GLOBAL LANDSCAPE: DATA TRAILS OF DIGITALLY INCLUDED POOR (DIP) PEOPLE

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ACKNOWLEDGEMENTS

Consultative Group to Assist the Poor

RIGHTS AND PERMISSIONS

PURPOSE OF THE RESEARCH

Context: The increased digitization of the economy opens opportunities to use the data trails that the digitization process creates. While more affluent segments generate more and more valuable data trails (e.g., transactional and credit history) many low-income people also generate rich data trails (e.g., airtime data, social media engagements, mobile money data) that are not being fully leveraged in the design and delivery of financial services. This is due to multiple factors including limited availability of data to financial service providers (FSPs), legacy technology and legacy business models, low capacity in data processing and analytics, limited infrastructure, and regulatory barriers.

What this deck covers: This deck puts a spotlight on the specific data trails generated by digitally included yet poor people, the sources of these data trails, and variations of data trails across different segmentations (rural/urban, regions, countries, occupations) of low-income people, with a special focus on data generated by women.

Objectives of the deck:
• To make more concrete the so far largely abstract discussion about the role of data in advancing financial inclusion; to this end, the deck provides an enhanced description of the data trails of low-income individuals.
• To help attract more FSPs to experiment with data-driven models serving the target segment.

Learning questions:
• What is the digitally included poor (DIP) segment?
• What data trails do DIP people generate?
• Which data trails are relevant for financial services providers?

Disclaimer: This deck provides a landscape of the data trails of low-income individuals. We recognize the right to data privacy.
All data used in the deck was gathered either through interviews or from third-party sources after getting explicit consent for using personal data.

SCOPE

Digital Data:
This deck focusses on the data trails of poor people generated through digital channels. It does not focus on non-digital data trails.

Mobile Data:
We are assuming that mobile phones are the key source generating the digital data of poor people.

We recognize that there are several sources of digital data including digital National IDs, utility bills, social security databases, closed-loop card infrastructure, etc. However, we are primarily focusing on mobile data since this data is the most widely available and usable by FSPs. The global fintech revolution which has been driven by smartphones is evidence for this.

We have categorized levels of digital inclusion which range from no access to phones to access to the internet on phones.

Poverty Definition:
We are using WB's "earning $5.5/day (PPP adjusted)" income cut-off for defining the poor across markets. We acknowledge that there could be variations across markets, and we have chosen the highest poverty line as defined by the WB to account for this. The country-specific studies in Section 2 give a more nuanced view of country numbers on digital inclusion of the poor since we administered country-level surveys for these studies.

Adult Population Definition:
Adults are defined as individuals who are over the age of 15.

Eligible Population Definition:
Eligible population includes population above the age 15 in the global south who are below the $5.5/day poverty line.

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KEY INSIGHTS AND EMERGING OPPORTUNITIES

Photo by Kailash Mittal

Key Messages: Our research confirms (1/3)

Digitally included poor (DIP) people that are defined as adults (>15) in low- and middle-income countries, earning under $5.5/day (PPP adjusted), with ownership or access to a phone are a growing segment, as indicated by the following findings:

- An estimated 1.8 Bn poor people in low- and middle-income countries are digitally included.
- About 58% of these, or 1.05 Bn people, have access to the internet.
- By 2025, the DIP segment could include 2 Bn people, primarily owing to the growth in phone penetration in low- and middle-income markets.
- India, China, Indonesia, Nigeria and Bangladesh account for 73% of the DIP segment.
- In low- and middle-income markets in general lower income levels correspond with lower phone ownership levels.

Data trails vary considerably across countries and therefore, while some of our insights are global, others do not generate a single global picture—context matters! The findings suggest the following:

- Poverty numbers vary considerably across low- and middle-income markets. ~80% of the population falls below the $5.5/day poverty line in India and Kenya, while the average income in Mexico is much higher at $54/day. Thus, digital services usage could vary considerably across markets.
- Across markets, the digital footprint of the poor varies by occupation and gender owing to variations in occupational segments and in digital services usage among the poor. For instance, in Mexico, platform workers typically do not belong to the "poor" category but in Kenya they are represented in the "poor" category.
- The variability of data trails and their respective sources needs to be considered in diverse contexts. How stakeholders can leverage data depends on the specific socio-economic circumstances of countries and their ability to develop financial services targeted at poor people.

Key Messages: Our research confirms (2/3)

Gender differences exist in digital access and, as a result, in the generation of data trails. Specifically, the data shows the following:

- 63% women (compared to 79% men) in low- and middle-income countries own a phone which results in a gender gap of 16 percentage points (p.p.) among DIP people.
- To close the gender gap of 16 p.p. between poor women and men, 192 Mn more poor women would need to be digitally included.
- Women's lack of access to devices like smartphones and dependency on shared devices limits their digital footprint. For example: (1) Women in the global south are 18% less likely to own a smartphone than men. (2) In India, 41% DIP women use borrowed phones compared to 13% DIP men and in Kenya, 9% of DIP women use borrowed phones compared to 4% DIP men.
- Men who use smartphones spend a higher proportion of time on better quality networks (meaning higher mobile internet speeds) which potentially results in a higher data trail for men across markets. On average, across markets covered in the smartphone study, 54% men are on 4G data networks compared to 44% women and 39% men are on 3G networks compared to 47% women.

In cases where women have a level of digital access similar to that of men there are some important similarities in the data trails being generated by men and women, such as:

- Across five markets in Sub-Saharan Africa, over 90% women and men who are smartphone users generate data on airtime top-ups.
- Gender parity in the share of DIP men and women using their phones for communication and social media in Mexico and in the use of phones for mobile money transactions in Kenya.

Key Messages: Our research confirms (3/3)

Telecom data (data on airtime top-ups, P2P transactions) is the most widely available digital data trail of DIP people but there are other important sources of data being generated. This is indicated by the following:

- Other important types of data being generated by DIP people include cellular, demographic, individual identifier, personal network, and location data (Refer to Slides 41 and 42 for details).
- Data about the DIP segment largely sits with government registries, banks, and telecom and utility providers.

Smartphone users generate a very small data footprint in low- and middle-income markets. However, there are some patterns in the types of data trails they generate, such as:

- Airtime top-ups are the most common data trails being generated across markets with over 90% individuals generating these data trails across markets.
- On average across markets 55% smartphone users are generating data trails on P2P transactions.
- Data generated on loans and savings is very limited with variations across markets.

We see some opportunities emerging

DIP people are currently being underserved by financial institutions, and this could be addressed by leveraging their digital data. Roughly 81% of the DIP segment has a national ID (roughly 1.46 Bn individuals) and this percentage considerably declines for account ownership (67%), use of digital payments (32%), those who make deposits (26%), and those who have borrowed from an FSP (12%).

FSPs can leverage the digital footprint of unserved DIP people to offer more and better services including accounts, remittances, credit, and savings.

Offline channels like USSD generate data that could help FSPs better understand the financial behavior of DIP people who use feature phones. FSPs could use MNO transaction data and handset data like call and message history to understand the behavior of low-income individuals. For instance, JUMO in Africa is using MNO data in credit-scoring models for USSD users.

Meta (including Facebook, WhatsApp, and Instagram) controls a large part of the app data that is being generated through smartphones in low- and middle-income markets. However, on average, the smartphone data trails are still thin in these markets. The data currently has limited usability for FSPs but could be used in the future

As smartphone adoption picks up and the smartphone data footprint expands, Facebook and WhatsApp could be important data sources and be effective channels for lending/selling insurance products or financial literacy communication.

Women who are smartphone users have a higher median total value of monthly airtime top-ups than men. In five markets in Sub-Saharan Africa, the value for women is $3.2/month and for men it is $2.9/month. FSPs could take this into consideration when they design products for, and deliver to, women since airtime top-ups are an important source of data.

Utility payments data is being increasingly generated by the poor which could be a rich source of data for FSPs, but its use is still at an early stage.

We have identified potential areas for action or further research

Researchers

- Commission more research at the country level (and disaggregated by gender) to understand how the digital footprints of low-income individuals are evolving, specifically data trails generated from smartphones.
- Dig deeper into how customer-level data can be integrated with public data sources to expand the richness of data trails.
- Understand how data-sharing models like Open Finance are enabling FSPs to cater to low-income customers in low-and middle-income markets.

Funders

- Support FSPs that are developing business models which rely on digital data trails such as airtime top-up data, P2P transaction data, and social media data, since this data is being generated by low-income customers.
- Support country-level research on the digital footprint of low-income individuals.

FSPs

- Leverage findings of this study to expand the types and sources of data being leveraged in product design and delivery, especially for low-income customers.
- As the digital footprint of low-income individuals expand and data-sharing models like Open Finance evolve, explore new and innovative use cases of data that go beyond credit. For example: overdraft protection, personal financial management, and enhanced KYC processes.

PART 1: WHAT IS THE DIGITALLY INCLUDED POOR (DIP) SEGMENT?

Photo by Sujan Sarkar

Digitally included poor (DIP) people are defined as adults (above the age of 15) in low- and middle-income countries, earning under $5.5/day[1], with ownership or access to a phone

Non-poor
Population above the age of 15 in the global south who are above the poverty line and digitally connected

Digital connectivity[2]

Basic phone access

DIP

Poverty

$5.5 per day, PPP

Digitally excluded
Population above the age of 15 in the global south who are below the poverty line and digitally excluded

Population[3] above the age of 15 in the global south who are below the poverty line and are connected digitally

Notes: 1. We are using WB's "earning $5.5/day (PPP adjusted)" income-cut off for defining the poor across markets. We acknowledge that there could be variations across markets and we have chosen the highest poverty line as defined by the WB to account for this. The country-specific studies in Section 2 give a more nuanced view of what digital inclusion of poor looks like at the country level 2. Defined as access to or ownership of a phone; 3. Phone ownership data is from Global Findex 2021 which uses data from the World Gallup Poll; Data from Global Findex 2017 has been used for 17 countries not available on Findex 2021

An estimate 1.8 billion poor people, which accounts for ~41% of the total adult population and 73% of poor adult population in low- and middle-income countries[1] are digitally included

Of the 1,800 million DIP people, **~200 million poor** people, primarily women, use a **borrowed phone**[2]

4,420
(100%)

1,940
(44%)

1,800
(40%)

1,050
Internet and Phone Access

Phone only Access

680
(15%)

| Digitally excluded poor | Digitally included poor (DIP) | Non-Poor | Total |
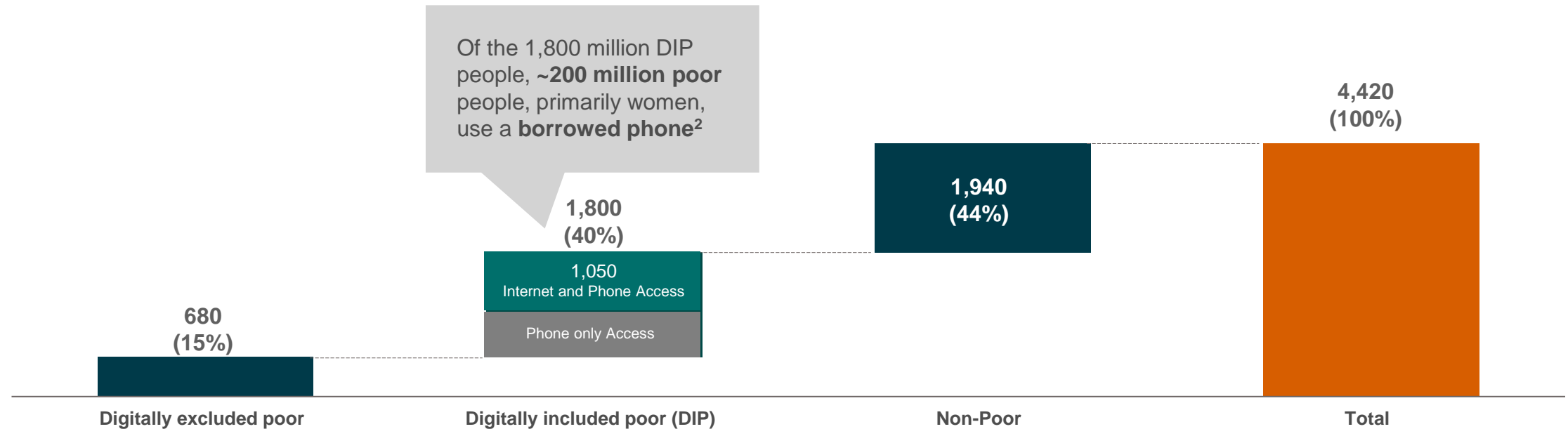
- **200 Mn poor people use borrowed phones** leading to the higher bound of 1.8 Bn for the DIP segment.
- **1.6 Bn poor people own a phone**[3] which is the lower bound for the DIP out of these, about 550 Mn do not have access to the internet.
- **~1.05 Bn poor people** (59% of the DIP segment and 24% of the adult population) have access to the internet.

Notes: 1. Countries in the low income to middle income group in Global South (31 high income countries contributing to 2% of overall population have been eliminated). Additional filter of population at least above 100,000 with data being tracked by World Bank (42 countries which overall contribute to 0.2% of population of Global South have been excluded; 2. Pew Research report reported % of people sharing phones across 11 emerging economies: Vietnam, Jordan, Tunisia, Colombia, Kenya, Lebanon, South Africa, Mexico, Philippines, India and Venezuela. The median of these economies was used as a determinant for the rest of Global South countries. Other industry reports, including the GSMA Gender Gap report, were used to identify primary sharers, i.e. women; 3. Smartphone ownership data by income is unavailable at a global level. We expect it to be in the range of 20-50% based on triangulation from various sources. Sources: World Bank database: Population estimation; World Bank database: Poverty intelligence; Global Findex 2017 & 2021; World Bank Database; Pew Research: Mobile Connectivity and Internet Users

Across low- and middle-income countries, the poor are split across those that have no access to phone (L0) to those who have access to the internet (L3)

Level 0 — No access to phones – **680 Mn** (**15%** of adult population)

Level 1 — Access to a shared phone – **200 Mn** (**4.5%** of adult population)

Level 2 — Ownership of basic or smartphone (no access to mobile internet) – **550 Mn** (**12.5%** of adult population)

Level 3 — Access to the internet[1] – **1,050 Mn** (**24%** of adult population)

The richness of data trails increases as we move from Level 0 to Level 3
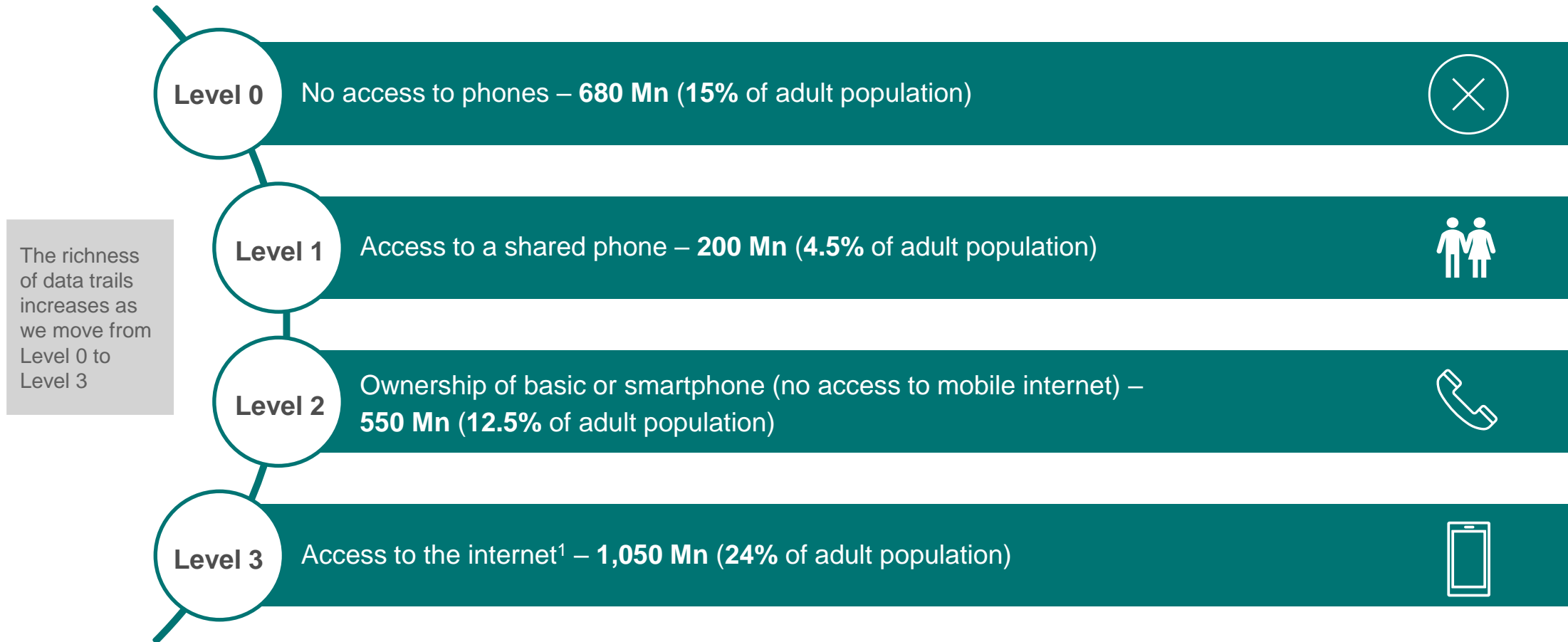
Notes: 1. As per the GSMA Gender Gap Report 2022, in some countries, a significant proportion of smartphone owners do not use mobile internet, particularly women. In Bangladesh, for instance, 26 per cent of women who own a smartphone do not use mobile internet compared to 20 per cent of men; 2, We can assume that most people who have access to the internet also have access to a smartphone

Regional differences exist in access to phones and the internet among the poor, with Sub-Saharan Africa lagging other regions

Access to phone across regions (as a % of eligible population)
(2021, Eligible Population only[1])

Access to internet[1] across regions (as a % of eligible population)
(2021[1], Eligible Population only)

Region	Phone	Internet
South Asia	79	40
Europe and Central Asia	86	61
Middle East and North Africa	69	59
Latin America and Caribbean	87	68
Sub-Saharan Africa	66	27
East Asia and Pacific	93	76
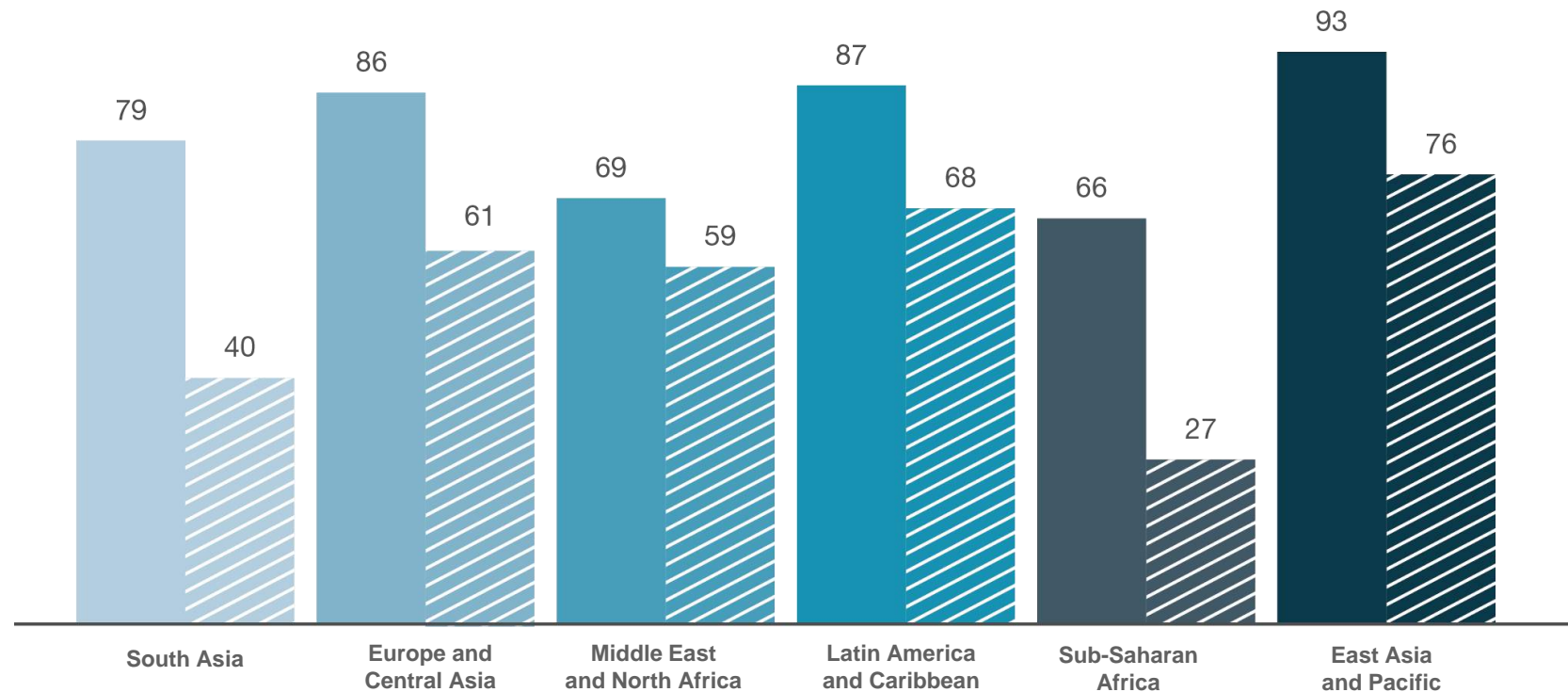
Note: 1. Eligible population includes population above the age 15 in the global south who are below the $5.5/day poverty line 2. Internet Access Numbers for the 17 countries that are missing in Findex and India are taken from the World Bank Database and the most recent year for which data was collected varies. Source: Latest Global Findex: Mobile Phone and Internet Access Estimates; World Bank database: Population estimation; Poverty intelligence; Internet Access for the 17 countries missing in Findex 2021

By 2025, the DIP segment could include over 2 billion people

Change in number of DIP, by drivers
(2021 to 2025, millions)

1800	DIP in 2021
-57	Decrease due to increasing income (reduction in poverty)
89	Increase due to absolute population increase
202	Increase due to higher phone penetration
2034	DIP in 2025
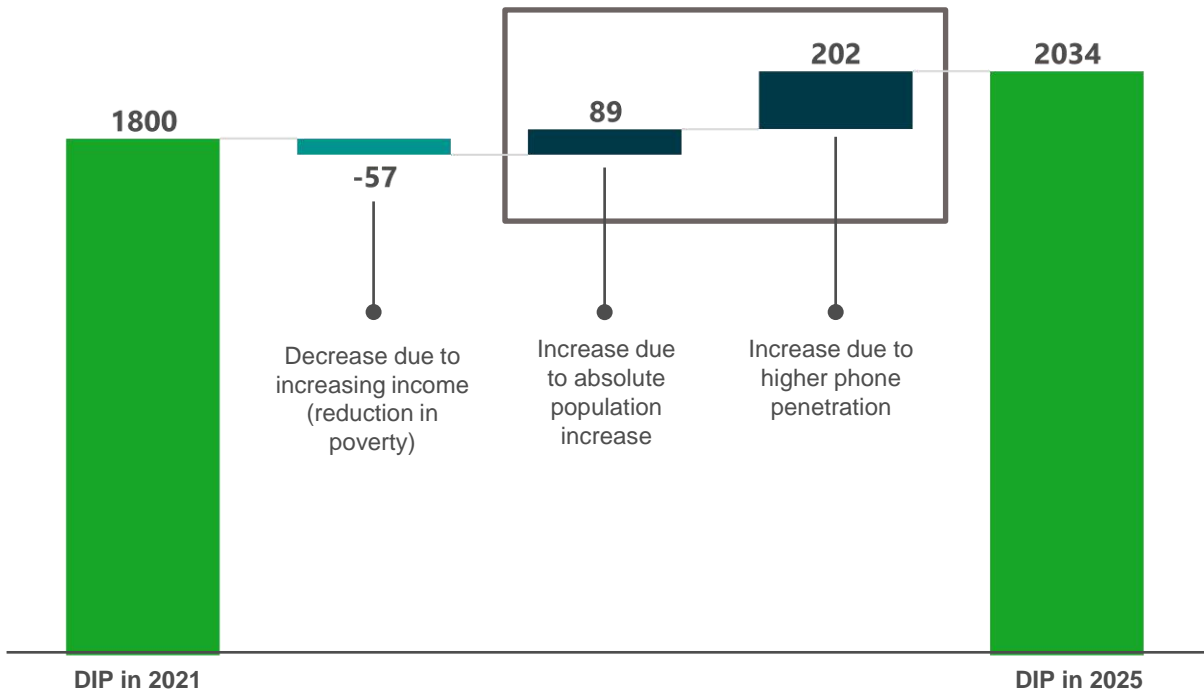
Poverty

- Rapid urbanisation, increasing social mobility and economic growth in **countries such as China and India, is poised to reduce poverty by nearly ~150 Mn** globally by 2025 (this does not account for the impacts of COVID, which are still ongoing).

- At the same time, **~100 Mn individuals will be pushed into poverty owing to pandemics, fragility, climate change and other factors.**

Digitization

- **Sub-Saharan Africa and Middle East may see an increase in phone penetration,** by 5 p.p. and 8 p.p. respectively.

- Within phone penetration, the **share of smartphones could also increase** from ~65% currently to 80% by 2025.

Methodology and assumptions: 1. Change in the number of people falling below the $5.5 poverty line and change in population forecasted based on a historical CAGR (from 2000 to 2021) with country wise data point for major contributors and global average for others; 2. Growth in Unique Mobile Phone Subscribers (proxy for device ownership) forecasted based on GSMA forecasts; 3. Growth of device ownership amongst the poor assumed to be 50% higher than total population, 4. DIP forecast formula = DIP in 2021 x % projected change in 'poor population' x % projected growth in phone ownership
Sources: Latest Global Findex; GSMA intelligence: Mobile Economy 2022; World Bank dataset on poverty; World Bank Poverty and Inequality Platform; World Bank estimate on population growth

63% poor women (compared to 79% men) in low- and middle-income countries own a phone

Global south population by poverty, phone ownership and gender[1]
(2021, Population below USD 5.5/day, Millions)

■ Digitally Included   ■ Digitally Excluded

	Digitally Included	Digitally Excluded	Total
Poor Men	850 (79%)	230	~1,080
Poor Women	756 (63%)	446	~1,200

> To close the gender gap of 16 p.p. between poor women and men, **192 Mn more poor women would need to be digitally included**

- There are **446 million women in the global south who are digitally excluded as compared to 230 million men.**
- Women in the low- and middle-income countries are **18% less likely to own a smartphone and 16% less likely to use mobile internet than men.**
- The use of borrowed phones amongst women included in the DIP is also higher than men, restricting women's digital footprint.
- Through stakeholder conversations during this project, we found that women **face more restrictions and supervision while using phones**, restricting their digital footprint generation.
- The **representation of women in the DIP segment lags even their representation in the economically non-poor segment[2]**, indicating poor women have lesser phone access than the non-poor.

Note:1. The figure does not include "non-poor" men and women 2. Refer to Slide 12 for more details
Sources: World Bank database: Population estimation; World Bank database: Poverty intelligence; Latest Global Findex Data; Pew Research-Mobile Connectivity; GSMA Intelligence

About 50% of the gender gap among the DIP segment is driven by South Asia

Women are equally represented among poor people but are 6 p.p. less likely to be digitally included (all figures are for 2021)

...driven mainly by South Asia's gender gap[1]

-6 p.p.

53 | 47
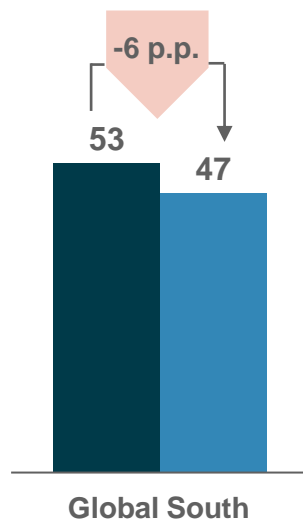
Global South

■ Women as a fraction of poor people

■ Women as a fraction of DIP

East Asia and Pacific	48 / 47	-1 p.p.
Europe and Central Asia	54 / 49	-5 p.p.
Latin America and Caribbean	63 / 61	-2 p.p.
Middle East and North Africa	55 / 49	-6 p.p.
South Asia	52 / 45	-7 p.p.
Sub-Saharan Africa	53 / 47	-6 p.p.
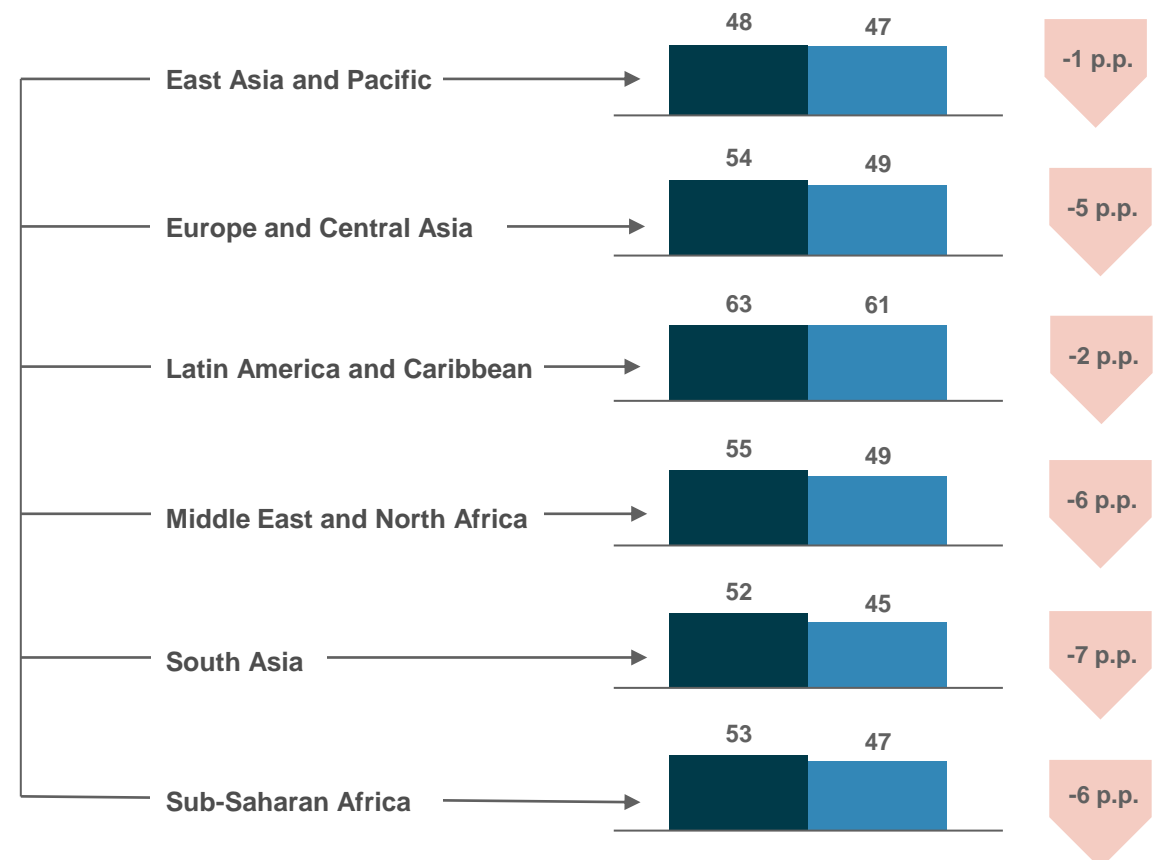
Notes: 1. South Asia's large population size and gender gap in phone ownership drive global gender gaps among the DIP segment. Sources: Latest Global Findex Data; World Bank database: Poverty intelligence

India, China, Indonesia, Nigeria, and Bangladesh account for 73% of DIP people (and 59% of the world's poor population)

Phone penetration and prevalence of poverty in LMIC in the global south

(2021, % of population on both axis, bubble size represents DIP population of the country, top 32 countries by population)

China accounts for 19% of the DIP segment globally, driven by high phone penetration and lower poverty levels compared to its peers.

India, Indonesia, Nigeria, and Bangladesh account for 54% of the DIP segment, driven by moderate to high poverty levels and moderate phone penetration.

Y-axis: Phone Penetration (%) — 45 to 105

X-axis: % Eligible population — 0 to 99

Countries plotted: Ukraine, Thailand, China, Morocco, Malaysia, Algeria, Sri Lanka, Colombia, Philippines, Brazil, Peru, South Africa, Iran, Ghana, Kenya, Senegal, Bangladesh, Nepal, Egypt, Uganda, Côte D'Ivoire, Vietnam, Uzbekistan, Indonesia, Nigeria, Tanzania, India, Pakistan, Mozambique, The Democratic Republic of Congo, Ethiopia

Sources: World Bank database: Population estimation; World Bank database: Poverty intelligence; Latest Global Findex; Pew Research-Mobile Connectivity

Phone ownership varies across regions and income levels with South Asia seeing the largest fall in access as income decreases

Phone ownership by income level across regions[1,2]
(2021, Eligible Population only)

Legend: 80-100% | 60% - 80% | 40% - 60% | 20% - 40% | Bottom 20%

Difference in % with access to phone

South Asia — -26 p.p.
83% | 72% | 65% | 58% | 57%

Sub-Saharan Africa — -20 p.p.
85% | 80% | 76% | 68% | 65%

MENA — -10 p.p.
93% | 92% | 91% | 84% | 83%

LatAm and Caribbean[3] — -3 p.p.
90% | 88% | 86% | 84% | 87%

East Asia and Pacific — -4 p.p.
98% | 96% | 96% | 95% | 94%

Europe and Central Asia — -12 p.p.
94% | 91% | 90% | 89% | 84%
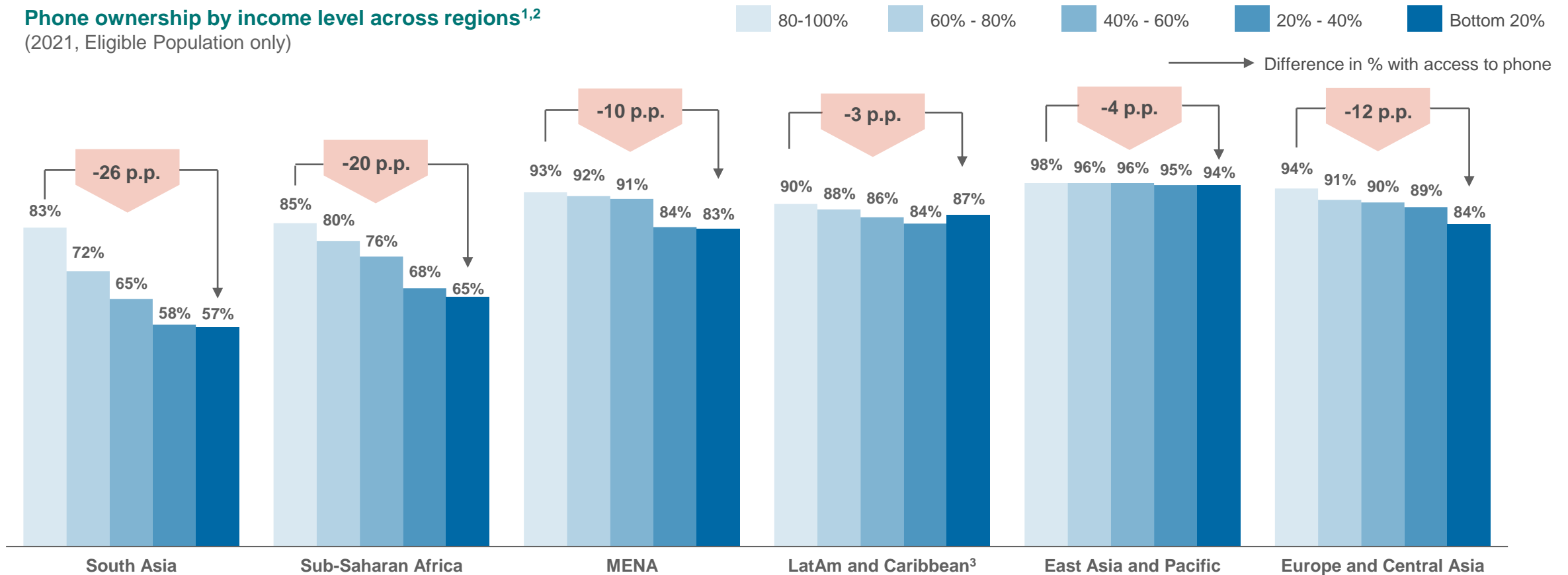
Note: 1. People owning a phone in the income quintile/total eligible population in that income quintile; 2. Within a region, the income cut off of USD 5,5/day PPP adjusted falls under different income quintiles by country and has not been plotted on the chart; 3. The increase in phone access with a reduction in income level could be explained by the average margin of error of 3.9 for LAC in the latest Global Findex
Source: Latest Global Findex, CGAP Analysis
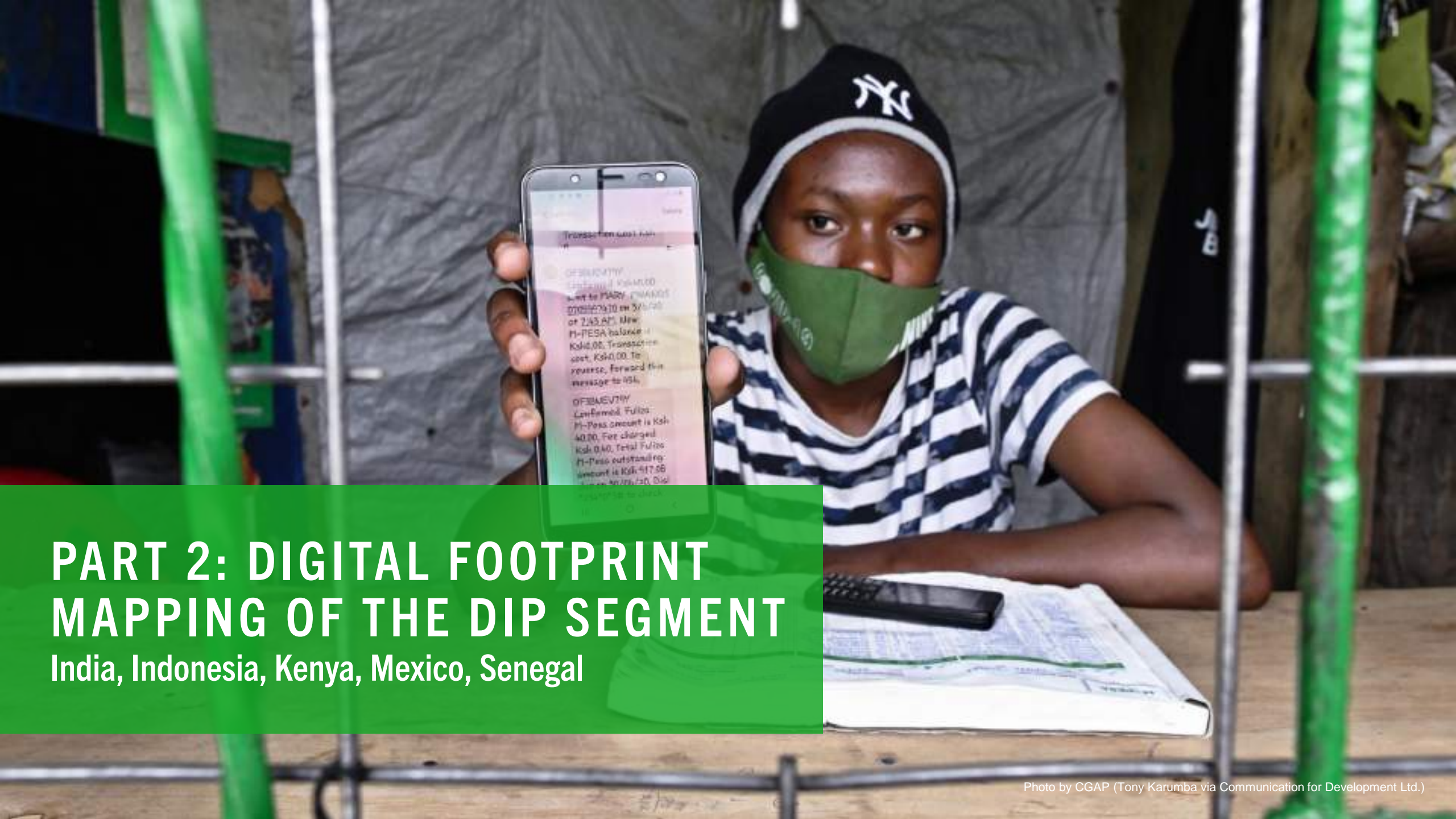
PART 2: DIGITAL FOOTPRINT MAPPING OF THE DIP SEGMENT
India, Indonesia, Kenya, Mexico, Senegal

SUMMARY: DIGITAL FOOTPRINT OF THE DIP SEGMENT (1/2)

Opportunity for FSPs:
- As highlighted in Slide 22, there are clear opportunities for FSPs to serve DIP people. Roughly 81% DIP people have a national ID (roughly 1.46 Bn individuals) and this percentage considerably declines on account ownership (67%), use of digital payments (32%), those who make deposits (26%), and those who have borrowed from an FSP (12%).
- FSPs can leverage the digital footprint of the unserved DIP to offer more and better services including accounts, remittances credit, and savings.

Trends across markets:
- Across markets, unsurprisingly, DIP people primarily use their phones for voice and text-based communication.
- Use of social media is prevalent across markets, with over a third of DIP people using social media in all five markets surveyed.
- Use by 30% or more DIP people in each market indicates:
  - People are using their phones for "education." The survey was conducted in 2020 when countries were in COVID-19 lockdowns and individuals were increasingly using their phone for education.
  - People are using their phones to access "information," which includes "searching for information e.g., using Google, news sites, weather sites, agriculture information etc."

Note: 1. . Respondents who answered a "yes" for using e-wallet or any form of online payments were included; Sources: CGAP Survey and Analysis

SUMMARY: DIGITAL FOOTPRINT OF THE DIP SEGMENT (2/2)

Usage of financial services[1] through phones:
- There are considerable variations across markets for use of phones by DIP people to access financial services.
- In Kenya and Senegal (markets with high prevalence of mobile money), the usage numbers for financial services by DIP people are high (94% and 67% respectively).
- In India, roughly 50% of the DIP segment uses a phone to access financial services (potentially due to the high prevalence of the United Payments Interface).

Data Types: Across markets, there is high incidence of telecom, cellular, demographic, individual identifier, personal network, and location data among the DIP segment.

Data Sources: Across markets, government registries, banks, and telecom and utility providers are the largest source of data on the DIP segment.

Note: 1. Respondents who answered a "yes" for using e-wallet or any form of online payments were included; Sources: CGAP Survey and Analysis

Globally among the DIP segment, 81% have a national ID (or 1.46 Bn individuals), 67% have an account, 32% have used digital payments, 26% have used deposits. These are indicators that FSPs could extend more financial services to the DIP

Digitally **excluded** *poor*[1]   *Digitally* **included** *poor (DIP)*[1]   *Non-poor*[1]   (2021)

	Digitally excluded poor	Digitally included poor (DIP)	Non-poor
% with a National ID	71%	81% (1.46 Bn)	91%
% with Accounts	49%	67% (1.2 Bn)	81%
% who use digital payments[2]	13%	32% (580 Mn)	65%
% who have used deposits	8%	26% (470 Mn)	52%
% who have borrowed from an FSP	7%	12% (216 Mn)	15%

81% of DIPs have a national ID, with **78% of DIP having a digital National ID.**

2/3rd of DIP own a Bank account and National ID, thus meeting high standards of identification requirements.

With a 26% usage of deposits and 32% usage of digital payments, **~470/575 million DIP have a national ID, account and use deposits/digital payments**. This points to the potential of leveraging digital footprint to further financial inclusion.

Notes: 1. All numbers as a % digital poor, digitally excluded or non-poor 2. Digital payments include receiving of government transfers, wages, agri payments and self- employment payments along with payment of utility bills, domestic remittances and other online payments through a card, account or mobile phone 3. In order to calculate Digital National ID, The 81% of DIP with a national ID were mapped to countries with a Digital ID system and weighted by their population. This assumes that the distribution of National ID and Digital National ID is the same between Digitally Excluded, DIP and Non-poor
Sources: Latest World Bank ID4D; Latest Global Findex; Dalberg Analysis

In low- and middle-income countries, smartphone and internet users spend time on a variety of digital applications, with messaging, social networking, and calling being the most used

Activities undertaken in mobile internet-based usage
(2019 LMIC Countries in Global South, percent of mobile internet users, Across income categories)

🟧 Fastest growing (from 2017 to 2019)

Activity	Percent
Instant Messaging	85%
Social Networking	80%
Voice Calls	75%
Video Calls	70%
News	65%
Online Video Viewing	60%
Gaming	55%
Education	40%
Information	35%
Music	33%
Health	20%
Pay Utilities	20%
Job Search	18%
Government Service	17%
Order goods online	15%
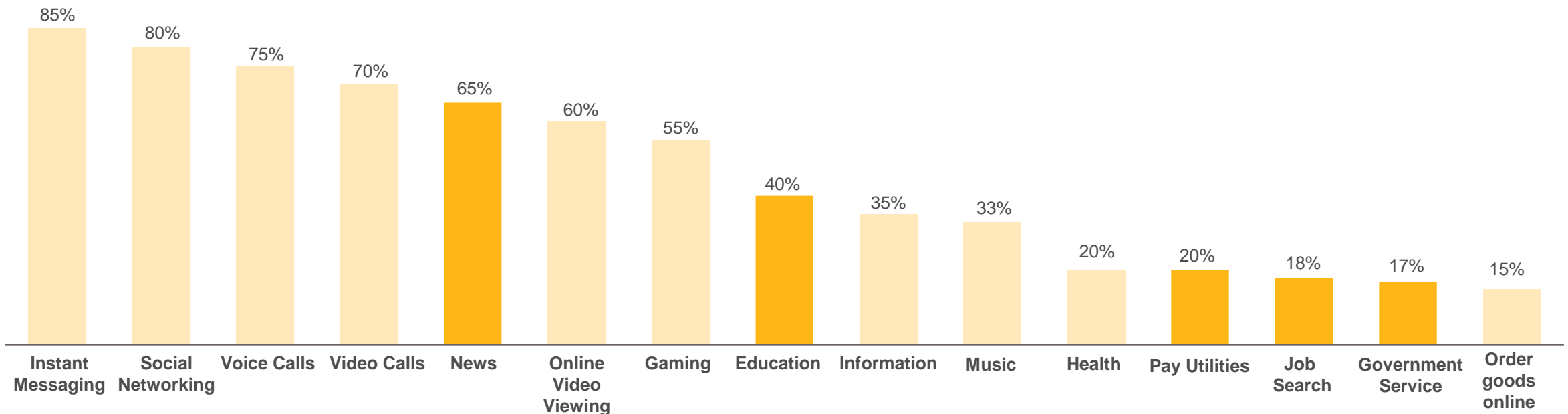
- Most of the messaging applications, such as WhatsApp, Telegram etc., use encrypted means of communication, meaning that much of this digital footprint is likely to be unavailable, although the channels can be used to connect with customers.
- Social networking is used primarily through Facebook.
- Education, News, Utility, Job Search, and Government Services are the fastest growing uses of smartphone-based internet and leave a digital trail which can be used to understand the needs of customers better.

Source: GSMA

QUICK STATS: 545 million individuals or 54% of India's adult population can be classified as DIP

Segmentation on the basis of income and access to digital services (%)
Global Findex 2021

Population above 15 (millions)

281	**545**	**177**	**1,003**
	54%	18%	100%
28%			
Digitally excluded poor	Digitally included poor (DIP)	Non-vulnerable	Total

59% of poor women are digitally included in comparison to 74% men

- Nearly **4 in 5 Indians fall below USD 5.5 income per day.**
- Only **4% of DIP people are able to reach tertiary or higher levels of education** in comparison to 10% of the non-poor.
- **25% of DIP people do not own a phone and use a borrowed phone**. Use of borrowed phones is higher amongst women at 41% as compared to men (13%).

Sources: Latest Global Findex; CGAP Survey

25% DIP in India own a smartphone; application of smartphones includes communication, education, social media, and financial services

Usage of services amongst DIP people with a smartphone and internet access[1] (%)

2021. In-app survey, N=1,000
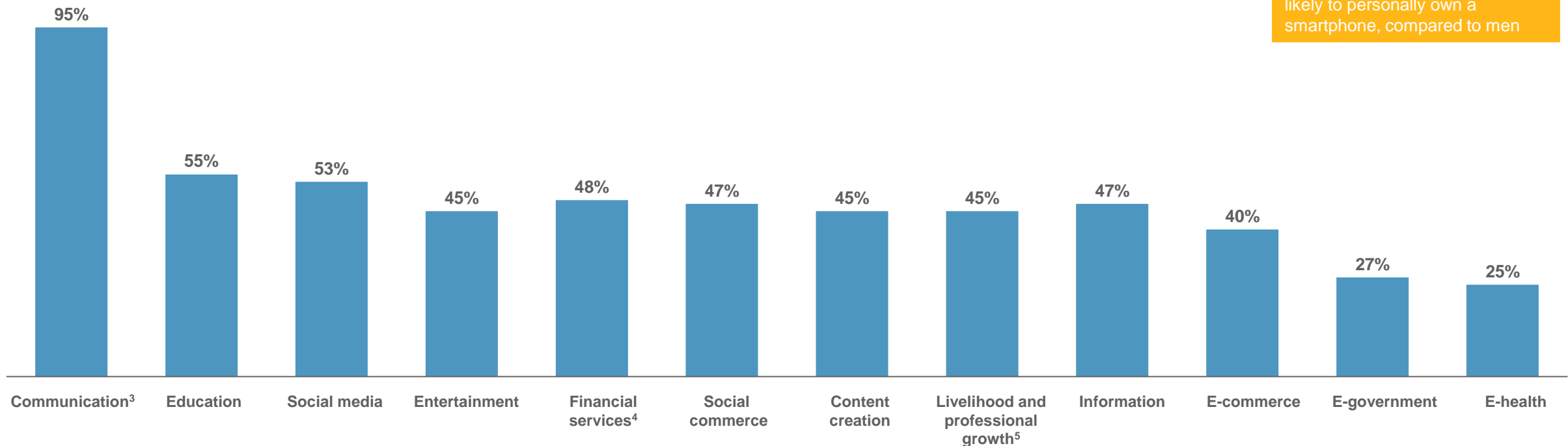
75% of DIP people personally own a SIM card[2] (2017)

25% of DIP people personally own a smartphone[6] (2020)

Women DIP are less than half as likely to personally own a smartphone, compared to men

Communication[3]	95%
Education	55%
Social media	53%
Entertainment	45%
Financial services[4]	48%
Social commerce	47%
Content creation	45%
Livelihood and professional growth[5]	45%
Information	47%
E-commerce	40%
E-government	27%
E-health	25%

Notes and Sources: 1. Data on use of services is not available for non-smartphone users given digitally run survey, 2. Based on FII 2018, survey for which was conducted in 2017 3. FII (2018), 3. Respondents were asked to state their response for "Do you use your smartphone to communicate with others (Calling or messaging over WhatsApp, Zoom etc.). It is possible that respondents use their phones for voice calls and SMS instead of using smartphone applications and as a result this number is 95% 4. Respondents who answered a "yes" for using e-wallet or any form of online payments were considered users of financial services, 5. Use digital services for livelihood and support, including upskilling and job-search; CGAP Survey
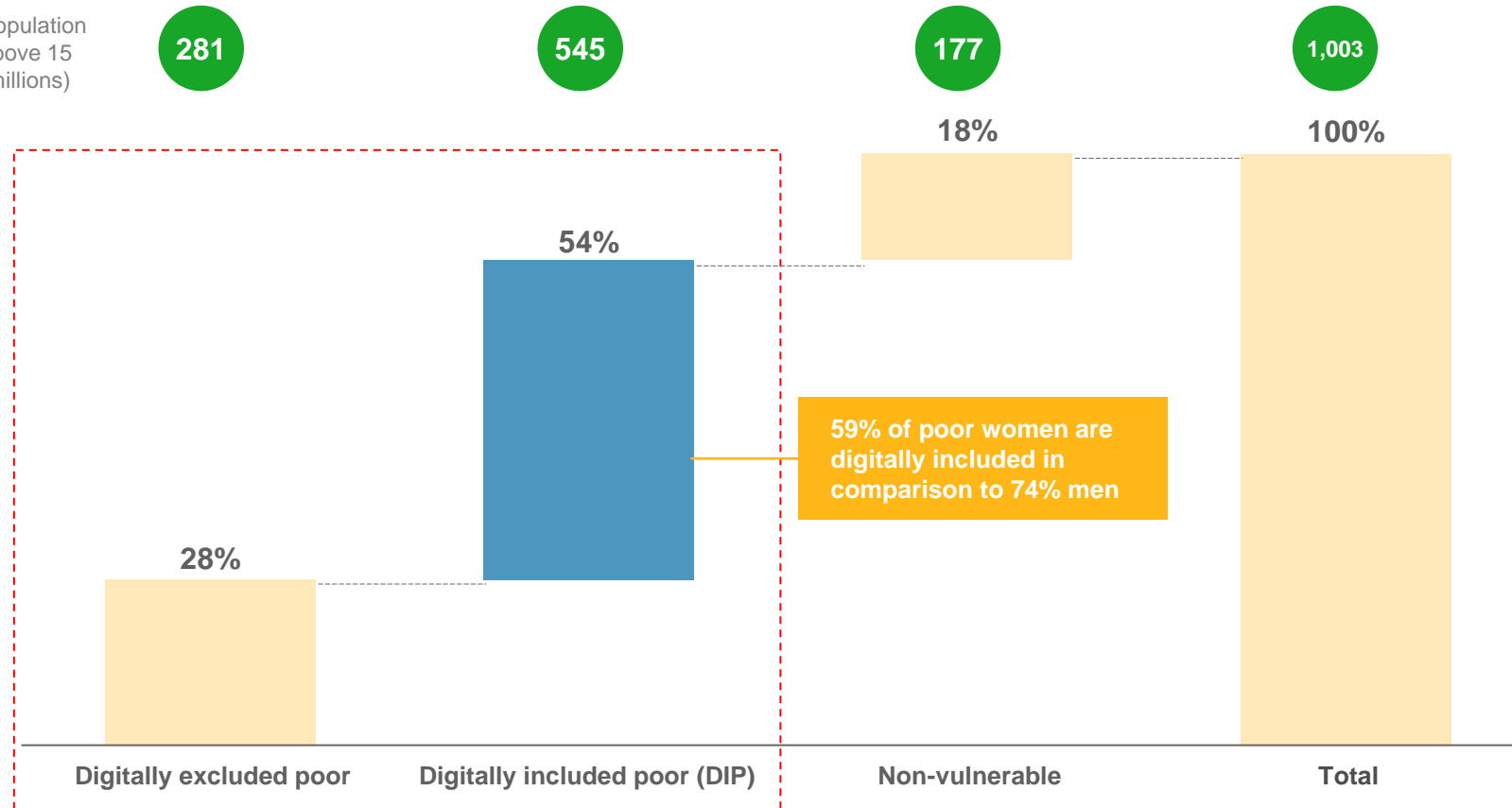
QUICK STATS: 78 million individuals or 39% of Indonesia's adult population can be classified as DIP

Segmentation on the basis of income and access to digital services (%)
Global Findex 2021

Population above 15 (millions)

29	**78**	**93**	**200**
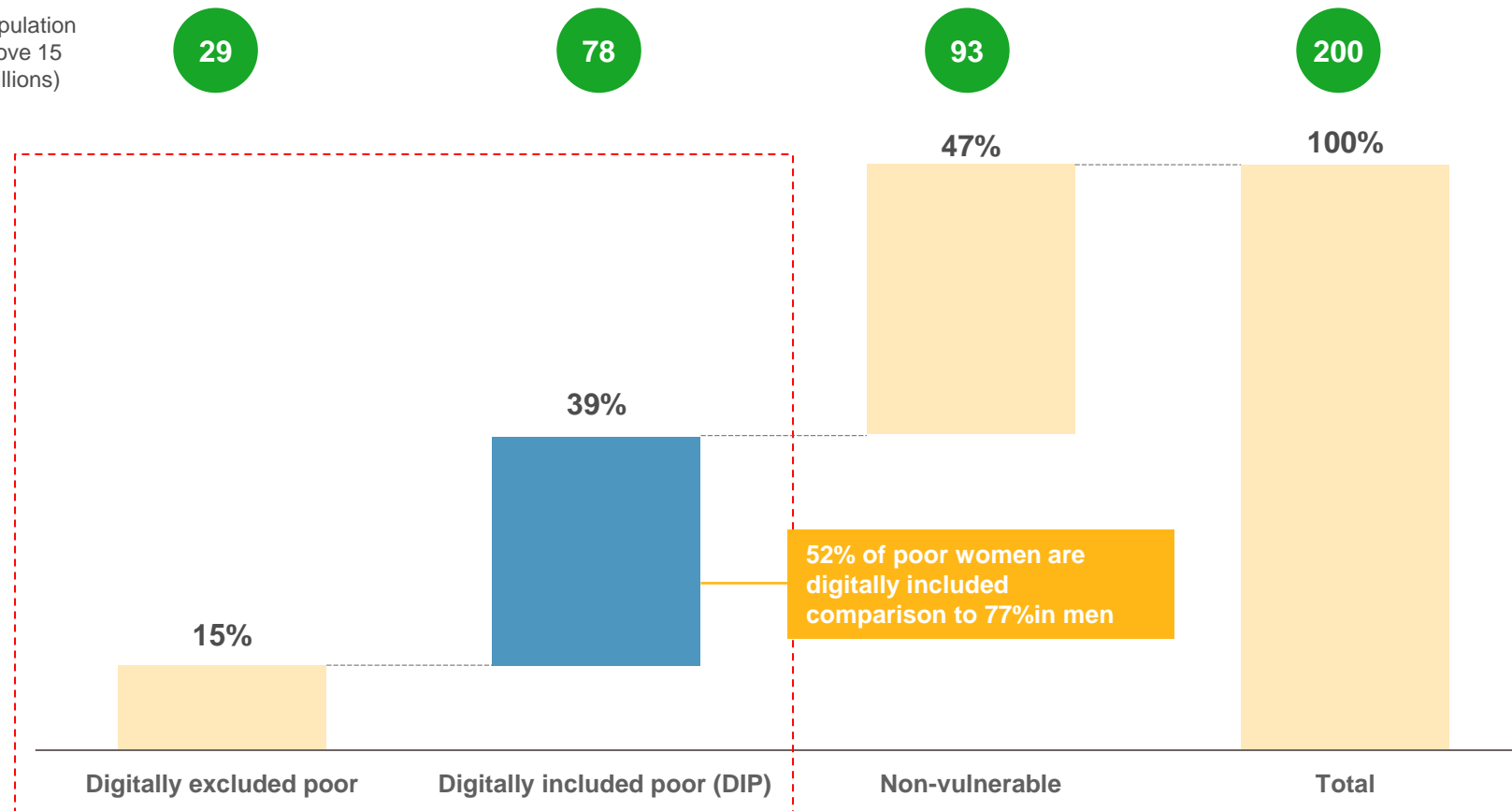
- **48% of DIP people personally own a smartphone**
- 3% of DIP people have completed tertiary or higher education as compared to 7% of the non-poor
- DIP people are **3 years younger on average** than the non-poor
- **~24% of DIP people do not own a phone and use borrowed phones;** use of borrowed phones is higher amongst women (27%) as compared to men (20%)

Digitally excluded poor — 15%

Digitally included poor (DIP) — 39%

Non-vulnerable — 47%

Total — 100%

52% of poor women are digitally included comparison to 77%in men

Sources: Latest Global Findex; CGAP Survey

48% of DIP people in Indonesia own a smartphone; more than a third of smartphone owners use services like communication & entertainment

Usage of services amongst DIP people with a smartphone and internet access[4] (%)

2021, In-app survey, N=1,000
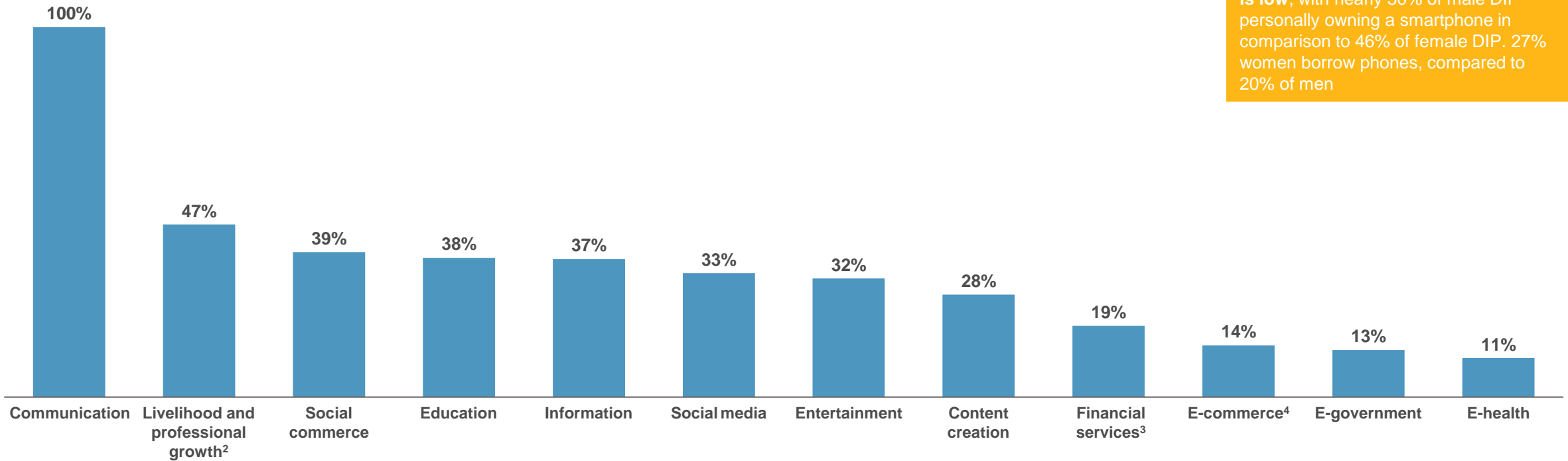
76% of DIP people own a SIM card (2020)[1]

56% of DIP people have access to internet (2020)

48% of DIP people personally own a smartphone (2020)

Gender gap in smartphone ownership is low, with nearly 50% of male DIP personally owning a smartphone in comparison to 46% of female DIP. 27% women borrow phones, compared to 20% of men

Communication	Livelihood and professional growth[2]	Social commerce	Education	Information	Social media	Entertainment	Content creation	Financial services[3]	E-commerce[4]	E-government	E-health
100%	47%	39%	38%	37%	33%	32%	28%	19%	14%	13%	11%

Notes and Sources: 1. FII Indonesia (2020), Borrowing of phones used as proxy for borrowing of SIMs; 2. Use digital services for livelihood and support, including upskilling and job-search; 3. Respondents who answered a "yes" for using e-wallet or any form of online payments were included; 4. Data on use of services is not available for non-smartphone users given that digitally run survey. Data may be skewed by services like Entertainment and E-commerce; FII 2020; CGAP Survey

QUICK STATS: 23 million or 72% of Kenya's adult population can be classified as DIP, driven by the high level of phone penetration among the poor

Segmentation on the basis of income and access to digital services (%)
Global Findex 2021

Population above 15 (millions)

4	**23**	**5**	**32**

Digitally excluded poor: 13%
Digitally included poor (DIP): 72%
Non-vulnerable: 16%
Total: 100%

87% poor women are digital in comparison to 83% men

- Nearly **4 in 5 of Kenyans fall below USD 5.5 income per day**
- **72% of the poor have access to a mobile phone** (23 million digital poor). Of the 23 million, 94% own their own phone
- **7% of DIP people do not own a phone and borrow**. 9% of DIP women borrow a phone compared to 4% of men
- Majority of the poor **do not have primary education (62%)**
- DIP people **are younger** than the average person in Kenya with **54% of them aged between 15-35 years**

Sources: Latest Global Findex; CGAP Survey

Mobile money, communication services, and social media are widely used in Kenya but broader usage in mobile banking, e-commerce, and business commerce remains low

Usage of services amongst DIP people (%)
(2020, N = 1816)

93% of own their SIM Card (2020)

60% of DIP people have access to internet (2020)
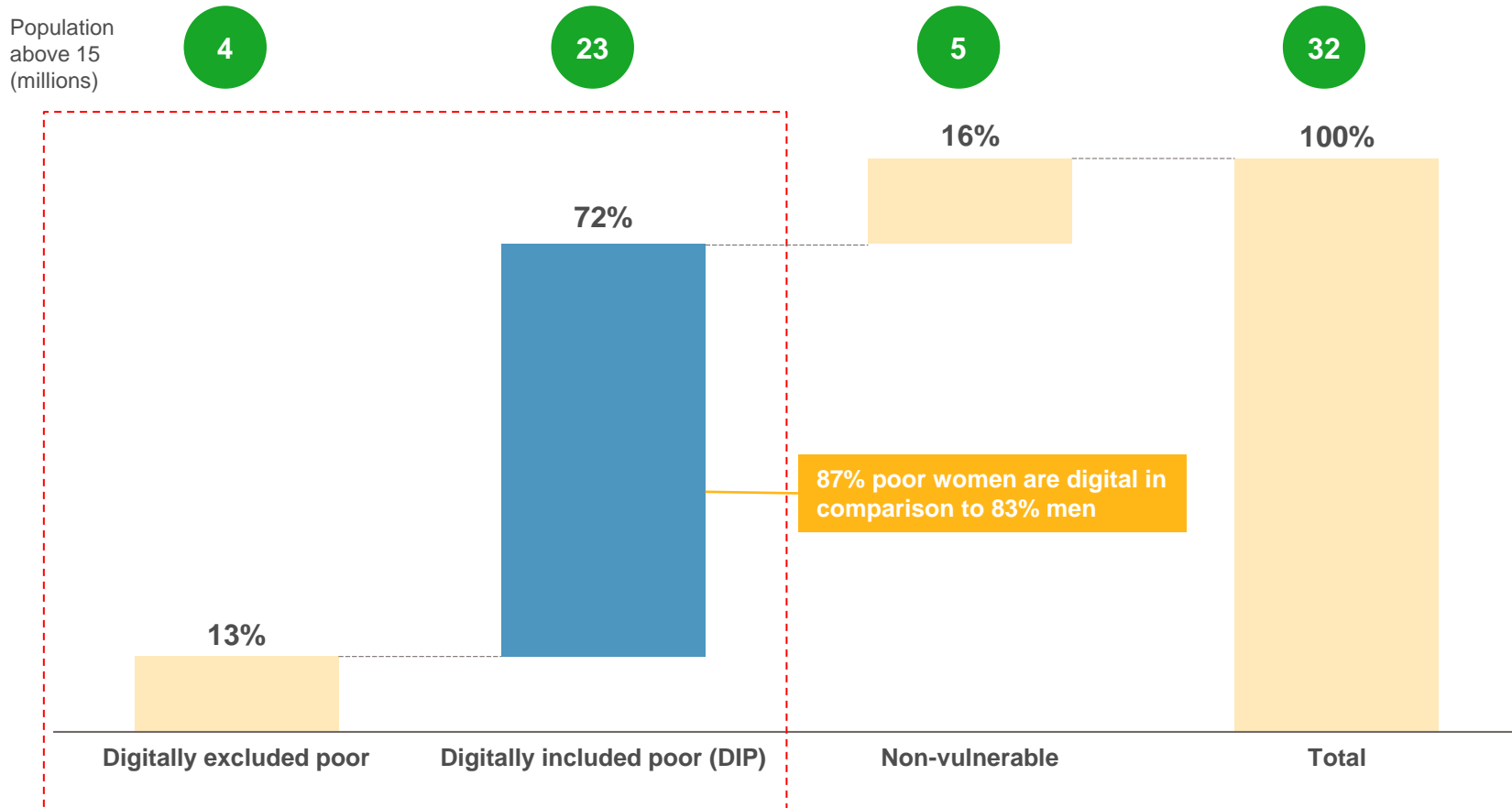
44% of DIP people personally own a smartphone (2020)

Fewer women (39%) use social media compared to men in Kenya (56%)

DIP who use these services are **younger by ~ 5 years, more educated by 14 pp., and more urban by 17 pp.**, and are more likely to be male by 15 pp. than DIP who do not use these services

1 in 3 platform workers use professional and livelihood services, compared to the average 11%

Service	%
Mobile money for sending and receiving money	94%
Mobile money for buying airtime and data on mobile phone	66%
Communication services (such as videocall, zoom, email, whatsapp)[1]	52%
Social media	47%
Entertainment services	36%
Mobile banking services	35%
Information (such as google news, weather, agriculture etc)	33%
Making and receiving payments for goods or services	15%
E-government services	14%
E-commerce[2]	11%
Professional growth and livelihood services	11%
Making and receiving payments for business and employment	9%
Content creation	9%
Making and receiving payments on ecommerce platforms	3%

Notes: 1. Does not include voice calling; 2. 13% of Kenyans have used e-commerce platforms to buy or sell products and services. This figure underestimates the real extent of e-commerce, as respondents largely reported the use of marketplace platforms like Jumia and Kilimall, while the full breadth of e-commerce also encompasses digital trade through informal platforms—for example, via social media—as well as payments, logistics, addressing systems, and asset recognition including mapping/tracking commodity ownership or exchange. Still, even if all forms of e-commerce were included, there is almost certainly room for many more Kenyans to utilize or deepen their utilization of digital services for commerce and trade
Source: Dalberg Survey

GENDER ANALYSIS: Women lag behind men in use of digital services, especially in browsing internet for information, entertainment, and social media

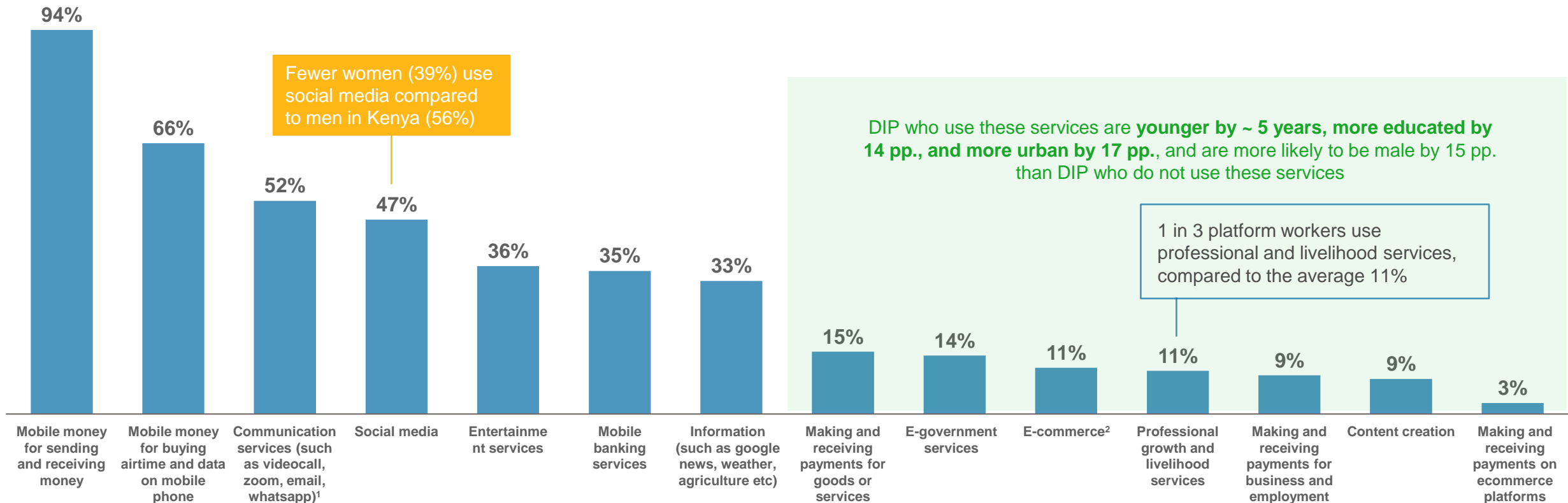**Usage of services amongst DIP people (%)**
(2020, N = 916)

90% of own their SIM Card (2020)

54% of DIP people have access to internet (2020)

37% of DIP people personally own a smartphone (2020)

49% of women have more than one SIM compared to 57% of men

In comparison, 52% of men own a smartphone, a gap of 15 pp.

Difference of usage between women and men

0 p.p.	-11 p.p.	-12 p.p.	-17 p.p.	-3 p.p.	-20 p.p.	-22 p.p.	-4 p.p.	-10 p.p.	-5 p.p.	-2 p.p.	-8 p.p.	-5 p.p.	0 p.p.

Women who use these services are **younger by ~ 4 years, more educated by 10 pp., and more urban by 16 pp.** than women DIP who do not use these services

94%	61%	46%	39%	33%	26%	22%	13%	10%	9%	8%	6%	6%	3%
Mobile money for sending and receiving money	Mobile money for buying airtime and data on mobile phone	Communication services (such as videocall, zoom, email, whatsapp)[1]	Social media	Mobile banking services	Entertainment services	Information (such as google news, weather, agriculture etc)	Making and receiving payments for goods or services	E-government services	E-commerce2	Making and receiving payments for business and employment	Professional growth and livelihood services	Content creation	Making and receiving payments on ecommerce platforms

Notes: 1. Does not include voice calling; 2. 9% of Kenyan DIP women have used e-commerce platforms to buy or sell products and services. This figure underestimates the real extent of e-commerce, as respondents largely reported the use of marketplace platforms like Jumia and Kilimall, while the full breadth of e-commerce also encompasses digital trade through informal platforms—for example, via social media—as well as payments, logistics, addressing systems, and asset recognition including mapping/tracking commodity ownership or exchange. Still, even if all forms of e-commerce were included, there is almost certainly room for many more Kenyans to utilize or deepen their utilization of digital services for commerce and trade
Source: Dalberg Survey

QUICK STATS: 16 million or 17% of Mexico's adult population can be classified as DIP; lower than other countries due less to people earning under $5.5 a day

Segmentation on the basis of income and access to digital services (%)

Global Findex 2021

Population above 15 (millions)

| Digitally excluded poor | Digitally included poor (DIP) | Non-vulnerable | Total |

6 · 16 · 73 · 94

77% · 100%

Assuming bottom 40% of the population as poor, the DIP segment increases to ~28 million

30%

17%

6%
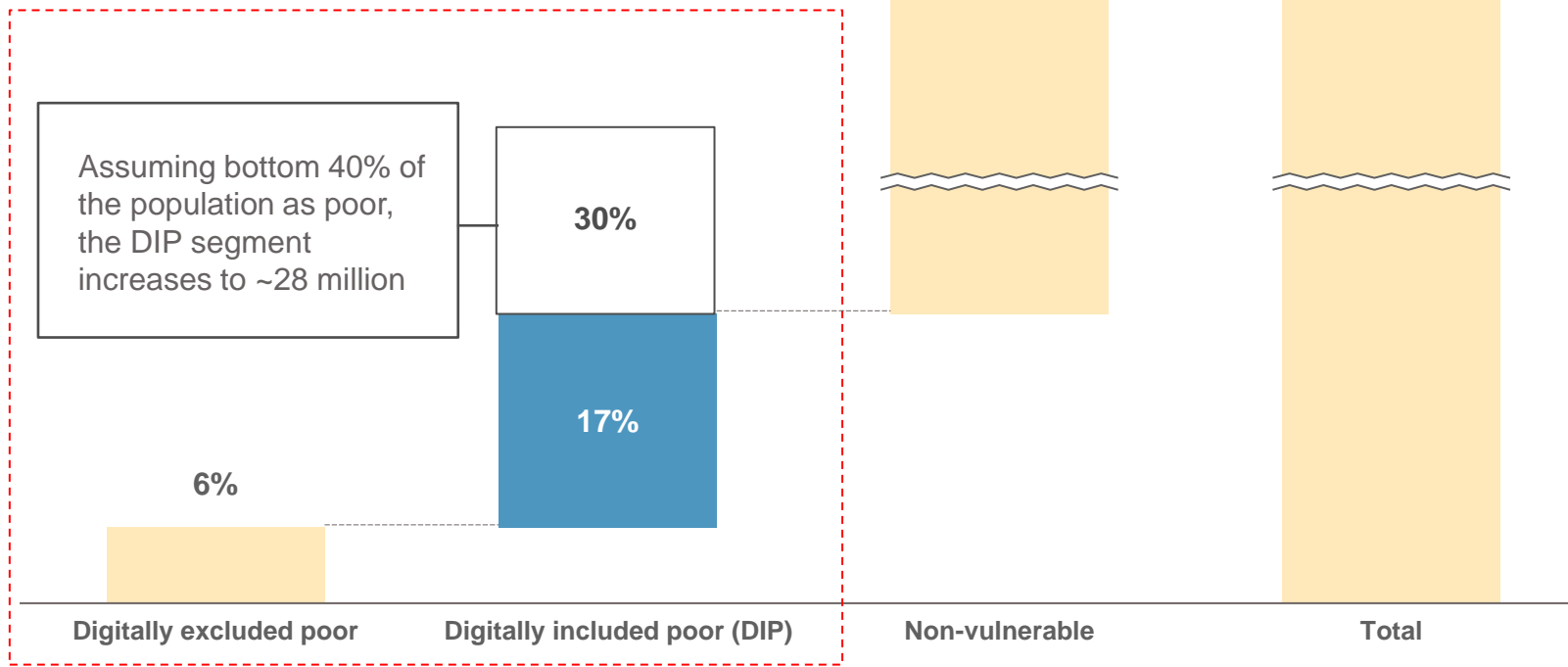
- 52% of poor are digitally included
- 55% of DIP people personally own a smartphone
- DIP people are younger than non-poor and digitally excluded by 5 years and 9 years respectively
- 14% of DIP people use borrowed phones, use of borrowed phones is higher amongst women (18%) as compared to men (9%)

Sources: Latest Global Findex; CGAP Survey

[1] Note: Mexico has higher average income (USD 54/day) as compared to other countries in focus, and thus has lower % of its population below PPP adjusted USD 5.5/day income; an average of Brazil and India's phone ownership numbers for 2021 are used to determine the DIP

Communication, social media, information, and education are the most used digital services, with nearly 50% of DIP people using it on a daily/weekly basis

Usage of services amongst DIP people (%)
(2021, N = 1,005)

■ Daily/ weekly   ■ Monthly/ yearly

85% of DIP people personally own a SIM card (2021)

An average Mexican DIP person **owns only 1 SIM (~1.04)**

37-61% of DIP people have access to internet (2021)

55% of DIP people personally own a smartphone (2021)
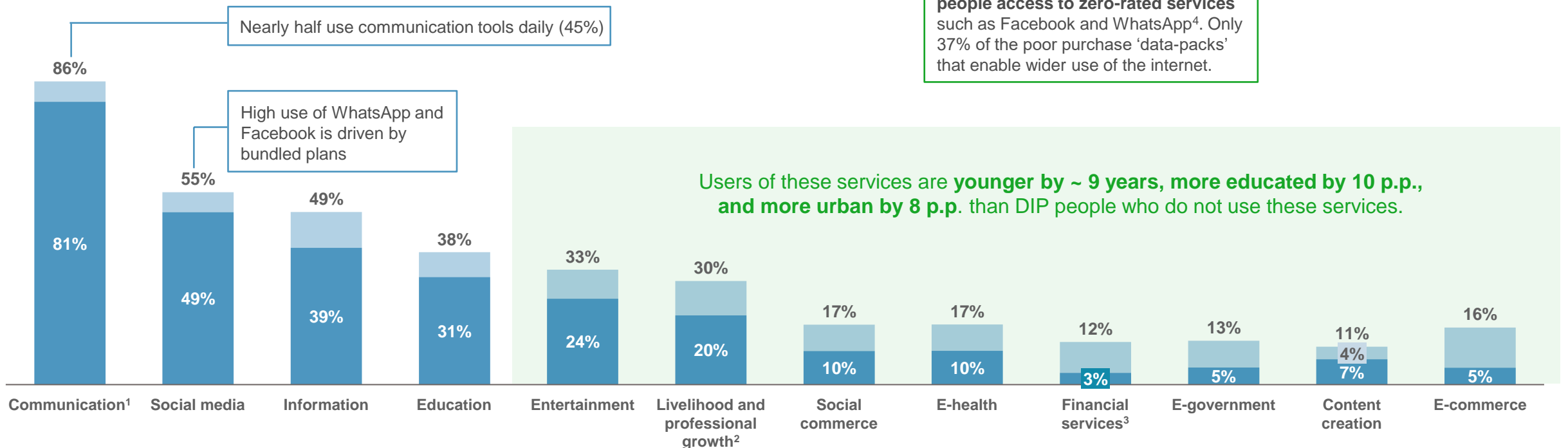
Telecom operators in Mexico provide a bundled plan with the SIM, allowing people access to zero-rated services such as Facebook and WhatsApp[4]. Only 37% of the poor purchase 'data-packs' that enable wider use of the internet.

Nearly half use communication tools daily (45%)

High use of WhatsApp and Facebook is driven by bundled plans

Users of these services are **younger by ~ 9 years, more educated by 10 p.p., and more urban by 8 p.p**. than DIP people who do not use these services.

Service	Total	Daily/weekly	Monthly/yearly
Communication[1]	86%	81%	
Social media	55%	49%	
Information	49%	39%	
Education	38%	31%	
Entertainment	33%	24%	
Livelihood and professional growth[2]	30%	20%	
Social commerce	17%	10%	
E-health	17%	10%	
Financial services[3]	12%	3%	
E-government	13%	5%	
Content creation	11%	7%, 4%	
E-commerce	16%	5%	

Notes: 1. Respondents were asked to choose between daily / weekly / monthly / yearly / never / don't know for the question on "How often do you use your phone to communicate with others (e.g., regular call or SMS, video call, email, WhatsApp, Zoom etc.) It is possible that respondents did not understand the question and as a result, answered "don't know; 2. Use digital services for livelihood and support, including upskilling and job-search; 3. For financial services, we did not have answer options for daily / weekly / monthly. Instead "Often" and "Very often" are assumed to stand for daily/ weekly usage, and any usage less often is conducted monthly / yearly; 4. Zero rated applications primarily include communications and social media services but may also include information tools such as Wikipedia. Different telecom providers provide different zero-rated apps to customers, which may vary by service type as well; we haven't deep-dived into offerings from different telecom providers
Source: CGAP Survey

GENDER ANALYSIS: Women use more communication, education and social commerce and lesser financial services, and e-commerce services compared to men

Usage of services amongst DIP women (%)
(2021, N = 533)

81% of DIP people personally own a SIM card (2021)

34% - 60% of DIP people have access to internet (2021)

52% of DIP people personally own a smartphone (2021)

3-4 pp lower SIM card ownership, smartphone ownership and internet access **compared with men**

Difference of usage between women and men

	Communication[1]	Social media	Information	Education	Entertainment	Livelihood and professional growth[2]	Social commerce	E-health	Financial services	E-government	Content creation	E-Commerce
Diff.	+2 p.p.	-1 p.p.	-3 p.p.	+3 p.p.	-6 p.p.	-5 p.p.	+2 p.p.	-2 p.p.	-5 p.p.	-5 p.p.	-2 p.p.	-9 p.p.
Usage	87%	54%	48%	39%	30%	27%	18%	16%	10%	10%	10%	12%

Women using these services are younger by 9 years, more educated by 10 p.p., more urban (in comparison to rural) by 11 p.p., than women who do not use these services.

Notes: 1. Respondents were asked to choose between Daily, weekly, monthly, yearly, never, and don't know for the question on "How often do you use your phone to communicate with others (e.g., regular call or SMS, video call, email, WhatsApp, Zoom etc.) It is possible that respondents did not understand the question and as a result, answered "don't know; 2. Use digital services for livelihood and support, including upskilling and job-search
Source: CGAP Survey

QUICK STATS: 6 million or 67% of Senegal's adult population can be classified as DIP; 60% of DIP people personally own a smartphone

Segmentation on the basis of income and access to digital services (%)

Global Findex 2021

Population above 15 (millions)

1	**6**	**2**	**9**
11%	67%	22%	100%
Digitally excluded poor	Digitally included poor (DIP)	Non-vulnerable	Total

79% of poor women are digital, compared to 87% of poor men
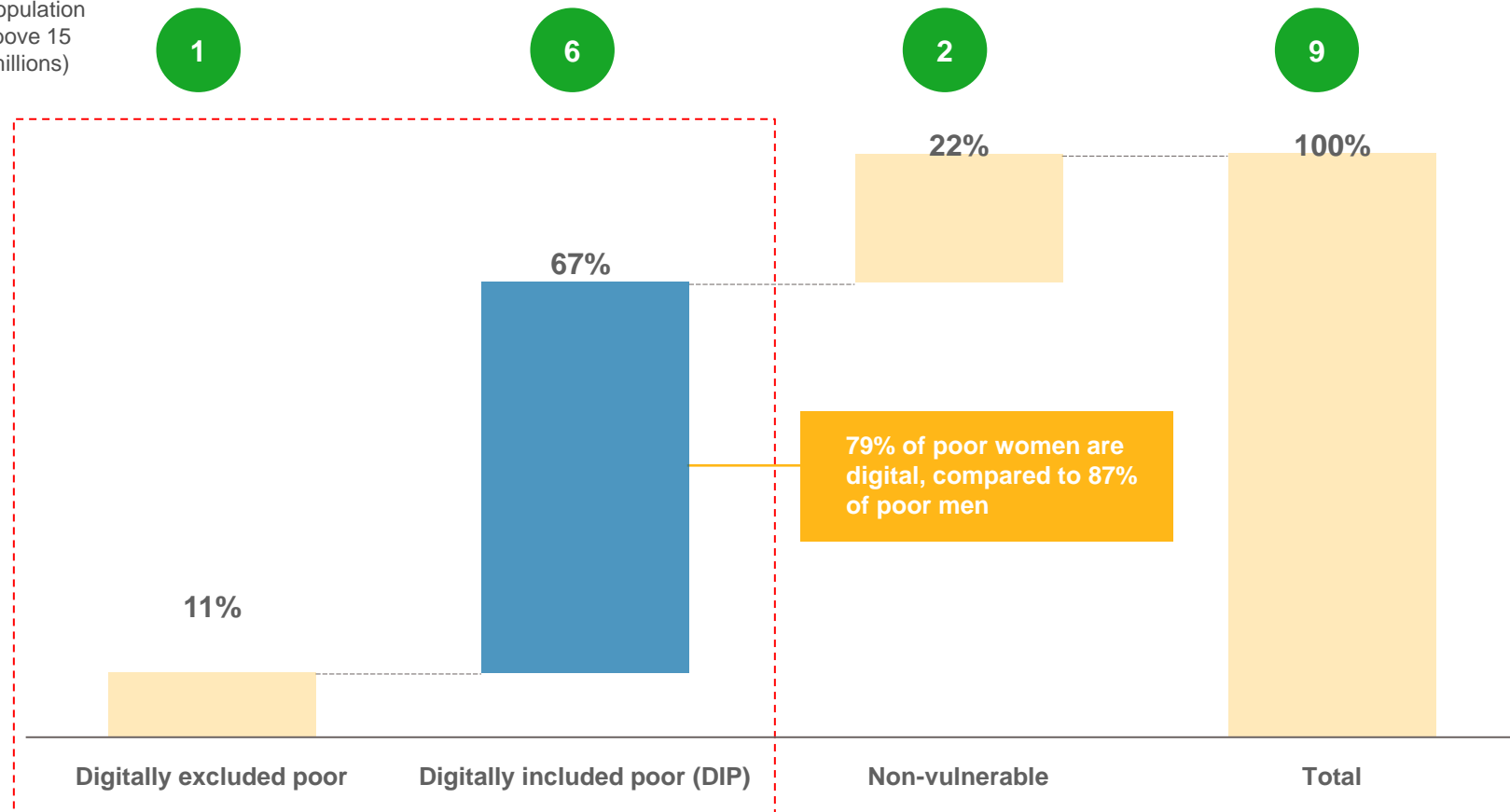
- **82%** of poor are digitally included.
- **62% of DIP people personally own a smartphone.**
- Only **25% of DIP people receive education above the primary level, compared to 44% amongst non-poor** and 17% amongst the excluded.
- **3% of DIP people use a borrowed phone. Use of borrowed phones** is higher amongst women (5%) as compared to men (1%).

Sources: Global Findex 2021; CGAP Survey

With 62% of DIP people owning a smartphone and 65% accessing internet, the use of communication, financial services, and social media is high and frequent

Usage of services amongst DIP people (%)
(2021, N = 1,018)

■ Daily/ weekly ■ Monthly/ yearly
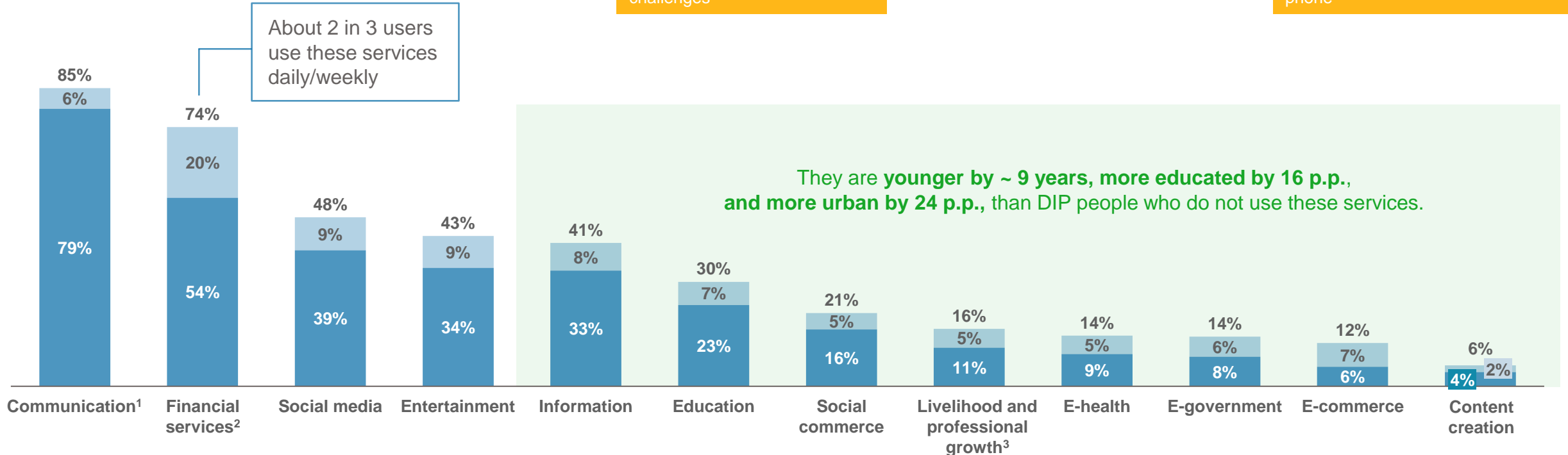
94% of DIP people personally own a SIM card (2021)

On average, the DIP **own over 3 SIM cards** (3.3). This is due to network connectivity and cost challenges

65% of DIP people have access to internet (2021)

62% of DIP people personally own a smartphone (2021)

Sharing of phones is not very common in Senegal; nearly 97% of DIP people said that they own their phone

About 2 in 3 users use these services daily/weekly

They are **younger by ~ 9 years, more educated by 16 p.p., and more urban by 24 p.p.,** than DIP people who do not use these services.

Service	Monthly/yearly	Daily/weekly	Total
Communication[1]	6%	79%	85%
Financial services[2]	20%	54%	74%
Social media	9%	39%	48%
Entertainment	9%	34%	43%
Information	8%	33%	41%
Education	7%	23%	30%
Social commerce	5%	16%	21%
Livelihood and professional growth[3]	5%	11%	16%
E-health	5%	9%	14%
E-government	6%	8%	14%
E-commerce	7%	6%	12%
Content creation	2%	4%	6%

Notes: 1. Respondents were asked to choose between daily / weekly / monthly / yearly / never / don't know for the question on "How often do you use your phone to communicate with others (e.g., regular call or SMS, video call, email, WhatsApp, Zoom etc.) It is possible that a few respondents did not understand the question and as a result, answered "don't know", 2. For financial services, we did not have answer options for daily / weekly / monthly. Instead "Often" and "Very often" are assumed to stand for daily/ weekly usage, and any usage less often is conducted monthly / yearly, 3. Use digital services for livelihood and support, including upskilling and job-search
Source: CGAP Survey

GENDER ANALYSIS: Women trail men in smartphone ownership, internet access and use of services like social media, entertainment, and information

Usage of services amongst DIP women (%)
(2021, N = 617)

93% of DIP people personally own a SIM card (2021)

60% of DIP people have access to internet (2021)

58% of DIP people personally own a smartphone (2021)

In comparison, **70% of men have access to internet, a gap of 10 p.p.**

66% of men personally own their phones, a difference of 8 p.p.

Difference of usage between women and men

| | +7 p.p. | -11 p.p. | -22 p.p. | -21 p.p. | -19 p.p. | -7 p.p. | -10 p.p. | -9 p.p. | -7 p.p. | -8 p.p. | -11 p.p. | -4 p.p. |

Women using these services are younger by 9 years, more educated by 10 p.p., more urban (in comparison to rural) by 11 p.p., than women who do not use these services.

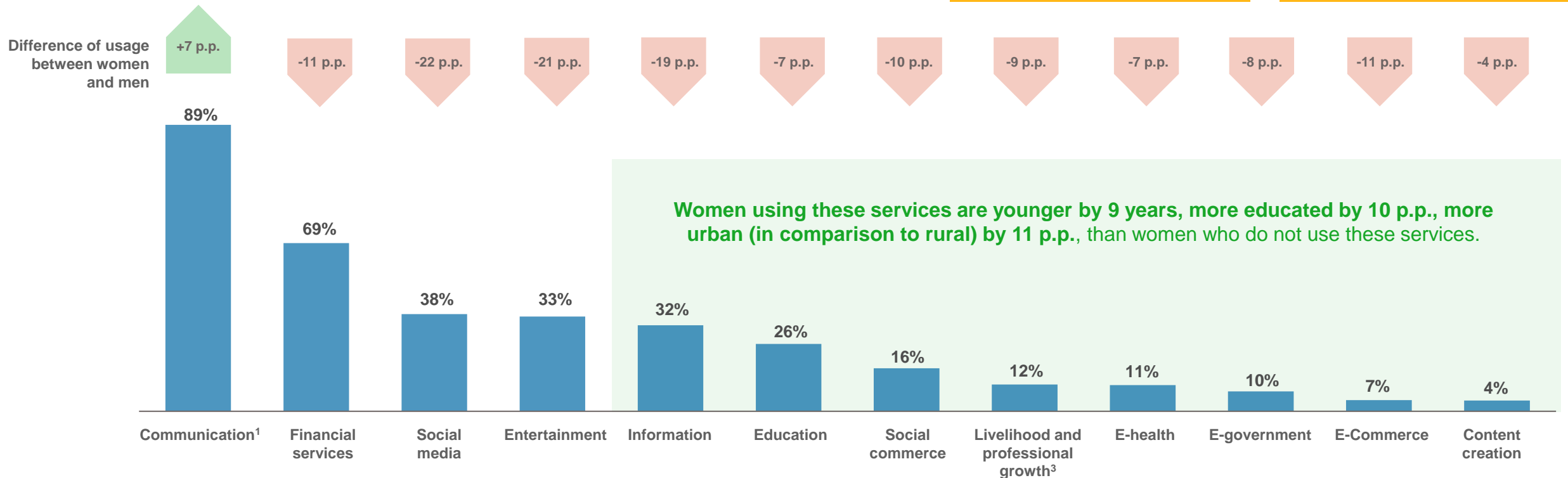| Communication[1]	Financial services	Social media	Entertainment	Information	Education	Social commerce	Livelihood and professional growth[3]	E-health	E-government	E-Commerce	Content creation
89%	69%	38%	33%	32%	26%	16%	12%	11%	10%	7%	4%

Notes: 1. Respondents were asked to choose between daily / weekly / monthly / yearly / never / don't know for the question on "How often do you use your phone to communicate with others (e.g., regular call or SMS, video call, email, WhatsApp, Zoom etc.) It is possible that a few respondents did not understand the question and as a result, answered "don't know", 2.. Use digital services for livelihood and support, including upskilling and job-search
Source: CGAP Survey

Across markets, the digital footprint of the poor varies by occupation and gender; owing to both variations in occupational segments and digital services usage among the poor
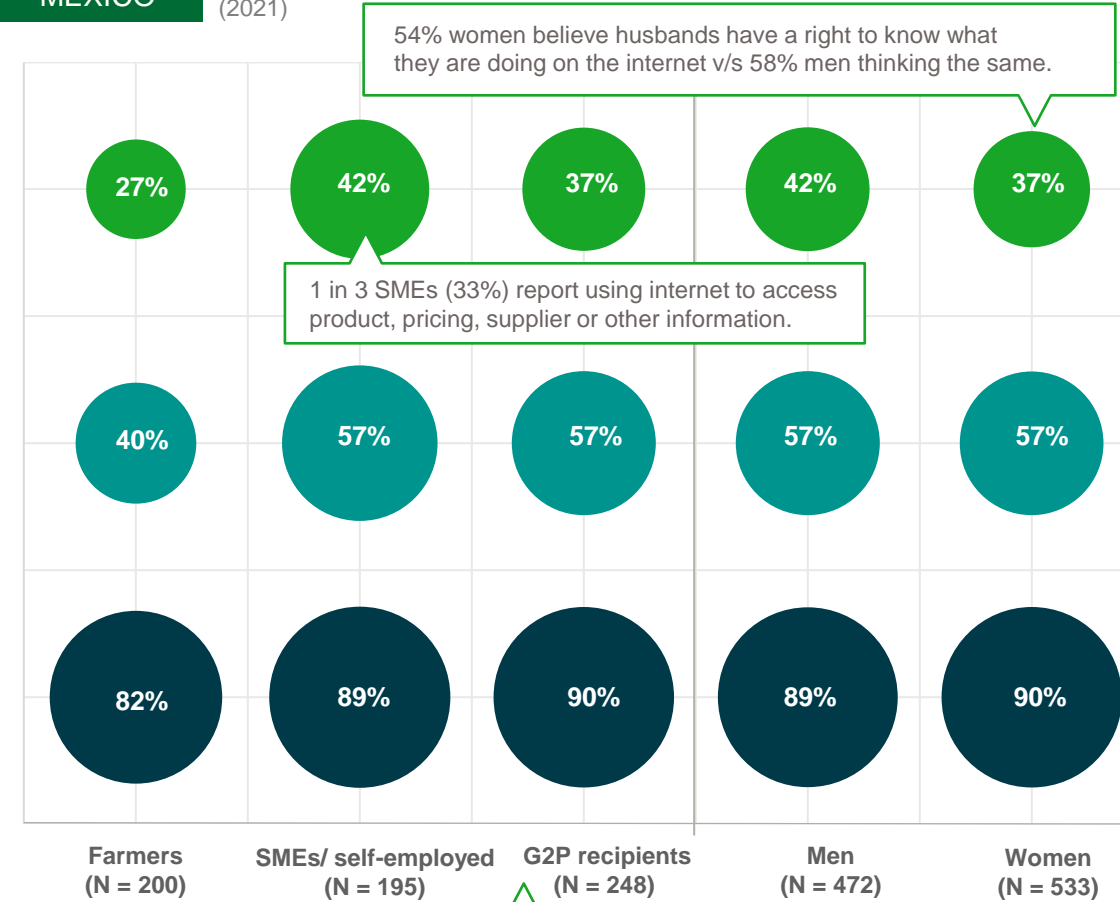
Usage[1] of services amongst DIP people in Kenya, by segment and gender (%) (2020)

Usage[1] of services amongst DIP people in Mexico, by segment and gender (%) (2021)

54% women believe husbands have a right to know what they are doing on the internet v/s 58% men thinking the same.

KENYA

E-wallets, E-health, E-government:
- Farmers: 23%
- SMEs/self-employed: 43%
- G2P recipients: 16%
- Platform workers: 70%
- Men: 45%
- Women: 28%

Education, Online Payments, Social Commerce, Ecommerce, Professional and livelihood, Content Creation:
- Farmers: 49%
- SMEs/self-employed: 74%
- G2P recipients: 39%
- Platform workers: 89%
- Men: 72%
- Women: 60%

Communication, Social media, Information, Entertainment:
- Farmers: 98%
- SMEs/self-employed: 95%
- G2P recipients: 91%
- Platform workers: 97%
- Men: 95%
- Women: 94%

Segments: Farmers (N = 462), SMEs/self-employed (N = 369), G2P recipients (N = 69), Platform workers (N = 30), Men (N = 900), Women (N = 916)

Services include e-gov, e-commerce along with agriculture specific applications.

MEXICO

E-wallets, E-health, E-government:
- Farmers: 27%
- SMEs/self-employed: 42%
- G2P recipients: 37%
- Men: 42%
- Women: 37%

Education, Online Payments, Social Commerce, Ecommerce, Professional and livelihood, Content Creation:
- Farmers: 40%
- SMEs/self-employed: 57%
- G2P recipients: 57%
- Men: 57%
- Women: 57%

Communication, Social media, Information, Entertainment:
- Farmers: 82%
- SMEs/self-employed: 89%
- G2P recipients: 90%
- Men: 89%
- Women: 90%

Segments: Farmers (N = 200), SMEs/self-employed (N = 195), G2P recipients (N = 248), Men (N = 472), Women (N = 533)

1 in 3 SMEs (33%) report using internet to access product, pricing, supplier or other information.

In Mexico, platform workers typically do not belong to the "poor" category and are hence, not represented in the segments here.

Notes: 1. Usage refers to the use of any services listed in a category

We have developed a six-layer data framework to understand the digital footprint of the DIP segment

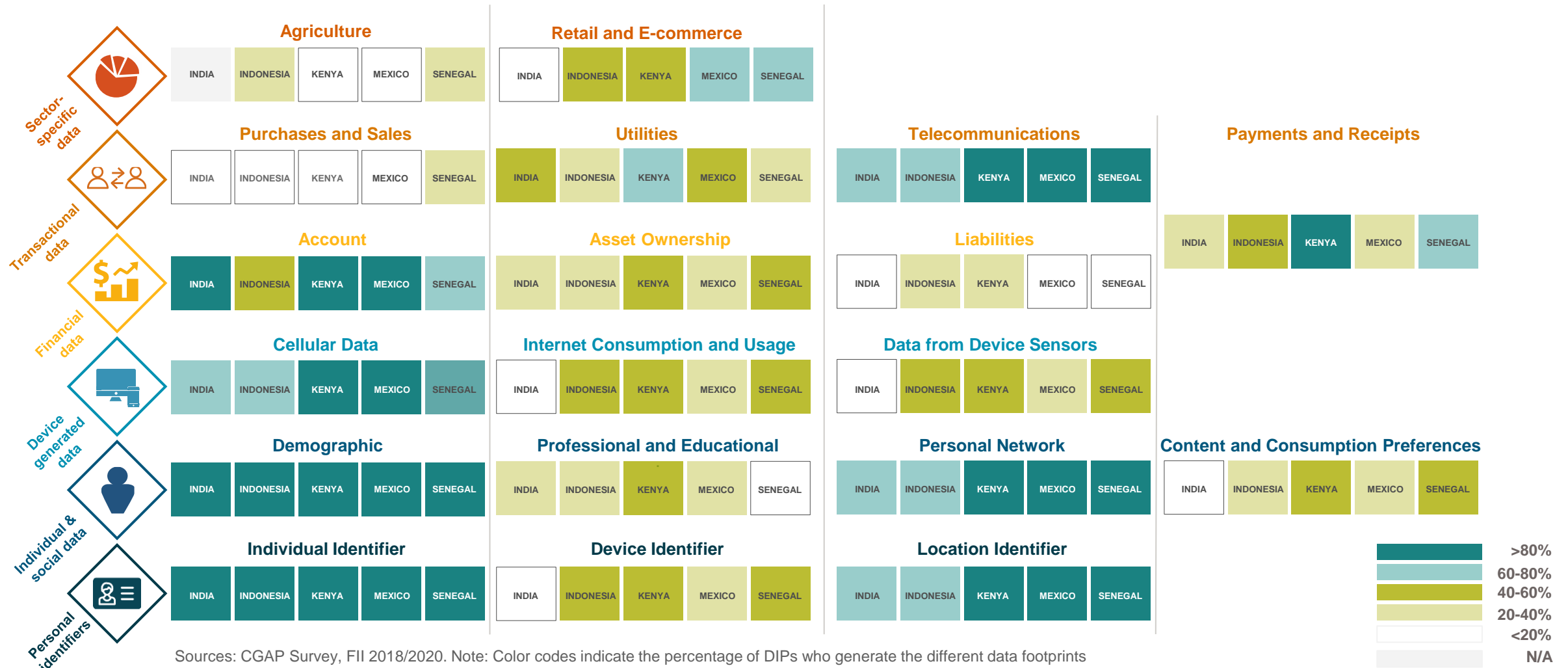| Digital footprint layer	Description	Relevance to Financial Service Providers (FSPs)
Economic activity data	Data trails unique to usage of services for supporting economic activities[1]	Builds understanding of financial lives allows tailoring of product/services, and improves fit
Transactional data	Data generated on access and usage of financial products and services, as well as transactions; these help understand the financial lives of the DIP poor	Provides view of financial lives, helps establish product/service fit, provides understanding of use of formal financial services, and cash-flows
Financial data		
Device generated data	Data trails that help identify demographic characteristics and digital usage (generated through use of devices)	Enables targeting and distribution of products and services
Individual and social data		
Personal Identifiers	Unique or semi-unique identifiers that enable identification of an individual, person, or data generating process	Enables KYC, onboarding

Source: CGAP Analysis

Multiple data points have been identified across the six layers which may be relevant to FSPs serving the DIP segment

Agriculture Agricultural processes and farm holding, e,g. type of crop, type of inputs utilised (fertilisers, access to irrigation), size of holding	**Retail and E-commerce** Merchant and associated business processes data, e.g. inventory, size, types of products sold, supplier payments etc.		
Purchases and Sales Purchase and sale of goods and services, e.g., volume and type of good purchased or sold	**Utilities** Access and usage of utilities, e.g., electric and water bills, gas and TV connections etc...	**Telecommunications** Telecom activity and usage, e.g., duration of calls, airtime topups, etc...	**Payments and Receipts** Payments between individuals and businesses, e.g., remittances, payments for utilities, purchases and sales, social commerce etc..
Account Access to financial accounts, e.g., bank account number, electronic wallet, debit or ATM card, micro-finance or savings group memberships	**Asset Ownership** Ownership, rental or borrowings, e.g., house and personal possessions, debts, cash on hand, savings and type of savings	**Liabilities** Credit access and availability, e.g., short or long-term borrowing, type of borrowing, interest rates, repayment history	
Cellular data Real-time text or data transmitted between two or more individuals, e.g. text messages, voice calls, IVR, USSD, VoIP etc.	**Internet consumption and usage** Access to and usage of internet, e.g., download and upload speeds, type of uplink (wi-fi versus cellular), duration, frequency etc.	**Data from device sensors** Data generated from device sensors other than location, e.g., elevation, motion sensors, multimedia sensors (e.g. camera), app usage	
Demographic Group characteristics, attributes or socio-economic status, e.g. gender, age, ZIP code etc..	**Professional and educational** Education and professional history, e.g. professional credentials, occupation, income etc.	**Personal Network** Inter-personal relationship between individuals and their social network, e.g. friends and family, professional acquaintances etc.	**Content and consumption preferences** Individual's interest around content and products they consume, e.g. social media posts, browsing history, likes and dislikes
Individual Identifier Uniquely identity for an individual, e.g., name, username, national registry number, consumer ID, biometrics, phone number etc.	**Device identifier** Uniquely identity for devices and data generating processes, e.g,. IP address, MAC address, browser and OS signature etc.	**Location Identifier** Location of individual, business or land holdings e.g.,GPS or cell tower location	

Source: CGAP Analysis

Across markets, there is high incidence of telecom, cellular, demographic, individual identifier, personal network, and location data among the DIP segment

Sector-specific data

Agriculture
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Retail and E-commerce
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Transactional data

Purchases and Sales
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Utilities
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Telecommunications
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Payments and Receipts
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Financial data

Account
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Asset Ownership
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Liabilities
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Device generated data

Cellular Data
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Internet Consumption and Usage
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Data from Device Sensors
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Individual & social data

Demographic
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Professional and Educational
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Personal Network
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Content and Consumption Preferences
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Personal identifiers

Individual Identifier
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Device Identifier
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Location Identifier
INDIA	INDONESIA	KENYA	MEXICO	SENEGAL

Legend:
- >80%
- 60-80%
- 40-60%
- 20-40%
- <20%
- N/A

Sources: CGAP Survey, FII 2018/2020. Note: Color codes indicate the percentage of DIPs who generate the different data footprints

Across markets, government registries, banks, and telecom and utility providers are important sources of data on the DIP segment

		Personal identifiers	Individual and social data	Device generated data	Financial data	Transactional data	Sector-specific data
Financial Service Providers	Government and public registries	INDIA INDONESIA KENYA MEXICO SENEGAL	INDIA INDONESIA KENYA MEXICO SENEGAL		INDIA MEXICO	INDIA INDONESIA MEXICO	INDIA
	Traditional banks and FSPs	INDIA INDONESIA KENYA	INDIA INDONESIA KENYA		INDIA INDONESIA KENYA	INDIA INDONESIA	INDIA
	Fin-tech providers						
	MFIs and NBFCs	INDIA INDONESIA KENYA MEXICO	INDIA INDONESIA MEXICO		INDIA INDONESIA KENYA	INDONESIA	
	E-Money issuers and mobile money	KENYA SENEGAL	KENYA SENEGAL	SENEGAL	KENYA SENEGAL	SENEGAL	
Digital Service Providers	E-commerce					KENYA	
	Social media	MEXICO SENEGAL	MEXICO SENEGAL	MEXICO SENEGAL			
	Other digital service providers	KENYA	KENYA				
	Telecommunications and Utilities	INDIA INDONESIA KENYA MEXICO SENEGAL	INDIA INDONESIA KENYA MEXICO SENEGAL	INDIA INDONESIA KENYA MEXICO SENEGAL		INDIA INDONESIA KENYA MEXICO SENEGAL	
	Data aggregators and holders	KENYA	KENYA				
	Private sector databases	KENYA					
	NGOs and international organisations	KENYA					

Sources: CGAP Analysis; Note: Placement of a flag indicates that the data source has medium to high coverage for different data points in that market

PART 3: SMARTPHONE USAGE ANALYSIS
Côte d'Ivoire, Ghana, Kenya, Nigeria, South Africa

Photo by CGAP (Nicolas Réméné via Communication for Development Ltd.)

SUMMARY: SMARTPHONE DATA TRAILS (1/2)

Digital Footprint:
- Airtime top-ups are the most common data trails being generated across markets with over 90% of individuals generating these data trails across markets.
- On average across markets 55% of individuals are generating data trails on P2P transactions.
- Data generated on loans and savings is very limited with variations across markets.

Data Consumption:
- Data trails vary across markets with men, urban dwellers, and younger people consuming more mobile internet data on average.
- Men spend a higher proportion of time on better quality networks (higher mobile internet speeds) which potentially results in a higher data trail for men across markets. On average across markets covered in the study:
  - 54% men are on 4G data networks compared to 44% women.
  - 39% men are on 3G networks compared to 47% women.
- Data consumption could be used as a proxy of income to segment customers.
- On average, women have a higher median total value of monthly airtime top-ups than men—for women the value is $3.2/month and for men it is $2.9/month. This could be an important consideration for FSPs when they design products for, and deliver to, women.
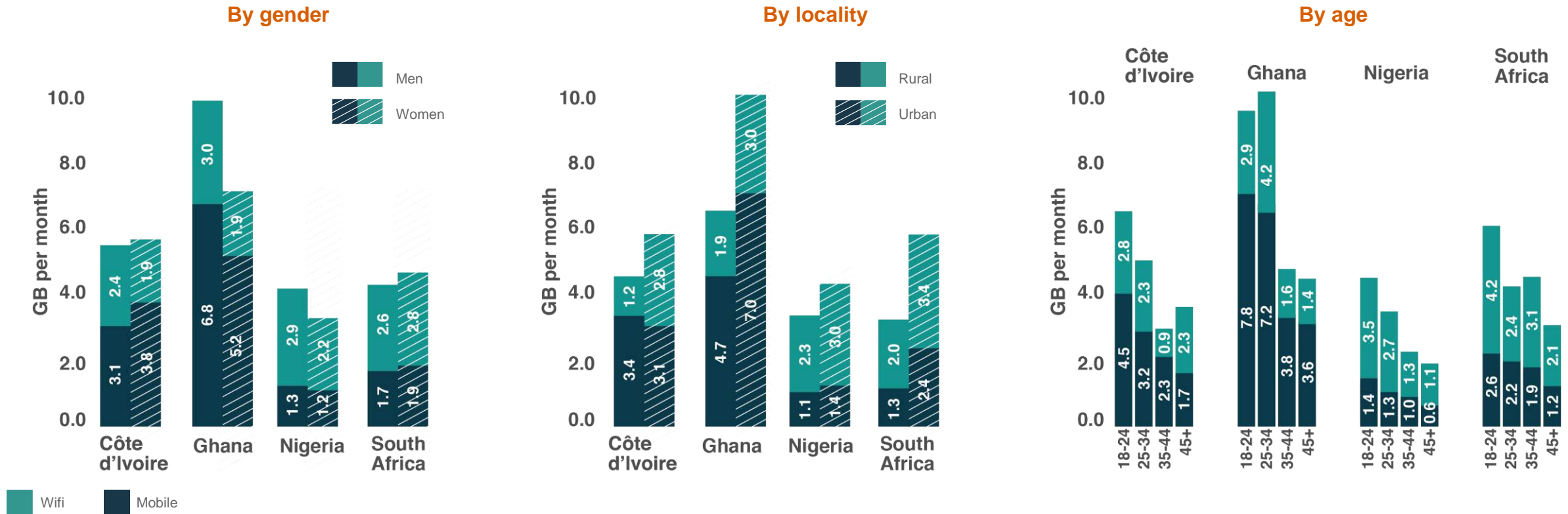
SUMMARY: SMARTPHONE DATA TRAILS (2/2)

Use of Data Trails by FSPs:

- Since mobile money transactions are a common source of data, providers could enhance the design of embedded lending and insurance products that leverage data from MNOs and sell loans and insurance through MNOs.
- MNOs are a rich source of both airtime top-up and financial payments data; enhanced data-sharing frameworks (such as Open Data and advancements) could enable FSPs to leverage MNO data.
- FSPs could design credit products for airtime or data bundles.
- A large proportion of the mobile app data is controlled by Meta (Facebook, WhatsApp, Instagram).

Data trails of smartphone users[1] vary across markets as well as by gender, locality, and age

Data consumption 2019-2020

By gender

Legend: Men, Women

	Côte d'Ivoire	Ghana	Nigeria	South Africa
Wifi	2.4 / 1.9	3.0 / 1.9	2.9 / 2.2	2.6 / 2.8
Mobile	3.1 / 3.8	6.8 / 5.2	1.3 / 1.2	1.7 / 1.9

By locality

Legend: Rural, Urban

	Côte d'Ivoire	Ghana	Nigeria	South Africa
Wifi	1.2 / 2.8	1.9 / 3.0	2.3 / 3.0	2.0 / 3.4
Mobile	3.4 / 3.1	4.7 / 7.0	1.1 / 1.4	1.3 / 2.4

By age

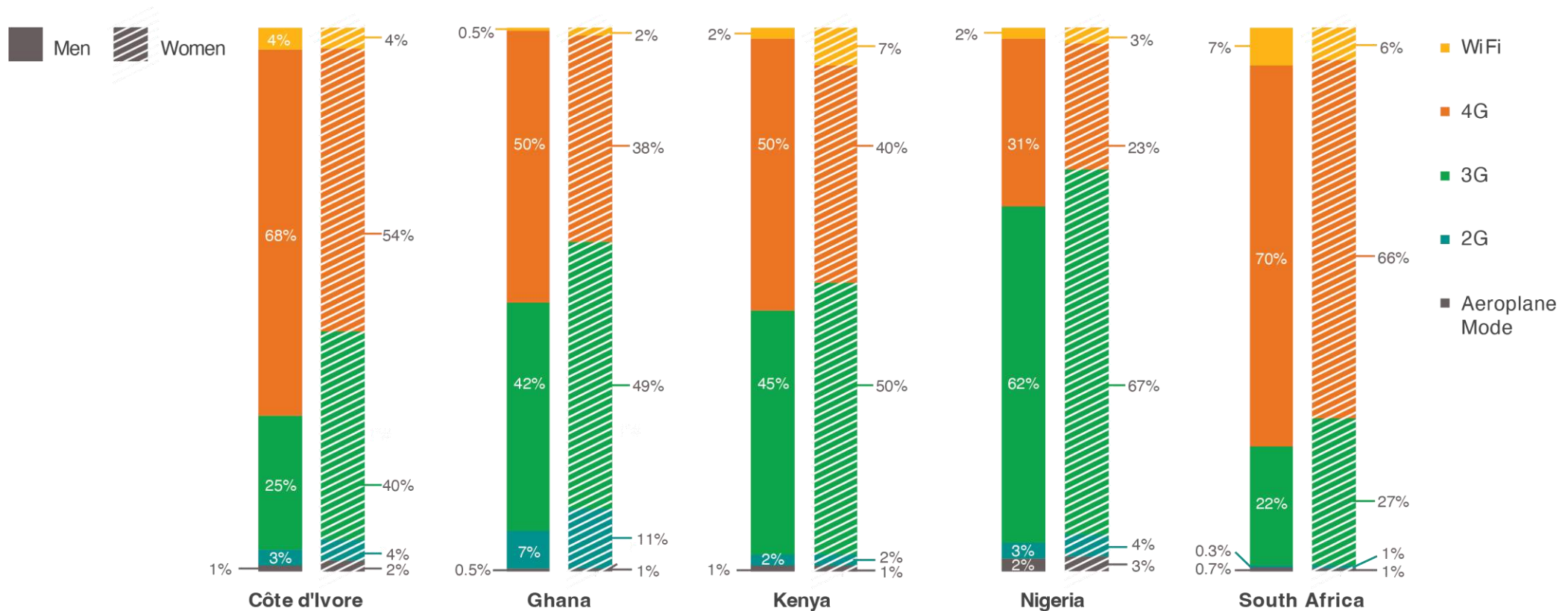|	Côte d'Ivoire				Ghana				Nigeria				South Africa			
	18-24	25-34	35-44	45+	18-24	25-34	35-44	45+	18-24	25-34	35-44	45+	18-24	25-34	35-44	45+
Wifi	2.8	2.3	0.9	2.3	2.9	4.2	1.6	1.4	3.5	2.7	1.3	0.6	4.2	2.4	3.1	2.1
Mobile	4.5	3.2	2.3	1.7	7.8	7.2	3.8	3.6	1.4	1.3	1.0	1.1	2.6	2.2	1.9	1.2

Legend: Wifi, Mobile

- Men and urban dwellers consumed significantly more data per month. Across all markets, individuals consumed significant amounts of data over WiFi connections, with variances on the percentage of data consumed over WiFi by market and by segment.
- Youth (ages 18-24) consume the most amount of data relative to other age groups. This is not surprising as this age group are digital natives.

Note: 1. This section covers the digital footprint of only smartphone users

Across markets, men typically spend more time connected to higher quality networks than women
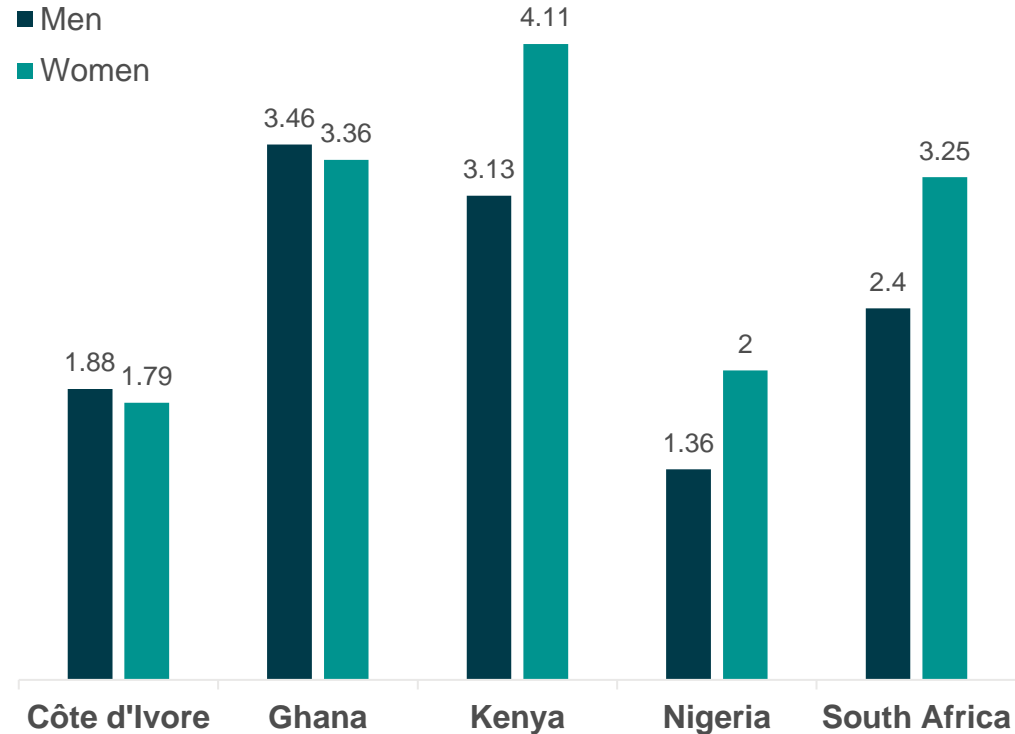
Time spent connected to each network modality, by gender: 2019-2020

Legend: ■ Men (solid), ▨ Women (hatched)

Legend: ■ WiFi, ■ 4G, ■ 3G, ■ 2G, ■ Aeroplane Mode

Côte d'Ivore
- Men: 4% WiFi, 68% 4G, 25% 3G, 3% 2G, 1% Aeroplane Mode
- Women: 4% WiFi, 54% 4G, 40% 3G, 4% 2G, 2% Aeroplane Mode

Ghana
- Men: 0.5% WiFi, 50% 4G, 42% 3G, 7% 2G, 0.5% Aeroplane Mode
- Women: 2% WiFi, 38% 4G, 49% 3G, 11% 2G, 1% Aeroplane Mode

Kenya
- Men: 2% WiFi, 50% 4G, 45% 3G, 2% 2G, 1% Aeroplane Mode
- Women: 7% WiFi, 40% 4G, 50% 3G, 2% 2G, 1% Aeroplane Mode

Nigeria
- Men: 2% WiFi, 31% 4G, 62% 3G, 3% 2G, 2% Aeroplane Mode
- Women: 3% WiFi, 23% 4G, 67% 3G, 4% 2G, 3% Aeroplane Mode

South Africa
- Men: 7% WiFi, 70% 4G, 22% 3G, 0.3% 2G, 0.7% Aeroplane Mode
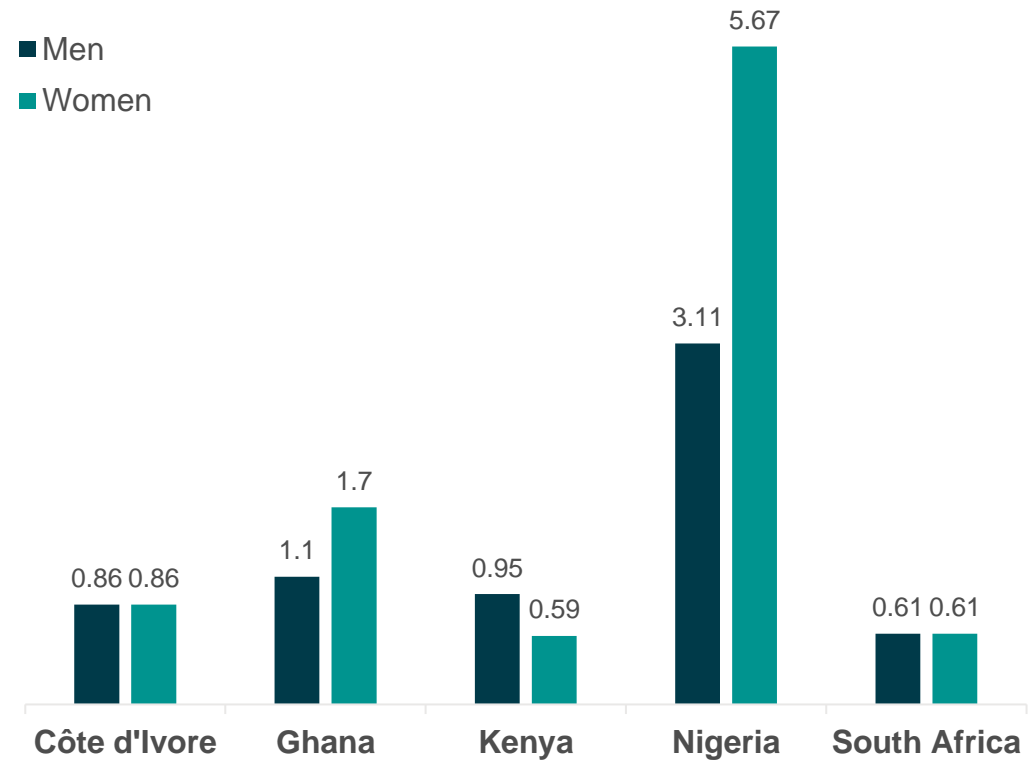- Women: 6% WiFi, 66% 4G, 27% 3G, 1% 2G, 1% Aeroplane Mode

Women spending less time on higher quality networks could indicate that, on average, women have lower quality handsets than men.

There are gender-based variations in number and value of monthly airtime top-ups among smartphone users across geographics

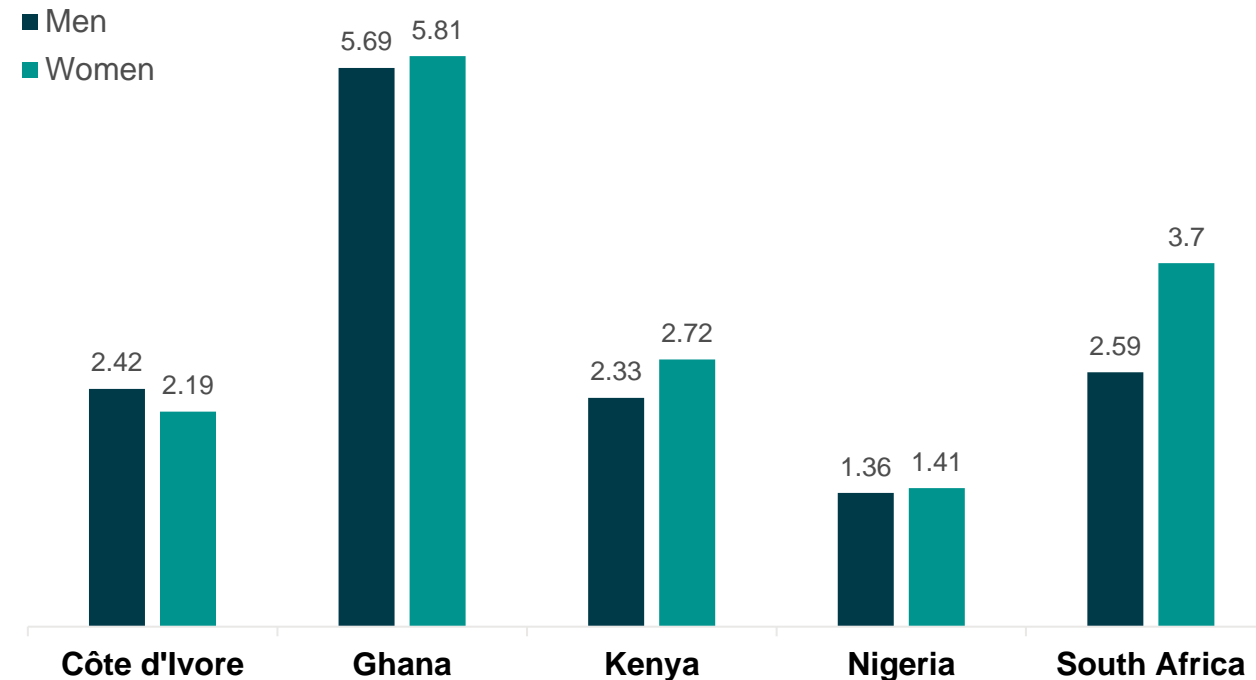**Median number of airtime top-ups per month, by gender 2019-2020**

■ Men
■ Women

Côte d'Ivore: 1.88, 1.79
Ghana: 3.46, 3.36
Kenya: 3.13, 4.11
Nigeria: 1.36, 2
South Africa: 2.4, 3.25

Median airtime top-up value per month, by gender (in USD) 2019-2020

■ Men
■ Women

Côte d'Ivore: 0.86, 0.86
Ghana: 1.1, 1.7
Kenya: 0.95, 0.59
Nigeria: 3.11, 5.67
South Africa: 0.61, 0.61

The value of airtime top-ups is similar across genders, with women having a higher value in most markets

Median total value of airtime top-ups per month, by gender (in USD)
2019-2020

■ Men
■ Women

	Côte d'Ivore	Ghana	Kenya	Nigeria	South Africa
Men	2.42	5.69	2.33	1.36	2.59
Women	2.19	5.81	2.72	1.41	3.7

FSPs can factor the transaction behavior of women into the design and delivery of gender-smart financial products.

Airtime top-ups have widespread availability across markets and are valuable data trails for both men and women

Share of individuals making airtime top-ups

2019-2020

Côte d'Ivore	Ghana	Kenya	Nigeria	South Africa
99%	99%	98%	93%	96%
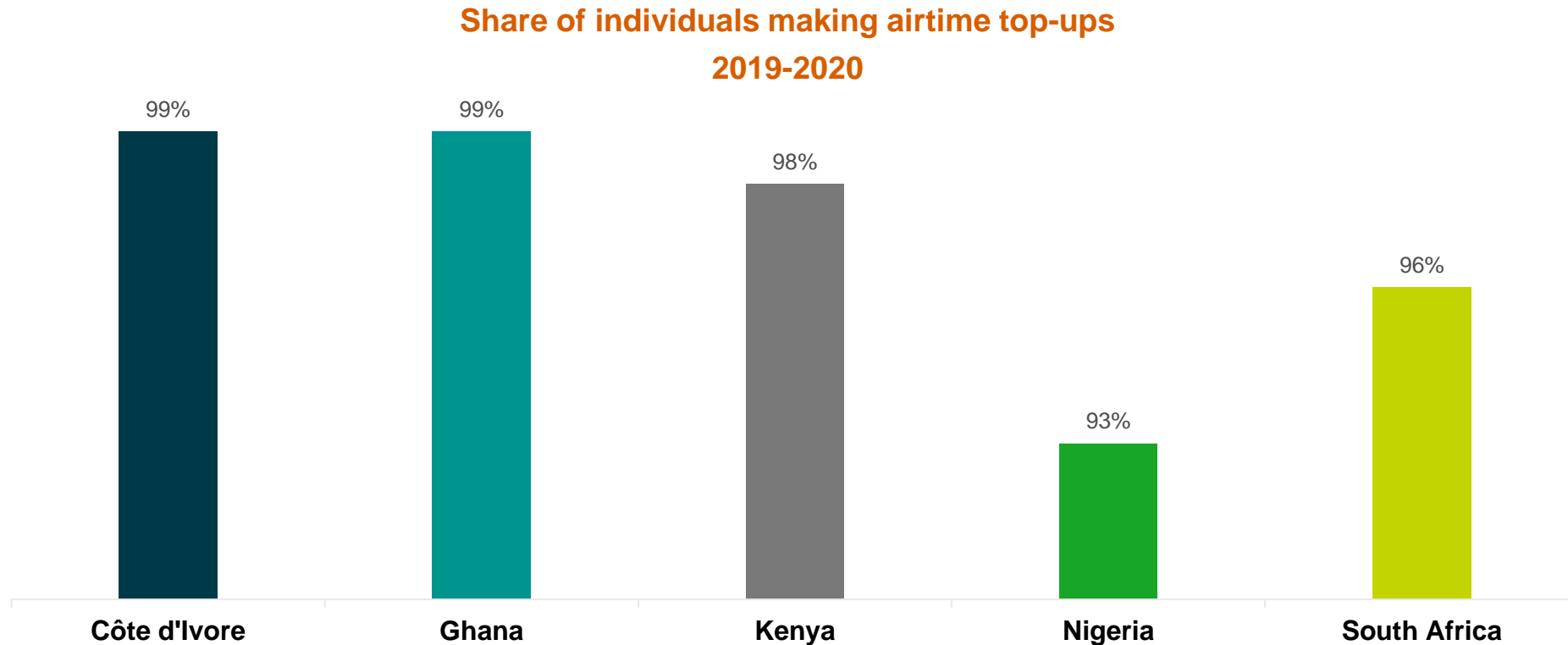
- Frequency and amount of top-ups are being used by FSPs to set initial credit limits for low denomination/short tenor loans or to segment users.
- In addition to the data itself, the behavior could be useful as an on-ramp to lending or insurance products, such as pre-approval for airtime credits, or bundling insurance. It may also be a useful behavior to bundle savings or loan repayments.

About half of smartphone users are making financial transactions beyond top-ups, ranging from 36% in Côte d'Ivoire to 73% in Kenya
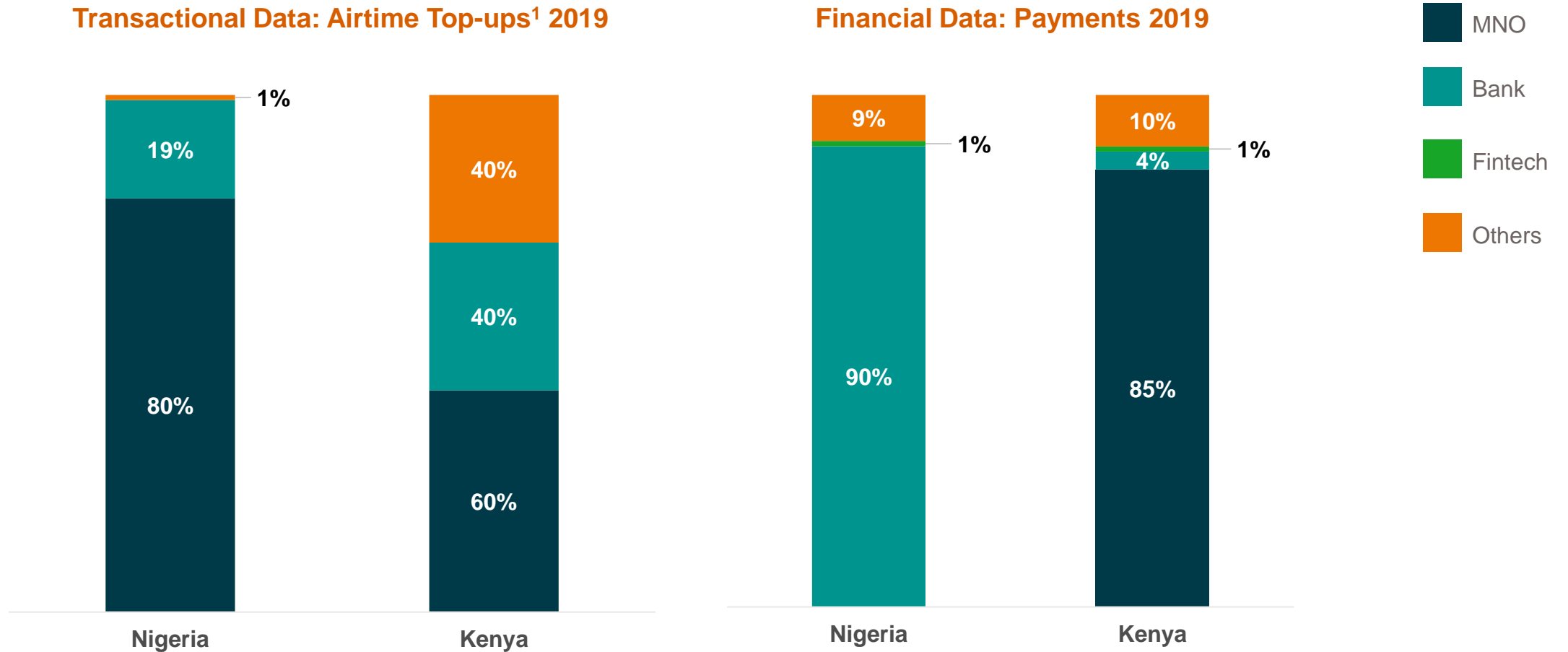
Share of individuals (by transaction types)
2019-2020

Legend:
- CICO
- P2P
- P2B
- Loan
- Savings

Côte d'Ivore
- CICO: 36%
- P2P: 36%
- P2B: 26%

Ghana
- CICO: 38%
- P2P: 43%
- P2B: 22%
- Loan: 6%
- Savings: 0%

Kenya
- CICO: 64%
- P2P: 73%
- P2B: 71%
- Loan: 42%
- Savings: 19%

Nigeria
- CICO: 34%
- P2P: 66%
- P2B: 32%
- Loan: 4%
- Savings: 2.4%

South Africa
- CICO: 40%
- P2P: 55%
- P2B: 53%
- Loan: 1%
- Savings: 0%
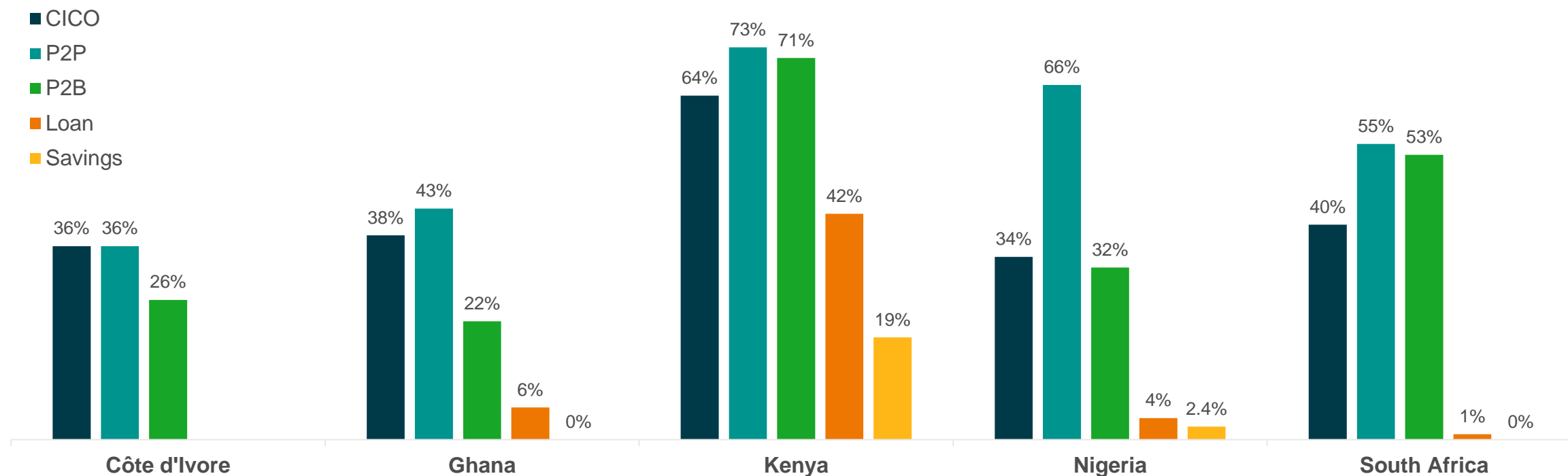
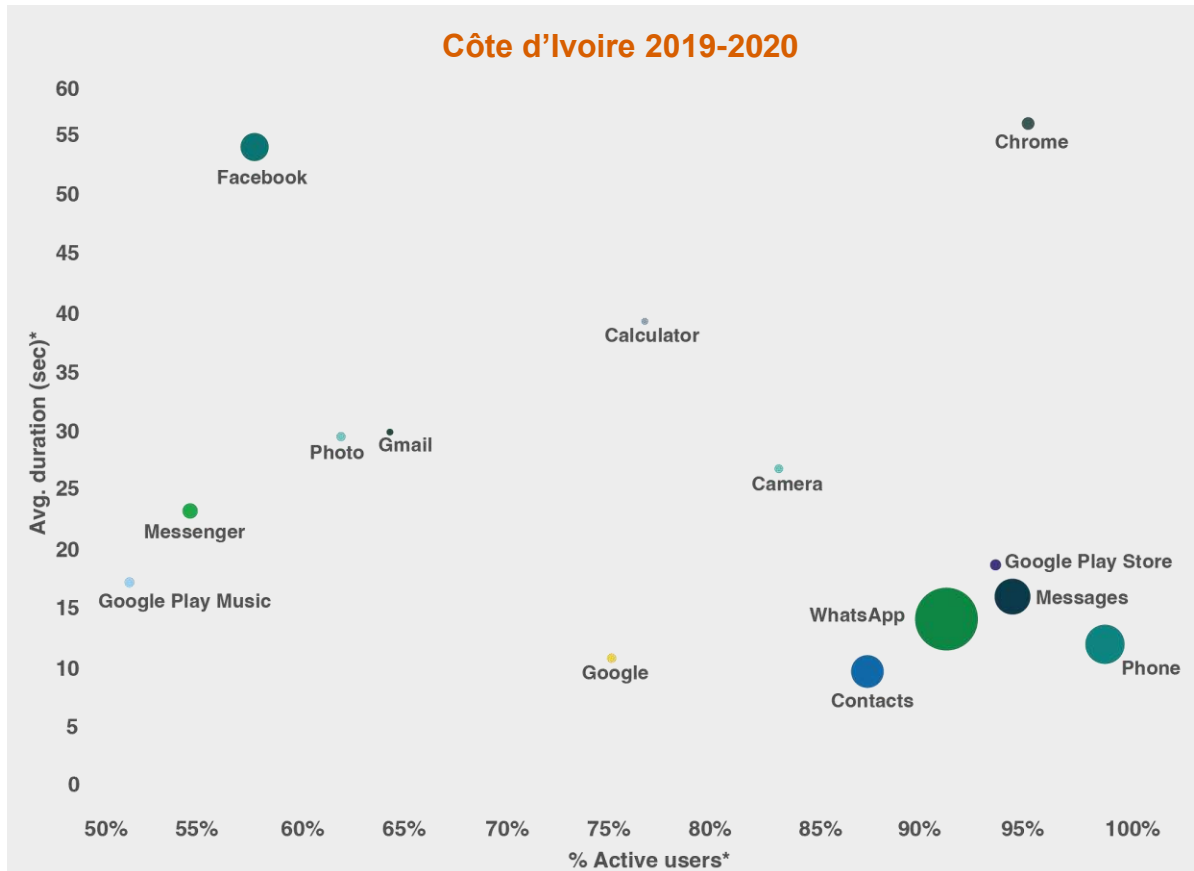> P2P is the most common use (after top-ups) across markets, savings is very low.

Note: 1. Loan and Savings data is not available for Côte d'Ivoire. 2. Transactions made through a banking app that don't result in an SMS message would not appear in this data, this could result in underreporting, especially in markets with a higher use of banks vs mobile money like Nigeria and South Africa

Most transactional data for smartphone users is concentrated in MNOs and banks

Transactional Data: Airtime Top-ups[1] 2019

Nigeria: Bank 19%, MNO 80%, 1%
Kenya: Others 40%, Bank 40%, MNO 60%

Financial Data: Payments 2019

Nigeria: Others 9%, Bank 90%, 1%
Kenya: Others 10%, Bank 4%, MNO 85%, 1%

Legend:
- MNO
- Bank
- Fintech
- Others

Note: 1. Airtime Transactions from providers classified as other were outside of identified / known providers
Source: Data points are derived from Caribou Data but should be interpreted as illustrative

Most app data is controlled by Meta (primarily driven by WhatsApp but also Facebook)

Côte d'Ivoire 2019-2020

Avg. duration (sec)* vs % Active users*

Chrome, Facebook, Calculator, Photo, Gmail, Camera, Messenger, Google Play Music, WhatsApp, Google Play Store, Messages, Google, Contacts, Phone

Ghana 2019-2020

Avg. duration (sec)* vs % Active users*

Facebook, Chrome, Calculator, Photo, Camera, Messenger, Calendar, Google, Google Play Store, WhatsApp, Messages, Contacts, Phone

- In addition to phone calls, nearly all users in Côte d'Ivoire and Ghana use SMS messaging, WhatsApp, and Google's Chrome browser, with very high frequency usage of WhatsApp.
- Facebook and WhatsApp could be effective channels for lending/insurance products or financial literacy communication.

Note: 1. Size of bubble indicates frequency of use

APPENDIX

Methodology

The descriptive analysis has three components

The DIP Segment - Market Sizing and Segmentation:
CGAP worked with Dalberg Global Development Advisors to analyze the global size and segmentation of the digitally included poor through a combination of global and country datasets as explained below:

- **Phone ownership data:** We used Global Findex 2021, which uses data from the World Gallup Poll; Global Findex 2021 did not have data on 17 countries (Azerbaijan, Belarus, Botswana, Chad, Congo, DRC, Ethiopia, Guatemala, Haiti, Kyrgyzstan, Lesotho, Libya, Madagascar, Mexico, Niger, Rwanda, Vietnam). Data from Global Findex 2017 was used for phone ownership for those 17 countries. The data on phone ownership is referenced as "Latest Global Findex".
- **Internet access data:** Internet Access Numbers for the 17 countries that are missing in Findex as well as India are taken from the World Bank Database which collects data from the ITU and the most recent year for which data was collected varies across markets.
- **Population and poverty data:** We have used World Bank's World Development Indicators.

DIP Segment Digital Footprint Mapping (in select markets):
- We conducted surveys for ~6000 digital poor users in 5 markets (India, Indonesia, Kenya, Mexico, Senegal). For Kenya we did not administer a new survey but used pre-existing Dalberg Survey data.

Smartphone Usage Analysis (in select markets):
- CGAP worked with Caribou Data to analyze mobile data trails of a significant group of smartphone users in select markets. This segment covers findings from the study that was conducted for five markets – Côte d'Ivoire, Ghana, Kenya, Nigeria, and South Africa.
- Caribou Data recruited and compensated each panelist with airtime for every month that they shared their mobile data. The sample for each country includes more than 1,000 adults 18 years and older with an Android smartphone who use mobile data, at least occasionally. Panels are designed with overlapping quotas for gender, age, and urban/rural locality, derived from the most recent population census or other official sources, and adjusted for the 18+ adult population .
- All data was anonymized on the device. Caribou Data took consent from individuals before collecting data and the data was structured and protected within a GDPR-compliant differential privacy layer. The data was analyzed across four categories: devices, networks, apps, and transactions.
- The data for Côte d'Ivoire, Kenya, Nigeria, and South Africa was collected in 2019 and the data for Ghana was collected in 2020.

Stories Behind The Data

Sushila

G2P recipient

Female, 45, Mumbai, India

Sushila lives in Mumbai with two daughters. She runs a small business from home, preparing packed lunches for customers. She owns a feature phone, and her daughters own smartphones. She occasionally uses their phones to listen to music, send WhatsApp messages and video call her family and friends. She is proud of how much she has learnt about the internet, but with her business and household work, doesn't get time to use it too often.

For the past year and a half, she has been receiving 1,000 rupees each month from the Sanjay Gandhi Niradhar Anudan Yojana, a government scheme for widows (among others), after her husband passed away.

> My friend told me that this is there for people who have lost their husbands. So I inquired about it at the government office, gave my documents, and the pension started.

Source: CGAP HCD Interviews

When she enrolled at a government office Sushila had to submit copies of a series of documents and IDs (her Aadhaar card, PAN card, children's birth certificates, domicile certificate, electricity bill and a rent agreement). Her next step was to open her first account at a designated bank.

> I opened a bank account to get the pension. I only use the bank account for the pension. We use this money to buy everything for the house and business.

Each month, Sushila receives an SMS on her daughter's smartphone notifying her that the payment has been received and then visits the bank to withdraw all the money. She is never able to save money, as she spends it on her daughters, and does not use her account for any other purposes.

In addition to her pension, Sushila also applies for a scholarship for her daughter's college every year. For this, she gives her income certificate, address proof, PAN card, Aadhaar card, and husband's death certificate.

Here's a summary of Sushila's data footprint:
Sushila owns her own feature phone and SIM card, which she uses for calling generating individual and device identifiers, personal network, and cellular data. She uses WhatsApp and YouTube on a shared phone, not generating content and consumption data of her own.

- Her G2P benefits, lead to a transactional data trail, and the applications for the benefit, as well as her daughter's scholarship involve her national ID and other documents, generating individual identifiers and social data.

- Sushila also generates data through her utility payments, that are paid in cash.

Stories Behind The Data

Amanda

Platform worker

Female, 28, Jakarta, Indonesia

Amanda, a single mother who lives with her two young children, is a driver with the Gojek transportation service. She owns a smartphone and uses her friend's motorcycle for her work.

" I chose (online platform work) mostly because...of my children. With this, I can still make money and spend time with them. The flexibility is the sole reason I do it... In the future, I hope to have a food business so I can stay at home.

Before she committed to platform work one year ago, Amanda tested it out using her brother's profile. To register on Gojek, Amanda had to provide a copy of her national ID card, her driver's license, a police permit, and her bank account number.

Although Gojek offers many services, Amanda only does food deliveries – she starts her work at lunchtime, and leaves the app on until late at night, sometimes up to 3am. She prefers deliveries to ride-hailing, and sometimes she can take her children along with her. Amanda also thinks her connectivity isn't always good enough for ride-hailing, since she'd need to stay connected for the entire duration of the trip.

Source: CGAP HCD Interviews

" There are two payment options, cash or GoPay. I prefer cash because customers often give me a tip or let me keep the change.

Amanda often transfers money from her bank account to her Gojek driver wallet, so that she has enough to pay Gojek's commission, which gets deducted automatically. She also uses her bank account to pay her electricity bill and buy phone data, through a mobile banking application, but prefers to use the cash she earns for her deliveries on her day-to-day expenses.

" The phone is only for Gojek...I'm (also) in a WhatsApp group of Gojek drivers…If I have any problem in the street, they can help me…I don't have any free time to chat on WhatsApp other than for the important things.

Amanda and other Gojek drivers use a WhatsApp group to share order locations or information about an accident. The group is even Amanda's preferred source of news. There are few other women in the driver community, as women are not usually drawn to physically challenging work, Amanda says.

Here's a summary of Amanda's data footprint:
As a platform worker, Amanda regularly generates individual identifiers, device identifiers and location identifiers through apps like Gojek and Google Maps.

- She owns her own smartphone and SIM card, which she uses for calling, generating personal network, cellular and internet consumption data.

- Amanda's use of the Gojek platform involves transactions (receipts and payments). She uses her bank account for Savings (assets) but has never taken a loan. She uses E-money, connected to her bank account, to make utility payments.

App data is unevenly distributed across genders

Select app category session frequency, by gender: 2019-2020

Legend: Women (light) · Men (dark)

App sessions per day	Côte d'Ivoire	Ghana	Kenya	Nigeria	South Africa
Messaging + Social (Women)	47	122.7	126	78	147
Messaging + Social (Men)	49	134.7	113	80	93
Gambling (Women)	0	<1	1	<1	<1
Gambling (Men)	<1	8.4	1	2	<1
Video (Women)	1	2.3	2	2	1
Video (Men)	1	1.5	2	3	1
Voice[1] (Women)	20	48.6	30	26	19
Voice[1] (Men)	18	54.2	28	30	14
Internet + Browser (Women)	1	2.3	3	2	7
Internet + Browser (Men)	2	4.4	6	5	8

- Messaging + Social: In South Africa and Kenya, significantly higher frequency usage of messaging and social apps by women. In Ghana, higher usage by men. In other markets, similar usage.
- Video: In most markets, Men use video apps more frequently than women. The exceptions are Côte d'Ivoire and Ghana. These variances are very slight, except in Nigeria. Given it's a prominent app category, the potential to leverage video to explain T&Cs and/or for financial literacy building should be explored.
- Voice: Women make voice phone calls more frequently in all markets except Nigeria and Ghana.
- Internet + Browser: Women use Internet + Browser applications less frequently than men in all markets. This could be due to literacy or capacity but may also be use-case driven (e.g., fewer needs to access external information, or perception that social network might be more fruitful). This could be an area further research could explore.

Note: 1. "Voice" frequency counts also include USSD communications, as this activity invokes the dialer

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