




5G and the dilemma of connecting rural and low income communities

by Tim Genders, WAPA

You're on a Huawei to Hell, China tells US: We'll fight import tariffs, trade war to bitter end

Beijing slams Trump's 'abuse of export control measures', vows to take some sort of action

By [Iain Thomson](#) in [San Francisco](#) 16 May 2019 at 20:22 30  SHARE ▼



What are the issues?



Spying ?



Backdoor ?

What is 5G?

Faster 4G

What was 4G?

Faster 3G

What was 3G?

The Need for Speed

1G



3G



2G



4G



Leave **New York** at 6am, make afternoon and dinner meetings in **London**, and be home to tuck your kids into bed.

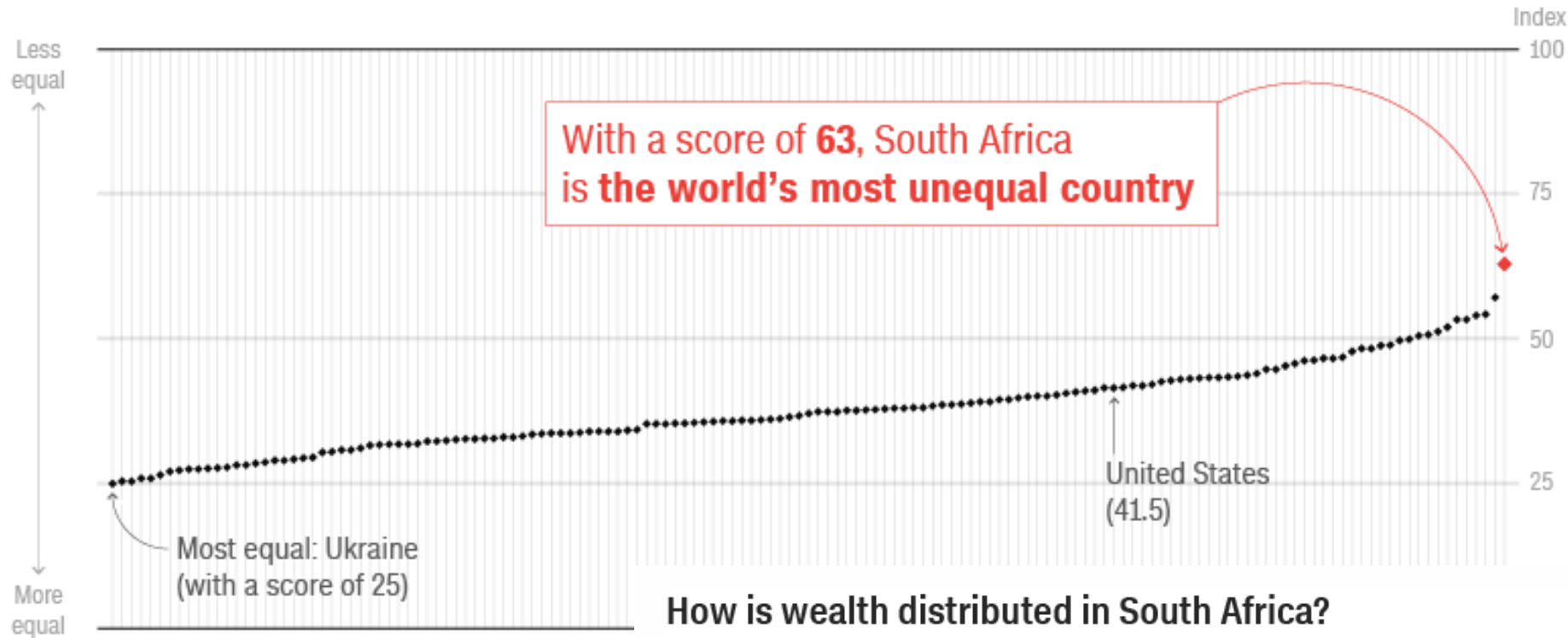
EACH WAY
\$2,500

BOOM ARRIVES IN
~~7hrs~~ **3hrs 15min**

TIME GAINED
3hrs 45min

Income inequality: How does South Africa compare?

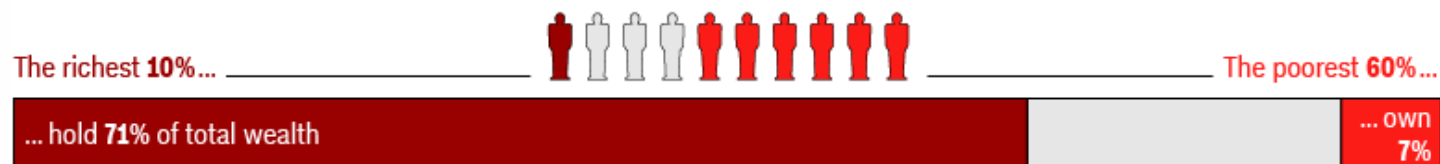
The Gini index measures the distance to perfect equality. The less equal a country's income distribution, the higher its score



10 May 2019



How is wealth distributed in South Africa?



OECD AVERAGE:

The richest **10%**...

... hold **50%** of total wealth

The poorest **60%**...

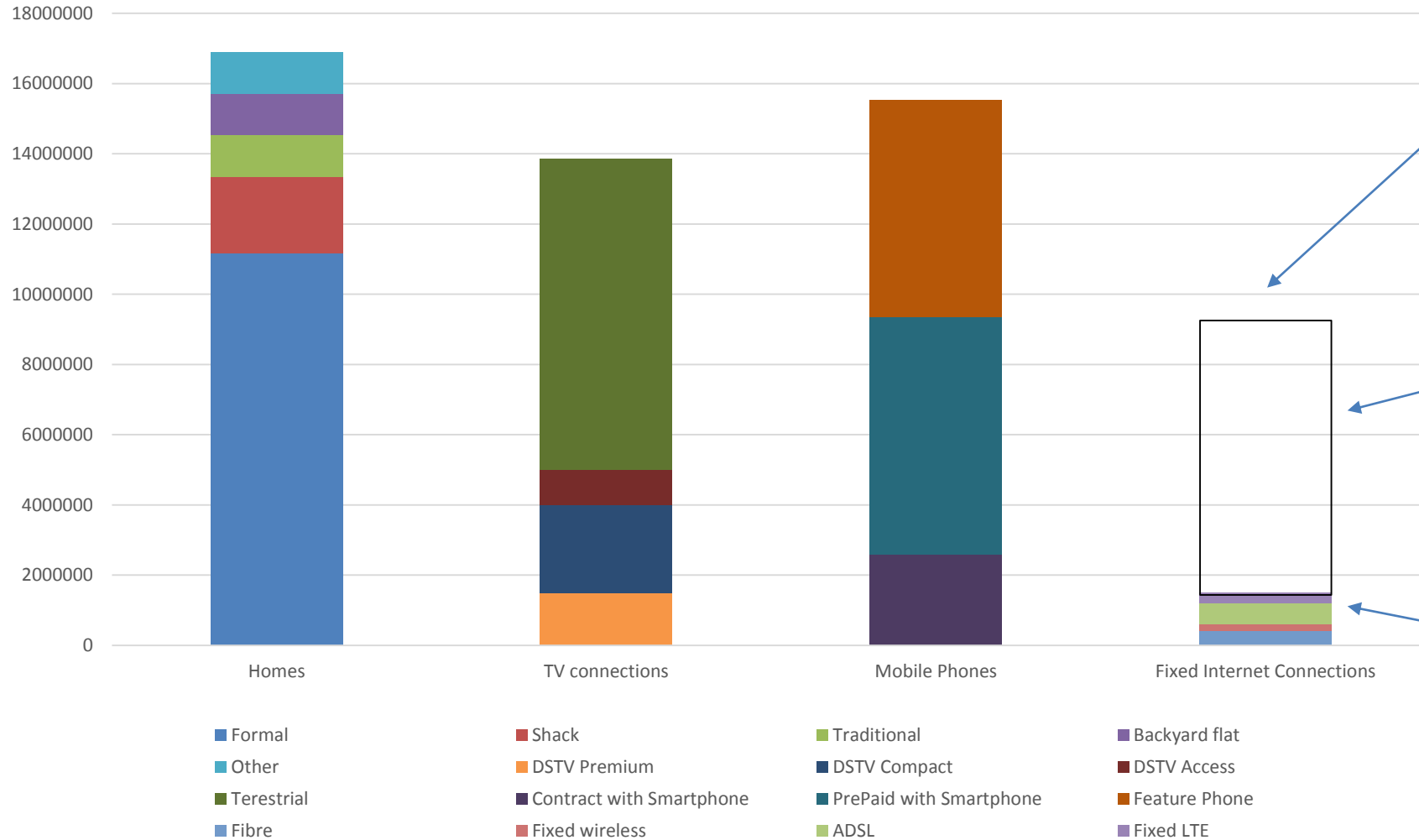
... own **13%**



Source: World Bank and University of South Africa, 2011-2015.

South Africa Connected households

South African Connections at home



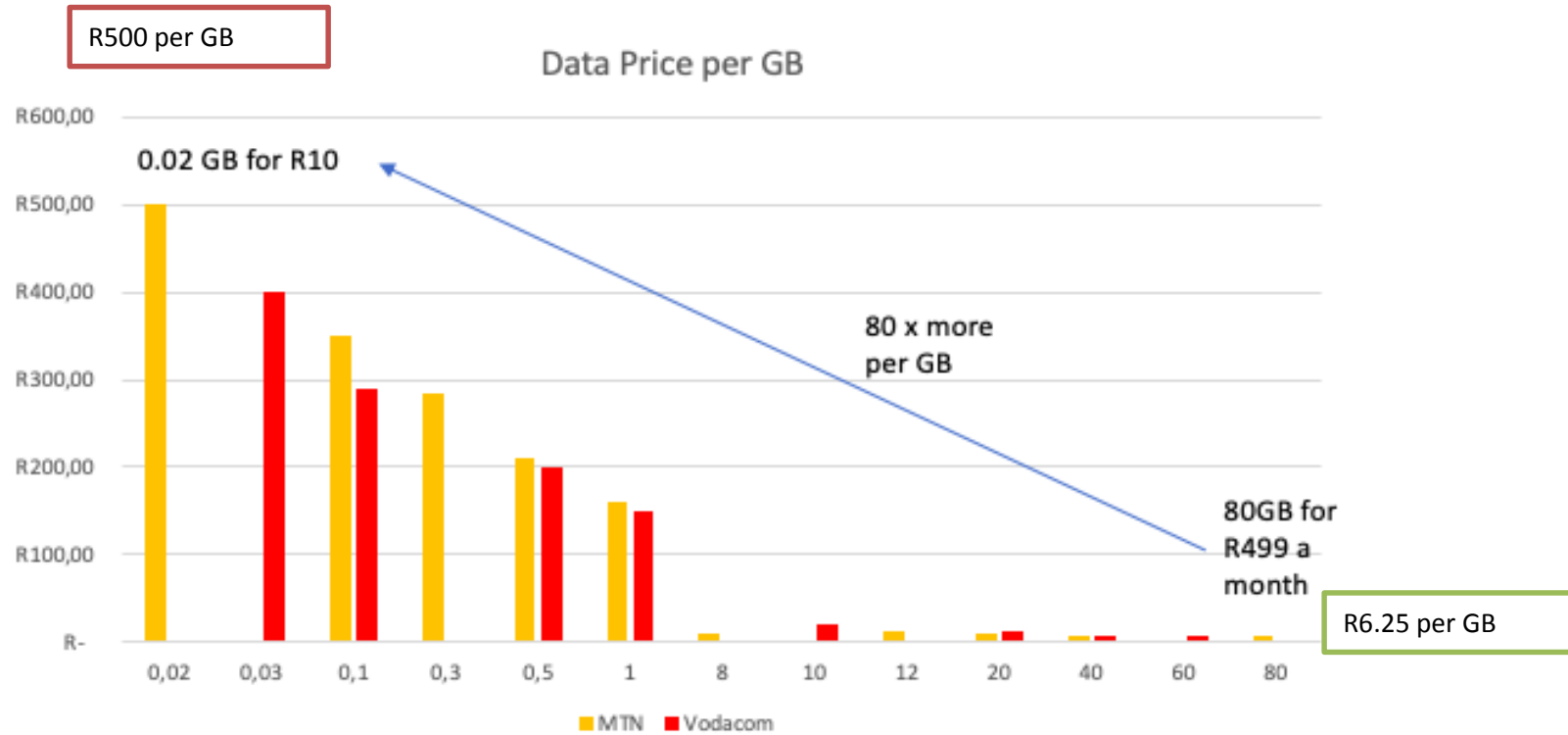
7.5 million lower income homes are paying up to **80X** more for Internet access than high income homes

Smart phone Internet access.
Data Cost up to R500 per GB

Only 10% of SA homes have fixed affordable Internet.

Data Cost < R10 per GB

Cost of Data contracts



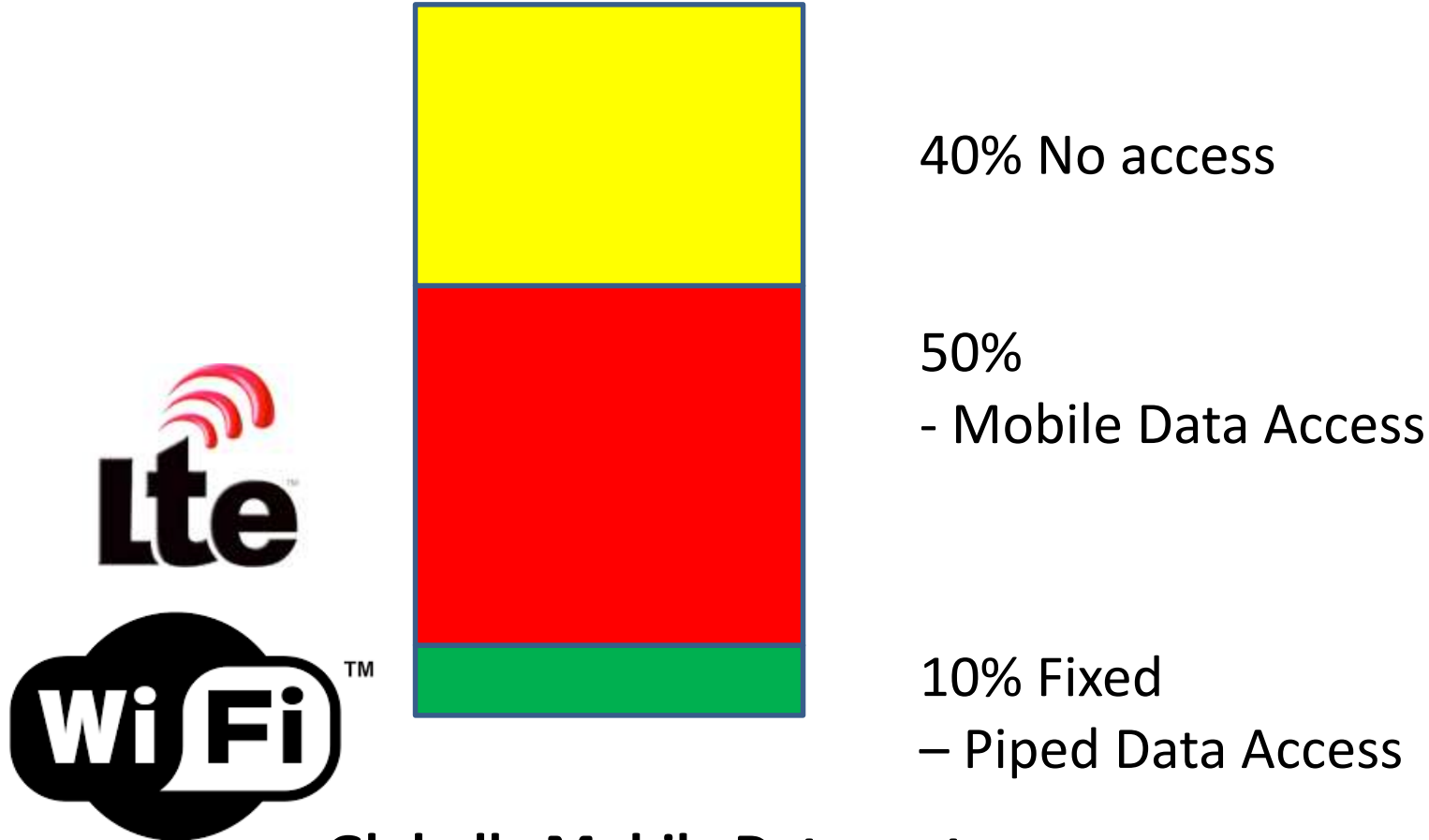
Pre paid data bundles

Low income
 Uncreditworthy
 Only data option available

Post paid 24 month data contracts

High income
 Creditworthy
 One of many data options available

Internet Access

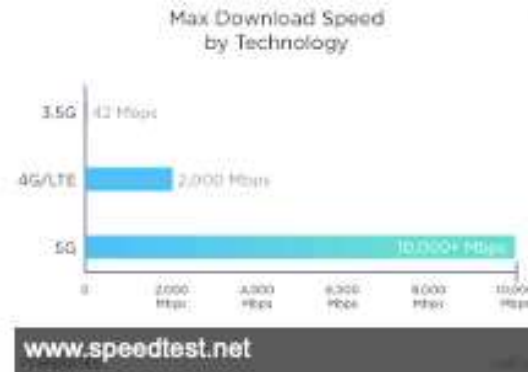


**Globally Mobile Data costs
37x more than Wi-Fi Data**
Wi-Fi Now 2nd August 2019



5G for 90% of South Africa

Tech companies are promising a lot from **5G**. While 4G tops out at a theoretical 100 megabits per second (Mbps), **5G** tops out at 10 gigabits per second (Gbps). That means **5G** is a hundred times faster than the current 4G technology—at its theoretical maximum **speed**, anyway. Mar 15, 2019



R29 buys 100 MB
1 gigabit per second
= 128 MB per second

Enjoy 5G speeds
for 0.78 seconds



Why do we need 5G?

Fixed Wireless Internet



Already here



RADWIN

mimosa



Driverless Cars



Already here?



How do we connect up SA?

Dr David Johnson
Dr Albert Lysko

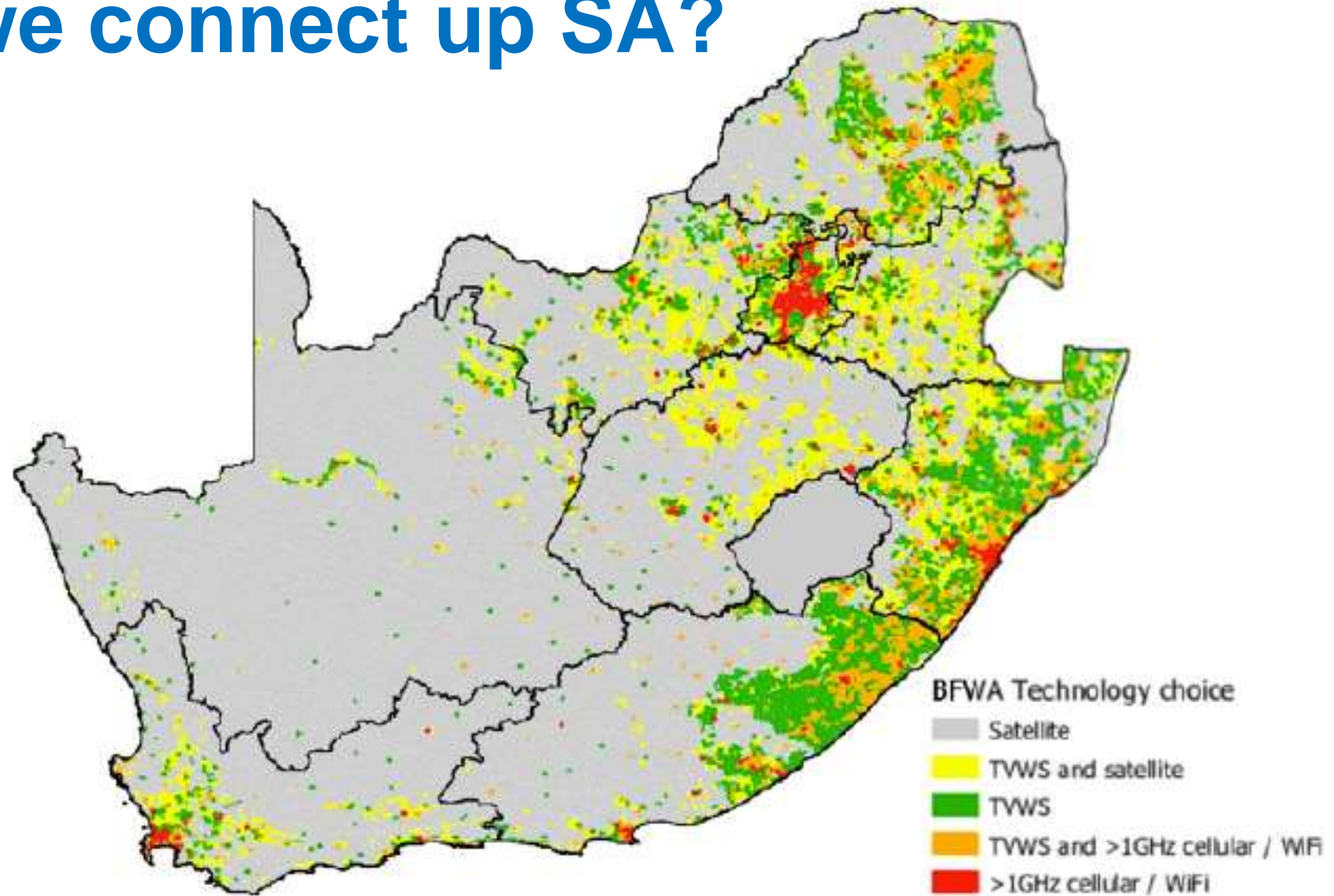


Figure 6 Matching population density to technology

Closer look at density

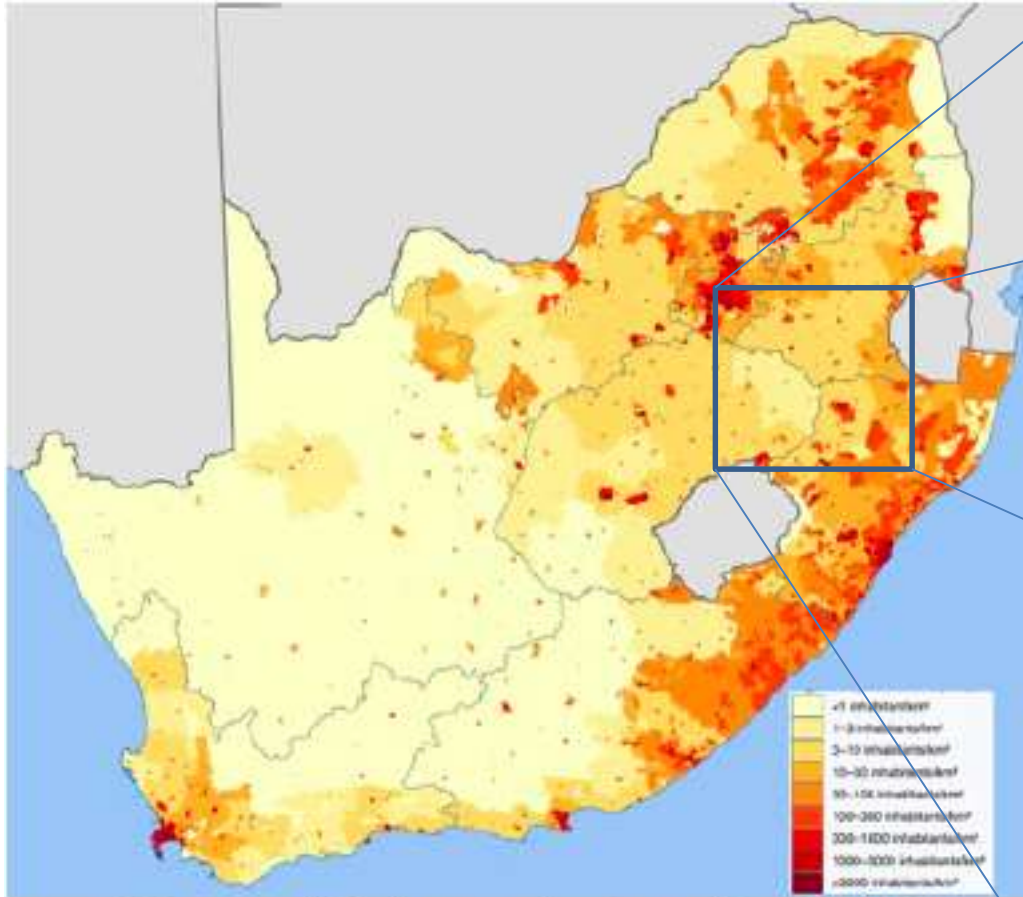
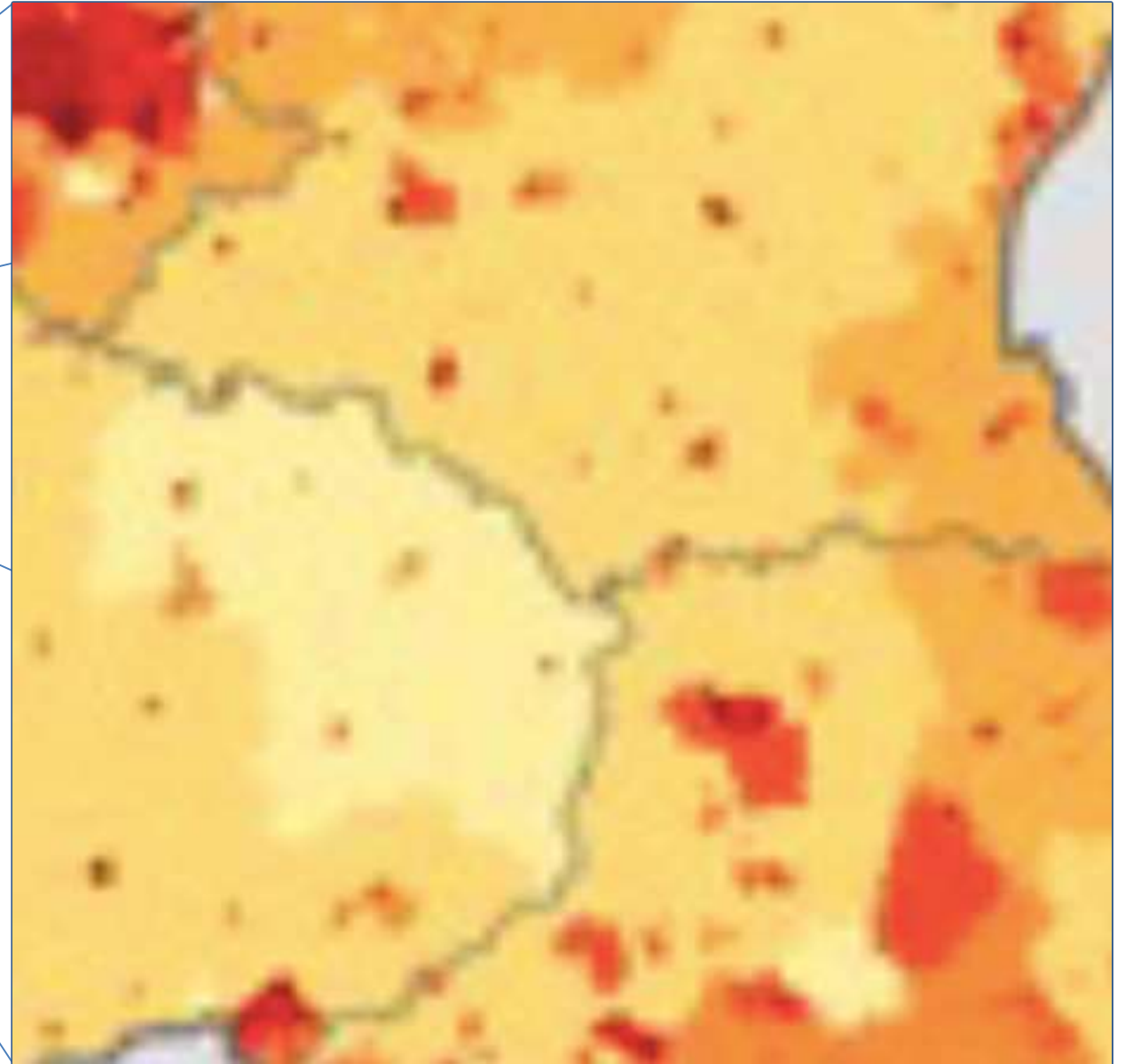


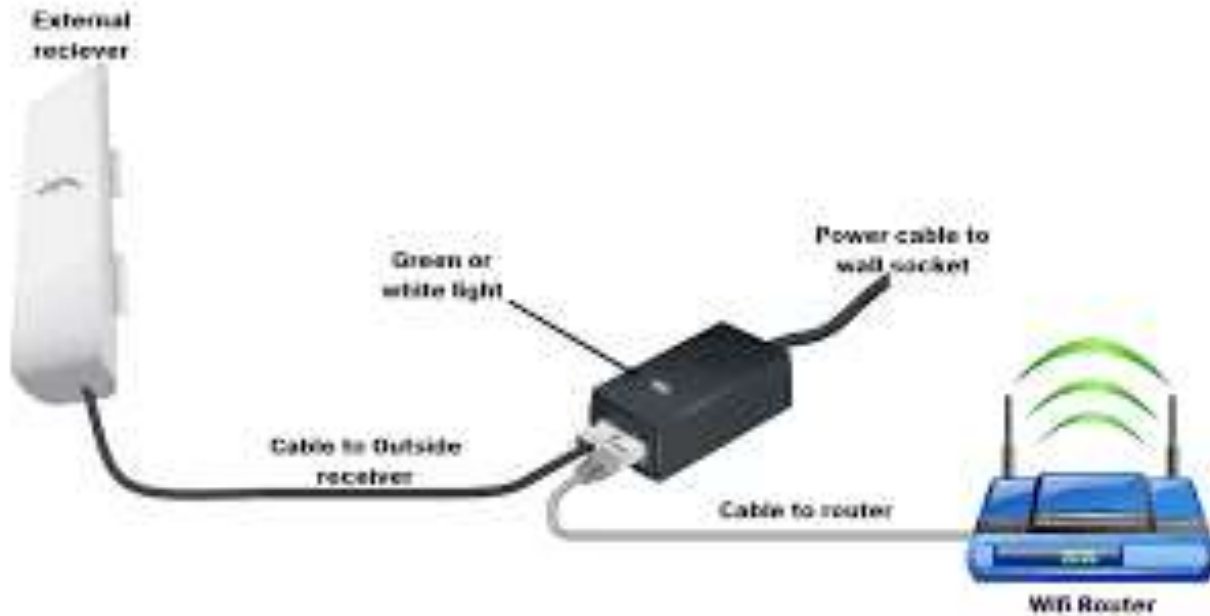
Figure 4 SA population distribution



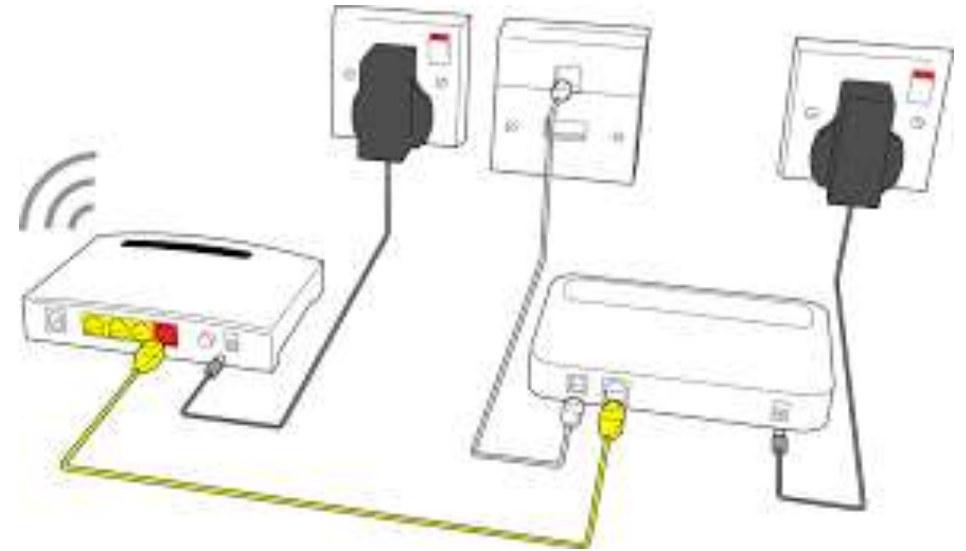
The rural challenge - not as we think



Why haven't WISPs connected up low income homes?



Fixed wireless Equipment Risk in home
R2000



Fibre Equipment Risk in home
R700

Addressable homes for Internet

MultiChoice Group – FY19 Results

The leading video entertainment platform in Africa



High Income

Plot size 2400 m²
Take up 35%
ARPU: R600 per month

Low Income

Plot size 600 m²
Take up 35%
ARPU: R150 per month

Low Income spend

Mobiles Data: R250 per month per home
DSTV: R150 per month per home

Aerial vs Underground fibre



[ABOUT](#)

[SOLUTIONS](#)

[PRODUCTS](#)

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Buried fiber deployment

Most local authorities and customers prefer their services, including fiber cables, to be installed underground. Buried fiber deployments are immune to wind and ice damage as they are buried below the layer where the soil freezes. This means that underground deployments is often at least ten times more reliable than aerial routes, especially where poor weather is common.

But there are some downsides. Cable needs to be buried deep in the ground to protect it from accidental damage – and the deeper an operator has to dig the more costly it is. Unforeseen obstacles such as tree roots can dramatically add to costs. If a buried direct cable is broken it is expensive to repair. Unlike cable in duct solutions, buried direct cable cannot be removed and replaced because it tends to be firmly anchored into the ground.

Aerial fibre is 5 x cheaper to deploy, more reliable and quicker to fix

Connecting SA

	Urban	Rural
LSM 10	Underground fibre	Fixed wireless 5G
LSM 9		
LSM 8	Aerial Fibre	TVWS
LSM 7		
LSM 6		
LSM 5		
LSM 4		
LSM 3	No device to receive	
LSM 2		
LSM 1		