



ICT access and use in India and the Global South

Report launch in collaboration with Cellular Operators Association of India (COAI)

Helani Galpaya (@helanigalpaya)

Tharaka Amarasinghe

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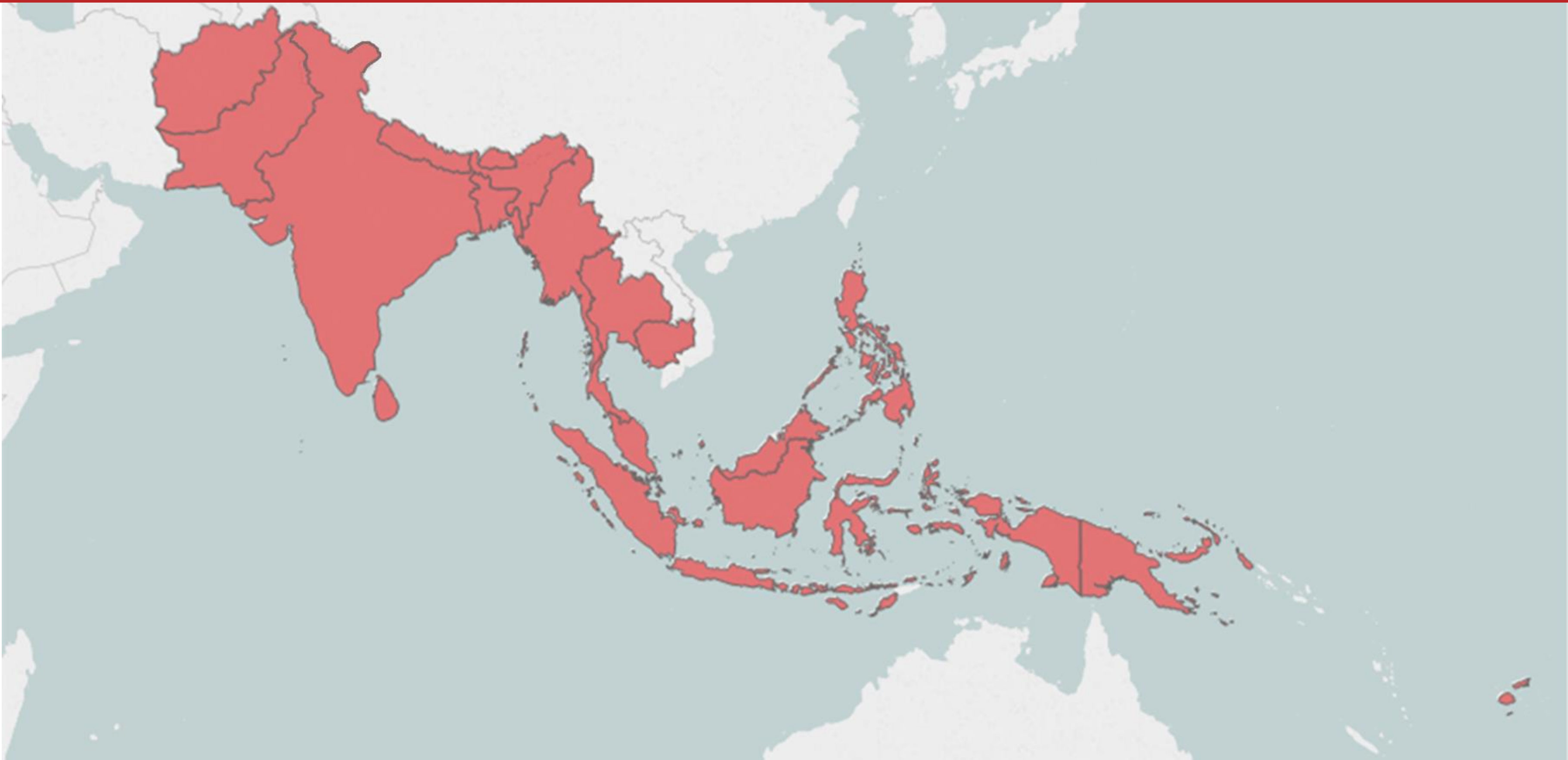
New Delhi



LIRNEasia: a pro-poor, pro-market Asia Pacific think tank; focus on infrastructure policy and regulation

- Mission
 - *Catalyzing policy change through research to improve people's lives in the emerging Asia Pacific by facilitating their use of hard and soft infrastructures through the use of knowledge, information and technology*
- (Among other things) studied demand for ICT services in Asia for over 12 years
- In India we have researched and made recommendations on:
 - Universal service and ADC (2005 onwards)
 - Telecom regulatory environment surveys (2006 onwards)
 - M-government (2008 onwards)
 - Broadband quality of service experience (2007 onwards)
 - ICT use and access by the poor (2006, 2008, 2011)
 - NOFN initiative (2015 onwards)
 - Online freelancing and microwork (2017 onwards)
 - ...etc.

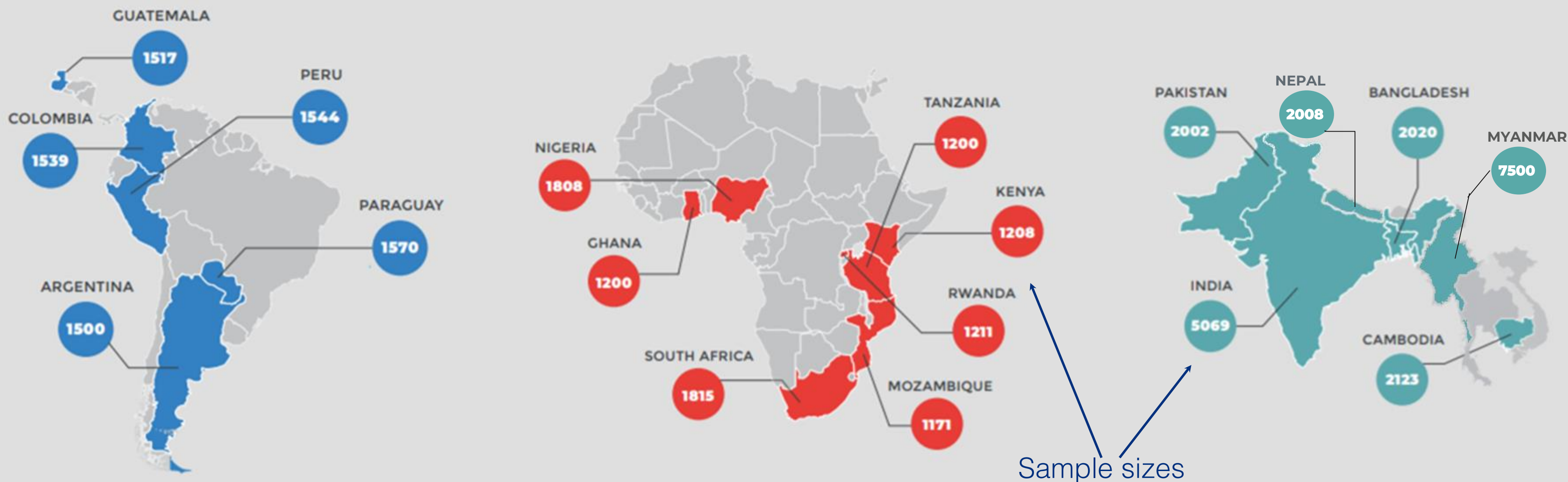
Countries we engage with



AfterAccess: Nationally representative surveys of ICT access and use by households & individuals aged 15-65 across Global South

- Rigorous sampling method, comparable across countries
- Predominantly common questionnaire with local customization
 - Structured, closed-ended responses administered face-to-face using mobile devices
 - User-based (rather than subscription-based) data allowing for disaggregation by urban-rural, gender, SEC, age, etc.
- Asian countries by LIRNEasia. Africa by Research ICT Africa. Latin America by DIRSI
- Funded by IDRC (Canada) and SIDA (Sweden)

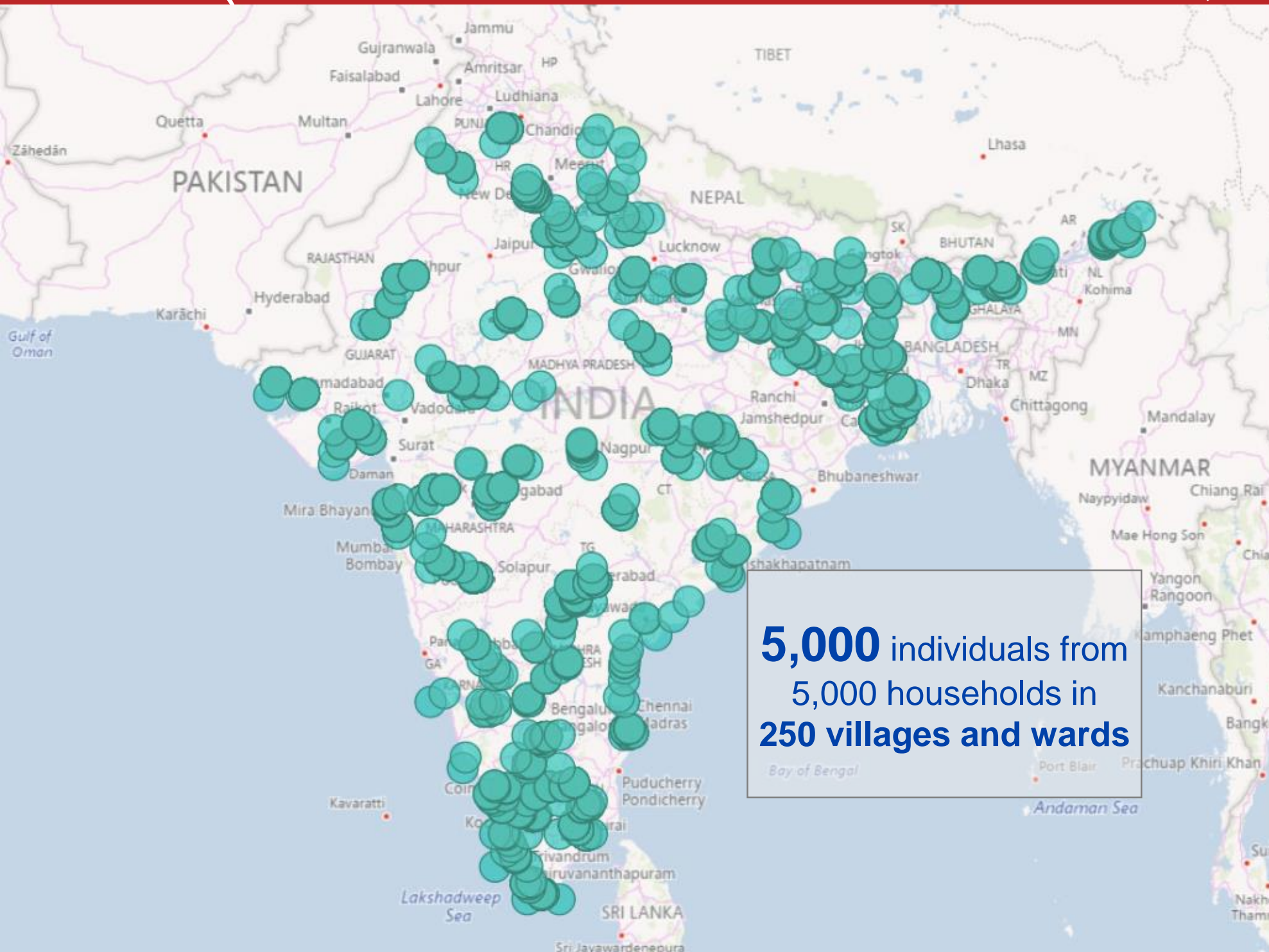
To date: 18 countries (covering >30% global population); 38,005 face-to-face interviews; +/-3 margin of error



Not shown in slides today:

- Nepal and Myanmar, Sri Lanka
- Surveys just completed/surveys about to start/data being analyzed
- Watch www.afteraccess.net or www.lirneasia.net

India sample representative of 15-65 population (95% Confidence Interval; +/-3.5 margin of error)



Sample GPS locations recorded by CAPI device at time of survey

- Sample designed to be representative of 15-65 population at:
 - National level
 - Urban-rural level
 - Men vs Women
 - SEC (Socio-economic classification : a proxy for income)
- The sample is not designed to represent at:
 - State level
 - District level
 - other

Sample size of 5,000 adequate to represent population at desired levels of disaggregation

Sample size calculation

- Desired level of accuracy set to a confidence level of 95% and an absolute precision (relative margin of error) of 5%. The population proportion p was set conservatively to 0.5 which yields the largest sample size (Lwanga & Lemeshow, 1991). The minimum sample size per tabulation group determined by (Rea & Parker, 1997):

$$n = \left(\frac{Z_a \sqrt{p(1-p)}}{C_p} \right)^2 = \left(\frac{1.96 \sqrt{0.5(1-0.5)}}{0.05} \right)^2 = 384$$

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice

C = confidence interval, expressed as decimal (e.g., .05 = ± 5)

Weighting

- Two weights constructed: for households and individuals, based on inverse selection probabilities \rightarrow data can be extrapolated to national level.

$$\text{Household weight: } HH_w = DW \frac{1}{P_{HH} * P_{EA}}$$

$$\text{Household Selection Probability: } P_{HH} = \frac{n}{HH_{EA}}$$

$$\text{Individual weight: } IND_w = DW \frac{1}{P_{HH} * P_{EA} * P_I}$$

Sample designed to represent India as a whole; random selection at every stage of sampling



250 Villages and Wards covering
19 States
108 Districts
Fieldwork time period : October 5 – November 30

100 Enumerator Areas of the 2017 National census
5 Provinces excluding FATA
28 Divisions
Fieldwork time period : October 21 – Ongoing

100 Villages and Wards
40 Zilas
92 Upazillas
Fieldwork time period : October 8 – December 1

100 Villages covering
20 Provinces
70 Districts
Fieldwork time period : September 23 – October 12

India

Random selection of districts using PPS
(108 Districts selected)



Random selection of sub-districts within
selected districts using PPS (189 Sub-
districts selected)



Selected sub-districts split into urban (ward)
and rural (village) PSUs



Random selection of required number of
wards and villages using PPS (108 wards
and 142 villages were selected)

Stage 1:

Stratified random
sampling of the
primary sample
units (PSUs) with
probability
proportionate to
size (PPS) sampling

Obtaining PSU information (boundaries, households, etc.) from key informants

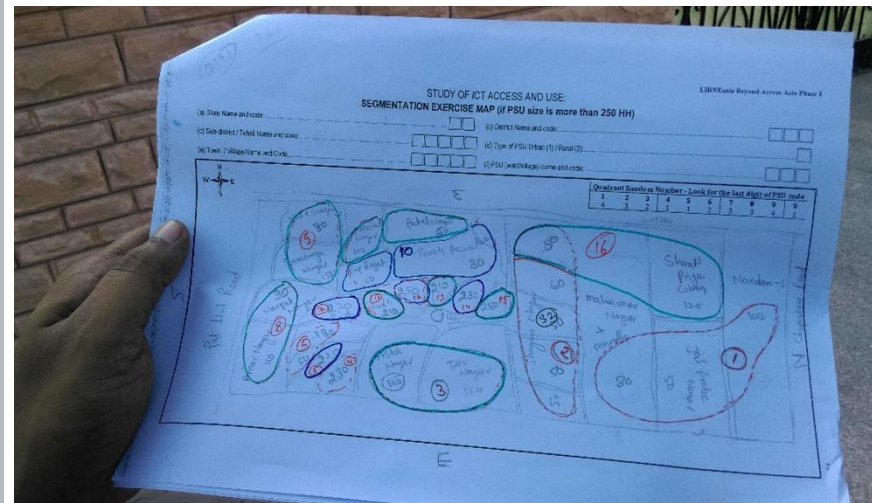


KI Interview in India

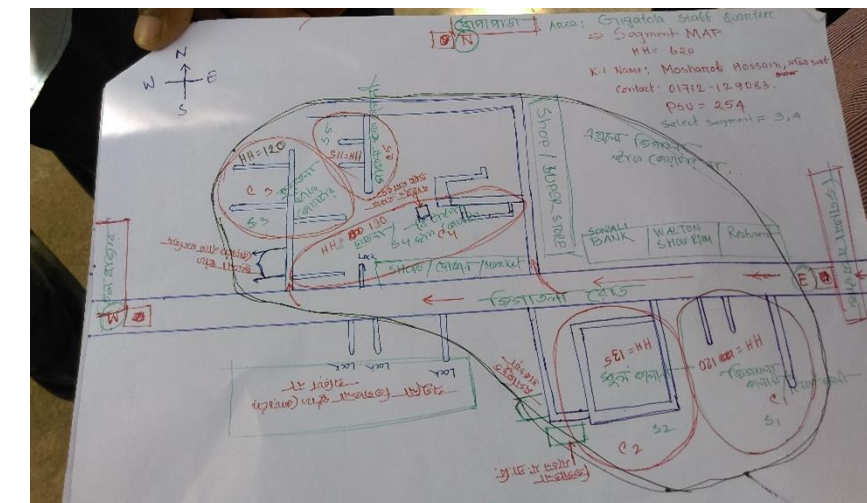


KI Interview in Cambodia

Mapping & segmentation



Segmentation Map - India



Segmentation Map - Bangladesh

Listing of households



Listing - India



11 Listing - Pakistan

Stage 2:

Mapping and listing of selected PSUs

- Mapping of randomly selected village or ward with the help of the key informants

- Segmentation of wards and villages where the number of households exceeding 250

- List of structures of the entire segment identifying the eligible households

Stage 3:

Random selection of listed households

Random selection of households conducted systematic random sampling using the household lists collected during the listing

Sufi	Surveyor	A4	A6	A7	HNO	House status	Address	HH_Name	HH_Mem	Latitude	Longitude	Selected House No
54118883	Shabana B	FEROZABAD (440110404)	A	B	6	Successful / Living house	Mahmoodabad - S.H. No. 1336/5-T-36	Muhammad Khan	9	24.8572700	67.0817800	
54118883	Shabana B	FEROZABAD (440110404)	A	B	2	Successful / Living house	Mahmoodabad - S.H. No. 1336/5-T-36	Imran	3	24.8571700	67.0816400	20
54118883	Shabana B	FEROZABAD (440110404)	A	B	6	Successful / Living house	SH18/B Mahmoodabad-9	Dhushad	2	24.8571700	67.0816700	
54118883	Shabana B	FEROZABAD (440110404)	A	B	6	Successful / Living house	SH18/B Mahmoodabad-9	Muhammad Zubir	7	24.8571433	67.0814200	
54118883	Shabana B	FEROZABAD (440110404)	A	B	6	Successful / Living house	SH18/B Mahmoodabad-9	Javed Qureshi	7	24.8571717	67.0814000	
54118883	Shabana B	FEROZABAD (440110404)	A	B	6	Successful / Living house	SH18/B Mahmoodabad-9	Gulab Khan	7	24.8571800	67.0814200	
54118883	Shabana B	FEROZABAD (440110404)	A	B	6	Successful / Living house	SH18/B Mahmoodabad-9	Kirshan	3	24.8572683	67.0815183	
54118883	Shabana B	FEROZABAD (440110404)	A	B	6	Successful / Living house	SH18/B Mahmoodabad-9	Farooz Din	4	24.8570988	67.0814400	
54118883	Shabana B	FEROZABAD (440110404)	A	B	6	Successful / Living house	SH18/B Mahmoodabad-9	Yasir Ali	6	24.8570983	67.0815000	
54118883	Shabana B	FEROZABAD (440110404)	A	B	60	Successful / Living house	SH18/B Mahmoodabad-9	Fazal Dad	7	24.8568433	67.0817333	
54118883	Shabana B	FEROZABAD (440110404)	A	B	61	Successful / Living house	SH18/B Mahmoodabad-9	Arshad Ali	7	24.8572000	67.0816100	1
54118883	Shabana B	FEROZABAD (440110404)	A	B	61	Successful / Living house	SH18/B Mahmoodabad-9	Dilbar Khan	21	24.8567877	67.0814800	
54118883	Shabana B	FEROZABAD (440110404)	A	B	65	Successful / Living house	SH18/B Mahmoodabad-9	Muhammad Tufi	4	24.8510000	67.0818833	
54118883	Shabana B	FEROZABAD (440110404)	A	B	61	Successful / Living house	SH18/B Mahmoodabad-9	Muhammad Ali	4	24.8561881	67.0826733	

Random HH selection in PK

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54118883	Shabana B	FEROZABAD (440110404)	A	B	2	Successful / Living house	Mahmoodabad - S.H. No. 1336/5-T-36	Imran	3	24.8571700	67.0816400	20
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Random HH selection in KH

Stage 4:

Household interview (with household representative) and individual interview (with randomly selected individual after listing eligible members in household roster)

Interviews conducted on mobile devices



- Random selection of 20-25 households for the main survey

- Listing all the household members in the household roster
- Randomly selecting one member from age 15-65 from the list

Apples vs oranges: A note on comparison of AfterAccess data with supply-side

Supply side data as reported via operators/TRAI	Demand side (household and individual survey we report)	Implication
Counts active SIMs Includes individual and corporate users; and SIMs inside devices (e.g. POS)	Counts USERS with one or more SIM cards Does not count corporate connections or SIMs in other devices	Demand side data more accurate reflection of individuals and households who have access (Counts multi-SIM owners as ONE user) Avoids inaccuracies with problematic SIM registrations Demand side result WILL be lower
Includes SIMs used by all users, without age restriction	Our survey only targeted those aged 15 -65 (66% of the population in IN)	Below 14 or Over 66 years persons are not counted. Demand side estimate WILL be lower.

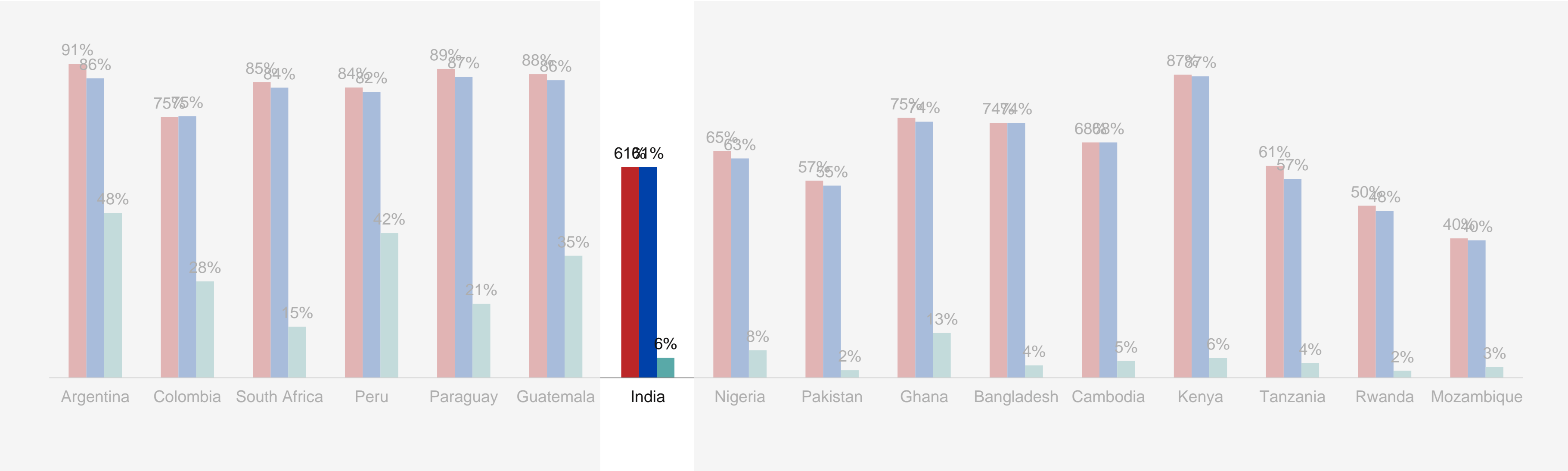
CONNECTIVITY and DEVICE OWNERSHIP

61% of Indians aged 15-65 have a mobile phone of some type.

Negligible computer ownership in the household

Mobile phone, SIM card & desktop or laptop ownership (% of aged 15-65 population)

■ Mobile phone ownership ■ SIM card ■ Desktop computer or Laptop

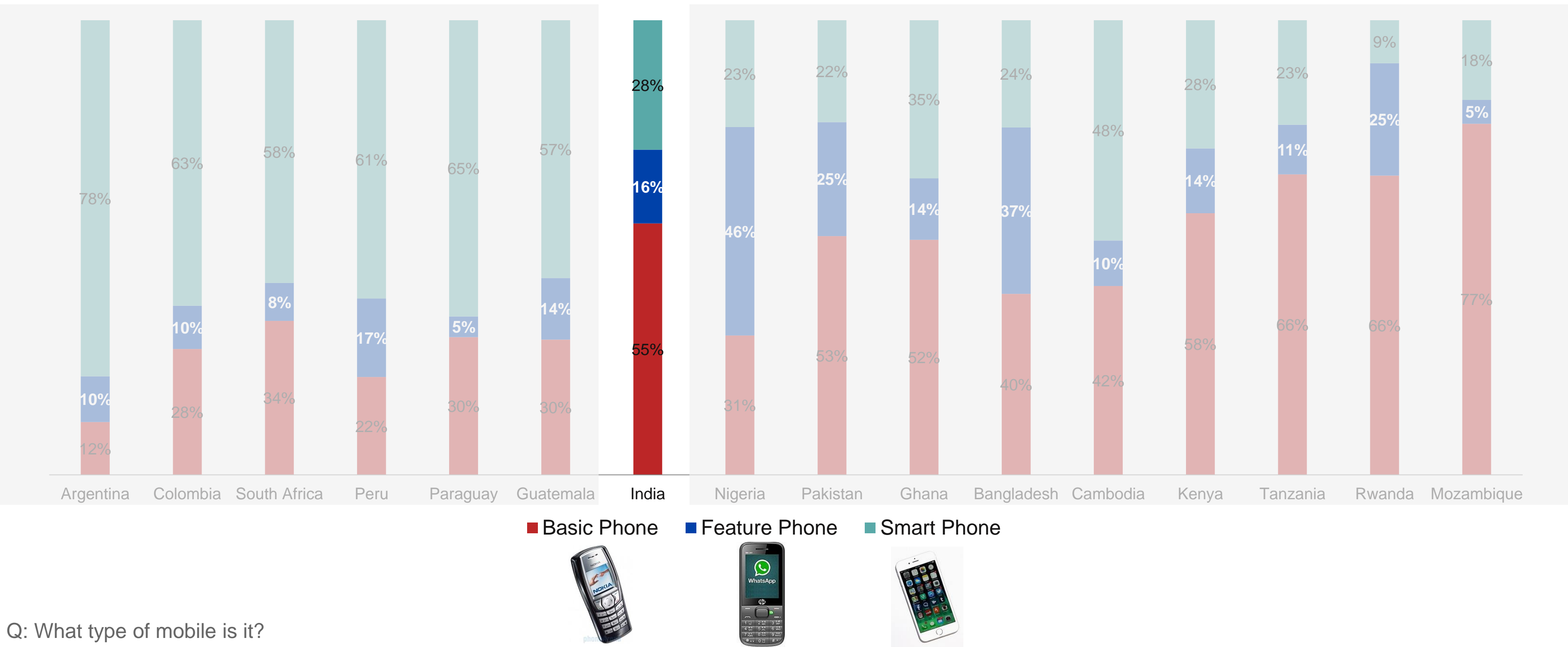


Q1: Do you own a mobile phone?
Q2: How many active SIM cards do you have, (SIM cards that you used in last 30 days)?
Q3: Do you own a personal Desktop computer or Laptop?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
All respondents	1,240	1,425	1,610	1,478	1,357	1,407	5,069	1,706	2,002	1,145	2,020	2,123	1,179	1,102	1,118	1,091

55% of owners have basic phones (that are not internet enabled);
Only 28% mobile owners have a smartphone as their primary device

Mobile phone ownership (% of aged 15-65 mobile phone owners)



Basic Phone Feature Phone Smart Phone



Q: What type of mobile is it?

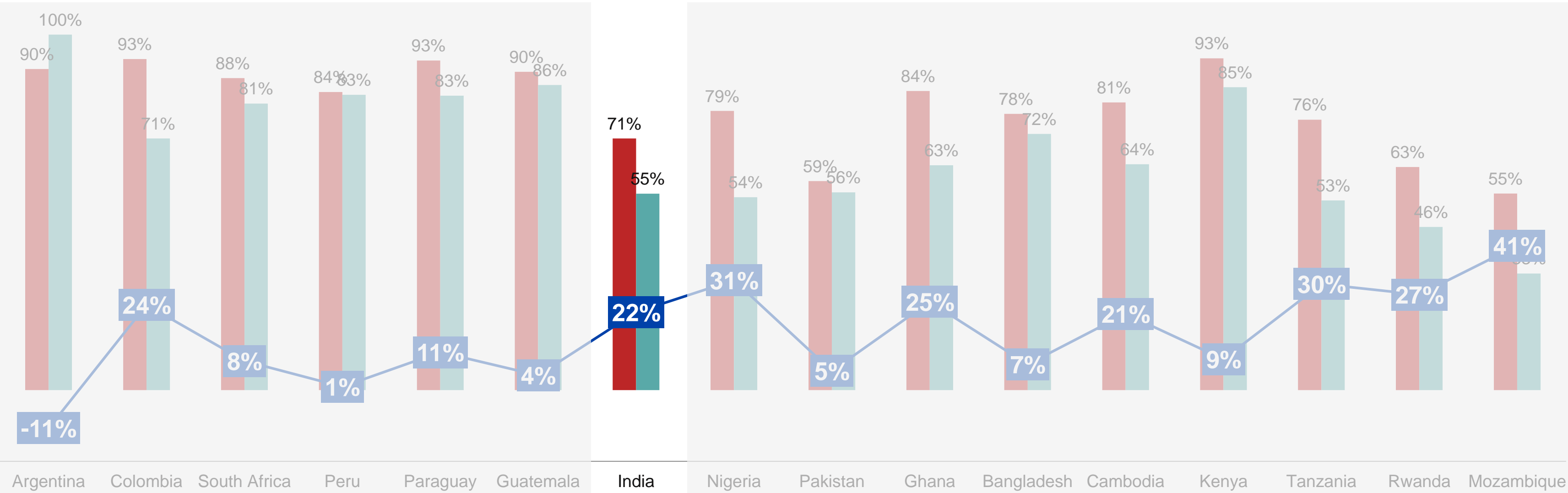
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Mobile phone owners	1,116	1,297	1,398	1,234	1,209	1,214	3,252	1,123	1,208	901	1,531	1,526	1,054	761	635	632

Rural India still lagging behind in phone ownership

Mobile phone ownership (% of aged 15-65 population)

Urban Rural Gap

Urban rural gap in ownership (%) =
$$\frac{\text{Urban mobile phone owners (\% of urban population)} - \text{Rural mobile phone owners (\% of rural population)}}{\text{Urban mobile phone owners (\% of urban population)}}$$



Q: Do you own a mobile phone?

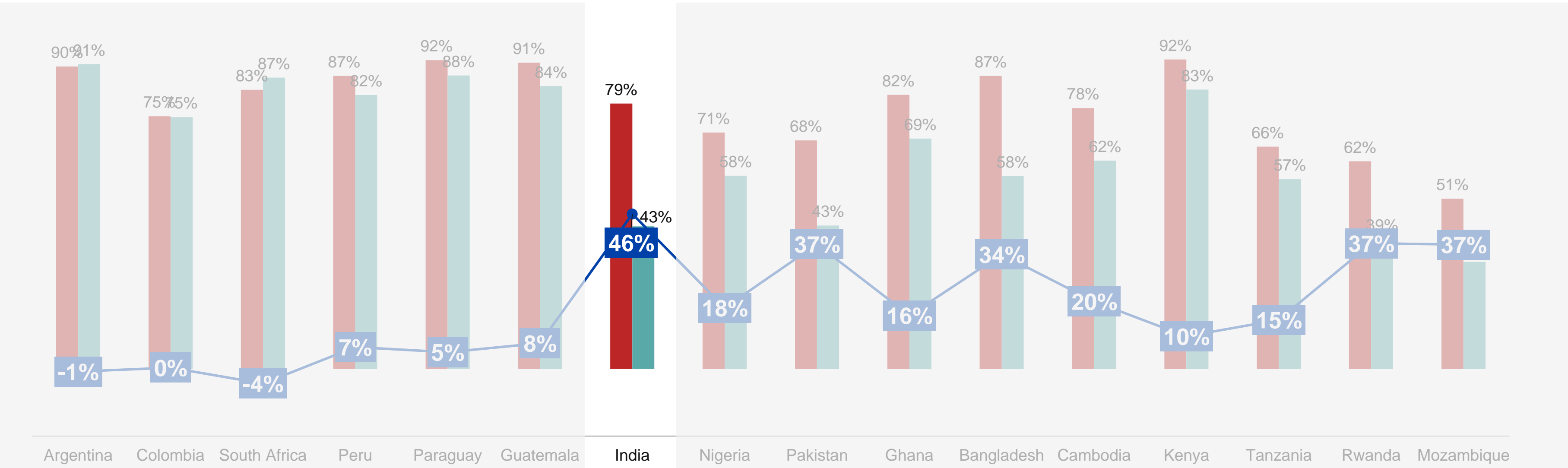
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	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
All respondents	1,208	32	986	439	1,050	765	1,178	300	824	533	550	857	2,200	2,869	1,147	661	793	1,209	721	479	808	1,212	897	1,226	727	481	720	480	711	500	718	453

Gender gap is the highest among the 16 countries; women in India 46% less likely to own a mobile than men (15-65 group)

Mobile phone ownership (% of aged 15-65 population)

Male Female Gap

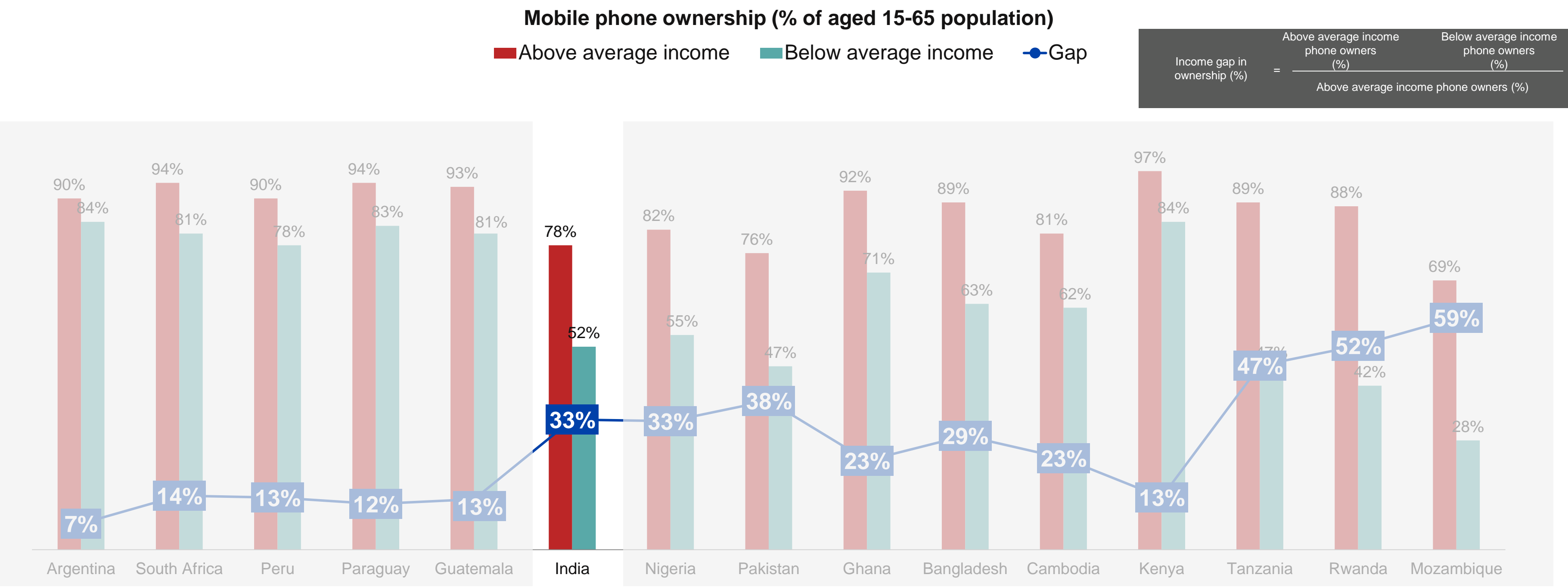
Gender gap in ownership (%) =
$$\frac{\text{Male phone owners (\% of male population)} - \text{Female phone owners (\% of female population)}}{\text{Male phone owners (\% of male population)}}$$



Q: Do you own a mobile phone?

Base	Argentina		Colombia		South Africa		Peru		Paraguay		Guatemala		India		Nigeria		Pakistan		Ghana		Bangladesh		Cambodia		Kenya		Tanzania		Rwanda		Mozambique	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All respondents	478	762	487	938	795	1,020	508	970	879	478	656	751	2,478	2,591	912	896	1,060	942	547	653	1,092	928	735	1,388	544	664	531	669	556	655	527	644

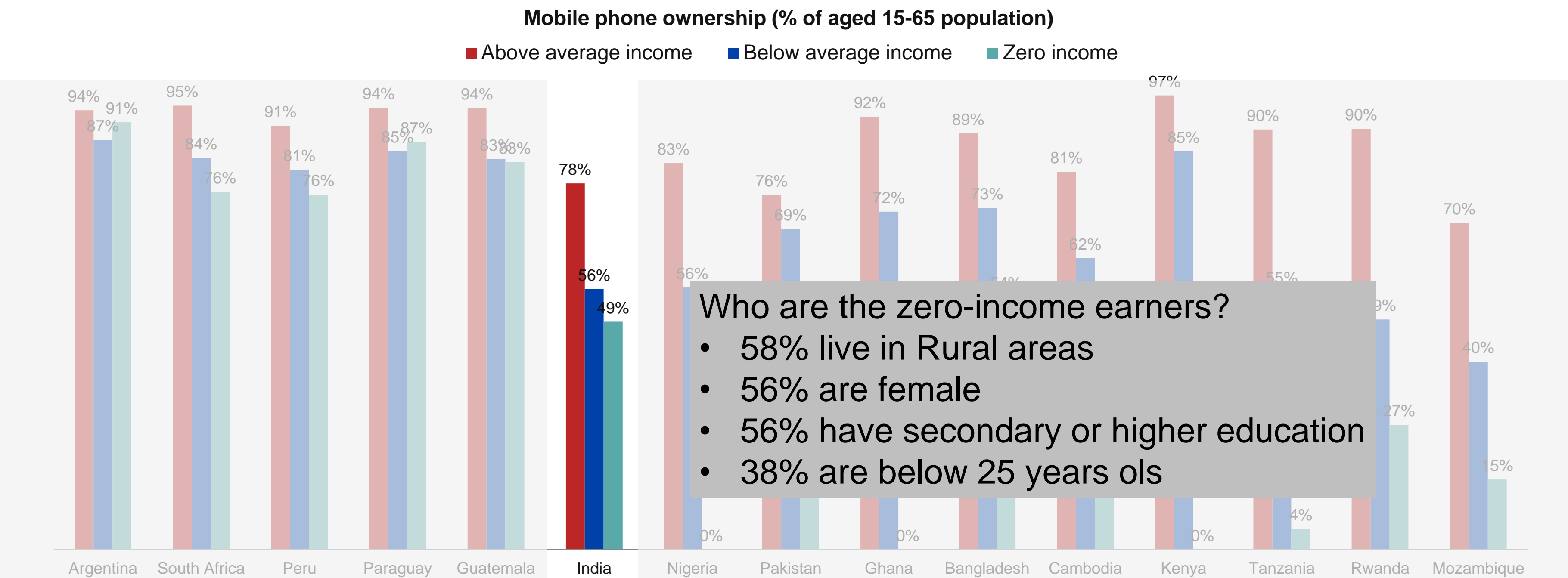
Low income earners 33% less likely than high income earners to own a mobile



Q: Do you own a mobile phone?

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In India half of the zero income earners own a mobile phone

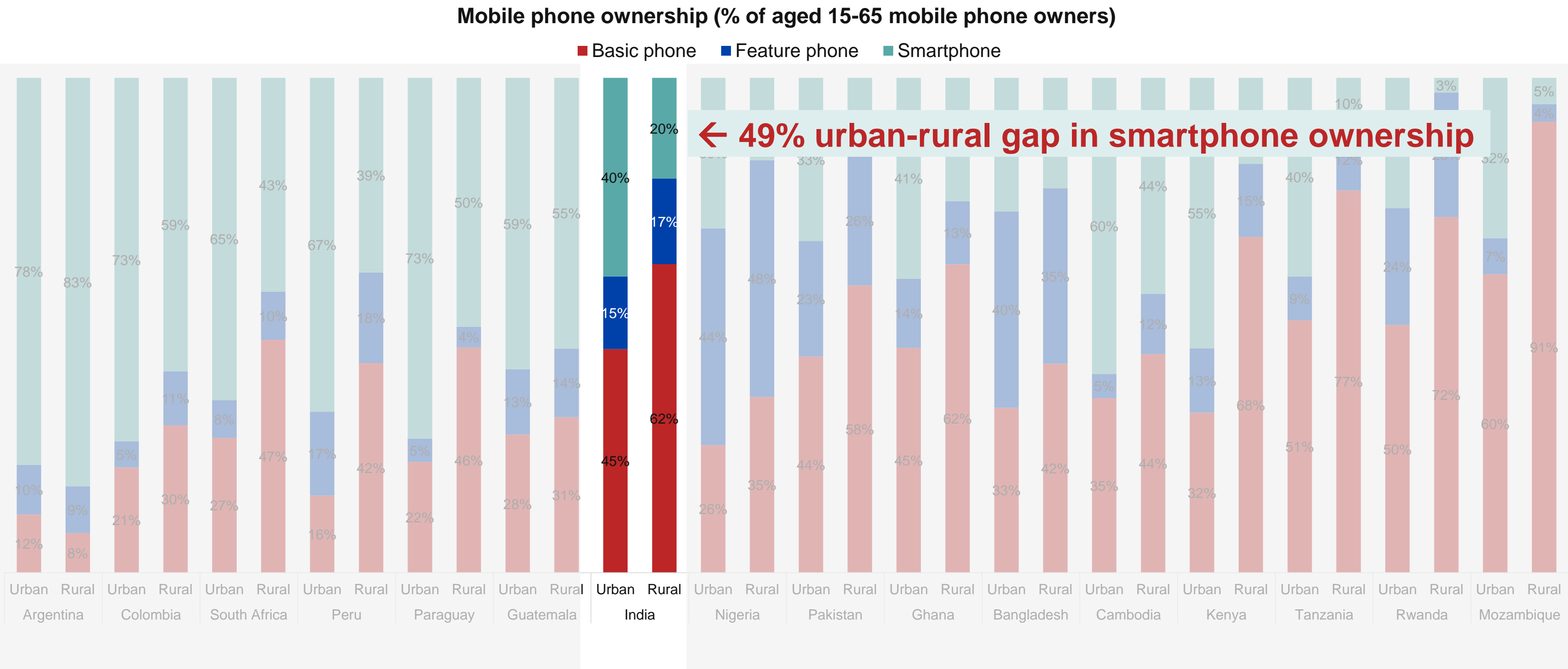


Q: Do you own a mobile phone?

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Smartphone penetration 40% in urban, 20% in rural.

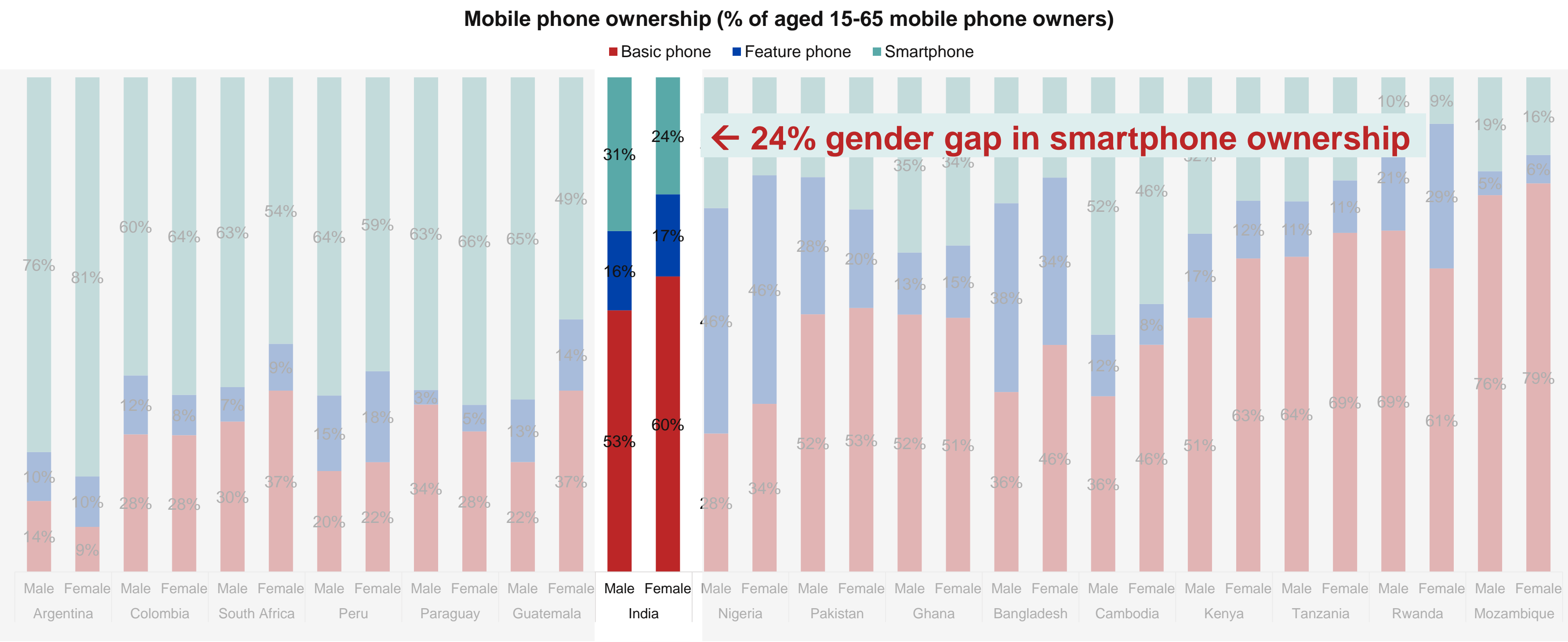
37% rural mobile owners have Internet-enabled phones



Q: What type of mobile is it?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Mobile phone owners	1,116	1,297	1,398	1,234	1,209	1,214	3,252	1,123	1,208	901	1,531	1,526	1,054	761	635	632

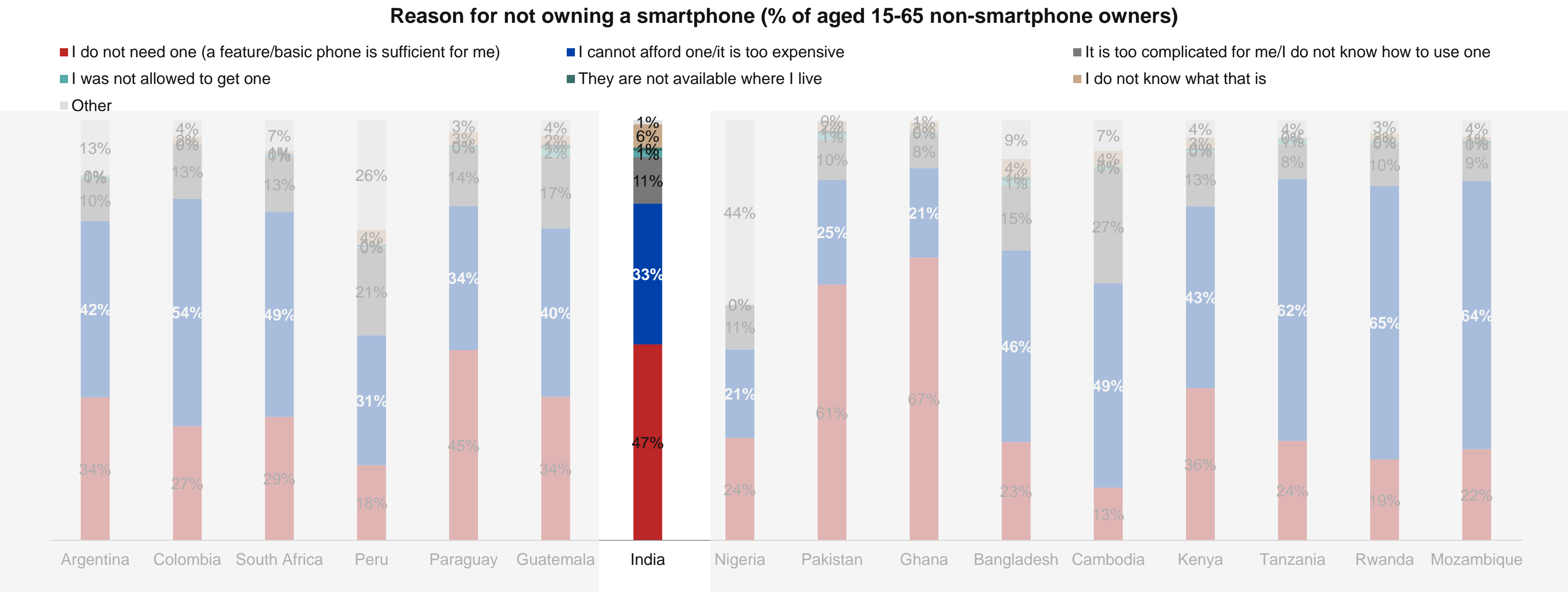
Gender gap in device type is not as large as in mobile ownership



Q: What type of mobile is it?

Base		Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
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Lack of need and the affordability are the two key barriers for smartphone adoption



Q: Please tell me the primary reason why you have chosen not to obtain a smartphone or touch phone handset?

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Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Non-smartphone owners	246	433	633	476	456	537	2378	20	872	1186	595	780	646	513	506	448

More new users in Asia and Africa; In India, around 40% connected in last 3 years; 60% in the last 5 years

	Number of years since first ever mobile connection (% of aged 15-65 mobile phone owners)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15+
Argentina	4%	3%	4%	3%	7%	7%	4%	6%	3%	23%	3%	6%	3%	2%	9%	15%
Colombia	11%	10%	7%	5%	10%	9%	5%	7%	3%	10%	1%	6%	1%	1%	7%	9%
South Africa	6%	6%	5%	5%	4%	4%	7%	4%	4%	4%	4%	5%	4%	4%	3%	30%
Peru	5%	7%	8%	6%	13%	6%	6%	7%	4%	15%	2%	4%	2%	1%	7%	8%
Paraguay	6%	6%	8%	6%	12%	6%	6%	6%	2%	15%	1%	5%	2%	1%	9%	11%
Guatemala	13%	11%	11%	5%	11%	6%	3%	7%	2%	12%	1%	3%	0%	1%	5%	7%
India	15%	14%	10%	6%	12%	6%	9%	3%	4%	6%	2%	4%	1%	1%	2%	4%
Nigeria	7%	5%	7%	5%	9%	4%	7%	5%	8%	11%	6%	8%	6%	3%	4%	6%
Pakistan	8%	10%	3%	6%	6%	10%	4%	8%	3%	3%	7%	3%	2%	3%	13%	
Ghana	Mostly rural, women, low income earners				6%	6%	9%	6%	5%	9%	3%	4%	3%	1%	4%	4%
Bangladesh					11%	6%	11%	6%	8%	5%	3%	5%	1%	1%	1%	4%
Cambodia	12%	6%	9%	7%	11%	4%	8%	3%	3%	12%	3%	5%	2%	3%	4%	8%
Kenya	11%	9%	8%	8%	8%	4%	10%	9%	5%	6%	3%	4%	3%	2%	3%	7%
Tanzania	11%	7%	7%	7%	6%	7%	12%	10%	7%	6%	4%	6%	3%	2%	1%	5%
Rwanda	18%	11%	11%	5%	15%	5%	3%	7%	3%	9%	2%	2%	1%	1%	3%	3%
Mozambique	12%	12%	8%	8%	8%	9%	6%	3%	4%	6%	3%	7%	3%	2%	4%	5%

Q: When did you get your first ever mobile connection (i.e., working handset and SIM card)? [record year] (converted to time since)

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26% of Indian 15-65 mobile owners have more than 1 SIM

Number of SIM cards (% of aged 15-65 mobile phone owners)

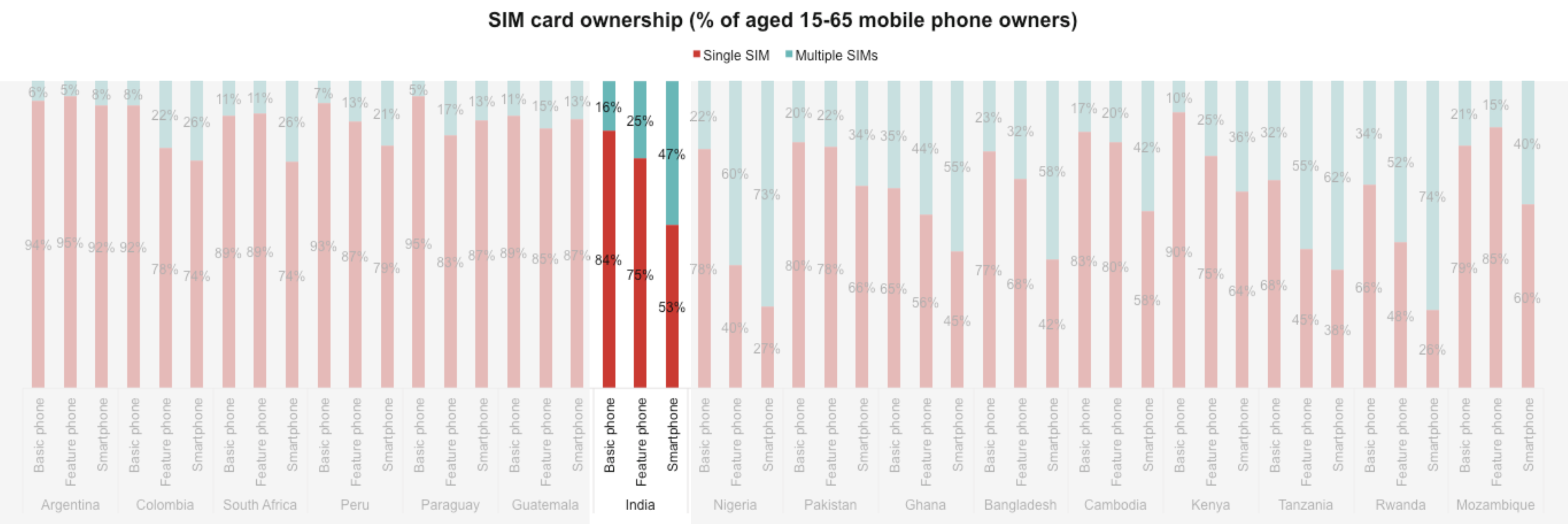
Number of SIM cards	1	2	3	4	5	6+
Argentina	93%	6%	1%	0%	0%	0%
Colombia	79%	20%	1%	0%	0%	0%
South Africa	80%	18%	2%	0%	0%	0%
Peru	83%	13%	3%	0%	0%	0%
Paraguay	89%	9%	1%	0%	0%	0%
Guatemala	87%	12%	1%	0%	0%	0%
India	74%	23%	2%	1%	0%	0%
Nigeria	48%	42%	7%	3%	0%	0%
Pakistan	77%	19%	2%	1%	0%	0%
Ghana	57%	10%	1%	0%	0%	1%
Bangladesh	66%	10%	0%	0%	1%	0%
Cambodia	71%	10%	0%	0%	0%	0%
Kenya	80%	10%	1%	0%	0%	0%
Tanzania	59%	36%	4%	1%	0%	0%
Rwanda	58%	37%	5%	0%	0%	0%
Mozambique	76%	21%	3%	0%	0%	0%

Slightly skewed towards smart phone owners, urban, men, high income earners and below 25 years

Q: How many active SIM cards do you have (SIM cards that you used in last 30 days)?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Mobile phone owners	1,116	1,297	1,398	1,234	1,209	1,214	3,252	1,123	1,208	901	1,531	1,526	1,054	761	635	632

In India, smartphone owners use multiple SIM cards more often

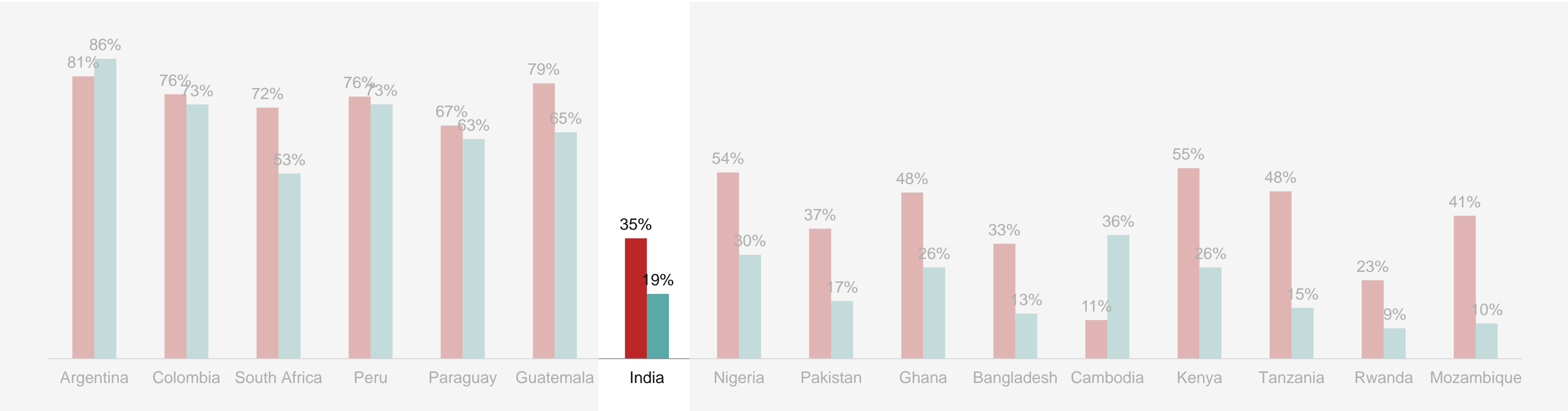


INTERNET

Low awareness and use of Internet in IN. But it should be doing better

Internet awareness and use (% of aged 15-65 population)

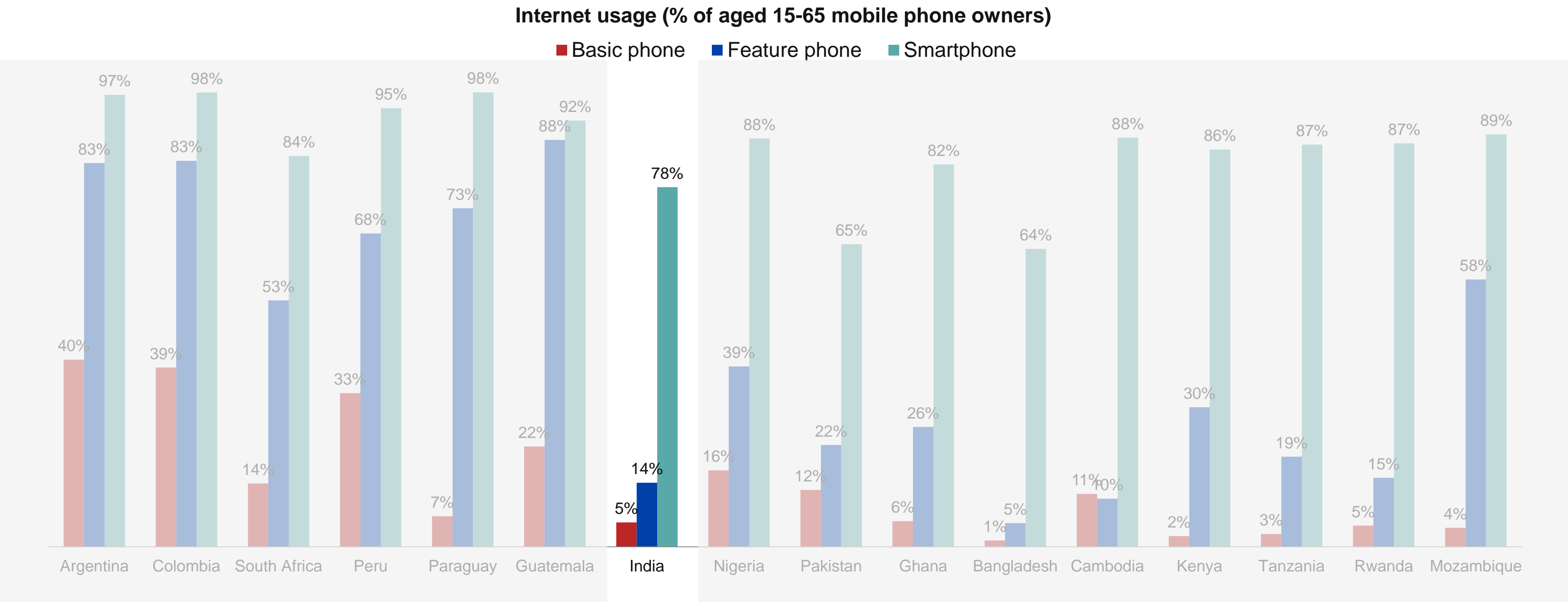
Internet awareness Internet use



Q1: Do you know what the Internet is?
Q2: Have you ever used the Internet (Gmail, Google, Facebook, email)?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
All respondents	1,240	1,425	1,610	1,478	1,357	1,407	5,069	1,706	2,002	1,145	2,020	2,123	1,179	1,102	1,118	1,091

Smartphone owners are the highest users of the Internet



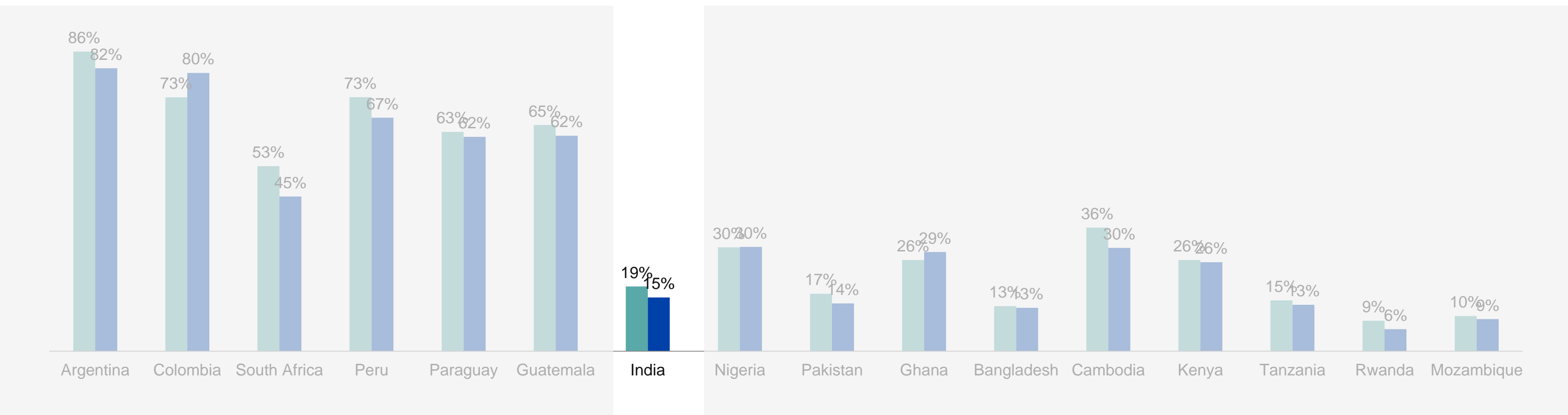
Q: Have you ever used the Internet (Gmail, Google, Facebook, email)?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Mobile phone owners	1,116	1,297	1,398	1,234	1,209	1,214	3,252	1,123	1,208	901	1,531	1,526	1,054	761	635	632

Internet use ≈ Social media use

Internet and social media use (% of aged 15-65 population)

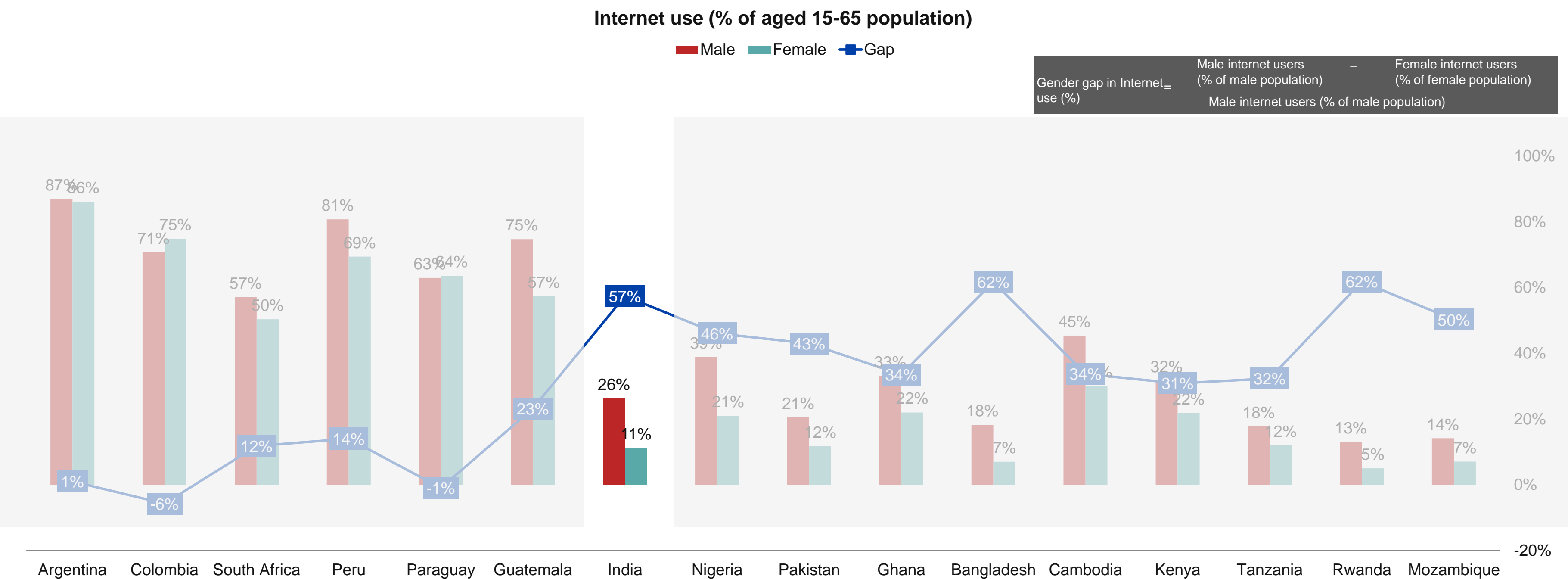
Internet use Social media use



Q1: Have you ever used the Internet (Gmail, Google, Facebook, email)?
Q2: Do you use social media like Facebook, Whatsapp, Twitter etc?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
All respondents	1,240	1,425	1,610	1,478	1,357	1,407	5,069	1,706	2,002	1,145	2,020	2,123	1,179	1,102	1,118	1,091

Gender divide in Internet use even higher than mobile ownership



Q: Have you ever used the Internet (Gmail, Google, Facebook, email)?

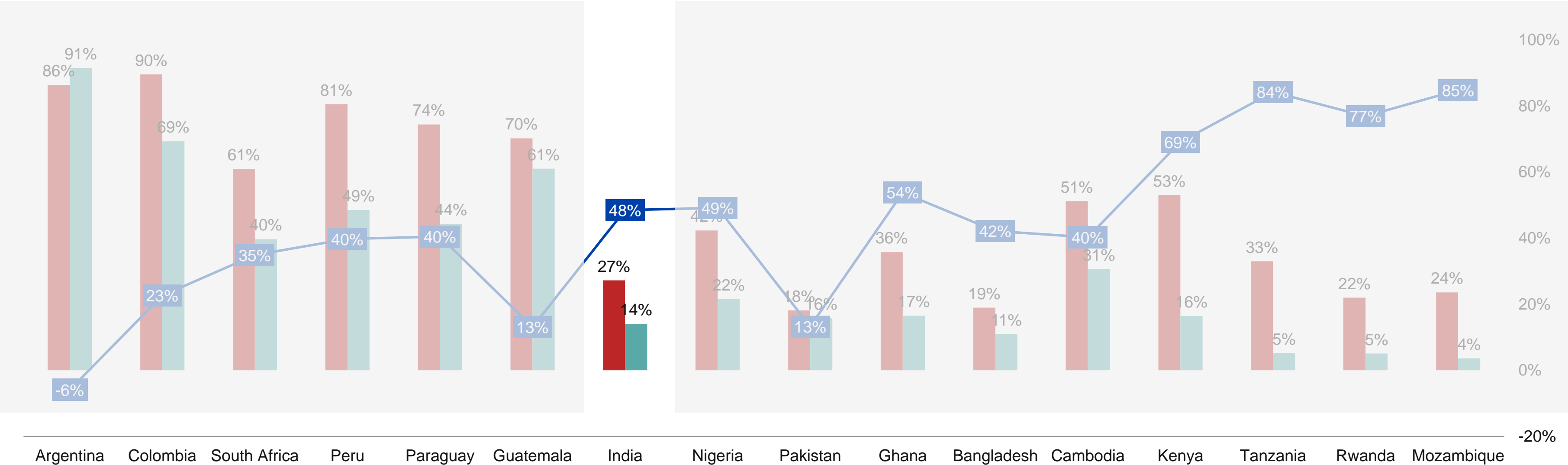
Base	Argentina		Colombia		South Africa		Peru		Paraguay		Guatemala		India		Nigeria		Pakistan		Ghana		Bangladesh		Cambodia		Kenya		Tanzania		Rwanda		Mozambique	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All respondents	478	762	487	938	795	1,020	508	970	879	478	656	751	2,478	2,591	912	896	1,060	942	547	653	1,092	928	735	1,388	544	664	531	669	556	655	527	644

Rural Internet use quite far behind urban

Internet use (% of aged 15-65 population)

Urban Rural Gap

Urban rural gap in Internet usage (%) =
$$\frac{\text{Urban Internet users (\% of urban population)} - \text{Rural Internet users (\% of rural population)}}{\text{Urban Internet users (\% of urban population)}}$$

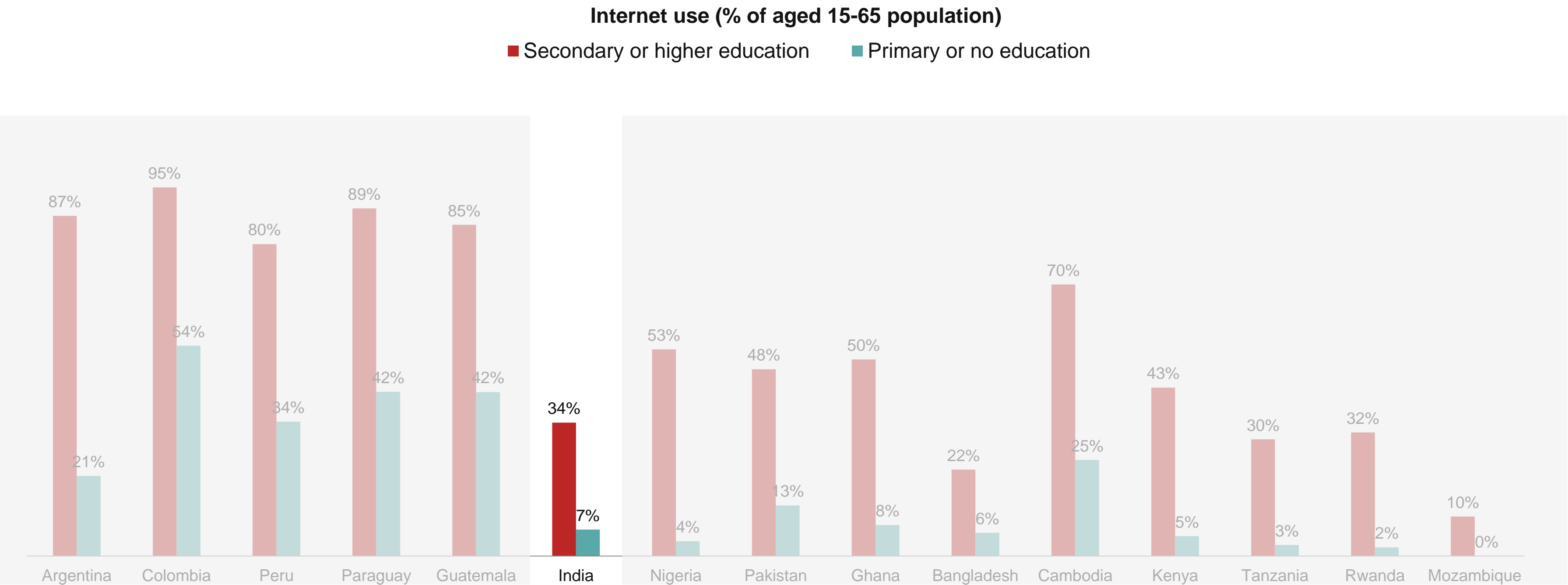


Q: Have you ever used the Internet (Gmail, Google, Facebook, email)?

Base	Argentina		Colombia		South Africa		Peru		Paraguay		Guatemala		India		Nigeria		Pakistan		Ghana		Bangladesh		Cambodia		Kenya		Tanzania		Rwanda		Mozambique	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
All respondents	1,208	32	986	439	1,050	765	1,178	300	824	533	550	857	2,200	2,869	1,147	661	793	1,209	721	479	808	1,212	897	1,226	727	481	720	480	711	500	718	453



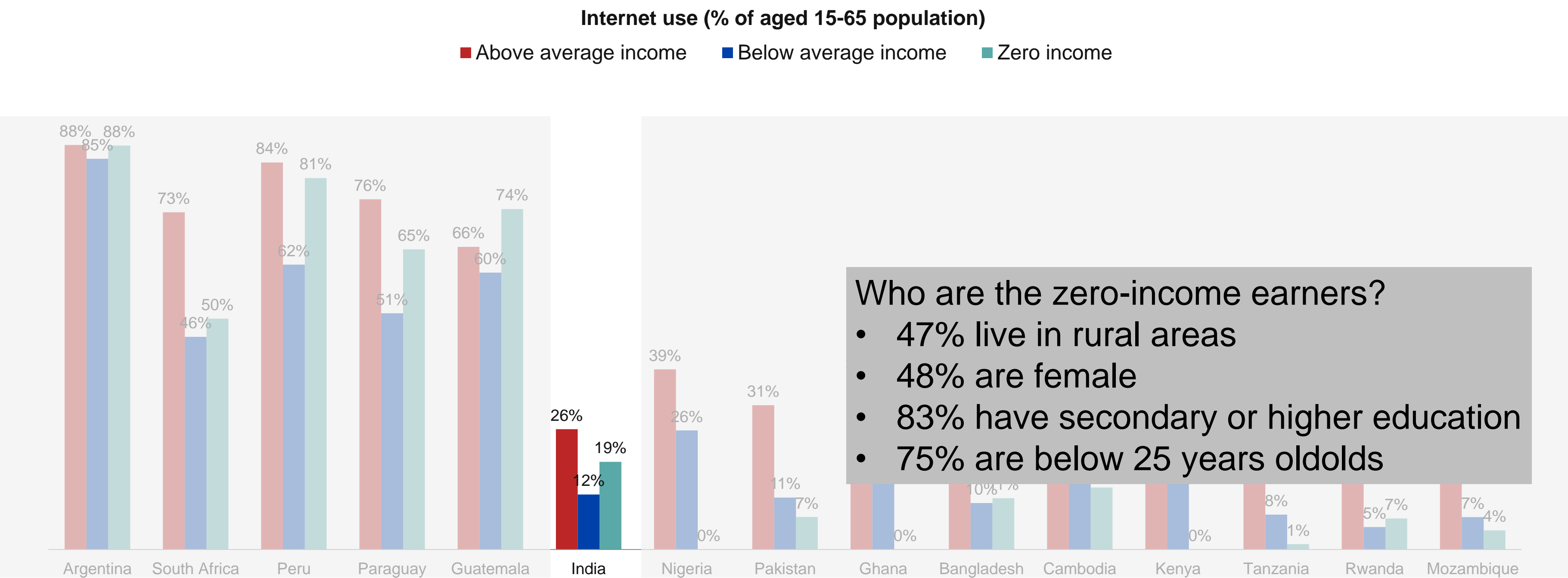
Lower Internet use among less educated across countries



Q: Have you ever used the Internet (Gmail, Google, Facebook, email)?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
All respondents	1,240	1,425	1,610	1,478	1,357	1,407	5,069	1,706	2,002	1,145	2,020	2,123	1,179	1,102	1,118	1,091

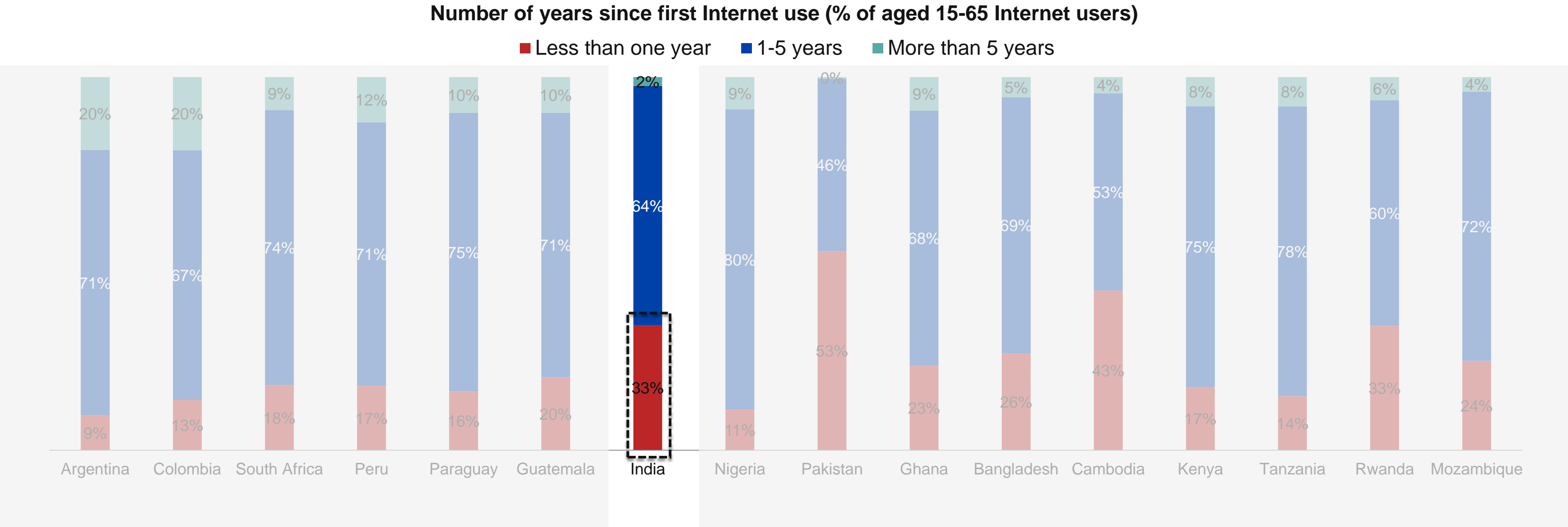
In IN, more zero income earners use Internet than low income earners



Q: Have you ever used the Internet (Gmail, Google, Facebook, email)?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
All respondents	1,240	1,425	1,610	1,478	1,357	1,407	5,069	1,706	2,002	1,145	2,020	2,123	1,179	1,102	1,118	1,091

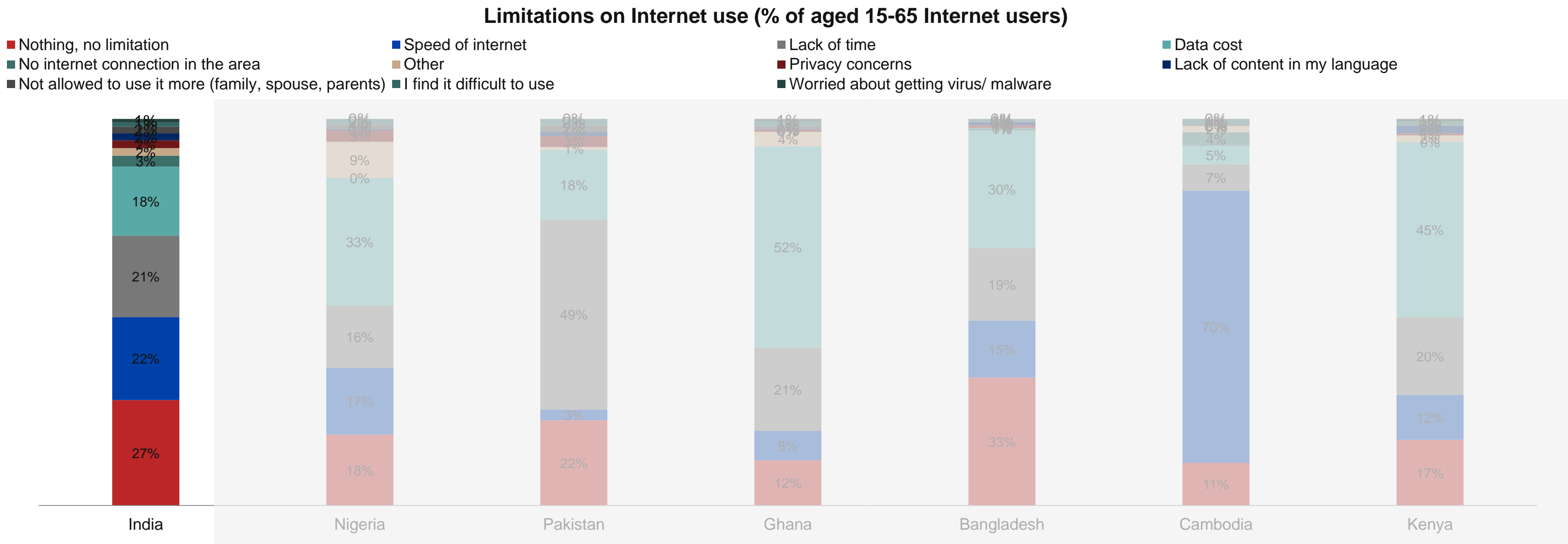
1/3rd of Internet users in IN, came online less than a year before survey



Q: For how many years have you been using the internet? (1 also for less than a year)

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Internet users	1,006	1,192	829	1,120	886	1,104	919	537	427	311	266	804	440	266	172	238

What limits more use among current users: Speed of Internet, lack of time & data costs

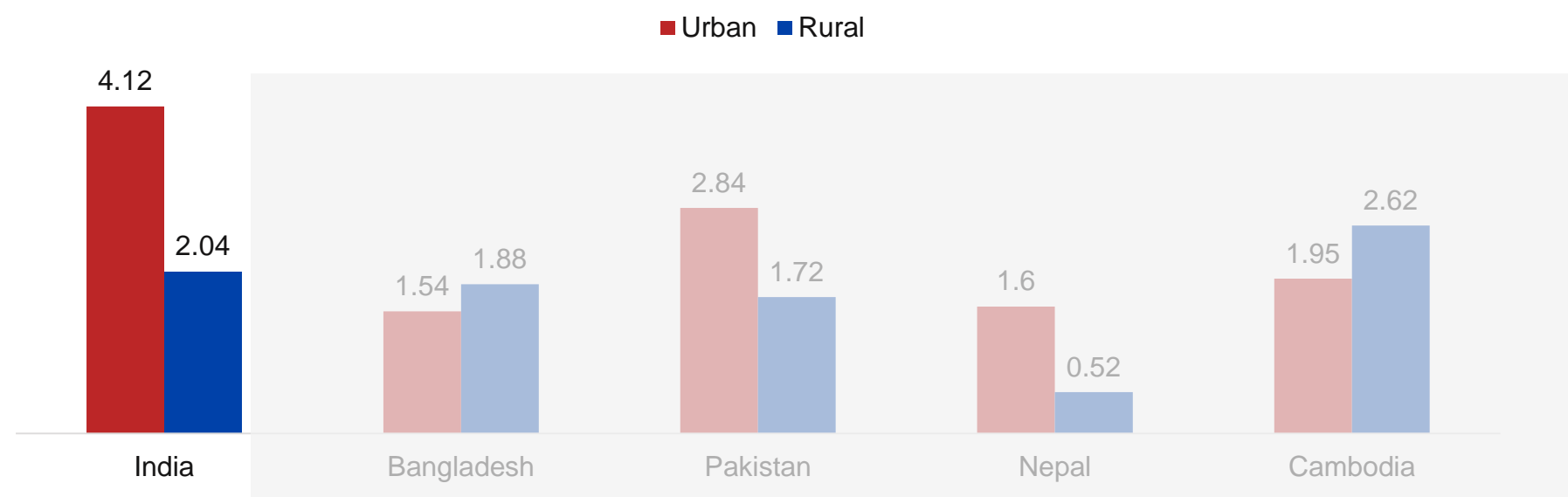


Q: What is your main limitation for your use of the internet? (Single response question)

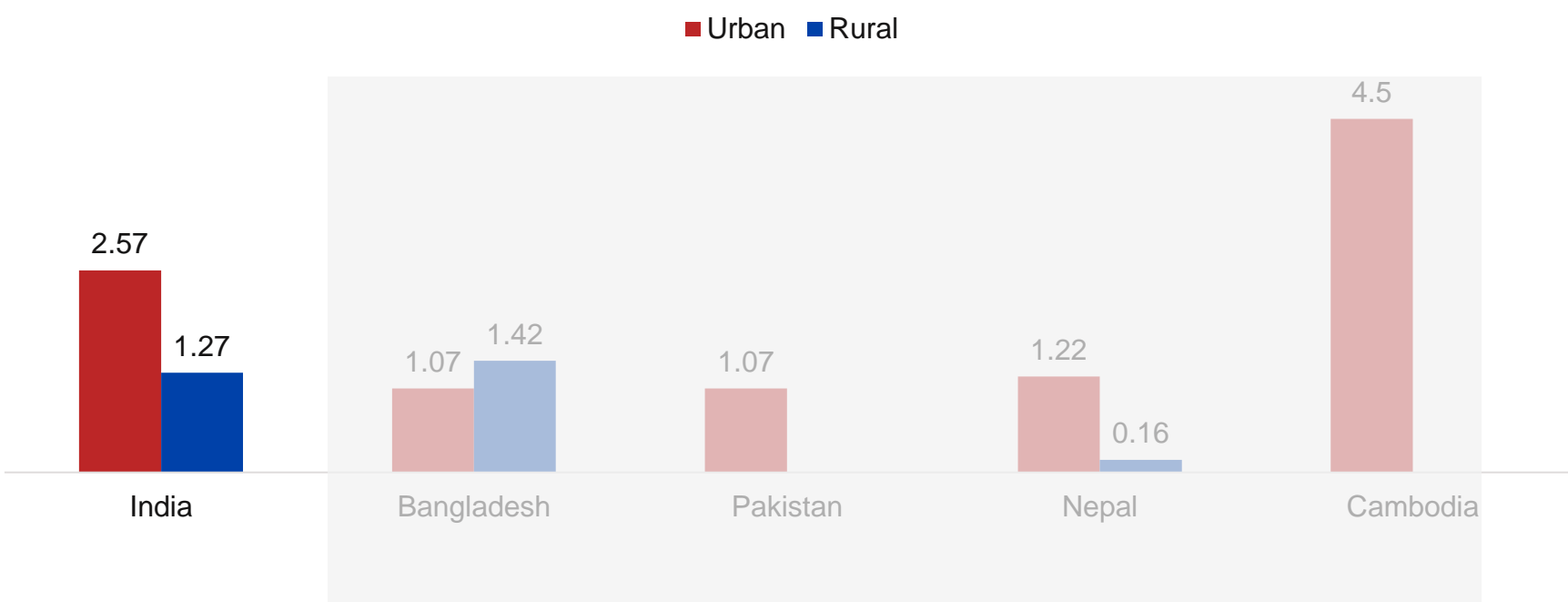
Base	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya
Internet users	919	529	427	311	266	804	440

We tested BB quality: poor performance doubled from rural to urban locations; Rural locations faced 16% network errors vs. 5% in urban

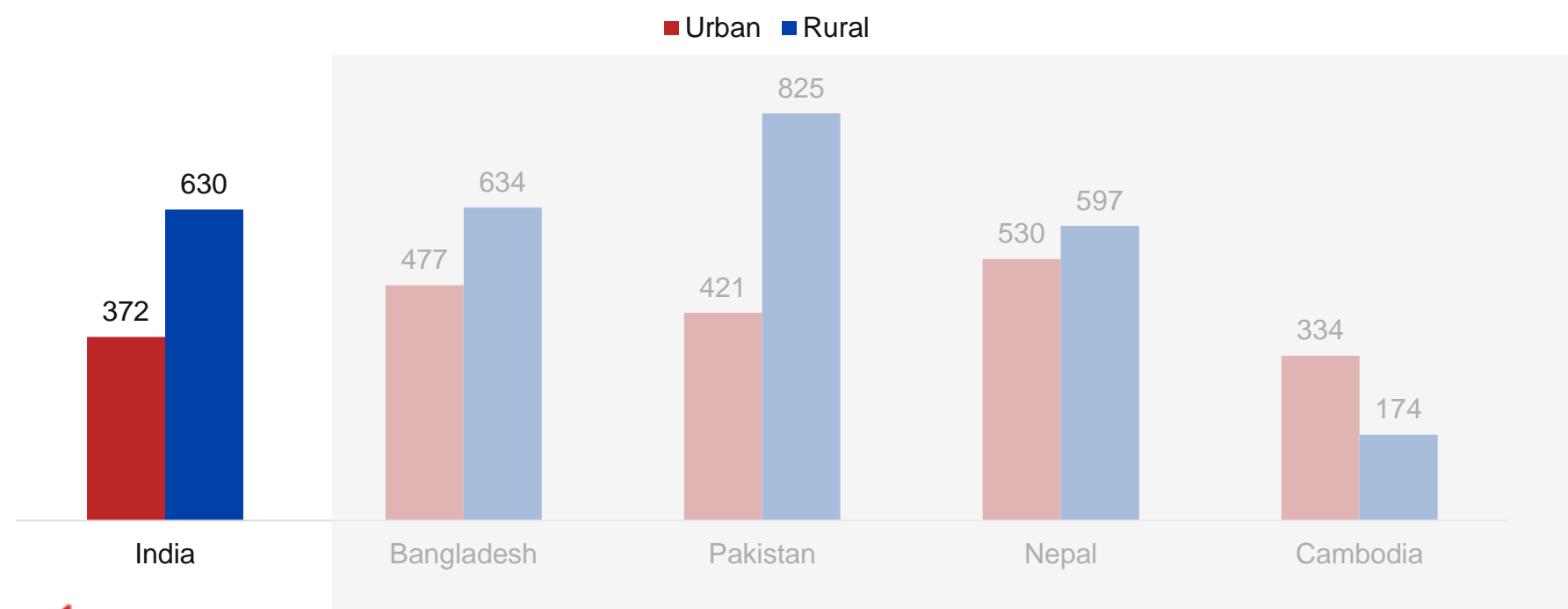
Average download speeds (Mbps)



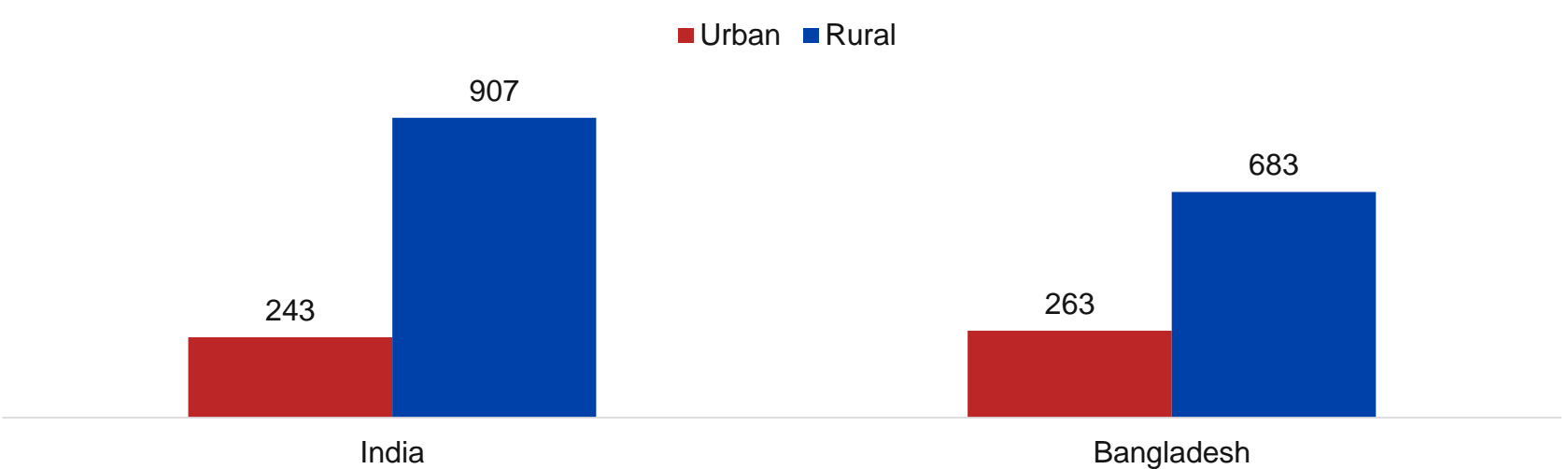
Average upload speeds (Mbps)



Average latency (ms)

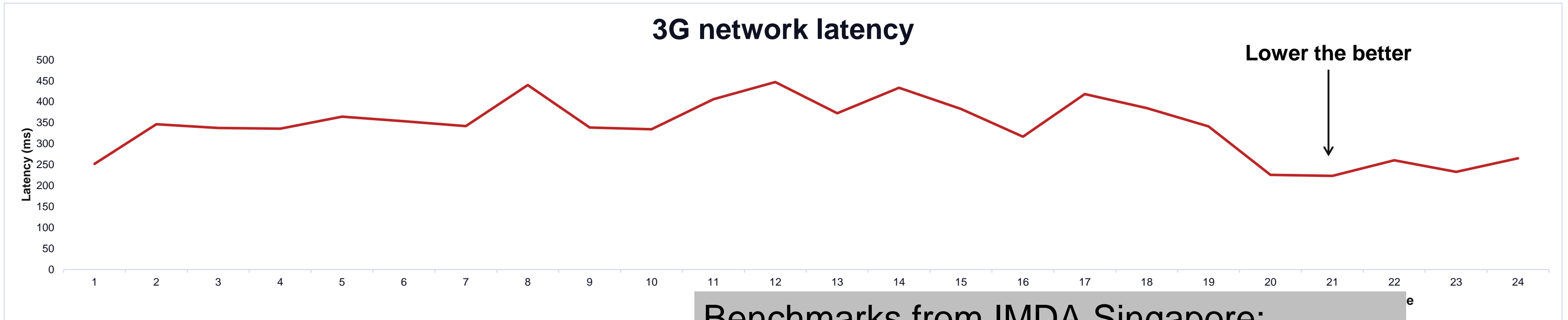


Number of network errors

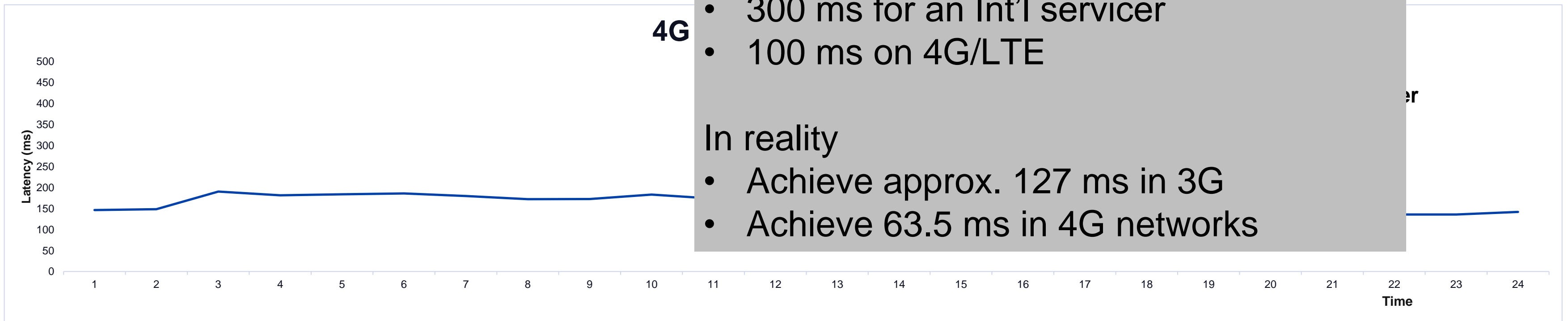


Total sample size: 24920
Test sites with GPS coordinates: 17,047
Test sites within a 1 Km of sampling frame's urban / rural locations: 10,179
Test sites in urban settings: 4,509
Test sites in rural settings: 5,670

Performance improvements on newer technologies, but even on 4G / LTE latency is still high



Average download speed: 2.78 Mbps; Average upload speed: 1.30 Mbps



Average download speed: 7.42 Mbps; Average upload speed: 3.90 Mbps

Benchmarks from IMDA Singapore:

- 300 ms for an Int'l server
- 100 ms on 4G/LTE

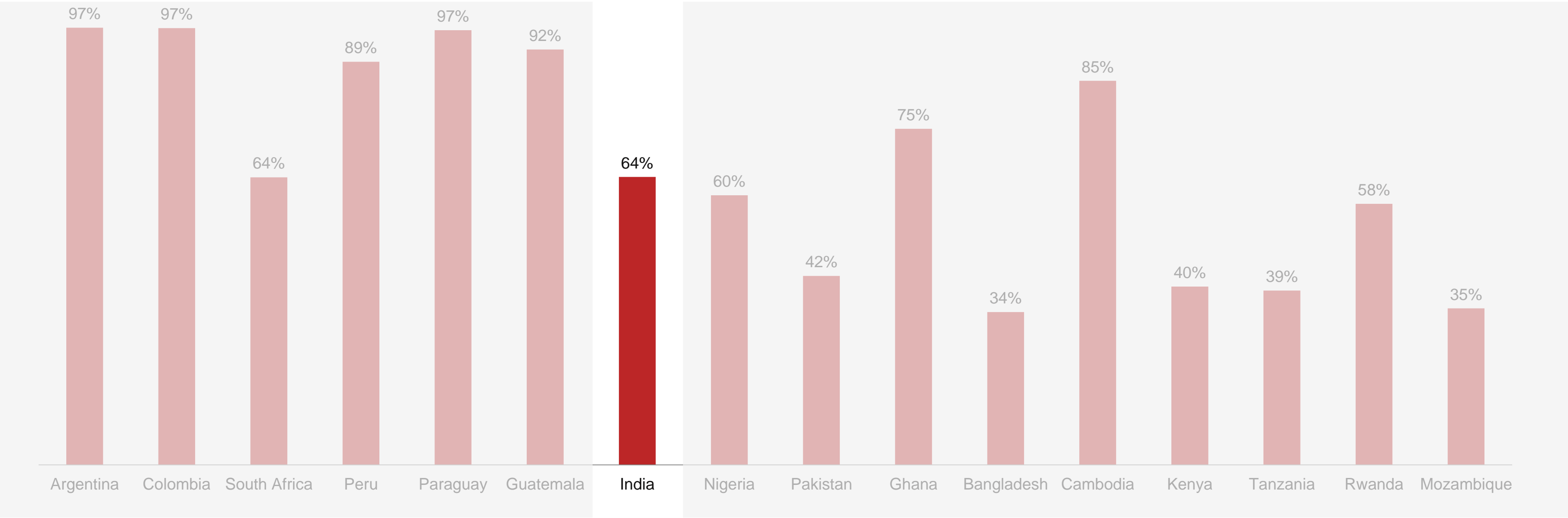
In reality

- Achieve approx. 127 ms in 3G
- Achieve 63.5 ms in 4G networks

WHAT DO USERS DO WHEN ONLINE?

64% of those with Internet-enabled mobiles use some kind of app

App use (% of aged 15-65 feature or smartphone owners)



Q: Are you using these types of mobile apps on your phone?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Feature or smartphone owners	982	1,020	1,552	972	809	846	1,397	795	571	458	936	878	1,074	789	660	667

Nearly 50% smart/feature phone owners use social media & messaging

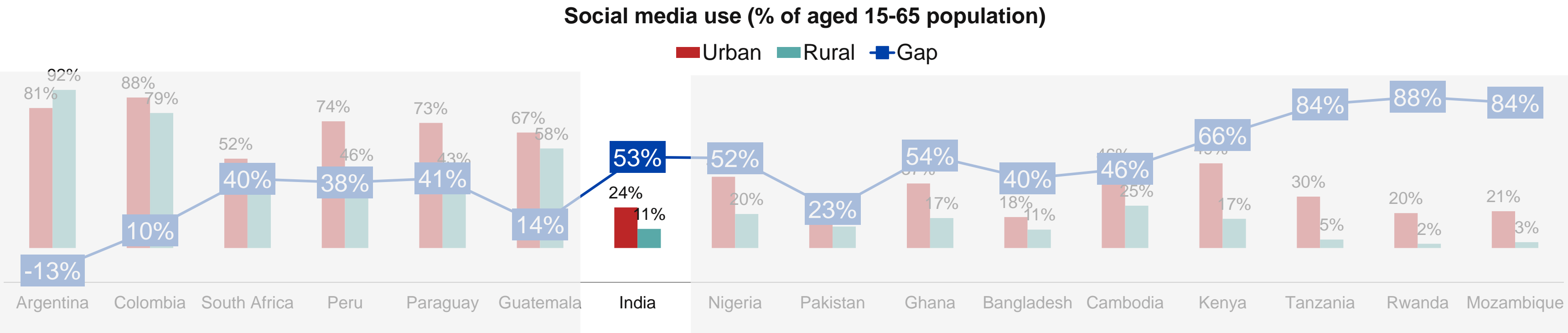
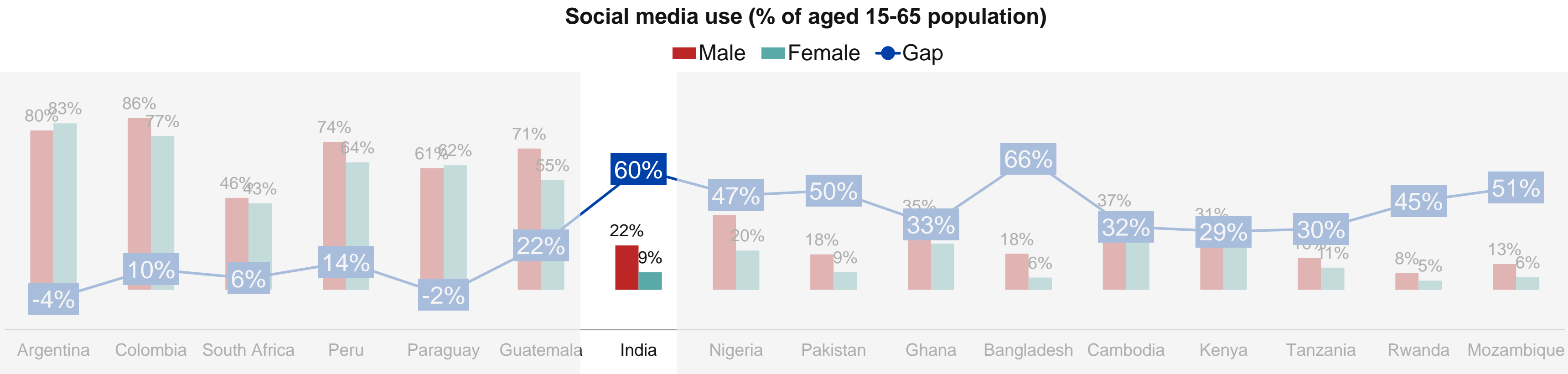
	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Social networking apps (Such as Facebook, WhatsApp, Instagram, Snapchat, Twitter, linkedin, line)	95%	94%	52%	82%	88%	87%	48%	52%	25%	68%	19%	71%	30%	22%	12%	20%
Messaging or chat (text) apps (Whatsapp, Skype, Viber, Line, Talkray, Telegram, Facebook messenger)	89%	86%	45%	77%	90%	78%	46%	43%	25%	64%	22%	50%	26%	17%	16%	28%
Entertainment apps (movie trailers, celebrity gossip, radio station guides,)	27%	43%	24%	44%	28%	37%	43%	28%	13%	40%	13%	51%	17%	28%	30%	16%
Voice apps (Whatsapp, Skype, Viber, Line, Talkray) for voice	89%	86%	45%	77%	90%	78%	42%	43%	24%	64%	17%	27%	26%	17%	16%	28%
Game apps (puzzles, charades, etc.)	19%	32%	32%	31%	18%	34%	34%	31%	15%	46%	13%	37%	16%	9%	9%	17%
News apps (local news, national headlines, technology announcements, sport)	49%	41%	25%	60%	38%	51%	33%	37%	12%	44%	8%	36%	16%	16%	17%	15%
Educational applications (dictionary, learning tools)	34%	39%	27%	55%	25%	50%	30%	36%	10%	53%	8%	32%	16%	12%	7%	14%
Search tool apps (Maps, directions, phone numbers, recipes, etc.)	51%	49%	30%	56%	32%	47%	29%	28%	16%	43%	7%	23%	19%	19%	18%	12%
Business apps (calculate, convert, translate, etc.)	28%	22%	13%	45%	21%	26%	26%	25%	14%	30%	15%	51%	13%	26%	24%	8%
Weather apps (local forecasts, natural disaster updates)	57%	42%	26%	51%	46%	37%	22%	18%	11%	32%	3%	24%	10%	4%	2%	12%
Trading or E-commerce apps (selling and buying online e.g. ebay)	43%	23%	8%	36%	16%	18%	19%	8%	12%	18%	3%	6%	9%	6%	4%	5%
Transport apps (public transportation info, taxis, Uber)	31%	15%	10%	35%	10%	22%	17%	6%	17%	13%	2%	1%	9%	4%	5%	6%

Q: Are you using these types of mobile apps on your phone?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Feature or smartphone owners	982	1,020	1,552	972	809	846	1,397	795	571	458	936	878	1,074	789	660	667



High gender and urban-rural gaps in social media use in IN



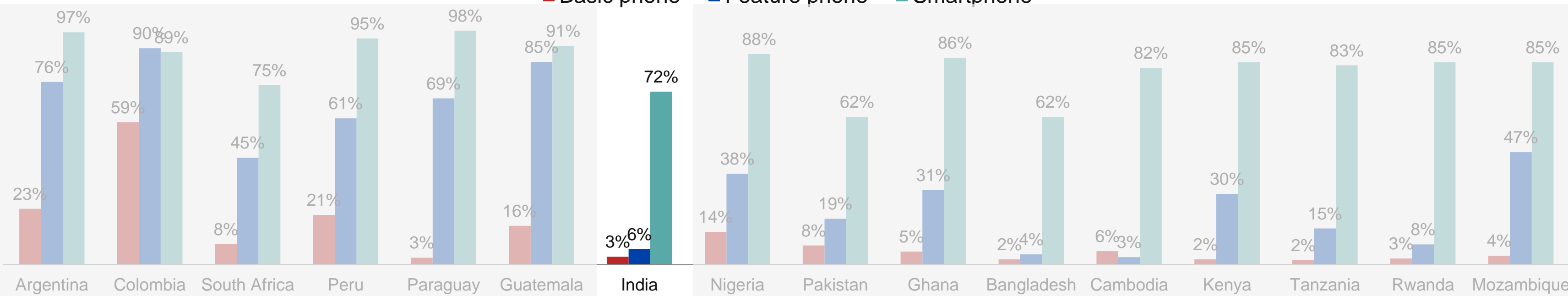
Q: Do you use social media like Facebook, Whatsapp, Twitter etc?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
All respondents	1,240	1,425	1,610	1,478	1,357	1,407	5,069	1,706	2,002	1,145	2,020	2,123	1,179	1,102	1,118	1,091

Social media use almost entirely via smartphones in IN; mostly among educated, higher earners and younger age groups

Social media use (% of aged 15-65 mobile phone owners)

Basic phone Feature phone Smartphone



India

Social media use (% of aged 15-65 population)

		India
Education	Secondary or higher education	29%
	Primary or no education	5%
Income	Above average income	22%
	Below average income	10%
	Zero income	15%

		India
Age	15-25	33%
	26-35	27%
	36-45	25%
	46-55	19%
	56-65	16%

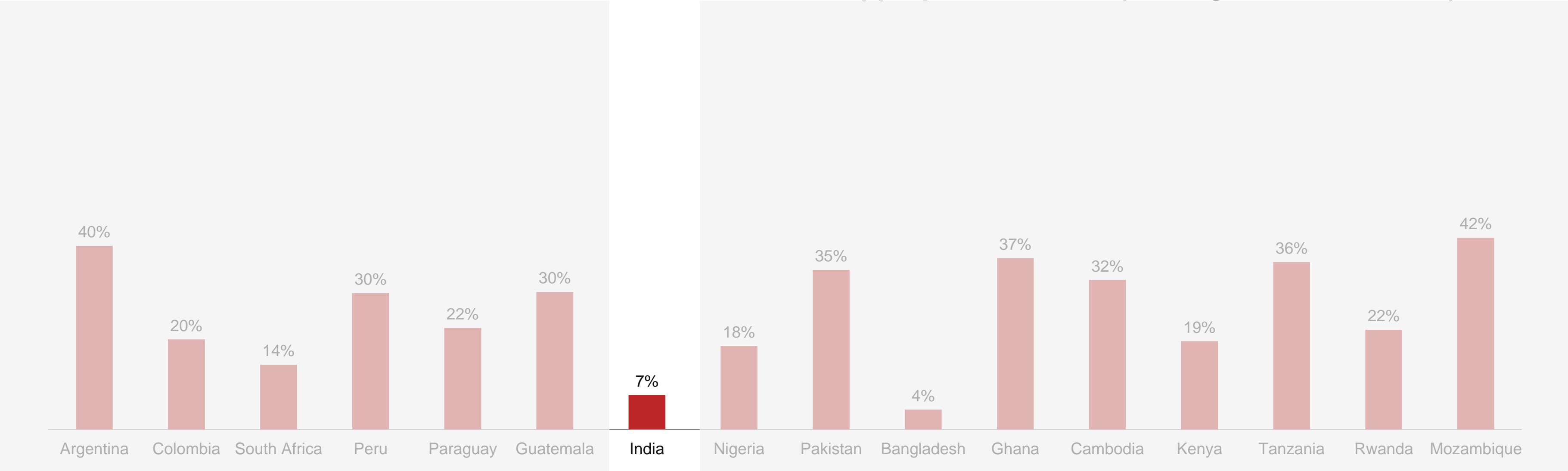
Q: Do you use social media like Facebook, Whatsapp, Twitter etc?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
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ONLINE EXPERIENCE and RIGHTS

Users confronted by “unwanted” material (not necessarily all illegal) in all countries. India lowest

Confronted with unwanted offensive or inappropriate material (% of age 15-65 SM users)



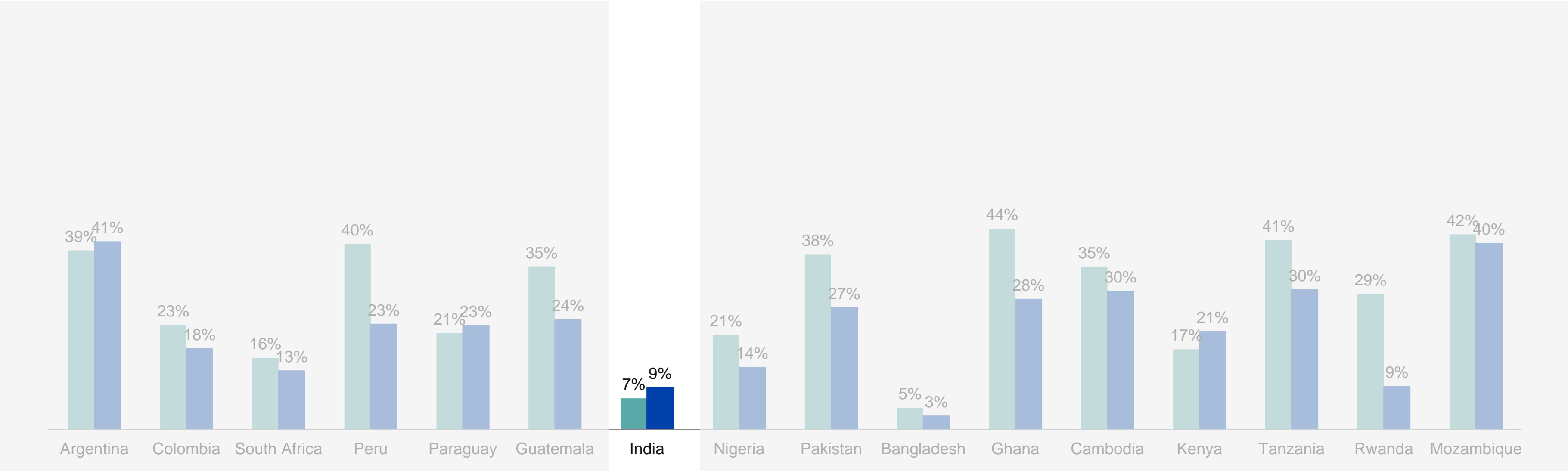
Q: While using social media were you ever confronted with unwanted offensive or inappropriate material (e.g. sexual content)?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Bangladesh	Ghana	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Social media users	993	1,246	669	999	802	878	754	496	369	251	323	680	423	241	156	230

Higher % of men (than women) say they are confronted by unwanted material – BUT INDIA IS DIFFERENT

Confronted with unwanted offensive or inappropriate material (% of age 15-65 SM users)

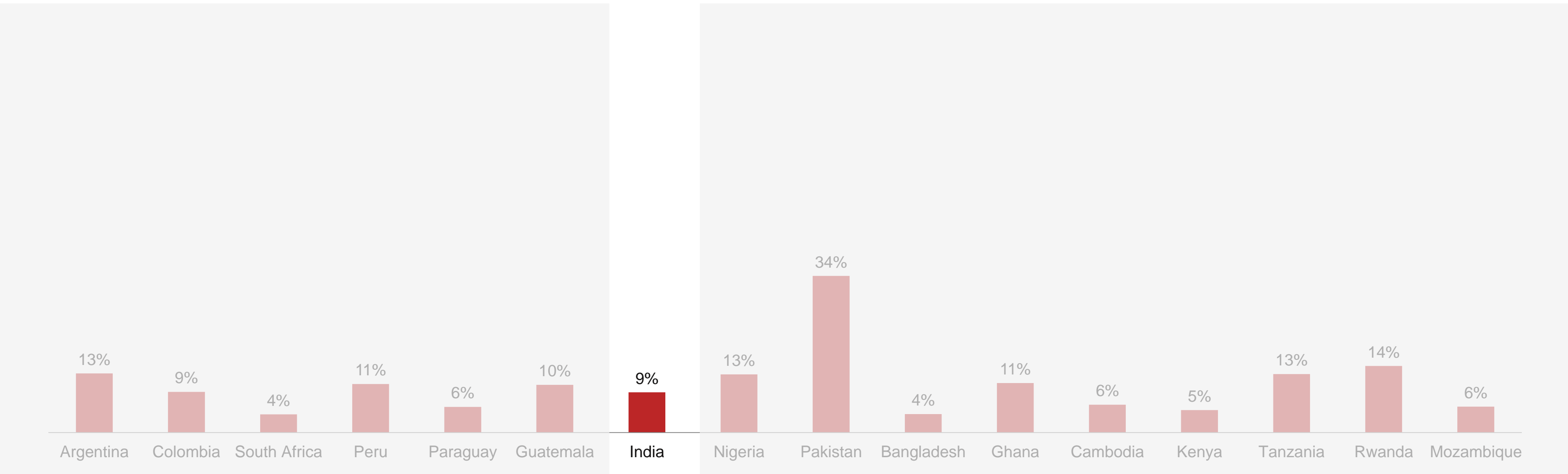
Male Female



Q: While using social media were you ever confronted with unwanted offensive or inappropriate material (e.g. sexual content)?

Repeated offensive comments or emails are common too

Victim of online bullying (% of age 15-65 SM users)

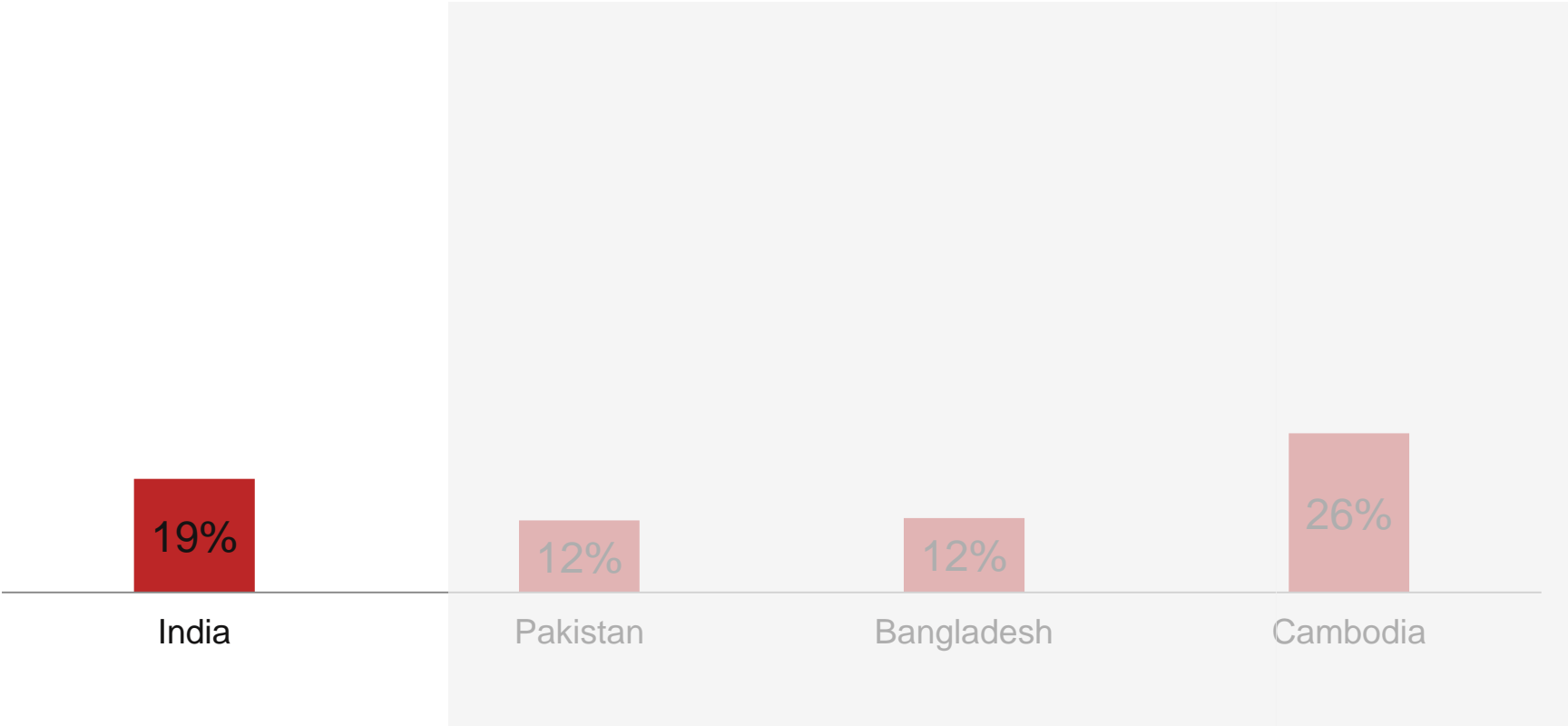


Q: Have You Ever Been A Victim Of On-Line Bullying (repeated offensive comments or emails)?

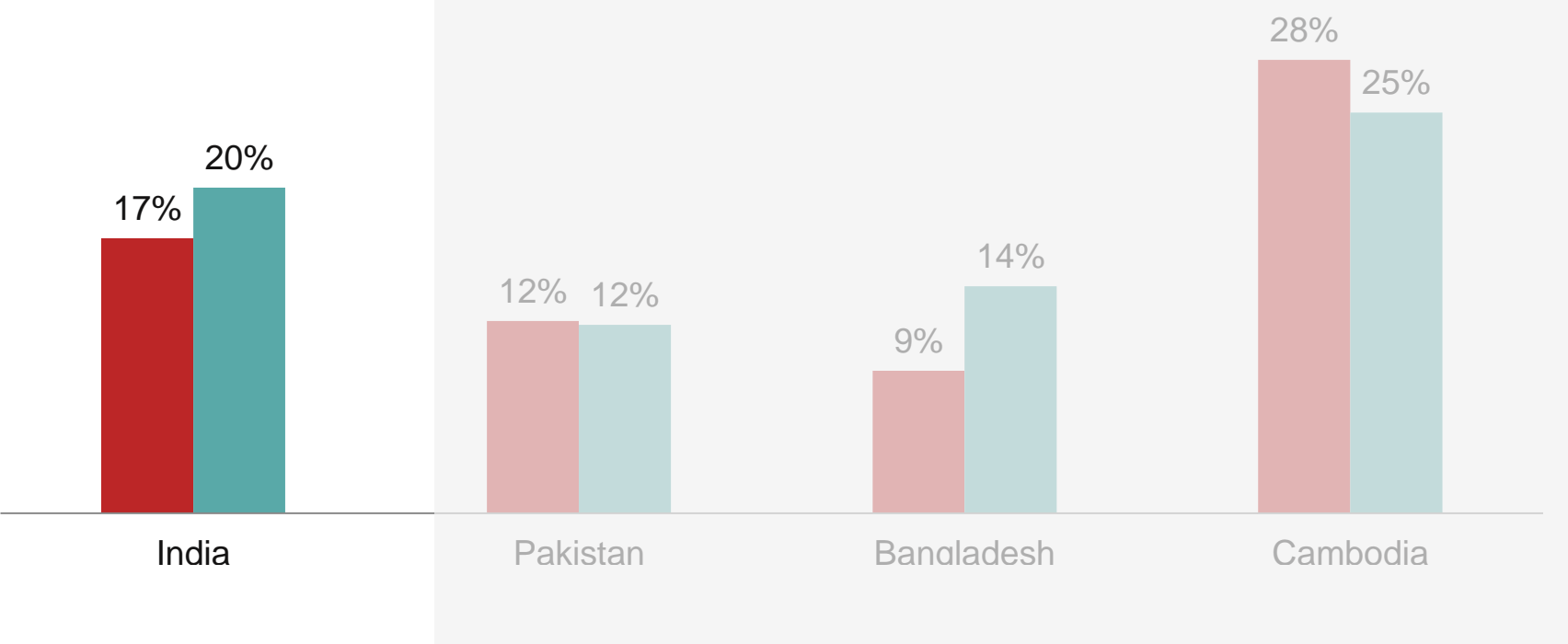
Base Social media users Argentina 993 Colombia 1,246 South Africa 669 Peru 999 Paraguay 802 Guatemala 878 India 754 Nigeria 496 Pakistan 369 Bangladesh 251 Ghana 323 Cambodia 680 Kenya 423 Tanzania 241 Rwanda 156 Mozambique 230

One fifth of Internet or social media users in IN have experienced some form of online harasssment; more men than women

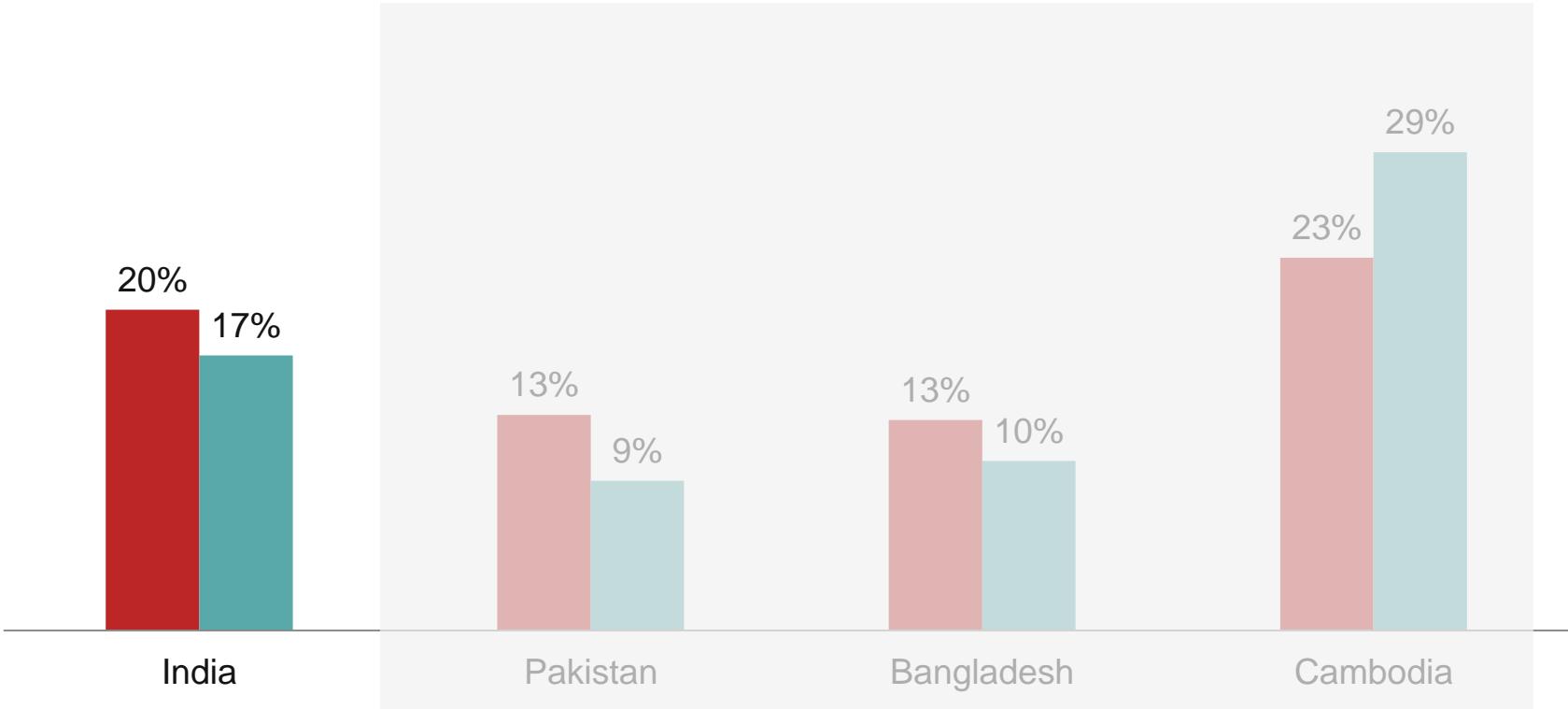
Experiencing online harasssment (% of aged 15-65 internet users)



Urban Rural



Male Female



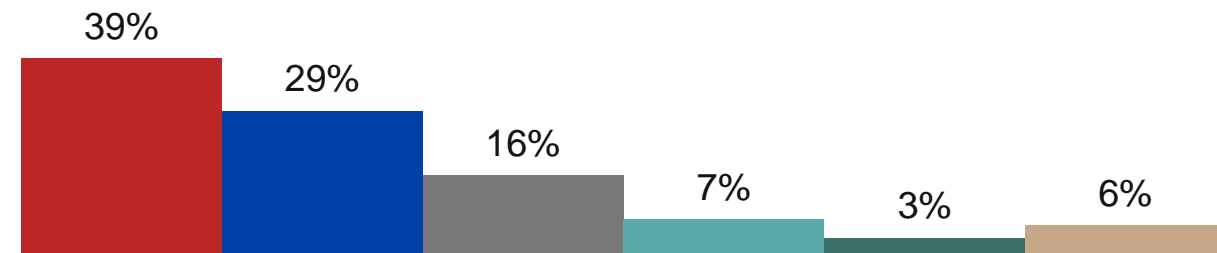
Q1: Being called offensive names
Q2: Being purposefully embarrassed or criticized in another way (besides being called offensive names)
Q3: Being physically threatened
Q4: Being sexually harassed
Q5: Being approached repeatedly by unwanted contacts (cyber-stalked)

Base	India	Pakistan	Bangladesh	Cambodia
Internet users	919	427	266	804

Social media a major vehicle for harassment; perceived motivation gender, religion, or politics

Platform on which the harassment experienced (% Internet & SM users who experienced harassments(age 15-65))

■ Social media (eg: facebook) ■ Chat applications (eg: whatsapp)
■ Comments section of a website ■ Online gaming
■ Email ■ Other (specify)

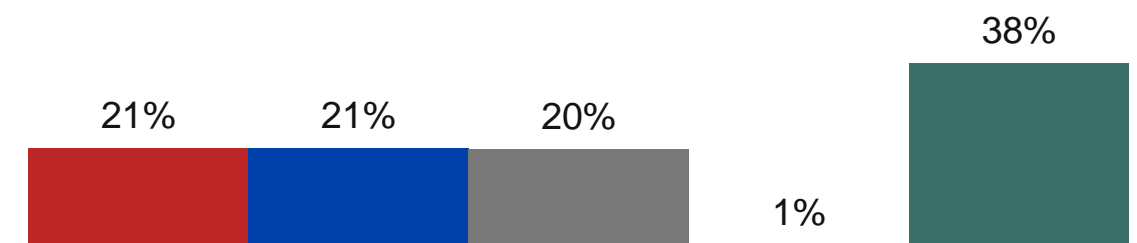


India

Q:On which PLATFORM, did you experience this harassment?

Motivation for the harassment (% of those who experienced online harassment)

■ Gender ■ Religion or race ■ Politics ■ Other (specify) ■ I don't know

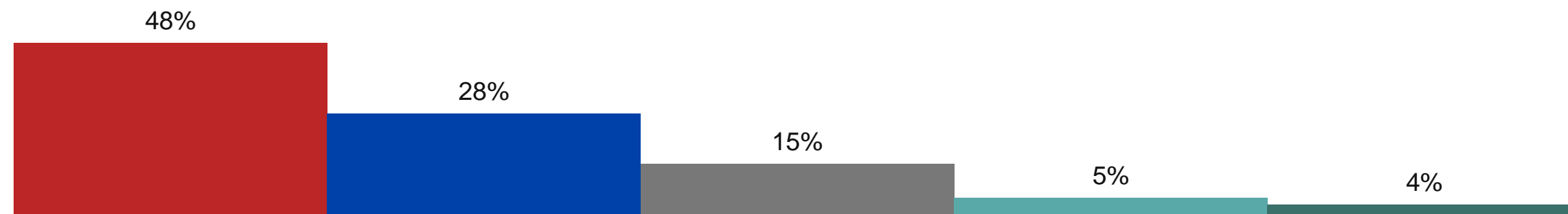


India

Q:What do you believe was the main motivation behind this harassment?

Effect of the harassment on internet usage (% of those who experienced online harassment)

■ It has had no effect ■ I reduced use of the particular website ■ I deleted the app or my profile ■ I unfriend/blocked contacts or left that a group/forum ■ I now limit my use the internet as a whole



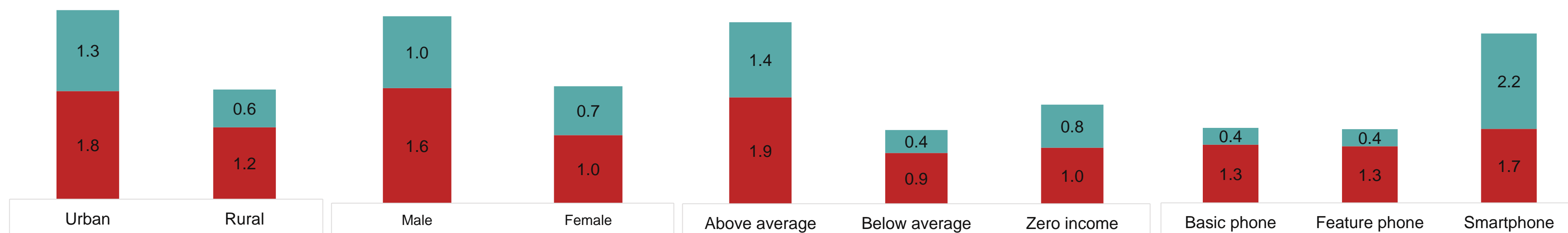
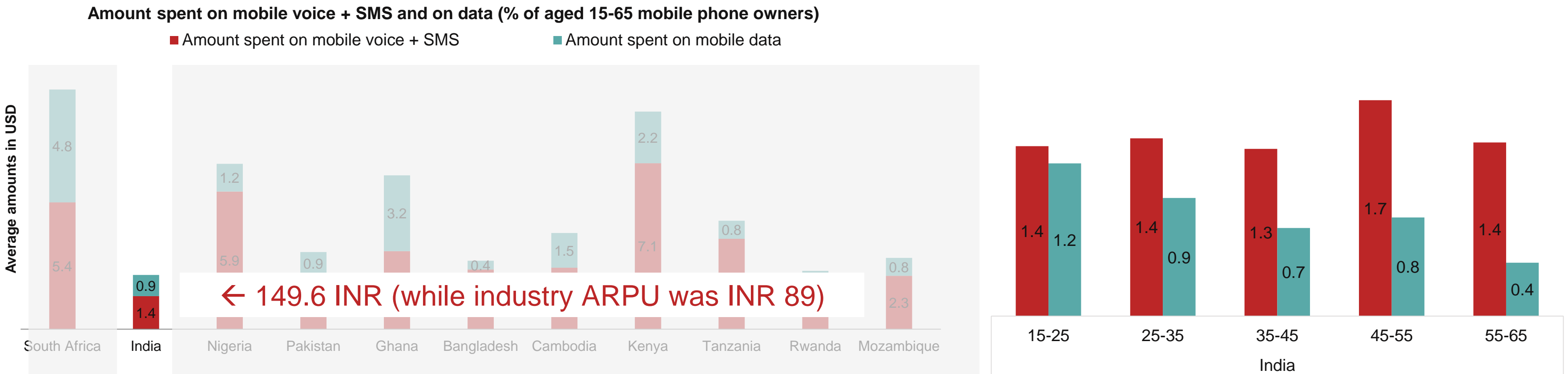
India

Q: What effect has this had on your use of the Internet?

Base	India	Pakistan	Bangladesh	Cambodia
Respondents faced online harassments	178	51	38	197

MOBILE EXPENDITURE

Who spends the most on data? the urban, men, high income earners, smartphone owners and the young



Q: In terms of mobile phone expenditure: Could you tell me how much you spent last MONTH for VOICE, SMS and Data in total (airtime, subscription)?

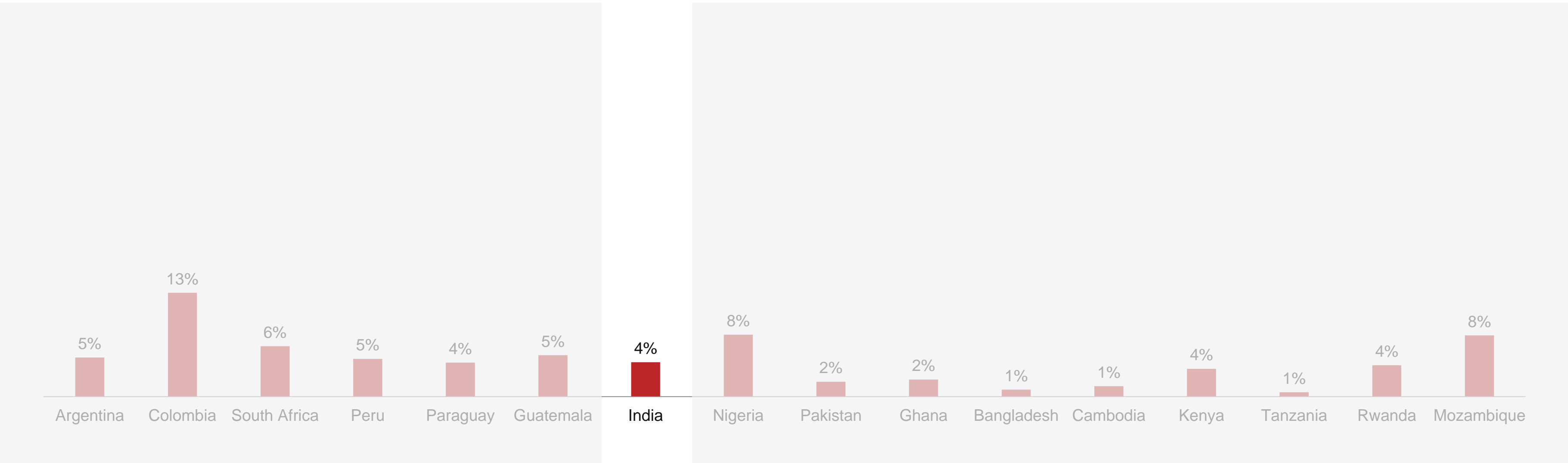
Q: In terms of mobile phone expenditure, Could you tell me how much you spent last MONTH on Data only (dedicated top-up or data bundles e.g.) (=0 if does not use mobile phones)

Base	South Africa	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Mobile phone owners	1,398	3,252	1,123	1,208	901	1,531	1,526	1,054	761	635	632

E-COMMERCE: ARE PEOPLE MAKING
MONEY **SELLING GOODS AND SERVICES?**

4% 15-65 population used a platform to **selling** labor and earn income (finding jobs, doing work online, driving taxis etc.)

Usage of platforms: **selling** (% of aged 15-65 internet users)

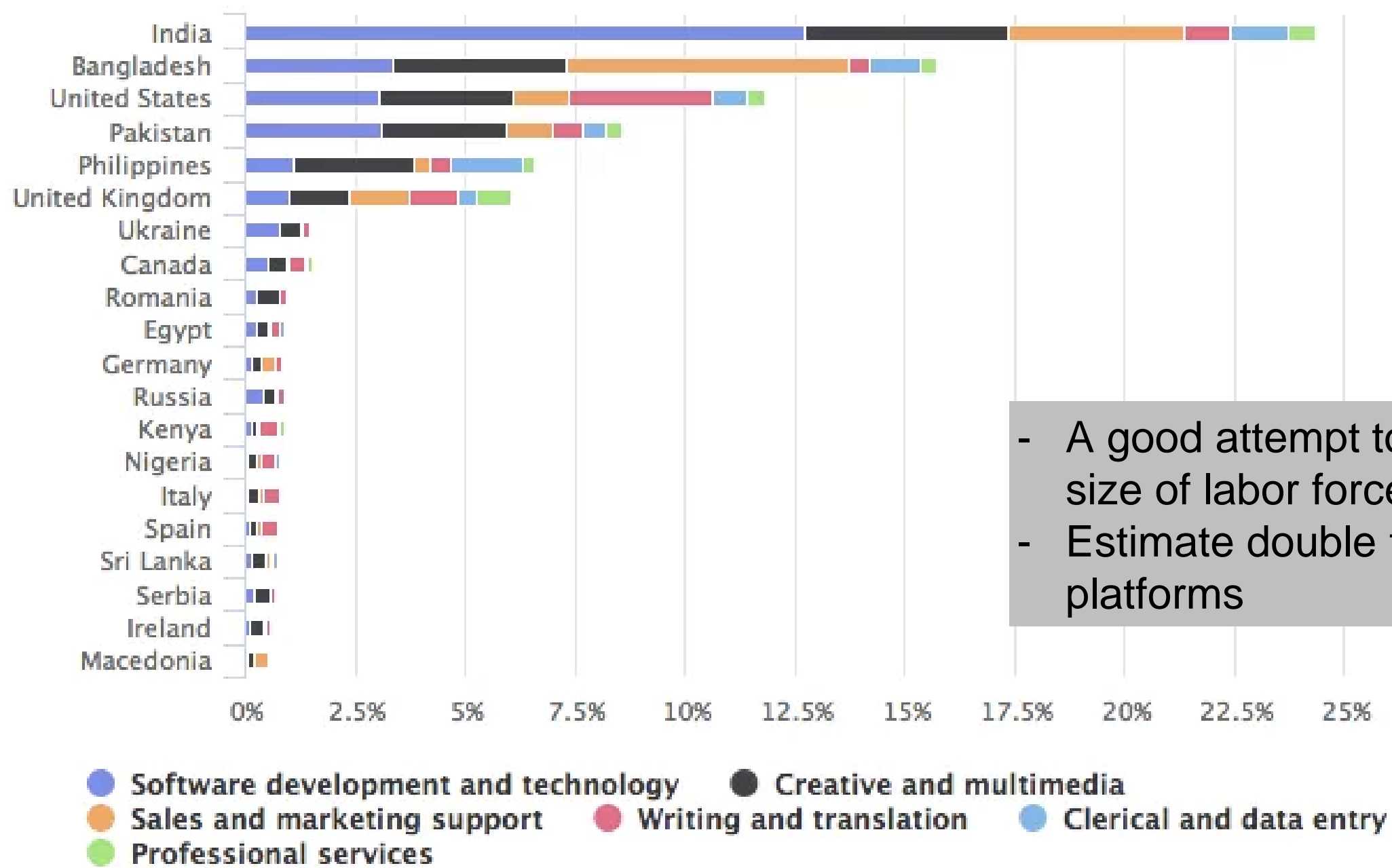


Q: Some people find paid jobs or tasks by connecting directly with people who want to hire them using a website or mobile app. In the last year, have you earned money by taking on jobs of this type?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Internet users	1,006	1,192	829	1,120	886	1,104	919	537	427	311	266	804	440	266	172	238

India largest supplier of digital labor on the top 5 work platforms

Online Labor Index top occupation by country, 1-6 July 2017



- A good attempt to weigh and project actual size of labor force for these platforms
- Estimate double this number of all other platforms

Indian digital workers (platform mediated) earn a range of incomes online, mostly while doing other jobs or studying

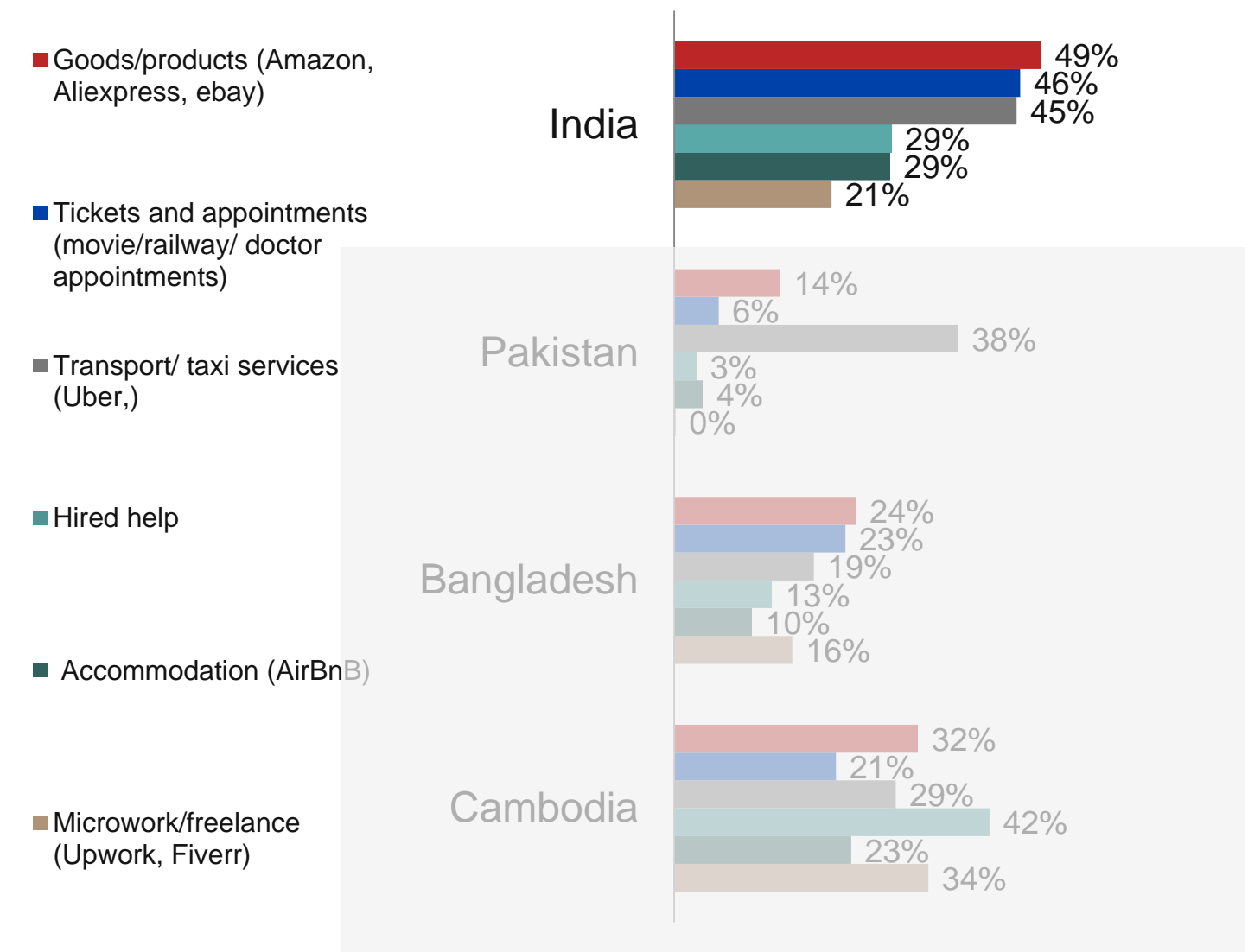
Type of work	Examples of type of work	Average earnings per month	Earning per job	Platforms used
Professional services	Project management Accounting Social media consultant	USD 15- 230	USD 0.15 per sq.ft for interior designing	Facebook, Frapp, Instagram
Clerical and data entry	Translation Transcription Formatting documents Audio transcription	USD 15- 90	USD 0.1- 0.77 per word USD 6 per 1 hour audio	Translators café, Guru, Fiverr, Upwork, Freelancer
Creative and multimedia	Photography Video production Video editing	USD 107-184	USD 8- 77 per logo USD 60 per short film USD 150-300 per photo shoot	Behance, 99design
Sales and marketing support	Search engine optimization Ad posting Event promotion	USD 77- 230	USD 1.5 per 10 app referrals	Frapp, Facebook groups, Whatsapp
Software development and technology	Mobile development Software development Web development App development	USD 77- 230	USD 46- 122 per website	Upwork, Freelancer, Fiverr
Writing and translation	Copywriting Creative writing Technical writing Translation	USD 15- 90	USD 0.03 per word	Guru, Fiverr, Upwork, Freelancer

E-COMMERCE: ARE PEOPLE **BUYING**

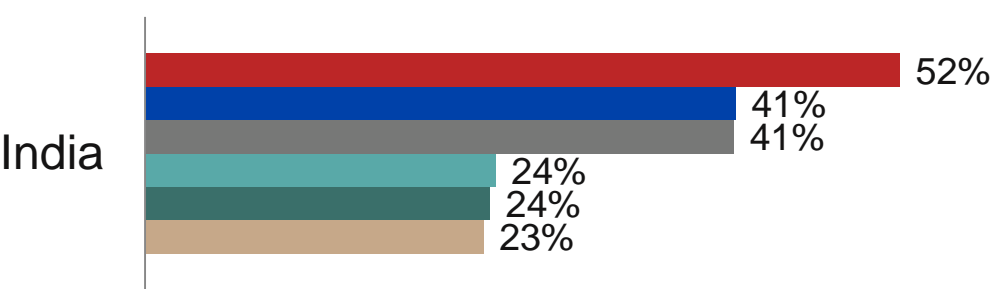
Awareness and use for buying highest in India; key motivation for use = convenience

“platforms” = via internet or apps

Awareness of platforms for buying/selling (% of aged 15-65 internet users)

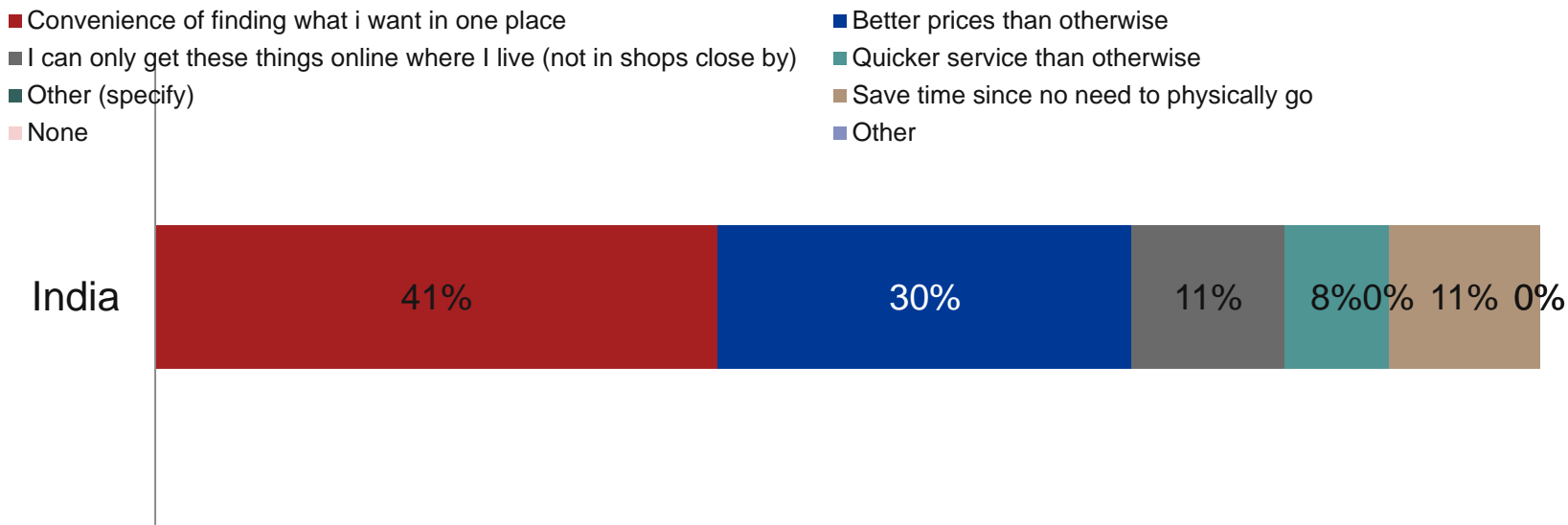


Usage of platforms: **buying** (% of aged 15-65 internet users aware of platforms)



Q2: Have you ever bought any of the following goods or services through the internet or apps?

Reason for using platforms for **buying** (% of aged 15-65 platform users who buy)



Q: Why do you usually choose to use these kinds of websites/apps to search/buy goods and services?

Base	India
Platform users who purchased through platforms	239

Q1: Have you heard of these opportunities to buy/sell goods or services over the internet or apps as just defined?

Base	India
Internet users	919

Payment and delivery often happen outside the platform. Debit card and COD are popular payment methods

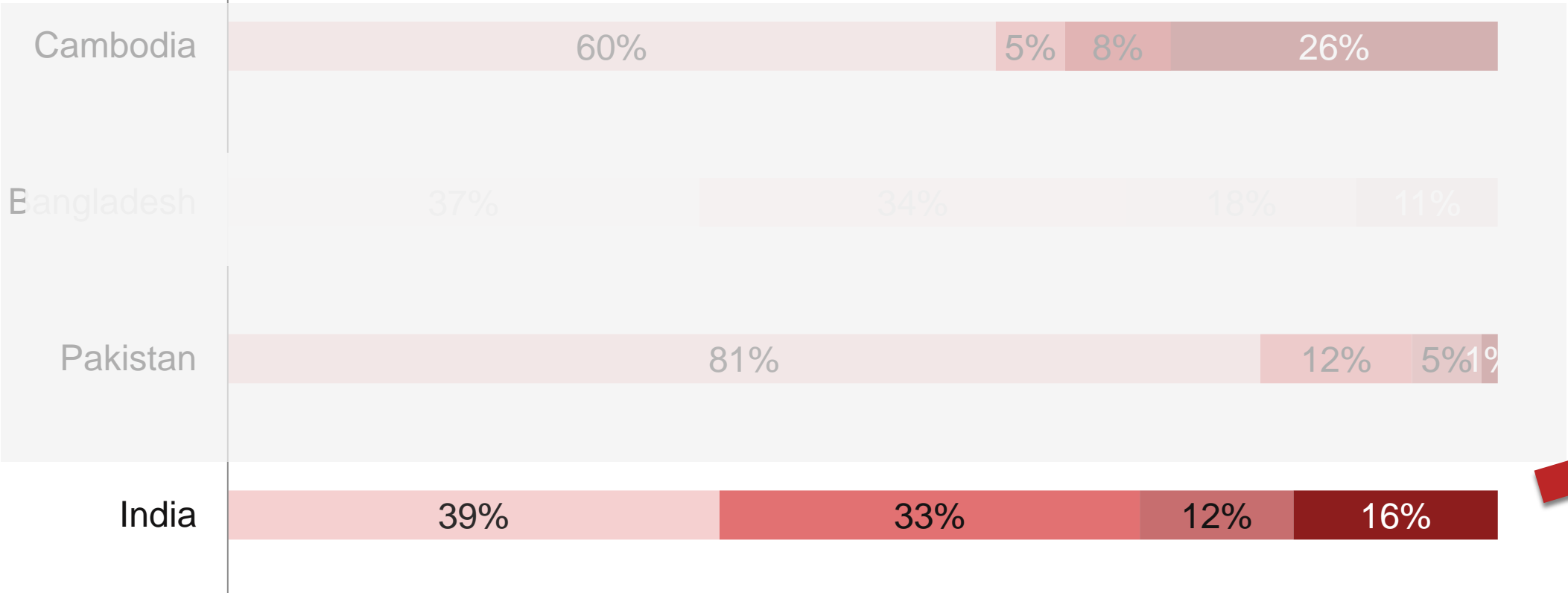
Transaction components completed on Internet/apps: **buying** (% of aged 15-65 platform users who buy)

- Search only

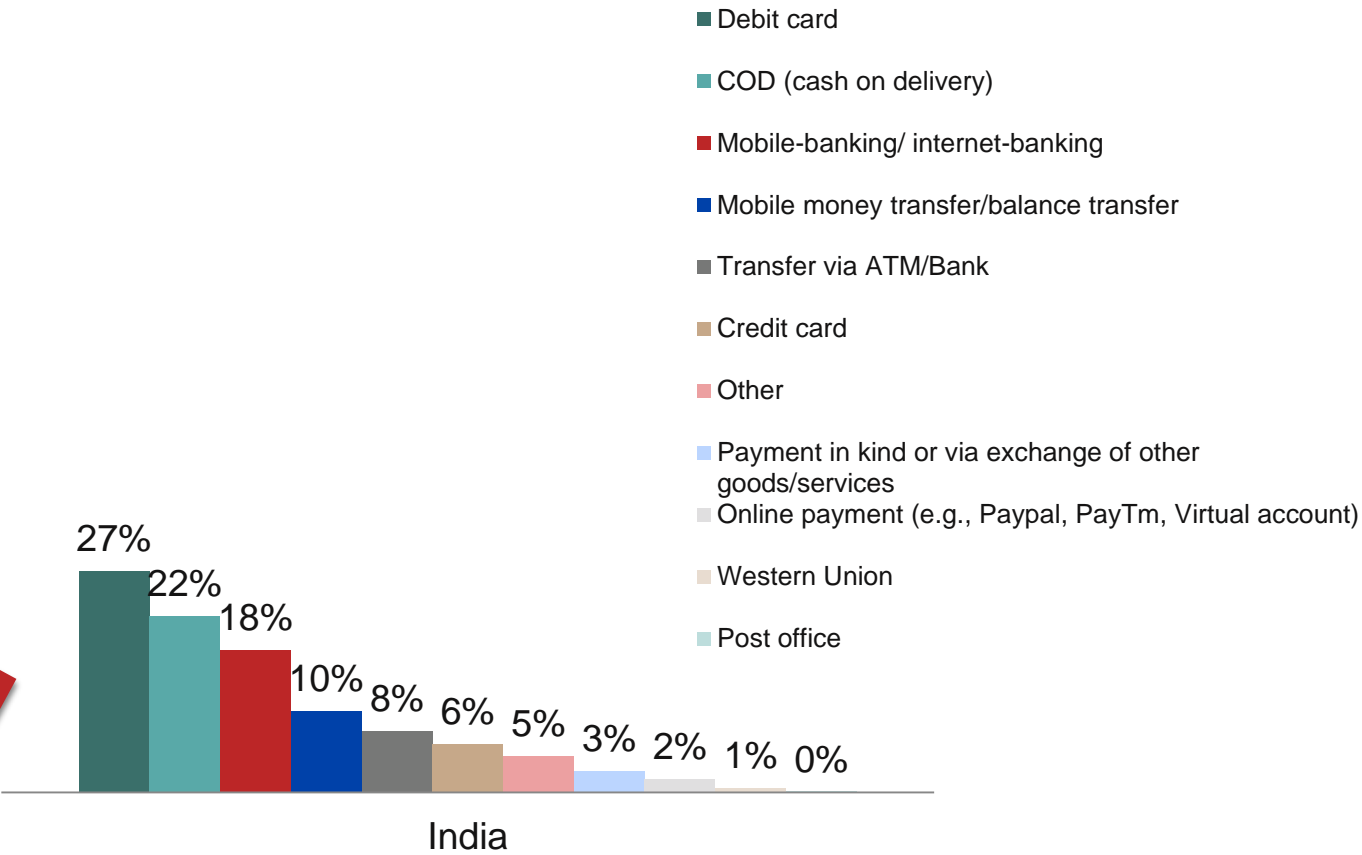
Search and place order only

Search, place order and pay

Search, place order and pay and delivery



Usual method of paying (% of aged 15-65 platform users who buy)



Q: In your most frequent online purchase or hire do you usually use the internet to:


Base	India	Pakistan	Bangladesh	Cambodia
Platform users who purchased through platforms	239	125	14	102

Lack of relevance and skills are barriers to greater service uptake

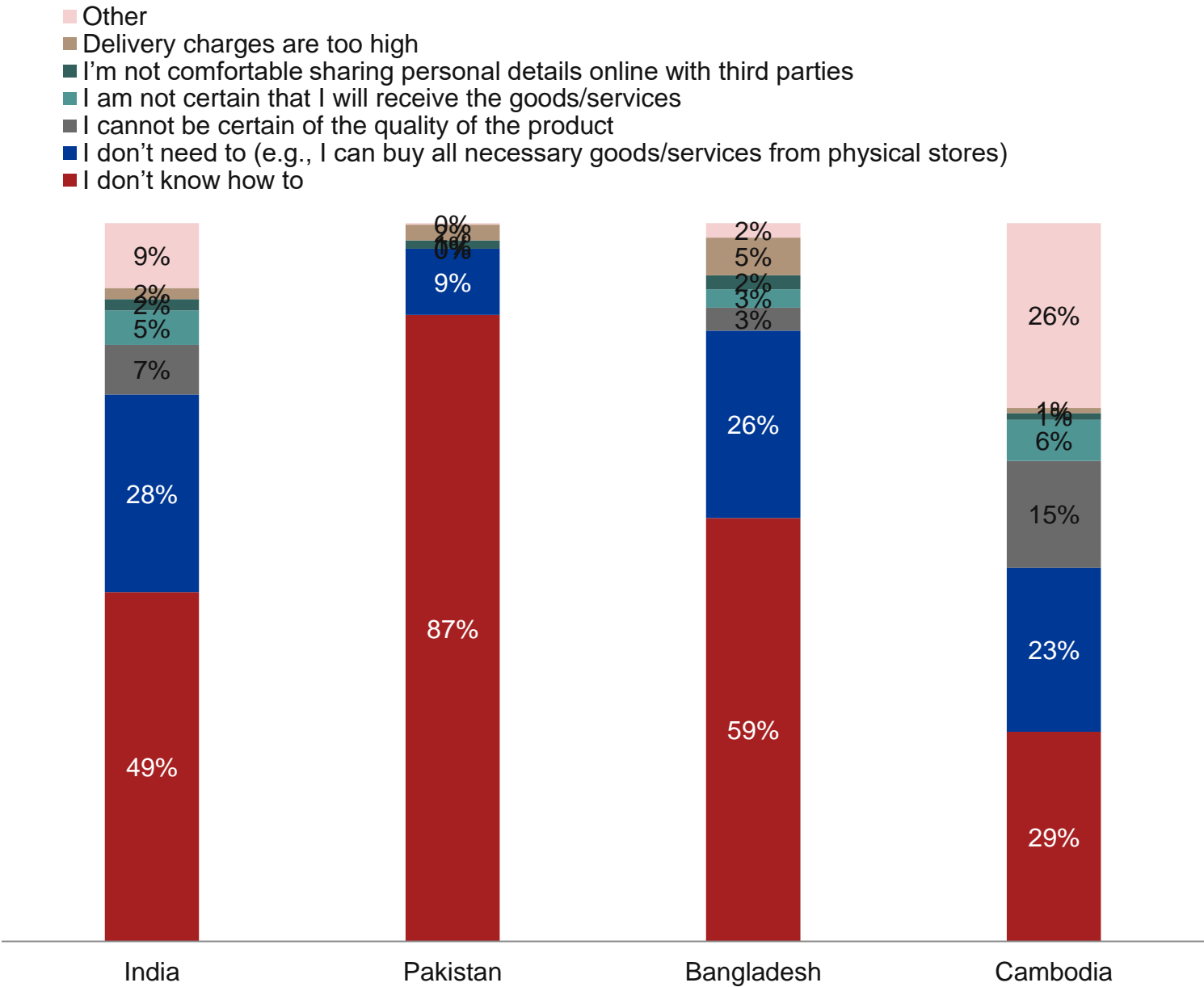
Reason for not placing order and paying via Internet/apps
(% of aged 15-65 buyers who didn't place order or pay for the most recent purchase)

	India
I don't need to (e.g., I can buy all necessary goods/services from physical stores)	31%
I'm not comfortable sharing personal details online with third parties	24%
I cannot be certain of the quality of the product	23%
I don't know how to	22%
I am not certain that I will receive the goods/services	20%
Delivery charges are too high	18%
It takes too much time	15%
There is no option to place order or do payment online	13%
I'm not comfortable sharing financial details online with third parties	11%
Online prices of goods/services are too high	11%
I am not certain that my payment will reach the seller	10%
I've had a negative experience in the past	7%
I am not comfortable using sellers/service providers that I don't know	5%
I have heard of people having negative experiences with these	4%

Q: In your most frequent online purchase or hire, what are the reasons you usually don't place the order or do the payment through the Internet or mobile apps?

	
Base	India
Platform users didn't place or pay for the most recent purchase	175

Reason for not using platforms for buying (% of those aged 15-65 who are aware of but don't use platforms)



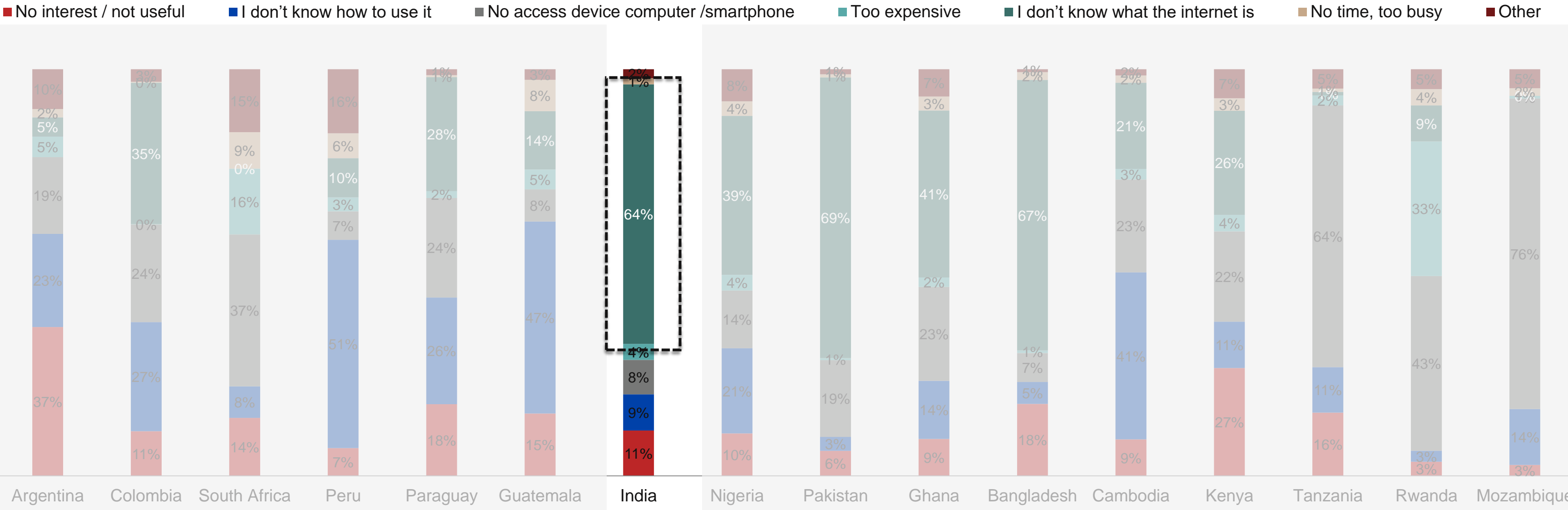
Q: What is the primary reason you don't buy goods/services through the internet or mobile apps?

Base	India	Pakistan	Bangladesh	Cambodia
Respondent who are aware of platforms but not using them	586	302	227	421

NON INTERNET USERS

Non users: 64% of non-users in India don't know what the Internet is

Reasons for not using the Internet (% of aged 15-65 non-Internet users)



Q: What is the main reason why you do not use the Internet?

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Non-Internet users	192	248	317	391	536	484	4,150	1,177	1,575	837	1,754	1,320	741	319	151	319

Some implied needs

- Demand stimulation (only 20% of target population use Internet)
- Increased awareness and salience raising (64% of non-users don't know what the Internet is)
- Higher data quality in rural areas (most BB Quality measure poor in rural)
- More smart phones in use (still 55% of phones are not Internet capable, and are basic phones; 47% of these basic phone owners say its good enough for them)

What could be done

- Start young: integrate digital literacy and ethics into school curriculum
- Small financial incentives for those who access government services via digital means (instead of paper)
- Market driven, market non-distorting, time-limited public WiFi programs
 - Provision of vouchers, daily data allowances through licensed players who already serve consumers
- Balance policy objectives: between revenue generation vs economic stimulation from Internet growth and use
 - Tax burden (various fees) combined with high competition → incentive for investment in rural areas or in 5G ?
- Get rid of the basic (non-Internet capable) phones
 - Phone recycling programs with discount coupon? Other?
- Focus on rural, low income and women: USO funds?

THANK YOU

