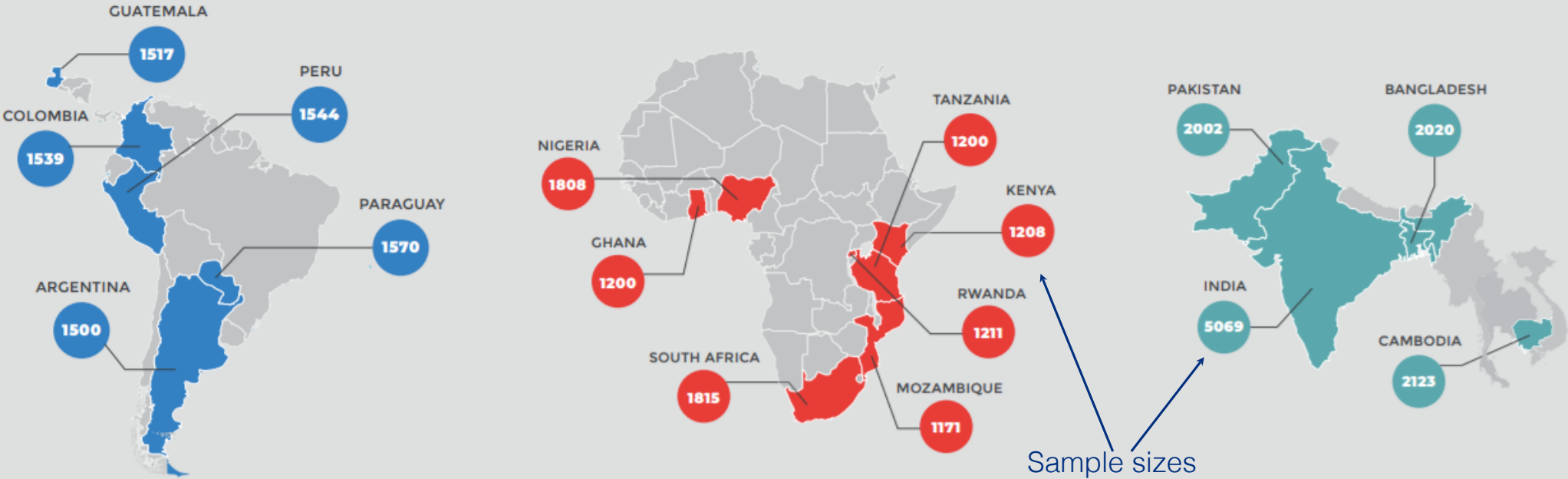


Who's connected, who isn't and why?

Shazna Zuhyle | 7 August 2018 | Washington, D.C



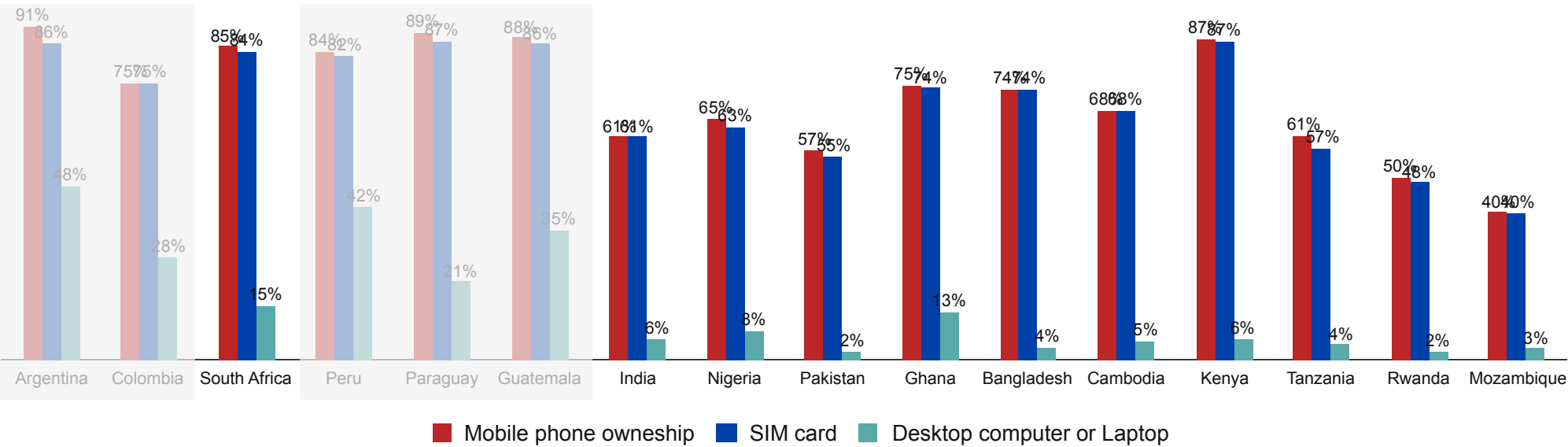
To date: 18 countries (covering >30% global population); 38,005 face-to-face interviews; +/-3 margin of error



Sample sizes

Mobile phones are the prevalent mode of access to the Internet

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

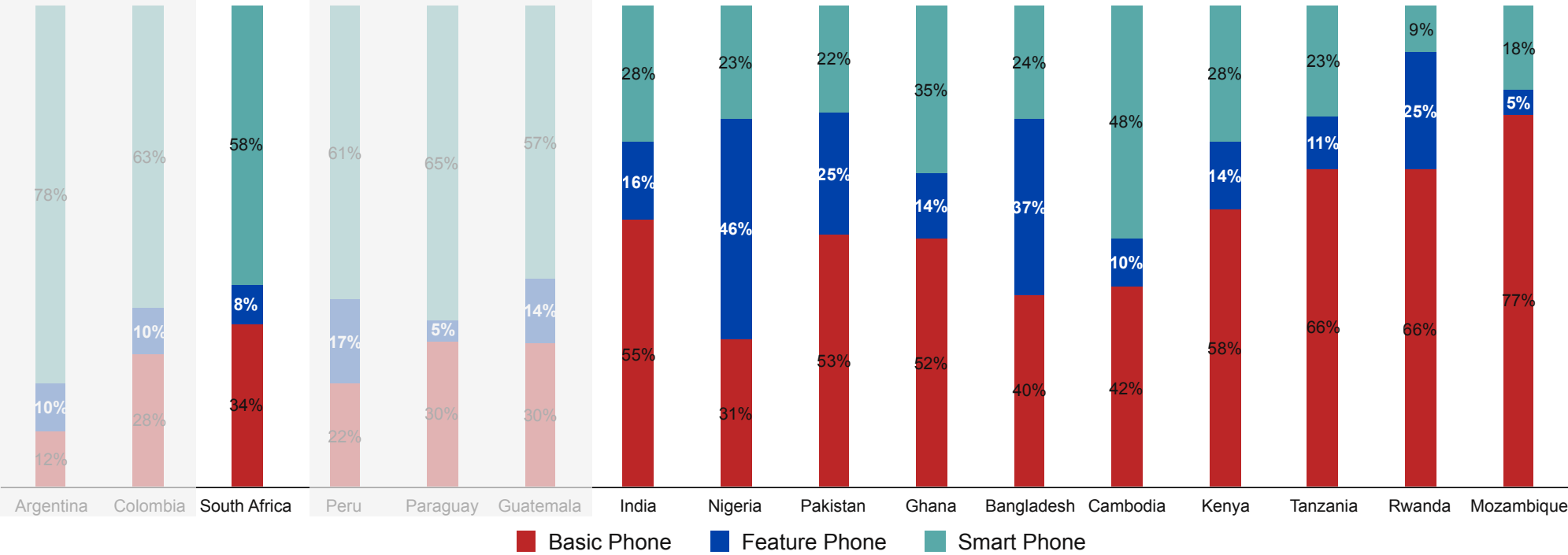


Q1: Do you own a mobile phone?
 Q2: How many active SIM cards do you have, (SIM cards that you used in last 30 days)?
 Q3: Do you own a personal Desktop computer or Laptop?

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

However the market is still predominantly for basic phones

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



Basic Phone Feature Phone Smart Phone

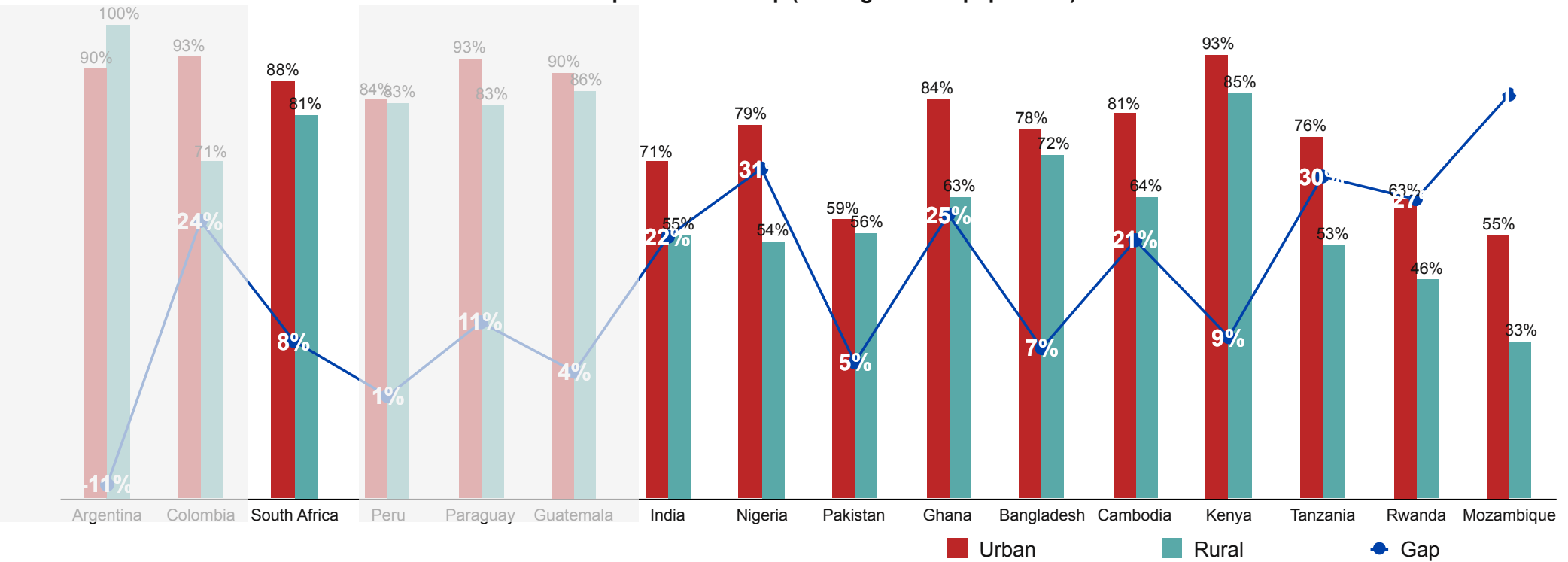


Q: What type of mobile is it?

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

Proximity to infrastructure matters: Rural lags behind in connectivity

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



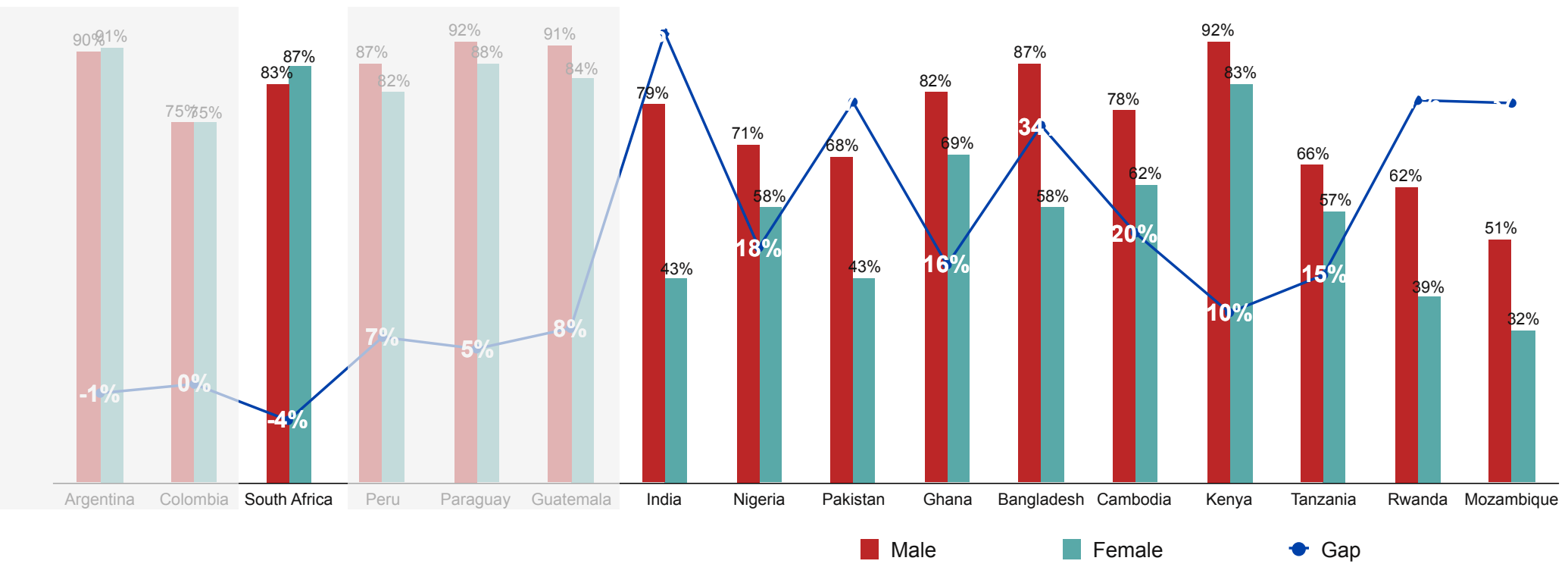
Q: Do you own a mobile phone?

Base	Argentina		Colombia		South Africa		Peru		Paraguay		Guatemala		India		Nigeria		Pakistan		Ghana		Bangladesh		Cambodia		Kenya		Tanzania		Rwanda		Mozambique	
	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	1,145	661	793	1,209	721	479	808	1,212	897	1,226	727	481	720	480	711	500	718	453

© After Access. All Rights Reserved. Proprietary and Confidential

The gender gap is the highest in India 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)



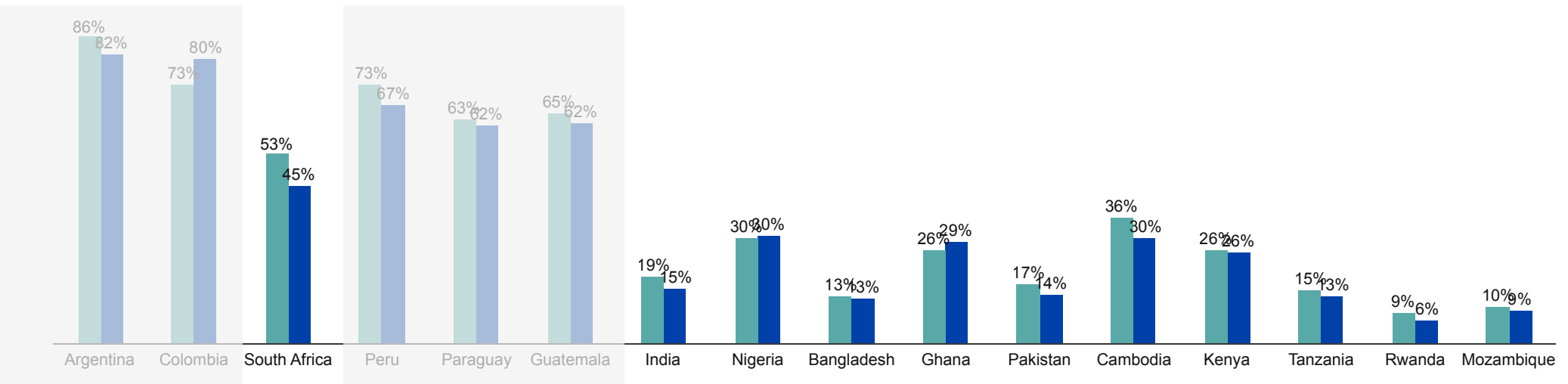
Q: Do you own a mobile phone?

Base	Argentina		Colombia		South Africa		Peru		Paraguay		Guatemala		India		Nigeria		Pakistan		Ghana		Bangladesh		Cambodia		Kenya		Tanzania		Rwanda		Mozambique	
	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal	Male	Femal		
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

© After Access. All Rights Reserved. Proprietary and Confidential

Internet use ≈ Social media use

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



Q1: Have you ever used the Internet (Gmail, Google, Facebook, email)?

Q2: Do you use social media like Facebook, Whatsapp, Twitter etc?

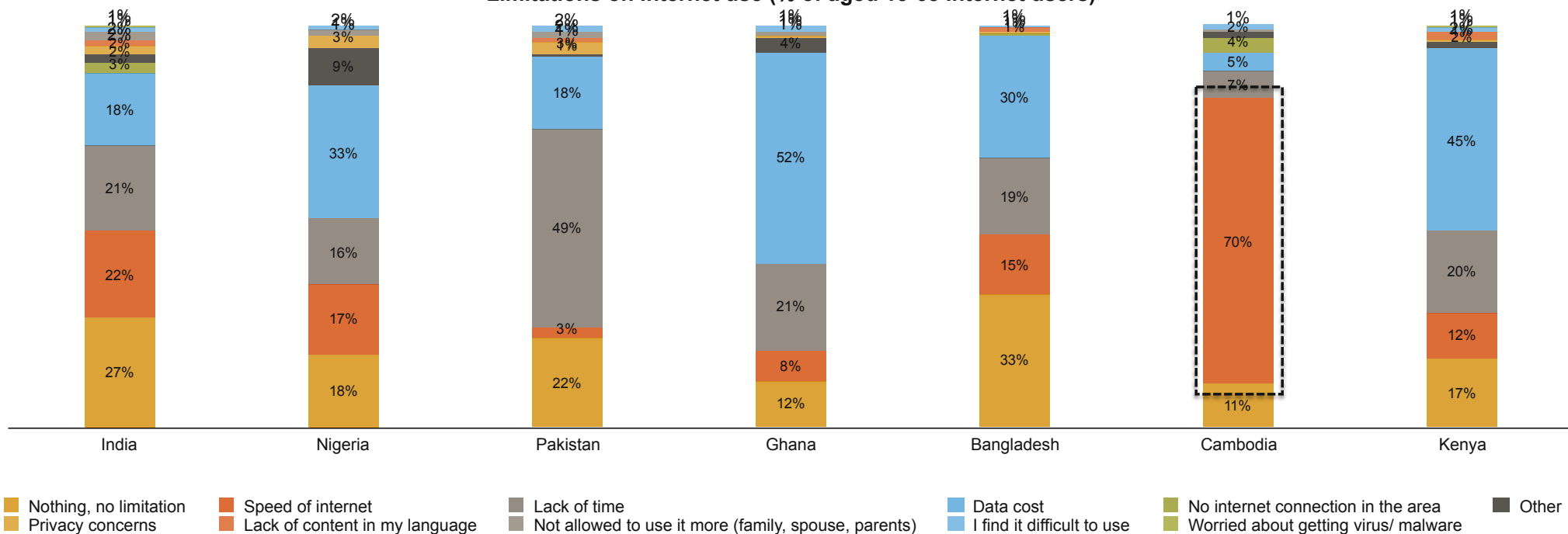
■ Internet use

■ Social media use

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

Speed of Internet, lack of time & data costs are key challenges among current Internet users

Limitations on Internet use (% of aged 15-65 Internet users)

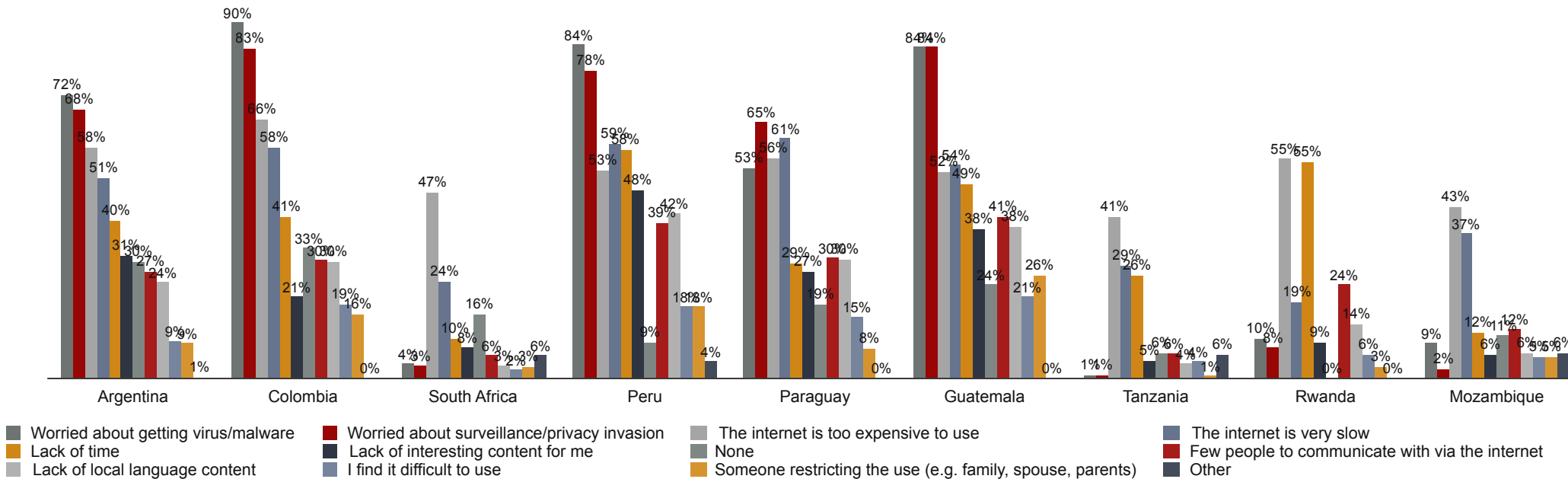


Q: What is your main limitation for your use of the internet? (Single response question)

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

What limits more use among current users? : Cost & speed in most African countries; malware & privacy concerns in LATAM

Limitations on Internet use (% of aged 15-65 Internet users)



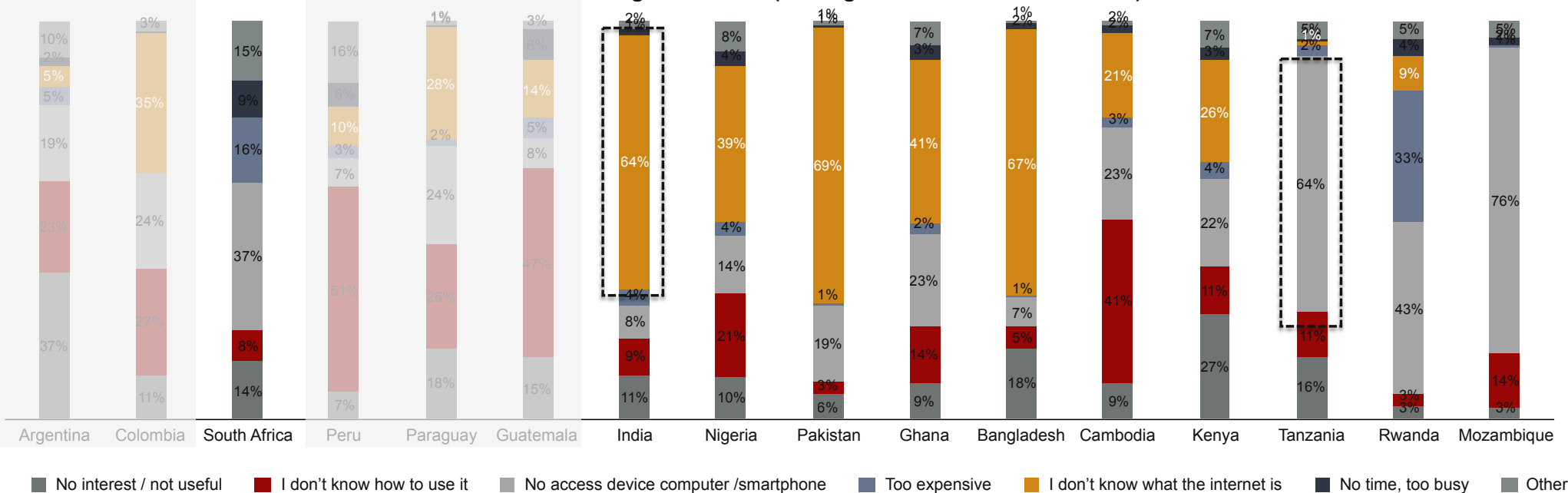
Q: I'm going to read some phrases that other people have mentioned like limits to use the internet? For each one, please, tell me if you consider it a limitation or not. (Multiple response question)

Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	Kenya	Tanzania	Rwanda	Mozambique
Internet users	1,006	1,192	829	1,120	886	1,104	440	266	172	238

NON INTERNET USERS

Non users: Still a significant % of in Asia (and some in Africa) don't know what the Internet is. In LATAM, many don't know how to use it.

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



■ No interest / not useful ■ I don't know how to use it ■ No access device computer /smartphone ■ Too expensive ■ I don't know what the internet is ■ No time, too busy ■ Other

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

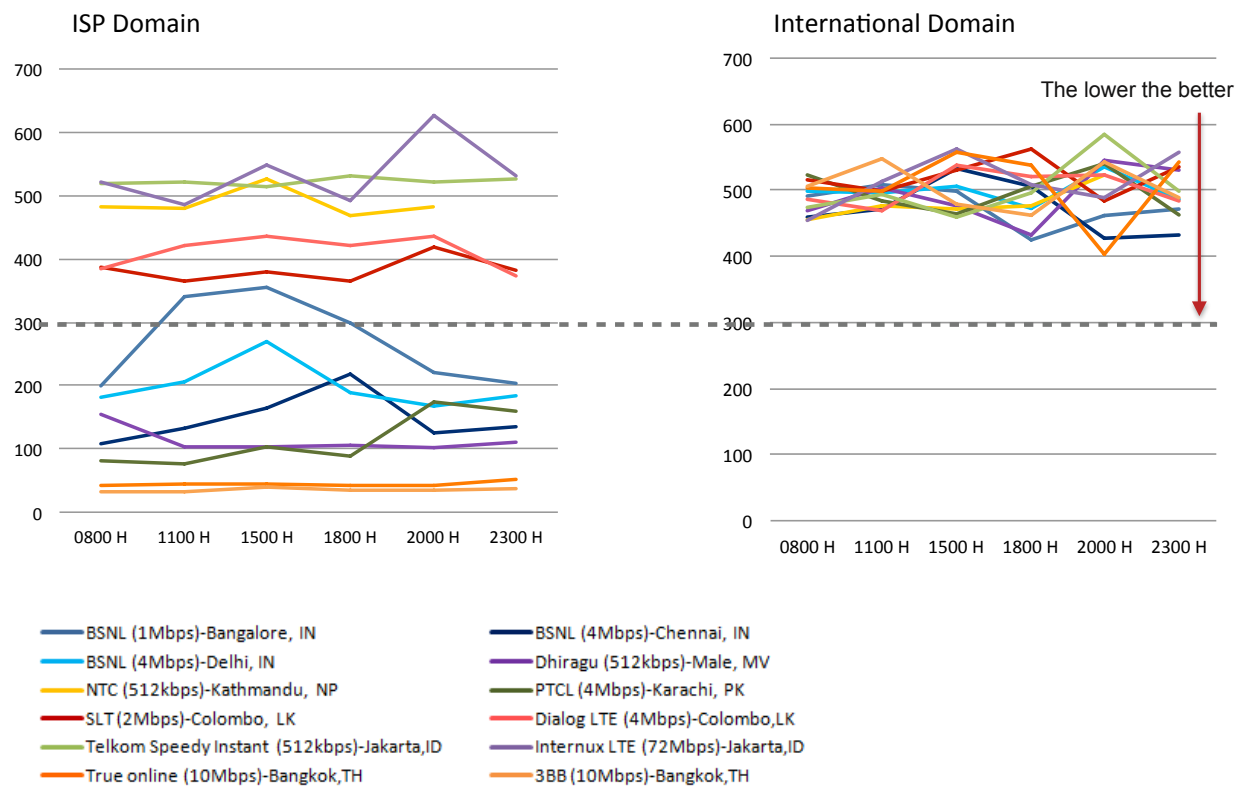
Base	Argentina	Colombia	South Africa	Peru	Paraguay	Guatemala	India	Nigeria	Pakistan	Ghana	Bangladesh	Cambodia	Kenya	Tanzania	Rwanda	Mozambique
Non-Internet users	192	248	317	391	536	484	4,150	1,177	1,575	837	1,754	1,320	741	319	151	319

QUALITY OF SERVICE EXPERIENCE

“A chain is only as strong as it’s weakest link”

Service degradation when accessing the 'open Internet'

Fixed Broadband (DSL) in 10 cities



- Inadequacy of supply (backhaul)
- Sole reliance on undersea cables

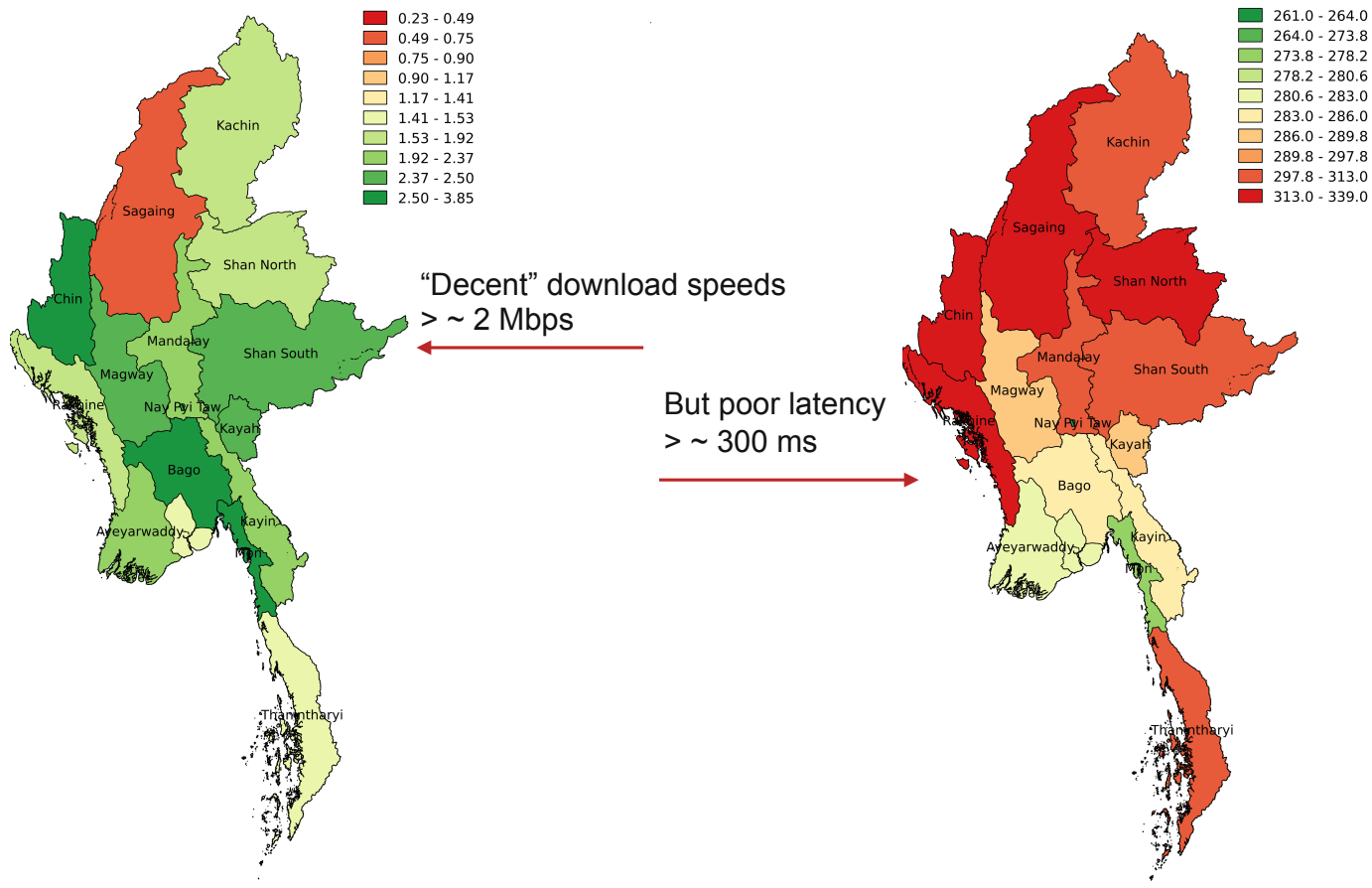


- Asia Pacific Information Superhighway
[Fiber along the Trans-Asian Railway to link all of Asia to Europe and the Pacific Rim]

UN ESCAP

Source: LIRNEasia, 2014

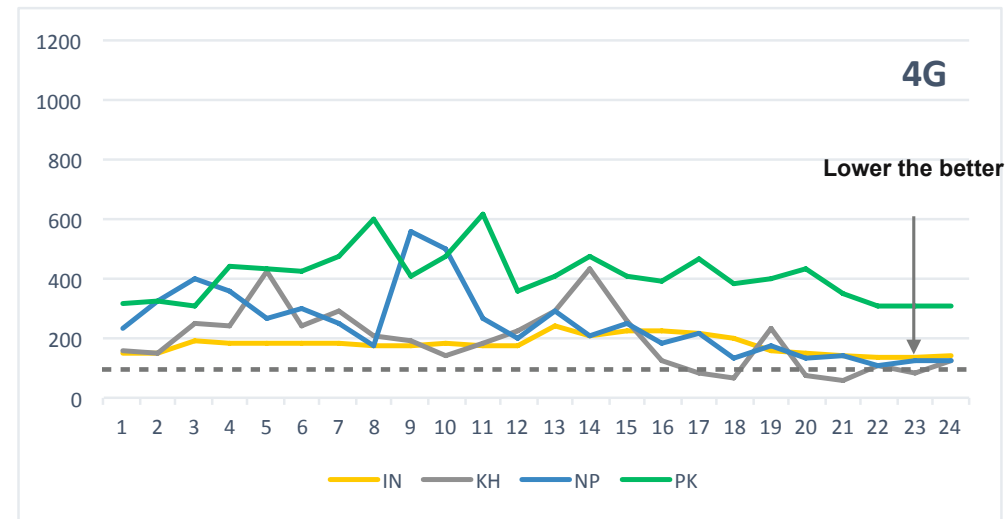
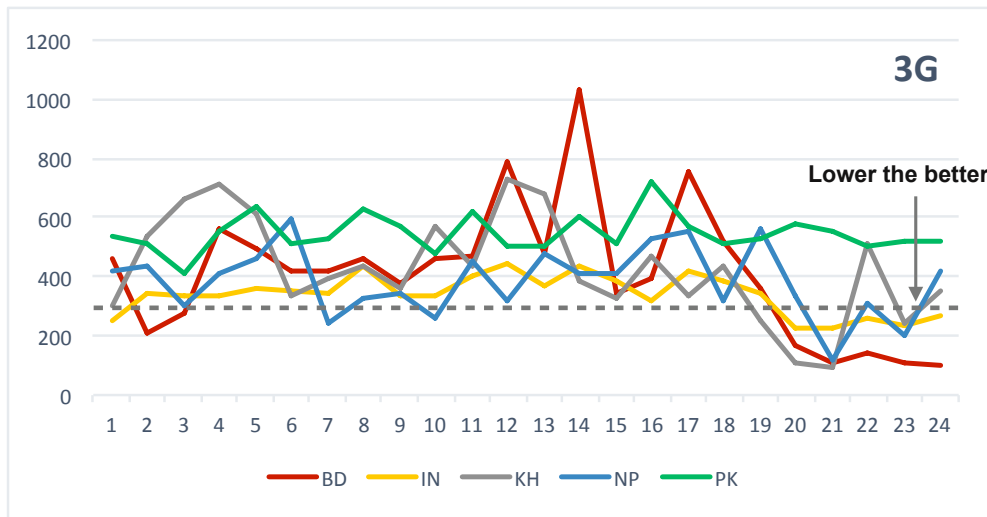
Latency causes poor quality experience (example from Myanmar)



- Recently liberated telecom sector
- Prices of SIM cards \$1000 (black market / auctions) to \$2
- It's all about mobile broadband
- Leapfrogged to 3G and LTE

Source: LIRNEasia with NDT, 2016

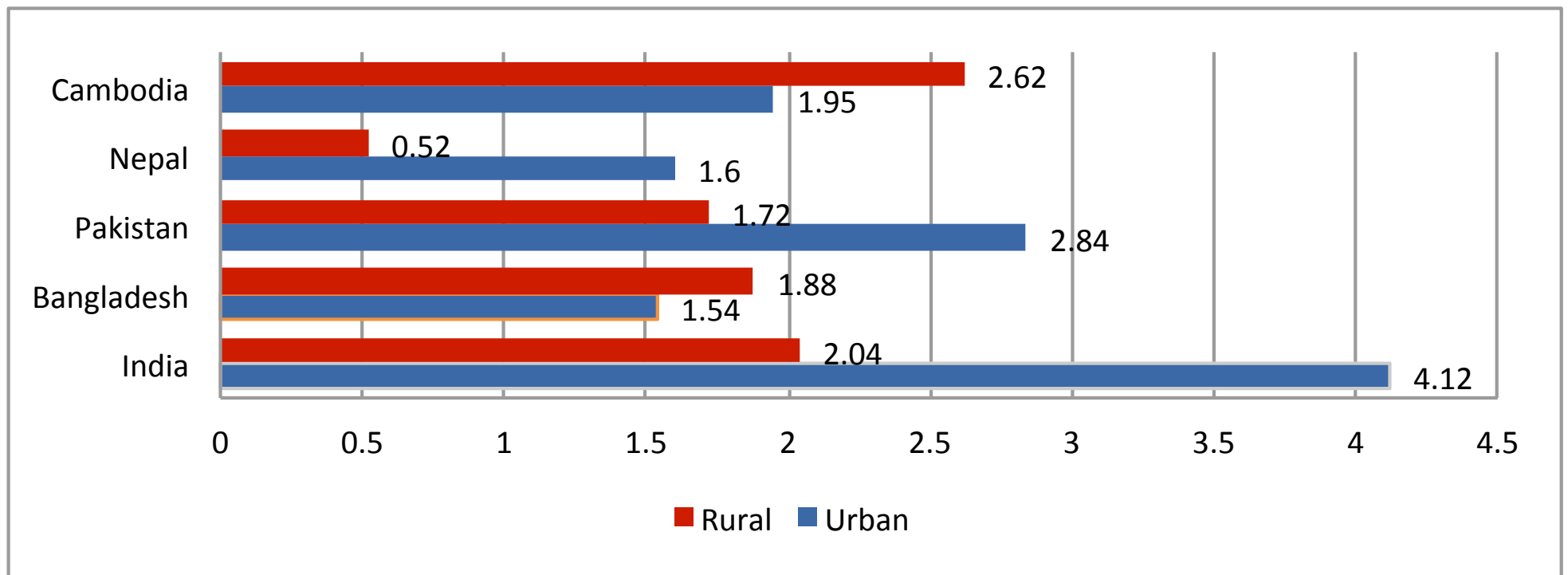
Marginal performance improvements with 4G / LTE networks



BD - Bangladesh ~ 2,000 sessions
 IN - India ~ 24,000 sessions
 KH - Cambodia ~ 17,000 sessions
 NP - Nepal ~ 16,000 sessions
 PK - Pakistan ~ 100,000 sessions

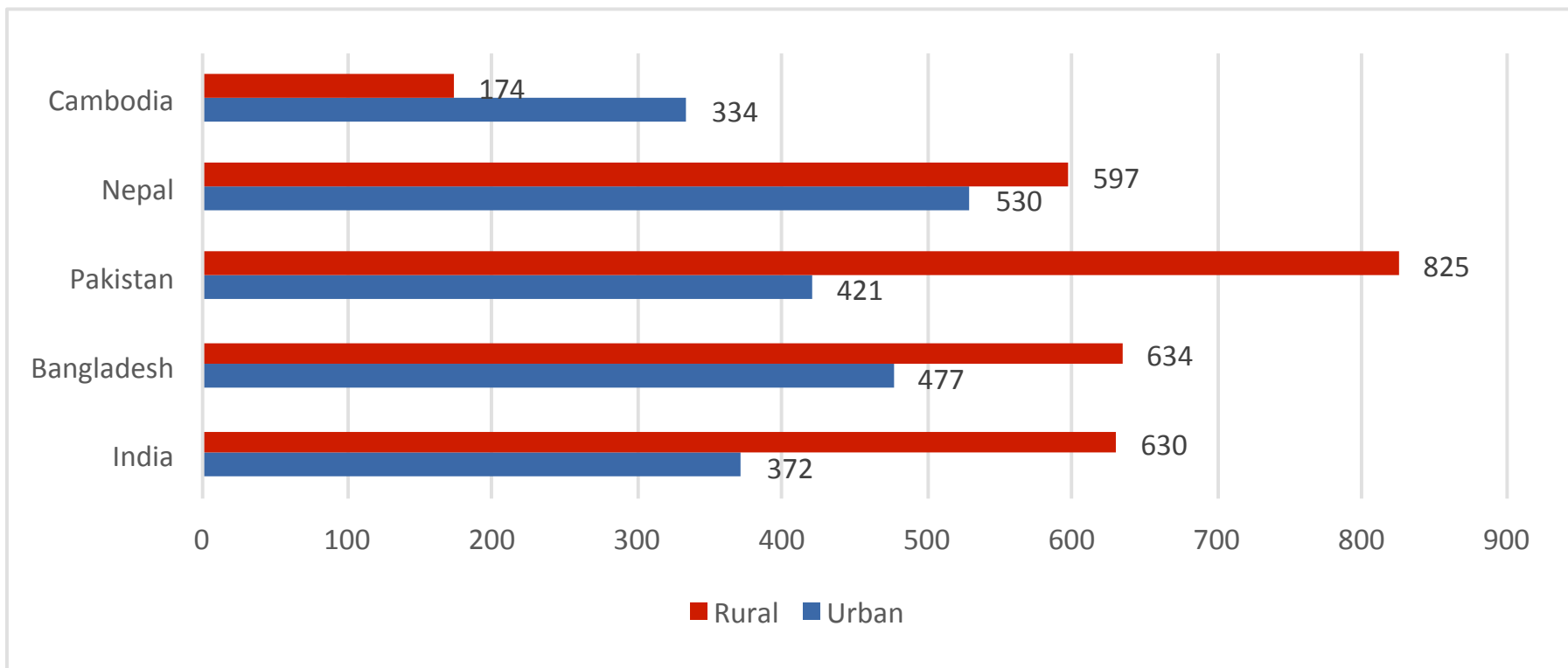
Urban-Rural disparities evident in QoSE

Average Download speed (Mbps)



Urban-Rural disparities evident in QoSE

Average latency (ms)



India: rural locations faced 15% network errors vs. 5% in urban

