

# Inspecting the Free Bridge Across Digital Divide: Assessing the Quality of Facebook's Free Basics Service

**Rijurekha Sen<sup>1</sup>**, Hasnain Ali Pirzada<sup>3</sup>, Amreesh Phokeer<sup>4</sup>, Zaid Ahmed Farooq<sup>3</sup>, Satadal Sengupta<sup>5</sup>, David Choffnes<sup>2</sup>, Krishna P. Gummadi<sup>1</sup>

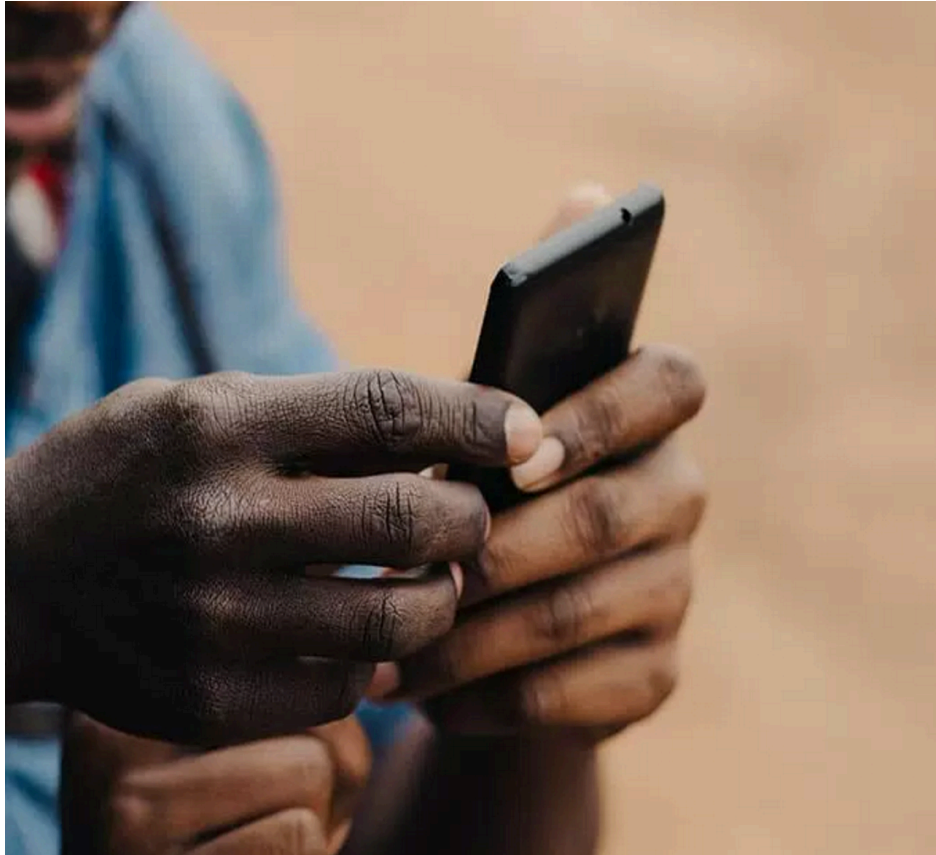


MAX PLANCK INSTITUTE  
FOR SOFTWARE SYSTEMS



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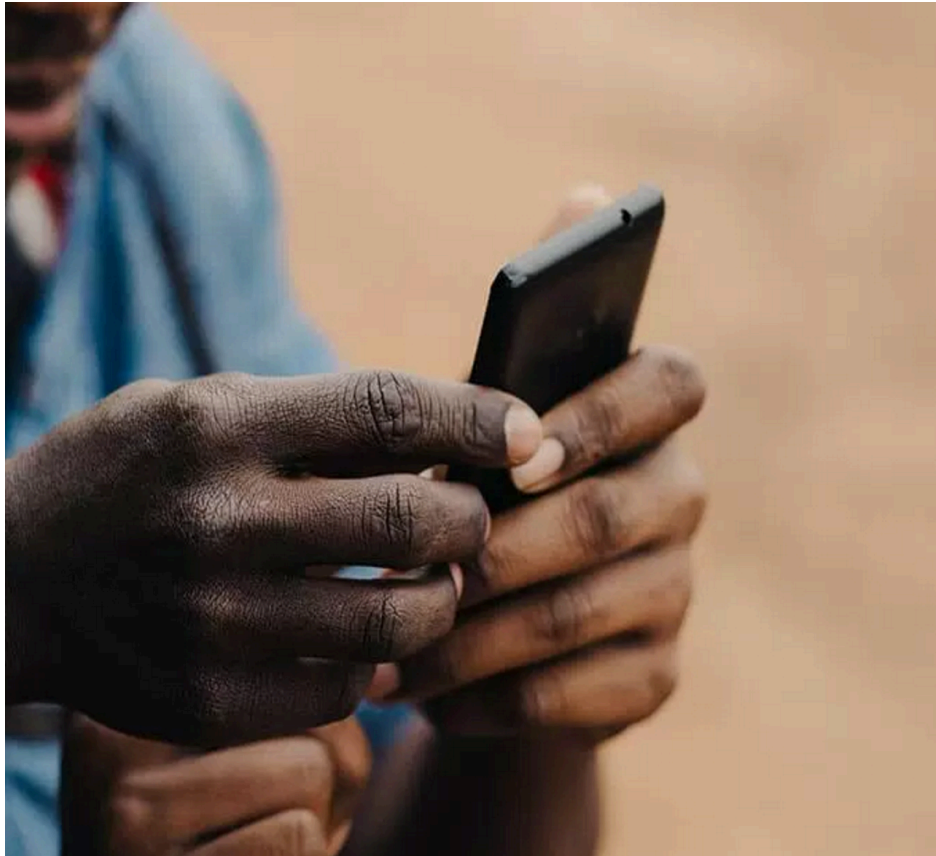


## Free Basics by Facebook

Free Basics by Facebook provides people with access to useful services on their mobile phones in markets where internet access may be less affordable. The websites are available for free without data charges, and include content on things like news, employment, health, education and local information. By introducing people to the benefits of the internet through these websites, we hope to bring more people online and help improve their lives.

Image from: <https://info.internet.org/en/>

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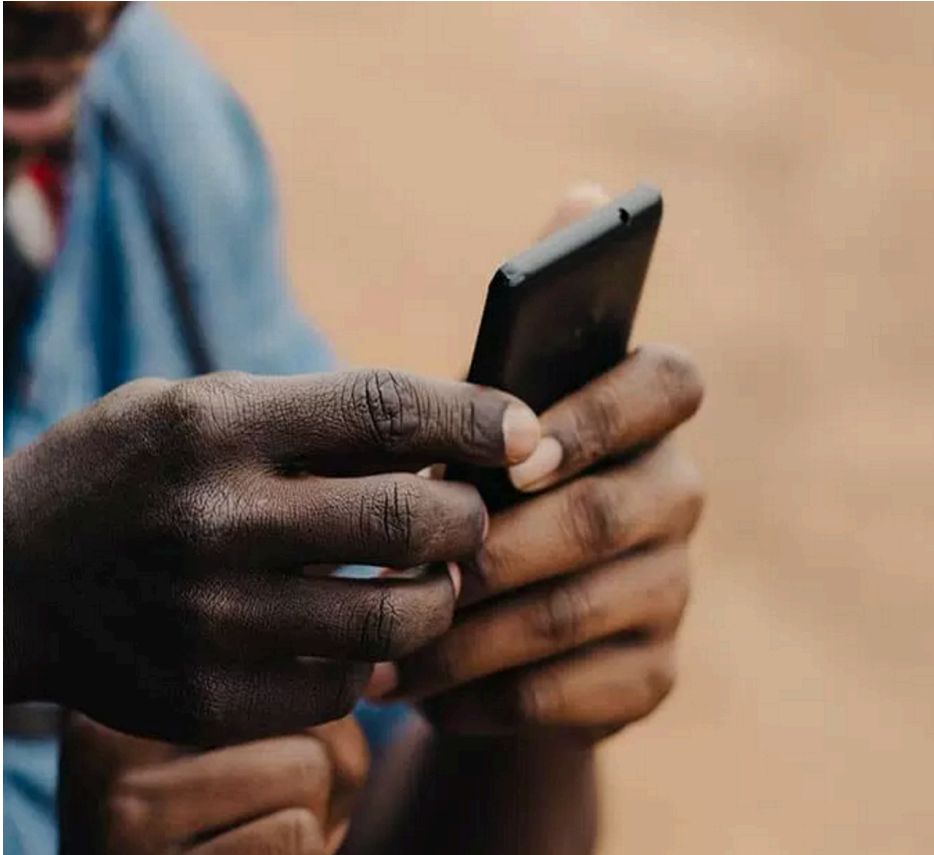


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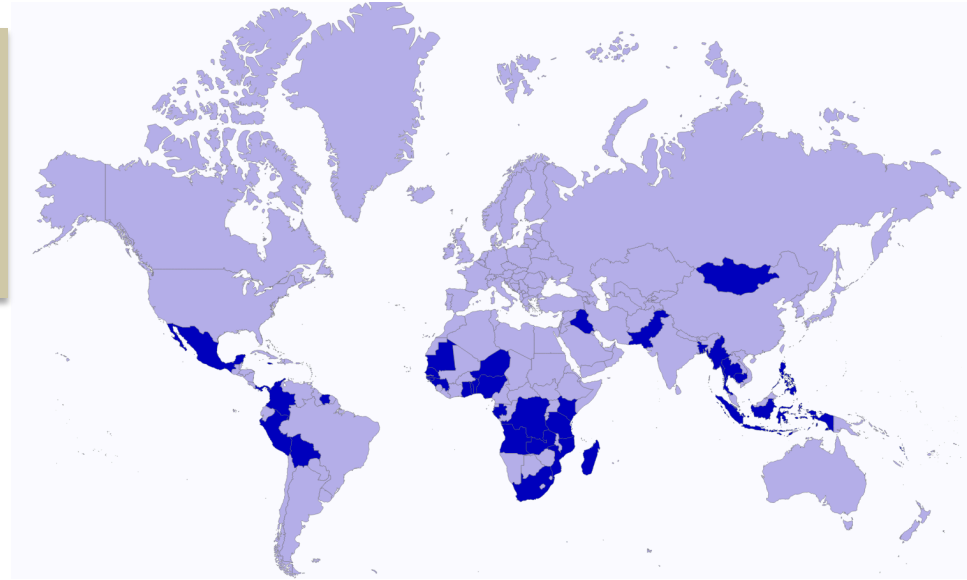
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Zero-rated web service offering, hoping to bridge digital divide.

# Facebook's Free Basics – where is it?

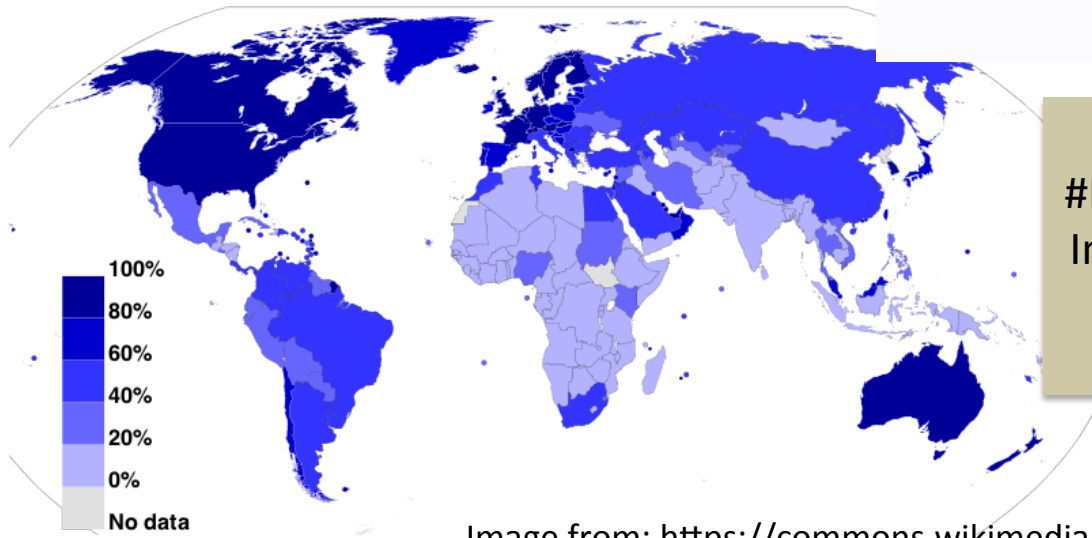
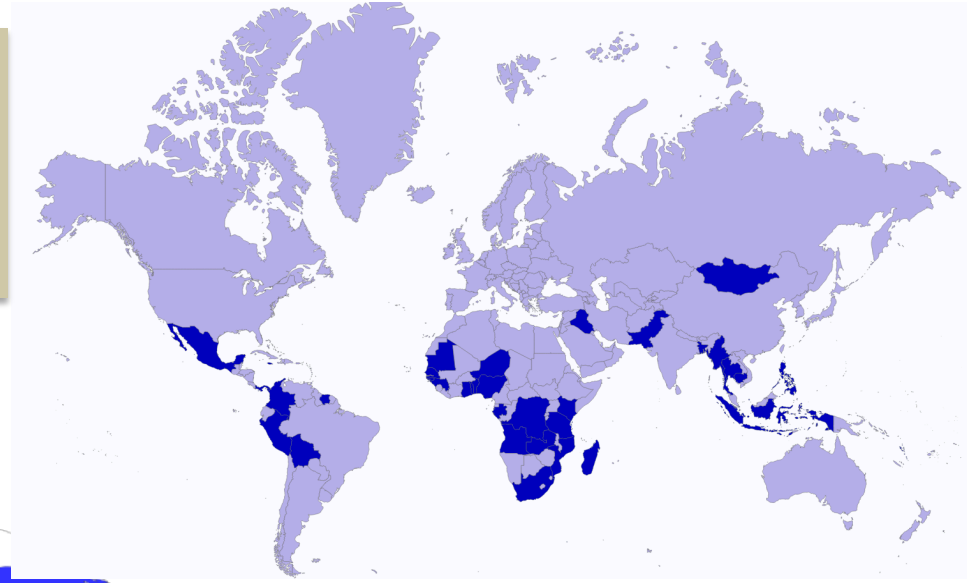
# Facebook's Free Basics – where is it?

53 countries in Asia, Africa,  
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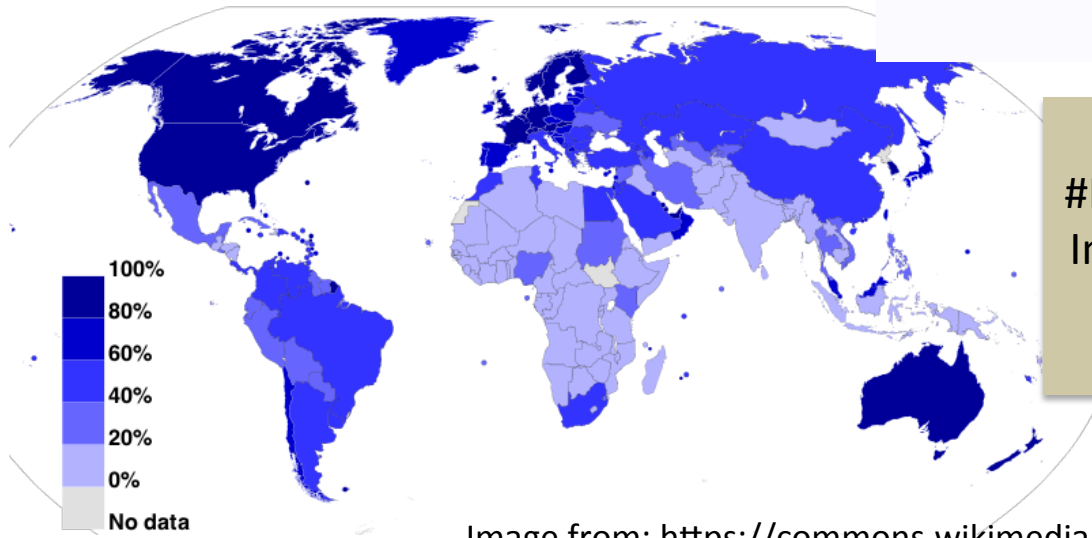
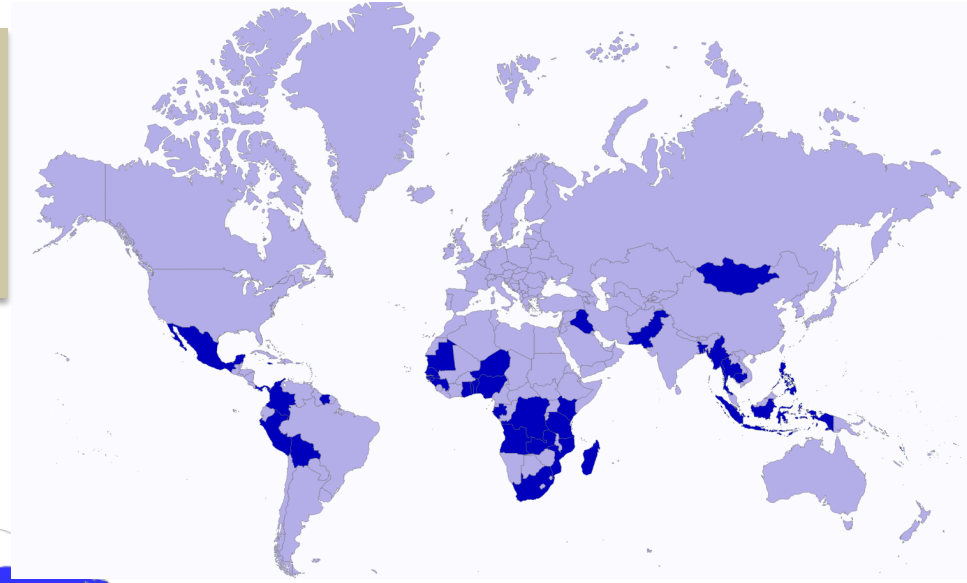
#Internet users as % of population  
International Telecommunications  
Union (2012).

Image from: <https://commons.wikimedia.org/w/index.php?curid=19202338>



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Free Basics is targeted to countries with low Internet penetration.



# & our three research questions



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I. What is on the menu?



- # of free services
- category of free services
- comparison with Alexa top lists



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- functional restrictions
- comparison with paid version



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III. Is the service fast?



- network QoS
- comparison with paid version

# Measurement methodology

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**USER MOBILE**

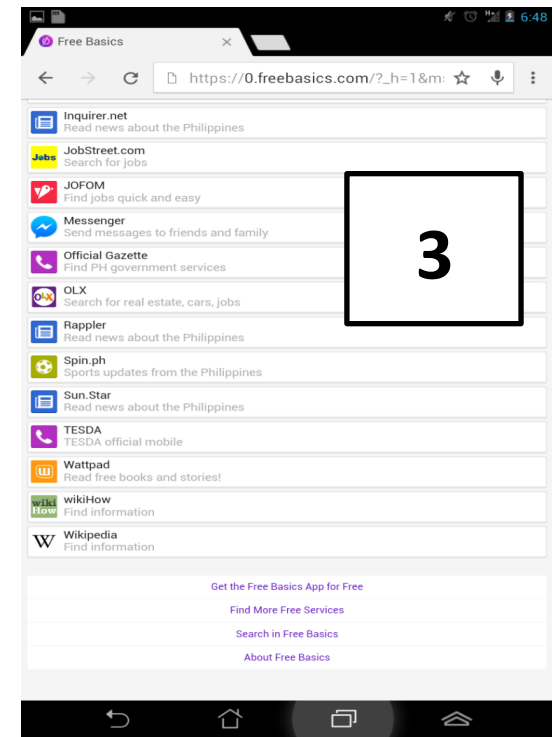
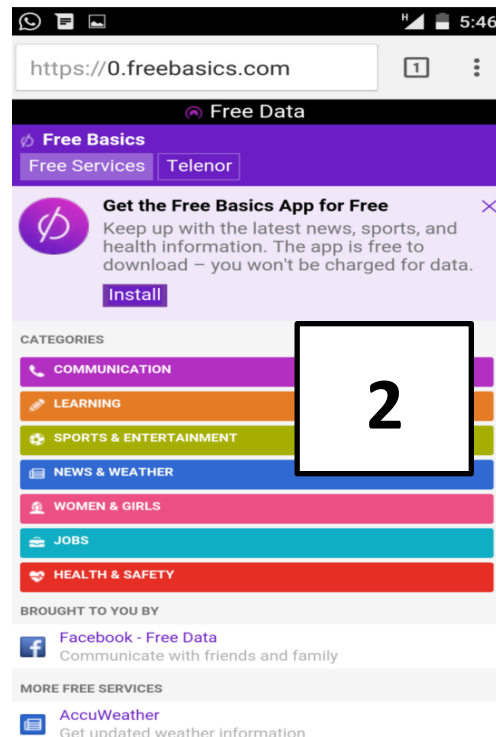
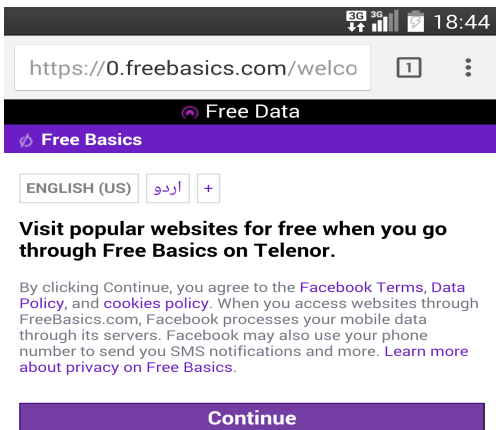
Architecture,  
according to Facebook

# Measurement methodology



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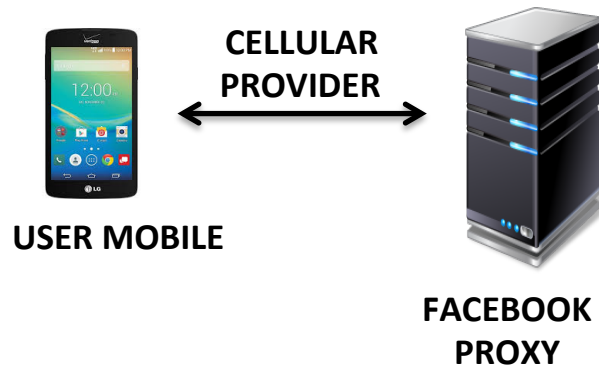


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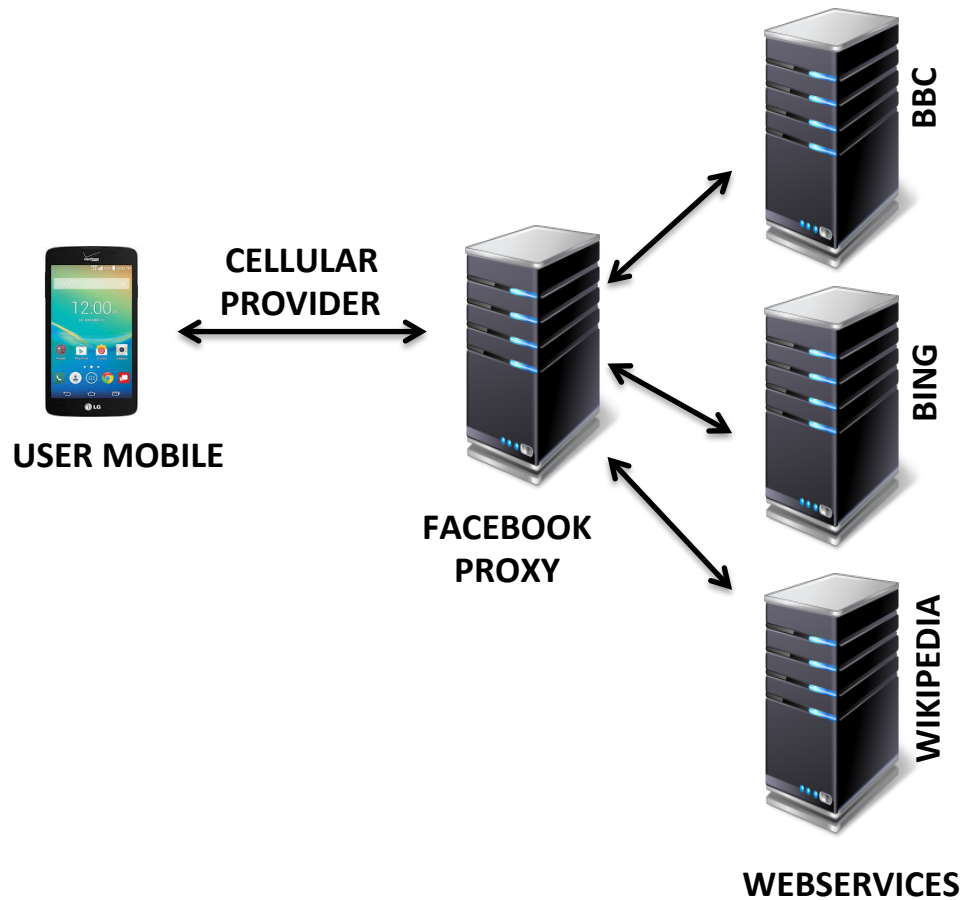
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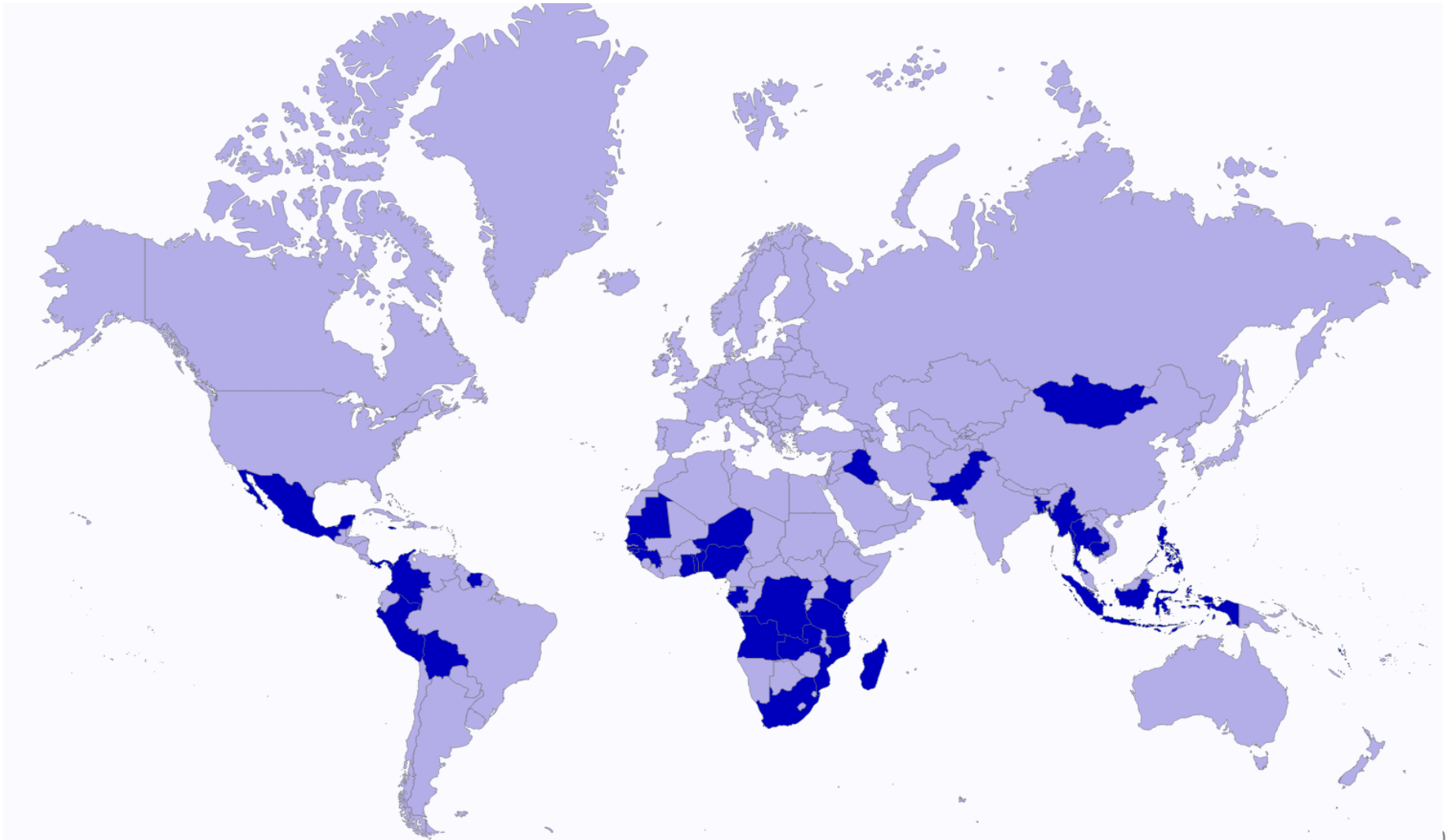
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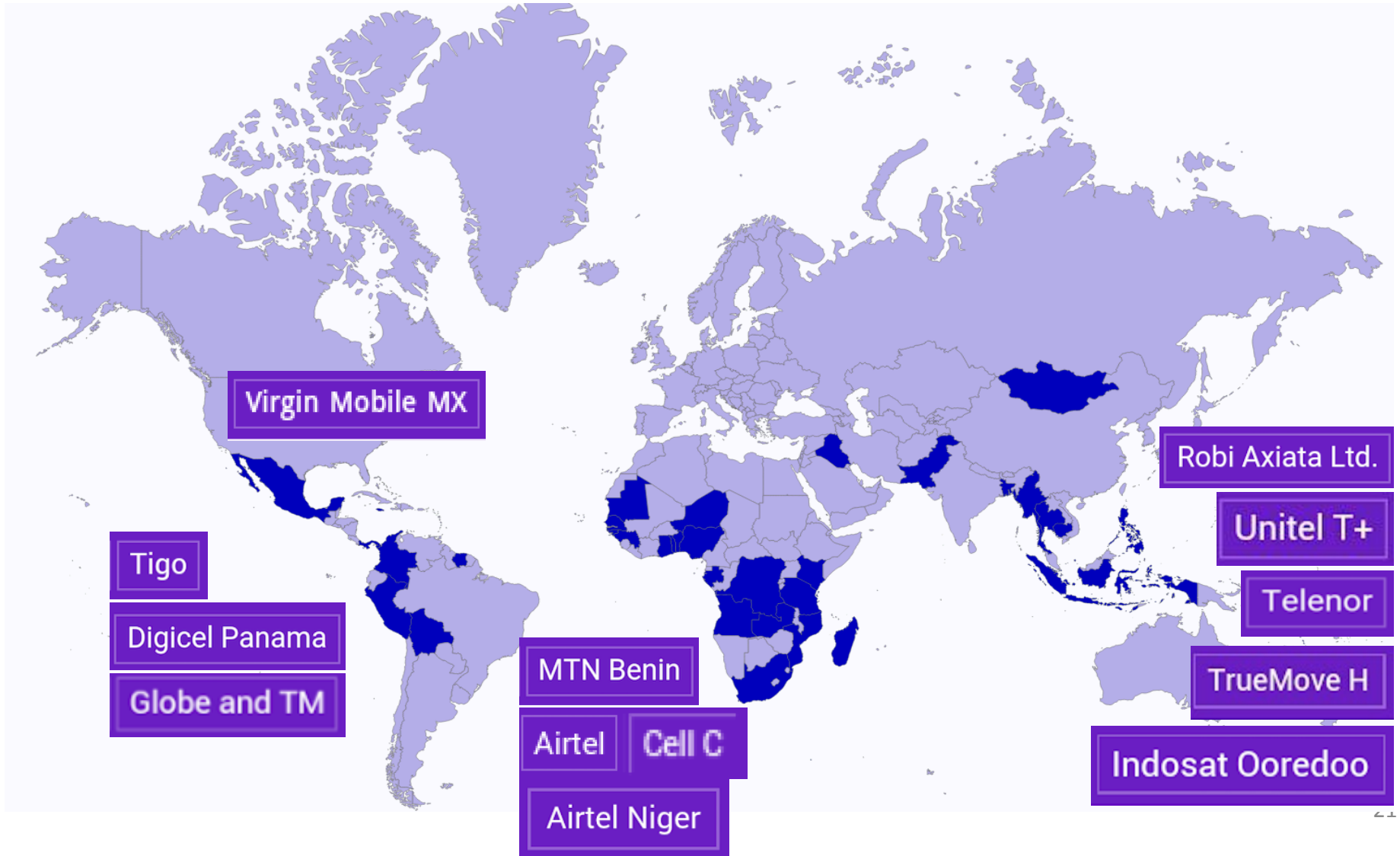


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# Challenging to measure



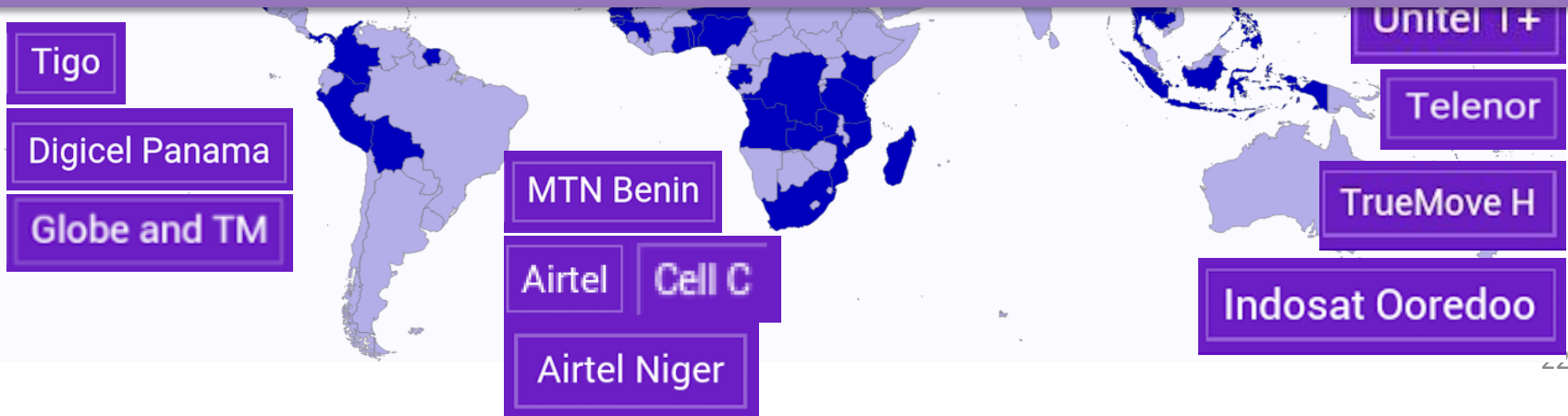
# Challenging to measure



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Measurement needs to be in specific countries, with particular cellular connections.



# Measurement methodology

Testbed in

- LUMS, Pakistan
- UCT, South Africa

WI-FI  
TETHER



USER MOBILE



LAPTOP WITH  
REMOTE LOGIN

CELLULAR  
PROVIDER



FACEBOOK  
PROXY



BBC



BING



WIKIPEDIA

WEBSERVICES



Architecture,  
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SCRIPTS



- browse Free Basics service list
- download both paid and zero-rated pages some services



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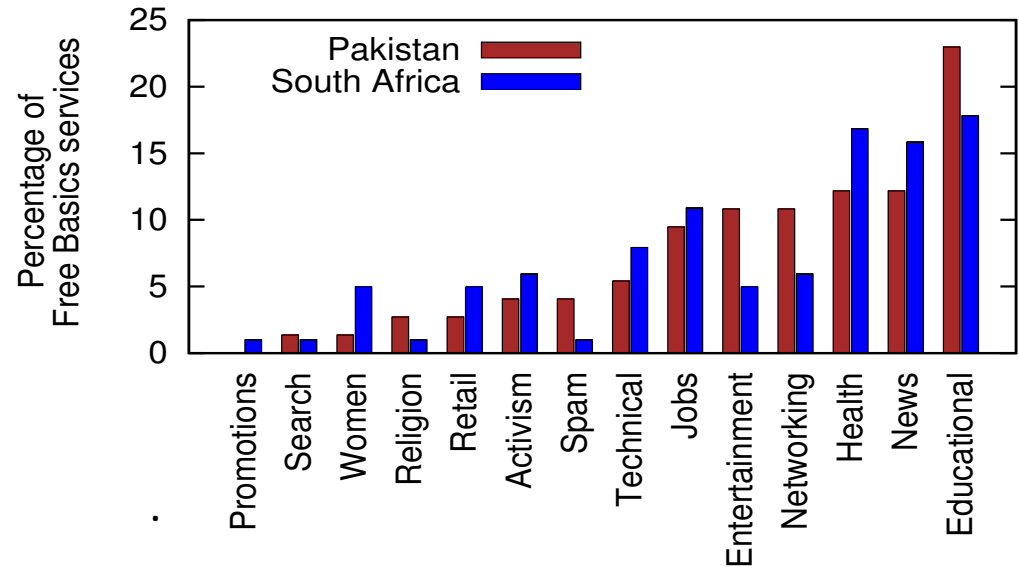
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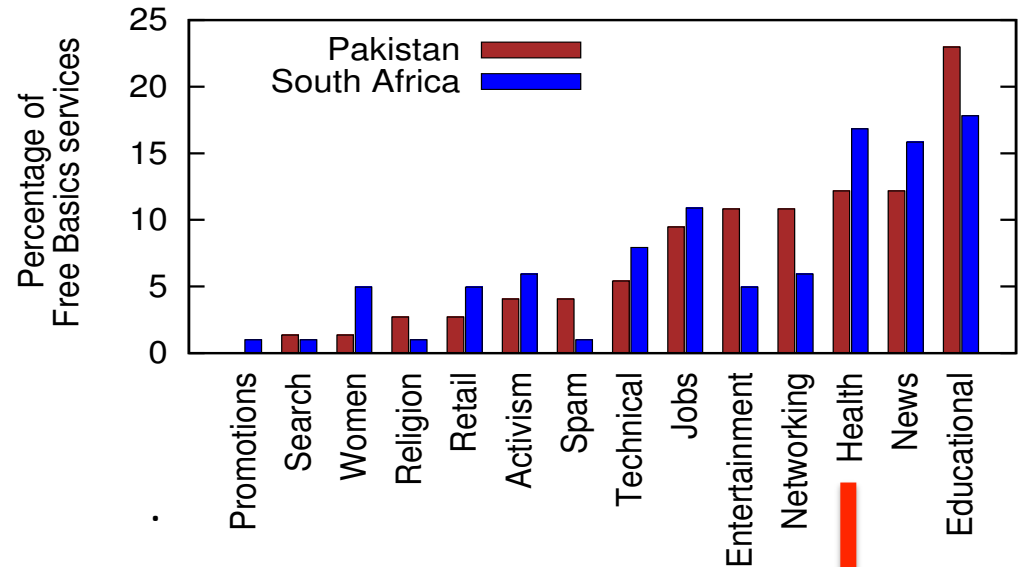
manual categorization  
from service name  
& description



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Malaria No More



Ebola Information



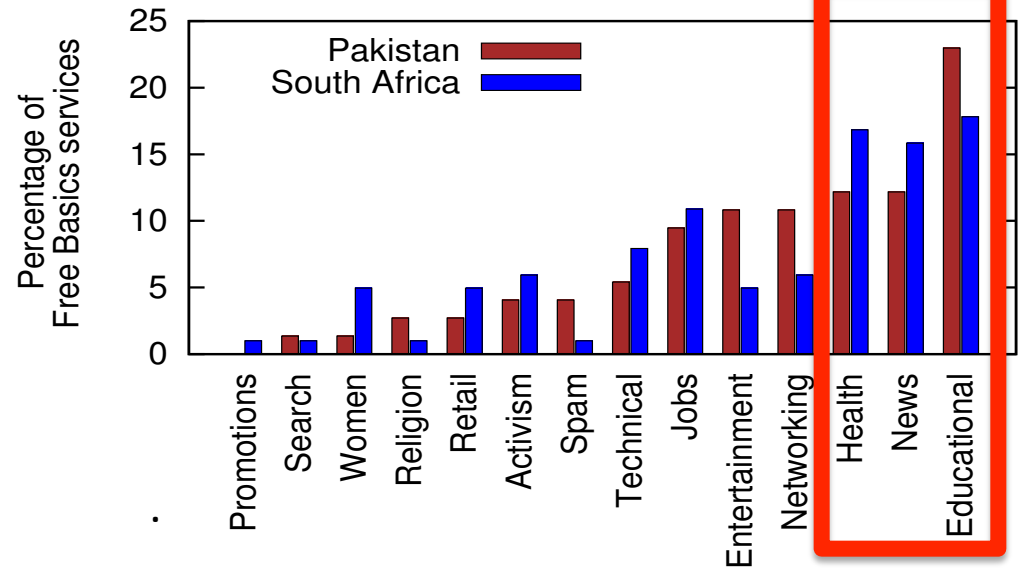
BabyCenter – Zika info

Learn about Zika, pregnancy and babies

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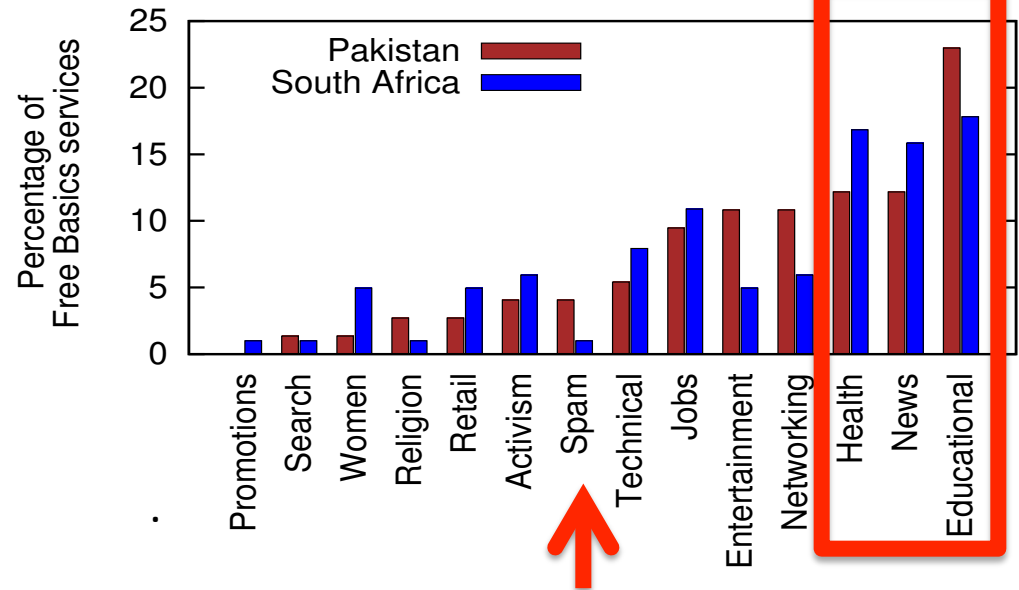
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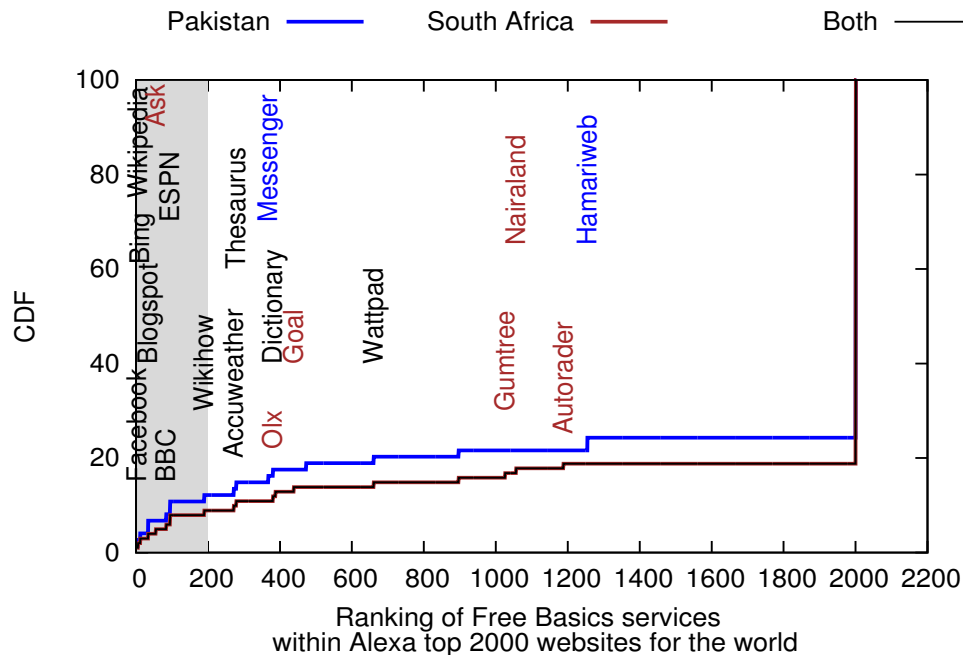
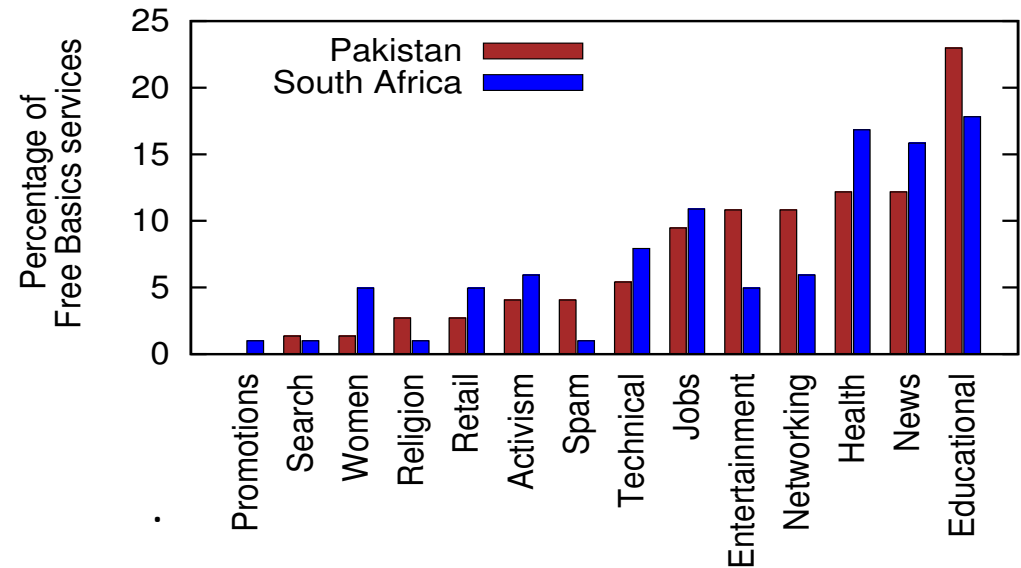
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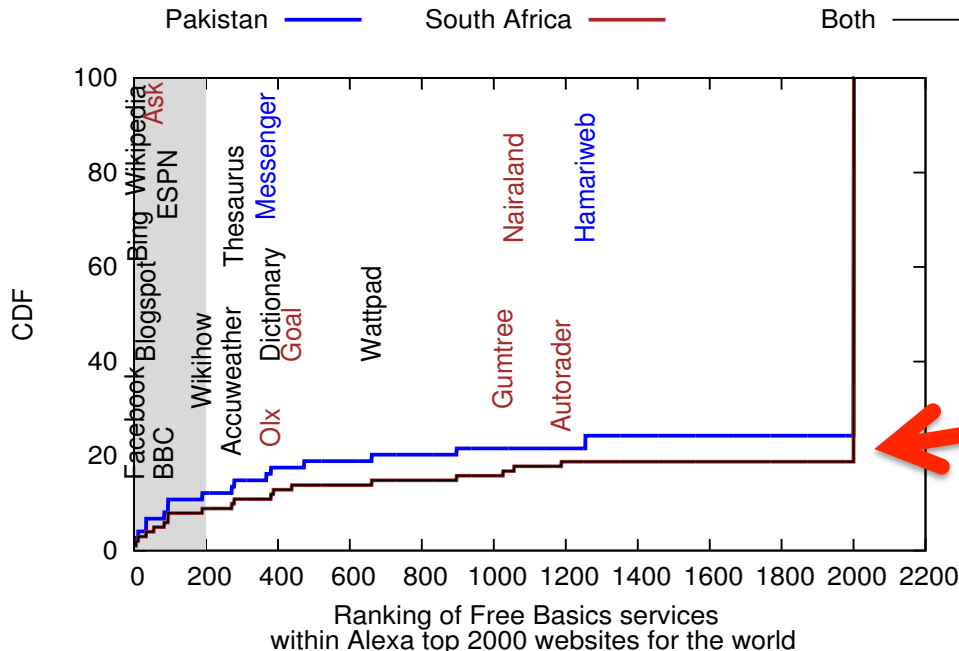
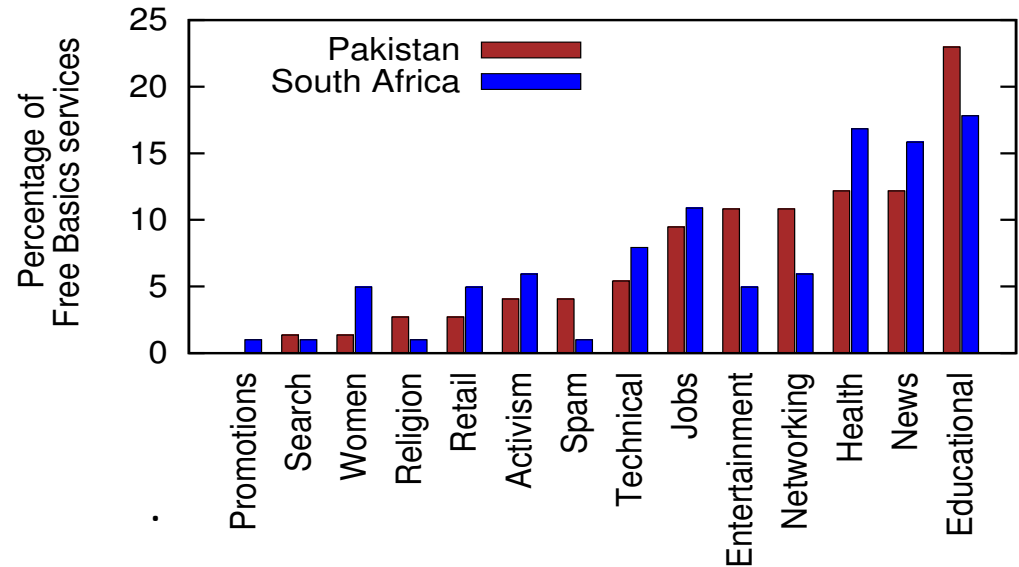


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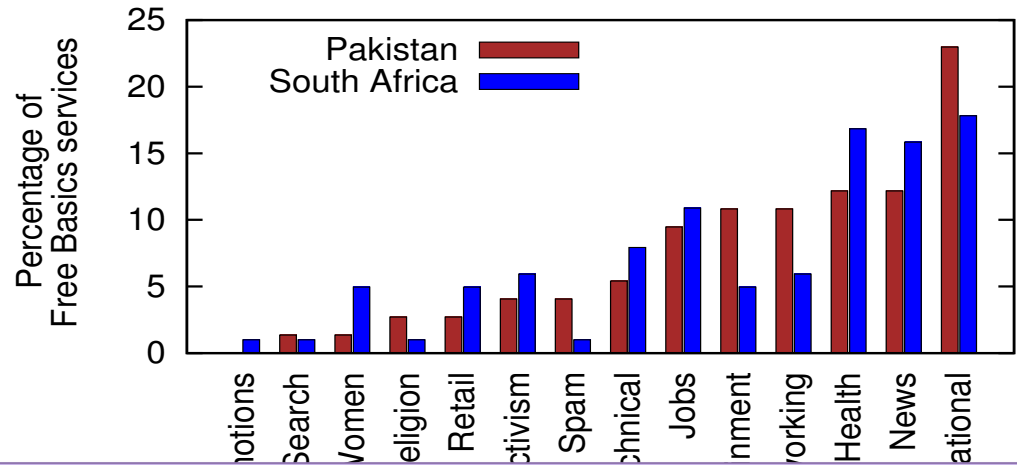
20% services like Facebook, BBC, Bing, Wikipedia, ESPN: highly popular in Alexa.



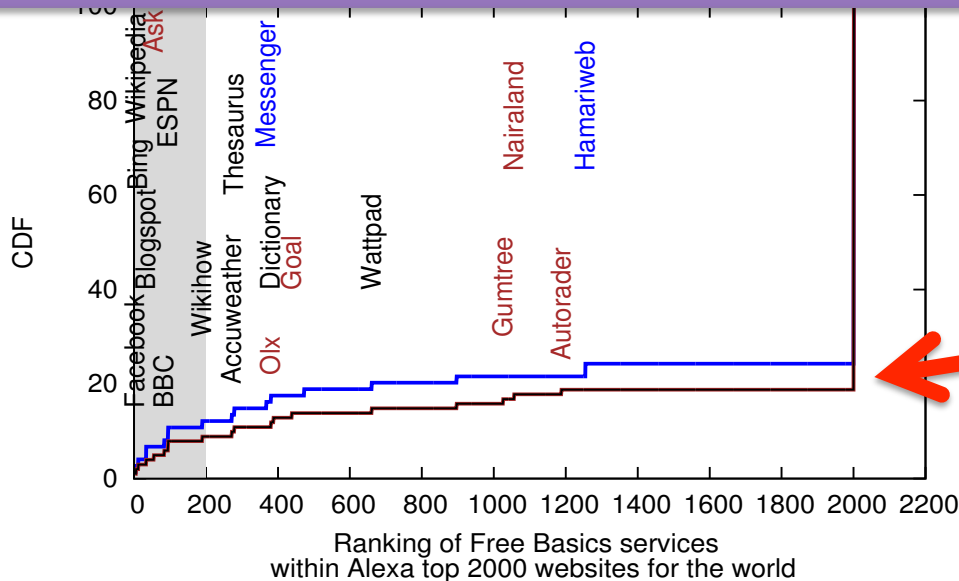
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#services low, few of them popular,  
but useful and locally relevant content in what is available.



Are these services popular?

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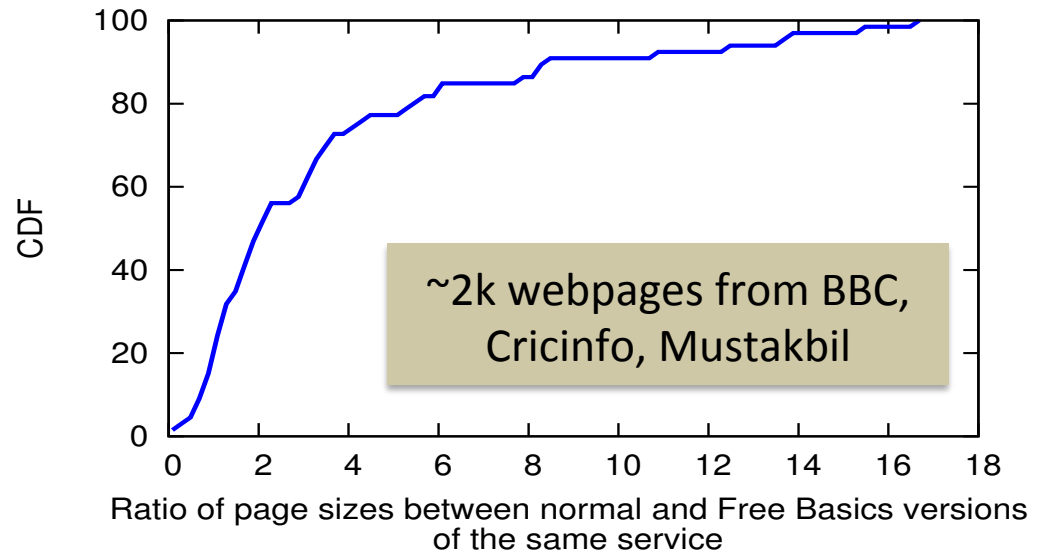
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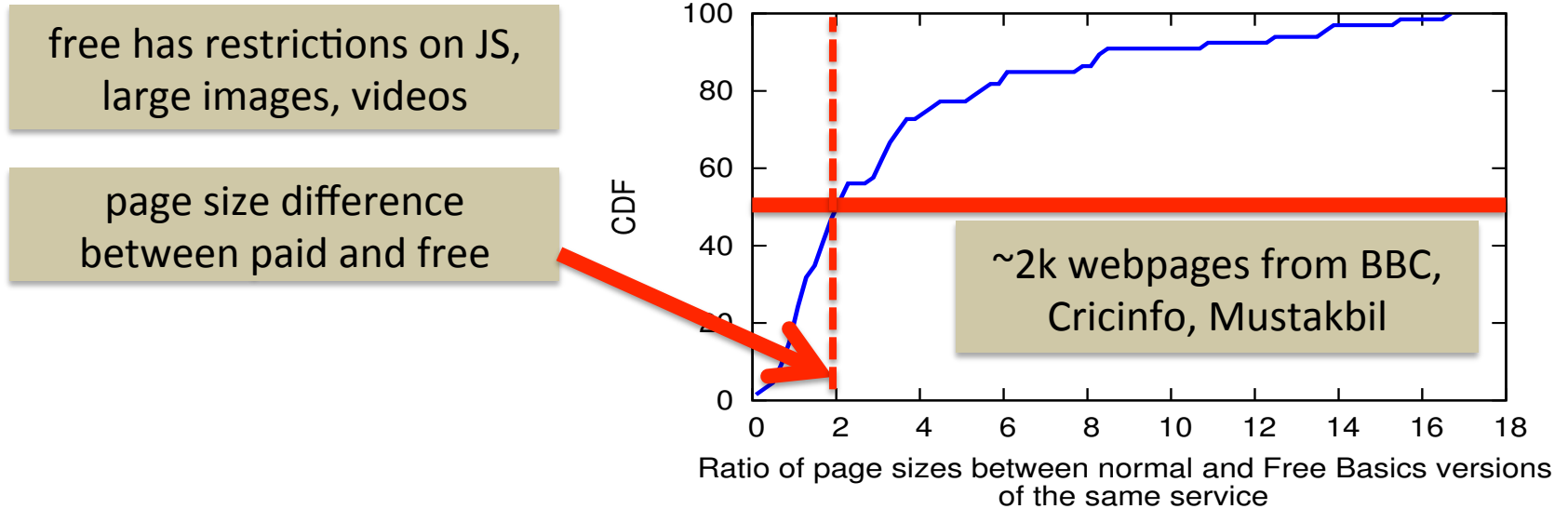
free has restrictions on JS,  
large images, videos

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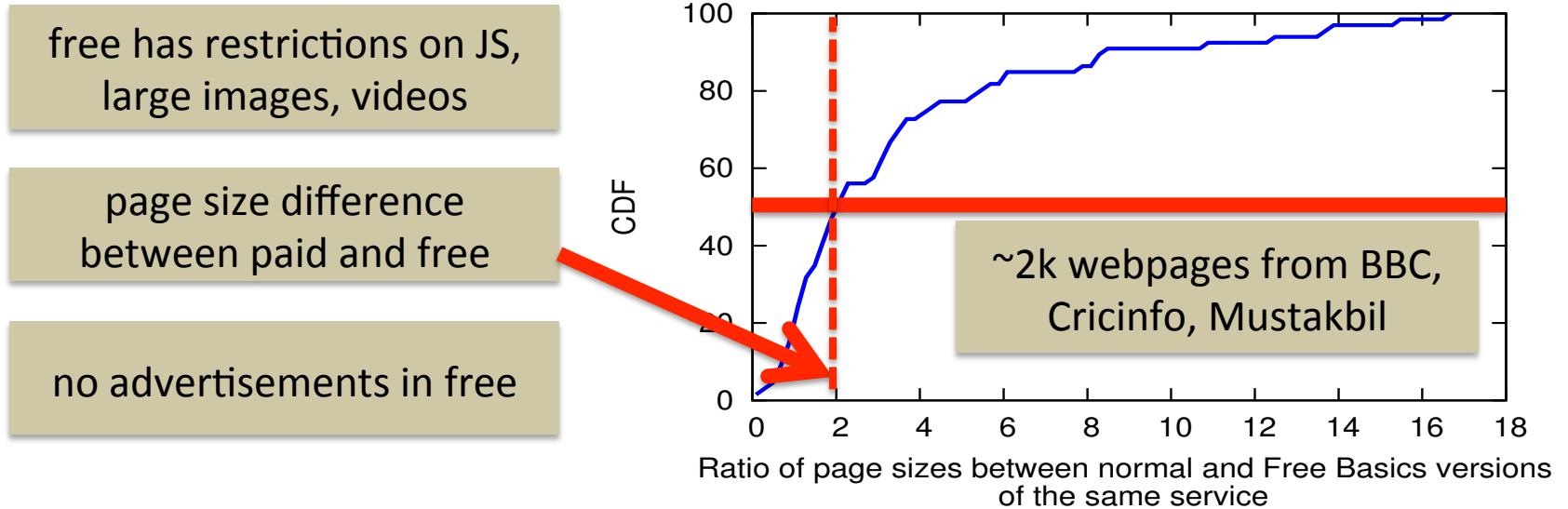
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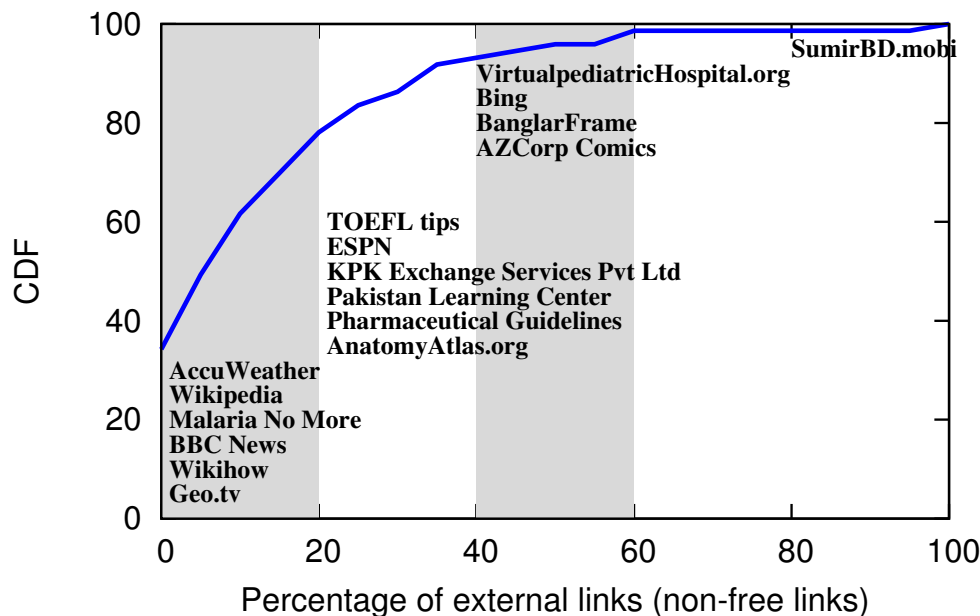
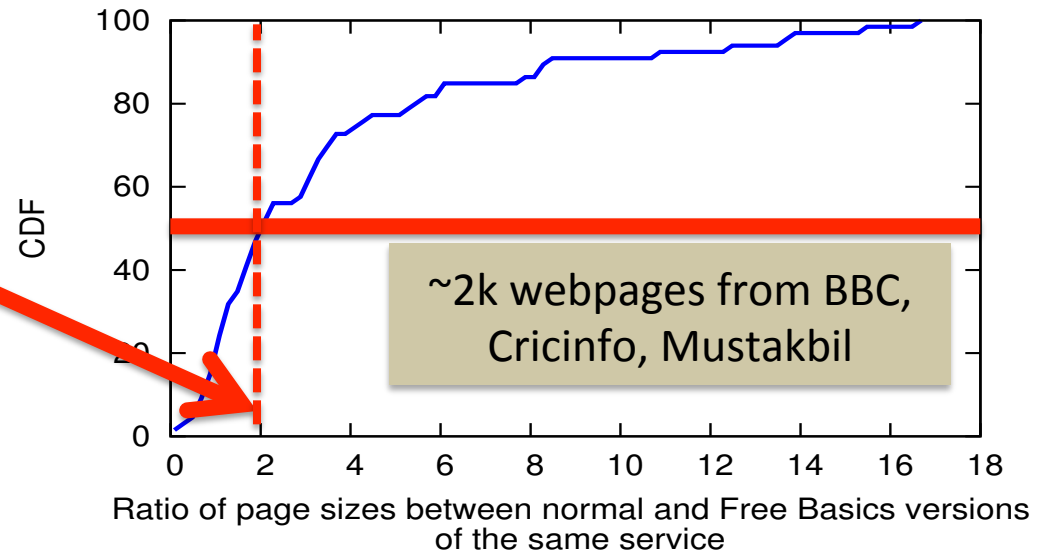


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page size difference  
between paid and free

no advertisements in free

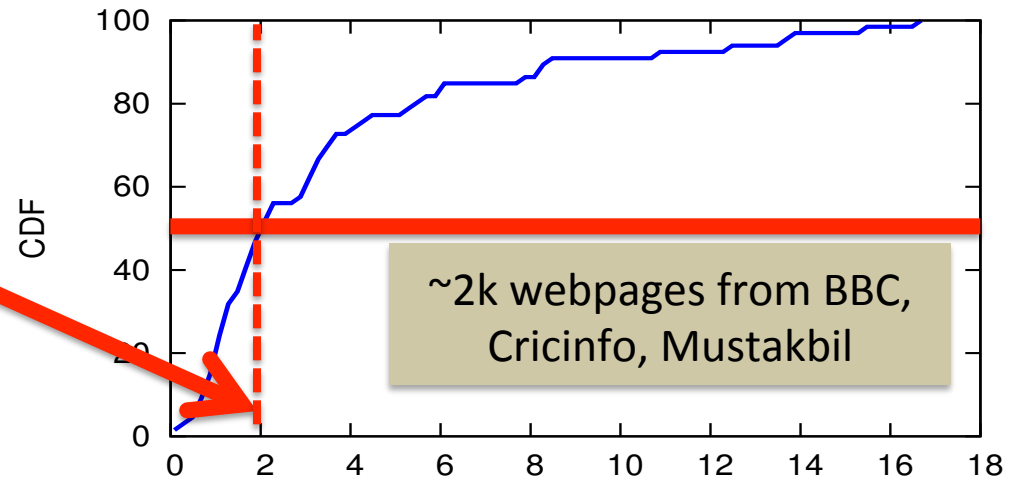


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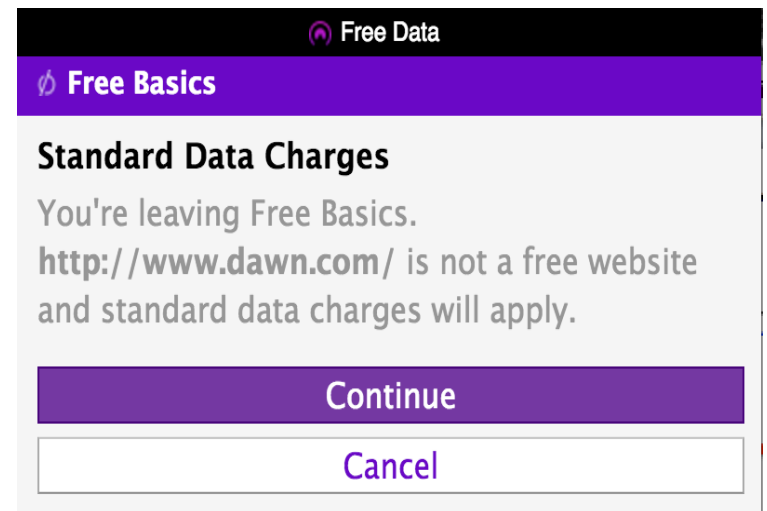
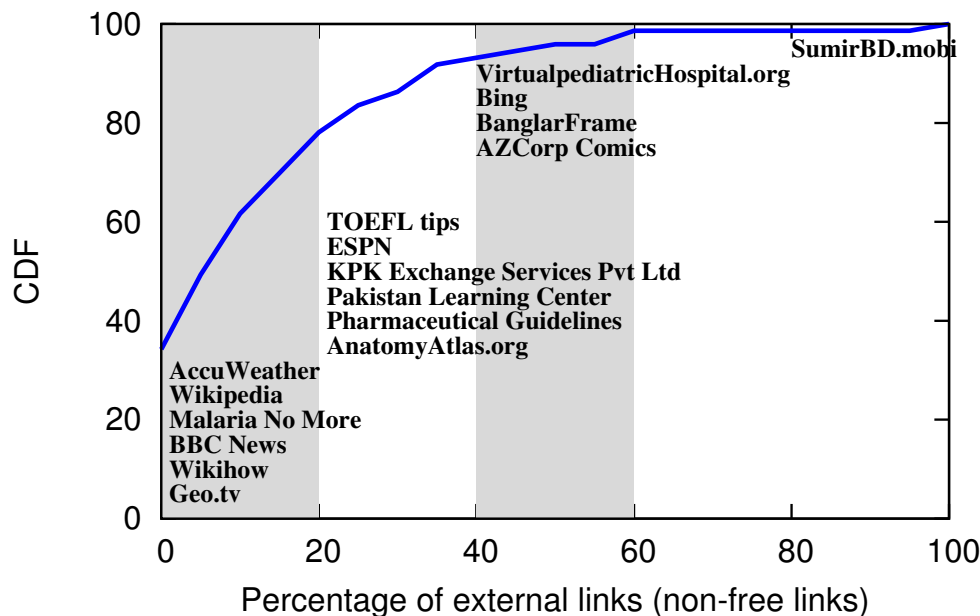
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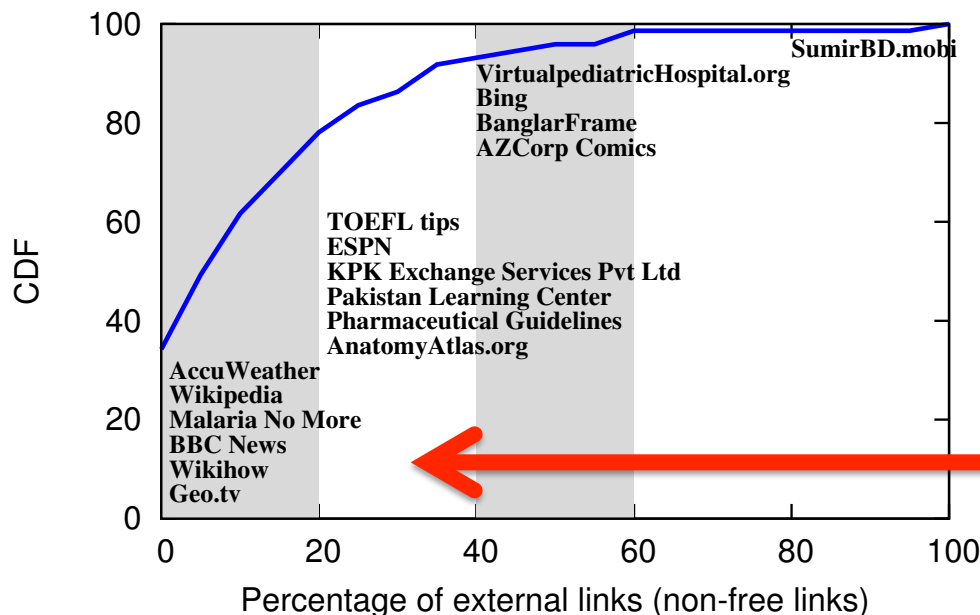
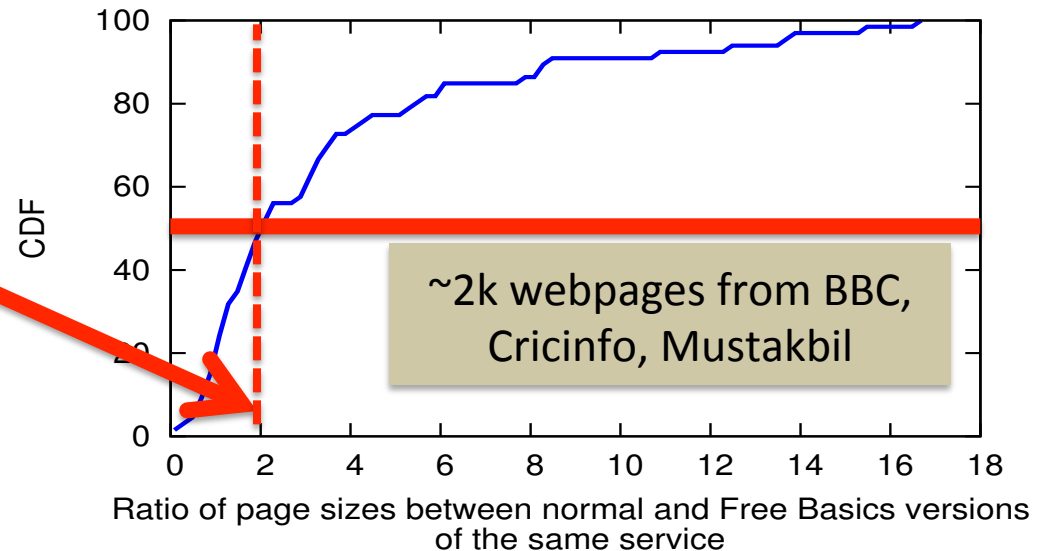
Ratio of page sizes between normal and Free Basics versions  
of the same service





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- free has restrictions on JS, large images, videos
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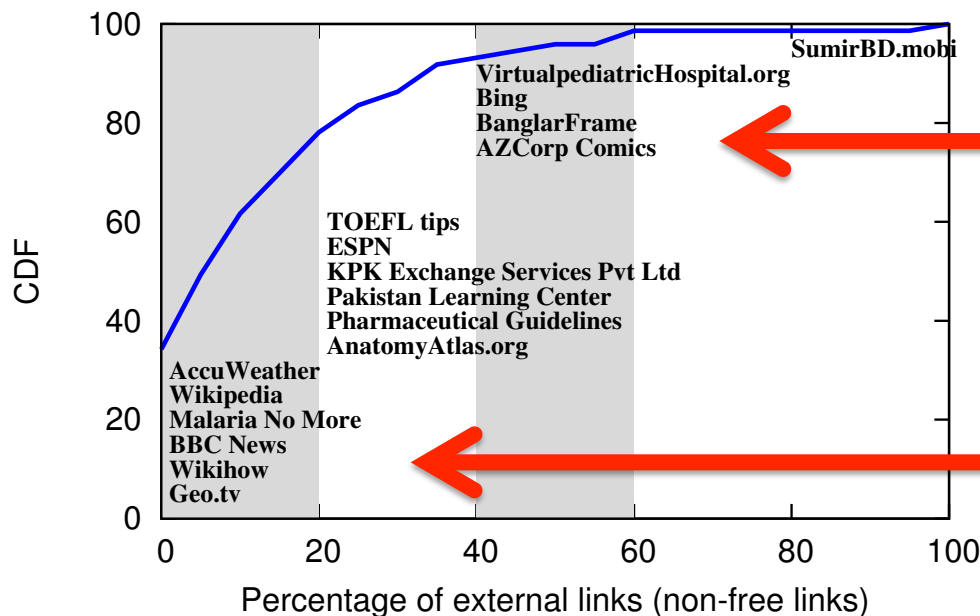
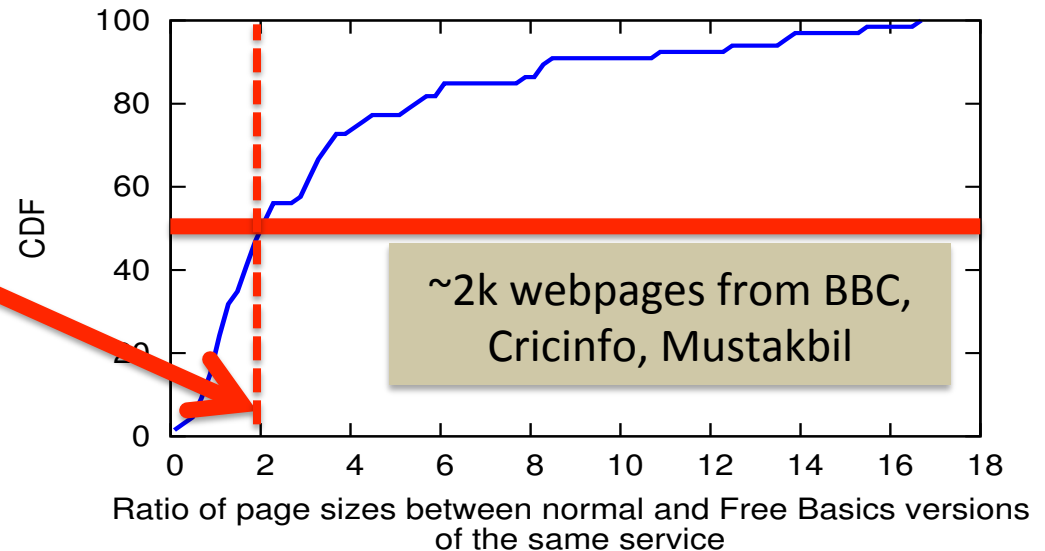


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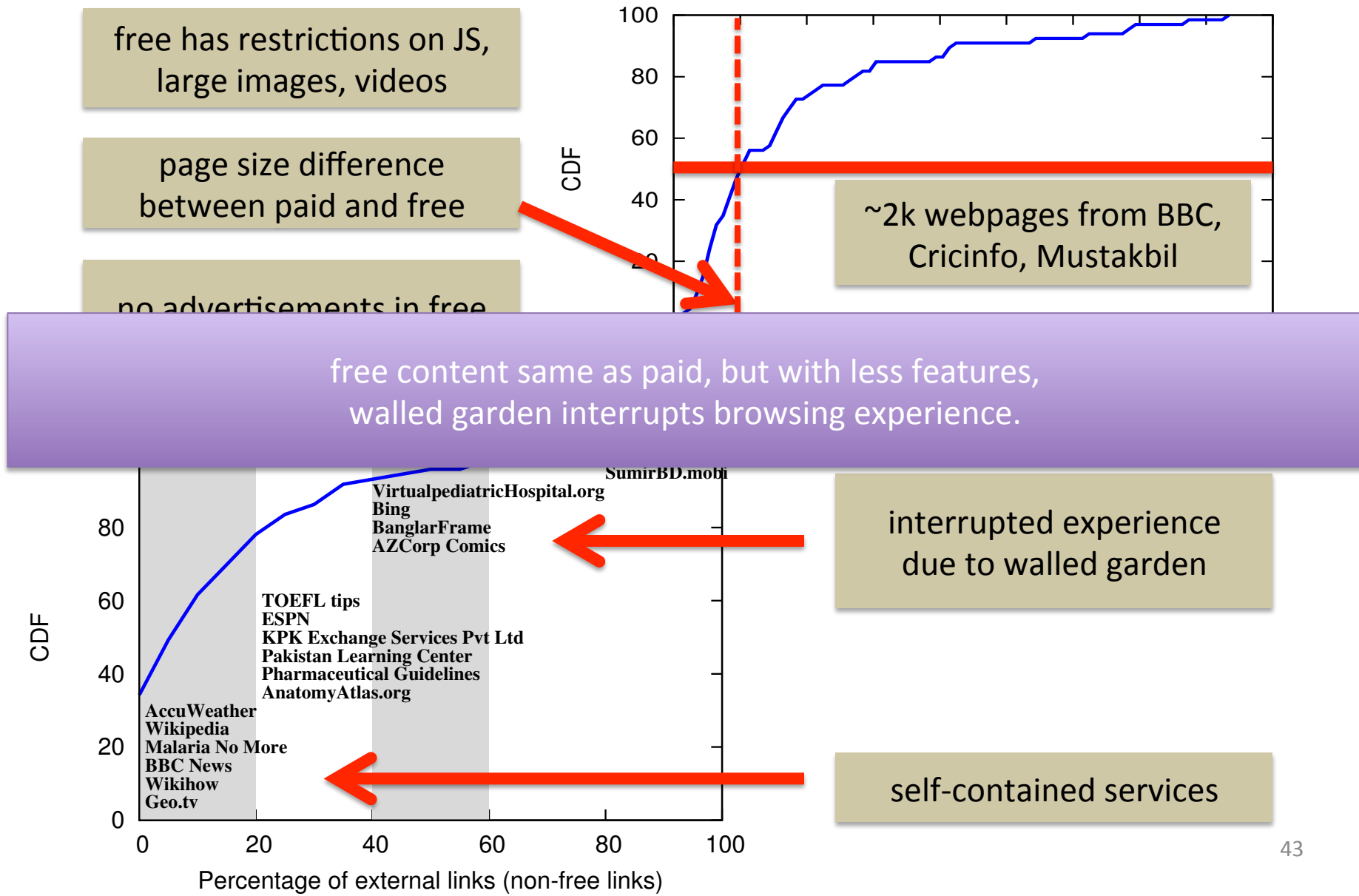
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interrupted experience  
due to walled garden

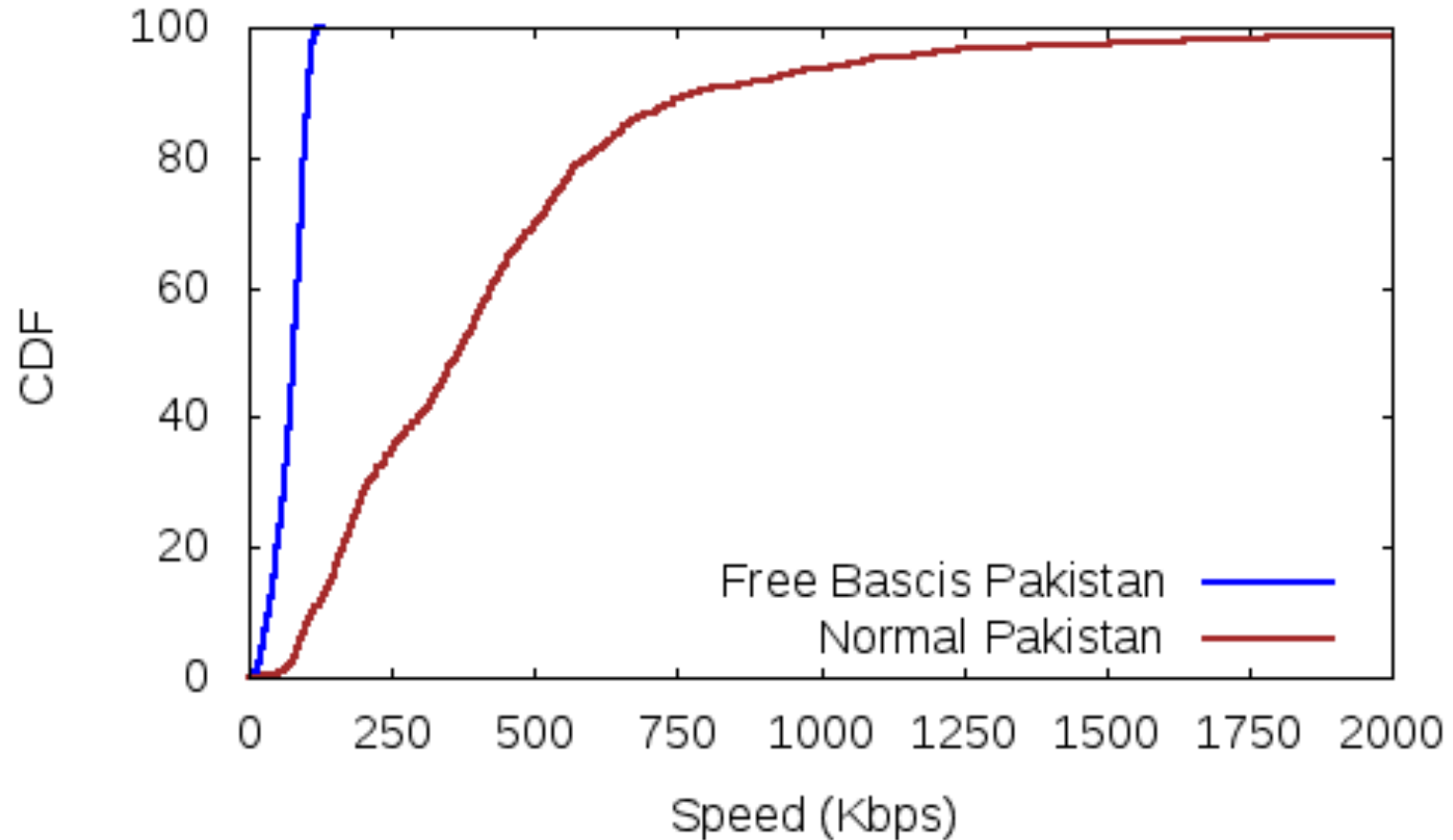
self-contained services

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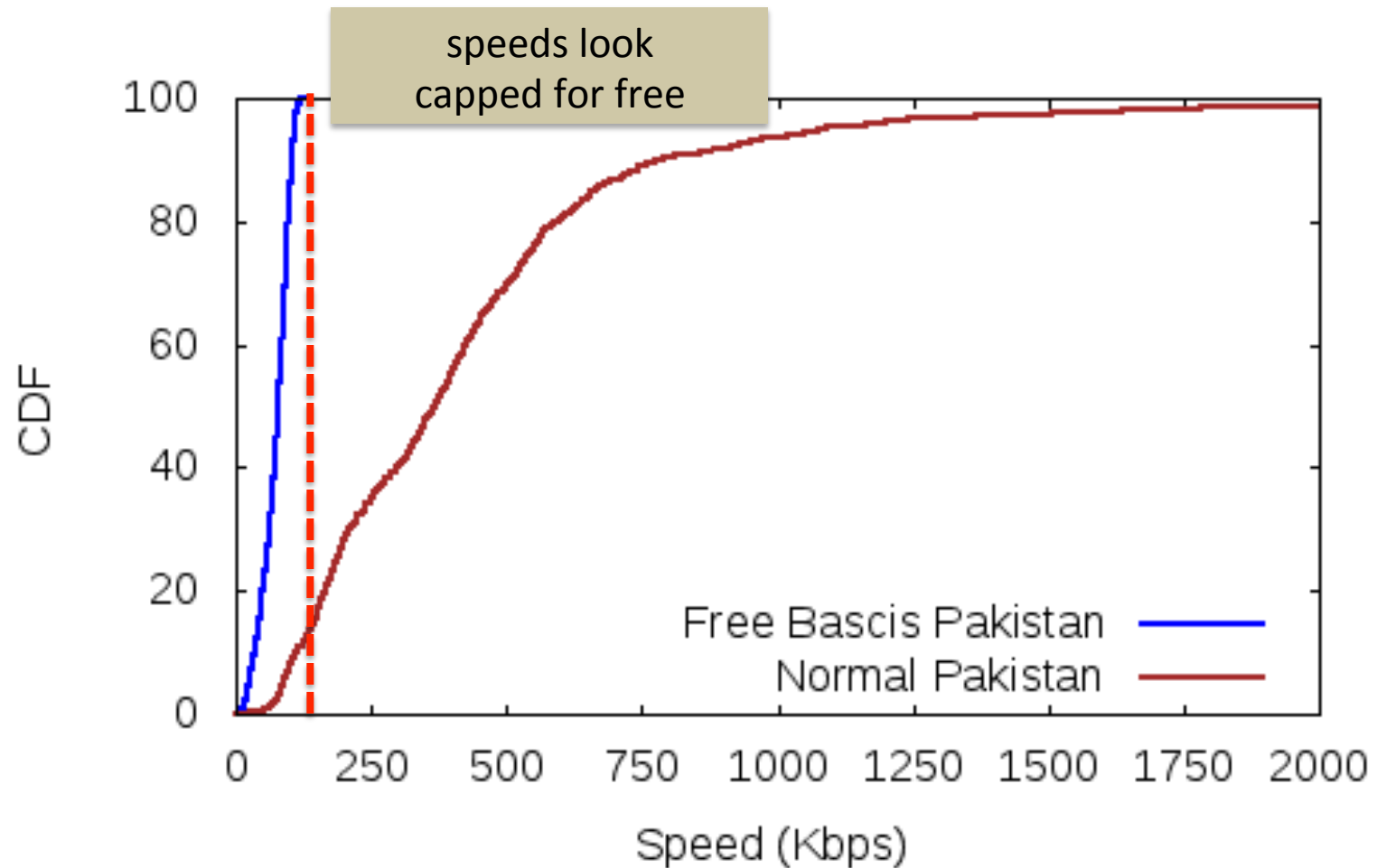


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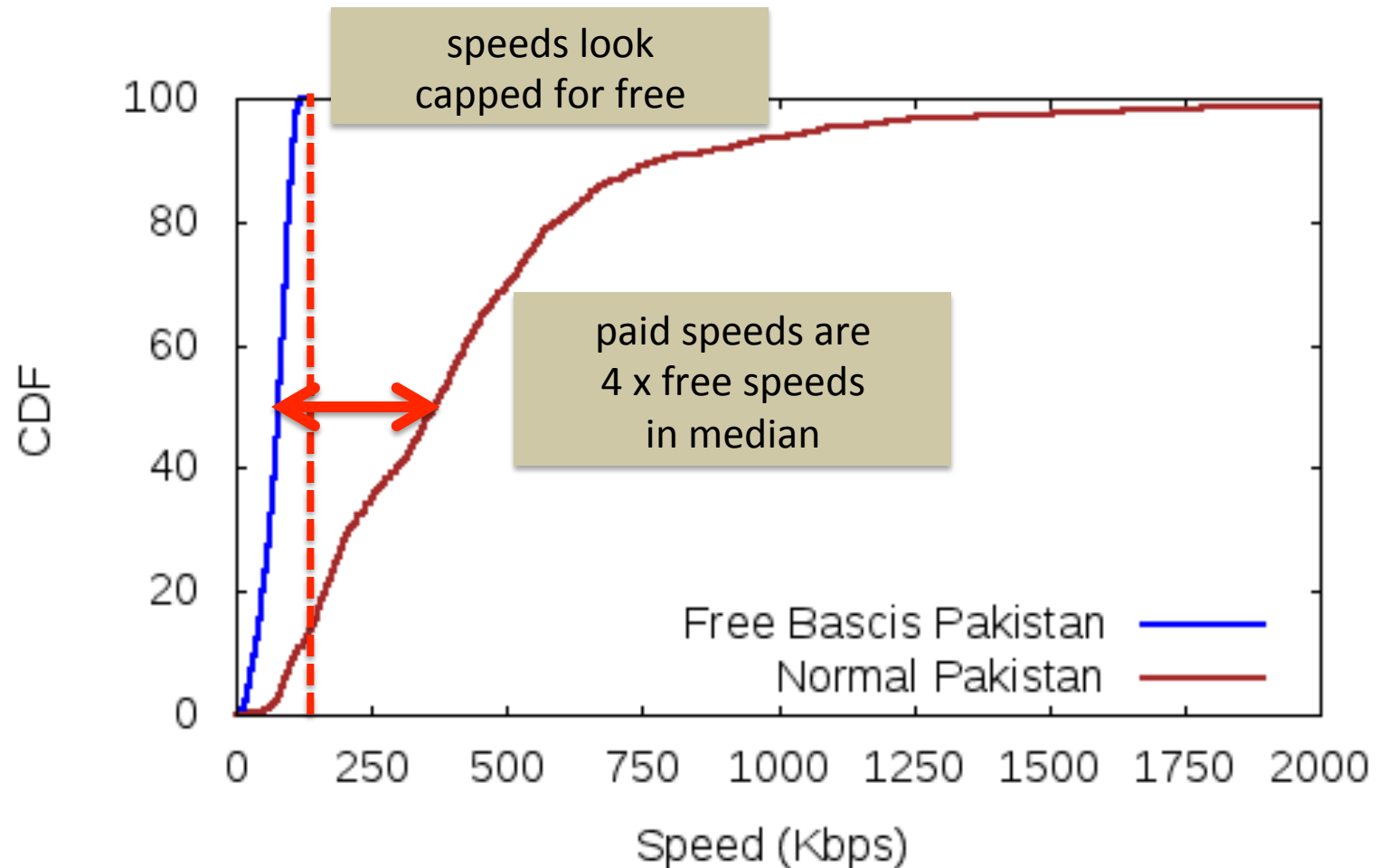
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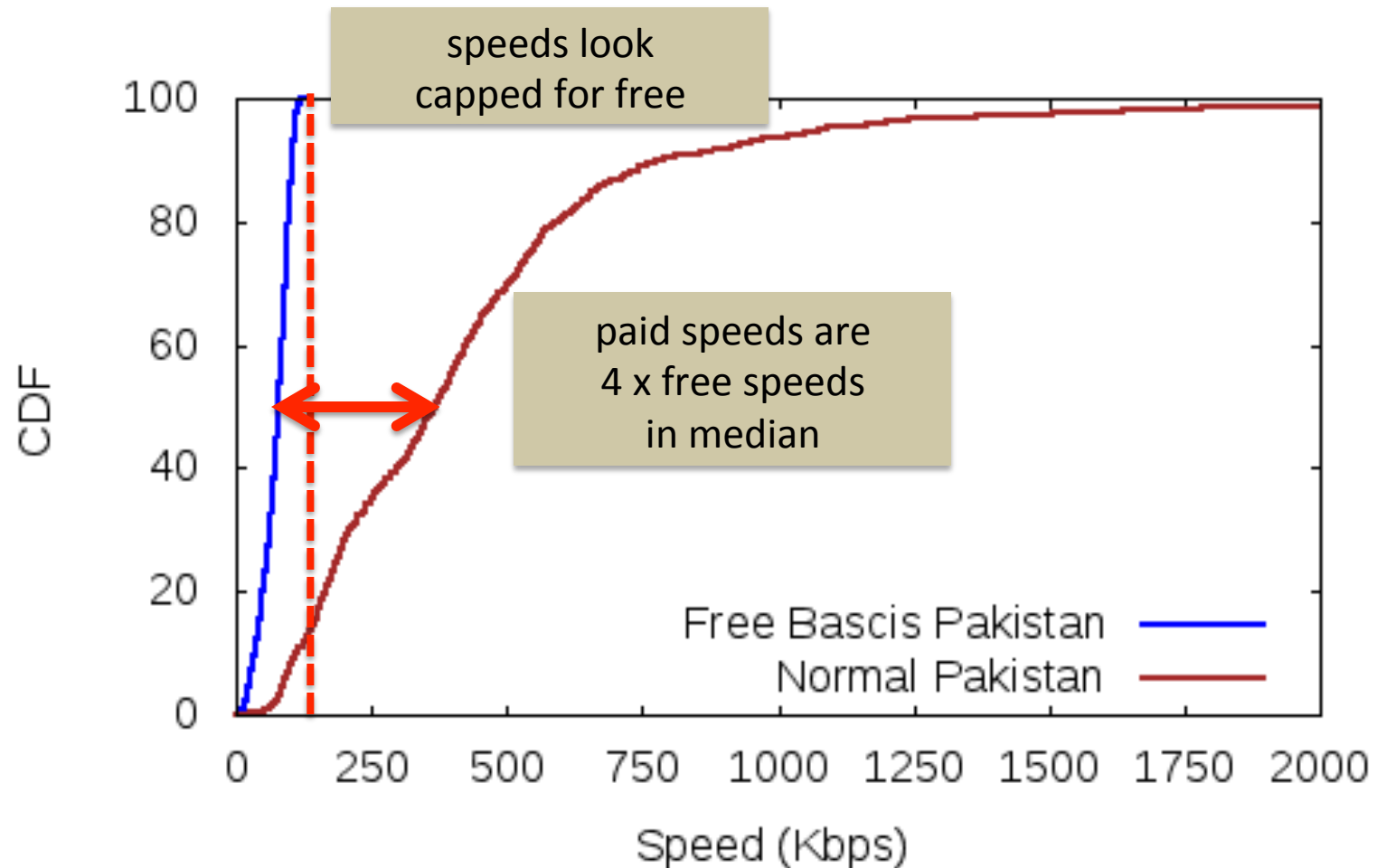
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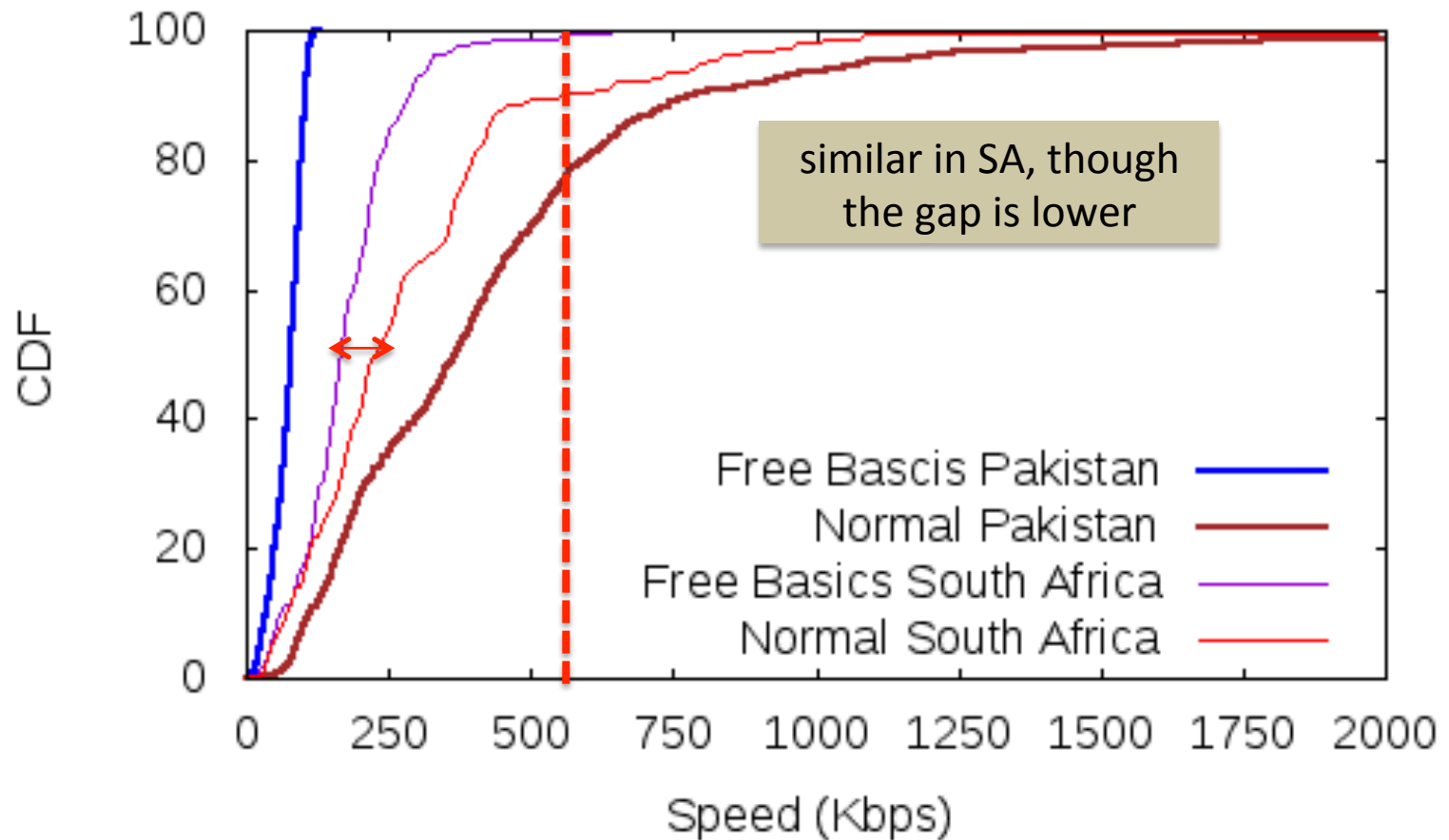
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same cellular connection, same place, same time – page fetch slower for free

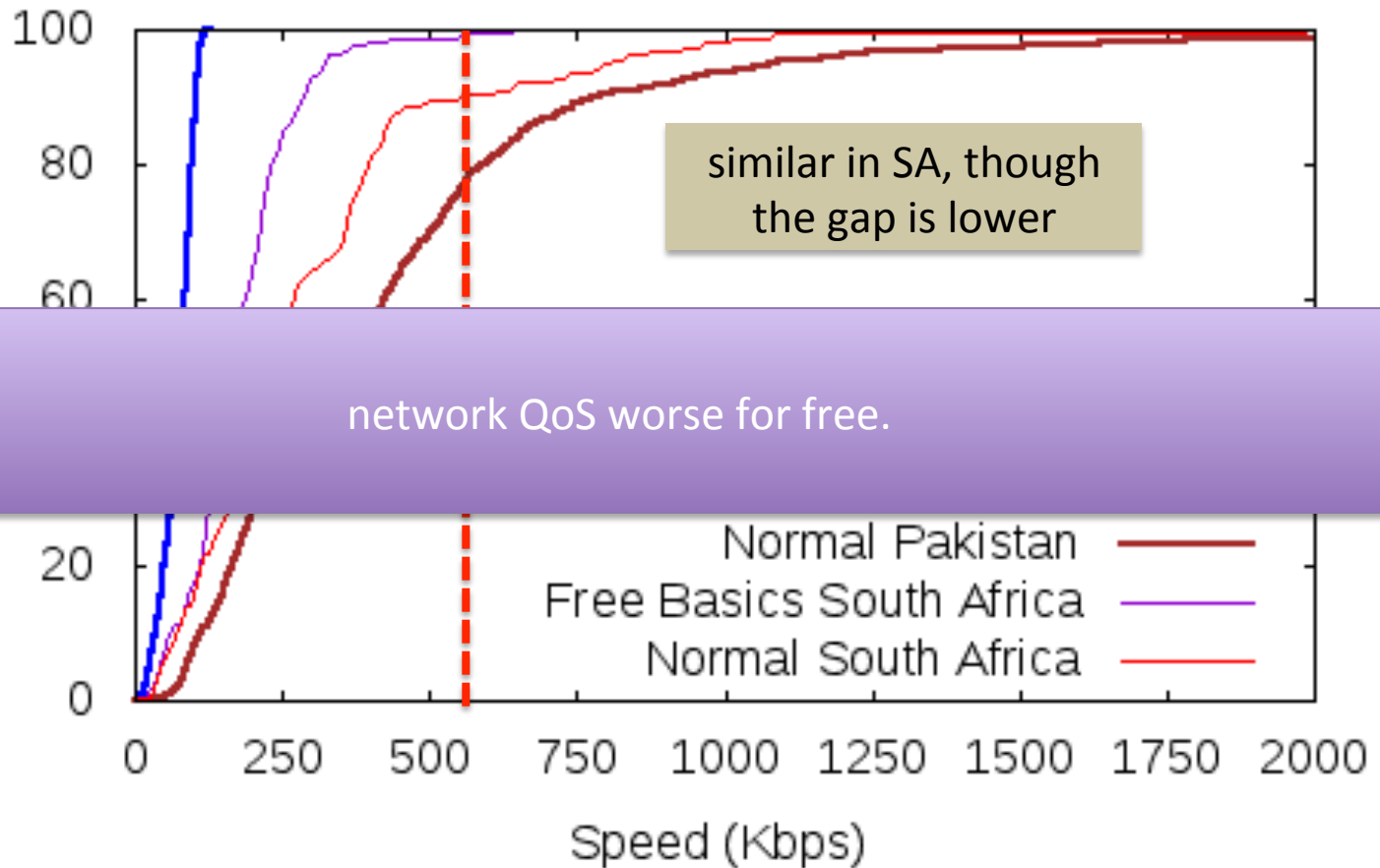


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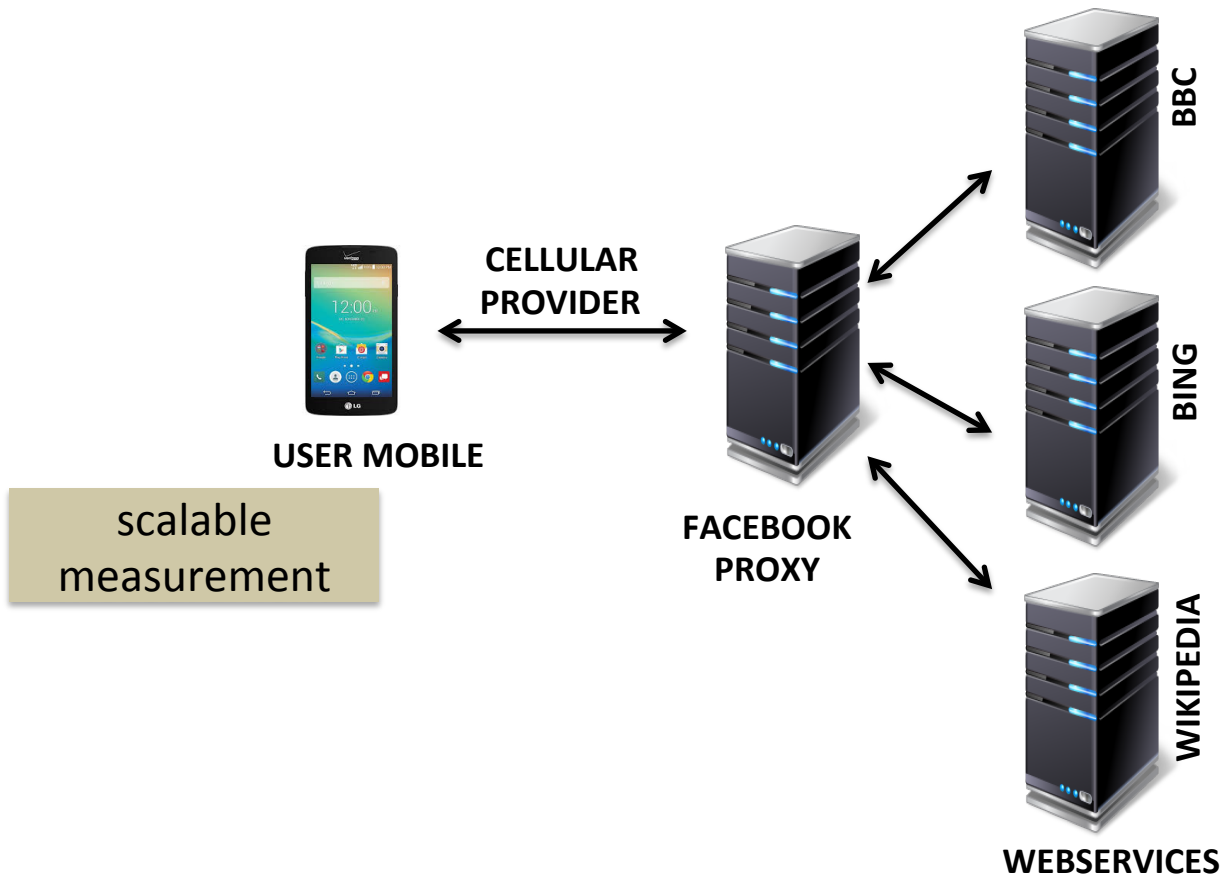
# Summary & ongoing work

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- ~ 100 free services in different categories
- somewhat restricted functionality
- worse network QoS compared to paid counterparts

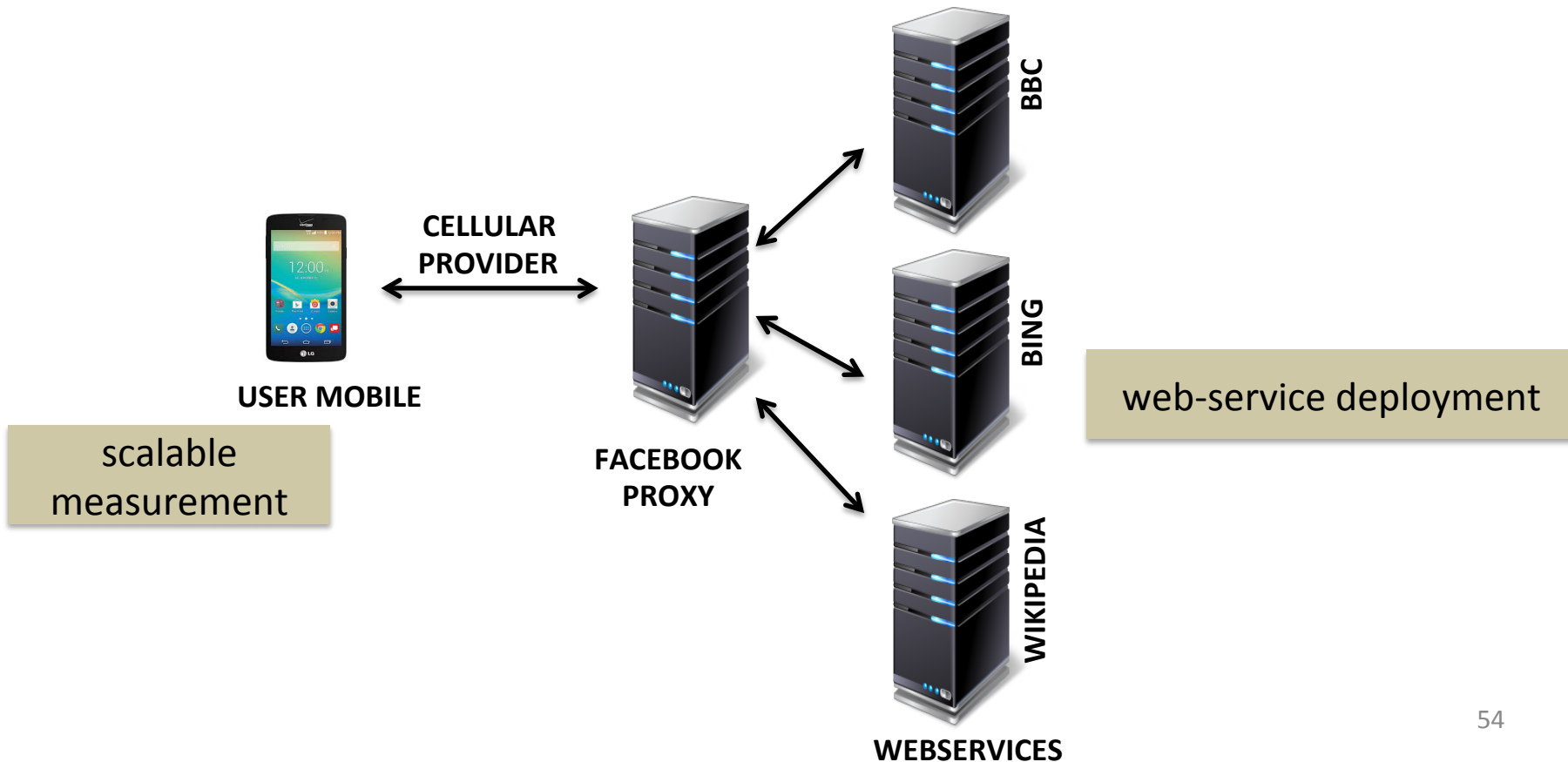
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Open questions: How are services growing over time? What services can be supported within the technical specifications? Who is to blame for throttling?

