Centre for Affordable Housing Finance in Africa

Making housing finance markets work for the poor

A perspective on the role of big data

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Big data is generated everywhere. How much of it is justifiably in the line of sight of third parties?
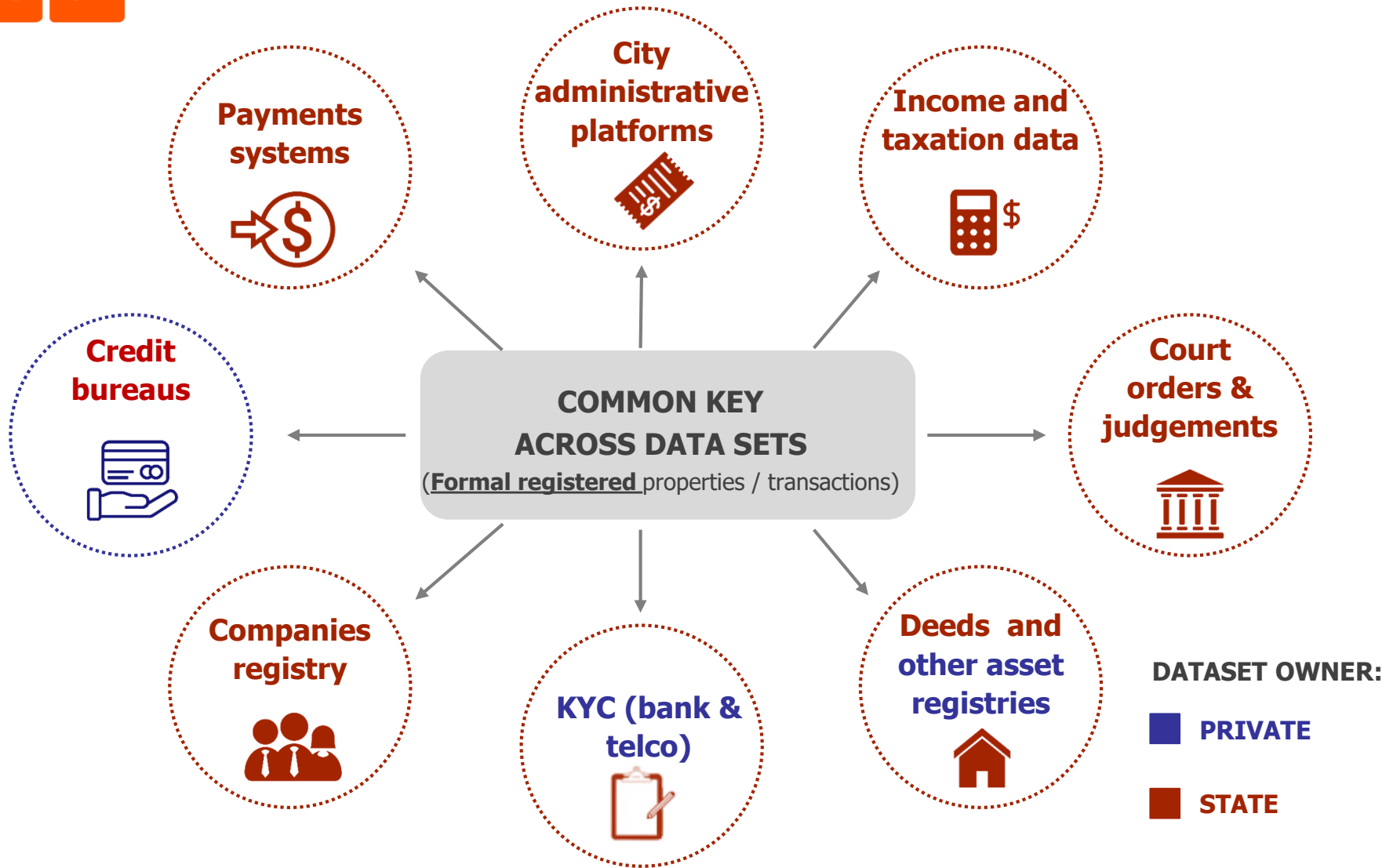
What data is in the line of sight of without relying on consent from consumers / companies / other entities who own data?

What data is in the line sight AND does not violate the privacy of individuals or households?

What detailed data resides within administrative systems and infrastructure that could be *within line of sight*? How can this data help inform our understanding of housing and housing finance markets?
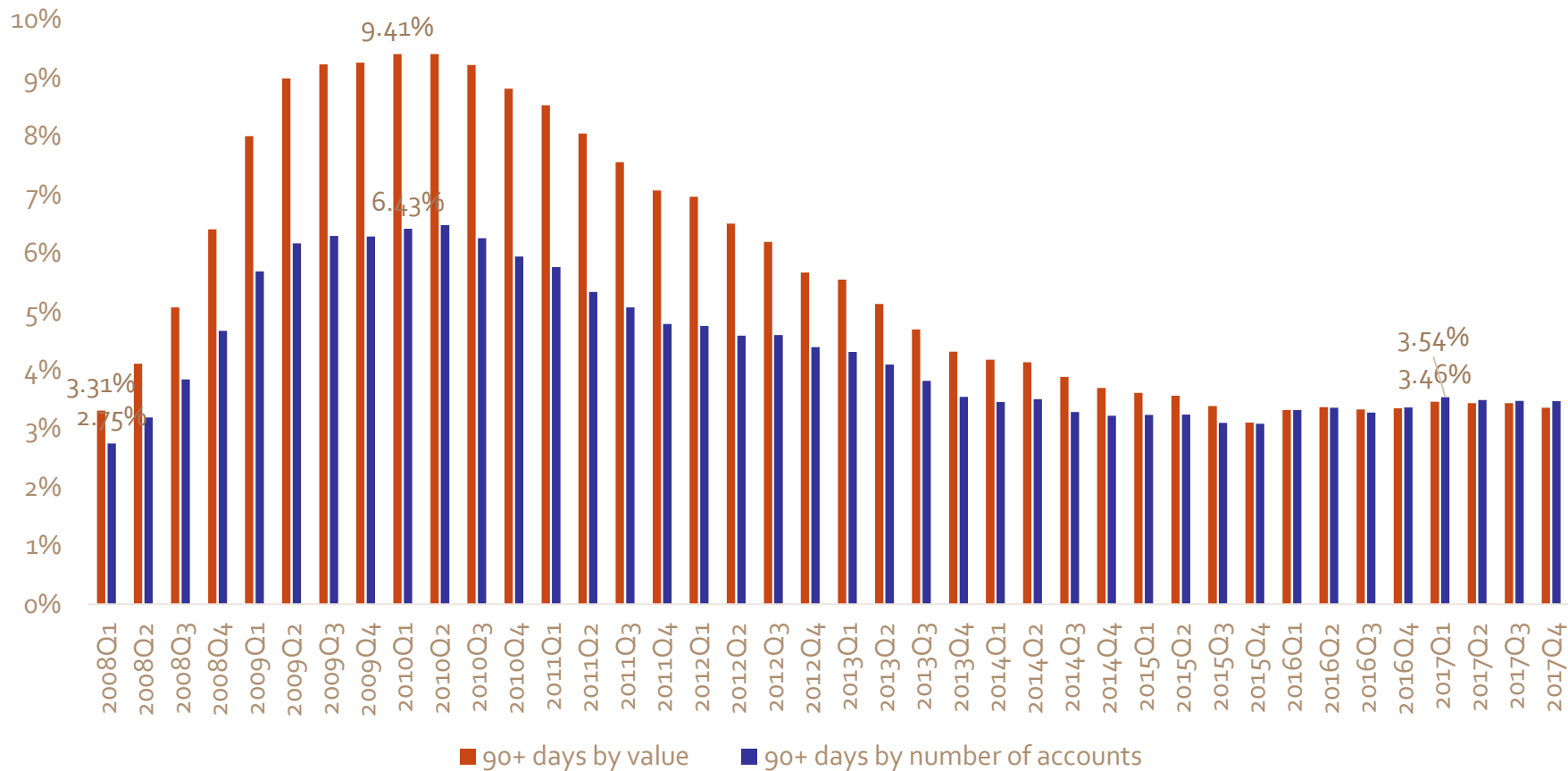
Payments systems

City administrative platforms

Income and taxation data

Credit bureaus

COMMON KEY ACROSS DATA SETS
(**Formal registered** properties / transactions)

Court orders & judgements

Companies registry

KYC (bank & telco)

Deeds and other asset registries

DATASET OWNER:

PRIVATE

STATE

Note: This data universe will differ by country, in addition, rules and protocols around accessing different data sets may differ

Example: Understand performance of entry level mortgages
Regulators publish mortgage performance data for the book as whole. There was no data to indicate performance of mortgages granted to lower income borrowers in historically black areas

PROPORTION OF LOANS THAT ARE 90 DAYS OR MORE IN ARREARS
(Mortgages granted to consumers)

Legend: ■ 90+ days by value   ■ 90+ days by number of accounts

Data labels: 3.31%, 2.75%, 9.41%, 6.43%, 3.54%, 3.46%

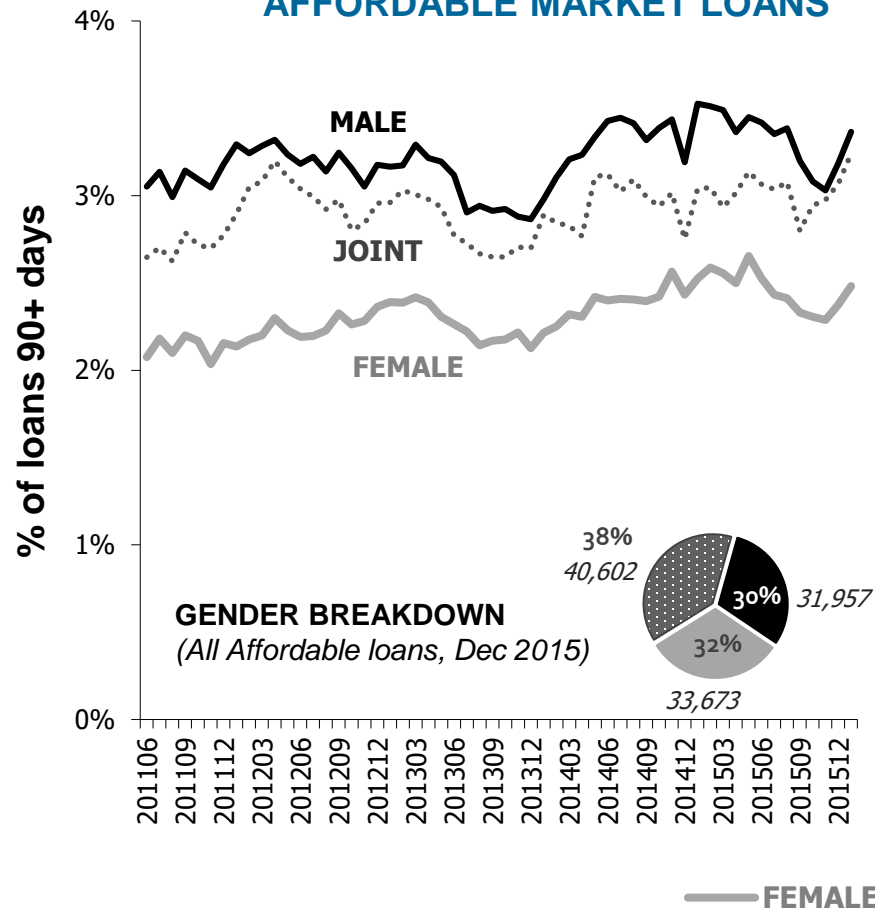Source: The National Credit Regulator

We could link credit bureau and deeds data using ID numbers. The data facilitates granular analysis by market segment, location, property type, borrower and loan characteristics
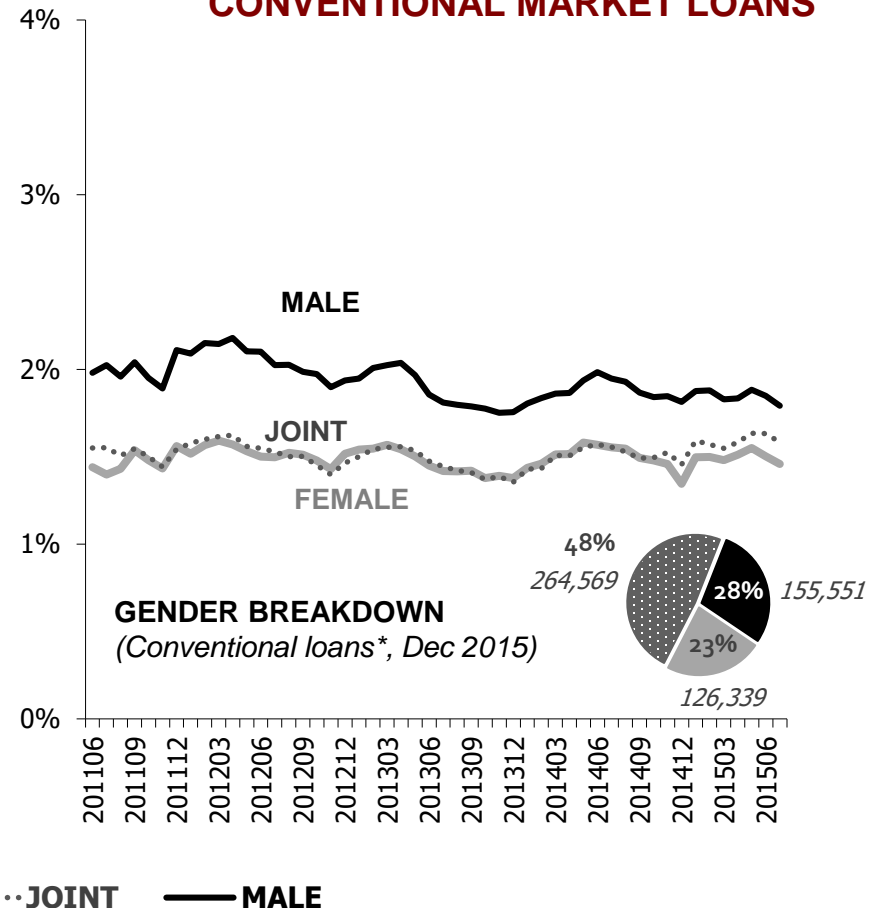
PROPORTION OF LOANS THAT ARE 90 DAYS OR MORE BY GENDER
(Mortgages originated between <u>2009 and 2015</u>, mortgages from big 4 banks)

AFFORDABLE MARKET LOANS

CONVENTIONAL MARKET LOANS

% of loans 90+ days

MALE
JOINT
FEMALE

GENDER BREAKDOWN
(All Affordable loans, Dec 2015)

38%
40,602
30% *31,957*
32%
33,673

MALE
JOINT
FEMALE

GENDER BREAKDOWN
(Conventional loans, Dec 2015)*

48%
264,569
28% *155,551*
23%
126,339

FEMALE ·······JOINT MALE

Extensive property level data is generated by municipalities who provide services and play a critical role in urban governance. This data is often made available on open data portals

THE CITY OF CAPE TOWN'S OPEN DATA POLICY

"The role played by data in the economy and society is changing. The growth of the internet and the rise of big data mean that access to large data sources in a usable form is an increasingly important feature in open and competitive economies.

….

The City generates a significant amount of data that is useful to citizens. However, this information is often hidden from view in line department archives or is difficult to access. Various data access policies and procedures within the organisation similarly impede public access to information.

….

The open data portal will assist citizen engagement with the City by making it easier for members of the public to access data. Enhancing transparency will empower citizens to hold the City to account.
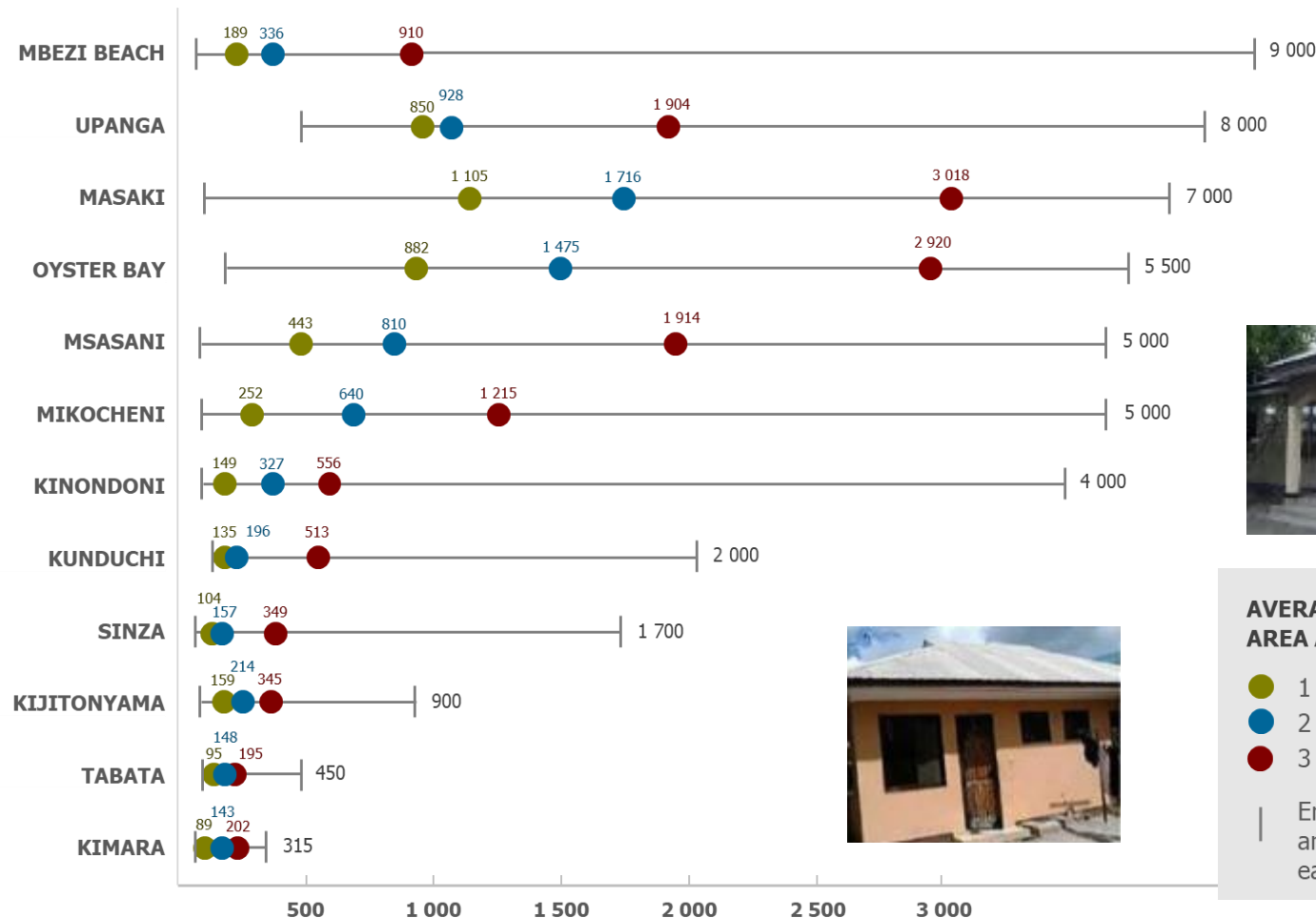
The portal aims to make available information that is useful and empowering to citizens and that can enable innovative entrepreneurial activity. "

Analyzing rental supply and rental prices over time would provide Governments with salient data for policy formation. Web scraping can be helpful (where it is allowed). Over time we expect more visibility on lower rental properties

RENTAL PROPERTY PRICES
(Top 12 suburbs / regions by number of rental properties listed on Zoom Tanzania)

Area	1 bedroom	2 bedroom	3 bedroom	Most expensive
MBEZI BEACH	189	336	910	9 000
UPANGA	850	928	1 904	8 000
MASAKI	1 105	1 716	3 018	7 000
OYSTER BAY	882	1 475	2 920	5 500
MSASANI	443	810	1 914	5 000
MIKOCHENI	252	640	1 215	5 000
KINONDONI	149	327	556	4 000
KUNDUCHI	135	196	513	2 000
SINZA	104	157	349	1 700
KIJITONYAMA	159	214	345	900
TABATA	95	148	195	450
KIMARA	89	143	202	315

AVERAGE MONTHLY RENTAL BY AREA AND NUMBER OF BEDROOMS

- 1 bedroom
- 2 bedroom
- 3 bedroom

Endpoints represent cheapest and most expensive listings in each area

A defining feature of the informal sector is that it escapes enumeration. Does this understanding of informality change as technology creates effective, analyse-able visibility in the housing domain

"Most enterprises run with some measure of bureaucracy are amenable to enumeration by surveys, and - as such - constitute the 'modern sector' of the urban economy. The remainder - that is, those who __escape enumeration__ - are variously classified as 'the low-productivity urban sector', 'the reserve army of underemployed and unemployed', 'the urban traditional sector', and so on."
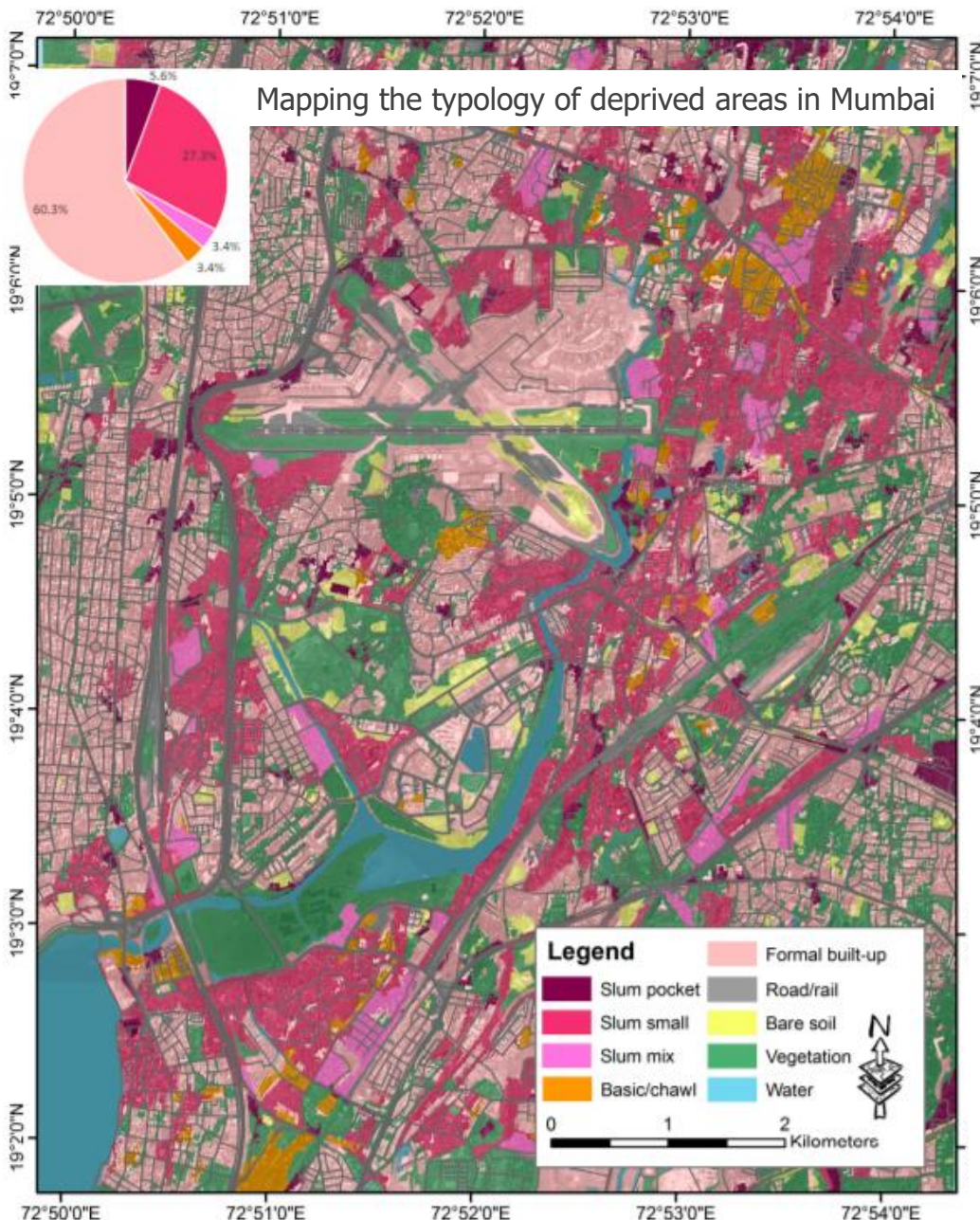
– Keith Hart, 1973

The best thing about housing ….

MONWOOD INFORMAL SETTLEMENT, CAPE TOWN

YOU CAN SEE IT (AND SENSE IT, NOT ONLY COUNT IT?)

Mapping the typology of deprived areas in Mumbai

TYPE 1	TYPE 2
Slum pocket *	**Slum area, small buildings (slum small *)**
Geometry: Small roofs	Geometry: Small roofs
Density: High	Density: High
Pattern: Organic	Pattern: Organic
Environment: Pockets along roads or within formal areas	Environment: Large areas with diverse uses

TYPE 3	TYPE 4	TYPE 5
Slum area, mix small/larger buildings (slum mix *)	**Basic formal and chawl (basic/chawl *)**	**Formal areas (formal *)**
Geometry: Small–medium roofs	Geometry: Medium roofs	Geometry: Large roofs
Density: Mix	Density: High-medium	Density: Medium - low
Pattern: Diverse	Pattern: Some structure	Pattern: Well structured
Environment: Some areas in more elevated terrain	Environment: Little vegetation within areas	Environment: Higher vegetation cover

- There are abundant opportunities for applications of machine learning to transform unstructured data and turn it into useful, analyse-able data at scale

- For example, this study analyzes the capacity of very high resolution (VHR) imagery and image processing methods to map locally specific types of deprived areas in Mumbai

- Spatial, spectral, and textural characteristics of deprived areas are analysed using VHR imagery combined with auxiliary spatial and census data, a random forest classifier, and logistic regression modeling

- The overall classification accuracy for a typology of deprived areas is 79%

Legend

Slum pocket	Road/rail
Slum small	Bare soil
Slum mix	Vegetation
Basic/chawl	Water
Formal built-up	

Mapping the diversity of deprived areas (multi-class approach): Kuffer, Pfeffer, Sliuzas, Baud, van Maarseveen (2017)

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In summary: Housing data is abundant, and increasingly accessible and usable in theory. But that does not mean we can leverage it in practise

CHALLENGE 1

Frame the question – this looks easy, but it is perhaps the hardest step…

CHALLENGE 4

Close the loop (data on impact)
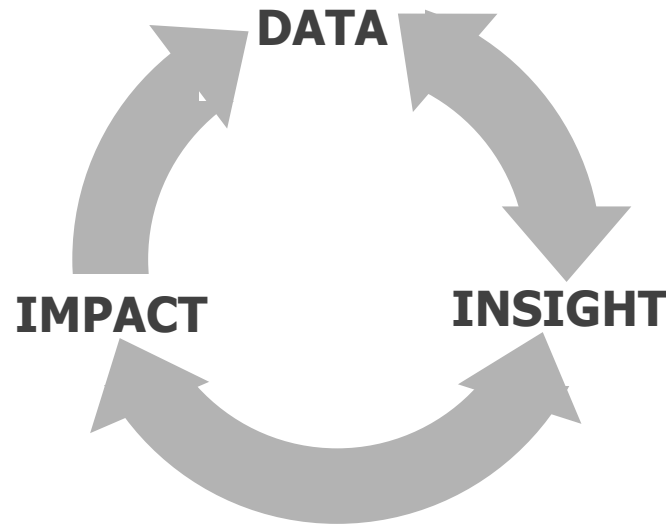
CHALLENGE 2

Create the dream team – transversal team spanning deep technical, analytical and 'business' skills

DATA

IMPACT

INSIGHT

CHALLENGE 3

Engage with the findings to drive, evidence-led change (other forces might prefer alternatives)

Privacy by design (PbD)

"PbD aims to *ensure that privacy is considered* before, at the start of, and throughout the development and implementation of initiatives that involve the collection and handling of personal information .... Approach(es) privacy as a *'design feature'* of ... processes and activities *rather than as a compliance burden* to be endured or to which lip-service is given. It *shifts the privacy focus to prevention* rather than compliance, using innovative approaches that are *anchored in genuine respect for individuals' personal information*."

PRIVACY BY DESIGN: EFFECTIVE
PRIVACY MANAGEMENT IN THE VICTORIAN PUBLIC SECTOR

Overview

The **Centre for Affordable Housing Finance in Africa** (CAHF) is an independent think tank based in Johannesburg, South Africa. Established in May 2014, it grew out of the housing finance theme of the FinMark Trust, where its research and advocacy programme began in 2003. CAHF's work extends across the continent, and it is supported by and collaborates with a range of funders and partners.

The **vision** of CAHF is an enabled affordable housing finance system in countries throughout Africa, where governments, business, and practitioners work together to provide a wide range of housing options accessible to all.

CAHF's **mission** is to make Africa's housing finance markets work, with special attention to access to housing finance for the poor, through the dissemination of research and market intelligence, the provision of strategic support, and ongoing engagement in both the public and the private sector; supporting increased investment, cross-sector collaborations and a market-based approach.

The overall **goal** of our work is to see an increase of investment in affordable housing and housing finance throughout Africa: more players and better products, with a specific focus on the poor.