India's rural millions: Connected?

Findings from a six-country study of Teleuse at the Bottom of the Pyramid

Presentation to the Cellular Operators Association of India
10 February 2009, Mumbai

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Our mission

To improve the lives of the people of the emerging Asia-Pacific by facilitating their use of ICTs and related infrastructures; by catalyzing the reform of laws, policies and regulations to enable those uses through the conduct of policy-relevant research, training and advocacy with emphasis on building in-situ expertise

Teleuse at the Bottom of the Pyramid: 3

TELEUSE@BOP 3

Teleuse@BOP background

- *Objective*: To understand how BOP interacts with ICTs (mostly phones) to better inform policy
  - Large surveys of 'BOP' conducted in 2005, 2006, 2008
  - Almost 20,000 face to face interviews in 6 countries since 2005
    - Bangladesh (2008)
    - Pakistan
    - India
    - Sri Lanka
    - Philippines
    - Thailand

- Funded by the International Development Research Center (IDRC) of Canada with contributions from Telenor Research and Innovation

Methods

Quantitative	Qualitative

• 9,950 face-to-face interviews
  • 1 week usage patterns via diary method (50% of sample)
  • Sep-Oct 2008
	• Focused group discussions
	• Mini-ethnographies
	• Depth interviews with migrant teleusers
	• Feb-Mar 2009

- Multi-stage stratified sampling, random selection of households and individuals

- Migrant worker tele*users* at "bottom of the pyramid"
  - SEC groups C** + D + E*
  - "internal" and "external" migrants that send money home
  - Findings available in March 2009

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Samples

	Bangladesh	Pakistan[1]	India	Sri Lanka[2]	Philippines[3]	Thailand[4]	Total
BOP teleusers	**2,050**	**1,814**	**3,152**	**924**	**800**	**800**	**9,540**
Margin of error @ 95% CL (%)	± 3%	± 2%	± 2%	± 3%	± 4%	± 4%	
Diary Sample	1,025	900	1,600	450	400	400	4,775
Migrant workers	350	300	400	200	200	100	1,550

[1] Pakistan: Excludes tribal regions
[2] Sri Lanka: Excludes North and East
[3] Philippines: Survey was undertaken only among SEC E
[4] Thailand: Excludes Bangkok as the SEC DE population in Bangkok is very small

Sampling logic

- Multi-staged stratified sampling by probability proportionate to size
  - Regions (states/provinces/districts) randomly selected in 2006; kept the same for comparison in 2008 (except BN)
  - Stratification of cities within state, province etc
  - Geographical ordering of cities, villages
  - PPS selection of cities, villages
- Within PSU
  - Random starting points
  - 10 HH per starting point; right hand rule
  - KISH grid to select respondent in HH

"Kish" Grid

If there was more than one respondent who belong to the target group in a selected household the Kish grid was administrated to select a respondent randomly.

- First, the eligible respondents were listed by the descending order of their age.
- Then a number was picked by using the following grid.
- Finally the respondent who corresponds to the picked number was selected for the interview

No of Males & Females between 15-60 yrs in BOP Household	The last digit of the questionnaire number / serial no. of household contacted									
	0	1	2	3	4	5	6	7	8	9
1	1	1	1	1	1	1	1	1	1	1
2	1	2	1	2	1	2	1	2	1	2
3	3	1	2	3	1	2	3	1	2	3
4	1	2	3	4	1	2	3	4	1	2
5	4	5	1	2	3	4	5	1	2	3
6	2	3	4	5	6	1	2	3	4	5
7	1	2	3	4	5	6	7	1	2	3
8	6	5	6	1	2	3	4	5	6	7
9	5	6	7	8	9	1	2	3	4	5
10	1	2	3	4	5	6	7	8	9	10

Study locations and dates

Region	State	Planned Sample
North	Uttar Pradesh	
	Haryana	
West	Rajasthan	
	Gujarat	
East	Bihar	
	West Bengal	
South	Tamil Nadu	
	Karnataka	
North East	Assam	
	Tripura, Arunachal Pradesh	

- Fieldwork between September and November 2008
  - Pakistan & Bangladesh fieldwork commenced after end of Ramadan (1st week October)

Agenda

WHO ARE THE BOP?

BOP TELECOM EXPANSION

- ACCESS
- OWNERSHIP

MARKET DEVELOPMENT

- WHAT THE BOP DOES WITH THEIR MOBILES?
- POTENTIAL FOR MOBILE 2.0?
- BENEFITS?
- THE UNCONNECTED?

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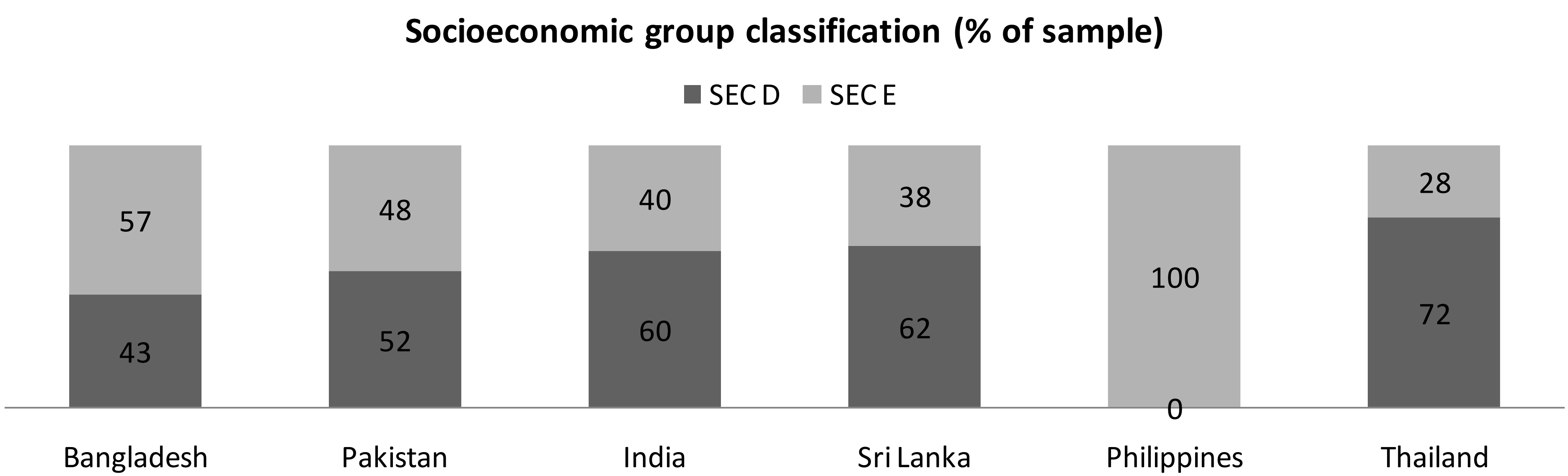
Representing 429 million in India

- *Teleusers* at "bottom of the pyramid"
  - SEC groups D + E
  - Aged 15-60



(Rural India: R2, R3, R4)

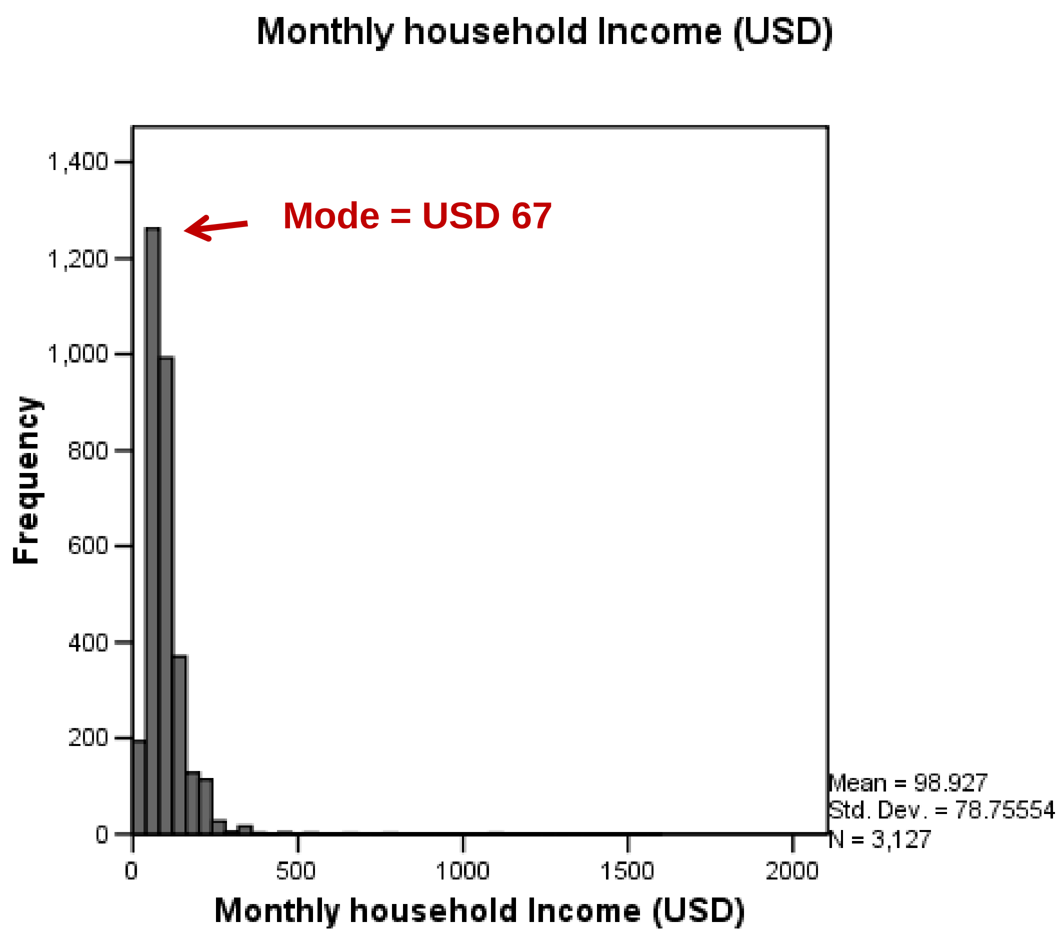
Among BOP teleusers

Link between SEC D+E and "$2 per day" definition

Actual population proportions

	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
SEC D+E (% of population)	73	59	69	44	38 [SEC E]	33
Less than $2 per day (% of population)	78	85	86	45	40	28

Most Indian BOP households earn USD67 per month



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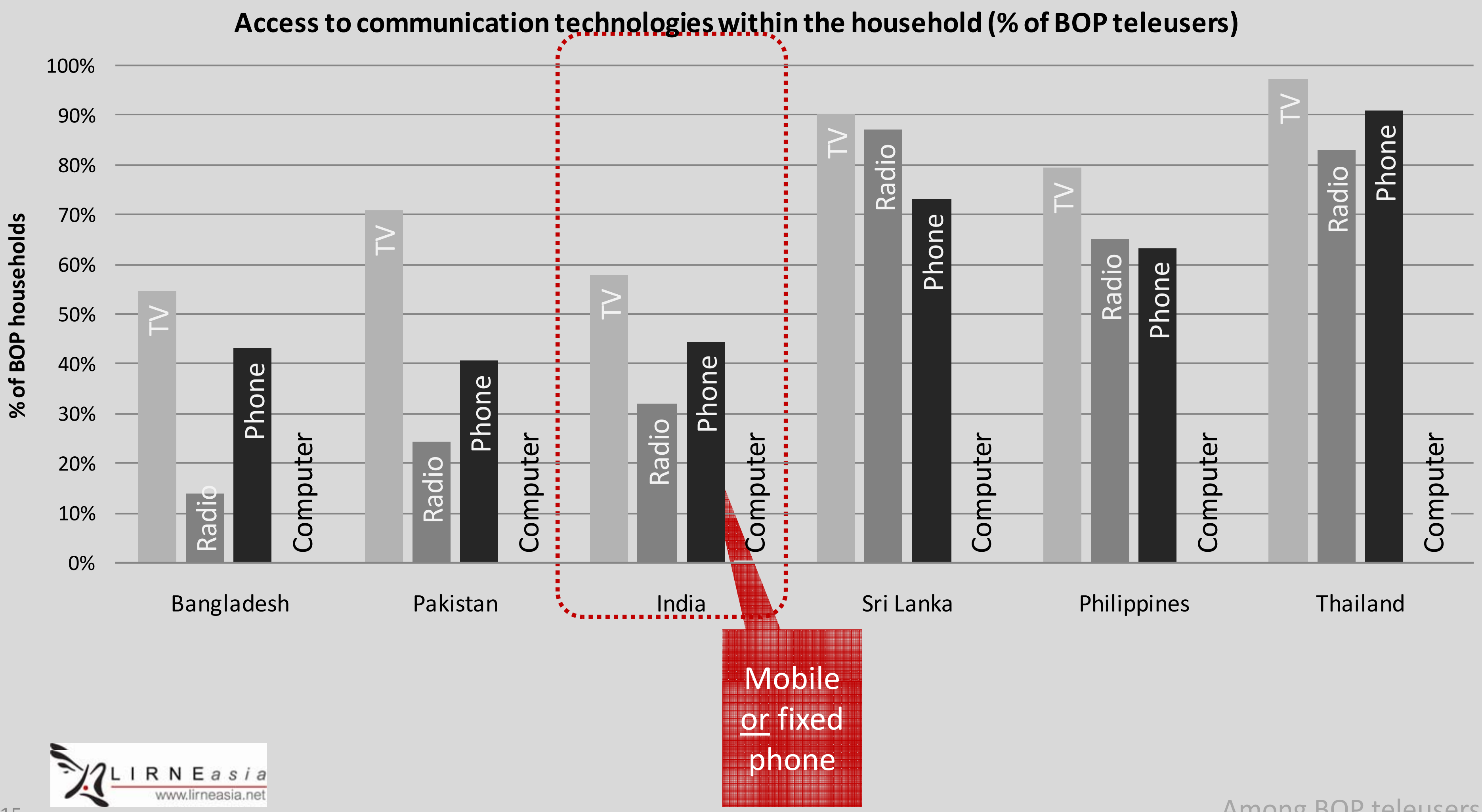
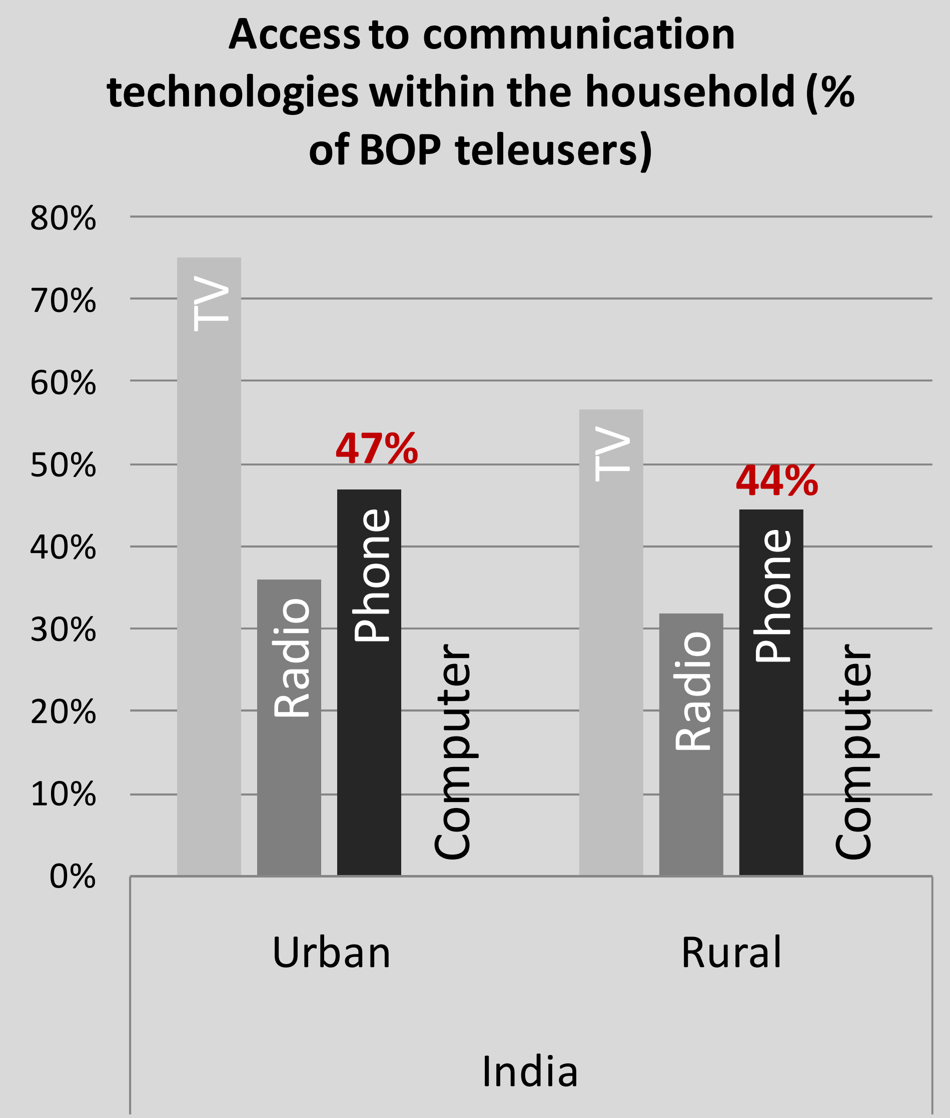
Among BOP teleusers

Phones have overtaken radios at the BOP

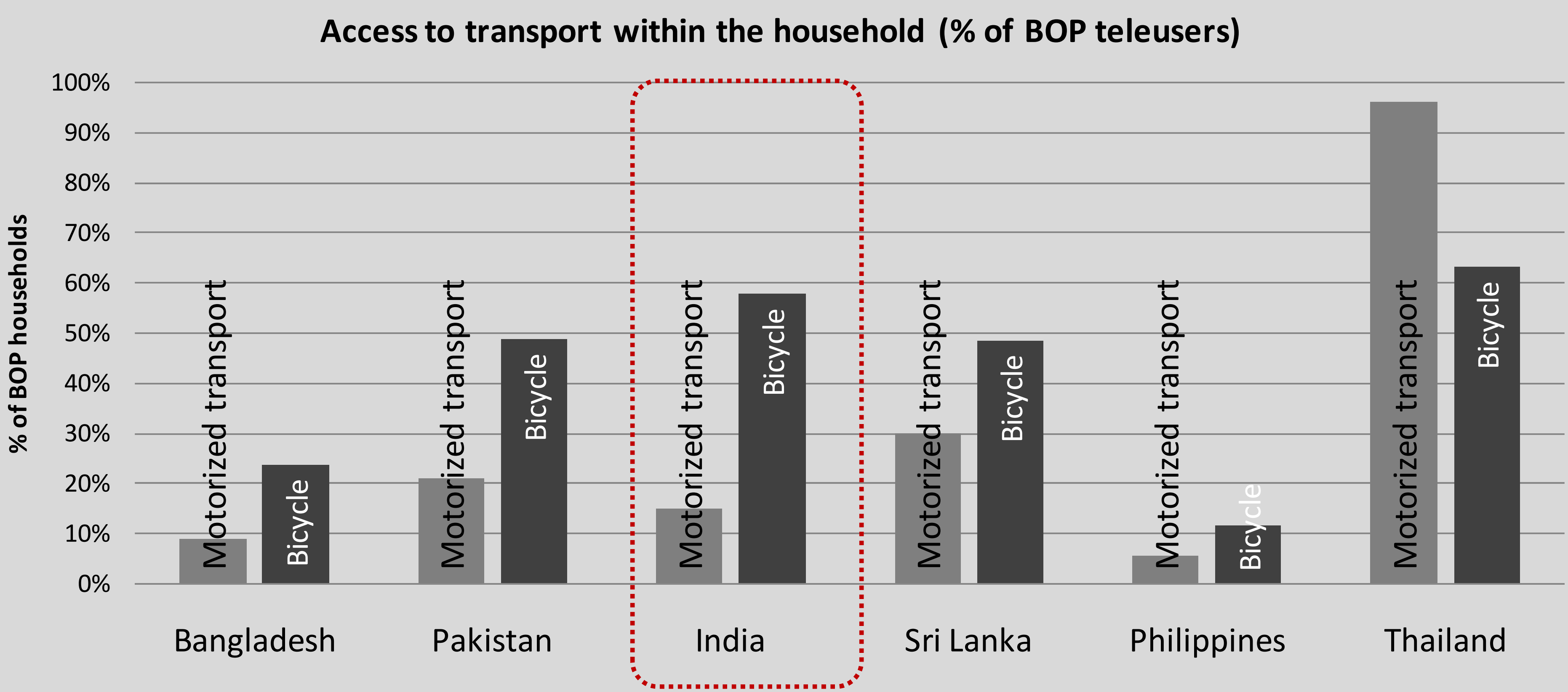


Among BOP teleusers



Among BOP teleusers

Access to transport



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Among BOP teleusers

41% of Indian BOP teleusers' households have access to a "bank account" (broadly defined)

Access (either own or within household) to a bank account or credit card (% of BOP teleusers)

	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
Bank account	31%	11%	41%	93%	13%	84%
Credit card	3%	2%	3%	10%	1%	11%

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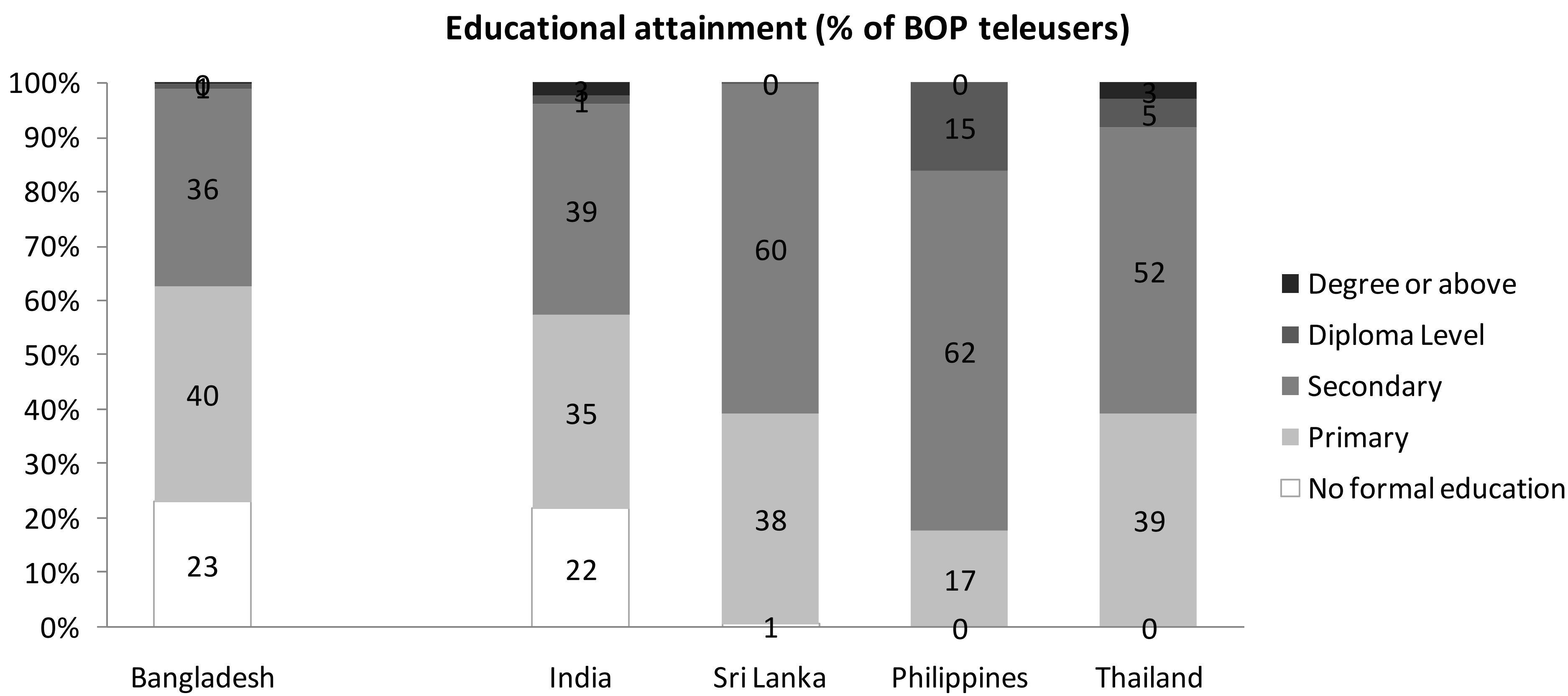
Among BOP teleusers

Educational attainment does not exceed primary or secondary education



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Among BOP teleusers

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Recent use of the phone to make/receive calls

Used a phone in the last 3 months

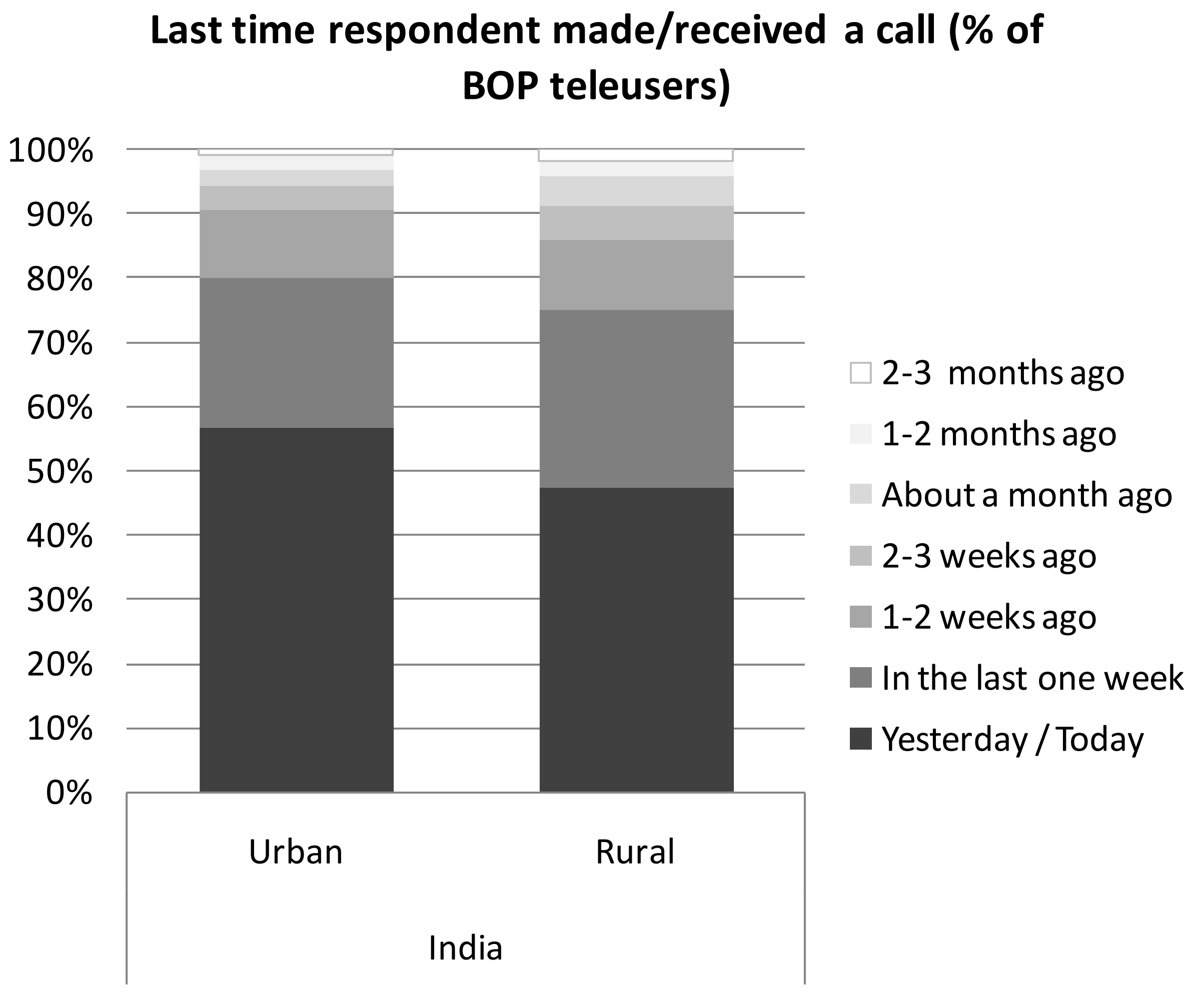
	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
% of BOP (outer sample)	95%	96%	86%	88%	79%	77 %

Used a phone in the last week

	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
% of BOP (outer sample)	82%	66%	65%	77%	38%	72%

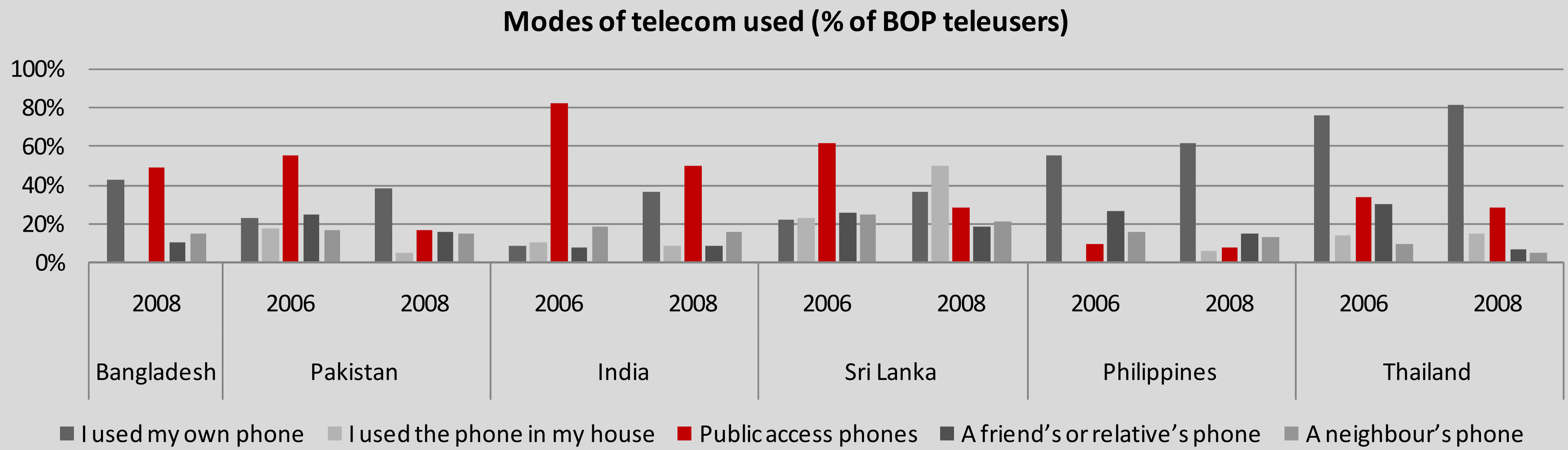
Among BOP (OUTER SAMPLE)

More than two thirds of rural BOP teleusers used a phone in the last week



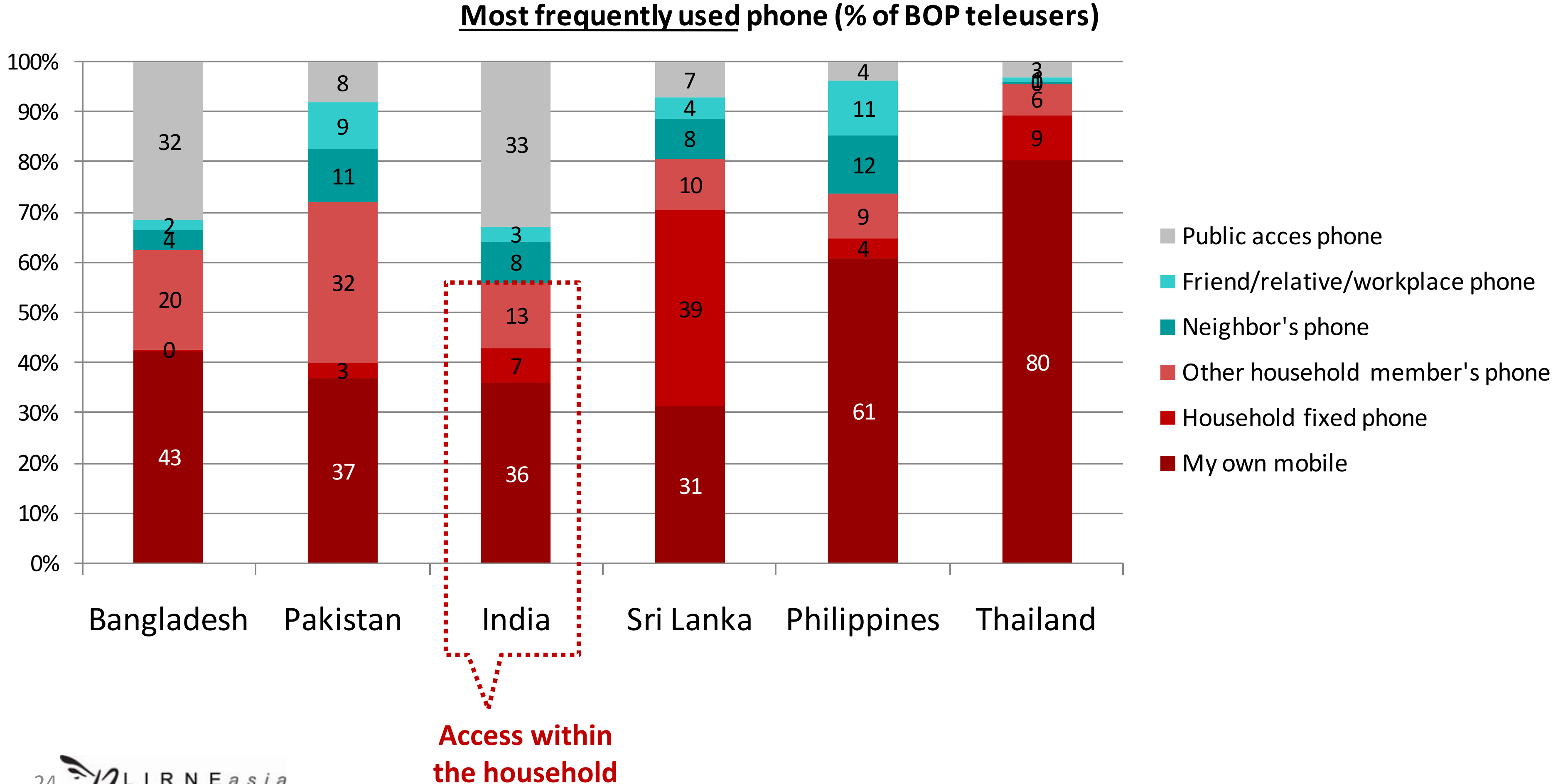
Among BOP teleusers

All modes: Public access has fallen since 2006



Among BOP teleusers

Mobiles are used most as the primary phone; public phones in second place



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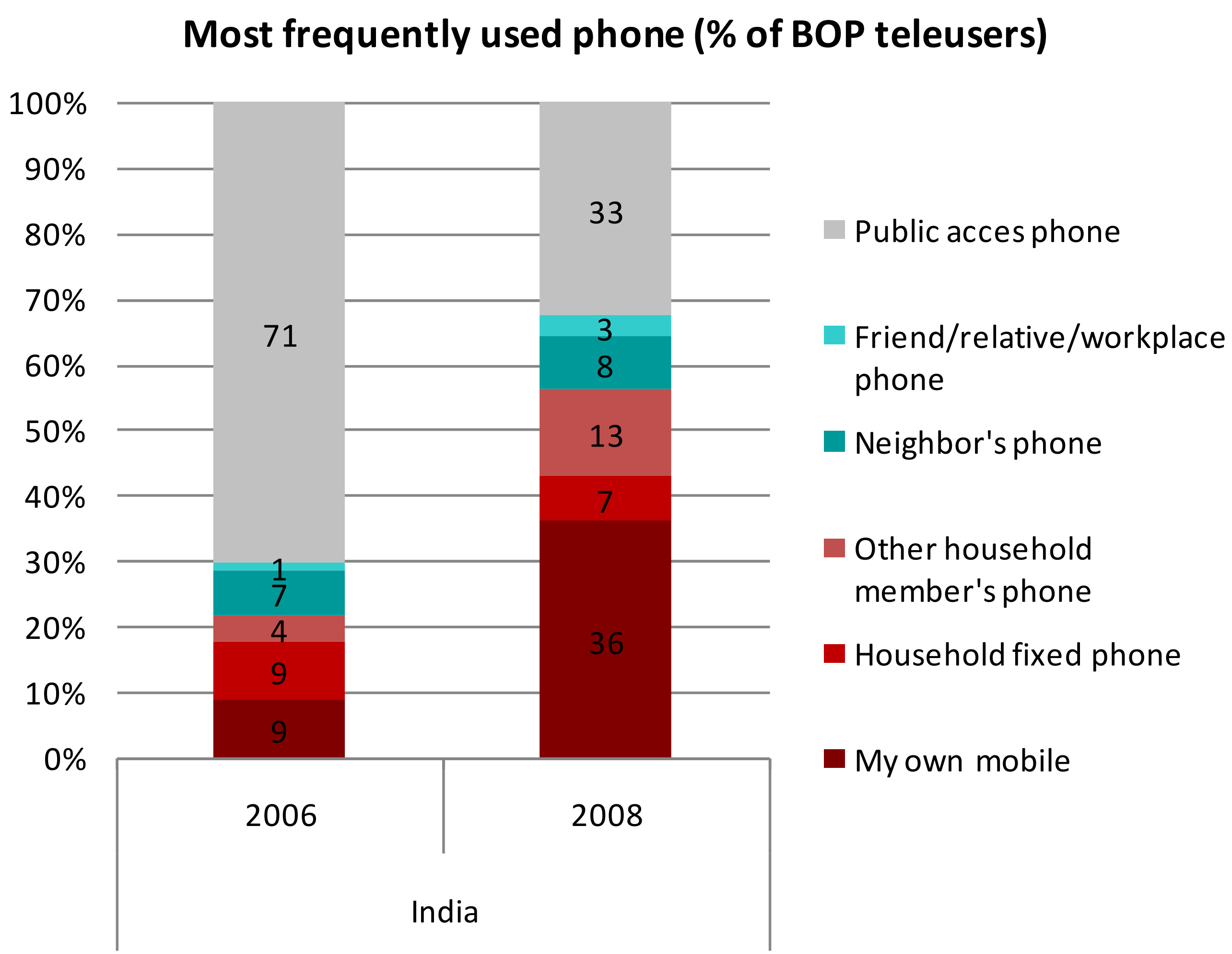
Among BOP teleusers

BOP public access use fallen by 38% since 2006



Among BOP teleusers

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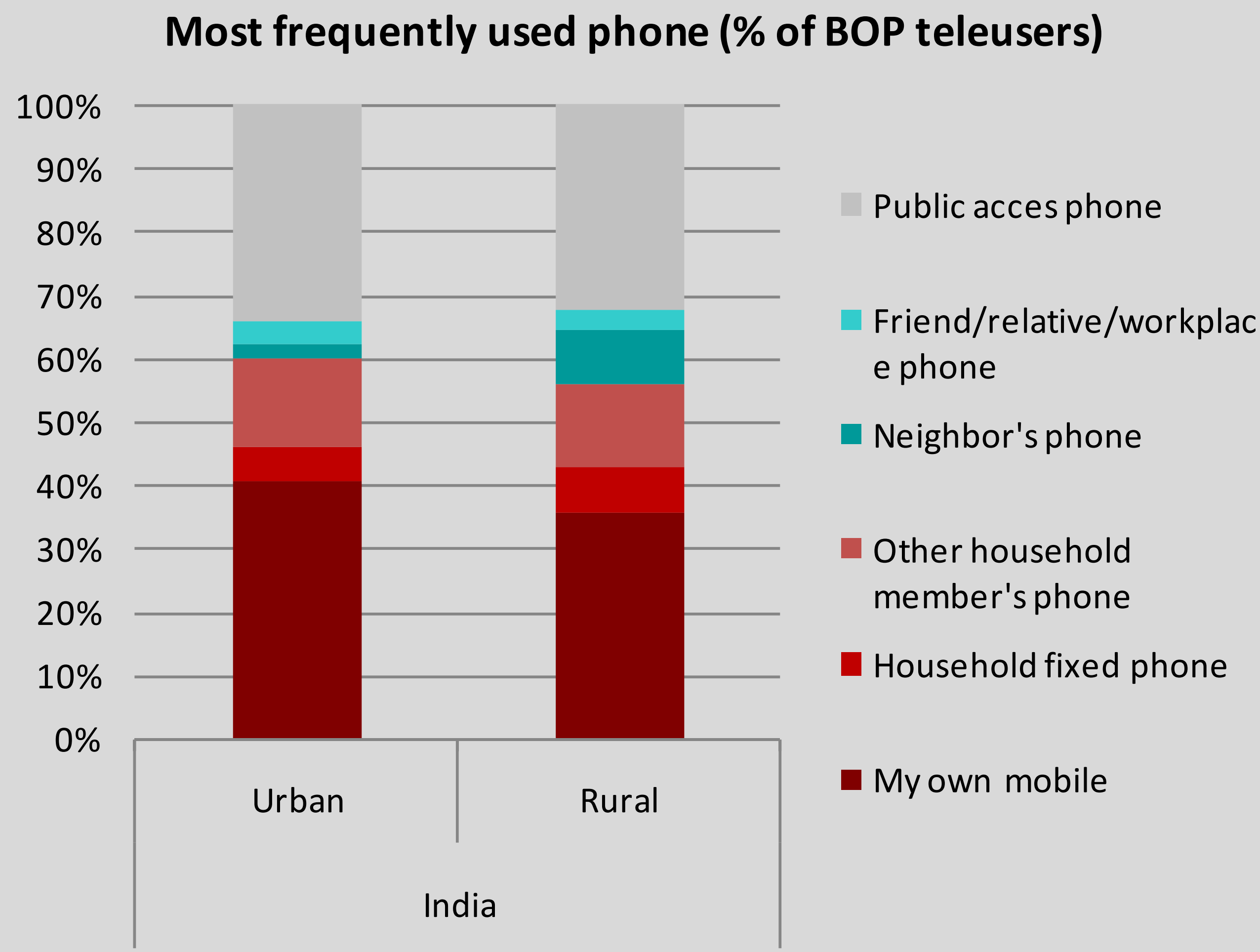
Not much difference in rural India



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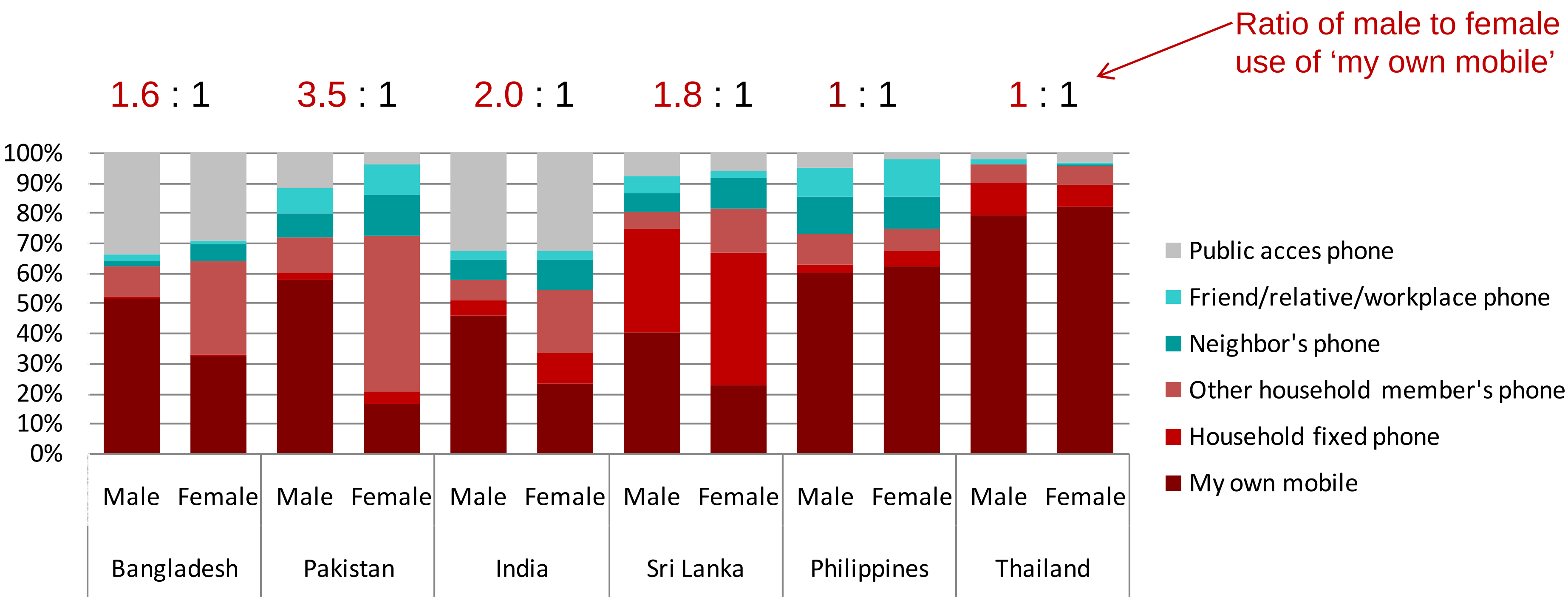
Among BOP teleusers

Indian women use public phones as much as men

Most frequently used phone (% of BOP teleusers)



- Women less likely to use their own mobile or public phones; more likely to use other peoples' phones

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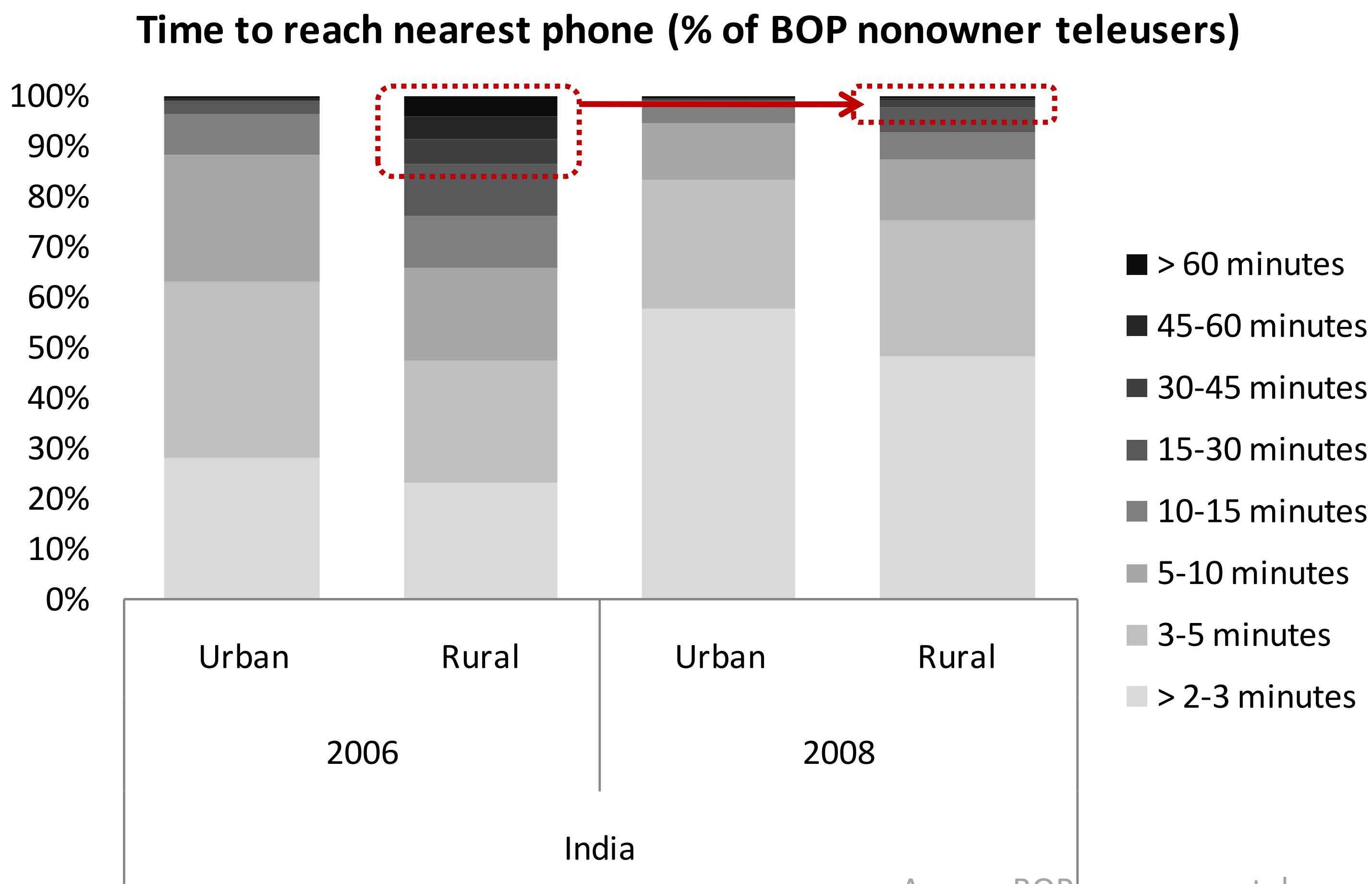
Among BOP teleusers

2006: 13% in rural India had to travel > 30 minutes; 2008: just 2%



Among BOP non-owner teleusers

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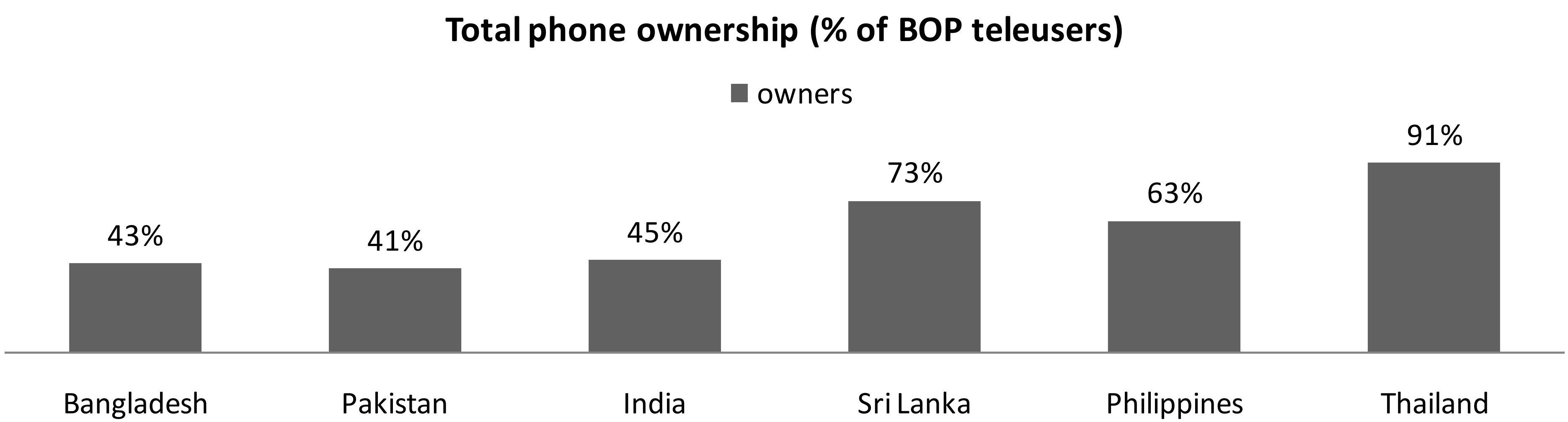
India ahead of Bangladesh and Pakistan in **total BOP phone ownership** (mobile + fixed)



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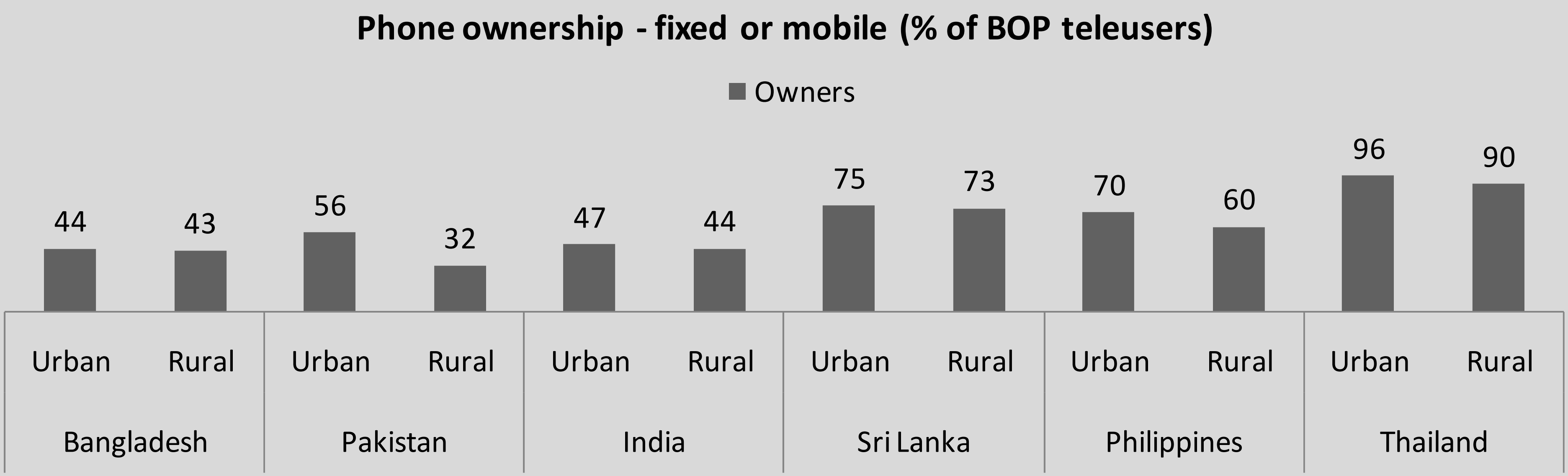
Among BOP teleusers

Extent of phone ownership (either own mobile or household fixed)



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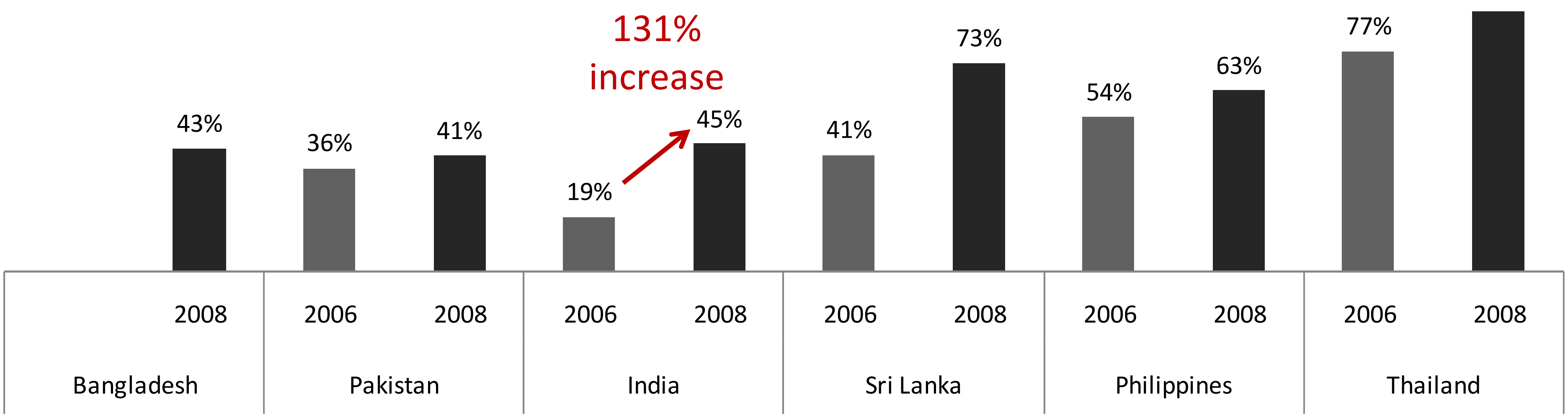
Among BOP teleusers

Largest % growth in Indian total BOP phone ownership

Total BOP phone ownership: 2006 vs 2008 (% of BOP teleusers)



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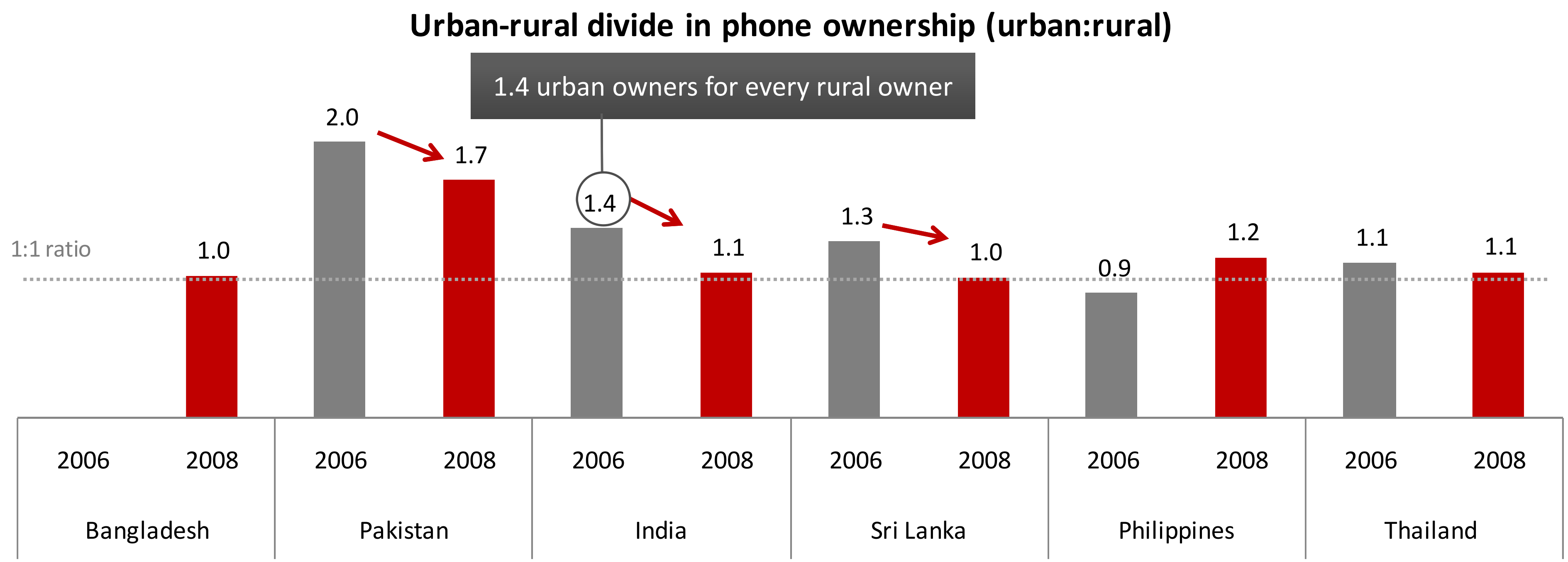
Among BOP teleusers

Urban-rural divide in total BOP phone ownership declining



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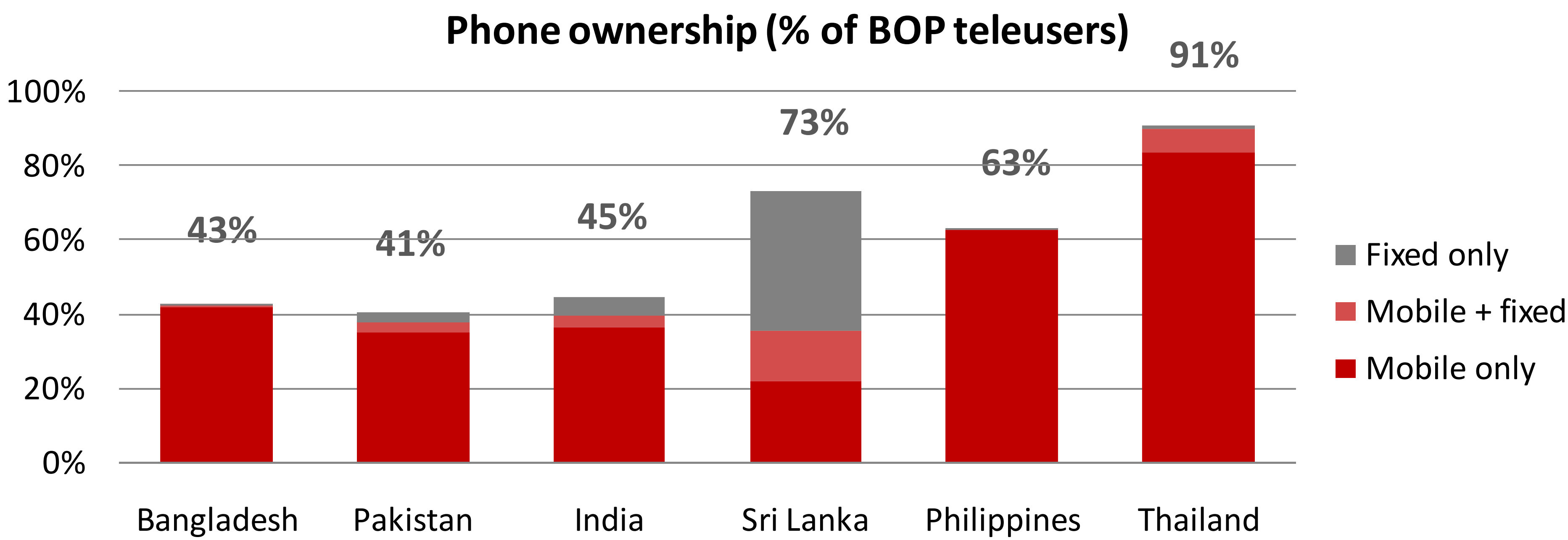
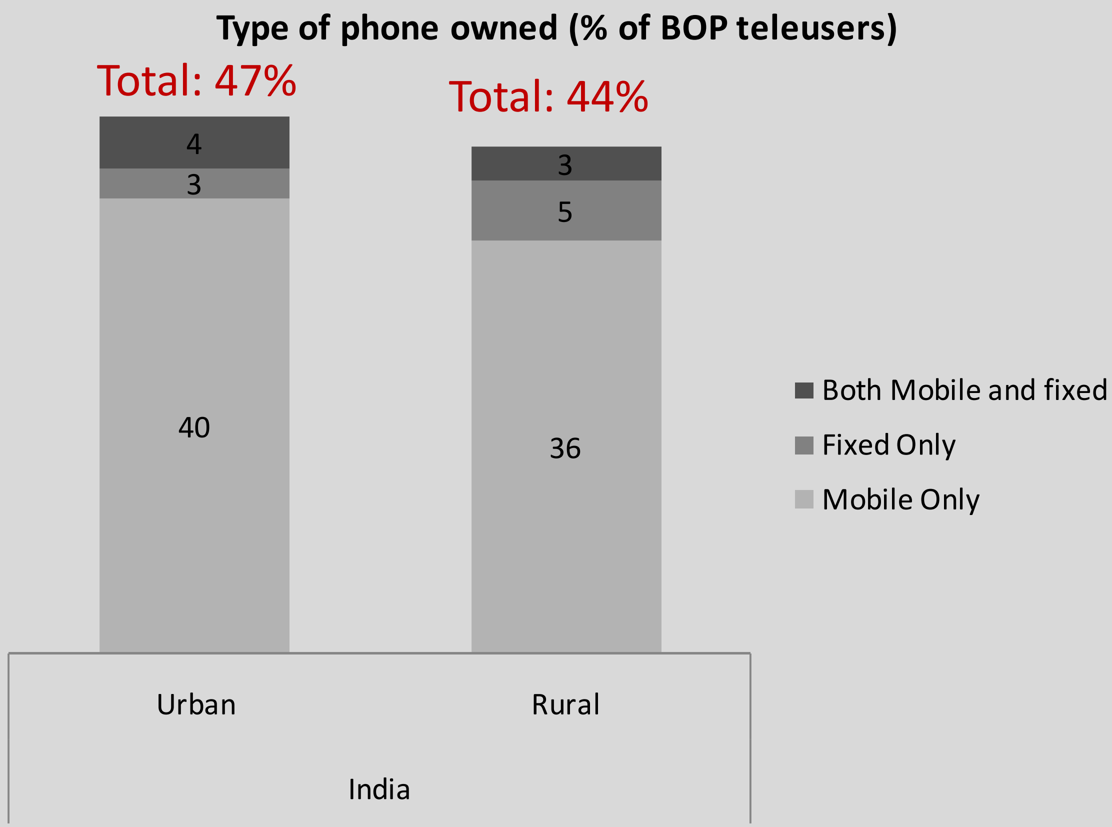
Ratio between urban and rural BOP teleusers

Mostly mobile phones: 90% BOP phone owners own a mobile



Among BOP teleusers



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Among BOP teleusers

Probablility of mobile adoption associated with:

demographics, household amenities, usage and network effects

LOGIT model for mobile adoption:

```
Logistic regression                               Number of obs   =       1991
                                                  LR chi2(17)     =     824.54
                                                  Prob > chi2     =     0.0000
Log likelihood = -926.30552                       Pseudo R2       =     0.3080
```

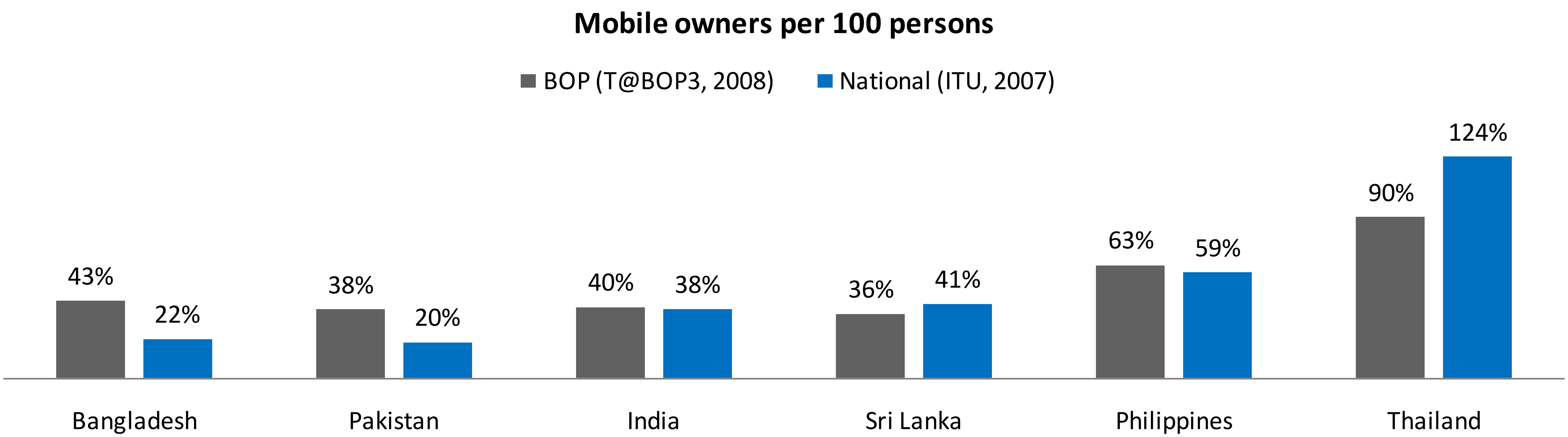
mobileowne~p	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lnyp	1.519097	.1410704	4.50	0.000	1.266307	1.822351
female	.4680568	.0691721	-5.14	0.000	.3503509	.625308
primaryedu	1.306247	.29284	1.19	0.233	.8417817	2.026989
secondaryedu	1.852081	.4121814	2.77	0.006	1.19736	2.864806
tertiaryedu	3.673386	1.214677	3.93	0.000	1.921322	7.023167
walktimeto~l	.9990342	.0007337	-1.32	0.188	.9975971	1.000473
age2	.9997762	.0000707	-3.17	0.002	.9996377	.9999147
contacts	4.043233	.8365527	6.75	0.000	2.69534	6.065184
pakistan	.5392478	.0959228	-3.47	0.001	.3805173	.7641918
srilanka	.7082766	.1451743	-1.68	0.092	.4739511	1.058455
thailand	3.745535	1.078381	4.59	0.000	2.130314	6.58543
accesstoel~y	1.136095	.2153935	0.67	0.501	.7834917	1.647384
fixedphone~s	.2970311	.0546232	-6.60	0.000	.207142	.4259274
tvinhouseh~d	2.073017	.3171827	4.76	0.000	1.535905	2.797959
radioinhou~d	1.057112	.1408271	0.42	0.677	.8141881	1.372514
noofcalls	1.073553	.0070951	10.74	0.000	1.059737	1.08755
nomobilepe~e	12.29072	5.179292	5.95	0.000	5.38124	28.07194

Probablility of mobile adoption associated with demographics, household amenities, usage and network effects

Significant variables	Impact
Personal Income	Higher the ln(personal income) higher the likelihood of having a mobile
Gender	Males => Higher likelihood of having a mobile
Education	Higher the education => Higher likelihood of having a mobile
Walk time to nearest town	Higher the walk time => Lower the likelihood of having a mobile
Age	Higher the Age squared => Lower the likelihood of having a mobile
% of top five contacts having mobile phones	Higher the % => Higher likelihood of having a mobile
Occupation	Insignificant
Urban / rural	Insignificant
Perceived benefits of telecom access	Insignificant
Access to electricity	Access to electricity => Higher likelihood of having a mobile
Fixed phone in the household	=> Higher likelihood of having a mobile
TV in household	=> Higher likelihood of having a mobile
Number of calls (incoming+outgoing) per week	Higher the # => Higher likelihood of having a mobile
% of household members with mobile phones	Higher the % => Higher likelihood of having a mobile

T@BOP 2008 vs ITU 2007

demand side **supply-side**



- BOP has caught up with entire nation within 1 year?
  - Maybe, but national numbers contain some doubles (multiple SIMs)

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T@BOP3 data among BOP teleusers

9% own more than one (active) SIM

	Bangladesh	Pakistan		India		Sri Lanka		Philippines		Thailand	
	2008	2006	2008	2006	2008	2006	2008	2006	2008	2006	2008
More than 1 SIM	10%	12%	23%	5%	9%	9%	16%	9%	19%	1%	13%

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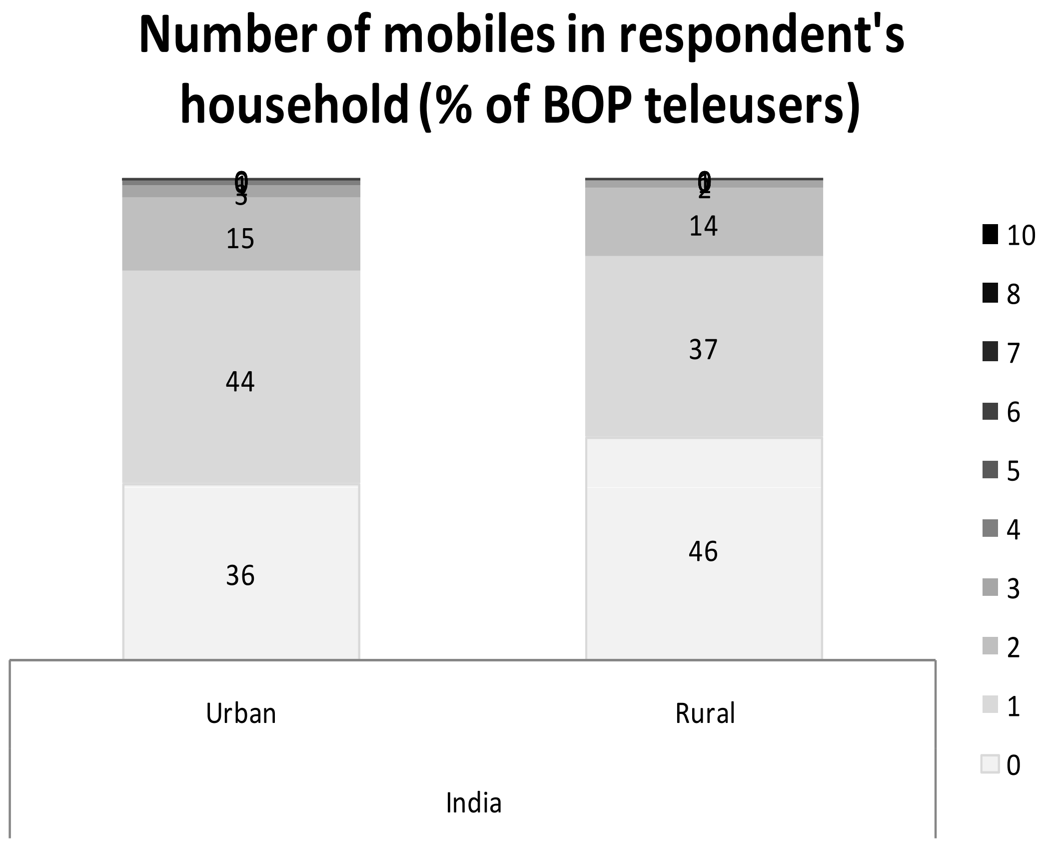
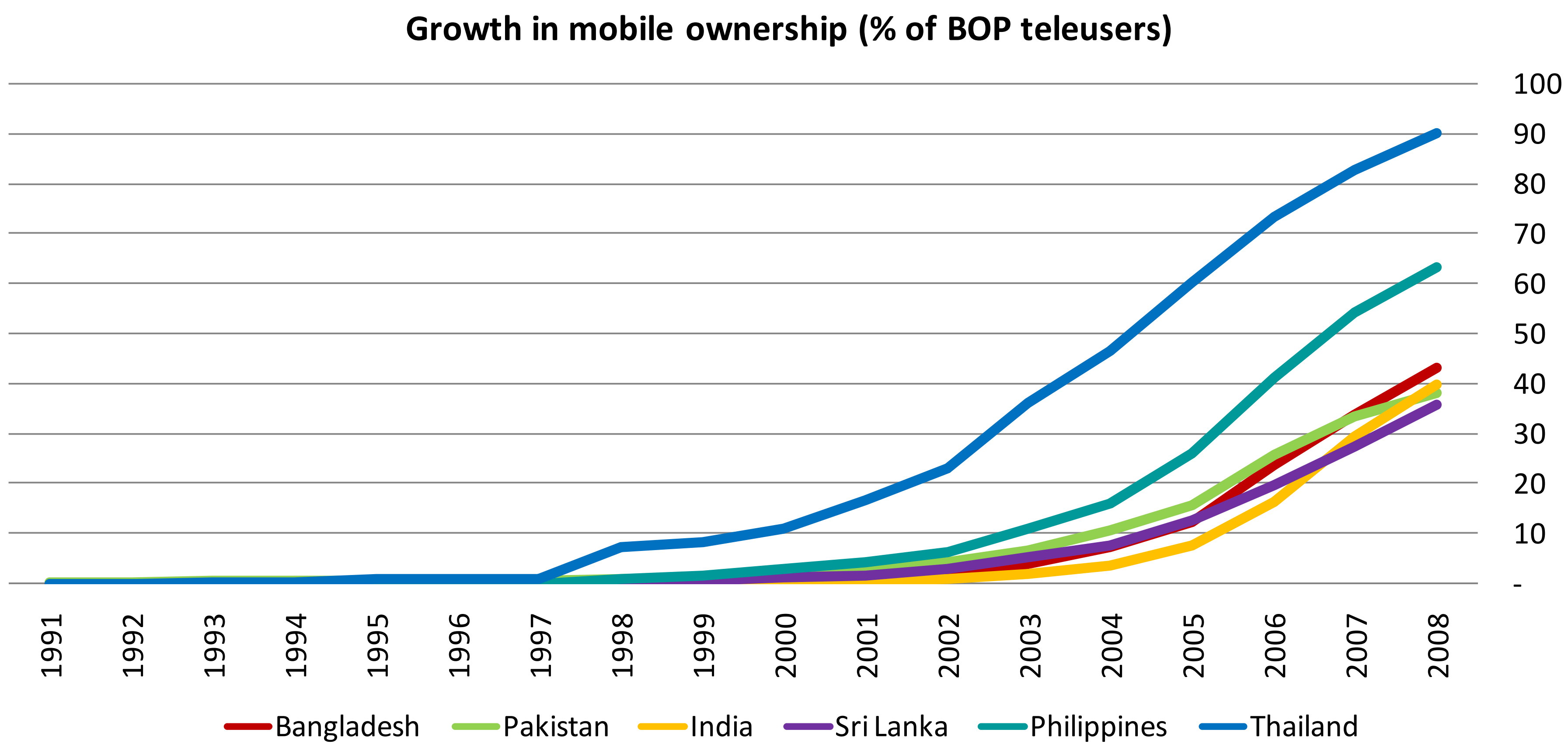
Among BOP mobile owners

16% of Indian BOP teleusers have more than 1 mobile in their households



Among BOP teleusers

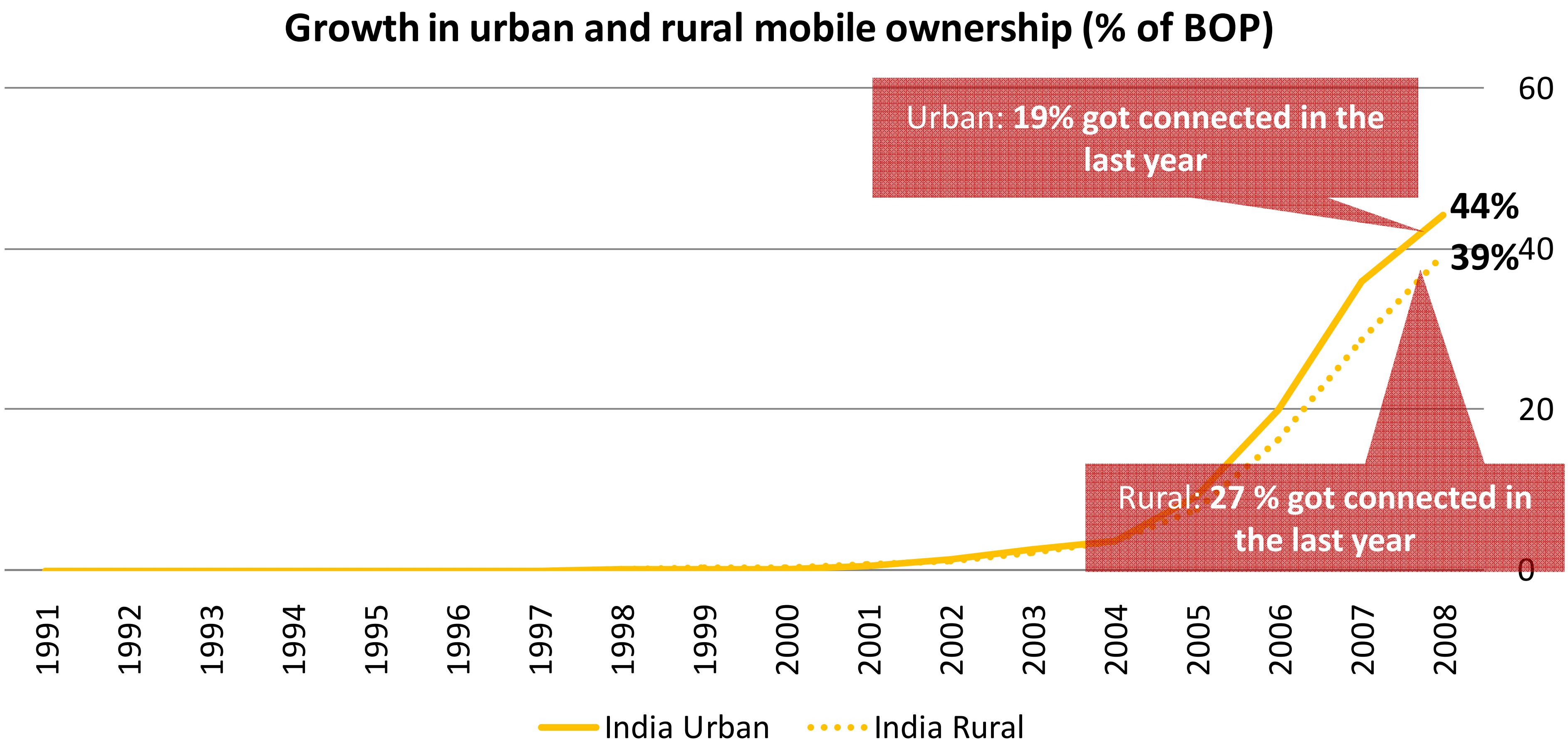
Indian BOP picking up



	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
Got connected in the last year (% of BOP mobile owners)	22	13	26	23	14	8

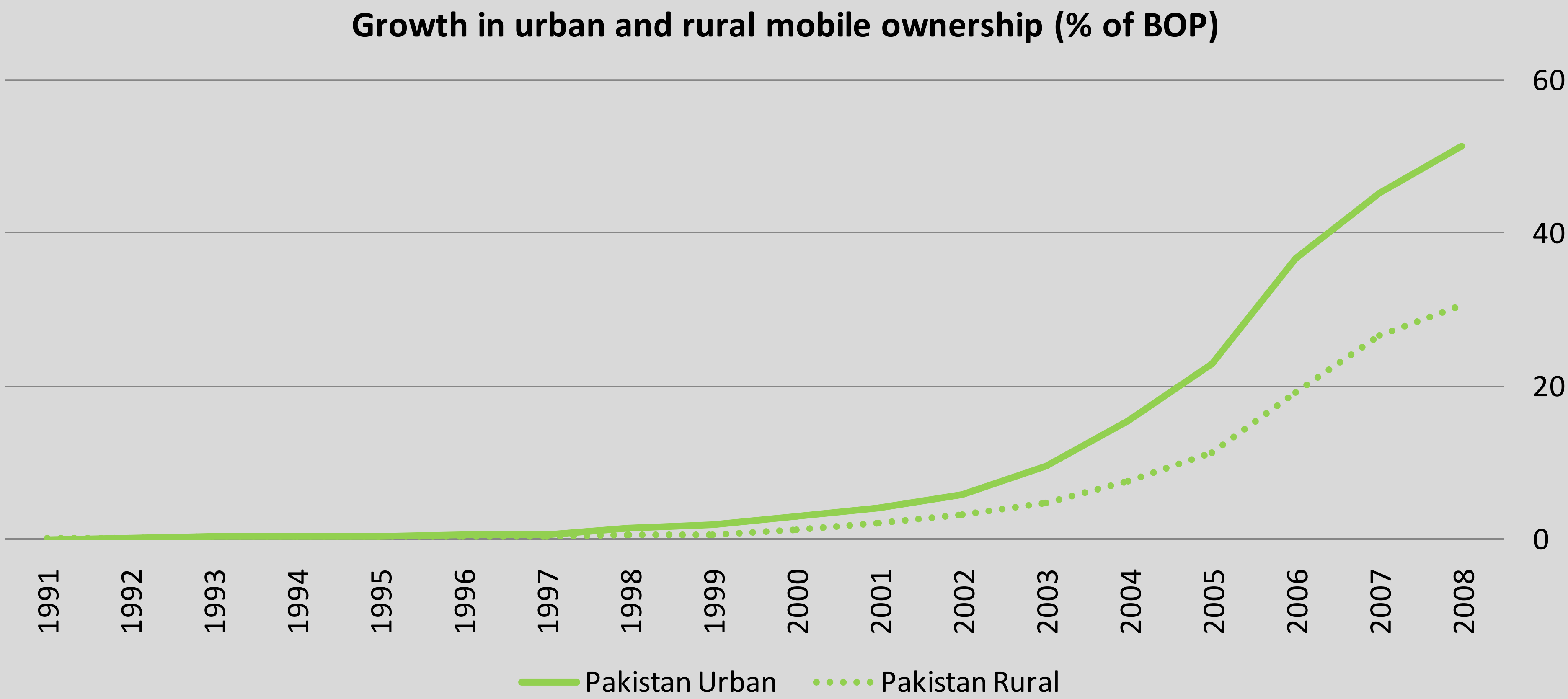
Among BOP teleusers

Rural Indian BOP has grown more than urban in last year, but still behind



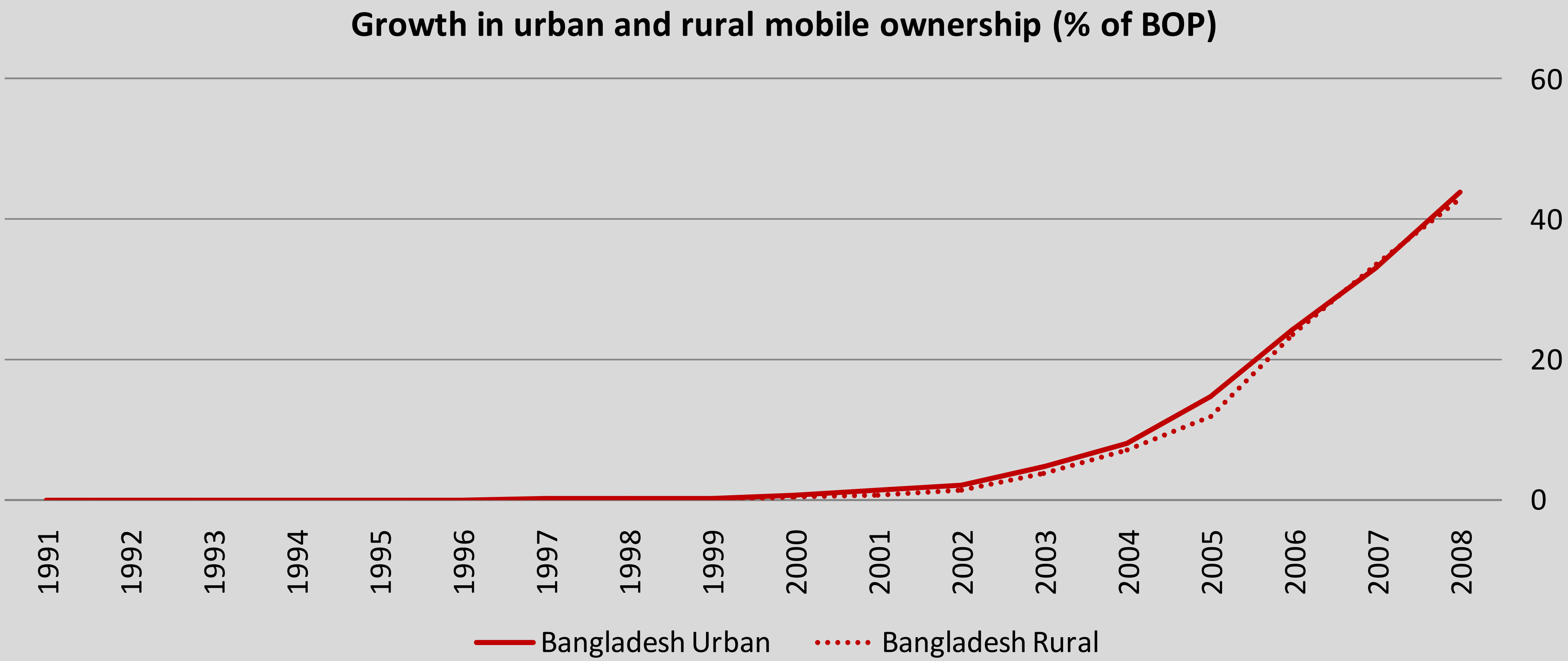
Among BOP mobile owners

Better than Pakistan



Among BOP mobile owners

But not Bangladesh



Among BOP mobile owners

BOP access has been achieved

- The access challenge has been met
  - Most at the BOP can easily make or receive calls
  - The phone has come closer to the unconnected
- The biggest increase in BOP connectivity happened in 2006-07
  - Suggesting that industry dynamics rather than government actions are driving the process
- Rural BOP connectivity is growing apace, slowing down a little in 2007-08, but still more than urban BOP connectivity
  - Could be getting to the flat part of the "S" curve
- Reducing taxes and levies can do more for BOP connectivity than anything else: postpone the early onset of a slowdown
  - Removing ADC and making universal service funds technology neutral was a good start; build on it

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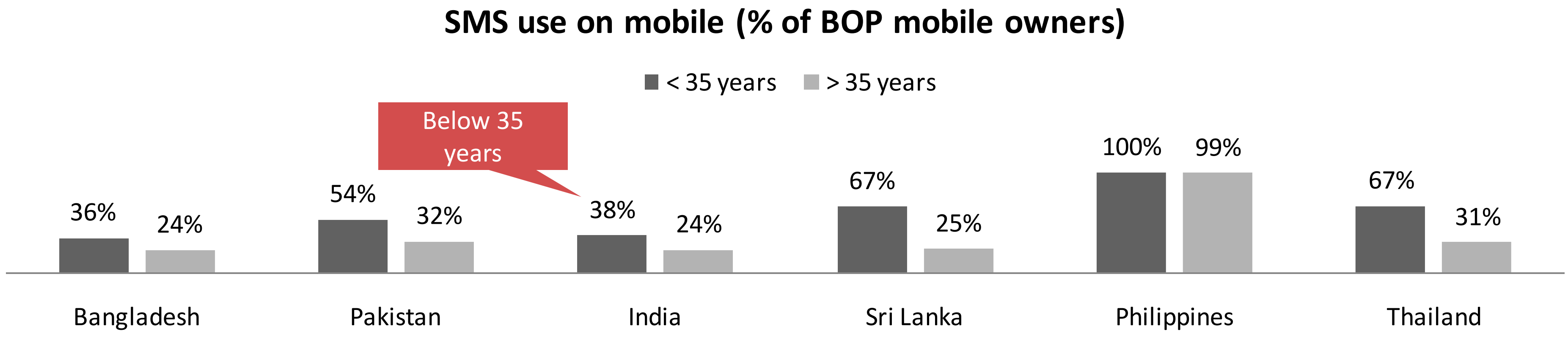
menu

Mostly calls, SMS, missed calls, balance checking

Among BOP mobile owners

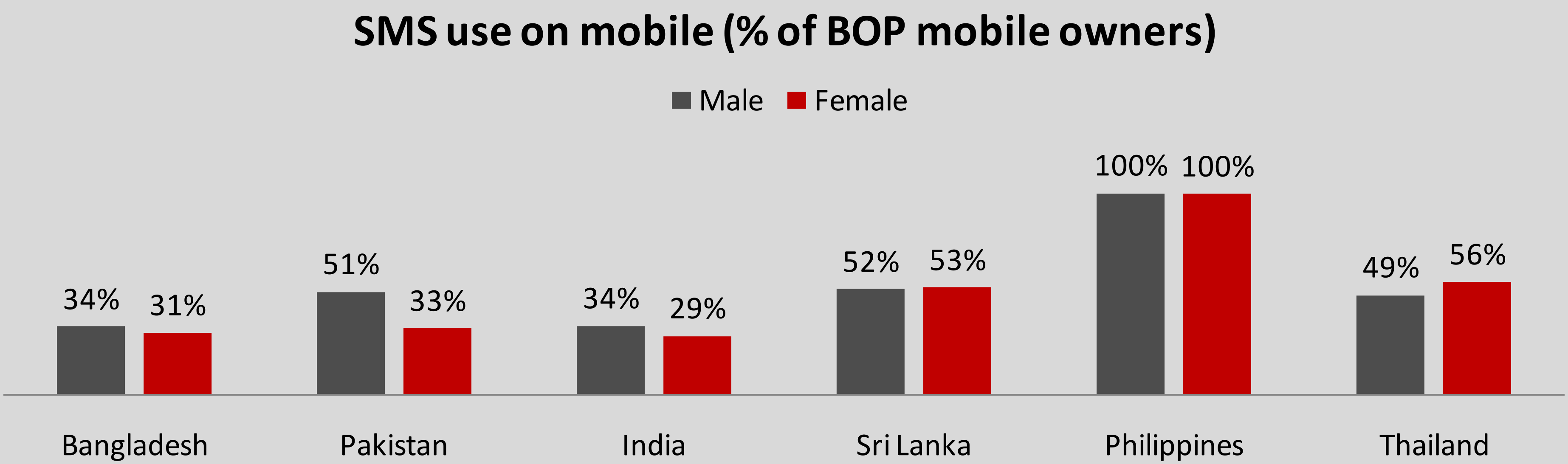
	B'desh	Pakistan	India	S' Lanka	Ph'pines	T'land
	% of BOP mobile owners					
Taking phone calls	100%	100%	99%	100%	89%	100%
Receiving phone calls	100%	100%	98%	100%	99%	100%
Sending/receiving 'missed calls'	94%	84%	84%	73%	86%	39%
Sending/receiving SMS (text messages)	32%	47%	33%	52%	100%	53%
Sending/receiving MMS (picture messages)	1%	4%	4%	6%	13%	4%
Sending/receiving emails	0%	0%	1%	0%	0%	1%
Browsing the Internet	0%	1%	1%	2%	0%	2%
Taking photos /video clips	4%	2%	1%	8%	4%	18%
To play games (individual)	13%	18%	7%	21%	14%	17%
To play games (interactive)	1%	1%	1%	1%	3%	1%
To listen to the radio	0%	7%	3%	12%	5%	22%
To listen to music (files which you have downloaded or been sent by others, not radio)	4%	5%	3%	7%	3%	22%
To share content that you have created (E.g. ringtones, wallpapers, pictures, games and video clips)	1%	2%	2%	6%	5%	3%
To send or receive or download or upload other content (E.g., ringtones, wallpapers, pictures, games and video clips)	0%	2%	3%	8%	10%	9%
As an organizer (keep appointments, reminders, alarm and clock)	1%	7%	8%	4%	9%	14%
To check my bill / credit balance	11%	40%	25%	50%	3%	39%

SMS popular among youths



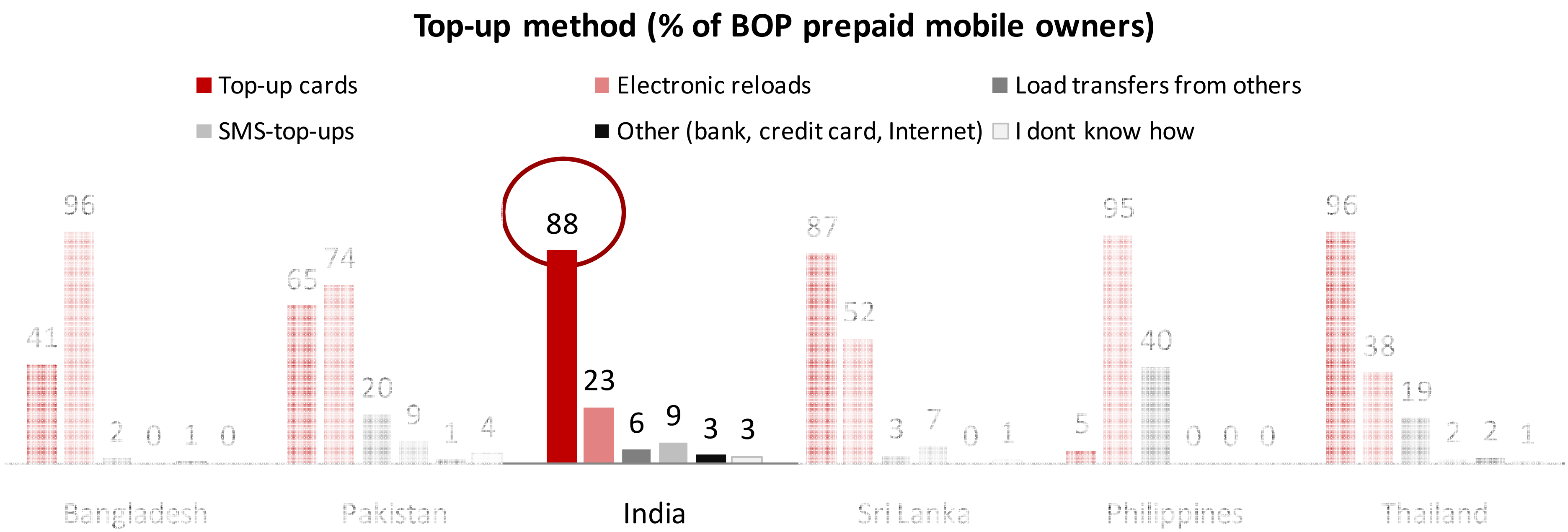
Among BOP mobile owners

SMS more popular among males in South Asia (literacy?)



Among BOP mobile owners

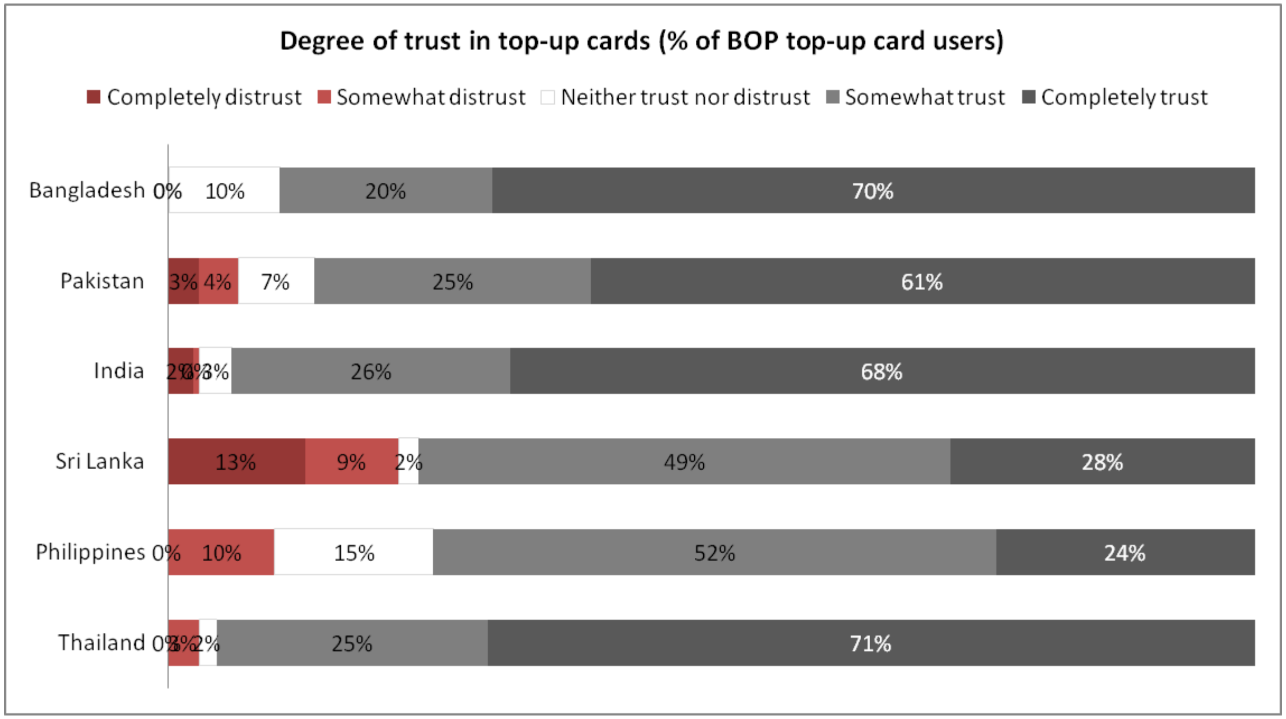
Reloading mostly via top-up cards in Indian BOP

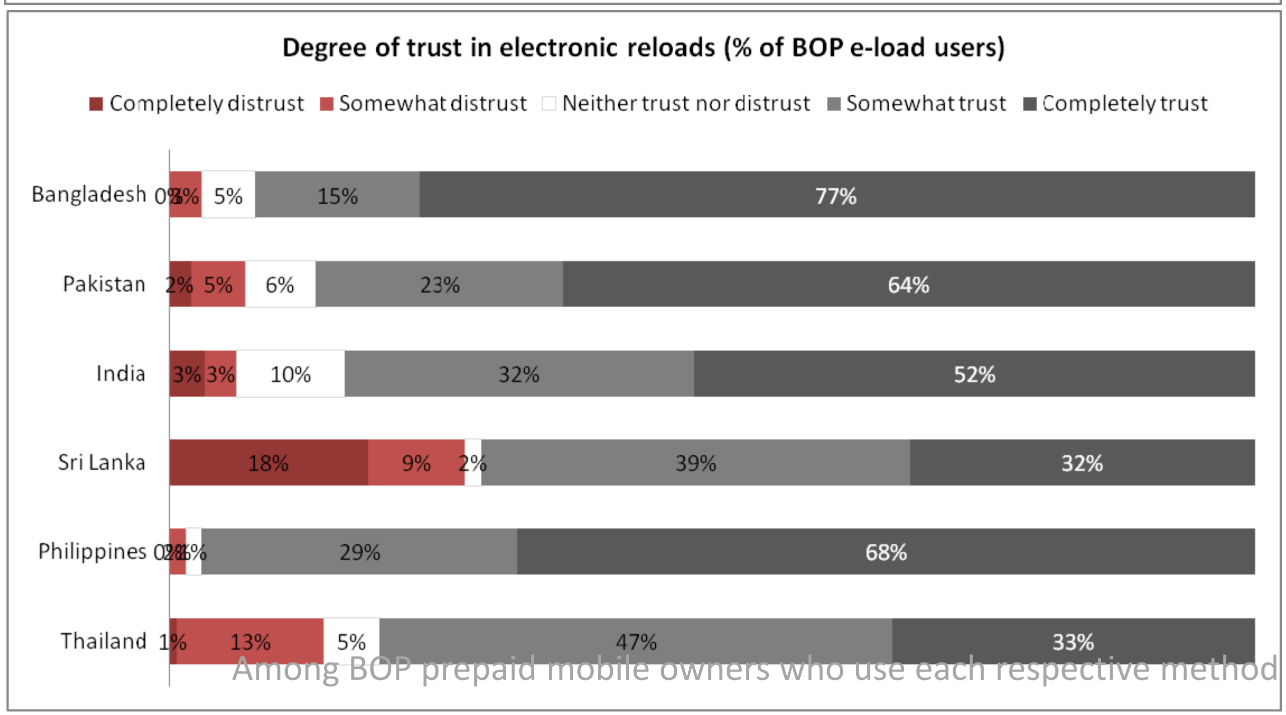


Among BOP prepaid mobile owners

Indian BOP trusts cards more

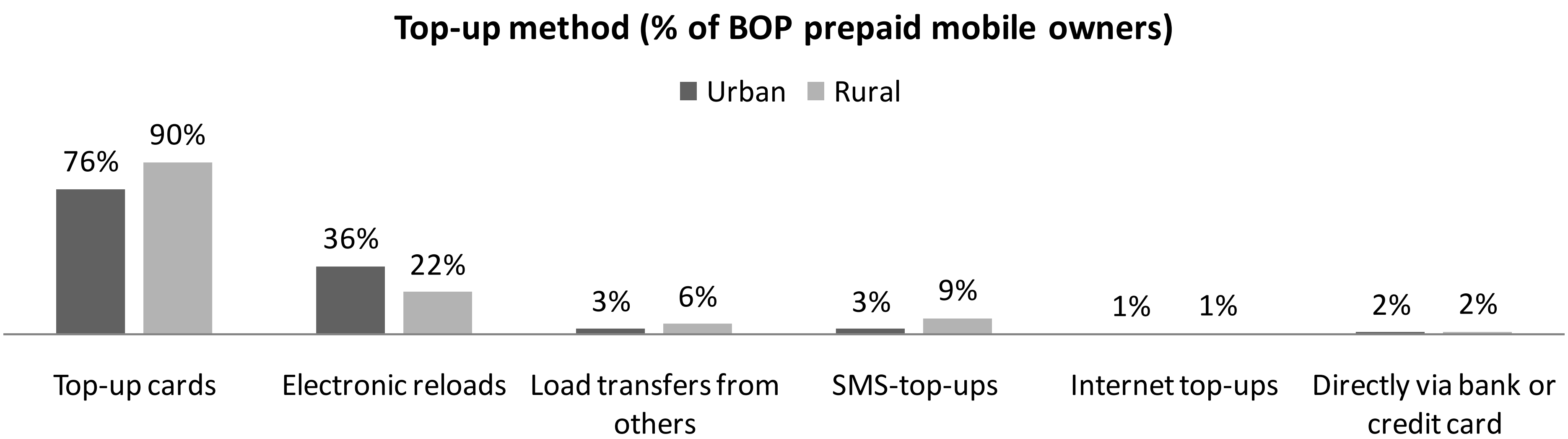
- 68% of Indian top-up card users “completely trust” their method
- 53% of Indian electronic reload users “completely trust” their method





Among BOP prepaid mobile owners who use each respective method

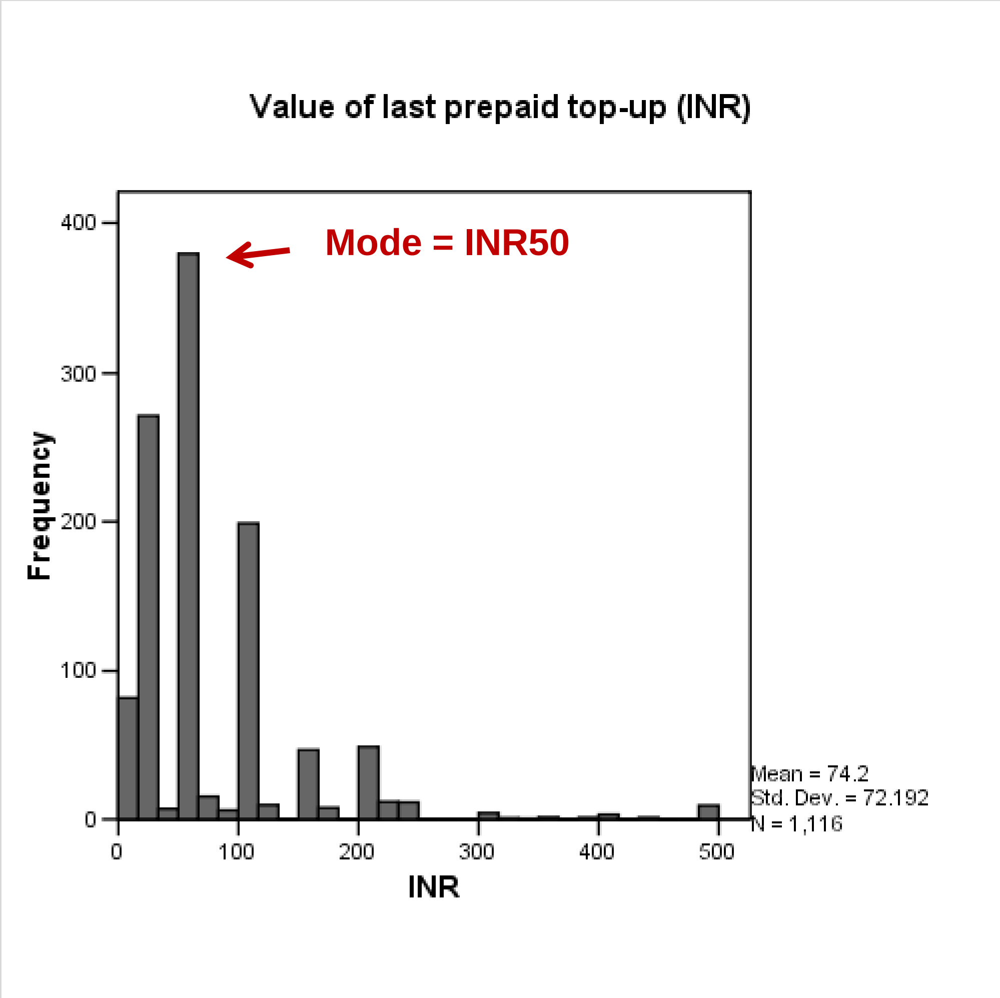
Electronic reloads used less in rural India



- Most Indians top-up for ~USD1.50 (highest in South Asia)

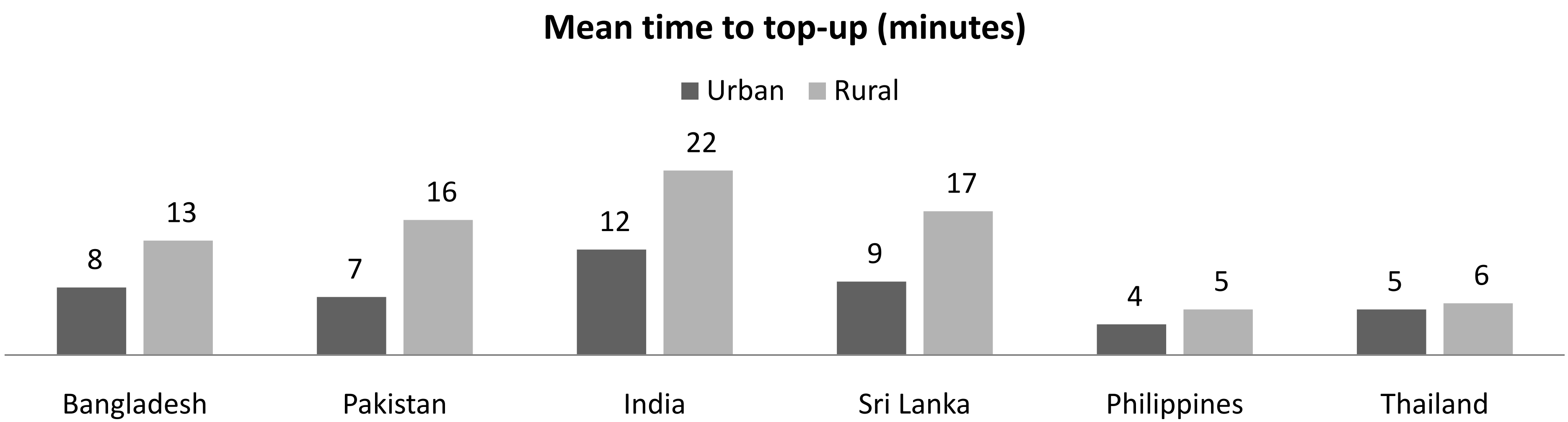
Among BOP prepaid mobile owners

Most Indians top-up for INR50



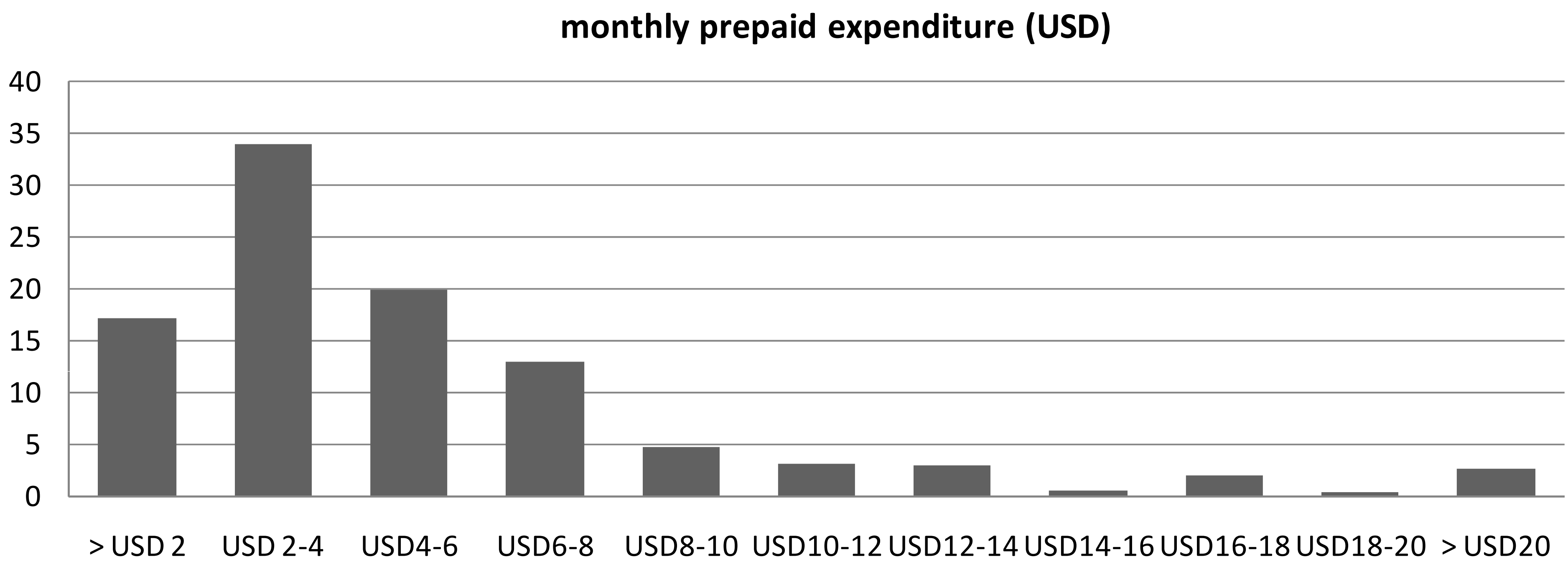
Among Indian BOP prepaid mobile owners (who only own mobiles)

Rural mobile owners travel 10 minutes more than urban mobile owners for top-ups



Among BOP prepaid mobile owners

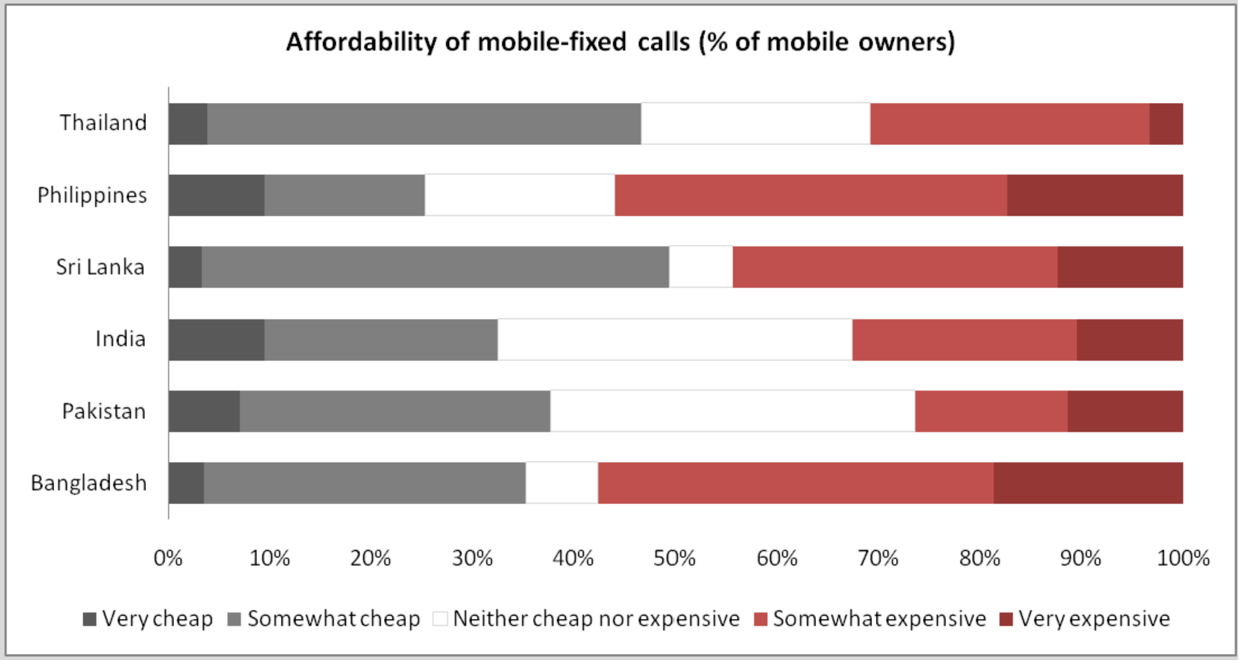
Most spend USD2-4 per month on prepaid mobile

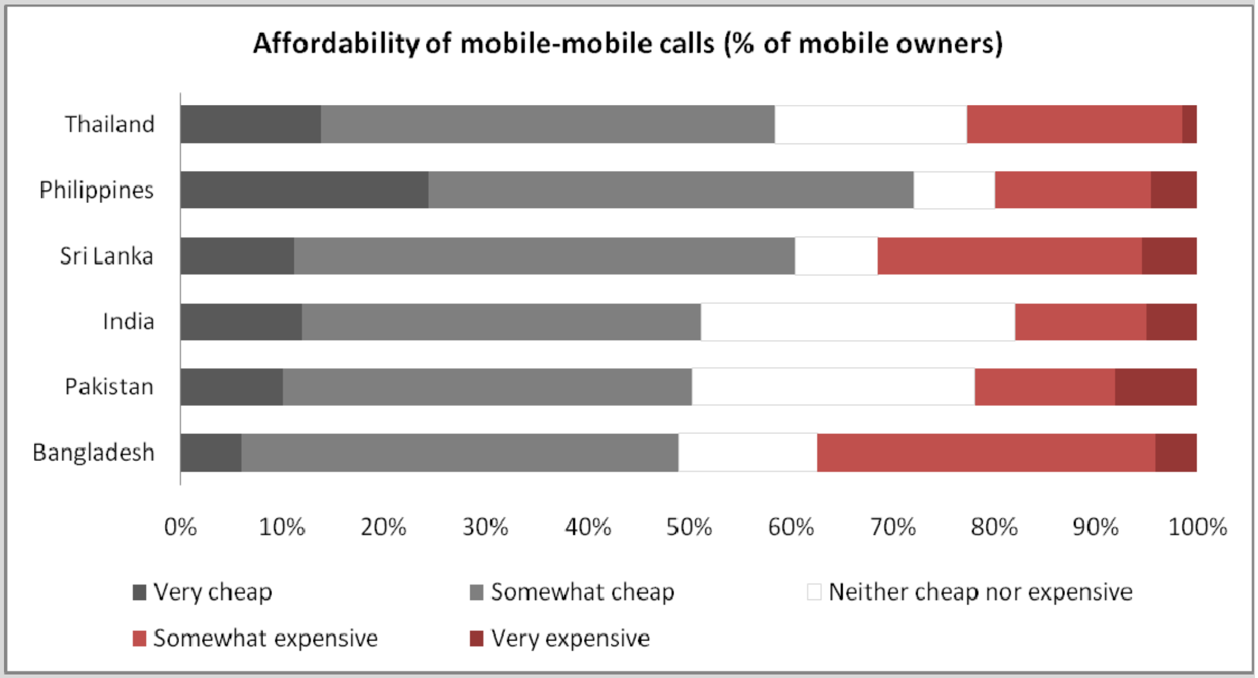


Based on amount of last top-up and how long they expect it to last

Among BOP prepaid mobile owners

Mobile-fixed calls more expensive than mobile-mobile





Among BOP mobile owners

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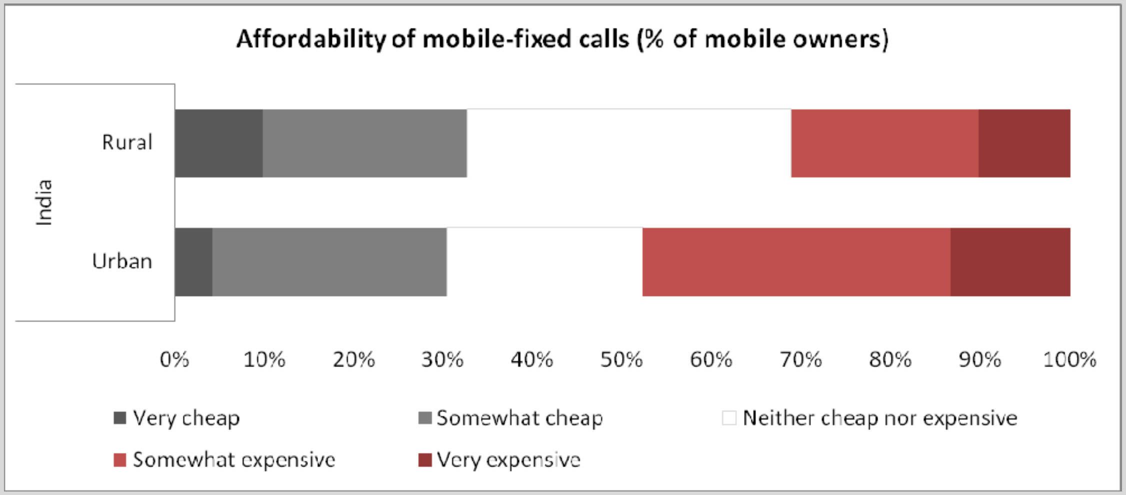
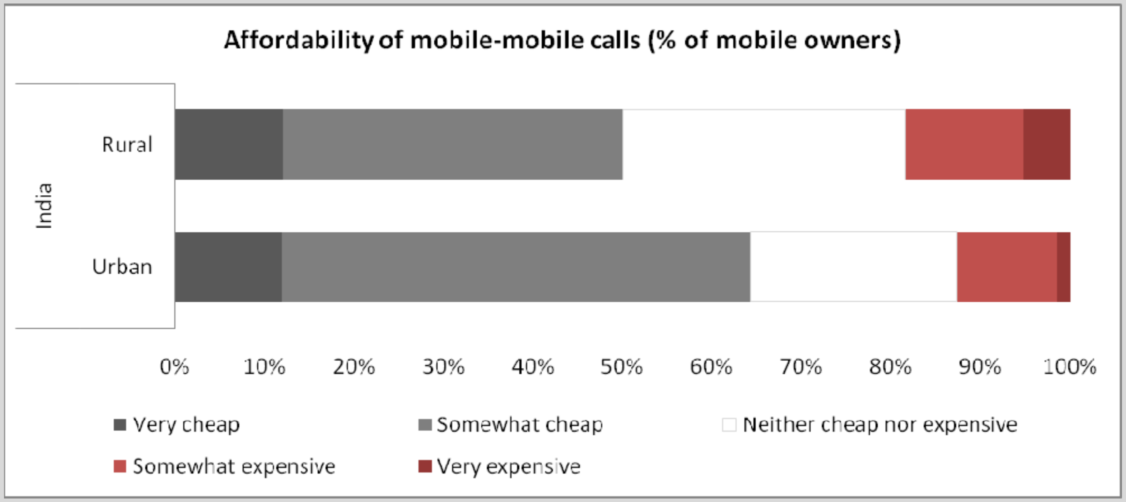
Mobile-fixed calls more expensive for urban Indian BOP

- Opposite wrt mobile-mobile calls





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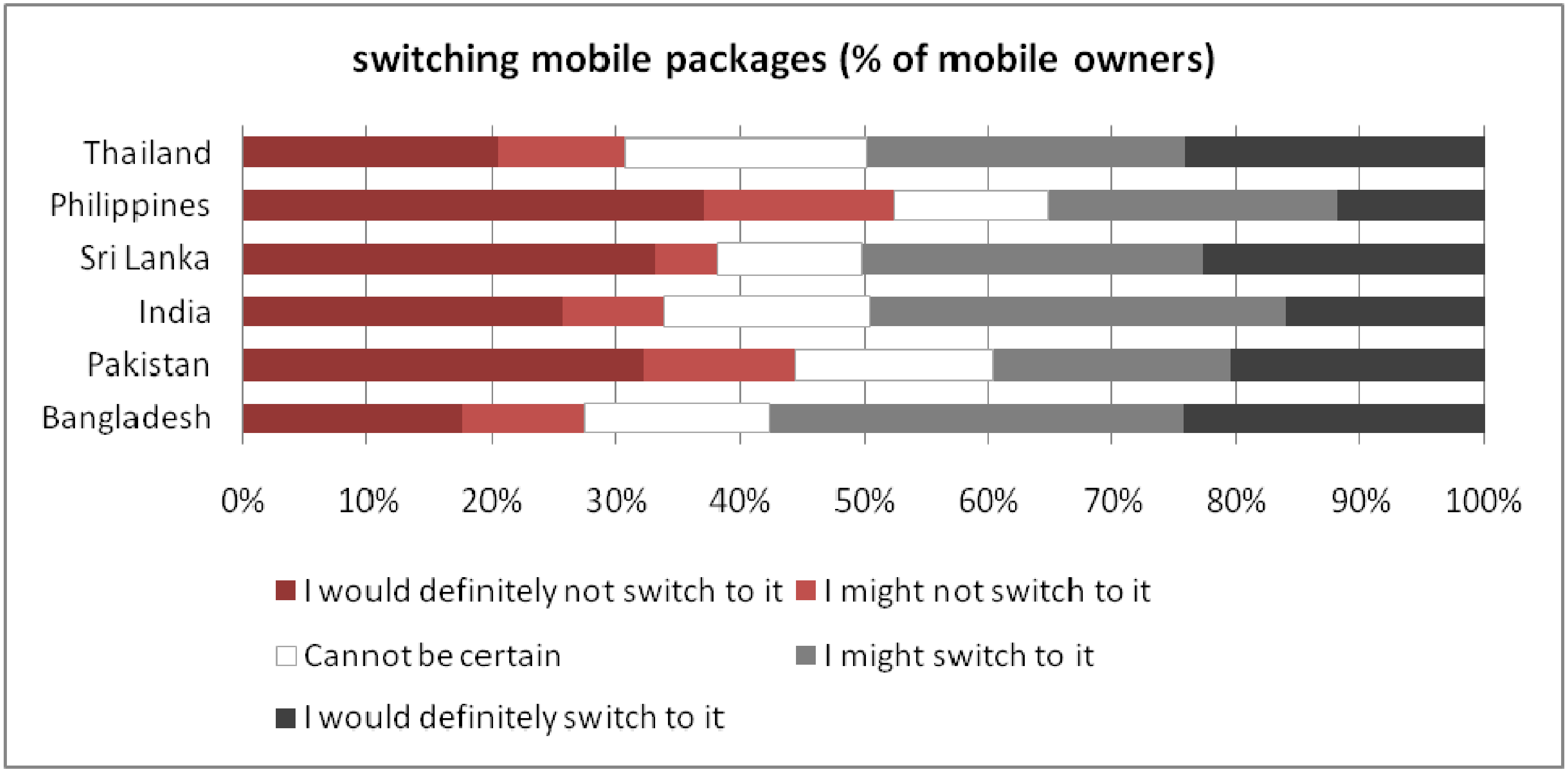
Among BOP mobile owners

26% of BOP mobile owners in India would *definitely not* consider switching to a cheaper package



- 40% of those unwilling to switch state that it is important to keep the number at present
  - Given MNP + cheaper package, 63% of mobile BOP owners will switch

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Among BOP mobile owners

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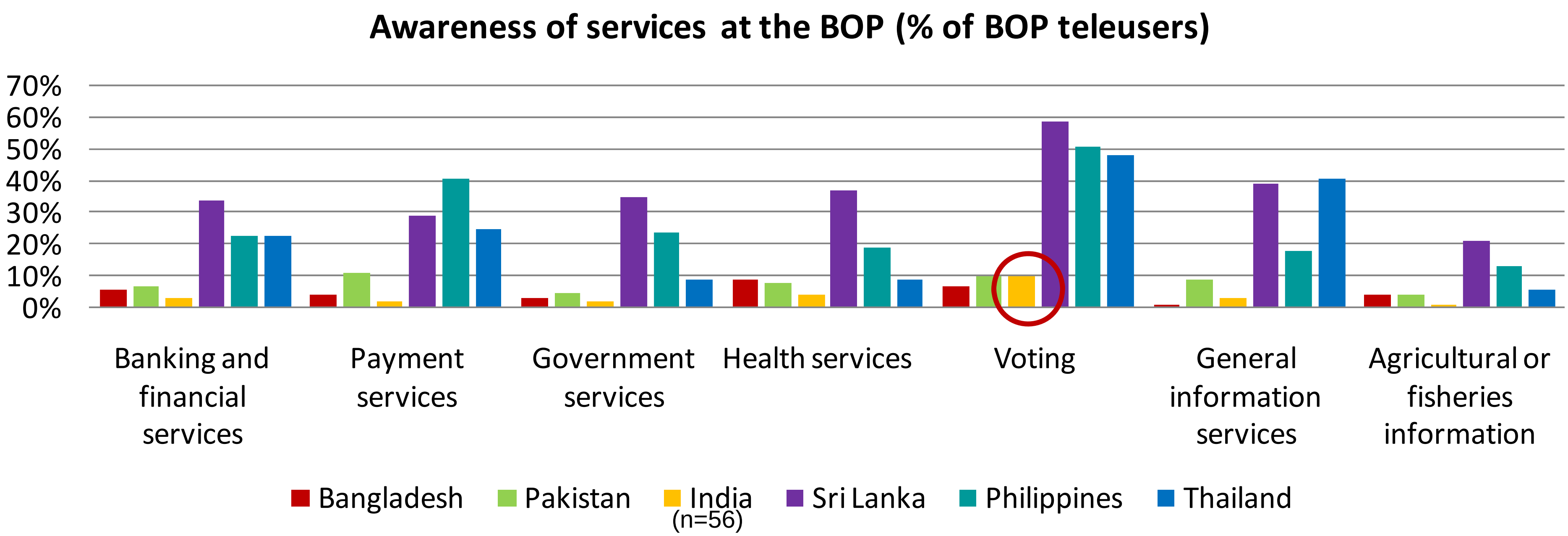
menu

Poor awareness in India



- 10% are aware of voting applications in India (competitions, real time polling, live participation in TV/radio programs, etc)

Among BOP teleusers

Usage is *even* poorer

	India (% of BOP teleusers who are aware of such services)	
	Use regularly	**Use, but not regularly**
Banking and financial services		**1%**
Payment services		
Government services		
Health services		**1%**
Voting	**1%**	**1%**
General information services		
Agricultural or fisheries information		

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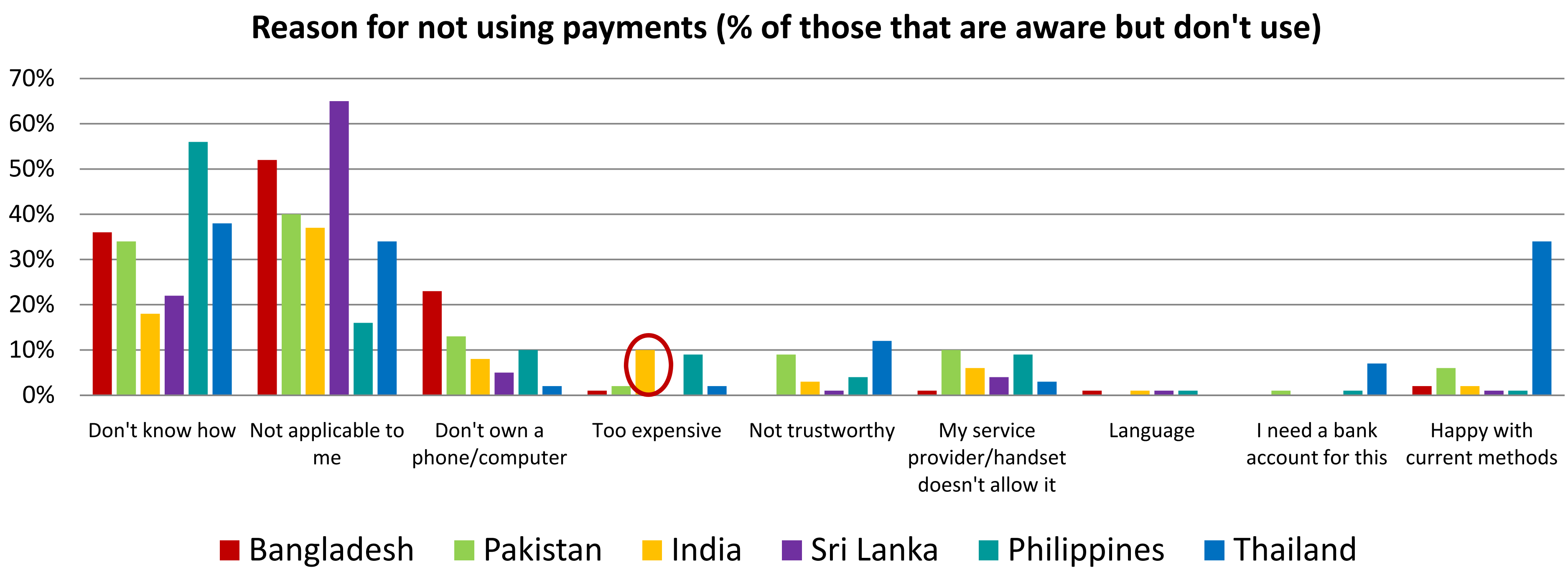
Among BOP teleusers who are aware of services

Payments: Most who are aware don't know how or don't feel the need to use it



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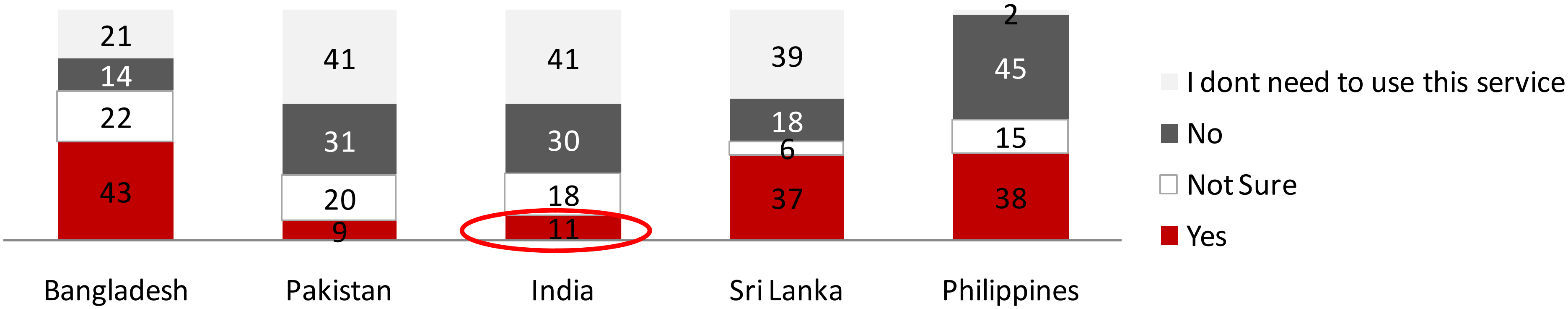
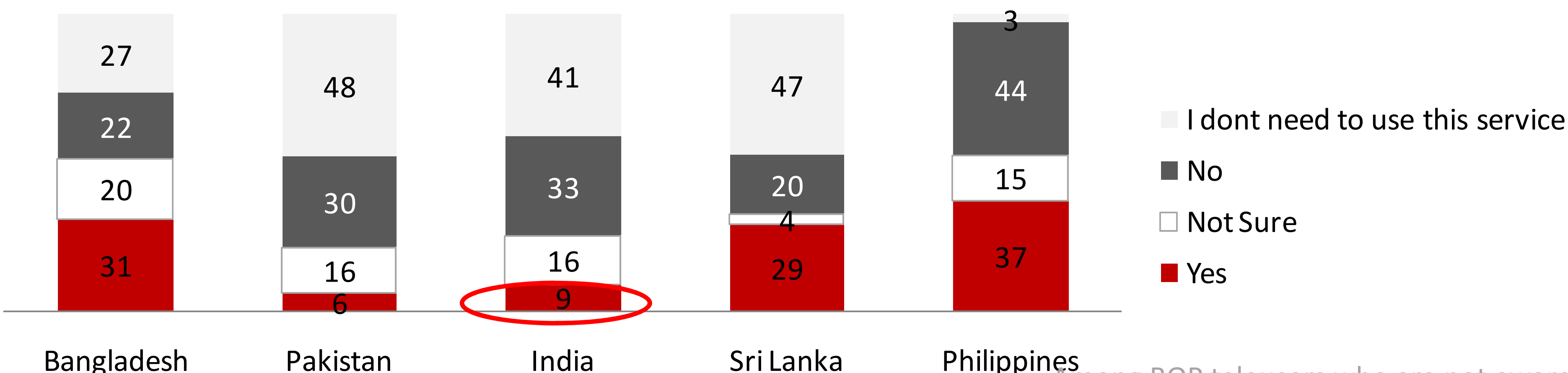
Among BOP teleusers who are aware of services but don't use them

Few of those who aren't aware would be willing to use money transfer services and govt services via a mobile

Willingness to try sending or receiving money (% of BOP teleusers who are currently unaware of such services)



Willingness to try accessing government services (% of BOP teleusers who are currently unaware of such services)



Among BOP teleusers who are not aware

TAKEAWAYS:
Huge potential for more-than voice services

- Indian BOP still in Mobile 1.0 mode
  - Mainly voice and missed calls, SMS used only by a third
- Comparative awareness of more-than voice applications very low; usage extremely low
  - Some premium SMS facilities used…
  - Mobile payment and government services use almost non-existent
- Sharing files, downloading music and even playing non-interactive games are low
- Comparatively behind in electronic reloads even though relatively trustworthy
  - Lower transaction costs
  - Opening doors for more-than voice services

Thank you

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Survey asked about perceived benefits of telecom access: *how has telecom access improved …*

- Your ability to:
  - make more money (generally, and via sale of talk time)
  - find out about employment/work opportunities
  - access price or market information
  - save money
  - save on travel cost
  - act in an emergency
  - contact others in an emergency
- The efficiency of your day to day work
- Your relationships with family and friends
- Your social status/ recognition in the community

Economic benefits

Emergency communication

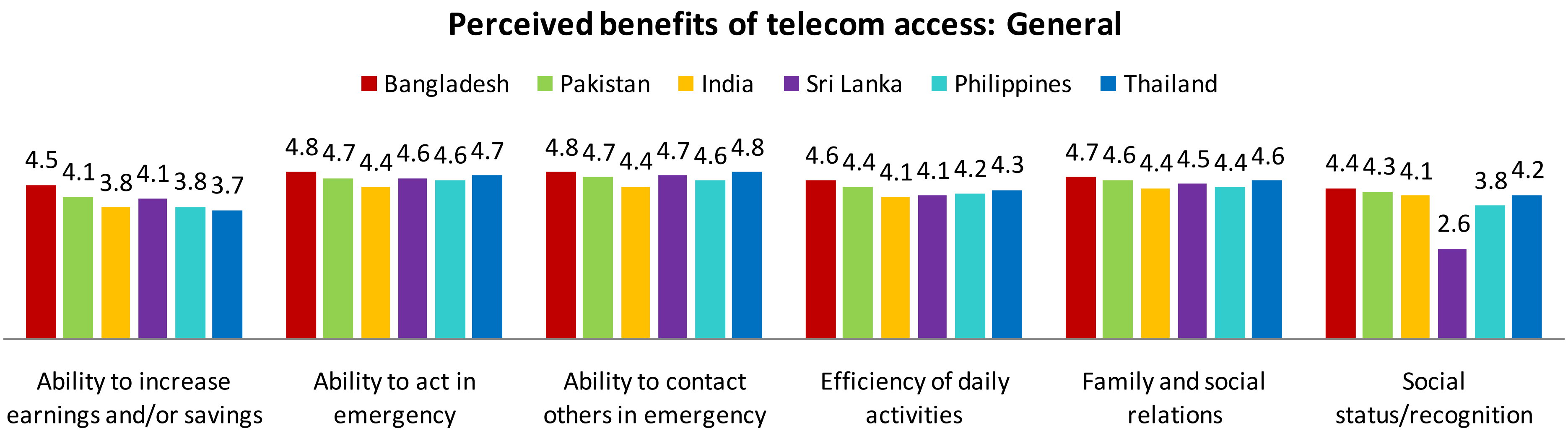
Efficiency

Emotional / soft benefits

Five-point scale: 1=worsened → 5=improved

Largest benefits perceived in emergency communication and relationship maintenance

1=worsened 2 = slightly worsened 3=no change 4=slightly improved 5=improved

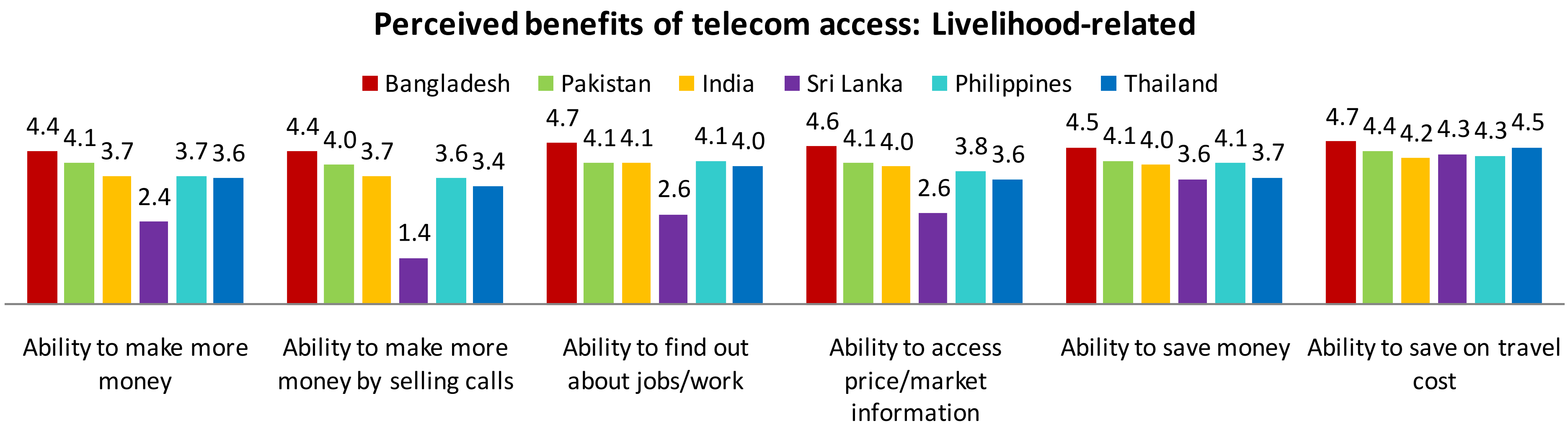


- Smallest benefit on economic factors
- Sri Lankans have an odd position on social status

Among BOP teleusers with personal incomes > 0

Some Sri Lankan BOP teleusers say having a phone *worsened* financial aspects of their lives

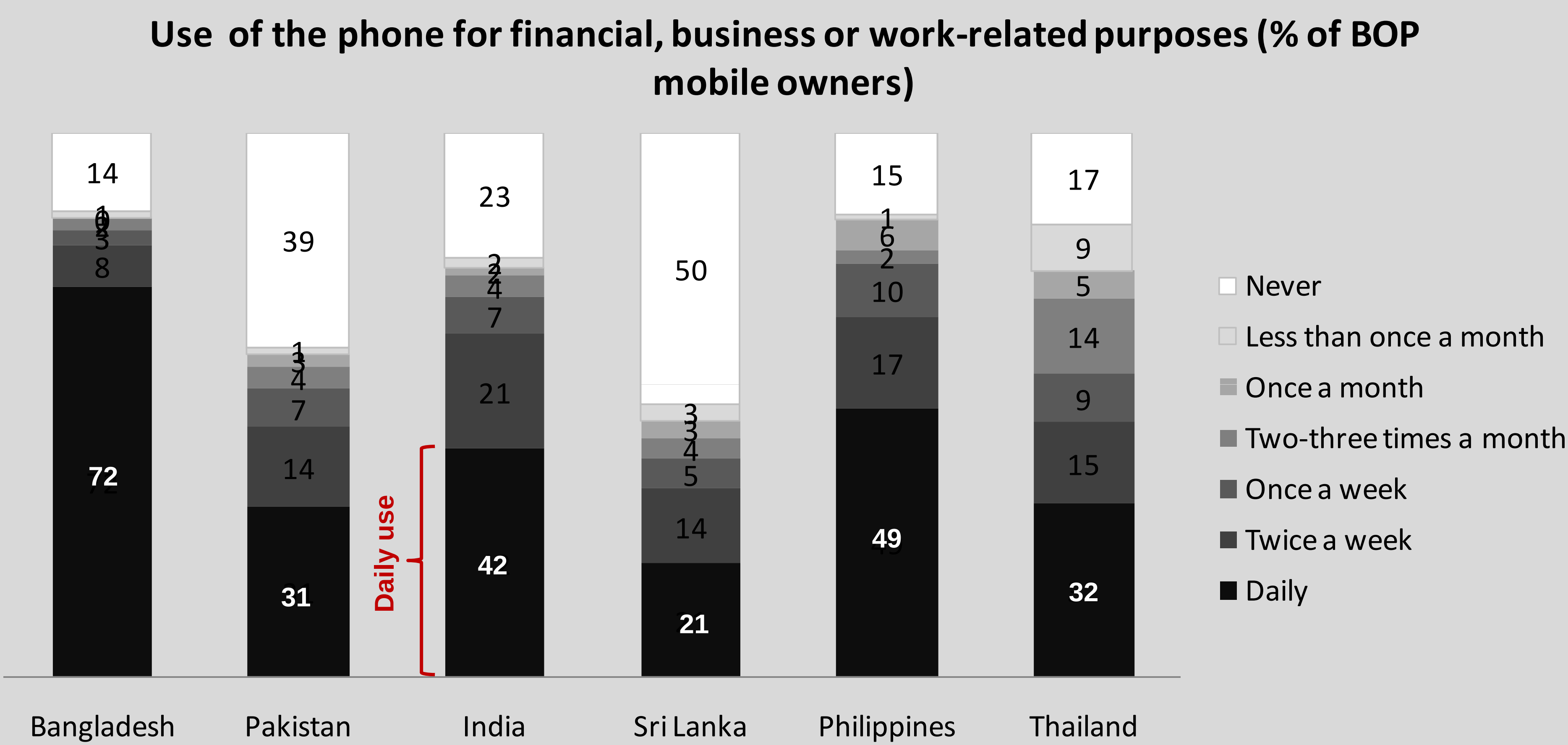
1=worsened 2 = slightly worsened 3=no change 4=slightly improved 5=improved



Among BOP teleusers with personal incomes > 0

- Indians who use the phone for business activities see more benefits in terms of: making more money (also via sale of calls), ability to find out about employment, save money, improve efficiency of daily work
  - 77% of Indian teleusers at BOP use their mobile for business, financial or work-related purposes
    - More than half of these do so on a daily basis

77% of Indian teleusers at BOP use their mobile for business, financial or work-related purposes



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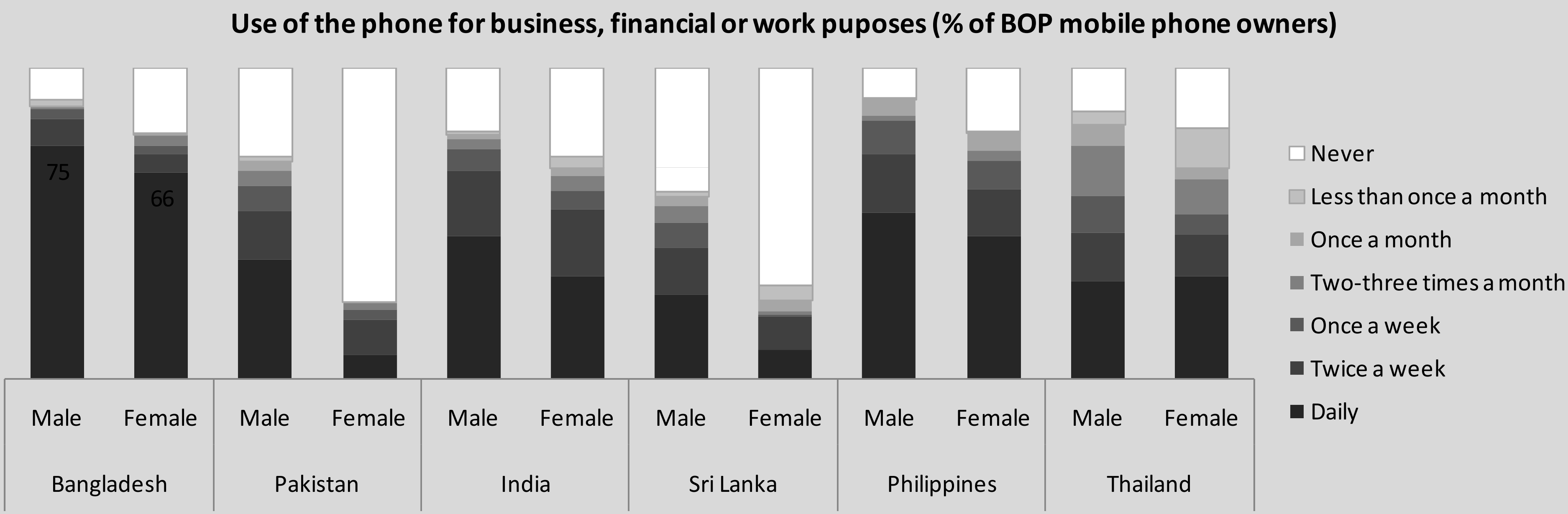
Among BOP mobile owners

Little difference between urban and rural India

Use of the phone for business, financial or work puposes (% of BOP mobile phone owners)

Among BOP mobile owners

Indian BOP female mobile owners more entrpreneurial than Pakistani and Sri Lankan



Among BOP mobile owners

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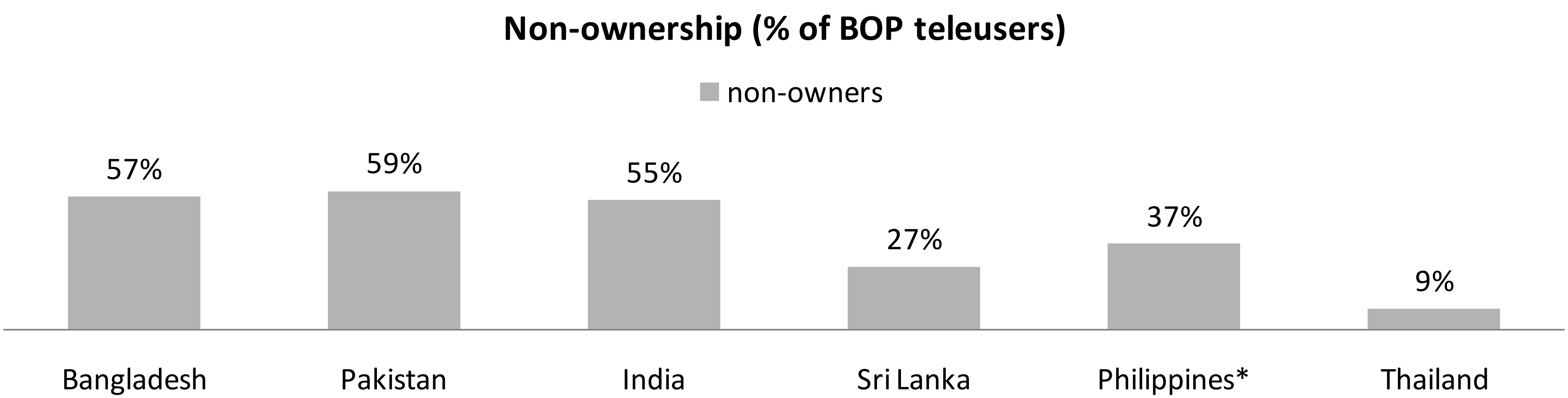
55% of Indian BOP teleusers don't own a phone

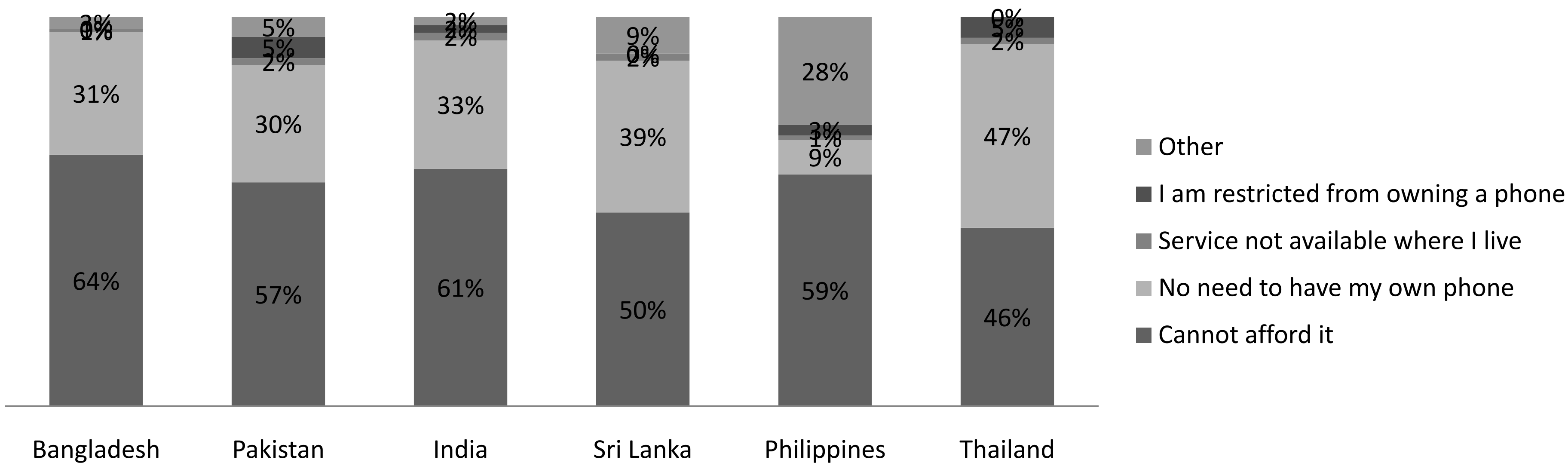


- 76% of these non-owners can reach a phone in under 5 minutes

Among all BOP teleusers

Main reasons for not owning are affordability and the lack of a need

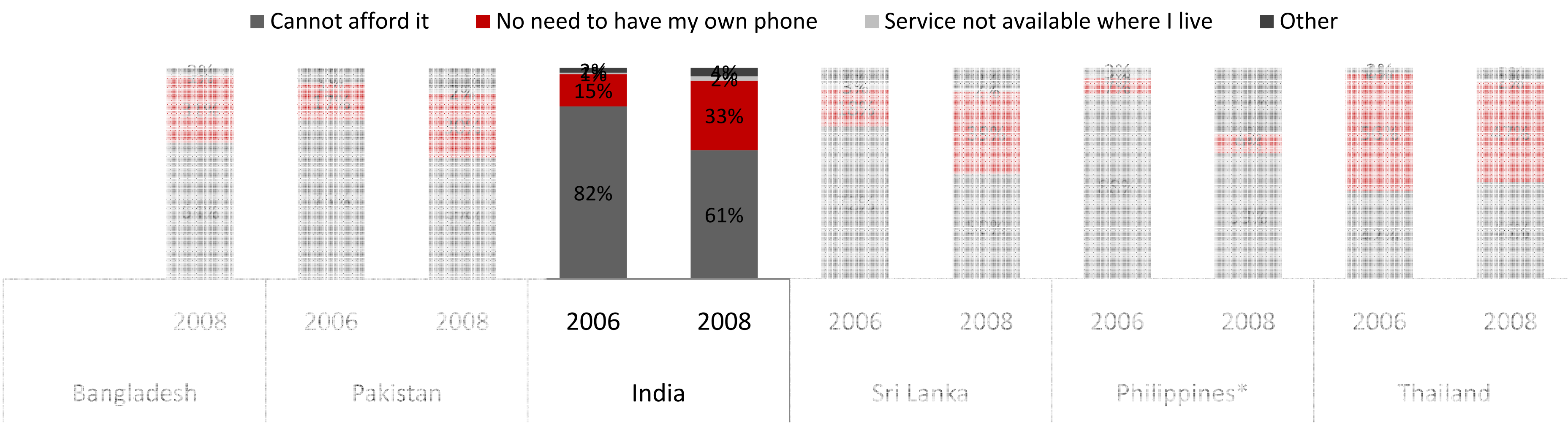
Primary reason for not owning a phone (% of BOP non-owner teleusers)



- Just 2% say that service is not available where they live

Larger share of non-owners say they don't need a phone in 2008, compared to 2006

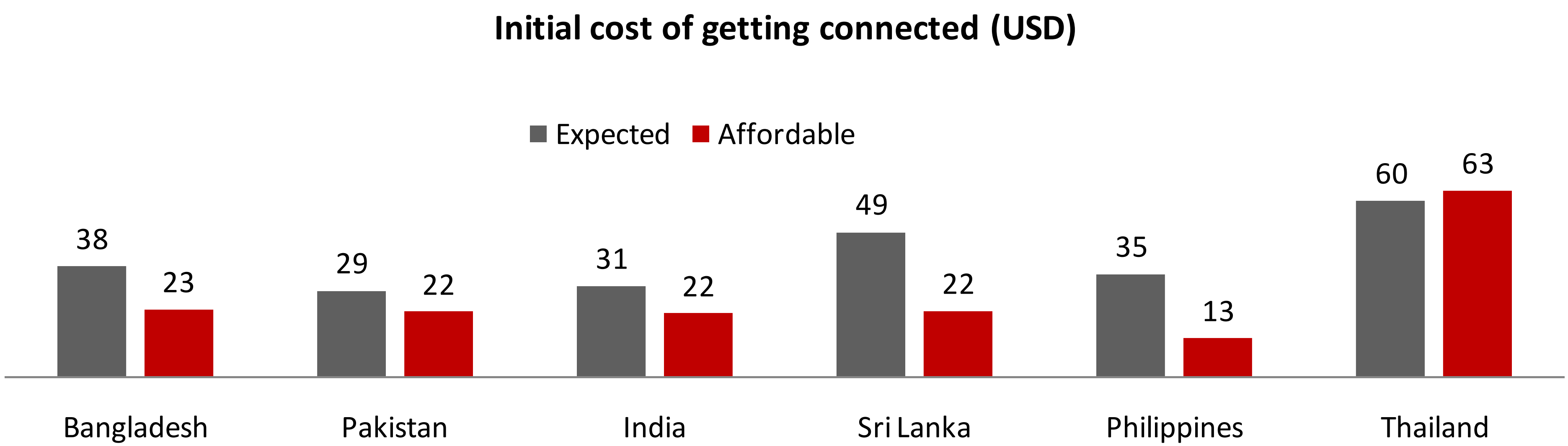
Key reason for not owning a phone (% of BOP non-owners)



- Approaching top of the "S" curve

Among BOP non-owner teleusers

Indian BOP can afford USD22 to get connected, but think that it will actually cost them USD31



- Once connected they can afford to spend USD1.90 per month on communication costs, while think it will actually cost them USD2.70

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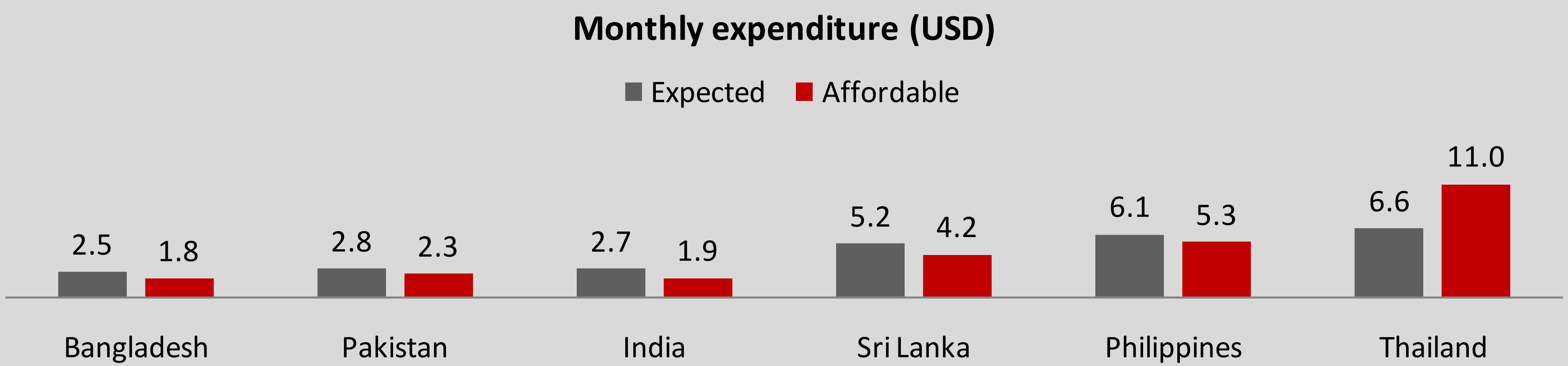
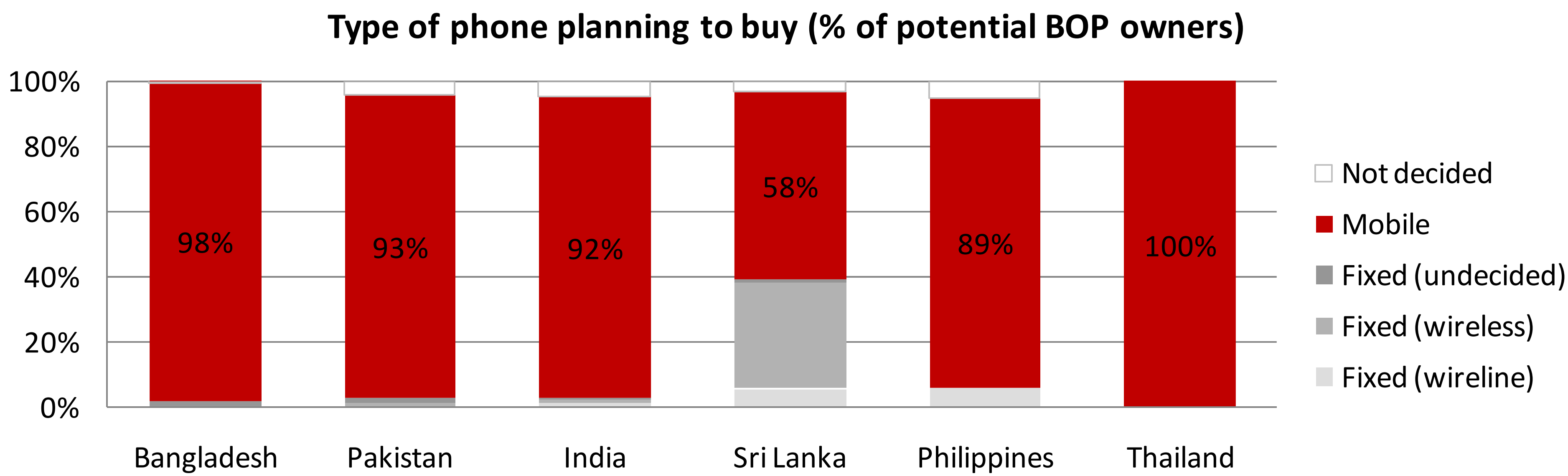
Among BOP non-owner teleusers



Among BOP non-owner teleusers

28% of the current unconnected BOP in India plan to get connected; 92% of them plan to get mobiles



- Same picture in rural India

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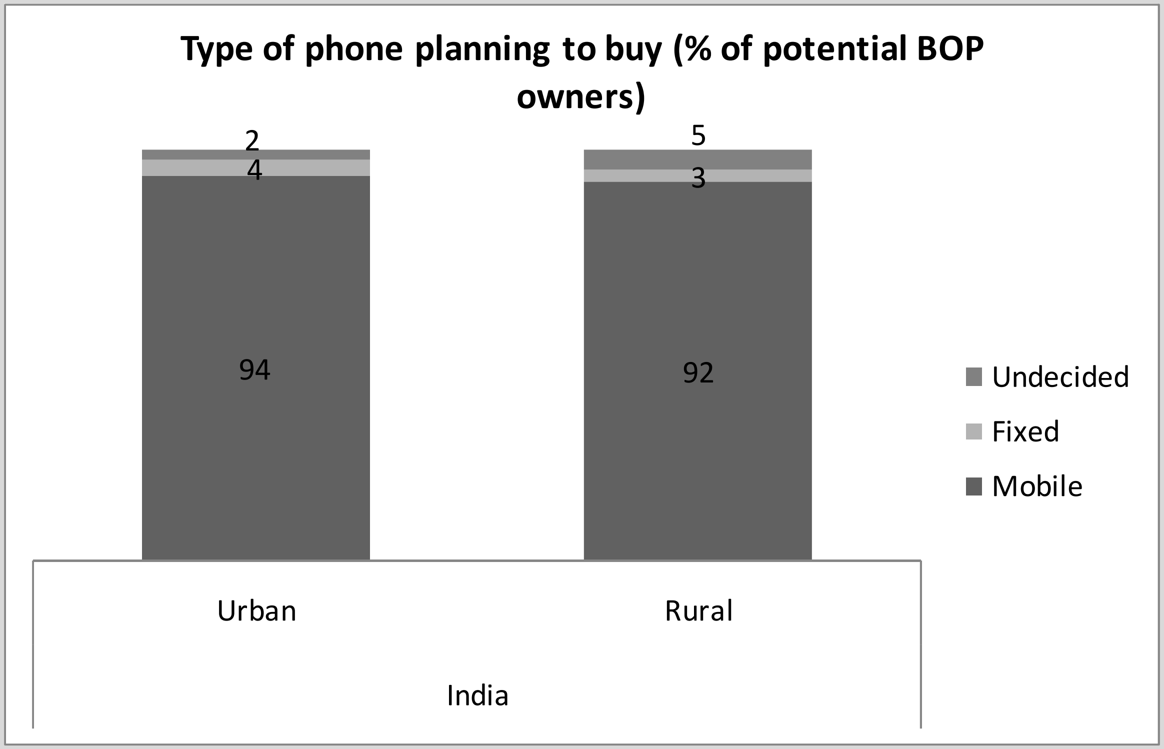
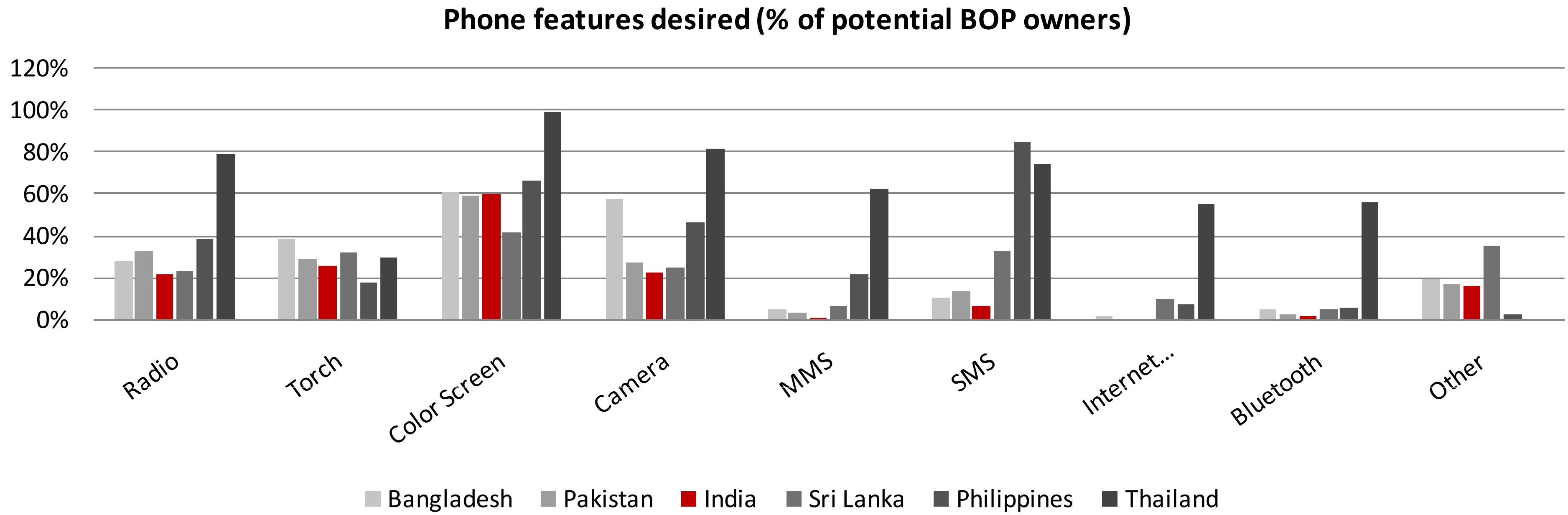
Among BOP non-owner teleusers planning to get connected



Among BOP non-owner teleusers planning to get connected

Color screen, torch, radio and camera are the most sought after phone features



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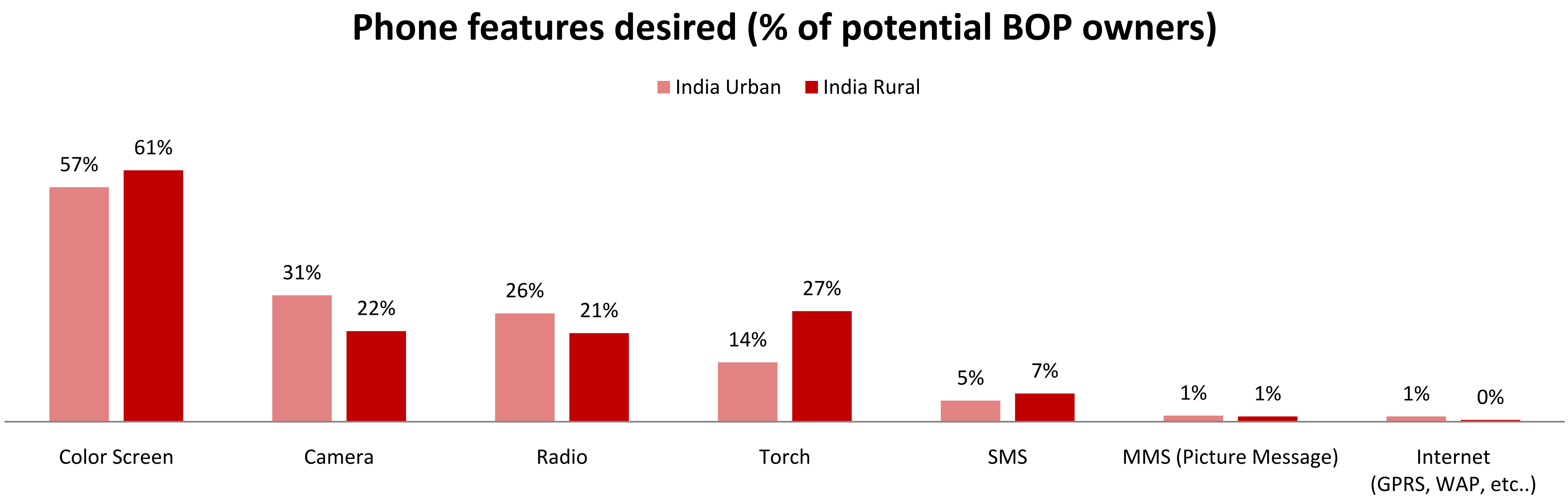
Among BOP non-owner teleusers planning to get connected

Color screen and torch more sought after in rural Indian BOP



Among BOP non-owner teleusers planning to get connected

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