

SECTOR STATISTICS

TELECOMUNICATIONS

Costa Rica 2019

sutel
SUPERINTENDENCIA DE TELECOMUNICACIONES

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INTRODUCTION
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As the authority responsible for regulating the telecommunications market in Costa Rica, the Superintendence of Telecommunications (Superintendencia de Telecomunicaciones - SUTEL), among other functions, aims to empower end users and to support businesses involved in the sector by providing market evolution information.

Under this premise, and with the valuable collaboration of related providers and operators, the most recent statistical information concerning the national telecommunications market is made available to the general public.

We hereby present the 2019 telecommunications indicators, which, in fact, is the eighth edition of this report since this effort started off in 2012.

The contents of this report are essential for the continuous assessment and gradual adjustment of national public policies.

This document is a type of X-ray of the telecommunications sector performance in 2019. Data come from market monitoring, analyzing the effects of sectorial regulations adopted, and transcendental decisions made, such as opening the market to competition, consumer decisions, and commercial policies of external economic agents.

These are all key elements that drive digital transformation and consolidate an ever better informed and articulated society.

With this background, we present the main findings that will be addressed below:

OVERALL SECTOR EVOLUTION

For 2019, the market recorded 760 264 billion colones in revenue, a slight increase, in nominal terms, of 0.32% over 2018.

MOBILE TELEPHONY

In 2019, subscriptions remained basically unchanged as compared to 2018, where prepaid subscriptions represented 71.7% of the total. Revenue from voice traffic and mobile telephony dropped 5.9% and 12.2% respectively.

BULK INTERNET ACCESS

Total subscriptions from 2018 to 2019 varied 56% (39% of all connections have speeds ranging between 10 Mbps and 600 Mbps).

DEDICATED LINES

Subscriptions between 2018 and 2019 varied 13% (21.9% corresponding to the bulk market, 6.9% of the total are connections in the international market, 51.5% of the total are connections up to 5 Mbps).

FIXED TELEPHONY

The number of subscriptions to the fixed telephony (traditional basic and VoIP) service showed the same downward trend observed over previous years, going from 850 377 in 2015 to 636 504 at the end of 2019 (-25.15%).

MOBILE INTERNET

The total number of subscriptions from 2018 to 2019 varied -8.4% (postpaid 7.5%, prepaid dropped -21%, and data card/USB 12.8%).

FIXED INTERNET

Subscriptions between 2018 and 2019 varied +8.4% (cable modem 10.8%, xDSL -30.3%, fiber optics 494.4%, wireless/others -26,8%).

SUBSCRIPTION TELEVISION

In 2019, total subscriptions reached 874 088, representing a reduction of 1.1% in total subscribers. However, the Internet Protocol Television service continued to grow subscribers for a third consecutive year, with 21 401 more at the end of 2019, representing a 13.3% increase.

Telecommunications tower in Rancho Redondo, San José.

COMMERCIAL OFFERS AND PRICING

A wider variety range of mobile and fixed Internet commercial offers were available in 2019, accompanied by greater Internet speed and download capacity. The mobile telecommunications price index closed at -12% with respect to the baseline (July 2017), while the fixed Internet price index closed at -35.4% compared to July 2018.

INTERNATIONAL

Costa Rica is at a global level in terms of mobile telephony penetration. Additionally, among Latin American countries, it ranks 7th in the Global Competitiveness Index, and more specifically, in the innovation pillar, it is only surpassed by Chile, Mexico, Uruguay, and Colombia

COMPETITION

The regulatory framework applicable to competition was updated and strengthened in 2019 through the Law for the Strengthening of Competition Authorities of Costa Rica, which assigns SUTEL a series of functions and additional tools. By the end of 2019, 20 monopolistic practices and 4 mergers had been examined.

NETWORK QUALITY AND PERFORMANCE

The quality of fixed Internet access services in 2019 proved to be stable, as there was no loss of performance compared to 2018, (reduced speed and increased delay) at the time of greatest network load (peak hour), from 19:00 to 23:00 hours. During 2019, the 4G mobile network availability reached 70% countrywide, which means that, in average, mobile users had a 4G mobile connection 70% of the time, enjoying the high speeds offered by such a connection.

ACHIEVING GOALS SET OUT IN THE NATIONAL TELECOMMUNICATIONS DEVELOPMENT PLAN (NTDP 2015-2021) AND FONATEL RESOURCE EXECUTION

The 2019 goals established in the NTDP 2015-2021 were not only achieved, but also exceeded, as was the case for programs such as Connected Households, Equipped Public Centers, and Connected Public Spaces, increasing connectivity in non-profitable areas for the telecommunications service providers and servicing lower revenue populations, which translates into 1 171 572 persons and 370 662 households with access to voice and data services in districts where FONATEL programs are present, which is 98% of all districts in the country.

The facts mentioned above demonstrate that these indicators are the result of a joint and articulated measurement effort involving different disciplines and structural areas of SUTEL, namely:

The Directorate General for Quality and Spectrum), which monitors network deployment and quality throughout the national territory, and supervises the efficient use of the radio electric spectrum, network quality and protection of telecommunications end users.

The Directorate General of FONATEL, which is in charge of taking telephony and Internet services to areas not financially profitable for operators, and to populations which, for geographic or financial reasons, do not have access to telecommunication services through the universal service and access programs mandated in NTDP 2015-2021.

The Directorate General for Competition, which strives to ensure market efficiency, and intervenes in the event an operator or service provider becomes involved in anti-competitive practices that affect the market.

Finally, the Directorate General for Markets, which, enforces the interconnection and access regime, and also supervises each telecommunications service available to the public by regularly monitoring the market using indicators that meet broad technical rigor and follow best international practices.

Definitely, Costa Rica , through figures, shows to be an ever more robust and consolidated market, with a clear vision of providing telecommunications access to the entire population, with quality services and prices that fit consumer needs, while taking the country to a more competitive position with a world class digital system.

Nevertheless, it is worth recognizing that there are still challenges ahead in areas such as network deployment and adoption of new and better technologies to ensure a more competitive market in the future, advancing the accelerated and healthy evolution the country has experienced since opening the telecommunications market.

I would like to thank all users, companies, institutions, and especially SUTEL personnel who, day by day, work based on principles, dedication, and responsibility to fulfill every duty assigned to them, and, of course, for their contribution so the country can gather reliable and timely information to monitor the sector and its continuous progress.

Federico Chacón Loaiza
Chair of the Council
Superintendence of Telecommunications

METHODOLOGY

and Report Scope



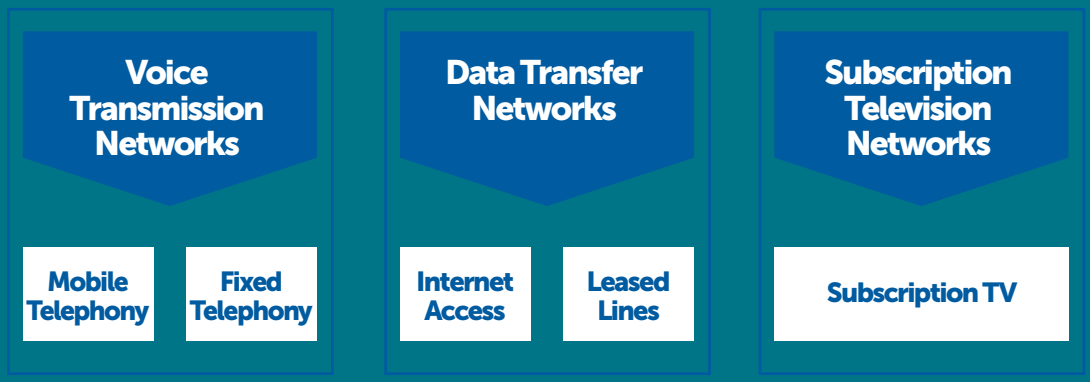
Data switching equipment

Description of Telecommunication Services included in this Report

In order to standardize and simplify the way in which information presented by service providers and network operators is gathered, telecommunications services available to the general public have been divided according to the characteristics of the network deployed and the type of signal carried.

Therefore, the services considered herein are classified in three major categories: voice services, data transfer services and subscription television services. These categories and their corresponding sub-groups are illustrated in Figure n.° 1.

Figure n.° 1. Costa Rica: General Service Classification



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Services provided through voice transmission networks include the following:

- **MOBILE TELEPHONY SERVICE:**
  This offers two subscription modalities: prepaid and postpaid.

- **FIXED TELEPHONY SERVICE:**

This service is defined in Article 3 of the Reglamento sobre el Régimen de Protección al Usuario Final de los Servicios de Telecomunicaciones (Regulations of the System for the Protection of End Users of Telecommunication services). For the purposes of this report, it is sub-divided in three different types: traditional basic telephony, IP or VoIP telephony, and public telephony. As indicated in Article 3 of the abovementioned Regulations, fixed telephony services can be provided through any means of access, provided the associated terminals thwart mobility.

Data transfer services are defined in Article 8, sub-paragraph 75, of the Reglamento de Prestación y Calidad de los Servicios (Regulations for Service Provision and Quality), divided in two markets for the purposes of this report:

- **INTERNET ACCESS SERVICE:**

Service offered by a provider to allow for the access required by subscribers to connect their computer equipment to the Internet.

- **LEASED LINE SERVICE:**

This type of service implies the transfer of data from one given point to one or more physically separate access points. The transfer network is based on wired systems.

Finally, although television content itself is not considered a telecommunications service, it does include television transmission networks, since these are means to offer Internet-based telecommunication services. This concept includes:

• **SUBSCRIPTION TELEVISION OR PAY TV:** Satellite television, cable television, IP television, and MMDS television.

Table n.° 1 describes the marketing modalities and characteristics of the networks that support each service included in those three groups:

Table n.° 1. Costa Rica: Telecommunication services Considered in the Statistical Report

Telecommunications service category	Marketing	Characteristics of supporting networks
Mobile telephony	Instant messaging (SMS), multimedia messaging (MMS), voice postpaid, voice prepaid.	Facilitates voice communications through wireless means. Evolving towards an all-IP architecture.
Fixed telephony	Traditional basic telephony, voice over IP (VoIP), ISDN.	Known also as PSTN, it uses a set of exchanges and trunk links to establish a connection between two ends, also known as circuit switching. Additionally, when using a softswitch and other active elements, the PSTN network can be connected to any data network and provide voice over IP.
Subscription television	Satellite television, cable television, IP television and MMDS television.	Service provided through different technologies, either a satellite system or a cable system based on DOCSIS 2.0 or higher. It transmits, or re-transmits, television and audio signals to a group of users that subscribe to the service by means of a contract and, in return, give the provider a monetary compensation. This requires a network consisting of a Head End1 for wireless distribution, or a wireless distribution satellite station for user access.[2] This network, which basically provides television services or subscription-based content also allows for data transfer. Although not a telecommunications service in itself, it is interesting to analyze its evolution.
Data transfer	Wholesale data transfer.	This term describes the service offered by telecommunications service operators to carry the traffic of third-party operators or providers. In other words, the end service is provisioned by a different provider since the carrier leases a physical or logical connection to manage a network so that other providers can offer telecommunication services to their end users.
	Instant messaging (SMS), multimedia messaging (MMS), voice postpaid, voice prepaid.	Facilitates voice communications through wireless means. Evolving towards an all-IP architecture.
	End-to-end wireless links.	Transferring data between two or more geographically separated access points. The transfer network is wireless.
	Leased lines.	Transferring data between two or more geographically separated access points. The transfer network is wired.
	Private virtual networks.	Service provisioning a data network that uses public telecommunications infrastructure, while maintaining data private through different routing and security technologies.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Authorized services not considered in this report are geolocation, videoconferencing, and trunking, since those require a radio-electric spectrum frequency license for private commercial use. Therefore, the telecommunications network used in this case is private and does not connect to public telecommunications networks, so these services are not considered available to the public.

[1] Head End: Head of the telecommunications network, where programming originates, and the distribution network begins. Normally, signals are received from satellites, broadcast stations, and even from the Internet, and then made available for distribution.
[2] Users, subscribers, either residential or commercial.

Methodology

To develop the 2019 telecommunications sector indicators, report for Costa Rica, the tasks undertaken by the Directorate General for Markets, the Directorate General for Competition, the Directorate General for Quality, and the Directorate General of FONATEL resulted from applying methodologies to each area in order to obtain overall sector performance indicators (market behavior), operation, and quality of service of FONATEL projects, respectively.

It is worth noting that the overall telecommunications sector results in this report implicitly including the values reported for the indicators mentioned in the FONATEL section. Readers must not add FONATEL results to those reflected for the Telecommunications Sector.

Methodology Applied for Market Behavior Indicators

For the telecommunications market behavior indicators, the following three steps are required: data collection, data review and analysis, and generation of results.

Figure n.° 2. Costa Rica: Data collection, review and analysis, and generation of telecommunications sector indicators



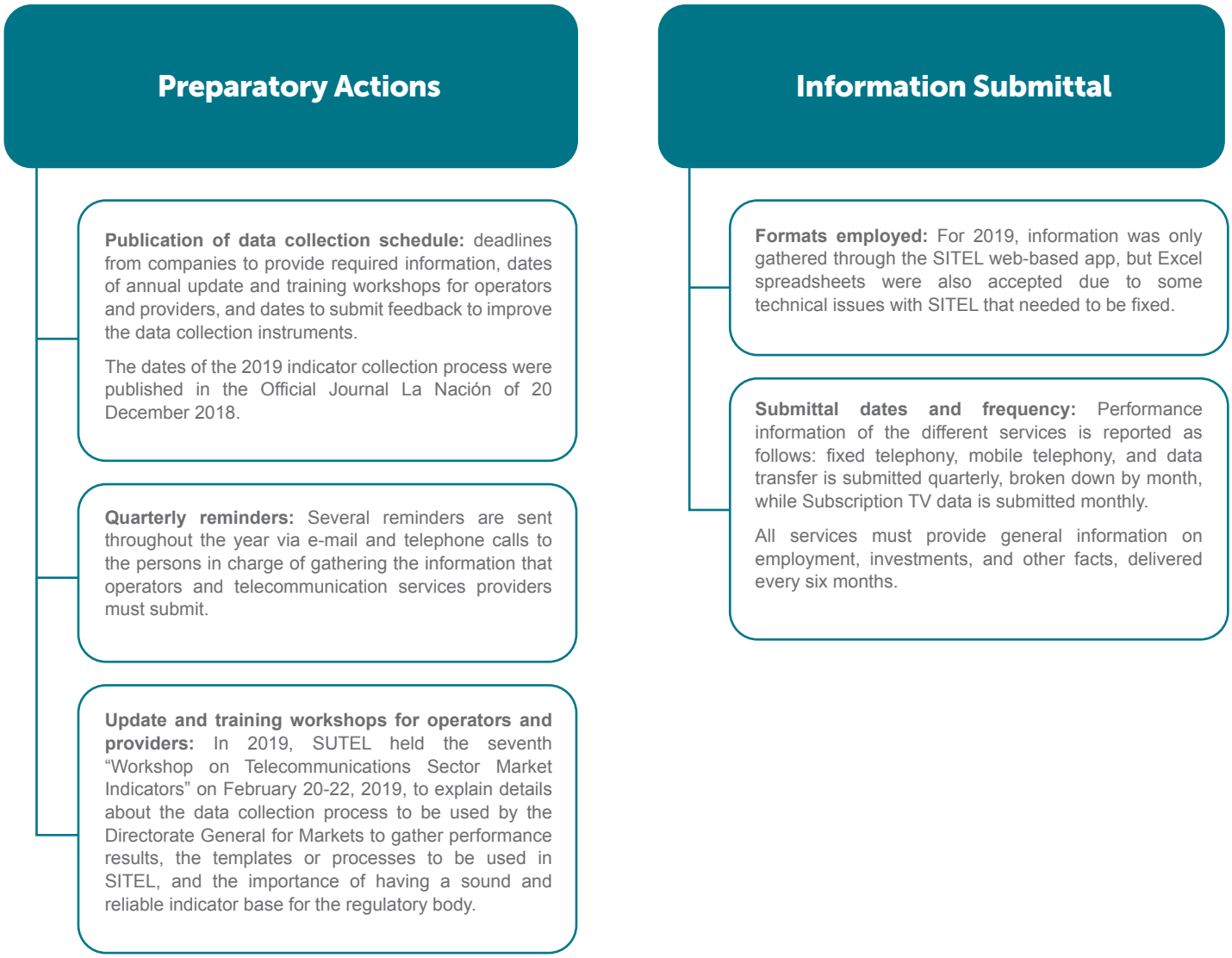
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

• Data Collection

This phase is executed through the Telecommunications Sector Indicator System (SITEL[3]), which is fed with information supplied by operators through downloadable templates. These templates make it easier for operators to report data and facilitate report processing.

[3] Platform consisting of web-based app and a Smart Business solution. SITEL consists of two interfaces, one for SUTEL officers and another for individuals authorized by the telecommunications service provider or operator to enter the required information to build the indicators on downloadable templates.

Figura n.° 3. Costa Rica: Data Collection to Build Telecommunications Sector Indicators



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

During the 2019 update and training workshops for operators and telecommunications service providers, a total of 103 representatives attended, corresponding to 60 operators with an active commercial offer. These workshops were held at ARESEP offices. The methodology employed this time was different from that of previous years in that they focused on analyzing experiences using the SITEL tool, designing new indicators, results of the Mobile Telecommunications Price Index, and participation of the Economic Regulation and Market Access areas as well as the Directorate General for Quality.

Tabla n.° 2. Costa Rica: Superintendence of Telecommunications: Attendance to Telecommunications Market Indicator Workshop, 2019

Date/Operator	Representative
20/2/2019	
CABLE VISIÓN DE OCCIDENTE S.A.	1
COSTA NET S.A.	1
SAN CARLOS WIRELESS	1
RADIOGRÁFICA COSTARRICENSE S.A.	2
MILLICOM CABLE COSTA RICA, S.A (TIGO)	6
TELEFÓNICA DE COSTA RICA TC, S.A.	3
INSTITUTO COSTARRICENSE DE ELECTRICIDAD	8
BLUE SAT SERVICIOS ADMINISTRADOS DE TELECOMUNICACIONES S.A.	2
EMPRESA DE SERVICIOS PÚBLICOS DE HEREDIA (ESPH)	2
COOPERATIVA ELECTRIFICACIÓN RURAL DE GUANACASTE (COOPEGUANACASTE)	2
CLARO CR TELECOMUNICACIONES, S.A.	5
TELECABLE S.A. (TELECABLE ECONÓMICO T.V.E., S.A.)	2
CALL MY WAY S.A.	1
CABLE TICA (LIBERTY)	2
CABLE ARENAL DEL LAGO, S.A.	1
AMERICAN DATA NETWORKS	1
CABLE CARIBE, S.A.	1
COOPERATIVA DE ELECTRIFICACIÓN RURAL DE ALFARO RUIZ RL (COOPEALFARO RUIZ)	2
COOPERATIVA DE ELECTRIFICACIÓN RURAL DE SAN CARLOS, R.L. (COPELESCA)	2
CABLE VISIÓN DE COSTA RICA CVCR, S.A. DE OCCIDENTE S.A.	1
Total	**46**
21/2/2019	
CENTURY LINK COSTA RICA S.R.L.	1
CABLE VISIÓN DE COSTA RICA CVCR. S.A.	1
AMERICAN DATA NETWORKS/ ELCOMSA	2
INTERPHONE, S.A.	1
METRO WIRELESS SOLUTIONS DE COSTA RICA MWS, S.A.	1
GRUPO GLOBAL TECH SOLUTIONS S.A.	2
COOPERATIVA DE ELECTRIFICACIÓN RURAL LOS SANTOS R.L. (COOPESANTOS)	2
CABLE VISIÓN DE COSTA RICA CVCR, S.A.	2
CONECTA DEVELOPMENTS S.A.	3
GRUPO KONECTIVA LATAM S.A.	1
TRANSDATELECOM, S.A.	2
RED PUNTO COM TECHNOLOGIES S.A.	1
P.R.D. INTERNACIONAL, S.A.	1
NYXCOMM, S.A.	1
RSL TELECOM (PANAMÁ), S.A.	1
REDES INTEGRADAS CORPORATIVAS LTDA. (REICO)	1
COMUNICACIONES TELEFÓNICAS TICOLÍNEA, S.A.	1
Total	**24**

22/2/2019	
HOLST VAN PATTEN S.A.	1
IBW COMUNICACIONES SOCIEDAD ANÓNIMA	1
UFINET COSTA RICA, S.A.	1
CODISA SOFTWARE CORPORATION, S.A.	3
RED CENTROAMERICANA DE TELECOMUNICACIONES S.A. (REDCA)	1
TECNOLOGÍA Y SISTEMAS WILCASJI S.A.	2
CABLE PLUS, S.R.L.	2
GOLD DATA COSTA RICA SOCIEDAD ANÓNIMA	2
BOOMERANG WIRELESS, S.A.	1
SERVICIOS DIRECTOS DE SATÉLITE, S.A.	2
RED Y COMUNICACIONES REYCOM DEL SUR, S.A.	1
SISTEMA DE RED CMM E.I.R.L.	1
SERVILINK, S.A.	1
SERVICIOS TECHNOLOGICOS ANTARES DE COSTA RICA	1
CONTINUM DATACENTER S.A.	2
OTHOS TELECOMUNICACIONES S.A.	1
TICARIBE SOCIEDAD ANÓNIMA	1
COMERCIALIZADORA DENNISALOM DEL SUR S.A. (SERVCOMSA)	1
COMPAÑÍA NACIONAL DE FUERZA Y LUZ	4
AT&T SERVICIOS DE COMUNICACIÓN DE COSTA RICA S.A.	1
COMUNICACIONES METROPOLITANAS METROCOM, S.A.	1
IDEAS GLORIS S.A.	1
SOCIÉTE INTERNATIONALE DE TÉLÉCOMUNICATIONS AÉRONAUTIQUES (SITA)	1
Total	**33**
Total general	**103**

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

• Data Review and Analysis

After information is received in the SITEL system, it is reviewed and analyzed by professionals from the Indicators Team of the Directorate General for Markets (DGM). Any action taken as result of this general verification must be based on determining the consistency, timing and thoroughness of the information. Otherwise, the relevant parties must provide clarifications or corrections.

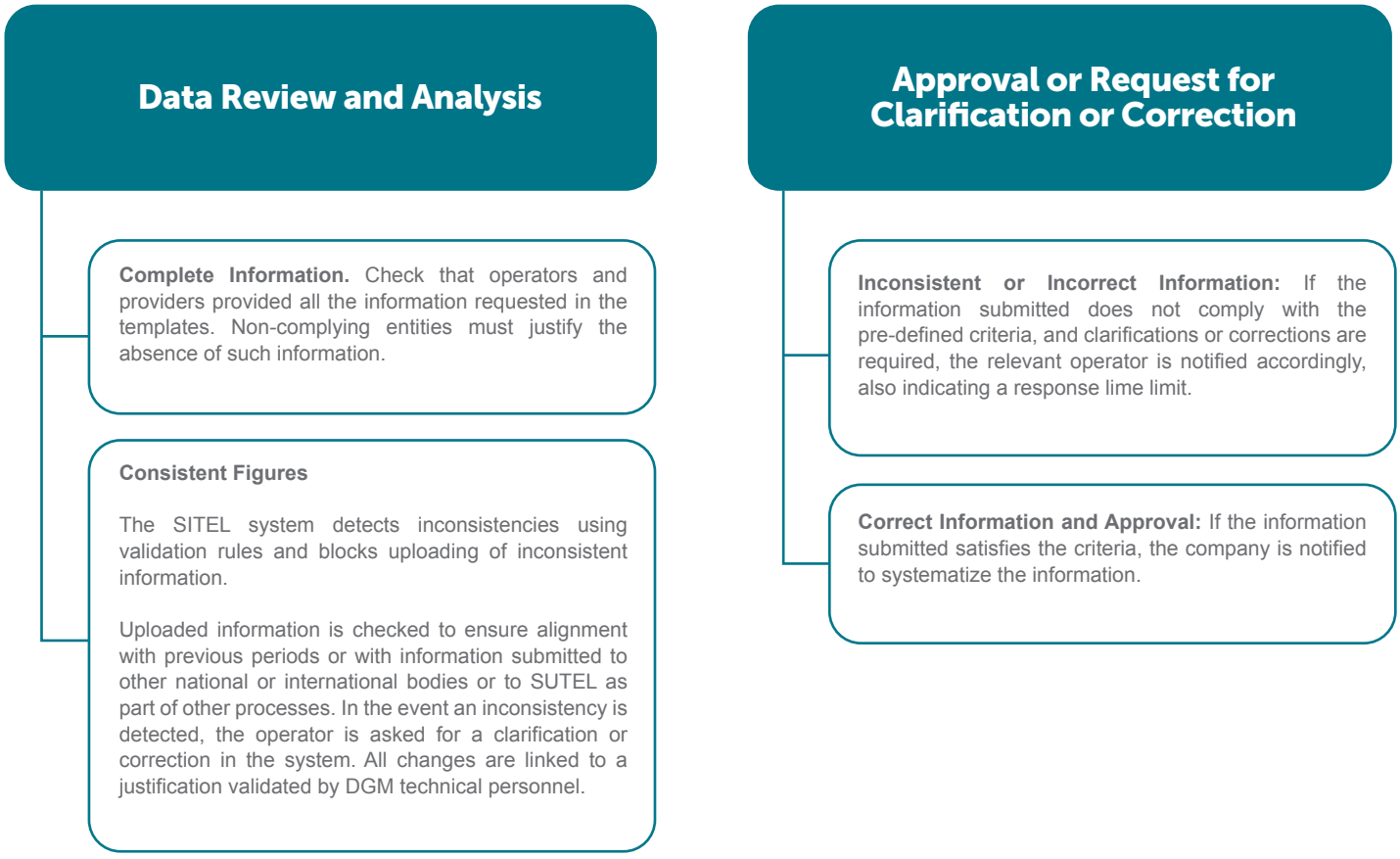
For these services, any inconsistency is reported firstly to the operator via e-mail, followed up by a telephone call, and finally, by an official written communication from the Directorate General of Markets. Additionally, the SITEL platform has a series of validation tools to avoid recording data outside the historical trend of each operator (outliers). In the event an operator requests changes of historical data, the SUTEL Council will examine the case, along with its respective justification.

SUTEL monitors compliance with Law N.° 9694 National Statistical System, which mandates providing information for statistical purposes. Specifically, Article 19 reads: “Information provided or supplied in the framework of the PEN (National Statistics Program) shall always be timely and accurate under penalty as provided for in this Law.”

In 2019, since the SITEL system was used to report and upload information, an additional filter was added to the review process, considering that the system includes intrinsic validation rules that prevent operators and telecommunications service providers from including information not consistent with historical data provided, as indicated before. For example, the rules do not allow uploading information in units other than those previously reported (thousands or millions of colones, Kbps or MB, among others).

Operators with the greatest market share must provide information to ensure comparable statistics.

Figure n.° 4. Costa Rica: Costa Rica: Data Review and Analysis to Develop Telecommunications Sector



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

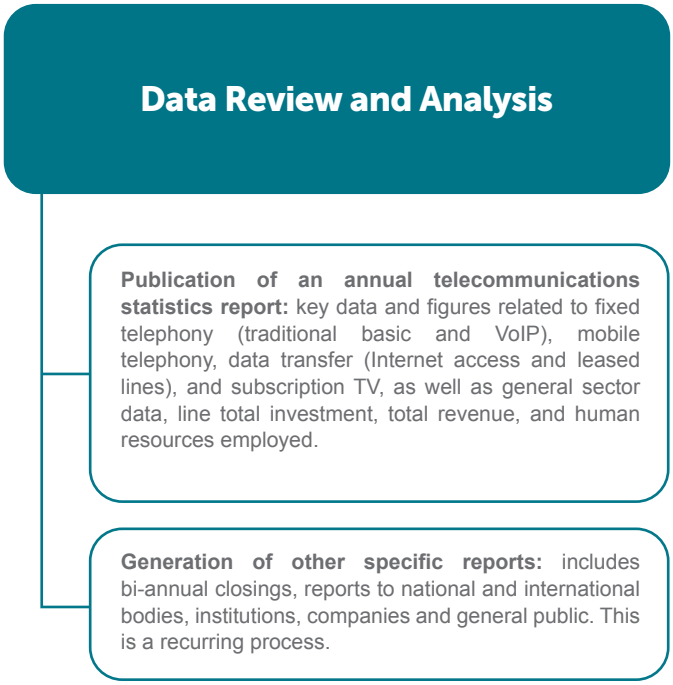
It is worth mentioning that besides the review process, meetings are held year-round with individual operators to clarify any indicator data requested on the templates, and to share any comments the Superintendence may have regarding the information provided.

• Generation of Results

Results and reports are generated based on information provided by network operators and telecommunications services providers, as well as from secondary national and international sources (INEC, ITU, World Economic Forum, etc.). Annual and bi-annual reports are published on the SUTEL website. Additionally, in compliance with commitments entered into with international bodies, the following reports are produced:

- **Encuesta Reglam. Telecom. TIC_2019, 22 January 2019**
- **ITU World Telecommunication/ICT Regulatory Survey 2019, 1 March 2019**
- **ITU ICT Price Basket Questionnaire 2018: Costa Rica, 4 March 2019.**
- **World Telecommunication/ICT Indicators (WTI) Short questionnaire, 29 March 2019**
- **WTO CRI Section 4, 15 May 2019**
- **ITU Survey on Tariff Policies 2019, 11 October 2019**
- **ITU Long Questionnaire 2019, 15 October 2019**

Figura n.° 5. Costa Rica: Generation of Results and Final Indicators of the Telecommunications Sector



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Summary of Market Behavior Indicators Presented in the Report

General definitions of each market behavior definition are presented to provide clarity regarding the market information processed. Take note that these definitions are aligned with those of the International Telecommunications Union (ITU).

Table n.° 3. Costa Rica: Fixed Telephony Service Indicators, 2019

Indicator	Definition
Total active fixed telephone lines	Number of lines in service and duly assigned to a customer, not definitely suspended (Articles 12 and 34 of RPDF), reflecting at least one chargeable event during the last billing period, or with an effective service contract with the provider.
Active VoIP subscriptions/lines	Number of active subscriptions to a fixed line utilizing the voice over Internet protocol (VoIP) transmission. This should only include the total subscriptions to the incoming and outgoing VoIP service in the last three months. Excludes: VoIP software applications (such as Skype VoIP between computers or from computer to telephone).
ISDN, BRI and PRI service subscriptions	Total number of subscriptions to the ISDN Integrated Services Digital Network, which may be split as: basic rate interface (BRI) and primary rate interface (PRI).
Total traffic in traditional basic telephony	Traffic corresponding to phone calls made through fixed analogue or digital telephone lines, or both.
Total VoIP traffic	Traffic corresponding to phone calls made through fixed managed VoIP telephony
International incoming telephone traffic	Total traffic of international origin with an on net fixed destination
International outgoing telephone traffic	Total traffic of on net fixed origination and international destination
Total revenue traditional basic telephony (retail)	Revenue resulting from basic telephony + overage + other items associated to provisioning fixed telephony services
Total VoIP revenue (retail)	Equivalent to revenue from basic rate + overage + other items associated to provisioning VoIP services

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 4. Costa Rica: Data Transfer Service Indicators, 2019

Indicator	Definition
Active fixed wired Internet subscriptins	Sum of active fixed wired broadband subscriptions (cable mode, xDSL, fiber optics to home or office, and other fixed wired technologies).
Active fixed wireless Internet subscriptions	Sum of active fixed wireless broadband subscriptions (satellite, fixed WiMax, and other fixed wireless technologies-).
Active mobile Internet subscriptions	Sum of active mobile broadband subscriptions (cellular, prepaid, postpaid, data card, mobile WiMax, and other fixed wireless technologies-).
Active dial-up Internet subscriptions	Number of active dial-up Internet subscriptions. This is an Internet connection made through a modem and a fixed telephone line, where the modem dials a telephone number in order to access the Internet.
Number of leased lines (dedicated links)	Number of private dedicated connections. A leased line connects two voice telecommunications or private data service sites. Instead of a special cable, this requires a reserved circuit between two points. Normally companies lease this type of line to connect their offices, since it guarantees the necessary bandwidth for network traffic.
Internet traffic	Amount of data transmitted and downloaded (in gigabytes) by broadband users.
Total revenue from provided leased lines	Total amount of revenue invoiced for provisioning the lease line service.
Maximum download speed offered	Maximum Internet speed offered to download data through the Internet access service.
Minimum download speed offered	Minimum Internet speed offered to download data through the Internet access service.
Total revenue invoiced for wired fixed Internet access	Total amount of revenue invoiced in association with providing wired fixed Internet access service.
Total revenue invoiced for wireless fixed Internet access	Total amount of revenue invoiced in association with providing wireless fixed Internet access service.
Total revenue invoices for mobile Internet access	Total amount of revenue invoiced in association with providing mobile Internet access service.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 5. Costa Rica: Telephony Service Indicators, 2019

Indicator	Definition
Active postpaid mobile subscriptions	Total number of postpaid mobile phone subscriptions paying a monthly subscription fee, reflecting at least one chargeable event in the billing month, and not currently in permanent suspension, as provided in Articles 12 and 35 of the RPUF.
Active prepaid mobile subscriptions	Total number of prepaid mobile phone subscriptions that have at least one chargeable event in the service balance, within the ninety calendar days prior to the last charge and that are on the prepaid platform.
Total capacity of mobile lines installed	Maximum number of mobile lines that can be connected. This number includes active mobile numbers and mobile lines available for subsequent connection, including those used for the technical operation of the exchange (test numbers).
Mobile traffic (voice, SMS and MMS)	Total traffic of the mobile telephone service.
Mobile traffic - on net fixed	Traffic originating in on net mobile destined to on net fixed.
Mobile traffic on net	Traffic originating mobile network destined to same mobile network (on net traffic).
Mobile traffic - other mobile networks	Traffic originating in on net mobile destined to other mobile networks (other operator mobile networks).
Traffic other mobile networks – on net mobile	Traffic originating in other mobile networks destined to on net mobile.
Traffic on net fixed – on net mobile	Traffic originating in fixed on net destined to on net mobile.
Mobile traffic - other mobile networks	Traffic originating in fixed on net destined to other fixed networks (off net mobile).

Traffic other fixed networks – on net mobile	Traffic originating in other operator fixed networks (off net fixed) destined to own mobile network (on net mobile).
Mobile traffic - international	Traffic originating in on net mobile network, with international destination (off net international).
International network traffic – own mobile	Traffic originating in international networks (off-net international) with destination to own mobile network (on-net mobile).
Transit mobile traffic	Traffic originating in off-net (other fixed, mobile and long distance international networks) with off-net destination (other fixed, mobile and long distance international networks), that transit the own mobile network.
Total mobile voice traffic by payment - mode	Sum of mobile voice traffic per payment mode (prepaid and postpaid). To build this indicator, on net traffic must be added to outbound off traffic. Total mobile voice traffic: on net mobile voice traffic + total off net mobile voice traffic (outbound mobile voice traffic to other mobile networks, own network, other fixed networks, and towards international networks).
On net postpaid SMS traffic	Short message service (SMS) traffic exchanged among subscriptions of the same mobile network, postpaid.
On net postpaid SMS traffic	Short message service (SMS) traffic exchanged among subscriptions of the same mobile network, prepaid.
Off net postpaid SMS traffic	Short message service (SMS) traffic sent and received by mobile telephone subscriptions, postpaid.
Off net postpaid SMS traffic	Short message service (SMS) traffic sent and received by mobile telephone subscriptions, prepaid.
Postpaid or prepaid SMS national traffic	Short message service (SMS) traffic sent to national destinations from mobile phones, postpaid or prepaid.
Postpaid or prepaid SMS international traffic	Short message service (SMS) traffic sent to international destinations from mobile phones, postpaid or prepaid.
On net postpaid MMS traffic	Multimedia messaging service (MMS) exchanged among subscriptions of the same mobile network, postpaid.
On net prepaid MMS traffic	Multimedia messaging service (MMS) exchanged among subscriptions of the same mobile network, prepaid.
Off net postpaid MMS traffic	Multimedia messaging service (MMS) sent and received by subscriptions to mobile telephony service, postpaid.
Off net prepaid MMS traffic	Multimedia messaging service (MMS) sent and received by subscriptions to mobile telephone service prepaid. Exclude MMS on net traffic.
Postpaid or prepaid MMS national traffic	Multimedia messaging service (MMS) sent to national destinations by mobile telephone, postpaid or prepaid.
Postpaid or prepaid MMS international traffic	Multimedia messaging service (MMS) sent to international destinations by mobile telephone, postpaid or prepaid.
Outbound roaming telephony traffic	Number of total traffic minutes of communications made by own customers through local networks, roaming with foreign networks, when out of the service zone of the local network (outbound roaming).
Inbound roaming telephony traffic	Number of total traffic minutes of communications received by own customers through local networks, roaming with foreign networks, when out of the service zone of the local network (outbound roaming).
Outbound SMS and MMS international roaming traffic	Traffic generated by resident mobile subscribers when sending SMS and MMS when out of the service zone for their local network.
Inbound SMS and MMS international roaming traffic	Traffic generated by resident mobile subscribers when receiving SMS and MMS when out of the service zone for their local network (inbound roaming).
Inbound roaming data traffic (TB)	Transmitted traffic (TB) by resident subscribers when accessing Internet service when out of the service zone of the local network (inbound roaming).
Outbound roaming data traffic	Transmitted traffic (TB) by resident subscribers when accessing Internet service when out of the service zone of the local network (outbound roaming).
Average price	Average price of a call from a mobile telephone (prepaid or postpaid).
Average price of a local 1-mnute call (peak hour, on net) for mobile cellular telephony	Price of a local call, for one minute, made at peak hour from a mobile telephone line. This indicator may be calculated using the distribution of revenue generated by mobile calls (prepaid or postpaid) on net during the hourly period considered “peak” or high consumption over the number of minutes used (traffic) for these calls. Includes taxes.

Average price for local call per minute (outside peak hours, on net) for mobile cellular telephony	Price of a local call per minute made outside peak hours from a mobile cellular telephone (prepaid or postpaid) to another mobile cellular telephone of the same network. This indicator may be calculated using the distribution of revenue generated by mobile prepaid on net calls made during “non-peak” or low consumption time slot over the number of minutes utilized (traffic) for these calls. Includes taxes.
Average price for local call per minute (outside peak hours, off net) for mobile cellular telephony	Price of a local call per minute made outside peak hours from a mobile cellular telephone (prepaid or postpaid) to a mobile cellular telephone of another network. This indicator may be calculated using the distribution of revenue generated by mobile prepaid off net calls made during “non-peak” or low consumption time slot over the number of minutes utilized (traffic) for these calls. Includes taxes.
Average price of local call per minute (peak hours, to fixed network) for mobile cellular telephony	Price of a local call per minute made in peak hours from a mobile cellular telephone (prepaid or postpaid) to a fixed telephone network. This indicator may be calculated using the distribution of revenue generated by mobile prepaid calls to a fixed network made during “peak” or high consumption time slot over the number of minutes utilized (traffic) for these calls. Includes taxes.
Average price of local call per minute (outside peak hours, to fixed network) for mobile cellular telephony	Price of a local call per minute made outside peak hours from a mobile cellular telephone (prepaid or postpaid) to a fixed telephone network. This indicator may be calculated using the distribution of revenue generated by mobile prepaid calls to a fixed network made during “peak” or high consumption time slot over the number of minutes utilized (traffic) for these calls. Includes taxes.
Average price of local call per minute (peak hours, off net) for mobile cellular telephony	Price of a local call per minute made in peak hours from a mobile cellular telephone (prepaid or postpaid) to a mobile cellular telephone of another network. This indicator may be calculated using the distribution of revenue generated by mobile prepaid calls to a fixed network made during “peak” or high consumption time slot over the number of minutes utilized (traffic) for these calls. Includes taxes.
Average price of local call per minute (weekend/evening, on net) for mobile cellular telephony	Price of a local call per minute made on weekends, evenings, from a mobile cellular telephone (prepaid or postpaid) to a mobile cellular telephone of the same network. Taxes must be included. Otherwise, this must be indicated in a note along with the applicable tax rate. This indicator may be calculated using the distribution of revenue generated by mobile prepaid calls on net made on weekends or evenings over the number of minutes utilized (traffic) for these calls. Includes taxes.
Average price of local call per minute (weekend/evening, off net) for mobile cellular telephony	Price of a local call per minute made on weekends, evenings, from a mobile cellular telephone (prepaid or postpaid) to a mobile cellular telephone of another network. This indicator may be calculated using the distribution of revenue generated by mobile prepaid calls off net made on weekends or evenings over the number of minutes utilized (traffic) for these calls. Includes taxes.
Average price of local call per minute (weekend/evening, off net, to a fixed network) for mobile cellular telephony	Price of a local call per minute made on weekends, evenings, from a mobile cellular telephone (prepaid or postpaid) to a fixed network. This indicator may be calculated using the distribution of revenue generated by mobile prepaid calls off net made on weekends or evenings over the number of minutes utilized (traffic) for these calls. Includes taxes.
Average price of SMS (on net) for mobile cellular telephony, prepaid and postpaid	Average price to send a short message (SMS) from a mobile cellular telephone (prepaid or postpaid) to the mobile cellular telephony of the same network. This indicator is calculated using the distribution of revenue generated by the number of SMS on net. Includes taxes.
Average price of SMS (on net) for mobile cellular telephony (off net) for mobile cellular telephony prepaid and postpaid.	Average price to send a short message (SMS) from a mobile cellular telephone (prepaid or postpaid) to the mobile cellular telephony of another network. This indicator is calculated using the distribution of revenue generated by the number of SMS off net. Includes taxes.
Revenue from mobile telephone service, prepaid or postpaid	Revenue related to mobile telephony service, prepaid or postpaid. This is the sum of revenue from monthly fee, minute overage, and other charges generated as part of the provision of the mobile telephony service and which are not part of the monthly fee or overage fee, such as penalties for suspension and reconnection.

Revenue from mobile voice traffic, on net, prepaid or postpaid	Revenue related to mobile voice traffic originating in same mobile network (on net mobile) destined to the same mobile network (on net mobile).
Revenue from mobile outgoing voice traffic, prepaid or postpaid	Revenue related to mobile voice traffic originating in same mobile network (on net mobile) destined to off net (same mobile network, other fixed networks, other mobile networks, international networks).
Revenue monthly subscription or minimum rate prepaid or postpaid	Revenue related to collection of recurring rates resulting from subscription to mobile telephony service prepaid or postpaid.
Revenue from overage mobile fixed telephone service prepaid or postpaid	Revenue related to minute overages or not considered in the minimum rate of prepaid or postpaid service. Includes minute overage related to local as well as international calls.
Revenue from incoming mobile voice traffic, prepaid or postpaid	Revenue related to traffic originating off net (same mobile network, other fixed networks, other mobile networks, international networks) and destined to on net (same fixed network).
Revenue from outgoing international mobile voice traffic, prepaid or postpaid	Revenue related to mobile voice traffic originating on same mobile network (on net mobile) destined to off net international.
Revenue from incoming international mobile voice traffic, prepaid or postpaid	Revenue related to mobile voice traffic originating off net international destined to on net (same mobile network).
Revenue from number of SMS on net postpaid or prepaid	Revenue related to short message (SMS) traffic exchanged between users of a same mobile network under prepaid or postpaid.
Revenue from number of SMS off net postpaid or prepaid	Revenue related to short message (SMS) traffic sent to national or international destinations from mobile telephones, under prepaid or postpaid.
Revenue from number of MMS on net postpaid or prepaid	Revenue related to multimedia message (MMS) traffic exchanged between users of a same mobile network, under prepaid or postpaid.
Revenue from number of MMS off net postpaid or prepaid	Revenue related to multimedia message (MMS) traffic sent to national and international destinations from mobile telephones under prepaid and postpaid.
Revenue from MMS sent to national destinations postpaid or prepaid	Revenue related to total traffic of multimedia message (MMS) sent to national destinations. Does not include messages sent via computers to other computers or to mobile telephones.
Revenue from MMS sent to international destinations postpaid or prepaid	Revenue related to total traffic of multimedia message (MMS) sent to international destinations. Does not include messages sent via computers to other computers or to mobile telephones.
Revenue from SMS sent to national destinations postpaid or prepaid	Revenue related to short message (SMS) traffic sent to national destinations from mobile telephones.
Revenue from SMS sent to international destinations postpaid or prepaid	Revenue related to short message (SMS) traffic sent to international destinations from mobile telephones.
Revenue from total number of MMS	Revenue related to total traffic of multimedia message (MMS) sent to national and international destinations. Does not include messages sent via computers to other computers or to mobile telephones.
Revenue from outgoing roaming telephone traffic (minutes)	Revenue generated by mobile telephony subscribers when making or receiving calls when they are outside the service area of their national network, for example, while travelling abroad.
Revenue from incoming roaming telephone traffic (minutes)	Revenue generated by visiting subscribers (foreigners) when receiving calls in a country. This revenue accrues to the network operators in the country of the visiting subscribers.
Revenue SMS and MMS roaming outgoing	Revenue generated by own subscribers of mobile telephony while sending SMS and MMS when they are outside the service area of their national network.
Revenue SMS and MMS roaming incoming	Revenue generated by visiting subscribers (foreigners) when receiving SMS and MMS. This revenue accrues to the network operators in the country of the visiting subscribers.
Data traffic roaming Inbound (TB)	Revenue generated by visiting subscribers (foreigners) when accessing the Internet. This revenue accrues to the network operators in the country of the visiting subscribers.
Data traffic roaming outbound (TB)	Revenue generated by own mobile telephony subscribers when accessing the Internet while outside the service area of their national network.
Bulk revenue from mobile telephony service	Revenue from charges for call termination on own mobile network.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 6. Costa Rica: Subscription TV Service Indicators, 2019

Indicator	Definition
Total number of multi-channel cable TV subscriptions	Number of multi-channel television subscriptions, transmitted through terrestrial means to hybrid optical fiber and coaxial cable networks (HCF). These networks allow providing other telecommunication services.
Total number of multi-channelthrough direct to home antennas (DTH) subscriptions	Number of multi-channel television subscriptions corresponding to television signals received from a communications satellite and carried from the operator to the end user receiving equipment.
Total number of multi-channel IPTV subscriptions	Number of multi-channel television subscriptions through broadband connections over the IP network.
Total number of multi-channel multi-pint distribution service (MMDS)	Number of multi-channel television subscriptions using MMDS (Microwave Multipoint Distribution Service), which transmits wireless signals to the end user. This service allows providing other telecommunication services.
Total revenue from Subscription TV service (revenue from subscriptions, connection, basic plan and value added)	Total revenue invoice for Subscription TV service, without deductions regarding country carriers of Subscription TV service.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

COMPETITION

The Law for the Strengthening of the Competition Authorities in Costa Rica, N.° 9736, states that SUTEL is the sectorial authority for the defense and promotion of competition and free concurrence in the telecommunications and networks sector that support open access sound and television broadcasting.

Additionally, Chapter II, Title III of the General Telecommunications Law (GTL) provides for a Sectorial Competition Regime that assigns a series of functions to the Superintendence of Telecommunications as sectorial telecommunications competition authority, namely:

a) Promote the principles of competition in the national telecommunications market;

b) Analyze the degree of effective market competition;

c) Determine when actions or operations, either in the country or abroad, by operators or providers may affect effective local market competition;

d) Ensure access of operators and providers to the telecommunications market under reasonable and non-discriminatory conditions;

e) Ensure access to essential facilities under equitable and non-discriminatory conditions;

f) Avoid abuses and monopolistic practices by operators or providers in the market. The latter shall not appoint a single operator for their services and technologies for monopolistic purposes. In the event a provider creates or utilizes another legal entity for such monopolistic purposes, SUTEL shall order the immediate termination of such practice, without detriment of applicable penalties;

g) Prevent and detect monopolies and detect cartels, monopolistic practices, unlawful mergers, and other restrictions to the efficient operation of the telecommunications market and impose legal measures and sanctions.

h) Authorize or reject mergers in the network and telecommunications sector that support the sound and television broadcasting services, and establish the necessary conditions to thwart possible anticompetitive effects resulting from a merger;

i) Request documentation and information from any physical person or legal entity, de facto or de jure, public or private, national or foreign, to support their functions;

j) Examine and obtain copies of documents and physical or electronic records, prior justified authorization by a Civil and Administrative Treasury Court, of industrial and commercial establishments and other movable property and real estate owned by operators and providers, as necessary to collect, and protect from loss or destruction, any useful evidence to investigate absolute and relative monopolistic practices as provided in this law and its regulations, pursuant to Chapter IV, Title III of the Law for the Strengthening of the competition Authorities in Costa Rica.

k) Execute publicity and advocacy activities related to telecommunications and network competition that support sound and television broadcasting.

l) Express non-binding opinions regarding competition and free concurrence, regarding laws, regulations, agreements, circulars and other administrative efforts related to the telecommunications and networks sector that support sound and television broadcasting.

m) Other functions granted under the Law for the Strengthening of the Competition Authorities in Costa Rica and its regulations.

SUTEL, through the Directorate General for Competition (DGCO), is authorized to analyze and sanction, as appropriate, any monopolistic practice of a telecommunications operator; approve or decline telecommunications operator mergers; and work on.

the promotion and advocacy of competition through activities such as expressing opinion, performing market studies, publishing guides, and arranging dissemination and training activities to promote competition.

The overall market performance section in the report this year includes information about competition-related activities carried out by SUTEL in 2019, namely:

- Analyze merger applications;
- Investigate possible monopolistic practices under both modalities: absolute and relative.
- Develop methodological analysis guidelines to promote transparency, predictability, and legal certainty regarding formalities and procedures at SUTEL.
- Develop activities to promote competition.
- Perform market studies.
- Express opinions regarding regulations that could affect competition in the telecommunications markets.

Methodology Applied to the FONATEL Program and Project Monitoring and Evaluation System

The General Telecommunications Law (Articles 31 through 40 and Transitory Note VI) authorize SUTEL to undertake projects that ensure access and use of telecommunication services for the economically and socially vulnerable population. This is done with resources from the National Telecommunications Fund (Fondo National de Telecomunicaciones - FONATEL), in accordance with the objective set out in said Law, and with the goals and priorities defined in the National Telecommunications Development Plan (NTDP) in force.

To determine the scope of projects under FONATEL, SUTEL utilizes the goals identified in the NTDP to develop an Annual Projects and Programs Plan (Plan Anual de Proyectos y Programas - PAPyP), which communicates, organizes, monitors and evaluates programs and projects related to universal access, universal service, and solidarity.

The current portfolio consists of five programs, four of which were under execution[4] at the end of 2019 (Figure N.° 6), while the fifth is awaiting the final definition or relevant public policies, and analyzing whether the goal needs to be updated.

[4] The four projects under execution (active) in 2019 are: Connected Communities Program, Connected Households Program, Equipped Public Centers Program and Connected Public Spaces Program. The fifth program, called Solidary Broadband, although included in the NTDP (2015-2021) and the 2018 PAPyP, is on hold until the scope and contribution of FONATEL are defined by the Executive Branch.

Figure n.° 6. Costa Rica: Program Portfolio under Development[5] FONATEL 2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

The life cycle of the FONATEL program projects is split in four different phases. The planning and execution phase in particular includes the management and follow-up of each program to better examine the results of indicators and their progress reports:

a) Initiation: process to define a new project and measure its value and viability. It includes proposal reviews, prefeasibility review, preliminary project overview, and work order or instrument to commission the new project.

b) Planning: process to determine the project scope and define the necessary course of action to achieve the relevant goals. It also includes the method to select the provider to take over the project execution, socio-economic study, financial scheme, Project and Program plan, and appointment of an operator or service provider. This phase includes the formulation and tender/acceptance stages.

- Formulation: includes projects in the planning phase, from generating the work order to drawing up the bid papers.
- Tender/acceptance includes projects in the planning phase, from launching the competition to assign a supplier.

[5] Includes all programs in any project life cycle phases, that is: initiation, planning, execution and closing.

c) **Execution:** includes project development and execution processes in line with the Project and Program work plan (project management takeover), follow-up and control to analyze project performance and progress (including payment handling, quality control, risk management, and output delivery progress). This phase begins when the project is awarded to a network operator or telecommunications service provider and ends when the project closes. It consists of two phases: execution/receipt and production.

- Execution /receipt covers projects in the execution phase, specifically from the time the project development initiates, once it is awarded to a bidder, until its acceptance. This includes the receipt and acceptance of infrastructure and equipment.
- Production: covers projects in the execution phase, namely operational projects (already offering services), from the entry into operation of the infrastructure until the end of the contract.

d) **Closing:** finalization and handover of the project. Includes termination and closing of contracts and development of relevant project closing documents.

In accordance with the phases described above, and as part of the control, monitoring and evaluation of projects developed by SUTEL, two types of indicators are gathered, defined, developed and analyzed: operational indicators (to measure project progress) and perception indicators (to estimate the effects of the projects on target populations). This report only includes operational indicators related to programs with projects under execution.

It is worth highlighting that the values of indicators reported under the FONATEL section are implicitly included in the overall results of the telecommunications sector reported and analyzed in the sub-sections corresponding to each service covered under this report.

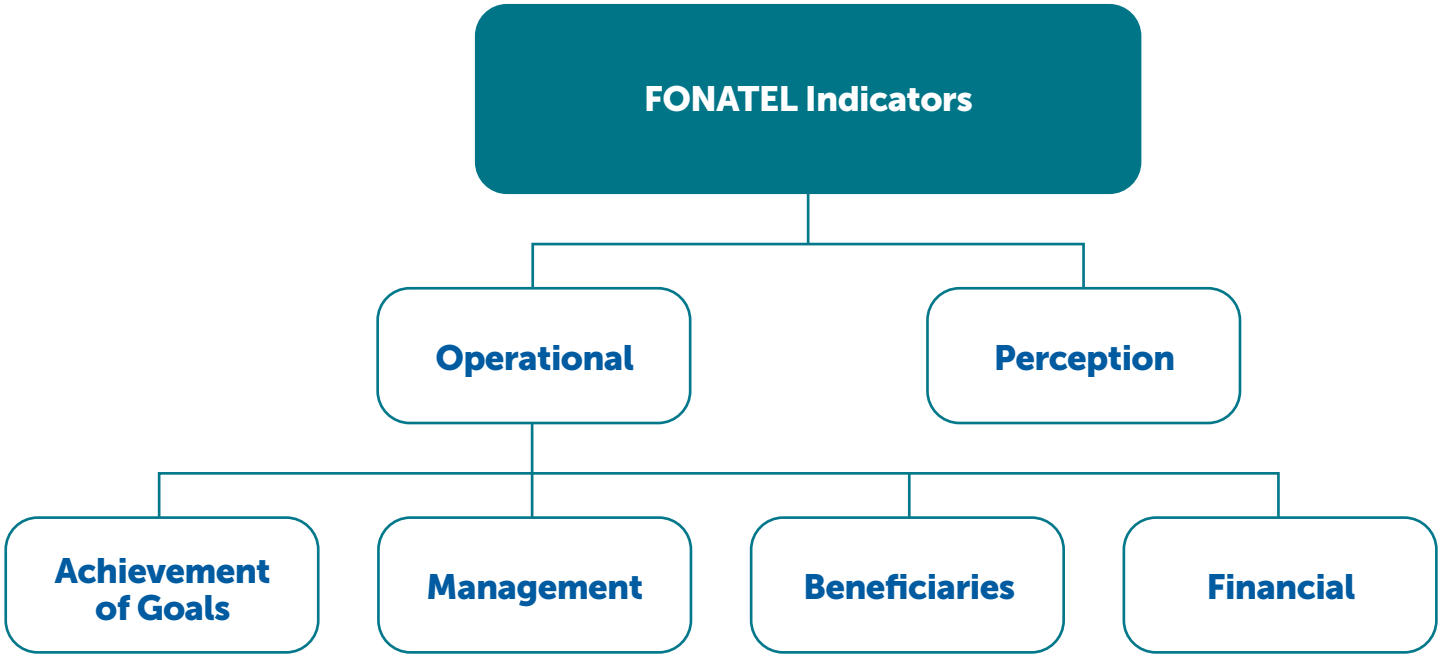
Operational Indicators Linked to FONATEL programs

Operational indicators aim to measure progress in achieving the goals set out in the individual program NTDPs and the overall progress of each project. In other words, they provide information about actions taken regarding service provision, infrastructure development, and provisioning of devices and supporting materials[6] for each intervention or program. Indicators are collected and analyzed monthly using execution reports prepared by the Trustee (Banco National de Costa Rica) together with the relevant project and program management units[7] pursuant to Clause 14, sub-paragraph d.4 of the Trust contract.

Operational indicators are sub-divided in four types or categories: indicators on goal compliance, to monitor progress with the effective NTDP goals; management indicators, to monitor the operational advancement of projects; beneficiary indicators, to quantify the populations that have benefited from project and program outputs, and, lastly, financial indicators, to measure execution of Fund resources to develop projects and programs aimed at closing the digital divide.

[6] Ancillary products include equipment, instruments, technology, software and products designed to propitiate the autonomy of persons with disabilities.
[7] The management unit is subsidiary of the Trust and consists of a team of professionals or specialists commissioned by the Trustee to support the necessary technical areas with regards to projects and programs to develop using Trust funds. For projects under execution, the firms Ernst & Young, Price Waterhouse Coopers and the SPC-NAE consortium will be in charge of the management units.

Figure0 n.° 7. Costa Rica: FONATEL 2019 Indicators



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Operational indicators are derived using a methodology based on the Logical Framework Approach[8] and the Results Chain[9] to ensure that all related programs, projects and actions are fully aligned with the objectives and goals set out in the current NTDP.

The methodology includes data collection templates and a catalogue of indicators developed along with the corresponding management units. Indicator templates are filled out by the management units and submitted monthly by the Trustee to the Directorate General of FONATEL. Technical staff of the latter checks the historical data, and considerers the details provided by the Trustee in monthly program and project management reports approved by the SUTEL Council and at monthly follow-up meetings with the Council and management units. Additional controls are made through site visits and information requested from the institutions involved in the execution.

To facilitate their inclusion and understanding, the FONATEL indicator results are also analyzed in two groups:

- **Aggregated results:** results coming from indicators that measure the general and aggregated joint execution of projects and programs funded and developed in the framework of FONATEL.

[8] The Logical Framework Approach is a matrix, four rows by four columns, that presents a summary of the most outstanding project aspects. Columns: narrative summary of the objectives and activities, indicators (specific results to be achieved, verification methods and assumptions or external factors that represent a risk). Rows: EAP components: end, purpose, components/results and activities needed to produce such components/results.
[9] The Results Chain provides a clear and logical definition of how the sequence of inputs, activities and products, related directly to the intervention, interact and help achieve the effects and impacts.

- **Program-specific:** results obtained regarding the performance of each program and project managed through FONATEL, which specifically measure their status and progress.

Below is an extract of the FONATEL operational indicator catalogue.[10]

Table n.° 7. Costa Rica: Catalogue of indicators for the monitoring and evaluation of ongoing FONATEL programs and projects, 2019

Group	Indicator Type	Indicator Name	Indicator Description
Aggregate	Management	Total projects developed through FONATEL	Cumulative total of projects developed through FONATEL programs, according to status in their respective life cycle phase.
Aggregate	Management	Districts with presence of at least one program developed by FONATEL	Cumulative total districts with presence of at least one program developed by FONATEL with connectivity (total or partial) with access to voice and/or data services with at least one household benefitting from an Internet service subsidy and one device for use and/or a Public Service Provision Center (PSPC) with devices for access to, and use of, ICTs and/or a digital area with free access to Internet service.
Aggregate	Management	Devices delivered through ICT access and use	Cumulative total devices delivered to households and PSPCs through FONATEL program for access to, and use of, information and communications technologies.
Aggregate	Management	Households with access to voice and data services in districts with presence of programs developed by FONATEL	Estimated total households located in districts with presence of programs developed by FONATEL with access to voice and data services.
Aggregate	Management	Houses with access to voice and data services in districts with presence of programs developed by FONATEL	Estimated total houses located in districts with presence of programs developed by FONATEL with access to voice and data services.
Aggregate	Beneficiary	Inhabitants with access to voice and data services in districts with presence of programs developed by FONATEL	Estimated total inhabitants in districts with presence of programs developed by FONATEL with access to voice and data services.
Aggregate	Beneficiary	Subscriptions to fixed Internet access services provided through FONATEL programs	Total subscriptions to fixed residential Internet access service through FONATEL programs.
Aggregate	Financial	FONATEL equity	Total FONATEL resources received from diverse sources of funding as provided in Article 38 of the General Law of Telecommunications. Obtained from the total assets and liabilities owned by the FONATEL.
Aggregate	Financial	Special parafiscal fee collection	Total amount received by the FONATEL from contributions made by the corresponding operators and telecommunications service providers, corresponding to 1.5% of gross revenue resulting directly from the operation of networks and the provision of telecommunication services.

[10] These indicators were validated together with the Directorate General for Markets, in line with SUTEL Council Resolution RCS-301-2019 and with SUTEL Council Agreement 034-013-2020 (notified through Writ 01531-SUTEL-SCS-2020) and were thereafter approved through Agreements 002-031-2020 and 003-031-2020 (notified through Writs 03396-SUTEL-SCS-2020 and 03397-SUTEL-SCS-2020, respectively).

Aggregate	Financial	Investment made through FONATEL	Total sum of funds executed to develop each of the programs and projects financed by FONATEL.
Program 1	Achievement of Goal	Districts with connectivity (total or partial) with access to voice and data services provided through the Connected Communities Program	Cumulative total districts with connectivity (total or partial) with access to voice and data services provided by projects in the FONATEL Connected Communities Program.
Program 1	Achievement of Goal	Achievement of NTDP goal related to districts with connectivity under the Connected Communities Program	Percentage compliance with the goal established in in the National Telecommunications Development Plan (NTDP) in force, in the framework of the Connected Communities Program, regarding the total number of districts with connectivity (total or partial) to access to voice and data services.
Program 1	Achievement of Goal	Indigenous territories with connectivity (total or partial) with access to voice and data services provided through the Connected Communities Program	Cumulative total indigenous territories with connectivity (total or partial) with access to voice and data services provided by projects in the FONATEL Connected Communities Program.
Program 1	Achievement of Goal	Achievement of NTDP goal related to indigenous territories with connectivity under the Connected Communities Program	Percentage compliance with the goal established in in the National Telecommunications Development Plan (NTDP) in force, in the framework of the Connected Communities Program, regarding the total number of indigenous territories with connectivity (total or partial) to access to voice and data services.
Program 1	Management	Total projects of the Connected Communities Program, according to phase of each project	Cumulative total projects of the FONATEL Connected Communities Program, according to the life cycle phase they are in.
Program 1	Management	Telecommunications infrastructure towers, by operational-construction phase in the Connected Communities Program	Cumulative total telecommunications infrastructure towers, by construction and operational phase in the FONATEL Connected Communities Program.
Program 1	Management	Public Service Provision Centers by state of availability of Internet service of the Connected Communities Program	Cumulative total of Public Service Provision Centers (PSPC) by state of availability of Internet service of the FONATEL Connected Communities Program.
Program 1	Beneficiary	Inhabitants with access to voice and data services in districts with connectivity (total or partial) provided through the Connected Communities Program	Total inhabitants of districts with connectivity (total or partial) with potential access to voice and data services provided by projects in the FONATEL Connected Communities Program.
Program 1	Beneficiary	Active subscriptions to fixed Internet service provided through the Connected Communities Program	All active subscriptions to the residential fixed Internet service provided through the FONATEL Connected Communities Program.
Program 1	Beneficiary	Active subscriptions to the service of the Connected Communities Program	Total active subscriptions to residential fixed telephony service (reflecting at least one chargeable event during the last month, or with a valid service provision contract with the operator) provided through the FONATEL Connected Communities Program.
Program 1	Beneficiary	Active subscriptions to the mobile telephony service provided through infrastructure facilitated by the Connected Communities Program	Total active subscriptions to the mobile telephony service provided through infrastructure facilitated by the FONATEL Connected Communities Program.
Program 1	Financial	Investment executed through the Connected Communities Program	Total sum of amounts executed from FONATEL to finance and develop each project of the Connected Communities Program.

Program 2	Achievement of Goal	Households benefitting from the Benefited Household Program, by status	Cumulative total households benefitting from subsidy for Internet service and one device (including assets and non-assets) in the FONATEL Connected Household Program, by activity status.
Program 2	Achievement of Goal	Achievement of goal of the Connected Household Program	Percentage compliance with the goal established in the National Telecommunications Development Plan (NTDP) in force, in the framework of the Connected Households Program, regarding the total number of households benefitting from a subsidy for the Internet service and one device.
Program 2	Management	Districts with presence of the Connected Households Program	Cumulative total districts with presence of the FONATEL Connected Households Program, with at least one household benefitting from a subsidy for the Internet service and one device.
Program 2	Management	Total projects of the Connected Households Program according to status of each project	Cumulative total projects of the FONATEL Connected Households Program, according to the status of the life cycle they are in.
Program 2	Beneficiary	Subsidized subscriptions to active Internet access service of the Connected Households Program	Cumulative total subsidized subscriptions to Internet access service (active service) provided through the FONATEL Connected Households Program.
Program 2	Management	Net penetration of Connected Households service	Percentage of total houses in the country that have a first-time subscription to residential fixed Internet access through the FONATEL Connected Households Program, and which is active [11].
Program 2	Financial	Investment executed through the Connected Households Program	Total sum of amounts executed from FONATEL to finance and develop the Connected Households Program projects.
Program 3	Achievement of Goal	Devices delivered by the Equipped Public Centers Program to PSPC for ICT access and use	Cumulative total devices delivered to the Public Service Provision Centers (PSPC) through the FONATEL Equipped Public Centers Program to access information and communication technologies.
Program 3	Achievement of Goal	Achievement of goal established in the NTDP regarding devices delivered by the Equipped Public Centers Program to PSPC	Percentage compliance of goal established in the National Telecommunications Development Plan (NTDP) in force, in the framework of the Equipped Public Centers Program, on the total number of devices delivered to the Public Service Provision Centers (PSPC for access to, and use of, information and communication technologies.
Program 3	Management	Compliance with bid document goal of devices delivered by the Equipped Public Centers Program to PSPC, according to the institution	Percentage compliance of goal established in the bid awarded for the Equipped Public Centers Program regarding the total number of devices delivered to Public Service Provision Centers (PSPC) for access to, and use of, information and communication technologies by institution.
Program 3	Management	Total Equipped Public Centers Program projects, according to status of each project	Cumulative total projects of the FONATEL Equipped Public Centers Program, according to status in the life cycle phase they are in.

[11] Calculated dividing the net active subsidized subscriptions (67 335) over the total number of houses in the country (1 578 161) as reported in the National Household Survey (Encuesta National de Hogares - ENAHO), published by the National Statistics and Census Institute (Instituto National de Estadísticas y Censos - INEC). This indicator is calculated dividing over the number of houses in order to keep in line with the penetration indicator calculated for the market, following the International Telecommunications Union (ITU) definition, where penetration is the proportion of the overall market in which the services have been introduced. In this sense, the house represents the physical infrastructure where the services are installed and may consist of one or more households with access to the installed services. Additionally, INEC surveys measure the number of houses with telecommunications service.

Program 3	Management	Public Service Provision Centers benefitting from the Equipped Public Centers Program	Cumulative total Public Service Provision Centers (PSPC) with devices for ICT access and use delivered by the FONATEL Equipped Public Centers Program.
Program 3	Management	Districts with presence of the Equipped Public Centers Program	Cumulative total districts with presence of the FONATEL Equipped Public Centers Program, with at least one benefited PSPC.
Program 3	Financial	Investment executed through the Equipped Public Centers Program	Total sum of amounts executed from FONATEL to finance and develop the Equipped Public Centers Program projects.
Program 4	Achievement of Goal	Digital areas with free Internet access, by status of availability of the Public Connected Spaces Program service	Cumulative total number of digital areas with free Internet access through the FONATEL Public Connected Spaces Program, according to service availability status.
Program 4	Achievement of Goal	Achievement of NTDP goal regarding digital areas with free Internet access through the Public Connected Spaces Program service	Percentage compliance of goal established in the National Telecommunications Development Plan (NTDP) in force, in the framework of the Public Connected Spaces Program, regarding total number of digital areas with free Internet access in service.
Program 4	Management	Total Public Connected Spaces Program projects, according to individual project status	Cumulative total of FONATEL Public Connected Spaces Program, according to status in the life cycle phase they are in.
Program 4	Management	Districts with presence of the Public Connected Spaces Program	Cumulative total districts with presence of FONATEL Public Connected Spaces Program, with at least one digital area with active free Internet access.
Program 4	Management	Unique devices connected to free Internet wireless network of the Public Connected Spaces Program	Cumulative total devices (terminal MAC addresses) connected to free Internet wireless network of the Public Connected Spaces Program.
Program 4	Financial	Investment executed through the Public Connected Spaces Program	Total sum of amounts executed from FONATEL to finance and develop the Public Connected Spaces Program.

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Methodology to Evaluate Fixed Internet Access Services

Providers included

This evaluation is based on information related to the four fixed Internet service providers that represent 94.3% of that specific market, considering that its corresponding measurement system includes equipment distributed throughout the country, which allows to evaluate the service quality provided by operators in the territory and with a larger concentration of users[12]. These providers are:

- **ICE**
- **Cabletica**
- **Tigo**
- **Telecable**

[12] According to the responsibilities of SUTEL, pursuant to Article 73, paragraph k of the Law of the Regulatory Authorities of Public Services, Law No. 7593, the evaluation of fixed Internet access quality of service covers operators with national coverage and significant market share in order to ensure that the results reflect nationwide quality of service.

Services Evaluated

Internet service providers offer a wide range of connectivity options, where the main difference is the speed of a particular service.

It is currently not viable to evaluate the entire universe of speeds made available by each operator with the current measurement mechanisms, so the most representative services are evaluated instead. This complies with the provisions of Article 7, sub-paragraph 93 of the Regulations for Service Provision and Quality, which indicates that fixed Internet access services will be measured by evaluating the service that best represents each operator/provider, that is, the service with most active customers of each operator/provider.

Therefore, the results shared in this report come from quality assessments of a total of 256 fixed Internet access services distributed throughout the seven provinces in the country. The number of fixed Internet access services utilized to evaluate each operator is as follows:

Table n.° 8. Costa Rica: Number of fixed Internet services utilized to evaluate each operator

Operator	Number of Services
ICE	82
Cabletica	67
Tigo	59
Telecable	48

Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Equipment Used to Perform Quality Evaluations

Each Internet access service is evaluated using measuring probes, and specialized and dedicated equipment (hardware and software) to measure quality of service.

All measuring probes, together with the relevant data processing and measuring servers, form a distributed system to evaluate quality of service at the national level.

The International Telecommunications Union (ITU) has identified sounding probes as a method to evaluate quality of service, in line with recommendation ITU-T E.806 entitled "Measurement campaigns, monitoring systems and sampling methodologies to monitor the quality of service in mobile networks," particularly in the sense that probes "can provide performance results in near real time and end-to-end quality of service background, allowing to collect data to identify quality of service degradation."

Quality Indicators Evaluated

The evaluation includes those indicators listed Chapter Seven "Specific indicators for Internet service access" of the current Regulations for Service Provision and Quality (published in Comment No. 36 of La Gaceta dated Friday, 17 February 2017), which are:

- International delay
- Relationship between local and international data transfer speed and speed provided

A description of each indicator is provided below.

- **International delay**

The delay indicator is evaluated using ping tests. In each test, 100 ICMP Eco Request bundles are sent, and then the time to receive each ICMP Echo Reply response is measured. The average time of the 100 responses is the result of one ping test.

The international delay indicator is evaluated by running the ping tests with a special dedicated server located in Florida, USA, more specifically at the IXP and Data Center called NAP de las Americas.

Each measuring probe measures at least one ping every 20 minutes and continues to measure 24x7.

- **Relationship between speed measured and speed provided**

The relationship between the data transfer speed and the speed provided is measured by transferring files through an HTTP protocol for a period of at least 10 seconds. Independent measurements are taken to download data (HTTP Download) and upload data (HTTP Upload).

Data transfer speed results are compared to the value of the speed provided for each Internet access service in order to determine the ratio or percentage between the speed measured and the speed provided.

Each measuring probe makes at least one HTTP measurement every 20 minutes and continues to measure 24x7.

Methodology to evaluate the quality of experience of the mobile Internet access service

Provider included

The three mobile service providers authorized in the country are including, namely:

- **ICE (Kölbi)**
- **Telefónica (Movistar)**
- **América Móvil (Claro)**

Methods to Evaluate User Experience

Mobile telephones are metered using the Opensignal application, which users voluntarily install and use to monitor the status or quality of the mobile system at any time.

The Opensignal application is available at Google Play and Apple Store and may be downloaded and installed free of charge by any user to collaborate in user quality of experience studies commissioned by SUTEL to the Opensignal firm.

The app collects quality of service data, both outdoors and indoors, just as experienced by users in a broad range of situations and produces data that reflect the service level obtained by users directly in the mobile devices.

Data is collected from measurements taken directly by the user as well as those automatically taken by the application.

Most data come from automatic metering, carried out at random intervals, to capture the user´s experience at specific points in time.

This user experience metering approach does not use dedicated test servers. Instead, it measures the end-to-end experience from the terminal device to the content delivery network (CDN), such as Google, Akamai and Amazon.

Since the app is installed voluntarily, the total number of telephones changes over time. It really depends on how many users install the application and how long they keep it installed on their mobile devices.

The data used herein come from the 2019 bi-annual reports. The first report utilized 65 506 telephones and collected 120 955 957 samples, while the second report used 33 843 telephones and gathered 82 779 097 samples.

Methodology to value telecommunication services commercial offers

Based on the principle that commercial offers adapt to the dynamic preferences of telecommunications service users, a qualitative analysis is carried out to identify changes in composition and characteristics of offers for mobile and fixed telecommunications between 2018 and 2019 with the aim to reflect new consumer demands, as well as industry responses (supply).

For mobile telecommunications (voice, SMS, and mobile data), the total number of postpaid plans and prepaid bundles marketed by authorized operators from December 2018 versus December 2019 was analyzed. This information was gathered through the web-based tool called Mi Comparador[13].

Concerning fixed telecommunications (fixed Internet, fixed telephony and subscription TV), the bundles offered in December 2018 versus December 2019 by major competitors in the market were examined (using as reference those holding 95% of the total subscriptions in 2019).

This shows variations in terms of service composition, quantity of data, channels, speed, free applications, applications with unlimited data; in other words, a qualitative analysis that shows national consumer trends.

Methodology of the price index for mobile telecommunications

This index allows measuring price trends of services purchased by mobile telecommunications users and is based on a series of statistical and economic criteria described below.

The index monitors the mobile telecommunications services in different forms and from different angles: general or national index, sub-indices according to the payment mode.

This index and its different levels are not adjusted for mobile data quality, and the voice and SMS services are considered homogeneous, showing that different operators maintain similar performance quality factors, given the similarity in telecommunications infrastructure required to provide said services.

Some calculation considerations include::

- Mobile Internet access through data cards is not included.
- Prepaid promotions aimed at specific segments are not included, for example double top-ups only to numbers ending in 1.
- Mobile telecommunications top-ups, bundled with other services, are not included.

Since telecommunications is one of the most dynamic and changing sectors in terms of technology and consumer habits, this methodology is in continuous development and improvement. Therefore, it is important to compare these changes over time with the appropriate precautions.

[13] Mi Comparador is a platform of the Superintendence of Telecommunications where, through different devices, it is possible to compare plans and promotions available for telephony, Internet, and television at the following website: https://micomparador.sutel.go.cr/

The methodologies are presented below:

- **Postpaid methodology**

The following operator ***(i)*** prices are analyzed monthly:

- $\mathbf{plPT_{i,c,pl,m_1}}$ ➔ Unit prices[14] of each component (on net, off net voice, on net SMS and off net SMS and mobile data) based on the plans selected. The plans selected (pl) will represent at least 80% of the monthly postpaid revenue for each operator. This includes plans currently in the market, as well as those which, although not available to new users, still have subscribers.

- $\mathbf{pePT_{i,c,m_1}}$ ➔ Overage prices per component.

For the operator ***(i)***) and the month ($\mathbf{m_1}$), of analysis, each postpaid plan selected shows a unit price for each component (c) ➔ $\mathbf{(plPT_{i,c,pl,m_1})}$. Averaging these numbers results in a mean unit price per component, based on information in the operator plans ➔ $\mathbf{(PMedplPT_{i,c,m_1})}$

A single price per component for each operator in m1 that considers overage price **(pePT)**, is obtained from weighted average calculated considering: (a) the mean unit price of each component $\mathbf{(PMedplPT_{i,c,m_1})}$ weighted by the relative weight of revenue from plans within the total revenue[15] of each operator $\mathbf{(\propto_{i,m_1})}$ and (b) the overage price of each component $\mathbf{(pePT_{i,c,m_1})}$ weighted by the relative weight of revenue from overage in the total postpaid revenue $\mathbf{(\beta_{i,m_1})}$. For each operator in m1, this produces a single price per component $\mathbf{(PPT_{i,c,m_1})}$.

With the above, the relative change of unique prices per component compared to July 2017 are calculated in $\mathbf{m_1}$ $\mathbf{(\Delta PPT_{i,c,m_1})}$. These in turn are weighted by the monthly share of each component in the operator´s postpaid revenue $\mathbf{(\text{Ù}PT_{i,c,m_1})}$[16], thus producing a postpaid price index for each bidder in that market $\mathbf{(\mu PT_{i,m_1})}$.

To end, the index per operator $\mathbf{(\mu PT_{i,m_1})}$ is weighted by the monthly participation of each operator in the total postpaid revenue $\mathbf{(\text{þ}PT_{i,m_1})}$[17] , which results in the monthly national postpaid index $\mathbf{(\tilde{I}PT_{m_1})}$.

Postpaid index formulas:

$$(1)\ PMedplPT_{i,c,m_1} = \frac{\sum_{npl=1}^{npl} plPT_{i,c,pl,m_1}}{npl_{i,c,m_1}}$$

$$(2)\ PPT_{i,c,m_1} = \propto_{i,m_1} * PMedplPT_{i,c,m_1} + \beta_{i,m_1} * pePT_{i,c,m_1}$$

$$(3)\ \Delta PPT_{i,c,m_1} = \frac{PPT_{i,c,m_1}}{PPT_{i,c,m_0}}$$

$$(4)\ \mu PT_{i,m_1} = \sum_{c=1}^{5} \Delta PPT_{i,c,m_1} * \text{Ù}PT_{i,c,m_1}$$

$$(5)\ \tilde{I}PT_{m_1} = \sum_{i=1}^{3} \mu PT_{i,m_1} * \text{þ}PT_{i,m_1}$$

$$(6)\ \tilde{I}PT_{c,m_1} = \Delta PPT_{i,c,m_1} * \text{þ}PT_{i,m_1}$$

Nomenclature

i=	Market suppliers, where 1= Kölbi, 2 = Movistar and 3= Claro
m0 =	Baseline month, July 2017
m1 =	Month analyzed
c =	Components, 1= on net calls, 2= off net calls, 3= on net SMS, 4= off net SMS and 5 = mobile data
PT=	Postpaid
pl=	Individual operator plan selected, from 1 to z
z=	Total plans selected per operator in $\mathbf{m_1}$
$\mathbf{npl_{i,c,m_1}}$=	Number of operator plans i selected containing the component analyzed in $\mathbf{m_1}$

[14] To obtain unit prices, the value of each plan is distributed among: voice (on and off net), data and SMS (on and off net), according to the operator weighting of such components in the postpaid revenue for July 2017 (reference month) and then each sum is divided by the number of minutes, messages and GB at maximum speed in the agreed plan, resulting in a price per unit of measure.

[15] Total revenue postpaid= Minimum revenue (revenue per monthly cost of bundles) + Revenue from overage.

[16] Where for each i in m1, $\sum_{c=1}^{5} \text{Ù}PT_c = 1$

[17] Where for each i in m1 $\sum_{i=1}^{3} \text{þ}PT_i = 1$

• **Prepaid methodology**

Prepaid users have three types of pricing for each component: bundle pricing ($\mathbf{paqPR_{i,c,paq,m_1}}$), promotion pricing ($\mathbf{prPR_{i,c,pr,m_1}}$) and reload pricing ($\mathbf{recPR_{i,c,m_1}}$).

These prices are described below:

1- For mean monthly unit prices, for operator bundles ($\mathbf{paqPR_{i,c,paq,m_1}}$), the same postpaid unit prices methodology applies, except that all prepaid bundles offered are used in m1, resulting in ($\mathbf{PMedprPR_{i,c,m_1}}$).

2- Market price of each component per operator in $\mathbf{m_1}$ ($\mathbf{recPR_{i,c,m_1}}$), set by the operator.

3- For operator promotions in $\mathbf{m_1}$ ($\mathbf{prPR_{i,c,pr,m_1}}$), details are analyzed to estimate the price per component of each promotion, as well as international reference information, for example, data consumption on mobile applications 18 (Facebook, WhatsApp, Waze, Youtube, among others), and information requested from operators, such as average consumption per user of minutes, data, and unlimited messages. The individual operator promotion prices are averaged mathematically to produce a single mean price per promotion and operator ($\mathbf{PMedprPR_{i,c,m_1}}$).

Prices of the three above sources are weighted in m1 according to their share in the prepaid revenue for the reference month[19] at the operator level, $\mathbf{wrec_i}$ (weight of operator i reload revenue), $\mathbf{wpaq_i}$ (weight of operator i bundle revenue), and $\mathbf{wpr_i}$ (weight of operator i promotions revenue), and month of analysis a single price per component ($\mathbf{PPR_{i,c,m_1}}$) for each operator.

With this information, the percentage difference of single prices per component at the operator level for the study month are compared to July 2017 ($\mathbf{\Delta PPR_{i,c,m_1}}$). These in turn are weighted by the monthly share of each component in the operator´s prepaid revenue ($\mathbf{ʊPR_{i,c,m_1}}$)[20], producing a prepaid price index for each supplier in the market that month ($\mathbf{\mu PR_{i,m_1}}$).

Finally, the individual operator indices ($\mathbf{\mu PR_{i,m_1}}$) are taken and weighted by the monthly share of each operator in the total prepaid revenue for the study period ($\mathbf{þPR_{i,m_1}}$)[21], producing the national monthly prepaid index ($\mathbf{ĨPR_{m_1}}$).

Prepaid index formulas:

$$(7)\ PMedprPR_{i,c,m_1} = \frac{\sum_{npr=1}^{npr} prPR_{i,c,pr,m_1}}{npr_{i,c,m_1}}$$

$$(8)\ PPR_{i,c,m_1} = wrec_i * recPR_{i,c,m_1} + wpaq_i * PMedpaqPR_{i,c,m_1\,i,c,m_1} + wpr_i * PMedprPR_{i,c,m_1\,i,c,m_1}$$

$$(9)\ \Delta PPR_{i,c,m_1} = \frac{PPR_{i,c,m_1}}{PPR_{i,c,m_0}}$$

$$(10)\ \mu PR_{i,m_1} = \sum_{c=1}^{5} \Delta PPR_{i,c,m_1} * ʊPR_{i,c,m_1}$$

$$(11)\ ĨPR_{m_1} = \sum_{i=1}^{5} \mu PR_{i,m_1} * þPR_{i,m_1}$$

$$(12)\ ĨPR_{c,m_1} = \Delta PPR_{i,c,m_1} * þPR_{i,m_1}$$

Nomenclature

i =	Market suppliers: 1= Kölbi, 2= Movistar, 3= Claro, 4= Tuyomóvil and 5= Fullmóvil
m0 =	Baseline month, July 2017
m1 =	Month of analysis
c =	Components, 1= voice on net, 2= voice off net, 3= SMS on net, 4= SMS off net and 5 = mobile data
PR=	Prepaid
$\mathbf{npr_{i,c,m_1}}$=	Number of operator I promotions containing the component under analysis in $\mathbf{m_1}$
pr=	Each prepaid promotion of operator i for $\mathbf{m_1}$, running 1 to £
£=	Total promotions of i for $\mathbf{m_1}$

[18] Empresa de Telecomunicaciones de Chile, ENTEL. www.entel.cl/calculadora-datos/
[19] SUTEL dispone de información de este indicador únicamente para el mes base.
[20] Donde para cada i en m_1 se cumple que $\sum_{c=1}^{5} ʊPR_c=1$
[21] Donde para cada i en m_1 se cumple que $\sum_{i=1}^{3} þPR_i=1$

paq = Each operator i bundle for m1 runs from 1 to η

η= Total bundles of i for $\mathbf{m}_1$

rec= Sum of reloads per unit of consumption for each component (one minute for voice, one SMS or one Gb) of operator i for $\mathbf{m}_1$

- **National index ($\tilde{I}NAL_{m_1}$)**

For $\mathbf{m}_1$ the postpaid ($\tilde{I}PT_{m_1}$) and prepaid ($\tilde{I}PR_{m_1}$) indices are weighted based on the relative weight of each mode in the total revenue from mobile telecommunications[22] πPT_{m_1} (postpaid weighting) and πPR_{m_1}* (prepaid weighting)[23].

National index formula:

$$\tilde{I}NAL_{m_1} = \pi PT_{m1} * \tilde{I}PT_{m_1} + \pi PR_{m1} * \tilde{I}PR_{m_1}$$

Nomenclature

m1 = Month of analysis

Fixed Internet Price Index Modality

Home Internet is ever more common and, in many cases, has become indispensable for everyday life. This is evidenced by the fact that the total number of persons with home Internet services was 60.2% (INEC, 2015) , while the more recent figure is 86.34% (INEC, 2019). Additionally, data in this report show that registered subscriptions to fixed Internet services have grown 8% between 2018 and 2019, for a total of 903 735 subscriptions in 2019.

Also noteworthy is that in December 201624, SUTEL declared that this service was now in competition since prices were determined by market supply and demand dynamics.

This highlights the need for a tool to measure price variations per giga of speed25 so that SUTEL can have one more input for its decision-making process in the face of ex post regulation.

The fixed Internet retail price index (IPIF) measures price variations for speed contracted by Costa Rican households as of July 2018, which allows analyzing relevant market trends.

[22] Prepaid revenue plus postpaid revenue for the month of study.

[23] Where $\pi PT_{m_1} + \pi PR_{m_1} = 1$

[24] SUTEL (2016). "Revisión del mercado del servicio minorista de acceso residencial a Internet desde una ubicación fija, análisis del grado de competencia en dicho mercado, declaratoria de operadores importantes e imposición de obligaciones" (RCS-258-2016) Retrieved from: https://www.sutel.go.cr/sutel/resoluciones?field_tipo_documento_tid=All&=Aplicar

[25] Internet is unlimited in data, so commercial offers are in function of contracted speed.

IPIF is calculated considering the following:

- The four major operators in the market are Kölbi, Tigo, Cabletica, and Telecable, which together represent 95% of all subscriptions. Although 18 operators provide fixed Internet services, the rest represent between 0% and 1% each, and are, therefore, excluded because their commercial actions will not significantly alter the index results.
- The analysis covers commercial offers targeting homes (residential) and provided as a stand-alone service (unbundled).
- The technology (xDSL, HFC, FTTx, and wireless) over which Internet services are offered is not relevant for this calculation. Operators perceive that "market competition occurs mostly at the price level because end customers base their purchase decision on the best price, not necessarily the best quality" (according to Report RCS-258-2016). Besides, they consider that Internet services from a fixed location have similar features, quality and prices, and, therefore, all technologies are deemed part of the same relevant market. Thus, the determining factor in consumer decision-making is speed for home service.
- Operators offer consumers a range of Internet speeds. However, since the quality and quantity of residential consumption is not as high as business consumption, not all speeds available in the market are considered. In this case, a maximum of 100 Mbps is considered for each operator, since that is the speed offered by most residential fixed Internet service operators.

Additionally, using household expenditure behavior data from the 2013 National Household Revenue and Expenditure Survey (Encuesta National de Ingresos y Gastos de los Hogares - ENIGH), and using the relative weight of the expense structure, an extrapolation to 2018 showed that communications expenses ranged between 13 000 and 64 000 colones, depending on the revenue quintile, averaging 36 000 colones. In contrast, the average cost of bundles over 100 Mbps exceeds 50 000 colones. It is quite unlikely for a home to consume speeds greater than 100 Mbps, because that, by far, exceeds the average household communications consumption estimated in the ENIGH.

- Commercial offers represent at least 80% of fixed Internet subscriptions. This also includes current plans being offered as well as those that, despite not being in force, still have subscribers.
- Prices analyzed only measure fixed Internet services and, therefore, exclude the cost of the modem and/or installation.
- The reference month is July 2018.

Indicator Calculation:

1- Unit prices ($\mathbf{PIF_{i,v,m_1}}$), result from dividing the rate offered by the number of Mbps per second in the offer under review.

$$PIF_{i,v,m_1} = \frac{PIF_{i,v,m_1}}{Cant\ Mbps_{v,i,m_1}}$$

2- Mean operator unit prices ($\mathbf{PMedIF_{i,m_1}}$) result from weighting the operator´s individual unit prices **(i)** and the month of analysis ($\mathbf{m_1}$) based on the share of revenue reached during the reference month ($\boldsymbol{\delta_{i,v,m_1}}$)

$$PMedIF_{i,m_1} = \sum_{v=1}^{v=n} PIF_{i,v,m1} \cdot \delta_{i,v,m_1}$$

3- For the average national price $\mathbf{PIF_{m_1}}$, $\mathbf{PMedIF_{i,m_1}}$ is weighted according to the monthly share of each operator in the total fixed Internet revenue for the month under review ($\boldsymbol{\beta IF_{i,m_1}}$)

$$PIF_{m_1} = PMedIF_{i,m_1} \cdot \beta IF_{i,m_1}$$

4- Lastly, the relative percent change of national prices compared to the reference month $\mathbf{\Delta PIF_{i,v,m_1}}$, is calculated, resulting in the national monthly fixed Internet index $\mathbf{(IIF_{m_1})}$

$$\tilde{I}IF_{m_1} = \Delta PIF_{i,v,m_1} = \frac{PIF_{m_1}}{PIF_{m_0}}$$

Theory indicates that weighted price indicators are usually based on the household expenditures for goods and services. In this case, in absence of information on household expenditures for fixed Internet, the revenue received by operators for such service is used.

Nomenclature

Cant=	quantity of megabytes
IF=	fixed Internet
i=	market suppliers, where 1= Kölbi, 2= Tigo, 3= Cabletica and 4= Telecable
m_0=	baseline month
m_1=	month of analysis
n=	number of bundles of operator (i) that were selected in the month of analysis (m_1)
v=	speed in commercial offer

VOICE AND DATA OVER THE MOBILE NETWORK MAKE UP 65% OF REVENUE

Overall Sector EVOLUTION



Telecommunications Tower in San Pedro, Costa Rica.

Telecommunications Commercial Offer in 2019

At the closing of 2019, a total of 148 telecommunications operators and providers were registered as enabled (not necessarily active), three fewer than in 2018, but 9 more than in 2015. It is worth highlighting that evidently the marketplace is undergoing a commercial adjustment in view of user requirements and operator offerings. Also noteworthy is that licenses first granted ten years ago are expiring, and several operators are not yet commercially active.

For operators participating in the study period, by service, 100% of the active fixed telephony operators reported information, 100% of the mobile telephony operators, 68% of data transfer operators, and 100% of the Subscription TV operators. Additionally, data transfer operators had the highest market share. Therefore, general conclusions did not vary. The remaining 32% includes commercially active companies providing other services and in early or pre-operational phases of data transfer services, and are, therefore, considered active operators.

Behavior of Revenue from the Telecommunications Sector

Market revenue in 2019 amounted to 760 264 million colones, with a slight nominal increase of 0.32% over 2018, showing market contraction and possible effects due to other factors, such as national economic adjustments in the last two years. This slowdown of revenue dynamics has ended, consistent with the growth of productive activity in that same period in the country. Based on data from the Costa Rican Central Bank (BCCR), the rate of change of the GDP in the first quarter of 2018 was 3.2%, but was 1.9% in the last measurement published in January 2019. An analysis of the 2015-2019 period confirms a downward trend, and the average annual growth rate for that period was barely 0.34%.

The ratio between the total sector revenue and the Gross Domestic Product at market prices (see Graph n.° 2) in 2019 was 2.1%. Compared to 2018, it was a minor decrease (-0.1 basis points). In 2018, the BCCR changed the GDP calculation base and applied the 2012 base.

Regarding revenue performance at the services level (see Graph n.° 3), fixed telephony (traditional basic and VoIP) and mobile telephony (voice and MSM) services show a downward trend for the third consecutive year. Although mobile telephony dropped 12.2%, Internet access, as a whole (data transfer), and lease lines grew 10.2% and 17%, respectively. Year 2019 confirmed the 2018 observations, where data transfer revenue was almost twice as much as for mobile telephony, which had the highest revenue, thus validating a shift in consumption patterns of telecommunications users.

An analysis of the individual services shows the following:

Mobile telephony

When considering revenue from voice and messaging traffic, the total reported for 2019 is 225 872 million colones, a 12.2% reduction over 2018. Annual average growth rate for 2015-2019 is -8.2%, as depicted in Graph n.° 3. The reported mobile telephony revenue reflects that 96.6% came from voice traffic, while the remaining 3% came from messaging, practically the same as 2018 (3.7%).

Fixed telephony (traditional basic and VoIP)

Fixed telephony service (traditional basic and VoIP telephony) revenue in 2019 was a total of 59 804 million colones, a 19.2% reduction over 2018. This downward trend has been observed over the years. The more limited use of this service, especially the traditional basic mode, is evident when analyzing the annual growth rate for the 2015-2019 period, at an annual average of -8,8% (see Graph n.° 3).

Traditional basic telephony

Revenue from traditional basic telephony has been dropping over time. For this last year, the reduction was 19%, while the average growth rate was a negative 5%. The relative weight of this service compared to total basic telephony went from 91.4% in 2018 to 85% in 2019.

Fixed telephony VoIP

Fixed telephony VoIP had been showing an upward trend in the last few years, but in 2019 its related revenue dropped 1% as compared to 2018. The average annual growth rate since 2015 had been 8.25%.

Internet access (including access to mobile Internet)

Revenue related to Internet access shows an upward trend. For 2015-2019, the average annual growth rate was 11.8%. For 2019, the service generated 425 095 million colones, which is a 10.6% increase over 2018. This confirms an increase in usage of this service. It is worth highlighting that revenue from fixed Internet represents 38%, while mobile Internet is 62%. Revenue from these services over this last year grew, respectively, 7% and 25%, from 2018 to 2019.

Leased lines

Revenue generated from the leased line service has been quite erratic over the years, with ups and downs. In 2018, it was down, but then picked up again in 2019. The sum reported for 2019 was 49 492 million colones, which is 17% greater than in 2018. For this specific case, the growth rate observed between 2015 and 2019 was, in average, 8.1% per year.

When analyzing the percent weight of revenue for each service compared to total sectorial revenue, two scenarios arise. The first one lumps all mobile telephony and mobile Internet (mobile network) into one same revenue line, followed by fixed Internet access, traditional telephony and VoIP, and lastly, leased lines (see Graph n.° 4). The second scenario clusters fixed and mobile Internet into one single revenue line, followed by mobile telephony (voice only), traditional telephony and VoIP telephony, and lastly, leased lines (see Graph n.° 5).

For the first scenario, mobile telephony and mobile Internet services account for 65% of the 2019 revenue. This percentage has been shrinking over the years. It was 69% in 2015, then 68% in 2016, 66% in 2017, and then 65% for 2018, as indicated above. Then comes the fixed Internet service with 21%, followed by traditional basic telephony and VoIP telephony with 8%, and leased lines with 6%. The percentage weight of mobile telecommunications services represents almost three quarters of the market.

Regarding the second scenario, Internet access services (fixed and mobile) account for 56% of the revenue, followed by mobile telephony (voice only) which generates 30%, showing a growing gap in consumer preferences, in contrast to 2018, where percentages were 51% and 34% respectively. Finally, just as in the first scenario, fixed telephony contributes 8%, while leased lines produce 6%. In this case, mobile telephony services and Internet access, jointly, generate 86% of revenue in this sector.

Subscription Behavior in the Telecommunications Sector

One important component of the telecommunications market worth examining is the behavior of subscriptions of the different services because of their role in the growth of such sector. Table n.° 11 contains details related to service penetration, measured by number of inhabitants or housing units, in the period under review (2015-2019).

Mobile telephony

Mobile telephony showed 8 550 243 subscriptions in 2019. Of these, prepaid accounted for 6 132 481 and postpaid were 2 417 762, with percentages of 71.7% and 28.3% of the total, respectively. The service shifted behavior in 2019, with 54 558 more subscriptions than in 2018. Most of this increase occurred in the postpaid service, with 207 365 more lines, while prepaid ended with 152 707 fewer lines. Penetration of this service in 2019 was169%, one basis point lower than the 2018 figure.

Fixed telephony (traditional basic and VoIP)

The subscription indicator for fixed telephony services once again showed a reduction, like in previous years, going from 763 254 in 2018 to 636 504 in 2019, with 126 750 fewer subscriptions (17%). The penetration of this service in population and housing units in 2019 was 11% and 36%, respectively. This is a reduction of 3 and 9 basis points over the previous year.

When separating traditional basic telephony and VoIP telephony, the most significant reduction is seen in traditional basic telephony, with 123 710 fewer subscriptions than in 2018 (18%), although VoIP telephony also had a drop of 3 040 subscriptions (4%).

Penetration of these services in 2018 for traditional basic telephony was 11% and for housing units reached 36%, while VoIP was 1.3% and 4.1%, respectively.

Traditional basic telephony

Traditional fixed telephony subscriptions are on a downward trend, as seen in the behavior over the last five years: in 2019 there were 571 808 subscriptions reported, 232 600 fewer than in 2015 (804 468), with an average annual negative rate of 8.18%.

Fixed telephony VoIP

For fixed telephony VoIP, the rising trend observed in previous years changed in 2019, when 64 696 subscriptions were recorded, 3000 less than in 2018, taking the growth rate from 18% to 4.1% between 2015 and 2019.

Internet access (including mobile Internet)

Internet access services (fixed and mobile) showed a reduction in subscriptions in contrast with 2018. For 2019, a total of 5 568 807 subscriptions were registered, 355 483 less. This lower demand can be divided into the three types of subscriptions: fixed wired, fixed wireless, and mobile. Fixed wired subscriptions grew 9% (70 980 subscriptions), but fixed wireless and mobile dropped 1 030 and 425 433 subscriptions respectively.

Leased lines

Dedicated line subscriptions have varied over the period of analysis, but grew in 2019 compared to 2018, with 5 970 more connections, amounting to a 35% increase. Therefore, 2019 showed the highest growth in the last five years.

Total investment

The total investment of the telecommunications sector over the last years has not shown significant increase. However, 2019 experienced a slight increase, representing 0.6% of the GDP, in contrast with 0.5% recorded in 2018. Nevertheless, this increase is quite limited, evidencing that the telecommunications sector is still contracted. Additionally, the national economy experienced effects with the approval of the fiscal plan.

Comparing investment with gross capital formation shows a greater increase over the previous indicator, going from. 2.9% in 2018 to 4.2% in 2019.

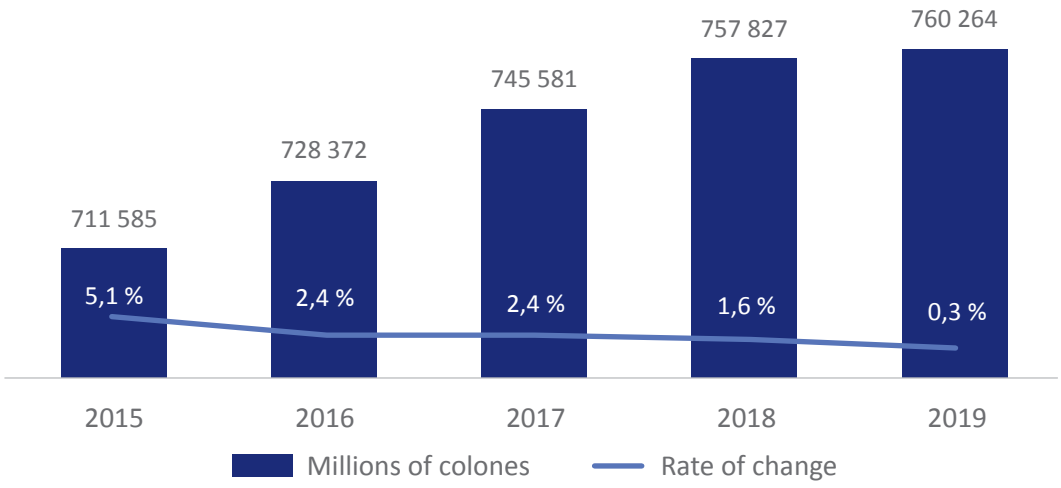
Human resources employed

Data from 2019 indicate that the total number of persons employed to provide telecommunications services has shrunk, with 1046 fewer persons, representing -9% compared to 2018 (see Graph n.° 8). A comparison of the telecommunications-specific human resources and the overall national work force reveals a slight reduction over 2018, yet stable throughout the period of review, where 2019 was the first year in which the weight of the labor force was less than 0.5% (see Graph n.° 9). For the telecommunications work force and the total Graph n.° 10, shows moderate changes over time, with a minor reduction in the last year, reaching the lowest value in the last five years (-0.03% annual average). Such indicators demonstrate stability in the scope of this report and a reduction over the previous year.

An analysis of female employees in the telecommunications sector reveals no major difference over 2019. In fact the 2019 indicator is the same as 2018, and a cumulative growth rate of 1.5% as compared to 2015.

Graph n.° 1. Costa Rica: Total Revenue – Telecommunications Sector, 2015 - 2019

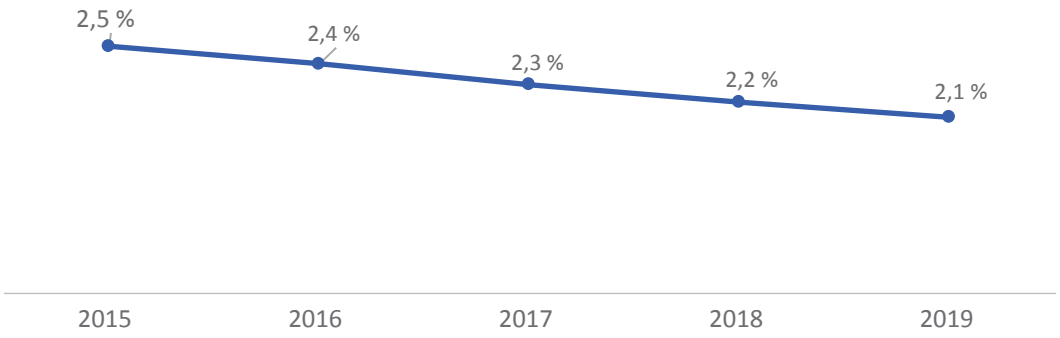
(annual figures in millions of colones and percent change)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 2. Costa Rica: Total revenue of telecommunications sector as share of GDP*, 2015- 2019

(annual figures in percentages)

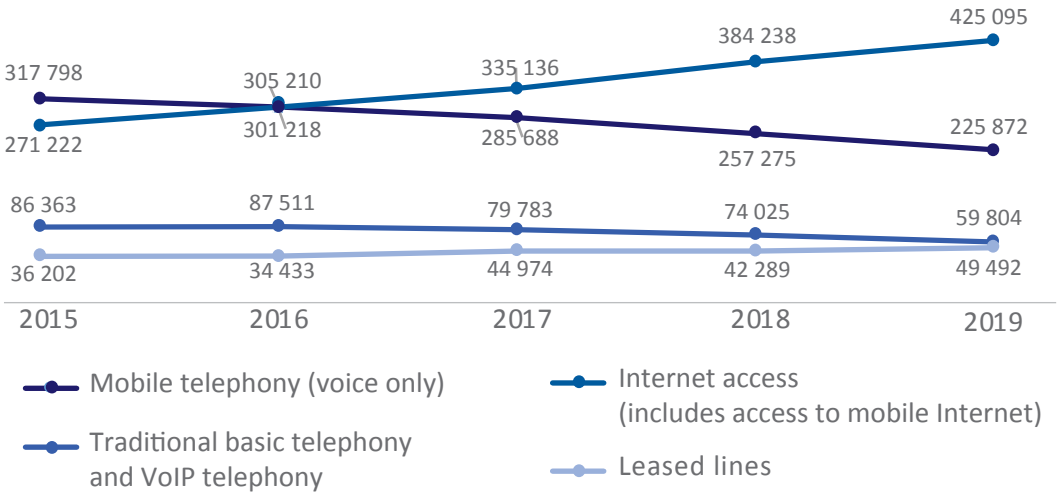


Note: *Gross Domestic Product at current market prices.

Source: SUTEL, Directorate General for Markets and BCCR, Costa Rica, 2019.

Graph n.° 3. Costa Rica: Total revenue of telecommunications sector by service, 2015 -2019

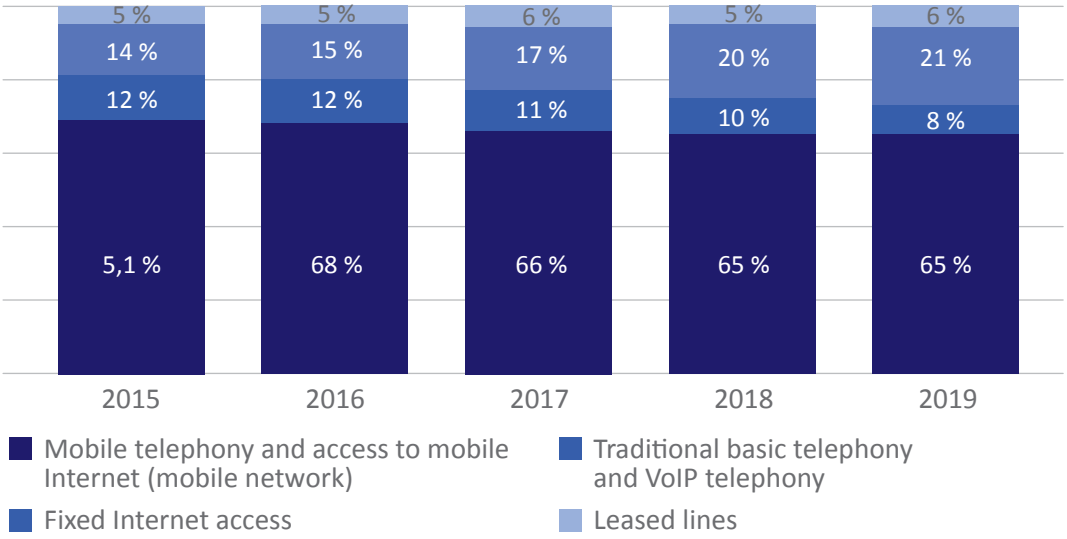
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 4. Costa Rica: Total revenue of telecommunications sector by service, 2015 - 2019

(annual figures in percentages)

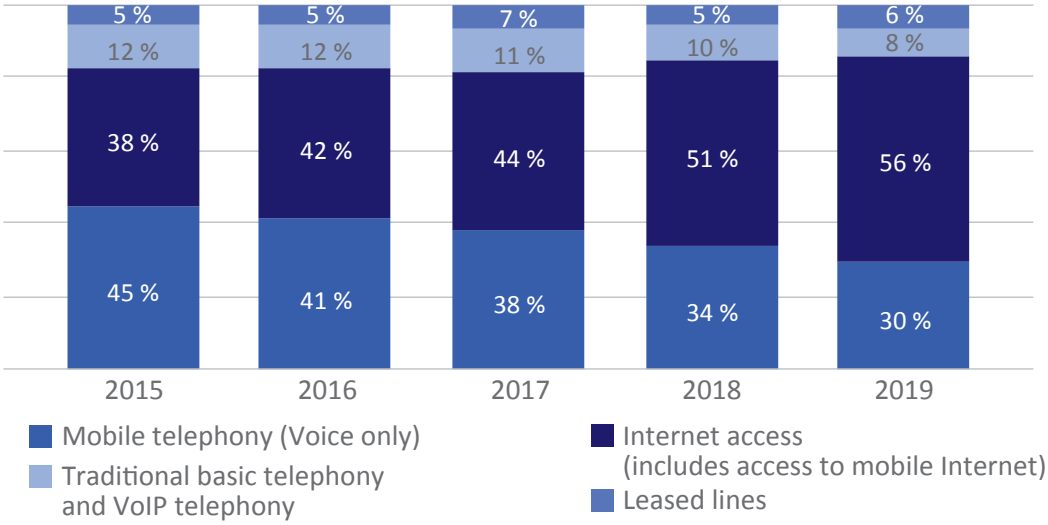


Note: Mobile telephony revenue also includes revenue from mobile Internet access services.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 5. Costa Rica: Total revenue of telecommunications sector by service, 2015 - 2019

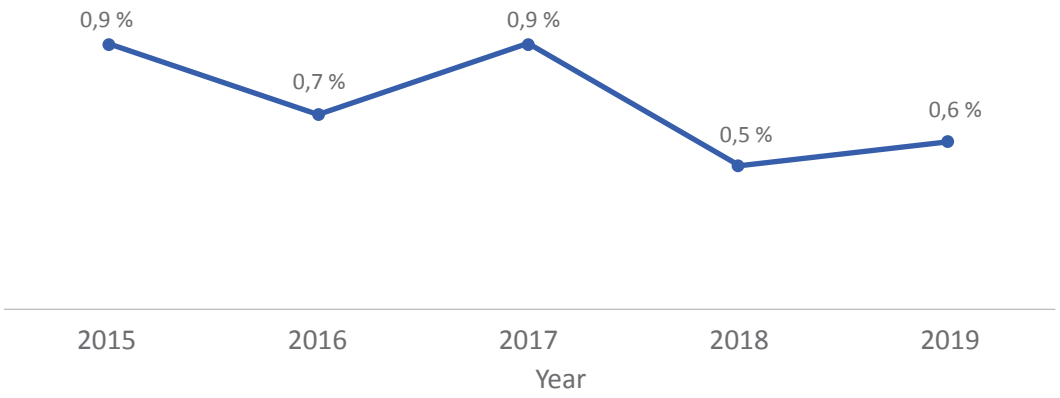
(annual figures in percentages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 6. Costa Rica: Total investment in telecommunications sector as share of GDP*, 2015- 2019

(annual figures in percentages)

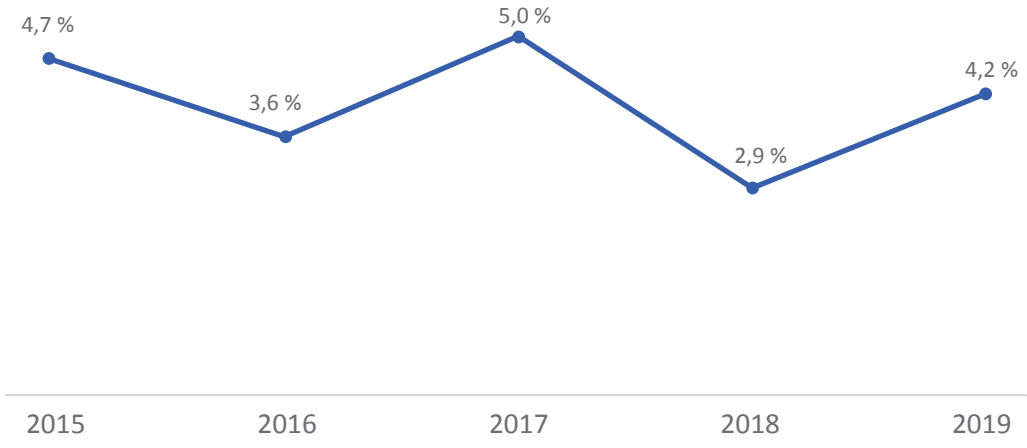


Note: *Gross Domestic Product at current market prices.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 7. Costa Rica: Total investment in telecommunications sector as share of Gross Capital Formula, 2015-2019

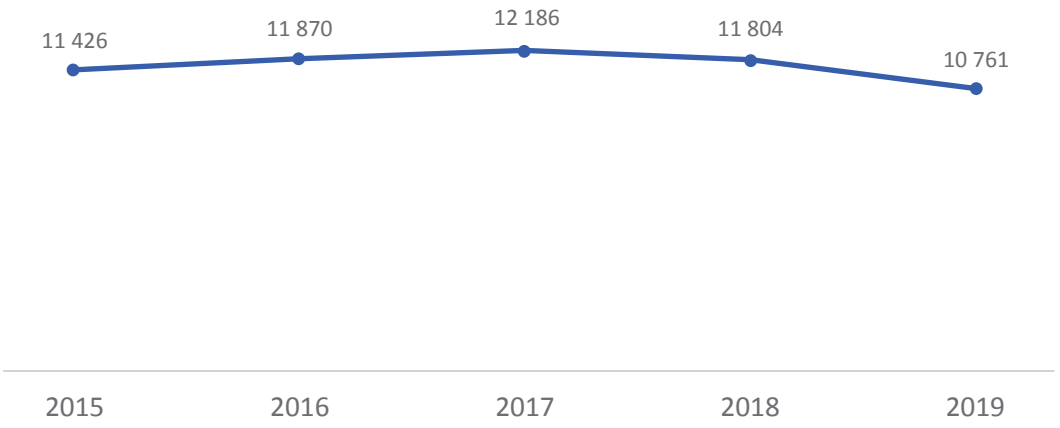
(annual figures in percentages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 8. Costa Rica: Labor force in Telecommunications Sector, 2015- 2019

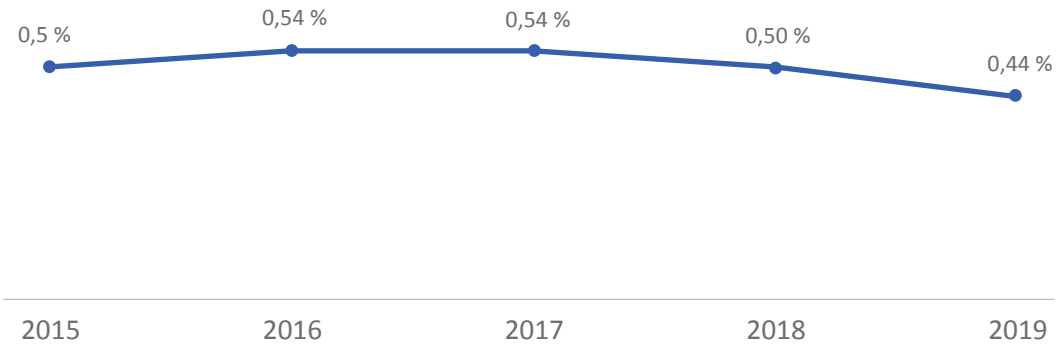
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 9. Costa Rica: Percentage of labor force in Telecommunications Sector over economically active population, 2015- 2019

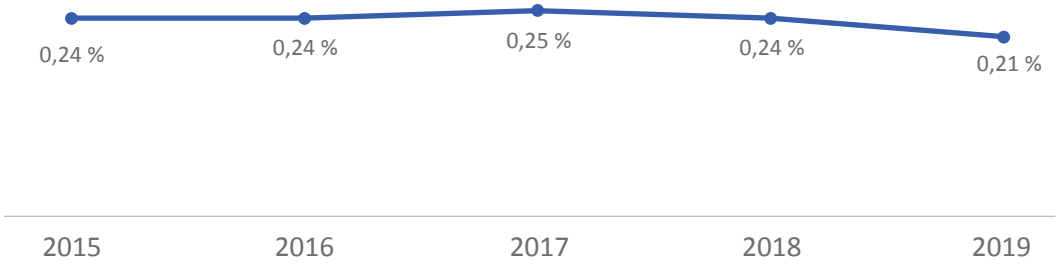
(annual figures in percentages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

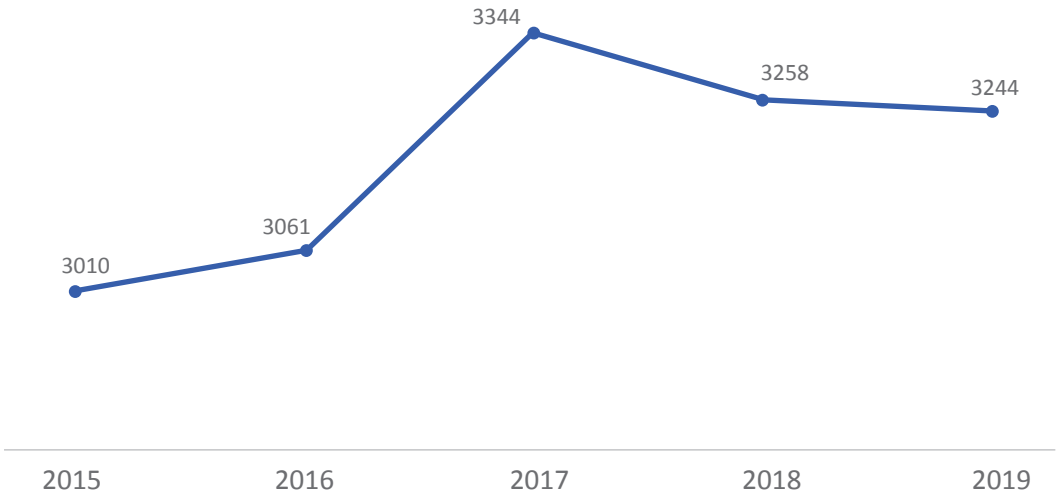
Graph n.° 10. Costa Rica: Percentage of labor force in Telecommunications Sector over total population, 2015- 2019

(annual figures in percentages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 11. Costa Rica: Female labor force in Telecommunications Sector, 2015- 2019



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 9. Costa Rica: Number of telecommunications service providers and operators, 2015 - 2019

Indicator	2015	2016	2017	2018	2019
Total authorized companies	139	135	143	152	148
Indicator response rate	88 %	83 %	80 %	80 %	77 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 10. Costa Rica: Percentage distribution of companies by service in the sectorial indicator report 2015 – 2019

	2015	2016	2017	2018	2019
Fixed telephony	94 %	94 %	90 %	100 %	100 %
Mobile telephony	100 %	100 %	100 %	100 %	100 %
Data transfer*	97 %	97 %	55 %	61 %	68 %
Subscription TV	100 %	100 %	97 %	100 %	100 %

Note: *Key operators in the market have provided information over the years, helping ensure statistical comparability. In fixed Internet, the 3 operators with greatest market share contribute nearly 95% of the market year on year; the other 7 operators represent most of the remaining 5%.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 11. Costa Rica: Summary of indicators of the performance of the Costa Rican Telecommunications sector 2015 – 2019

Indicator	2015	2016	2017	2018	2019
Aggregated Data					
Total revenue (millions of colones)*	711 585	728 372	745 581	757 827	760 264
Total revenue/GDP (percentage)**	2,53 %	2,42 %	2,29 %	2,18 %	2,10 %
Total investment/GDP (percentage)**	0,90 %	0,67 %	0,92 %	0,50 %	0,58 %
Total human resources employed	11 426	11 870	12 186	11 804	10 758
Total human resource employed/Total economically active population	0,50 %	0,54 %	0,54 %	0,50 %	0,44 %
Fixed telephony					
Total subscriptions	850 377	833 590	808 967	763 254	636 504
Total subscriptions /100 inhabitants	18 %	17 %	16 %	15 %	13 %
Total subscriptions /100 housing units	59 %	57 %	54 %	50 %	40 %
Total subscriptions traditional basic fixed telephony	804 468	779 972	747 428	695 518	571 808
Total subscriptions traditional basic fixed telephony / 100 inhabitants	17 %	16 %	15 %	14 %	11 %
Total subscriptions traditional basic fixed telephony / 100 housing units	56 %	53 %	50 %	45 %	36 %
Total VoIP subscriptions	45 909	53 618	61 539	67 736	64 696
Total number of pay phones	5726	4731	4674	4581	3798
Mobile telephony					
Total subscriptions	7 535 599	8 330 664	8 840 342	8 495 585	8 550 243
Prepaid subscriptions	5 951 337	6 468 693	6 795 591	6 285 188	6 132 481
Postpaid subscriptions	1 584 262	1 861 971	2 044 751	2 210 397	2 417 762

Total subscriptions /100 inhabitants	156 %	170 %	179 %	170 %	169 %
Pre-paid subscriptions /Total subscriptions	79 %	78 %	77 %	74 %	72 %
Post-paid subscriptions/Total subscriptions	21 %	22 %	23 %	26 %	28 %
Data transfer					
Total subscriptions Internet access	4 713 075	4 972 171	5 533 005	5 924 290	5 568 807
Total subscriptions fixed Internet access	558 656	636 087	744 041	834 784	904 734
Total subscriptions fixed wired Internet access	545 813	625 466	735 833	829 296	900 276
Total subscriptions fixed wireless Internet access	12 843	10 621	8 208	5 488	4 458
Total subscriptions mobile Internet access	4 154 419	4 336 084	4 788 964	5 089 506	4 664 073
Total subscriptions fixed Internet access / 100 inhabitants	12 %	13 %	15 %	17 %	18 %
Total subscriptions fixed Internet access / 100 housing units	39 %	43 %	50 %	54 %	57 %
Total subscriptions mobile Internet access/100 inhabitants	86 %	89 %	97 %	102 %	92 %
Total subscriptions mobile Internet access/Total subscriptions mobile telephony	55 %	52 %	54 %	60 %	55 %
Number of leased line connections	14 093	16 032	18 486	16 951	22 921
Subscription TV					
Total subscriptions	797 230	821 575	831 907	883 883	874 088
Total subscriptions/100 inhabitants	16 %	17 %	17 %	18 %	17 %
Total subscriptions/100 housing units	56 %	56 %	56 %	57 %	55 %
Reference indicators					
Total population	4 832 234	4 890 379	4 947 490	5 003 402	5 058 007
Gross domestic product at market prices (millions of current colones)	28 098 969	30 048 726	32 506 356	34 691 057	36 279 504
Total housing units	1 436 120	1 465 259	1 496 053	1 540 029	1 578 161

Notes:
* These figures do not include revenue related to Subscription TV service.
**For 2018, the BCCR changed the GDP calculation basis, utilizing 2012.
Source: SUTEL, Directorate General for Markets, INEC y BCCR, Costa Rica, 2019.

COMPETITION

Aside from regulating the telecommunications sector, SUTEL is also the sectorial competition authority, as provided since its creation through the General Law of Telecommunications.

As sectorial authority in telecommunications competition, SUTEL is responsible for promoting competition, investigating and sanctioning, as applicable, anti-competitive practices, and enforcing controls prior to mergers.

The Law for the Strengthening of Competition Authorities in Costa Rica, Law 9736, updates and reinforces the competition regulatory framework, assigning to SUTEL a series of functions and additional instruments, and also creates the figure of a Technical Competition Body (Órgano Técnico de Competencia) that provides competition-related technical advice.

The duties and powers of the Technical Competition Body are provided in Law 9736 as well as in Title III, Chapter II of the General Telecommunications Law, Law 8642, and any others assigned to it by the Senior Body, the SUTEL Council.

The Technical Competition Body makes recommendations to the SUTEL Council regarding procedures set out in the Telecommunications Competition Sectorial Regime (Régimen Sectorial de Competencia en Telecomunicaciones) and directs and determines the investigation and trial phases of the special procedure to address anti-competitive actions, with independence of technical judgment.

The functions and attributions of the Technical Competition Body established in Law 9736 were entrusted to the Directorate General for Competition, as provided in Resolution

RE-170-JD-2020 of the Board of Directors of the Regulatory Authority of Public Services regarding “Partial amendment of the internal regulations of the organization and functions of ARESEP and its decentralized agency (RIOF), for the implementation in SUTEL of the Law for the Strengthening of the Competition Authorities in Costa Rica, Law 9736”, published on 16 July 2020 in Comment 179 to La Gaceta 173.

1- Summary of key amendments included in Law 9736 to the legal framework of the Telecommunications Competition Sectorial Regime

The Law for the Strengthening of Competition Authorities in Costa Rica, Law 9736, entered into force on 18 November 2019 and modified the Costa Rican legal framework in matters of competition. This Law is part of a series of reforms undertaken by the country as requirement for accession to the OECD.

The main objective of Law 9736 is to strengthen the national competition authorities and provide them with an updated legal framework aligned with related best international practices. The Law strengthens the competencies of two national institutions: on one hand, the Commission for the Promotion of Competition (Comisión para Promover la Competencia -COPROCOM), as national competition authority, and on the other, SUTEL, as sectorial competition authority specialized in telecommunications.

The new law gathers the recommendations of a Peer Review on Competition Law and Policy in Costa Rica carried out in conjunction with the Organization for Economic Cooperation and Development (OCDE) and the Inter-American Development Bank (IDB) in September 2014.

Below is a list of the most relevant changes introduced by Law 9736 into the Telecommunications Competition Sectorial Regime:

- *Broaden the scope of application of competition law*

The scope of the competition law is expanded to all sectors, excluding only specific acts duly authorized in special laws, for which the law is waived.

- *Enhance procedure to investigate and apply sanctions*

Law 9736 provides a special procedure to investigate and sanction anti-competitive conduct. It was designed to respond to the complexities and particularities of matters related to competition.

The special procedure consists of three independent phases: investigation, trial, and decision. For greater transparency and legal certainty of economic agents, the duties of officers participating in each of these phases were divided.

Having a three-phase procedure ensures due process and the right of defense. The procedure must be applied by SUTEL and COPROCOM.

The special procedure introduces a leniency program which provides for the elimination or reduction of fines to economic agents that collaborate with authorities in the investigation of absolute monopolistic practices. The leniency program will help competition authorities to better detect cartels.

The procedure also introduces mechanisms to allow investigated economic agents to request early termination of a proceeding. Three early termination mechanisms were included: manifest inadmissibility; admission of infraction; and demand commitment bargaining.

- *Classification of conducts and effective sanctions to deter unlawful conduct and foster cooperation between economic agents and the competition authority.*

Law 9736 increased the number of anticompetitive practices that the competition authorities can sanction.

The maximum fine that applies to physical persons that take part in unlawful mergers or monopolistic practices, and for public servants that in any manner contribute to, facilitate, propitiate, or participate in monopolistic practices is up to six hundred and eighty base salaries, equivalent to US$516,777.

- *Modification of the definition of mergers and their review standard.*

Concerning merger controls, Law 9736 provides a two-phase procedure which will allow the competition authority to expeditiously approve transactions that have no potential to harm competition.

All mergers must be notified prior to executing the transaction.

A new merger review standard, which follows international recommendations, is provided, and authorities are instructed to focus their analysis on the effects of a transaction.

Finally, for COPROCOM, the notification thresholds were modified to allow for a better use of public resources and to avoid analyzing transactions that have no anti-competitive effects on the market.

- *Strengthen the powers of the competition authorities to take part in the promotion and advocacy of competition*

Law 9736 reinforces the powers of the competition authorities to avoid distortions or barriers to entry in laws, regulations, agreements, circulars and administrative resolutions by expressing opinion and publishing market studies.

Additionally, they may carry out training and promotion activities to increase the understanding and public awareness regarding the benefits of competition.

Finally, Law 9736 authorizes the authorities to enter into agreements of cooperation with entities, public or private, national or international, and to exchange information with other competition authorities, and participate and collaborate gathering evidence regarding anticompetitive practices and unlawful mergers.

- *Authority to undertake market studies*

Law 9736 strengthens the powers of competition authorities to efficiently carry out market studies, granting them sufficient competencies to request information from both public and private entities.

Such authorities may make include all recommendations they deem convenient in those studies. Although recommendations in a market study are not binding, public entities that divert from these recommendations must inform the competition authority about their rational within a peremptory period.

2- Competition statistics for 2019

Competition statistics summarize results concerning cases addressed by SUTEL in connection with the Telecommunications Competition Sectorial Regime.

These statistics are based on indicators defined by the Organization for Economic Cooperation and Development (OECD) in the Basic Statistics Survey of its Competition Committee, which consists of five major sections that bring together the normal tasks of a competition authority, namely: general data, cartels, abuse of a dominant position, mergers and advocacy.

Table n.° 12. Costa Rica: Statistics of monopolistic practices in the telecommunications sector 2019

Items	2019
MONOPOLISTIC PRACTICES	
Investigations	10
Initiated ex officio	3
Initiated from complaint	7
Practices sanctioned	0
Absolute monopolistic practices	0
Relative monopolistic practices	0
ECONOMIC MERGERS	
Notified	2
Authorized	2
Authorized with conditions	0
Denied	0
Sanctioned	0

Source: SUTEL. Órgano Técnico de Competencia, Costa Rica, 2019.

3- Summary of cases

Below is a breakdown of cases considered in the previous Table, as well as a summary of other activities developed by SUTEL in the areas of advocacy and promotion of competition:

- Analysis of two requests for authorization of economic mergers, which were approved without conditions.
- Review of three queries related to commercial transactions, beyond the scope of prior control of economic mergers in telecommunications.
- Conduction of ten preliminary investigations based on complaints or reports in reference to alleged monopolistic practices. Seven were closed and three are under investigation.
- Conduction of three preliminary investigations ex officio in reference to alleged omissions in the prior control scheme of economic mergers in telecommunications. All three cases were closed.
- Promotion and advocacy activities:
    - o Publication of market study: Access to common telecommunications infrastructure in residential condominiums, apartments and gated communities.
    - o Launch of two market studies: Access to common telecommunications infrastructure in business condominiums and government procurement of telecommunications services.
    - o Express opinion regarding the Central American Competition Regulations (Reglamento Centroamericano de Competencia), the draft Law for the Strengthening of the Competition Authorities in Costa Rica, and the draft Law of Cinematography and Audiovisual Arts.
    - o Participation in competition promotion events related to Law 9736.
- Other subjects:
    - o Assessment of a case related to the degree of impact to effective competition in the market of Open Access Sound Broadcasting, as result of the transfer of frequencies between and/or among companies operating in the industry.

IN 2019,
PENETRATION
OF THE VOIP
SERVICE GREW
FOR THE FIRST TIME

Fixed TELEPHONY



Receptionist at HWP communications company in Barrio Escalante, San José.

Subscriptions

The number of fixed telephony service (traditional basic and VoIP) subscriptions in 2019 experienced a similar downward trend as previous years, going from 850 377 in 2015 to 636 504 at the end of 2019 (25.15%). This trend is even more notorious in the last year, with a drop of 126 750 subscriptions, equivalent to an annual reduction of 16.6%, the most significant since the telecommunications market in Costa Rica opened (see Graph n.° 12).

Likewise, Graph n.° 13 shows that the voice over Internet protocol (VoIP) service experienced, for the first time, a downward trend at year end of 2019, where the number of subscriptions went from 67 736 in 2018 to 64 696 in 2019, meaning a reduction of 4.49% over the previous year. The percentage distribution of these technologies remains similar, with a constant increase in share, in terms of percentage, of VoIP subscriptions in 2019, of 1.3 basis points (see Graph n.° 14).

When considering the number of quarterly subscriptions to fixed telephony, 2018 and 2019 reveal a consistent reduction over all eight quarters. This was related mostly to the reduction in traditional basic telephony subscriptions, plus the behavior of VoIP subscriptions this year. The average quarterly die-off rate was 4.4% in 2019 (see Table n.° 31 of the Annex).

When examining the level of mergers in the fixed telephony market, which includes both traditional basic telephony as well as VoIP, it is worth recalling the declaration of ICE as incumbent operator, especially due to its ongoing monopoly in the former of these technologies. Determination of the Herfindahl-Hirschman Index (HHI) for 2019 produces a value of 8096 points, less than 2018, which was 8323 points, but does not differ significantly from the calculation included in RCS-261-2016 dated 23 November 2016 (8771 points).

As indicated in Resolution RCS-261-2016, HHI, as a structural indicator, shows that the arrival of new competitors to the fixed voice communications market in the country has had a minor impact on share composition, driven mostly by the dynamic behavior of VoIP telephony.

As to traditional basic telephony penetration in the country, measured as a percent of total subscriptions over the total population, the trend is descending, from 16.6% in 2015 to 11.3%, in 2018 (see Graph n.° 16). On the other hand, penetration of the voice over Internet protocol (VoIP) service for 2019, displays a reduction, from 13.5 in 2018 to 12.8 subscriptions per one thousand inhabitants (see Graph n.° 17). Consequently, penetration of the fixed telephony service in general shows a downward trend, mostly due to the behavior of traditional basic telephony, as depicted in Graph n.° 18 where the percent of subscriptions in 2015 dropped from 17.6% to 12.6% in 2019.

Comparing market share versus VoIP distribution per operator, and its evolution over the last two years, Graphs n.° 19 and n.° 20 reveal that Cabletica has the largest share both in 2018 (35%) and in 2019 (40%), followed by Tigo and Telecable, for which 2019 brought a drop of five basis points and one basis point respectively.

Since fixed telephony also includes public telephony, it is important to analyze the number of pay phones available and their evolution in the five years examined herein. Graph n.° 21 reflects a reduction in the number of such devices, which were 5726 at the closing of 2015, and only 3798 in 2019, evidencing the reduction that started in 2013, as indicated in previous reports. The figure for 2019 dropped 17% over 2018 and 71% over 2013.



Fixed telephony service over IP.

Traffic

Telephone traffic carried over fixed networks continues to descend. While in 2015 a total of 3210 million minutes were carried, by 2019 that figure had dropped to 1870 million minutes, equivalent to an annual average reduction of 11.5%. When considering the previous year only, the reduction observed (532 million minutes) represents a decrease of 22.1%, the highest recorded since the telecommunications market opened (see Graph n.° 22).

As to VoIP telephony, telephone traffic maintained constant growth. The number of minutes carried went from 232 million in 2015 to 395 million in 2018, an average annual growth of 22.9%. However, the situation changed in 2019, where the year closed at 241 million minutes, equivalent to a 39% reduction over 2018 (see Graph n.° 23).

A closer look at traffic dynamics per quarter, specifically for the eight quarters corresponding to the last two years, confirms the downward trend in the overall fixed telephony service, which repeatedly dropped during the quarters under review, in line with the reduction experienced in traditional basic telephony traffic (see Graph n.° 24).

Details of these quarterly figures for VoIP corresponding to 2018-2019 show a descending behavior (see Graph n.° 25 and Table n.° 35 in the Annex).

As to percentage distribution for VoIP traffic per operator for 2018, 81.3% of the total traffic carried was agglutinated by five main operators (in alphabetical order): American Data, Cabletica, PRD, Telefónica and Tigo. But for 2019, this same number of operators represented 74.1%, namely by, also alphabetically: American Data, Cabletica, CallMyWay, Telecable, and Tigo. This market share reduction is related to the drop in traffic of several dominant operators, which, due to its magnitude, explains the reduction in VoIP traffic in 2019 (see Graph n.° 26 and Graph n.° 27).

Finally, the traffic analysis for this service produces an estimated average traffic per subscriber. For example, the average annual traffic per subscriber of traditional basic telephony in 2015 was 3701 minutes, while in 2019 dropped to 2849 minutes, equivalent to an average annual reduction of 6.3% for the period. A similar situation occurs with VoIP, where the average annual traffic per user dropped from 5059 minutes in 2015 to 3728 minutes in 2019, in other words, an average annual reduction of 3.2%, mainly due to the 36.1% drop this last year (see Graph n.° 28).

Revenue

In line with the behavior of subscriptions and with telephone traffic, fixed telephony services overall also displayed a decline in 2015 - 2019. For example, in 2015, fixed telephony generated 86 363 million colones, and for 2019, revenue shrunk to 58 970 million colones, in other words, a reduction equivalent to 31.7% for the period (9.1% average annual reduction). This drop was even more notorious in the three-year period from 2017 through 2019, with an annual average reduction of 19.5% (see Graph n.° 29).

Consequently, VoIP shows a connection to the number of subscribers and to telephone traffic. The behavior of this technology differs from that of traditional basic telephony in particular. Specifically, revenue has increased over time, going from 4973 million colones in 2015 to 6906 million colones in 2018. However, for 2019, this item, as well as others under this mode of service, show a reduction, since 2019 closed with 6830 million colones in revenue, equivalent to a decrease of 1.1% (see Graph n.° 30).

Breaking down such revenue per quarter, and considering the last two years, fixed telephony revenue also shows a quarterly drop. Reduction in the first quarter of 2018 was 18 842 million colones, then 16 144 million colones in the first quarter of 2019, and 13 095 million in the fourth quarter of 2019. This is all equivalent to average quarterly reductions of 2.4% in 2018 and 7.2% in 2019 (see Graph n.° 31).

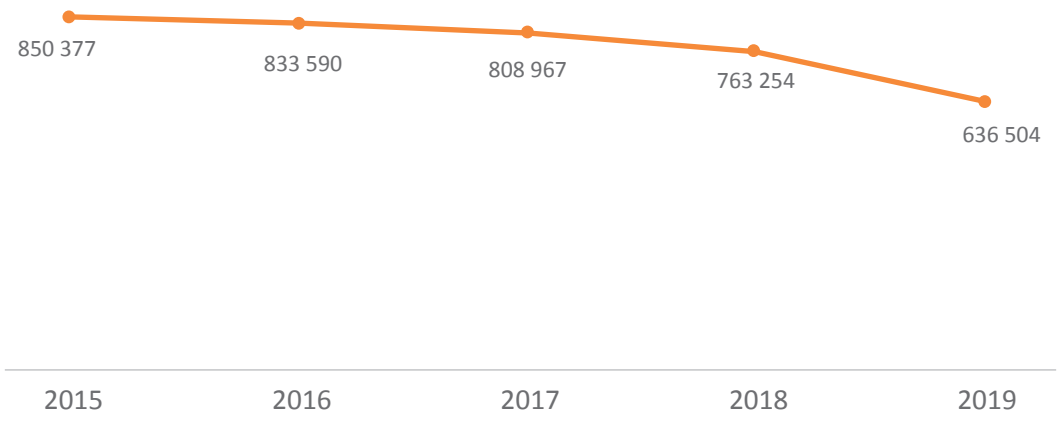
Quarterly revenue for VoIP over the eight quarters of 2018 and 2019 shows a descending trend, particularly in the last year. In numbers, it goes from 1884 million colones in the fourth quarter of 2018 to 1543 million colones in the fourth quarter of 2019, representing an average quarterly reduction of 4.8% (see Graph n.° 32).

Connecting revenue to the number of subscribers leads to estimate the average revenue per user (ARPU). General fixed telephony and traditional basic telephony together show the average annual revenue per subscriber which is quite similar for the three years analyzed (2015-2017). Nevertheless, the average in 2018 and 2019 for fixed telephony in general was 95 958 and 92 646 colones respectively, while for traditional basic telephony the figure was 91 184 colones for the last year.

Revenue per VoIP subscriber has descended to the point that the sum of 108 330 colones in 2015 decreased to 105 571 colones in 2019, that is – 9.9% for the period (see Graph n.° 33 and Table n.° 38 of the Annex).

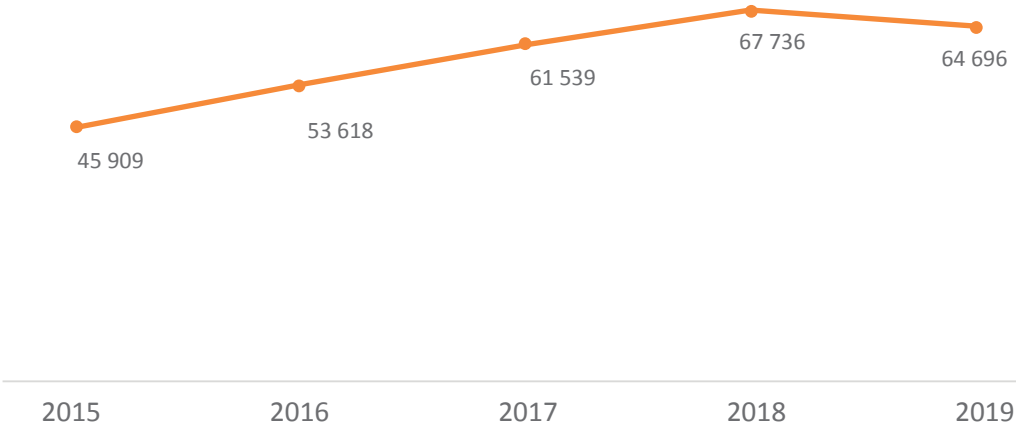
Additionally, Graph n.° 34 displays the results of estimating the average revenue per minute both for the traditional basic telephony service and for VoIP. In the case of the latter, the average resulting price shows an upward trend, going from 27 to 33 colones in that same five-year period. The same applies to VoIP, when the average revenue per minute went from 15 to 28 colones at the closing of 2019. The dominance of this last mode of connection within the fixed telephony service makes overall average prices come closer to those of traditional basic telephony (see Table n.° 39 of the Annex).

Graph n.° 12. Costa Rica: Traditional basic telephony and VoIP telephony subscriptions, 2015 - 2019
(annual figures)



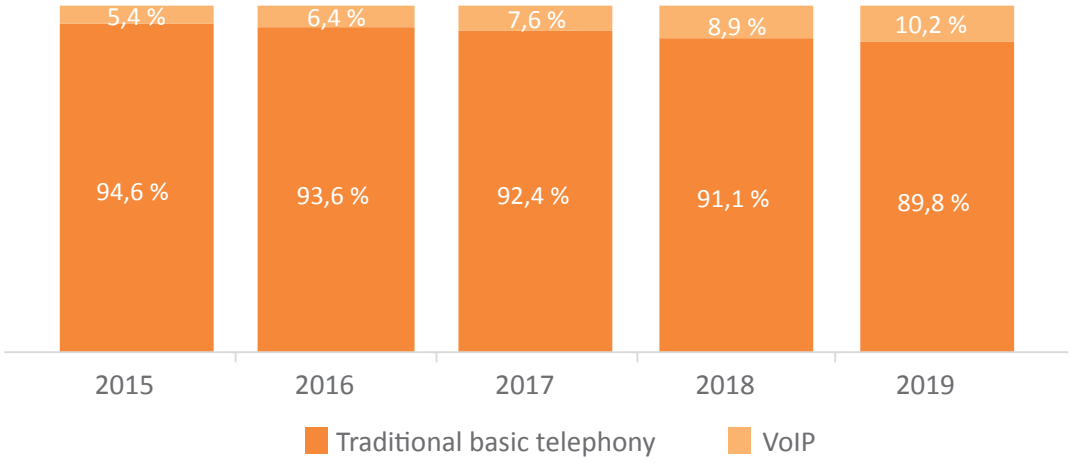
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 13. Costa Rica: VoIP telephone subscriptions, 2015 - 2019
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

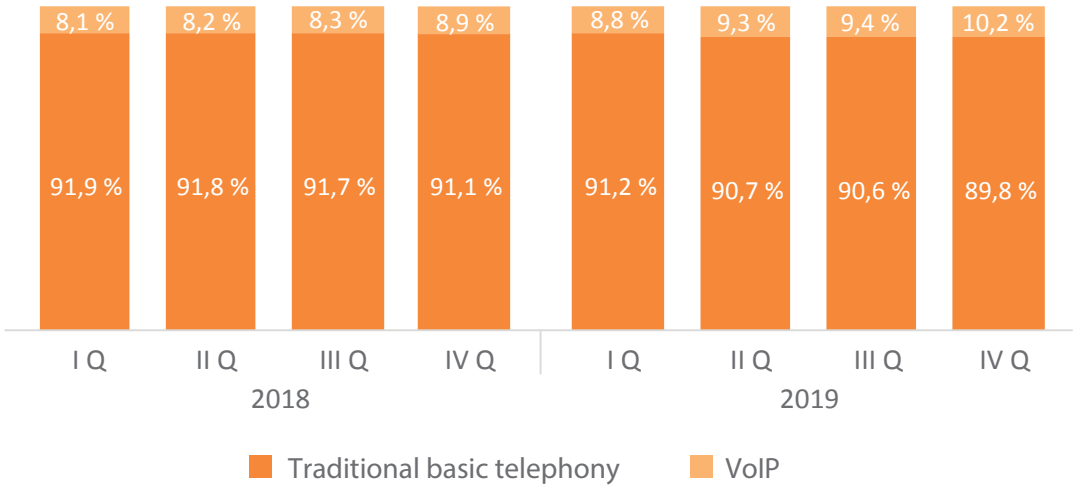
Graph n.° 14. Costa Rica: Percentage distribution subscriptions traditional basic telephony and VoIP, 2015 - 2019
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 15. Costa Rica: Percentage distribution subscriptions traditional basic telephony and VoIP, 2018 - 2019

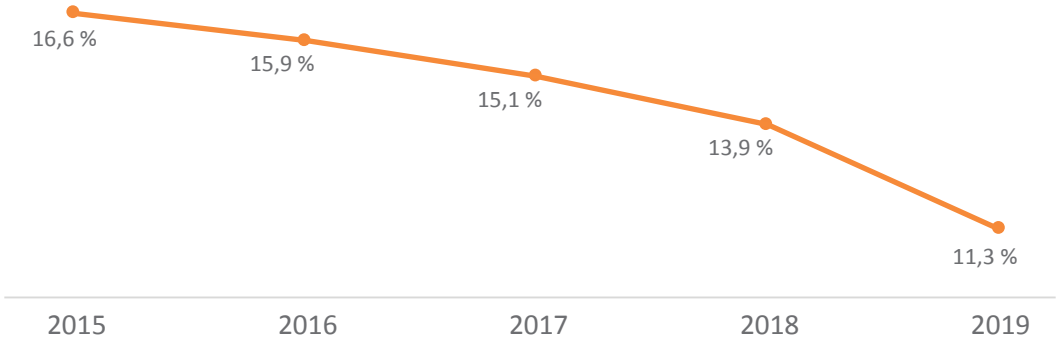
(figures at end of each quarter)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

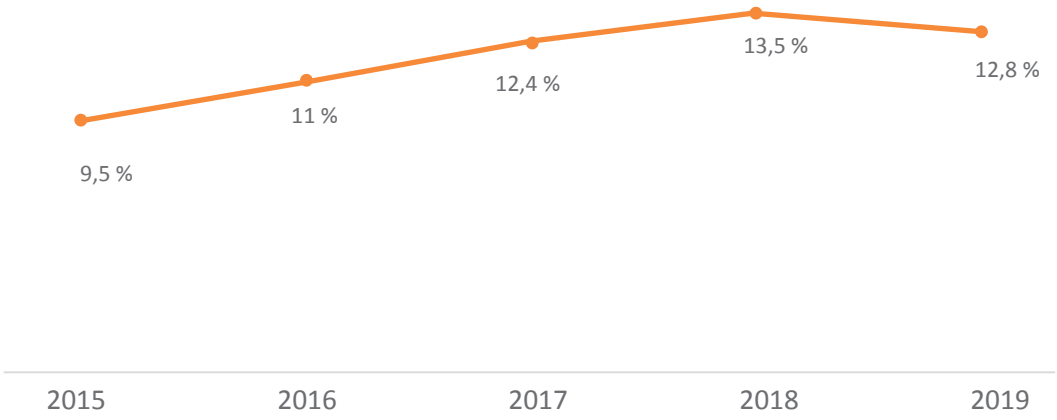
Graph n.° 16. Costa Rica: Penetration traditional basic telephony service, 2015-2019

(subscriptions over total population and figures in percentages)



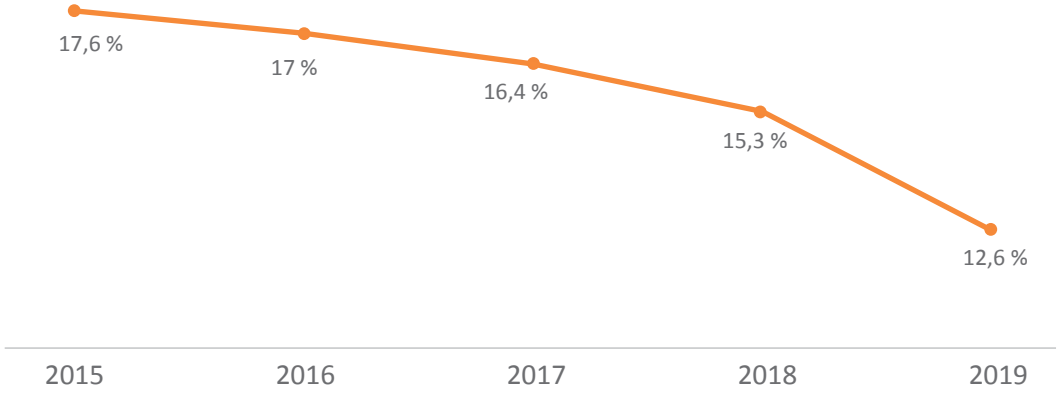
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 17. Costa Rica: VoIP telephone subscriptions, 2015 - 2019
(annual figures)



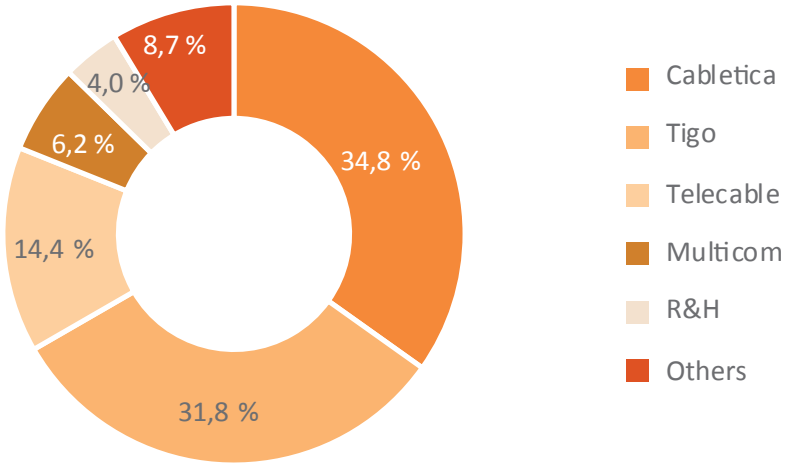
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 18. Costa Rica: Fixed telephony penetration, 2015-2019
(subscriptions versus total population, in percentages)



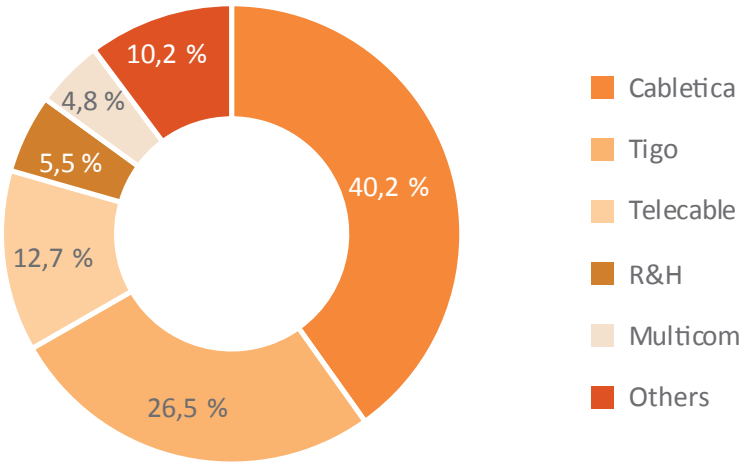
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 19. Costa Rica: Distribution per operator in VoIP subscriptions, December 2018
(percentages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 20. Costa Rica: Distribution per operator in VoIP subscriptions, December 2019
(percentages)



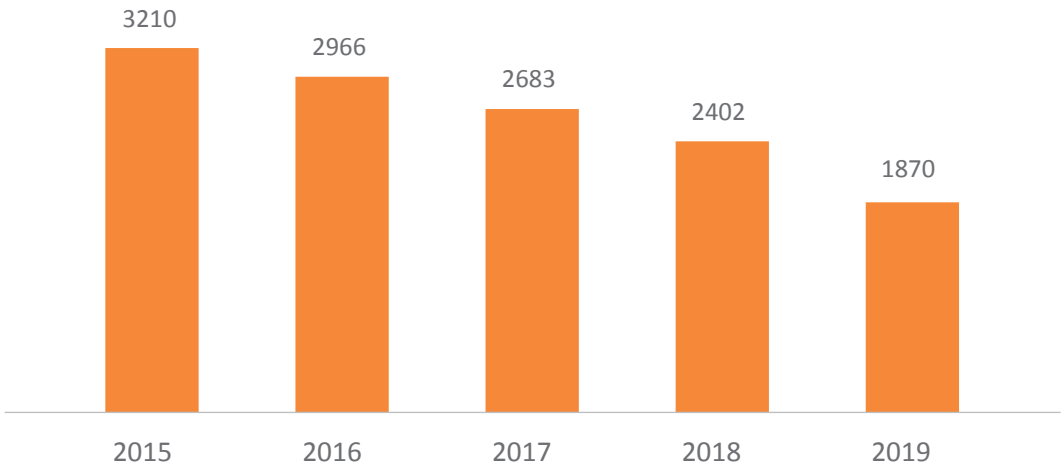
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 21. Costa Rica: Pay phones traditional basic telephony, 2015-2019
(year end numbers)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

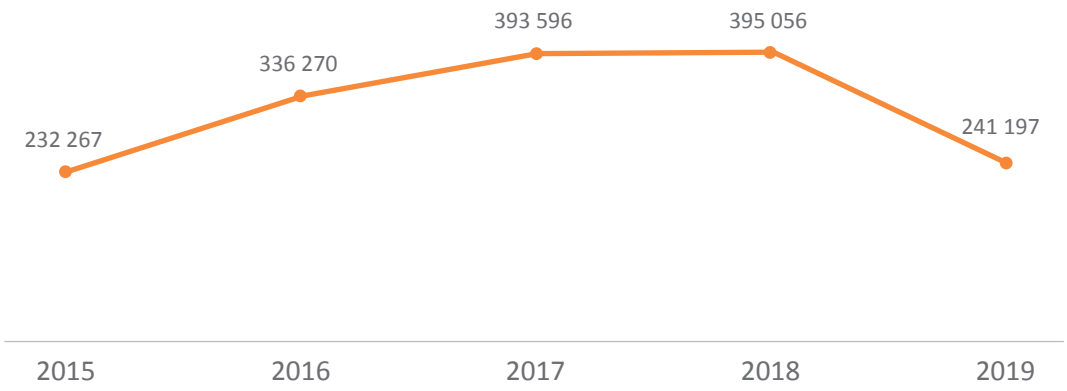
Graph n.° 22. Costa Rica: Fixed telephony traffic, 2015-2019
(million minutes per year)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 23. Costa Rica: VoIP telephony traffic, 2015-2019

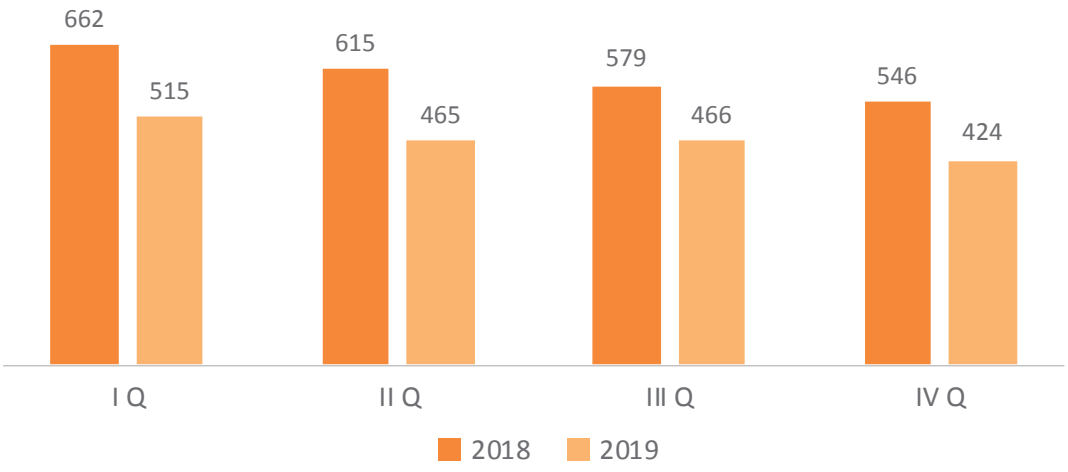
(thousands of minutes per year)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 24. Costa Rica: Fixed telephony traffic, 2018-2019

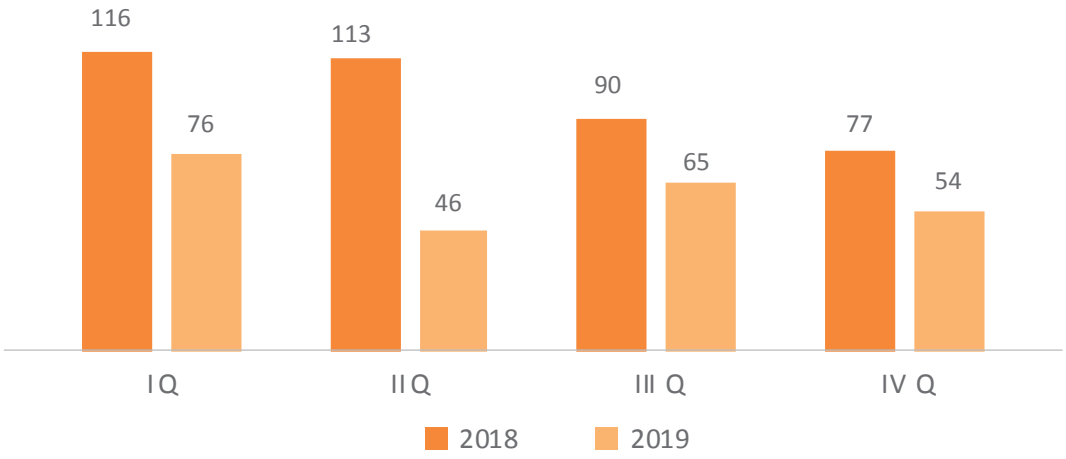
(quarterly figures in million minutes)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

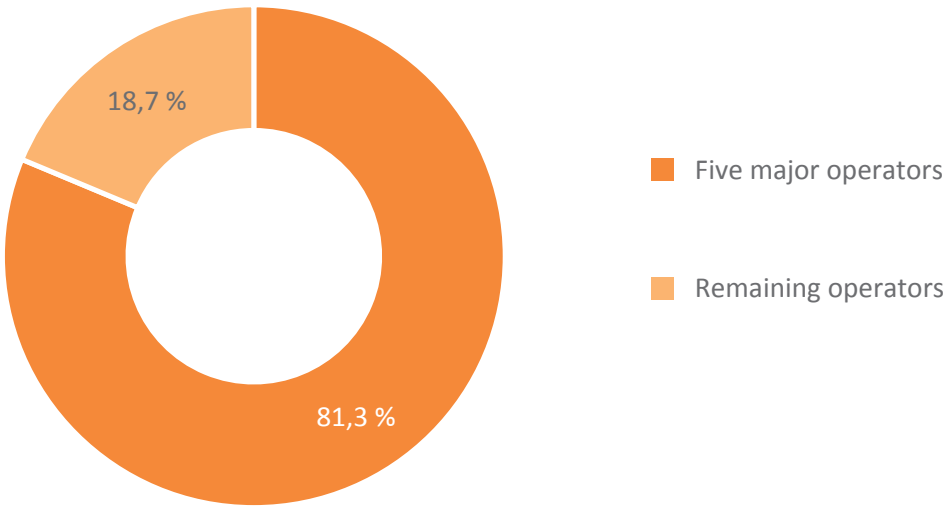
Graph n.° 25. Costa Rica: VoIP telephony traffic, 2018-2019

(quarterly figures in million minutes)



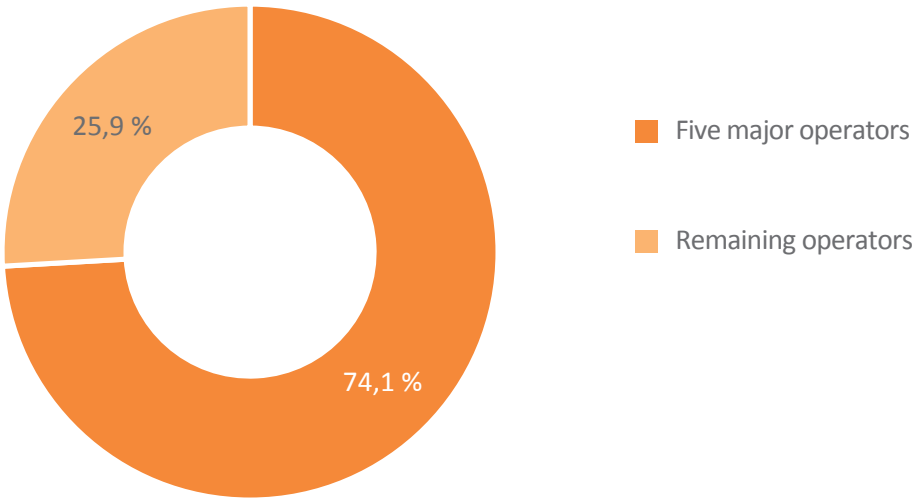
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 26. Costa Rica: Percentage distribution VoIP by provider, 2018



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

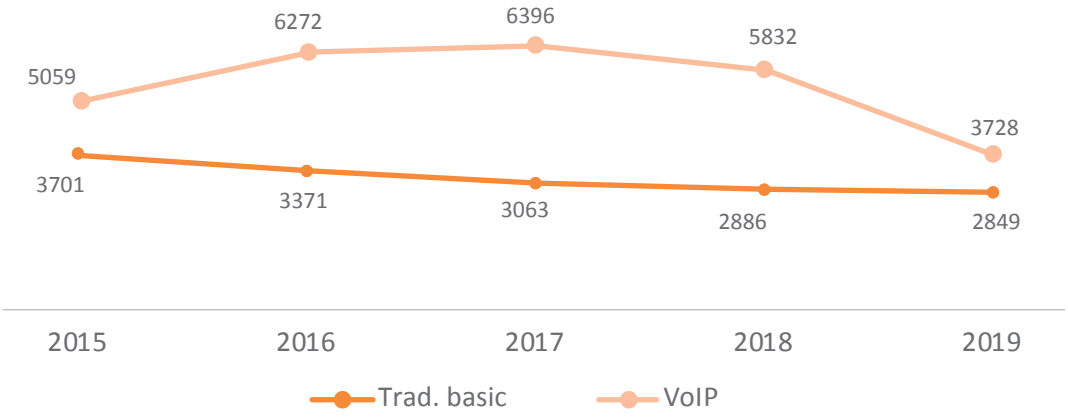
Graph n.° 27. Costa Rica: Percentage distribution VoIP traffic, by provider, 2019



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 28. Costa Rica: Average traffic per subscriber fixed telephony, by type of connection: traditional basic and VoIP, 2015-2019

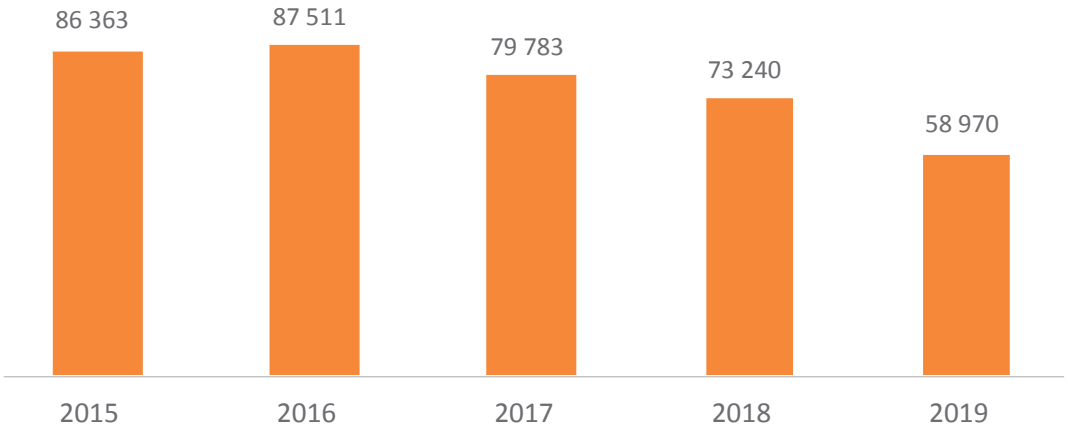
(figures in minutes)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

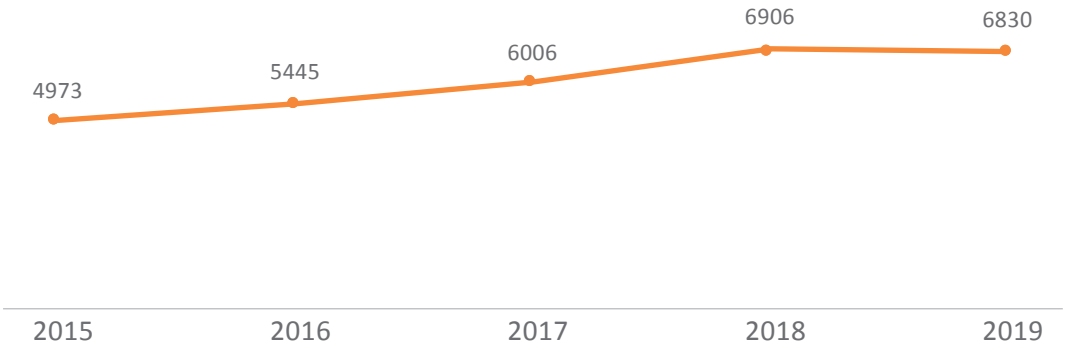
Graph n.° 29. Costa Rica: Fixed telephony revenue, 2015-2019

(million colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

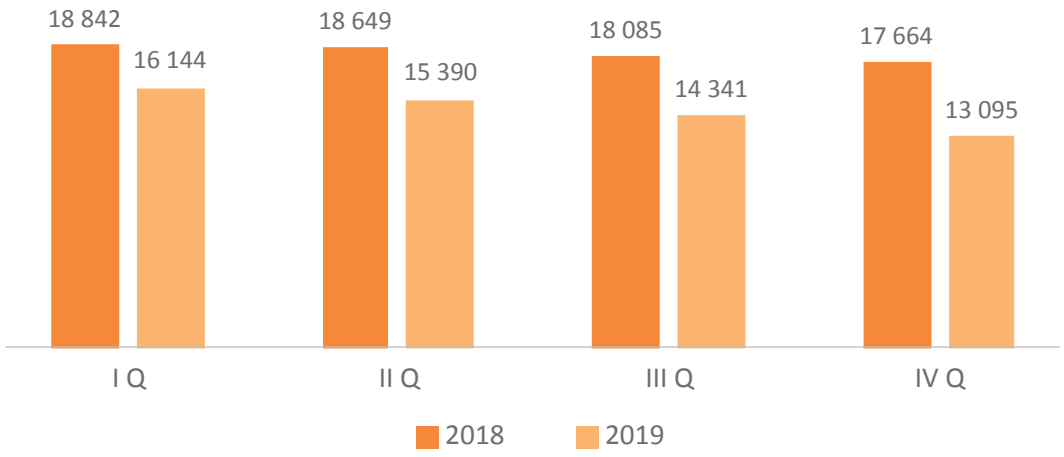
Graph n.° 30. Costa Rica: VoIP telephony revenue, 2015-2019 VoIP by provider, 2018



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 31. Costa Rica: Fixed telephony revenue, 2018-2019

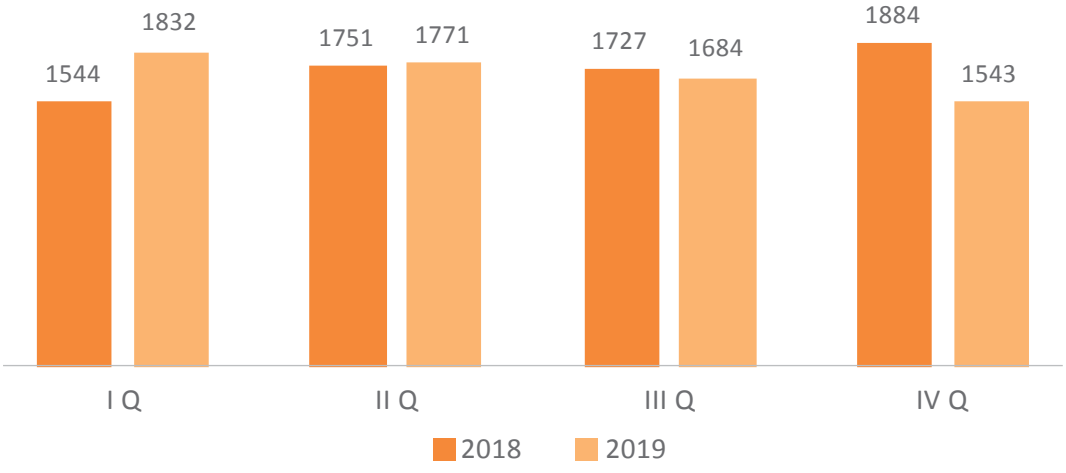
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 32. Costa Rica: VoIP telephony revenue, 2018-2019

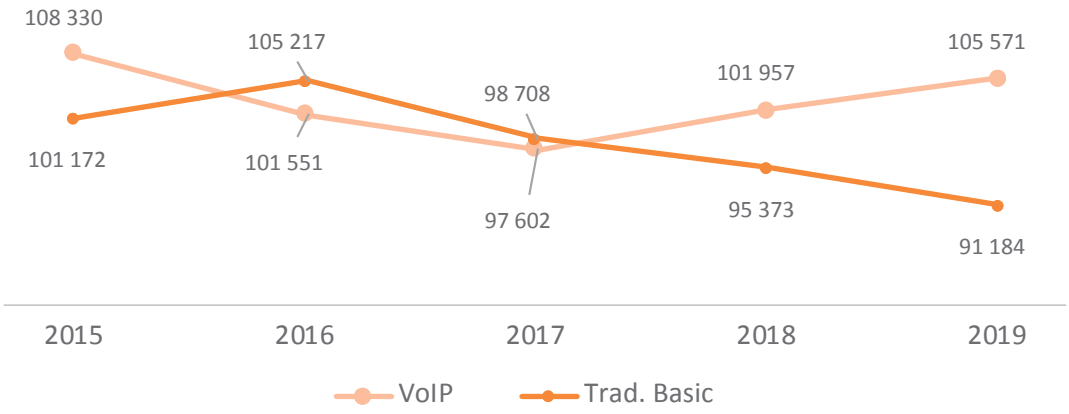
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 33. Costa Rica: Average revenue by subscriber fixed telephony, by type of connection: Traditional basic and VoIP, 2015-2019

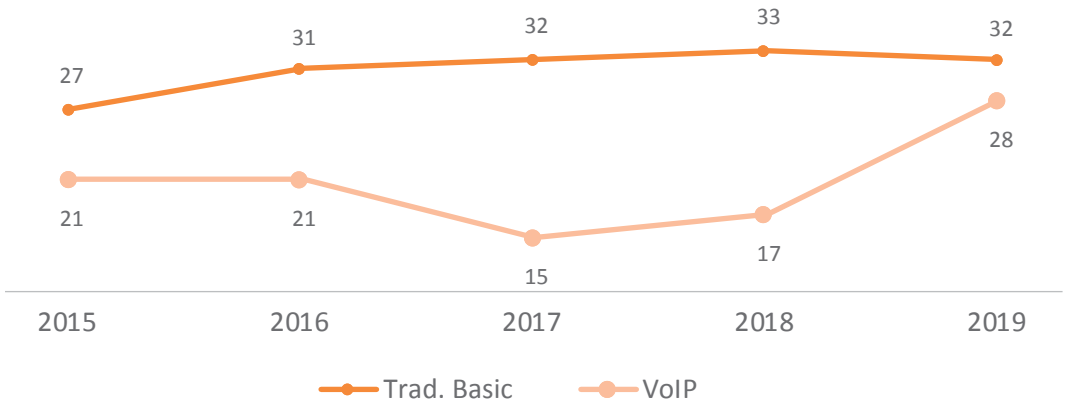
(annual figures in colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 34. Costa Rica: Average revenue per minute carried fixed telephony by type of connection: Traditional basic and VoIP, 2015-2019

(annual figures in colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.



Pay phones on east side of BCCR, San José.

A POSTPAID SUBSCRIBER CONSUMES 4 TIMES MORE IN MINUTES THAN A PREPAID SUBSCRIBER IN A MONTH

Mobile TELEPHONY



Cellular telephony users in Francia Park in San José.

Subscriptions

The mobile telephony market shows an increase in subscriptions, closing 2019 with 8 550 243 lines. This represents a growth of 0.6% compared to 2018. That is, approximately 54 658 more lines (see Graph n.° 35).

Regarding mobile telephony penetration, it reached 169.04%. To analyze this, it is important to see in Graph n.° 36 that the maximum point was reached in 2017 with 178.7%, which decreased 8.9 percentage points for 2018 and then registered a recovery in relation to the decrease rate, since from 2018 to 2019, it decreased by just 0.76 points.

From the payment method point of view, postpaid subscriptions have increased at an average annual growth rate of 11.1% since 2015, while prepaid subscriptions do so at a rate of 0.8% (see Graph n.° 38). At the end of 2019, postpaid represented 28.3% of subscriptions, while prepaid, 71.7%, (that is, there are 2.5 prepaid lines for each postpaid line). This is important to analyze graphically (see Graph n.° 40). The trend is a sustained increase in the proportion represented by postpaid compared to prepaid.

Regarding the market share (see Graph n.° 42), it remains very similar to that of 2018. ICE represents 51.2% of the total active subscribers, followed by Movistar with 29.9%, Claro with 18.9%, and virtual operators that together represented 0.1% in 2019.

When considering the internal structure of each payment method (see Graph n.° 43), in the case of postpaid, ICE has a market share of 57.3% (3.2 points less than in 2018), followed by Claro with 21.8% (1.3 points more than in 2018), and Telefónica closed with 20.6% (1.6 points more). In the case of prepaid, ICE has the largest market share with 48.8% (2.5 points less than in 2018), followed by Telefónica with 33.5% (4.2 points more), Claro with 17.7% (1 point less), and the virtual mobile operators that together closed with a 0% participation because both stopped marketing for the second half of this year.

The above participation caused the HHI[26], Herfindahl-Hirschman Index[27] to reach 3867 points in 2019 (see Graph n.° 44), thus reflecting a decrease compared to 2018. This index, which is above 3.000 points, shows that the mobile telecommunications market is a concentrated market28, which reflects a structural condition that is typical of a market with three participants. Despite the foregoing, it should be noted that said concentration indicator shows a concentration level close to the most equitable distribution that a market of three participants could achieve[29].

[26] HHI for 2017 (year in which mobile telecommunications where declared in competition conditions) was 3825 points.

[27] https://es.wikipedia.org/wiki/Indice_de_Herfindahl. The Herfindahl Index of the Herfindahl and Hirschman Index (HHI) is a measurement used in economics to report on the economic concentration of a market. An elevated index indicates a not very concentrated and not very competitive market.

[28] RCS-082-2015 states that markets with an HHI higher than 3 000 points are concentrated markets.

[29] The most equitable distribution that a three-participant market may achieve is reflected in a 3333-point HHI.



Cell phone service in a rural area in Cot, Cartago.

Traffic

In the last five years, consumption in voice minutes (national, international, excluding roaming) presents a downward trend with an average annual decrease of 8%, with 2017 being the year with the highest interannual decrease (10%), and 2019, the lowest with 6% (closing with 5.924 million minutes in total). On the other hand, in terms of payment method, traffic on prepaid platforms decreased at an average annual rate of 17.6%, with 2019 as the year with the highest interannual decrease with 21%, while postpaid increased on average by 2.2% per year, with 2019 as the year with the highest growth, at 7% (see Graph n.° 45).

The traffic composition at the end of 2019 shows that postpaid represented 62% of the total traffic of the mobile service versus 38% of prepaid, despite the fact that in terms of subscriptions for each postpaid line there are 2.5 prepaid lines. The relationship is reversed in terms of traffic, since for each minute spent on prepaid platforms, approximately 4 postpaid minutes are consumed.

Following this line, the average monthly consumption per user in postpaid was 127 minutes, while in prepaid, it was 30 minutes.

Considering these proportions, at a total level it can be said that for 2019, the total average consumption per month was 58 minutes, that is, 34 minutes below the average monthly consumption registered in 2015.

Graph n.° 47 shows that in the last five years the gap in average consumption of voice minutes per user between the modalities has increased, since in 2015, 2.6 postpaid minutes were consumed for each prepaid minute until reaching 4 minutes at the closing of 2019. Furthermore, it is shown that in absolute terms the average user consumes less and less as years go by, due to the change in consumer habits towards other media used for voice transmission and also due to the competitive dynamics of market operators in terms of bundles, promotions, and plans.

The behavior regarding the destination of calls (see Graph n.° 48) has remained similar since 2015, showing a stable consumption structure dominated by on-net calls (50.1%), followed by off-net calls (28.4%), destined for fixed telephony networks (17.5%), and finally, international (4%).

In relation to international traffic (see Graph n.° 49), 2019 closed with 419 million minutes, which is 14% lower than in 2018, and also the lowest consumption in the last five years. Outbound international traffic decreased 13% compared to 2018, while incoming international traffic, 15%.

Regarding roaming traffic, this practically remained the same than in 2018, since it presented an increase of 3% (the lowest in the last 5 years), reaching 80 million minutes. Graph n.° 50 shows the distribution between incoming and outgoing roaming, showing that this distribution is maintained compared to 2018: 86.2% and 13.8%, respectively.

SMS messaging has decreased at an average annual rate of 34% during the last five years (see Graph n.° 51), closing 2019 with 1802 million messages.

Finally, MMS messages are practically marginal (see Graph n.° 52), since in 2019, only 1603 MMS were consumed (-98% compared to 2018).

When analyzing the above, from the point of view of monthly consumption per user, Graph n.° 53 shows that the reduction has been strong, since in 2015, 106 SMS were consumed per subscriber, while in 2019, only 18. On the other hand, since 2015, the monthly consumption per user in MMS was practically 0.

Revenue

Mobile telephony revenue at the end of 2019 (includes outgoing and incoming national, international voice, SMS, MMS, excluding roaming and mobile data) reached 225 872 million colones. This results from a 12% decrease compared to the amount registered in 2018, representing the largest year-on-year decrease since 2015. Likewise, this trend is consistent with the sustained decrease in consumption of voice minutes registered in the country since 2015 (8% on average per year), and with the quarterly trend towards a decrease in revenue in 2019, which always remained below that of 2018 (see Graphs n.° 54 y n.° 55).

This reduction in mobile telephony revenue is consistent with the reduction in prices in this market, which according to the respective index calculated by SUTEL, reaches 9.26 percentage points compared to the end of 2018 (see mobile telecommunications price index Graph n.° 174, in the section on prices and commercial offers).

The monthly revenue of mobile telephony per user was 2.127 colones for voice and 74 colones for messaging (12% and 21% below 2018 respectively). These amounts are the lowest since 2015 (see Graph n.° 56).

In terms of the composition of mobile telephony revenue, the voice component takes the largest share registered since 2015, with 96.6%, while messaging only represents 3.4% of the total (see Graph n.° 57). This reflects the user's preference for voice over text messages that has been manifesting for several years in consumer structures. Anything related to the use of mobile devices for data is discussed in the Data Transfer section.

Total roaming revenue per component (voice, messaging, and data) is made up by the sum of outgoing roaming (revenue generated by own subscribers who access mobile telecommunications services outside the service area of the country's network) and incoming roaming (revenue generated by visiting subscribers when accessing the country's mobile telecommunications services). In line with the above, the total revenue per voice roaming experienced a 4% reduction compared to 2018 (this decrease began in 2015, going from 6.596 million colones to 2.616 million colones), while roaming revenue for messaging and data registered a -5% (decrease that began in 2016), decreasing from 8789 million colones to 6364 million in 2019 (see Graphs n.° 58 and n.° 59).

In relation to revenue from international calls, 2019 closed with 10 930 million colones, of which 34% account for incoming international calls and 66% for outgoing calls. However, it is important to note that this revenue fell by 37% compared to 2018, the largest drop according to historical data (see Graph n.° 60).

If the mobile data revenue is added to the mobile telephony revenue previously analyzed, an estimate of the total revenue generated by the mobile network is obtained, which for 2019 amounted to 490 450 million colones. This figure does not have significant changes (0.12% annual average in the last 5 years); however, this indicates that the growth of mobile data revenue (growth of 11.63% in annual average) has been similar to the decrease for mobile telephony (8.18% on average per year), resulting in a trade-off between data versus voice and messaging (see Graph n.° 61).

It is important to note that within mobile network revenue, revenue generated by data continues to expand its importance as years go by. An example of this is that it went from representing 47.8% in 2018 to 53.9% in 2019, while voice dropped from 50.3% to 44.5%, and messaging from 2% to 1.6%.

On the other hand, mobile network revenue comes mostly from postpaid, 72% in 2019, and 28% from prepaid. This has been characterized by a growing gap between these two modalities. Thus, for example, by 2015, each one contributed 50% to mobile network revenue (see Graph n.° 62).

Finally, at the mobile network user level, the average monthly revenue generated by a postpaid user for 2019 was 12.202 colones per month (practically no change compared to 2018), while in prepaid, it was 1854 colones (-17 % compared to 2018). In other words, 6.58 postpaid colones are generated per user per month for each colon in the prepaid mobile network (see Graph n.° 64). At this point, it is important to consider that there are differences in the collection of one mode or another that affect the calculation data of the monthly average revenue generated, since although for each prepaid minute, 4 postpaid minutes are consumed, as stated above, in the case of prepaid, users pays for what is consumed, while in postpaid, users do not need to consume to continue paying the minimum rate.

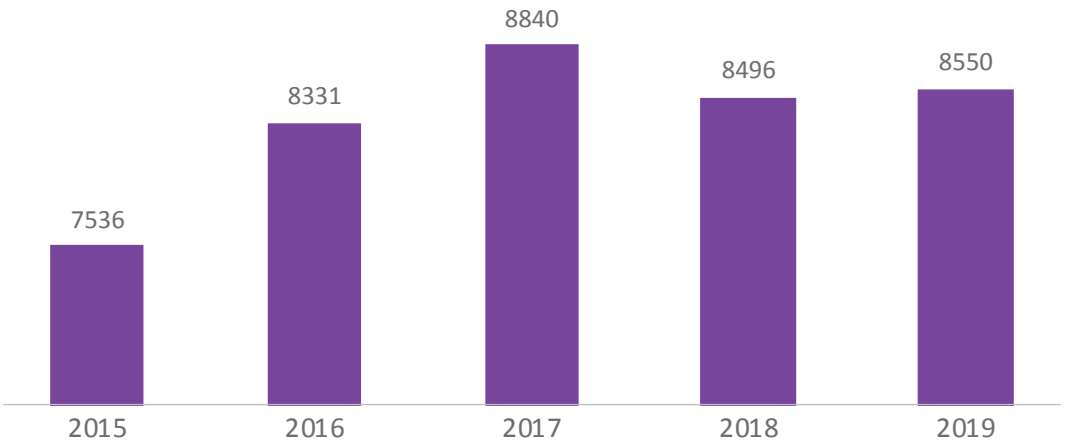
Portability

For 2019, 490 733 successful processes of number portability were carried out, registering an increase of 11.3% compared to 2018 (see Graph n.° 65).

It is important to note that the use of this facility has been increasing since 2014. It started with 2% of the total subscriptions until it reached practically 6% in 2019, which shows how users increasingly opt for this possibility of changing an operator, based on their preferences, while maintaining the same number, thus encouraging operators to offer better prices and promotions to capture this population.

Graph n.° 35. Costa Rica: Mobile telephony service subscriptions, 2015 - 2019

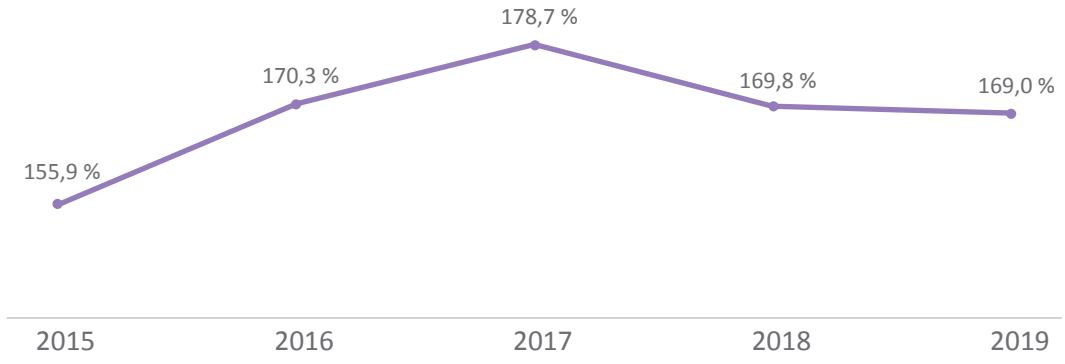
(annual figures in thousands)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 36. Costa Rica: Mobile telephony service subscriptions per 100 inhabitants, 2015 - 2019

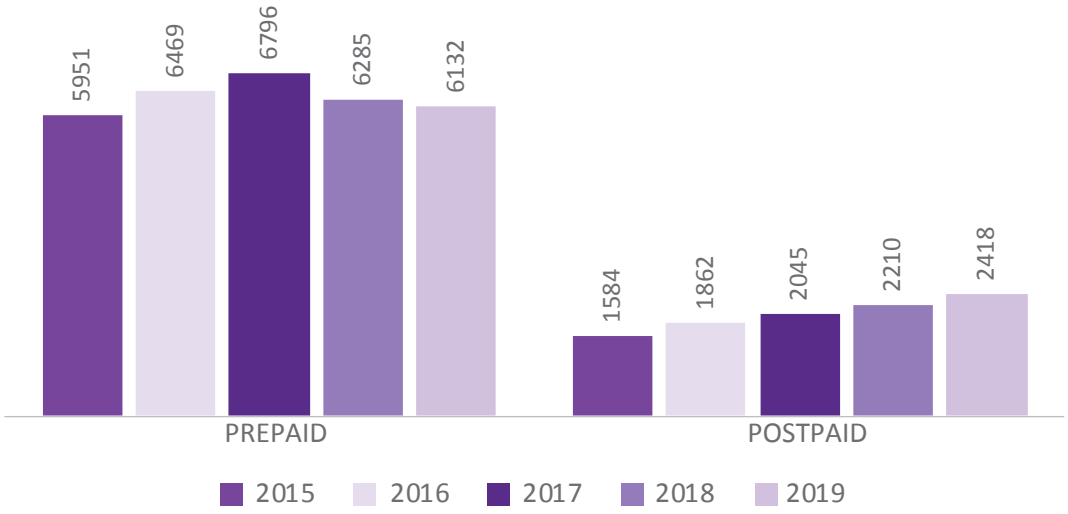
(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 37. Costa Rica: Mobile telephony service subscriptions per payment method, 2015-2019

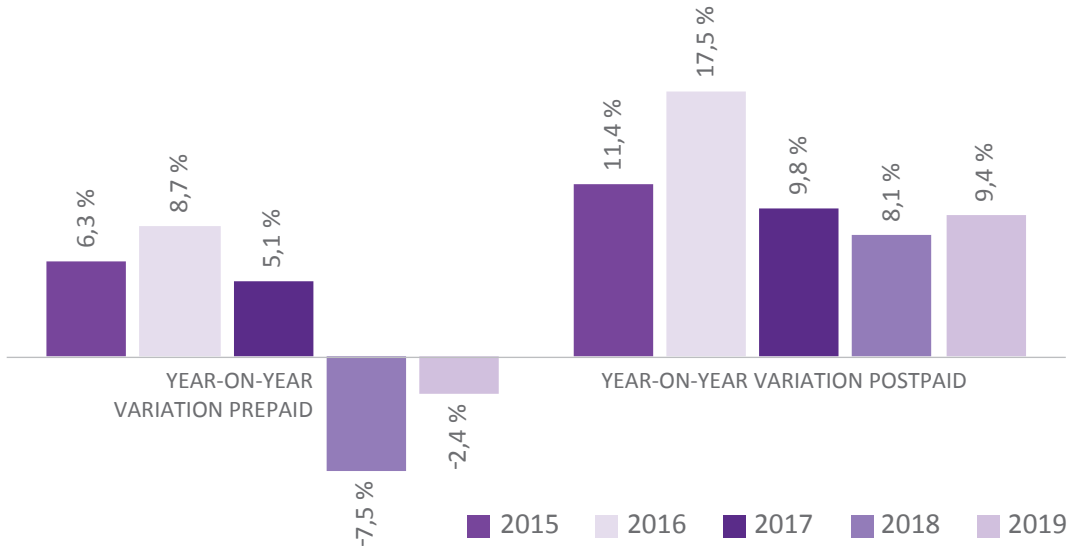
(annual figures in thousands)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 38. Costa Rica: Mobile telephony service subscriptions annual growth rate per payment method, 2015-2019

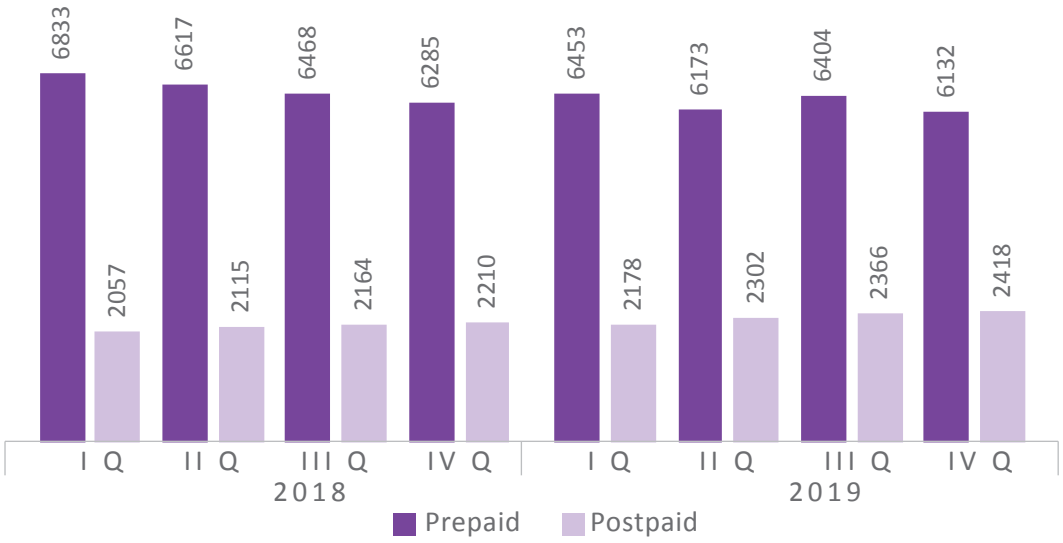
(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 39. Costa Rica: Mobile telephony service subscriptions per payment method, 2018-2019

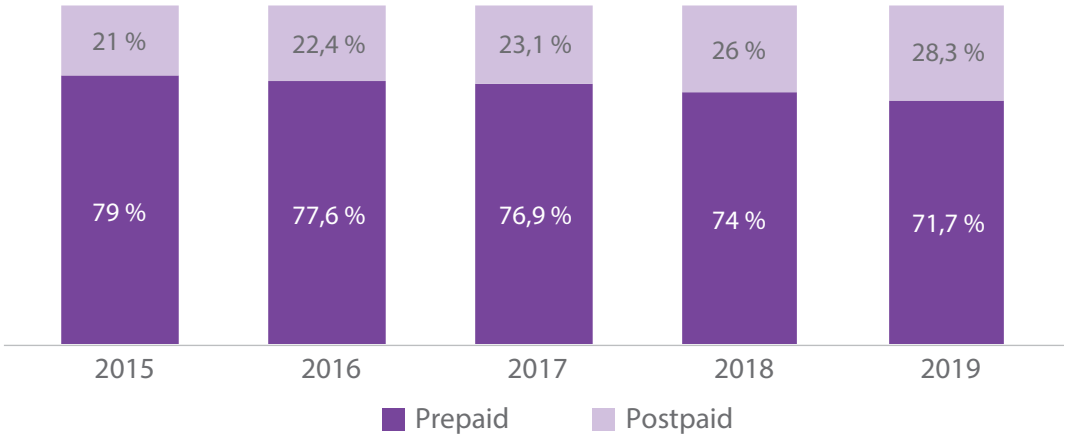
(quarterly figures in thousands)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 40. Costa Rica: Subscriptions distribution per payment method, 2015-2019

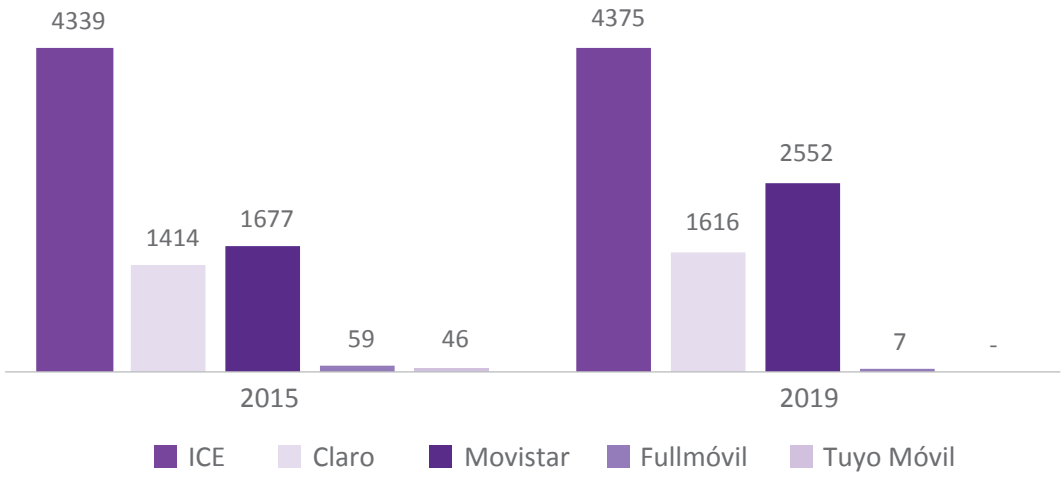
(figures in annual percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 41. Costa Rica: Mobile telephony service subscriptions by operator, 2015 & 2019

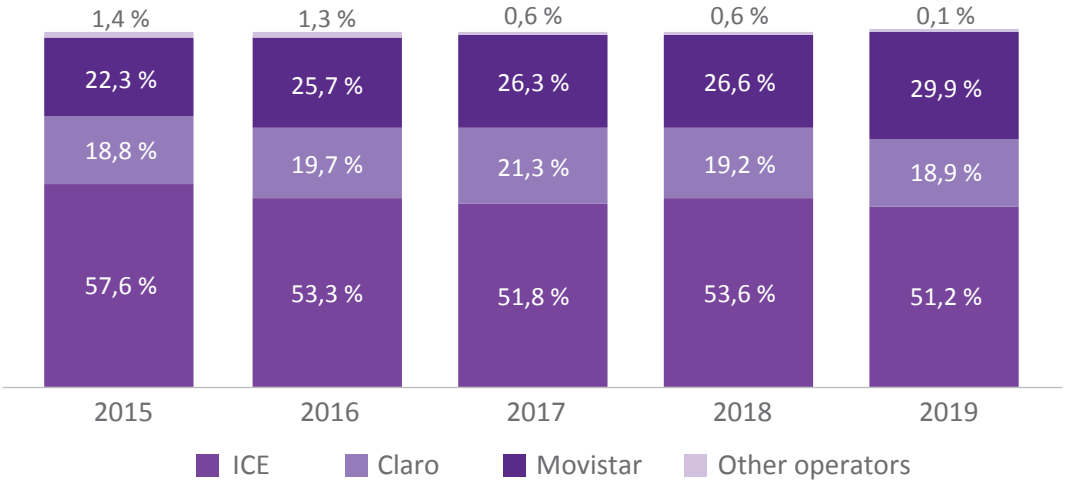
(annual figures in thousands)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 42. Costa Rica: Mobile telephony service subscriptions distribution by operator, 2015 - 2019

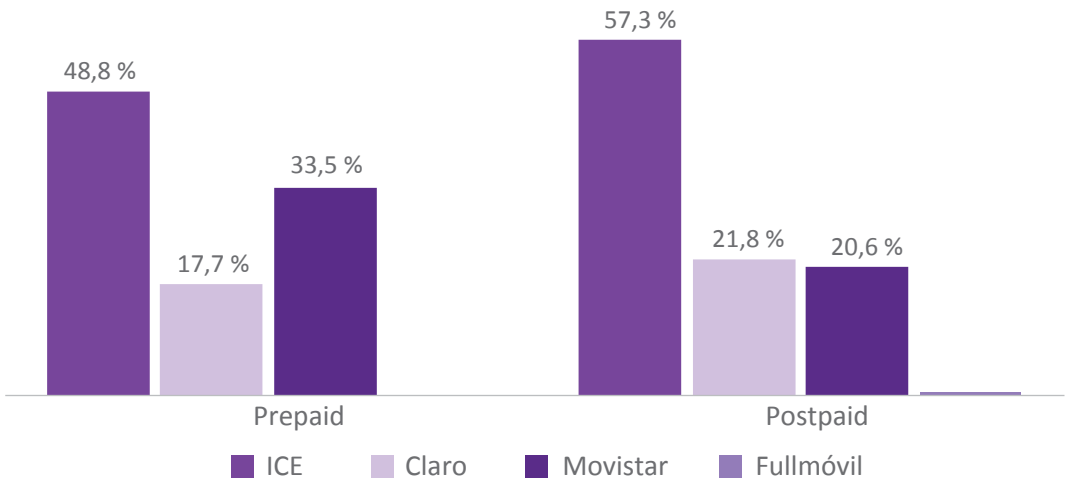
(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 43. Costa Rica: Mobile telephony service subscriptions distribution by operator per payment method*, 2019

(annual figures by percentage)

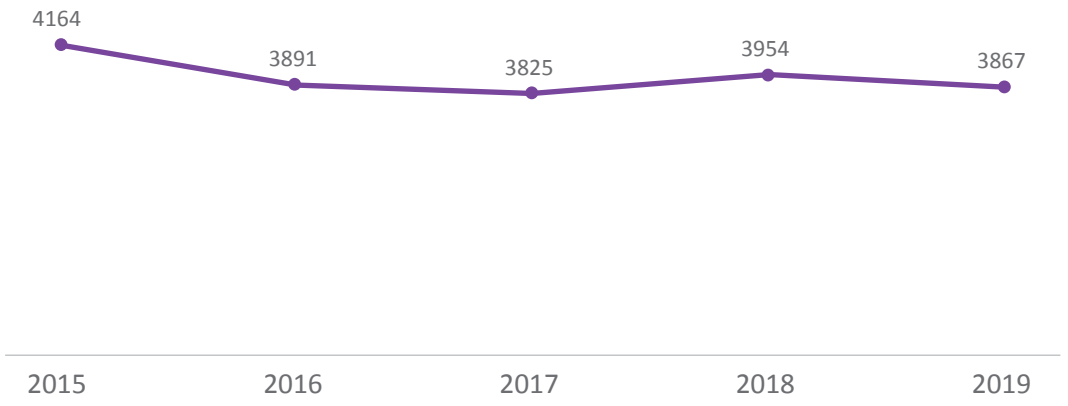


Note: *Fullmóvil markets SMS only through postpaid.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 44. Costa Rica: HHI evolution per year, 2015 - 2019

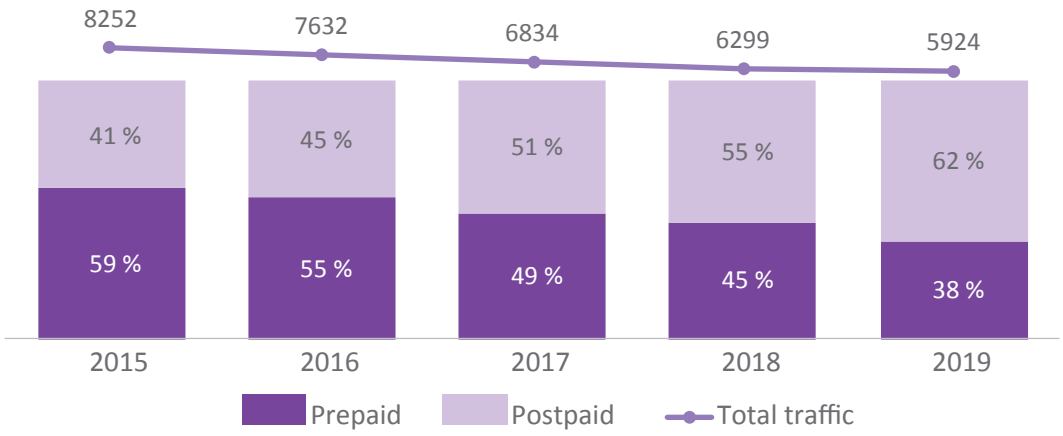
(figures in simple units)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 45. Costa Rica: Total traffic of mobile* telephony service and percentage distribution per payment method, 2015-2019

(figures in millions of minutes and percentages)

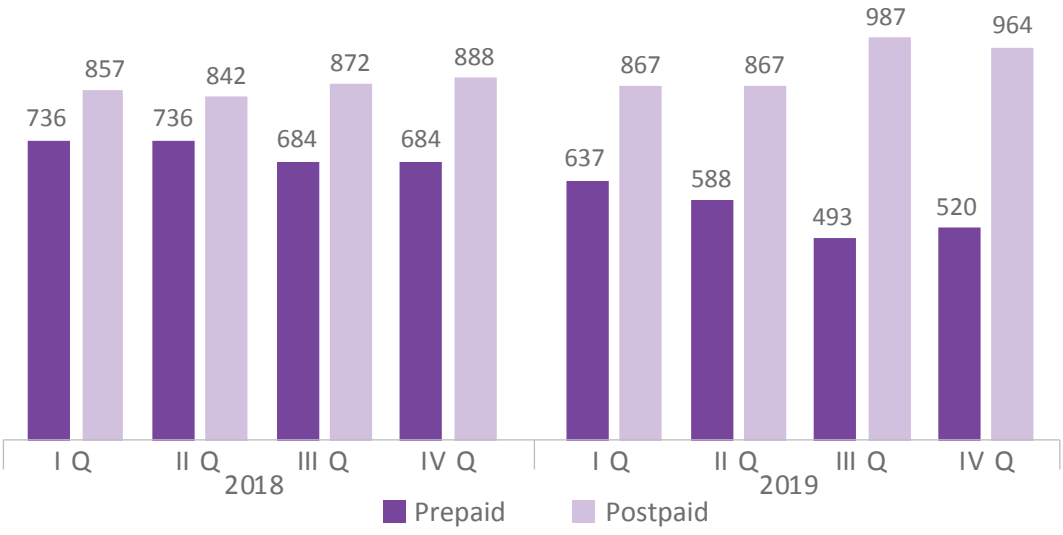


Note: *Includes only national and international voice minutes, excludes roaming.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 46. Costa Rica: Mobile telephony service total traffic per payment method, 2018 & 2019

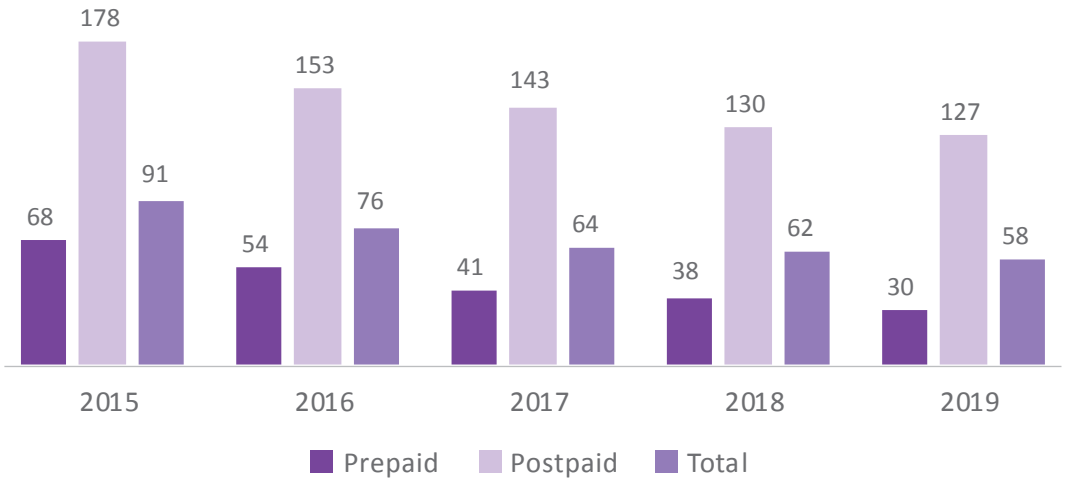
(quarterly figures in millions of minutes)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 47. Costa Rica: Monthly average of voice traffic by subscriber per payment method, 2015-2019

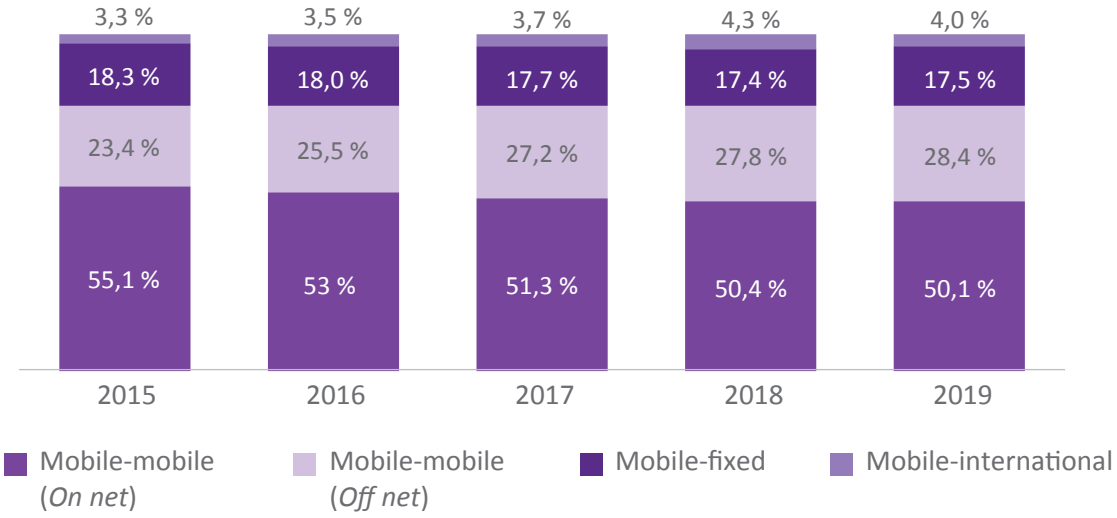
(annual figures in minutes per month and by subscriber)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 48. Costa Rica: Mobile telephony service total traffic distribution by destination*, 2015-2019

(annual figures by percentage)

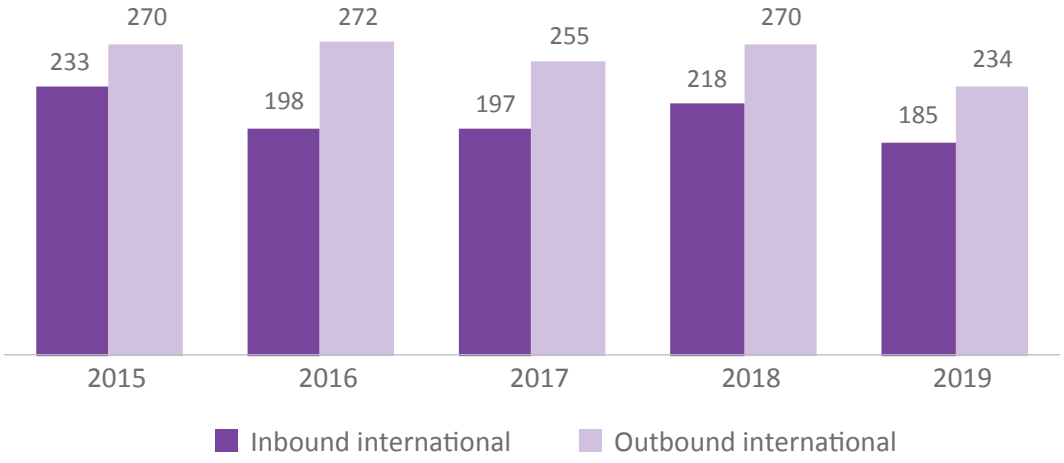


Note: *Includes only national and international voice minutes, excludes roaming.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 49. Costa Rica: Mobile telephony service total international traffic, 2015-2019

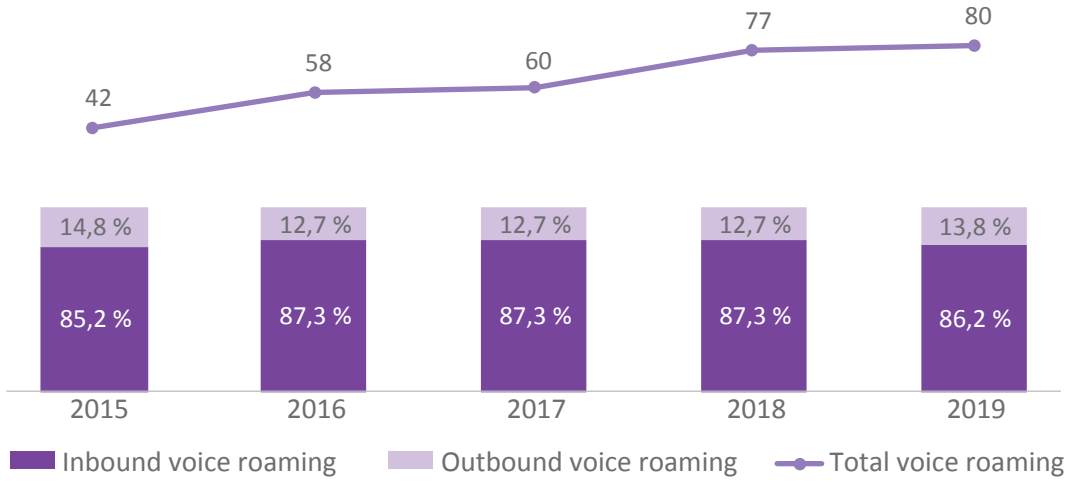
(annual figures in millions of minutes)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

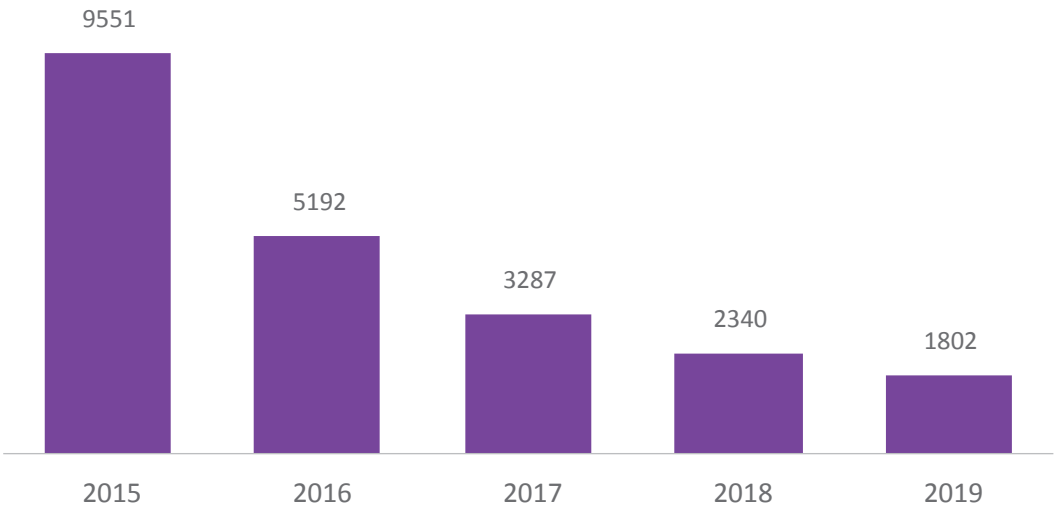
Graph n.° 50. Costa Rica: Mobile telephony service total and percentage distribution of voice roaming traffic, 2015-2019

(annual figures in millions of minutes and percentage)



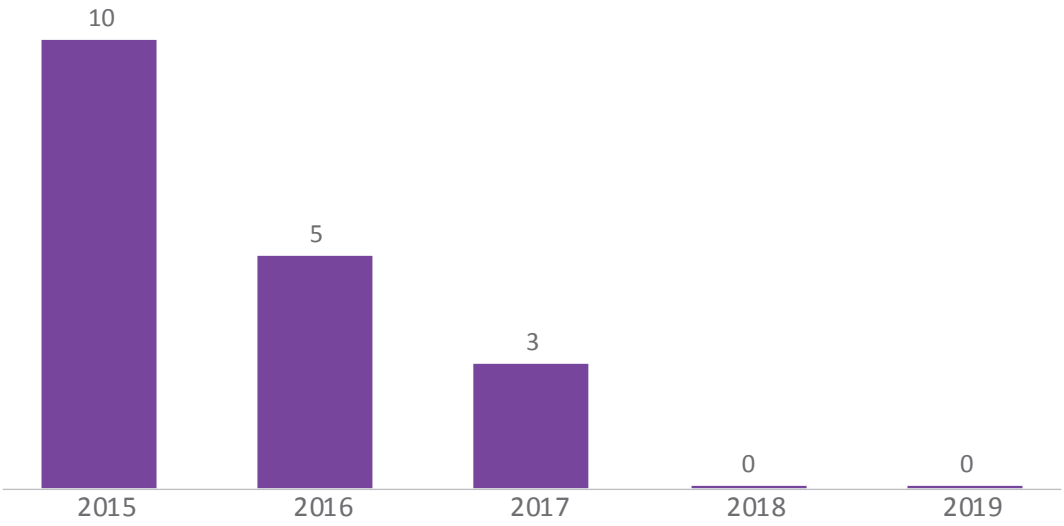
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 51. Costa Rica: SMS total traffic, 2015-2019
(annual figures in millions of messages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

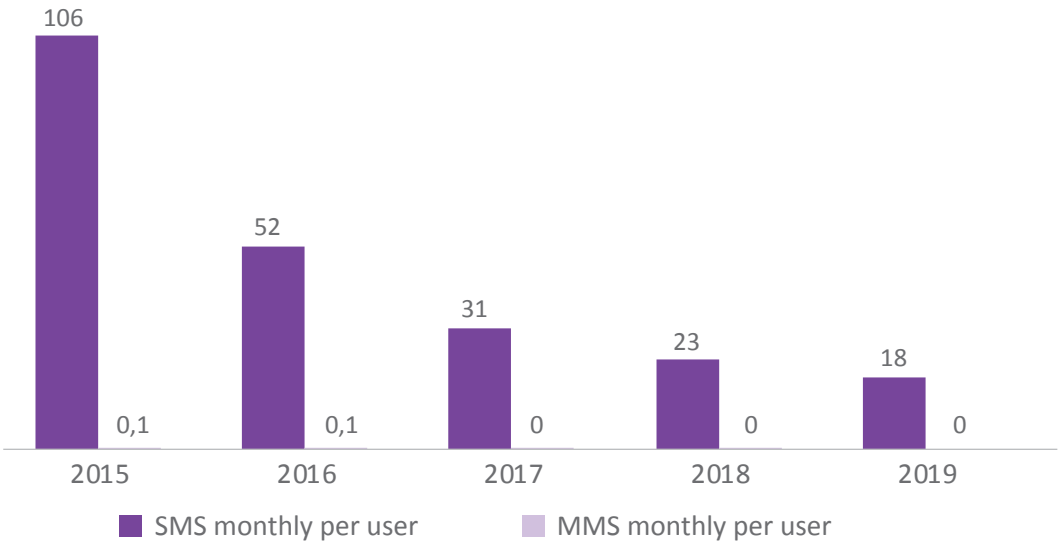
Graph n.° 52. Costa Rica: MMS total traffic, 2015-2019
(annual figures in millions of messages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 53. Costa Rica: Monthly average traffic per subscriber by type of messaging, 2015-2019

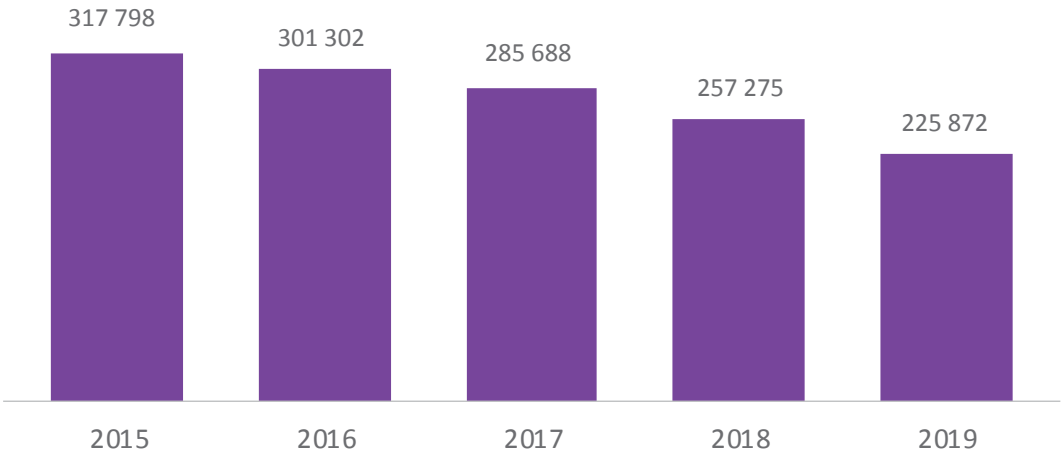
(figures by amount of monthly messages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 54. Costa Rica: Mobile telephony service total revenue*, 2015-2019

(annual figures in millions of colones)

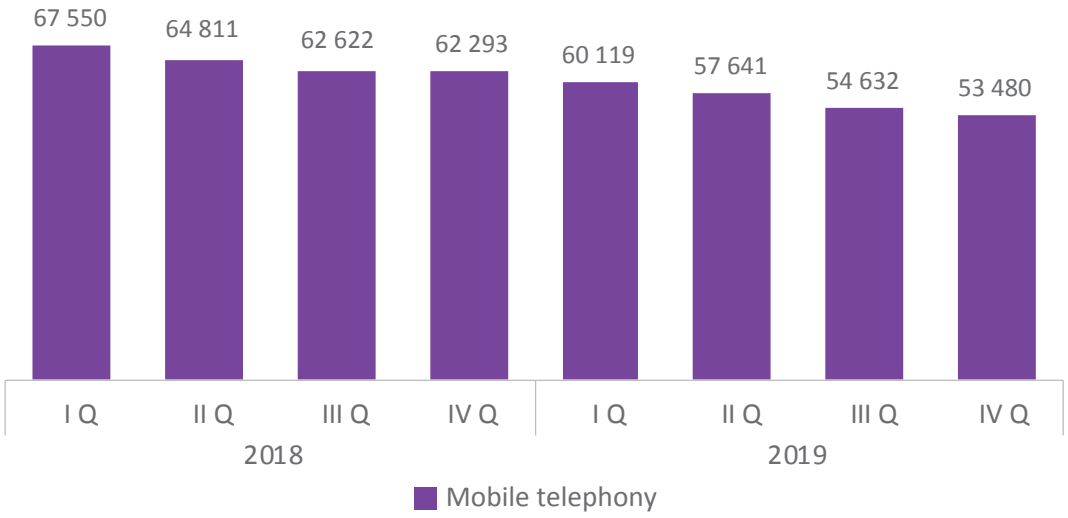


Note: *Does not include mobile data or roaming.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 55. Costa Rica: Mobile* telephony service total revenue, 2018-2019

(quarterly figures in millions of colones)

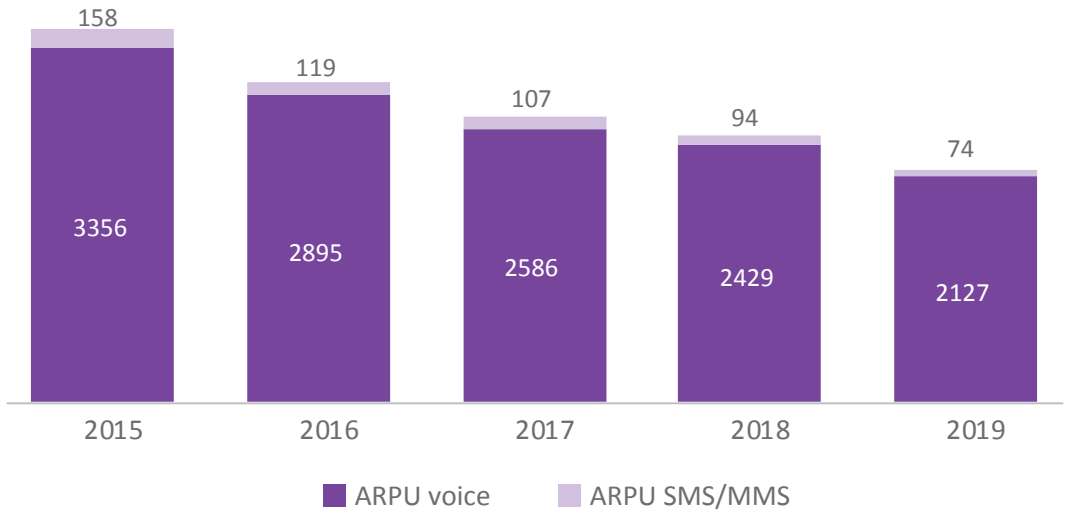


Note: *Does not include mobile data or roaming.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 56. Costa Rica: Monthly average revenue per mobile* telephony subscriber, by component, 2015-2019

(figures in colones)

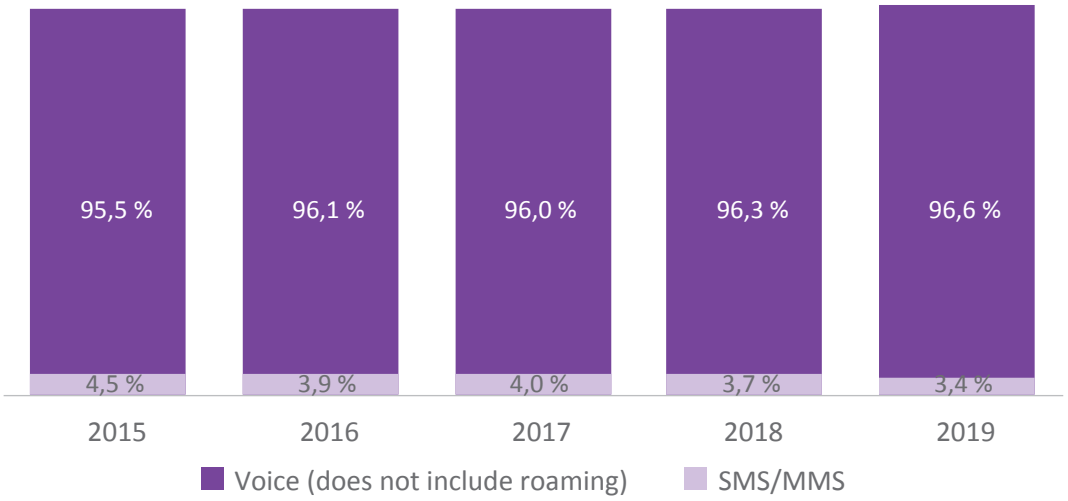


Note: *Includes revenue by mobile voice, messaging, does not include roaming.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 57. Costa Rica: Mobile telephony service total revenue distribution by component, 2015-2019

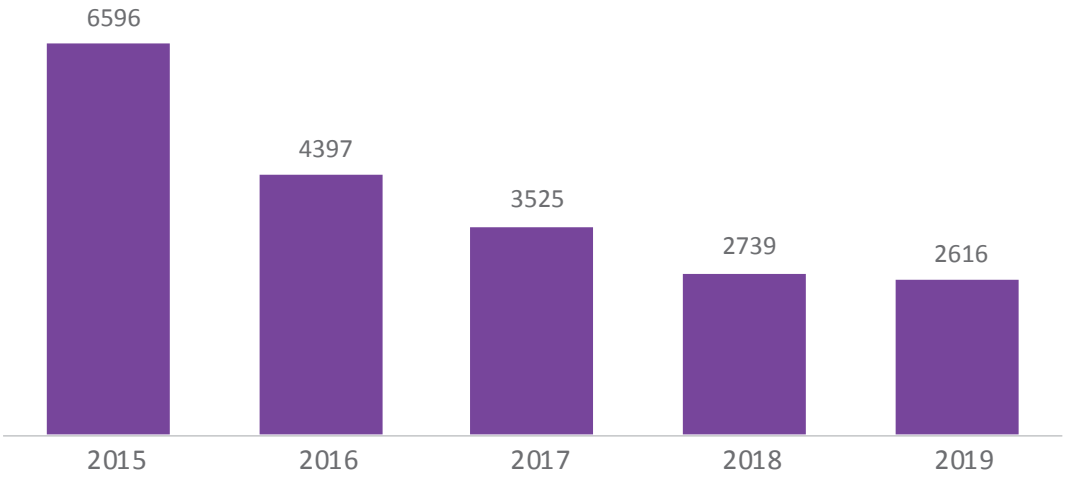
(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 58. Costa Rica: Voice roaming total revenue, 2015-2019

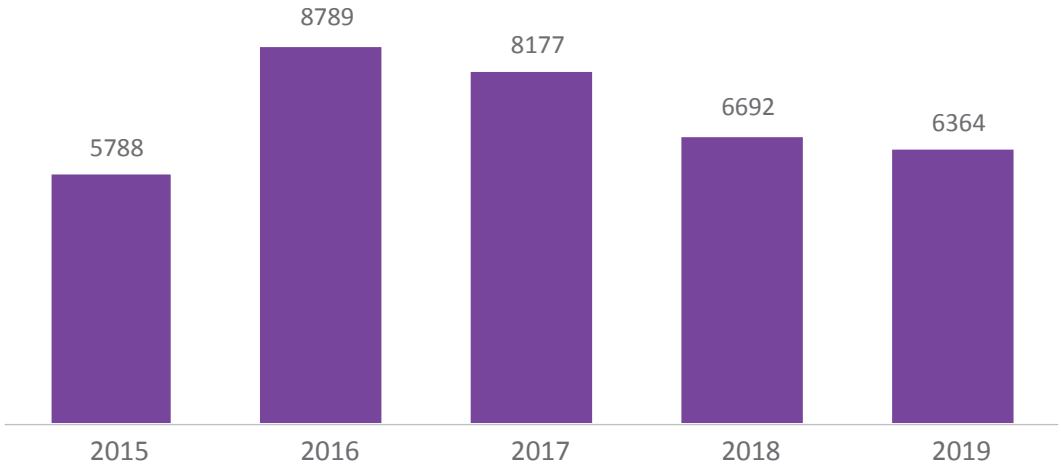
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 59. Costa Rica: SMS/MMS roaming and data total revenue, 2015-2019

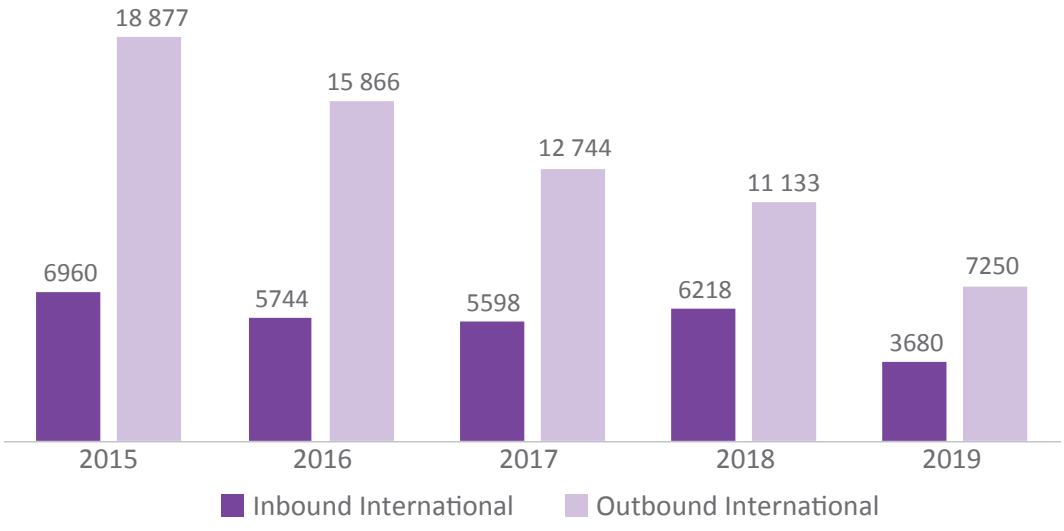
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 60. Costa Rica: International calls total revenue, 2015-2019

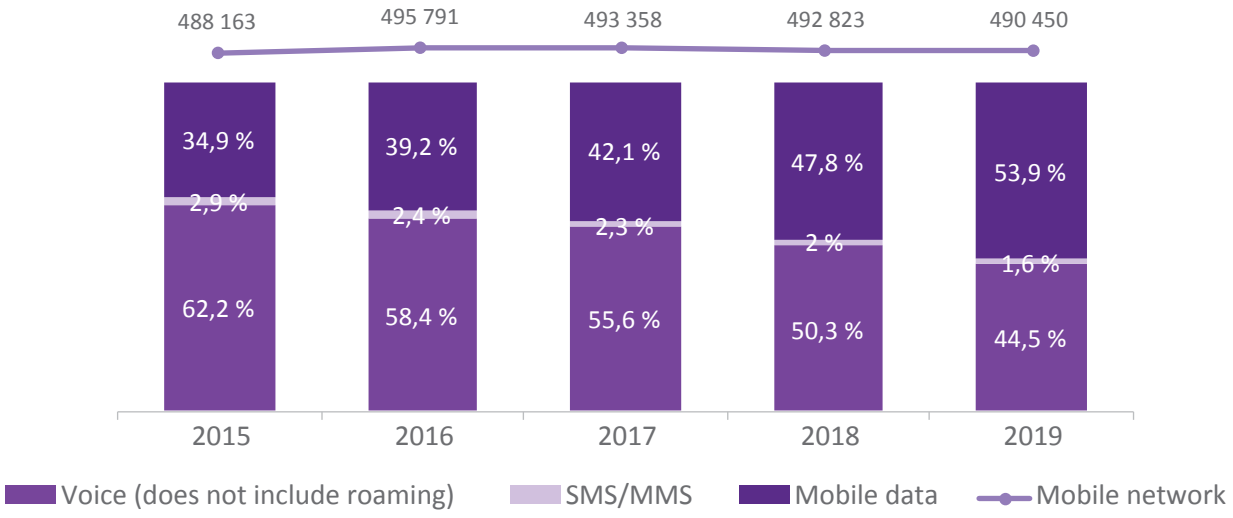
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 61. Costa Rica: Mobile network total revenue distribution by component, 2015-2019

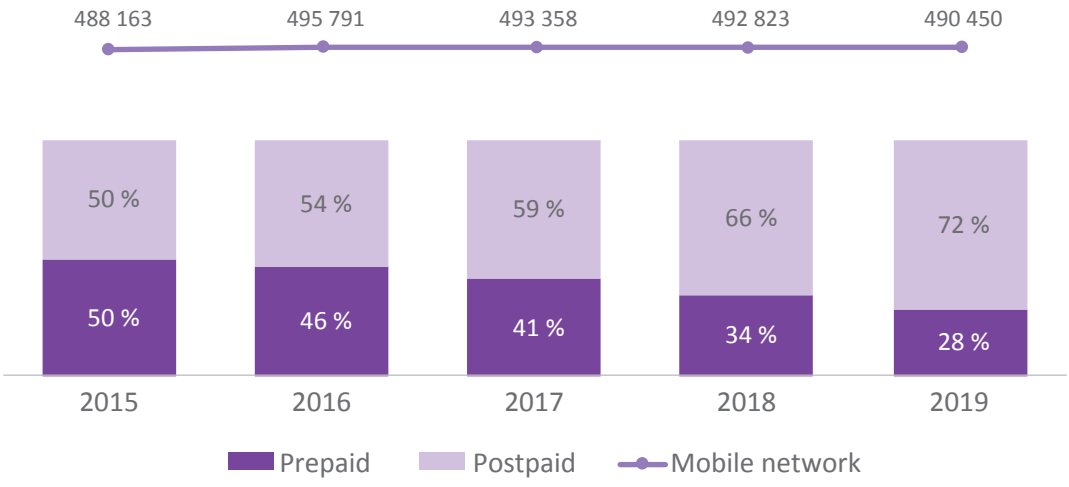
(annual figures by percentage and million colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 62. Costa Rica: Mobile* network total revenue distribution, per payment method, 2015-2019

(annual figures by percentage)

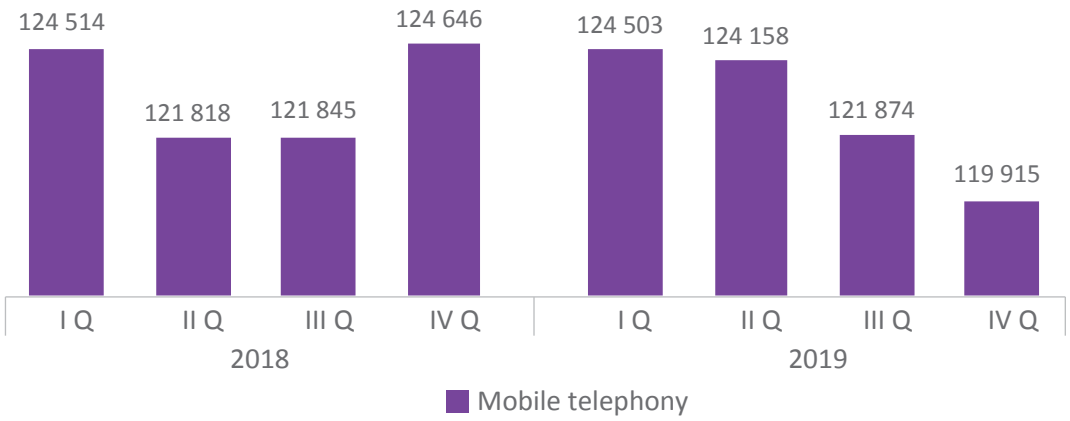


Note: *Includes revenue by mobile voice, messaging and mobile data, does not include roaming.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 63. Costa Rica: Mobile* network service total revenue, 2018-2019

(quarterly figures in millions of colones)

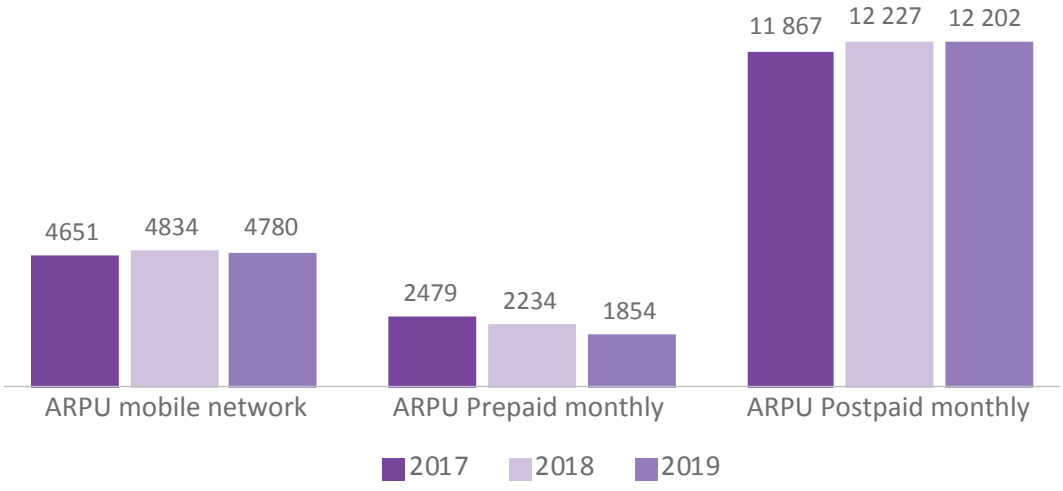


Note: *Does not include mobile data or roaming.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 64. Costa Rica: Monthly average revenue per mobile network subscriber* per payment method, 2016-2019

(figures in colones per month)

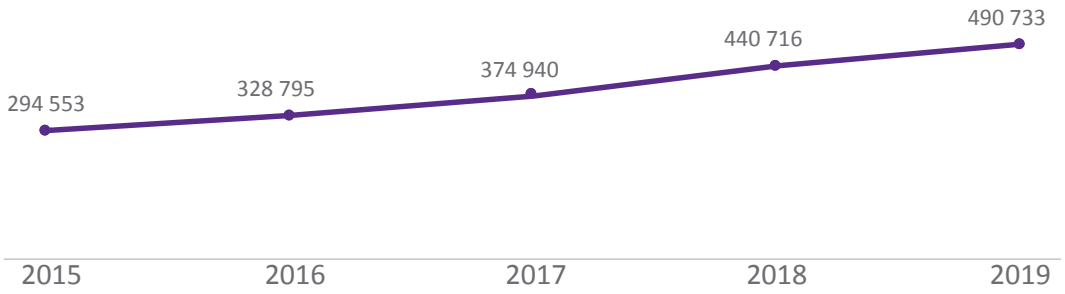


Note: *The average revenue per subscriber (ARPU) includes national and international inbound and outbound mobile voice revenue, national and international SMS/MMS and mobile data, excludes roaming revenue (voice, SMS/MMS, and data).

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 65. Costa Rica: Successful annual number of portability* 2015 - 2019

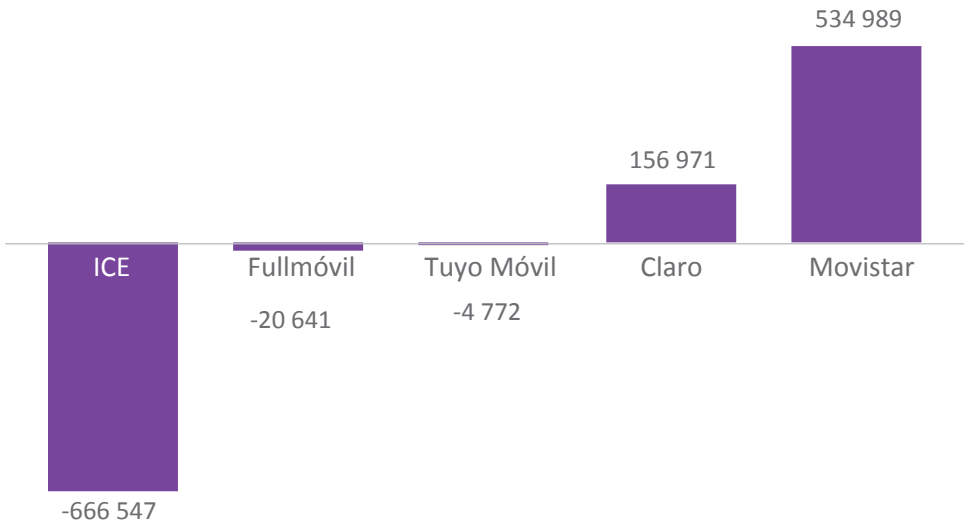
(annual figures)



Note: *Successful number portability: Amount of number portability processes that were finally activated in the new operator network.
Fuente: SUTEL, Dirección General de Mercados y Dirección General de Calidad, 2019.

Graph n.° 66. Costa Rica: Net* number portability processes by operator, December 2013 – December 2019

(accumulative figures)



Note: *Net number portability processes: Amount of imported minus exported number portability.
Fuente: SUTEL, Dirección General de Mercados y Dirección General de Calidad, 2019.





FIBER OPTICS WAS
THE GREATEST VARIATION
IN TECHNOLOGY SUBSCRIPTIONS
FROM 2018 TO 2019 WITH 494.4 %

DATA TRANS FER



Virtual meeting, Market General Director Team, SUTEL.

Mobile Internet Subscriptions

In the last five years, the mobile Internet service was positioned among the preferences of telecommunications users. This can be seen in Graph n.° 67, which shows the total subscriptions of said service at the end of each year for 2015-2019. Since the beginning of said period, more than 4 million mobile Internet subscriptions have been registered in the country, for an average annual growth in the period of 2.9% despite the decrease registered from 2018 to 2019, with a percentage change of -8.4%, closing 2019 with a total of 4 664 073 subscriptions.

Graph n.° 68 shows the comparative detail by quarter for 2018 and 2019. The percentage change between quarters is negative for each year, according to what is presented for the end of each year. The period with the greatest decrease in subscriptions was the first quarter with a percentage change of -11.8% (-9.2% for the second quarter, -7.6% for the third quarter, and -8.4% for the fourth quarter).

To broaden the comparison between 2018 and 2019, detail is shown by payment method and device. In other words, at the closing of each year, the total datacard/USB and cell phone subscriptions are compared, divided into prepaid and postpaid. Graph n.° 69 shows this comparison, where for datacard/USB, there is a percentage change of 12.8% from one year to the other. For postpaid, there is a percentage change of 7.5%, and for prepaid, a variation of -21%. In absolute values, for cellulars, 159 309 more subscriptions were quantified in postpaid and a decrease of 599.811 subscriptions in prepaid.

Reviewing the monthly behavior for 2018-2019, Graph n.° 70 shows the total subscriptions of mobile Internet service, making the distinction by payment method and device, which allows us to see how the trend was to increase postpaid subscriptions, with an average annual growth for this period of 0.9 % (412 455 more subscriptions at the end of December 2019 compared to January 2018).

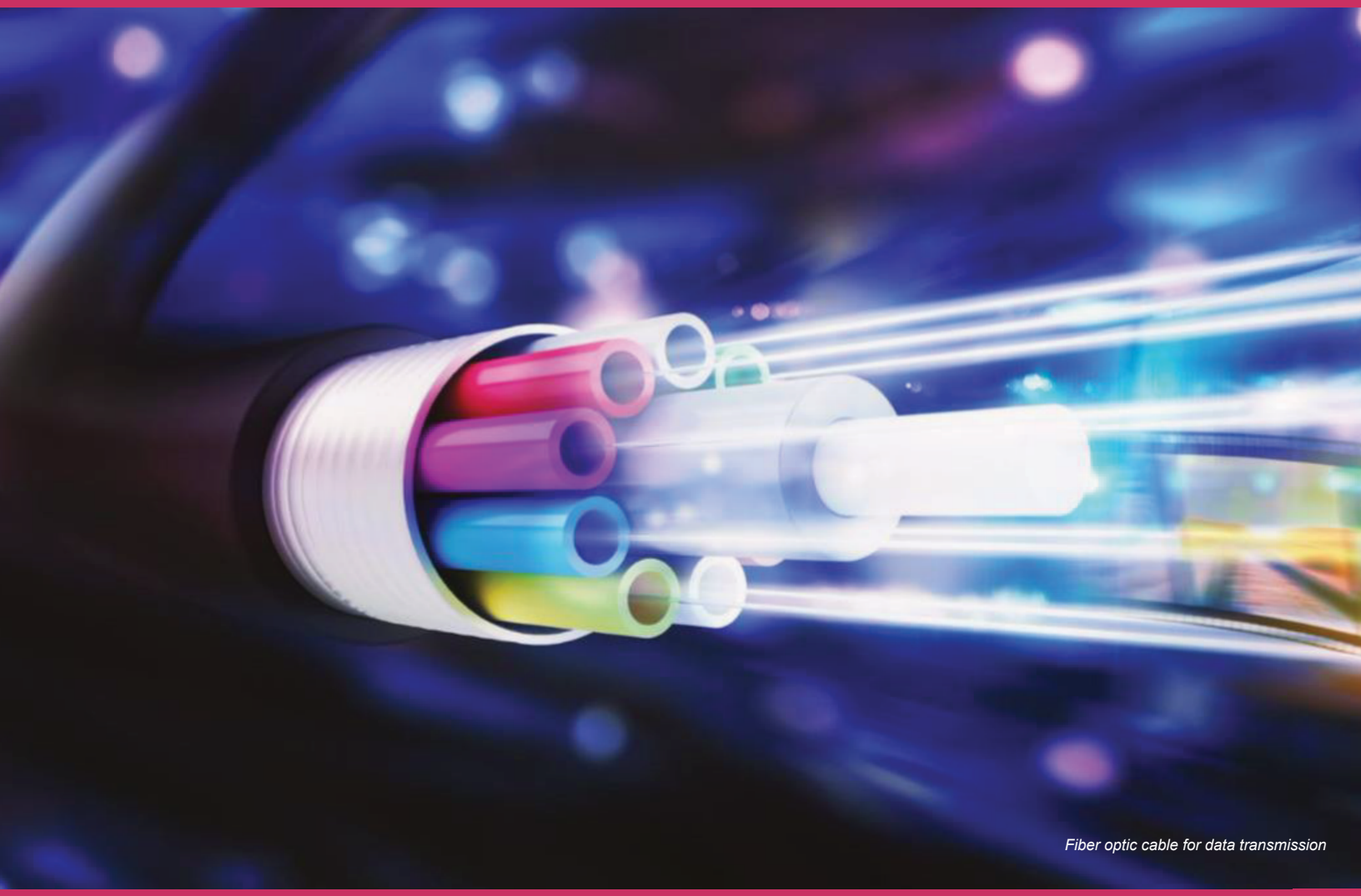
Graph n.° 71 details, for 2019, the percentage distribution by payment method and device in each quarter of the year. It can be seen how the mobile Internet connection via datacard/USB varies between 2.6% of the total in the first quarter and 2.8% in the fourth quarter. In postpaid, an increase from 46.2% in the first quarter to 48.9% in the fourth quarter is seen. Finally, for prepaid in the first quarter, it is observed that from 51.2% of total subscriptions, it went to 48.2% in the fourth quarter.

Next, to complement the analysis, a detail of the market share of each operator by payment method and device is examined for each quarter of 2019. Graph n.° 72 shows the distribution for operators that offer Internet connection via datacard/USB, where Telefónica appears for the first time and closes the year with 7.1%, while Claro closes with 14.6%, and ICE with 78, 3% of the total in subscriptions via datacard/USB.

Graph n.° 73 is similar to the previous one, except that it shows the market share for prepaid, where ICE has the highest share in the four quarters, closing with a 45.6% share, which represents 2.2 percentage points less than in the first quarter. However, compared to 2018, it represents an increase of 6.4 percentage points. For postpaid, the detail is shown in Graph n.° 74, where ICE closed the fourth quarter with 55.7% of total subscriptions, 1.1 percentage points less than in the first quarter, and 8.1 percentage points less compared to the end of 2018.

With the intention of expanding the detail for 2019, subscriptions according to the contracted speed are shown, distinguishing between payment and device.

Graph n.° 75 shows detail for datacard/USB subscriptions at year-end. Four speed ranges are shown, where subscriptions for the different offers by operators are grouped. In this case, it is the range between 5 Mbps and 8 Mbps that concentrates the largest number of subscriptions, 69.7% of the total, followed by the range of speeds less than or equal to 2 Mbps, with 15.7% of the total.



Fiber optic cable for data transmission

Graph n.° 76 shows the percentage distribution for prepaid, where the range from 5 Mbps to 8 Mbps is the one with the highest number of subscriptions,

62.6 %. Then, Graph n.° 77 shows the distribution by speed for postpaid subscriptions, where four speed ranges are observed to group the different offers. The one with the highest number of subscriptions is the range from 5 Mbps to 8 Mbps with 45.7% of the total, followed by the range from 8 Mbps to 15 Mbps with 22.5%, then the range from 2 Mbps to 5 Mbps with 19.9%, and the range with speed of 2 Mbps or less with 11.9% of total subscriptions.

As a complement to the study of the mobile Internet service in 2019, the evolution of the market concentration index (Herfindahl-Hirschman index or HHI) is shown.

Graph n.° 78 presents the HHI for total mobile subscriptions in 2015-2019. The decrease in market concentration between 2018 and 2019 is 55 points, calculating 3847 points in 2019, which indicates a highly concentrated market according to what the SUTEL defines in resolution RCS-082-2015. Graph n.° 79 shows the proportion of mobile Internet subscriptions versus the number of fixed Internet subscriptions, where a gradual decrease can be seen in the period, from 7.4 times in 2015 to 5.2 times in 2019.

Finally, Graph n.° 80 presents the detail of the number of subscriptions per 10 inhabitants at the end of December of each year in the period 2015-2019. For 2019, given the decrease observed in prepaid subscriptions, a penetration of 92.2% is calculated, a decrease of 2.5 percentage points compared to the value of 2018.

Mobile Internet Revenue

The movement of mobile Internet service revenues shows interesting aspects given the increase observed in postpaid subscriptions. To start the review, Graph n.° 81 presents the total revenue reported by operators for each year of the 2015-2019 period for the data provided at that time[30]. However, since the beginning of said period, revenue growth has been shown for every year.

For 2019, the total amount is 264 578 million colones, an absolute growth of 29 044 million colones compared to 2018, or a percentage change of 12.3%. For the entire period, an average annual growth in revenue of 11.6% is obtained.

Graph n.° 82 shows the comparison by quarter for years 2018 and 2019. The percentage change between quarters of each year is positive despite the change shown in total subscriptions, which is explained later in this section when reviewing the composition of revenue by payment method. The first three quarters of the year show double-digit revenue increases, with the second quarter showing the greatest variation, 16.7%. The fourth quarter does not maintain the trend, and a quarterly growth of 6.6% is calculated.

To extend the comparison between 2018 and 2019, the detail by payment method and device is presented, that is, comparing the annual totals of datacard/USB revenues and cellular revenues divided by prepaid and postpaid. Graph n.° 83 shows that for the services provided via datacard/USB, the percentage change is 4.7% (409 million colones); for prepaid the percentage change is -15.6% (-13.527 million colones), and for postpaid, 29.5%, which is an absolute increase of 41 892 million colones, a reflection of the change in subscription behavior shown previously.

Graph n.° 84 specifies the monthly behavior of mobile Internet service revenue by payment method and device, for 2018-2019. This allows to see that during this period, the trend is growing for postpaid revenue (average annual growth of 1.9%). For datacard/USB, the average annual growth is 0.5%, and for prepaid, there is a decrease throughout the period, from 9.001 million colones in January 2018 to 5.798 million colones in December 2019.

Graph n.° 85 shows the detail for 2019 in terms of the percentage distribution by payment method and device in each quarter of the year. It is observed in said graph that mobile Internet revenue by datacard/USB represent 3.4% of the total in the first, second, and third quarters, and 3.6% in the fourth quarter. In postpaid, there is a gradual increase, starting with 66.6% in the first quarter, 68.5% in the second quarter, 71.6% in the third quarter, and ending the year with 71.3%. For prepaid, there is a reduction from 30.0% in the first quarter to 25.2% in the fourth quarter.

Below, to complement the review of mobile Internet service revenues, graphs by speed are shown for each payment method and device. Graph n.° 86 shows this detail for revenue associated with datacard/USB, with four speed ranges. The range from 5 Mbps to 8 Mbps is the one that covers the most revenue, approximately 47.3% of the total for the year. The range with connections of 2 Mbps or less represents 26.6%, from 2 Mbps to 5 Mbps by 17.7%, and finally, from 8 Mbps to 15 Mbps with 8.3%. Graph n.° 87 presents another circular diagram to show the distribution by speed in prepaid, where 56.5% of revenue comes from connections at speeds between 5 Mbps and 8 Mbps. For postpaid, Graph n.° 88 shows 45.9% of revenue is obtained from subscribers with plans with speeds that range between 5 Mbps and 8 Mbps, 21.5% with speed range from 2 Mbps to 5 Mbps, 17% for plans with speeds of connection between 8 Mbps and 15 Mbps, and finally, 15.7% of subscribers with speeds of 2 Mbps or less.

After showing the detail by speed, in Graph n.° 89, the average revenue per monthly user for 2019 is presented. The behavior is shown for each payment method and for datacard/USB. For prepaid, the trend is downward during the year, with 281 colones less per user in December 2019 compared to January of the same year. However, in datacard/USB, when comparing December against January, an increase of 9 colones per user is obtained, and in postpaid, the increase is of 253 colones per user. This explains the variations shown for total revenue and subscriptions, for example, in postpaid, where revenue obtained increases according to the increase in subscribers.

[30] In 2018, corrections sent by Claro on data provided in 2018 are included.

Mobile Internet Traffic

The increase in the postpaid offer had a direct effect on the amount of traffic on the mobile network for 2019. Graph n.° 90 shows the total traffic in TB for mobile Internet service from 2015 to 2019. By the end of 2019, a total of 284 794 TB is obtained, an increase of 15% compared to the previous year, an increase that, as discussed below, is associated with a greater demand for data in postpaid. Throughout the period, an average annual growth of 21% is calculated.

Next, a quarterly comparison is presented for 2018-2019 in Graph n.° 91. This graph shows that the traffic values of each quarter increased in 2019 by 10.9% in the first quarter, 7.9% in the second quarter, 16.8% for the third, and the year closed with an increase of 24.7%.

As a complement to what is shown, Graph n.° 92 presents, for 2018-2019, the detail by payment method and access device in accordance with what was explained for subscriptions and revenue. This graph, as in prepaid mode and in datacard/USB, includes traffic decreases in the mentioned period (4088 TB in prepaid, 6595 TB in datacard). However, for the postpaid mobile Internet service, the percentage change was 30.1%, which in absolute numbers represents an increase of 31 999 TB.

To extend the analysis, in Graph n.° 93 the monthly detail of traffic by payment method and device for 2018-2019 is shown. It can be seen how in this period the trend is increasing for total traffic; however, a positive percentage change is observed only for postpaid traffic (average annual growth of 2.4%). For datacard/USB and prepaid, negative percentage changes were registered (average growth for the period of -0.5% and -3.2%, respectively).

Graph n.° 94 shows the detail of each payment method and datacard/USB, for each quarter of 2019.

Specifically, datacard traffic accounted for 4.0% of the total in the first quarter, dropping to 3.8% in the second quarter, then to 3.5% of the total in the third quarter and the fourth quarter closed with 3.2% of total traffic. A similar behavior occurred for prepaid, which went from 12% in the first quarter to 9.8% in the fourth quarter. In postpaid, there was an increase in each quarter, 84% of the total in the first quarter. This proportion increased to 87% in the fourth quarter (in absolute values the mentioned change is 9118 TB).

After having reviewed traffic for 2019 by payment method and device, a review of the percentage distribution by speed at the end of 2019 is made. In Graph n.° 95 this distribution for datacard/USB is presented. It is observed that in the range from 2 Mbps to 5 Mbps, 58.5% of data consumption is concentrated under this mode of service, 28.6% in the speed range of 2 Mbps or less, 7.9% in the range from 5 Mbps to 8 Mbps, and finally, 5.1% in the range from 8 Mbps to 15 Mbps.

For prepaid, Graph n.° 96 shows that there are only two ranges, where 51.6% of traffic is consumed in the range from 8 Mbps to 15 Mbps, and the remaining 48.4% in the range from 5 Mbps to 8 Mbps. Then, for postpaid, it is observed in Graph n.° 97 that the highest data consumption at the end of 2019 is registered in the speed range of 5 Mbps to 8 Mbps (57.7%) and then in the range of 8 Mbps to 15 Mbps (25.3%). The last two ranges (speeds up to 5 Mbps) combined represent 17% of total traffic.

After showing the detail by speed, in Graph n.° 98, the average traffic in GB per user and per month during 2019 is presented. The behavior of this variable in prepaid and postpaid and for datacard/USB can be seen in the graph. In postpaid, the composite percentage change for the period is 2.4%; for prepaid, 0.7%, and for datacard/USB, -1.5%.

Finally, in absolute values at the end of the year, there is a consumption of 6.28 GB per user per month in postpaid mobile Internet, 0.73 GB per user per month in prepaid, and 3.59 GB per user per month on datacard/USB. In general, each mobile Internet user, regardless of the type of service, consumed a monthly average of 3.30 GB in 2019.

Fixed Internet Subscriptions

In 2015-2019, there is an increase in the demand for fixed Internet service. A reflection of this is the number of subscriptions that operators reported to SUTEL in that period. Graph n.° 99 allows to appreciate the detail. It is observed that at the end of 2019, 904 734 subscriptions were registered, a percentage change compared to 2018 of 8.4% and an average annual growth for the entire period of 12.8%.

To expand on this increase in the number of subscriptions, in Graph n.° 100, the comparison by quarter for the 2018-2019 period is shown. It is observed that when comparing each quarter, there is a positive percentage change, 10.6% compared to the first quarter, 8.2% in the second, 9.5% in the third, and 8.4% in the fourth.

As a complement to the review of the 2018-2019 period, Graph n.° 101 exhibits the monthly behavior of that period, with a continuous line for the accumulated total of subscriptions per month and a bar graph to represent the monthly variation. It is clear that the rate of change per month has only been negative in three months of the period, maintaining positive growth throughout the period.

Continuing with the analysis of subscriptions in 2018-2019, a comparison is made by access technology. In this case, there is access via HFC networks or by cable, by copper networks or xDSL technologies, last mile access over fiber optic networks, and finally, a fourth group is added, where wireless technologies are added with other different to those first three and others not accurately reported. For this, Graph n.° 102 shows the variations for each technology, comparing the closing of each year of the indicated period. This way, for networks over coaxial cable there was a positive percentage change in the number of subscriptions reported, for 10.8%; for copper networks, -30.3%; for fiber networks a positive variation of 494.4%; and finally, for wireless technologies/others, a percentage change of -26.8%.

Regarding a monthly review of subscriptions for the 2018-2019 period by technology, Graph n.° 103 shows the cumulative total of subscriptions for the access technologies listed above. The total increase is observed from January 2018 to December 2019, and the average growth for the period is obtained for each of these, 1.1% for cable networks, -1.5% for copper, 8.1% for access over fiber optics, and -3.1% for the group of wireless technologies / others.

To follow the review by technology, there is Graph n.° 104, which shows the percentage distribution by quarter for each technology for 2019. This graph shows correspondence with what was previously presented. For example, in the fourth quarter of 2019, the share of each technology within total subscriptions was: 65.3% for cable, 21.2% for copper, 12.9% for fiber, and 0.5% for wireless/others, where the change in share of fiber networks from 2018 to 2019 stands out, increasing by 10.5 percentage points

Finally, Graph n.° 105 presents the number of operators that reported subscribers in each of the technologies, highlighting that 23 operators are competing in the fixed Internet retail market using fiber optic platforms.

Following, the number of subscriptions by contracted speed ranges is reviewed. In the first place, Graph n.° 106 makes an annual comparison for the period 2018-2019, where speed ranges are clarified, and in 2019, these ranges are expanded to have greater clarity about how subscribers move at higher speeds. However, for this graph, the new speed ranges are grouped to make them comparable with 2018, and it is clarified that in 2019, the range from 2 Mbps to 10 Mbps is the range from 2 Mbps to 8 Mbps, and the range from 10 Mbps to 100 Mbps would be 8 Mbps to 100 Mbps.

Thus, the following annual variations are obtained for each speed range: subscriptions greater than 100 Mbps, 39%;

subscriptions in the range of 10 Mbps to 100 Mbps, 170%; subscriptions in the range of 2 Mbps to 10 Mbps, -48%; and for subscriptions with speeds lower than 2 Mbps, -18%. To further expand on this, Graph n.° 107 shows the monthly subscriptions for 2018-2019, in each of the indicated speed ranges; the decrease in ranges from 2 Mbps to 10 Mbps and speeds below 2 Mbps can be seen, which show average growth for the period of -3.2% and -1.0% respectively. On the other hand, speed ranges from 10 Mbps to 100 Mbps and more than 100 Mbps show compound growth of 9.3% and 7.3% respectively.

The above shows a change in the behavior of subscriptions with respect to the contracted speed. It is necessary to show this detail only for 2019, where the speed ranges are expanded, going from four ranges to eight. Graph n.° 108 presents the detail of subscriptions in each of these ranges on a monthly basis for 2019. The number of subscriptions for lower speeds decreases from January to December. More precisely, ranges from 5 Mbps to 8 Mbps, from 2 Mbps to 5 Mbps, and for speeds below 2 Mbps have an average growth for the period of -5.6%, -3.5%, and -1.1%. The opposite occurs for the other ranges, which all show increases. The highest variation is that of speeds greater than 100 Mbps, with an average annual growth of 34.2%. In absolute terms, the speed range between 30 Mbps and 50 Mbps shows the highest number of subscriptions as of December 2019 compared to January 2019, an increase of 87 859 subscriptions.

Finally, to close the study of subscriptions by speed, Graph n.° 109 allows to analyze the percentage detail at the end of each quarter, where the variations explained above are reflected and the relative share of each speed range in each quarter is evident. In the fourth quarter, the range from 8 Mbps to 15 Mbps is the one that covers the highest number of subscriptions with 28.8%, followed by the range of speeds below 2 Mbps with 17.9%.

Here are some general elements regarding fixed Internet access subscriptions. To begin, Graph n.° 110 shows the number of companies operating in each speed range. Thus, as can be seen, the offer is expanded, with more than 20 providers in all ranges, except for speeds greater than 100 Mbps.

In Graph n.° 111, the measurement of market concentration (HHI) for fixed Internet service in 2015-2019 is observed. The decrease between 2015 and 2019 is 758 points, closing the period with 2367 points and a downward trend.

Continuing with the review, Graph n.° 112, shows the market share for fixed Internet at the end of 2019. ICE is observed with a market share of 33.5%, Cabletica with 21.8%, Tigo with a market share of 19.7%, and Telecable with a 19.2% share, which leaves 5.8% of total subscribers for the remaining companies that reported data in 2019. Graph n.° 113 presents the penetration of fixed Internet, where a year-over-year growth is observed, closing 2019 with 17.9%. In a complementary way, Graph n.° 114 shows the penetration of the fixed Internet service per household, a figure that increased by 3.1 percentage points compared to 2018, closing with 57.3%.

To close with the general elements related to fixed Internet subscriptions, Map n.° 1 -heatmap- shows how the total subscriptions are distributed by canton at the end of 2019. Said graph shows seven scales to show the number of subscribers per canton, the first of which has 13 cantons with less than 2.400 subscriptions; the second one, 12 cantons with more than 2400 subscriptions, but less than 4000; a third rank with more than 4000 subscriptions, but less than 5900 in 12 other cantons; the fourth one has between 5900 and 9700 subscriptions for 12 cantons, followed by a fifth rank that groups 10 cantons with more than 9700 subscriptions, but less than 14 200; the sixth scale between 14 200 and 21 700 subscriptions groups 12 cantons; and finally 10 cantons with more than 21 700 subscribers and less than 82 200. In this last range, it is indicated that Cartago, Heredia, Desamparados, Alajuela, and San José have more than 35.000 subscriptions.

Map n.° 2 is a heat map showing the relationship of subscriptions by canton with the total population for each canton, in other words, the penetration of fixed Internet by canton. In the range of highest penetration, 12 cantons with penetration values greater than 22.5% can be seen, with Heredia, Santa Ana, Montes de Oca, Garabito, and Escazú as the 5 with the highest penetration. At the same time, in the last range, there are 14 cantons with penetrations lower than 11.8%, namely: Poas, Nandayure, La Cruz, Coto Brus, Hojancha, Guacimo, Buenos Aires, Valverde Vega, Alvarado, Talamanca, Matina, Guatuso, Upala, and Los Chiles.

Fixed Internet Revenue

Regarding revenue registered for fixed Internet service, a positive percentage change is shown in Graph n.° 115 as well as an upward trend for 2015-2019. The average annual growth for the entire period is 13.4%, and the variation with respect to last year is 8.8%.

Graph n.° 116 presents the quarterly comparison of revenue in 2018 and 2019. In each period there is an increase in revenue, and the third quarter exhibits a greater increase with 12.9%.

The analysis continues for 2018-2019, and in Graph n.° 117, the monthly behavior of revenue for said period is presented, with a continuous line for the accumulated total of revenue per month and a bar graph to represent the monthly variation. The correspondence of the monthly variations and their effect on the total is observed, although it is evident that the trend throughout the period is positive.

The detail by technology is then presented for the same period. In Graph n.° 118, the total revenue for each of the technologies previously mentioned in the subscription section is shown. In cable and fiber optic networks, there is an increase from 2018 to 2019, where a 118.4% variation in fiber optic subscriptions stands out. In copper networks and for the group of wireless technologies/others, a negative percentage change is observed. In line with the above, Graph n.° 119 presents the monthly detail for 2018-2019, where the behavior of fixed Internet revenue by technology is displayed from January 2018 to December 2019, with an average annual growth obtained for the period shown, for revenue reported in cable networks (0.7%) and fiber networks (3%).

Finally, regarding the analysis by technology, the share of revenue that each technology covers for each quarter of 2019 is presented. Graph n.° 120 shows the behavior during each quarter. Specifically, fourth quarter shows 43.1% for revenue received in cable networks, 22.7% in copper networks, 31.9% in fiber optic networks (5.5 points percentage above the value in the first quarter), and 2.3% in wireless/other.

Now, from Graph n.° 121 on, a review by speed ranges is shown, where initially new ranges obtained in 2019 are grouped to make them comparable with the 2018 data, as explained previously in the subscription section. In said graph, it should be clarified that for 2019, the range from 2 Mbps to 10 Mbps is the range of speeds from 2 Mbps to 8 Mbps, and that from 10 Mbps to 100 Mbps would be 8 Mbps to 100 Mbps. Thus, there is a reduction in total revenue in the speed ranges of 2 Mbps or less and in the 2 Mbps to 10 Mbps ranges (-57% and -30% respectively). For the range from 10 Mbps to 100 Mbps, there is an increase of 185% compared to 2018, and a positive percentage change of 3% for speeds greater than 100 Mbps.

To further explore revenue data by speed, revenue per month is reviewed for each previously explained range. Graph n.° 122 shows how each rank evolves, in line with annual totals. It is striking that the range from 10 Mbps to 100 Mbps begins to grow since November 2018. This is confirmed by seeing that the compound growth of monthly revenue in this period is 5.6%, which in absolute figures represents a positive change of 5.687 million colones more per month in December 2019 than in January 2018.

Along the same lines as the above, Graph n.° 123 displays the revenue detail for every month in 2019, but with all ranges updated in 2019. These eight new ranges provide greater precision when reviewing which speeds users are choosing. The first four ranges, which group revenue received in connections of up to 15 Mbps, present negative average growth for the period (-2.3%, -2.9%, -4.8%, and -0, 3% respectively), while the others show positive average growth for the indicated period, where the range of 30 Mbps to 50 Mbps stands out with 9.2% (984 million colones more in December 2019 compared to January of the same year).

The review of speed revenue concludes with Graph n.° 124, where the percentage distribution of each range per quarter is displayed, it is evident that the range from 8 Mbps to 15 Mbps is the one that concentrates the highest revenue in each quarter (27.2%, 26.9%, 27.2% and 27.1%).

Fixed Internet Traffic

If data traffic transferred through fixed networks is checked, Graph n.° 125 shows the behavior of total data per year in TB for the five-year period of 2015-2019. In 2019, operators reported a total of 1 162 046 TB, a 34% variation compared to 2018.

Graph n.° 126 presents the comparative detail of 2018 and 2019, showing the increase between quarters, 45% when comparing the first quarters, 41% when comparing the second quarters, 35% variation between the third quarters of each year, and finally, 21% when comparing the fourth quarter.

Graph n.° 127 presents the detail of the percentage distribution by technology and by quarter for 2019, where at the end of the year, 87.6% of traffic was transferred over cable networks.

Wholesale Access Connections

In 2019, the wholesale Internet service registers 12 operators involved. This can be seen in Graph n.° 128, where it is confirmed that there are three more operators compared to the previous year. Graph n.° 129, meanwhile, shows the number of connections for 2015-2019, with a percentage change of 56% between 2018-2019.

Graph n.° 130 shows the quarterly growth from 2018 to 2019, where in all periods there is a double-digit increase. For example, between the fourth quarter of each year, the percentage change is 56%. In Graph n.° 131, distribution by technology for 2019 is shown, where at the end of the fourth quarter there is a 2.88% participation in DWDM, 10.61% in microwave, and 85.61% in fiber technologies (PON/AON/Ethernet/+), and 0.9% in SDH.

On the other hand, the number of connections by speed range in 2019 is reviewed. In Graph n.° 132, it can be seen that in the fourth quarter the speed range from 2 Mbps to 10 Mbps concentrates 45.3%, followed by the range from 10 Mbps to 100 Mbps with 31.5%. The range of speeds below 2 Mbps covers 7.7% of the connections, while the range above 100 Mbps and less than 600 Mbps concentrates 7.6%. Finally, for speeds greater than 600 Mbps, it is 7.9%.

Closing the speed review, Graph n.° 133 shows the percentage of subscriptions over 100 Mbps for each technology, where it can be seen how 94% of the connections in DWDM exceed said threshold; while in SDH networks, it is 40%; in fiber networks, 14%, and 3% in microwave.

Wholesale Acces Revenue

Following, in Graph n.° 134, the revenue of the Internet wholesale service for the period 2015-2019 is shown. There is a percentage change from 2018 to 2019 of 80%, a change driven by international capacity providers, IP transit, etc. The average annual growth for the aforementioned period is 28%, closing 2019 with 7.524 million colones.

Graph n.° 135 shows the percentage distribution of revenue per quarter for each of the connection technologies. It is observed that during the four quarters of the year, fiber optic connections (PON/AON/Ethernet/+) cover the highest proportion of revenues (67.1%, 68.3%, 69.8%, and 73% respectively), followed by connections in DWDM (30.6%, 28.5%, 27.6%, and 24.4% respectively).

As for the detail by speed, Graph n.° 136 shows how the total revenue is distributed by range.

It is observed that the greatest amount of revenue is perceived by connections with speeds greater than 600 Mbps and up to 10 Gbps. The breakdown of the revenue distribution for the fourth quarter is as follows: speeds below 2 Mbps, 0.2%; speeds between 2 Mbps and 10 Mbps, 4.5%; speeds between 10 Mbps and 100 Mbps, 11.4%; speeds from 100 Mbps to 600 Mbps, 15.9%; and finally, speeds between 600 Mbps and 10 Gbps, 68%.

As a complement to the above, Graph n.° 137 shows the amount of revenue received for each technology for connections above the 100 Mbps threshold. It is evident that in DWDM, 99% of the revenue is collected for connections that exceed this speed. For SDH, it is 71%; for fiber (PON/AON/Ethernet/+), 83%; and for microwave, 12%.

Leased lines Connections

In Graph n.° 138, the number of leased line service providers for 2015-2019 is presented, where in the last year, there are 37 active operators who provided information to SUTEL. Graph n.° 139 shows the increase in number of connections for the mentioned period. It can be seen that 2019 closes at 22 921 connections, a percentage change of 61% compared to 2018 and an average annual growth for the period of 13%.

To broaden the comparison between 2018 and 2019, Graph n.° 140 shows the quarterly change for both years, with an increase towards 2019 for each quarter. The respective percentage changes are: first quarter, 8.6%; second quarter, 4.3%; third quarter, 31.8%; and fourth quarter, 19.8%.

Now, to detail the analysis of this service, Graph n.° 141 begins the review by type of market, that is, the percentage distribution of connections by wholesale and retail markets. At the end of 2019, the wholesale market covers 21.9% of the total connections, 3.2 percentage points more than in the first quarter. The retail market closes with 78.1% of the total. In absolute values, both types of markets saw increases towards the end of the year compared to the first quarter, 1.252 more connections in the wholesale market and 1.487 more connections in the retail market.

In Graph n.° 142, the market composition is shown by territory where the service is provided, in other words, connections contracted in the country (national territory) and connections served outside the borders (international territory). The graph shows that at the end of 2019, 93.1% of the connections are national, and the remaining 6.9% are for international

connections. In both types of territory, there is an increase in absolute values (2260 for connections in national territory and 479 for connections in international territory).

Continuing with what was detailed above, in Graph n.° 143, the percentage of connections are presented for national and international territory for the wholesale market at the end of 2019, where 11% are wholesale connections in international territory, and 89% are wholesale connections in national territory. In the same way, in Graph n.° 144, the percentage of retail connections in international territory (6%) and of wholesale connections in national territory (94%) is observed.

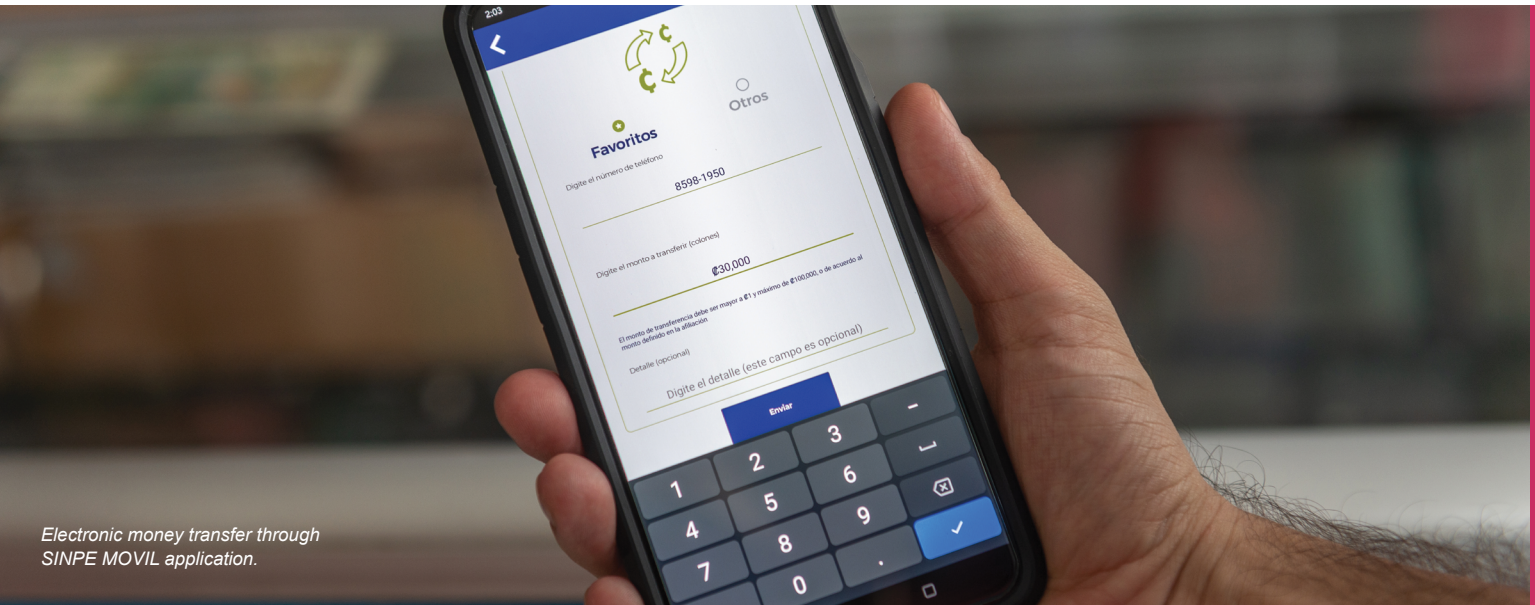
To extend the review, we proceed to review the behavior of the number of connections by speed range, and considering only each type of market. In the first instance, Graph n.° 145 shows the behavior of the wholesale market on a monthly basis in 2019. The increase in total connections towards December of that year, and the variation of each group of speeds are displayed. For the range of speeds below 5 Mbps, there is an average annual growth of 1.6% in the period; for the range from 5 Mbps to 8 Mbps, the average annual growth is 0.9%; for the 8 Mbps to 15 Mbps range, the average annual growth is 4%. Then, for speeds between 15 Mbps and 30 Mbps, it is 7.1%; in the range between 30 Mbps and 100 Mbps, average annual growth of 8.5% is calculated; and finally, 5.8% in the range of speeds greater than 100 Mbps.

Similarly, Graph n.° 146 shows the behavior of the retail market by month in 2019. In this regard, for all cases, there is a positive average annual growth. At speeds lower than 5 Mbps, it is 0.02%; at speeds from 5 Mbps to 8 Mbps, 0.7%; at speeds from 8 Mbps to 15 Mbps, 2.5%; in the range of 15 Mbps and 30 Mbps, 6.2%; then, 1% in the range of 30 Mbps to 100 Mbps, and 0.3% in speeds of more than 100 Mbps.

Here is a review of the number of connections by technology. It is clarified that it is not done by type of market as in the case of speeds, but for the total of connections only considering the technological platform for the provision of the service. In this sense, Graph n.° 147 shows the variation from 2018 to 2019 for connections through virtual private networks (VPN), digital links, and a third group that collects data reported in data frames, ports, legacy links, and other types of connection (or connections reported without any specific technology). In this case, the aforementioned technologies have a positive variation from the end of 2018 to the end of 2019. In absolute values, it would be: 93 connections in VPN, 1578 in dedicated links, and 2113 for the group Ports/Others/Analog/frames.

Expanding on the last detail noted, Graph n.° 148 shows the distribution of connections by technology on a monthly basis throughout 2019. Connections for virtual private networks (VPN) have an average annual growth of 0.1%, digital links of 3.1%, and for the Ports/Others/Analogue/frames group an average annual growth of 5.2%.

Finally, to close the speed review and the connections section, Graph n.° 149 shows the percentage distribution by technology for each quarter of 2019, where it is observed that VPN connections cover the highest percentage of connections at the end of each quarter: 45.6% in the first quarter; 44.6% in the second quarter; 41.6% in the third quarter; and 40.3% in the fourth quarter.



Electronic money transfer through SINPE MOVIL application.

Leased Lines Revenue

The review of the leased line service continues, showing certain aspects of interest regarding the behavior of total reported revenue. Initially, Graph n.° 150 shows the total annual revenue per year for 2015-2019, where in the last year a total of 49.492 million colones was registered, a percentage change, compared to 2018, of 11.7%.

Graph n.° 151 presents, for 2018-2019, the quarterly comparison of the total amount of revenue received in this service. As can be noted, for every quarter, there is a positive percentage change, where the first quarter of 2019 shows an increase of 14.1%, the second quarter 9.5%, the third quarter 17.6% and, finally, the fourth quarter 5.7%.

In Graph n.° 152, as in the section on connections, a review is presented by type of market, that is, the percentage distribution of revenue by wholesale market and retail market. Thus, the percentage values per quarter can be seen in said graph, where the wholesale market represents for the first, second, third, and fourth quarters, 21.3%, 22.7%, 21.0%, and 21.5% respectively. The retail market in the first quarter accounted for 78.7% of revenue, 77.3% in the second quarter, 79.79% in the third quarter, and 78.6% in the fourth quarter.

In Graph n.° 153, the percentage distribution of revenue by territory where the service is provided (national territory and international territory) is displayed. In the first quarter, the ratio is 7.6% for revenue from services in international territory, and 92.4% for revenue received from connections in national territory. These values change for the fourth quarter, where the international territory covers 13.9% and the national territory, 86.1 %. This change is explained when, based on absolute values of the first and fourth quarters, the variation rate is calculated, 75% is for revenue from connections in international territory, and -11% is for revenue from connections in national territory.

Next, a review is made by type of market and by territory of provision at the end of the year. Initially, Graph n.° 154 shows the percentage composition of the wholesale market by territory. It is evident that, in the wholesale segment, 87% of the revenue comes from links within the country. On the other hand, in Graph n.° 155, it is observed that, in the retail segment, 91% of revenue is the product of links in operation within the country.

To continue with the study by type of market, Graph n.° 156, shows the percentage distribution by speed range for the wholesale market on a monthly basis.

This graph allows to analyze the movement of revenue from January 2019 to December of the same year. After calculating the average annual growth for each range, positive growth is obtained in two of these, in the one from 15 Mbps to 30 Mbps with 4.3% and for the one from 30 Mbps to 100 Mbps with 5.5%.

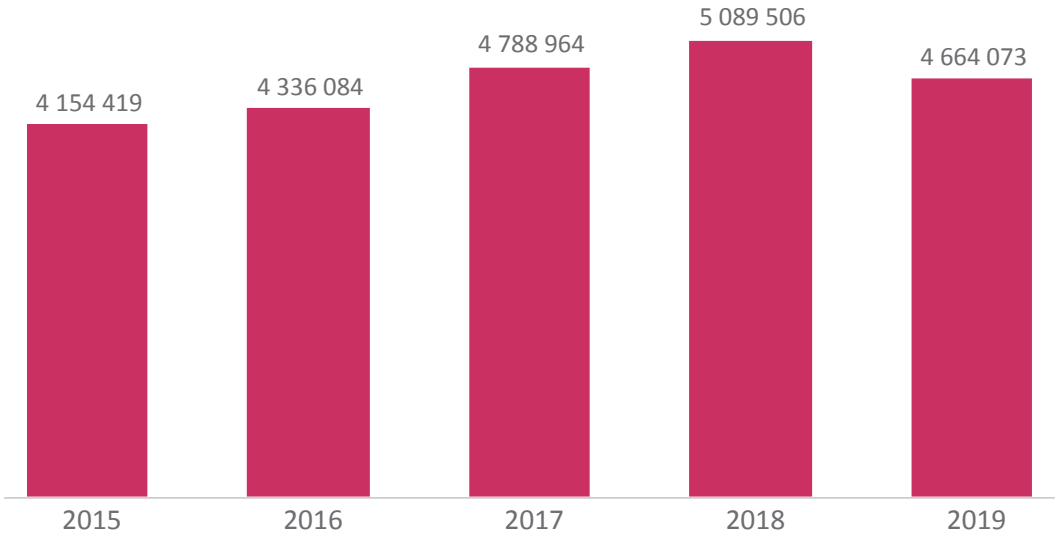
Similarly, Graph n.° 157 shows detail by speed and by month for the retail market in 2019. It is observed how the speed range with connections at speeds lower than 5 Mbps covers most of the revenue received by operators, and when calculating the average growth for each range, two of these ranges show positive values: the group from 8 Mbps to 15 Mbps with 4% and from 15 Mbps to 30 Mbps with 1.5%.

A review of revenue by connection technology is now presented, clarifying what is done for all connections, without distinction of type of market. For this, Graph n.° 158 presents, for 2018-2019, the variation for VPN platforms, digital links, and the group of Ports/Other/Analogue/frames. For VNP, the percentage change towards 2019 is 12.2%; for digital links, 5%; and for the third group, 50.2%.

The study of the behavior of revenue is in Graph n.° 159, which shows revenue for each technological platform month by month from 2018 to 2019. The following average growth was obtained in the period: 0.7% in VPN, -0.4% in digital links, and 2.1% in the Ports/Others/Analogue/frames group.

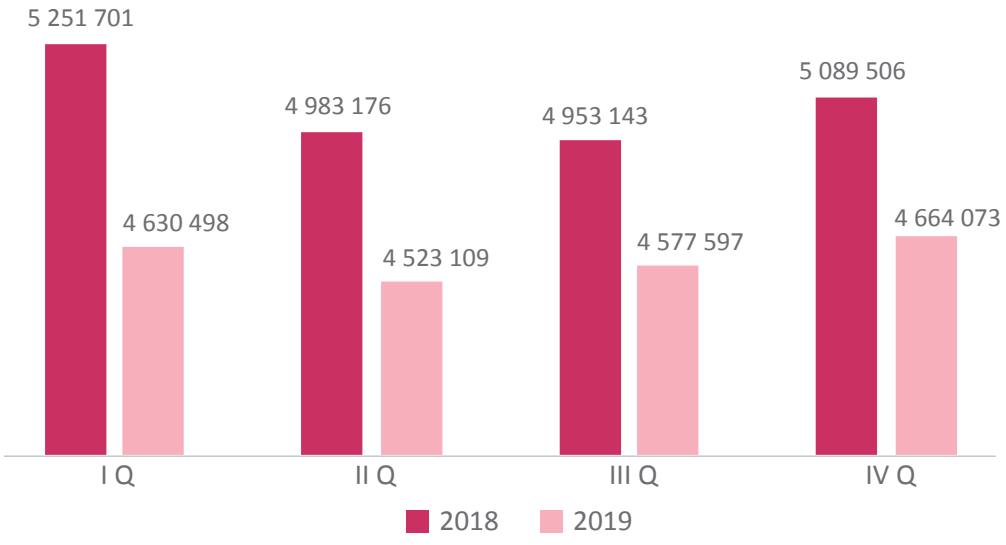
Finally, Graph n.° 160 shows the percentage of revenue per product of each technological platform by quarter in 2019, where VPN has the highest amount of revenue for the first, second, third, and fourth quarters, with 52.4%, 53.4%, 50.7% and 52.2% respectively.

Graph n.° 67. Costa Rica: Subscriptions, access to Internet in the mobile network, 2015-2019
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

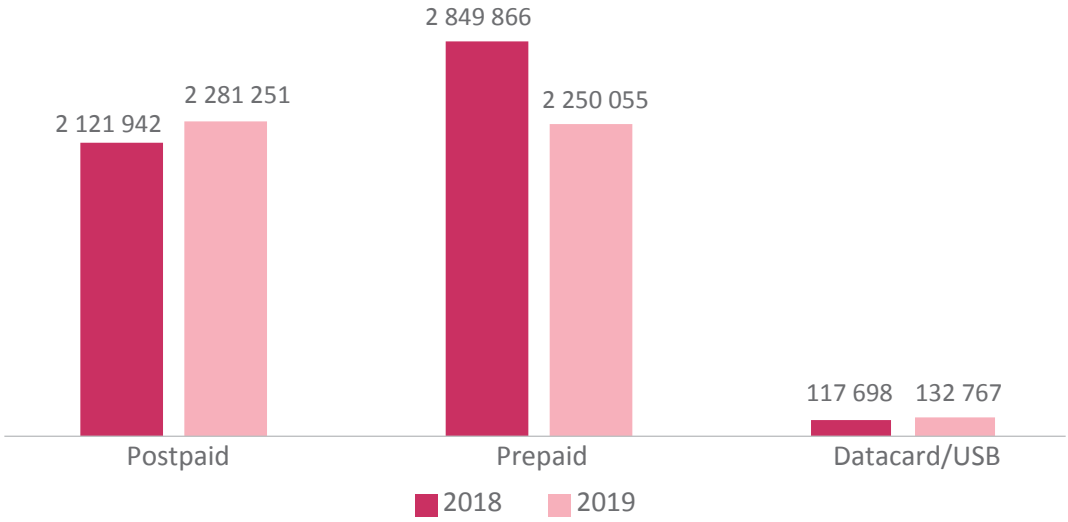
Graph n.° 68. Costa Rica: Subscriptions, access to Internet in the mobile network, 2018-2019
(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 69. Costa Rica: Subscriptions, access to mobile Internet, comparison per payment method and access device, 2018-2019

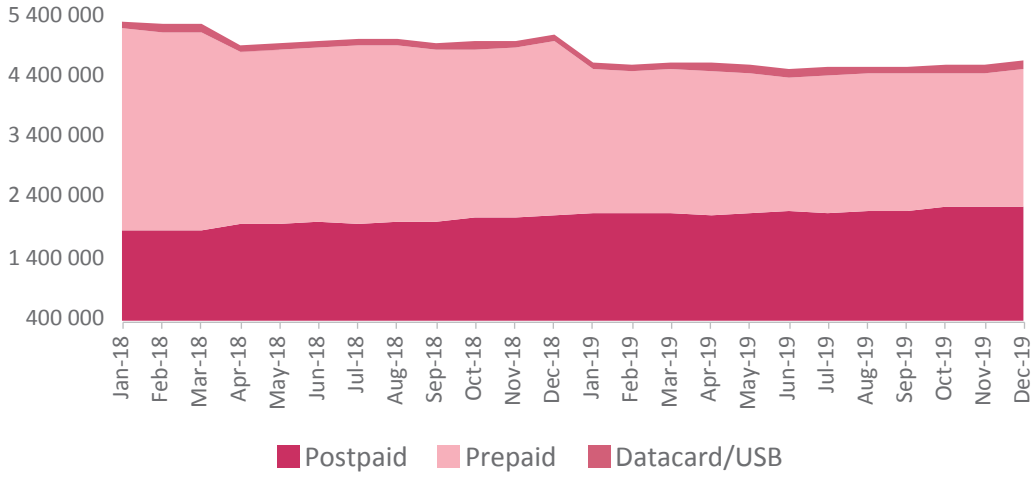
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 70. Costa Rica: Subscriptions, access to mobile Internet, comparison per payment method and access device, 2018-2019

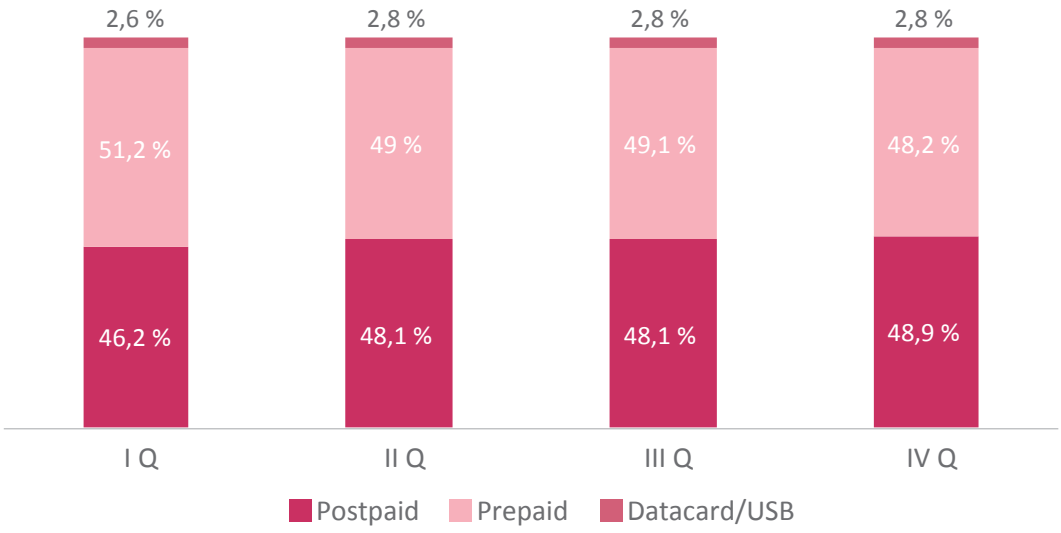
(monthly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 71. Costa Rica: Subscriptions, access to Internet through mobile network, percentage distribution according to payment method and access device, 2019

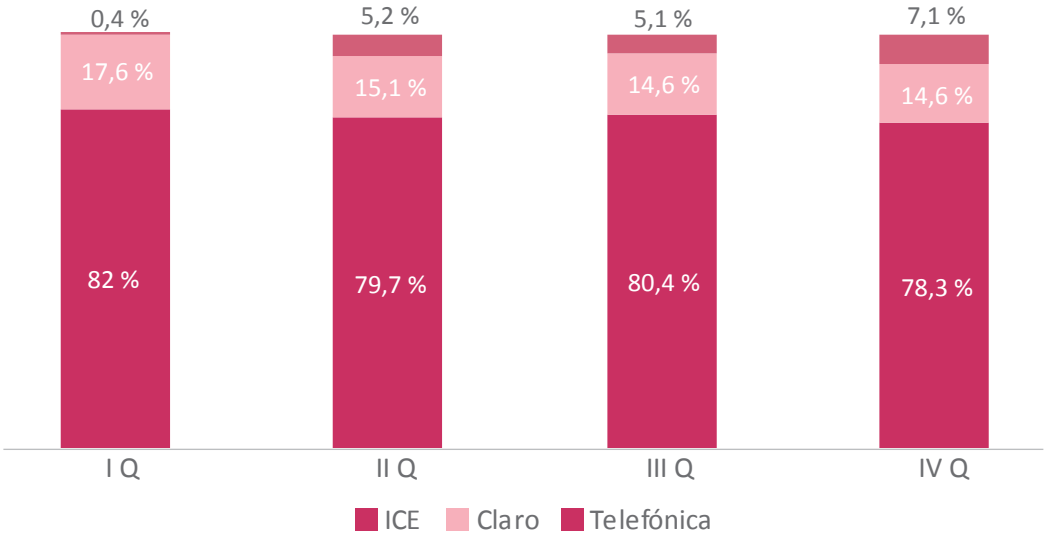
(quarterly figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 72. Costa Rica: Subscriptions, access to Internet in the mobile network, datacard. Percentage distribution by operator, 2019

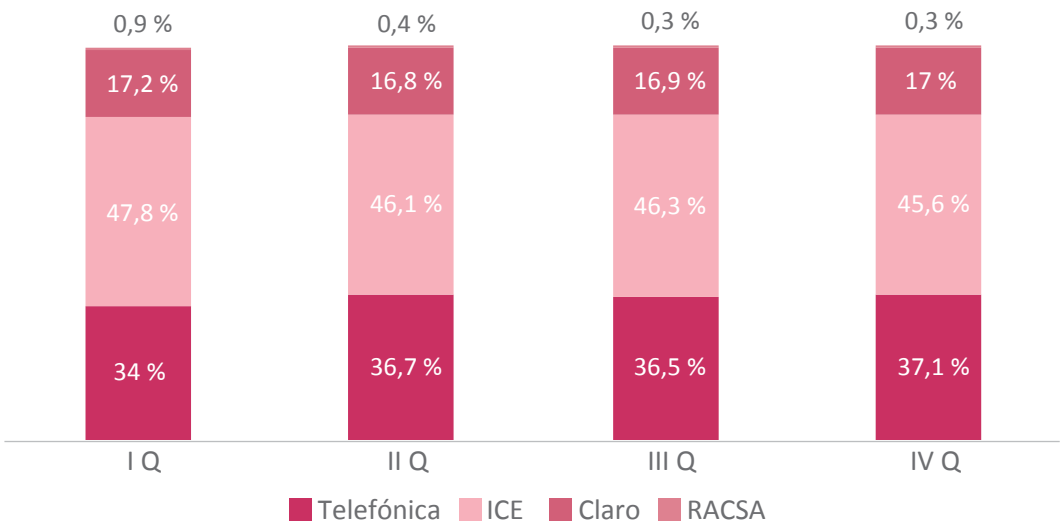
(quarterly figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 73. Costa Rica: Subscriptions, access to Internet in the mobile network, Prepaid. Percentage distribution by operator, 2019

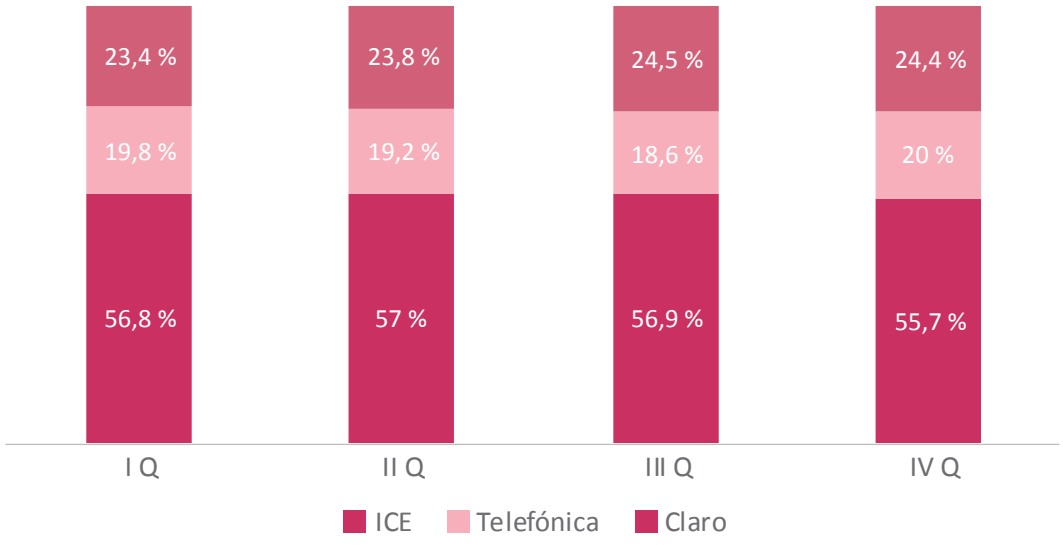
(quarterly figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 74. Costa Rica: Subscriptions, access to Internet in the mobile network, Postpaid. Percentage distribution by operator, 2019

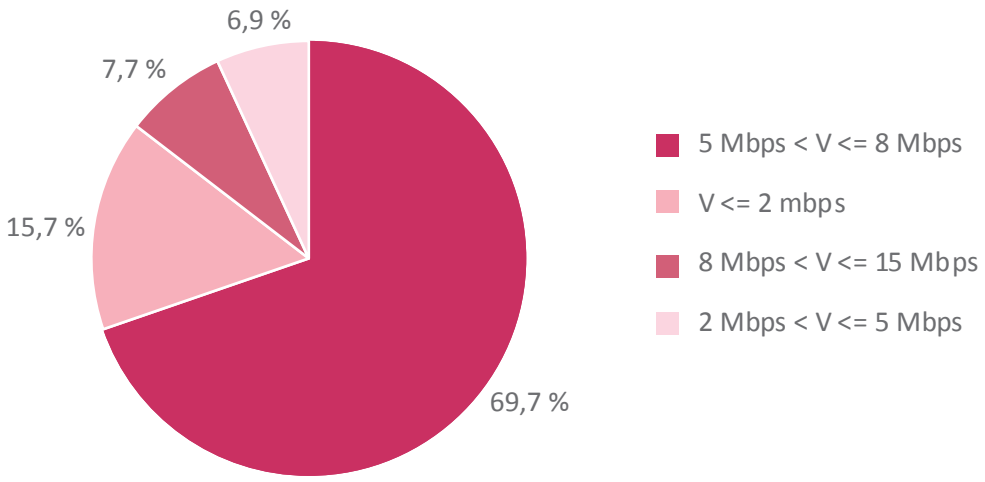
(quarterly figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 75. Costa Rica: Subscriptions, access to Internet in the mobile network. Percentage distribution by speed, datacard, 2019

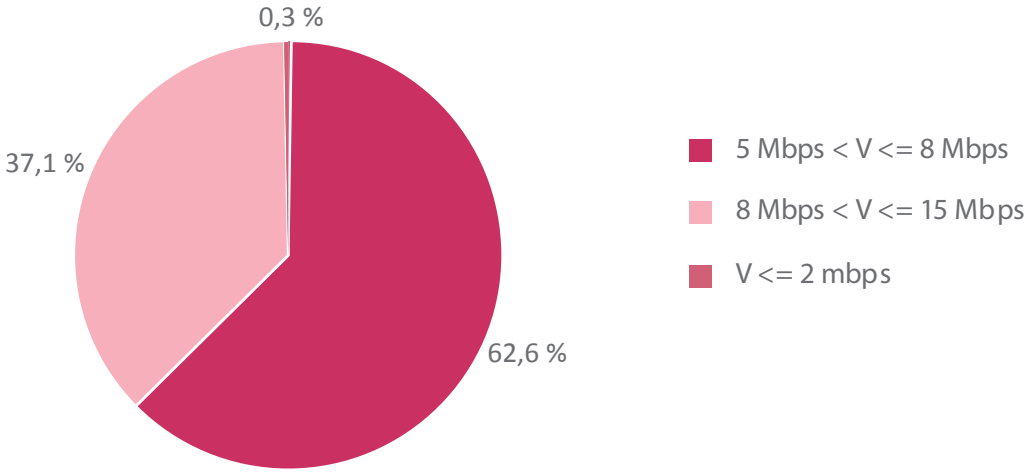
(figures by percentage at year closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 76. Costa Rica: Subscriptions, access to Internet in the mobile network. Percentage distribution by speed, Prepaid, 2019

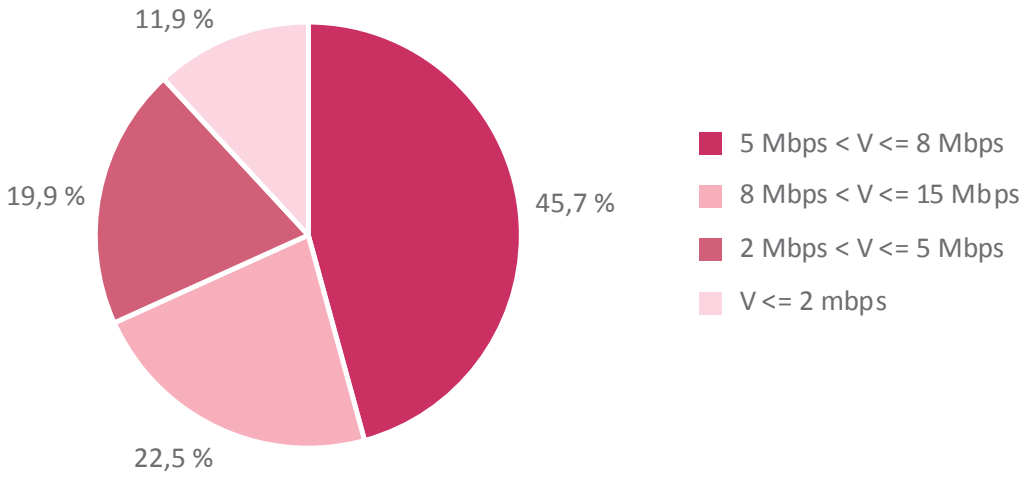
(figures by percentage at year closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 77. Costa Rica: Subscriptions, access to Internet in the mobile network. Percentage distribution by speed, Postpaid, 2019

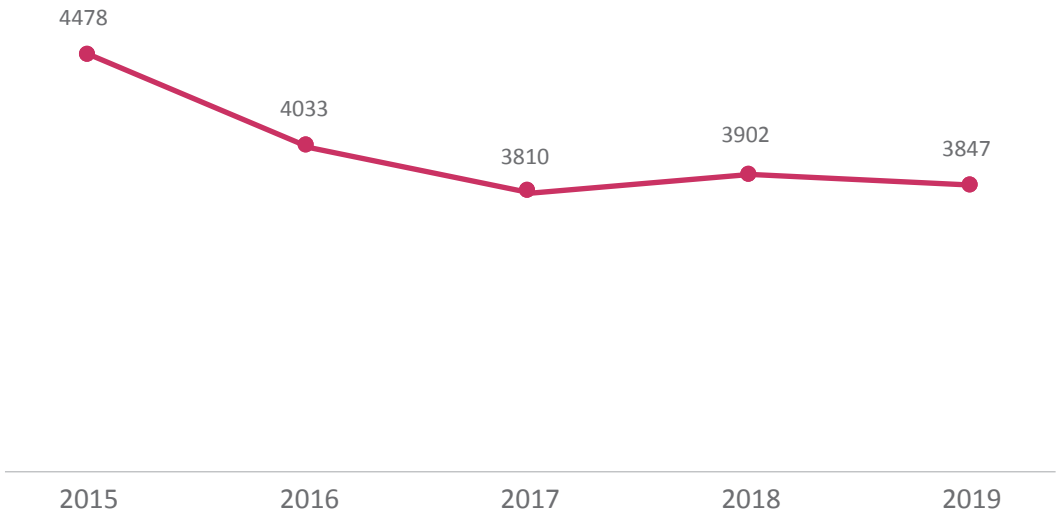
(figures by percentage at year closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 78. Costa Rica: HHI evolution, access to Internet in the mobile network, 2015-2019

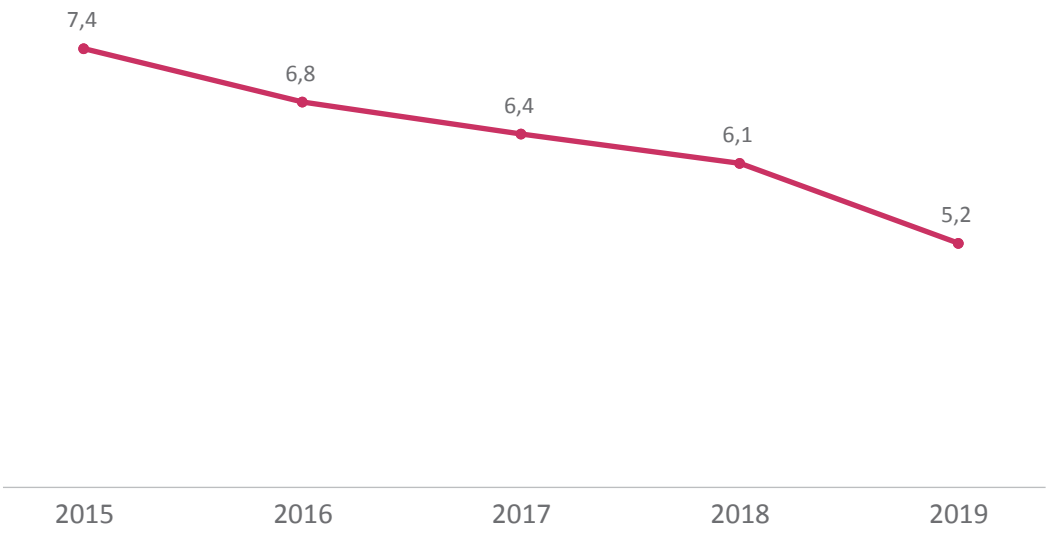
(figures at each year´s closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 79. Costa Rica: Proportion of Mobile Internet subscriptions in relation to fixed Internet, 2015-2019

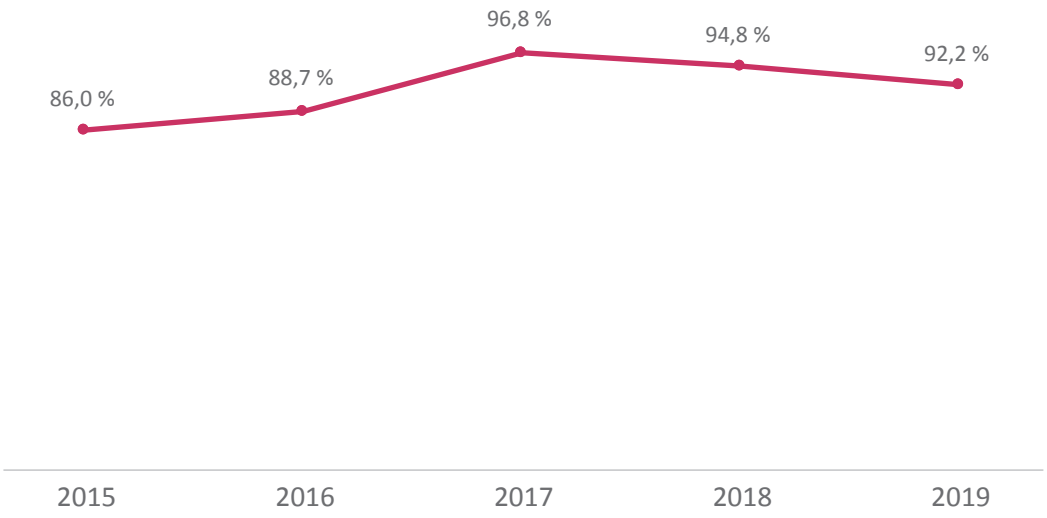
(figures at each year´s closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 80. Costa Rica: Subscriptions, access to mobile Internet per 100 inhabitants, 2015-2019

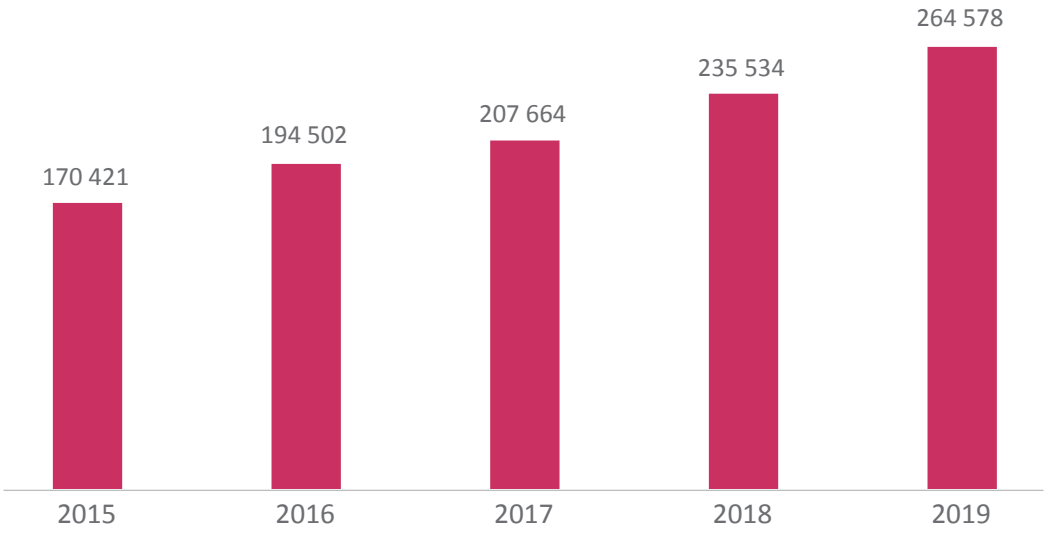
(figures at each year´s closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 81. Costa Rica: Revenue, access to Internet in the mobile network, 2015-2019

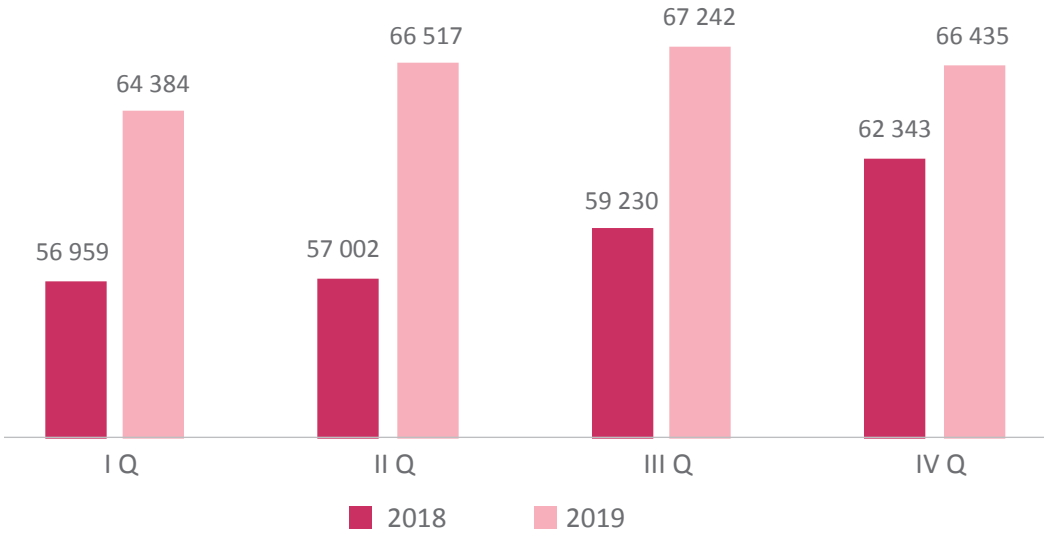
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 82. Costa Rica: Revenue, access to Internet in the mobile network, 2018-2019

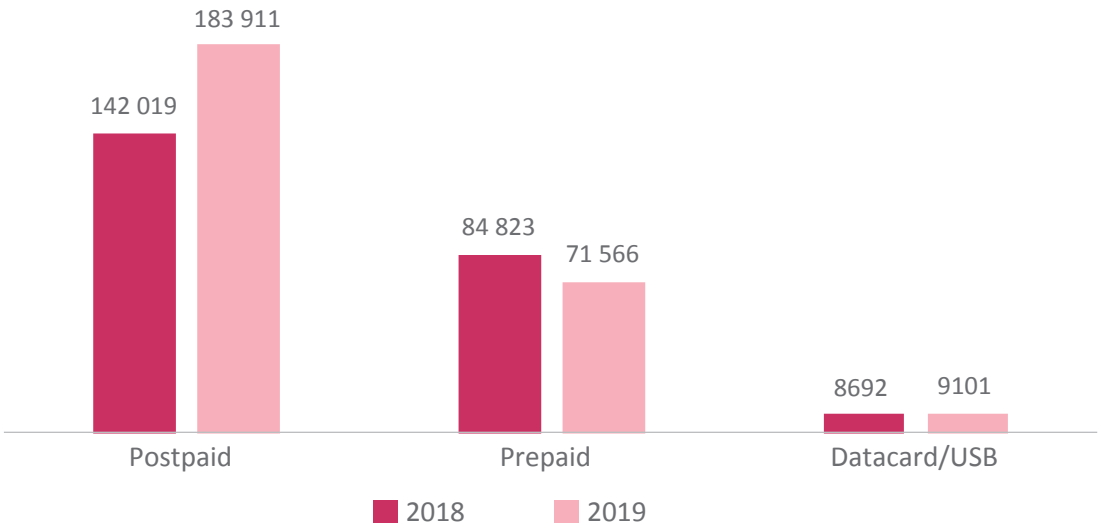
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 83. Costa Rica: Revenue, access to mobile Internet, comparison per payment method and access device, 2018-2019

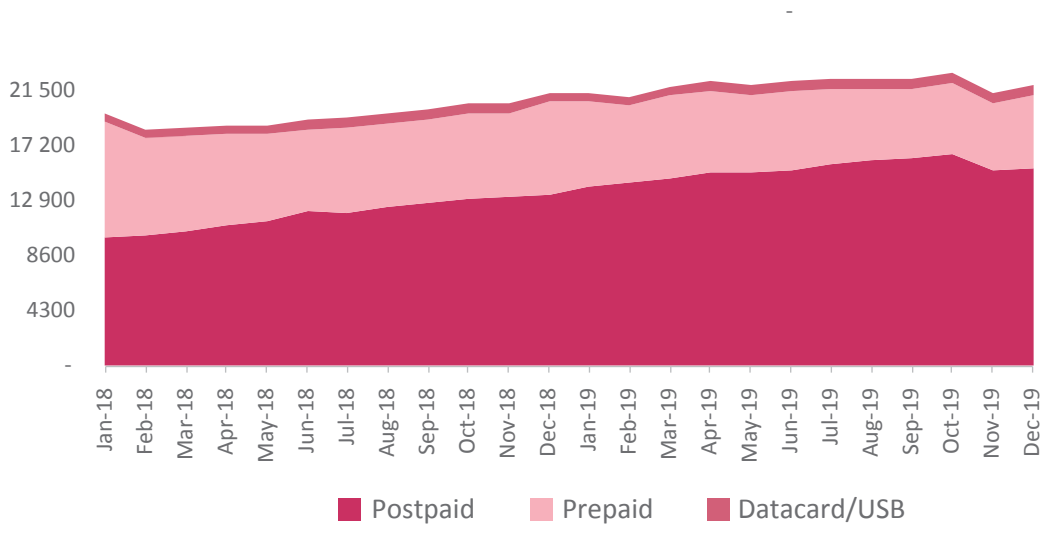
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 84. Costa Rica: Costa Rica. Revenue, access to mobile Internet, comparison per payment method and access device, 2018-2019

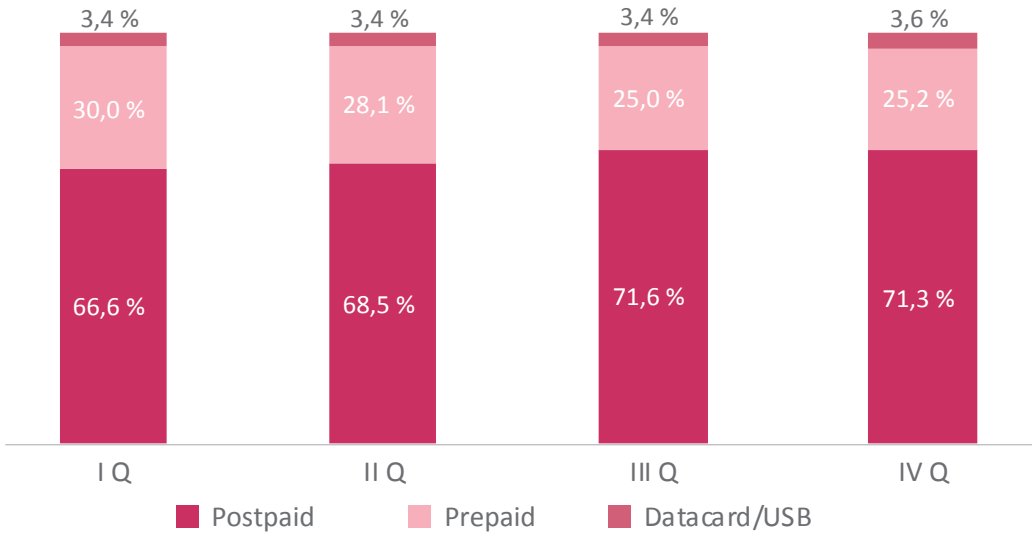
(monthly in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 85. Costa Rica: Revenue, access to Internet in the mobile network, percentage distribution per payment method and access device, 2019

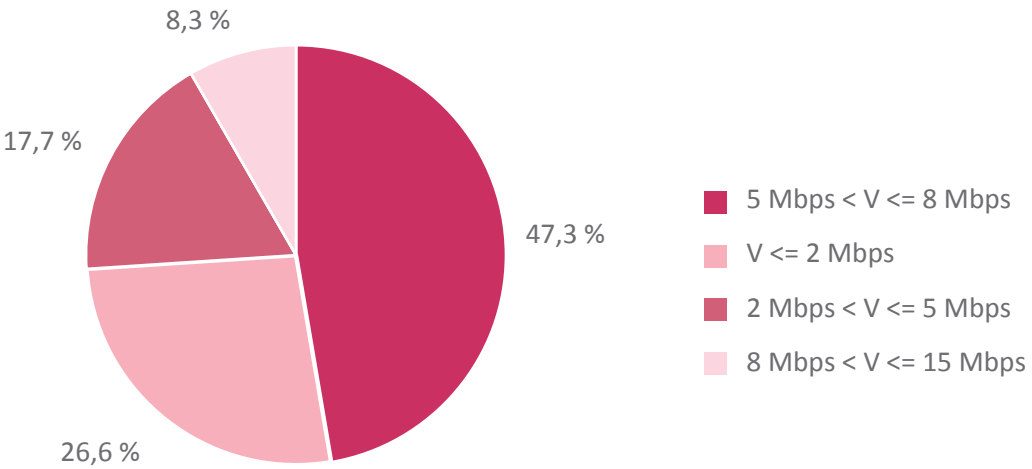
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 86 Costa Rica: Revenue, access to Internet in the mobile network, datacard. Percentage distribution by speed, 2019

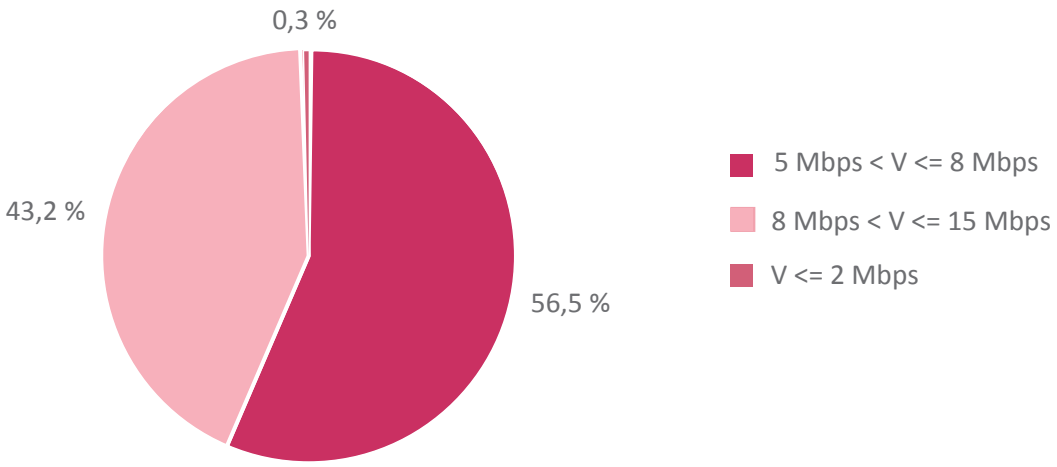
(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 87. Costa Rica: Revenue, access to Internet in the mobile network, Prepaid. Percentage distribution by speed, 2019

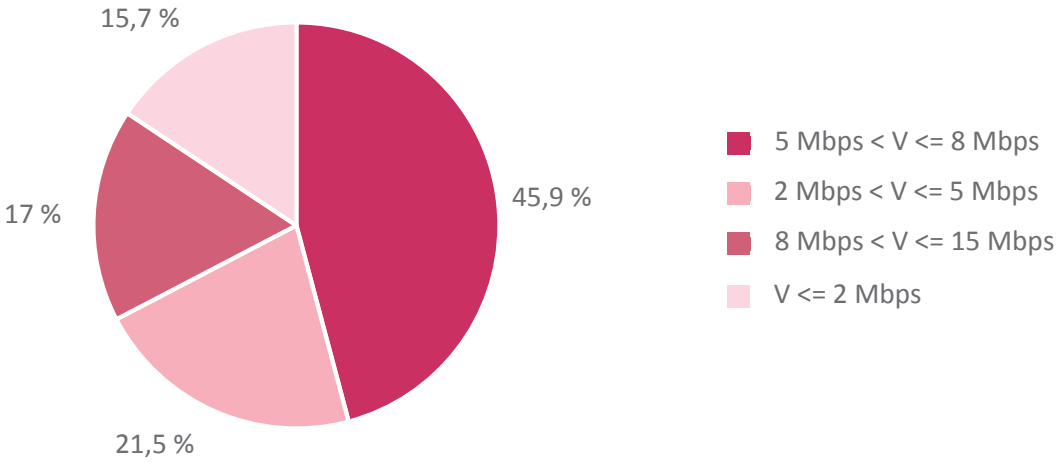
(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 88. Costa Rica: Revenue, access to Internet in the mobile network, Postpaid. Percentage distribution by speed, 2019

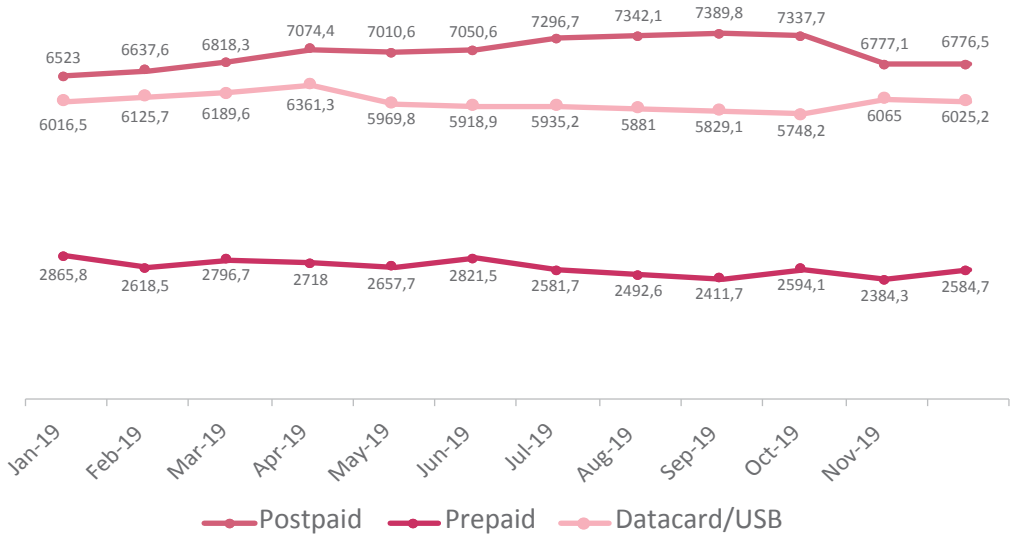
(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 89. Costa Rica: Revenue, access to Internet in the mobile network, average revenue per user for each payment method and datacard, 2019

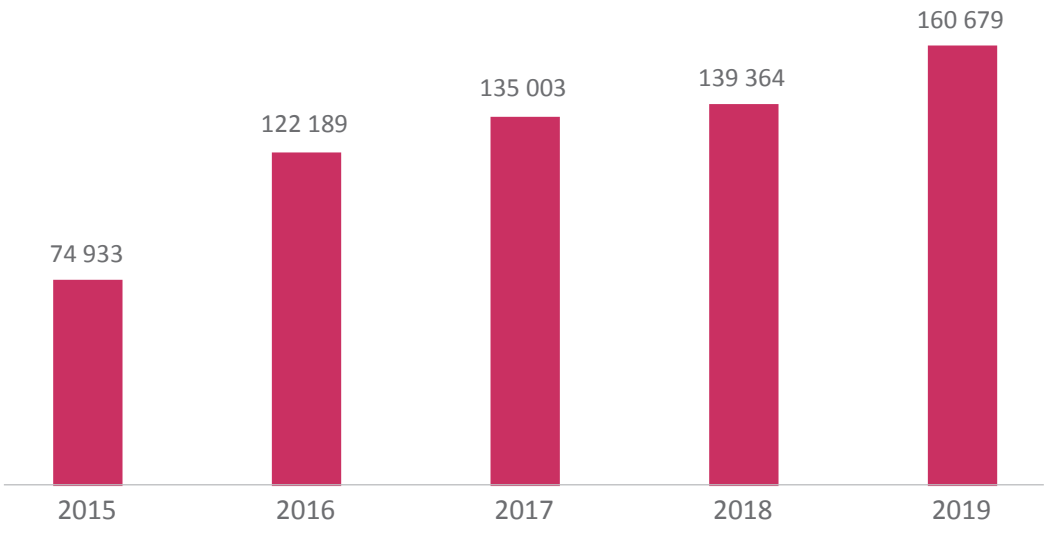
(monthly figures in colones per user)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 90. Costa Rica: Traffic, access to Internet in the mobile network, 2015-2019

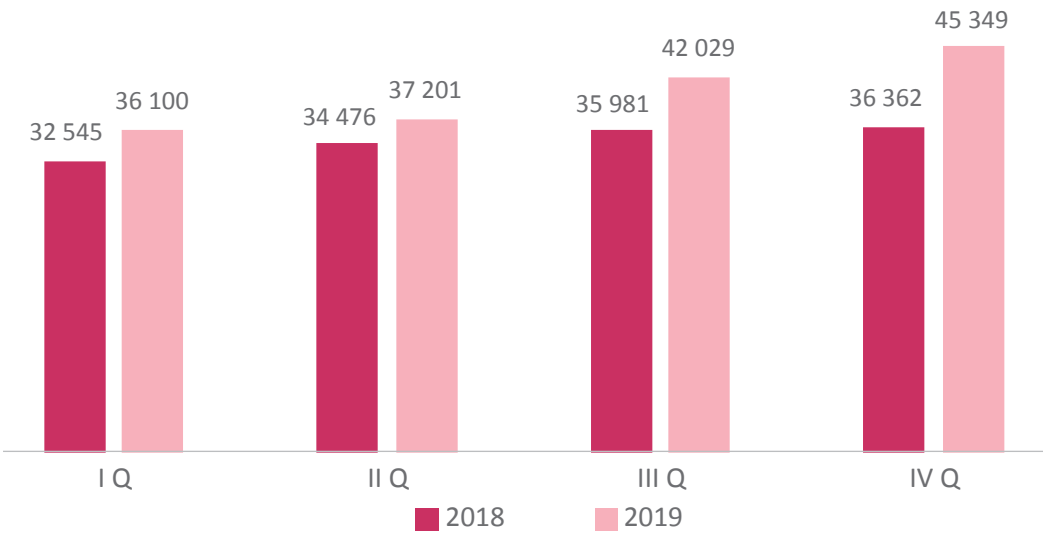
(annual figures in TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 91. Costa Rica: Traffic, access to Internet in the mobile network, 2018-2019

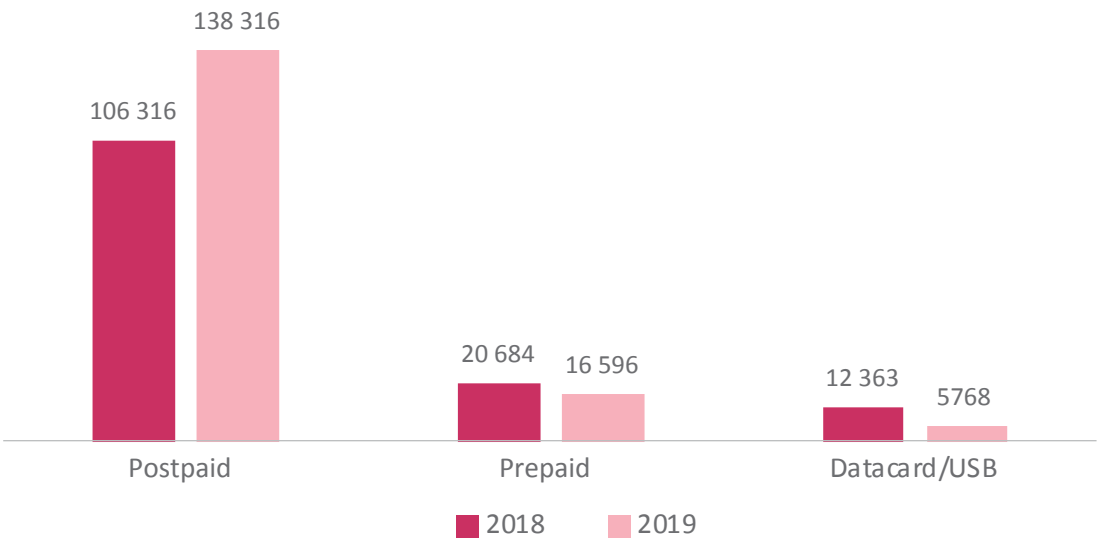
(quarterly figures in TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 92. Costa Rica: Traffic, access to mobile Internet, comparison per payment method and access device, 2018-2019

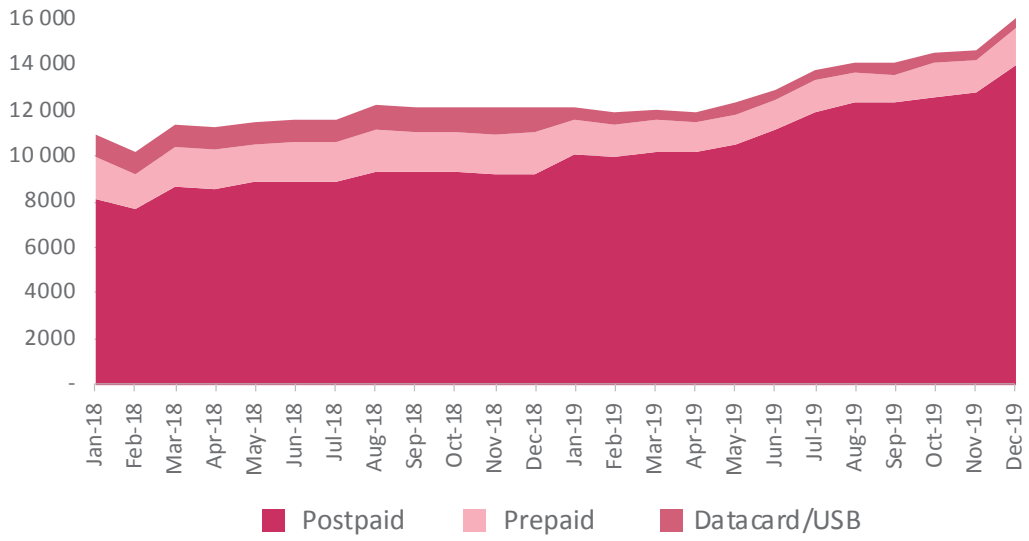
(annual figures in TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 93. Costa Rica: Traffic, access to mobile Internet, comparison per payment method and access device, 2018-2019

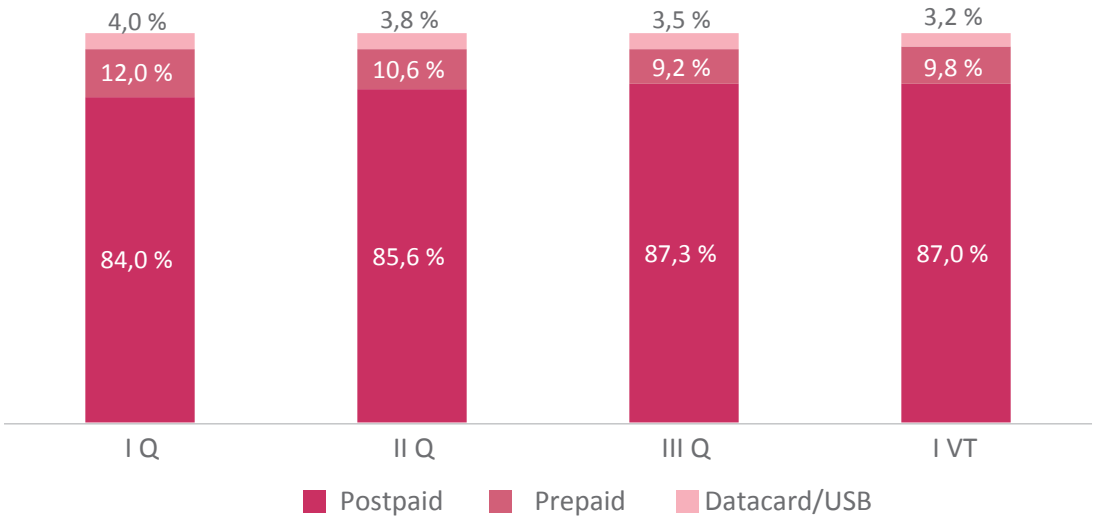
(monthly figures in TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 94. Costa Rica: Traffic, access to Internet in the mobile network, percentage distribution per payment method and access device, 2019

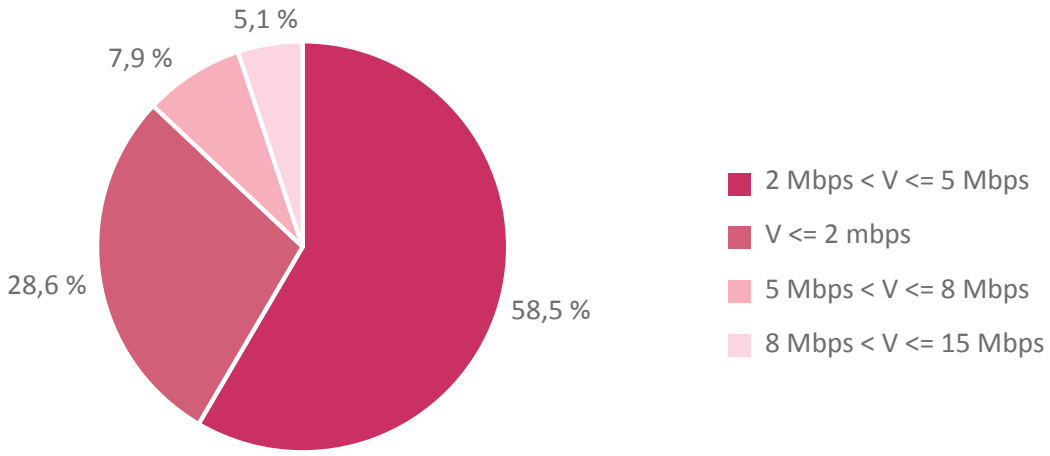
(quarterly figures in TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 95. Costa Rica: Traffic, access to Internet in the mobile network, datacard. Percentage distribution by speed, 2019

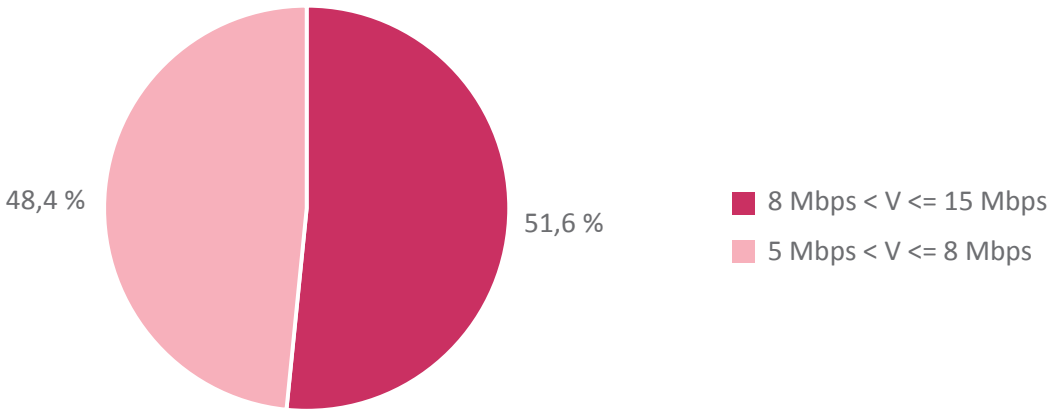
(annual figures in TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 96. Costa Rica: Traffic, access to Internet in the mobile network, Prepaid. Percentage distribution by speed, 2019

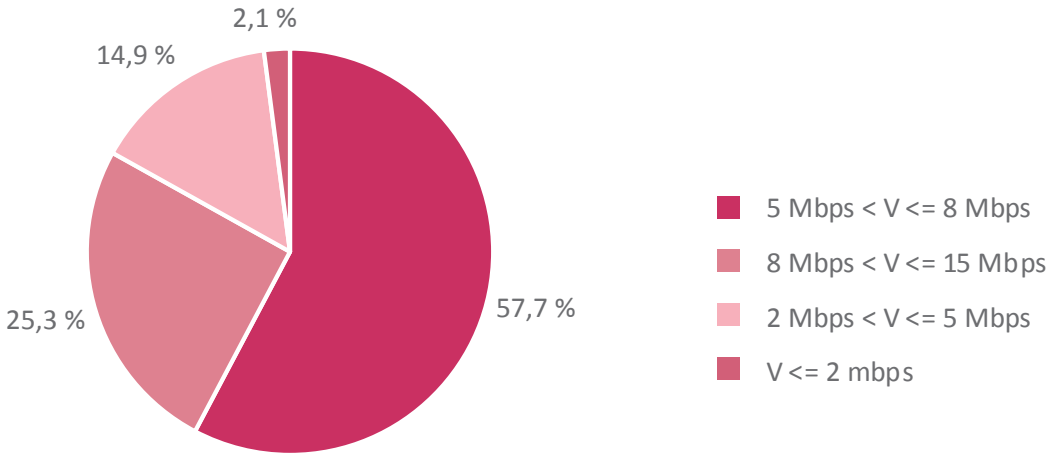
(annual figures in TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 97. Costa Rica: Traffic, access to Internet in the mobile network, Postpaid. Percentage distribution by speed, 2019

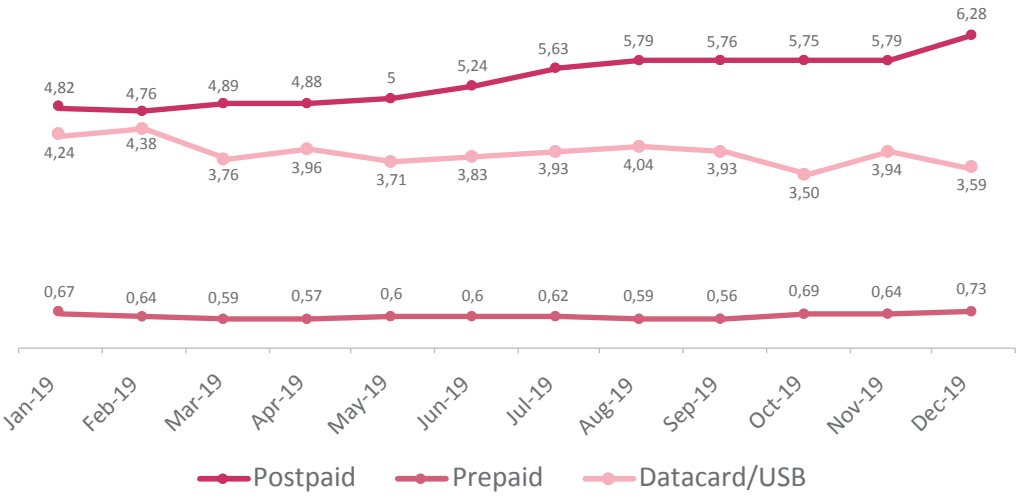
(annual figures in TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 98. Costa Rica: Traffic, access to Internet in the mobile network, average traffic per user for each payment method and in datacard, 2019

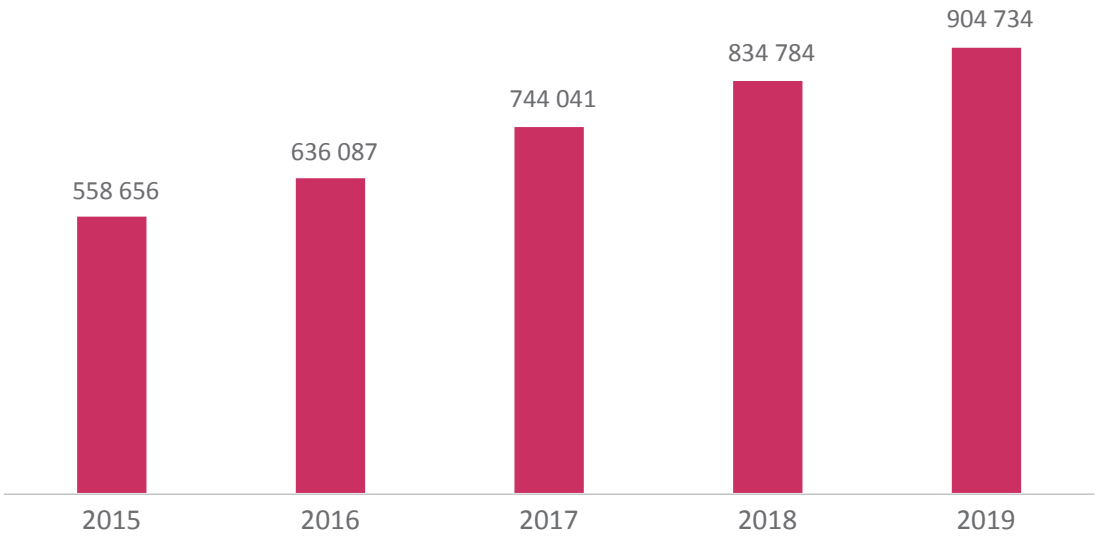
(figures en GB per user per month)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 99. Costa Rica: Subscriptions, access to Internet in the fixed network, 2015-2019

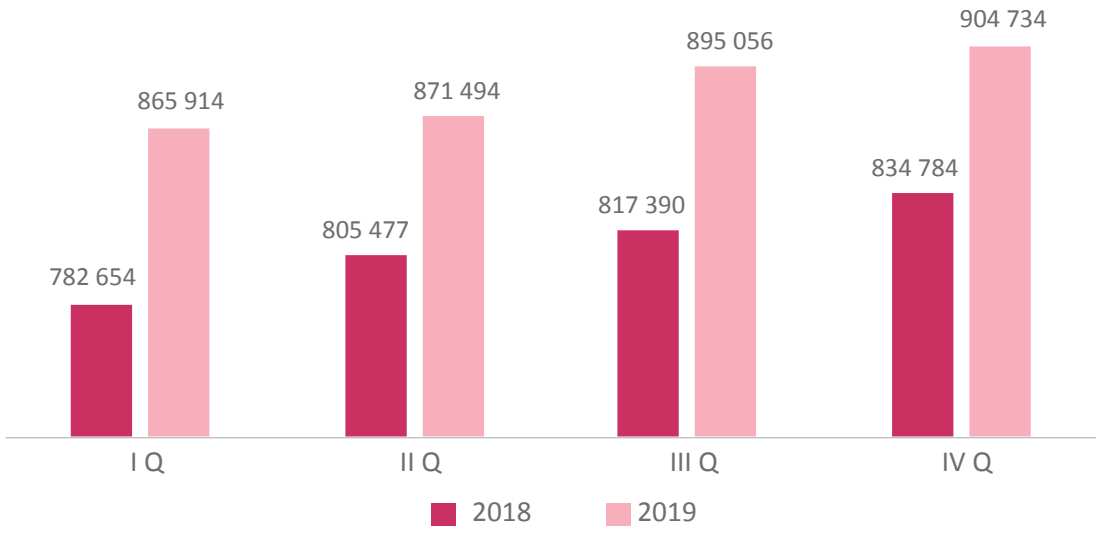
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 100. Costa Rica: Subscriptions, access to Internet in the fixed network, 2018-2019

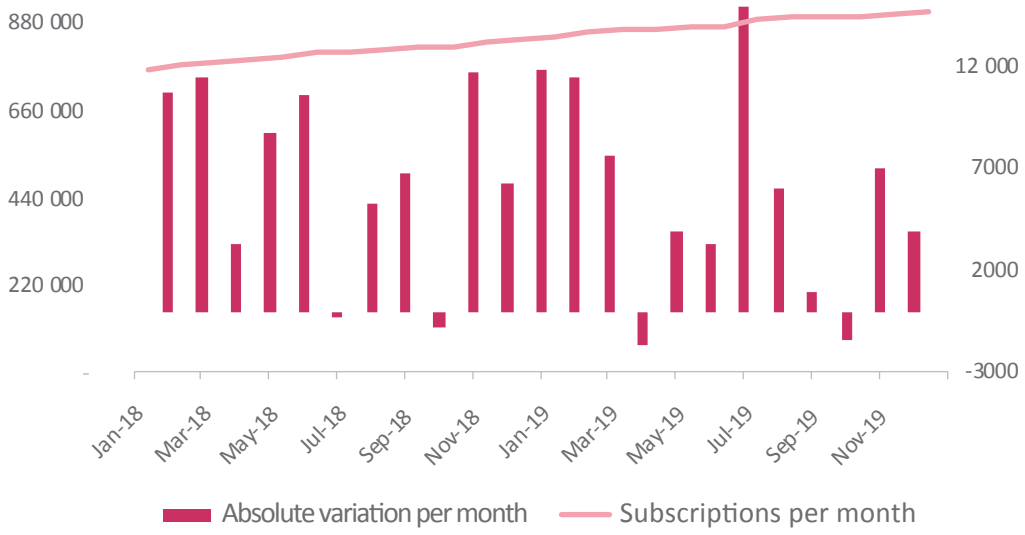
(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 101. Costa Rica: Subscriptions, access to Internet in the fixed network, accrued total and absolute monthly variation, 2018-2019

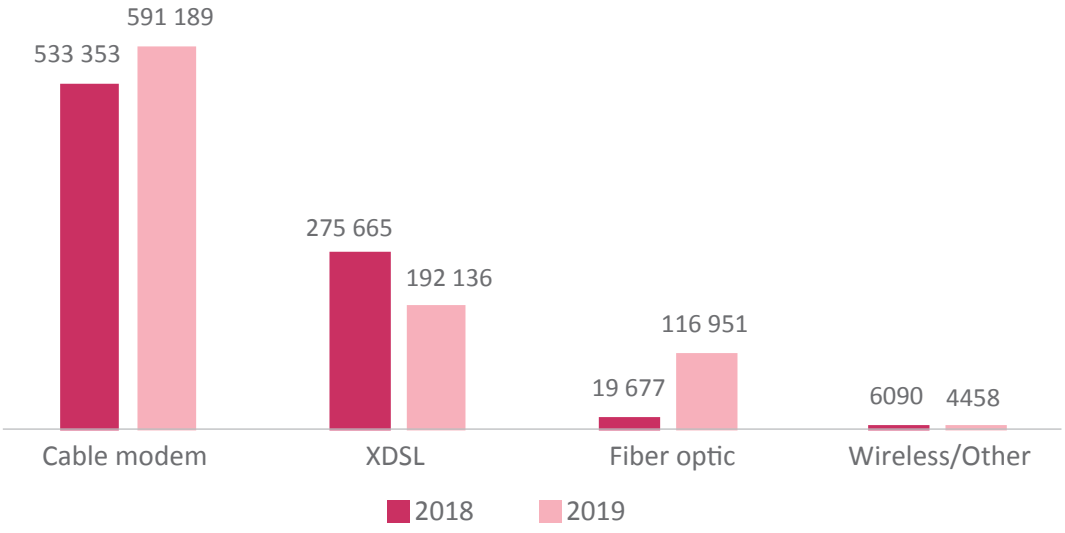
(monthly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 102. Costa Rica: Subscriptions, access to fixed Internet, comparison by technology, 2018-2019

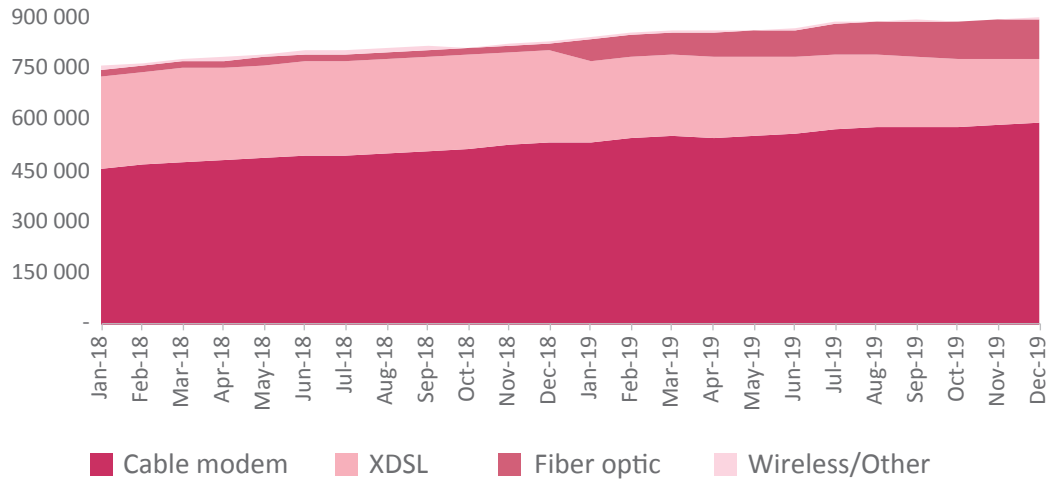
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 103. Costa Rica: Subscriptions, access to fixed Internet, comparison by technology, 2018-2019

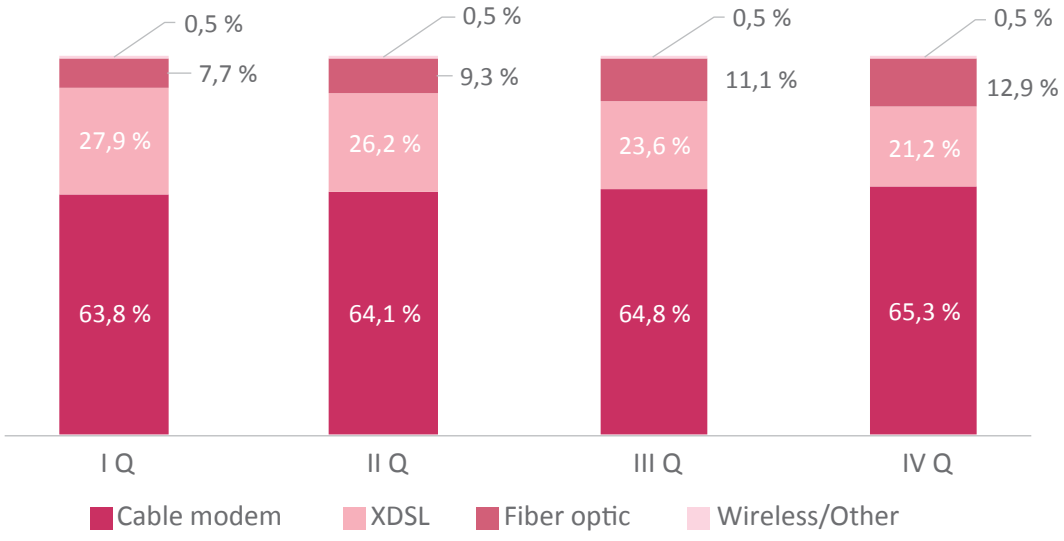
(monthly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 104. Costa Rica: Subscriptions, access to fixed Internet. Percentage distribution by technology, 2019

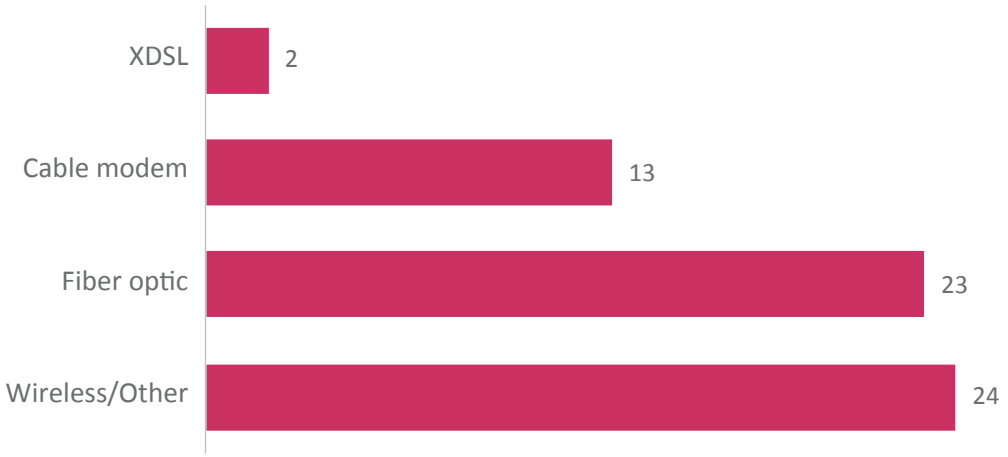
(quarterly figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 105. Costa Rica: Subscriptions, access to fixed Internet, number of operators by technology, 2019

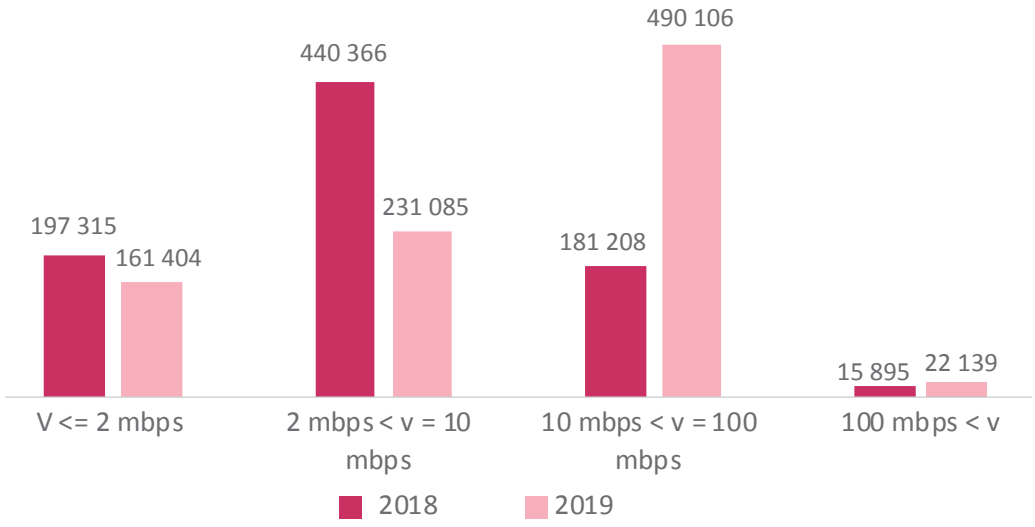
(figures at year closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 106. Costa Rica: Subscriptions, access to fixed Internet, comparison by speed, 2018-2019

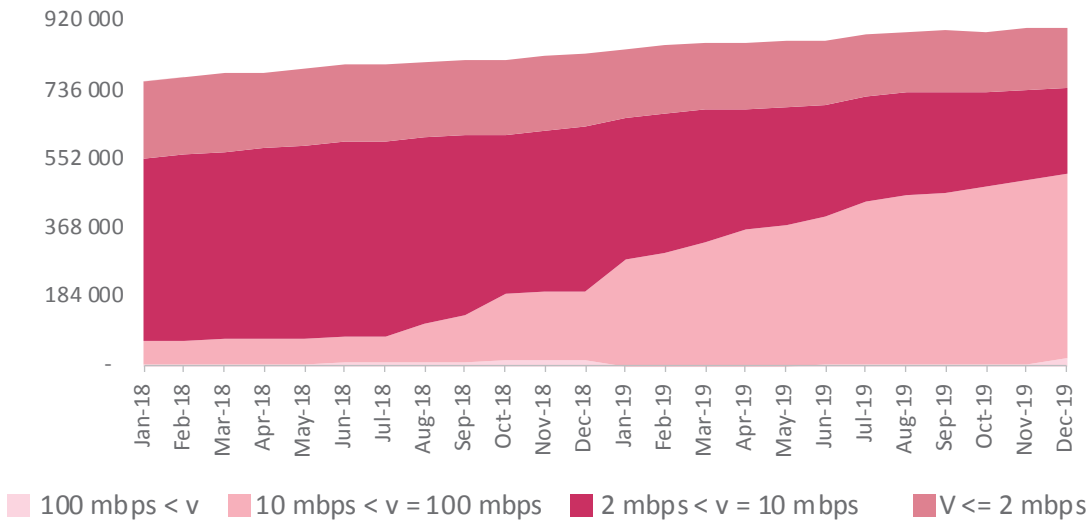
(figures at each year´s closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 107. Costa Rica: Subscriptions, access to fixed Internet. Detail by speed, 2018-2019

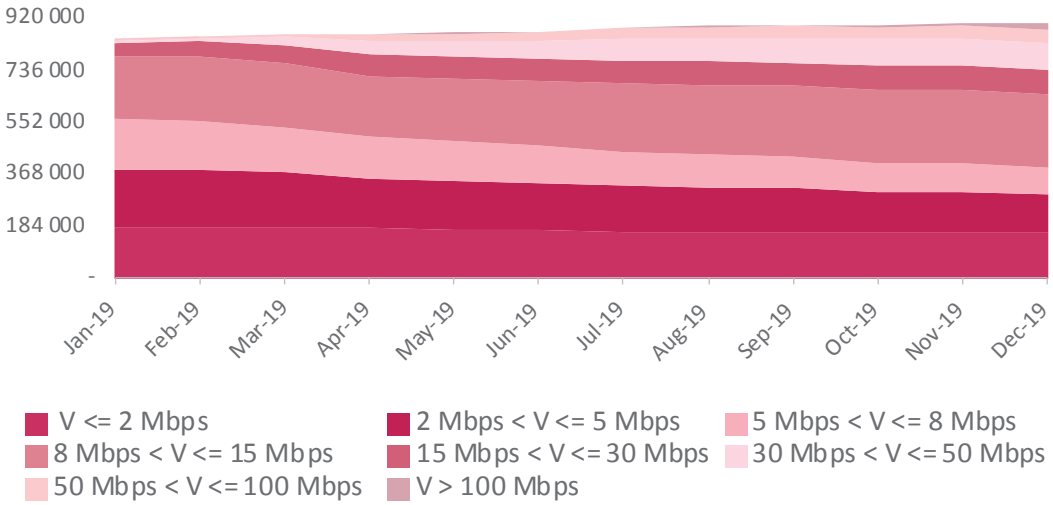
(figures at month closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 108. Costa Rica: Subscriptions, access to fixed Internet, detail by speed ranges and by month, 2019

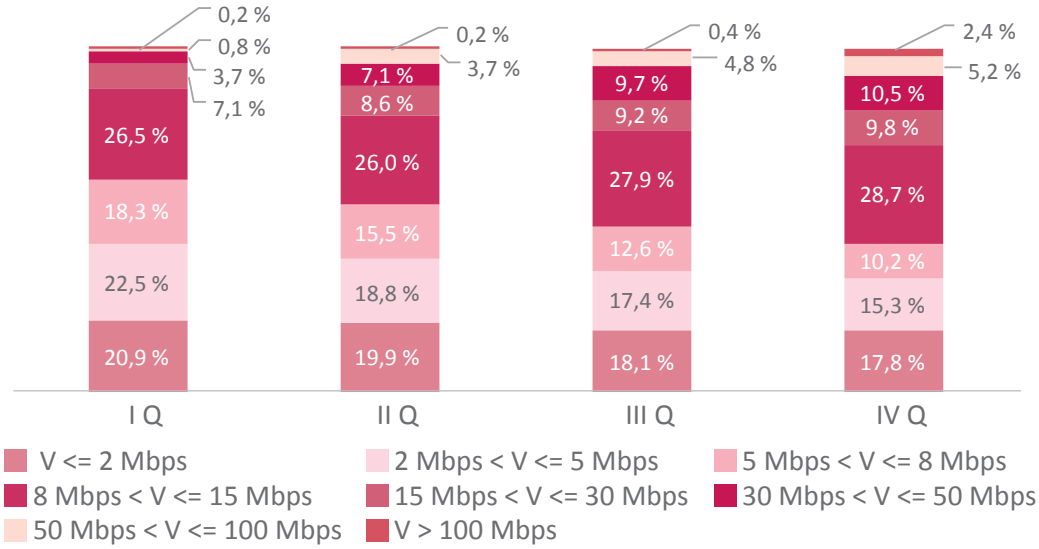
(figures at month closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 109. Costa Rica: Subscriptions, access to fixed Internet. Percentage distribution by speed, 2019

(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 110. Costa Rica: Subscriptions, access to fixed Internet, number of operators by speed range, 2019

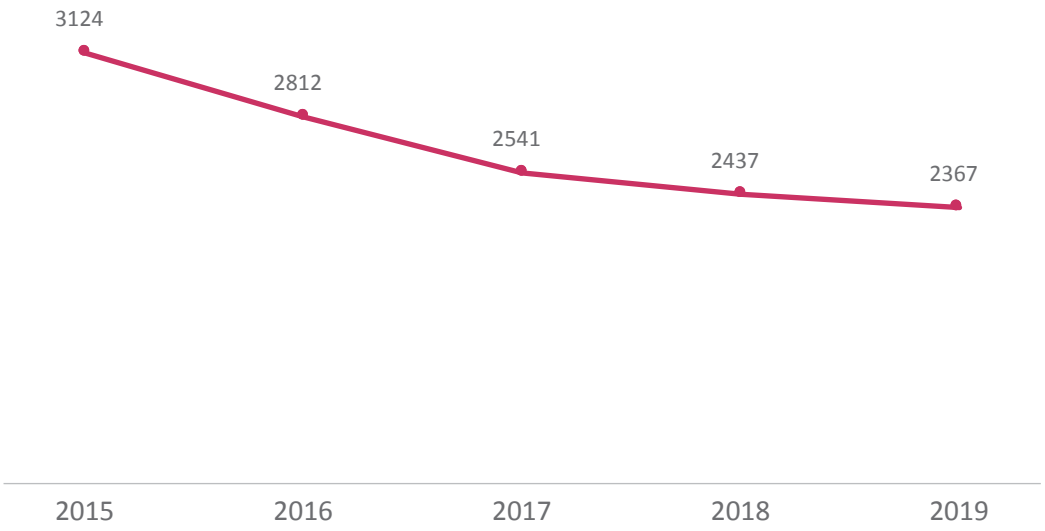
(figures at year closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 111 Costa Rica: HHI evolution, access to fixed Internet, 2015-2019

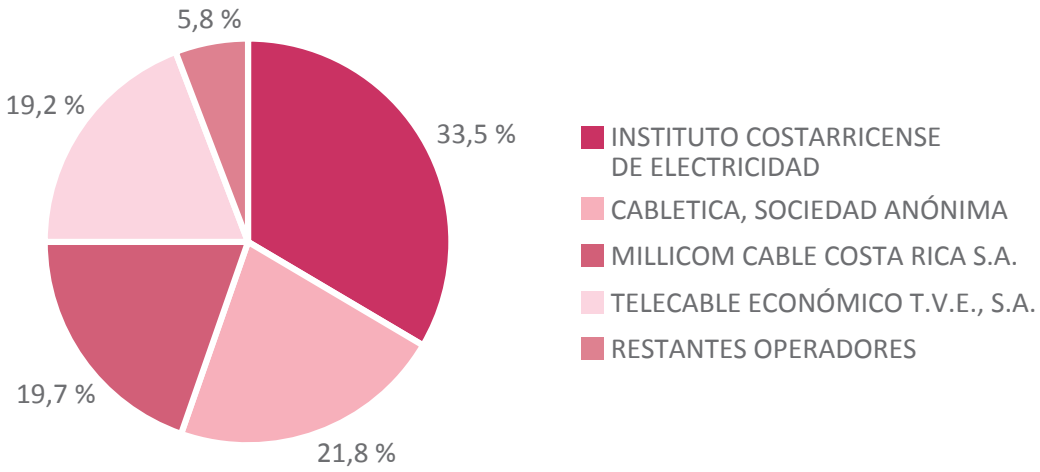
(annual figures in natural units)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 112. Costa Rica: Market share, access to fixed Internet, 2019

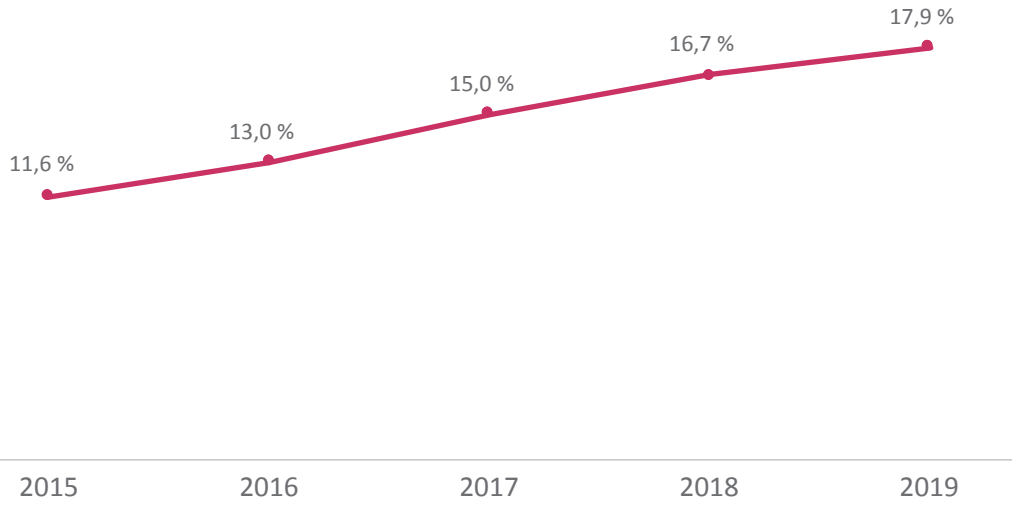
(figures at year closing)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 113. Costa Rica: Subscriptions, access to fixed Internet per 100 inhabitants, 2015-2019

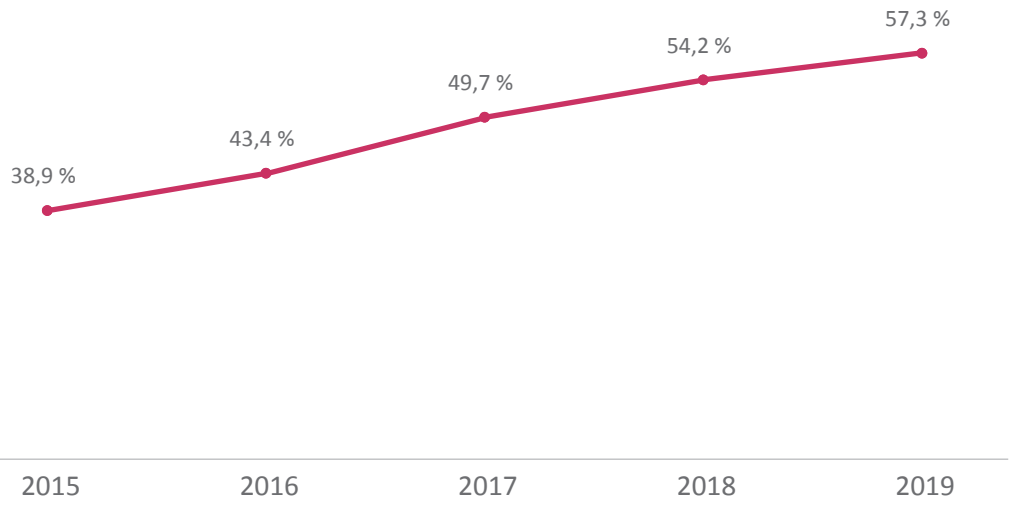
(annual figures in percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 114. Costa Rica: Subscriptions, access to fixed Internet per 100 houses, 2015-2019

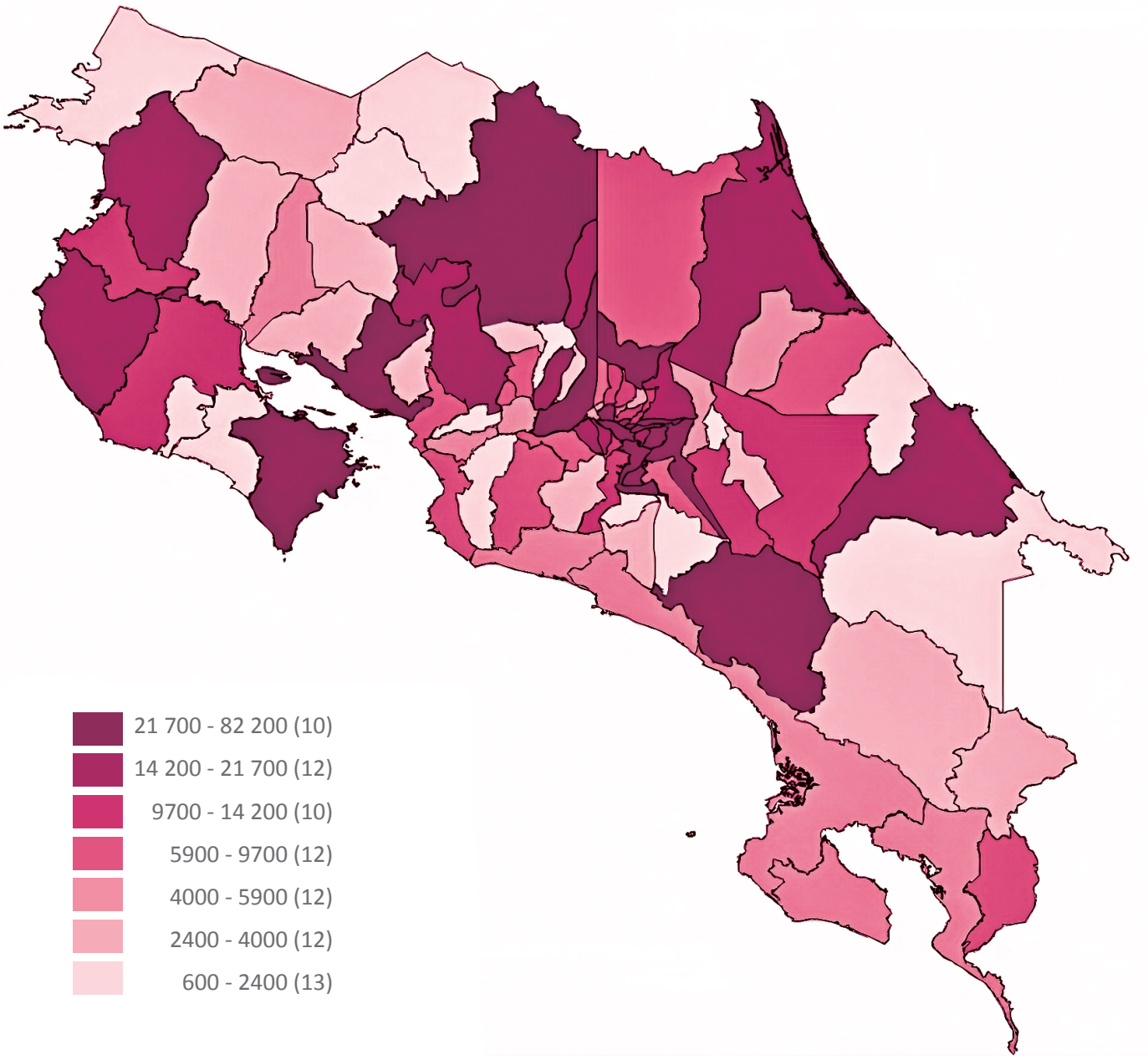
(annual figures in percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Map n.° 1 Costa Rica: Subscriptions, access to fixed Internet, heat map for the number of subscriptions by canton, 2019

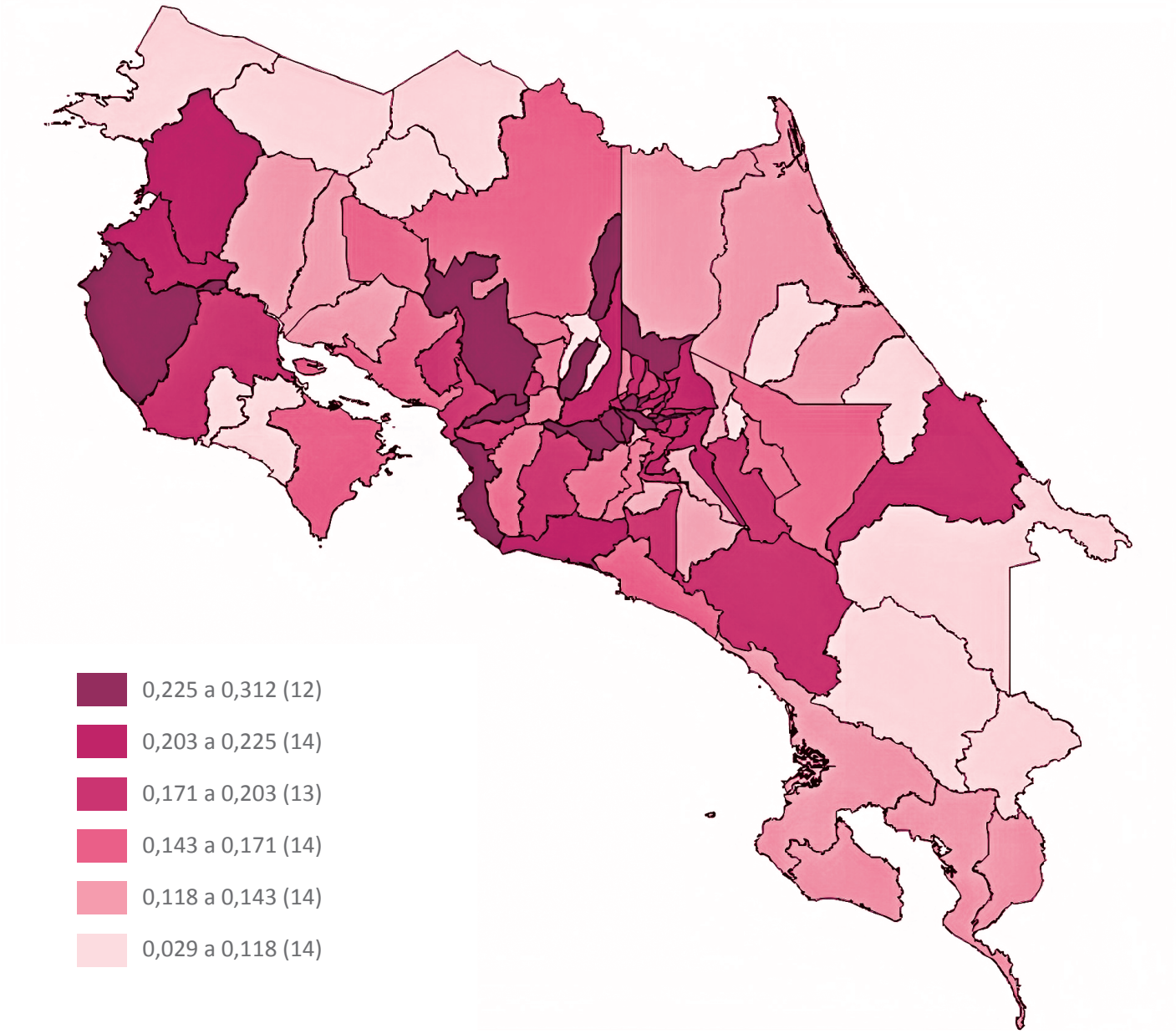
(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Map n.° 2. Costa Rica: Subscriptions, access to fixed Internet, heat map for Internet penetration by canton, 2019

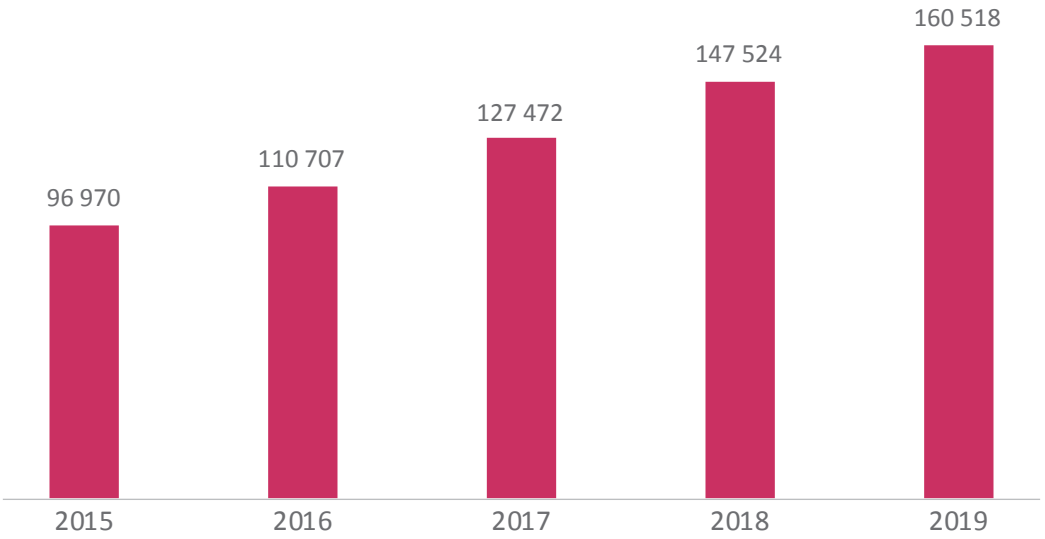
(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 115. Costa Rica: Revenue, access to fixed Internet, 2015-2019

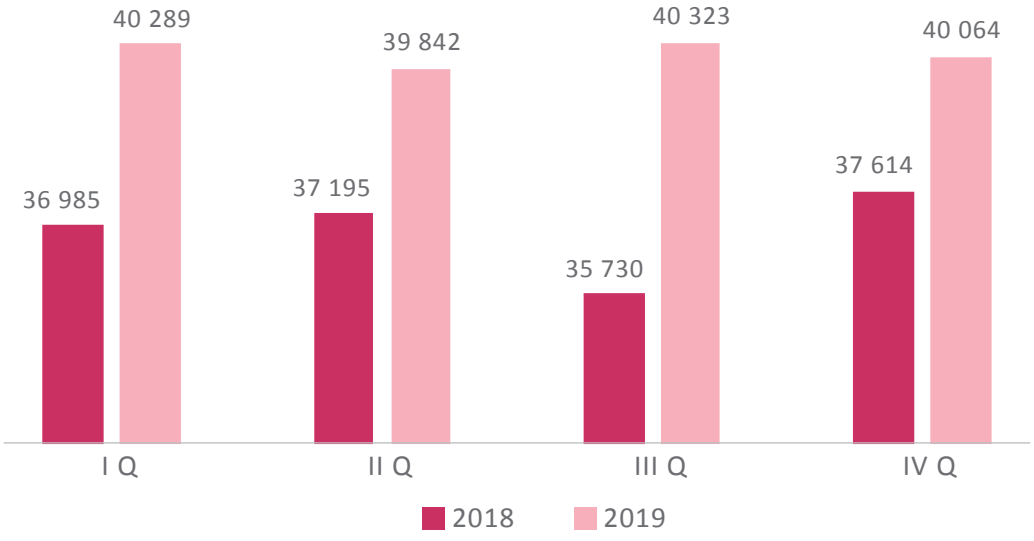
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 116. Costa Rica: Revenue, access to fixed Internet, 2018-2019

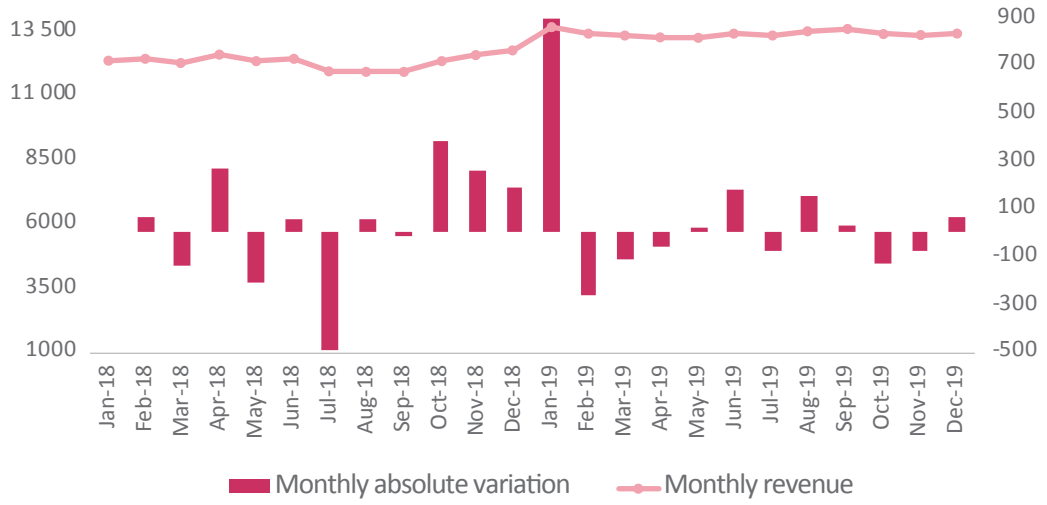
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 117. Costa Rica: Revenue, access to fixed Internet, total accrued and absolute monthly variation, 2018-2019

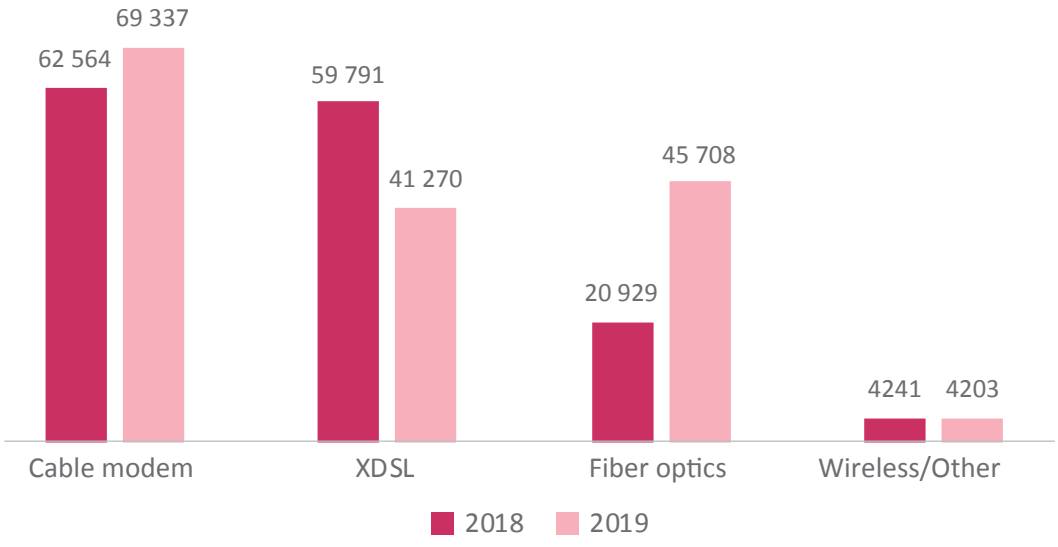
(monthly in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 118. Costa Rica: Revenue, access to fixed Internet, comparison by technology, 2018-2019

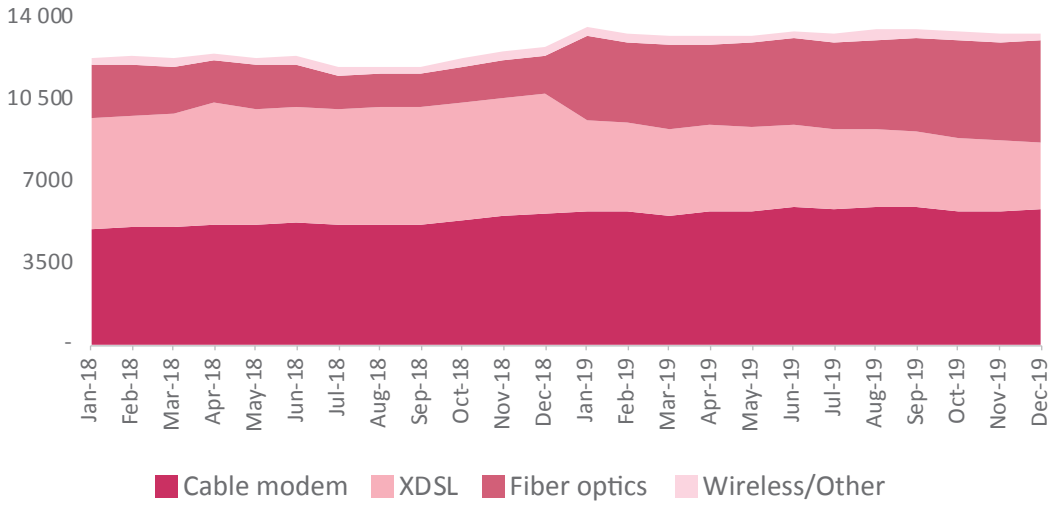
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 119. Costa Rica: Revenue, access to fixed Internet. Distribution by technology, 2018-2019

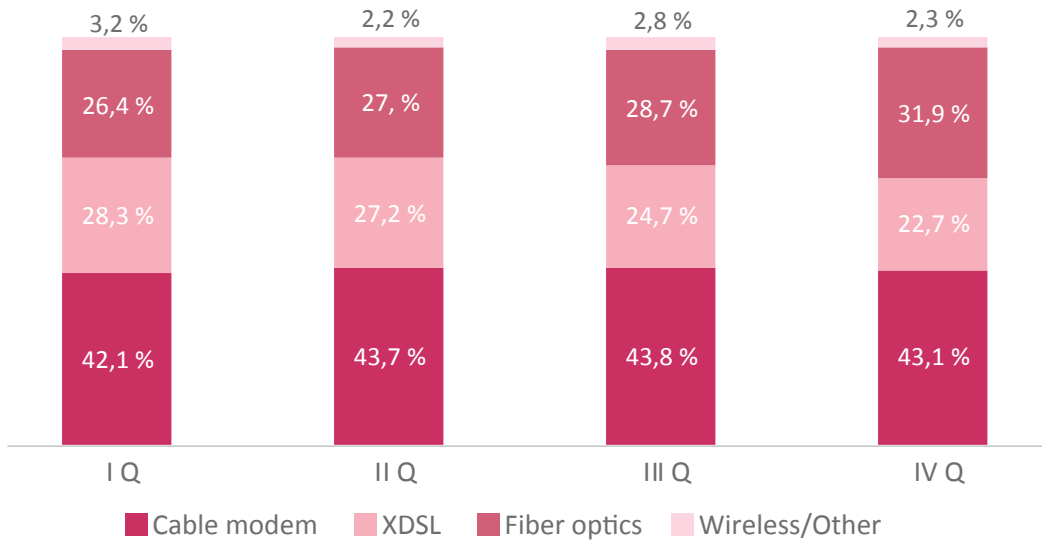
(monthly in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 120. Costa Rica: Revenue, access to fixed Internet. Percentage distribution by technology, 2019

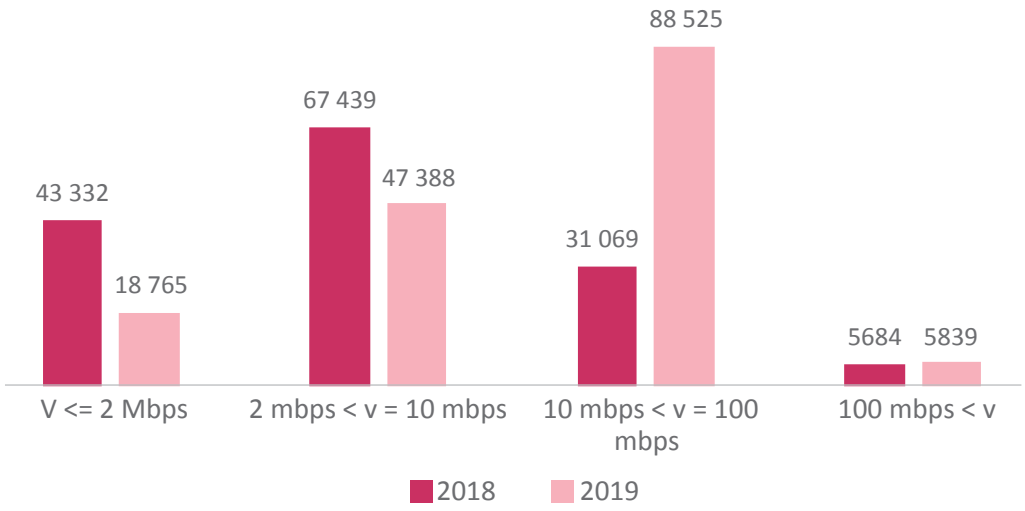
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 121. Costa Rica: Revenue, access to fixed Internet, comparison by speed, 2018-2019

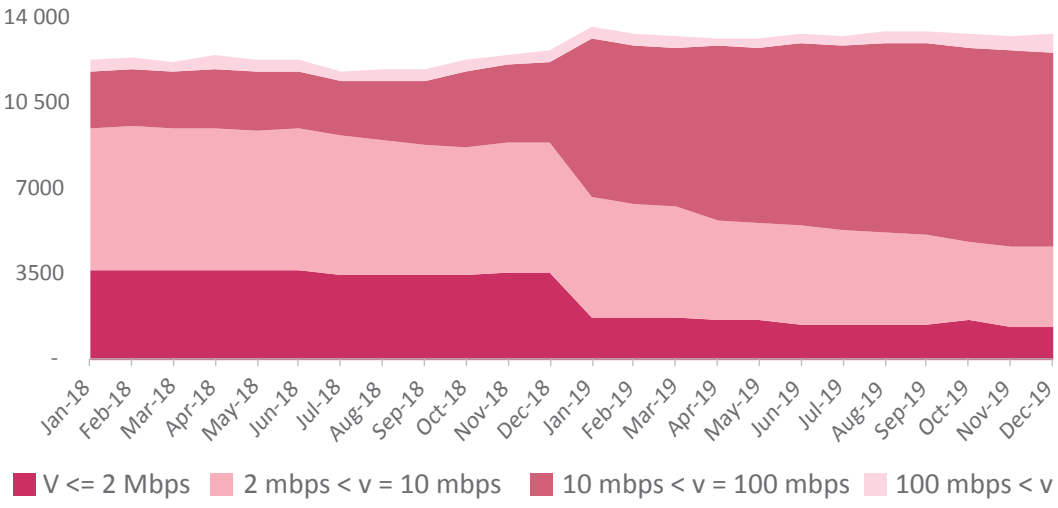
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 122. Costa Rica: Revenue, access to fixed Internet, comparison by speed, 2018-2019

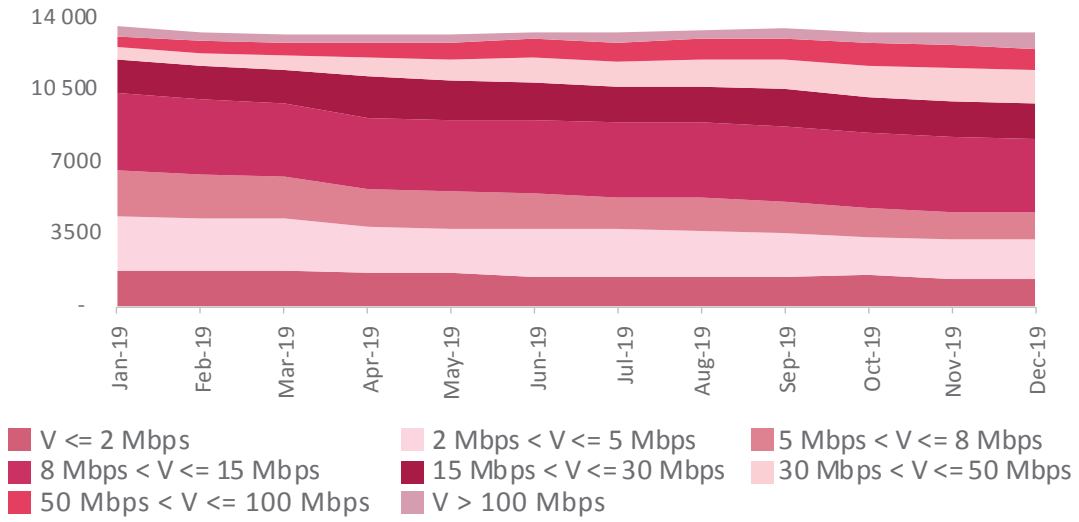
(monthly in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 123. Costa Rica: Revenue, access to fixed Internet, comparison by speed, 2018-2019

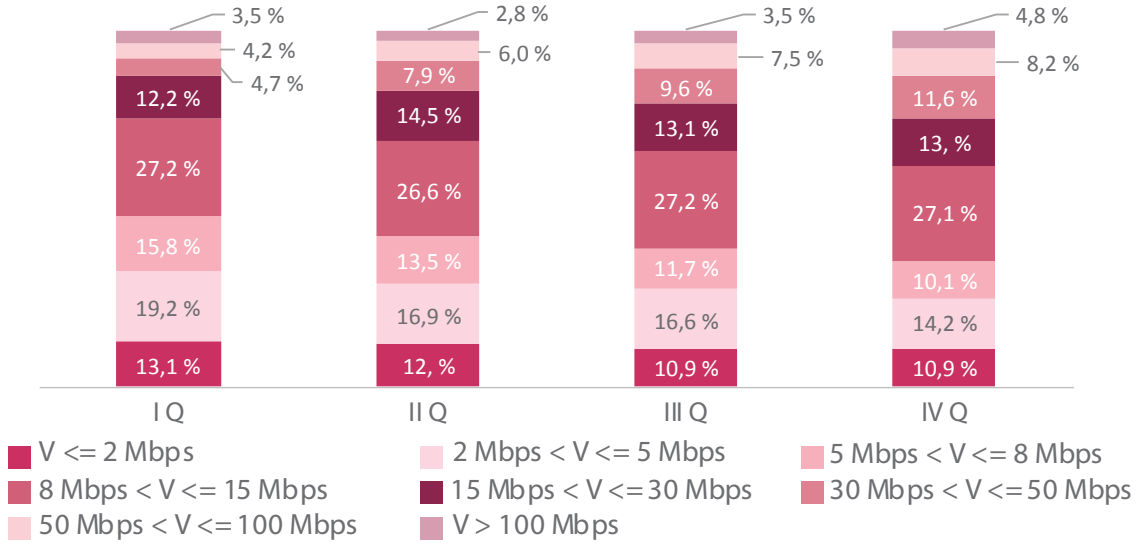
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 124. Costa Rica: Revenue, access to fixed Internet, distribution by new speed ranges, 2019

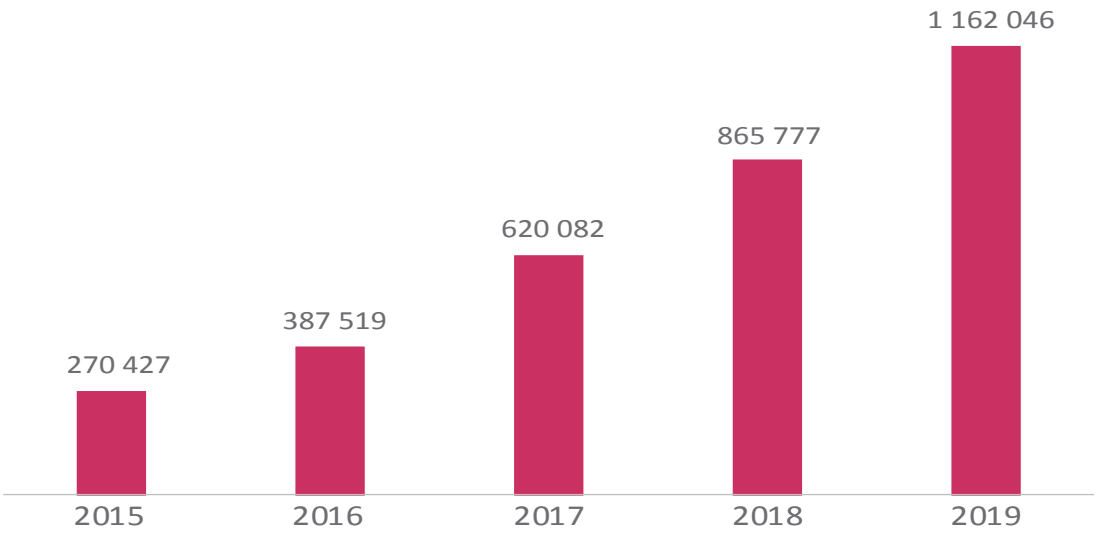
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 125. Costa Rica: Traffic, access to fixed Internet, 2015-2019

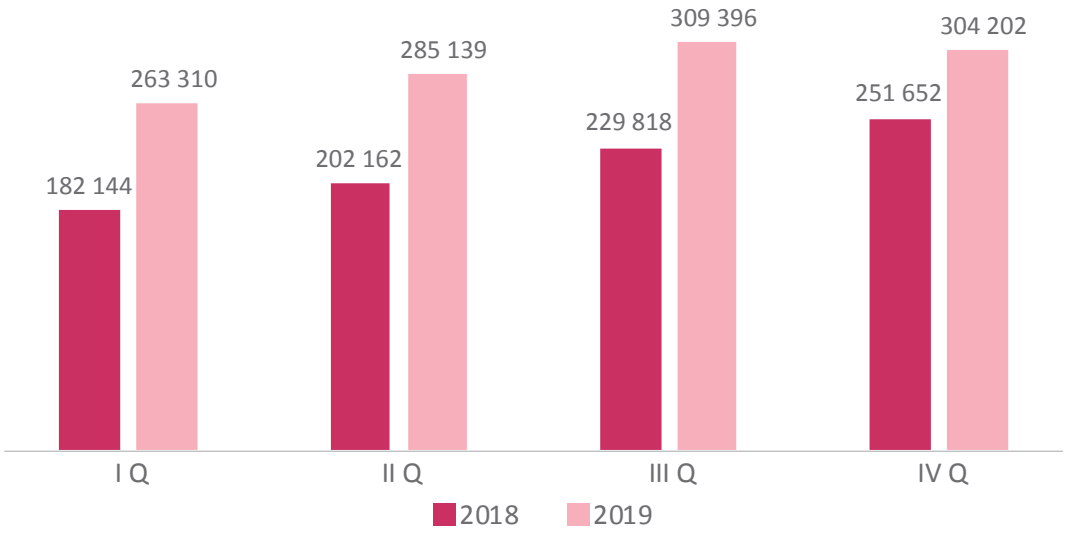
(annual figures in TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 126. Costa Rica: Traffic, access to fixed Internet, quarterly comparison, 2018-2019

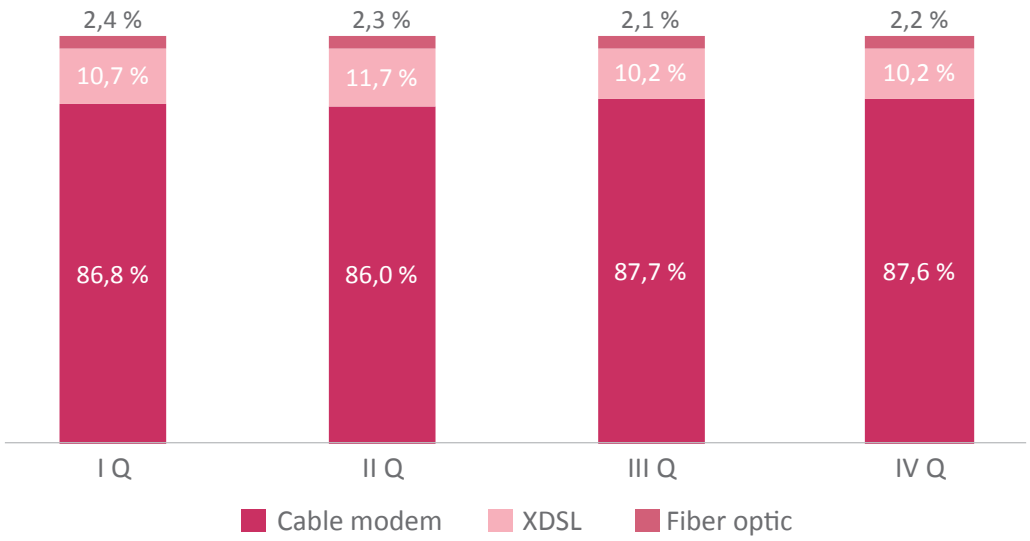
(cifras trimestrales en TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 127. Costa Rica: Traffic, access to fixed Internet, comparison by technology, 2018-2019

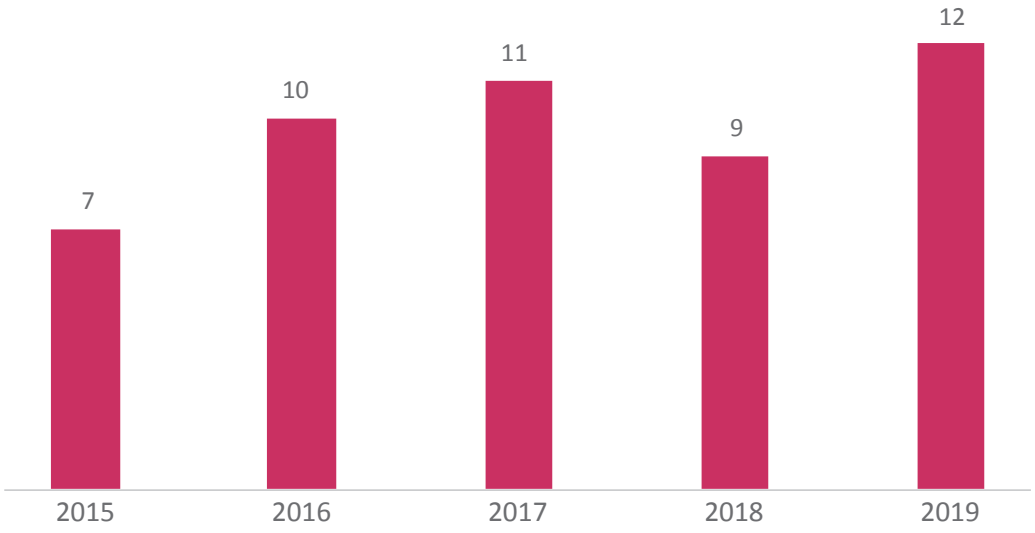
(cifras trimestrales en TB)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 128. Costa Rica: Connections, wholesale Internet access, number of participating companies, 2015-2019

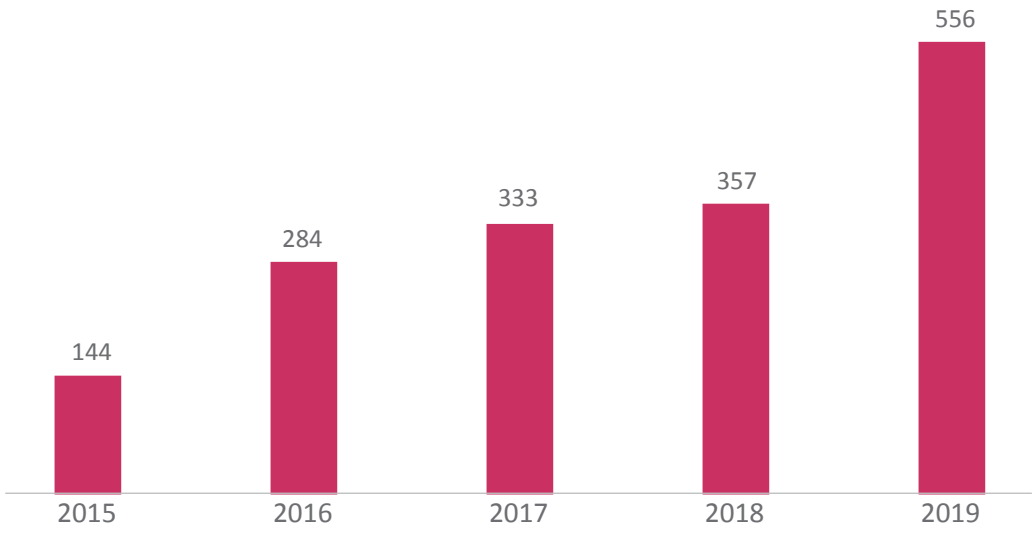
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 129. Costa Rica: Connections, wholesale Internet access, 2015-2019

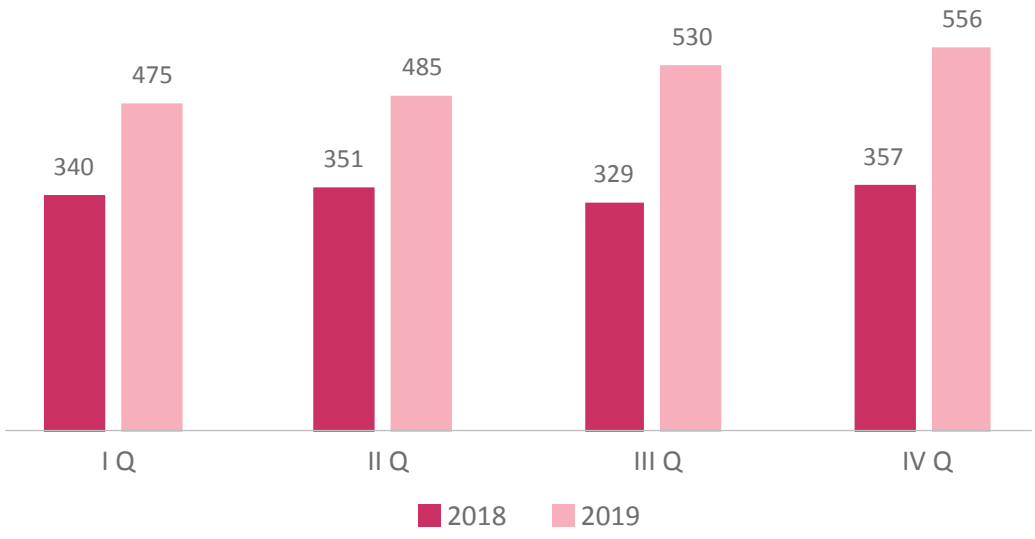
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 130. Costa Rica: Connections, wholesale Internet access, 2018-2019

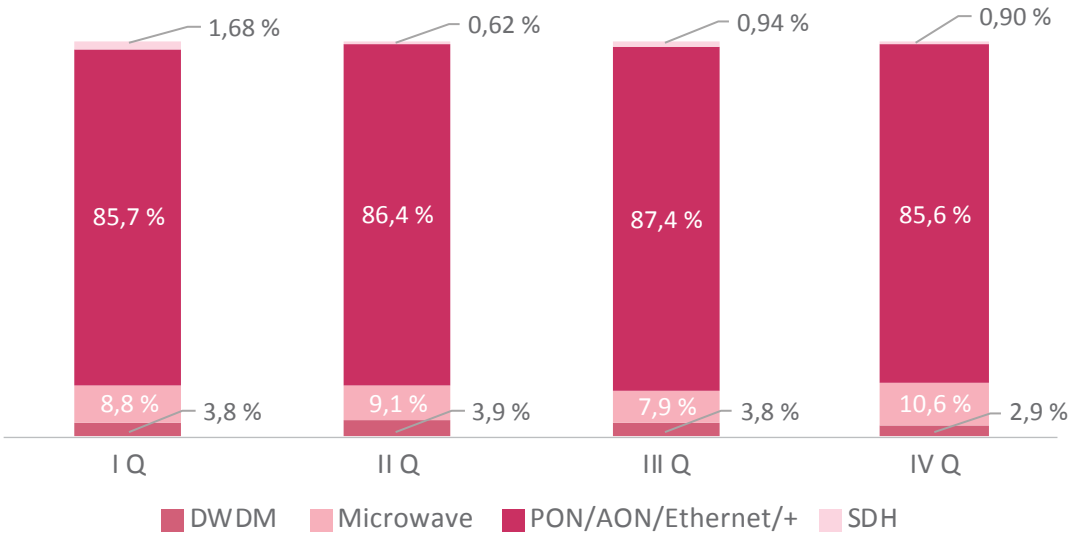
(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 131. Costa Rica: Connections wholesale Internet access, percentage distribution by connection technology, 2019

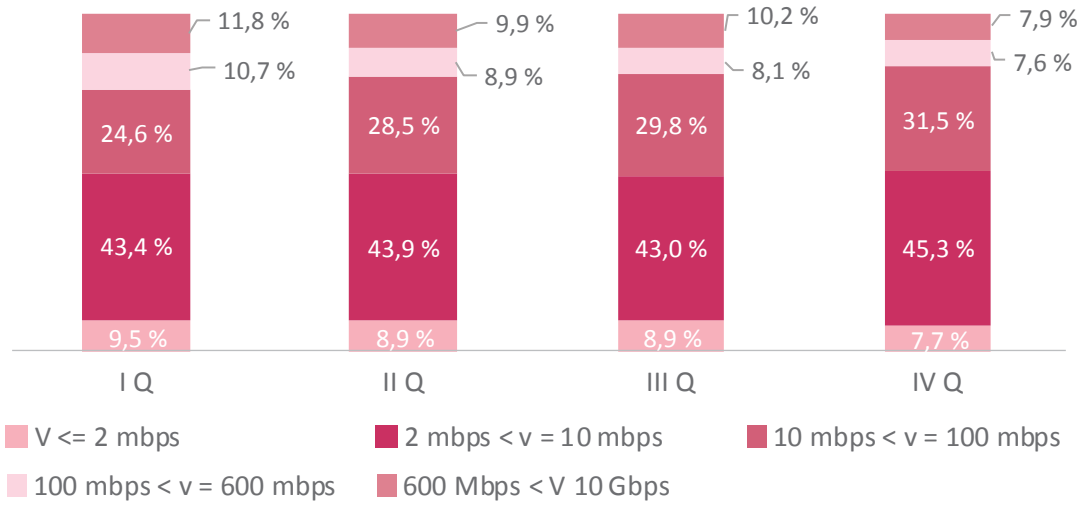
(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 132. Costa Rica: Connections, wholesale Internet access, percentage distribution by speed, 2019

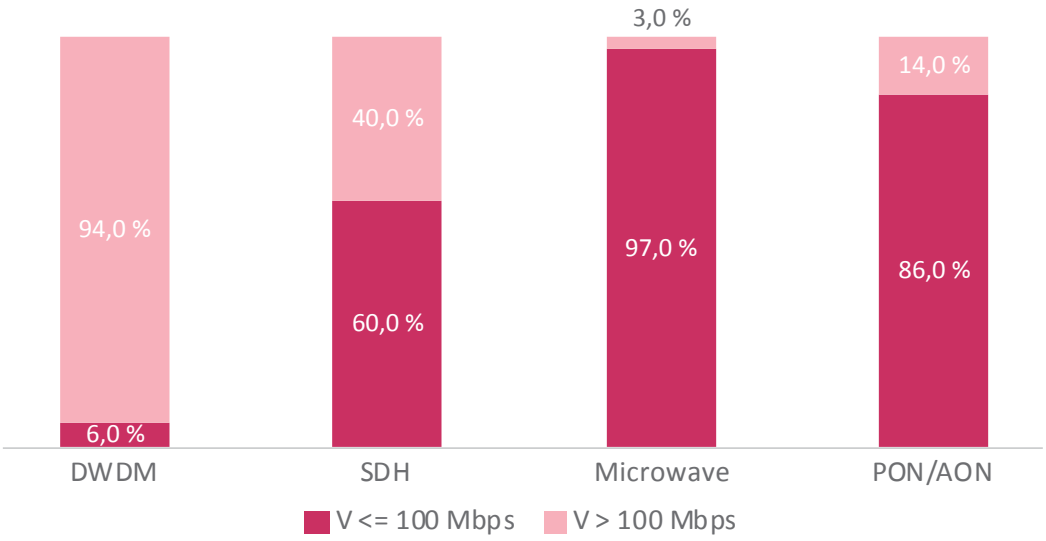
(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 133. Costa Rica: Connections, wholesale Internet access, percentage distribution by speed and technology, 2019

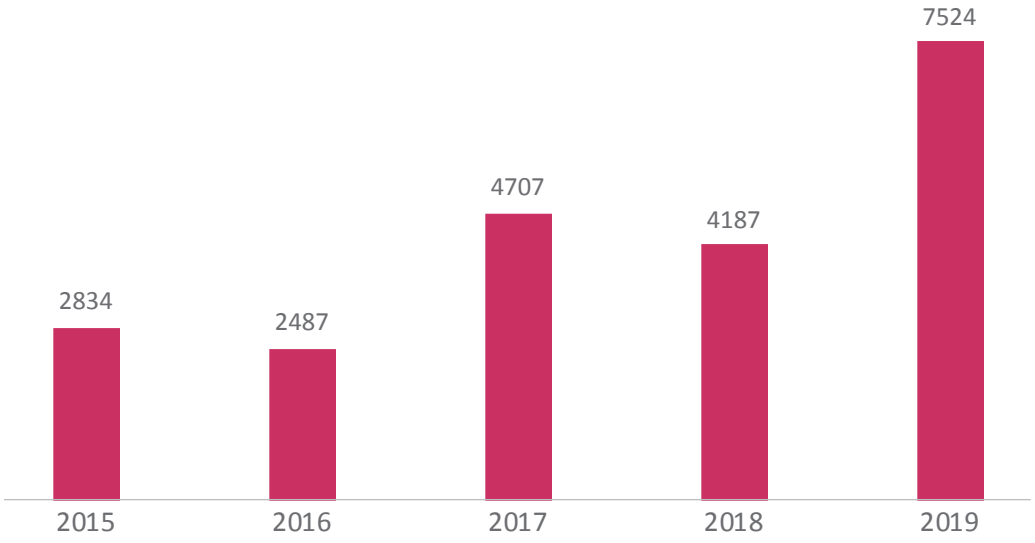
(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 134. Costa Rica: Revenue, wholesale Internet access, 2015-2019

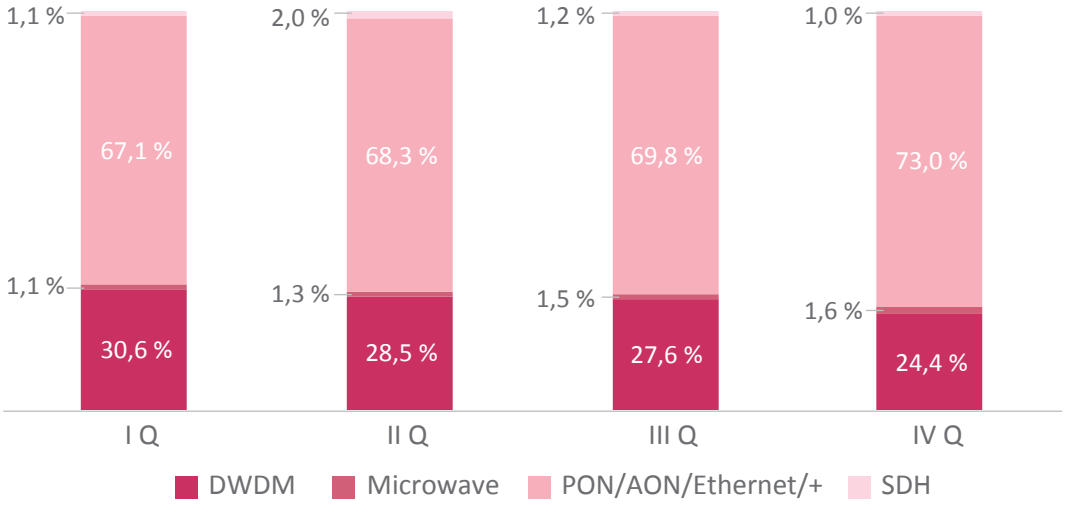
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 135. Costa Rica: Revenue, wholesale Internet access, distribution by technology, 2019

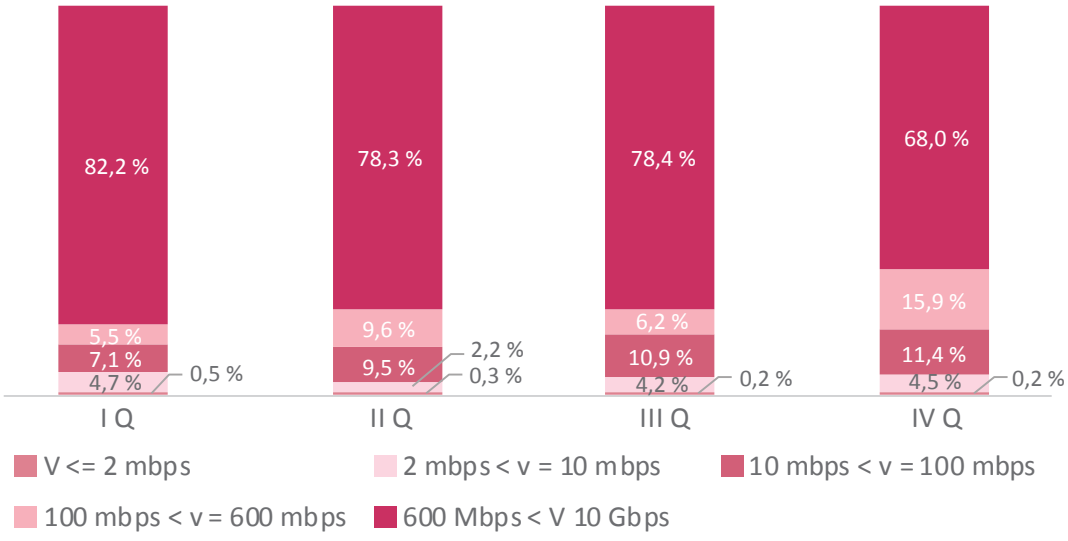
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 136. Costa Rica: Revenue, wholesale Internet access, distribution by speed, 2019

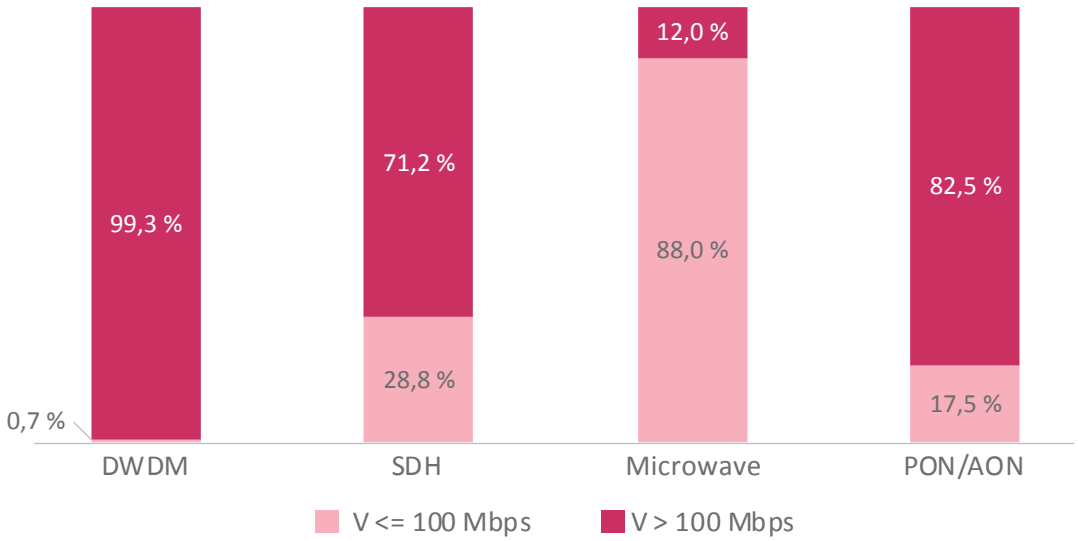
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 137. Costa Rica: Revenue, wholesale Internet access, distribution by speed and technology, 2019

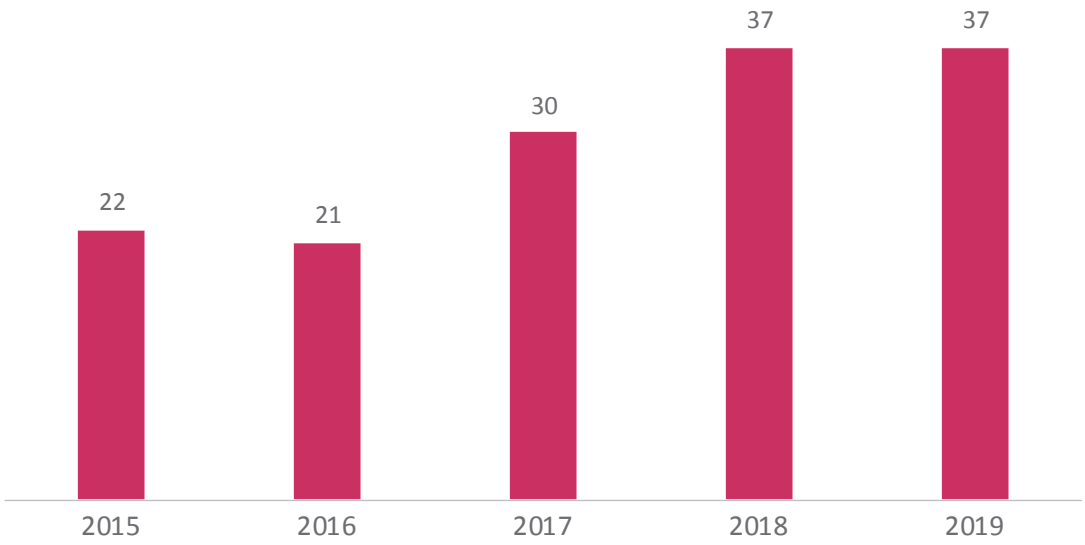
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 138. Costa Rica: Connections, leased lines, number of active companies, 2015-2019

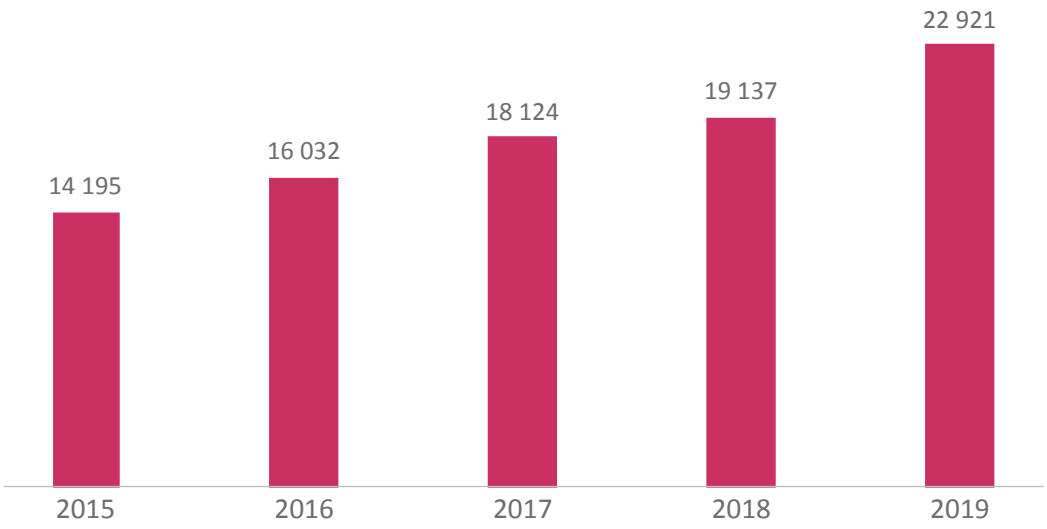
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 139. Costa Rica: Connections, leased lines, 2015-2019

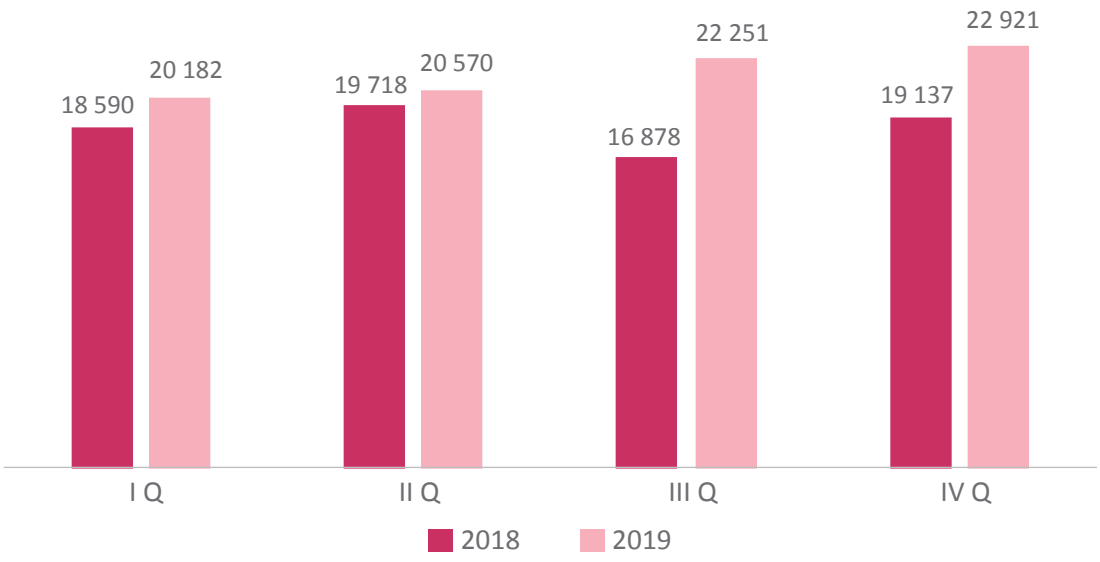
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 140. Costa Rica: Connections, leased lines, 2018-2019

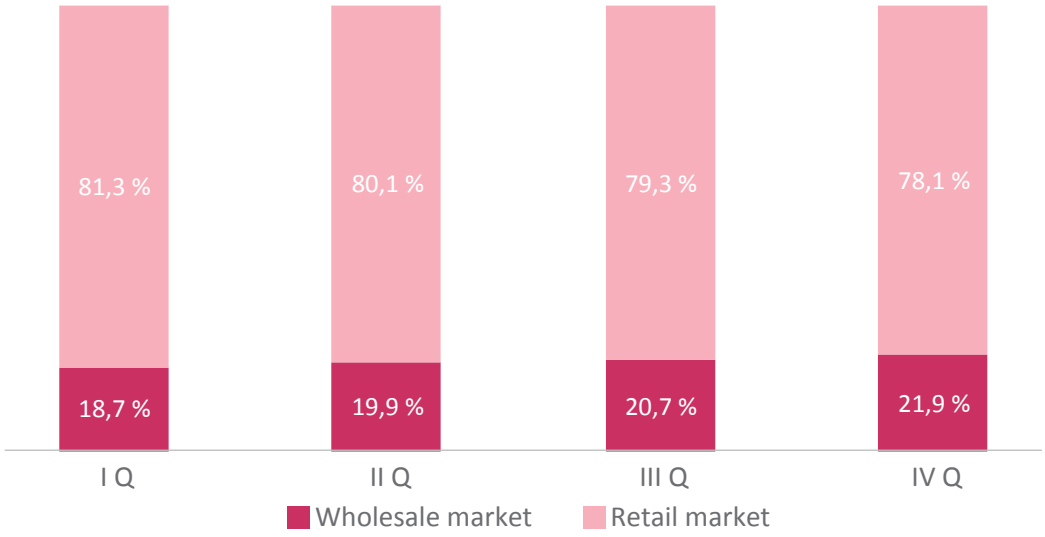
(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 141. Costa Rica: Connections, leased lines, comparison by market type, 2019

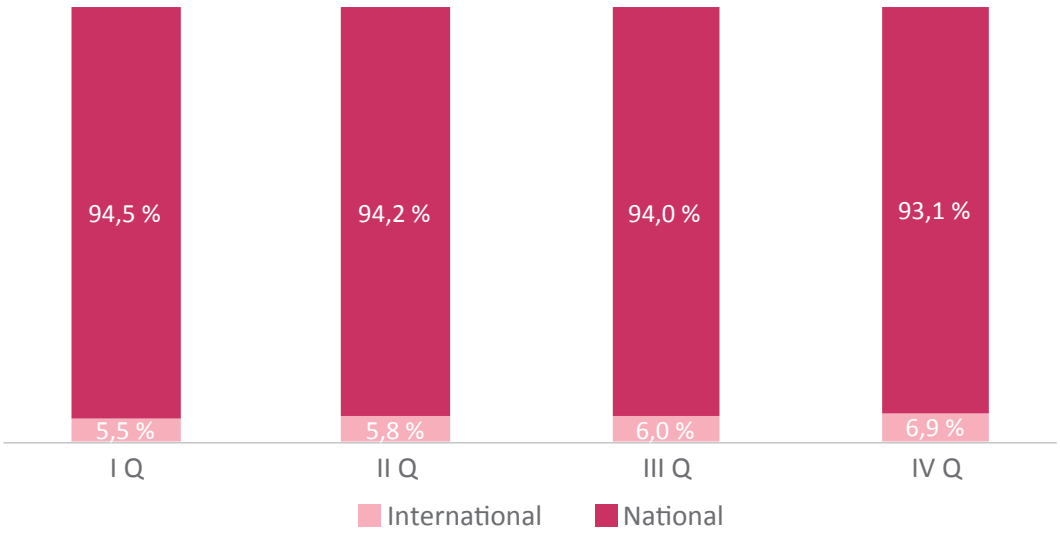
(quarterly figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 142. Costa Rica: Connections, leased lines, comparison by territory by services provided, 2019

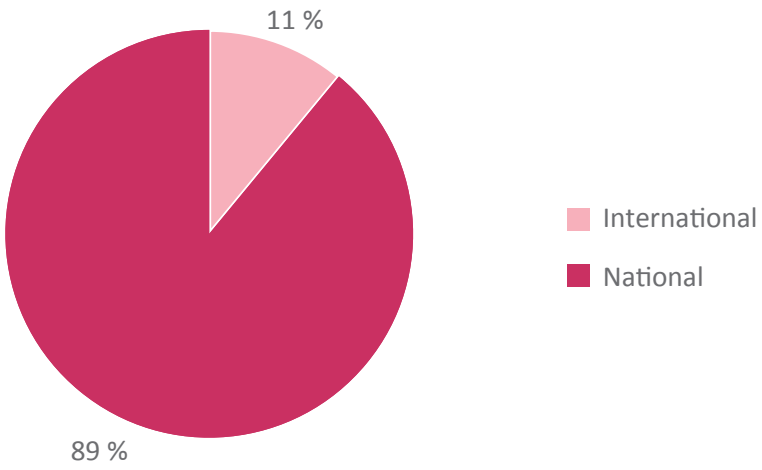
(quarterly figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 143. Costa Rica: Connections, leased lines, distribution by territory by services provided, wholesale market, 2019

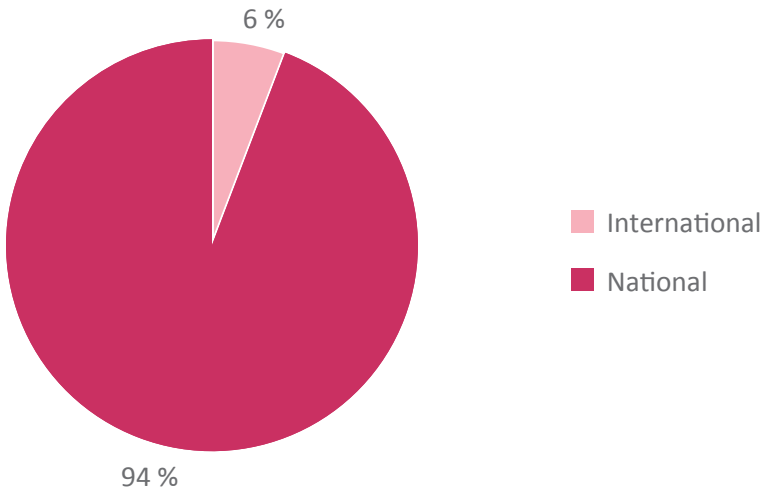
(figures at year closing in percentages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

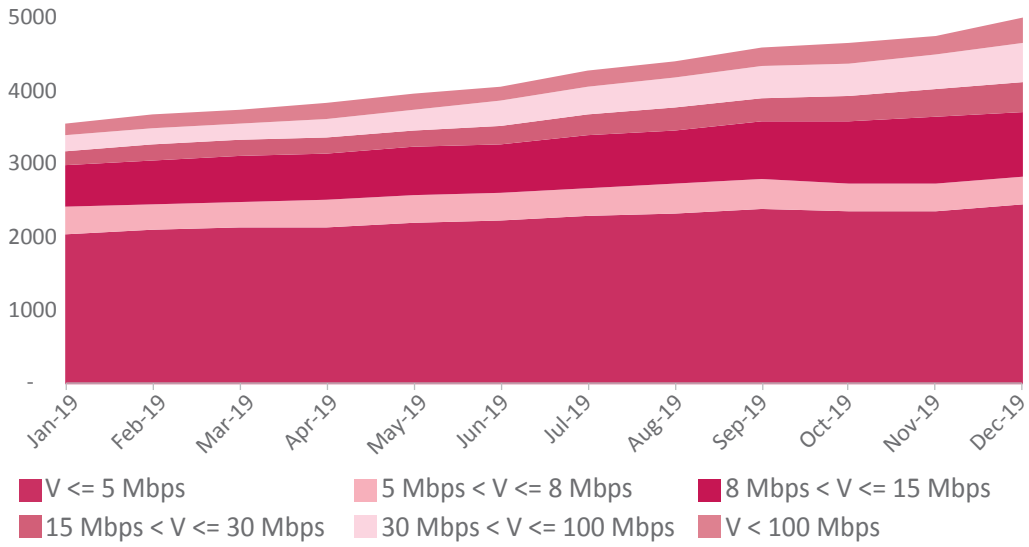
Graph n.° 144. Costa Rica: Connections, leased lines, distribution by territory by services provided, retail market, 2019

(figures at year closing in percentages)



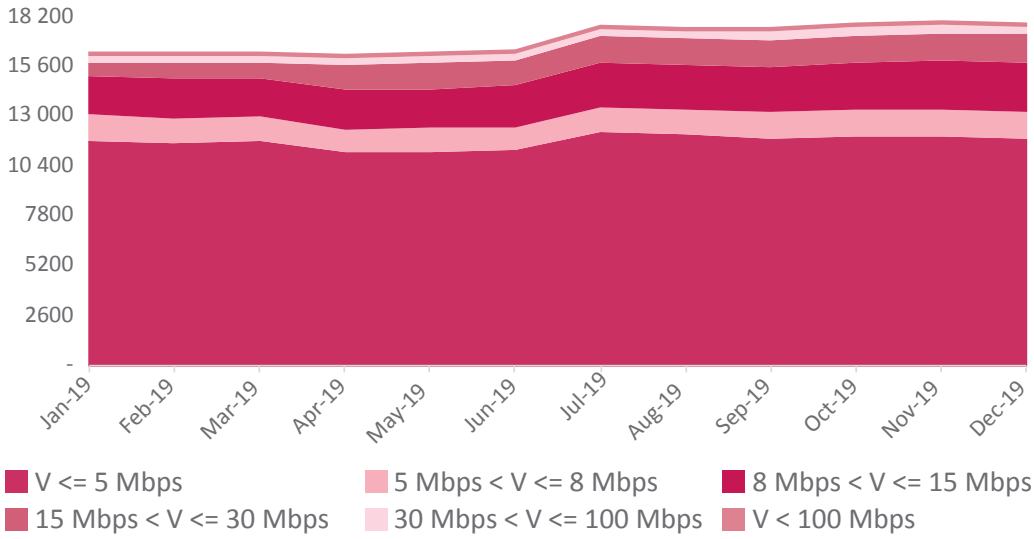
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 145. Costa Rica: Connections, leased lines, distribution by speed, wholesale market, 2019
(monthly)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

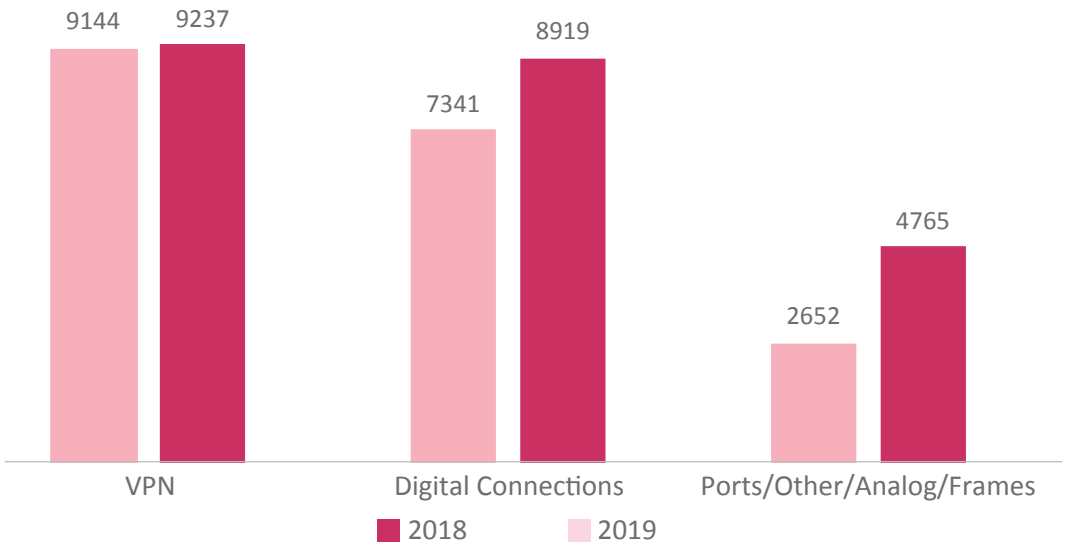
Graph n.° 146. Costa Rica: Connections, leased lines, distribution by speed, retail market, 2019
(monthly)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 147. Costa Rica: Connections, leased lines, total market, distribution by technology, 2018-2019

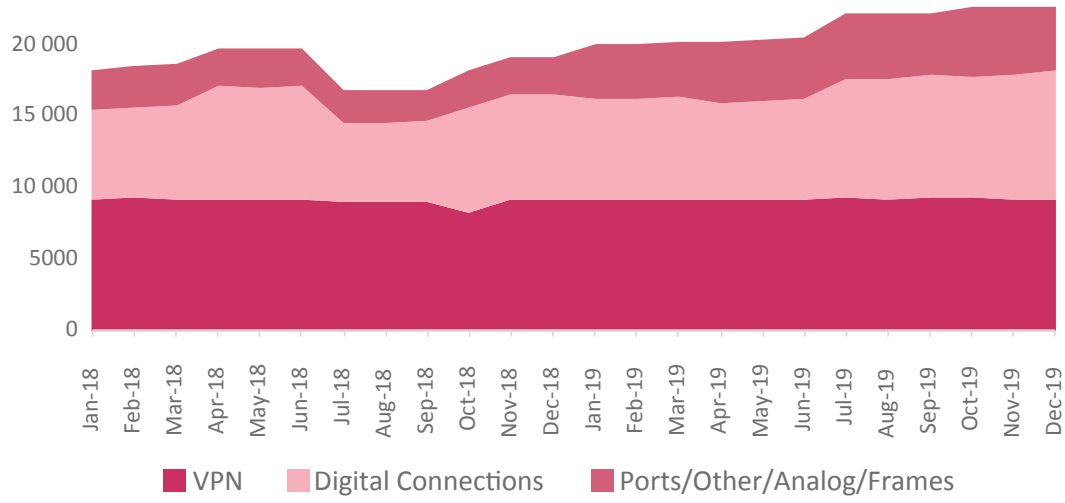
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

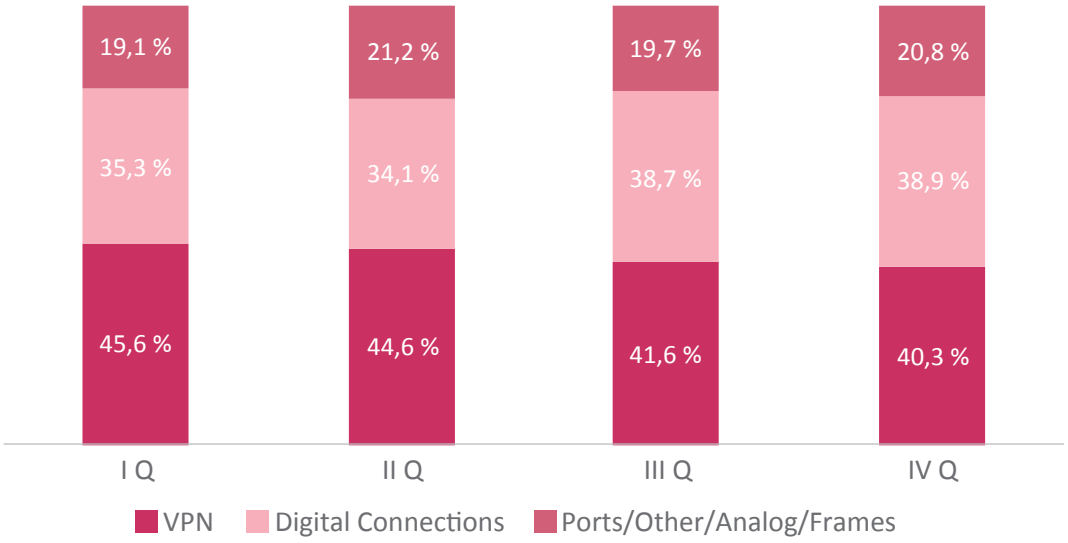
Graph n.° 148. Costa Rica: Connections, leased lines, total market, distribution by technology, 2018-2019

(monthly)



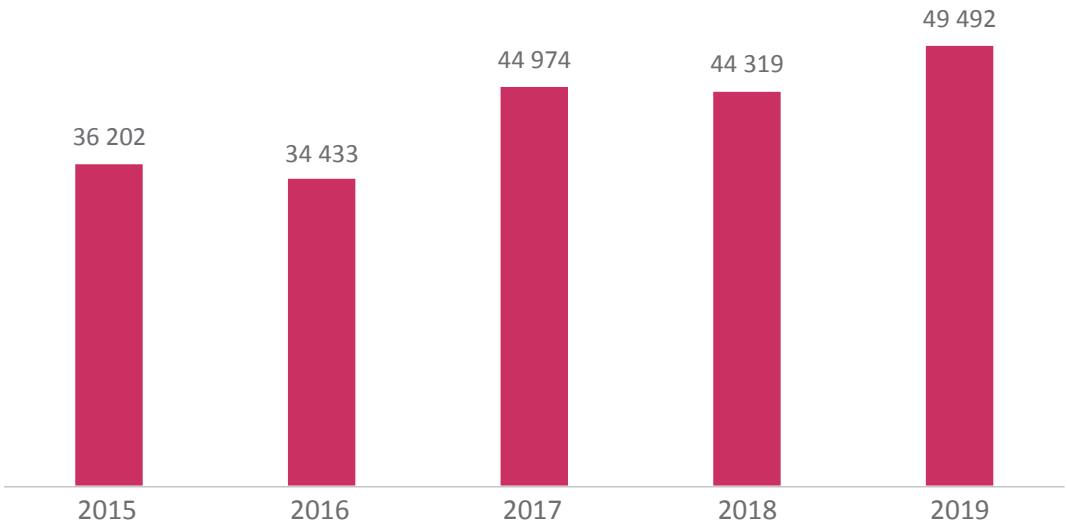
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 149. Costa Rica: Connections, leased lines, total market, distribution by technology, 2019
(quarterly figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

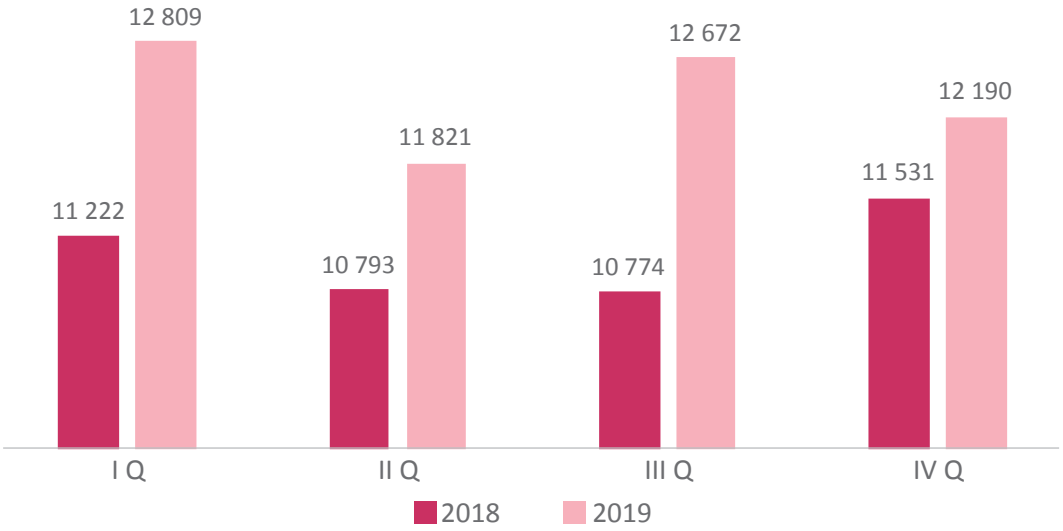
Graph n.° 150. Costa Rica: Revenue, leased lines, 2015-2019
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 151. Costa Rica: Revenue, leased lines, 2018-2019

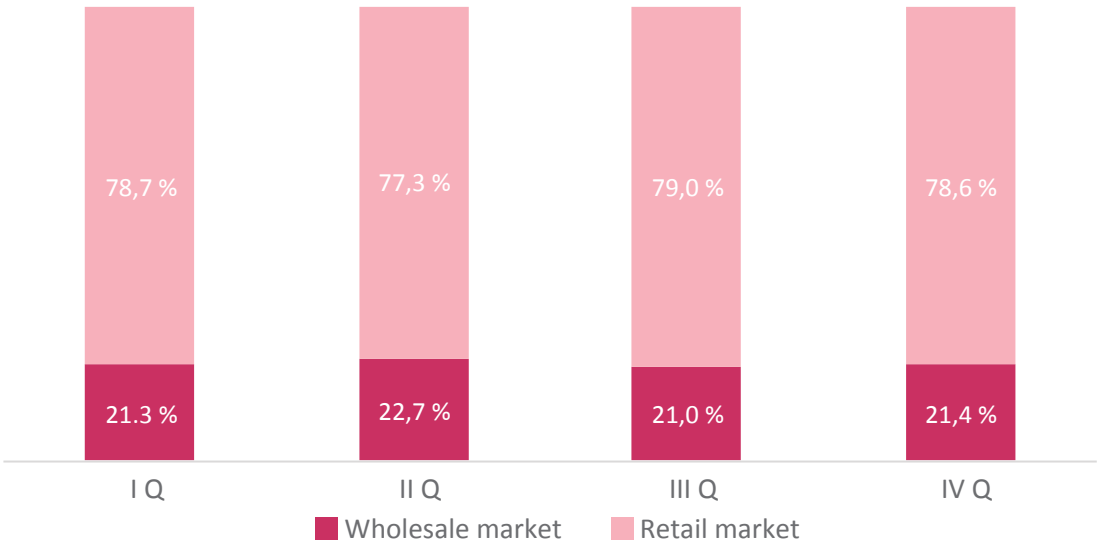
(quarterly figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 152. Costa Rica: Revenue, leased lines, comparison by market type, 2019

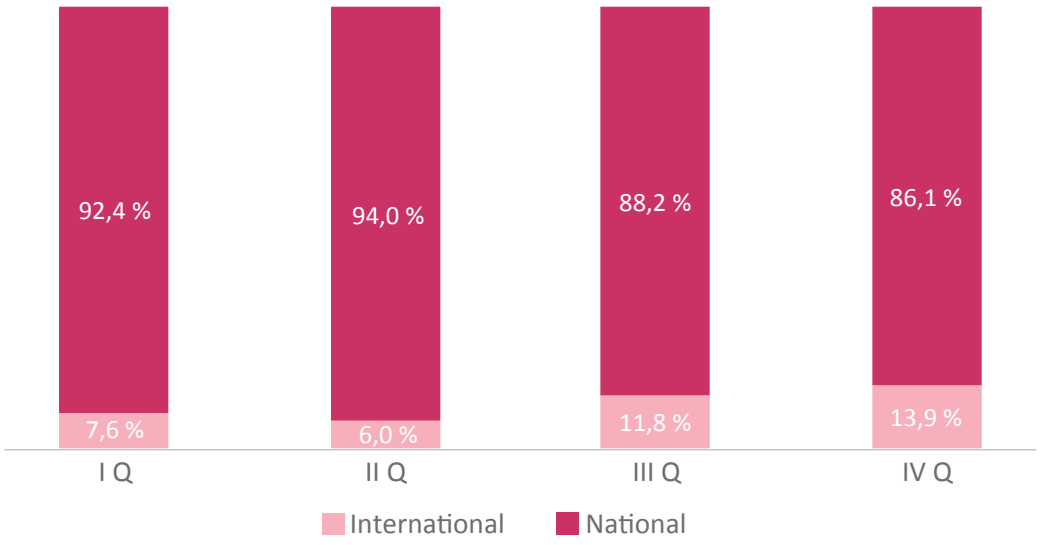
(quarterly figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 153. Costa Rica: Revenue, leased lines, comparison by territory by services provided, 2019

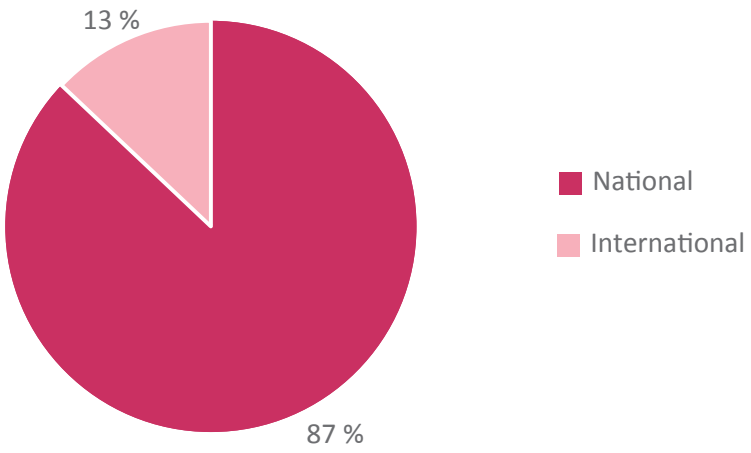
(quarterly figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 154. Costa Rica: Revenue, leased lines, distribution by territory by services provided, wholesale market, 2019

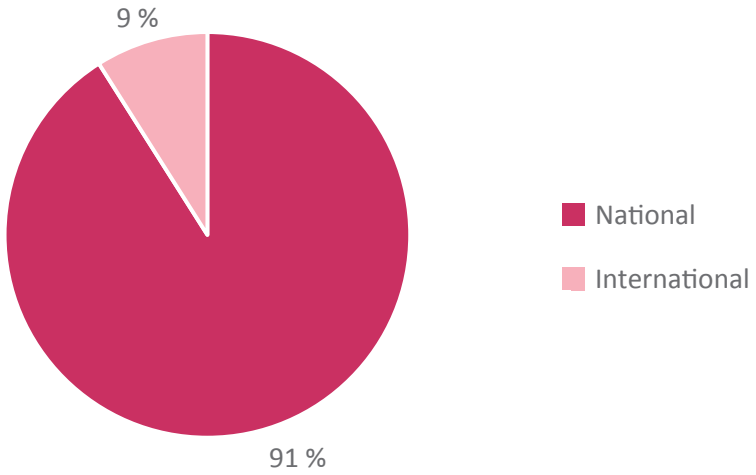
(figures at year closing in percentages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 155. Costa Rica: Revenue, leased lines, distribution by territory by services provided, retail market, 2019

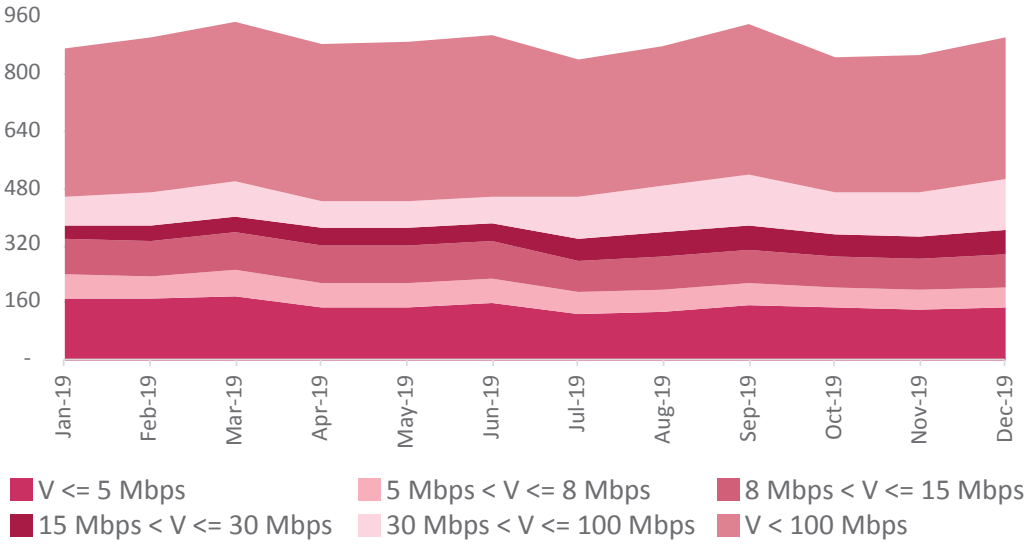
(figures at year closing in percentages)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 156. Costa Rica: Revenue, leased lines, distribution by speed, wholesale market, 2019

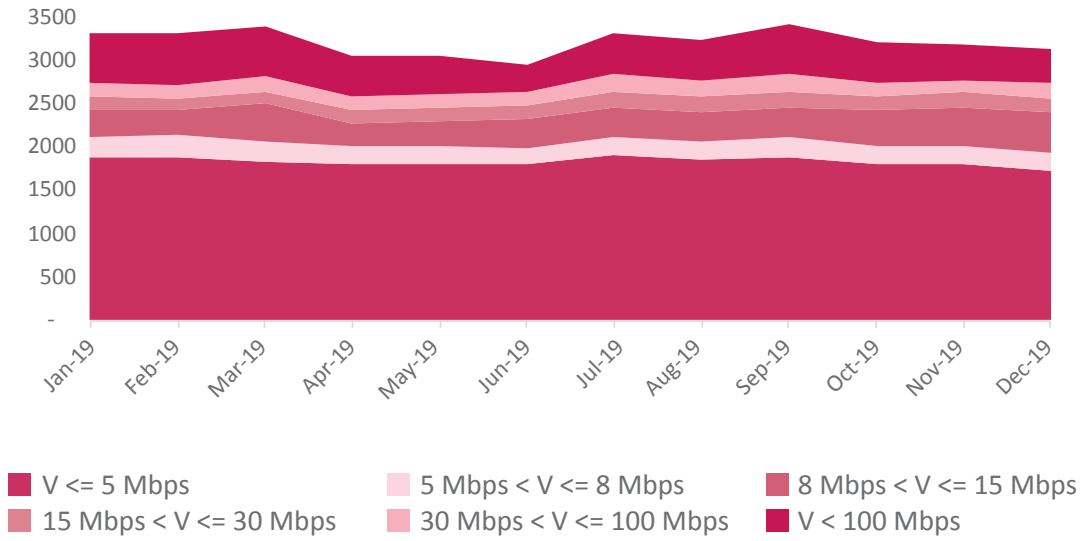
(monthly in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 157. Costa Rica: Revenue, leased lines, distribution by speed, retail market, 2019

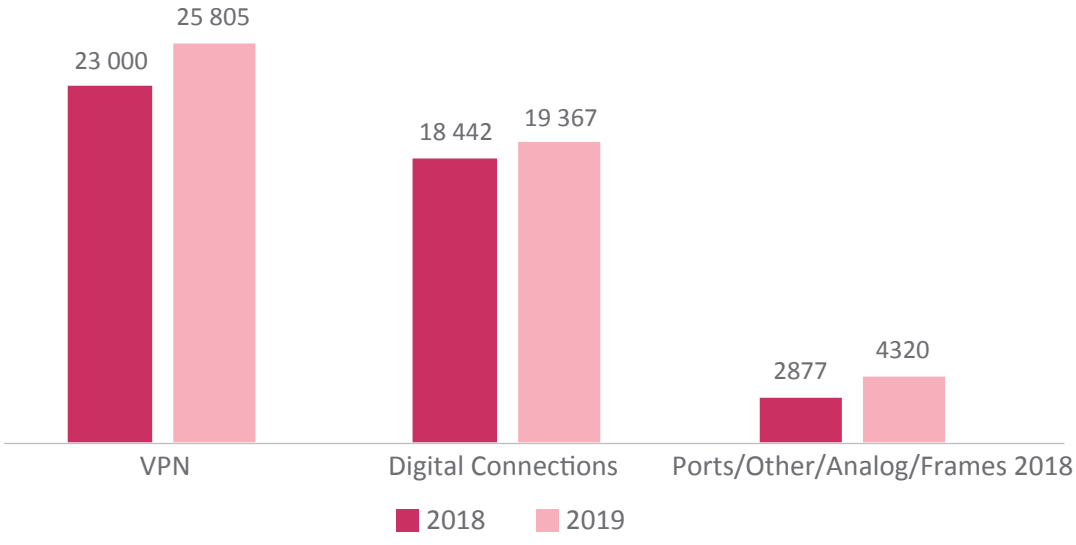
(monthly in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 158. Costa Rica: Revenue, leased lines, total market, distribution by technology, 2018-2019

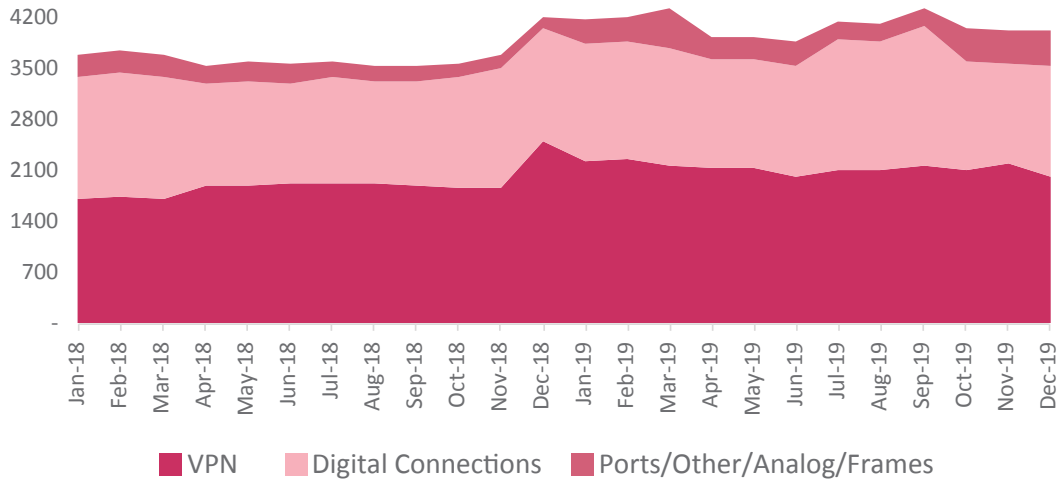
(annual figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 159. Costa Rica: Revenue, leased lines, total market, distribution by technology, 2018-2019

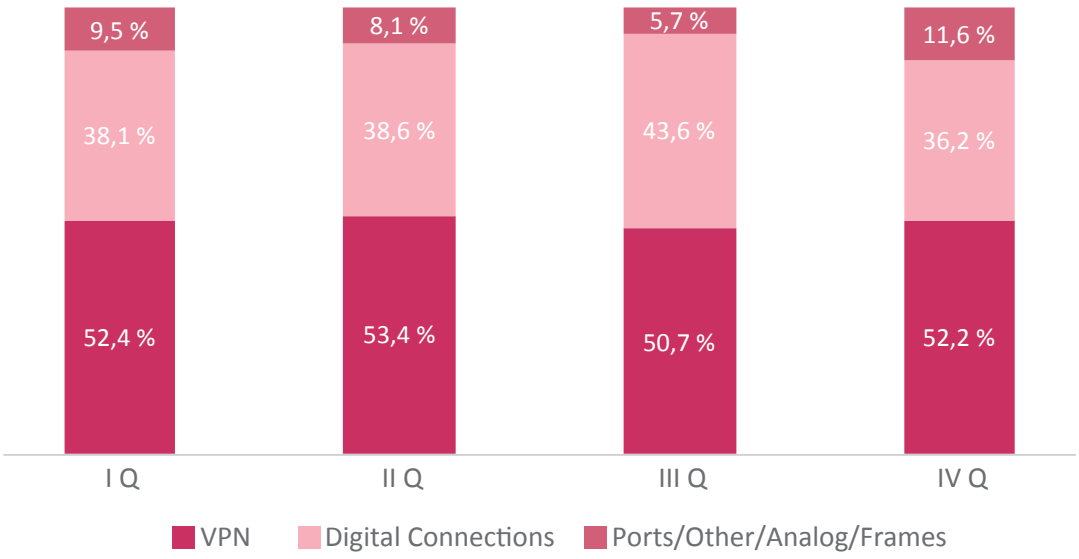
(monthly in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 160. Costa Rica: Revenue, leased lines, total market, distribution by technology, 2019

(quarterly figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

THE TELEVISION OVER IP SERVICE C ONTINUES GETTING SUBSCRIPTIONS FOR THE THIRD YEAR IN A ROW, 20 401 MORE AT THE 2019 CLOSING, WHICH REPRESENTS A 13.3% INCREASE

Subscription

TELE VI SION



Guadalupe's family neighbours in San Jose, enjoying susbcription television service.

The subscription television service as of December 2019 shows a reduction from the previous year regarding the commercial offer, registering a total of 28 providers compared to 31 in 2018. This service is offered by providers of different nature, including regional providers and other national and international ones, in such a way that these may offer one of the following service modalities: cable television subscription (23 providers), subscription television by wireless means, including satellite and microwave (5 providers), and finally, 2 companies that offer subscription television via Internet (IPTV)[31].



Subscriptions

Regarding the total subscriptions to this service, for 2019, they amount to 874 088, which implies a reduction of 9795 subscriptions in relation to the previous year, for a decrease of 1%, and this last year was the first period where the service showed a slowdown since the opening of the telecommunications sector in 2009. Due to this and as seen in Graph n.° 161, the behavior matches that of other telecommunications services and the sector in general, where the number of subscribers tends to grow to a lesser extent.

Regarding the inter-annual behavior, disaggregated on a quarterly basis and when comparing 2018 with 2019, constant growth rates are presented with a decreasing trend of less than 1% during this period, in such a way that the slight growth presented during 2018 is reversed, and for the fourth quarter of 2019, there is no growth when compared to the same period in 2018 (see Graph n.° 162).

By type of access technology, the predominance in the market for the provision of the service through coaxial cable continues at 65%, followed by satellite television at 29%, and finally television over IP, and multipoint, which group the remaining 6% (see Graph n.° 163). Regarding this disaggregation by technology during 2015-2019, the transformation that this service is presenting, enhanced in the last three years, is confirmed, mainly because cable services have seen a decrease in their market share, and there continues to be an increase in the provision of subscription television over IP and multipoint (see Graph n.° 164).

In the specific case of television service provided over IP, it is important to highlight that for the 2018-2019 period this service mode continues to grow for the fifth consecutive year, specifically 65% for this last year, which represents 21 401 new subscriptions. What stands out even more is that despite the 50% increase (11 021 subscriptions) in 2018, an even greater increase is registered for 2019 (see Table n.° 13).

Regarding the penetration of subscription television services, this indicator remains around 17%. On the other hand, with regard to the relationship between the total number of subscriptions to the subscription television service and the number of households for 2019, there are 55 subscriptions to the service for every 100 households, a value that represents two percentage points less than in 2018 (see Graphs n.° 165 and n.° 166).

Regarding the level of market concentration associated with subscription television services, the Herfindahl-Hirschman Index (HHI)[32], for 2019, reverts its trend and presents an increase of 17.7 points, for a value of 1729, which shows that there are no relevant structural changes. This index, at below 3000 points, shows that the subscription television market is a non-concentrated market[33] (see Graph n.° 167).

On the other hand, in relation to the ownership of the subscription television service in households, the National Household Survey (ENAHO) carried out by the National Institute of Statistics and Census states that for 2019, 70.8% of households (1 118 109) have access to subscription television service in any of its technologies. This means there are 30 393 more households with the service (3% growth) compared to 2018. On the other hand, the percentage of households that use the open television signal remains at 26.2% (see Graph n.° 168).

Regarding the geographical breakdown by cantons, of the total subscriptions to television services, Table n.° 14 presents the penetration of the service in cantons with respect to the population of each one of them; so, cantons with the highest penetration percentage can be seen. Among them, Garabito stands out, in the province of Puntarenas, which for the second consecutive year maintains the highest penetration with 50.4%. In contrast is the canton of Los Chiles, in the province of Alajuela, with 8% as it is the canton with the lowest penetration. It is important to highlight that for 2019, it was still impossible for operators to disaggregate their subscriptions for the new canton of Río Cuarto.

[31] This total amounts to 28 because a telecommunications service provider can offer its services under various modalities.
[32] See definition in the Methodology section.
[33] RCS-082-2015 establishes that markets with an HHI greater than 3000 points are concentrated markets.

Revenue

Regarding the revenue generated by the provision of subscription television services, these continue to show an increasing trend, so that for 2019, they reached the amount of 160 768 million colones, which implies the same growth rate compared to 2018, of 4%, equivalent to 5,642 million colones. Hence, when taking 2015 as a reference, revenue in this service with respect to 2019 presents an annual increase rate of 4% (see Graph n.° 169).

Regarding the behavior of revenue, disaggregated by quarter, it can be seen that the average quarterly revenue for 2019 amounts to 40 192 million colones, 1 411 million colones more than in 2018. However, when comparing the quarterly average variation rate for the 2018-2019 period, the value remains constant at 1% (see Graph n.° 170).

Regarding the percentage composition of revenue according to technology, according to the distribution of subscriptions, the revenue indicator confirms the predominance of the service provided by coaxial cable. This type of service represents 69% of the total revenue, followed by satellite service with 25%, and the rest of the technologies represent 6% (see Graph n.° 171).

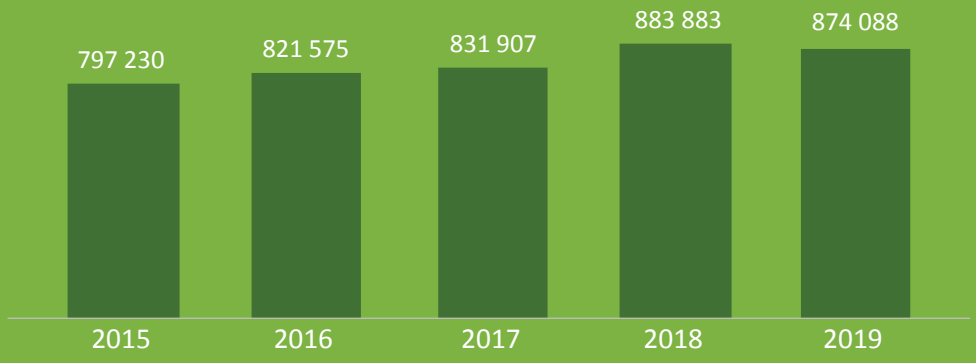
Now, for 2015-2019, it is necessary to highlight the percentage redistribution throughout this range, where the technological recomposition of the supply and demand of this market is ratified both at the subscription and revenue levels, by virtue of the fact that cable television service shows a percentage decrease, going from 73% in 2015 to 69% in 2019. However, changes are presented for satellite technology and other technologies (IPTV and MMDS-multi-channel multipoint), since they are the ones that cause this decrease. In particular, for the 2018-2019 period, satellite technology revenues decreased two percentage points in their market share and other technologies increased their percentage participation in that same technology, reaching six percentage points (see Graph n.° 172).

In addition to the above and particularly in reference to the 2018-2019 period, with regard to distribution by technology, Table n.° 15 points out, in absolute terms, the situation experienced by the coaxial cable television service, since its revenue increased from 2017 to 2018 by 4 372 million colones, from 2018 to 2019 by 2 620 million colones. The opposite happens with the IPTV service in those same periods, where differences are 1928 and 3211 million colones respectively.

Finally, in relation to the average revenue per subscriber for the service in 2019, this increased to 15 327 colones (702 more colones per subscriber per year), which represents an increase of 5% in relation to 2018. On the other hand, the average revenue per subscriber by access technology continues presenting an uneven behavior, specifically the revenue of cable services in 2018-2019 increased by approximately 1028 colones per year, as did satellite (312 colones), but IPTV service and multipoint multi-channel decreased 1072 and 198 colones per year, respectively (see Graph n.° 173 and Table n.° 16).

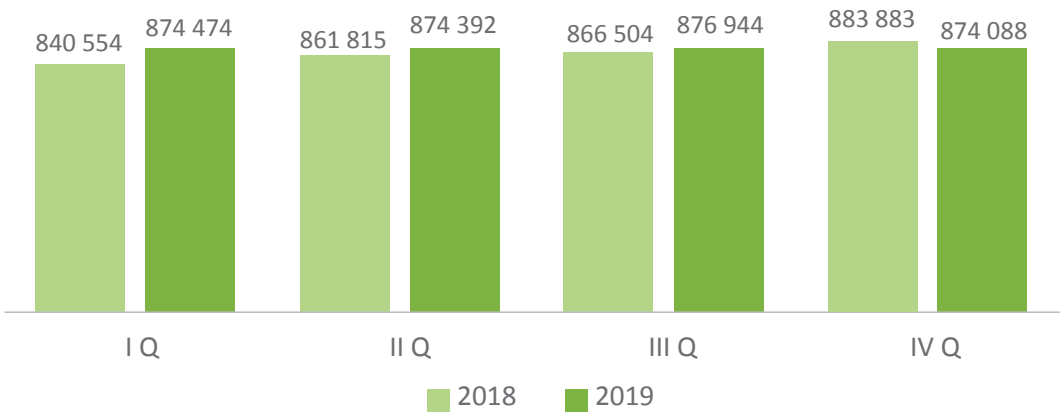
Graph n.° 161. Costa Rica: Total subscriptions television service by subscription, 2015 - 2019

(annual figures)



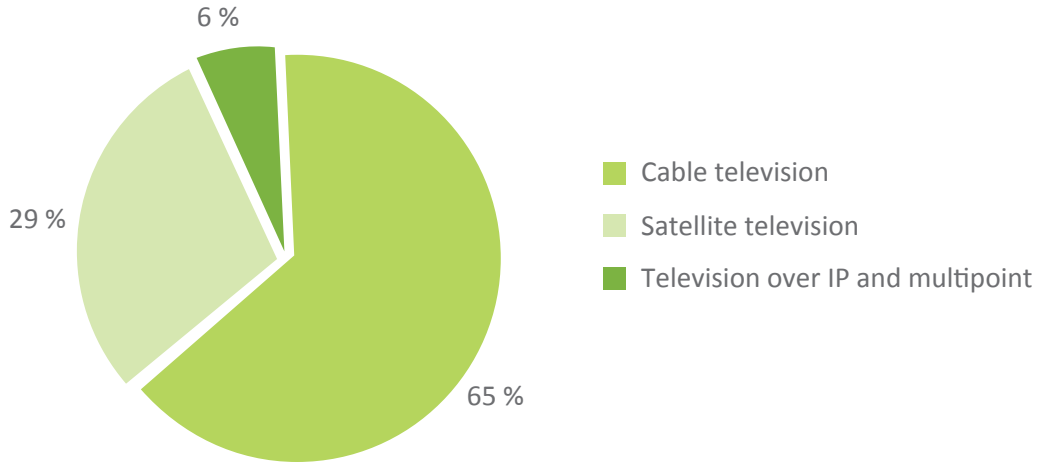
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 162. Costa Rica: Subscriptions to subscription television service per quarter, 2018 - 2019
(annual figures)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

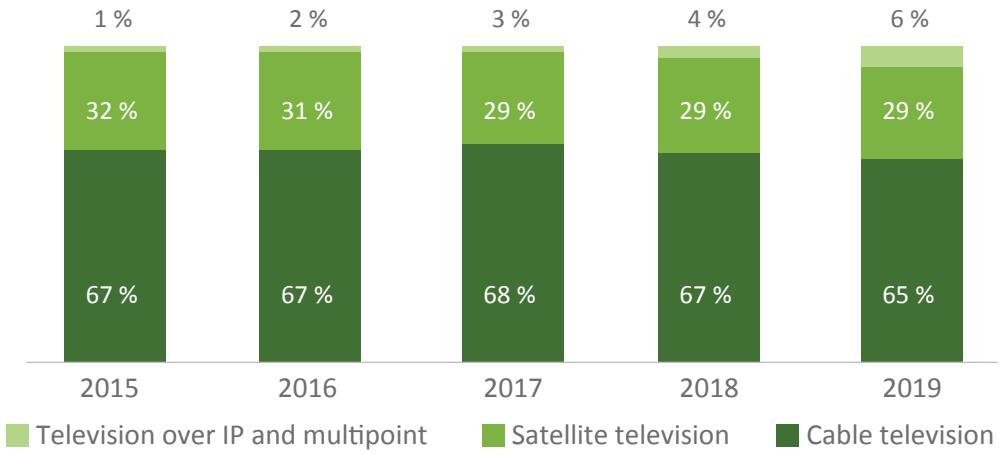
Graph n.° 163. Costa Rica: Percentage distribution of subscriptions to subscription television service by access technology, 2019



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 164. Costa Rica. Evolution of percentage participation of subscription television service per type of technology, 2015-2019

(figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 13. Costa Rica: Total de Subscriptions to subscription television service by access technology, 2015-2019

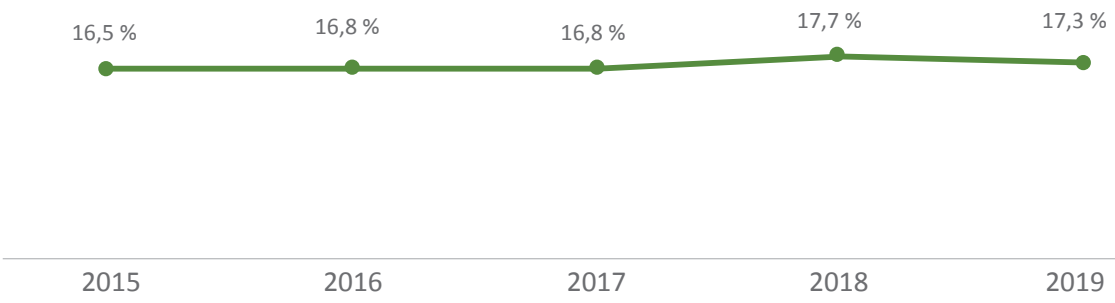
(annual figures)

Technology	2015	2016	2017	2018	2019
Cable television	531 807	548 113	563 607	594 508	570 176
Satellite television	257 986	257 486	244 881	255 193	248 269
Television over IP	6434	14 702	22 054	33 075	54 476
Land television per multipoint distribution	1003	1274	1365	1107	1167
Total	**797 230**	**821 575**	**831 907**	**883 883**	**874 088**

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 165. Costa Rica: Subscriptions to subscription television service 100 inhabitants, 2015 - 2019

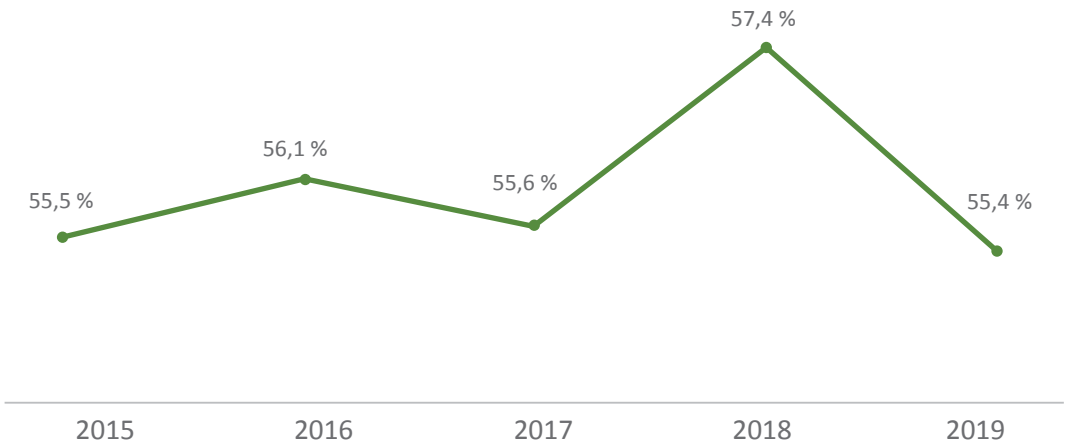
(figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

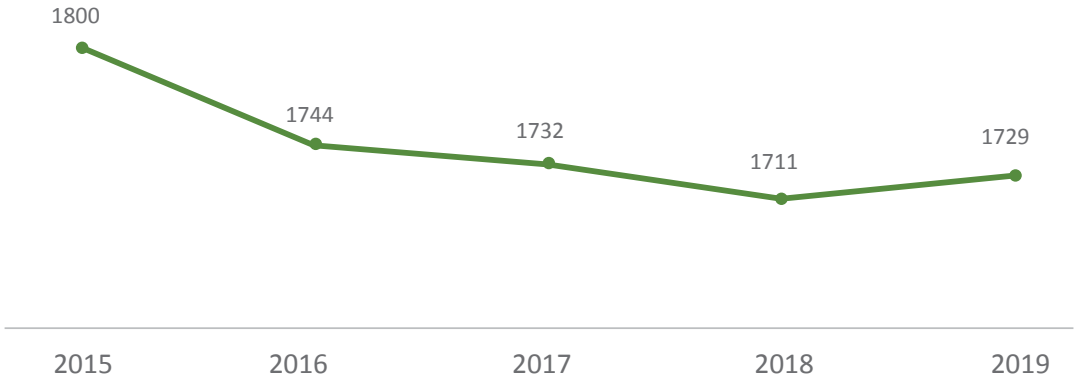
Graph n.° 166. Costa Rica: Subscriptions to subscription television service per 100 households, 2015- 2019

(figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

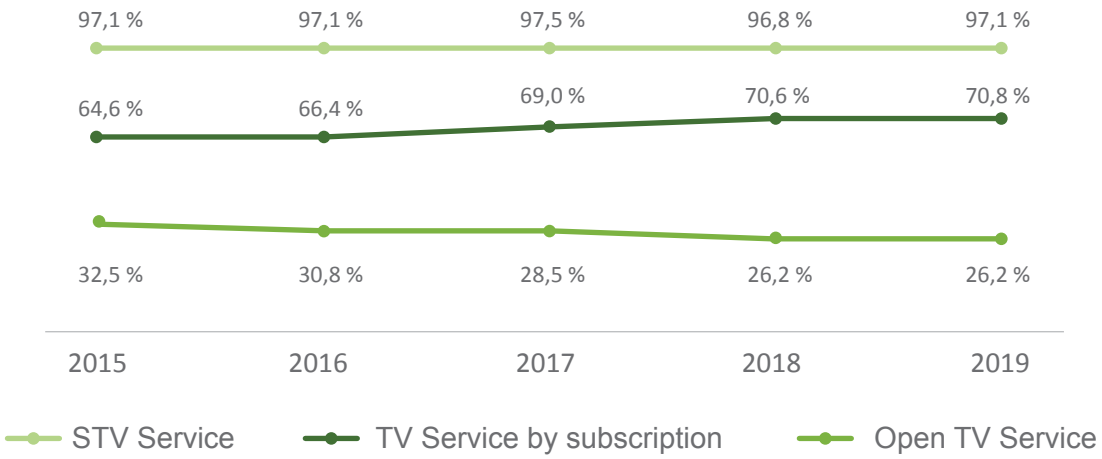
Graph n.° 167. Costa Rica: HHI evolution per year, 2015 - 2019



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 168. Costa Rica: Percentage of households with some type of television service, 2015- 2019

(figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

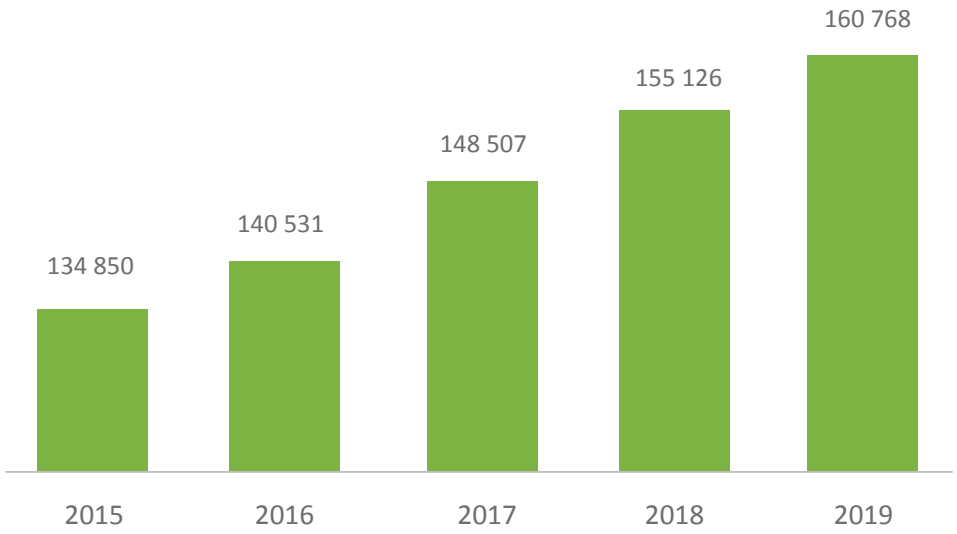
Table n.° 14. Costa Rica: Subscriptions to subscription television service for each 100 inhabitants per canton, 2019

(figures by percentage)

CANTON	%	CANTON	%	CANTON	%	CANTON	%	CANTON	%
Garabito	50,4	Zarcero	21,8	San Ramón	17,9	Alajuela	16,2	Aserrí	14,2
Santa Cruz	32,2	Liberia	21,7	Atenas	17,8	Coto Brus	16,2	Paraíso	14,0
Carrillo	28,0	Grecia	21,7	Santo Domingo	17,6	Turrialba	15,9	San Rafael	13,7
Parrita	26,5	San Mateo	21,4	San Carlos	17,4	La Cruz	15,9	Santa Bárbara	13,3
Alvarado	26,3	Montes de Oro	21,3	Vásquez de Coronado	17,2	Pérez Zeledón	15,6	Guatuso	13,2
Nicoya	26,1	Tilarán	21,2	Tarrazú	17,2	Naranjo	15,4	Valverde Vega	12,7
Escazú	25,0	Orotina	21,1	La Unión	17,2	Tibás	15,3	El Guarco	12,5
Acosta	24,9	Puntarenas	20,7	Cartago	17,1	León Cortés Castro	15,1	Pococí	12,5
Dota	24,6	Turrubares	20,1	Cañas	17,0	Siquirres	15,1	Corredores	11,7
Belén	23,8	San Isidro	20,1	Puriscal	16,9	Jiménez	15,1	Matina	10,9
Osa	23,7	Limón	19,9	Flores	16,7	Golfito	14,9	Buenos Aires	10,9
Mora	23,6	Abangares	19,8	San Pablo	16,7	Barva	14,5	Oreamuno	10,9
Montes de Oca	23,4	Esparza	18,6	Palmares	16,6	Goicoechea	14,5	Alajuelita	10,5
Hojancha	23,3	Nandayure	18,5	Moravia	16,6	Desamparados	14,4	Guácimo	9,5
Aguirre	22,7	Bagaces	18,3	San José	16,5	Santa Ana	14,3	Sarapiquí	8,7
Heredia	22,3	Curridabat	18,0	Poás	16,3	Upala	14,2	Los Chiles	8,0
				Talamanca	16,3			Río Cuarto	ND

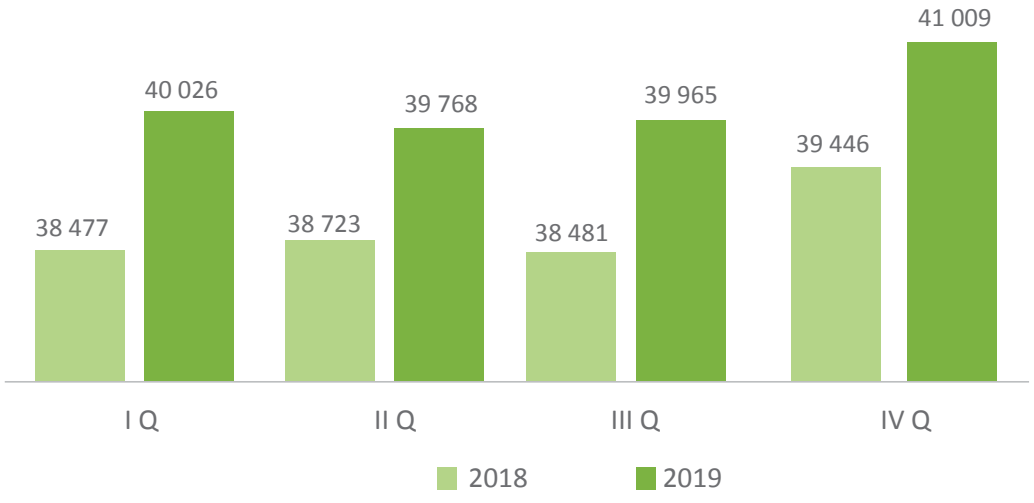
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 169. Costa Rica: Total revenue of subscription television service, 2015 - 2019
(annual figures in millions of colones)



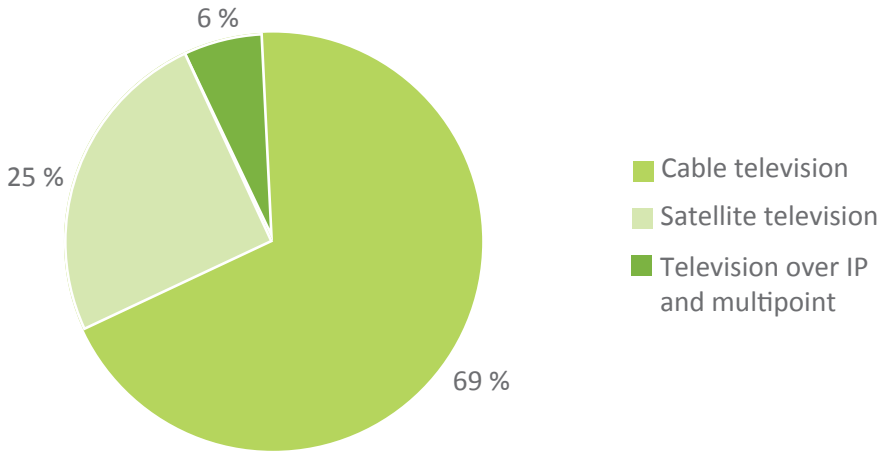
Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 170. Costa Rica: Total revenue of subscription television service by quarter, 2018 - 2019
(figures in millions of colones)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

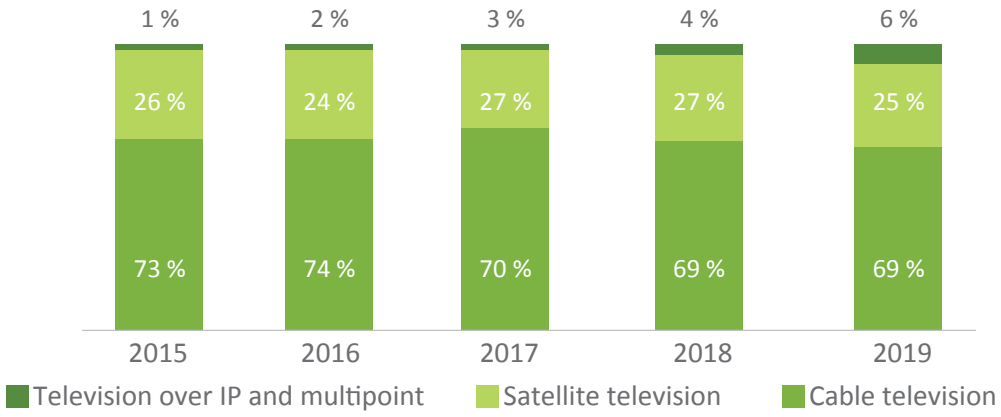
Graph n.° 171. Costa Rica: Percentage distribution of revenue of subscription television service by access technology, 2019



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 172. Costa Rica: Distribution evolution percentage of revenue in the subscription television service per technology, 2015-2019

(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

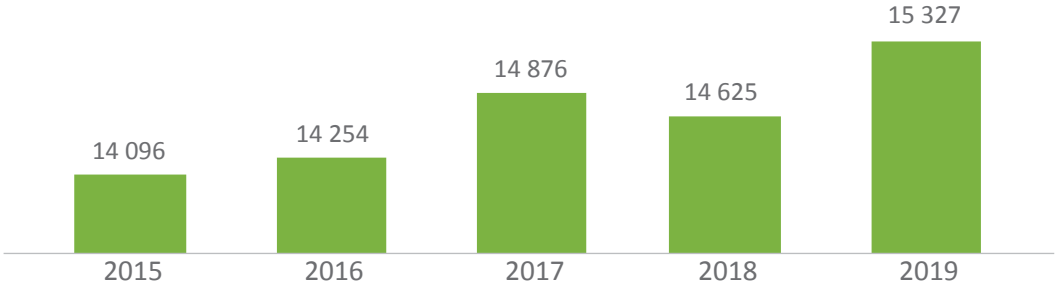
Table n.° 15. Costa Rica: Total revenue of subscription television service by access technology per quarter. Figures in millions of colones, 2015-2019

Tecnología	2015	2016	2017	2018	2019
Cable television	98 859	103 927	103 471	107 843	110 463
Satellite television	34 570	34 220	40 870	41 191	41 004
Television over IP	1371	2335	4117	6045	9256
Land television per multipoint distribution	49	49	50	47	45
Total	**134 850**	**140 531**	**148 507**	**155 126**	**160 768**

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 173. Costa Rica: Monthly average revenue by subscriber of subscription television service, 2015-2019

(monthly based on quarterly data in colones per subscriber)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 16. Costa Rica: Monthly average revenue by subscriber of subscription television service by access technology, 2015 - 2019.

(Annual figures in colones)

Technology	2015	2016	2017	2018	2019
Cable television	15 491	15 801	15 299	15 117	16 145
Satellite television	11 167	11 075	13 908	13 451	13 763
Television over IP	17 760	13 234	15 555	15 555	14 159
Land television per multipoint distribution	4101	3198	3033	3033	3371
Total	**14 096**	**14 254**	**14 876**	**14 625**	**15 327**

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.



Satellite television service in Cot, Cartago.

COMMERCIAL OFFERS
ORIENTED TO
PROVIDING MORE
INTERNET SPEEDS

Comercial OFFERS andprices



Prepaid mobile telephony SIM cards.

The growth experienced for years in the subscriptions of the different services has led to having telecommunications present in most of the households and lives of citizens in the country, encouraging market operators to diversify their marketing strategies in order to attract more customers or to tighten their commercial relationship with current ones, recognizing that now there are more mature users.

The changes that the commercial offers of 2019 have undergone compared to 2018 reflect the dynamic profile that characterizes a user, since it is assumed that these are designed based on the tastes and preferences of consumers to continue as an active company in the market.

Initially, the changes in the characteristics of the commercial offers of mobile telecommunications services, presented in the Postpaid and Prepaid plans (voice, messaging, and Mobile Internet) will be analyzed to later determine what pertains to the fixed telecommunications represented in the packaging of the fixed Internet services, subscription television, and fixed telephony.

Finally, the changes presented in the average prices of bundled services (2018 versus 2019) will be described, and through the price indices the change of mobile telecommunications and fixed Internet. This way, this chapter incorporates the qualitative analysis of the characteristics of commercial offers, and the quantitative analysis through prices.

Commercial offers

Commercial offers for mobile telecommunications

Mobile telecommunications include mobile telephony (mobile voice, messaging) and mobile data, offered under the Prepaid and Postpaid modalities. Following is an analysis of the change in the characteristics of commercial offers in both modalities.

Postpaid

From the information requested from the main operators of the mobile telecommunications market regarding subscriptions (Claro, Kölbi, and Telefónica) through "My comparator", in Annexes n.° 53 and n.° 54, Postpaid trading offers that were sold on the market in December 2018 and December 2019 are detailed.

The data reveal changes in the characteristics of commercial offers that lead to the conclusion that Internet has positioned itself as an essential service in the telecommunications market, as it is assumed that commercial offers are adapted to the needs of users, and this is how, for example, in 2018 the average amount of data download at maximum speed that was offered was 8.3 Gigas with a minimum of 1 to 20 Gigas, while in 2019, the average capacity almost doubled to 14 Gigas with a minimum of 1 to 30 (10 Gigas more than in 2018).

Regarding the composition of the plans, Claro, in December 2018, made two plans available for high consumption users, as they contained unlimited minutes to any network and download capacity of 12 and 20 Gigas at maximum speed, while in 2019, it went to 6 offers that included features adapted for all types of users, since the minutes started at 140 minutes to all networks to unlimited minutes, with a download capacity from 10 to 30 gigabytes. From the foregoing, it is important to highlight, for this operator, the increase in the number of plans adapted to all profiles and in the data download capacity.

Regarding the operators Kölbi and Telefónica, they maintained their offer in both periods; however, in 2019 they increased the data download capacity. Even in several of the plans the download capacity was doubled, maintaining the price of the plans. This from the point of view of the consumer means an implicit reduction in the price, by having greater benefits while paying the same price for the plan. In Annexes n.° 53 and n.° 54, increases in the download capacity associated with these plans can be appreciated, which together with the fact that the price of the bundle was maintained, leads to a reduction in the implicit prices.

In general terms, the offer of Postpaid plans increased by 25% (more variety in the market for the different needs of users, especially offering a greater range of download capacities). In addition, the plans that were maintained since 2018 increased the download capacity of data, maintaining the number of minutes and the price (that is, the implicit price is reduced).

Prepaid

In the case of commercial prepaid offers, see Annexes n.° 55 and n.° 56, when comparing the offers that were available in December 2018 versus December 2019, it is noteworthy that in the first case there were 23 options for the consumer, of which bundles intended only for calls represented 9% of the total, calls and Internet 35%, and only Internet 57%; while in 2019, offers increased by almost 45% (33 bundles in total), of which 73% were focused only on Internet.

Given the above, it is important to point out that commercial offers arise based on the consumption pattern

that consumers demand. Like plans, these focus on a change that reduces the emphasis on calls and messages towards an intensification in the Internet component or data use.

Claro added 4 new plans for 2019, of which 2 are exclusive to Internet, 1 is mixed (calls and Internet), and only 1 for voice; Movistar increased the offer by 6 bundles, all exclusive to Internet, while Kölbi remained with the same number of bundles offered. The above, then, demonstrates an increase in the number of bundles and also supports the assertion of the shift towards Internet as a comprehensive communication tool (voice, messaging, information, among others).

It is also important to note that, for both years, approximately 70% of the bundles maintain additional royalties that compete to attract consumers, such as unlimited uses of applications like Facebook, WhatsApp, Instagram, Waze, among others.

Mobile telecommunications commercial offers

In the case of commercial fixed telecommunications offers (fixed Internet, fixed telephony), since these are services that can be offered together because a single network can facilitate access to them by households (coupled with the possibility of adding subscription television), is that the trend to offer bundled services (packaging) has strengthened significantly in recent years[34].

This is how these commercial fixed telecommunications offers, at least in the last two years, revolve around the bundling of these services (fixed Internet + Subscription TV; Fixed Internet + Fixed Telephony, Fixed Telephony + Subscription TV; Fixed Internet + Subscription TV + Fixed Telephony), in which within each bundle there is a diversity of added values that stimulate competition not only in prices of the operators, but in benefits such as more channels, speed, minutes included, etc.

Based on the information provided by the main fixed telecommunications operators regarding their participation in the market (they represent 94% of the total subscriptions), tables in Annexes n.° 57 and n.° 58, show the bundle offer available to the Costa Rican consumer in December 2018 and December 2019. The evolution in behavior is evident.

In 2018, 97% of the bundles have at least Internet service with speeds from 1 Mbps to 100 Mbps (65% are offered with subscription TV -duo- and 32% with subscription TV and fixed telephony -triple-) while 3% include fixed telephony and subscription TV. In 2019, the proportion of bundles with Internet remains (97%), but not so the internal distribution, as there is evidence of a trend towards the promotion of bundles with the 3 services as it increased from 32% to almost 40% of the commercial offer.

In the case of bundles that include subscription TV, it is observed that the number of digital channels offered started in 77 channels in 2018; however, for 2019 the basis was increased to 89 channels.

In relation to the speeds offered within the bundles that incorporate Internet services, it is important to note that in 2018, speeds below 30 Mbps represented around 70% of the offers, with 1 Mbps being the minimum and 100 Mbps the maximum to be achieved in the market, while for year 2019, 70% of the offers contained speeds of up to 75 Mbps, the minimum being 1 Mbps and the maximum 500 Mbps (the limit increases compared to 2018).

[34] It is important to note that the bundle referred to here is a different concept from tied sales, which are illegal. What is important about bundled services is that they offer users the ability to take advantage of network economies. However, bidders maintain the possibility of individually accessing services, obtaining benefits also from the combination of individual plans contracted, thus diversifying providers. Notwithstanding the foregoing, due to the importance of the supply and demand for bundled services, an analysis of these offers is carried out here.

This reflects how commercial offers are adapted to consumers demanding higher Internet speeds for daily activities, such as information, communication, work, leisure, entertainment, among others. The above is supported by the results of the 2019 National Household Survey, where 70.8% of the total number of Internet users use the Internet to search for information; 91% is used for personal communication and social interaction, and 76.6%, for consumption of web content, among others.

Therefore, the findings of the fixed telecommunications commercial offers for 2019 compared to the offers of 2018 can be reduced to two aspects: 1) increase in Internet speeds, reaching speeds of up to 500 Mbps (download) and 2) a reduction in the margin of triple bundles (with fixed telephony) versus duo.

Prices

Once the qualitative analyses of the commercial offers have been carried out, we proceed with the analysis of the prices of the services. For this, the issue will be addressed through a comparative analysis of average prices for bundled services in 2018 versus 2019; and through price indices for retail markets35 that are in competitive conditions and that have a methodology already approved by the SUTEL Council.

Average prices of commercial offers of bundled services

In terms of prices (see Tables n.° 17 and n.° 18), a comparative analysis of 2018 versus 2019 was carried out according to Internet speeds offered by the Internet + subscription TV bundles (since they cover more than 60% of the market offers). Hence, three practical divisions were made in order to make average prices come closer.

The first division belongs to speeds lower than 10 Mbps (inclusive), of which in 2018 the average price of these bundles was 27 350 colones compared to 25 400 colones in 2019 (7% less). In the case of medium speeds (greater than 10 and less than 50 Mbps), it is around 47 380 colones for 2018, versus 34 043 colones in 2019 (28% less), and finally at high speeds (greater than 50 Mbps), the average price found for commercial offers is around 80 743 colones in 2018 against 64 362 colones in 2019 (20% less). With this, it is concluded that there is a benefit to the consumer in terms of prices, since there was a decrease with a simple average of up to 28% in the bundles.

In addition, given the benefits of economies of scale, the proposal of operators to offer bundles that add fixed telephony services at very similar prices to those of duo bundles can be seen; since, for example, in bundles aimed especially at households (low and medium speeds), the average prices of triple bundles are: 30 077 colones (low speeds), 55 538 colones (medium speeds), and with an average payment of 5 000 additional colones, a consumer could have landline telephony services at home with a variety of on net and off net minutes included, until reaching the level of including unlimited minutes on the operator's own network. The same happened in 2019, in which if the same exercise is carried out, the average increase that a household with low and average speeds would experience to acquire fixed telephony would be 3 317 colones, which is approximately 34% less compared to 2018.

Mobile Telecommunications Price Index (MTPI)

The Mobile Telecommunications Price Index (includes voice, messaging, and mobile data) monitors the price trend as of July 2017, the reference month before this market was declared under competitive conditions. With this, SUTEL adds one more element to be considered in regulatory decision-making.

The data show that, at the national level, prices have maintained a downward trend since July 2017, reaching 88.03% at the end of 2019, that is, 11.97 percentage points less than the prices of the reference month. This is the largest reduction reported to date (see Graph n.° 174).

In terms of payment method, the one that has contributed the most to reducing prices is undoubtedly postpaid, since it ended 2019 with 13.32 percentage points compared to the reference month, while prepaid did so with a downward difference of 8 points. It is important to note that both modalities this year showed a greater reduction than in 2018 (see Graphs n.° 175 and n.° 176).

Fixed Internet Price Index (FIPI)

The Fixed Internet Price Index measures the price behavior of the Mbps offered by operators in their commercial offer. Results of the last FIPI measurement continue to show a significant decrease (see Graph n.° 177). The operators continue with the commercial strategy of making speed increases, but with the same rates, causing a decrease in the implicit price of the contracted Mbps. Overall, prices have decreased by 35.4% compared to the base month (July 2018). If the monthly average behavior of this indicator is annualized in the calculation period from June 2018 to December 2019, it is 23.3%.

[35] A retail price index measures the evolution (trend) of consumer prices in a specific market starting from a base month based on a specific configuration of product, users, and consumption levels. Thus, SUTEL has two methodologies that allow monitoring this behavior, particularly in the mobile telecommunications and fixed Internet markets.

Table n.° 17. Costa Rica: Average bundle prices for fixed telecommunications according to download speed, December 2018

Download speed (Mbps)	Internet + TV	Internet + TV + Fixed telephony	TV + Fixed telephony
1	-	₡28.800	-
2	₡25.750	₡28.275	-
3	₡24.817	₡27.200	-
4	-	₡30.900	-
5	₡27.335	₡28.650	-
6	₡25.990	₡30.900	-
8	₡29.990	₡29.990	-
10	₡30.234	₡35.900	-
12	₡36.990	₡36.990	-
15	₡35.254	₡42.990	-
20	-	₡49.900	-
25	₡55.500	₡54.200	-
30	₡43.063	-	-
35	₡52.875	₡67.950	-
50	₡60.596	₡81.200	-
75	₡68.713	₡88.900	-
100	₡92.773	₡112.450	-
N/A	-	-	₡19.445

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

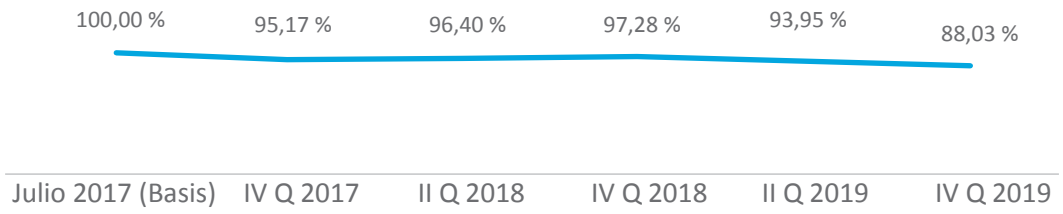
Table n.° 18. Costa Rica: Average bundle prices for fixed telecommunications according to download speed, December 2019

Download speed (Mbps)	Internet + TV	Internet + TV + Fixed telephony	TV + Fixed telephony
1	-	₡27.400	-
2	-	₡28.400	-
3	₡23.975	₡29.400	-
4	-	₡30.400	-
5	₡25.375	-	-
6	₡23.525	₡30.400	-
10	₡28.740	₡30.400	-
15	₡33.017	-	-
20	-	₡33.400	-
30	₡30.980	₡36.245	-
50	₡38.133	₡40.400	-
75	₡50.030	-	-
100	₡48.000	₡50.200	-
200	₡51.095	₡78.100	-
300	₡93.990	₡166.400	-
500	-	₡226.400	-
N/A	-	-	₡19.445

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 174. Costa Rica: Evolution by semester of the price index for national mobile telecommunications, July 2017 (base), 2017 - 2019

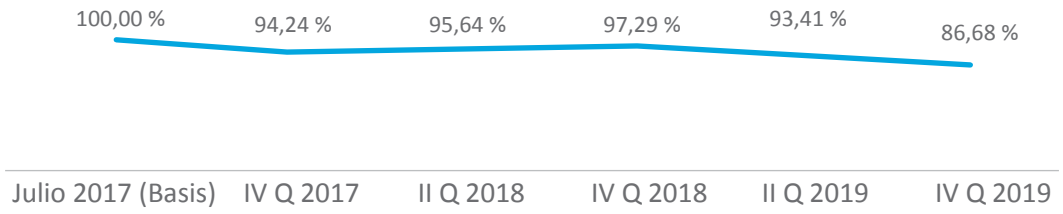
(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 175. Costa Rica: Evolution per semester of the price index for postpaid mobile telephony, July 2017 (basis), 2017 - 2019

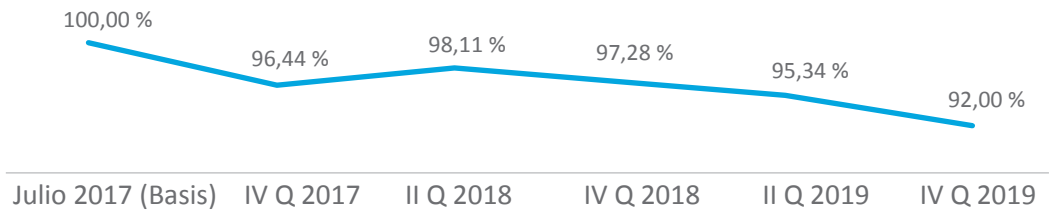
(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 176. Costa Rica: Evolution per semester of the price index for prepaid mobile telephony, July 2017 (basis), 2017 - 2019

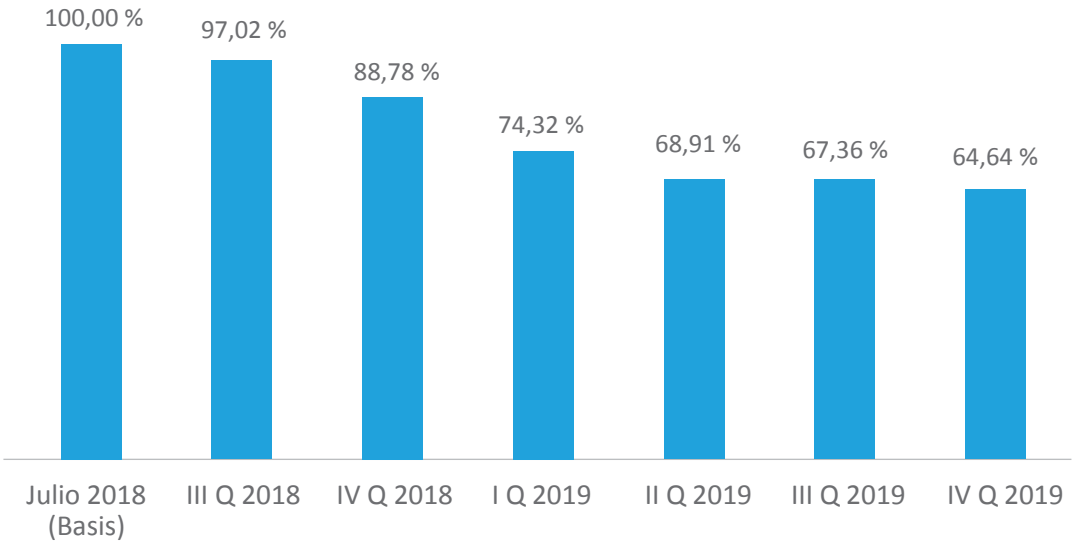
(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Graph n.° 177. Costa Rica: Evolution of the price index for fixed Internet, July 2018 (basis), 2018 - 2019

(annual figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.



Mobile telephone sales in Downtown San José.

PERFORMANCE OF FIXED INTERNET ACCESS SPEED FOR ALL OPERATORS ASSESSED WAS ABOVE 80%

Network QUALITY

And performance



Radio spectrum monitoring tower in SUTEL's station in San Rafael, Heredia.

Quality of service to fixed Internet access

This chapter describes the results of the evaluation of quality to fixed Internet access service carried out in 2018 and 2019. The results of measurements carried out in the field are shown by means of specialized equipment system (probes) that incorporate a total of 256 Internet access services evaluated at the national level[36] and its respective comparison against the threshold (goal value to be achieved) established by SUTEL[37] and pursuant to the provisions of the current Regulation on Service Provision and Quality[38].

Measurements are carried out as indicated in the methodology section described in this document and in compliance with the provisions of SUTEL's Board Resolution RCS-019-2018.

"Resolution on Measurement Methodologies Applicable to the Regulation on Service Provision and Quality".

The following sections describe the results obtained for each of the evaluated service quality indicators.



Mobile radio spectrum monitoring unit used by SUTEL to make measurements throughout the country.

[36] SUTEL makes available to users the results of the verifications carried out with the measurement probe system, which allows the simultaneous and continuous evaluation of the main telecommunications service providers in the country, in a 24-hour, 7-day scheme, with 256 measurement probes distributed in the main points of traffic nationwide.

[37] The thresholds were established by Resolution RCS-152-2017 of the SUTEL Council.

[38] The Regulation on Service Provision and Quality (RSPC) was published on February 17, 2017, in Scope n.° 36 of the Official Gazette and entered into force as of February 17, 2018.

International Delay Indicator

Graph n.° 178 shows the results of the measurements carried out during 2018 and 2019, considering all the services evaluated throughout the country. The International Delay Indicator is an informative indicator, which evaluates the response time of networks. It measures how fast the information packets are transferred through the network; thus, the results are better the lower its numerical value.

The regulatory threshold established by SUTEL is 150 ms for this Information Indicator for the population, which is exceeded by all the operators included in this study, and in all cases an improvement is demonstrated compared to 2018: Cabletica, goes from 68.6 ms to 59.7 ms; ICE, from 63.2 ms to 68.2 ms; Telecable, from 79.3 ms to 78.0 ms, and Tigo, from 72.9 ms to 68.4 ms.

Graph n.° 179 shows the result of the international delay broken down by province for 2018 and 2019. Cabletica showed a decrease in all its delay values, with the exception of the province of Guanacaste, where it registered a slight increase, going from 59.9 ms to 61.2 ms. For the particular case of the province of Limón, there is no data for 2018; so, it is not possible to provide a historical comparison.

In this same Graph n.° 179, ICE registers increases in international delays for all provinces except Heredia, where it registered an improvement, going from 60.9 ms in 2018 to 56.3 ms in 2019.

Telecable showed decreases in international delay values in San José, Alajuela, and Cartago, as well as a slight increase in the province of Heredia, in which it went from 74.4 ms in 2018 to 76.6 ms in 2019, according to the data in Graph n.° 179. In the case of the provinces of Guanacaste and Puntarenas, there is no data for 2018 for Telecable due to the non-availability of services for these two provinces in 2018, and for the province of Limón, there is no data at all because said operator did not market its services in that province during 2018 and 2019.

In the case of Tigo, there is coverage for all the country's provinces, and the data history shown in the Graph n.° 179 shows a decrease in international delay values for five of the seven provinces of the country: Alajuela, Cartago Heredia, Guanacaste, and Limón. In the case of the provinces of San José and Puntarenas, increases are shown. The highest is for Puntarenas, which went from 66.0 ms in 2018 to 71.2 ms in 2019.

Graph n.° 180 shows the behavior of the International delay indicator throughout the 24 hours of the day, from 00:00 to 23:00, for the four operators included in this study. Graph n.° 180 is specific to 2018, where the increase in this quality indicator in the ranges traditionally considered as peak hours (or period of maximum traffic) stands out, starting the increase around 19 hours (7:00 PM) and decreasing around 23 hours (11 PM), for all operators, except for ICE, which shows stable behavior in said time range. It should be noted that the variations recorded throughout the 24 hours of the day are below the 150 ms threshold for this indicator.

Results described above vary when compared to the 24-hour behavior of Graph n.° 181, which corresponds to the measurements made during 2019, and in which a much greater stability is appreciated, with a stable peak-hour behavior at the same level as the rest of the day, which shows an improvement in the stability of this indicator. Regarding compliance with the 150 ms threshold, data corresponding to 2019 are lower in all cases, evidencing compliance by the operators.

Download Speed Performance Indicator

The Download Speed Performance Indicator corresponds to the percentage relationship between the download speed measured in the field and the download speed provided by the operator.

Graph n.° 182 shows the results of the measurements carried out during 2018 and 2019, considering all the services evaluated throughout the country. The

Download Speed Performance Indicator evaluates the ability to transfer data from the network to the user and compares it against the configured speed (bandwidth contracted for data download) for that particular service. It is a measure of how much is obtained in relation to what is contracted, so results are better the higher its numerical value, establishing a limit of 100%.

In this indicator, Cabletica showed a decrease between 2018 and 2019, going from 100% to 97.2%. On the other hand, ICE showed an improvement, going from 79.4% in 2018 to 85.3% in 2019. In the case of Telecable, results show a decrease with values of 91.2% and 83.7% for 2018 and 2019, respectively. Tigo showed an improvement, going from 94.4% in 2018 to 100% in 2019.

It should be noted that the threshold established by regulation by SUTEL is 80%, which is exceeded in the most recent year measured, 2019, by all operators included in this study.

Graph n.° 183 shows the result of the download speed performance disaggregated by province for 2018 and 2019. Cabletica showed a decrease in four provinces: San José, Alajuela, Cartago, and Guanacaste, and maintained the same values from 2018 to 2019 in Heredia and Puntarenas, with 100% and 98%, respectively. For the particular case of the province of Limón, there is no data for 2018 for Cabletica, so it is not possible to provide a historical comparison.

In this same Graph n.° 183, ICE registers increases in the performance of the download speed for all the country's provinces when comparing 2018 with 2019. The most notable increases are those of Heredia, with an improvement from 78.7% to 93.8 %, and Puntarenas, going from 77.5% to 90.6%.

Telecable showed decreases in its performance values in its download speed in San José, Alajuela, Cartago, and Heredia. The most notable change is that of Heredia, which went from 93.6% in 2018 to 84.7 % in 2019, according to data from Graph n.°183. In the case of the provinces of Guanacaste and Puntarenas, there is no data for 2018 for Telecable, and for the province of Limón there is no data at all; therefore, it is not possible to provide a historical comparison.

In the case of Tigo, there is coverage for all the country's provinces, and the data history in Graph n.° 183 shows a general increase in the performance values of the download speed in all the provinces of the country. The most notable increase is that of the province of Limón with 87.2% in 2018 and 100% in 2019.

Graph n.° 184 shows the behavior of the download speed performance indicator throughout the 24 hours of the day, from 00:00 to 23:00, for the four operators included in this study. Graph n.° 184 is specific for 2018 in which a decrease in this quality indicator stands out in the ranges traditionally considered as peak hours (period of maximum Traffic), starting the increase at around 19 hours (7 pm) and decreasing at around 23 hours (11 pm), for Tigo and Telecable, while ICE and Cabletica are stable in said time range.

The behavior described above remains similar for Telecable when compared with the 24-hour behavior of Graph n.° 185, which corresponds to the measurements carried out during 2019, and in which a transitory decrease is seen, greater than that of 2018 and with an extension of peak hours, starting at 6 p.m. in 2019. In the particular case of Cabletica, Graph n.° 185 shows a differentiated performance for two specific periods, between 1 hour and 7 hours with a value of 100%, and in the remaining period of the day, with a decrease that remains stable near 90%. ICE and Tigo show stable behavior 24 hours a day for 2019.

Upload Speed Performance Indicator

The Upload Speed Performance Indicator corresponds to the percentage relationship between the upload speed measured in the field and the upload speed provided by the operator.

Graph n.° 186 shows the results of the measurements carried out during 2018 and 2019, considering all the services evaluated throughout the country. The upload speed performance indicator evaluates the ability to transfer data from the user to the network, and compares it with the configured speed (throughput contracted to send data) for that particular service. It is a measure of how much is obtained in relation to what is contracted; hence, results are better the higher the numerical value, establishing a limit of 100 %.

In this indicator, Cabletica and ICE showed a stable performance of 100% during 2018 and 2019. In the case of Telecable, it went from 100% in 2018 to 93.8% in 2019, and Tigo shows results of 100% and 99.6% for 2018 and 2019, respectively.

It should be noted that the threshold established by SUTEL regulation is 80%, which is exceeded by all operators included in this study.

Graph n.° 187 shows the result of upload speed performance disaggregated by province for 2018 and 2019. Cabletica remained stable at 100% for all provinces in both years. For the particular case of the province of Limón, there is no data for 2018 for Cabletica, so it is not possible to provide a historical comparison.

In this same Graph n.° 187, ICE also remained stable for most of the provinces, with small variations in Alajuela, going from 98.9% in 2018 to 100% in 2019, and in Guanacaste, going from 100% in 2018 to 96, 9% in 2019.

Telecable showed decreases in performance values for upload speed in San José, Alajuela, Cartago, and Heredia, in all cases going from 100% in 2018 to values close to 94% in 2019, for these four provinces, according to the data in Graph n.° 187. In the case of the provinces of Guanacaste and Puntarenas, there is no data for 2018 for Telecable, and for the province of Limón there is no data; therefore, it is not possible to provide the historical comparison.

In the case of Tigo, there is coverage for all the country's provinces, and the data history in Graph n.° 187 shows a stable indicator of 100 % for the provinces of Alajuela, Heredia, Guanacaste, and Puntarenas, while the provinces of Cartago and Limón show decreases from 2018 to 2019, and the province of San José an improvement from 96.5% to 98.3% in those two years.

Graph n.° 188 shows the behavior of the Upload Speed Performance Indicator throughout the 24 hours of the day, from 00:00 to 23:00, for the four operators included in this study. Graph n.° 188 is specific for 2018, in which two differentiated hourly ranges stand out: the range between 5 and 17 hours, in which the performance of the 4 operators is 100%, and the rest of the day, where the performance decreases with emphasis on peak hours, between 7 PM and 11 PM, for Tigo and Telecable, while ICE and Cabletica are stable in said time range, with both operators showing exactly the same results.

The behavior described above contrasts with the 24-hour results of Graph n.° 189, which corresponds to the measurements made during 2019, and in which a transitory decrease can be seen to values of 90% for Telecable, while the remaining three operators maintain a stable performance 24 hours a day, at very close values to 100%, and with identical results for ICE and Cabletica.

Quality of experience when accessing mobile Internet services

This section presents results corresponding to evaluations of quality of service experience from the user's perspective, which are collected through the Opensignal mobile application, which records data on the quality of service for users who install the application voluntarily and free on their mobile phones. Data therefore comes from a wide variety of terminal devices and plans, depending on the variety of services subscribed by users.

Since 2016, Opensignal has provided SUTEL with reports on the quality of service, taking advantage of data collected through the collaborative tool of said company, which allows evaluating the quality of the service from the perspective of user experience (QoSE). This collaborative tool allows collecting data from the users´ terminal (cell phone).

The data on which the reports are based is collected regardless of the location and conditions of the user at a given time, whether indoors or outdoors, in rural or urban areas, static or in motion, in population centers or throughout routes or highways, capturing the performance variables of the network in a wide variety of

situations, as experienced by users when using mobile services.

Results for 2019 were obtained from a total of 99,349 mobile phones, of which more than 200 million data were collected[39].

Graph n.° 190 shows how the speeds of 3G technology have evolved in Costa Rica from 2016 to 2019, for each of the mobile operators in the country. In the case of Movistar, the average 3G download speed has gone from 2.2 Mbps at the beginning of 2016 to 3.1 Mbps at the end of 2019. Claro exhibits a similar behavior, going from 1.8 Mbps to 2.8 Mbps in the same period. Kölbi, meanwhile, showed an increase of almost 3 times, going from 1.3 Mbps to 3.6 Mbps.

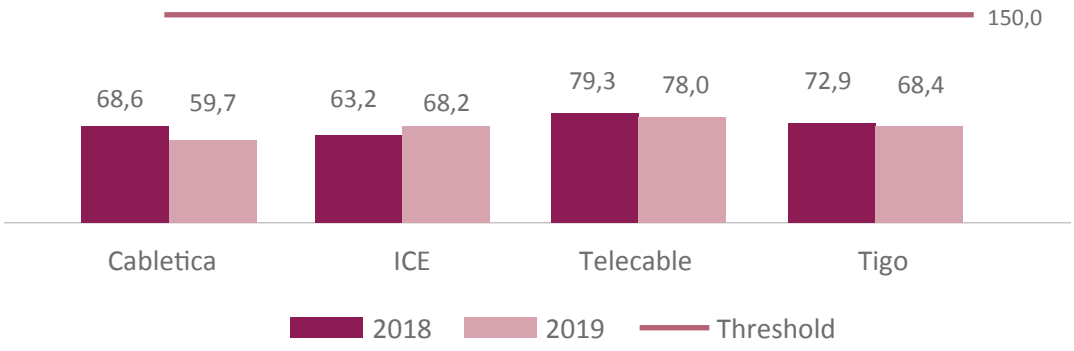
Graph n.° 191 also shows the evolution of download speeds, but for 4G technology, showing important increases when compared against its 3G equivalent.

From 2016 to 2019, Movistar went from 7.1 Mbps to 10 Mbps, the latter value has remained steady since the second half of 2018. Claro has doubled its speed in the last 3 years, starting in 2017 with 6.5 Mbps and ending 2019 with 12.9 Mbps. ICE with its Kölbi brand has shown a significant evolution, going from 4.9 Mbps at the beginning of 2016 and achieving 26.0 Mbps at the end of 2019, which represents an increase of more than 5 times in the last 4 years.

The availability of the 4G network shown in Graph n.° 192 provides a measure of the percentage of time that users of a specific operator stay connected to the network with 4G technology. In the case of Movistar, the increase has been 10% between the first half of 2016 to the second half of 2019, going from 63.8% to 73.8%. For Claro, the increase is noted by the change between 41.8% in 2017 to 65.4% in 2019. For Kölbi, from 2016 to 2019, an evolution from 44.4% to 69.9% is shown.

Graph n.° 178. Costa Rica: Evolution of the International Delay Indicator for the whole country, 2018-2019

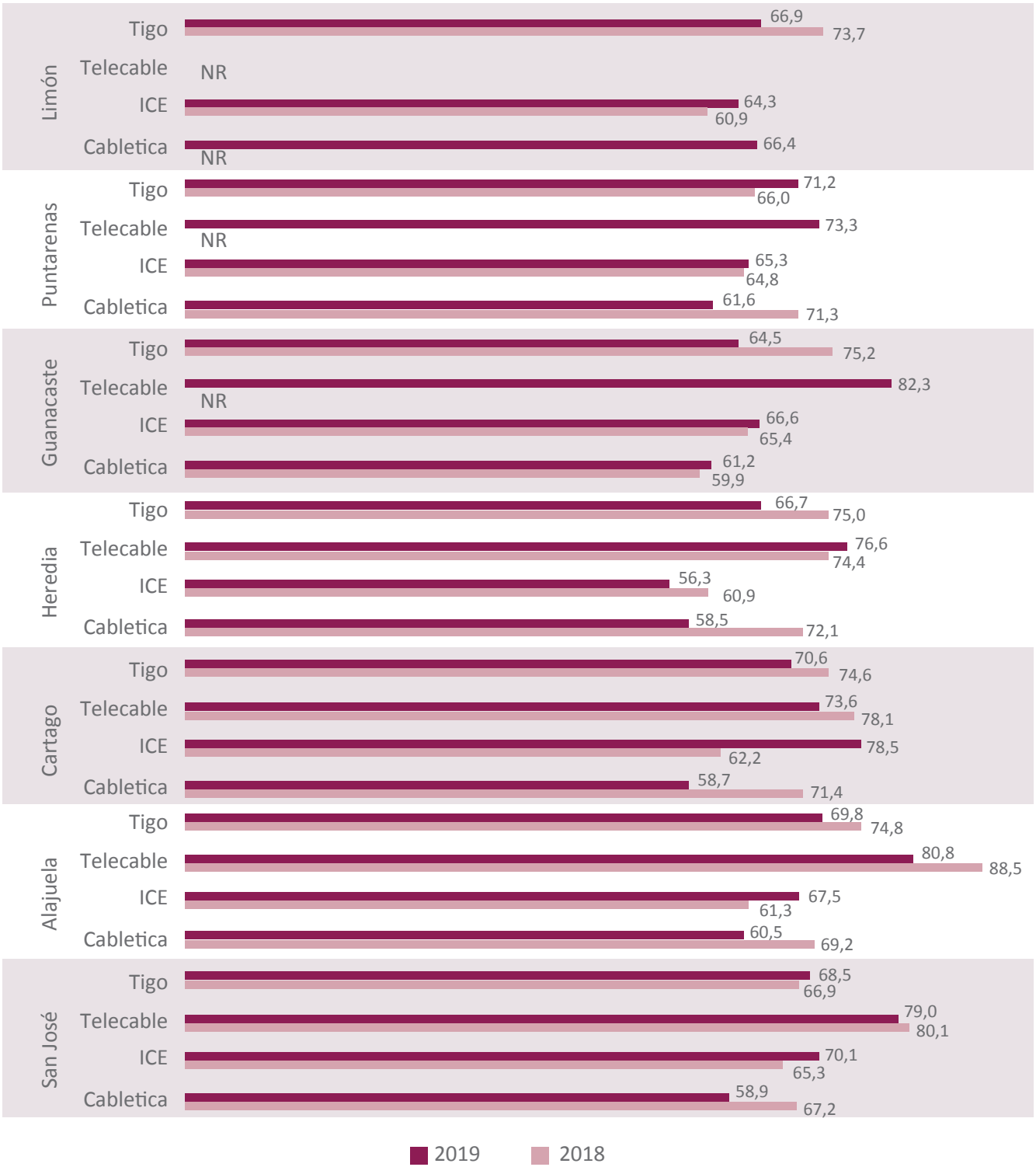
(figures in milliseconds)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

[39] The exact figure is 203 735 054 for data.

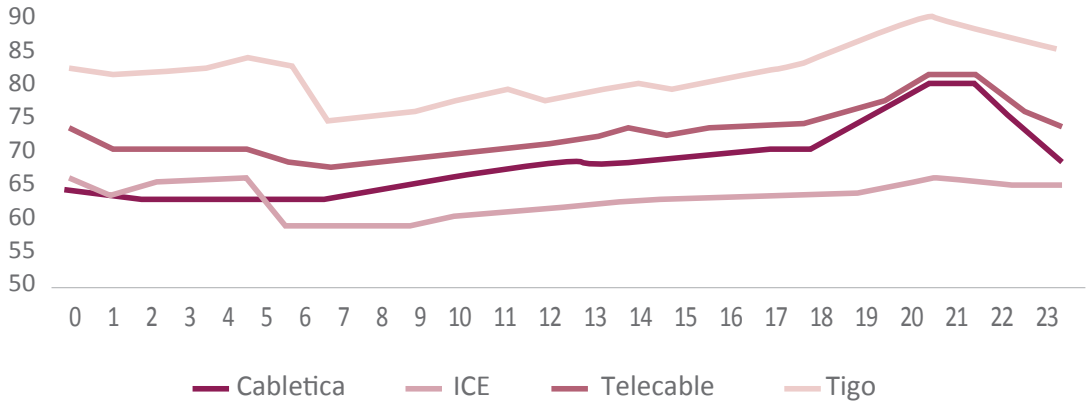
Graph n.° 179. Costa Rica: Evolution of the International Delay Indicator by province, 2018-2019
(figures in milliseconds)



Note: NR labels mean Not Reported and refer to data not available for any operator and specific evaluation year.
Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 180. Costa Rica: 24-hour behavior of the International Delay Indicator for the entire country, 2018

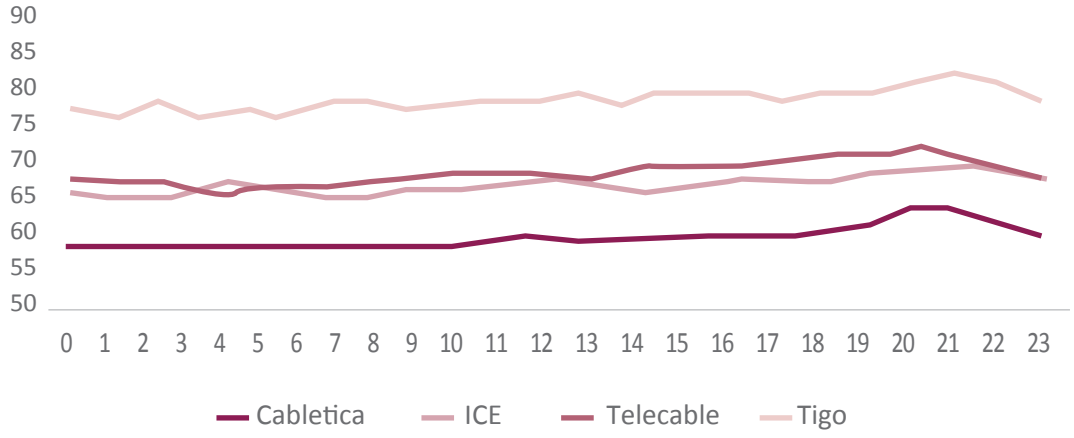
(figures in milliseconds)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 181. Costa Rica: 24-hour behavior of the International Delay Indicator for the entire country, 2019

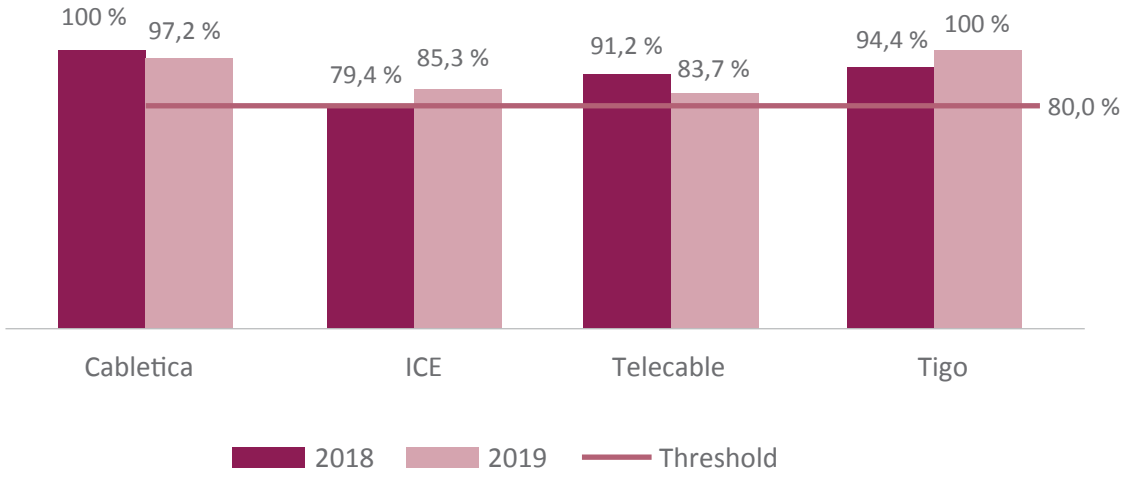
(figures in milliseconds)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 182. Costa Rica: Evolution of the Download Speed Performance Indicator for the entire country, 2018-2019

(figures in milliseconds)



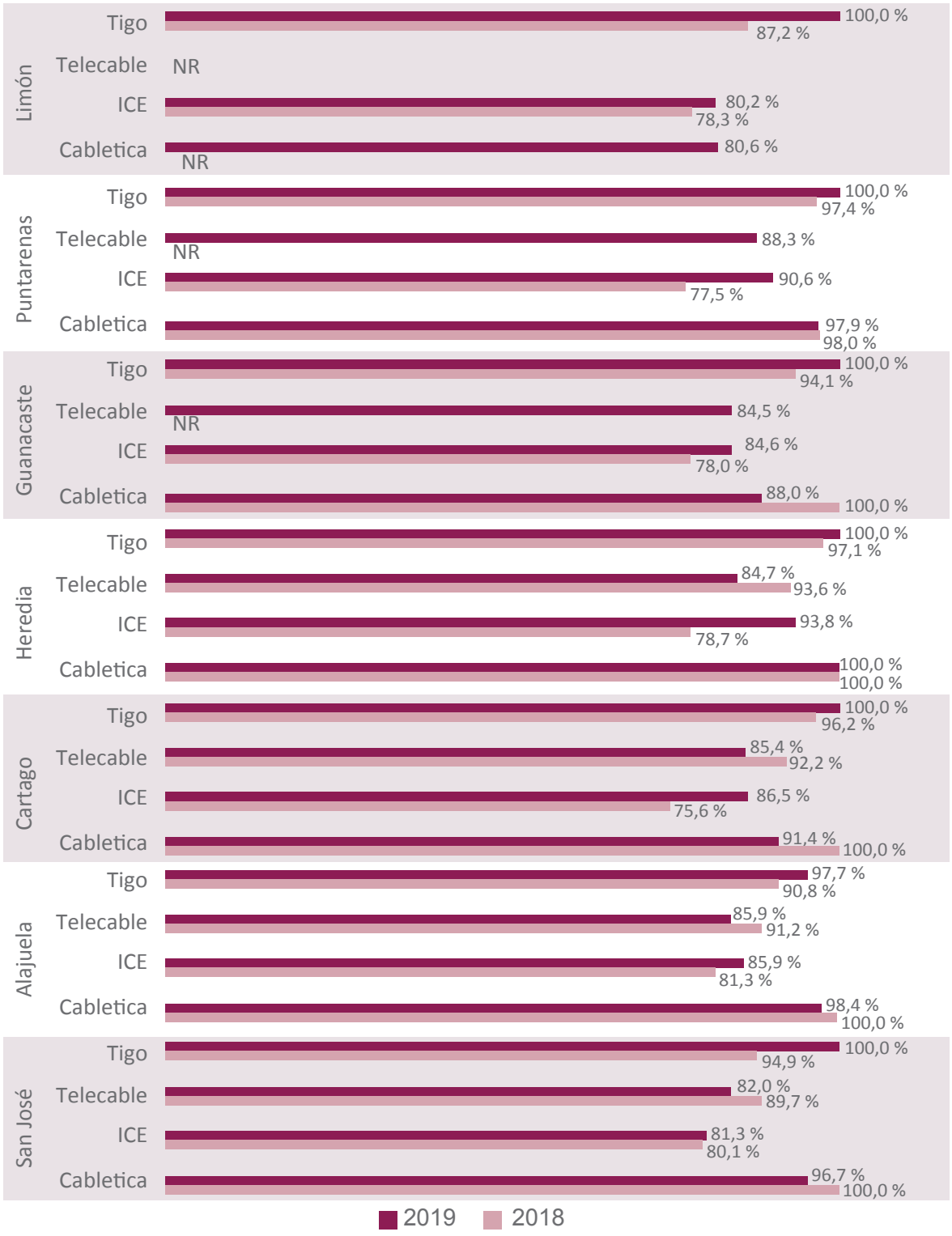
Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Mobile monitoring unit of the radioelectric spectrum performing measurements at Oficentro Multipark in Guachipelín de Escazú.



Graph n.° 183. Costa Rica: Evolution of the Download Speed Performance Indicator per province, 2018-2019

(figures in milliseconds)

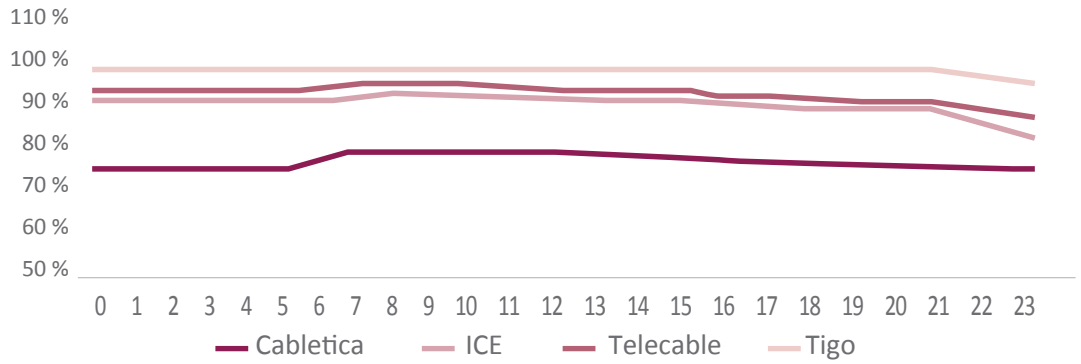


Note: NR labels mean Not Reported and refer to data not available for any operator and specific evaluation year.

Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 184. Costa Rica: 24-hour behavior of the Download Speed Performance Indicator for the entire country, 2018

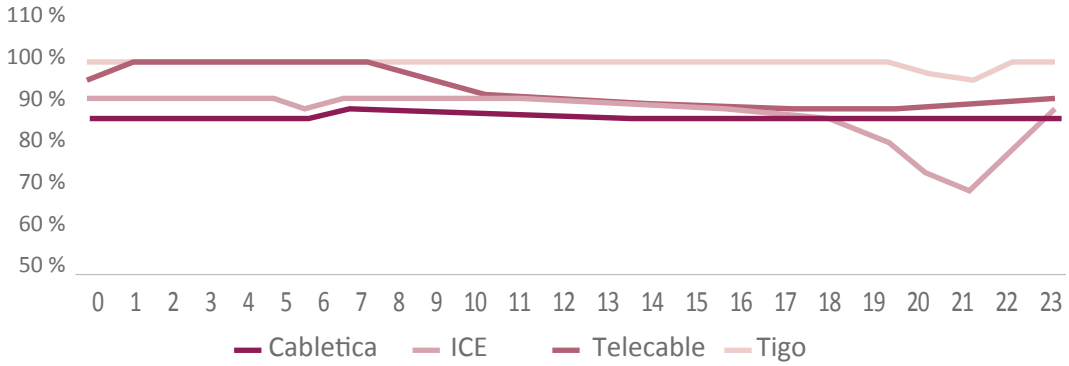
(figures by percentage)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 185. Costa Rica: . 24-hour behavior of the Download Speed Performance Indicator for the entire country, 2019

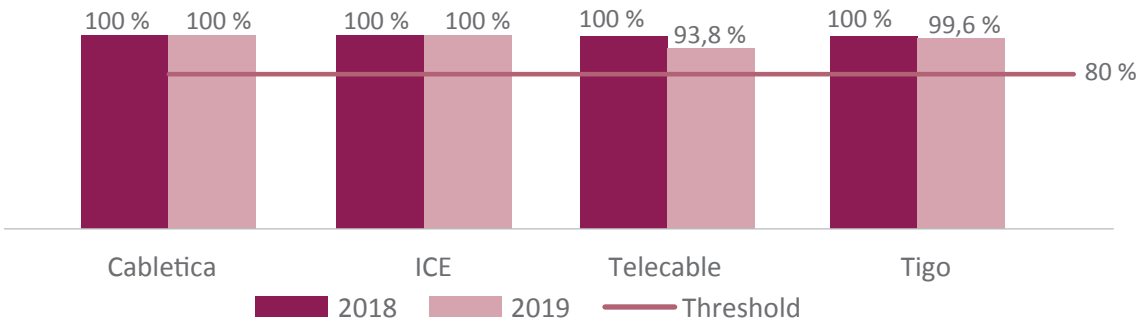
(figures by percentage)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 186. Costa Rica: Costa Rica. Evolution of the Upload Speed Performance Indicator for the entire country, 2018-2019

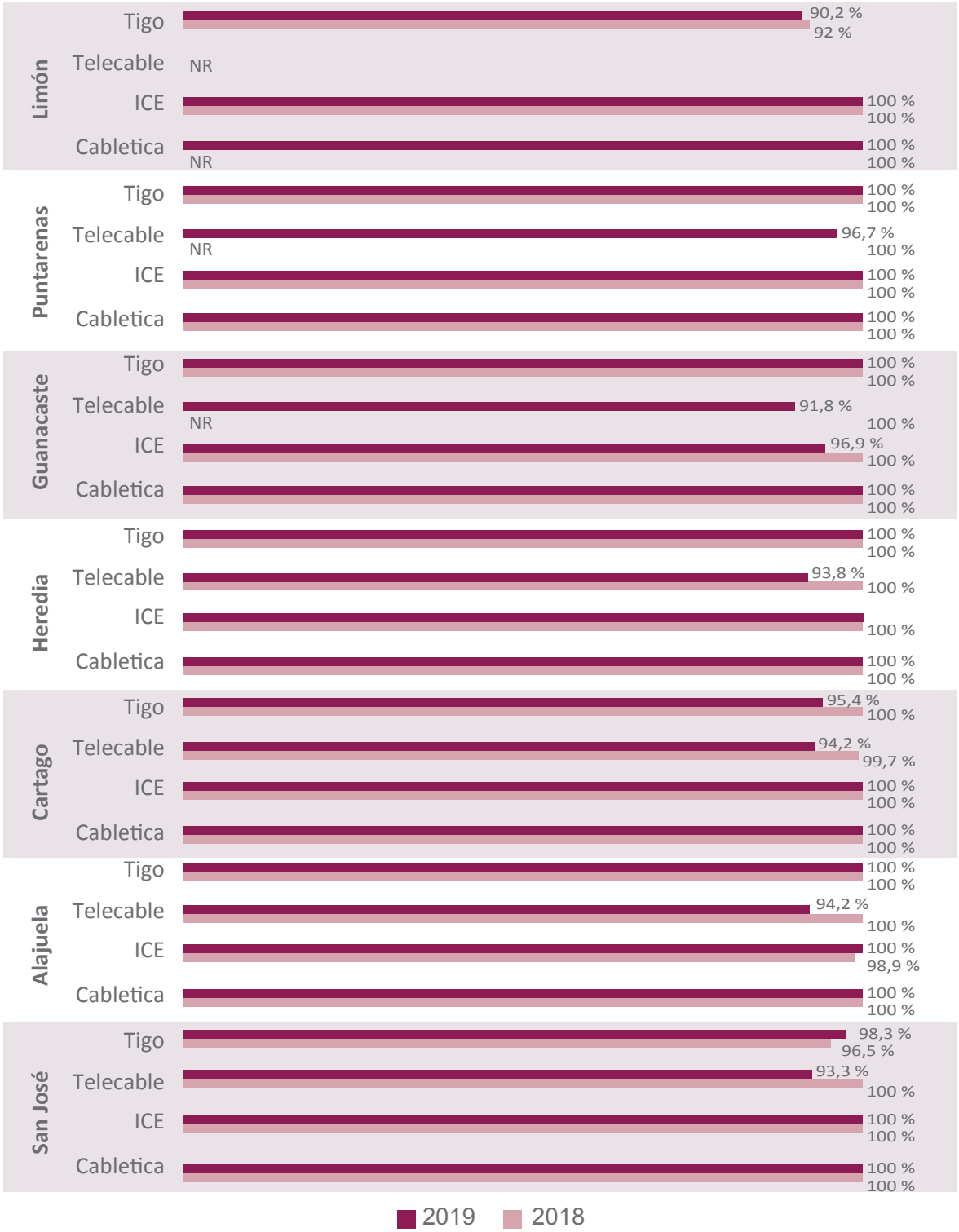
(figures by percentage)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 187. Costa Rica: Evolution of the Upload Speed Performance Indicator per province

(figures by percentage)

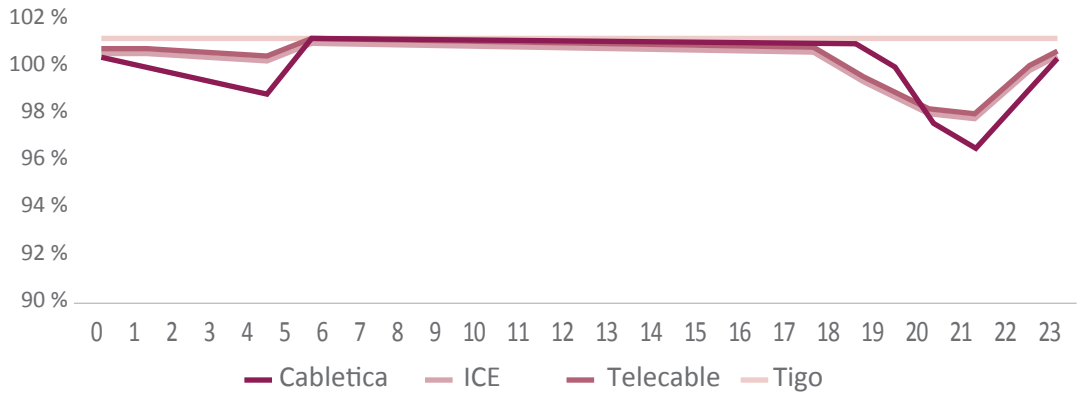


Note: NR labels mean Not Reported and refer to data not available for any operator and specific evaluation year.

Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 188. Costa Rica: 24-hour behavior of the Upload Speed Performance Indicator for the entire country, 2018

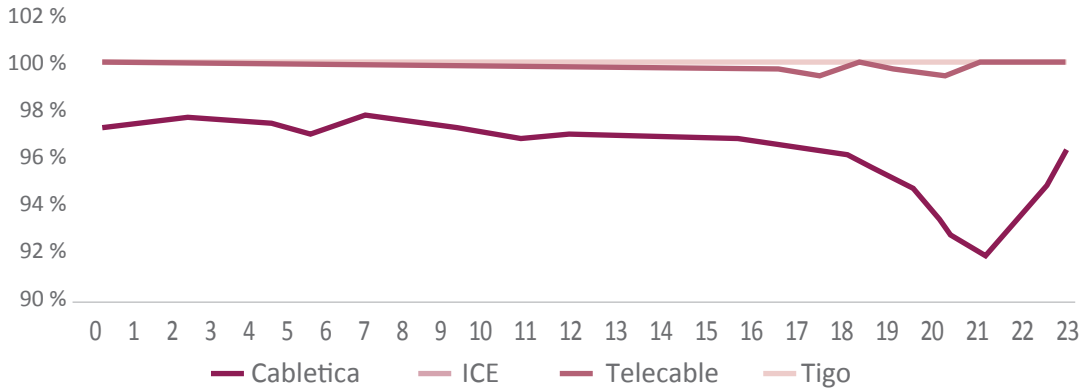
(figures by percentage)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 189. Costa Rica: 24-hour behavior of the Upload Speed Performance Indicator for the entire country, 2019

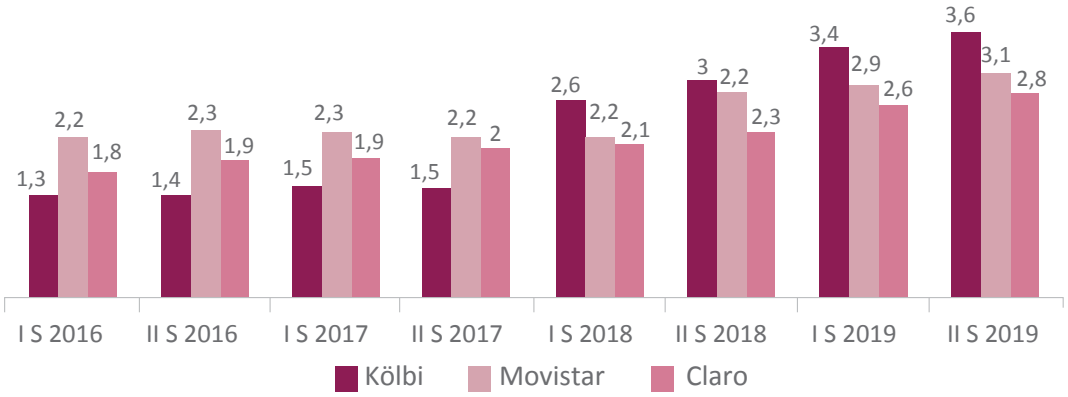
(figures by percentage)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 190. Costa Rica: Evolution of download speed 3G, 2016-2019

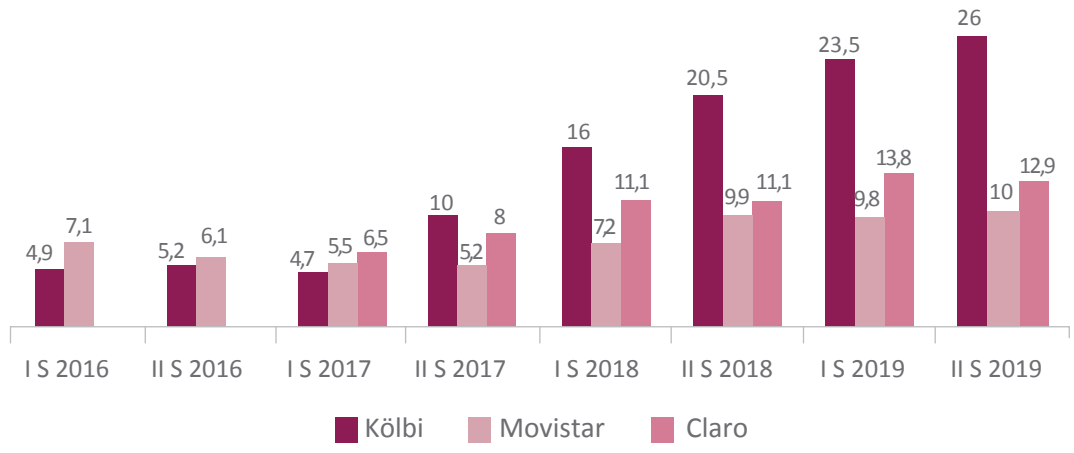
(figures per semester in Mbps)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 191. Costa Rica: Evolution of download speed 4G, 2016-2019

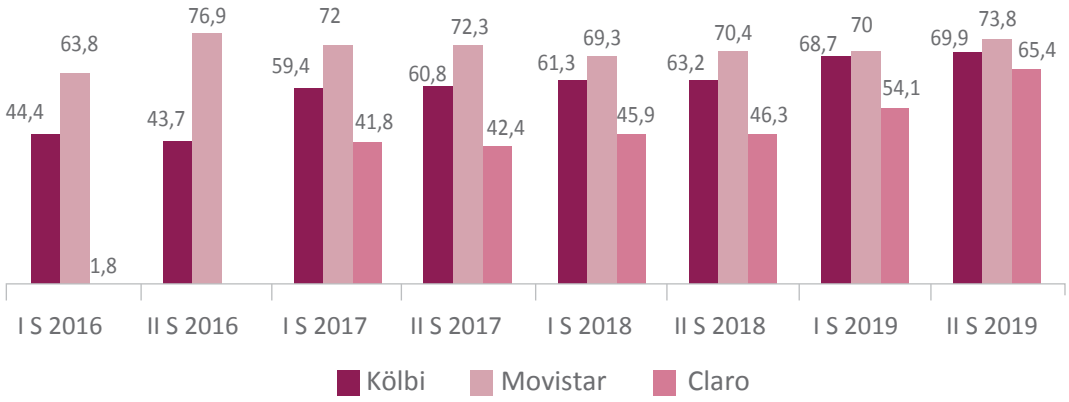
(figures per semester in Mbps)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

Graph n.° 192. Costa Rica: Evolution of access availability to 4G, 2016-2019

(figures per semester in percentages)



Source: SUTEL, Directorate General for Quality, Costa Rica, 2019.

1 171 572 INHABITANTS BENEFITED WITH A C CESS TO VOICE AND DATA SERVICES IN DISTRICTS WITH PRESENCE OF PROGRAMS DEVELOPED BY FONATEL

FONATEL

Compliance with the National Telecommunications Development Plan goals and Execution of FONATEL resources



Beneficiary family of the Connected Households Program.

Aggregate results

The following are the main aggregate results of the joint execution of the programs financed and developed within the framework of the National Telecommunications Development Plan with FONATEL resources during the 2015-2019 period, according to type of indicator[40]. In 2019, the fourth FONATEL program entered into production, thus reaching four programs in execution: Connected Communities Program, Connected Households Program, Equipped Public Centers Program, and Connected Public Spaces Program.

Indicators of achievement of goals in the National Telecommunications Development Plan

The following is the progress made during 2019 in meeting the public policy goals established in the National Telecommunications Development Plan (NTDP) 2015-2021 in force[41], associated with the programs in execution of FONATEL[42]. At the end of 2019, an average of 99% was recorded for annual achievement of the goals defined for this period, which reflects an increase of 16 percent compared to the average obtained in 2018, which was 83%. It should be noted that in 2019, it was possible to exceed the goal defined for the period for Connected Households, Equipped Public Centers, and Connected Public Spaces programs[43] (see Tabla n.° 19).

RIt is important to indicate that NTDP 2015-2021 establishes additional goals related to the Ministry of Housing and Human Settlements (MIVAH) and the Program 5 Bicentennial Educational Network, on which, in response to Technical Report MICITT-DEMT-DPPT-005-2020, "Second Biennial Evaluation Report of the Goals of the NTDP 2015-2021, cut-off as of December 31, 2019", SUTEL sent its observations by agreement 028-58-2020 of August 20, 2020.

Management indicators

Regarding the progress of the management of FONATEL´s projects and programs, the following results stand out regarding the coverage of services, infrastructure development, and provision of devices and support products[44], as of the intervention of FONATEL in the market.

The portfolio of programs and projects developed and financed with FONATEL resources remained unchanged between 2018 and 2019 in terms of the number of projects developed[45]. At the end of 2019, a total of 36 projects were reported considering all the stages within the life cycle phases of each one. Most of these projects (89%) belong to the Connected Communities Program. Despite the fact that the absolute number of projects has not changed, it is possible to notice progress in the execution of the projects since there was an increase in the number of projects in production, going from 20 in 2018 to 24 in 2019 (a 20% variation). Likewise, it is possible to identify a reduction in the number of projects in the stages of formulation/award (-1) and execution/reception (-5) between 2018 and 2019, which means progress in the management of these projects (see Graph n.° 193).

[40] For details on the formulation of FONATEL indicators, refer to section “Methodology and scope of the report” (p. 20)

[41] According to the 2015-2021 NTDP Goal Matrix, updated to March 2019.

[42] Results presented in this report are consistent with the results of the “Second Biennial Evaluation Report of the Goals of the NTDP 2015-2021, cutoff as of December 31, 2019”, Ministry of Science, Technology, and Telecommunications, June 2020 (Technical Report N° MICITT-DEMT-DPPT-005-2020) (https://www.micit.go.cr/sites/default/files/ii_informe_de_evaluacion_bienal_del_NTDP_2015-2021_final_web_1.pdf).

[43] This Report includes only the results of the goals of the NTDP 2015-2021 assigned to SUTEL/FONATEL for which data are available for monitoring under the responsibility of SUTEL/FONATEL. The report on goals n.° 3, n.° 6, n.° 7, n.° 8, and n.° 14 are excluded from this report because the responsibility for their compliance exceeds SUTEL/FONATEL and is shared with other institutions that are in charge of reporting the respective information and that have not delivered it, so its progress cannot be calculated. In this regard, refer to agreement of SUTEL Council 028-058-2020 notified through official letter 07532-SUTEL-SCS-2020 of August 24, 2020.

[44] The following devices and support products are defined: devices, equipment, instruments, technologies, software, and products designed to promote the personal autonomy of people with disabilities, allowing access and use of Information and Communication Technologies (ICT).

[45] For 2013-2018, a modification is incorporated in this indicator notified by the trustee of the trust and its Management Unit as a result of a certification study of the historical series of the operational indicators of the Connected Communities Program, which varied the historical data reported in previous editions, increasing the number of FONATEL projects by stage of development.

Another relevant aspect of 2019 is that two FONATEL projects reached their closing phase, corresponding to tender n.° 003-2013[46] of the Connected Communities Program, which brought connectivity to 6 communities in the Pacuarito and Siquirres districts and the connection of 11 Public Service Provision Centers (CPSP), and to tender n.° 009-2015 of the Equipped Public Centers Program and its expansion, with a total delivery of 36 831 devices and support products to 4 public institutions in the country.

The four FONATEL programs in execution, together, had a presence in 478 districts[47], which represented 98% of the total districts of the country (see Graph n.° 194). Of these, 24% have the presence of a single program in execution, which implies that three out of every four of the total districts have the presence of two or more programs. 42% of districts benefit from two programs; 31% of three programs; and 3% can access the benefits of the four programs in execution.

In 2019, the Connected Households and Equipped Public Centers programs jointly delivered 167 410 devices for accessing and using ICTs, which means an increase of 39% compared to 2018[48] (see Graph n.° 195), generating greater broadband technological solutions to comprehensively reduce the Digital Divide.

Beneficiary indicators

The Connected Communities and Connected Households programs have contributed to increasing connectivity in areas of low profitability for the provision of telecommunications services and with low-revenue populations, covering approximately 370 662 households and 365 420 housing units in 2019[49], which translates into 1.171.572 inhabitants benefiting from access to voice and data services in districts with the presence of the programs developed by FONATEL[50] (see Graph n.° 196).

The FONATEL resources assigned to the programs in execution have been invested in universalizing telecommunications services, expanding access to said services throughout the national territory. With the resources invested since the beginning of the projects and until 2019, 144 474 subscriptions to fixed telecommunications services have been reached: 3409 for fixed telephony and 141 065 for fixed Internet. These results represent an increase of 200% and 64% respectively, compared to 2018[51] (see Graph n.° 197)

Financial indicators

The value of the Fund´s total assets as of December 2019 was 200 847 million colones, 132 million colones less than in 2018 (see Graph n.° 198). This decrease is due to the fact that the revenue from the collection of the Special Parafiscal Contribution (CEPF), plus the revenue received from yields, were lower than expenses produced by the investment made for the execution and maintenance of the programs financed through FONATEL.

[46] Siquirres Project (Pacuarito) by Telefónica.

[47] Districts with the presence of at least one program developed by FONATEL, with connectivity (total or partial) with access to voice and data services or with at least one household benefitting from a subsidy for Internet service and a device for its use or a CPSP with devices for access and use of ICTs or an Internet digital free access zone.

[48] For 2017, a modification is incorporated in this indicator notified by the trustee of the trust and its Management Unit as a result of a certification study of the historical series of the operational indicators of the Equipped Public Centers Program, which varied the historical data reported in previous editions, reducing the number of devices for access and use of ICTs delivered.

[49] The number of households and housing units per district with access to voice and data services from the Connected Communities Program is estimated by dividing the population of the districts with connectivity (total or partial) with access to voice and data services provided by this program, obtained from the district population projections published by the National Institute of Statistics and Census (INEC), among the number of people per housing unit or household estimated in the National Household Survey (ENAHO), namely: persons per housing unit: 3.41 (2014), 3.37 (2015), 3.34 (2016), 3.31 (2017), 3.25 (2018) and 3.21 (2019) and persons per household: 3.35 (2014), 3.31 (2015), 3.27 (2016), 3.24 (2017), 3.20 (2018), and 3.16 (2019). The number of housing units benefiting from the Connected Households Program is estimated by dividing the number of households benefiting from the program by the number of households per housing unit estimated in the National Household Survey (ENAHO), namely: 1.022 (2016), 1.019 (2017), 1.014 (2018) and 1.014 (2019). The number of people benefited from the Connected Households Program is estimated by multiplying the number of households benefiting from the program by the number of people per household estimated in the National Household Survey (ENAHO). In the districts with the presence of both programs, the criterion of the Connected Communities Program is applied (only the total inhabitants, households and persons of the district are considered).

[50] For 2016-2018, a modification is incorporated in this indicator notified by the trustee of the trust and its Management Unit as a result of a certification study of the historical series of the operational indicators of the Connected Communities Program, which varied the historical data reported in previous editions, increasing the number of inhabitants and households with access to voice and data services.

[51] For 2016-2018, a modification is incorporated in this indicator notified by the trustee of the trust and its Management Unit as a result of a certification study of the historical series of the operational indicators of the Connected Communities Program, which varied the historical data reported in previous editions, increasing the number of subscriptions to fixed voice and data services.

In this regard, it is important to note that CEPF grew 4.7% compared to 2018, reaching 14 079 million colones in 2019 (see Graph n.° 199). On the other hand, the investment made by the programs under execution was 25 586 million colones in 2019, which meant a difference of 177 million colones more with respect to the investment in 2018 (see Graph n.° 200).

The investment made cumulatively during the last seven years (2013-2019) in the management of FONATEL programs and projects amounted to 70 969 million colones, with 2018 and 2019 as the years with the highest disbursements, adding up to 72% of the total investment during that period[52] (see Graph n.° 200). If the investment by program is analyzed, the Connected Households Program is the one that has executed the largest amount of resources annually since its inception in 2016. For 2019, the investment made by this program corresponds to 83% of the total Fund resources executed in the year, 15% more than in 2018. On the other hand, the investment made in the Connected Communities and Equipped Public Centers programs is equivalent to 7% and 6%, respectively, of the total executed. In 2019, the investment by the Connected Public Spaces Program was added, which represented 4% of the total disbursed in the year (see Graph n.° 201).

The executed resources of the Fund corresponding to 2019 were distributed among the 11 operators and service providers awarded through public tenders that are in charge of the execution of the projects and programs. Of these, Telecable obtained the highest disbursement corresponding to 28% of the total executed, which means an increase of 11 percentage points compared to what was received in 2018. Cumulatively, the four main operators (Telecable, Cabletica, ICE, and Tigo) accounted for 82% of the investment made in 2019, which corresponds to 20 922 million colones (see Graph n.° 202). This investment represents an increase of 6% compared to the amount transferred in 2018 to these 4 operators.

Results by program

The main results on performance in the execution of each of the programs in which the portfolio of projects financed and developed within the framework of FONATEL is distributed are set out below. These results reflect the status and progress of each intervention or program in execution, during 2015-2019.

Connected Communities Program (PCC)

Indicators of achievment of goals of the National Telecommunications Development Plan

The National Plan for the Development of Telecommunications 2015-2021 in force[53] establishes as total goals for this program: 183 districts and 20 of the indigenous territories in geographic areas without connectivity or with partial connectivity, or partially expanded with access to voice and data services, by 2021. For 2019, the established goals correspond to 125 districts and 4 indigenous territories. During 2019, the progress of the Connected Communities Program allowed bringing connectivity to 103 districts located in four regions of the outskirts of the country (22 districts less than required in the goal established for 2019), covering 6 of the 7 provinces (see Map n.° 3). In 2019, there was an increase of 43% in the number of districts with connectivity (partial or total) with access to voice and data services compared to 2018. The distribution of districts by planning region is equitable, encompassing between 19 and 30 districts per region (see Graph n.° 203). Also, in 2019, the geographic area of coverage of this program was expanded and projects in the Chorotega region were included, which cover 29 districts, including the indigenous territory of Matambú.

In this way, a compliance of 82% was obtained[54] of goal 1 established in the current NTDP 2015-2021, regarding the Connected Communities Program for 2019, which means 56% compliance with the final goal of 183 districts with connectivity (partial or total) with access to services voice and data, defined for 2021 (see Graph n.° 204). This result implies an increase of 17 basis points with respect to the compliance achieved in 2018, translated into 31 more districts. Regarding

[52] For 2016, a modification is incorporated in this indicator as a result of a validation study of the historical series of the financial indicators of the Connected Communities Program, which varied the historical data reported in previous editions, reducing the investment.

[53] According to the 2015-2021 NTDP Goal Matrix, updated to March 2019.

[54] pursuant to Technical Report MICITT-DEMT-DPPT-005-2020 “Second Biennial Evaluation Report of the Goals of the NTDP 2015-2021, cut-off as of December 31, 2019”, p.44.

goal 2 of the NTDP 2015-2021, in 2019 the first indigenous territory with connectivity (partial or total) was counted with access to voice and data services provided by this program, corresponding to the territory of Matambú, which meant 25% compliance with the goal set for 2019 and 5% with the goal set for 2021[55].

Management indicators

The Connected Communities Program is made up of a portfolio of 32 projects, an amount that has remained constant in the last 3 years, varying only in composition by stage within the life cycle phases of each one[56]. In 2019, there was an increase of 22% in the number of projects in production status in relation to the previous year, reaching a total of 22 projects that are providing services to the population (see Graph n.° 205). These projects correspond to 69% of the total portfolio of projects in this program. In 2019, the closing phase of the first project of this program was reported[57] after the end of its life cycle, which was intended to bring connectivity to six communities in the Pacuarito and Siquirres districts, which had no coverage by the market. This project also included the connection of 11 educational centers located in both districts.

In 2019, within the framework of this program, a total of 431 telecommunications towers were put into operation to bring connectivity to the districts; this value includes new towers built and suitable existing towers with new equipment. The 2019 infrastructure deployment represented an increase of 33% in relation to the towers put into operation in 2018. This increase was mainly due to the commissioning of the projects located in the Chorotega region, which generated the installation of 57 towers, as well as the progress of projects in the Huetar Caribe region, which increased the infrastructure by 49 towers (see Graph n.° 206).

The scope of the projects of this program also includes the connectivity of Public Services Provision Centers (PSPC), which increased by 66% from 2018 to 2019[58], registering 996[59] PSPC with access to fixed telephony and Internet services. These PSPCs correspond to educational centers of the Ministry of Public Education (MEP), which represent 93% of the total PSPCs connected in 2019, Education and Nutrition Centers and Comprehensive Care Children's Centers (CEN-CINAI) administered by the Ministry of Health and Intelligent Community Centers (CECI) managed by the Ministry of Science, Technology, and Telecommunications (MICITT), which represent 6% and 1% respectively of the total, enhancing their access to voice and data services (see Graph n.° 207).

Beneficiary indicators

The infrastructure deployed within the framework of the Connected Communities Program has allowed universal access to telecommunications services, increasing the number of inhabitants with access to voice and data services in districts where the cost of installation and maintenance of telecommunications infrastructure makes the provision of these services not profitable. By 2019, it was possible to cover 803 267 inhabitants of 103 districts with connectivity (total or partial) provided through this program, which represents an increase of 27% compared to last year[60] (see Graph n.° 208).

Regarding the direct users of the benefit granted by this program, at the end of 2019, there were 13 895 subscriptions to fixed telephony and Internet services, increasing the number of subscriptions to fixed telephony reported in 2018 by 200%. On the other hand, the service to fixed Internet access increased the number of subscriptions five times between 2018 and 2019[61] (see Graph n.° 209). This increase is mainly due to progress in the deployment of infrastructure in projects in the Huetar Caribe region.

[55] In October 2019, tenders 001-2018 and 002-2018 were awarded, which contemplate the coverage of 14 indigenous territories. Currently, a tender for the attention of six additional territories is being analyzed; in addition, work is being done with MICITT to seek an agreement for the three remaining territories that have refused to participate in the program.

[56] For 2013-2016, a modification is incorporated in this indicator notified by the trustee of the trust and its Management Unit as a result of a certification study of the historical series of the operational indicators of the Connected Communities Program, which varied the historical data reported in previous editions, increasing the number of projects by stage of development.

[57] Siquirres Project (Pacuarito) by Telefónica.

[58] For 2013-2016, a modification is incorporated in this indicator notified by the trustee of the trust and its Management Unit as a result of a certification study of the historical series of the operational indicators of the Connected Communities Program, which varied the historical data reported in previous editions, increasing the number of projects by stage of development.

[59] This figure includes the 11 PSPCs of project 1 that closed in 2019, located in the Pacuarito and Siquirres districts by Telefónica, which maintain active services.

[60] For 2017-2018, a modification is incorporated in this indicator notified by the trustee of the trust and its Management Unit as a result of a certification study of the historical series of the operational indicators of the Connected Communities Program, which modified the historical data reported in previous editions, varying the number of inhabitants in the districts with connectivity (total or partial).

[61] For 2016-2018, a modification is incorporated in this indicator notified by the trustee of the trust and its Management Unit as a result of a certification study of the historical series of the operational indicators of the Connected Communities Program, which varied the historical data reported in previous editions, increasing the number of subscriptions to fixed voice and data services.

When analyzing the distribution of subscriptions to fixed services by planning region, it is observed that in 2019 more than half (55%) of the subscriptions to fixed Internet of the Connected Communities Program were registered in the Huetar Norte region, which is supplied by Telefónica and Claro. This region experienced an increase of 4 342 subscriptions between 2018 and 2019, being the region with the highest increase. An increase was also reported in the number of subscriptions in the Huetar Caribe region compared to a year ago, going from 14 to 2171 subscriptions at the end of 2019 (see Graph n.° 210).

Regarding the subscriptions to fixed telephony of this program, a behavior similar to that of the fixed Internet service is observed in the planification regions: the Huetar Norte region concentrates the majority (45%), which means an increase of 670 fixed telephony subscriptions compared to 2018. Likewise, it is observed that the Huetar Caribe region obtained the highest growth in subscriptions to this service, going from 5 subscriptions in 2018 to 873 subscriptions in 2019 (see Graph n.° 211).

It is important to clarify that the projects tendered within the framework of this program include the extension of the coverage of voice and fixed Internet services. However, in some areas the participating operators have deployed convergent solutions that allow the provision of mobile services, marketed at the expense of said operators, therefore, considered as a positive externality of the Program. In this regard, for 2019, there is a 10% increase in the number of subscriptions to mobile services compared to 2018[62] (see Graph n.° 212).

Similar to fixed services, mobile service subscriptions are concentrated in the Huetar Norte region, three out of four mobile service subscriptions belong to that region, despite experiencing a decrease in the number of subscriptions from 2412 between 2018 and 2019. The other regions show an increase in the number of subscriptions to mobile services, with the Huetar Caribe region showing the highest growth (4365 more subscriptions) compared to the previous year (see Graph n.° 213).

Financial indicators

In 2019, an investment of 1936 million colones from the Fund is reported, attributable to the execution of the Connected Communities Program projects. This amount is lower than the 4754 million invested in 2018, which implies a reduction of 59% in the investment for this program, mainly due to the fact that during 2019 no investment advances were made (CAPEX)[63]. The accumulated investment made in the program since its inception in 2013 amounts to a total of 15 118 million colones[64] (see Graph n.° 214).

Regarding the distribution of the investment by service operator for 2019, Claro, in charge of five projects, was the operator that executed the highest amount of resources assigned to this program (3 out of every 4 million colones invested in the program were paid to this operator). This represented an increase of 2% compared to what was perceived in 2018. On the other hand, ICE (18 projects) and Telefónica (3 projects[65]) saw their participation in the execution of resources reduced in 2019, decreasing by 87% and 29[66]%, respectively, regarding the 2018 budget (see Graph n.° 215).

Connected Households Program (CHP)

Indicators of achievement of goals in the National Telecommunications Development Plan

The National Telecommunications Development Plan for 2015-2021 in force[67] establishes a total goal for this program of 140 496 households distributed in the national territory with subsidy for Internet service and a device for their use, by 2021. The goal established for 2019 corresponds to 95 196 households with this benefit.

In 2019, the Connected Households Program, made up of a single project, reached a total of 139 154 households contacted, which corresponds to the total number of households that have been asked to join the program (includes beneficiary households) and which represented 43% more than the households contacted in 2018. Of these, 6%

[62] For 2014-2018, a modification is incorporated in this indicator notified by the trustee of the trust and its Management Unit as a result of a certification study of the historical series of the operational indicators of the Connected Communities Program, which modified the historical data reported in previous editions, varying the number of subscriptions to the mobile phone service.

[63] In 2018, the respective payment to CAPEX was made for the projects in the Chorotega and Central Pacific and Upper regions, which was commissioned at the end of 2019, causing the effect of an increase in investment in 2018 and an increase in the districts with presence of the Program in 2019. The investment made in 2019 was impacted by a reduction in the number of projects that went into production (three less compared to 2018), which implied a lower initial investment and a lower investment for the installation of additional infrastructure.

[64] For 2016, a modification is incorporated in this indicator as a result of a validation study of the historical series of the financial indicators of the Connected Communities Program, which varied the historical data reported in previous editions, thus reducing the investment.

[65] It includes the Siquirres (Pacuarito) project by Telefónica, which reached the end of its life cycle in 2019. 66 The reduction is due to the fact that Telefónica only receives disbursements for services to the PSPCs.

[67] According to the 2015-2021 NTDP Goal Matrix, updated to March 2019.

They are in assigned status, that is, they have accepted to be part of the program, but their inclusion in it has not been formalized[68] (see Graph n.° 216). The remaining 94%, that is, 130 579 households were registered as beneficiaries of the program, receiving a subsidy for the acquisition of the fixed Internet access service and a computer for their use, surpassing the 2019 goal by 35 383 households. 90% of the households benefited in 2019 remained with an active service. The number of households benefited increased by 136% compared to those reported the previous year (see Graph n.° 217).

The increase in the number of beneficiary households registered in 2019 (46 311 more households compared to 2018) achieved137%[69] of goal 5 associated with the Connected Households Program, established in the current NTDP 2015-2021, set at 95 196 beneficiary households for 2019. This is the best performance on record for this program, four basis points above 2018. This, in turn, meant 93% achivement of the final goal of 140 496 households with a subsidy for Internet access and a device, provided by the program, defined to be met in 2021. This result implied a 33% increase compared to the total achievment reached in 2018 (see Graph n.° 218). In accordance with the growing trend in households benefited annually, it is estimated that the final goal will be met in 2020.

The distribution of households benefited by revenue quintile, a variable used as a criterion for defining the program's target population, reflects that since the second semester of 2017, there has not been a significant variation in the composition of the group of households benefited with respect to the revenue quintile. It is observed that the same trend has been maintained throughout the life of the program, where the lower the revenue quintile, the higher the proportion of households benefited. Households benefitting from revenue quintile 1[70] are 4.6 times more than households in the other quintiles. This has benefited the majority of households in the lowest revenue quintile, that is, households in poverty and extreme poverty, concentrating more than 80% of beneficiary households.

Compared to 2018, households in revenue quintile 1 showed the largest increase in the three quintiles included in the program, corresponding to 38 001 more households (see Graph n.° 219).

The participation of the nine operators and service providers attached to the program in attracting beneficiaries has varied in the last three years, noting a decrease in Cabletica's participation (5%) between 2018 and 2019, and an increase in participation of Telecable and ICE by 2% and 5% respectively, during the last year. These three operators concentrated 77% of the total beneficiary households (100 673 households), being the main providers of the benefits of the program during 2019. In this regard, Telecable was the operator with the highest growth in the number of households benefited (14 446 more households) compared to 2018 (see Graph n.° 220). It is important to note that in 2019 Cable Vision's operation within this program was absorbed by ICE[71] and in the last quarter, Cable Pacayas was incorporated, which provides services in the province of Cartago. In this way, the program closed 2019 with eight operators and service providers.

Geographically, the beneficiary households are concentrated in the provinces of San José, Alajuela, and Puntarenas, comprising 6 out of 10 beneficiary households, with San José being the province with the most beneficiary households, around a third of the total. This behavior has been maintained since the beginning of the program. Comparatively, the province of Cartago was the one that experienced the highest relative growth in the last year, increasing by 84% the number of households benefited in that area (see Graph n.° 221).

Management indicators

The increase in the number of beneficiary households allowed the expansion of the only Connected Household Program project in the national territory, reaching 471 districts with at least one beneficiary household with a subsidy for Internet service and a device for its use, which meant an increase of 9% compared to 2018 (see Graph n.° 222). In turn, the number of districts with the program's presence reaches 97% of the total number of districts in the country, increasing by 8 percentage points compared to last year (see Mapa n.° 4).

[68] For the second semester of 2018, a modification is incorporated in this indicator as a result of a validation study of the historical series of the operational indicators of the Connected Households Program, which varied the historical data reported in previous editions, increasing the amount by three of households decommissioned.

[69] In accordance with Technical Report MICITT-DEMT-DPPT-005-2020 Second Biennial Evaluation Report of the Goals of the NTDP 2015-2021, cut-off as of December 31, 2019, p.49.

[70] Revenue quintile 1 contains 20% of households with the lowest revenue (National Household Survey July 2019 - General Results, National Institute of Statistics and Censuses, 2019, p. 20).

[71] Said movement is due to the acquisition of Cable Vision by ICE, which implies the acquisition of the rights and obligations of the former. For more details refer to the Resolution of SUTEL Council RCS-291-2012 "Application for authorization of concentration of the Costa Rican Electricity Institute (Grupo ICE) for the acquisition of Cable Vision de Costa Rica CVCR SA"

Beneficiary indicators

In 2019, 117 719 total active subsidized fixed Internet subscriptions were reported[72] provided by the Connected Households Program. In this regard, an increase of 49% (38 904) was perceived in active subsidized subscriptions between 2018 and 2019 (see Graph n.° 223). Also, the number of net active subsidized subscriptions[73] for 2019 was estimated at 67 335[74].

For 2019, a net penetration of the fixed Internet service access of the Connected Households Program of 4.3% was obtained[75], which represented an increase of 0.1 percentage points in relation to 2018 (see Graph n.° 224). If the total active subsidized subscriptions with 2019 are considered, the total penetration of the program's fixed Internet access service rises to 7.5%.

This result is relevant considering that in 2019, the penetration per 100 housing units to fixed Internet access service in the market was 57.3%[76] . From the above, it can be deduced that in 2019, the Connected Households Program contributed to the penetration of fixed Internet access service in the market by up to 13.1%[77].

Financial indicators

During 2019, 21 205 million colones were executed from the Fund through this program, which represents an investment 23% greater than that executed in 2018, a difference that translates into 3 907 million additional colones between one year and another (see Graph n.° 225). This amount corresponds to the highest annual investment made by a program financed with FONATEL resources. Cumulatively, at the end of 2019, 45 297 million colones assigned to this program were executed, which represents 64% of all amounts disbursed by the Fund since 2013, for programs and projects.

The amounts executed through the Connected Households Program were distributed among the nine operators and service providers that are in charge of the provision of benefits of this program for the target population. In this regard, there has been a change in the distribution of resources by operator since 2016. Between 2018 and 2019, Cabletica's participation in the distribution of the resources assigned to the program decreased by 5%, contrary to the increase in the participation of ICE (2%) and Telecable (5%). Together, these three operators were assigned 77% of the amounts executed in 2019, which represents an increase of 3 509 million colones compared to 2018 (see Graph n.° 226).

Equipped Public Centers Program (EPCP)

Indicators of achievement of goals in the National Telecommunications Development Plan

The National Telecommunications Development Plan 2015-2021[78] in effect establishes 40.000 connectivity devices delivered to Public Service Provision Centers by 2021 as the total goal. The target established for 2019 corresponds to 36 000 devices delivered. In 2019, execution concluded and the closing phase and the expansion of the first project of the Equipped Public Spaces Program was carried out, at the end of its life cycle, through which a total of 36 831 devices were delivered and support products for access and use of ICTs in Public Services Provision Centers (PSPC), exceeding the 2019 goal by 831 devices. At the beginning of 2019, the 827

[72] Households benefitting from active Internet access service.

[73] Households benefitting from active Internet access service that subscribed to Internet access service for the first time thanks to the program. Before entering the program, they did not have the service.

[74] Estimated data from the perception survey applied in 2019 by SUTEL to a probabilistic sample of beneficiaries of the Connected Households Program and is equivalent to 57.2% of all households benefited with the active Internet access service.

[75] It is calculated by dividing the net active subsidized subscriptions (67.335) by the total number of housing units in the country (1.578.161) reported in the National Household Survey (ENAHO), published by the National Institute of Statistics and Census (INEC). For the calculation of this indicator, it is divided between the housing units in order to be consistent with the penetration indicator calculated in the market, following the definition of the International Telecommunications Union (ITU), in which penetration is defined as the proportion of the entire market in which the services have been introduced. In this sense, a dwelling corresponds to the physical infrastructure in which the services are installed, and which may include one or more households that have access to the installed services. Additionally, within the surveys applied by the INEC, the possession of telecommunications services is measured by dwelling.

[76] Data extracted from "Statistics of the Telecommunications Sector", page 101.

[77] It is calculated by dividing the total penetration of fixed Internet through the Connected Households program by the total penetration (subscriptions per 100 housing units) of fixed Internet in the market.

[78] According to the 2015-2021 NTDP Goal Matrix, updated to March 2019.

devices that were pending to be distributed in 2018 were delivered, corresponding to the expansion of the project, which meant 2% of total devices delivered (see Graph n.° 227).

With the delivery of devices from the first project, 102% of goal 9 associated with the Equipped Public Spaces Program was achieved, set in the current NTDP 2015-2021, corresponding to the delivery of 36 000 devices by 2019. Achievement is 92%[79] of the final goal established for 2021 on the delivery of 40 000 devices for access and use of ICTs in PSPC (see Graph n.° 228).

The first project of this Program closed with the delivery of 100% of the devices awarded to each of the four public institutions that acted as counterparts in its implementation, according to the goal established in tender n.° 009-2015 (see Graph n.° 229). These devices are distributed as follows: Ministry of Public Education (MEP) received seven out of ten devices delivered; Ministry of Science, Technology, and Telecommunications (MICITT) received 14% of these devices; one out of ten devices was delivered to the Costa Rican Social Security Fund (CCSS); and the remaining 3% was delivered to the Education and Nutrition Centers and Comprehensive Care Children's Centers (CEN-CINAI), in accordance with the requirement provided by each institution (see Graph n.° 230). On average, each PSPC received 9.7 devices, with MEP and MICITT as the institutions that received the highest number of devices per capita: 78.8 and 18.9 devices per PSPC on average, respectively.

Management indicators

This program managed to equip a total of 3 809 PSPC[80]. Most (3 134) of these PSPCs correspond to public health centers, which include the Basic Equipment for Comprehensive Health Care (EBAIS), clinics, hospitals, and Health Areas of the CCSS, followed by primary and secondary education centers of MEP (335), Intelligent Community Centers (CECI) of MICITT were 268, and finally, 72 Education and Nutrition Centers and Comprehensive Care Children's Centers (CEN-CINAI) received devices through this Program (see Graph n.° 231).

The distribution of the devices among the PSPCs resulted in the program having a presence in 263 districts, which include at least one PSPC equipped by the program (see Map n.° 5). The number of districts with presence of the program did not vary between 2018 and 2019, but it does show an increase in 91 districts compared to 2017 (see Graph n.° 232).

Financial indicators

To achieve the goal established for the first project, 9 573 million colones from the Fund were executed cumulatively, disbursed to RACSA-PC Central. The investment carried out shows a decreasing trend, because disbursements are made according to the progress of the project. For this reason, in 2019, the least number of resources was executed, corresponding to 15% of the total executed (see Graph n.° 233).

Connected Public Spaces Program (CPSP)

Indicators of achievement of goals in the National Telecommunications Development Plan

The National Plan for the Development of Telecommunications 2015-2021, in force81, establishes as a total goal for this program 513 digital zones with free Internet access for the population, in public spaces, by 2021. For 2019, the established goal corresponds to 200 digital zones in operation.

The first project of the Connected Public Spaces Program began in the first quarter of 2019, with the acceptance of the first digital zones with free Internet access. By December 2019 301 digital zones put into service were counted, which means

[79] Technical Report MICITT-DEMT-DPPT-005-2020, Second Biennial Evaluation Report of the Goals of the NTDP 2015-2021, cut-off as of December 31, 2019, p.55.
[80] Equipped PSPCs were established by the project partner institutions that received the devices.
[81] According to the 2015-2021 NTDP Goal Matrix, updated to March 2019.

an average of 30 zones put into service per month (see Graph n.° 234). With the progress of the program shown in 2019, the goal of 200 digital zones in operation established for 2019 was exceeded in 101 areas, which implies 151%[82] achievement of goal 13 set forth in the current NTDP 2015-2021, associated with the Connected Public Spaces Program. This means a 59% fulfillment of the final goal of 513 digital zones of free Internet access in public spaces, planned for 2021 (see Graph n.° 235).

Public spaces in which the digital zones of free Internet access were enabled correspond to libraries of the National Library System (SINABI), Civic Centers for Peace administered by the Ministry of Justice and Peace, train stations run by the Costa Rican Trains Institute (INCOFER), and public free access areas managed by the municipalities, among which are parks, squares, and community centers, among others.

In 2019, more than half of the digital zones of each type have been put into service, as established in tender no.002-2017. Train stations and libraries are the ones that have shown the greatest progress in meeting the goal defined in the public bid papers (86% and 74%) respectively. This means there are still 212 digital areas pending to be put into service between 2020 and 2021, 89% of which correspond to free access public spaces (see Graph n.° 236). Note that public spaces comprise the majority (81%) of the request for bid document goal.

Of the total number of digital zones put into service, three out of four correspond to public spaces administered by municipalities, followed by libraries, train stations, and to a lesser extent, Civic Centers for Peace (see Graph n.° 237). In this regard, it should be clarified that the list of 513 digital zones established in the goal of this Program includes two zones that are at the same time a library and a Civic Center for Peace, located in Guararí (Heredia) and Aguas Zarcas (San Carlos)[83].

Management indicators

The only project in this program is being executed by three service operators awarded with it. The distribution of digital zones put into service by operator indicates that the majority (127 zones) have been put into service in areas covered by Telecable. Coopeguanacaste has put into operation 108 zones and 66 correspond to the ICE-RACSA-PC Central cluster (see Graph n.° 238).

These digital zones are distributed in the seven provinces of the country, mainly in San José, Alajuela, and Heredia that concentrate 75% (225) of these (see Graph n.° 239). At the district level, with the monthly advance of the areas put into service, the presence of the program has been expanded by 65% per month, covering 19 more districts on average per month, reaching 178 districts at the end of 2019, which represents 37% of the total number of districts in the country (see Graph n.° 240). Consequently, the program has a presence in the six planning regions, with most of the digital zones being located in the Central, Chorotega, and Central Pacific regions, which cover 87% of the total digital zones put into service (see Map n.° 6).

By the end of 2019, the cumulative figure of 239 062 users was reached, counted as the number of single devices that connected to the free wireless Internet network at least once in the digital zones put into service. In this regard, it is clarified that users who connect several times are counted only once.

Financial indicators

The execution of this program in 2019 led to the disbursement of 981 million colones, exceeding the budget defined for this period by 50%. This amount was distributed among the three awarded service operators, with Telecable receiving nearly half (46%) of these resources, followed by the ICE-RACSA-SPC cluster and Coopeguanacaste, adding 531 million colones between both of them (see Graph n.° 241).

[82] In accordance with MICITT-DEMT-DPPT-005-2020, Second Biennial Evaluation Report on the Goals of NTDP 2015-2021, cut-off as of December 31, 2019, p.55.
[83] When adding the number of digital zones commissioned per institution, the result is 303

Wireless Internet Area in the Central Park in Moravia, San Jose.



Table n.° 19. Costa Rica: Compliance with goals established in NTDP 2015-2021 assigned to FONATEL execution programs, 2015-2019

Goal Description*	Current goal (March 2019)*	Progress as at 2019**	Annual compliance	Compliance total goal
GOAL 1: 183 districts with access to voice and data services, 2021 (partial or total)	2015: 12	2015: 0	2015: 0 %	2015: 0 %
	2016: 32	2016: 32	2016: 100 %	2016: 17 %
	2017: 72	2017: 72	2017: 100 %	2017: 39 %
	2018: 72	2018: 72	2018: 100 %	2018: 39 %
	2019: 125	2019: 103	2019: 82 %	2019: 56 %
	2020: 125	2020: ***	2020: ***	2020: ***
	2021: 183	2021: ***	2021: ***	2021: ***
GOAL 2: 20 of indigenous territories without connectivity, with partial coverage or with partial coverage expanded to the entire country with access to voice and Internet services, 2021	2016: 0	2016: NA	2016: NA	2016: NA
	2017: 0	2017: NA	2017: NA	2017: NA
	2018: 0	2018: NA	2018: NA	2018: NA
	2019: 4	2019: 1	2019: 25 %	2019: 5 %
	2020: 4	2020: ***	2020: ***	2020: ***
	2021: 20	2021: ***	2021: ***	2021: ***
GOAL 5: 140 496 households distributed in the national territory with subsidy for Internet service and one device for use, 2021	2016: 10 089	2016: 10 089	2016: 100 %	2016: 7 %
	2017: 30 418	2017: 30 418	2017: 100 %	2017: 22 %
	2018: 63 582	2018: 84 268	2018: 132 %	2018: 60 %
	2019: 95 196	2019: 130 579	2019: 137 %	2019: 93 %
	2020: 126 810	2020: ***	2020: ***	2020: ***
	2021: 140 496	2021: ***	2021: ***	2021: ***
GOAL 9: 40 000 connectivity devices delivered to PCPC, 2021	2016: 0	2016: NA	2016: NA	2016: NA
	2017: 6407	2017: 0	2017: 0 %	2017: 0 %
	2018: 18 533	2018: 18 533	2018: 100 %	2018: 46 %
	2019: 36 000	2019: 130 579	2019: 102 %	2019: 92 %
	2020: 40 000	2020: ***	2020: ***	2020: ***
GOAL 13: 513 free digital Internet access zones for the population, 2021	2017: 0	2017: NA	2017: NA	2017: NA
	2018: 15	2018: 0	2018: 0 %	2018: 0 %
	2019: 200	2019: 301	2019: 151 %	2019: 59 %
	2020: 400	2020: ***	2020: ***	2020: ***
	2021: 513	2021: ***	2021: ***	2021: ***

Notes:

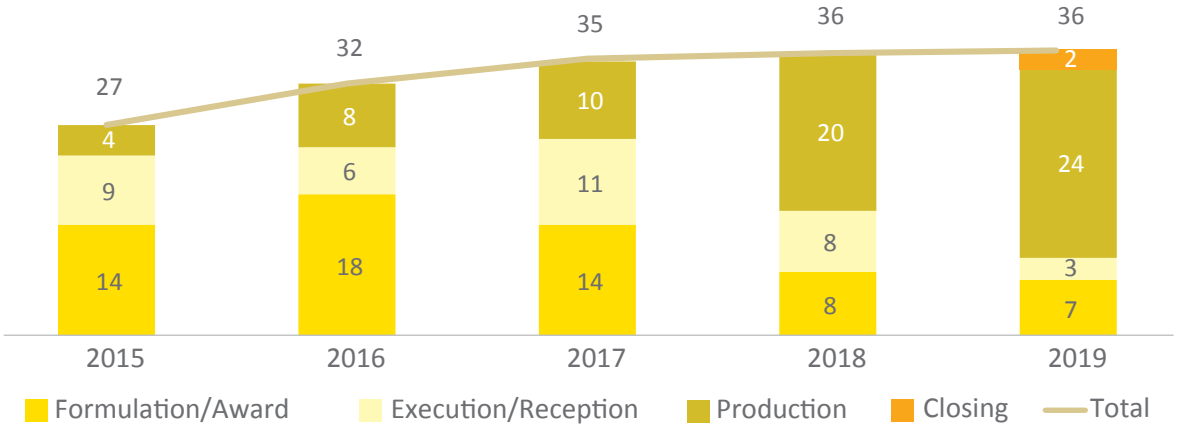
*Goals established in the goal Matrix of NTDP 2015-2021, updated as at March 2019

**Progress data according to reports sent by the Trust

***Information will be collected as of 2021

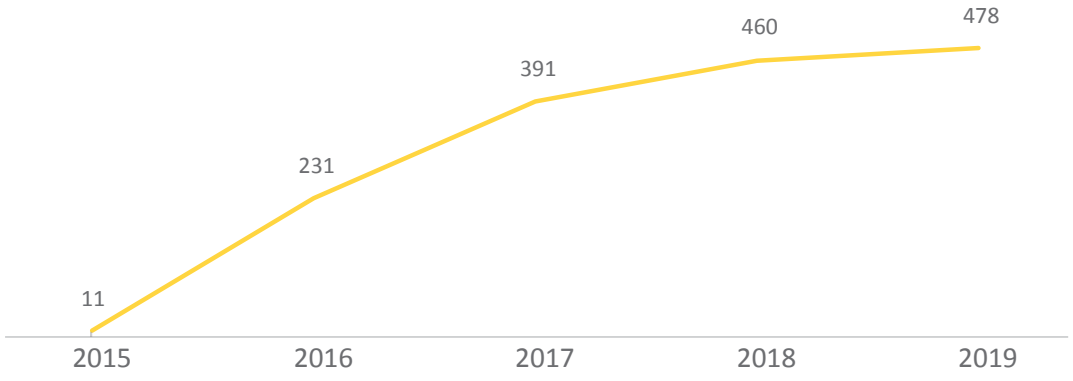
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 193. Costa Rica: Annual total projects developed by FONATEL according to the stage of each project, 2015-2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

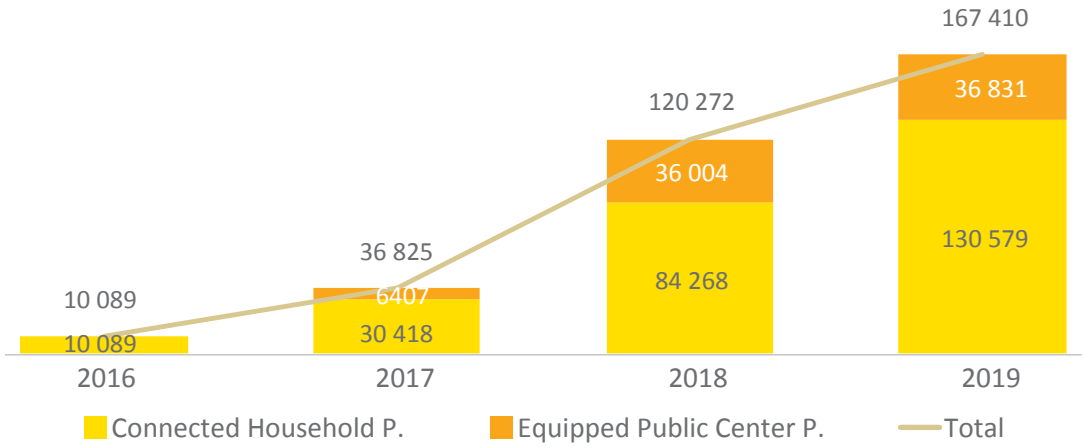
Graph n.° 194. Costa Rica: Districts with presence of at least one program developed by FONATEL, 2015-2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 195. Costa Rica: Devices delivered through FONATEL programs for access and use of ICTs according to program, 2016-2019

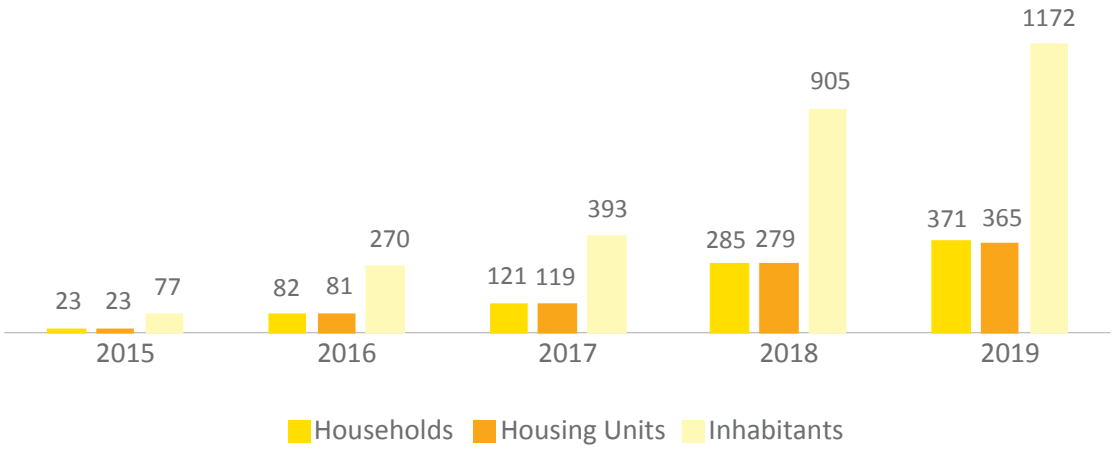
(annual accrued figures)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

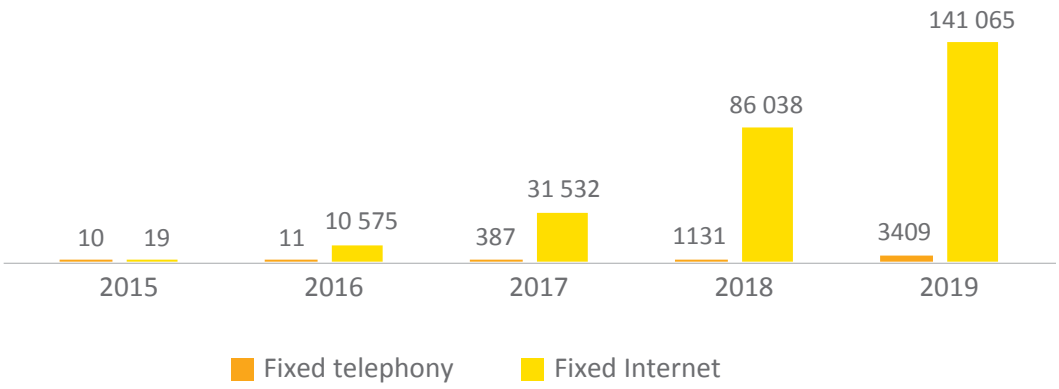
Graph n.° 196. Costa Rica: Inhabitants, households and housing units with access to voice and data in districts with presence of the programs developed by FONATEL, 2015-2019

(figures in thousands)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

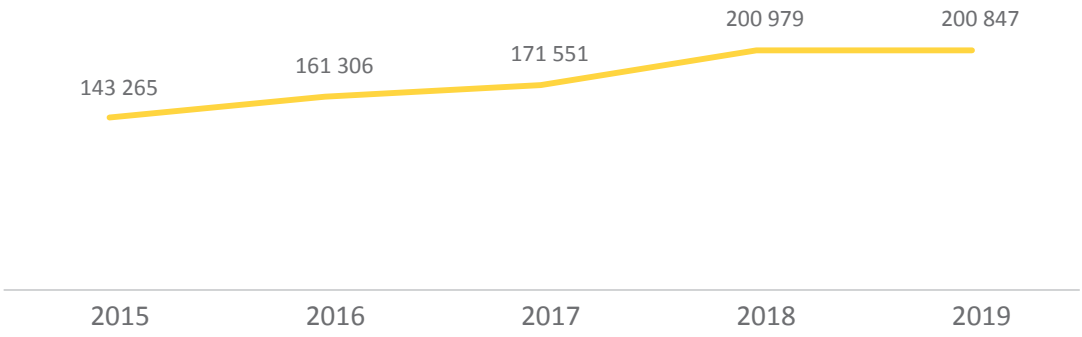
Graph n.° 197. Costa Rica: Subscriptions to fixed telephony and fixed Internet access services provided through FONATEL programs, 2015-2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 198. Costa Rica: FONATEL Equity, 2015-2019

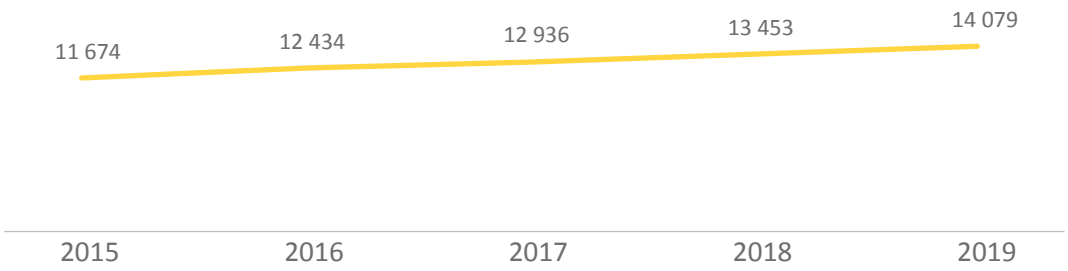
(annual figures in millions of colones)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 199. Costa Rica: Collection of special parafiscal contribution, 2015-2019

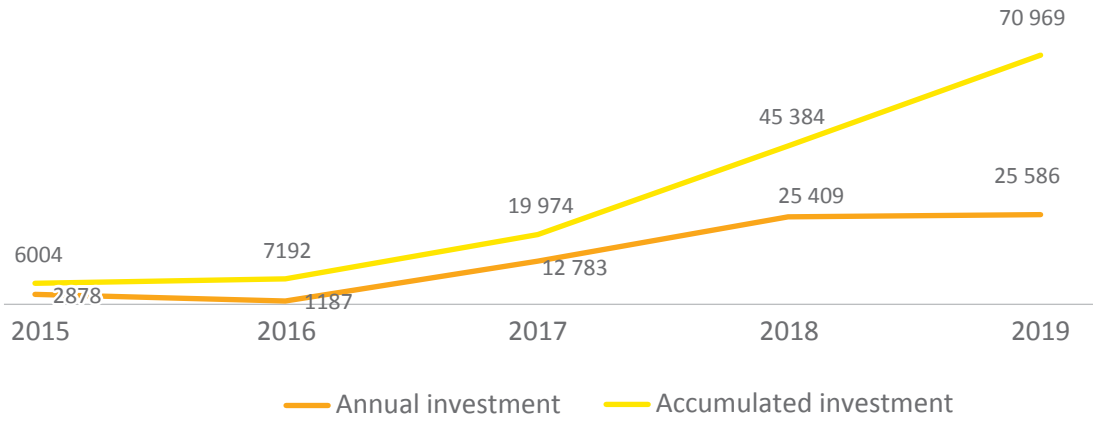
(annual figures in millions of colones)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 200. Costa Rica: Annual and accumulated investment executed by means of FONATEL, 2015-2019

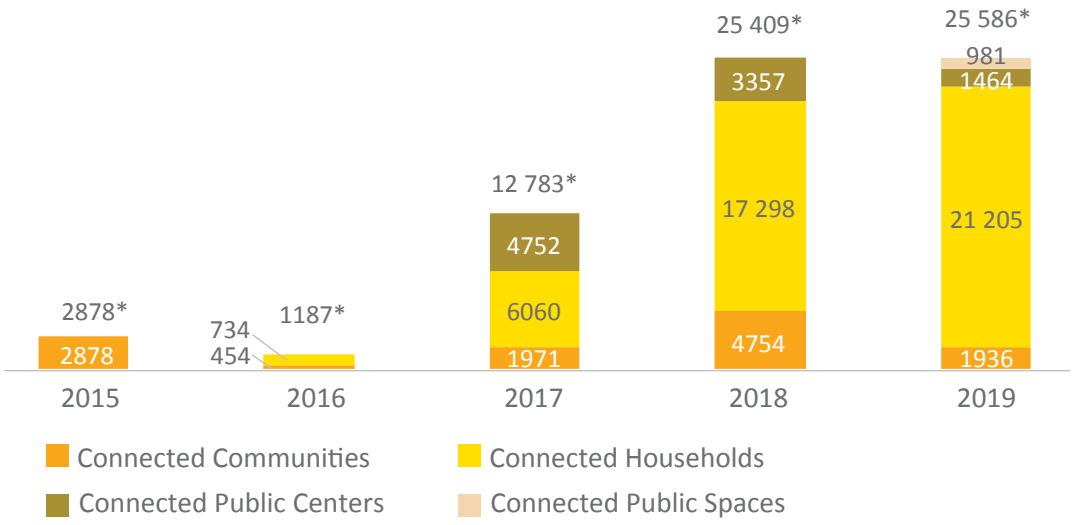
(annual figures in millions of colones)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 201. Costa Rica: Investment executed by means of FONATEL according to program, 2015-2019

(annual figures in millions of colones)

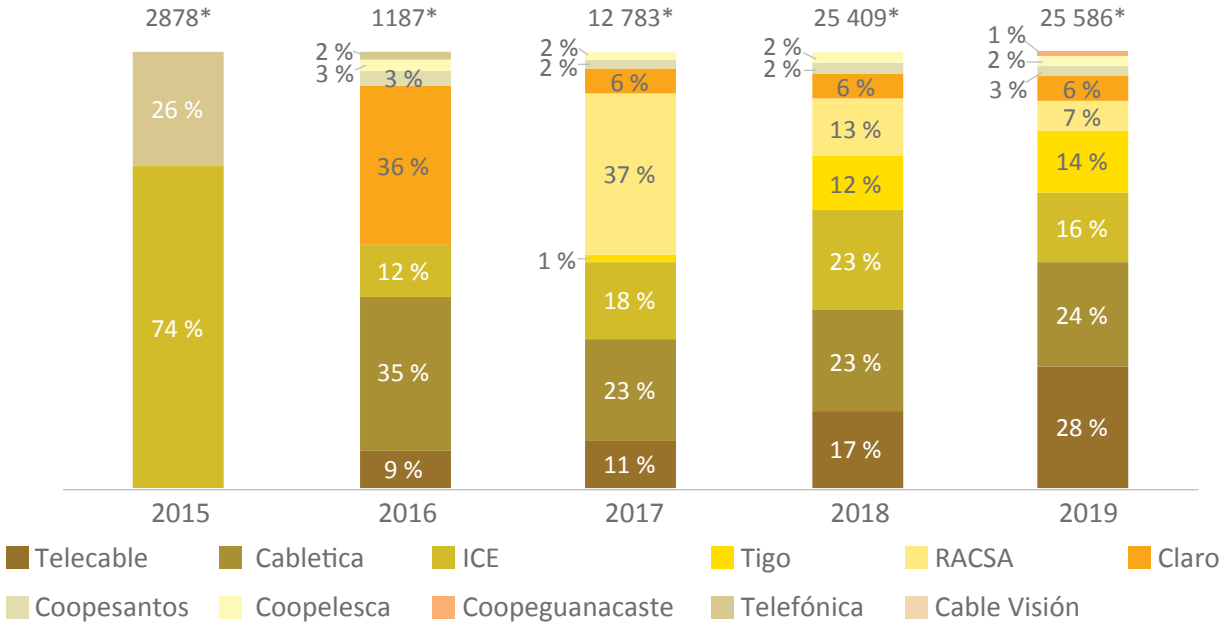


Note: *Figures correspond to the annual total in millions of colones

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 202. Costa Rica: Distribution of executed investment through FONATEL per operator, 2015-2019

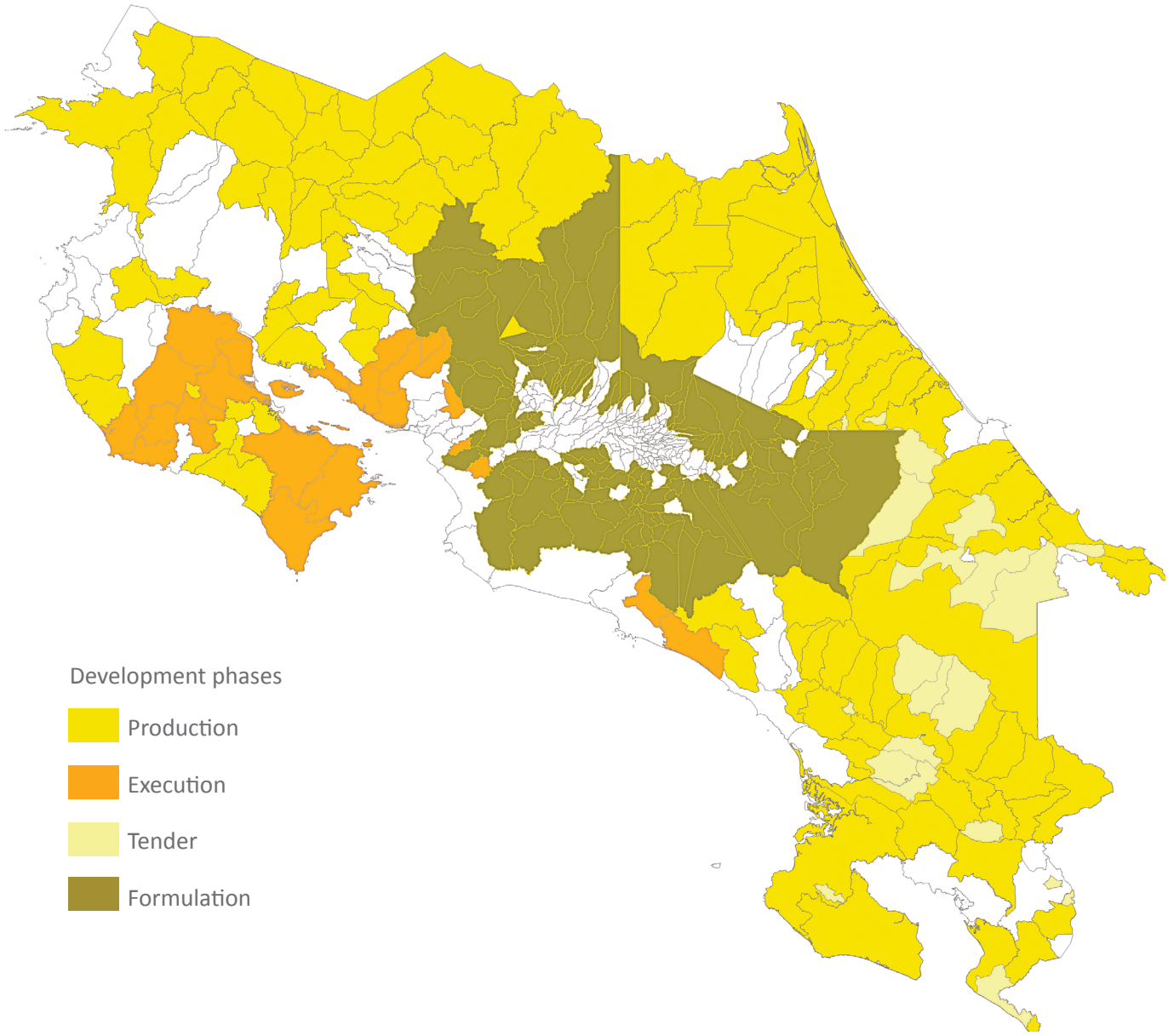
(annual figures by percentage)



Note: *Figures correspond to the annual total in millions of colones

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

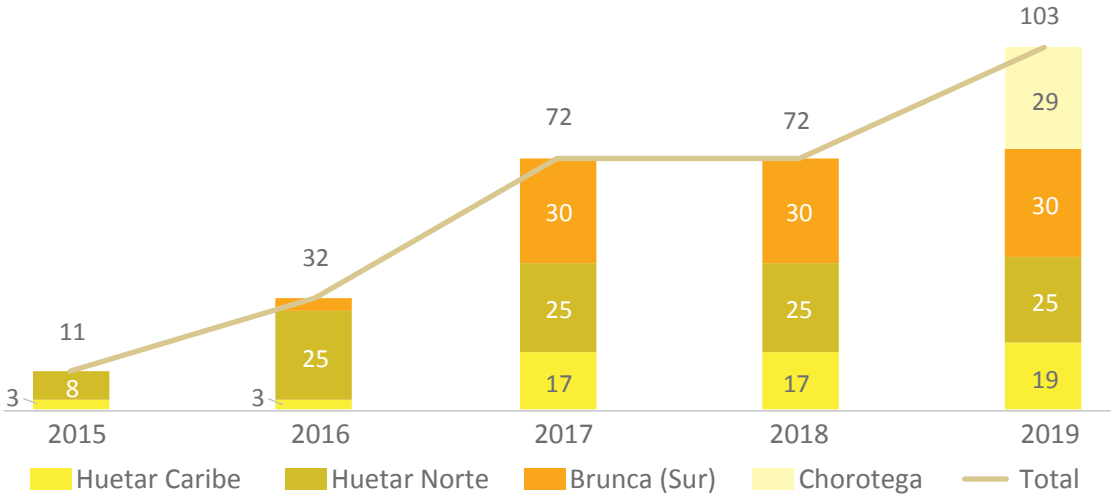
Map n.° 3. Costa Rica: Districts with connectivity (total or partial) with access to voice and data services through the Connected Communities Program, according to each project´s phase, 2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

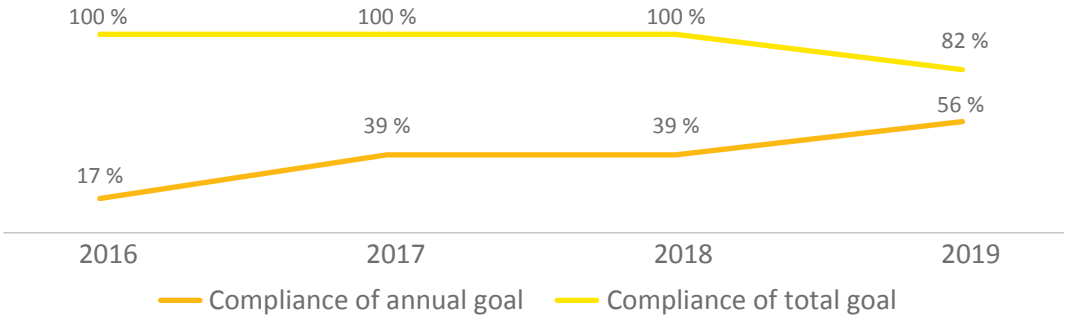
Graph n.° 203. Costa Rica: Distribution of districts with connectivity (total or partial) with access to voice and data services provided through the Connected Communities Program per region, 2015-2019

(annual accrued figures)



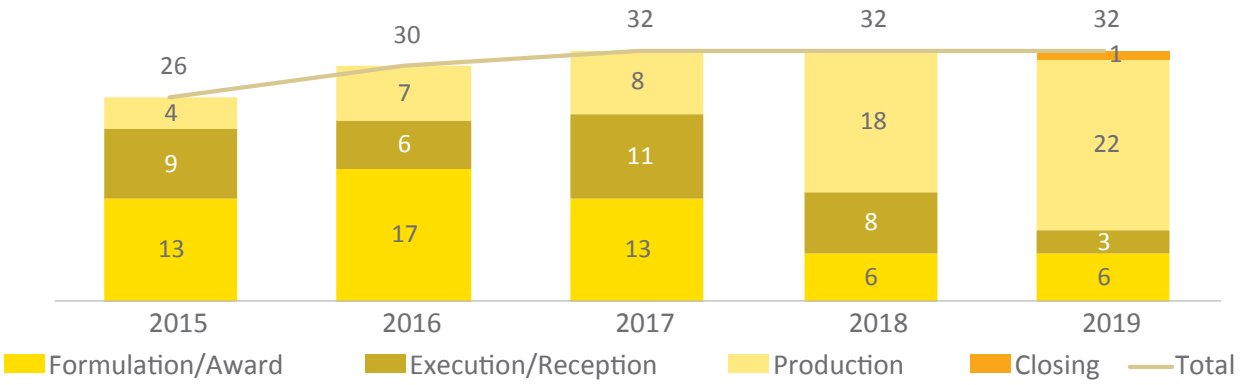
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 204. Costa Rica: Compliance of the NTDP goal of districts with connectivity of the Connected Communities Program, 2016-2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

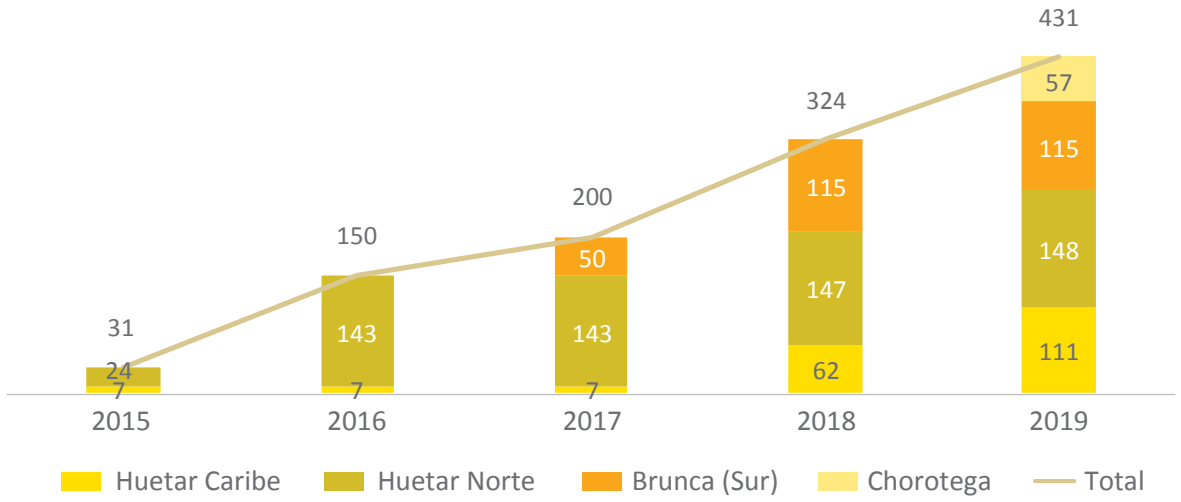
Graph n.° 205. Costa Rica: Total annual projects of the Connected Communities Program according to state of each project, 2015 - 2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 206. Costa Rica: Distribution of towers with telecommunications infrastructure in operation by the Connected Communities Program per region, 2015-2019

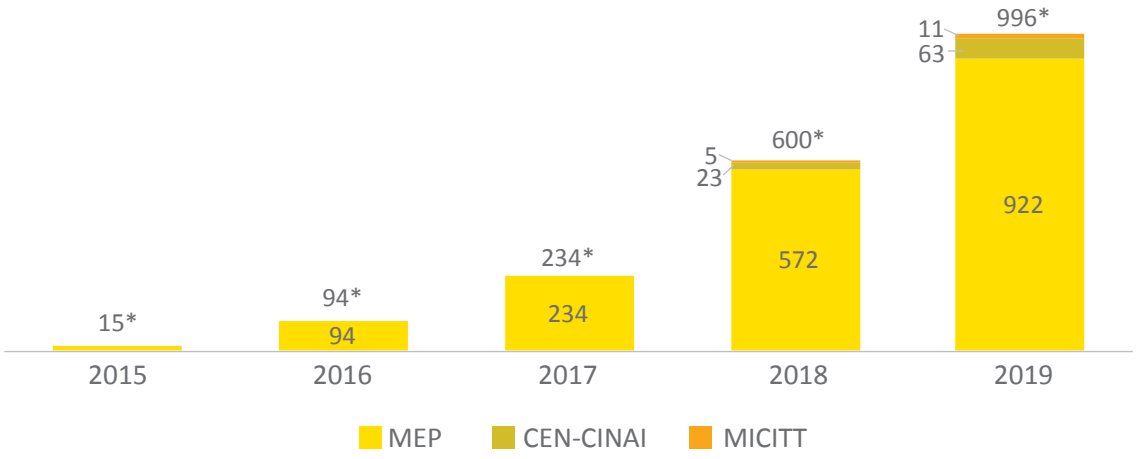
(annual accrued figures)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 207. Costa Rica: Public Services Provision Centers with Internet access service enabled through the Connected Communities Program per institution, 2015-2019

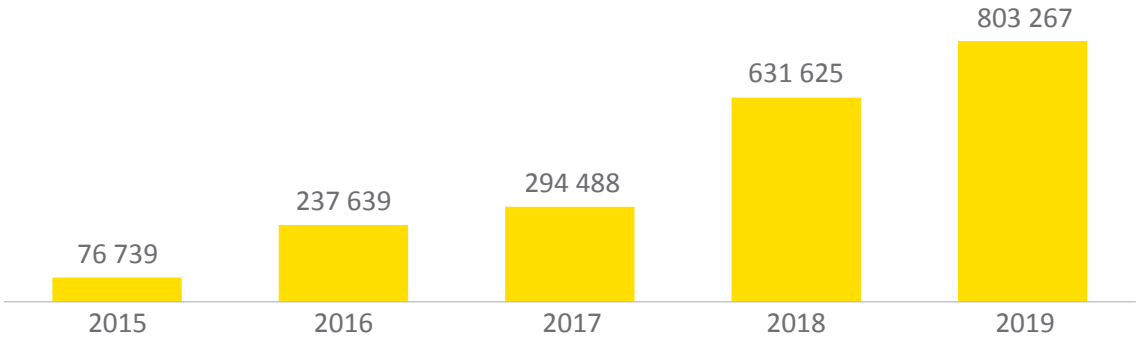
(annual accrued figures)



Note: *Figures correspond to the annual total.

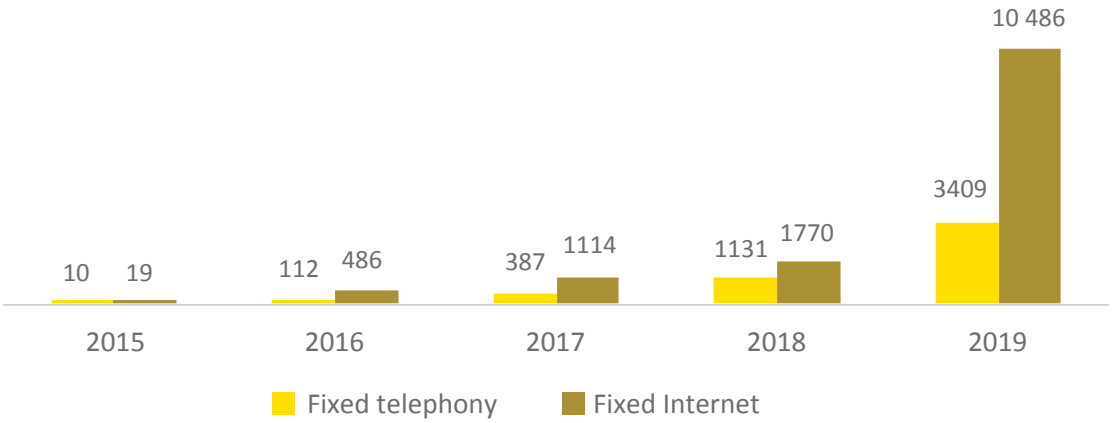
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 208. Costa Rica: Inhabitants with potential access to voice and data services in districts with connectivity (total or partial) provided by means of the Connected Communities Program, 2015-2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

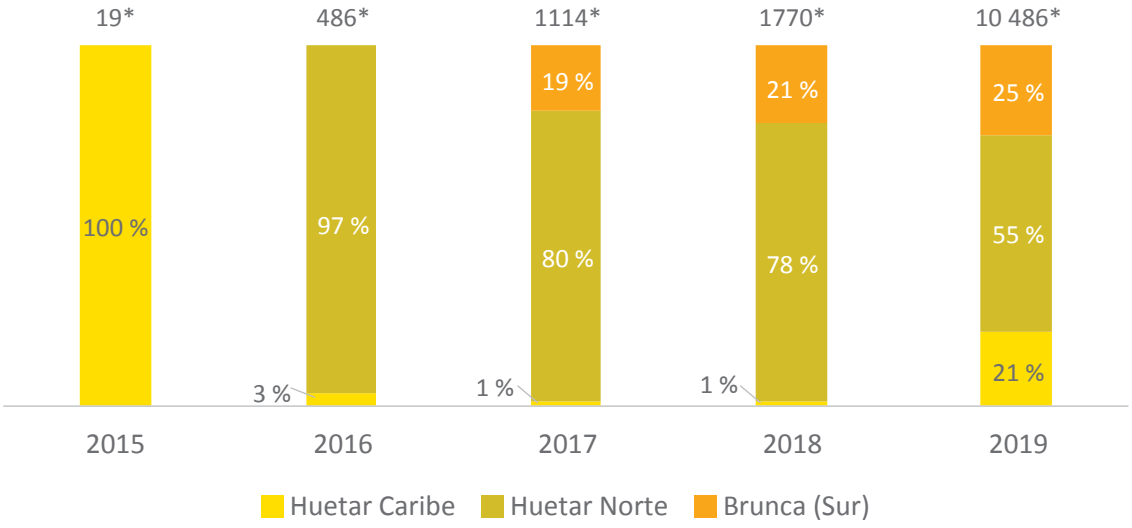
Graph n.° 209. Costa Rica: Subscriptions to fixed telephony and fixed Internet access provided through the Connected Communities Program, 2015-2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 210. Costa Rica: Distribution of subscriptions to fixed access Internet service through the Connected Communities Program per region, 2015-2019

(annual figures by percentage)

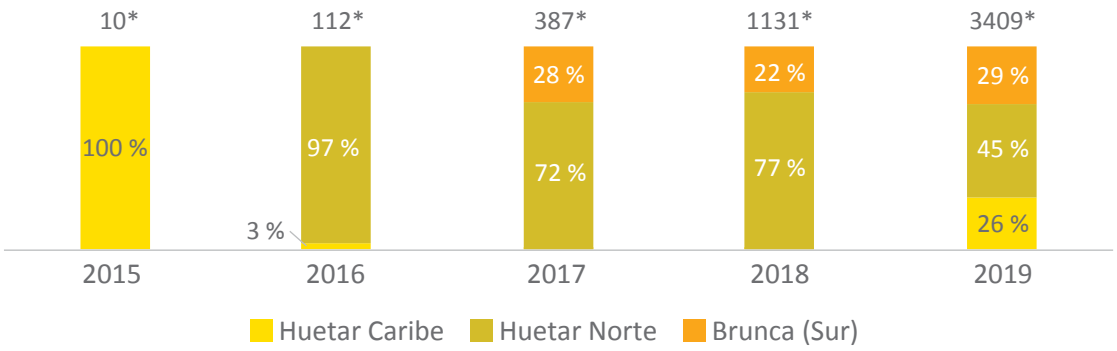


Note: *Figures correspond to the annual total.

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 211. Costa Rica: Distribution of subscriptions to fixed telephony service provided through the Connected Communities Program per region, 2015-2019

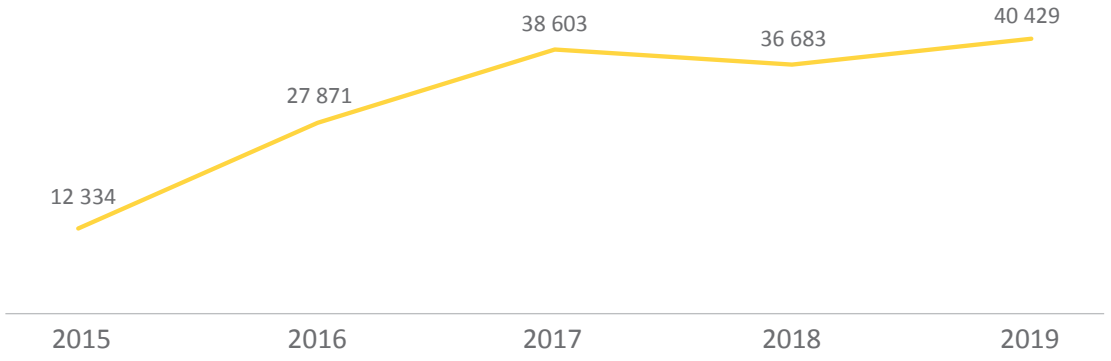
(annual figures by percentage)



Note: *Figures correspond to the annual total

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

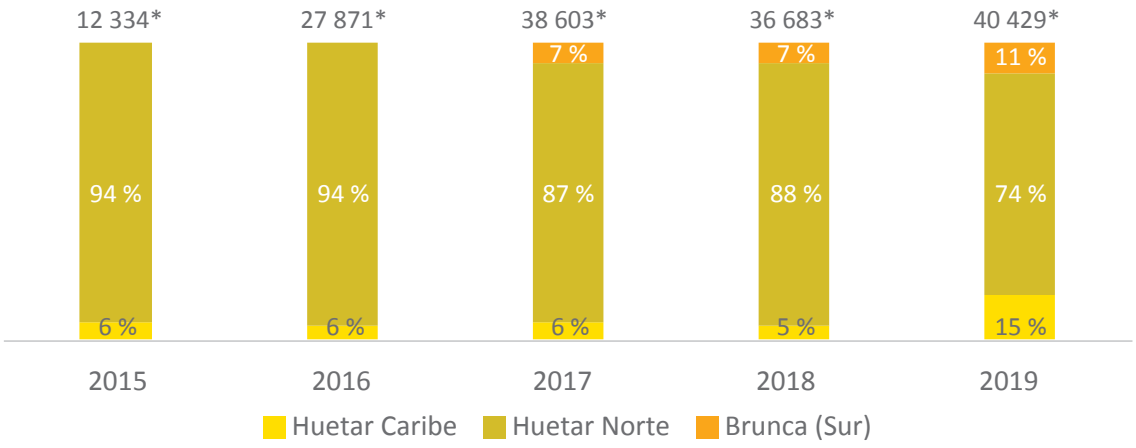
Graph n.° 212. Costa Rica: Subscriptions for mobile telephony service provided through the infrastructure facilitated by the Connected Communities Program, 2015-2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 213. Costa Rica: Distribution of subscriptions to mobile telephony service provided through the infrastructure facilitated by the Connected Communities Program per region, 2015-2019

(annual figures by percentage)

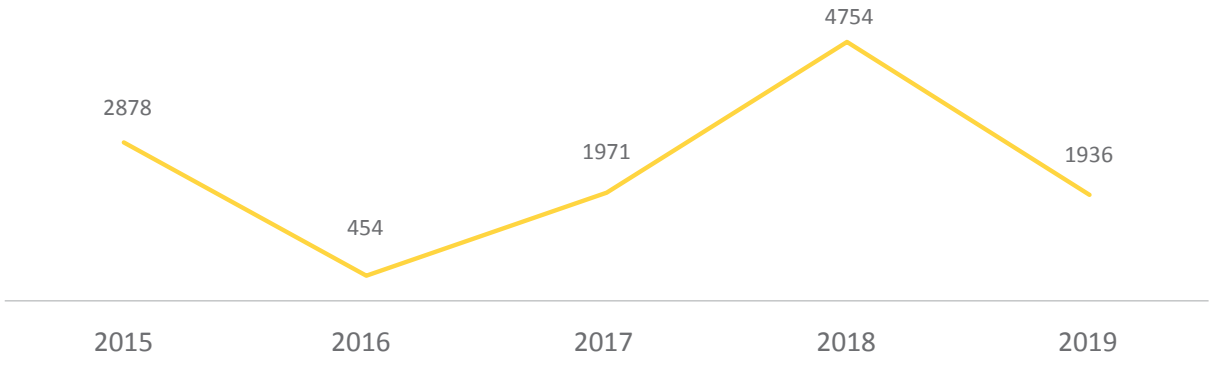


Note: *Figures correspond to the annual total.

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 214. Costa Rica: Investment executed through the Connected Communities Program, 2015-2019

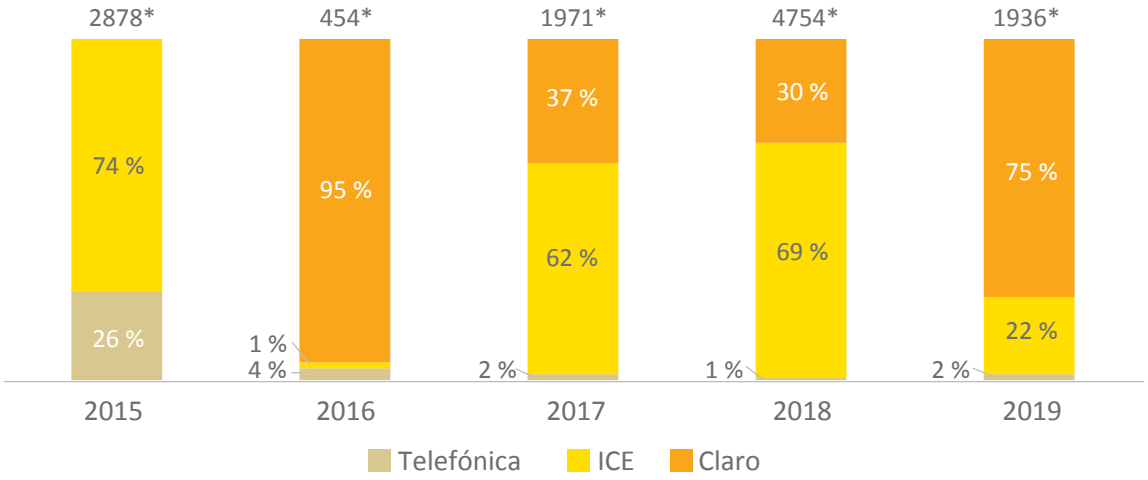
(annual figures in millions of colones)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 215. Costa Rica: Distribution of investment executed through the Connected Communities Program per operator, 2015-2019

(annual figures by percentage)

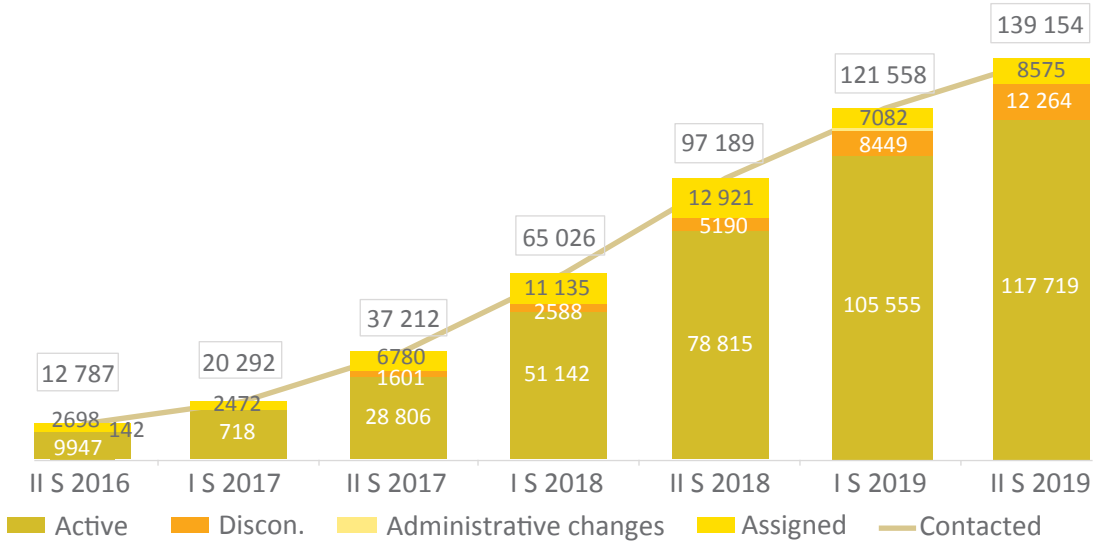


Note: *Figures correspond to the annual total in millions of colones.

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 216. Costa Rica: Households registered in the Beneficiaries Management System of the Connected Households Program by state, 2016-2019

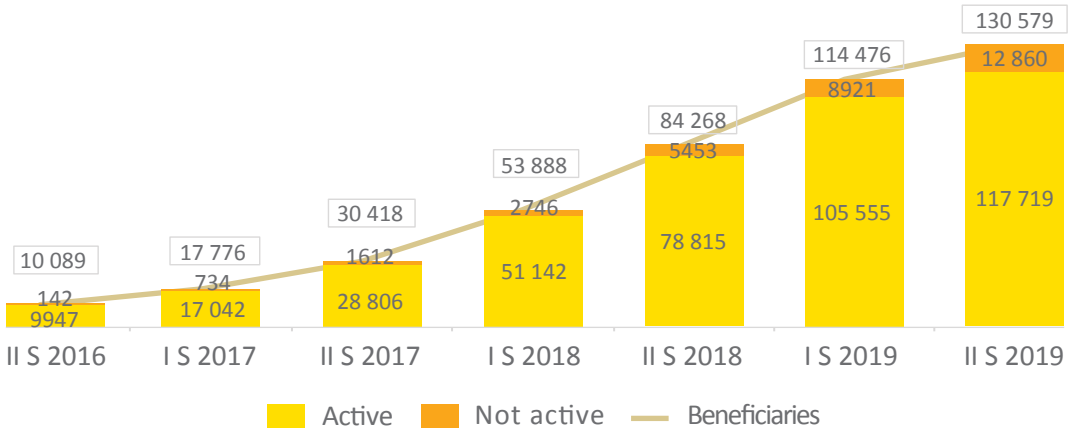
(figures accrued per semester)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

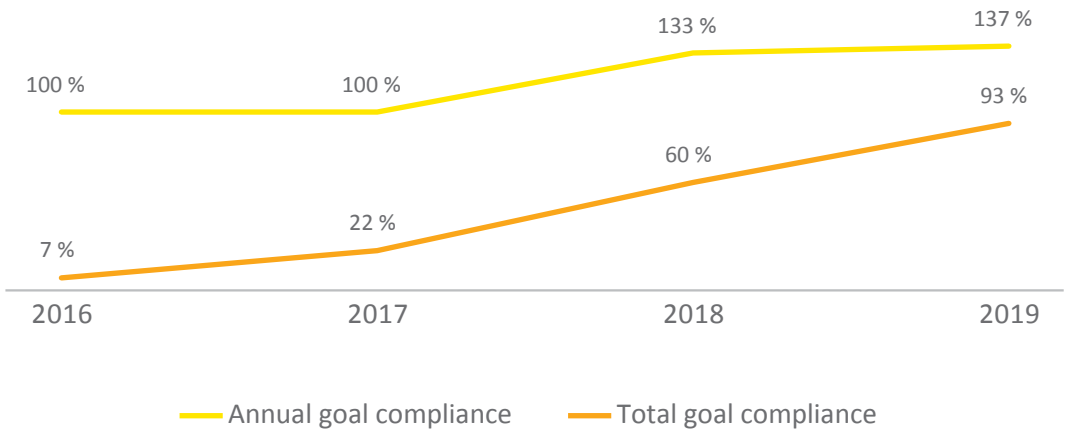
Graph n.° 217. Costa Rica: Households Benefiting from the Connected Households Program by state, 2016-2019

(figures accrued per semester)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

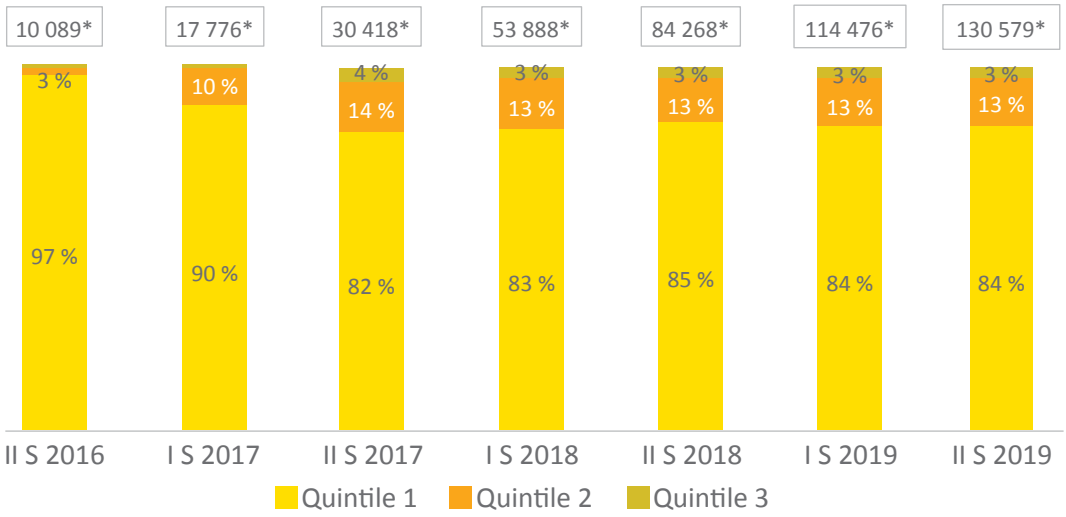
Graph n.° 218. Costa Rica: Compliance with the NTDP goal for benefited households of the Connected Households Program, 2016-2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 219. Costa Rica: Distribution for benefited households of the Connected Households Program per revenue quintile, 2016-2019

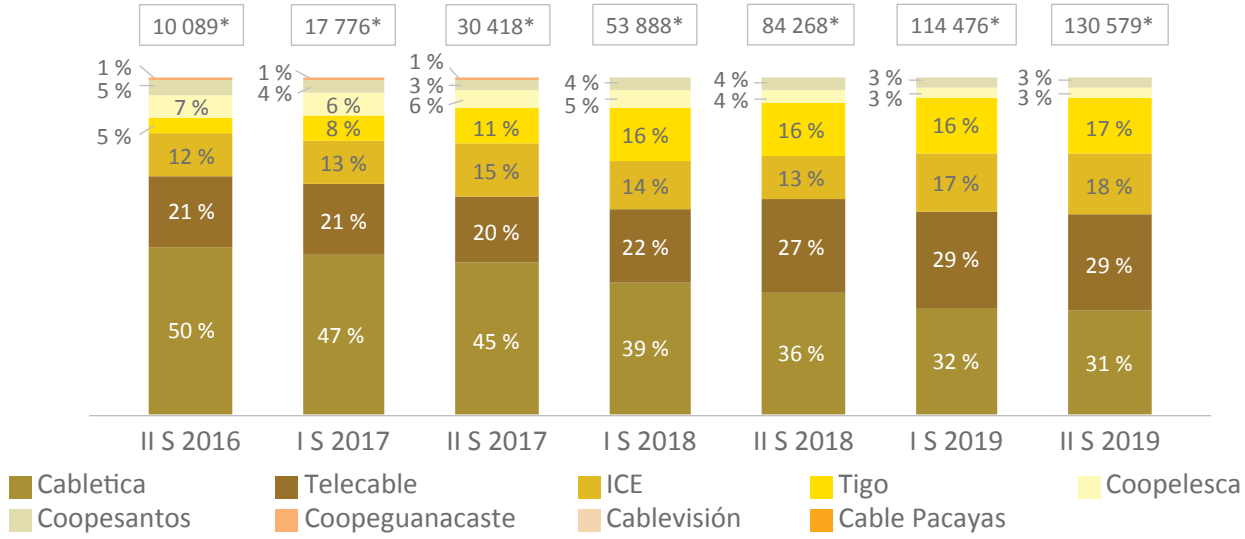
(figures per semester in percentages)



Note: *Figures correspond to the total of benefited households for the semester
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 220. Costa Rica: Distribution of benefited households of the Connected Households Program per operator, 2016-2019

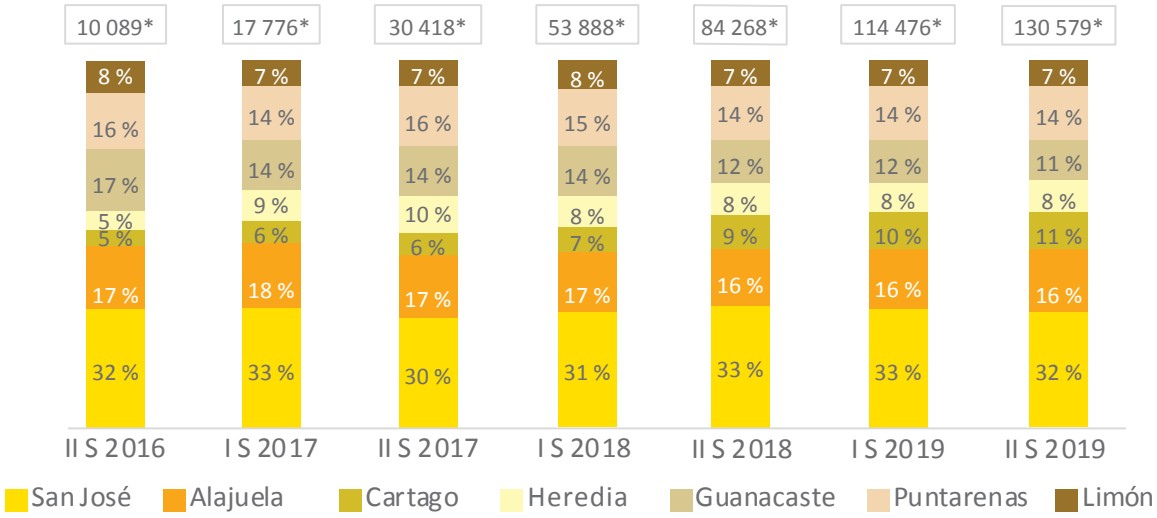
(figures per semester in percentages)



Note: *Figures correspond to the total of benefited households for the semester.
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

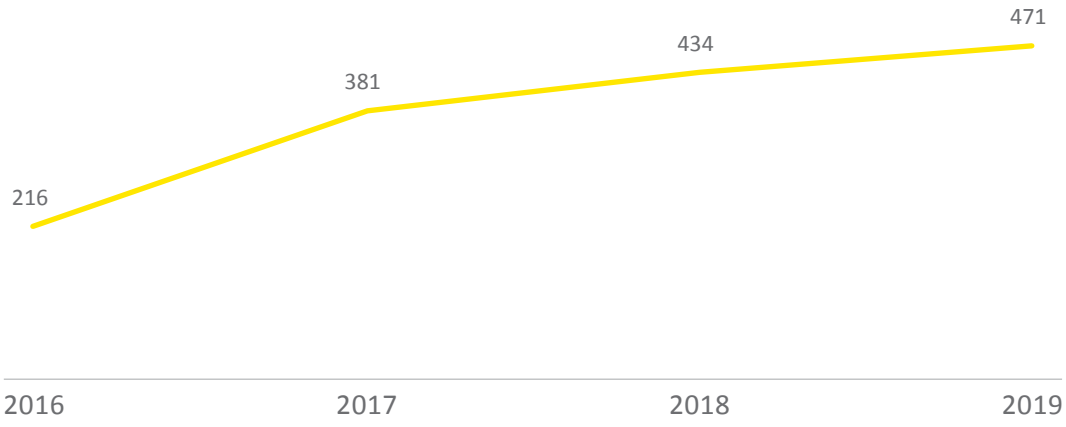
Graph n.° 221. Costa Rica: Distribution for benefited households of the Connected Households Program per province, 2016-2019

(figures per semester in percentages)



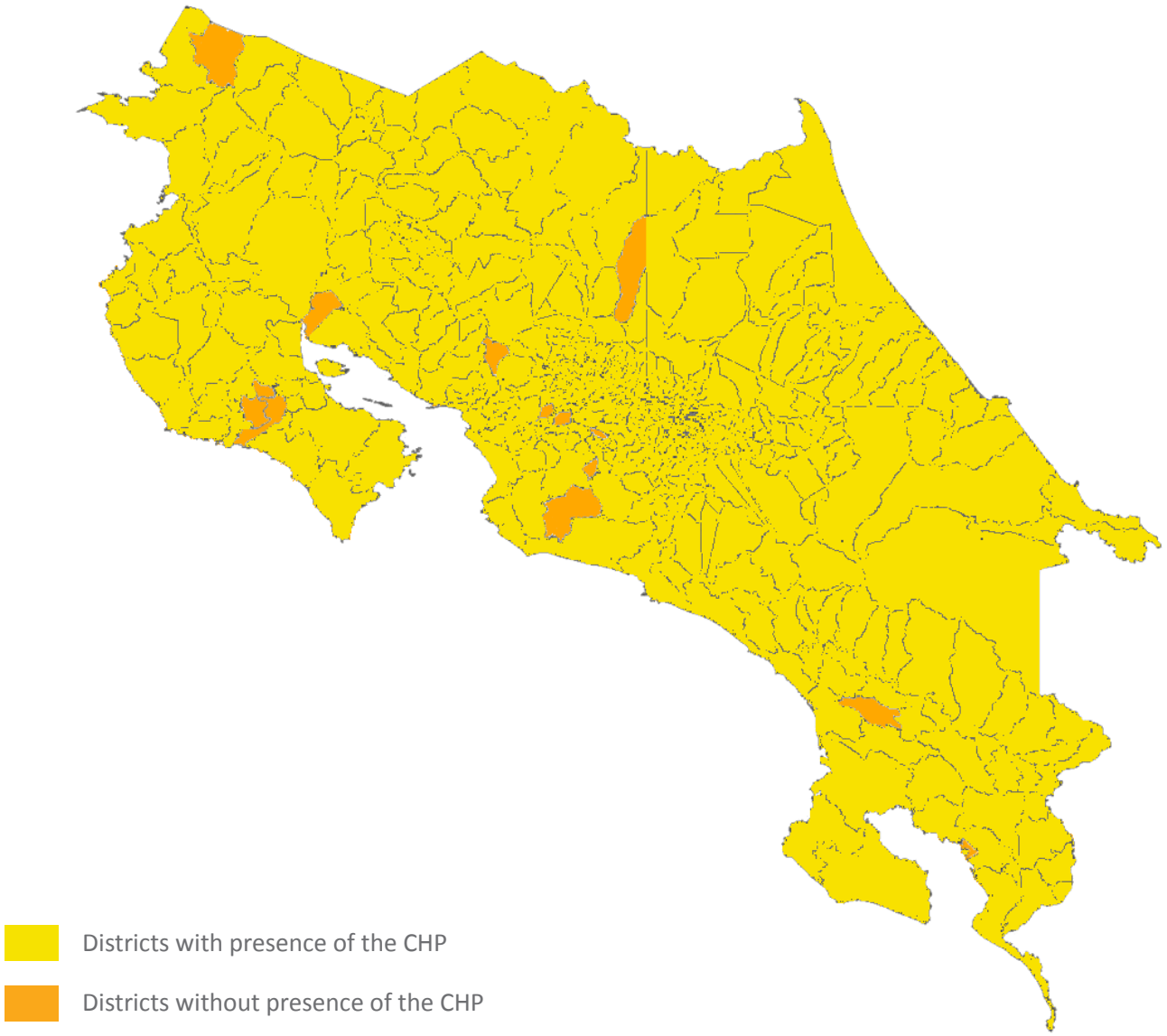
Note: *Figures correspond to the total benefited households for the semester.
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 222. Costa Rica: Districts with presence of the Connected Households Program, 2016-2019



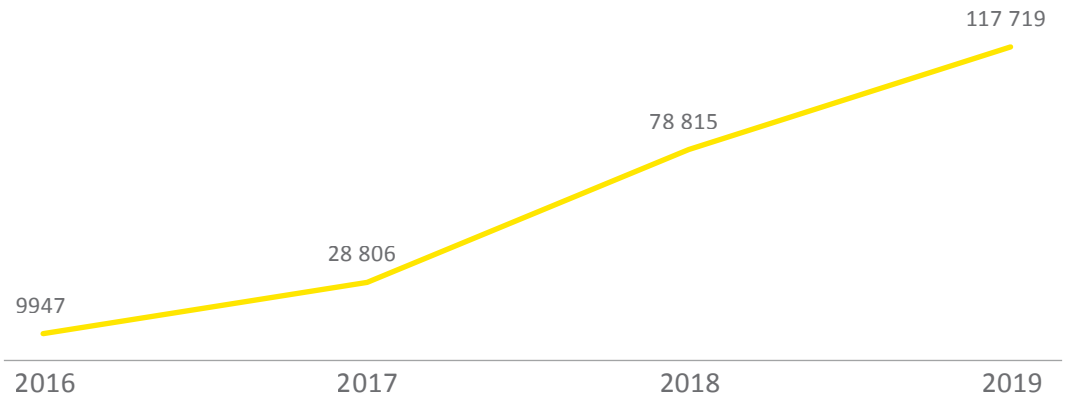
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Map n.° 4. Costa Rica: Districts with presence of the Connected Households Program, 2019



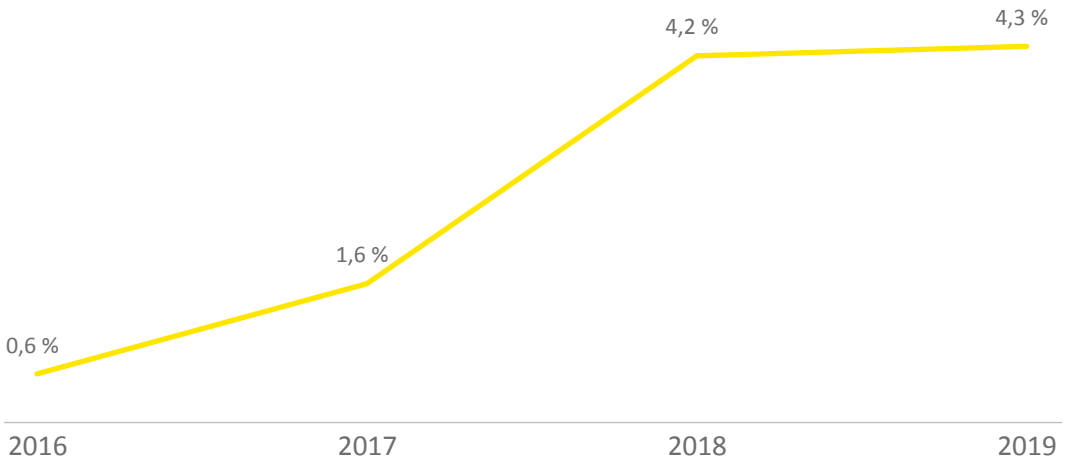
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 223. Costa Rica: Active subsidized subscriptions to Internet access service of the Connected Households Program, 2016-2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

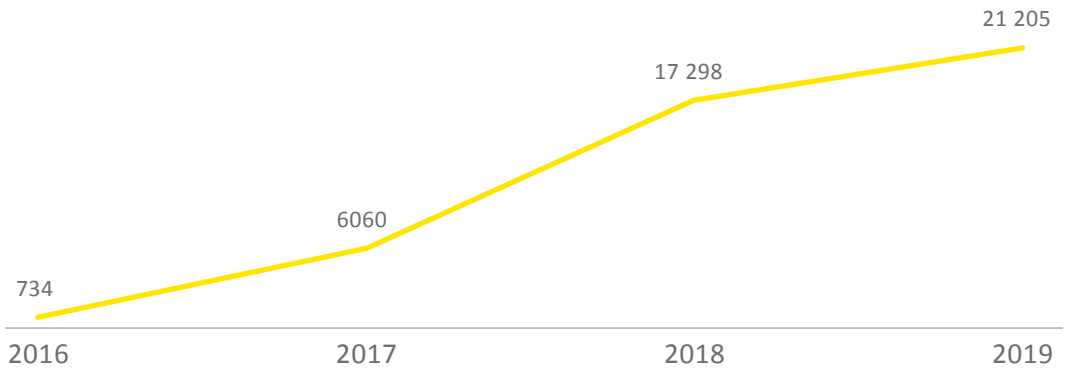
Graph n.° 224. Costa Rica: Net penetration of fixed Internet in households of the Connected Households Program, 2016-2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 225. Costa Rica: Investment executed through the Connected Households Program, 2016-2019

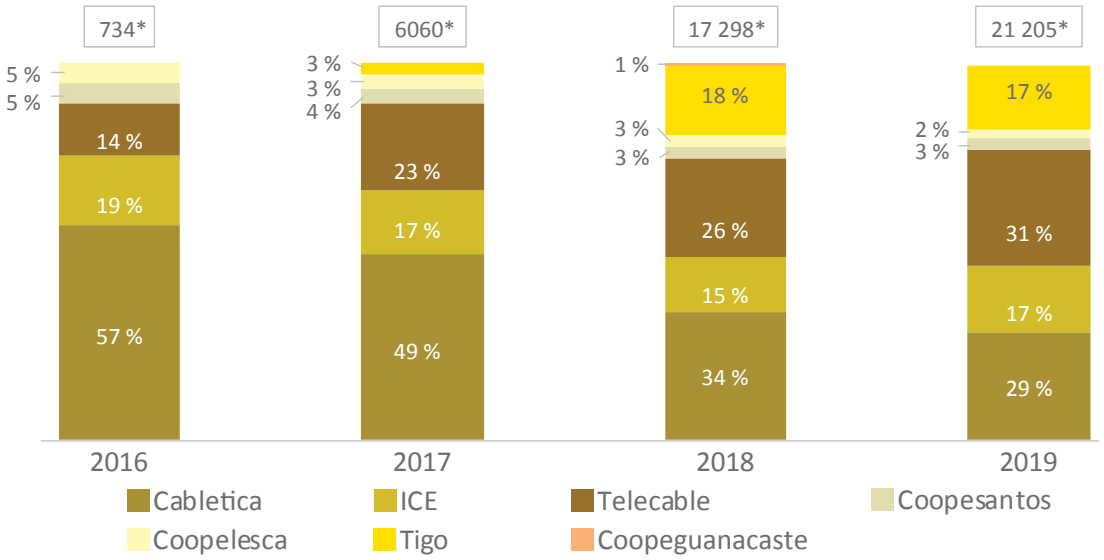
(annual figures in millions of colones)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 226. Costa Rica: Distribution of investment executed through the Connected Households Program

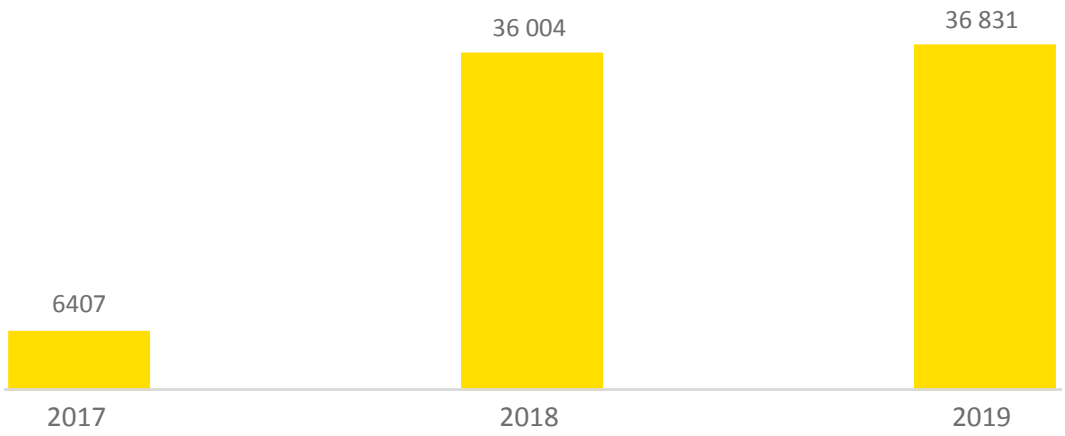
(annual figures by percentage)



Note: *Figures correspond to the annual total in millions of colones
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

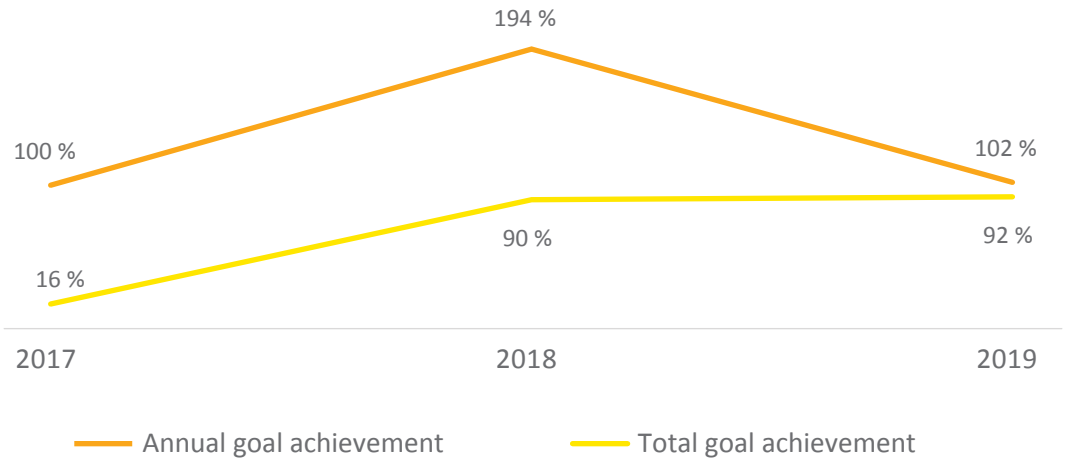
Graph n.° 227. Costa Rica: Devices delivered through the Equipped Public Centers Program to PSPC for access and use of ICTs, 2017-2019

(annual accrued figures)



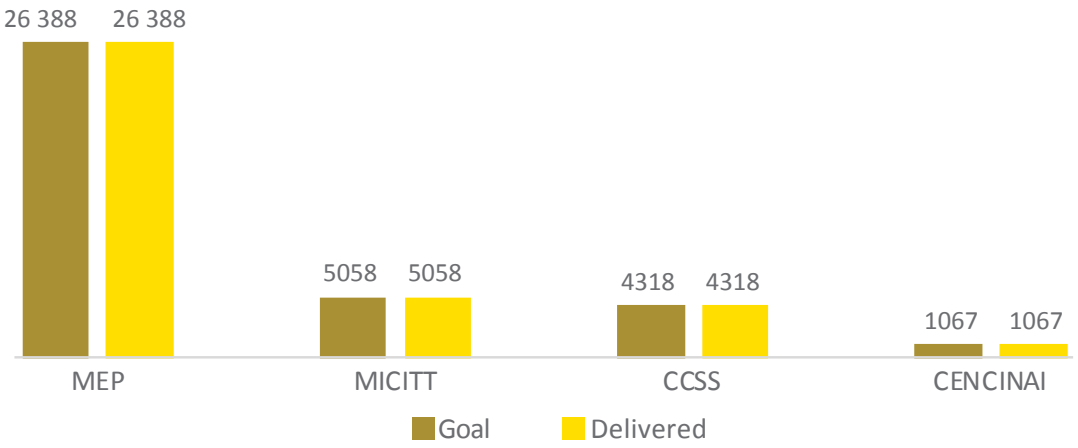
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 228. Costa Rica: Achievement of the goal established in the NTDP regarding devices delivered through the Equipped Public Centers Program to PSPC, 2017-2019



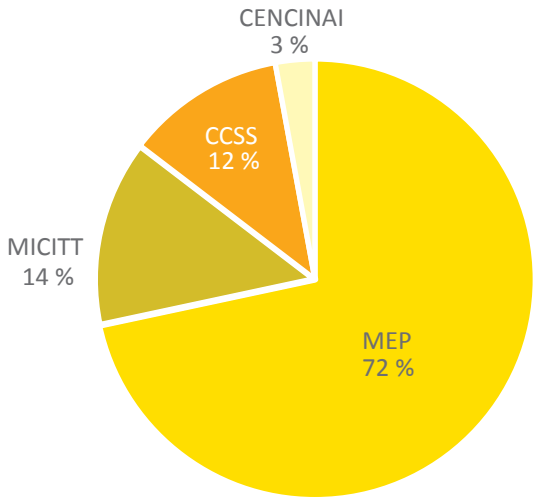
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 229. Costa Rica: Achievement of the bid goal by the Equipped Public Centers Program to PSPC per institution, 2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

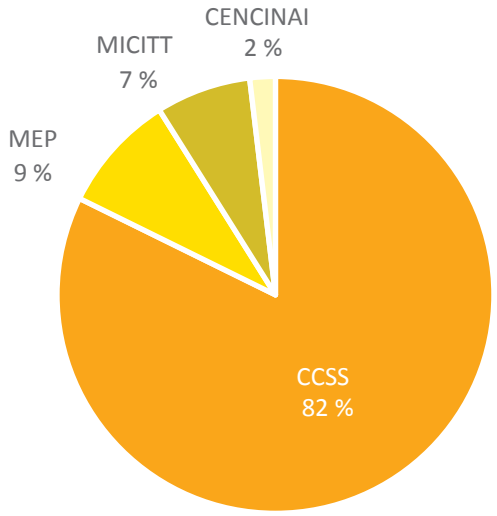
Graph n.° 230. Costa Rica: Distribution of devices delivered by the Equipped Public Centers Program for access and use of ICTs per institution, 2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

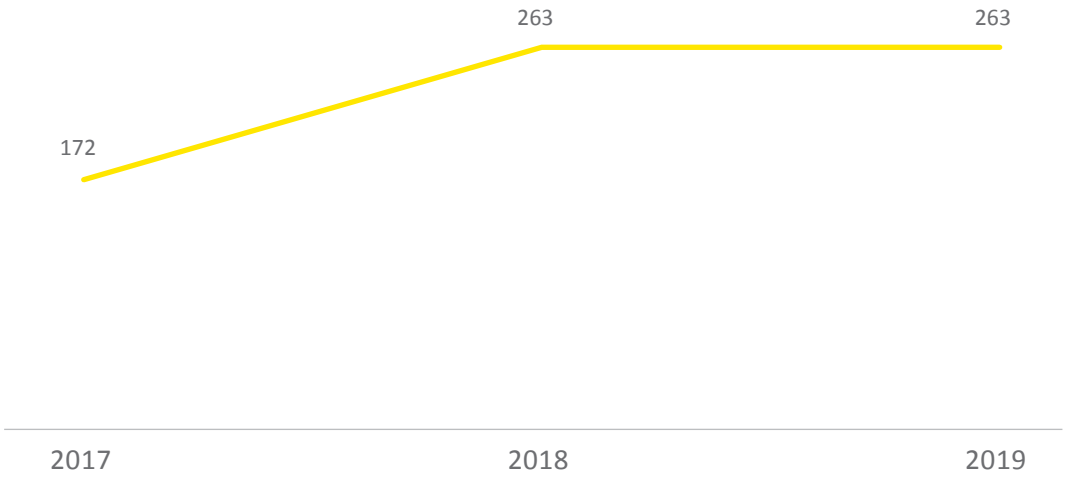
Graph n.° 231. Costa Rica: Distribution of Public Services Provision Centers benefited by the Equipped Public Centers Program per institution, 2019

(figures by percentage)



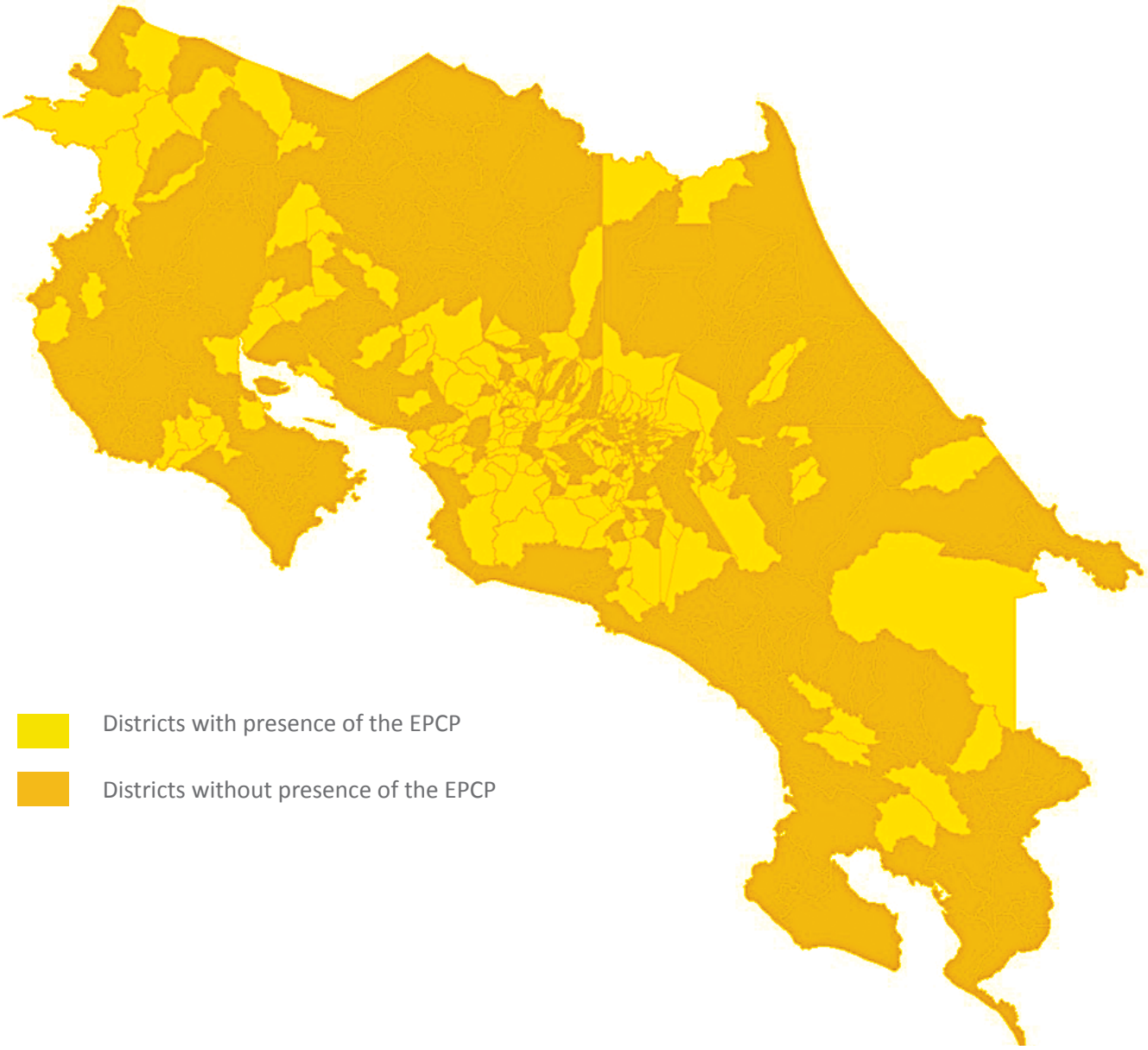
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 232. Costa Rica: Districts with presence of the Equipped Public Centers Program, 2017-2019



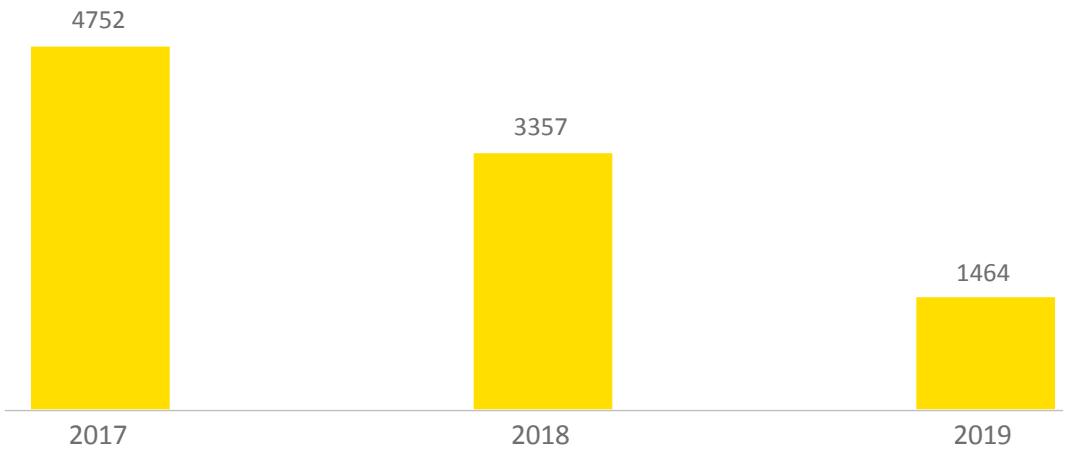
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Map n.° 5. Costa Rica: Districts with presence of the Equipped Public Centers Program, 2019



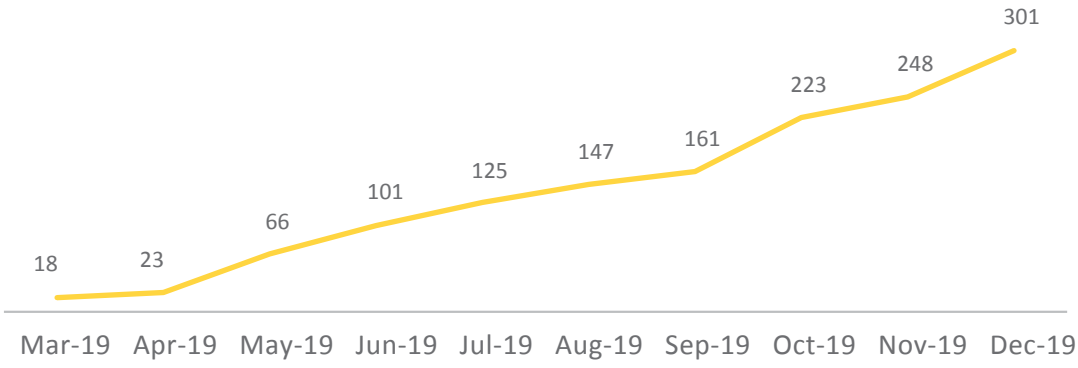
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 233. Costa Rica: Investment executed through the Equipped Public Centers Program
(annual figures in millions of colones)



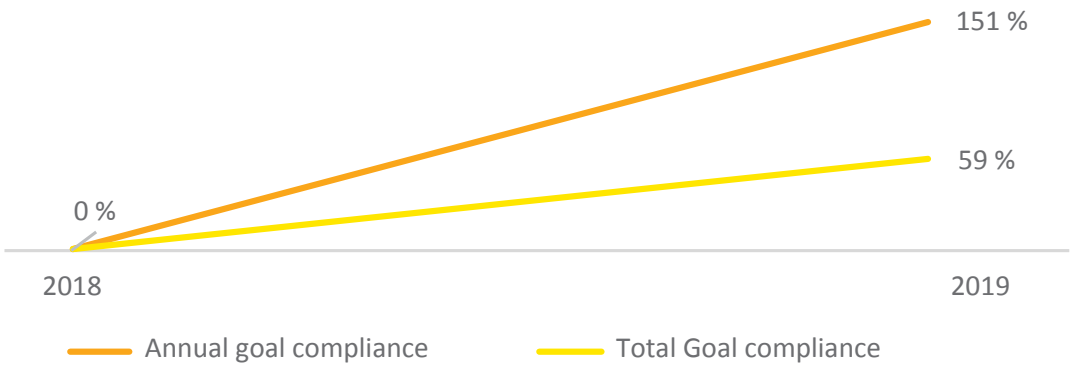
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 234. Costa Rica: Digital zones with free access to Internet put into service through the Connected Public Spaces Program, 2019
(monthly accrual)



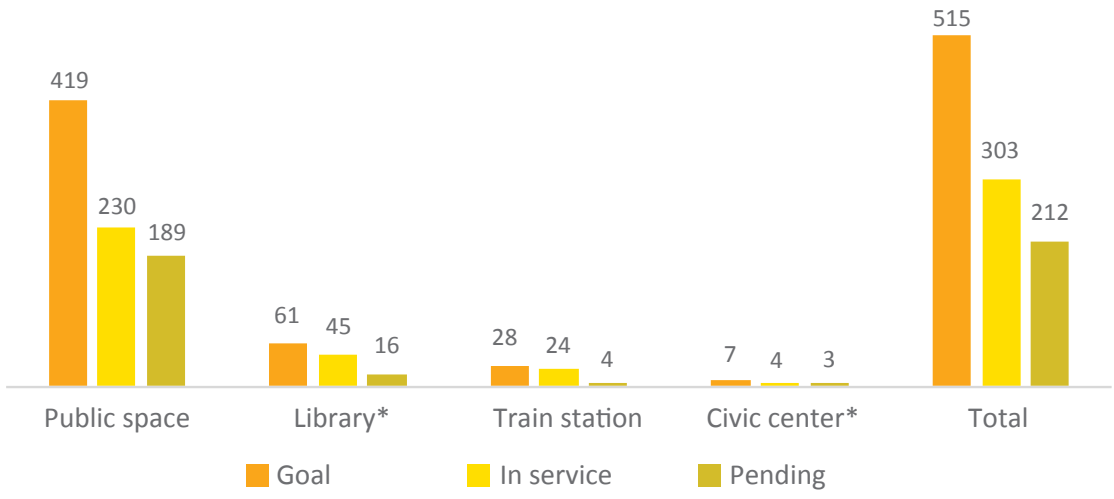
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 235. Costa Rica: Compliance with the NTDP goal of digital zones with free Internet access in service through the Connected Public Spaces Program



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

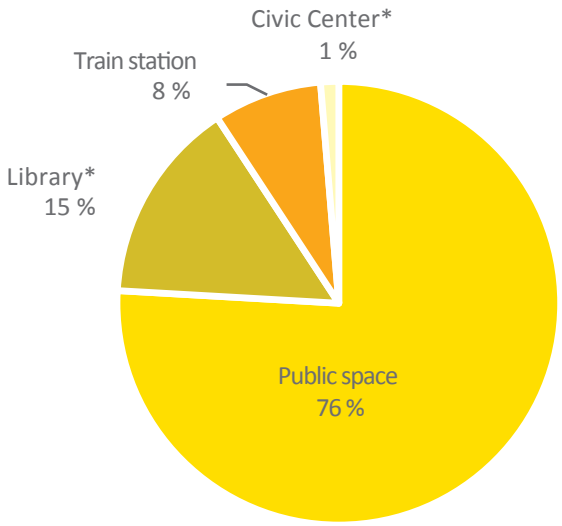
Graph n.° 236. Costa Rica: Compliance with the bid goal of digital zones with free access to Internet in service through the Connected Public Spaces Program per type of zone, 2019



Note: *There are two zones that are at the same time library and civic center, corresponding to Guararí (Heredia) and Aguas Zarcas (San Carlos).
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 237. Costa Rica: Distribution of digital zones with free Internet access put into service through the Connected Public Spaces Program per type of zone, 2019

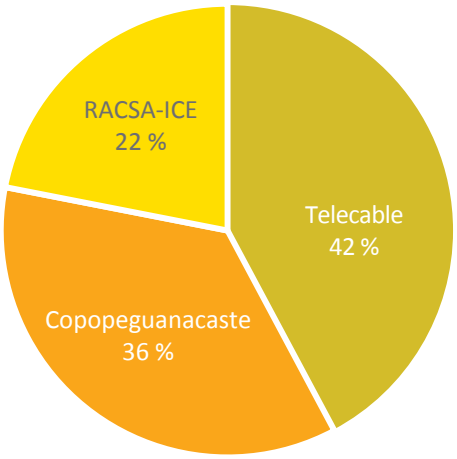
(figures by percentage)



Nota: *There are two zones that are at the same time library and civic center, corresponding to Guararí (Heredia) and Aguas Zarcas (San Carlos).
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 238. Costa Rica: Distribution of digital zones with free Internet access put into service through the Connected Public Spaces Program per operator, 2019

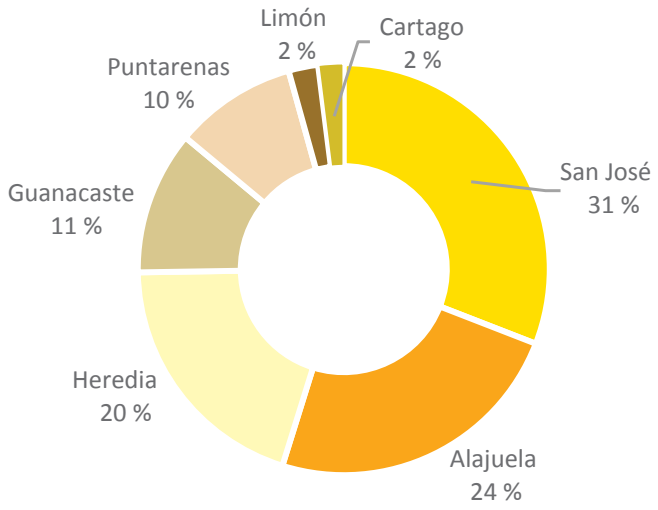
(figures by percentage)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 239. Costa Rica: Distribution of digital zones with free Internet access put into service through the Connected Public Spaces Program per province, 2019

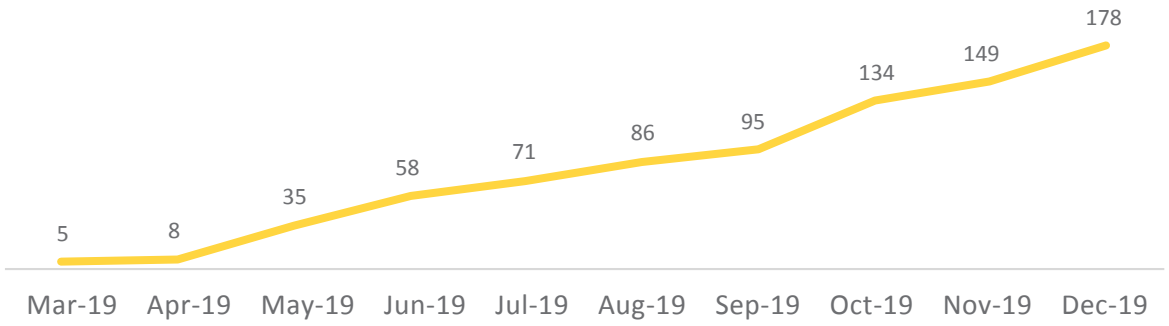
(figures by percentage)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

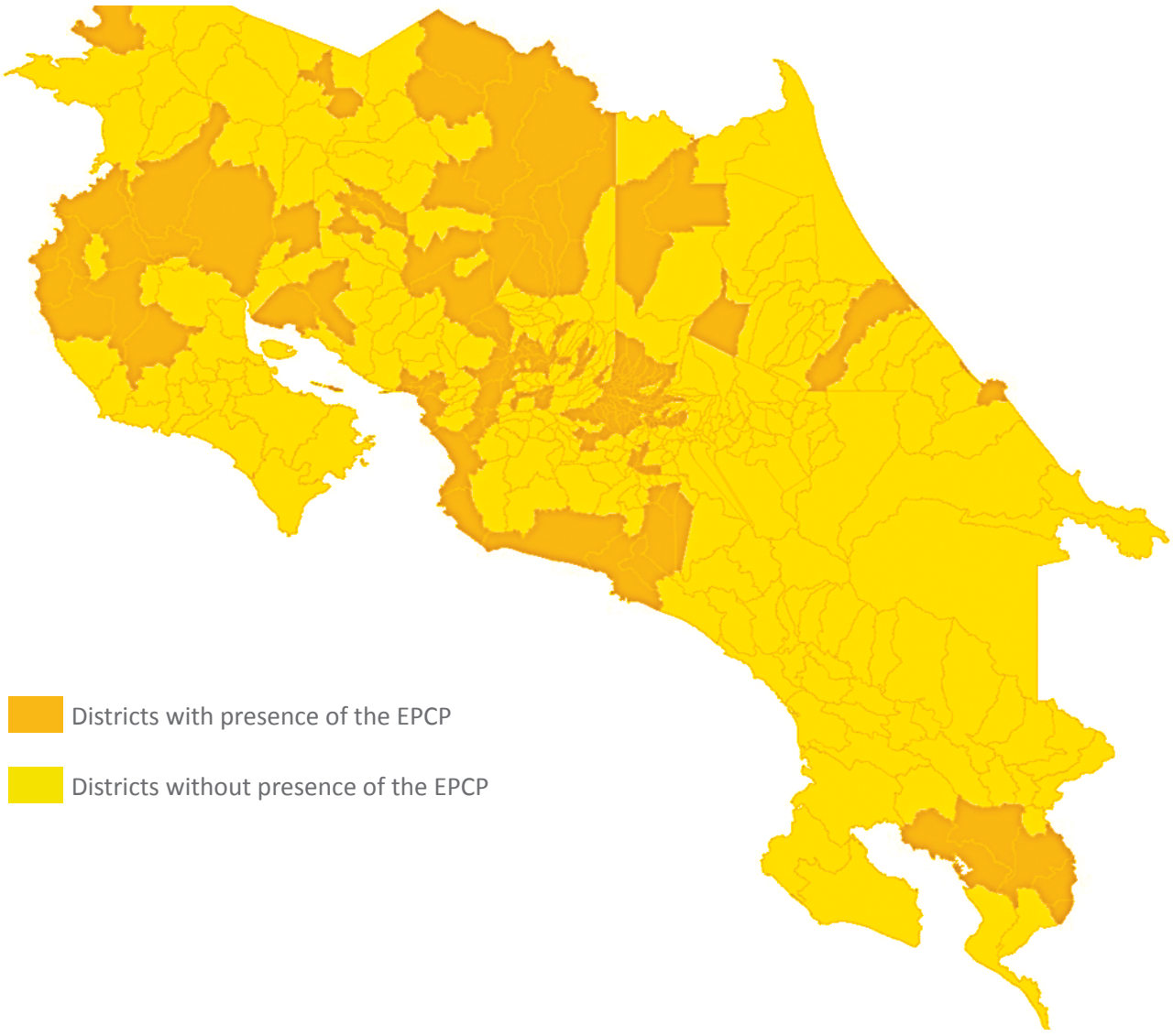
Graph n.° 240. Costa Rica: Districts with presence of the Connected Public Spaces Program, 2019

(monthly accrual)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

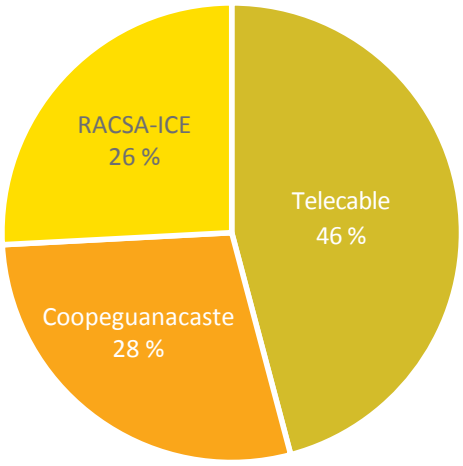
Map n.° 6. Costa Rica: Districts with presence of the Connected Public Spaces Program, 2019



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Graph n.° 241. Costa Rica: Distribution of investment executed through the Connected Public Spaces Program per operator, 2019

(figures by percentage)



Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

COSTA RICA STILL REMAINS AT THE WORLDWIDE LEVEL AS ONE OF THE COUNTRIES WITH HIGHER MOBILE TELEPHONY PENETRATION

INTERNATIONAL



This section aims to analyze the position of Costa Rica in the world context regarding the development of telecommunications. An analysis is made of the behavior of the different international services and the possible trends that may arise in relation to such behavior in the near future.

For this analysis, the following sections will be developed:

- Analysis of general international indicators
- Analysis of the Global Competitiveness Index

At the time of writing this report, the International Telecommunications Union (ITU) did not yet have public information for 2019; so, it was not possible to include information for that year in this edition. Instead, figures from 2018 are used, taking ITU data as the source of information.

Analysis of general international indicators

This analysis aims at knowing the position of Costa Rica in the most outstanding general indicators compared to the leading countries in telecommunications and to Latin American countries. On the other hand, quality of service indicators are undergoing a redesign process, in accordance with ITU. The countries used to compare are the most developed in ICTs, such as the Europeans and Asians. In the case of Latin America, the countries that had information available for the years of analysis were used.

Fixed telephony, mobile telephony, fixed Internet, and mobile services are analyzed, especially in relation to the evolution of the number of subscribers and their total penetration (it is measured through subscriptions and not at the geographic level). Due to this, indicators are constantly updated and monitored by ITU, which allows comparability with the countries.

Fixed telephony penetration (traditional basic telephony and VoIP telephony) measured as the percentage of total users with respect to the total population of the country, has shown, in general, a decrease in recent years. This situation is not exclusive to Costa Rica, as the number of subscriptions to this service continues to decrease also in countries such as Korea, Switzerland, Holland, United States, Norway, and Sweden.

This behavior is similar, but slower, for Latin American countries, like Argentina, Brazil, Chile, and Mexico, among others, where the penetration of this service has also remained practically unchanged. In other cases, such as Uruguay, Mexico, and Panama, slight increases are registered. In 2018, according to ITU records, the countries with the highest fixed telephony penetration are Korea, United Kingdom, and Switzerland, with 50.6%, 47.6%, and 39.2%, respectively. In the case of Costa Rica, penetration in 2018 was 15.5%; while in 2019, it fell by 11.3%, placing the country in the seventh position in Latin America, behind Uruguay, Argentina, Brazil, Mexico, Panama, and Chile (see Graph n.° 242). It should be noted that Costa Rica dropped two places compared to 2017.



In the case of mobile phone services (prepaid and postpaid are included), Costa Rica remains among the countries with the highest penetration, reaching the first position in 2018, worldwide, with 169.9%, surpassing countries like Singapore, Finland, and Switzerland, among other European countries. The penetration percentage reached in 2019 (169%) is consistent with the trend to remain in the first places of this penetration indicator, although it shows a decrease. Even so, figures for 2019 are higher than that registered in 2018 for the rest of the countries, as can be seen in the Graph n.° 243.

In the case of mobile phone services according to payment method, the proportion of prepaid subscriptions remains the same compared with 2017, but Costa Rica continues to be among the countries with the highest proportion of prepaid lines, only surpassed by Mexico, Panama, and Nicaragua. These results contrast with those observed in European and Asian countries, in which the relationship is inverse, as can be seen in Graph n.° 244.

As in the previous edition of the Telecommunications Sector Statistics, Costa Rica 2018, there is still an inverse relationship between the proportion of prepaid services and per capita revenue, according to the ITU Report data for 2018. Mobile phone users from countries with a higher degree of development and greater purchasing power opt, for the most part, for postpaid services, while countries with lower purchasing power opt for prepaid services. The detail can be seen in Graph n.° 245.

For Costa Rica, the measurement of fixed Internet per 100 inhabitants (16.6%) for 2018, increased by 1.5 percentage points from what was achieved on the year before last (15.17 %). Although this indicator is higher than that registered in most of the other Latin American countries considered in this comparative sample, it is lower than that achieved by Chile (17.4%), Argentina (19.1%), and Uruguay (28.3%). If the comparison is made with European countries, in particular Switzerland, Denmark, and the Netherlands, the values registered in these countries, in general, are three times those for Costa Rica. The detail can be seen in Graph n.° 246.

Contrary to what happens with fixed Internet access, for mobile Internet services, Costa Rica continues to show a relatively high position within the countries evaluated. Penetration for 2018 (97.2%) is only surpassed at the Latin American level by Uruguay (123.8%), and at the Asian and European level, it is led by Finland (156.4%), Singapore, and other Nordic countries (Sweden, Denmark, and Norway). If the 2019 data is considered (92.2%), the position of Costa Rica decreased, but it is comparable to that of the developed countries included in the sample analyzed. The detail can be seen in Graph n.° 247.

Analysis of the Global Competitiveness Index

The Global Competitiveness Index is prepared by the World Economic Forum, and in this section the position of Costa Rica within said index will be analyzed. The analysis will focus on the country's results in its third pillar: adoption of ICTs.

The Global Competitiveness Index measures the ability of countries to provide high levels of prosperity for their citizens. In this sense, this ability depends on the level at which a country productively uses its available resources. Consequently, the index measures a set of institutions, policies, and factors that define the levels of sustainable economic prosperity currently and in the medium term. It should be noted that, for 2018, the index changed its methodology, and was renamed Global Competitiveness Index 4.0, where the microeconomic and macroeconomic foundations of national competitiveness are evaluated. This is defined as the set of institutions, policies, and factors that determine the level of productivity of a country.

The index is calculated using public information from different institutions and the Executive Opinion Survey conducted by the World Economic Forum together with a network of partner institutions (including leading research institutions and business organizations) in the countries included in the report. In 2019, more than 12,000 business leaders in the 141 countries included in the calculation were interviewed. The survey is designed to capture a wide range of factors that affect the business climate within a country's economy. The index results in scores ranging from 0 to 100, where 100 is the maximum score that a country can obtain, and therefore, have the highest degree of global competitiveness.

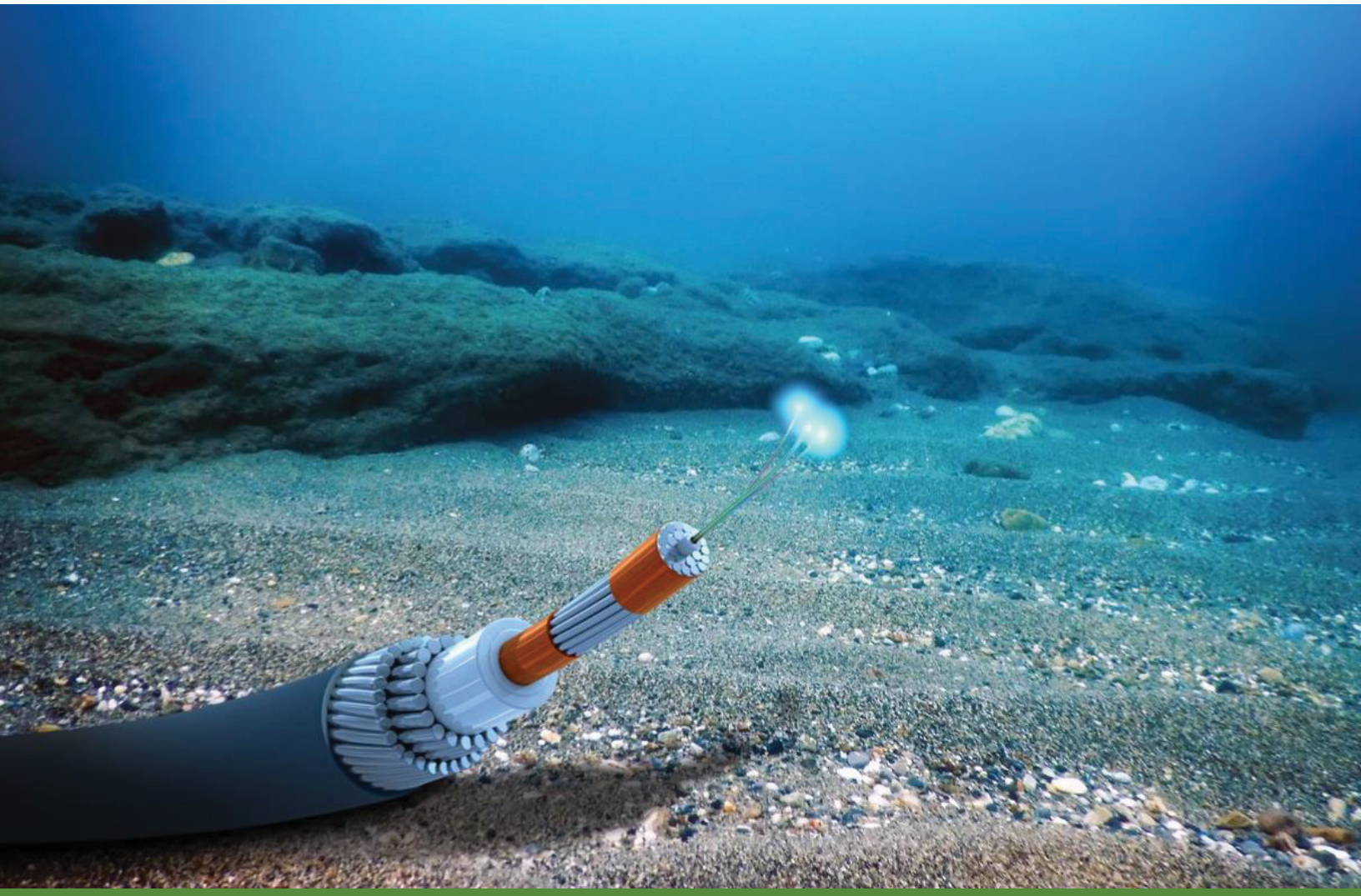
The ICT adoption pillar measures the agility with which an economy adopts existing technologies to improve the productivity of its industries, with specific emphasis on its ability to take full advantage of information and communication technologies (ICTs) in daily activities and business production processes to increase efficiency and competitiveness. ICTs reduce transaction costs and accelerate the exchange of information and ideas, improving efficiency and generating innovation. As ICTs are general-purpose technologies increasingly integrated into the economic fabric, they are becoming as necessary as energy and transportation infrastructure in all economies.

This section focuses on the pillar described above. As evidenced in Table n.° 20, the variables used in the calculation of the pillar related to technological preparation include indicators calculated and captured by SUTEL.

In relation to the behavior of the Global Competitiveness Index for Costa Rica, it can be observed in Graph n.° 248, in which the same behavior is shown compared to last year, when it went from 62.1 in 2018 to 62 in 2019, showing stability in the country's competitiveness. In this sense, it ranks 62nd out of 141 countries. Compared to 2018, when the position was 55, it fell 7 positions, because other countries have shown growth in aspects related to competitiveness.

In terms of Latin America, Costa Rica is in the 5th position, surpassed only by Chile, Mexico, Uruguay, and Colombia, with a score of 71, 65, 63, and 63 respectively. Costa Rica is above countries like Peru, Brazil, and Argentina, among others. The detail can be seen in Graph n.° 249.

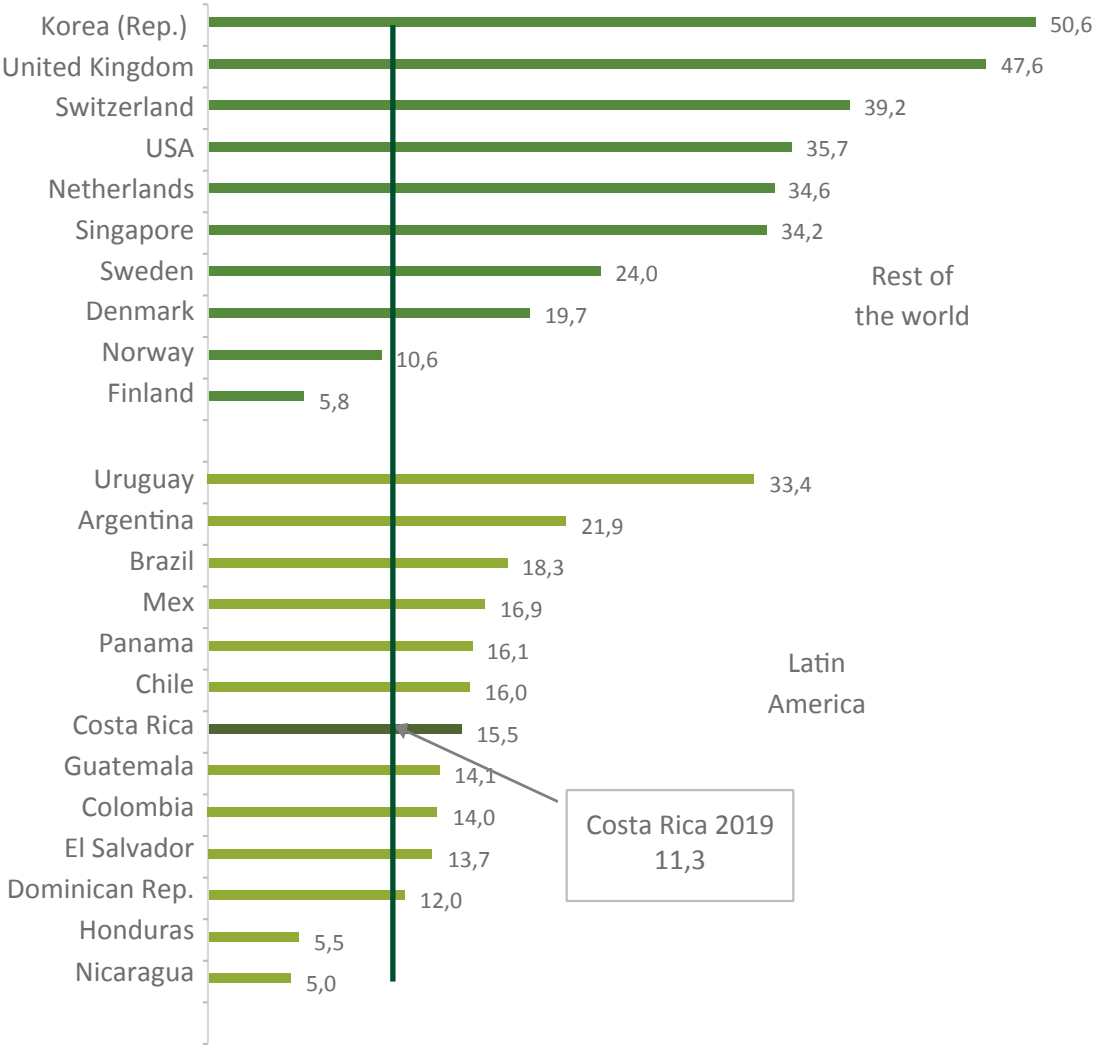
For the ICT adoption pillar, Costa Rica is in position number 63 of 141 countries in 2019, which shows a decrease in the position held in 2018, going from 55 to 63. In Latin American countries, Costa Rica is in position 4, surpassed by Uruguay and Chile with scores of 80 and 63 respectively. This difference is due to the fact that these countries have higher scores in these indicators: Fiber optic Internet subscriptions and Internet users. The detail can be seen in Graph n.° 250.



Submarine fiber optic cable.

Graph n.° 242. Costa Rica: Subscriptions to fixed telephony service per 100 inhabitants, 2018

(figures by percentage)

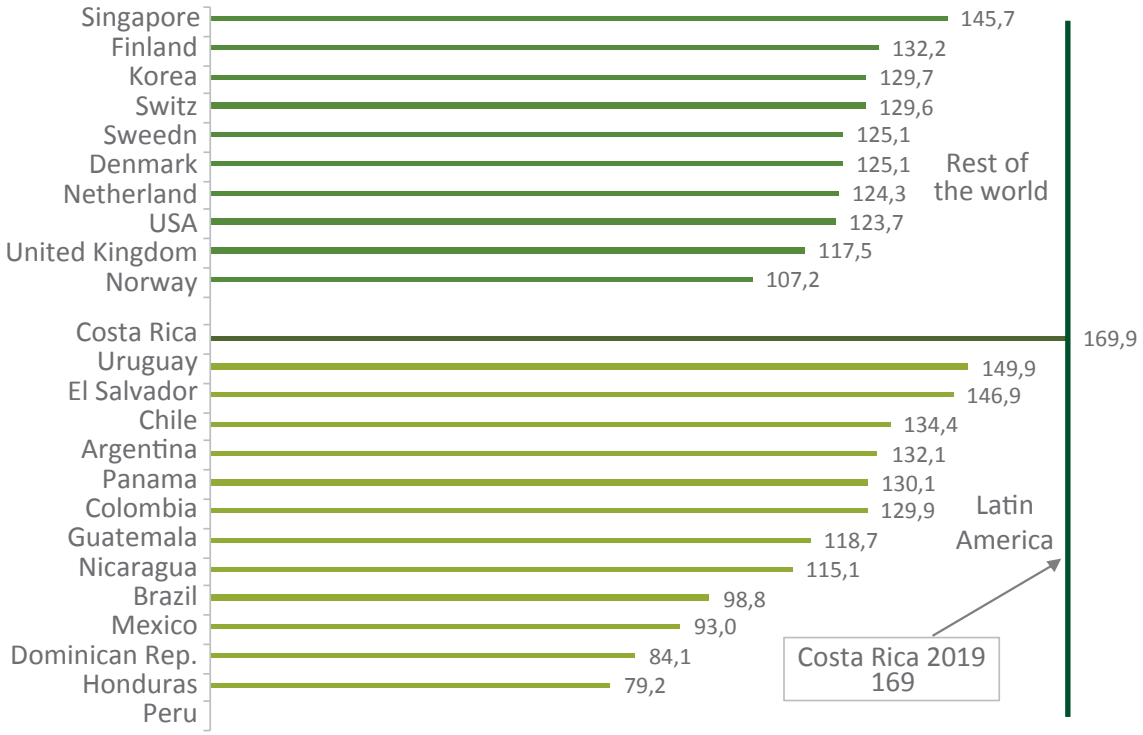


Note: *Includes traditional fixed telephony and VoIP subscriptions, 2019.

Source: SUTEL, Directorate General for Markets, Costa Rica, with information from the International Telecommunications Union, 2019.

Graph n.° 243. Costa Rica: Mobile telephony subscriptions per 100 inhabitants, 2018

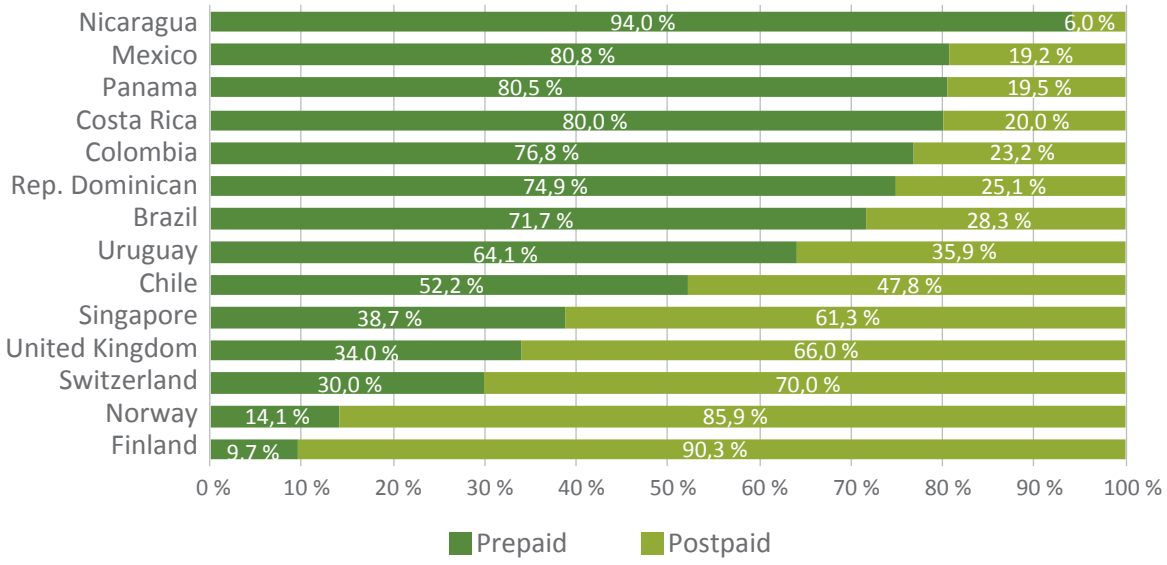
(figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, with information from the International Telecommunications Union, 2019.

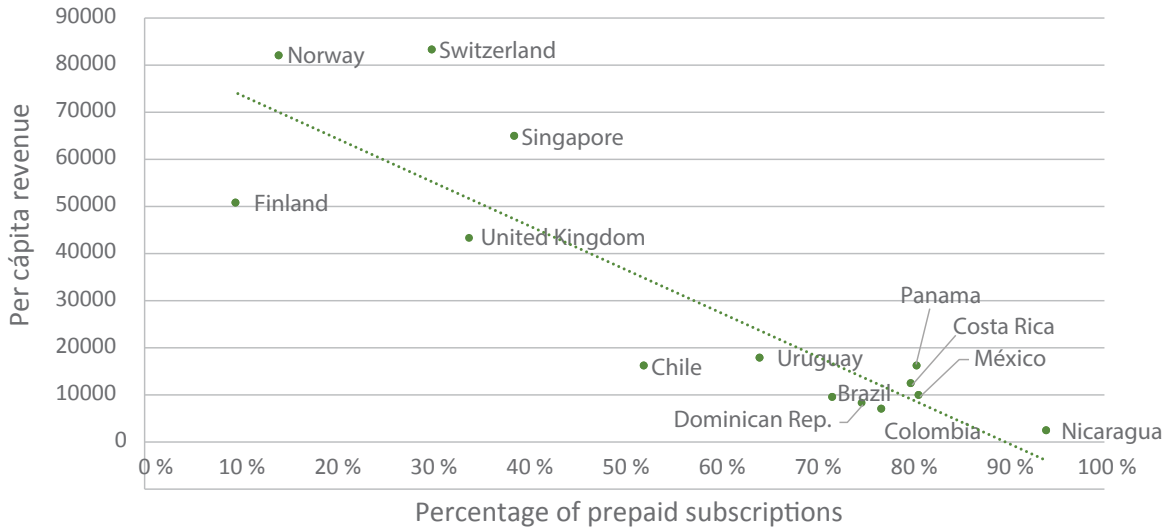
Graph n.° 244. Costa Rica: Distribution of percentage of mobile subscriptions between postpaid and prepaid, 2018

(figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, with information from the International Telecommunications Union, 2019.

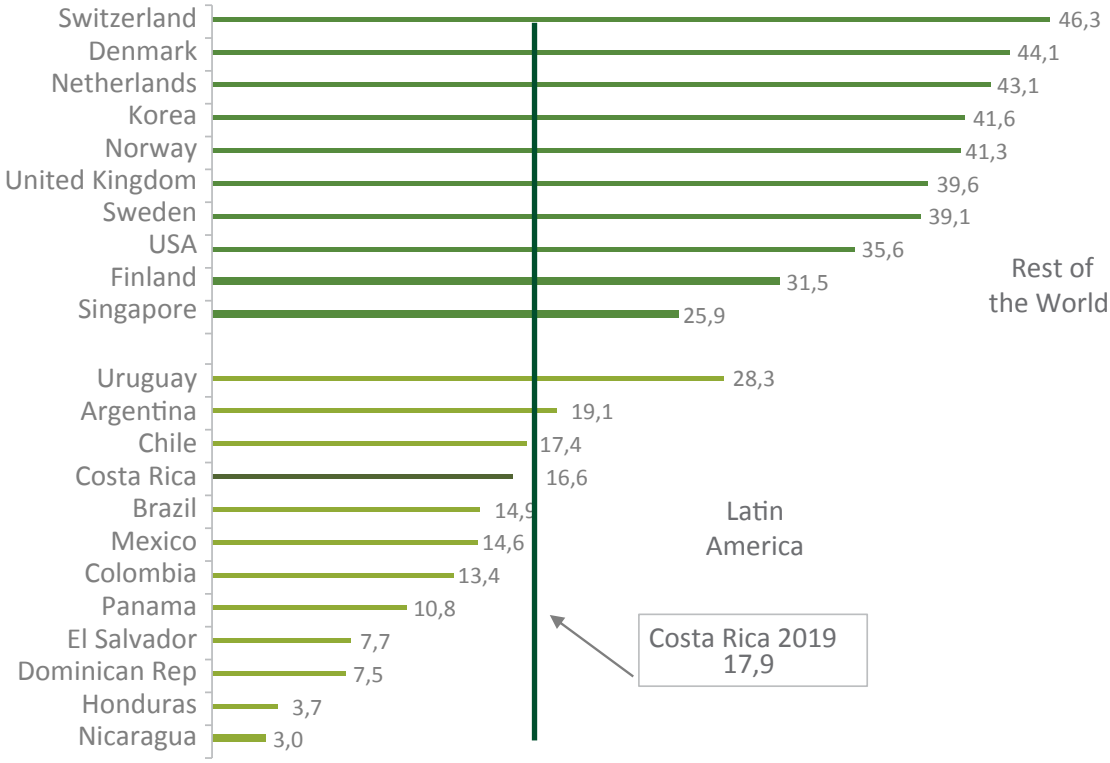
Graph n.° 245. Costa Rica: Average revenue per inhabitant and percentage of prepaid subscriptions, 2018



Source: SUTEL, Directorate General for Markets, Costa Rica, with information from the International Telecommunications Union, 2019.

Graph n.° 246. Costa Rica: Penetration of fixed Internet per 100 inhabitants, 2018

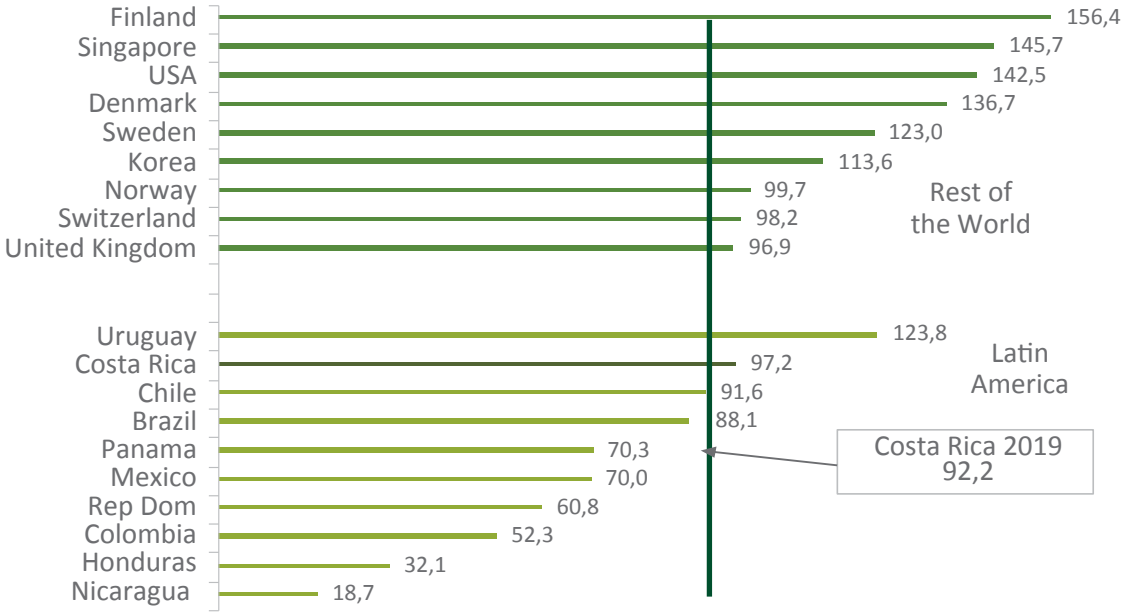
(figures by percentage)



Source: SUTEL, Directorate General for Markets, Costa Rica, with information from the International Telecommunications Union, 2019.

Graph n.° 247. Costa Rica: Penetration of access to mobile Internet per 100 inhabitants, 2018

(figures by percentage)



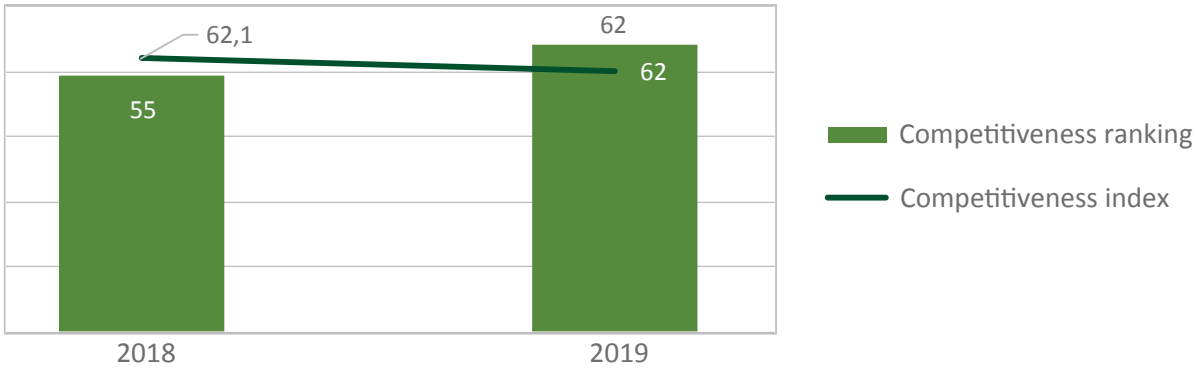
Source: SUTEL, Directorate General for Markets, Costa Rica, with information from the International Telecommunications Union, 2019.

Table n.° 20. Costa Rica: Third pillar: adoption of ICTs, variables that comprise them, 2018-2019

Indicator	Value		Position of Costa Rica (worldwide level)	
	2018	2019	2018	2019
Mobile telephone subscriptions	180,2	169,9	3	7
Mobile broadband subscriptions	116,6	97,2	15	33
Fixed bandwidth Internet subscriptions	15,2	16,6	57	58
Fiber optic Internet subscriptions	0,2	0,4	77	80
Internet users	66	74,1	60	57

Source: SUTEL, Directorate General for Markets, Costa Rica, with information from World Economic Forum, 2019.

Graph n.° 248. Costa Rica: Global Competitiveness Index, ranking and value. 2018-2019



Source: SUTEL, Directorate General for Markets, Costa Rica, with information from World Economic Forum, 2019.

Graph n.° 249. Costa Rica: Global Competitiveness Index: Value obtained according to Latin American countries, 2019



Source: SUTEL, Directorate General for Markets, Costa Rica, with information from World Economic Forum, 2019.

Graph n.° 250. Costa Rica: Pillar 3; adoption of ICTs: obtained according to Latin American countries. 2019



Source: SUTEL, Directorate General for Markets, Costa Rica, with information from World Economic-Forum, 2019

Statistical

ANNEX



Data Center.

Table n.° 21. Costa Rica: Telecommunications sector total revenue, 2015 - 2019

(quarterly figures in millions of colones)

Indicator	2015				2016			
	I Q	II Q	III Q	I Q	I Q	II Q	III Q	I Q
Millions of colones	175 837	181 452	176 561	177 735	177 248	181 514	184 169	185 441
Variation rate	10 %	2 %	-5 %	1 %	5 %	3 %	-3 %	1 %

Indicator	2017				2018			
	I Q	II Q	III Q	I Q	I Q	II Q	III Q	I Q
Millions of colones	184 337	186 314	185 664	189 266	192 377	194 529	186 507	184 414
Variation rate	0 %	2 %	1 %	1 %	-1 %	1 %	0 %	2 %

Indicator	2019				2012	2013	2014	2015
	I Q	II Q	III Q	I Q				
Millions of colones	193 959	191 410	189 417	185 477	501 648	576 742	677 142	711 585
Variation rate	1,644 %	1,118 %	-4,124 %	-1,122 %	-	15 %	17 %	5 %

Indicator	2016	2017	2018	2019
Millions of colones	728 372	745 581	757 827	760 264
Variation rate	2 %	2 %	2 %	0 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 22. Costa Rica: Telecommunications sector total revenue per service, 2015 - 2019

(quarterly figures in millions of colones)

Indicator	I Q 2015	II Q 2015	III Q 2015	IV Q 2015	I Q 2016	II Q 2016	III Q 2016	IV Q 2016
Basic traditional and VoIP telephony	22 044	21 903	20 959	21 457	22 445	22 427	21 546	21 093
Mobile telephony (voice and messages)	80 694	83 171	76 610	77 323	75 742	76 117	74 801	74 558
Internet access (includes access to mobile Internet)	64 210	67 027	69 818	70 168	71 449	74 586	78 516	80 659
Leased lines	8890	9351	9174	8787	7611	8384	9306	9132
Total	175 837	181 452	176 561	177 735	177 248	181 514	184 169	185 441

Indicator	I Q 2017	II Q 2017	III Q 2017	IV Q 2017	I Q 2018	II Q 2018	III Q 2018	IV Q 2018
Basic traditional and VoIP telephony	20 422	20 120	19 781	19 460	19 031	18 834	18 288	17 872
Mobile telephony (voice and messages)	71 796	70 854	70 837	72 201	67 550	64 811	62 622	62 293
Internet access (includes access to mobile Internet)	80 759	84 746	84 018	85 613	94 561	100 220	94 961	94 496
Leased lines	11 360	10 595	11 028	11 992	11 236	10 664	10 636	9 753
Total	184 337	186 314	185 664	189 266	192 377	194 529	186 507	184 414

Indicator	I Q 2019	II Q 2019	III Q 2019	IV Q 2019
Basic traditional and VoIP telephony	16 357	15 590	14 549	13 308
Mobile telephony (voice and messages)	60 119	57 641	54 632	53 480
Internet access (includes access to mobile Internet)	104 674	106 358	107 565	106 499
Leased lines	12 809	11 821	12 672	12 190
Total	193 959	191 410	189 417	185 477

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 23. Costa Rica: Telecommunications sector total revenue per service, 2015 - 2019

(annual figures in millions of colones)

Indicator	2015	2016	2017	2018	2019
Mobile telephony (Only voice)	317 798	301 218	285 688	257 275	225 872
Basic traditional and VoIP telephony	86 363	87 511	79 783	74 025	59 804
Internet access (includes access to mobile Internet)	271 222	305 210	335 136	384 238	425 095
Leased lines	36 202	34 433	44 974	42 289	49 492
Total	711 585	728 372	745 581	757 827	760 264

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 24. Costa Rica: Telecommunications sector total revenue per service, 2015 - 2019

(cifras anuales en porcentaje)

Indicator	2015	2016	2017	2018	2019
Mobile telephony (Only voice)	45 %	41 %	38 %	34 %	30 %
Basic traditional and VoIP telephony	12 %	12 %	11 %	10 %	8 %
Internet access (includes access to mobile Internet)	38 %	42 %	44 %	51 %	56 %
Leased lines	5 %	5 %	7 %	5 %	6 %
Total	100 %	100 %	100 %	100 %	100 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 25. Costa Rica: Telecommunications sector total revenue per service, 2015 - 2019

(annual figures in millions of colones)

Indicator	2015	2016	2017	2018	2019
Mobile telephony access to mobile Internet	488 172	495 721	493 352	492 810	490 450
Basic traditional and VoIP telephony	86 363	87 511	79 783	74 025	59 804
Access to fixed Internet	100 848	110 707	127 472	148 704	160 518
Leased lines	36 202	34 433	44 974	42 289	49 492
Total	**711 585**	**728 372**	**745 581**	**757 827**	**760 264**

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 26. Costa Rica: Telecommunications sector total revenue per service, 2015 - 2019

(annual figures by percentage)

Indicator	2015	2016	2017	2018	2019
Mobile telephony access to mobile Internet	69 %	68 %	66 %	65 %	65 %
Basic traditional and VoIP telephony	12 %	12 %	11 %	10 %	8 %
Access to fixed Internet	14 %	15 %	17 %	20 %	21 %
Leased lines	5 %	5 %	6 %	5 %	6 %
Total	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 27. Costa Rica: Telecommunications sector workforce, 2015 - 2019

(figures per semester and anually in absolute numbers)

Indicator	2015		2016		2017		2018	
	I S	II S	I S	II S	I S	II S	I S	II S
Persons	11 497	11 426	11 751	11 870	11 691	12 186	10 939	11 804
% variation	4 %	-1 %	3 %	1 %	-2 %	3 %	-6 %	-3 %

Indicator	2019		2015	2016	2017	2018	2019
	I S	II S					
Persons	9395	10 758	11 426	11 870	12 186	11 804	10 761
% variation	-14 %	-9 %	4 %	4 %	3 %	-3 %	-9 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 28. Costa Rica: Percentage of the telecommunications sector workforce compared to economically active population, 2015 - 2019

(annual figures by percentage)

Indicator	2015	2016	2017	2018	2019
Total Country	2 276 104	2 206 179	2 274 432	2 359 644	2 448 045
Telecommunications sector	11 426	11 870	12 186	11 804	10 761
Percentage	0,50 %	0,54 %	0,54 %	0,50 %	0,44 %
% variation	7 %	7 %	0 %	-7 %	-12 %

Source: SUTEL, Directorate General for Markets and INEC (Continuous Job Survey), Costa Rica. 2019.

Table n.° 29. Costa Rica: Percentage of the telecommunications sector workforce compared to the total population, 2015 - 2019

(annual figures by percentage)

Indicator	2015	2016	2017	2018	2019
Total population	4 832 234	4 890 379	4 947 490	5 003 402	5 058 007
Telecommunications sector workforce	11 426	11 870	12 186	11 804	10 761
Percentage	0,24 %	0,24 %	0,25 %	0,24 %	0,21 %

Source: SUTEL, Directorate General for Markets and INEC (Continuous Job Survey), Costa Rica. 2019.

Table n.° 30. Costa Rica: Telecommunications sector female workforce, 2015 - 2019

(figures per semester and annually in absolute numbers)

Indicator	2015		2016		2017		2018		2019	
	I S	II S	I S	II S	I S	II S	I S	II S	I S	II S
Persons	2963	3010	3057	3061	3178	3344	3062	3258	2504	3244
% variation per semester		2 %		0 %		5 %	-8 %	6 %	-23 %	30 %
% annual variation		3 %		2 %		9 %	-4 %	-3 %	-18 %	0 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 31. Costa Rica: Subscriptions of traditional basic telephony and VoIP telephony, 2018 - 2019

(each quarter end figures)

Indicator	2018				2019			
	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Total	803 332	791 532	776 626	763 254	741 336	712 672	686 617	636 504
Fixed traditional basic telephony	738 133	726 686	712 247	695 518	675 922	646 090	621 959	571 808
VoIP	65 199	64 846	64 379	67 736	65 414	66 582	64 658	64 696

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 32. Costa Rica: Fixed telephony traffic completed within the network and outbound, 2015-2019

(annual figures in millions of minutes and percentage change)

Indicator	2015	2016	2017	2018	2019
Minutes	3210	2966	2683	2402	1870
% variation		-7,6 %	-9,5 %	-10,5 %	-22,1 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 33. Costa Rica: Fixed traditional basic telephony traffic and VoIP telephony completed within the network and outbound, 2018 - 2019

(quarterly figures in millions of minutes and percentage change)

Indicator	2018				2019			
	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Minutes	662	615	579	546	515	465	466	424
% variation		-7,1 %	-5,9 %	-5,6 %	-5,6 %	-9,8 %	0,2 %	-8,9 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 34. Costa Rica: VoIP telephony traffic completed within the network and outbound, 2015-2019

(annual figures in thousands of minutes and percentage change)

Indicator	2015	2016	2017	2018	2019
Minutes	232 267	336 270	393 596	395 056	241 197
% variation		44,8 %	17,0 %	0,4 %	-38,9 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 35. Costa Rica: VoIP telephony traffic completed within the network and outbound, 2018 - 2019

(quarterly figures in millions of minutes and percentage change)

Indicator	2018				2019			
	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Minutes	116	113	90	77	76	46	65	54
% variation	3,9 %	-2,2 %	-20,7 %	-14,6 %	-0,8 %	-39,3 %	41,0 %	-17,2 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 36. Costa Rica: Total revenue from fixed telephony service, 2015 - 2019

(annual figures in millions of colones and percentage change)

Indicator	2015	2016	2017	2018	2019
Amount	86 363	87 511	79 783	73 240	58 970
% variation		1,3 %	-8,8 %	-8,2 %	-19,5 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 37. Costa Rica: Total revenue VoIP telephony, 2015 - 2019

(annual figures in millions of colones and percentage change)

Indicator	2015	2016	2017	2018	2019
Amount	4973	5445	6006	6906	6830
% variation		9,5 %	10,3 %	15,0 %	-1,1 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 38. Costa Rica: Average revenue by subscriber of traditional basic telephony and VoIP telephony, 2015-2019

(annual figures in thousands colones and percentage change)

Indicator	Average revenue			Percent variation		
	Traditional Basic	VOIP	Fixed telephony	Traditional Basic	VOIP	Fixed telephony
2015	101 172	108 330	101 558			
2016	105 217	101 551	104 981	3 %	-6 %	3 %
2017	98 708	97 602	98 624	-6 %	-4 %	-6 %
2018	95 373	101 957	95 958	-3 %	4 %	-3 %
2019	91 184	105 571	92 646	-4 %	4 %	-3 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 39. Costa Rica: Average revenue per minute processed of traditional basic telephony and VoIP telephony, 2015-2019

(figures in colones and percentage change)

Indicator	Average revenue			Percent variation		
	VOIP	Traditional Basic	Fixed telephony	VOIP	Traditional Basic	Fixed telephony
2015	21	27	27			
2016	16	31	30	-24 %	14 %	10 %
2017	15	32	30	-6 %	3 %	1 %
2018	17	33	30	15 %	3 %	3 %
2019	28	32	32	62 %	-3 %	3 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 40. Costa Rica: Total subscriptions mobile telephony service by operator, 2015-2019

(quarter end figures in thousands of subscriptions and percentage change)

Total	2015				2016				2017				2018				2019			
	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
ICE	4253	3925	4048	4339	4302	4314	4391	4440	4592	4521	4596	4576	4629	4626	4617	4557	4607	T4535	4735	4375
% variation	-2 %	-8 %	3 %	7 %	-1 %	0%	2 %	1 %	3 %	-2 %	2 %	-0%	1 %	-0%	-0%	-1 %	1 %	-2 %	4 %	-8 %
Claro	1206	1319	1328	1414	1526	1559	1551	1639	1772	1888	1891	1883	1868	1705	1577	1629	1704	1644	1598	1616
% variation	5 %	9 %	1 %	6 %	8 %	2 %	-1 %	6 %	8 %	7 %	0%	-0%	-1 %	-9 %	-8	3 %	5 %	-4 %	-3 %	1 %
Movistar	1515	1493	1637	1677	1790	1905	2087	2144	2181	2223	2237	2324	2347	2347	2382	2262	2298	2287	2429	2552
% variation	6 %	-1 %	10%	2 %	7 %	6 %	10%	3 %	2 %	2 %	1 %	4 %	1 %	-0%	2 %	-5 %	2 %	-0%	6 %	5 %
Fullmóvil	33	41	50	59	63	71	92	101	110	106	95	52	43	50	53	46	22	9	7	7
% variation	8	24 %	22 %	19 %	7 %	12 %	29 %	10%	9 %	-3 %	-11 %	-45 %	-18 %	16 %	6 %	-14 %	-53 %	-60%	-22	0%
Tuyo Móvil	55	47	48	46	29	11	9	7	7	7	5	4	4	4	2	2	0	0		
% variation	-18 %	-14 %	2 %	-5 %	-37 %	-60%	-26 %	-13 %	1 %	-1 %	-37 %	-11 %	-2 %	-0%	-44 %	-21 %	-72 %	-100%		
TOTAL	7061	6826	7112	7536	7711	7860	8130	8331	8663	8746	8823	8840	8891	8732	8632	8496	8630	8475	8769	8550
% variation	1 %	-3 %	4 %	6 %	2 %	2 %	3 %	2 %	4 %	1 %	1 %	0%	1 %	-2 %	-1 %	-2 %	2 %	-2 %	3 %	-2 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 41. Costa Rica: Total subscriptions mobile telephony service per payment method, 2015-209

(quarter end figures in thousands of subscriptions and percentage change)

Total	2015				2016				2017				2018				2019			
	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q	I Q	II Q	II Q	IV Q	I Q	II Q	III Q	IV Q	I Q	II Q	II Q	IV Q
Prepaid	5602	5344	5579	5951	6100	6189	6379	6469	6721	6743	6841	6796	6833	6617	6468	6285	6453	6173	6404	6132
% variation	0%	-5 %	4 %	7 %	3 %	1 %	3 %	1 %	1 %	0%	1 %	-1 %	1 %	-3 %	-2 %	-3 %	3 %	-4 %	4 %	-4 %
Postpaid	1459	1481	1532	1584	1611	1672	1751	1862	1942	2002	1983	2045	2057	2115	2164	2210	2178	2302	2366	2418
% variation	3 %	2 %	3 %	3 %	2 %	4 %	5 %	6 %	4 %	3 %	-1 %	3 %	1 %	3 %	2 %	2 %	-1 %	6 %	3 %	2 %
Total	7061	6826	7112	7536	7711	7860	8130	8331	8663	8746	8823	8840	8891	8732	8632	8496	8630	8475	8769	8550
% variation	1 %	-3 %	4 %	6 %	2 %	2 %	3 %	2 %	4 %	1 %	1 %	0%	1 %	-2 %	-1 %	-2 %	2 %	-2 %	3 %	-2 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 42. Costa Rica: Mobile telephony service penetration per 100 inhabitants, 2015-2019

(annual figures by percentage)

	2015	2016	2017	2018	2019
Mobile penetration	155,9 %	170,3 %	178,7 %	169,8 %	169,0 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 43. Costa Rica: Mobile telephony subscriptions share by operator per payment method, 2015-2019

(annual figures by percentage)

	2015	2016	2017	2018	2019
Prepaid					
ICE	54 %	49 %	48 %	51 %	49 %
Claro	19 %	19 %	22 %	19 %	18 %
Movistar	26 %	30 %	30 %	29 %	33 %
Fullmóvil	1.0 %	1.6 %	0.8 %	0,7 %	
Tuyo Móvil	0,8 %	0,1 %	0,1 %	0,0 %	
Postpaid					
ICE	71 %	68 %	64 %	61 %	57 %
Claro	19 %	21 %	20 %	20 %	22 %
Movistar	10 %	11 %	15 %	19 %	21 %
Fullmóvil*					0 %

Note: *Fullmóvil started to market business SMS in the 2nd semester of 2019 under the postpaid modality .

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 44. Costa Rica: Total revenue associated to telephony and mobile network services (including Internet) by component*, 2015-2019

(annual figures by percentage)

	2015	2016	2017	2018	2019
Mobile network	**488 163**	**495 791**	**493 358**	**492 823**	**490 450**
Mobile telephony	**317 798**	**301 302**	**285 688**	**257 275**	**225 872**
Voice	303 478	289 358	274 336	247 645	218 257
SMS/MMS	14 320	11 945	11 352	9631	7 615
Mobile data	170 366	194 489	207 670	235 548	264 578

Note: *Does not include roaming revenue.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 45. Costa Rica: Total revenue associated to mobile network per payment method*, 2015-2019

(annual figures in millions of colones)

	2015	2016	2017	2018	2019
Total	**488 163**	**495 706**	**493 358**	**492 823**	**490 450**
Prepaid	241 922	229 127	202 185	168 503	136 439
Postpaid	246 241	266 580	291 173	324 321	354 011

Note: *Does not include roaming revenue.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 46. Costa Rica: Average revenue per minute of mobile telephony (ARPM)*, 2015-2019

(annual figures in colones and minutes)

	2015	2016	2017	2018	2019
Voice Revenue	303 477 985 333	289 357 679 580	274 335 682 956	247 644 535 707	218 257 214 206
Total Traffic	8 252 296 345	7 631 673 792	6 827 569 387	6 298 697 425	5 923 954 905
ARPM	**37**	**38**	**40**	**39**	**37**

Note: *Only includes national and international traffic and voice revenue.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 47. Costa Rica: Total traffic and share per payment method per year, 2015-2019

(figures in millions of minutes and percentages)

	2015	2016	2017	2018	2019
Total Traffic	**8252**	**7632**	**6828**	**6299**	**5924**
PREPAID	4868	4210	3328	2668	2239
POSTPAID	3384	3422	3499	3631	3685
Prepaid	59 %	55 %	49 %	42 %	38 %
Postpaid	41 %	45 %	51 %	58 %	62 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 48. Costa Rica: Traffic relative distribution of mobile telephony service by origin and destination regarding total traffic, 2015-2019

(annual figures in millions of minutes and percentages)

	2015	2016	2017	2018	2019
Total Traffic	**8252**	**7632**	**6834**	**6299**	**5924**
Mobile-mobile (On net)	55 %	53 %	51 %	50 %	50 %
Mobile-mobile (Off net)	23 %	25 %	27 %	28 %	28 %
Mobile-fixed	18 %	18 %	18 %	17 %	18 %
Mobile-International	3 %	4 %	4 %	4 %	4 %

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 49. Costa Rica: Total subscriptions, revenue and traffic, access to fixed Internet, 2014-2019

(quarterly figures)

Indicator	2014				2015			
	I T	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Subscriptions	497 092	502 655	504 105	516 337	527 664	537 483	547 558	558 656
% variation		1,1 %	0,3 %	2,4 %	2,2 %	1,9 %	1,9 %	2,0 %
Revenue (million colones)	23 052,1	24 351,4	22 631,3	22 217,1	23 556,4	24 095,6	24 314,2	25 004,2
% variation		5,6 %	-7,1 %	-1,8 %	6,0 %	2,3 %	0,9 %	2,8 %
Traffic (TB)	25 012,0	31 849,8	38 282,3	43 400,9	55 997,7	60 688,8	72 942,4	76 726,6
% variation		27,3 %	20,2 %	13,4 %	29,0 %	8,4 %	20,2 %	5,2 %

Indicator	2016				2017			
	I T	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Subscriptions	570 826	597 025	614 039	636 087	657 407	694 267	718 985	744 041
% variation	2,2 %	4,6 %	2,8 %	3,6 %	3,4 %	5,6 %	3,6 %	3,5 %
Revenue (million colones)	25 471,3	26 892,2	28 531,2	29 812,7	29 206,2	31 966,6	32 265,1	34 033,7
% variation	1,9 %	5,6 %	6,1 %	4,5 %	-2,0 %	9,5 %	0,9 %	5,5 %
Traffic (TB)	84 792,0	85 233,3	98 932,7	118 560,8	141 718,0	147 699,4	154 217,3	176 447,2
% variation	10,5 %	0,5 %	16,1 %	19,8 %	19,5 %	4,2 %	4,4 %	14,4 %

Indicator	2018				2019			
	I T	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Subscriptions	782 654	805 477	817 390	834 784	865 914	871 494	895 056	904 734
% variation	5,2 %	2,9 %	1,5 %	2,1 %	3,7 %	0,6 %	2,7 %	1,08 %
Revenue (million colones)	36 984,7	37 194,7	35 730,5	37 614,4	40 289,0	39 842,0	40 323,0	40 064,0
% variation	8,7 %	0,6 %	-3,9 %	5,3 %	7,1 %	-1,1 %	1,2 %	-0,6 %
Traffic (TB)	182 144,5	202 162,0	229 818,0	251 652,2	263 309,9	285 139,2	309 395,8	304 201,6
% variation	3,2 %	11, %	13,7 %	9,5 %	4,6 %	8,3 %	8,5 %	-1,68 %

Source: SUTEL Directorate General for Markets Costa Rica 2019.

Table n.° 50. Costa Rica: Total subscriptions, revenue and traffic, access to mobile Internet 2014-2019

(quarterly figures)

Indicator	2014				2015			
	I T	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Subscriptions	3 465 856	3 536 075	3 551 430	3 796 619	3 832 819	3 829 223	3 981 967	4 154 419
% variation		2,0 %	0,4 %	6,9 %	1,0 %	-0,1 %	4,0 %	4,3 %
Revenue (Million colones)	29 050,2	31 489,7	31 713,5	34 944,2	39 569,2	42 080,1	44 499,3	44 273,0
% variation		8,4 %	0,7 %	10,2 %	13,2 %	6,3 %	5,7 %	-0,5 %
Traffic (TB)	8 268,6	8 426,2	9 956,3	11 316,8	14 663,1	16 821,4	19 945,1	23 503,6
% variation		1,9 %	18,2 %	13,7 %	29,6 %	14,7 %	18,6 %	17,8 %

Indicator	2016				2017			
	I T	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Subscriptions	4 180 219	4 172 235	4 178 455	4 336 084	4 636 451	4 644 695	4 637 919	4 788 964
% variation	0,6 %	-0,2 %	0,1 %	3,8 %	6,9 %	0,2 %	-0,1 %	3,3 %
Revenue (Million colones)	45 977,6	47 693,7	49 985,3	50 846,4	51 553,1	52 779,2	51 752,9	51 578,8
% variation	3,9 %	3,7 %	4,8 %	1,7 %	1,4 %	2,4 %	-1,9 %	-0,3 %
Traffic (TB)	24 737,1	28 953,1	31 875,2	36 623,5	37 588,7	33 458,5	31 940,4	32 015,2
% variation	5,2 %	17,0 %	10,1 %	14,9 %	2,6 %	-11,0 %	-4,5 %	0,2 %

Indicator	2018				2019			
	I T	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Subscriptions	5 251 701	4 983 176	4 953 143	5 089 506	4 630 498	4 523 109	4 577 597	4 664 073
% variation	9,7 %	-5,1 %	-0,6 %	2,8 %	-9,02 %	-2,3 %	1,2 %	1,9 %
Revenue (Million colones)	56 958,5	57 002,3	59 230,4	62 343,0	64 384,2	66 516,8	67 241,9	66 434,9
% variation	10,4 %	0,1 %	3,9 %	5,3 %	3,3 %	3,3 %	1,1 %	-1,2 %
Traffic (TB)	32545,3	34476,0	35980,7	36 362,0	36 100,0	37 201,4	42 028,9	45 349,1
% variation	1,7 %	5,9 %	4,4 %	1,1 %	-0,7 %	3,1 %	13,0 %	7,9 %

Source: SUTEL Directorate General for Markets Costa Rica 2019.

Table n.° 51. Costa Rica: Total subscriptions to subscription television service by technology by quarter, 2015-2019

Technology	2015				2016			
	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Cable television	510 921	512 431	527 140	532 201	536 335	530 604	535 920	548 113
Satellite television	226 130	240 900	252 908	257 592	252 604	261 102	258 505	257 486
Television over IP	4534	5111	5889	6434	7910	10 582	12 956	14 702
Terrestrial television by multipoint distribution	631	657	605	1003	892	903	942	1274
Total	742 216	759 099	786 542	797 230	797 741	803 191	808 323	821 575

Technology	2017				2018			
	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Cable television	552 115	556 100	559 012	563 607	568 037	577 288	582 261	594 508
Satellite television	255 434	252 209	247 199	244 881	246 810	256 207	252 979	255 193
Television over IP	16 635	18 302	20 260	22 054	24 460	27 247	30 242	33 075
Terrestrial television by multipoint distribution	1306	1193	1257	1365	1247	1073	1022	1107
Total	825 490	827 804	827 728	831 907	840 554	861 815	866 504	883 883

Technology	2019			
	I Q	II Q	III Q	IV Q
Cable television	578 997	575 525	571 102	570 176
Satellite television	257 100	255 423	255 862	248 269
Television over IP	37 350	42 429	48 763	54 476
Terrestrial television by multipoint distribution	1027	1015	1217	1167
Total	874 474	874 392	876 944	874 088

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 52. Costa Rica: Total revenue for subscription television services by technology by quarter, 2015-2019

(figures in millions of colones)

Technology	2015				2016			
	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Cable television	24 344	24 749	24 631	25 134	26 252	25 751	25 823	26 101
Satellite television	8275	8583	9303	8409	7377	9034	9117	8691
Television over IP	287	315	371	398	439	522	653	721
Terrestrial television by multipoint distribution	12	12	12	12	13	12	12	12
Total	32 919	33 659	34 318	33 954	34 081	35 319	35 605	35 525

Technology	2017				2018			
	I Q	II Q	III Q	IV Q	I Q	II Q	III Q	IV Q
Cable television	25 637	25 707	25 524	26 604	26 933	26 871	26 762	27 277
Satellite television	10 076	10 149	10 521	10 123	10 244	10 419	10 115	10 412
Television over IP	866	996	1084	1171	1287	1421	1592	1745
Terrestrial television by multipoint distribution	12	12	12	13	12	12	11	12
Total	36 591	36 864	37 142	37 911	38 477	38 723	38 481	39 446

Technology	2019			
	I Q	II Q	III Q	IV Q
Cable television	27 643	27 425	27 586	27 809
Satellite television	10 425	10 163	9 949	10 466
Television over IP	1945	2168	2417	2725
Terrestrial television by multipoint distribution	12	13	12	9
Total	40 026	39 768	39 965	41 009

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 53. Costa Rica: Characteristics of postpaid mobile telecommunication plans offered in December 2018

Operator	Plan Name	Cost without a terminal	Number of minutes to other networks	Number of minutes to same Operator	Number of minutes regardless of network (on net or off net)	Amount Messages on net	Number of Messages off net	Number of Messages regardless of network	Amount of Gigas to maximum contracted speed	Observations
Claro	Sin Limites Ilimitado 1	₡44 000	Unlimited	Unlimited	N/A	Unlimited	Unlimited	N/A	12	-
Claro	Sin Limites Ilimitado 2	₡55 000	Unlimited	Unlimited	N/A	Unlimited	Unlimited	N/A	20	-
Kolbi	Conversón k1	₡7000	N/A	N/A	120	N/A	N/A	50	1	-
Kolbi	Nuevo Plan 4G K1	₡8000	N/A	N/A	35	N/A	N/A	30	3	-
Kolbi	Nuevo Plan 4G K2	₡12 000	N/A	N/A	150	N/A	N/A	150	4	-
Kolbi	Conversón k2	₡15 000	N/A	N/A	400	N/A	N/A	300	1	-
Kolbi	Nuevo Plan 4G K3	₡18 000	N/A	N/A	300	N/A	N/A	300	5	-
Kolbi	Nuevo Plan 4G K4	₡26 000	N/A	N/A	800	N/A	N/A	600	7	-
Kolbi	Nuevo Plan 4G K5	₡36 000	N/A	N/A	1500	N/A	N/A	1300	10	-
Kolbi	Nuevo Plan 4G K6	₡48 000	N/A	N/A	3000	N/A	N/A	2500	20	-
Telefónica	PLAN @1 LTE PRO	₡10 500	150	300	N/A	300	150	N/A	4	WhatsApp Unlimited + 25 Hours of Movistar Play + 500 MB extra with early payment.
Telefónica	PLAN @2 LTE PRO	₡15 500	200	Unlimited	N/A	Unlimited	200	N/A	5	WhatsApp Unlimited + 25 Hours of Movistar Play + 500 MB extra with early payment.
Telefónica	PLAN @3 LTE PRO	₡21 500	300	Unlimited	N/A	Unlimited	300	N/A	6	WhatsApp Unlimited + 50 Hours of Movistar Play + 500 MB extra with early payment.
Telefónica	PLAN @4 LTE PRO	₡26 500	600	Unlimited	N/A	Unlimited	600	N/A	8	WhatsApp Unlimited + 50 Hours of Movistar Play + 500 MB extra with early payment.
Telefónica	PLAN @5 LTE PRO	₡32 500	1000	Unlimited	N/A	Unlimited	1000	N/A	10	WhatsApp Unlimited + 100 Hours of Movistar Play + 500 MB extra with early payment.
Telefónica	PLAN @6 LTE PRO	₡41 500	1500	Unlimited	N/A	Unlimited	1500	N/A	20	WhatsApp Unlimited + 100 Hours of Movistar Play + 500 MB extra with early payment.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 54. Costa Rica: Characteristics of postpaid mobile telecommunication plans offered in December 2019

Operator	Plan Name	Cost without a terminal	Number of minutes to other networks	Number of minutes to same Operator	Number of minutes regardless of network (on net or off net)	Amount Messages on net	Number of Messages off net	Number of Messages regardless of network	Amount of Gigas to maximum contracted speed	Observations
Claro	Conexión 1	₡9800	140	Unlimited	N/A	Unlimited	140	N/A	10	-
Claro	Conexión 2	₡13 200	200	Unlimited	N/A	Unlimited	200	N/A	12	-
Claro	Conexión 3	₡18 500	300	Unlimited	N/A	Unlimited	300	N/A	14	-
Claro	Conexión 4	₡24 500	600	Unlimited	N/A	Unlimited	600	N/A	16	-
Claro	Conexión 5	₡34 900	1500	Unlimited	N/A	Unlimited	1500	N/A	22	-
Claro	Conexión 6	₡44 000	Unlimited	Unlimited	N/A	Unlimited	Unlimited	N/A	30	-
Kolbi	Conversón k1	₡7000	N/A	N/A	120	N/A	N/A	50	1	-
Kolbi	Nuevo Plan 4G K1	₡8000	N/A	N/A	35	N/A	N/A	30	4	-
Kolbi	Nuevo Plan 4G K2	₡12 000	N/A	N/A	150	N/A	N/A	150	5	-
Kolbi	Conversón k2	₡15 000	N/A	N/A	400	N/A	N/A	300	1	-
Kolbi	Nuevo Plan 4G K3	₡18 000	N/A	N/A	300	N/A	N/A	300	7	-
Kolbi	Nuevo Plan 4G K4	₡26 000	N/A	N/A	800	N/A	N/A	600	12	-
Kolbi	Nuevo Plan 4G K5	₡36 000	N/A	N/A	1500	N/A	N/A	1300	20	-
Kolbi	Nuevo Plan 4G K6	₡48 000	N/A	N/A	3000	N/A	N/A	2500	28	-
Telefónica	PLAN @1 LTE PRO	₡10 500	150	300	N/A	300	150	N/A	8	Roaming without borders without cost in USA, Canada, Mexico and Central America (does not include Belize) + 5GB of RRSS (WhatsApp, Twitter and Waze) + 1GB extra with early payment.
Telefónica	PLAN @2 LTE PRO	₡15 500	200	Unlimited	N/A	Unlimited	200	N/A	10	Roaming without borders without cost in USA, Canada, Mexico and Central America (does not include Belize) + 5GB of RRSS (WhatsApp, Facebook, Instagram, Twitter and Waze) + 1GB extra with early payment.
Telefónica	PLAN @3 LTE PRO	₡21 500	300	Unlimited	N/A	Unlimited	300	N/A	14	Roaming without borders without cost in USA, Canada, Mexico and Central America (does not include Belize) + 5GB of RRSS (WhatsApp, Facebook, Instagram, Twitter and Waze) + 1GB extra with early payment.

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Operator	Plan Name	Cost without a terminal	Number of minutes to other networks	Number of minutes to same Operator	Number of minutes regardless of network (on net or off net)	Amount Messages on net	Number of Messages off net	Number of Messages regardless of network	Amount of Gigas to maximum contracted speed	Observations
Telefónica	PLAN @4 LTE PRO	₡26 500	600	Unlimited	N/A	Unlimited	600	N/A	16	Roaming without borders without cost in USA, Canada, Mexico and Central America (does not include Belize) + 5GB of RRSS (WhatsApp, Facebook, Instagram, Twitter and Waze) + 1GB extra with early payment.
Telefónica	PLAN @5 LTE PRO	₡32 500	1000	Unlimited	N/A	Unlimited	1000	N/A	22	Roaming without borders without cost in USA, Canada, Mexico and Central America (does not include Belize) + 5GB of RRSS (WhatsApp, Facebook, Instagram, Twitter and Waze) + 1GB extra with early payment.
Telefónica	PLAN @6 LTE PRO	₡41 500	15000	Unlimited	N/A	Unlimited	1500	N/A	30	Roaming without borders without cost in USA, Canada, Mexico and Central America (does not include Belize) + 5GB of RRSS (WhatsApp, Facebook, Instagram, Twitter and Waze) + 1GB extra with early payment.

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 55. Costa Rica: Characteristics of prepaid mobile telecommunication plans offered in December 2018

Name	Operator	Price	Included Services	Minutes to all Operators	Minutes to another Operator	Minutes to same Operator	SMS to all Operators	SMS to another Operator	SMS to same Operator	Download total capacity (Gb)	Other additional services (Gb)
100MB + WhatsApp Gratis	Claro	₡300	Internet							0,10	Free WhatsApp
250MB + WhatsApp Gratis	Claro	₡600	Internet							0,24	Free WhatsApp
400MB + Saldo	Claro	₡1000	Internet							0,39	Royalty: 1000 balance
600MB+Saldo	Claro	₡1500	Minutes, Internet							0,59	Royalty: 1500 balance
1GB + WhatsApp Gratis	Claro	₡2000	Internet							1,00	Free WhatsApp
2GB+Saldo	Claro	₡4500	Minutes, Internet							2,00	Royalty: 4500 balance in bonus account
3GB + WhatsApp Gratis	Claro	₡5500	Internet							3,00	Royalty: WhatsApp Unlimited
3,5GB+Saldo	Claro	₡8500	Minutes, Internet							3,50	Royalty: 8500 balance
25 Minutes Nac todas las redes	Claro	₡700	Minutes	25	25	25					
60 Minutes Nac todas las redes	Claro	₡1500	Minutes	60	60	60					
Paquete Internet En Todas 1	Kölbi	₡200	Internet							0,05	Include WhatsApp, Instagram, and Facebook with a consumption cap of 40 Mbyte
Paquete De Todo	Kölbi	₡2500	Minutes, Internet			34			200	0,15	SMS
Paquete Internet En Todas 3	Kölbi	₡600	Internet							0,20	Include WhatsApp, Instagram, and Facebook with a consumption cap of 100 Mbyte
Paquete En Todas Plus 5	Kölbi	₡1300	Internet							0,29	IInclude WhatsApp, Instagram, Facebook, Snapchat, Pinterest y Twitter with a consumption cap of 200 Mbyte.
Paquete Internet En Todas Plus 10	Kölbi	₡2500	Internet							0,49	IInclude WhatsApp, Instagram, Facebook, Snapchat, Pinterest , and Twitter with a consumption cap of 400 Mbyte
En todas y más	Kölbi	₡4000	Internet							2,00	
Paquete internet día	Movistar	₡300	Internet							0,09	
Paquete internet diario	Movistar	₡300	Internet							0,10	
Paquete de internet nocturno ilimitado	Movistar	₡600	Internet							0,10	
Preplan 7	Movistar	₡2000	Minutes, Internet		20	40		20		0,63	Include 1 hour of Free Movistar Play and WhatsApp Unlimited (does not apply for video calls or calls)
Preplan 7 Plus	Movistar	₡2900	Minutes, Internet		30	60		30		1,00	Include 1 hour of Free Movistar Play and WhatsApp Unlimited (does not apply for video calls or calls)
Preplan 15	Movistar	₡4000	Minutes, Internet		45	90		45		1,40	Include 2 Hours Free Movistar Play and WhatsApp Unlimited (does not apply for video calls or calls)
Preplan 15 Plus	Movistar	₡5900	Minutes, Internet		70	140		70		2,30	Include 2 Hours Free Movistar Play and WhatsApp Unlimited (does not apply for video calls or calls).

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 56. Costa Rica: Costa Rica. Characteristics of the prepaid mobile telecommunication bundles offered in December 2019

Name	Operator	Price	Included Services	Minutes to all Operators	Minutes to another Operator	Minutes to same Operator	SMS to all Operators	SMS to another Operator	SMS to same Operator	Download total capacity (Gb)	Other additional services (Gb)
20MB + WhatsApp Gratis	Claro	₡100	Internet							002	
100MB + WhatsApp Gratis	Claro	₡300	Internet							0,10	Free WhatsApp
250MB + WhatsApp Gratis	Claro	₡600	Internet							0,24	Free WhatsApp
400MB + Saldo	Claro	₡1000	Internet							0,39	Royalty: 1000 balance
600MB+Saldo	Claro	₡1500	Internet							0,59	Royalty: 1500 balance
1GB + WhatsApp Gratis	Claro	₡2000	Internet							1,00	Free WhatsApp
2GB+Saldo	Claro	₡4500	Internet							2,00	Royalty: 4500 balance in bonus account
3GB + WhatsApp Gratis	Claro	₡5500	Internet							3,00	Royalty: WhatsApp Unlimited
3,5GB+Saldo	Claro	₡8500	Internet							3,50	Royalty: 8500 balance
Superpacks de Internet 3	Claro	₡11 500	Internet							4,00	Unlimited social networks, WhatsApp
Plan M@s 30	Claro	₡10 000	Minutes, Internet	85	85	200	300	300		5,00	WhatsApp Unlimited
25 Minutes Nac todas las redes	Claro	₡700	Internet	25							
60 Minutes Nac todas las redes	Claro	₡1500	Internet	60							
60 Minutes	Claro	₡3000	Internet	60							
Paquete Internet En Todas 1	Kölbi	₡200	Internet							0,05	Include WhatsApp, Instagram and Facebook with a consumption cap of 40 Mbyte
Paquete De Todo	Kölbi	₡2500	Minutes, Internet			34		200		0,15	SMS
Paquete Internet En Todas 3	Kölbi	₡600	Internet							0,20	Include WhatsApp, Instagram and Facebook with a consumption cap of 100 Mbyte
Paquete Internet En Todas Plus 5	Kölbi	₡1300	Internet							0,29	Include WhatsApp, Instagram, Facebook, Snapchat, Pinterest and Twitter with a consumption cap of 200 Mbyte.
Paquete Internet En Todas Plus 10	Kölbi	₡2500	Internet							0,49	Include WhatsApp, Instagram, Facebook, Snapchat, Pinterest and Twitter with a consumption cap of 400 Mbyte
En todas y más	Kölbi	₡4000	Internet							2,00	
Paquete de Internet Básico	Movistar	₡200	Internet							0,03	
Paquete internet día	Movistar	₡300	Internet							0,09	
Paquete internet diario	Movistar	₡300	Internet							0,10	
Paquete de internet nocturno ilimitado	Movistar	₡600	Internet							0,10	Unlimited from 23:00:00 to 7:59:59
Superbono de Internet 500MB	Movistar	₡1150	Internet							0,49	WhatsApp Unlimited
Paquete de Internet Semana	Movistar	₡2000	Internet							0,54	
Preplan 7	Movistar	₡2000	Minutes, Internet		20	40		20		0,63	Include 1 hour of Free Movistar Play and WhatsApp Unlimited (does not apply for video calls or calls)
Preplan 7 Plus	Movistar	₡2900	Minutes, Internet		30	60		30		1,00	Include 1 hour of Free Movistar Play and WhatsApp Unlimited (does not apply for video calls or calls)
Preplan 15	Movistar	₡4000	Minutes, Internet		45	90		45		1,40	Include 2 Hours of Free Movistar Play and WhatsApp Unlimited (does not apply for video calls or calls)
Preplan 15 Plus	Movistar	₡5900	Minutes, Internet		70	140		70		2,30	include 2 Hours Free Movistar Play and WhatsApp Unlimited (does not apply for video calls or calls).
Paquete de Internet 1 día	Movistar	₡300	Internet							ilimitado	
Paquete de Internet 2 días	Movistar	₡600	Internet							ilimitado	Includes 200 MB bonus for WHATSAPP (valid for messages, not for calls or videocalls)
Paquete de Internet 4 días	Movistar	₡1200	Internet							ilimitado	Includes a 200 MB bonus for WHATSAPP, valid for messages (not for calls or videocalls)

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 57. Costa Rica: Characteristics of fixed mobile telecommunication bundles offered in December 2018

Operator	Plan Name	Cost	Services	Download Speed	Number of Televisions included	Number of channels included (digital)	Number of HD channels	Number of minutes from Fixed telephony to owned fixed network	Number of minutes from Fixed telephony to owned mobile network	Number of fixed national off net fixed telephony minutes	Number of mobile national off net fixed telephony minutes	Number of minutes to international calls included	Other Services added/ Observations
Cabletica	Super Pack Doble Play + Digital	₡25 750	Internet + TV	2	1	185	0	N/A	N/A	N/A	N/A	N/A	
Cabletica	Triple Play	₡25 750	Internet + TV + Fixed telephony	2	1	77	0	500	N/A	200	0	0	
Cabletica	Super Pack Doble Play + Digital	₡26 500	Internet + TV	3	1	185	0	N/A	N/A	N/A	N/A	N/A	
Cabletica	Triple Play	₡26 500	Internet + TV + Fixed telephony	3	1	77	0	500	NA	200	N/A	N/A	
Cabletica	Super Pack Doble Play + Digital	₡28 650	Internet + TV	5	1	185	0	N/A	N/A	N/A	N/A	N/A	
Cabletica	Triple Play	₡28 650	Internet + TV + Fixed telephony	5	1	77	0	500	NA	200	N/A	N/A	
Cabletica	Super Pack Doble Play + Digital	₡29 990	Internet + TV	8	1	185	0	N/A	N/A	N/A	N/A	N/A	
Cabletica	Triple Play	₡29 990	Internet + TV + Fixed telephony	8	1	77	0	500	NA	200	N/A	N/A	
Cabletica	Super Pack Doble Play + Digital	₡36 990	Internet + TV	12	1	185	0	N/A	N/A	N/A	N/A	N/A	
Cabletica	Triple Play	₡36 990	Internet + TV + Fixed telephony	12	1	77	0	500	NA	200	N/A	N/A	
Cabletica	Super Pack Doble Play + Digital	₡42 990	Internet + TV	15	1	185	0	N/A	N/A	N/A	N/A	N/A	
Cabletica	Triple Play	₡42 990	Internet + TV + Fixed telephony	15	1	77	0	500	NA	200	N/A	N/A	
Cabletica	Super Pack Doble Play + Digital	₡55 500	Internet + TV	25	1	185	0	N/A	N/A	N/A	N/A	N/A	
Cabletica	Triple Play	₡55 500	Internet + TV + Fixed telephony	25	1	77	0	500	NA	200	0	0	
Cabletica	Super Pack Doble Play + Digital	₡71 000	Internet + TV	35	1	185	0	N/A	N/A	N/A	N/A	N/A	
Cabletica	Triple Play	₡71 000	Internet + TV + Fixed telephony	35	1	77	0	500	NA	200	0	0	
Cabletica	Super Pack Doble Play + Digital	₡82 500	Internet + TV	50	1	185	0	N/A	N/A	N/A	N/A	N/A	
Cabletica	Triple Play	₡82 500	Internet + TV + Fixed telephony	50	1	77	0	500	NA	200	0	0	
Cabletica	Super Pack Doble Play + Digital	₡125 000	Internet + TV	100	1	185	0	N/A	N/A	N/A	N/A	N/A	
Cabletica	Triple Play	₡125 000	Internet + TV + Fixed telephony	100	1	77	0	500	NA	200	0	0	
CLARO	Doble Play Avanzado HD + Internet	₡22 730	Internet + TV	3	2	91	28	N/A	N/A	N/A	N/A	N/A	Claro Video
CLARO	Doble Play Avanzado HD Plus + Internet	₡25 220	Internet + TV	3	2	103	52	N/A	N/A	N/A	N/A	N/A	Claro Video / Premium FOX+
CLARO	Doble Play Avanzado HD + Internet	₡24 130	Internet + TV	5	2	91	28	N/A	N/A	N/A	N/A	N/A	Claro Video
CLARO	Doble Play Avanzado HD Plus + Internet	₡26 620	Internet + TV	5	2	103	52	N/A	N/A	N/A	N/A	N/A	Claro Video / Premium FOX+
CLARO	Doble Play Avanzado HD + Internet	₡27 130	Internet + TV	10	2	91	28	N/A	N/A	N/A	N/A	N/A	Claro Video
CLARO	Doble Play Avanzado HD Plus + Internet	₡29 620	Internet + TV	10	2	103	52	N/A	N/A	N/A	N/A	N/A	Claro Video / Premium FOX+
CLARO	Doble Play Avanzado HD + Telefonía	₡18 200	TV+ Fixed telephony	N/A	2	89	28	60	60	60	60	N/A	
CLARO	Doble Play Avanzado HD Plus + Telefonía	₡20 690	TV+ Fixed telephony	N/A	2	103	52	60	60	60	60	N/A	Claro Video / Paquete Premium Fox

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Operator	Plan Name	Cost	Services	Download Speed	Number of Televisions included	Number of channels included (digital)	Number of HD channels	Number of minutes from Fixed telephony to owned fixed network	Number of minutes from Fixed telephony to owned mobile network	Number of fixed national off net fixed telephony minutes	Number of mobile national off net fixed telephony minutes	Number of minutes to international calls included	Other Services added/ Observations
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡28 800	Internet + TV + Fixed telephony	1	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡30 800	Internet + TV + Fixed telephony	2	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡27 900	Internet + TV + Fixed telephony	3	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡30 900	Internet + TV + Fixed telephony	4	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡30 900	Internet + TV + Fixed telephony	6	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡35 900	Internet + TV + Fixed telephony	10	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡49 900	Internet + TV + Fixed telephony	20	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡52 900	Internet + TV + Fixed telephony	25	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡64 900	Internet + TV + Fixed telephony	35	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡79 900	IInternet + TV + Fixed telephony	50	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡88 900	Internet + TV + Fixed telephony	75	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
KOLBI	Plan Tiple Internet + TV avanzada + telefonía	₡99 900	Internet + TV + Fixed telephony	100	ND	119	0	600	N/A	N/A	N/A	N/A	600 minutes to 2 fixed favorites
Telecable	Combo TV Digital + @t 5	₡28 150	Internet + TV	5	1	115	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital Avanzado + @t 5	₡29 125	Internet + TV	5	1	150	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital + @t 10	₡29 175	Internet + TV	10	1	115	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital Avanzado + @t 10	₡30 500	Internet + TV	10	1	150	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital + @t 15	₡31 400	Internet + TV	15	1	115	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital Avanzado + @t 15	₡32 900	Internet + TV	15	1	150	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital + @t 30	₡36 320	Internet + TV	30	1	115	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital Avanzado + @t 30	₡38 100	Internet + TV	30	1	150	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital + @t 35	₡42 525	Internet + TV	35	1	115	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital Avanzado + @t 35	₡45 100	Internet + TV	35	1	150	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital + @t 50	₡52 000	Internet + TV	50	1	115	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital Avanzado + @t 50	₡53 500	Internet + TV	50	1	150	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital + @t 75	₡68 950	Internet + TV	75	1	115	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital Avanzado + @t 75	₡72 200	Internet + TV	75	1	150	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital + @t 100	₡78 900	Internet + TV	100	1	115	0	N/A	N/A	N/A	N/A	N/A	
Telecable	Combo TV Digital Avanzado + @t 100	₡82 200	Internet + TV	100	1	150	0	N/A	N/A	N/A	N/A	N/A	

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Operator	Plan Name	Cost	Services	Download Speed	Number of Televisions included	Number of channels included (digital)	Number of HD channels	Number of minutes from Fixed telephony to owned fixed network	Number of minutes from Fixed telephony to owned mobile network	Number of fixed national off net fixed telephony minutes	Number of mobile national off net fixed telephony minutes	Number of minutes to international calls included	Other Services added/ Observations
TIGO	TV DIGITAL BÁSICO + 6MB	₡25 990	Internet + TV	6	2	122	3	N/A	N/A	N/A	N/A	N/A	
TIGO	TV DIGITAL + 10MB	₡29 990	Internet + TV	10	2	159	7	N/A	N/A	N/A	N/A	N/A	
TIGO	TV HD + 10MB	₡34 990	Internet + TV	10	2	180	39	N/A	N/A	N/A	N/A	N/A	
TIGO	TV DIGITAL + 15MB	₡32 990	Internet + TV	15	2	159	7	N/A	N/A	N/A	N/A	N/A	
TIGO	TV HD + 15MB	₡35 990	Internet + TV	15	2	180	39	N/A	N/A	N/A	N/A	N/A	
TIGO	ONE TV (17HD) + 30MB	₡41 990	Internet + TV	30	2	159	17	N/A	N/A	N/A	N/A	N/A	
TIGO	ONE TV (39HD) + 30MB	₡44 990	Internet + TV	30	2	180	39	N/A	N/A	N/A	N/A	N/A	
TIGO	ONE TV DVR(17HD) + 30MB	₡46 990	Internet + TV	30	2	159	17	N/A	N/A	N/A	N/A	N/A	
TIGO	ONE TV DVR(39HD) + 30MB	₡49 990	Internet + TV	30	2	180	39	N/A	N/A	N/A	N/A	N/A	
TIGO	ONE TV (39HD) + 50MB	₡54 990	Internet + TV	50	2	180	39	N/A	N/A	N/A	N/A	N/A	
TIGO	ONE TV DVR(39HD) + 50MB	₡59 990	Internet + TV	50	2	180	39	N/A	N/A	N/A	N/A	N/A	
TIGO	ONE TV ELITE + 75MB	₡64 990	Internet + TV	75	2	180	39	N/A	N/A	N/A	N/A	N/A	
TIGO	ONE TV ELITE + 100MB	₡84 990	Internet + TV	100	2	180	39	N/A	N/A	N/A	N/A	N/A	

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 58. Costa Rica: Characteristics of fixed mobile telecommunication bundles offered in December 2019

Operator	Plan Name	Cost	Services	Download Speed	Number of Televisions included	Number of channels included (digital)	Number of HD channels	Number of minutes from Fixed telephony to owned fixed network	Number of minutes from Fixed telephony to owned mobile network	Number of fixed national off net fixed telephony minutes	Number of mobile national off net fixed telephony minutes	Number of minutes to international calls included	Other Services added/ Observations
Cabletica	DOBLE PLAY MEGA 30	₡30 980	Internet + TV	30	1	114	70	NA	NA	NA	NA	NA	CATV + @ + TV Digital
Cabletica	TRIPLE PLAY MEGA 30 + DIGITAL	₡34 089	Internet + TV + Fixed telephony	30	1	114	70	500	NA	200	0	0	CATV + @ + VoIP
Cabletica	DOBLE PLAY MEGA 100	₡35 890	Internet + TV	100	1	114	70	NA	NA	NA	NA	NA	CATV + @ + TV Digital
Cabletica	TRIPLE PLAY MEGA 100 + DIGITAL	₡38 999	Internet + TV + Fixed telephony	100	1	114	70	500	NA	200	0	0	CATV + @ + VoIP
Cabletica	DOBLE PLAY MEGA 200	₡51 690	Internet + TV	200	1	114	70	NA	NA	NA	NA	NA	CATV + @ + TV Digital
Cabletica	TRIPLE PLAY MEGA 200 + DIGITAL	₡54 799	Internet + TV + Fixed telephony	200	1	114	70	500	NA	200	0	0	CATV + @ + VoIP
Claro	Doble Play Avanzado HD + Internet	₡22 730	Internet + TV	3	2	91	28	N/A	N/A	N/A	N/A	N/A	Claro Video
Claro	Doble Play Avanzado HD Plus + Internet	₡25 220	Internet + TV	3	2	103	52	N/A	N/A	N/A	N/A	N/A	Claro Video / Premium FOX+
Claro	Doble Play Avanzado HD + Internet	₡24 130	Internet + TV	5	2	91	28	N/A	N/A	N/A	N/A	N/A	Claro Video
Claro	Doble Play Avanzado HD Plus + Internet	₡26 620	Internet + TV	5	2	103	52	N/A	N/A	N/A	N/A	N/A	Claro Video / Premium FOX+
Claro	Doble Play Avanzado HD + Internet	₡27 130	Internet + TV	10	2	91	28	N/A	N/A	N/A	N/A	N/A	Claro Video
Claro	Doble Play Avanzado HD Plus + Internet	₡29 620	Internet + TV	10	2	103	52	N/A	N/A	N/A	N/A	N/A	Claro Video / Premium FOX+
Claro	Doble Play Avanzado HD + Telefonía	₡18 200	TV + Fixed telephony	N/A	2	89	28	60	60	60	60	N/A	50 SMS to National mobile numbers
Claro	Doble Play Avanzado HD Plus + Telefonía	₡20 690	TV + Fixed telephony	N/A	2	103	52	60	60	60	60	N/A	50 SMS to National mobile numbers / Claro Video / Premium Fox Package
Kolbi	Plan TRIPLE con TV Avanzada	₡27 400	Internet + TV + Fixed telephony	1	1	119		600					600 minutes to 2 fixed favorites
Kolbi	Plan TRIPLE con TV Avanzada	₡28 400	Internet + TV + Fixed telephony	2	1	119		600					600 minutes to 2 fixed favorites
Kolbi	Plan TRIPLE con TV Avanzada	₡29 400	Internet + TV + Fixed telephony	3	2	119		600					600 minutes to 2 fixed favorites
Kolbi	Plan TRIPLE con TV Avanzada	₡30 400	Internet + TV + Fixed telephony	4	2	119		600					600 minutes to 2 fixed favorites
Kolbi	Plan TRIPLE con TV Avanzada	₡30 400	Internet + TV + Fixed telephony	6	2	119		600					600 minutes to 2 fixed favorites
Kolbi	Plan TRIPLE con TV Avanzada	₡30 400	Internet + TV + Fixed telephony	10	2	119		600					600 minutes to 2 fixed favorites
Kolbi	INTERNET + kA TV + Telefonía Fija	₡30 400	Internet + TV + Fixed telephony	10	2	119	8	600					600 minutes to 2 fixed favorites
Kolbi	Plan TRIPLE con TV Avanzada	₡33 400	Internet + TV + Fixed telephony	20	2	119		600					600 minutes to 2 fixed favorites
Kolbi	INTERNET + kA TV + Telefonía Fija	₡38 400	Internet + TV + Fixed telephony	30	2	119	8	600					600 minutes to 2 fixed favorites
Kolbi	INTERNET + kA TV + Telefonía Fija	₡40 400	IInternet + TV + Fixed telephony	50	2	119	8	600					600 minutes to 2 fixed favorites
Kolbi	INTERNET + kA TV + Telefonía Fija	₡61 400	Internet + TV + Fixed telephony	100	2	119	8	600					600 minutes to 2 fixed favorites
Kolbi	INTERNET + kA TV + Telefonía Fija	₡101 400	Internet + TV + Fixed telephony	200	2	119	8	600					600 minutes to 2 fixed favorites
Kolbi	INTERNET + kA TV + Telefonía Fija	₡166 400	Internet + TV + Fixed telephony	300	2	119	8	600					600 minutes to 2 fixed favorites
Kolbi	INTERNET + kA TV + Telefonía Fija	₡226 400	Internet + TV + Fixed telephony	500	2	119	8	600					600 minutes to 2 fixed favorites

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Operator	Plan Name	Cost	Services	Download Speed	Number of Televisions included	Number of channels included (digital)	Number of HD channels	Number of minutes from Fixed telephony to owned fixed network	Number of minutes from Fixed telephony to owned mobile network	Number of fixed national off net fixed telephony minutes	Number of mobile national off net fixed telephony minutes	Number of minutes to international calls included	Other Services added/ Observations
Telecable	Combo TV Digital +@10	₡23 900	Internet + TV	10	1	170							
Telecable	Combo TV Digital +@15	₡29 600	Internet + TV	15	1	170							
Telecable	Combo TV Digital +@50	₡33 250	Internet + TV	50	1	170							
Telecable	Combo TV Digital +@100	₡34 600	Internet + TV	100	1	170							
Telecable	Combo TV Digital +@200	₡50 500	Internet + TV	200	1	170							
Telecable	Combo TV Digital +@300	₡93 990	Internet + TV	300	1	170							
TIGO	TV DIGITAL + 6MB	₡23 525	Internet + TV	6	2	157	7	na	na	na	na	na	na
TIGO	TV DIGITAL + 10MB	₡28 850	Internet + TV	10	2	157	7	na	na	na	na	na	na
TIGO	TV HD + 10 MEGAS	₡34 200	Internet + TV	10	2	178	39	na	na	na	na	na	na
TIGO	TV DIGITAL + 15MB	₡32 050	Internet + TV	15	2	157	7	na	na	na	na	na	na
TIGO	TV HD + 15 MEGAS	₡37 400	Internet + TV	15	2	178	39	na	na	na	na	na	na
TIGO	TV DIGITAL + 50MB	₡38 440	Internet + TV	50	2	157	7	na	na	na	na	na	na
TIGO	TV HD + 50 MEGAS	₡42 710	Internet + TV	50	2	178	39	na	na	na	na	na	na
TIGO	ONE TV + 75 MEGAS	₡49 350	Internet + TV	75	2	178	39	na	na	na	na	na	na
TIGO	ONE TV DVR + 75 MEGAS	₡50 710	Internet + TV	75	2	178	39	na	na	na	na	na	na
TIGO	ONE TV + 100 MEGAS	₡60 050	Internet + TV	100	2	178	39	na	na	na	na	na	na
TIGO	ONE TV DVR + 100 MEGAS	₡61 460	Internet + TV	100	2	178	39	na	na	na	na	na	na

Source: SUTEL, Directorate General for Markets, Costa Rica, 2019.

Table n.° 59. Costa Rica: Total annual FONATEL developed projects per project status, 2012-2019

Status	2012	2013	2014	2015	2016	2017	2018	2019
Formulation / Award	1	11	19	14	18	14	8	7
Execution / Reception	0	2	5	9	6	11	8	3
Production	0	0	2	4	8	10	20	24
Closing	0	0	0	0	0	0	0	2
Total	**1**	**13**	**26**	**27**	**32**	**35**	**36**	**36**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 60. Costa Rica: Districts with at least one program developed by FONATEL according to program, 2015-2019

Program	2015	2016	2017	2018	2019
Connected communities	11	32	72	72	103
Connected Households	0	216	381	434	471
Equipped Public Centers	0	0	172	263	263
Connected Public Spaces	0	0	0	0	178
Total	**11**	**231**	**391**	**460**	**478**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 61. Costa Rica: Devices delivered through FONATEL programs for ICTs access and use according to program, 2016-2019

(annual accrued figures)

Program	2016	2017	2018	2019
Connected Households	10 089	30 418	84 268	130 579
Equipped Public Centers	0	6407	36 004	36 831
Total	**10 089**	**36 825**	**120 272**	**167 410**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 62. Costa Rica: Inhabitants, households and housing units with access to voice and data services in districts with presence of programs developed by FONATEL, 2014-2019

Indicator	2014	2015	2016	2017	2018	2019
Inhabitants	28 224	76 739	269 740	393 088	905 496	1 171 572
Households	8430	23 212	82 421	121 028	285 284	370 662
Housing units	8276	22 799	80 830	118 606	278 616	365 421

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 63. Costa Rica: Subscriptions to Fixed telephony and Fixed Internet access provided by FONATEL programs, 2014-2019

Service	2014	2015	2016	2017	2018	2019
Fixed telephony	13	10	112	387	1131	3409
Fixed Internet	18	19	10 575	31 532	86 038	141 065

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 64. Costa Rica: FONATEL Capital, 2012-2019

(annual figures in millions of colones)

	2012	2013	2014	2015	2016	2017	2018	2019
Capital	101 630	113 775	131 315	143 265	161 306	171 551	200 979	200 847
% variation		12 %	15 %	9 %	13 %	6 %	17 %	0 %

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 65. Costa Rica: Collection of special parafiscal contribution, 2012-2019

(annual figures in millions of colones)

	2012	2013	2014	2015	2016	2017	2018	2019
SPFC Collection	8649	9827	10 007	11 674	12 434	12 936	13 453	14 079
% variation		14 %	2 %	17 %	7 %	4 %	4 %	5 %

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 66. Costa Rica: Executed investment through FONATEL according to program, 2013-2019

(annual figures in millions of colones)

Program	2013	2014	2015	2016	2017	2018	2019	Total
Connected Communities	49	3077	2878	454	1971	4754	1936	15 118
Connected Households	0	0	0	734	6060	17 298	21 205	45 297
Equipped Public Centers	0	0	0	0	4752	3357	1464	9573
Connected Public Spaces	0	0	0	0	0	0	981	981
Total	**49**	**3077**	**2878**	**1187**	**12 783**	**25 409**	**25 586**	**70 969**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 67. Costa Rica: Executed investment through FONATEL by operator, 2013-2019

(annual figures in millions of colones)

Status	2013	2014	2015	2016	2017	2018	2019
Telecable	0	0	0	103	1372	4416	7072
Cabletica	0	0	0	420	2978	5941	6146
ICE	10	25	2123	140	2263	5791	4055
Tigo	0	0	0	0	188	3143	3649
RACSA	0	0	0	0	4752	3357	1741
Claro	0	2516	0	431	724	1423	1456
Coopesantos	0	0	0	38	272	577	648
Coopelesca	0	0	0	37	194	601	463
Coopeguanacaste	0	0	0	0	6	96	303
Telefónica	39	537	755	18	33	64	45
Cable Visión	0	0	0	0	0	0	6
Total	**49**	**3077**	**2878**	**1187**	**12 783**	**25 409**	**25 586**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 68. Costa Rica: Districts distribution with connectivity (total or partial) with access to voice and data services provided through the Connected Communities Program per region, 2014-2019

(cifras anuales acumuladas)

Region	2015	2016	2017	2018	2019
Huetar Caribe	3	3	17	17	19
Huetar Norte	8	25	25	25	25
Brunca	0	4	30	30	30
Chorotega	0	0	0	0	29
Total	**11**	**32**	**72**	**72**	**103**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 69. Costa Rica: Compliance with NTDP goal of districts with connectivity from the Connected Communities Program, 2016-2019

Indicator	2016	2017	2018	2019
Districts	32	72	72	103
Annual goal*	32	72	72	125
Annual goal compliance	100 %	100 %	100 %	82 %
Total Goal*	183	183	183	183
Total goal compliance	17 %	39 %	39 %	56 %

Note: *Goals established in NTDP goals Matrix 2015-2021 updated as at March 2019.

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 70. Costa Rica: Total annual projects of the Connected Communities Program per project status, 2012 - 2019

Status	2012	2013	2014	2015	2016	2017	2018	2019
Formulation / Award	1	11	19	13	17	13	6	6
Execution / Reception	0	2	5	9	6	11	8	3
Production	0	0	2	4	7	8	18	22
Closing	0	0	0	0	0	0	0	1
Total	1	13	26	26	30	32	32	32

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 71. Costa Rica: Tower distribution with operating telecommunications infrastructure of the Connected Communities Program per region, 2014-2019

(annual accrued figures)

Region	2014	2015	2016	2017	2018	2019
Huetar Caribe	7	7	7	7	62	111
Huetar Norte	0	24	143	143	147	148
Brunca	0	0	0	50	115	115
Chorotega	0	0	0	0	0	57
Total	**7**	**31**	**150**	**200**	**324**	**431**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 72. Costa Rica: Public Services Provision Centers with Internet access service through the Connected Communities Program per institution, 2014-2019

(annual accrued figures)

Institution	2014	2015	2016	2017	2018	2019
MEP	15	15	94	234	572	922
MICITT	0	0	0	0	5	11
CEN-CINAI	0	0	0	0	23	63
CCSS	0	0	0	0	0	0
Total	**15**	**15**	**94**	**234**	**600**	**996**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 73: Costa Rica: Inhabitants, households and housing units with potential access to voice and data services in districts with connectivity (total or partial) provided through the Connected Communities Program, 2014-2019

Institution	2014	2015	2016	2017	2018	2019
Inhabitants	28,224	76 739	237 639	294 488	631 625	803 267
Households	8430	23 212	72 745	90 765	197 129	254 138
Housing units	8276	22 799	71 208	89 099	194 405	250 543

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 74. Costa Rica: Subscriptions to fixed telephony, fixed Internet access and mobile telephony services provided through the Connected Communities Program, 2014-2019

Service	2014	2015	2016	2017	2018	2019
Fixed telephony	13	10	112	387	1131	3409
Fixed Internet	18	19	486	1114	1770	10 486
Mobile Telephony	454	12 334	27 871	38 603	36 683	40 429

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 75. Costa Rica: Subscriptions distribution to fixed Internet access service provided through the Connected Communities Program per region, 2014-2019

Region	2014	2015	2016	2017	2018	2019
Huetar Caribe	18	19	13	13	14	2171
Huetar Norte	0	0	473	894	1378	5720
Brunca	0	0	0	207	378	2595
Total	**18**	**19**	**486**	**1114**	**1770**	**10 486**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 76. Costa Rica: Subscriptions distribution to fixed telephony service provided through the Connected Communities Program per region, 2014-2019

Region	2014	2015	2016	2017	2018	2019
Huetar Caribe	13	10	3	2	5	873
Huetar Norte	0	0	109	278	873	1543
Brunca	0	0	0	107	253	993
Total	**13**	**10**	**112**	**387**	**1131**	**3409**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 77. Costa Rica: Subscriptions distribution of mobile telephony service provided through the infrastructure facilitated by the Connected Communities Program per region, 2014-2019

Region	2014	2015	2016	2017	2018	2019
Huetar Caribe	454	792	1565	2290	1865	6230
Huetar Norte	0	11 542	26 306	33 491	32 273	29 861
Brunca	0	0	0	2822	2545	4338
Total	**454**	**12 334**	**27 871**	**38 603**	**36 683**	**40 429**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 78. Costa Rica: Executed investment through the Connected Communities Program per operator, 2013-2019

(annual figures in millions of colones)

Operator	2013	2014	2015	2016	2017	2018	2019
Telefónica	39	2516	755	18	33	64	45
ICE	10	25	2123	5	1213	3267	434
Claro	0	537	0	431	724	1423	1456
Total	**49**	**3077**	**2878**	**454**	**1971**	**4754**	**1936**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 79. Costa Rica: Households registered in the Beneficiaries Management System of the Connected Households Program per status, 2016-2019

(figures accrued per semester)

Status	II S-16	I S-17	II S-17	I S-18	II S-18	I S-19	II S-19
Active	9947	17 042	28 806	51 142	78 815	105 555	117 719
Disconnect	142	718	1601	2588	5190	8449	12 264
Administrative changes	0	60	25	161	263	472	596
Assigne	2698	2472	6780	11,135	12 921	7082	8575
Total	**12 787**	**20 292**	**37 212**	**65 026**	**97 189**	**121 558**	**139 154**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 80. Costa Rica: Household benefited fromthe Connected Households Program per status, 2016-2019

(figures accrued per semester)

Status	II S-16	I S-17	II S-17	I S-18	II S-18	I S-19	II S-19
Benefitted	10,089	17 776	30 418	53 888	84 268	114 476	130 579
Active*	9947	17 042	28 806	51 142	78 815	105 555	117 719
Not active	142	734	1612	2746	5453	8921	12 860

Note: *Corresponds to active subsidized subscriptions of access to Internet service.

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 81. Costa Rica: Achievement ofthe NTDP goal for households benefited from the Connected Households Program, 2016-2019

Region	2016	2017	2018	2019
Benefitted	10 089	30 418	84 268	130 579
Annual goal*	10 089	30 418	63 582	95 196
Anual goal compliance	100 %	100 %	133 %	137 %
Total Goal*	140 496	140 496	140 496	140 496
Total goal compliance	7 %	22 %	60 %	93 %

Note: *Goals established in NTDP goals Matrix 2015-2021 updated as at March 2019.
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 82. Costa Rica: Households registered in the Beneficiaries Management System of the Connected Households Program per status, 2016-2019

(figures accrued per semester)

Quintile of Revenue	II S-16	I S-17	II S-17	I S-18	II S-18	I S-19	II S-19
Quintile 1	9832	15 970	24 981	44 884	71 431	95 951	109 432
Quintile 2	256	1805	4283	7166	10 536	15 273	17 402
Quintile 3	1	1	1154	1838	2301	3252	3745
Total	**10 089**	**17 776**	**30 418**	**53 888**	**84 268**	**114 476**	**130 579**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 83. Costa Rica: Distribution of households benefited from the Connected Households Program per operator, 2016-2019

(annual figures in millions of colones)

Operator	II S 2016	I S 2017	III S 2017	I S 2018	II S 2018	I S 2019	II S 2019
Cabletica	5018	8369	13 608	21 053	30 590	36 407	40 033
Telecable	2124	3734	6059	11 890	22 915	32 689	37 361
ICE	1237	2243	4694	7606	10 726	19 730	23 279
Tigo	488	1453	3242	8370	13 646	18 322	21 613
Coopelesca	658	1102	1684	2774	3060	3390	3940
Coopesantos	458	744	947	1954	2982	3535	3921
Coopeguanacaste	106	131	184	241	324	380	402
Cable Visión	0	0	0	0	25	23	22
Cable Pacayasa	0	0	0	0	0	0	8
Total	10 089	17 776	30 418	53 888	84 268	114 476	130 579

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 84. Costa Rica: Distribution of households benefited from the Connected Households Program per province, 2016-2019

(figures accrued per semester)

Province	II S 2016	I S 2017	III S 2017	I S 2018	II S 2018	I S 2019	II S 2019
San José	3259	5780	9173	16 883	28 102	37 284	41 919
Alajuela	1721	3273	5224	9173	13 335	18 216	21 482
Cartago	510	998	1872	3718	7533	11 982	13 894
Heredia	492	1538	2942	4421	6997	9440	10,557
Guanacaste	1671	2482	4183	7350	10458	13 336	14,949
Puntarenas	1624	2533	4903	8209	12106	16 560	18,750
Limón	812	1172	2121	4134	5737	7658	9028
Total	**10 089**	**17 776**	**30 418**	**53 888**	**84 268**	**114 476**	**130 579**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 85. Costa Rica: Districts with presence of the Connected Households Program, 2016-2019

	2016	2017	2018	2019
Districts	216	381	434	471

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 86. Costa Rica: Total active subsidized subscriptions to Internet service of the Connected Households Program, 2016-2019

Indicator	2016	2017	2018	2019
Total active subsidized subscribers	9947	28 806	78 815	117 719
Penetration	0,7 %	1,9 %	5,1 %	7,5 %

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 87. Costa Rica: Net penetration of the residential fixed Internet service of the Connected Households Program, 2016-2019

Indicador	2016	2017	2018	2019
Penetration	0,6 %	1,6 %	4,2 %	4,3 %
Net active subsidized subscriptions	8097	23 448	64 155	67 335

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 88. Costa Rica: Distribution of executed investment through the Connected Households Program per services operator, 2016-2019

(annual figures in millions of colones)

Operator	2016	2017	2018	2019
Cabletica	420	2978	5941	6146
ICE	136	1050	2524	3621
Telecable	103	1372	4416	6622
Coopesantos	38	272	577	648
Coopelesca	37	194	601	463
Tigo	0	188	3143	3649
Coopeguanacaste	0	6	96	50
Cable Visión	0	0	0	6
Total	**734**	**6060**	**17 298**	**21 205**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 89. Costa Rica: Compliance with established goal in NTDP delivered devices through the Equipped Public Centers to CPSP, 2017-2019

Indicador	2017	2018	2019
Devices	6407	36 004	36 831
Annual goal*	6407	18 533	36 000
Anual goal compliance	100 %	194 %	102 %
Total Goal*	40 000	40 000	40 000
Total goal compliance	16 %	90 %	92 %

Note: *Goals established in NTDP goals Matrix 2015-2021 updated as at March 2019
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 90. Costa Rica: Achievement of the bid goal for devices delivered through the Equipped Public Centers Program to CPSP per institution, 2019

Institution	Goal	Delivered
MEP	26 388	26 388
MICITT	5058	5058
CCSS	4318	4318
CENCINAI	1067	1067
Total	**36 831**	**36 831**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 91. Costa Rica: Distribution of Public Services Provision Centers benefited by the Equipped Public Centers Program per institution, 2019

Institution	Goal	Delivered
MEP	3134	3134
MICITT	373	335
CCSS	268	268
CENCINAI	72	72
Total	**3847**	**3809**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 92. Costa Rica: Districts with presence in the Equipped Public Centers Program, 2017-2019

	2017	2018	2019
Districts with presence	172	263	263

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 93. Costa Rica: Executed investment through the Equipped Public Centers Program
(annual figures in millions of colones)

	2017	2018	2019	Total
Executed investment	4752	3357	1464	**9573**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 94. Costa Rica: Free Internet access digital zones put into service under the Connected Public Spaces Program, 2019

	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Total
Digital zones	18	5	43	35	24	22	14	62	25	53	**301**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 95. Costa Rica: Achievement of the PNDT goal of digital zones with free Internet access in service under the Connected Public Spaces Program, 2018-2019

Indicator	2018	2019
Digital zones	0	301
Annual goal*	15	200
Annual goal compliance	0 %	151 %
Total Goal*	513	513
Total goal compliance	0 %	59 %

Note:* Goals established in NTDP goals Matrix 2015-2021 updated as at March 2019.
Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 96. Costa Rica: Achievement of the bid goal of digital zones with free Internet access in service under the Connected Public Spaces Program by zone, 2019

Type of zone	Goal	In service	Pending	Compliance
Public Space	419	230	189	55 %
Library *	61	45	16	74 %
Train station	28	24	4	86 %
Civic Center *	7	4	3	57 %
Total	**515**	**303**	**212**	**59 %**

Note : * Two zones are at the same time Library and Civic Center, corresponding to Guararí and Aguas Zarcas zones. Both zones count once in each category.

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 97. Costa Rica: Distribution of digital zones with free Internet access put into service under the Connected Public Spaces Program by operator, 2019

Operator	Quantity	Percentage
Telecable	127	42 %
RACSA-ICE	108	36 %
Coopeguanacaste	66	22 %
Total	**301**	**100 %**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 98. Costa Rica: Distribution of digital zones with free Internet access put into service under the Connected Public Spaces Program by province, 2019

Province	Zone	Percentage
San José	93	31 %
Alajuela	72	24 %
Heredia	60	20 %
Guanacaste	34	11 %
Puntarenas	29	10 %
Limón	7	2 %
Cartago	6	2 %
Total	**301**	**100 %**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 99. Costa Rica: Districts with presence in the Connected Public Spaces program, 2019

(monthly accrual)

	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
Districts with presence	5	8	35	58	71	86	95	134	149	178

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

Table n.° 100. Costa Rica: Executed investment in the Connected Public Spaces program per services operator

(accrued figures in millions of colones)

Operator	Amount	Percentage
Telecable	450	46 %
RACSA-ICE	278	28 %
Coopeguanacaste	253	26 %
Total	**981**	**100 %**

Source: SUTEL, Directorate General of FONATEL, Costa Rica, 2019.

ACRONYMS



Telecommunications towers at Irazú Volcano in Cartago.

A4AI	Alliance for Affordable Internet
AON	Active Optical Networks
ARPU	Average Revenue per User
BCCR	Central Bank of Costa Rica (Banco Central de Costa Rica)
CCSS	Costa Rica Social Security Fund (Caja Costarricense de Seguro Social)
CECI´s	Intelligent Community Centers (Centros Comunitarios Inteligentes)
Cen Cinai	Education and Nutrition Centers and Comprehensive Care Children´s Centers (Centros de Educación y Nutrición y Centros Infantiles de Atención Integral)
CEPF/ SPFC	Special Parafiscal Contribution
CGR	Office of the Comptroller General of the Republic (Contraloría General de la República)
CPSP/ PSPC	Public Services Provision Centers
DGC	Directorate General of Quality (Directorate General for Quality)
DGCO	Directorate General of Competition (Directorate General for Competition)
DGF	Directorate General of FONATEL (Directorate General of FONATEL)
DGM	Directorate General of Markets (Directorate General for Markets)
DWDM	Dense wavelength division multiplexing
EBAIS	Basic Comprehensive Healthcare Teams (Equipos Básicos de Atención Integral en Salud)
ENAHO	National Households Survey (Encuesta National de Hogares)
ENIGH	National Survey on Household´s Revenue and Expenses (Encuesta National de Ingresos y Gastos de los Hogares)
FAC	Quality Adjustment Factor (Factor de Ajuste de Calidad)
FTTx	Fiber to the X
FONATEL	National Telecommunications Fund (Fondo National de Telecomunicaciones)
GB	Gigabyte
GSM	Global System for Mobile Communications
HFC	Hybrid fiber-coaxial – Hybrid fiber and copper networks, which use DOCSIS or similar technologies
HHI	Herfindahl-Hirschman Index (to measure market concentration)
HTTP	Hypertext Transfer Protocol
ICE	Costa Rican Electricity Institute (Instituto Costarricense de Electricidad)
IMAS	Social Assistance Mixed Institute (Instituto Mixto de Ayuda Social)
INCOFER	Costa Rican Trains Institute (Instituto Costarricense de Ferrocarriles)
INEC	National Institute for Statistics and Census (Instituto National de Estadística y Censos)
IP	Internet Protocol. Digital data rules and standards, functionally classified in the Red Layer according to DSI international model
IPIF	Internet Fixed Prices Index
IPTM	Mobile Telecommunications Fixed Price Index (Índice de precios de telecomunicaciones móviles)
IPTV	Internet Protocol Television.
ISO	International Organization for Standardization
Kbps	Kilobits per second
LGT	General Law on Telecommunications, n.° 8642 (Ley General de Telecomunicaciones, Ley 8642)
LTE	Long Term Evolution – Wireless broadband technology designed to support Internet access to mobile telephones and portable devices

Mbps	Megabits per second
MEP	Ministry of Public Education (Ministerio de Educación Pública)
MH	Ministry of Finance (Ministerio de Hacienda)
MICITT	Ministry of Science, Tecnology, and Telecommunications (Ministerio de Ciencia, Tecnología y Telecomunicaciones)
MIDEPLAN	Ministry of National Planning and Economic Policy (Ministerio de Planificación National y Política Económica)
MIVAH	Ministry of Housing and Human Settlements (Ministerio de Vivienda y Asentamientos Humanos)
MMDS	Multichannel Multipoint Distribution Services
MMS	Multimedia Messaging System
MS	Ministry of Health (Ministerio de Salud)
Off-net	Refers to the origin of voice traffic or short messages from a network different to the destination network
On-net	Refers to the destination of voice traffic or short messages from the same network where traffic originated
PAPyP	Annual Plan for Projects and Programs (Plan Anual de Proyectos y Programas)
PBAS	Solidary Broadband Program (Programa Banda Ancha Solidaria)
PCC/CCP	Connected Communities Program (Programa de Comunidades Conectadas)
PCPE/ EPCP	Equipped Public Centers Program (Programa de Centros Públicos Equipados)
PEPC/ CPSP	Connected Public Spaces Program (Programa de Espacios Públicos Conectados)
PHC/CHP	Connected Households Program (Programa de Hogares Conectados)
GDP	Gross Domestic Product
NTDP	National Telecommunications Development Plan
UNDP	United Nations Program for Development
PON	Passive optical networks
QoSE	Quality of Service Experienced by User
RACSA	Radiográfica Costarricense S.A.
RPCS	Regulation of the delivery and quality of services
SDH	Synchronous Digital Hierarchy, to transfer bit flows in a synchronized manner over fiber
SMS	Short Message Service
SINABI	National Library System (Sistema National de Bibliotecas)
SITEL	System for Telecommunications Indicators (Sistema de Indicadores de Telecomunicaciones)
SUTEL	Telecommunications Superintendence (Superintendencia de Telecomunicaciones)
TB	Terabyte
ICTs	Information and Communication Technologies
UG	Management unit for the execution of FONATEL programs and projects
UIT	International Telecommunications Union: UN specialized organization in charge of regulating international telecommunications among different administrations and operating companies
USB	Universal Serial Bus. Device with a universal serial port for data storage
VoIP	Voice Over Internet Protocol
VPN	Virtual private Networks
XDSL	Digital subscriber line - technologies that use the copper telephone platform for access
VPN	Virtual private Networks
XDSL	Digital subscriber line - technologies that use the copper telephone platform for access



sutel
SUPERINTENDENCIA DE TELECOMUNICACIONES

Guachipelín de Escazú,
Oficentro Multipark Building Tapantí, 1st floor.
Toll Free: 800-88SUTEL
Headquarters: 4000-0000
Fax: 2215-6821
E-mail: gestiondocumental@sutel.go.cr