Statistics Indonesia

MPD for ICT Indicators

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The need for new indicators

- The proportion of population covered by a mobile network (SDG indicator 9.c.1)
- The proportion of individuals using the Internet (SDG indicator 17.8.1)

Conventional Methods: Surveys
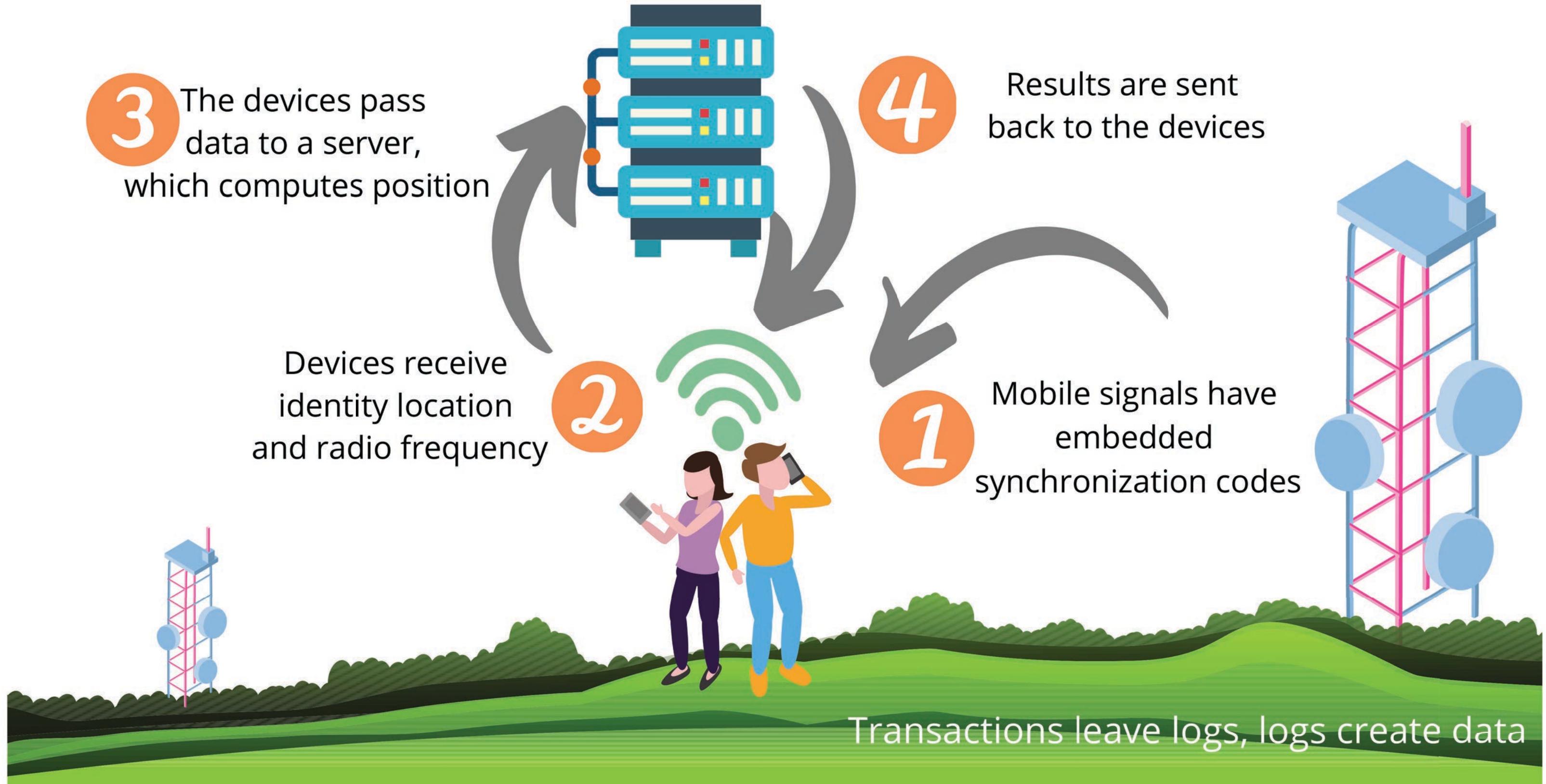
BLOK VIII. KETERANGAN TEKNOLOGI INFORMASI DAN KOMUNIKASI

No. Urut ART	DALAM 3 BULAN TERAKHIR, APAKAH (*nama*) MENGGUNAKAN TELEPON SELULER (HP)/ NIRKABEL? 1. Ya 5. Tidak	DALAM 3 BULAN TERAKHIR, APAKAH (*nama*) MEMILIKI/ MENGUASAI TELEPON SELULER (HP)/ NIRKABEL? 1. Ya 5. Tidak 807	BERAPA JUMLAH *SIMCARD* AKTIF YANG DIGUNAKAN (*nama*) MENURUT PROVIDER/OPERATOR BERIKUT:				DALAM 3 BULAN TERAKHIR, APA SAJA JENIS KOMPUTER YANG DIGUNAKAN (*nama*)? (*Pilihan jawaban harus dibacakan*) A. PC/DESKTOP B. LAPTOP/NOTE BOOK C. TABLET X. TIDAK MENGGUNAKAN KOMPUTER	DALAM 3 BULAN TERAKHIR, APAKAH (*nama*) PERNAH MENGGUNAKAN INTERNET (TERMASUK FACEBOOK, TWITTER, YOUTUBE, INSTAGRAM, WHATSAPP, DLL.? 1. Ya 5. Tidak → ART Berikutnya/ Blok IX	MEDIA APA SAJA YANG DIGUNAKAN (*nama*) UNTUK MENGGUNAKAN INTERNET? (*Pilihan jawaban harus dibacakan*) A. PC/DESKTOP B. LAPTOP/NOTE BOOK C. TABLET D. HP/PONSEL E. LAINNYA	DI MANA SAJA (*nama*) MENGGUNAKAN INTERNET? (*Pilihan jawaban harus dibacakan*) A. RUMAH SENDIRI B. BUKAN RUMAH SENDIRI C. TEMPAT BEKERJA/KANTOR D. GEDUNG SEKOLAH/KAMPUS E. TEMPAT UMUM (GRATIS) F. TEMPAT UMUM (BERBAYAR) G. DALAM KONDISI BERGERAK	UNTUK APA SA... (*Piliha...* A. MENDAPAT INFOR B. MENDAPATKAN IN C. MENGIRIM/MENER D. MEDIA SOSIAL/JE WHATS APP, SKYP E. PEMBELIAN BARA F. PENJUALAN BARA G. HIBURAN (*DOWNL* NONTON *FILM/VID* H. FASILITAS FINANS I. MENDAPAT INFOR J. LAINNYA
			TELKOMSEL?	INDOSAT?	XL AXIATA?	LAINNYA?					
401	801	802	803	804	805	806	807	808	809	810	
1	☐	☐	☐	☐	☐	☐	A B C X	☐	A B C D E	A B C D E F G	A B C
2	☐	☐	☐	☐	☐	☐	A B C X	☐	A B C D E	A B C D E F G	A B C
3	☐	☐	☐	☐	☐	☐	A B C X	☐	A B C D E	A B C D E F G	A B C

New Data Sources: Passive Mobile Positioning Data

msisdnchar	datetimetimestamp	sourcechar	bts_latchar	bts_lonchar	provchar	kabchar	kecchar	desachar	nodechar	trx_datedate
6281...	2018-02-08 13:33:03	LBA_ALL	-4.54691	120.35833	SULAWESI SELATAN	BONE	TANETTE	CELLU	3G	2018-02-08
6281...	2018-02-08 13:51:39	UPCC	-4.54051	120.30777	SULAWESI SELATAN	BONE	TANETTE	MACANANG	3G	2018-02-08
6281...	2018-02-08 14:00:39	CHG_POST	-4.53591	120.30377	SULAWESI SELATAN	BONE	TANETTE	MACANANG	3G	2018-02-08

- **CHG (Charging Data)**: The billing domain log stores successful charging transaction records such as calls, messaging, etc.
- **LBA (Location-Based Advertising):** The technology is used to pinpoint consumer's locations and provide location-specific advertisements on their mobile devices.
- **UPCC (Unified Policy and Charging Controller**: It provides policy, service, subscription, quota, and bearer resource management functions, as well as admission control for internet data usage.

How cellular technology works

3 The devices pass data to a server, which computes position

4 Results are sent back to the devices

Devices receive identity location and radio frequency **2**

1 Mobile signals have embedded synchronization codes

Transactions leave logs, logs create data
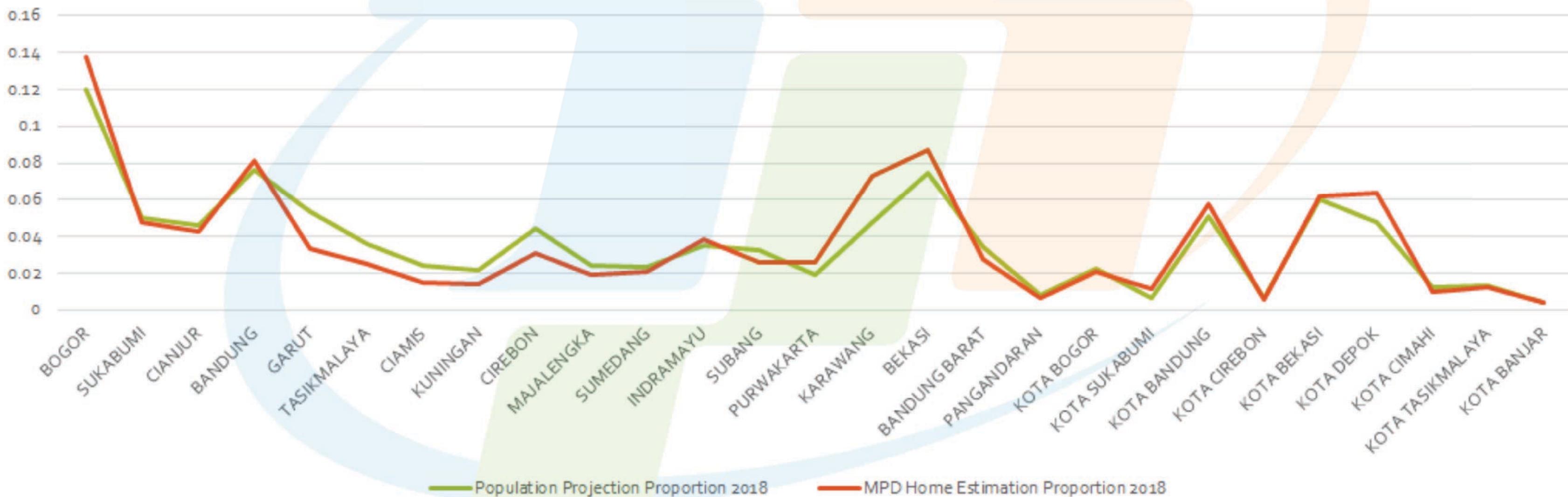
Population Projection using MPD:
Key Processing: Define Usual Environment

01 Data Source — CHG, LBA, UPCC

02 Master Raw — coordinate rounding and fast mover removal

03 Anchor Point — reversible clockwise; occurance at each anchor point

04 Monthly UE — determination of monthly usual environment

05 Yearly UE — determination of yearly usual environment
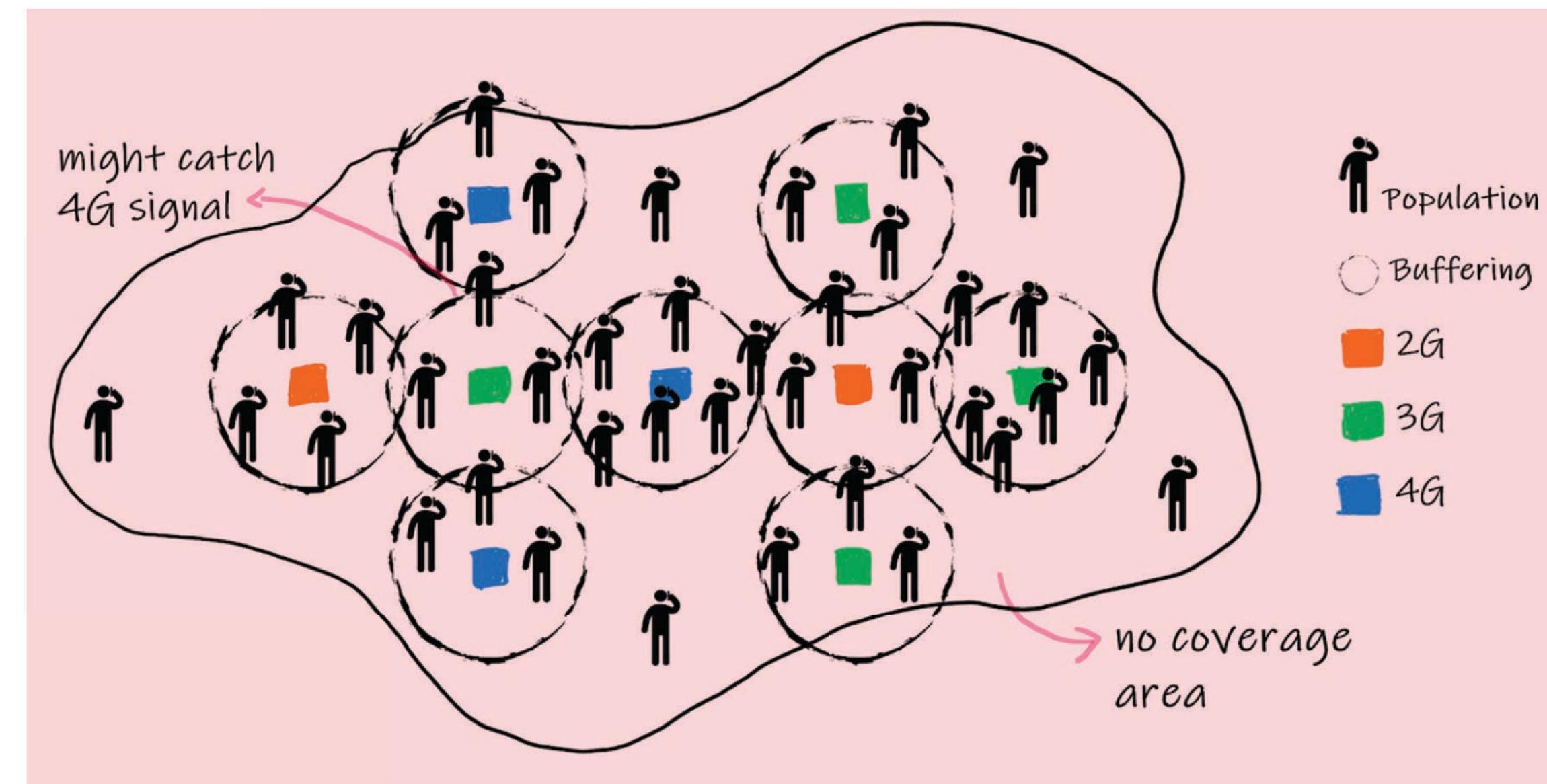
Empirical Result - Jawa Barat 2018

Population Projection Proportion 2018 — MPD Home Estimation Proportion 2018

(SDG indicator 9.c.1)
The proportion of population covered by mobile network based on technology

(SDG indicator 9.c.1)
The proportion of population covered by mobile network based on technology

2G

3G

4G

SIDE VIEW

Vertical field of view

OBSERVER POINT

Center line of sight

Pitch

+

−

Observer height

Range

VIEW FROM ABOVE

N

Azimuth

Center line of sight

Horizontal field of view

OBSERVER POINT
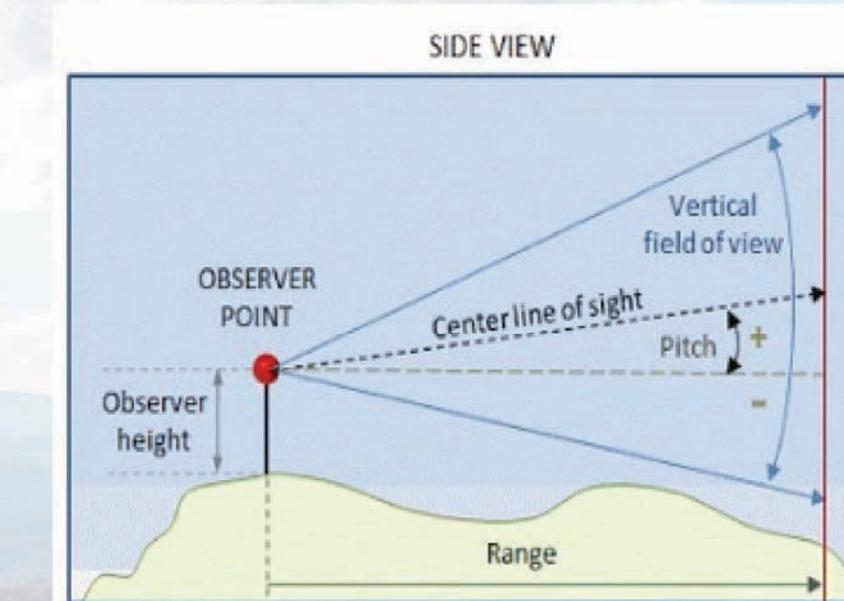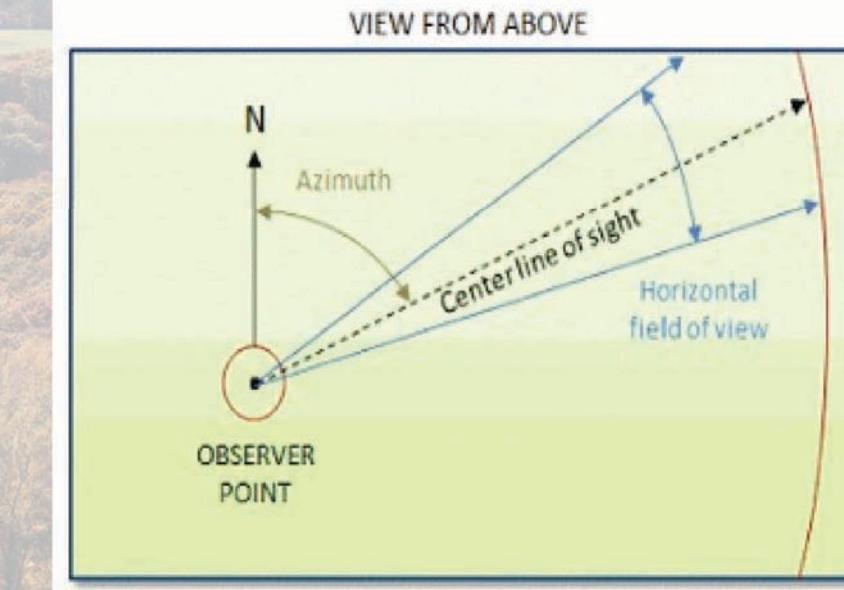
VIEW SHED

A view shed analysis requires a viewpoint layer dataset.
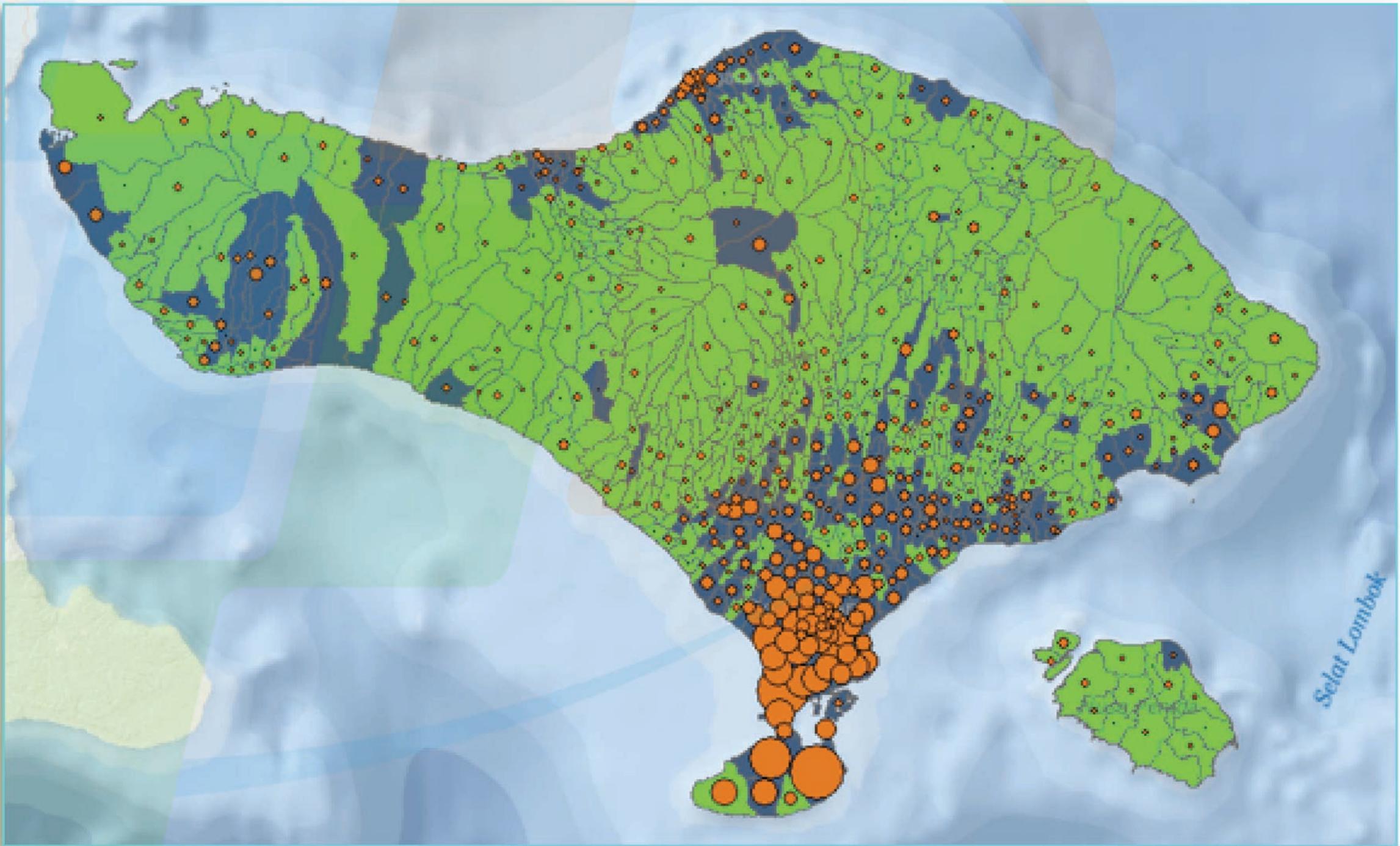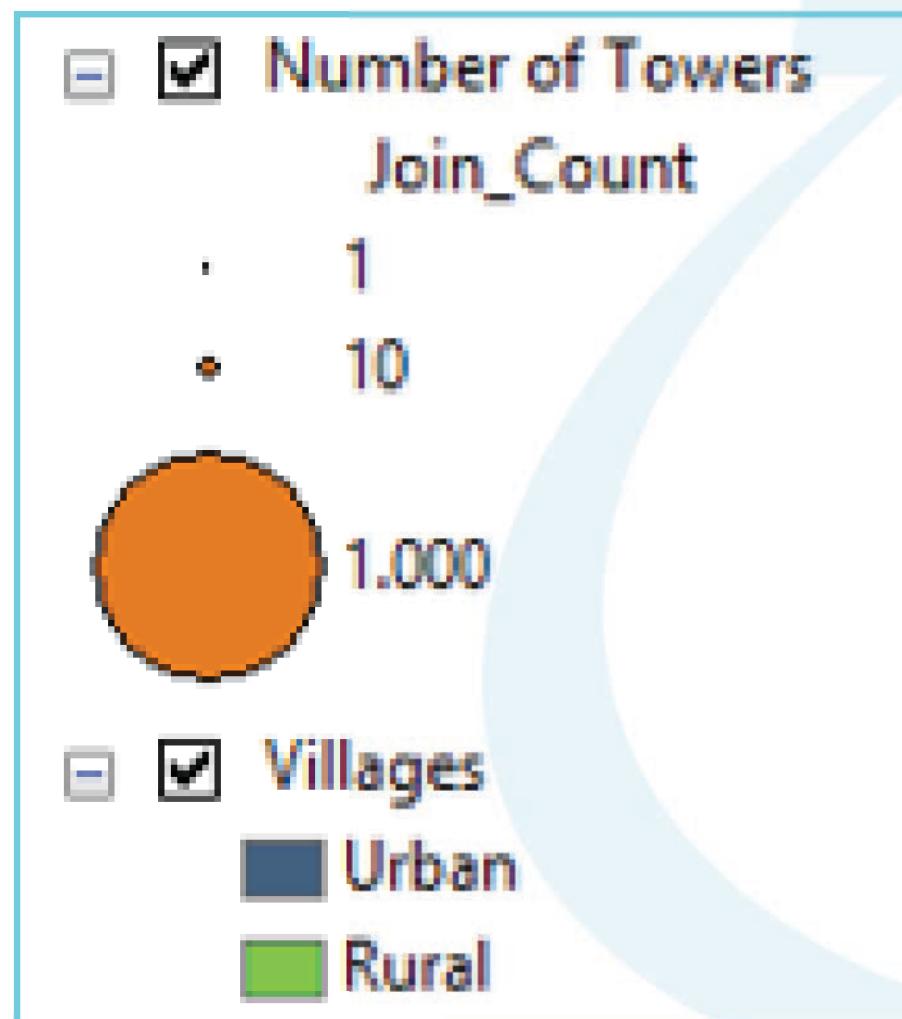
VIEWPOINT

The viewpoints refer to the cellular tower location.
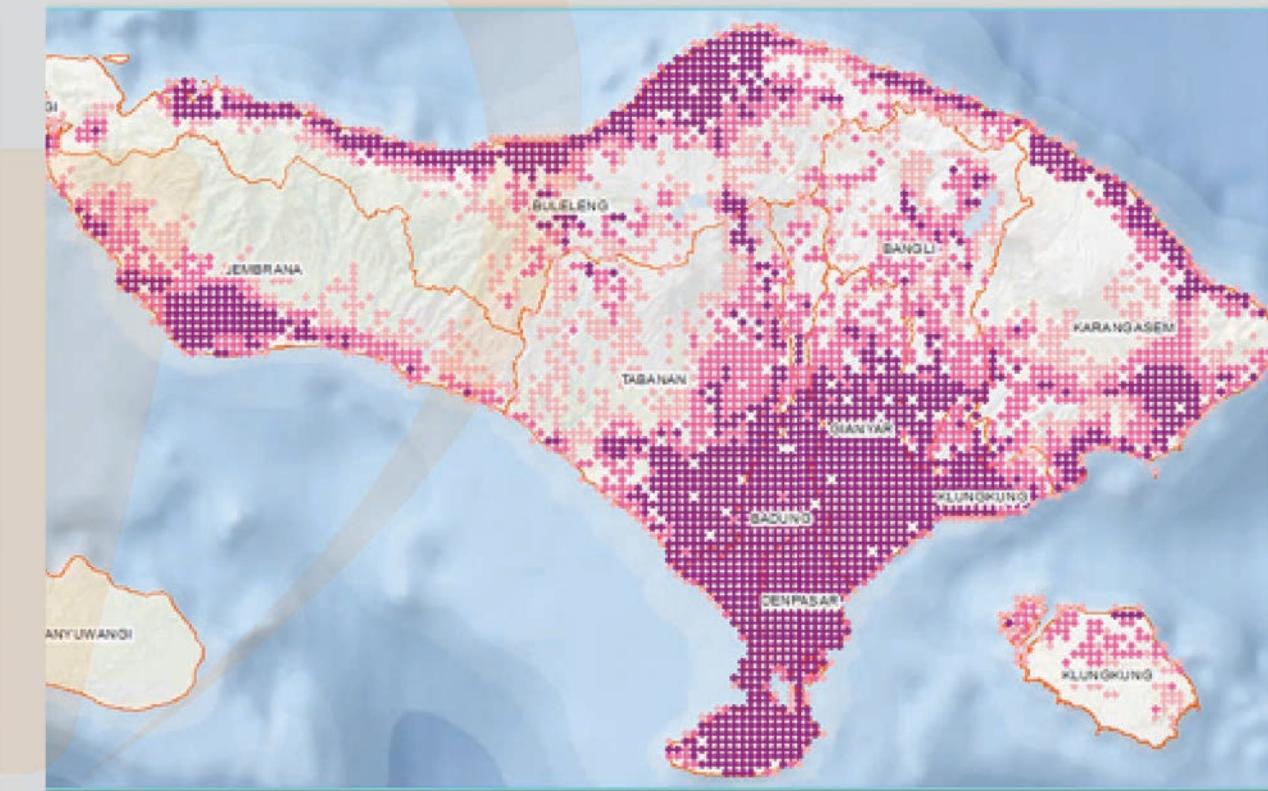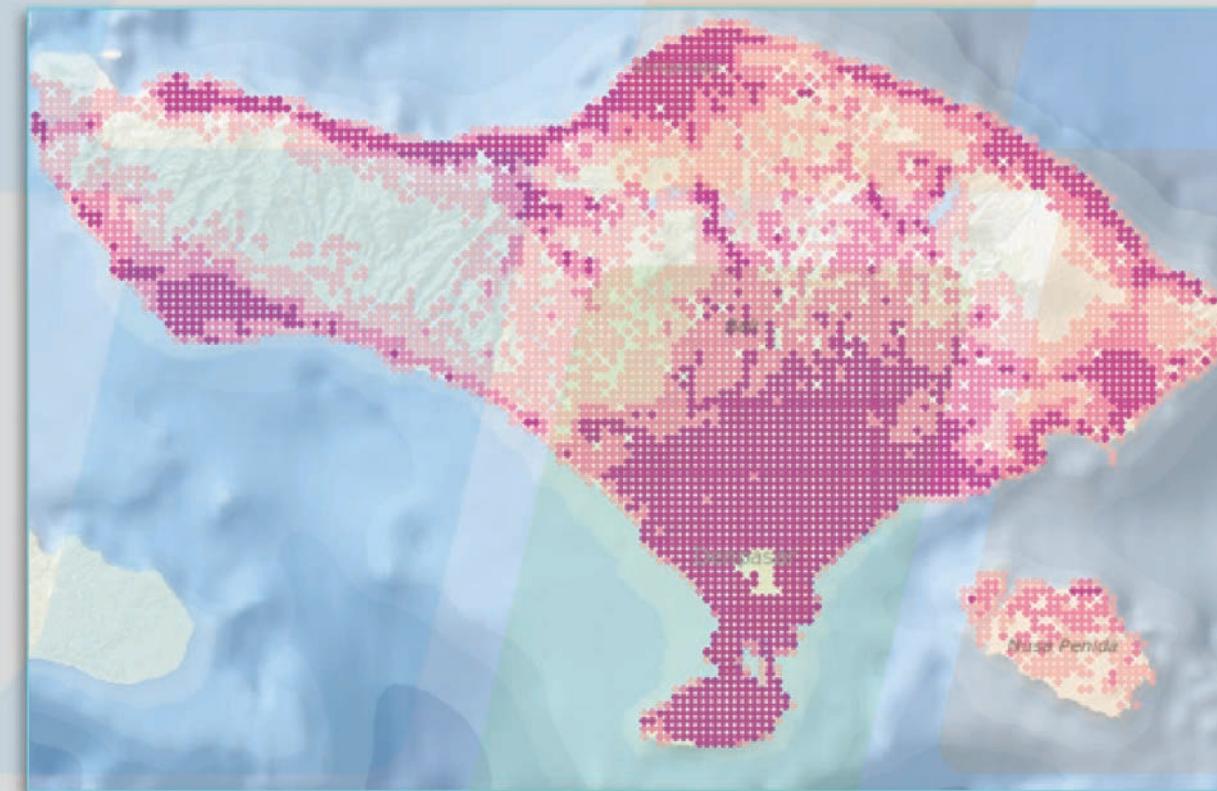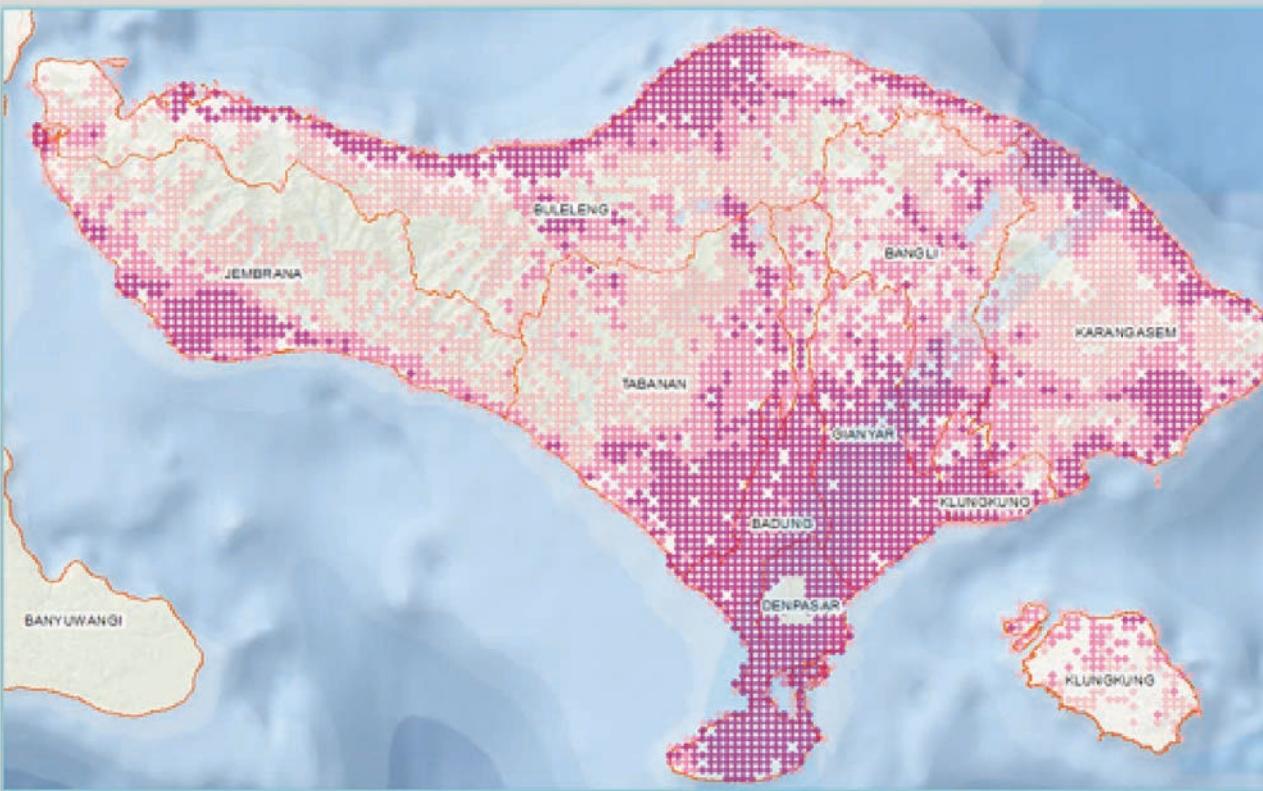
SIGNAL RANGE

A variable of Radius Value is used as a parameter to determine the range of the wireless signal.

CELL TOWERS IN BALI BASED ON AREA CLASSIFICATION

# Population covered by mobile network in Bali based on network type

2G

3G

4G
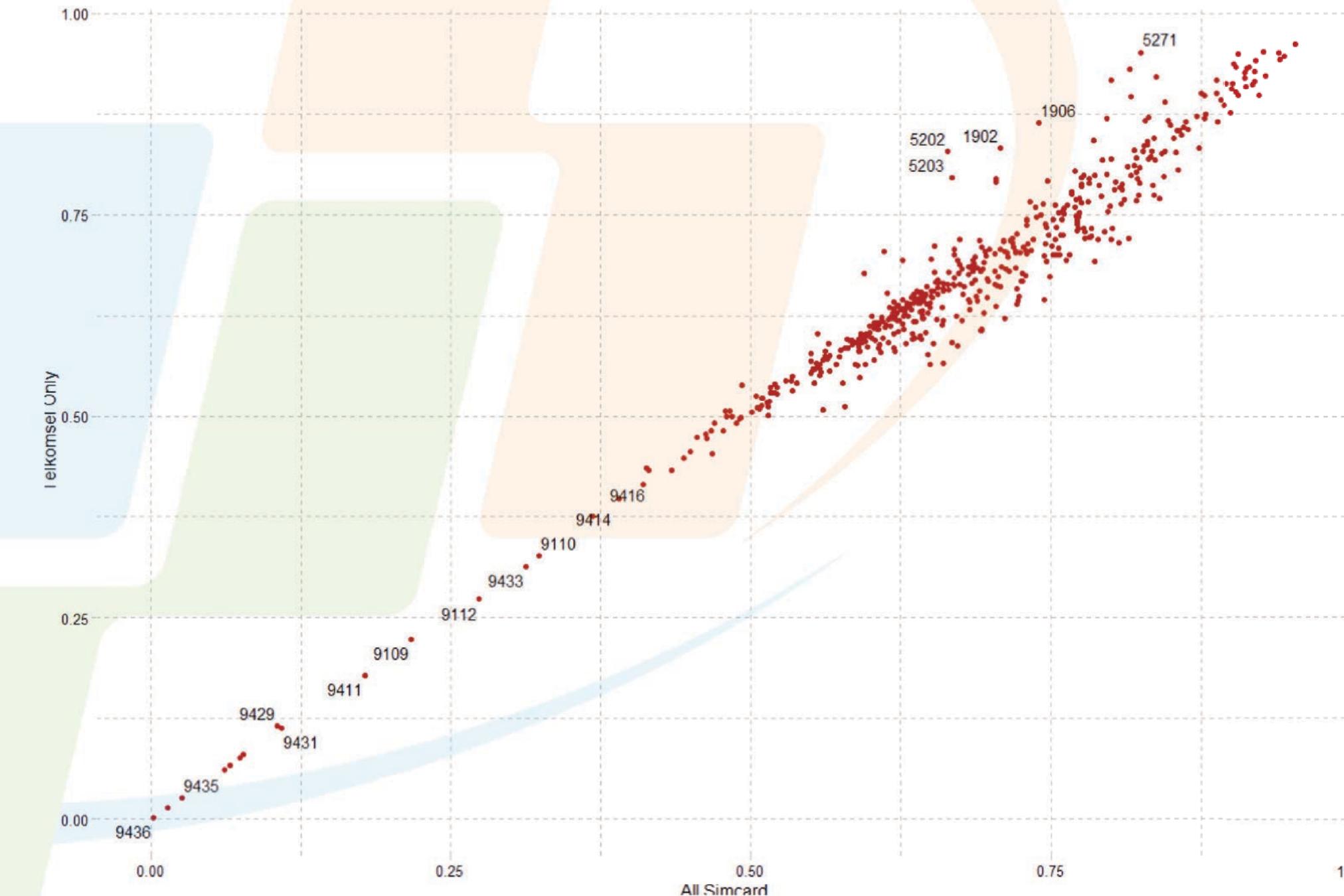
◆	1 - 300
◆	300- 600
◆	>600

(SDG indicator 17.8.1)
The proportion of individuals using the Internet

**check subscriber data, is there any event that states internet usage;**
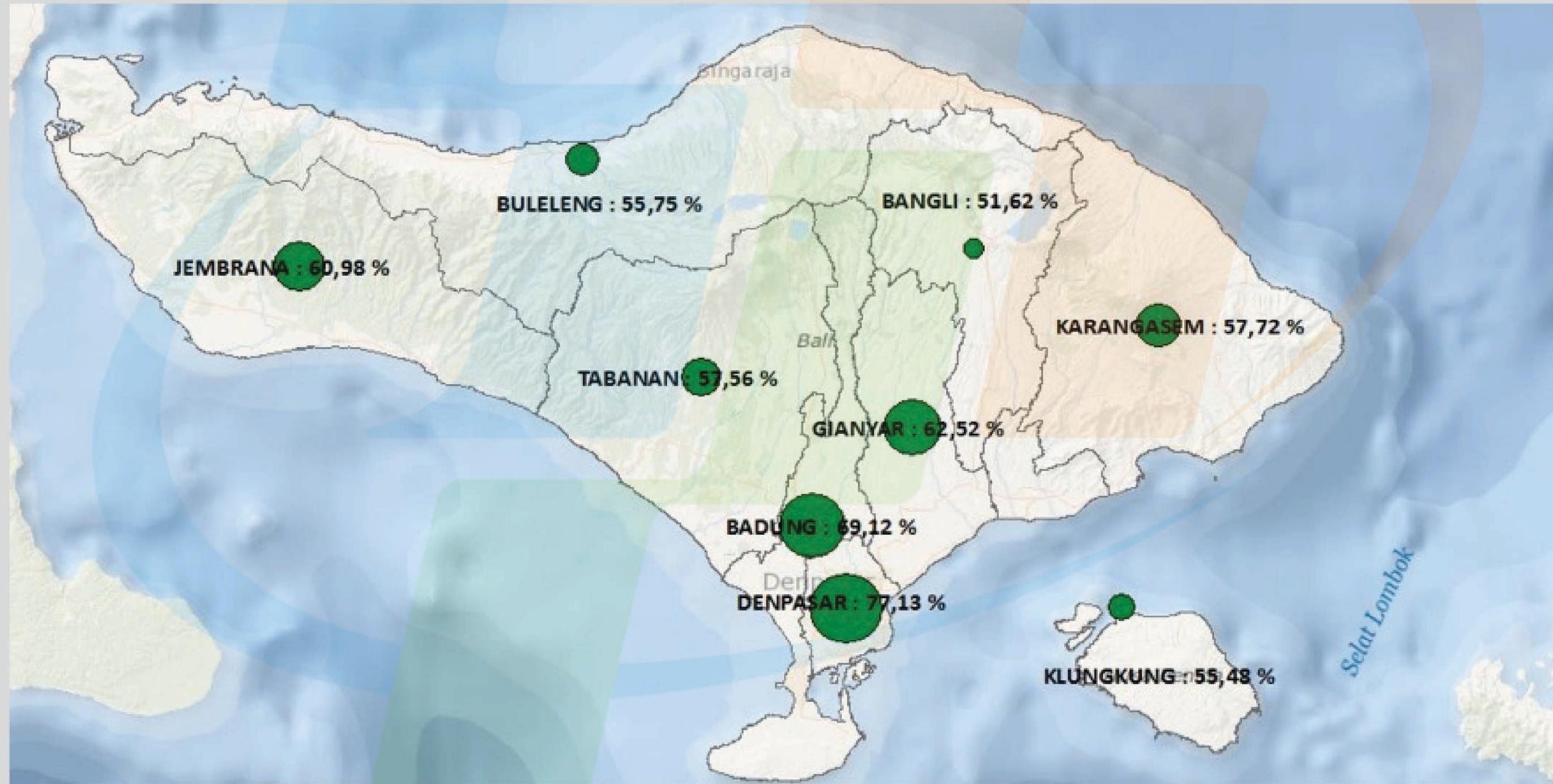
compare Mobile Broadband Subscriptions between All Cellular and our MNO partner
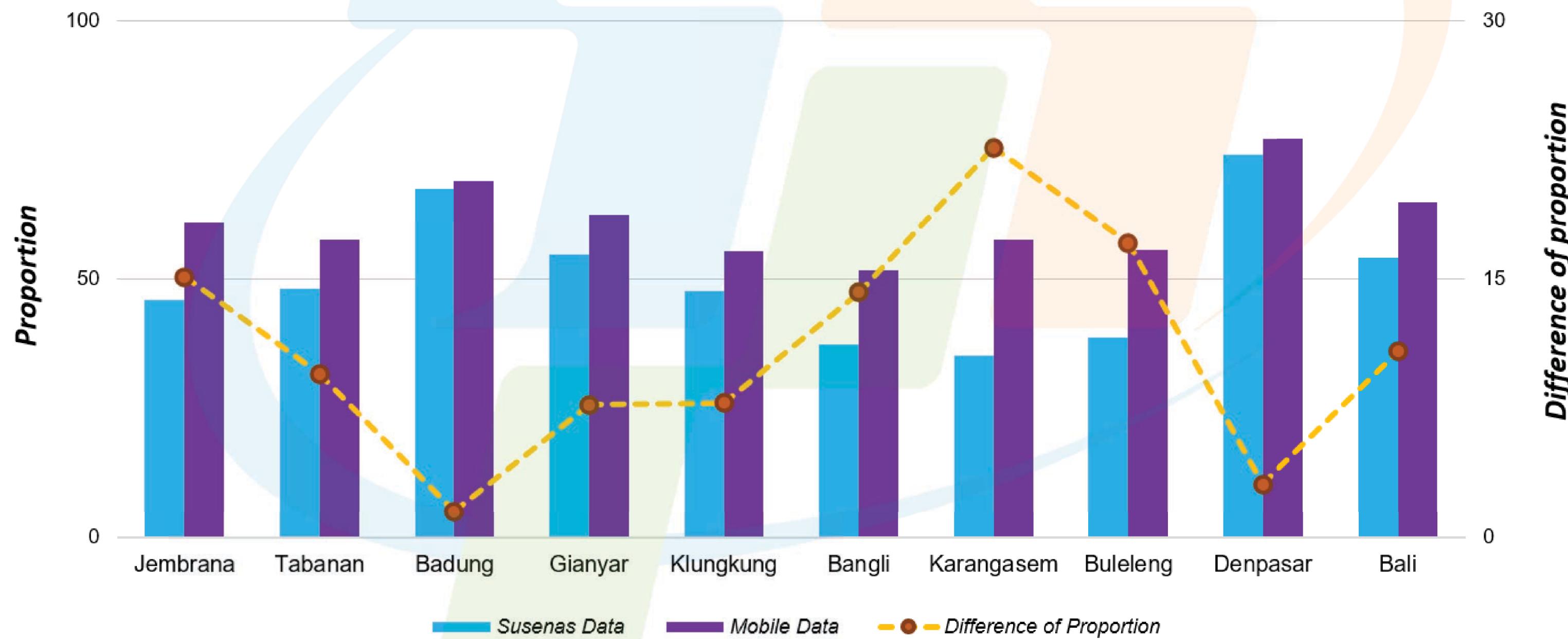

From this result, we found that Telkomsel is representative of the estimation of the indicator.

Correlation = 0.97

Internet Usage in Bali using MPD

Differences of proportion on Internet usage in Bali

Challenges

DATA PROCUREMENT

during the research period, most of the time was spent negotiating in obtaining data access rights

GRID POPULATION

Indonesia's population is not yet available in a grid format, but there is Worldpop as an alternative data source

CHANGE IN ALGORITHM

if there is an algorithm improvement, it is difficult to make backward corrections because the data is no longer accessible

THE REGULATION

changes to regulations may occur even though there is a contract

Thank You

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