

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



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

Telease 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

- 9,950 face-to-face interviews
 - 1 week usage patterns via diary method (50% of sample)
- Sep-Oct 2008

Qualitative

- 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 teleusers at “bottom of the pyramid”
 - SEC groups C** + D + E*
 - “internal” and “external” migrants that send money home

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
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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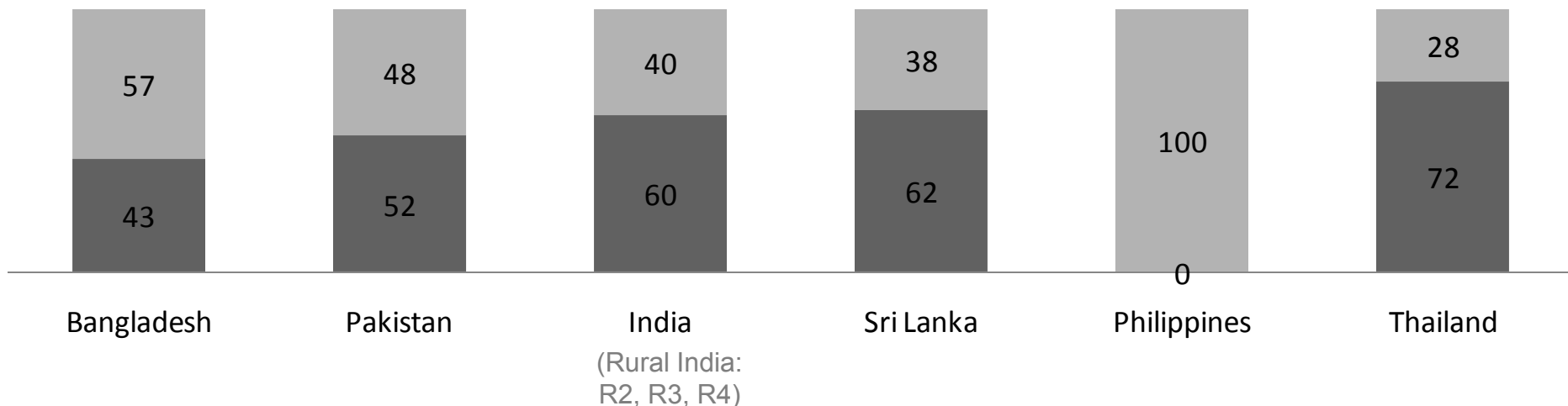
THE UNCONNECTED?

Representing **429 million** in India

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

Socioeconomic group classification (% of sample)

■ SECD ■ SECE

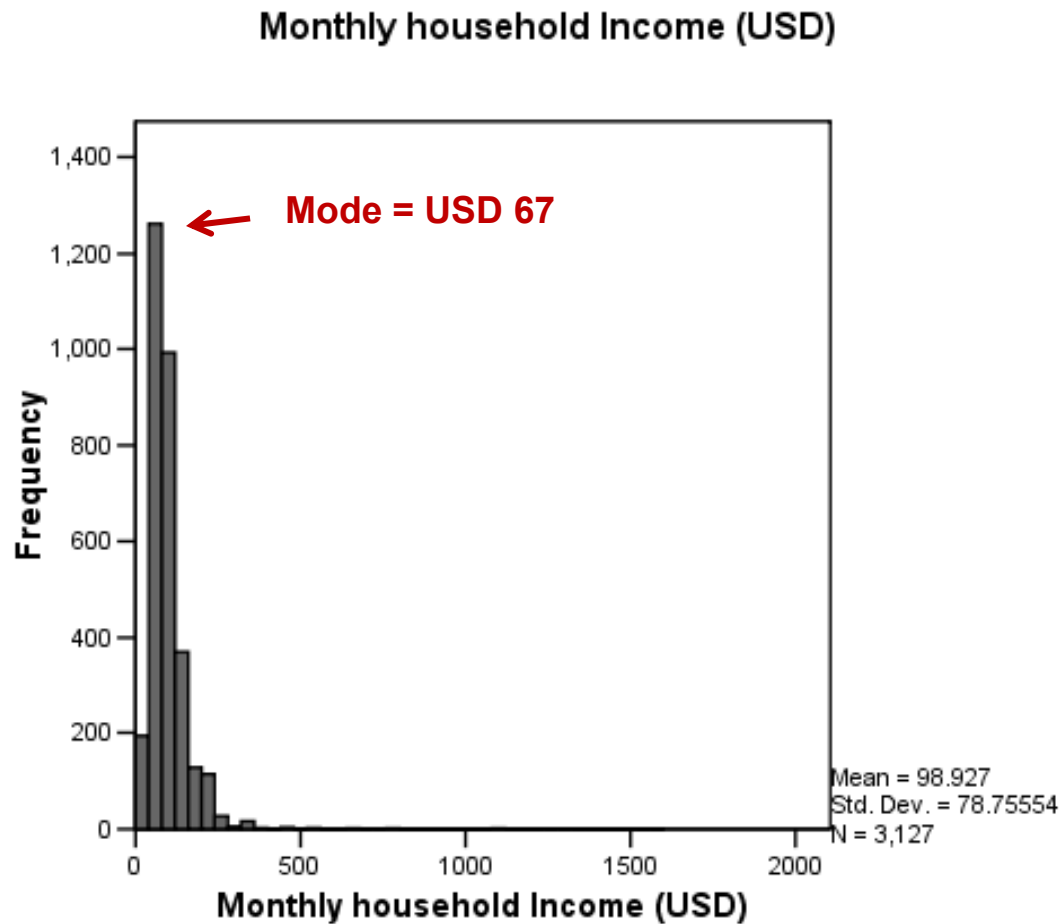


Link between SEC D+E and "\$2 per day" definition

Actual population proportions

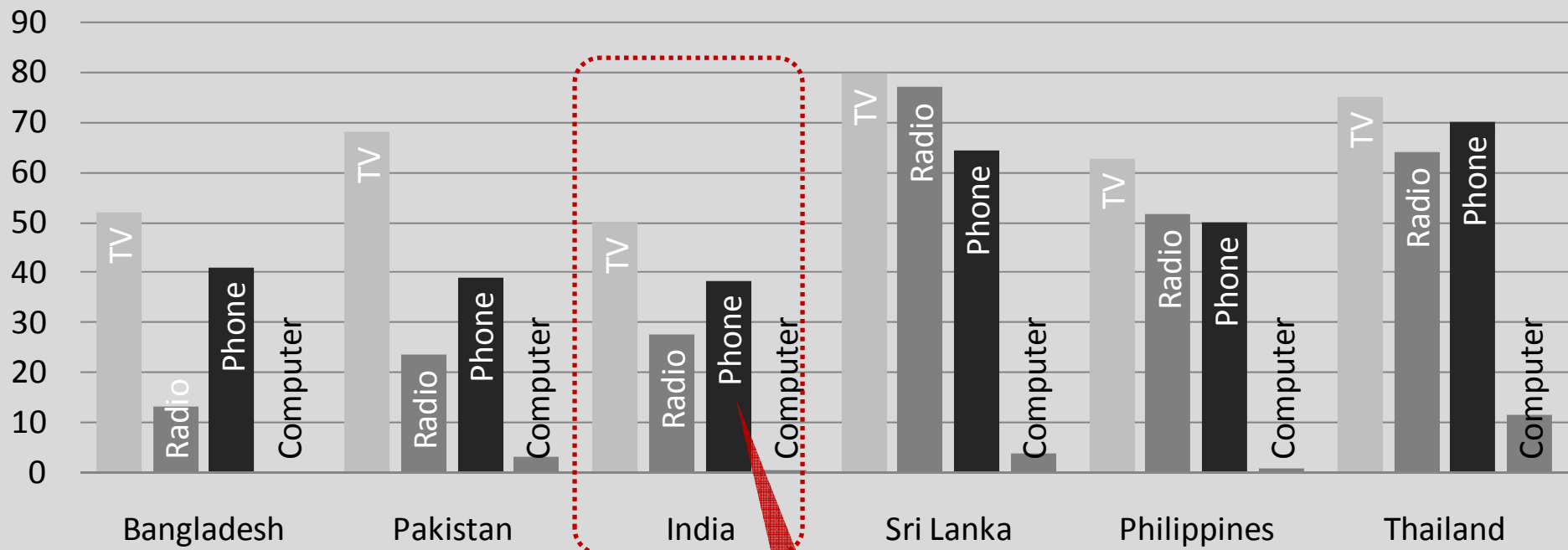
	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
SEC D+E (% of population)	73	59	69	44	38 [SEC E]	33
Less than \$2 per day (% of population)	78	85	86	45	40	28

Most Indian BOP households earn USD67 per month



Phones have overtaken radios at the BOP

Household access to communication technologies (% of BOP households)

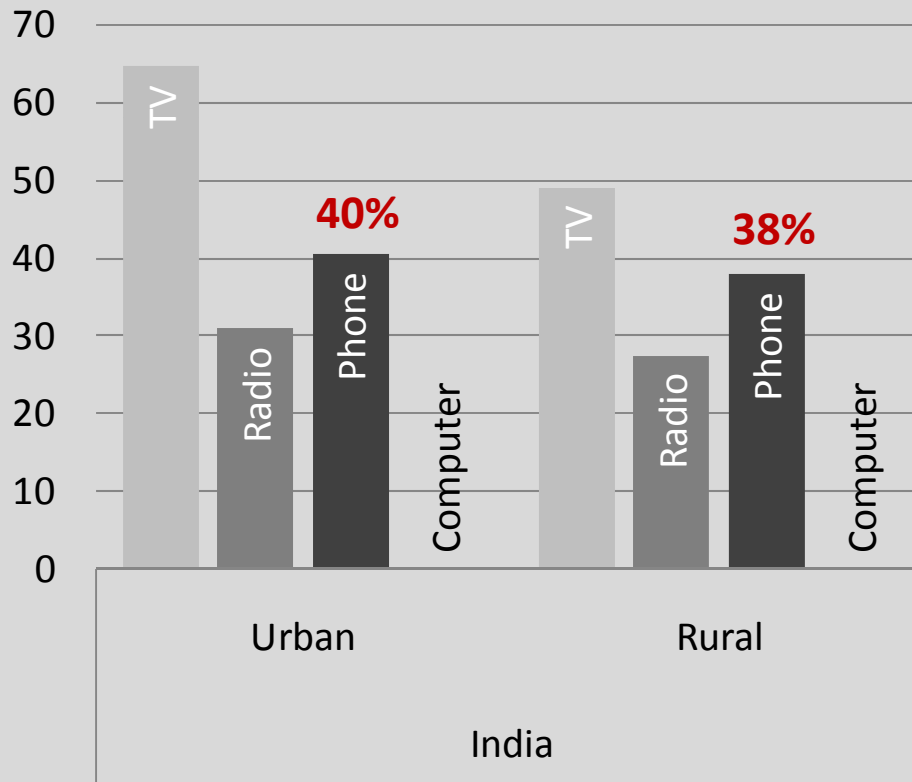


Mobile or fixed phone

Internal use

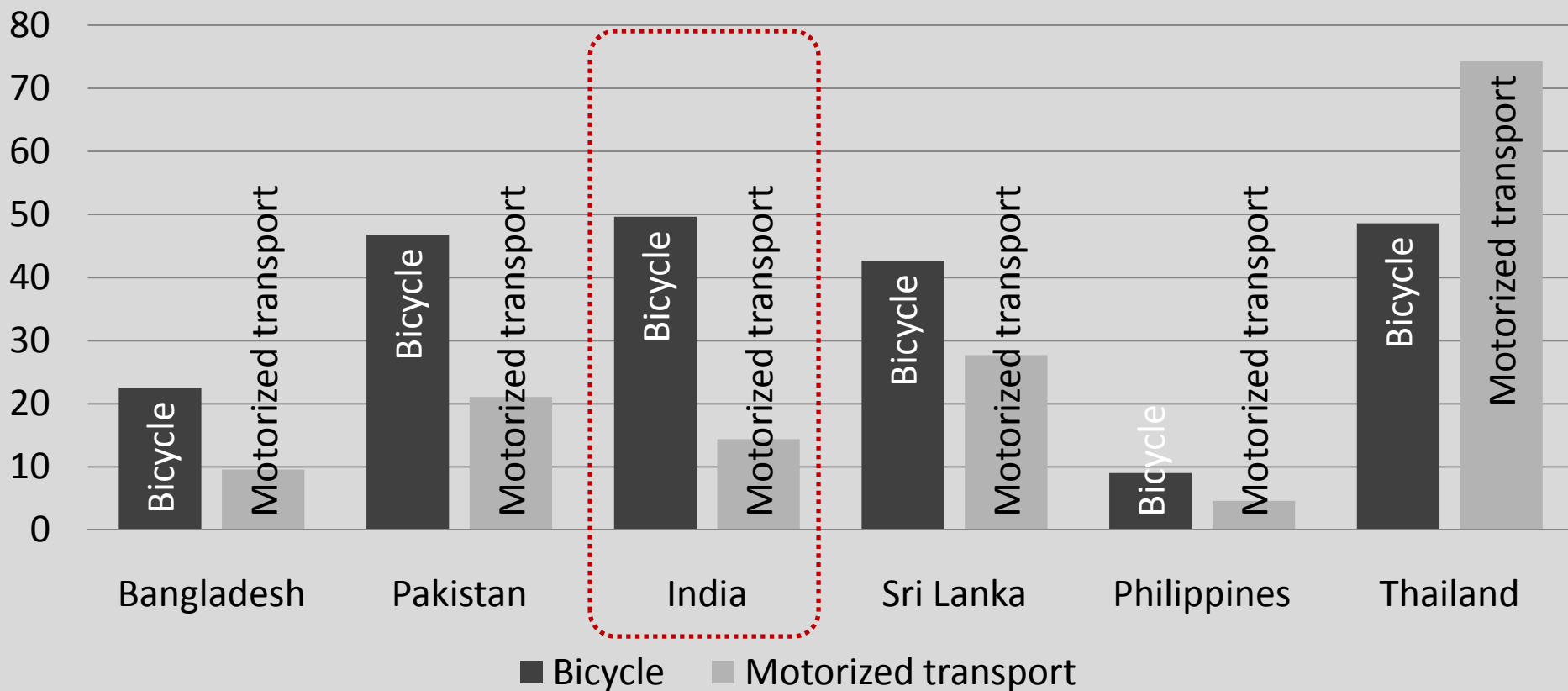
Among BOP

Household access to communication technologies (% of BOP households)



Access to transport

Household access to transport (% of BOP households)



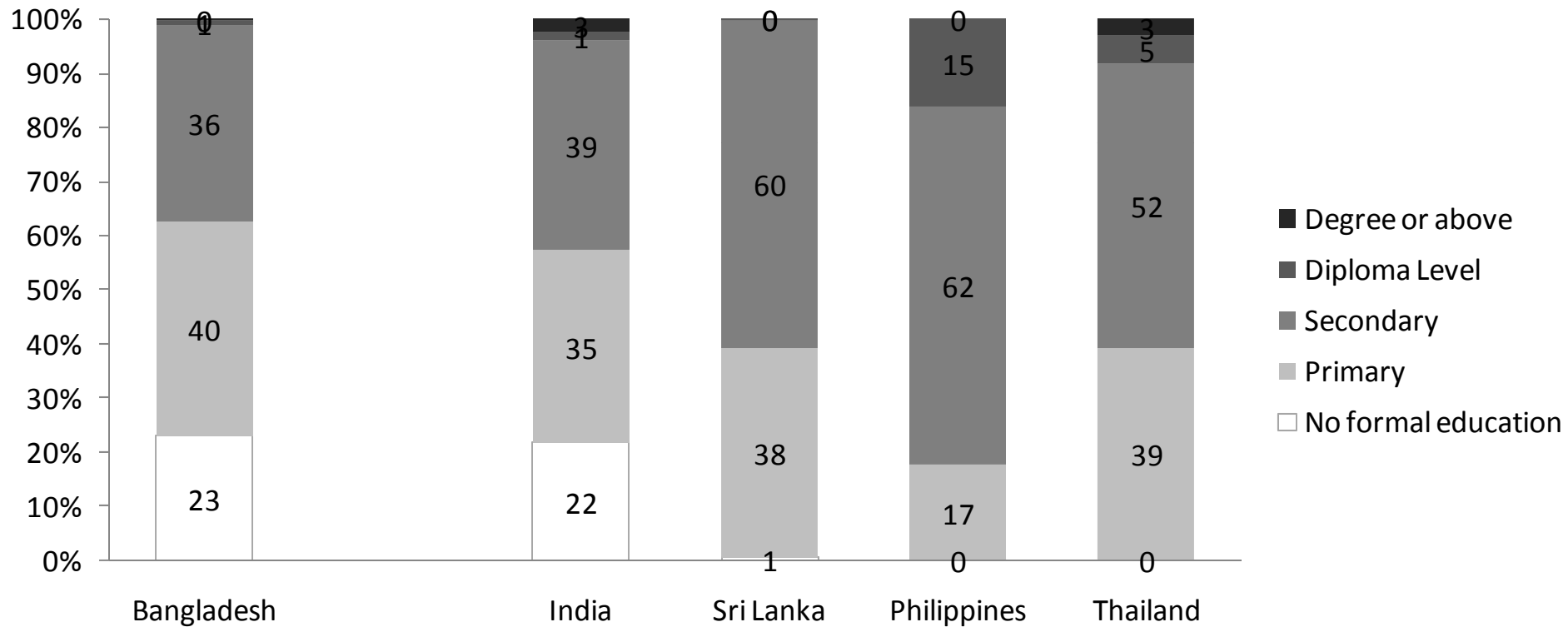
35% of Indian BOP teleusers' households have access to a "bank account" (broadly defined)

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

	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
Bank account	29%	11%	35%	82%	10%	65%
Credit card	3%	2%	3%	9%	1%	8%

Educational attainment does not exceed primary or secondary education

Educational attainment (% of BOP teleusers)



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Recent use of the phone to make/receive calls

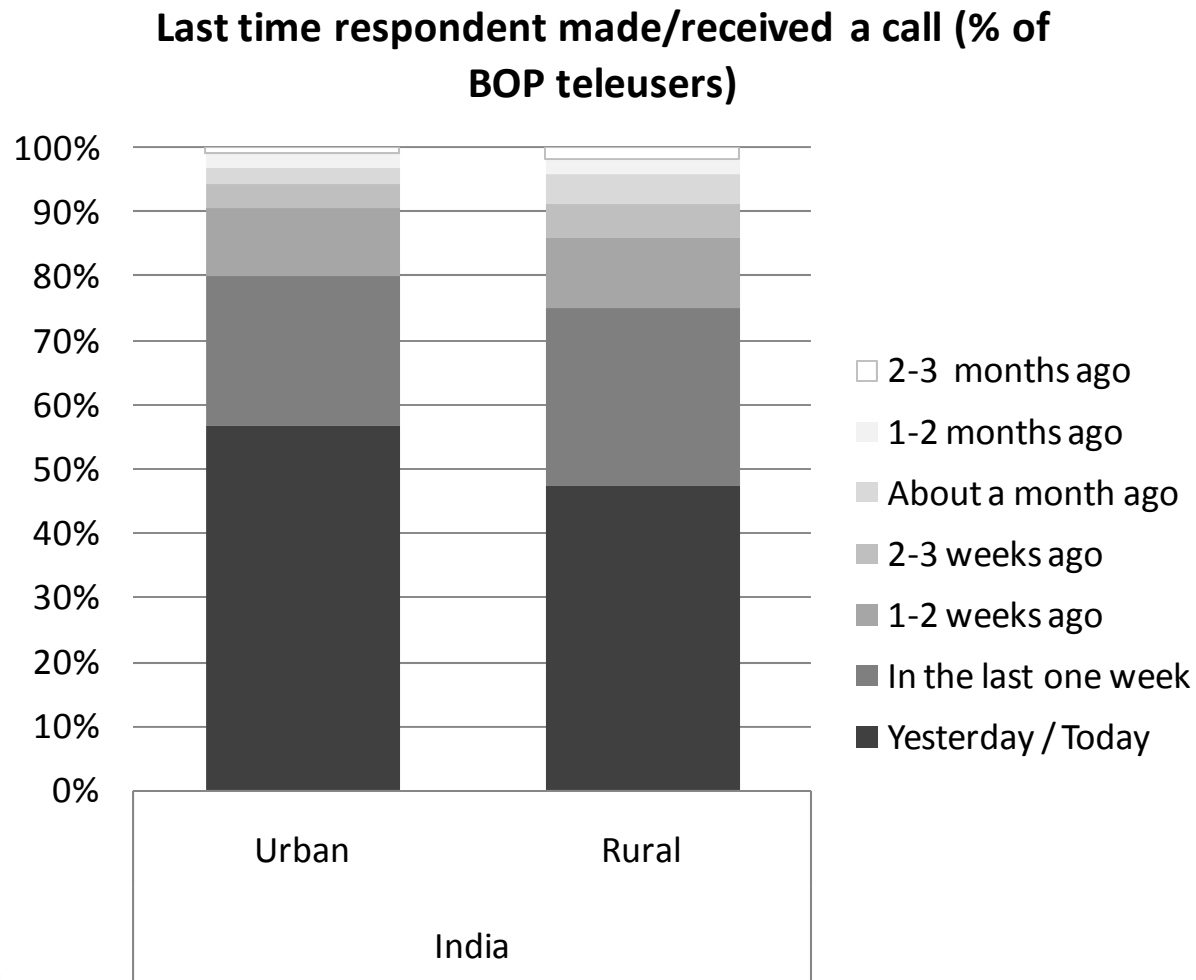
Used a phone in the last 3 months

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

Used a phone in the last week

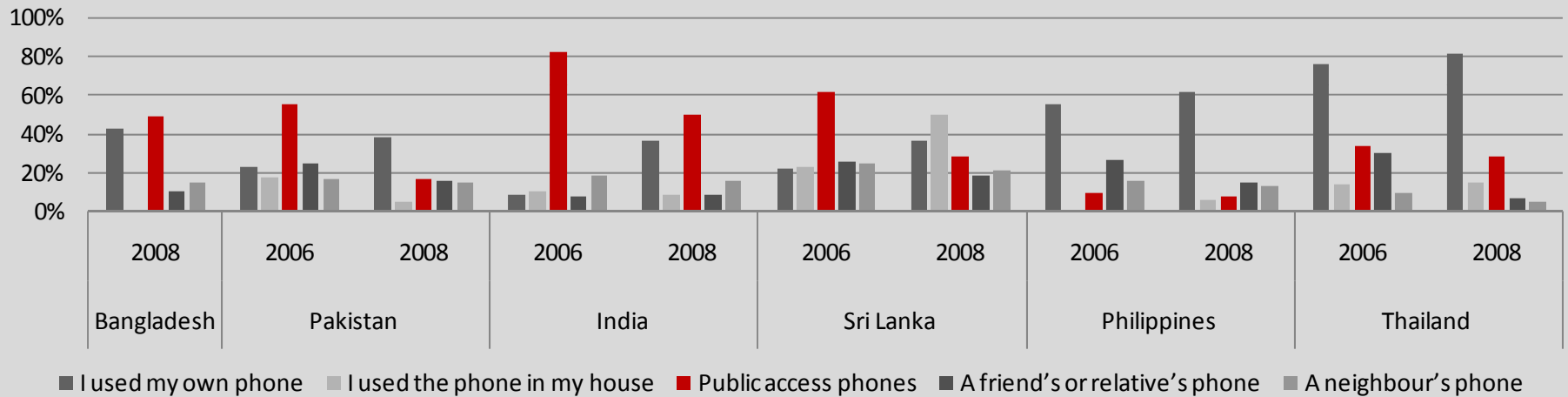
	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
% of BOP (outer sample)	82%	66%	65%	77%	38%	72%

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



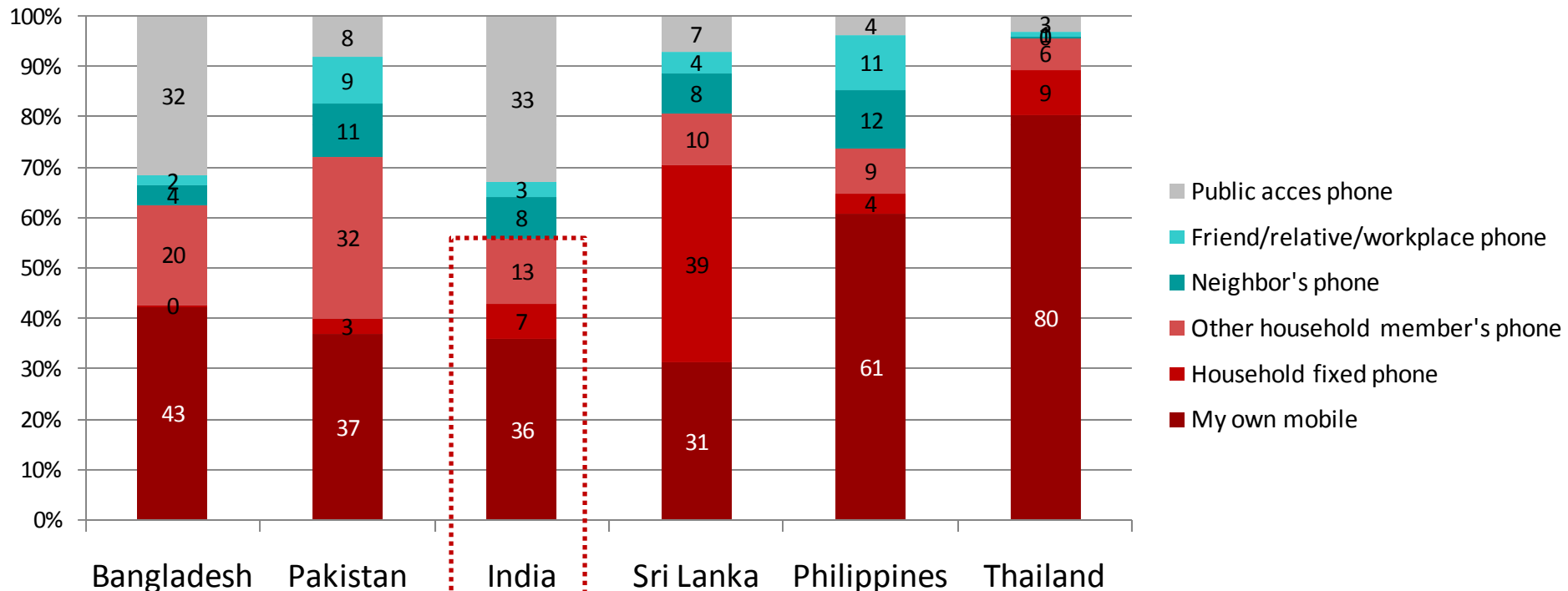
All modes: Public access has fallen since 2006

Modes of telecom used (% of BOP teleusers)



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

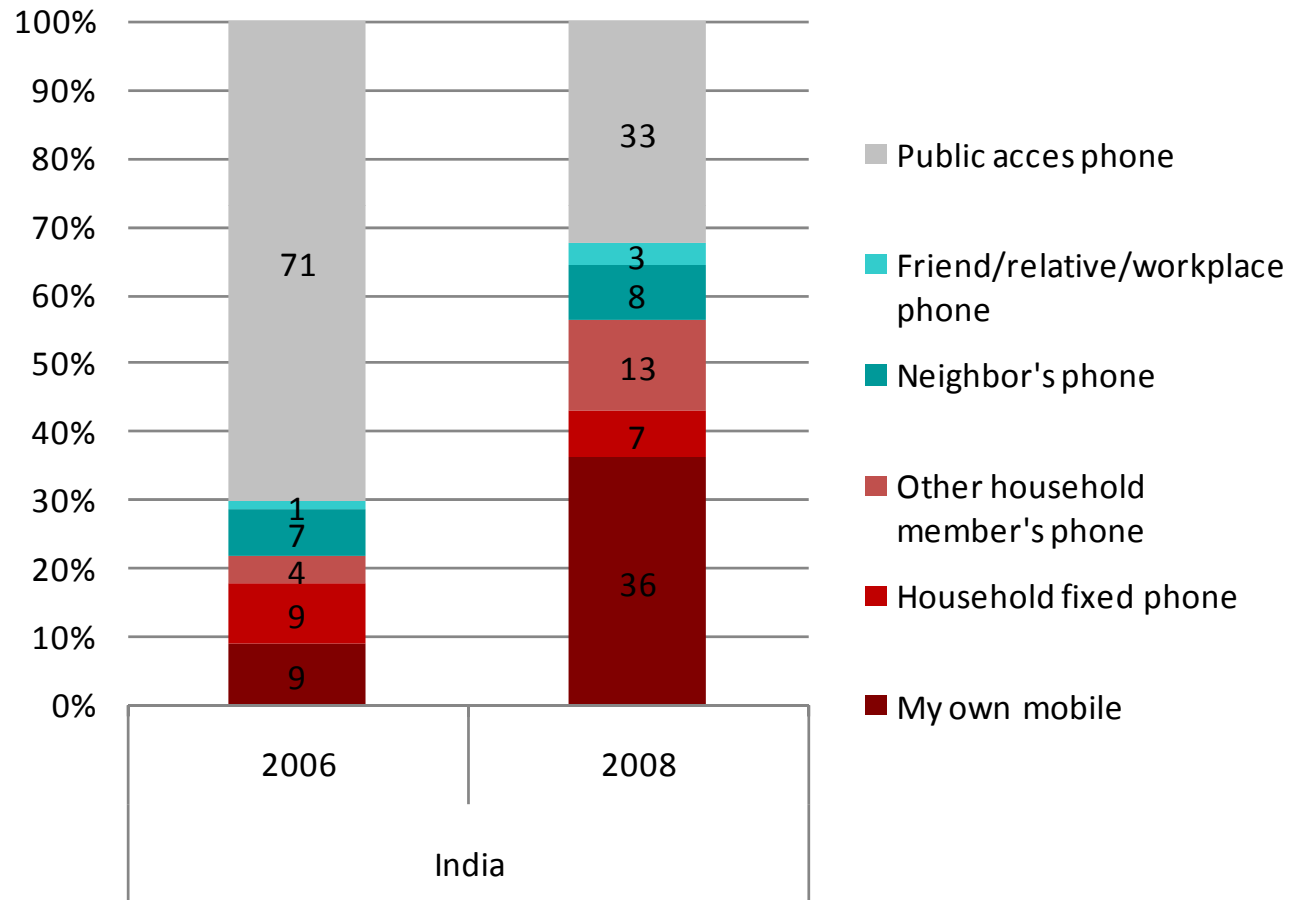
Most frequently used phone (% of BOP teleusers)



Access within the household

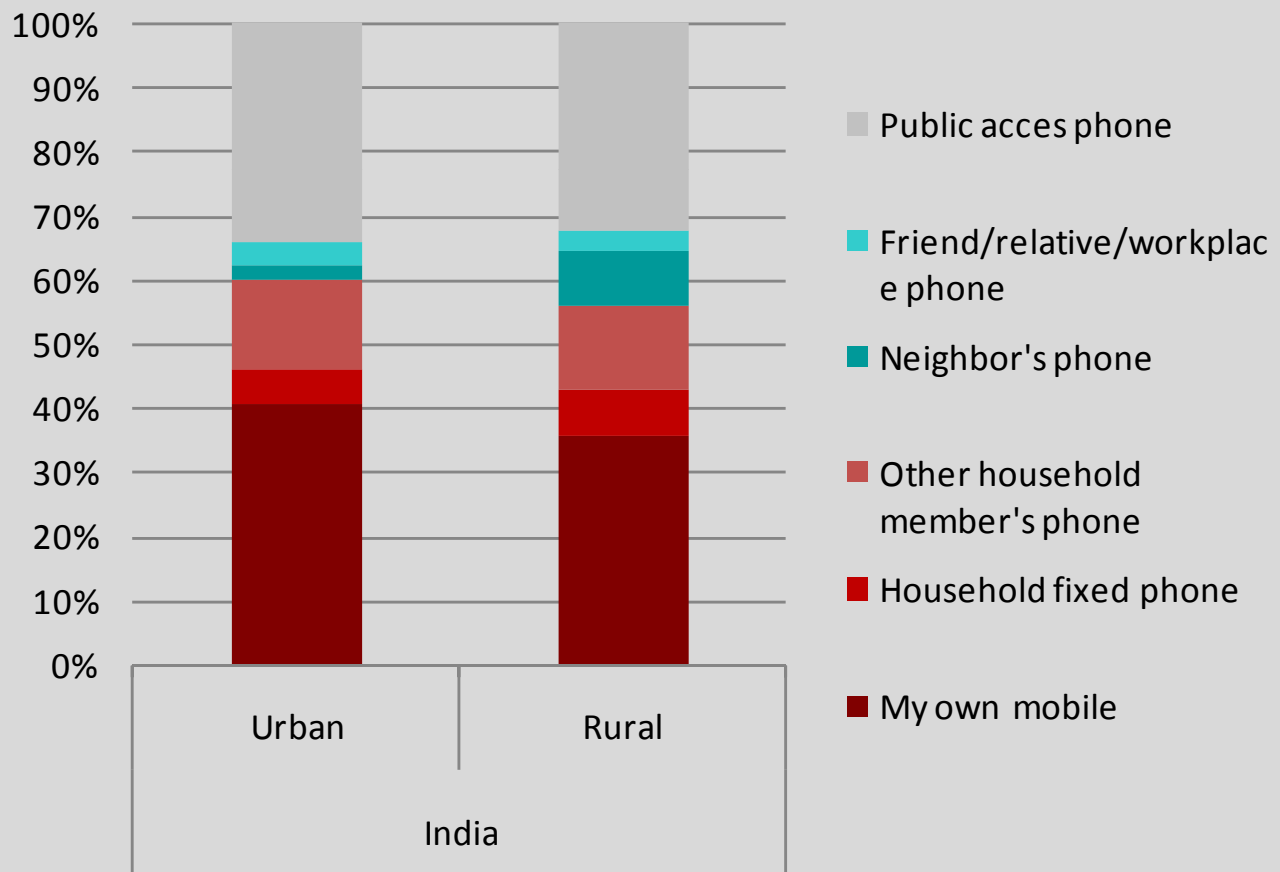
BOP public access use fallen by 38% since 2006

Most frequently used phone (% of BOP teleusers)



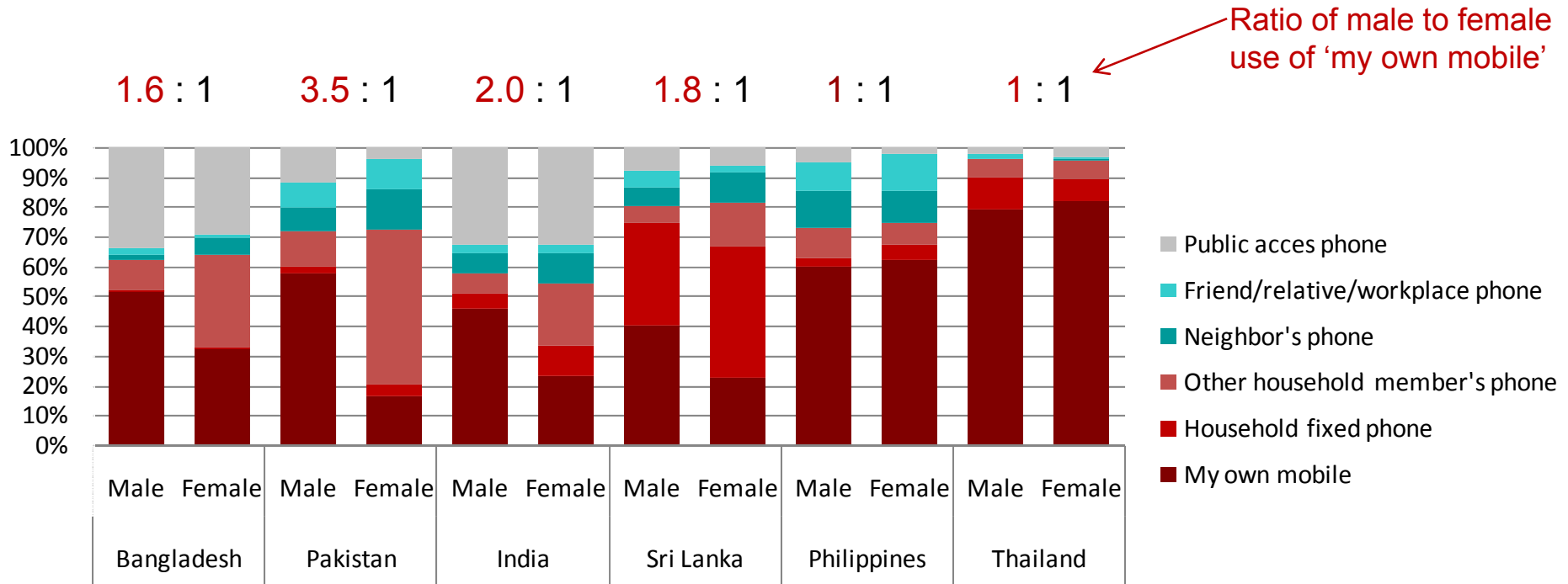
Not much difference in rural India

Most frequently used phone (% of BOP teleusers)



Indian women use public phones as much as men

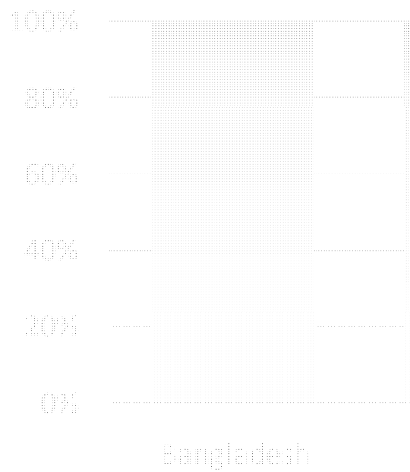
Most frequently used phone (% of BOP teleusers)



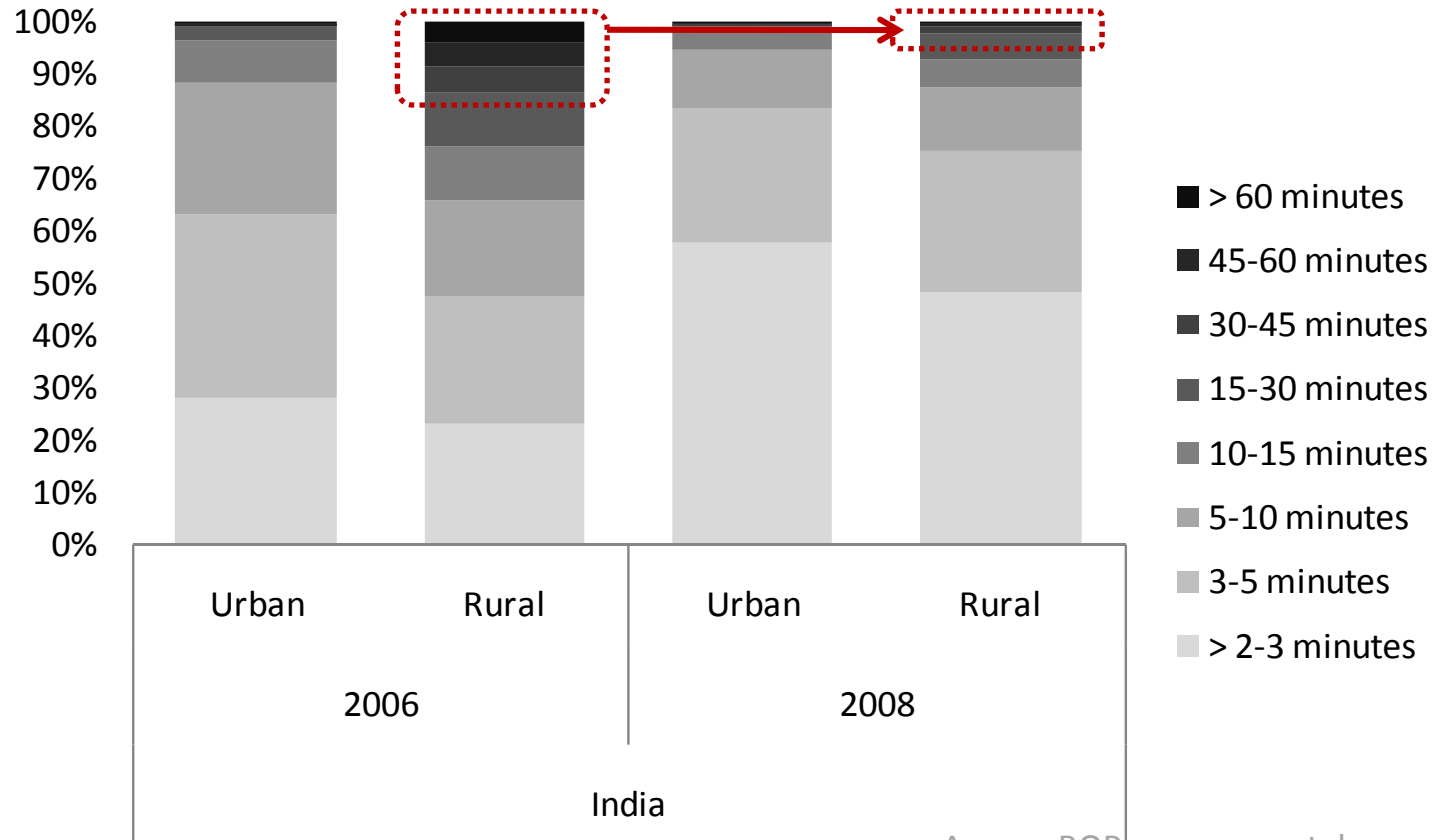
- Women less likely to use their own mobile or public phones; more likely to use other peoples' phones

76% can get to a phone in under 5 minutes

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



Time to reach nearest phone (% of BOP nonowner teleusers)



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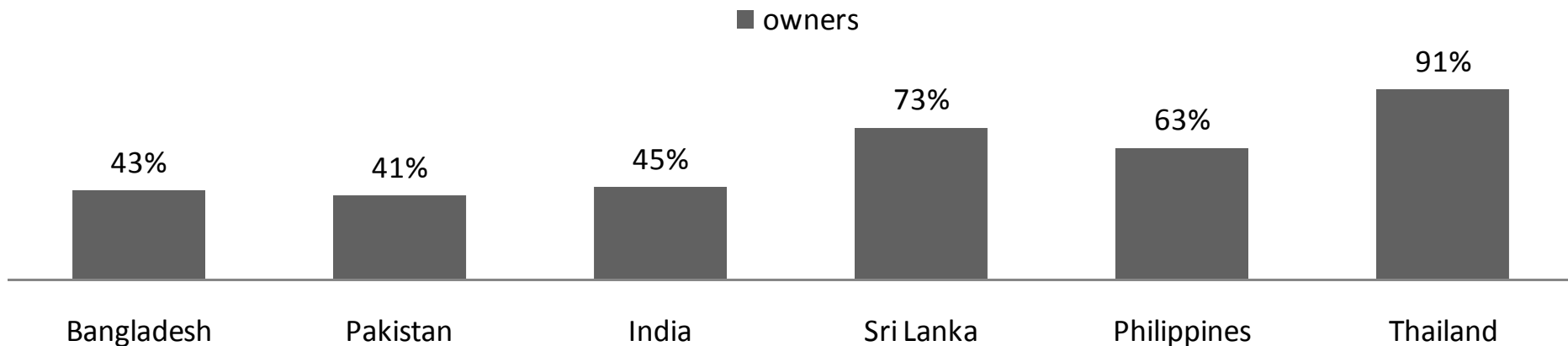
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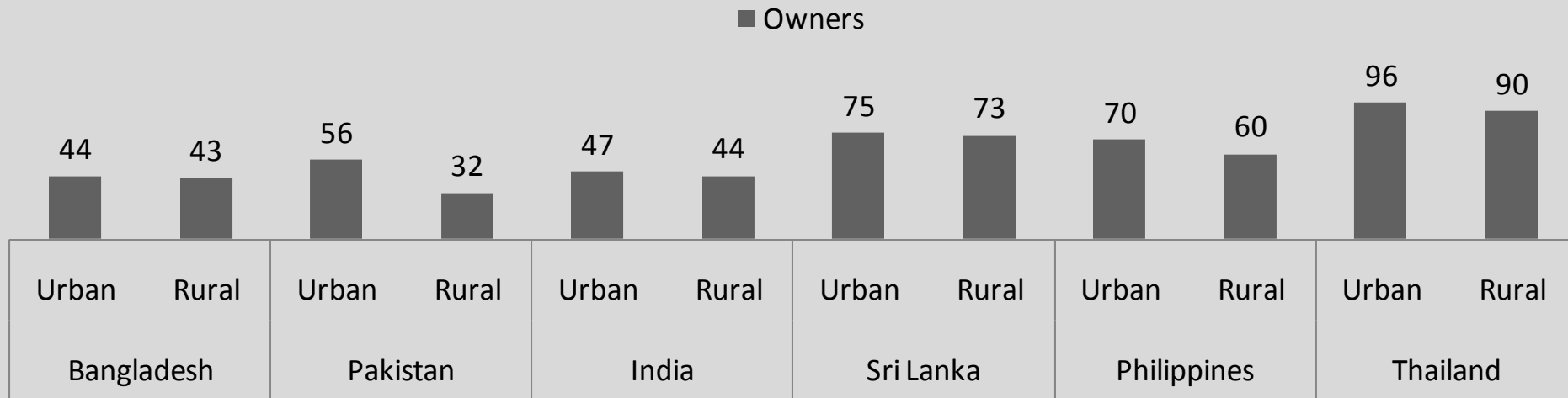
India ahead of Bangladesh and Pakistan in **total BOP phone ownership** (mobile + fixed)

Total phone ownership (% of BOP teleusers)



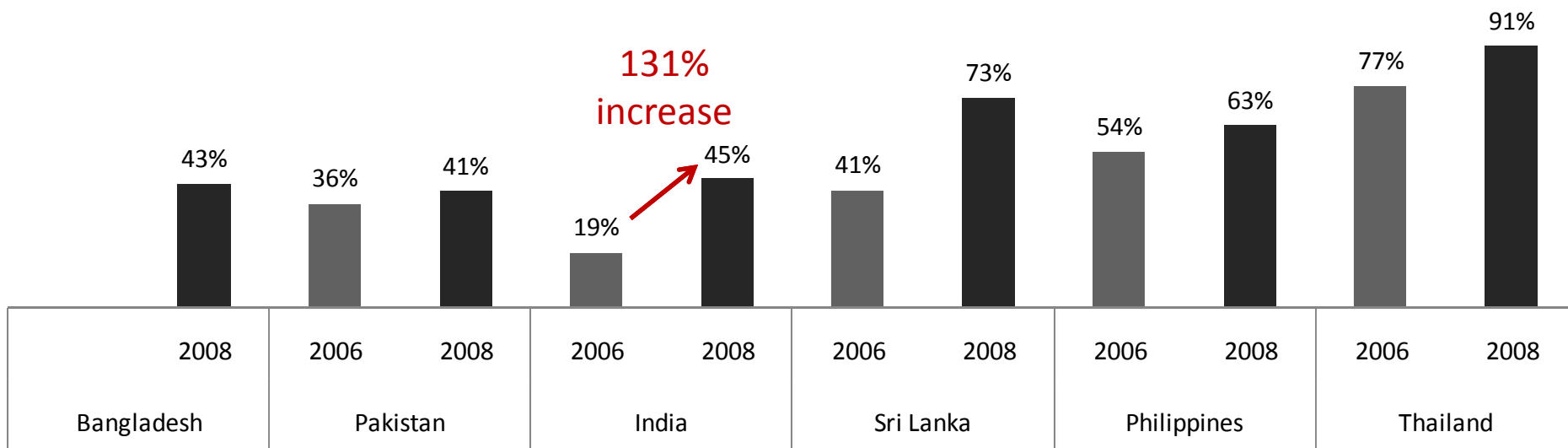
Extent of phone ownership (either own mobile or household fixed)

Phone ownership - fixed or mobile (% of BOP teleusers)



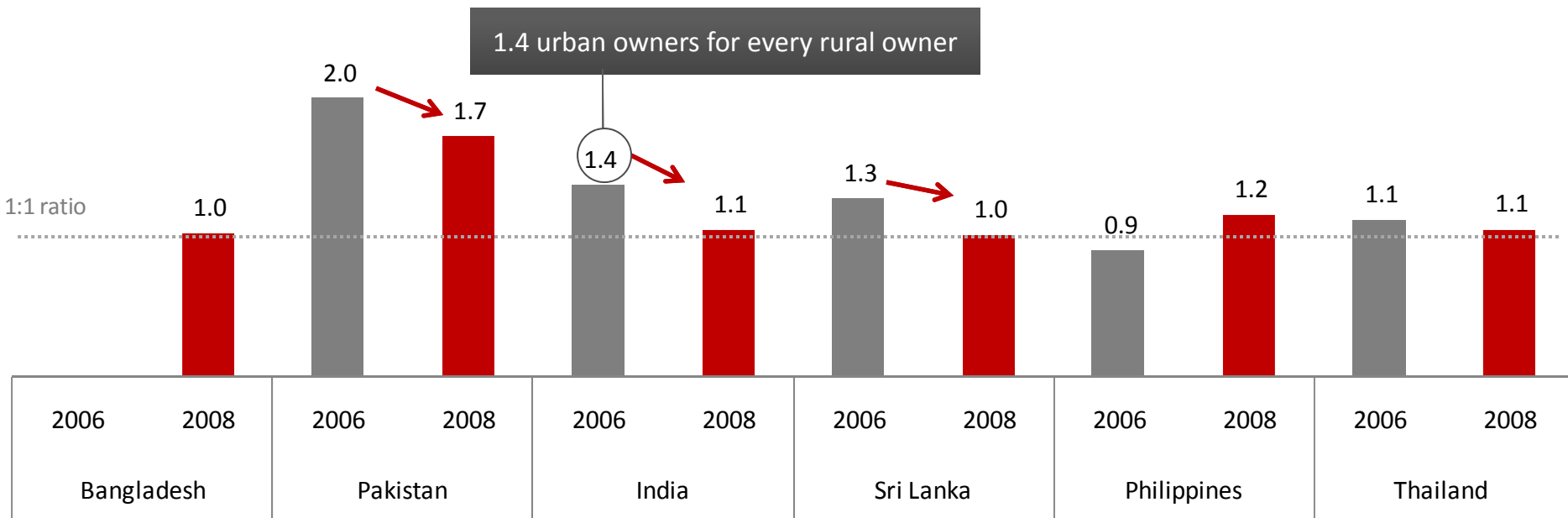
Largest % growth in Indian total BOP phone ownership

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

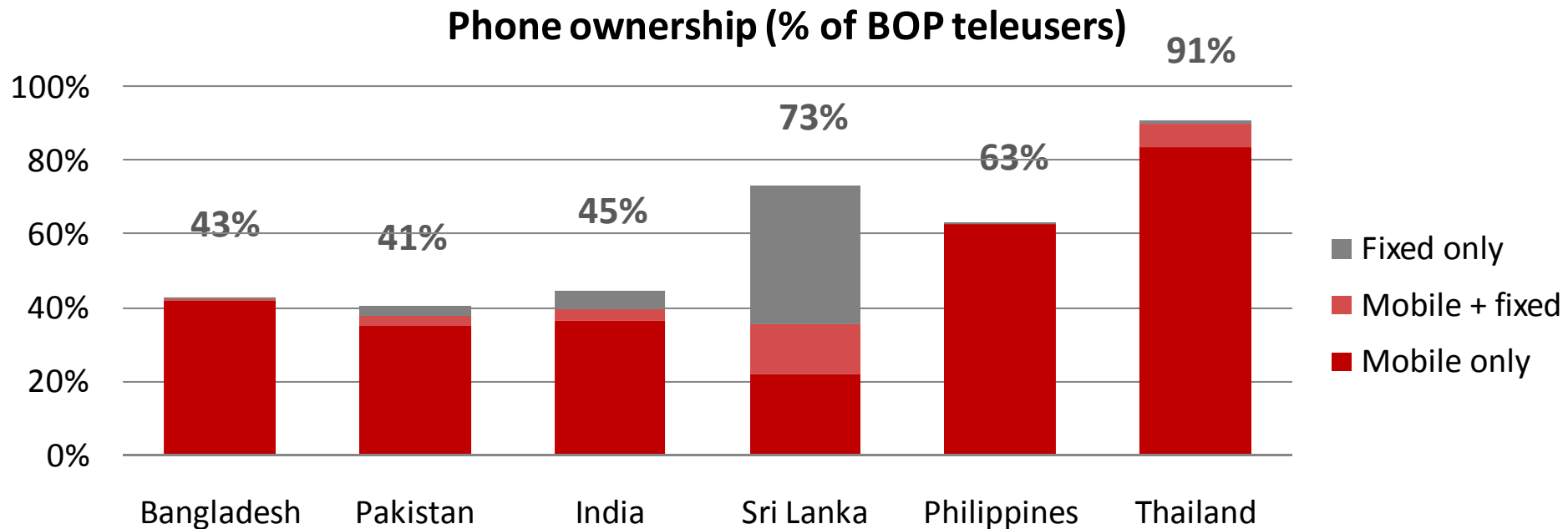


Urban-rural divide in total BOP phone ownership **declining**

Urban-rural divide in phone ownership (urban:rural)



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



Type of phone owned (% of BOP teleusers)

Total: 47%

Total: 44%



Probability 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~1	.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

Probability 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

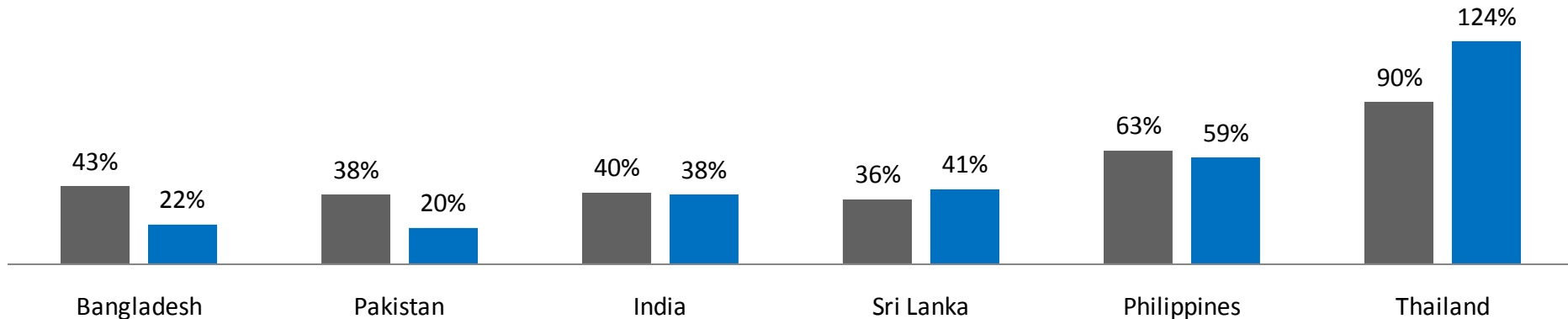
T@BOP 2008 vs ITU 2007

demand side

supply-side

Mobile owners per 100 persons

■ BOP (T@BOP3, 2008) ■ National (ITU, 2007)



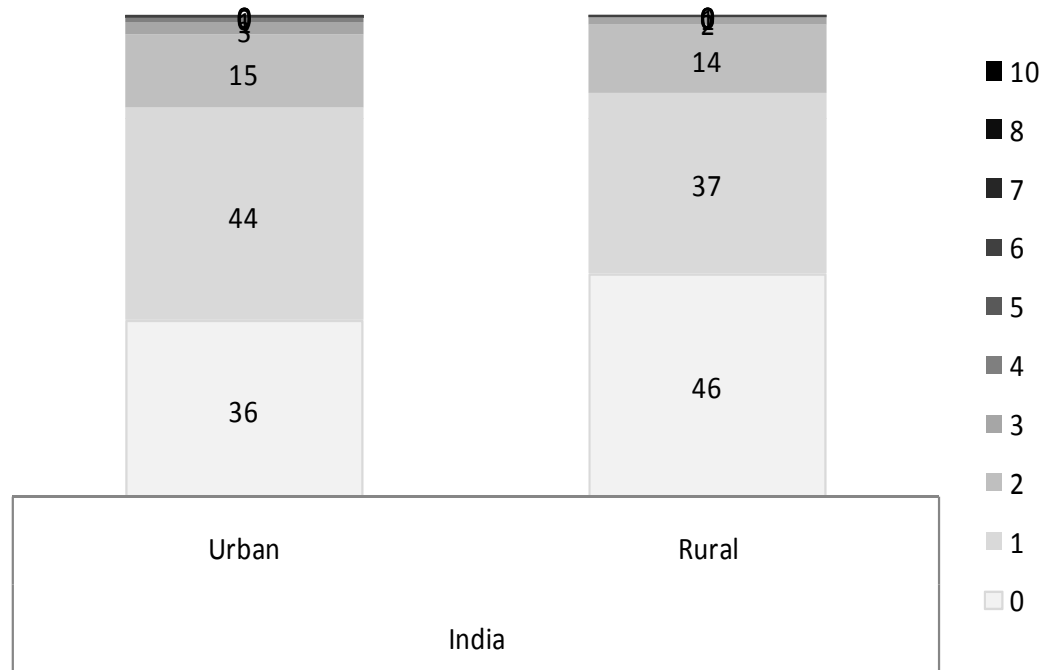
- BOP has caught up with entire nation within 1 year?
 - Maybe, but national numbers contain some doubles (multiple SIMs)

9% own more than one (active) SIM

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

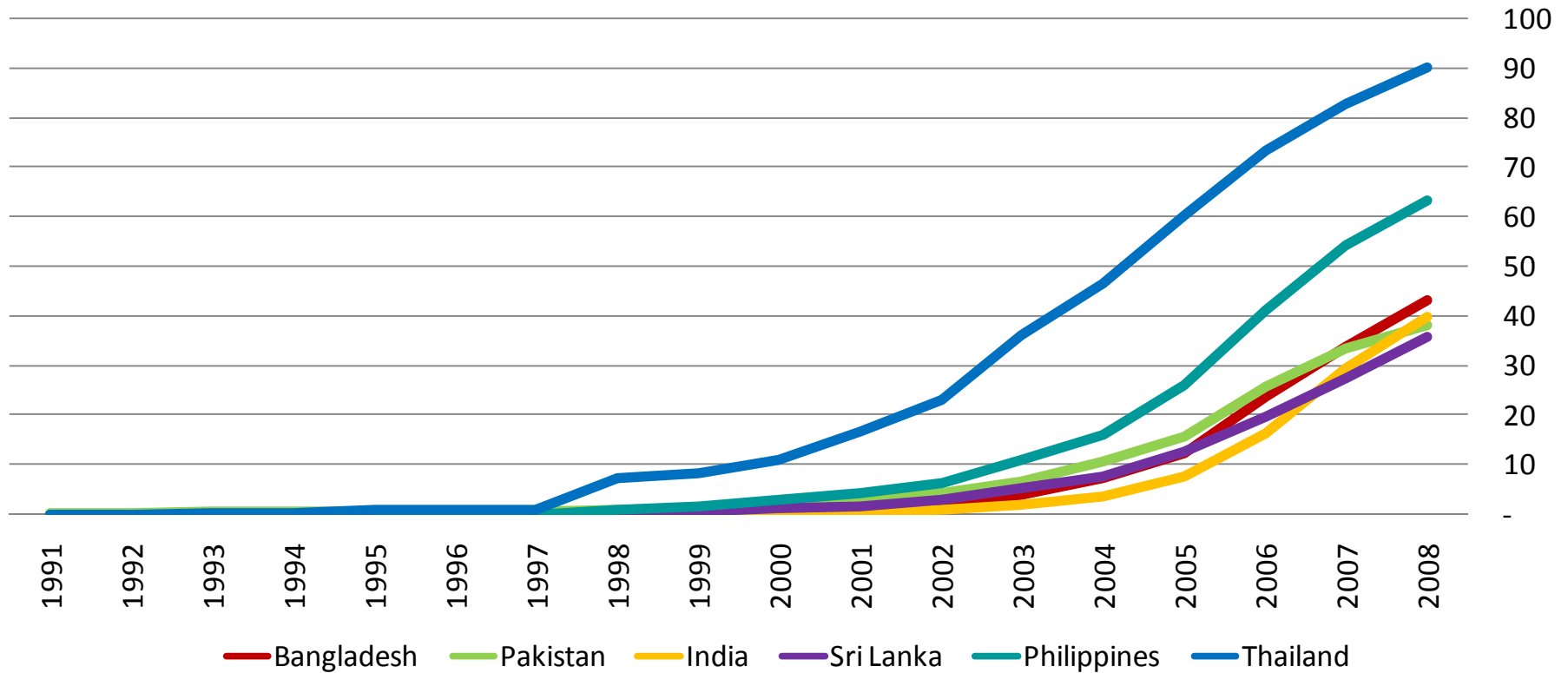
16% of Indian BOP teleusers have more than 1 mobile in their households

Number of mobiles in respondent's household (% of BOP teleusers)



Indian BOP picking up

Growth in mobile ownership (% of BOP teleusers)



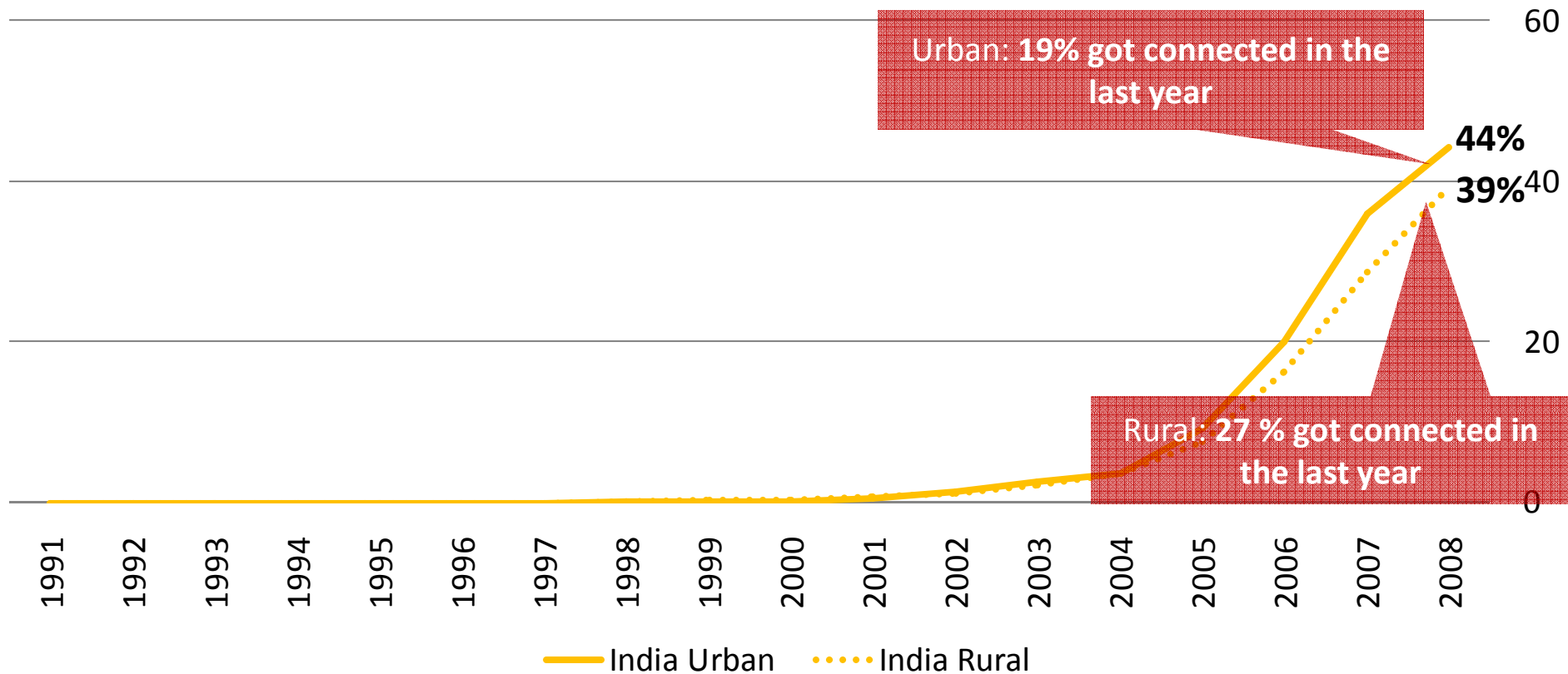
	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
Got connected in the last year (% of BOP mobile owners)	22	13	26	23	14	8

Internal use only

Among BOP teleusers

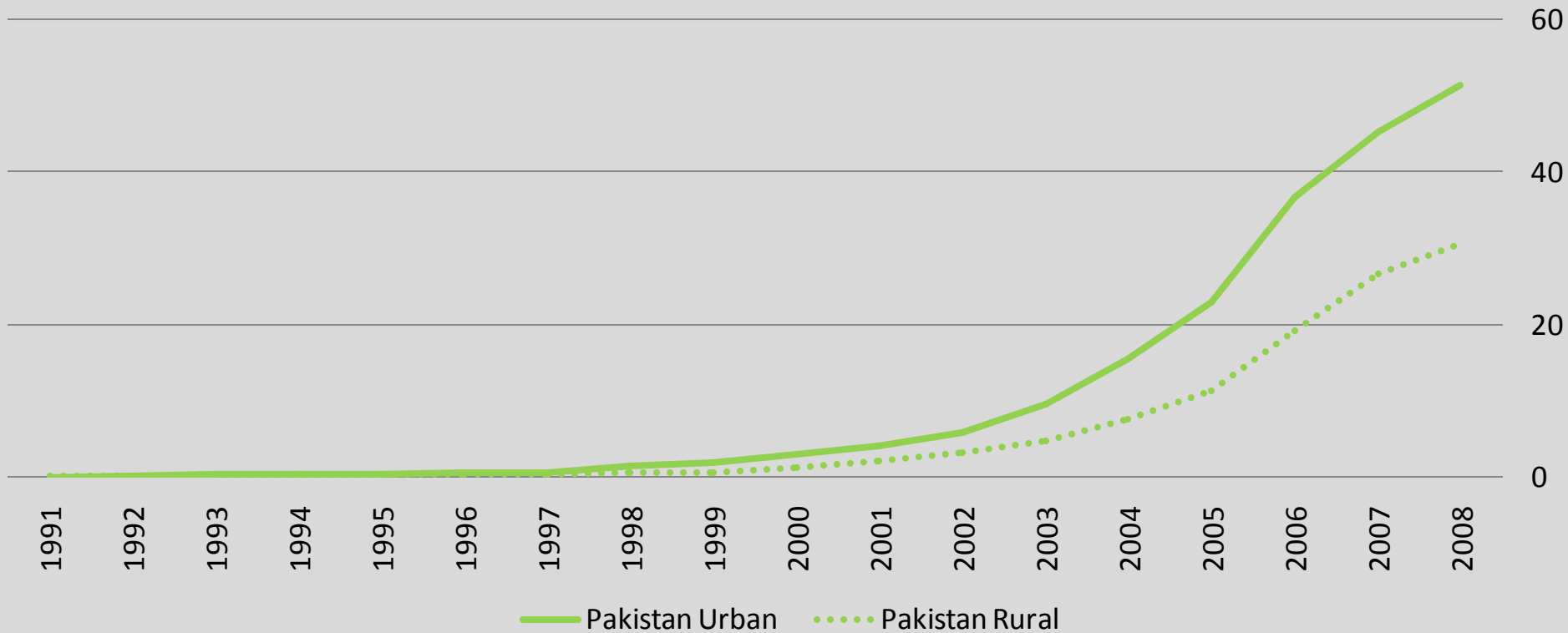
Rural Indian BOP has **grown more than urban** in **last year**, but still behind

Growth in urban and rural mobile ownership (% of BOP)



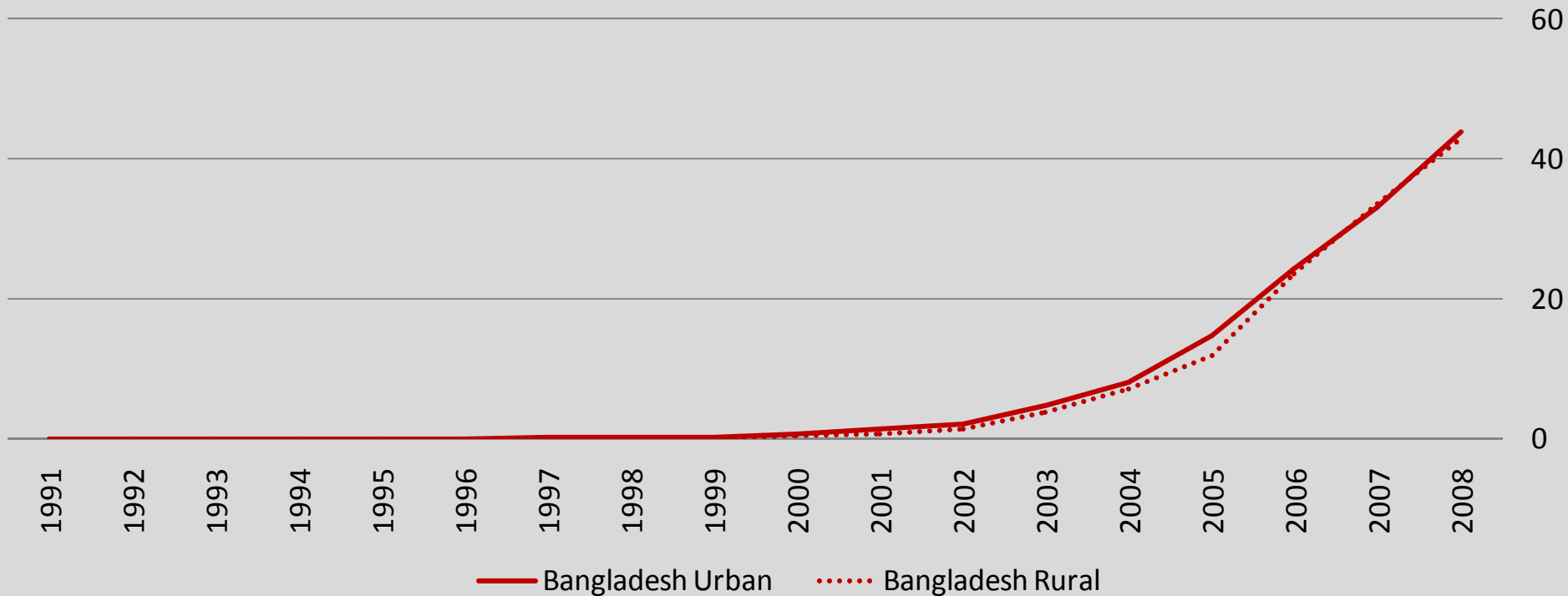
Better than Pakistan

Growth in urban and rural mobile ownership (% of BOP)



But not Bangladesh

Growth in urban and rural mobile ownership (% of BOP)



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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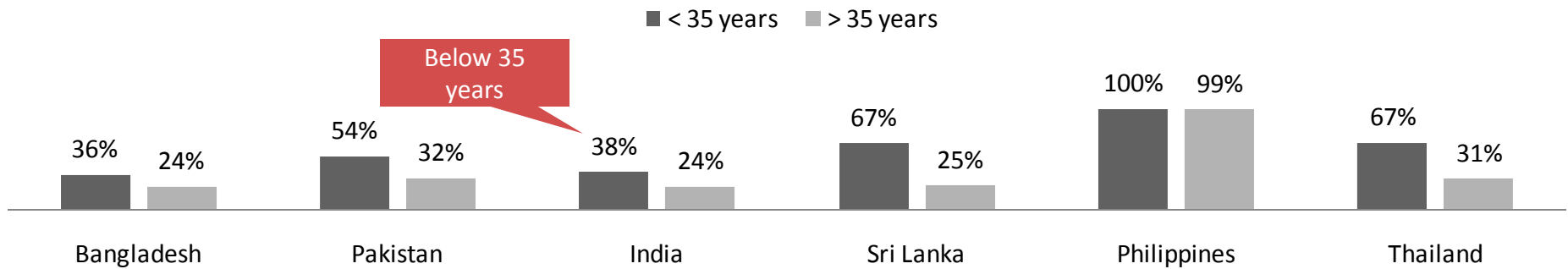
Mostly calls, SMS, missed calls, balance checking

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

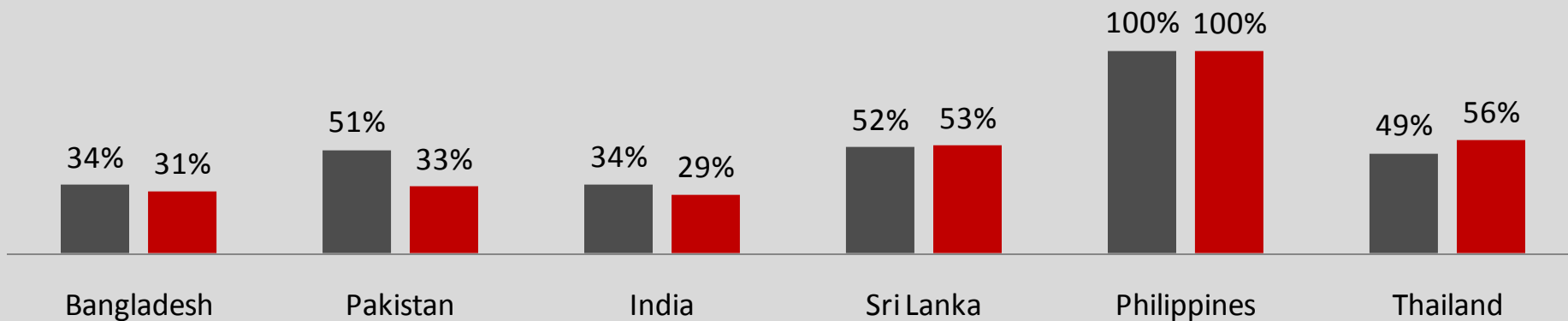
SMS use on mobile (% of BOP mobile owners)



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

SMS use on mobile (% of BOP mobile owners)

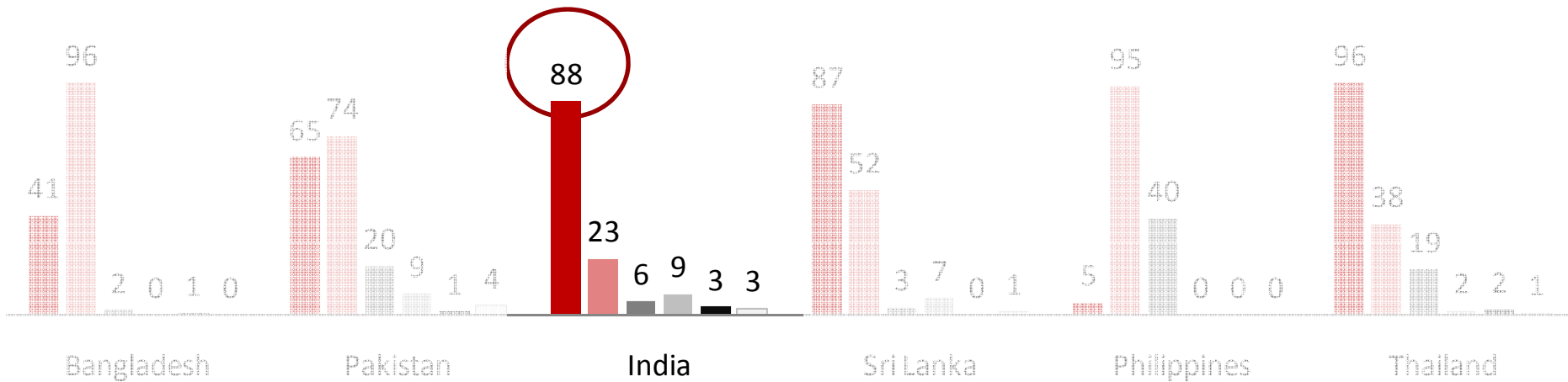
■ Male ■ Female



Reloading mostly via top-up cards in Indian BOP

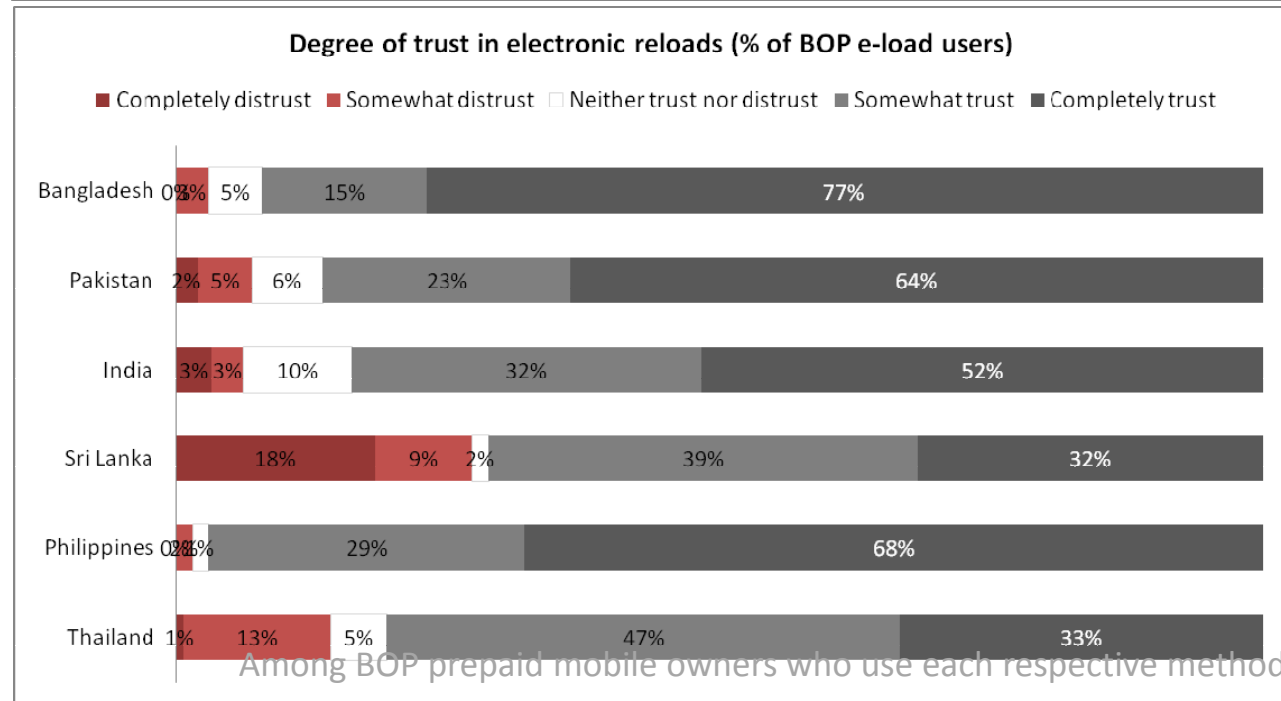
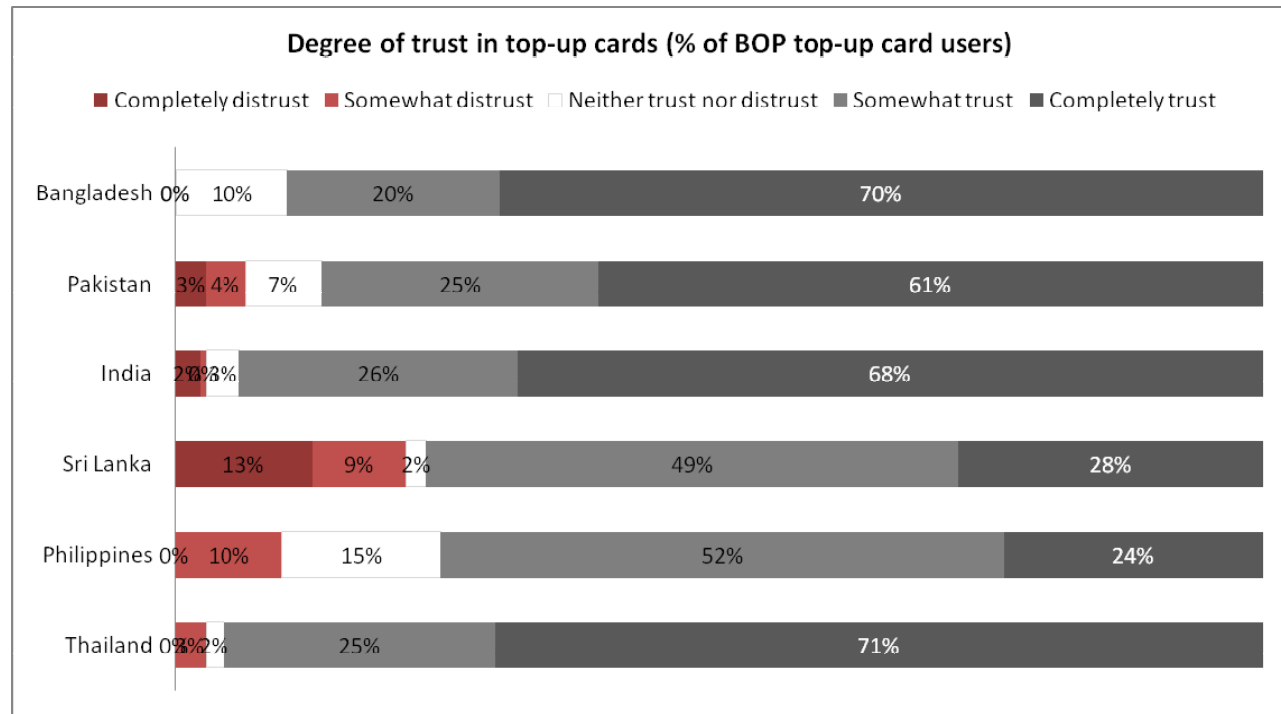
Top-up method (% of BOP prepaid mobile owners)

- Top-up cards
- Electronic reloads
- Load transfers from others
- SMS-top-ups
- Other (bank, credit card, Internet)
- I dont know how



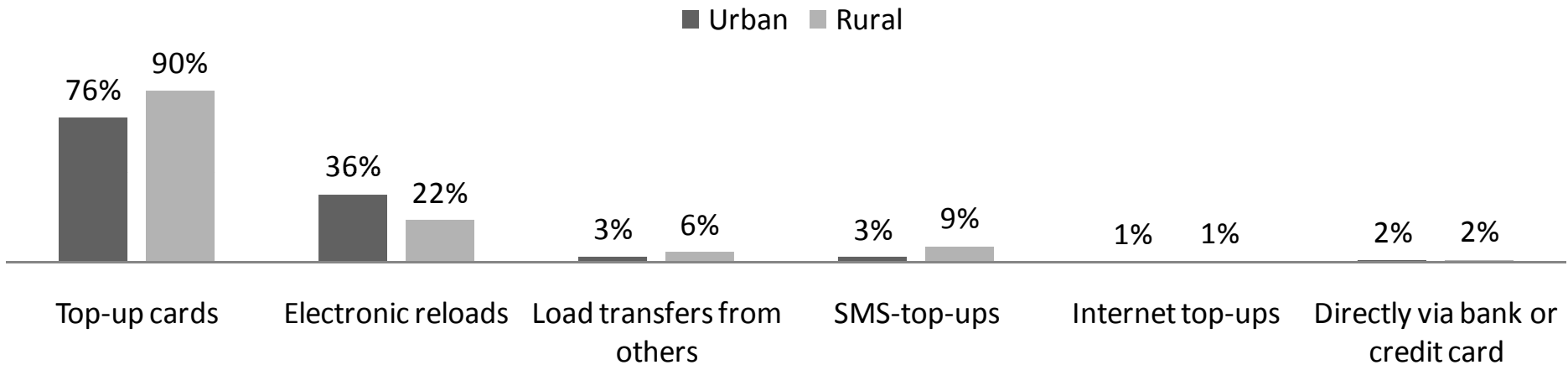
Indian BOP trusts cards more

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



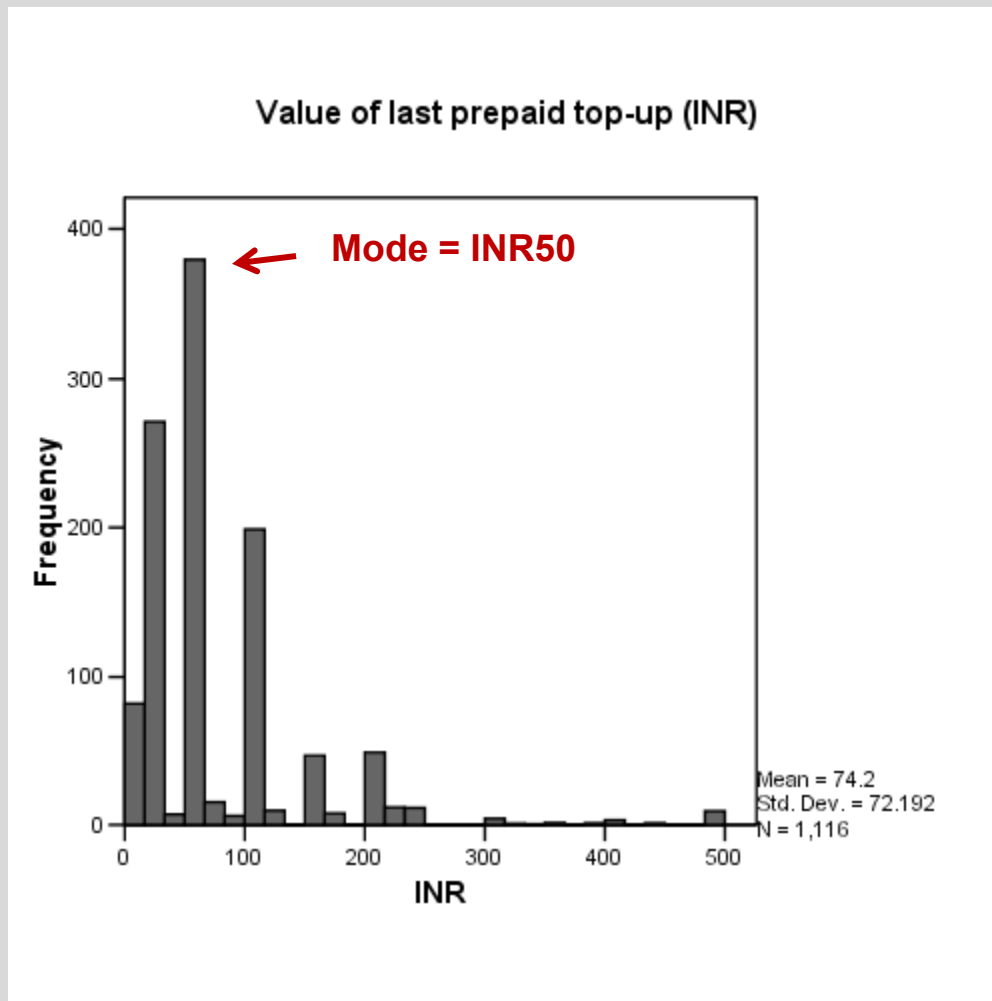
Electronic reloads used less in rural India

Top-up method (% of BOP prepaid mobile owners)



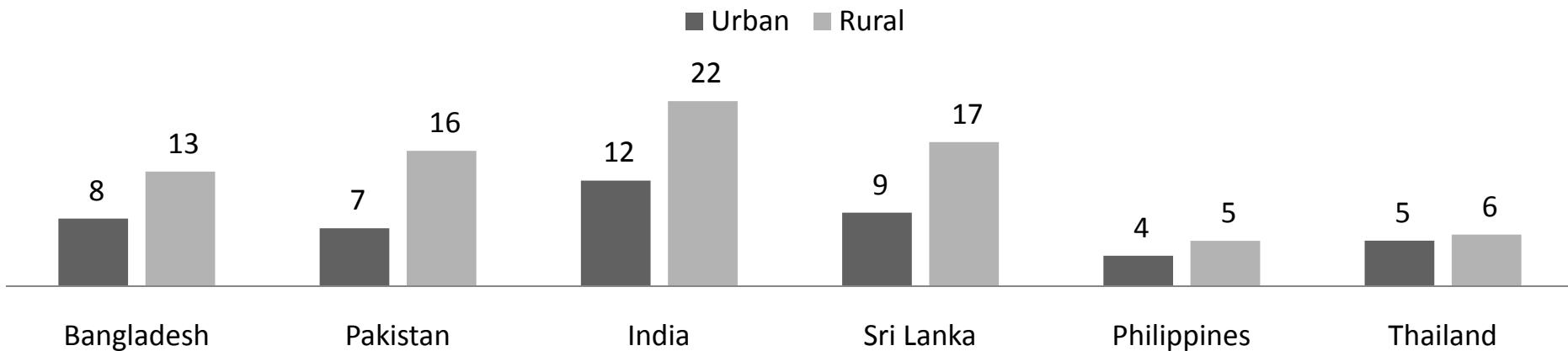
- Most Indians top-up for ~USD1.50 (highest in South Asia)

Most Indians top-up for INR50



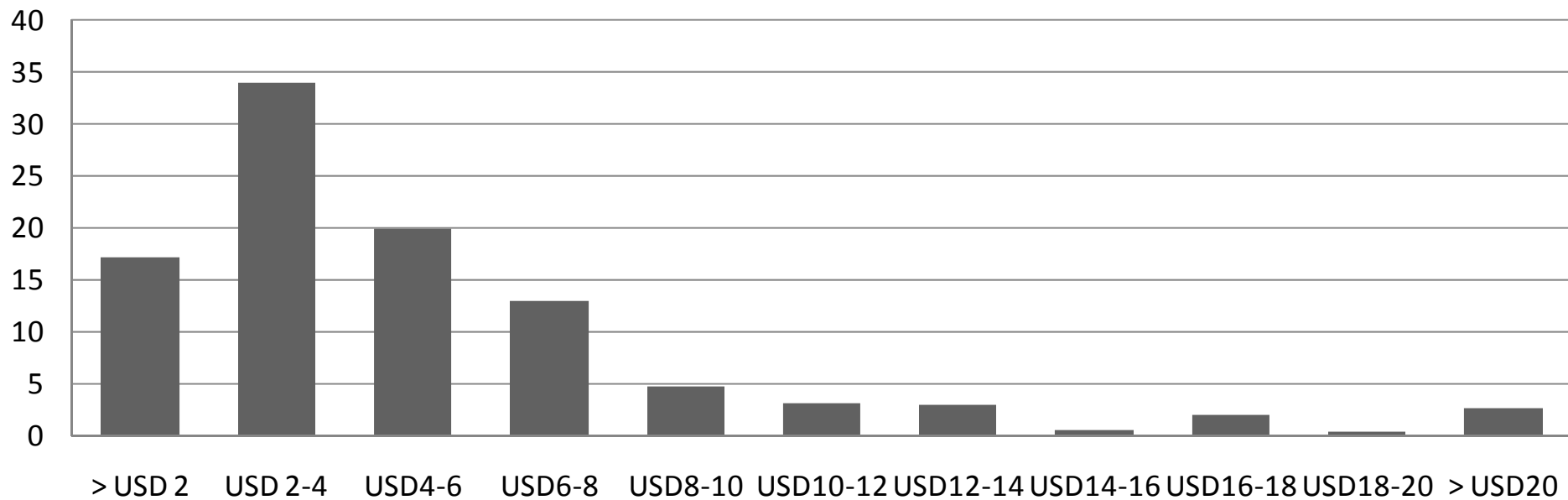
Rural mobile owners travel 10 minutes more than urban mobile owners for top-ups

Mean time to top-up (minutes)



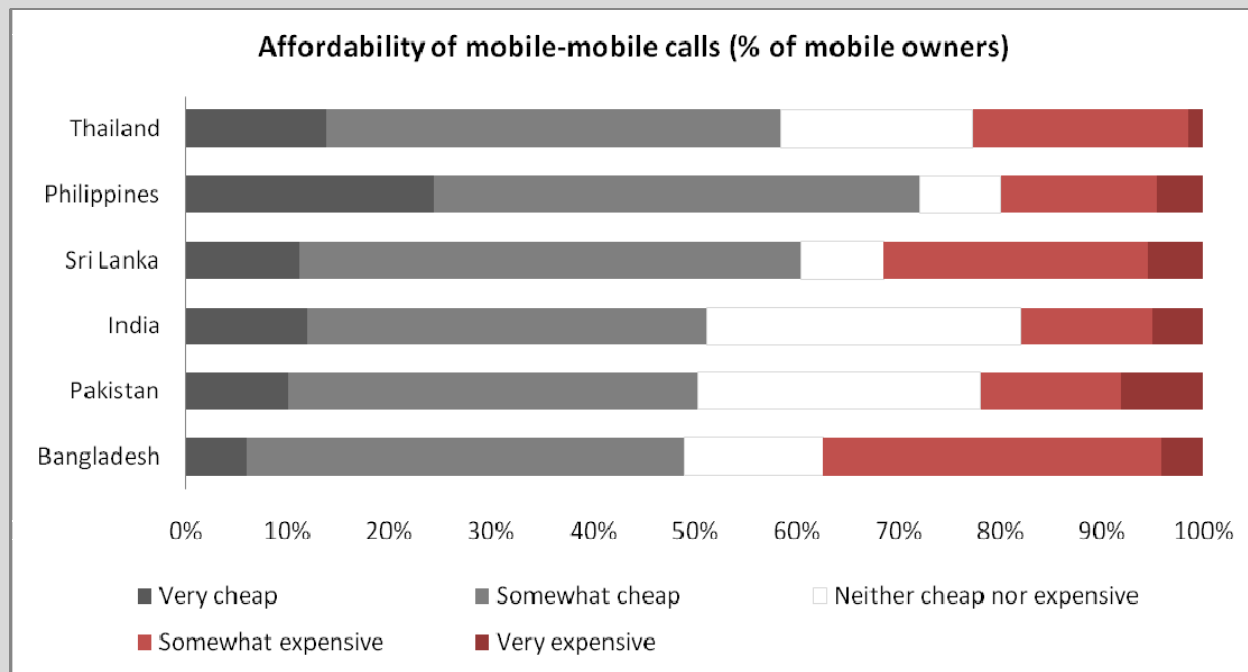
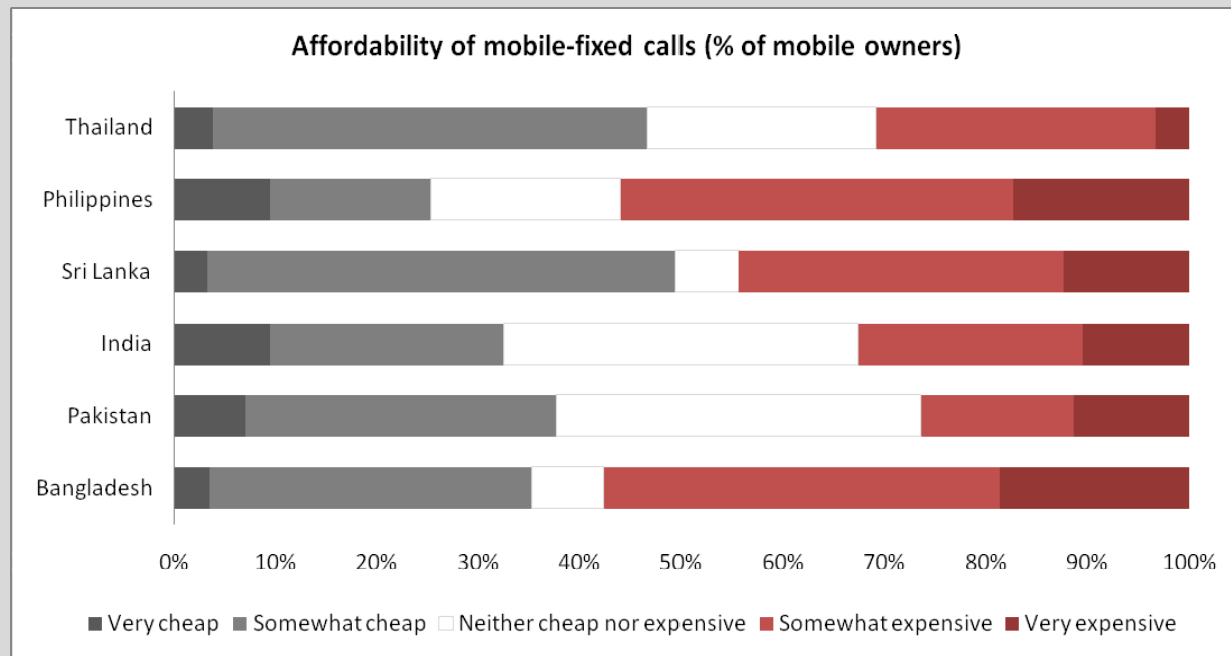
Most spend USD2-4 per month on prepaid mobile

monthly prepaid expenditure (USD)



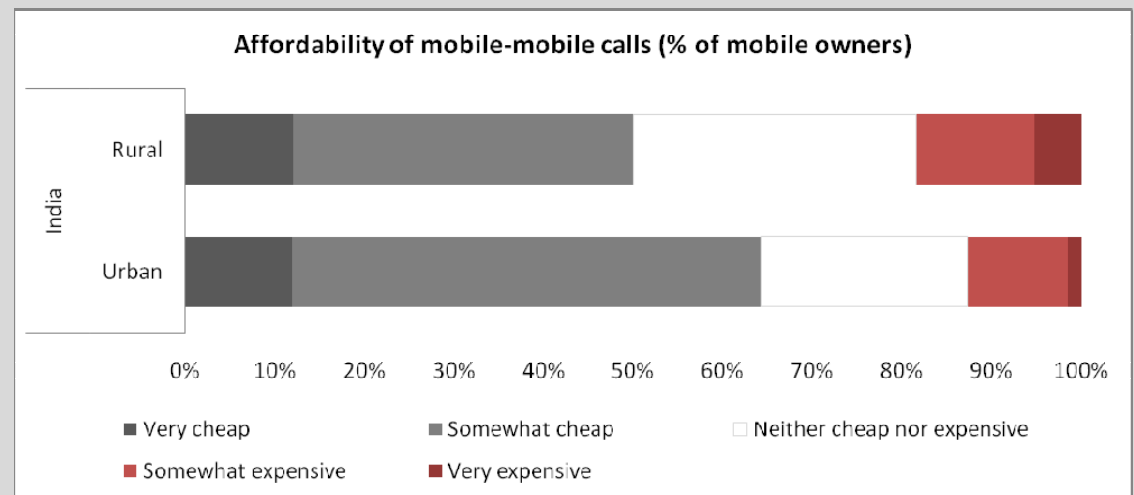
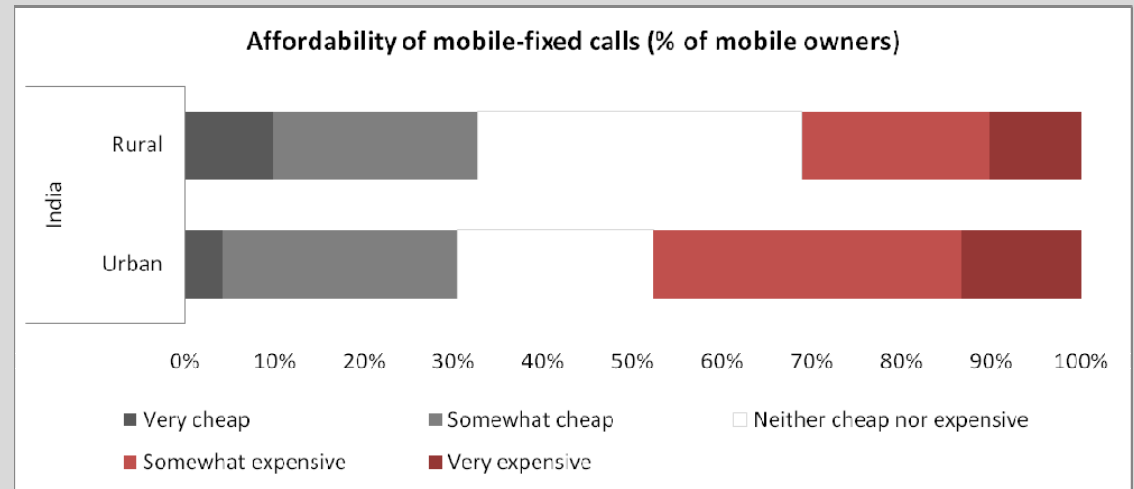
Based on amount of last top-up and how long they expect it to last

Mobile-fixed calls more expensive than mobile-mobile

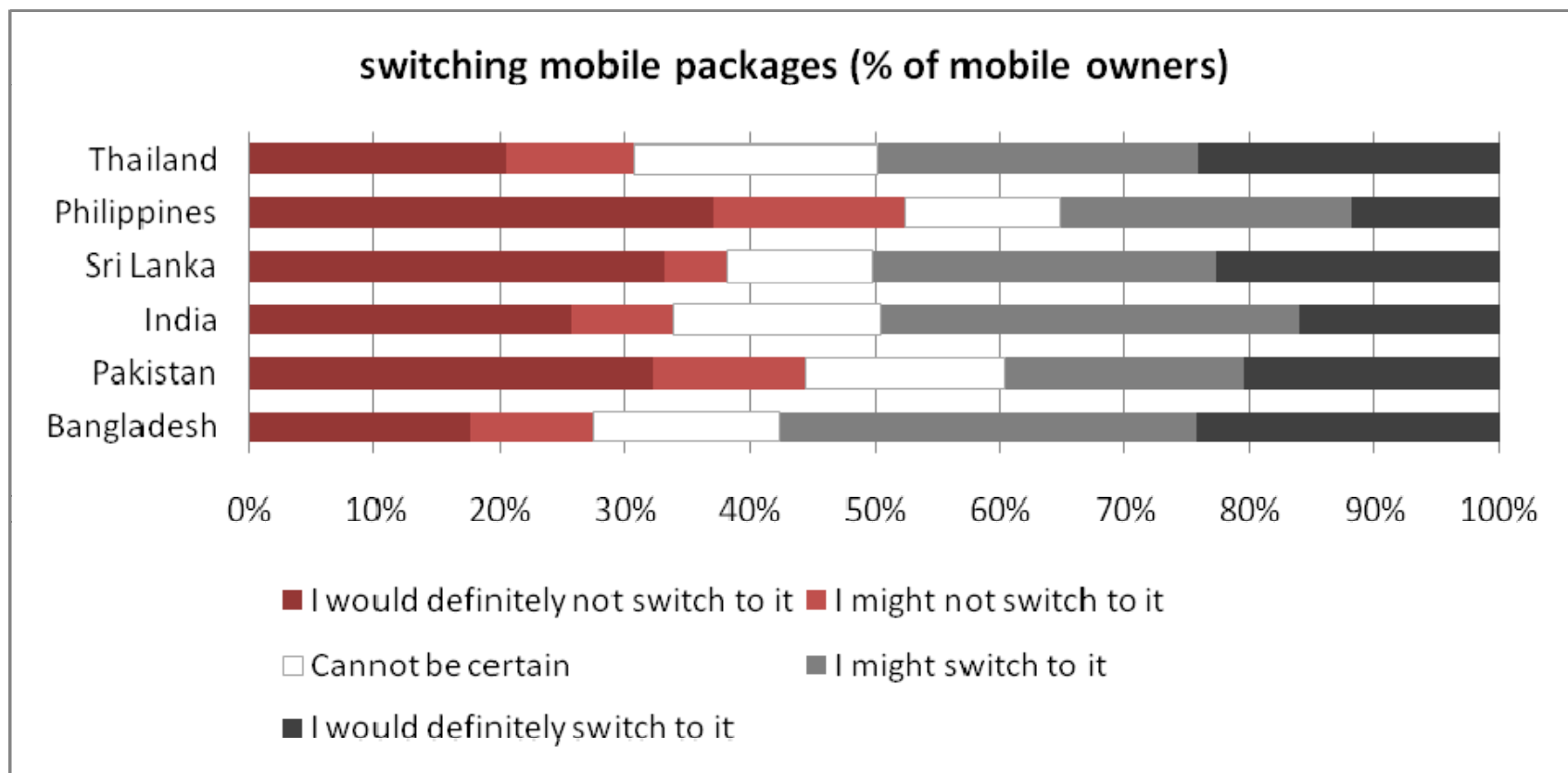


Mobile-fixed calls more expensive for urban Indian BOP

- Opposite wrt mobile-mobile calls



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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WHO ARE THE BOP?

BOP TELECOM EXPANSION

ACCESS

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MARKET DEVELOPMENT

WHAT THE BOP DOES WITH THEIR MOBILES?

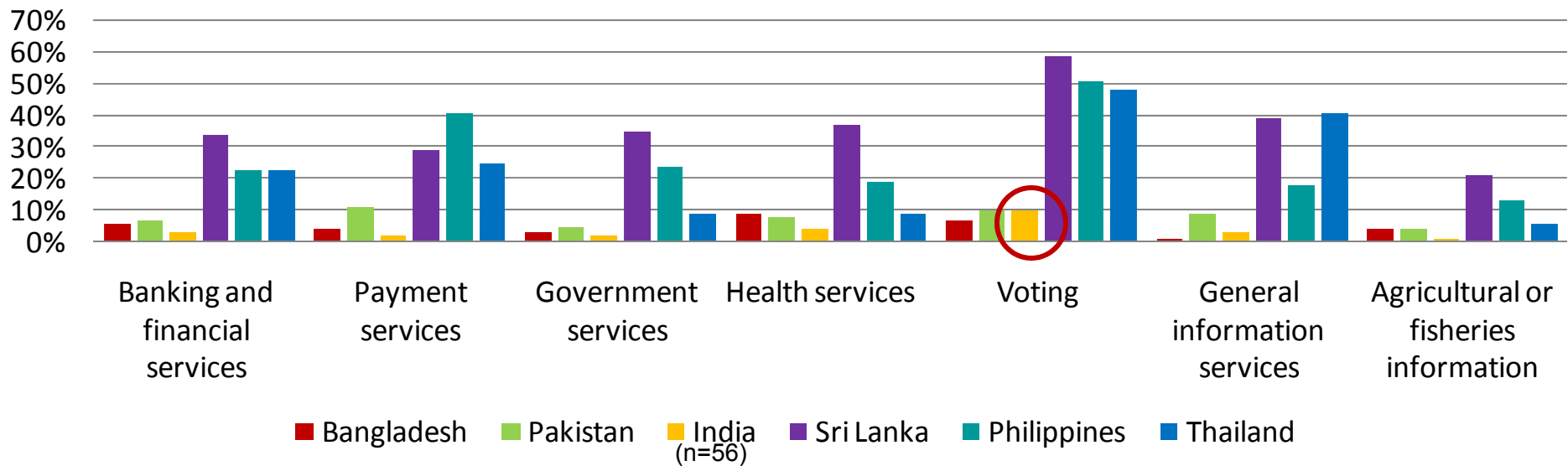
POTENTIAL FOR MOBILE 2.0?

BENEFITS?

THE UNCONNECTED?

Poor awareness in India

Awareness of services at the BOP (% of BOP teleusers)

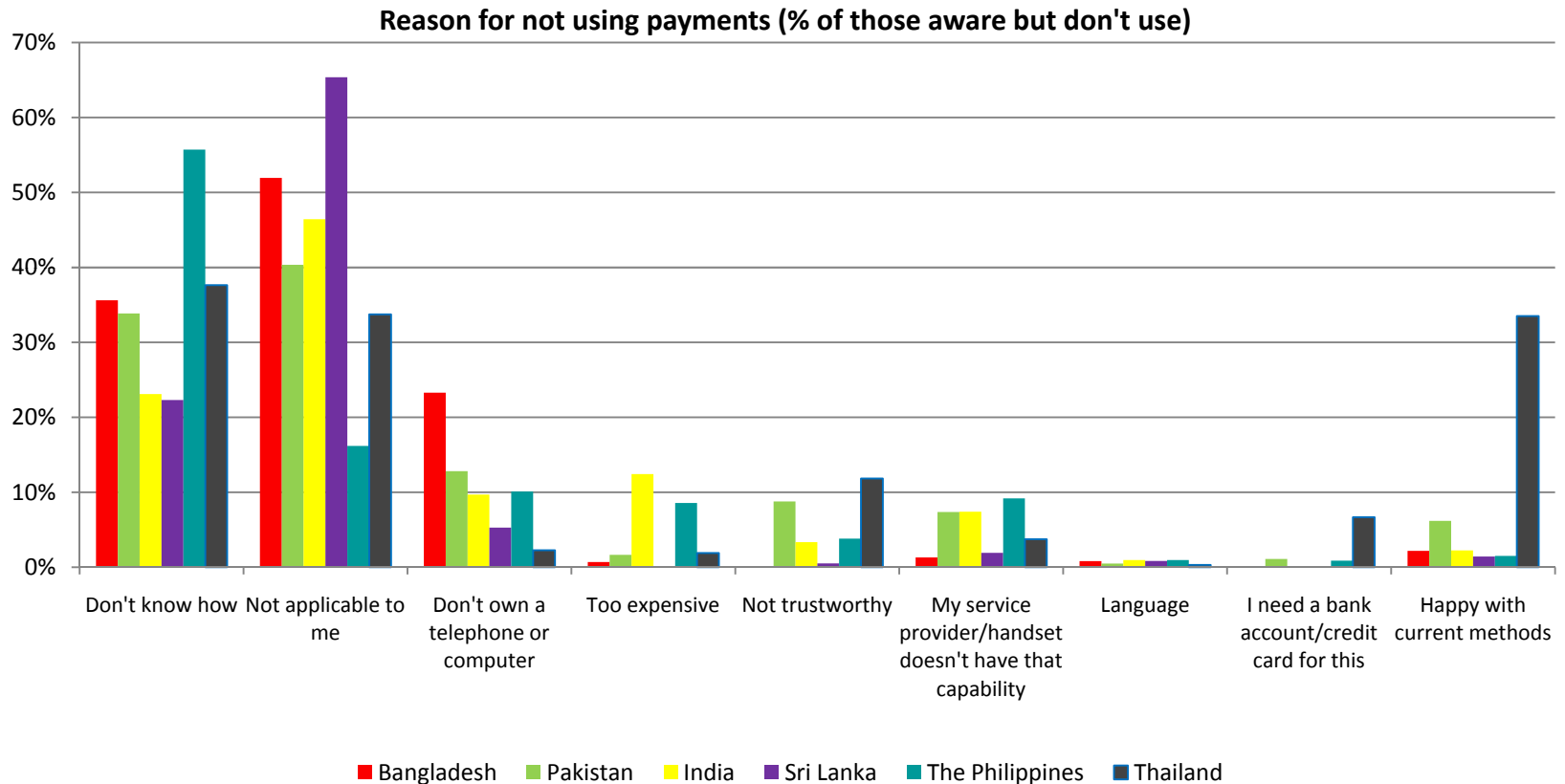


- 10% are aware of voting applications in India (competitions, real time polling, live participation in TV/radio programs, etc)

Usage is *even* poorer

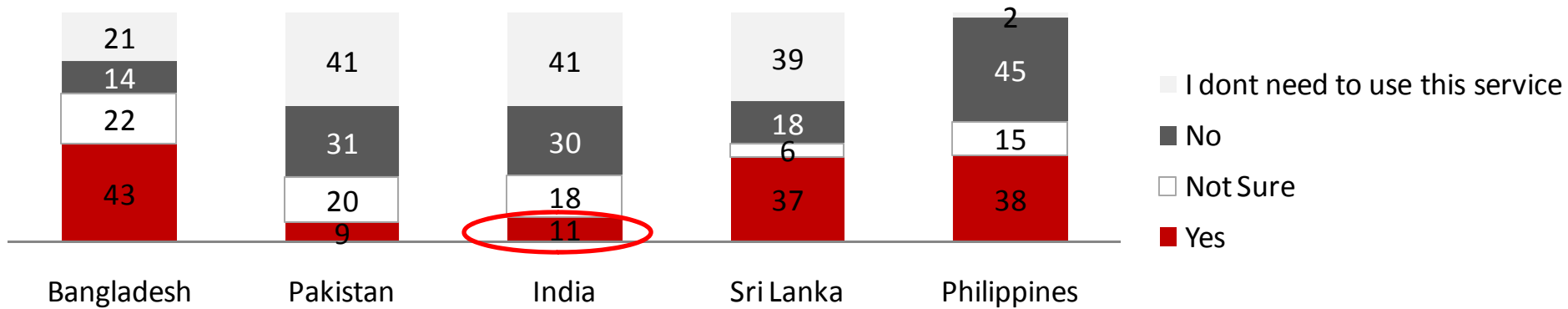
	India (% of BOP teleusers who are aware of such services)	
	Use regularly	Use, but not regularly
Banking and financial services	0.8%	17.0%
Payment services	4.6%	10.9%
Government services	2.3%	1.5%
Health services	1.9%	14.0%
Voting	5.6%	6.6%
General information services	2.7%	14.8%
Agricultural or fisheries information	3.8%	0.5%

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

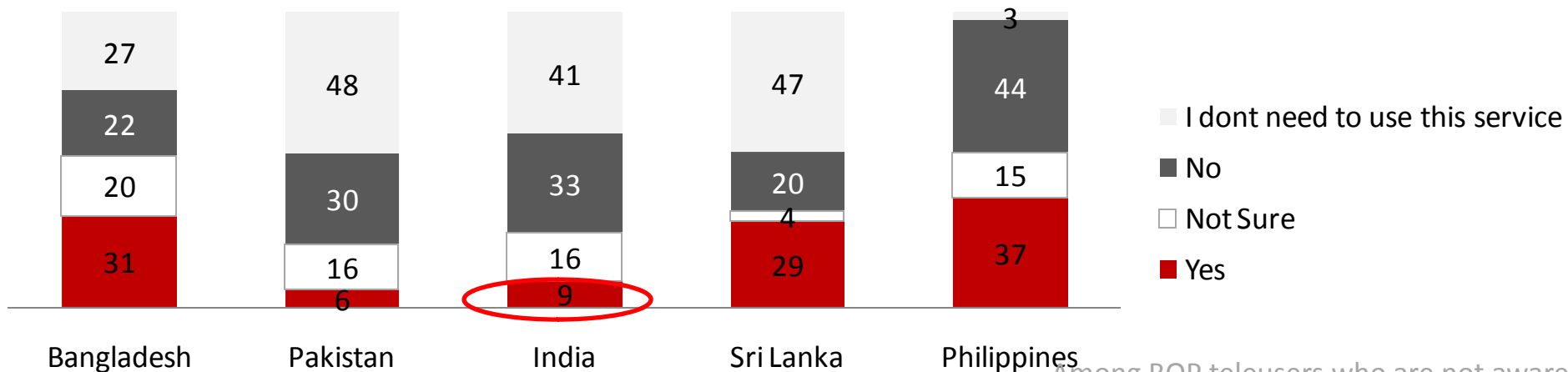


Few of those who aren't aware would be willing to use money transfer services and govt services via a mobile

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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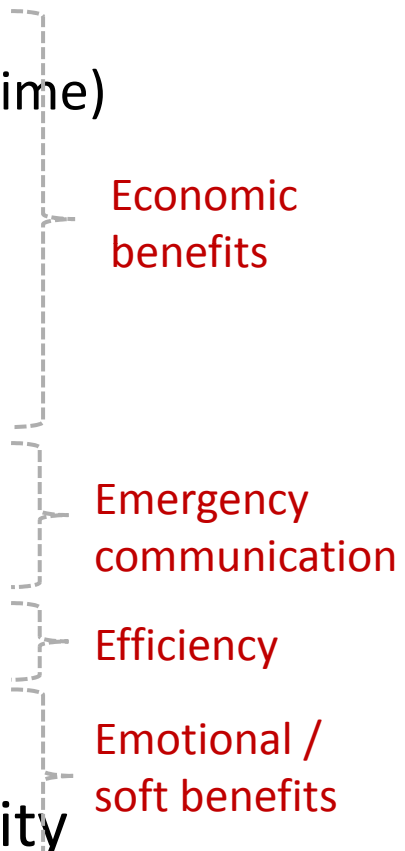
WHAT THE BOP DOES WITH THEIR MOBILES?

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

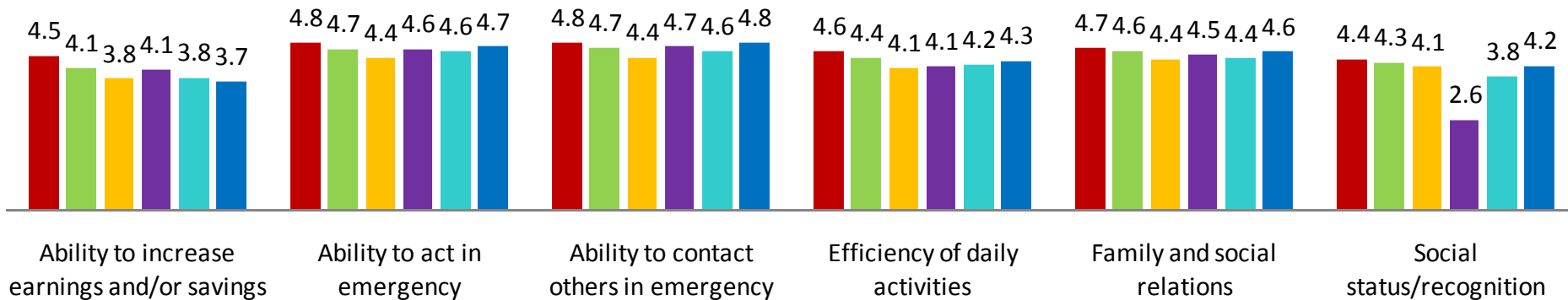
- Your ability to:
 - make more money (generally, and via sale of talk time)
 - find out about employment/work opportunities
 - access price or market information
 - save money
 - save on travel cost
 - act in an emergency
 - contact others in an emergency
 - The efficiency of your day to day work
 -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

Largest benefits perceived in emergency communication and relationship maintenance

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

Perceived benefits of telecom access: General

■ Bangladesh ■ Pakistan ■ India ■ Sri Lanka ■ Philippines ■ Thailand

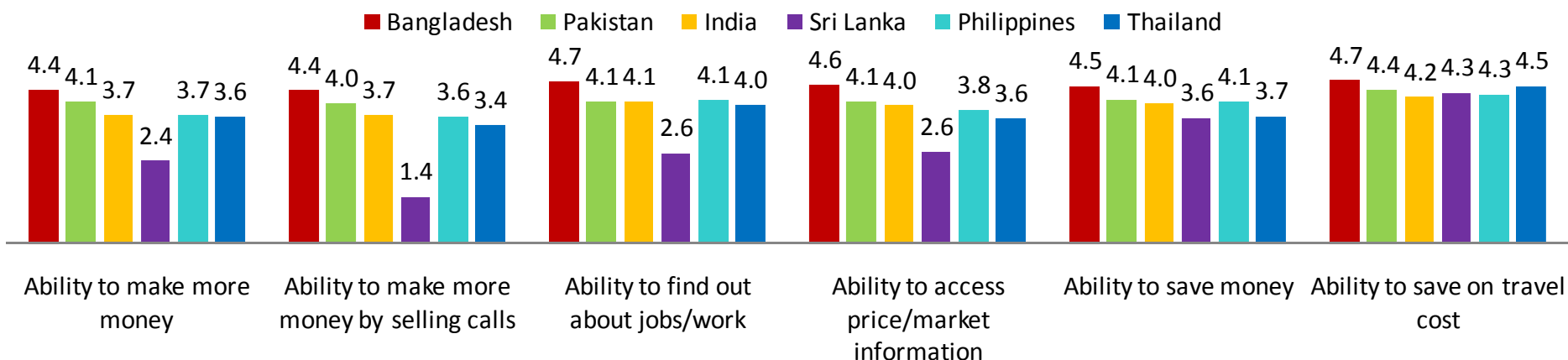


- Smallest benefit on economic factors
- Sri Lankans have an odd position on social status

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

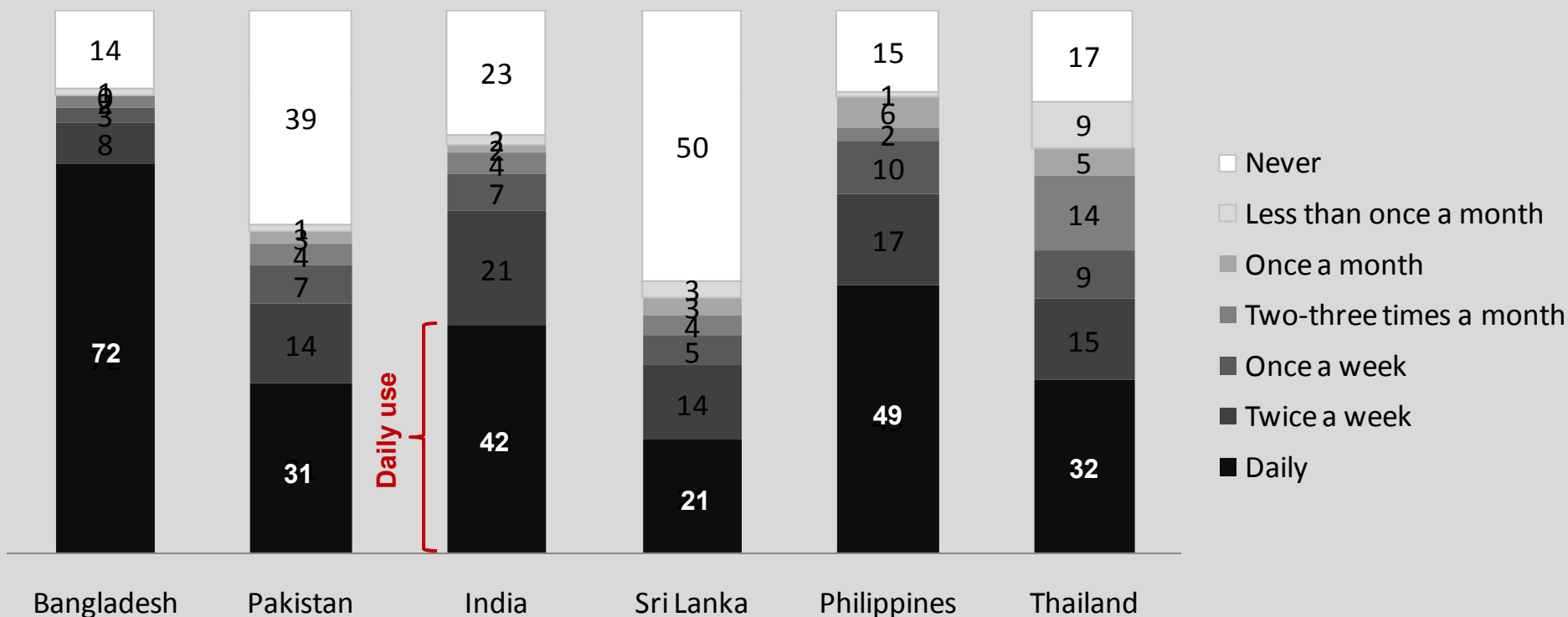
Perceived benefits of telecom access: Livelihood-related



- 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

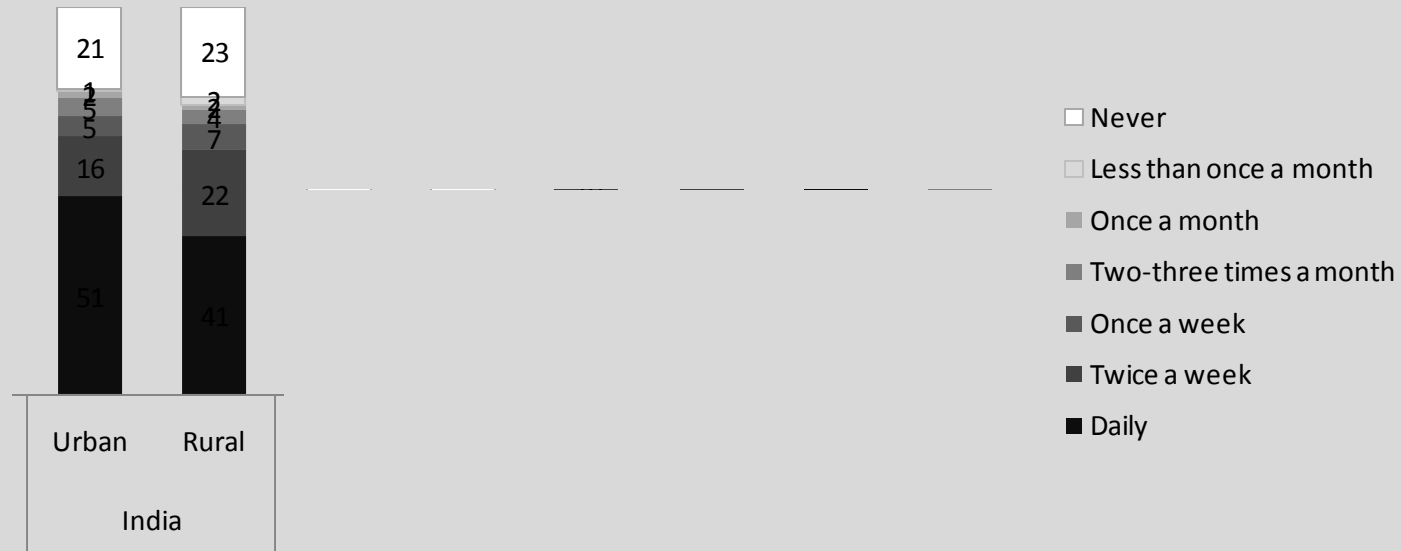
Use of the phone for financial, business or work-related purposes (% of BOP mobile owners)



Daily use

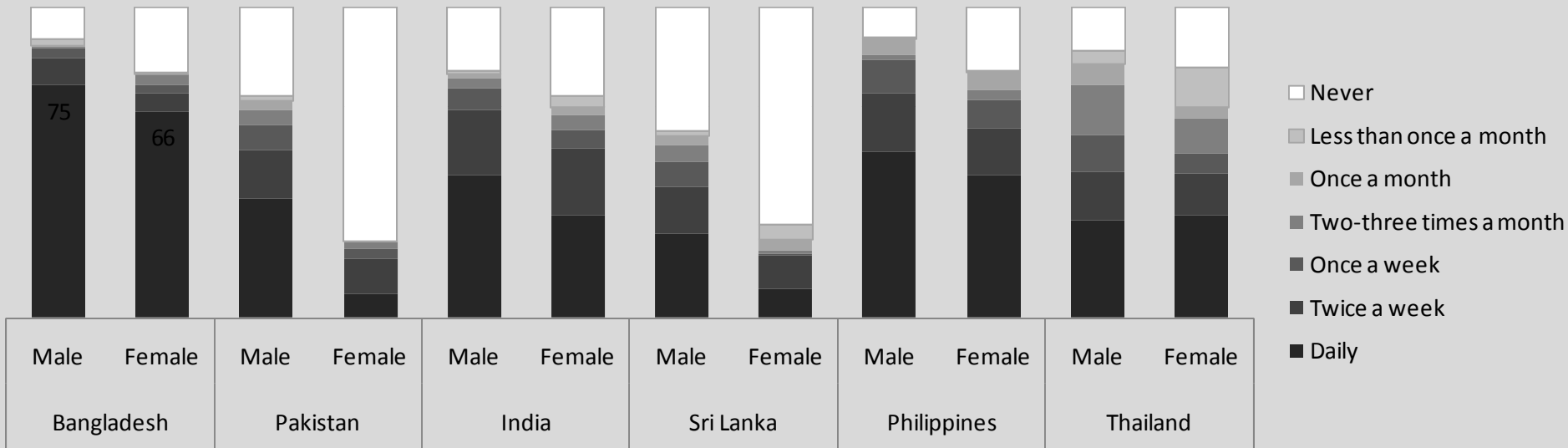
Little difference between urban and rural India

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



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

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



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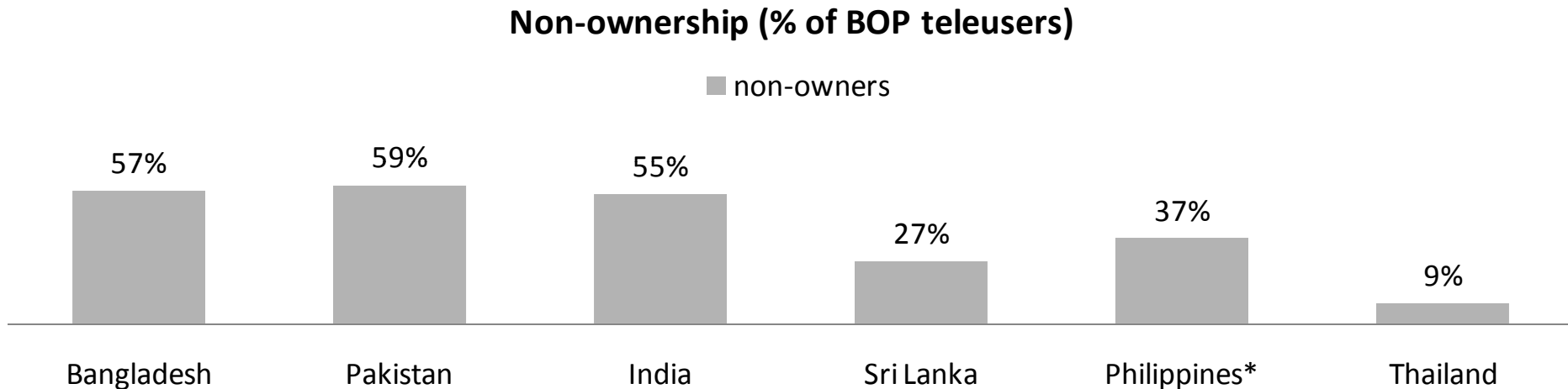
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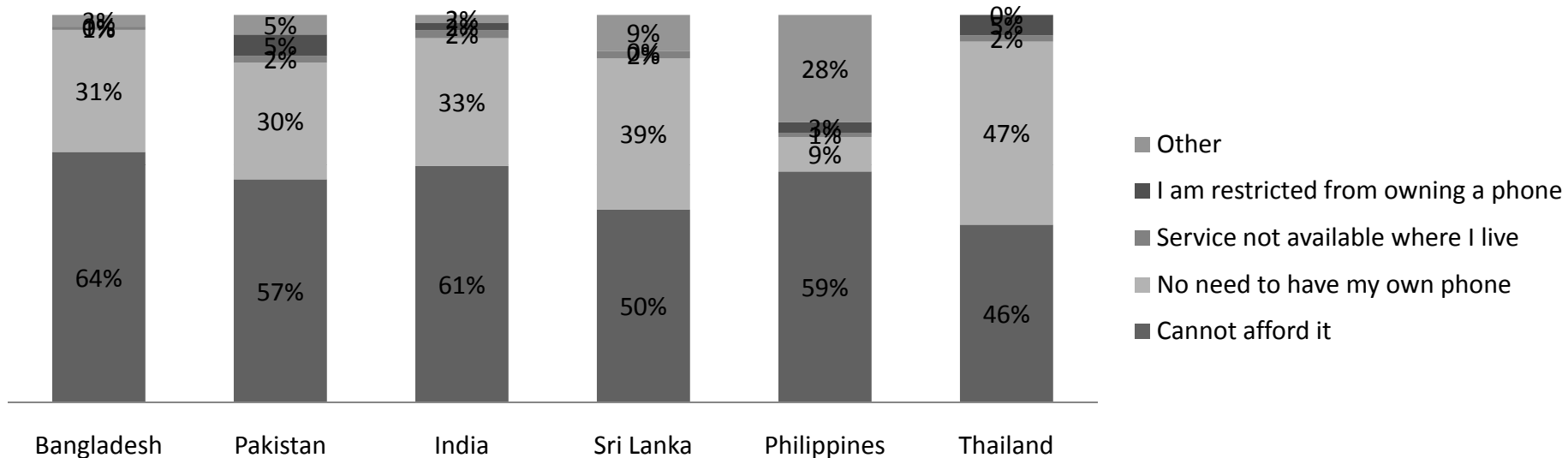
55% of Indian BOP teleusers don't own a phone



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

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)

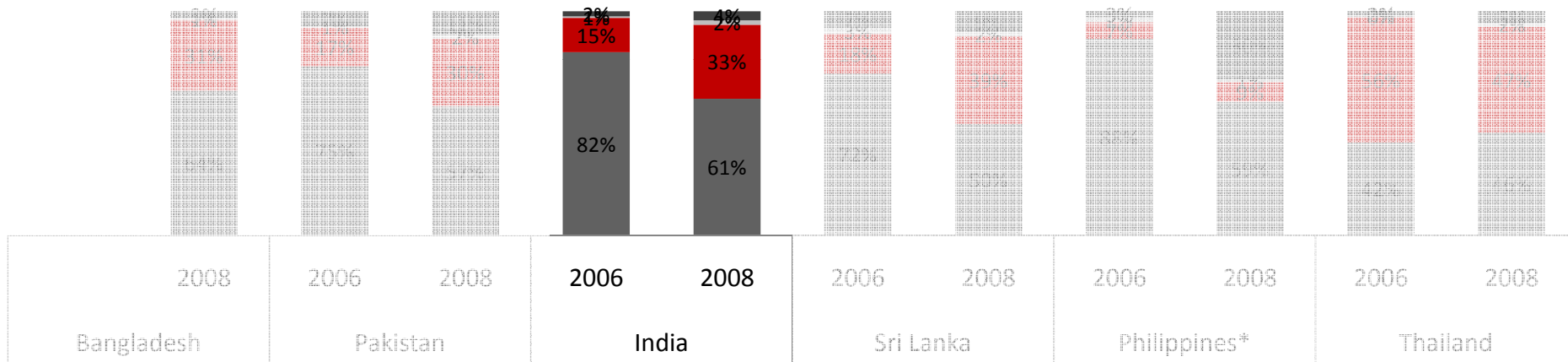


- Just 2% say that service is not available where they live

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)

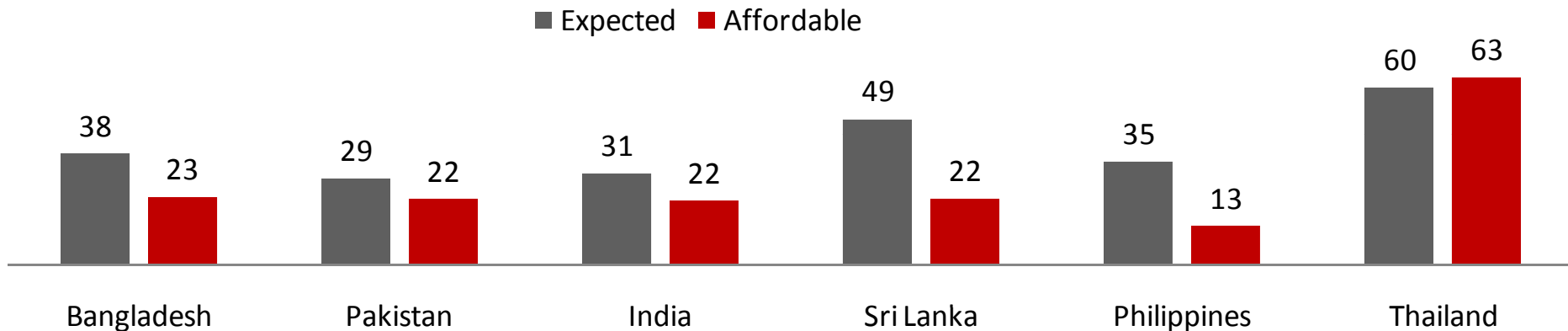
■ Cannot afford it
 ■ No need to have my own phone
 ■ Service not available where I live
 ■ Other



- Approaching top of the “S” curve

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

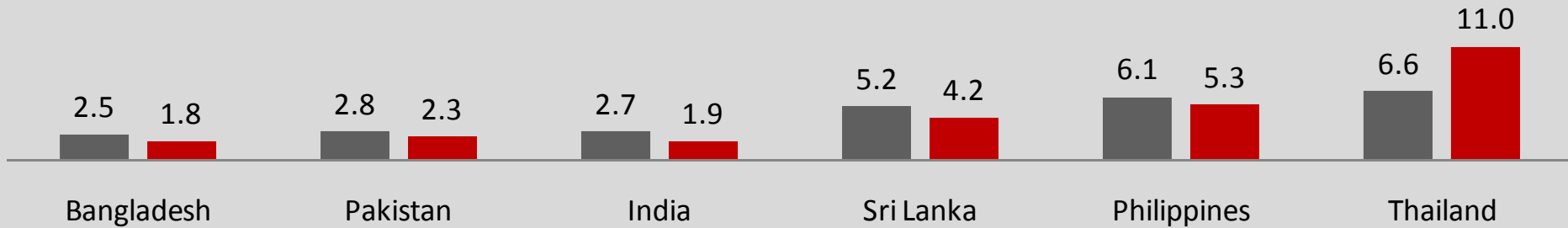
Initial cost of getting connected (USD)



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

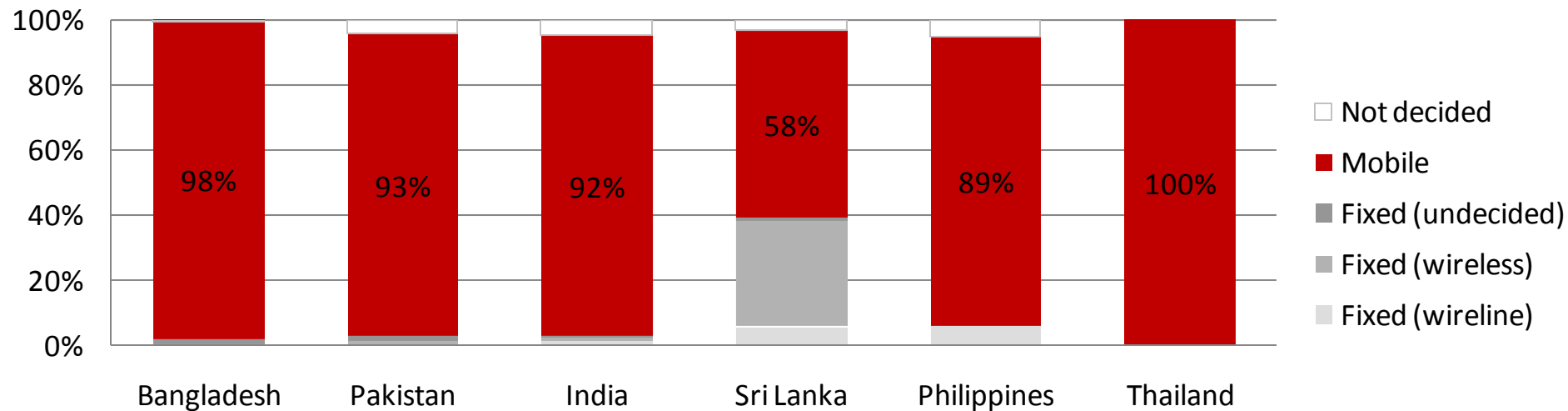
Monthly expenditure (USD)

■ Expected ■ Affordable



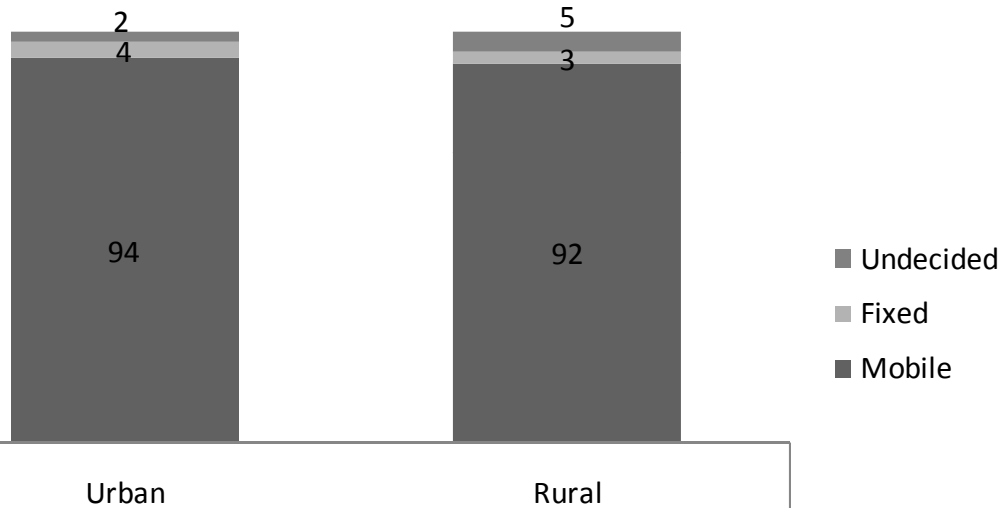
28% of the current unconnected BOP in India plan to get connected; 92% of them plan to get mobiles

Type of phone planning to buy (% of potential BOP owners)



- Same picture in rural India

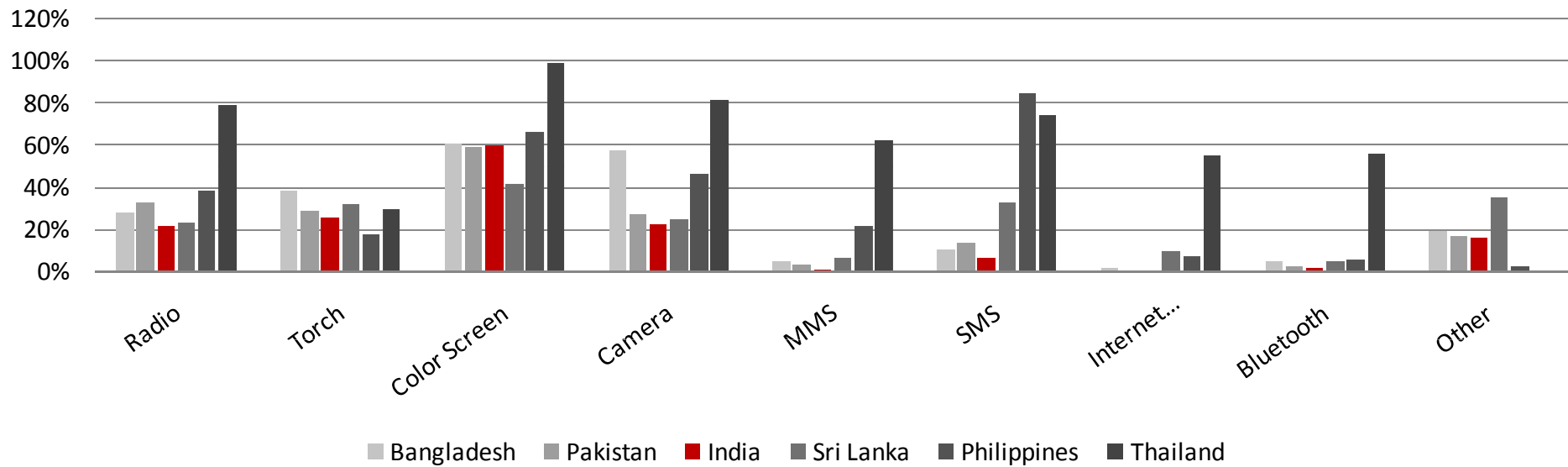
Type of phone planning to buy (% of potential BOP owners)



India

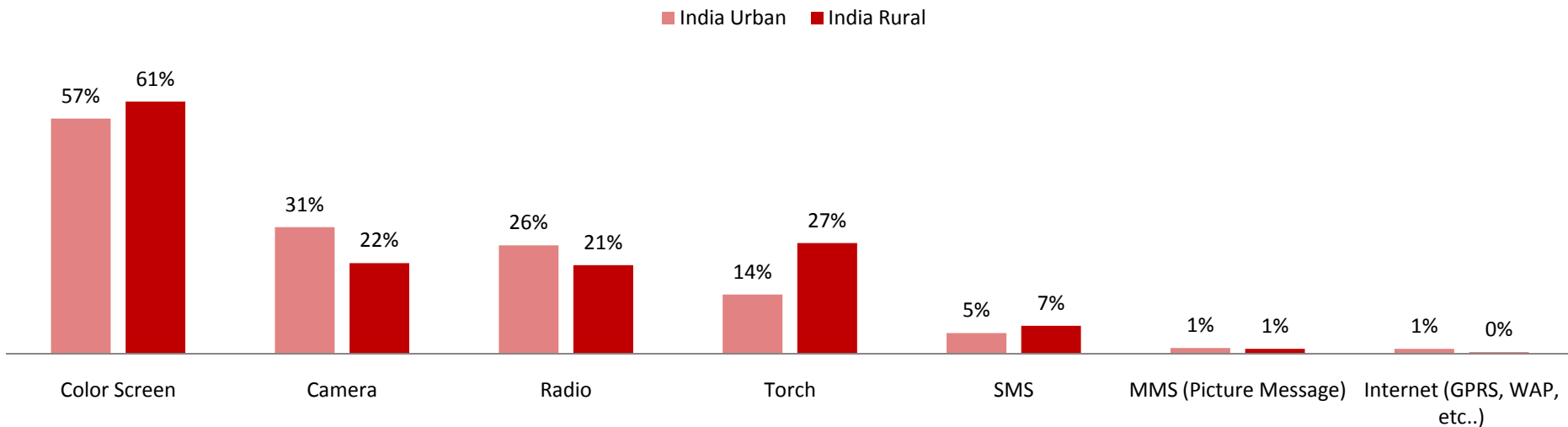
Color screen, torch, radio and camera are the most sought after phone features

Phone features desired (% of potential BOP owners)



Color screen and torch more sought after in rural Indian BOP

Phone features desired (% of potential BOP owners)



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