

# **MOBILE SERVICES**

**First quarter of 2020**

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## Executive summary

## EXECUTIVE SUMMARY

### **Penetration of mobile services with actual use reached 119.2 per 100 inhabitants**

At the end of the first quarter of 2020, the penetration of the mobile service reached 168 per 100 inhabitants. If only mobile accesses with actual use<sup>1</sup> are considered (excluding M2M<sup>2</sup>), the penetration rate in Portugal would be 119.2. On the other hand, if we were to exclude accesses exclusively made by data services and internet access (cards associated with a PC/tablet/pen/router), the penetration of mobile services would be 114.3 per 100 inhabitants.

The penetration of mobile accesses offered with bundled services provided at a fixed location was 45 per 100 inhabitants.

### **Number of subscribers grew by 0.1% in the last 12 months**

The number of mobile accesses authorised to use the service<sup>3</sup> amounted to 17.3 million.

Of these, 12.2 million (70.9% of the total) were actually used. Since 2012, there has been no significant growth in the number of these subscribers.

Excluding the number of accesses made by PC/tablet/pen/router, the number of mobile accesses rose to 11.7 million.

The number of subscribers that actually used the service increased by 0.1% (15 thousand subscribers) compared to the same quarter of the previous year. This growth is explained by the evolution of post-paid and hybrid plans<sup>4</sup> (+5.4% on the previous year), which continued to show a growth trend, while pre-paid fell, now representing 39.6% of the total (-3 percentage points that the same period of the previous year).

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<sup>1</sup> Active mobile accesses, including for example subscription plans, minutes plans, monthly plans convertible into traffic, etc., which are authorised to use one of the contracted services and which actually use one of the contracted services in the reporting period.

<sup>2</sup> M2M applications use the mobile networks and internet to operate, monitor and interconnect machines and equipment (i.e., tele-alarm, tele-security, telemetry, etc.). These are associated to the so-called internet of things.

<sup>3</sup> Active mobile accesses are enabled to use the services, but they might not have been used.

<sup>4</sup> Hybrid plans are tariff plans which simultaneously show features of both pre-paid and post-paid plans. These plans include a traffic ceiling in a post-paid scheme. However, the extra-ceiling traffic is charged at a pre-paid tariff.

**Due to COVID-19 a significant increase in monthly traffic per access and average call duration was recorded, reaching the highest ever value.**

Mobile voice traffic increased by 11.9%, compared to 1Q2019, in terms of minutes. The evolution recorded in voice traffic minutes was influenced by COVID-19. For example, in the week in which the state of emergency was declared (16 to 22 March), mobile voice traffic in minutes increased by 39% compared to the week prior to the declaration of the pandemic (2 to 8 March).

The changes in consumption patterns due to the impact of COVID-19 resulted in the exceptional growth of average traffic per mobile access and the average duration of calls. The number of conversation minutes per mobile voice access in 1Q2020 was on average 223 per month, 23.1 minutes (+11.6%) more than in the same period of the previous year. The average duration of calls was 184 seconds per call, twenty seconds (+12.4%) more than in the same period of the previous year and the highest figure ever recorded.

By type of call, the high growth recorded in voice traffic in minutes resulted mainly from the increase in off-net (+16.9%) and on-net (+8.4%) traffic. Traffic destined for international networks, which had been growing for 14 consecutive quarters, fell by 0.1% compared to the same period of the previous year.

**Mobile internet penetration was 78.3 per 100 inhabitants**

The number of actual users of the internet access mobile service stood at 8 million (+5.4% than in the same period of the previous year), continuing the slowing trend that began in 2017. This figure corresponds to a penetration of around 78.3 per 100 inhabitants (+4 percentage points higher than in 1Q2019). This growth is associated to the increase in mobile phone internet users (+5.8% compared to 1Q2019).

**The impact of COVID-19 also contributed to the growth in mobile internet traffic, which increased by 41.3%, and average monthly traffic, which reached 4.3 GB/month**

Mobile broadband internet access traffic increased by 41.3% compared to the first quarter of 2019, influenced by the effects of COVID-19. We estimate that in the first four weeks of the state of emergency, mobile data traffic grew on average by 8.5%.

Monthly traffic per active mobile internet user increased by 31.4% compared to the same period of the previous year. Each MBB user consumed on average 4.3 GB per month. We recall that the largest providers offered their customers 10 GB of mobile data at the beginning of the period when the state of emergency took effect.

### **Machine-to-machine (M2M) accesses increased by 5.9%**

At the end of 1Q2020 there were around 1.2 million active mobile accesses related to M2M, an increase of 5.9% compared to the same period of the previous year.

### **Significant growth of internet access traffic in international roaming**

With the exception of the number of text messages and roaming out calls, roaming traffic recorded significant increases in all types of traffic in relation to the previous year, especially internet traffic (+41.3% in the case of roaming in<sup>5</sup> and 39.7% in the case of roaming out<sup>6</sup>).

The number of roaming out calls recorded a fall compared to the same quarter of the previous year (-6.2%), for the first time since this indicator was measured. The fall in the number of roaming out calls, and the potentially more moderate evolution of the roaming indicators in comparison to previous periods will have been affected by the restrictions imposed on international travel due to the pandemic.

The level of roaming in by roaming out traffic coverage in minutes was 77.9%. Over the past 5 years the roaming balance (roaming in – roaming out) had a surplus only in 2017. In contrast, in the case of internet access, roaming in traffic is substantially higher than roaming out traffic. In 1Q2020, roaming in traffic volume was 2.3 times higher than roaming out traffic.

### **Shares per provider**

MEO was the provider with the highest share (41.5%) of active mobile accesses with actual use, followed by Vodafone (30.1%) and NOS (25.8%). Compared to the same period of the previous year, the share of mobile accesses of NOS increased by 0.9 p.p., while those of

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<sup>5</sup> Roaming in traffic is the traffic flow (generated and terminating) in national networks by foreign network subscribers.

<sup>6</sup> Roaming out traffic is traffic generated and terminated by subscribers of national operators as users of networks of other operators abroad.

MEO and Vodafone fell by 1 p.p. and 0.1 p.p. respectively. The concentration level, as measured by the Herfindahl-Hirschman index, although high, decreased slightly compared to the same period in the previous year, as has happened since 2012.

In the case of the shares of subscribers to mobile broadband internet access, MEO's share was 37.4%, followed by NOS with 31.2% and Vodafone with 29.2%. In 1Q2020, NOS became the second largest mobile Internet provider; its share increased by 2.6 p.p. Vodafone and MEO's shares fell by 1.6 p.p. and 1.5 p.p. respectively.

NOS had the highest share of broadband Internet traffic (45.5%), followed by MEO and Vodafone (27.4% and 26.6% respectively). Compared to the same period of the previous year, the share of NOS increased by 5 p.p. The shares of Vodafone and MEO fell by 4.4 p.p. and 0.7 p.p. respectively.



# Report

## 1. Mobile service penetration rate

At the end of the first quarter of 2020 (1Q2020), the penetration of the mobile service reached 168 per 100 inhabitants. If only mobile accesses with actual use were considered (excluding M2M), the penetration rate in Portugal would be 119.2 per 100 inhabitants. On the other hand, if we were to exclude accesses exclusively made by data services and internet access (cards associated with a PC/tablet/pen/router), the penetration of mobile services would be 114.3 per 100 inhabitants.

The number of cards associated with M2M reached 1.2 million, i.e. about 11.7 per 100 inhabitants.

The penetration of mobile accesses offered with bundled services provided at a fixed location was 45.0 per 100 inhabitants.

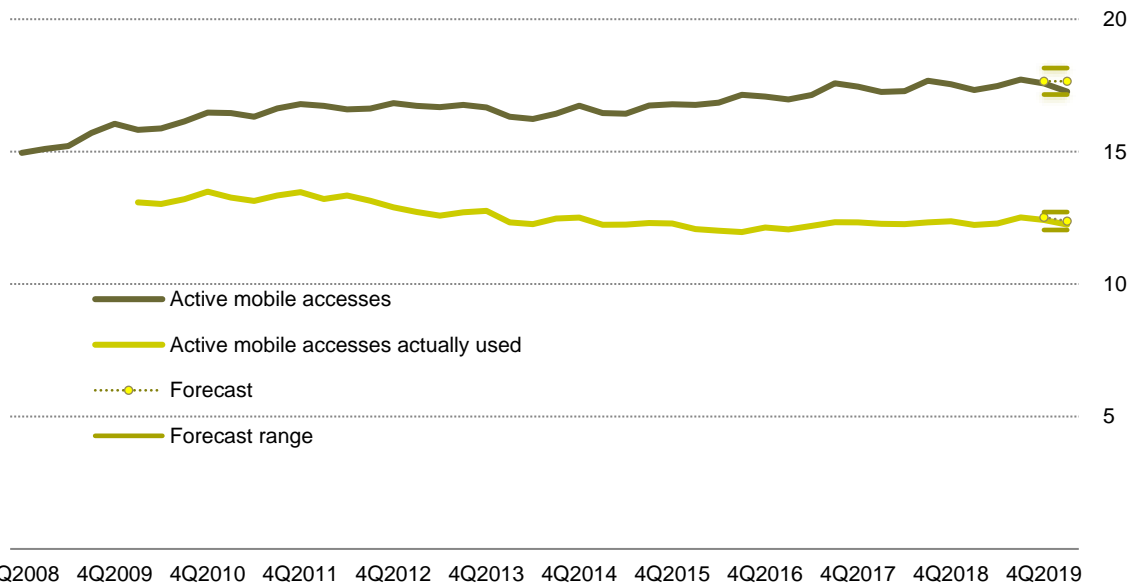
## 2. Active mobile accesses

At the end of 1Q2020, there were around 17.3 million active mobile accesses associated to post-paid tariff plans, pre-paid plans and combined/hybrid plans (-0.4% compared to 1Q2019).

About 12.2 million active mobile accesses (70.9% of the total) were actually used in the last month of the quarter (+0.1% than in the same period last year). Excluding the number of accesses made by PC/tablet/pen/router, the number of mobile accesses rose to 11.7 million.

These values are within the estimated forecast range derived from the historical trend (Graph 1). Since 2012, there has been no significant growth in the number of mobile accesses actually used.

Graph 1 – Evolution of the number of active mobile accesses actually used



Unit: millions of mobile accesses

Source: ANACOM

Note: The modelling of the active mobile accesses used the historical series from 1Q2004 onwards. Two changes in structure are evident, so a linear regression model was considered at three distinct time periods: from 1Q2004 to 4Q2009; from 1Q2010 to 4Q2014 which includes the slowdown in growth partly associated to the economic environment; and from 1Q2015. Seasonal dummies for the 4th quarter and 3rd quarter were also considered, the latter only having an impact in the last time period considered. All the independent variables were significant at a 95% confidence level:  $Y_t = 9.180.677 + 294.614 T_3 + 162.416 T_4 + 271.418 D1T2004_t + 7.030.512 D1T2010 + 22.870 D1T2010_t + 7.259.782 D1T2015 + 57.896 D1T2015_t$ . T3 and T4 refer to the seasonal dummies for the 3rd quarter and 4th quarter, D1Q2004\_t is the variable of the linear trend of the first period; D1Q2015 and D1Q2015\_t reflect the constant and the linear trend of the second period; D1Q2015 + 40.298 D1Q2015\_t refer to the constant and linear trend of the third period. The adjusted determination coefficient (adjusted R<sup>2</sup>) is 0.991.

The modelling of the series of mobile accesses with actual use was based on the regression model  $Y_t = 13.234.757 - 2.423t^2 + 121.921T_3 + 175.346T_4 - 1.179.376D + 900D_t^2$ , with all the independent variables being significant at a confidence level of 95%, namely seasonal dummies relative to the 3rd and 4th quarters, dummy for structural change in the 3rd quarter of 2015. The adjusted determination coefficient (adjusted R<sup>2</sup>) is 0.905.

The observed change is explained by the evolution of post-paid and hybrid plans (+5.4% on the previous year), which continue to show a growth trend, as has happened since 2012 (Table 1). The growth in the number of subscribers of these plans is associated to the increased penetration of bundled services which include mobile telephone service (convergence bundles).

**Table 1 – Mobile accesses**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
<b>Active mobile accesses</b>	<b>17 329</b>	<b>17 268</b>	<b>-0.4</b>
of which associated to M2M	1 130	1 198	5.9
Mobile accesses with actual use (excluding M2M)	<b>12 230</b>	<b>12 245</b>	<b>0.1</b>
Post-paid and hybrid plans	7 015	7 393	5.4
Pre-paid plans	5 215	4 852	-7.0
Mobile accesses with actual use (excluding M2M and PC/pen/tablet/router)	<b>11 723</b>	<b>11 745</b>	<b>0.2</b>

Unit: thousands of mobile accesses, %

Source: ANACOM

Note 1: Active mobile accesses are enabled to use the services, but they might not have been used.

Note 2: Active mobile accesses with actual use are those eligible to use the service and which were actively used during the reporting period, i.e. they recorded traffic in the last month.

The growing penetration of convergence bundles has resulted in the substitution of pre-paid plans for post-paid plans. Indeed, pre-paid plans have been declining since 2013, having been surpassed by post-paid plans in 2016, and now represent 39.6% of total accesses actually used.

### 3. Distribution of mobile accesses by provider

Table 2 shows the distribution of the total number of mobile accesses by provider according to several indicators.

**Table 2 – Distribution of mobile accesses by provider – 1Q2020**

	Active mobile accesses	Mobile accesses (excluding M2M) with effective use	Mobile accesses with actual use (excluding M2M and PC/pen/tablet/router)
<b>MEO</b>	45.7	41.5	41.8
<b>Vodafone</b>	27.6	30.1	30.4
<b>NOS</b>	24.6	25.8	25.1
<b>NOWO/Onitelecom Group</b>	1.0	1.4	1.5
<b>Lycamobile</b>	1.0	1.1	1.2

Unit: %

Source: ANACOM

Note: It should be noted that the definitions of the indicators used for calculation are those derived from the mobile services form in use in 2020. These definitions may differ from those used by the providers.

MEO continues to be the main provider with 41.5% of active mobile accesses with actual use (excluding M2M), followed by Vodafone and NOS, with shares of 30.1% and 25.8% respectively (Table 3). Compared to the same period of the previous year, the share of mobile accesses of NOS increased by 0.9 p.p., while those of MEO and Vodafone fell by 1 p.p. and 0.1 p.p. respectively.

**Table 3 – Distribution of active mobile accesses with actual use by provider (excluding M2M)**

	1Q2019	1Q2020	Variation (p.p.) 1Q2019 / 1Q2020
<b>MEO</b>	42.5	41.5	-1.0
<b>Vodafone</b>	30.3	30.1	-0.1
<b>NOS</b>	24.9	25.8	0.9
<b>Other providers</b>	2.4	2.6	0.2

Unit: %, p.p.

Source: ANACOM

Note: The variations shown may not correspond to the values in the table due to rounding off.

The concentration level, as measured by the Herfindahl-Hirschman index<sup>7</sup>, although high, decreased slightly compared to the same period in the previous year, as has happened since 2012.

<sup>7</sup> The Herfindahl-Hirschman (HHI) index is frequently applied by the European Commission to assess market concentration levels. This index is calculated by adding the squares of the individual market shares of all market participants. Its theoretical values vary between approximately zero (in a fragmented market) and

#### 4. Mobile internet users

At the end of 1Q2020, the number of actual users of the mobile internet access service reached 8 million, 5.4% more than in the same period of the previous year (Table 4). This service's penetration rose to 78.3 per 100 inhabitants, 4 percentage points higher than the previous year. These users represent 65.7% of total mobile accesses actually used.

**Table 4 – Mobile internet users**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
Number of mobile accesses (excluding M2M) with actual use of the broadband internet access service	7 636	8 045	5.4
(of which) PC/tablet/pen/router	507	500	-1.3
(of which) mobile phone	7 130	7 545	5.8

Unit: thousands of users, %

Source: ANACOM

The growth observed in internet mobile accesses has been associated to the increase of mobile phone internet access (+5.8% compared to 1Q2019) particularly when associated to bundled offers, the widespread uptake of smartphones<sup>8</sup> and the development of mobile apps.

Among the total users of mobile access services that recorded traffic in the last reporting month, 6.2% were users of the internet access service via PC/tablet/pen/router.

MEO has the highest share of mobile internet users (37.4%), followed by NOS (31.2%), which this quarter became the second largest provider of mobile internet, and Vodafone (29.2%) – see Table 5. In 1Q2020, the share of NOS increased by 2.6 p.p., while Vodafone's and MEO's share of subscribers fell by 1.6 p.p. and 1.5 p.p. respectively.

10,000 (in the case of an absolute monopoly). When the HHI is over 1,800, the market is considered to be highly concentrated. Between 1,000 and 1,800, the market is considered to be moderately concentrated.

<sup>8</sup> Gfk study available at: <http://www.gfk.com/temax/western-europe/Pages/portugal.aspx>

**Table 5 – Distribution of mobile internet users by provider**

	1Q2019	1Q2020	Variation (p.p.) 1Q2019 / 1Q2020
<b>MEO</b>	38.9	37.4	-1.5
<b>NOS</b>	28.6	31.2	2.6
<b>Vodafone</b>	30.9	29.2	-1.6
<b>Other providers</b>	1.6	2.2	0.6

Unit: %, p.p.

Source: ANACOM

Note: The variations shown may not correspond to the values in the table due to rounding off.

It should also be noted that in 2019 two new service providers (T-Mobile HotSpot and GmbHP Cubic Telecom Limited) began operations offering mobile internet access services in vehicles. At the end of 1Q2020, the number of accesses actually used to access this service was reduced, having generated around 120 GB of traffic.

## 5. Machine-to-machine (M2M)

At the end of 1Q2020 there were around 1.2 million active mobile accesses exclusively related to M2M, an increase of 5.9% compared to the same quarter of the previous year. These accesses represented 6.9% of the total active accesses, below the EU28 average (18.3%)<sup>9</sup>.

The number of M2M cards in Portugal is equivalent to a penetration of around 11.7 accesses per 100 inhabitants.

The overwhelming majority of these accesses are non-residential, with a small range of applications associated with the residential segment, namely geolocation and mobility security.

We recall that Vodafone launched, in July 2018<sup>10</sup>, a range of product offers of this type aimed at the residential segment.

MEO has the largest share of mobile accesses exclusively by M2M (51.3%), followed by NOS (24.5%) and Vodafone (24.2%) – see Table 6. In 1Q2020, the share of subscribers of

<sup>9</sup> EC, *Digital Economy and Society Index 2020* (Provisional information)

<sup>10</sup> <https://www.vodafone.pt/press-releases/2018/7/vodafone-lanca-v-by-vodafone-gama-de-solucoes-iot-para-o-segmento-de-consumo.html>

MEO increased by 1.6 p.p., while Vodafone's and NOS's shares fell by 1.4 p.p. and 0.2 p.p. respectively.

**Table 6 – Distribution of M2M accesses by provider**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
<b>MEO</b>	49.7	51.3	1.6
<b>NOS</b>	24.7	24.5	-0.2
<b>Vodafone</b>	25.6	24.2	-1.4
<b>Other providers</b>	<0.5	<0.5	0.0

Unit: %, p.p.

Source: ANACOM

Note: The variations shown may not correspond to the values in the table due to rounding off.

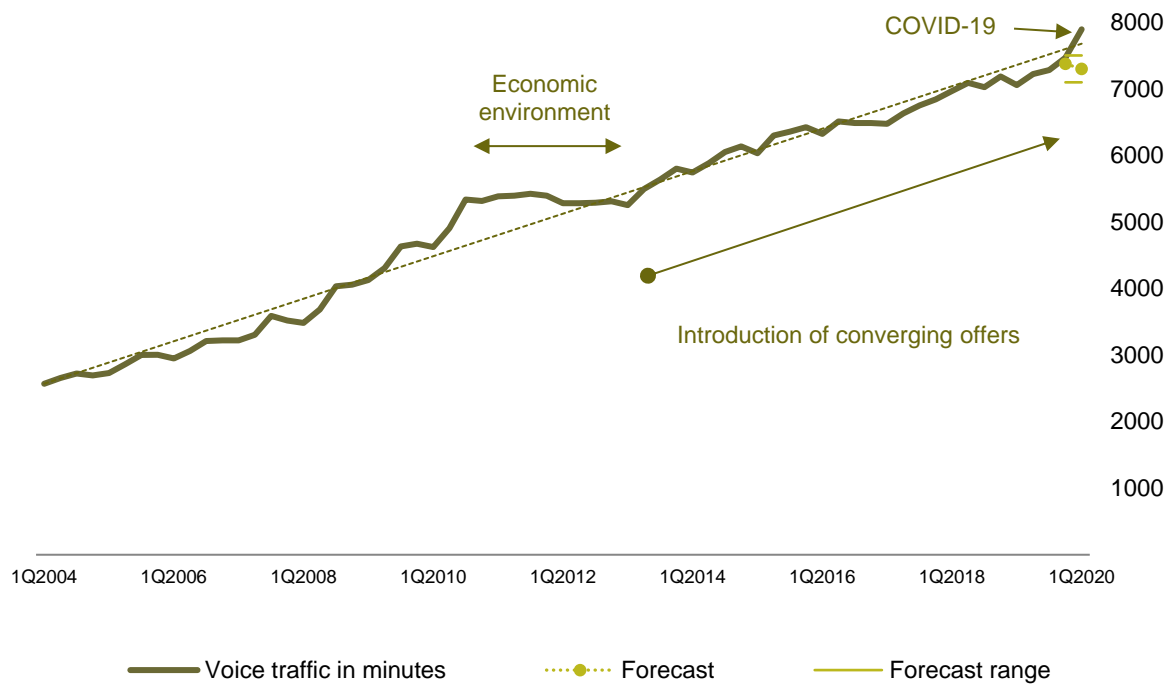
## 6. Traffic

### 6.1. Voice

Voice traffic in mobile networks amount to around 7.9 billion minutes in 1Q2020 (+11.9% compared to the same quarter of the previous year). This is the highest figure ever recorded. It is above the forecast range derived from the historical trend and the estimated seasonal effect (Graph 2).



Graph 2 – Evolution of voice traffic in minutes



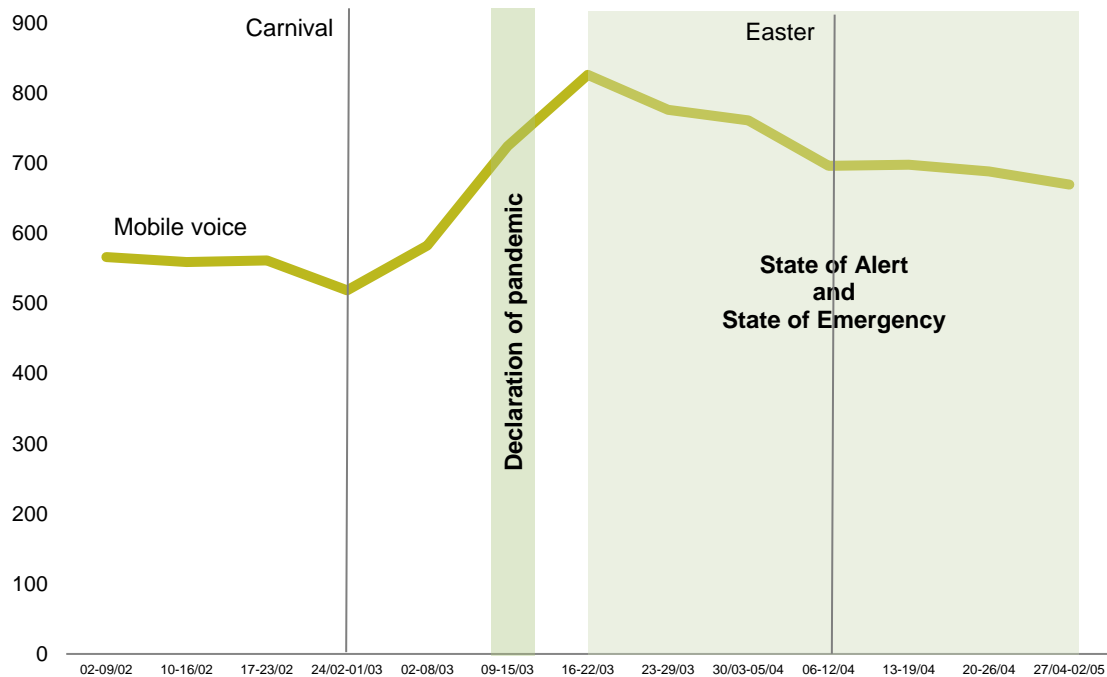
Unit: millions of minutes

Source: ANACOM

Note: The modelling of the series of minutes was based on the regression model  $Y_t = 2.416.080 + 2.194t^2 - 130.212T1 - 55.844T2 + 2.971.056CE + (3.010.487 + 85.550 * t - 561 * t^2)P$  with all the independent variables being significant at a confidence level of 95%, namely positive quadratic trend up to the 3rd quarter of 2010, seasonal dummies relative to the 1st and 2nd quarters, dummy for change of the country's economic environment with constant effect between the 4th quarter of 2010 and the 4th quarter of 2012 (EC) and dummy for the introduction of bundled offers with mobile telephone service (P) with growing linear trend from the 1st quarter of 2013 onwards. The adjusted determination coefficient (adjusted  $R^2$ ) is 0.997.

The registered evolution was influenced by COVID-19. For example, in the week in which the state of emergency was declared (16 to 22 March), mobile voice traffic increased by 39% compared to the week prior to the declaration of the pandemic (2 to 8 March) – see Graph 3.

**Graph 3 – Evolution of voice traffic between February and April 2020**



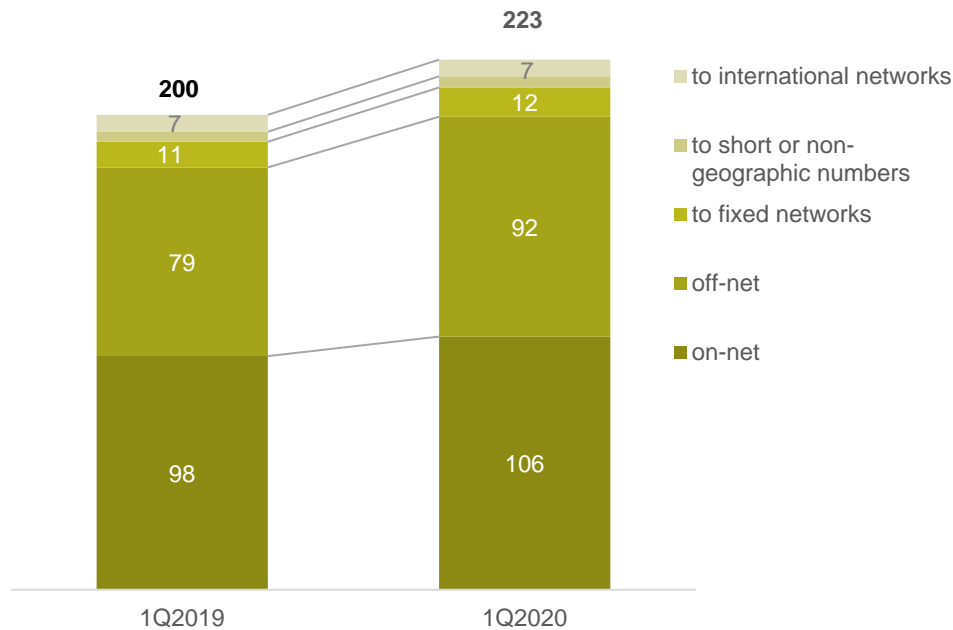
Unit: Millions of minutes

Source: ANACOM

Changes in consumption patterns due to the impact of COVID-19 resulted in abnormal growth in average traffic per mobile access and in the average duration of calls.

In 1Q2020, the number of minutes of conversation through actually used mobile accesses (excluding PC/tablet/pen/router and other M2M equipment) was on average 223 per month, 23.1 minutes (+11.6%) more than in the first quarter of 2019 (Graph 4). In terms of averages, 106 were on-net minutes, 92 were off-net minutes, 12 were calls to fixed networks, 5 to short/non-geographic numbers and 7 to international networks.

**Graph 4 – Monthly average number of minutes per mobile access actually used, excluding PC/tablet/pen/router and M2M**



Unit: minutes per mobile station with actual use

Source: ANACOM

Note: The totals might not match the sum of the items due to rounding off or omitted categories.

The significant increase recorded in the number of minutes was not matched by the number of calls, which fell by 0.4% in this quarter. This evolution resulted in an increase of the average duration of calls generated in the mobile network (excluding PC/tablet/pen/router and M2M equipment), which in 1Q2020 was 184 seconds per call, twenty seconds more than that recorded in the same period of the previous year (+12.4%), and the highest value ever recorded.

By type of call, the high growth recorded in voice traffic in minutes resulted mainly from the increase in off-net (+16.9%) and on-net (+8.4%) traffic. Increases were also recorded in mobile-fixed traffic (+14.7%) and calls to short and non-geographic numbers (+11.4%). Traffic destined for international networks, which had been growing for 14 consecutive quarters, fell by 0.1% compared to the same period of the previous year – Table 7.

Since 2012, there has been a trend of increasing off-net traffic and decreasing share of on-net traffic, due to the elimination of price differences between on-net and off-net calls and

the appearance of offers with “calls included” to all national networks. In 1Q2020, on-net traffic represented 47.7% of the traffic generated, 1.5 p.p. less than in 1Q2019. Since the 2nd quarter of 2018, on-net traffic has represented less than 50% of all mobile traffic.

**Table 7 – Voice traffic: minutes out**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
<b>Total – traffic out</b>	<b>7 061</b>	<b>7 900</b>	<b>11.9</b>
To the actual provider (on-net)	3 475	3 768	8.4
To other national MTS providers (off-net)	2 805	3 280	16.9
To national FTS providers	381	437	14.7
To short and non-geographic numbers	150	167	11.4
To international network providers	250	250	-0.1

Unit: thousands of minutes, %

Source: ANACOM

MEO has the largest share of voice traffic (36.1%), followed by Vodafone and NOS (32.5% and 29.3% respectively). Compared to the same period of the previous year, NOS’s share increased by 0.9 p.p. while Vodafone’s and MEO’s shares fell by 0.7 p.p. and 0.5 p.p. respectively (see Table 8).

**Table 8 – Voice traffic distribution by provider (minutes out)**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
<b>MEO</b>	36.7	36.1	-0.5
<b>Vodafone</b>	33.2	32.5	-0.7
<b>NOS</b>	28.4	29.3	+0.9
<b>Other providers</b>	1.7	2.0	+0.3

Unit: %, p.p.

Source: ANACOM

Note: The variations shown may not correspond to the values in the table due to rounding off.

## 6.2. SMS

In 1Q2020, about 3.3 billion text messages were sent, 9.0% less than the same period of the previous year. The continuous decline in text message traffic seen since 2012 stems mostly from the appearance of alternative forms of communication, particularly instant messaging services – Table 9.

**Table 9 – Text messages (SMS)**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
<b>Number of SMS generated</b>	<b>3 619</b>	<b>3 293</b>	<b>-9.0</b>
Value-added services based on sending of messages	22	18	-18.4

Unit: thousands of messages, %

Source: ANACOM

The average monthly number of messages sent by mobile access with actual use (excluding PC/tablet/pen/router and M2M) amounted to 93 messages (102 in 1Q2019), the lowest ever figure and, for the first time since this information began to be collected (2010), it is lower than 100 SMS per user. This figure represents approximately 3 messages per day per access.

The number of value-added messages reached 18 million in 1Q2020, corresponding to 0.6% of the total messages sent. Since 1Q2016, the peak of value-added messages, the volume of this type of message has fallen by 44.5%.

MEO has the highest share of SMS traffic (33.8%), followed by NOS and Vodafone (33.4% and 31.4% respectively) – see Table 10. Compared to the same period of the previous year, the shares of NOS and MEO increased by 1.7 p.p. and 0.3 p.p. respectively. Vodafone's share fell by 2.1 p.p.

**Table 10 – Distribution of SMS traffic by provider**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
<b>MEO</b>	33.5	33.8	+0.3
<b>NOS</b>	31.7	33.4	+1.7
<b>Vodafone</b>	33.6	31.4	-2.1
<b>Other providers</b>	1.2	1.4	+0.2

Unit: %, p.p.

Source: ANACOM

Note: The variations shown may not correspond to the values in the table due to rounding off.

### 6.3. International roaming

Roaming in<sup>11</sup> traffic recorded significant increases in all types of traffic in relation to the previous year, especially internet traffic (+41.3%) – see Table 11.

**Table 11 – Roaming in traffic**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
Number of calls	59	62	5.3
Number of minutes	207	248	19.5
Text messages	156	158	1.1
Volume of internet access (TB)	3492	4935	41.3
Average duration of calls (seconds)	210	238	13.5

Unit: thousands, TB, %

Source: ANACOM

The number of roaming out<sup>12</sup> voice minutes increased by 3.2% in relation to the first quarter of 2019, while the number of calls recorded, for the first time for this indicator, a fall

<sup>11</sup> Roaming in traffic is the traffic flow (generated and terminating) in national networks by foreign network subscribers.

<sup>12</sup> Roaming out traffic is traffic generated and terminated by subscribers of national operators as users of networks of other operators abroad.

compared to the same quarter of the previous year (-6.2%) – see Table 12. The volume of internet traffic increased by 39.7%.

**Table 12 – Roaming out traffic**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
Number of calls	57	54	-6.2
Number of minutes	308	318	3.2
Text messages	87	79	-8.6
Volume of internet access (TB)	1 567	2 189	39.7
Average duration of calls (seconds)	323	355	10.0

Unit: thousands, TB, %

Source: ANACOM

The evolution described above, especially the significant growth of internet traffic, was influenced by the entry into force of new rules on 30 April 2016. These rules are designed to encourage the elimination of the difference between national prices and roaming prices in the European Economic Area (EEA). Roaming prices were gradually reduced from 30 April 2016 and definitively terminated on 15 June 2017<sup>13</sup>.

The fall in the number of roaming out calls, and the potentially more moderate evolution of the roaming indicators in comparison to previous periods will have been affected by the restrictions imposed on international travel due to the pandemic.

The level of roaming in by roaming out<sup>14</sup> traffic coverage in minutes was 77.9%. Over the past 5 years the roaming balance (roaming in – roaming out) had a surplus only in 2017. In contrast, in the case of internet access, roaming in traffic is substantially higher than roaming out traffic. In 1Q2020, roaming in traffic volume was 2.3 times higher than roaming out traffic.

<sup>13</sup> Since 15 June 2017, operators are required to implement Roam Like at Home (RLAH), unless they demonstrate to the regulator that they cannot recover the cost related to the provision of the roaming services.

<sup>14</sup> This indicator is calculated as follows: roaming in minutes / roaming out minutes as a percentage.

#### 6.4. Mobile broadband internet traffic

Mobile broadband internet access traffic increased by 41.3% in 1T2020 in relation to 1Q2019 (Table 13). Since the onset of the collection of this indicator (in 2010), mobile internet traffic has tended to grow exponentially, albeit with some periods of deceleration. This growth is explained by the increased number of users of the service and also by intensity of use (Table 14).

**Table 13 – Mobile broadband traffic**

	1Q2019	1Q2020	Variation (%) 1Q2019/1Q2020
<b>Total</b>	<b>72 693</b>	<b>102 712</b>	<b>41.3</b>
of which by PC/tablet/pen/router	19 826	27 437	38.4
of which by mobile phone	52 867	75 275	42.4

Units: TB, %

Source: ANACOM

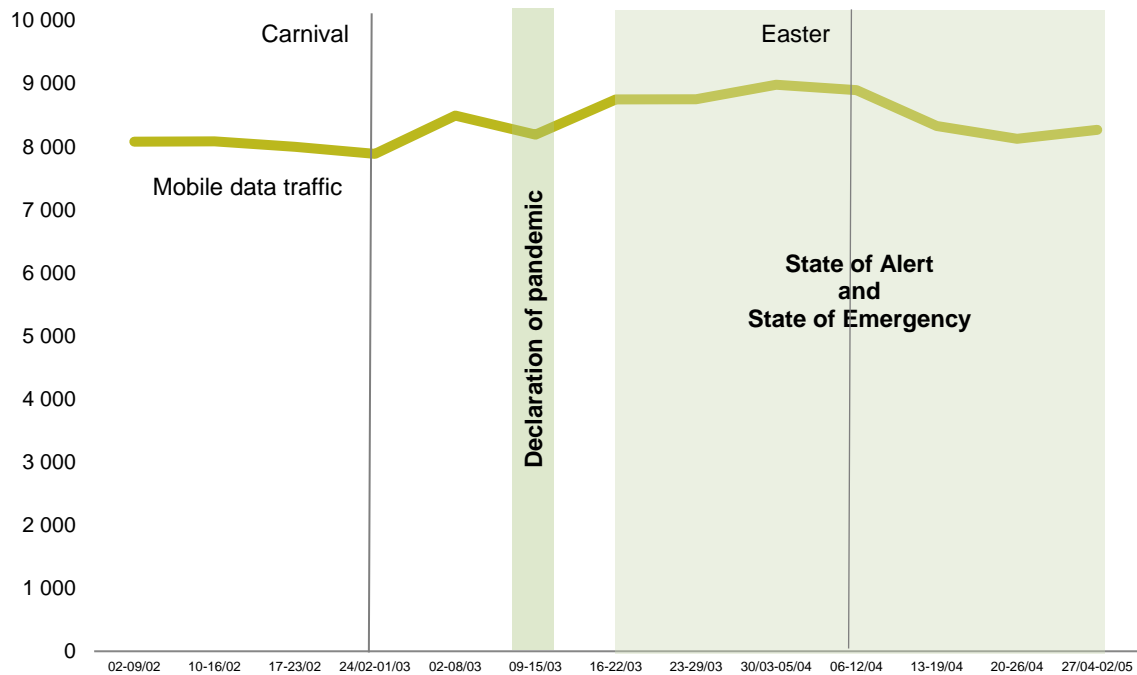
Note: Includes internet access traffic, outside of Portugal (roaming out)

In the first quarter, the impact of COVID-19 and the promotional offers launched by the larger operators<sup>15</sup> also contributed to the growth of traffic. We estimate that in the first four weeks of the state of emergency, mobile data traffic grew on average by 8.5% (Graph 5).

<sup>15</sup> Following the exceptional measures taken in response to COVID-19, MEO, NOS and Vodafone offered their customers 10 GB of mobile data to use over a 30-day period. The offer was made available for subscription to individual or business customers between 17 and 31 March.



**Graph 5 – Evolution of data traffic between February and April 2020**



Unit: TB

Source: ANACOM

Monthly traffic per active mobile broadband user increased by 31.4% compared with the same period of the previous year. Each MBB user consumed on average 4.3 GB per month (Table 14). The monthly traffic generated by PC/pen/tablet/router reached 18.5 GB.

**Table 14 – Mobile broadband internet access traffic per user**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
GB per active mobile internet user (monthly)	3.3	4.3	31.4
of which by PC/tablet/pen/router	12.7	18.5	45.5
Internet via mobile phone	2.5	3.3	31.3

Units: GB, %

Source: ANACOM

NOS had the highest share of broadband internet traffic (45.5%), followed by MEO and Vodafone (27.4% and 26.6% respectively) – see Table 15. Compared to the previous year,

the share of NOS increased by 5 p.p. The shares of Vodafone and MEO fell by 4.4 p.p. and 0.7 p.p. respectively.

**Table 15 – Distribution of mobile broadband internet traffic by provider**

	1Q2019	1Q2020	Variation (%) 1Q2019 / 1Q2020
<b>NOS</b>	40.5	45.5	+5.0
<b>MEO</b>	28.1	27.4	-0.7
<b>Vodafone</b>	31.0	26.6	-4.4
<b>Other providers</b>	0.4	0.5	+0.1

Unit: %, p.p.

Source: ANACOM

Note: Includes internet access traffic, outside of Portugal (roaming out)

Note: The variations shown may not correspond to the values in the table due to rounding off.

## **Methodological note**

## Methodological note

### a. Sources

- Quarterly survey on electronic communications networks and services.

Information collected quarterly from electronic communications providers in accordance with the specifications and definitions contained in Annex 2 of the Regulation on the provision of statistical information (Regulation 255/2017, published on 16 May 2017: <https://www.anacom.pt/render.jsp?contentId=1415433>).

The reference date for the information presented is 30/03/2020. The information now made available may be subject to revisions or updates.

- Statistical aggregates published by Statistics Portugal (INE).

### b. Definitions and notes

- Mobile accesses, traffic and revenue.

See section I.6, III.4, III.5 and IV.1.5, respectively, of annex 2 of the Regulation on the provision of statistical information (Regulation 255/2017 of 16 May 2017: <https://www.anacom.pt/render.jsp?contentId=1415433>).

With the entry into force of regulation 255/2017, of 16 May 2017, the number of mobile accesses actually used now excluded accesses associated with M2M. The figures in this report reflect this change, and therefore may be different from the figures published in previous reports.

- High speed.

High-speed networks are those that allow download speeds greater than 30 Mbps

- Broadband.

Broadband services are those that allow download speeds greater than 144 Kbps.

- Inhabitants.

Resident population (number); Annual — Statistics Portugal, Annual Population Estimates. Data reference period: 31/12/2018. This report, and for purposes of calculation of penetrations, uses the most recent estimates of the population, after Census 2011, published by Statistics Portugal on 14 June 2019.

### c. Acronyms and abbreviations

MBB	Mobile broadband	OTT	Over-the-top	TB	Terabyte
EEA	European Economic Area	RLAH	Roam Like at Home	1Q2019	1st quarter of 2019
GB	Gigabyte	SMS	Short message service	1Q2020	1st quarter of 2020
M2M	Machine-to-machine	MTS	Mobile Telephone Service		

### d. Conventional signs

%	percentage	n.a.	Not available	p.p.	percentage points
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