# A WAY TO UNDERSTAND HOUSING MARKETS BEYOND "SUBSIDY, GAP AND MARKET"

Robert McGaffin

# Understanding the market

Saying we have a

- Subsidy
- “Gap”
- Market

…is like the Unilever marketing people saying...

# Settlement typology


### 1M: Upper Crust

They are the elite of South African society – anointed through wealth and achievement. The Upper Crust live lives of distinction in pampered luxury, with little concern about cost – for them, quality is not negotiable. They know and can afford the best the world has to offer. Properties


### 2M: Pearl Strings

Closely related to the Upper Crust, the Pearl Strings are crowning lifetimes of achievement with refined, slightly understated style – in fact, they may well frown on flash. While their incomes are only outstripped by those of the Upper Crust, properties


### 3M: Cheese and Wine

They insist on the American Dream in South African suburbia, on being the captains of their own ships and on recognition of their status as self-made. A decade or two ago, the Cheese and Wine led the trek from the older suburbs to the new suburban Meccas


### 4M: Fashion Café Society

They are hip and happening – the trend-setters that push themselves hardest to live according to the dictates of lifestyle magazines. They work hard, earn big and, sometimes, spend even bigger. Fashion Café Society represents the new wave of residents of


### 25M: Chakalaka

Chakalaka clusters (named after a spicy vegetable relish/dish developed in the townships of Gauteng) were meant to be orderly locations – much like the eKasi clusters, however, all open spaces in this cluster have been crammed full with a wide assortment of shacks and structures. The result is a lively community that is,


### 26M: Poor Neighbours

The residents of the Poor Neighbours cluster, too, have outgrown the old 'matchbox' houses originally built in the area. As a result, the cluster is typified by numerous shack dwellings erected amongst the permanent structures or nearby. Dwellings are basically standard four-room or three-room


### 27M: Tin Town

When the people of the Tin Town cluster go to bed at night, a good dream would be to wake up somewhere else for it is difficult to find redeeming factors about this most oppressive cluster, other than the tenacity of its inhabitants. Tin Town clusters consist of very dense, relatively small shack settlements. What distinguishes this cluster


### 28M: eKaya

Informal settlements are nothing new in South Africa – eKaya clusters are proof of this. They are, however, different from newer informal settlements, being older, with the majority older than a decade and, often quite far from the city centres. Properties are slightly larger and more established – you might well find a clearly


### 6T: Rusty Blues Town

They have served their time providing skilled labour to the dominating industries of the small town – now the


### 7T: Young Blues Town

They are the agile young fingers supplying skilled labour and technical services to the town's industries. Many


### 8T: Basic Town

Their parents were most likely not allowed to own property. They were most likely condemned to second-class


### 9T: The Other Town

The social engineering that saw forced removals and gave rise to the townships of the cities was applied with equal force


### 10T: Forgotten People

Wherever you may be in South Africa, spare a thought for the Forgotten People, for they are truly the poorest of the

Currently based on Knowledge Factory Cluster+

CSIR
our future through science

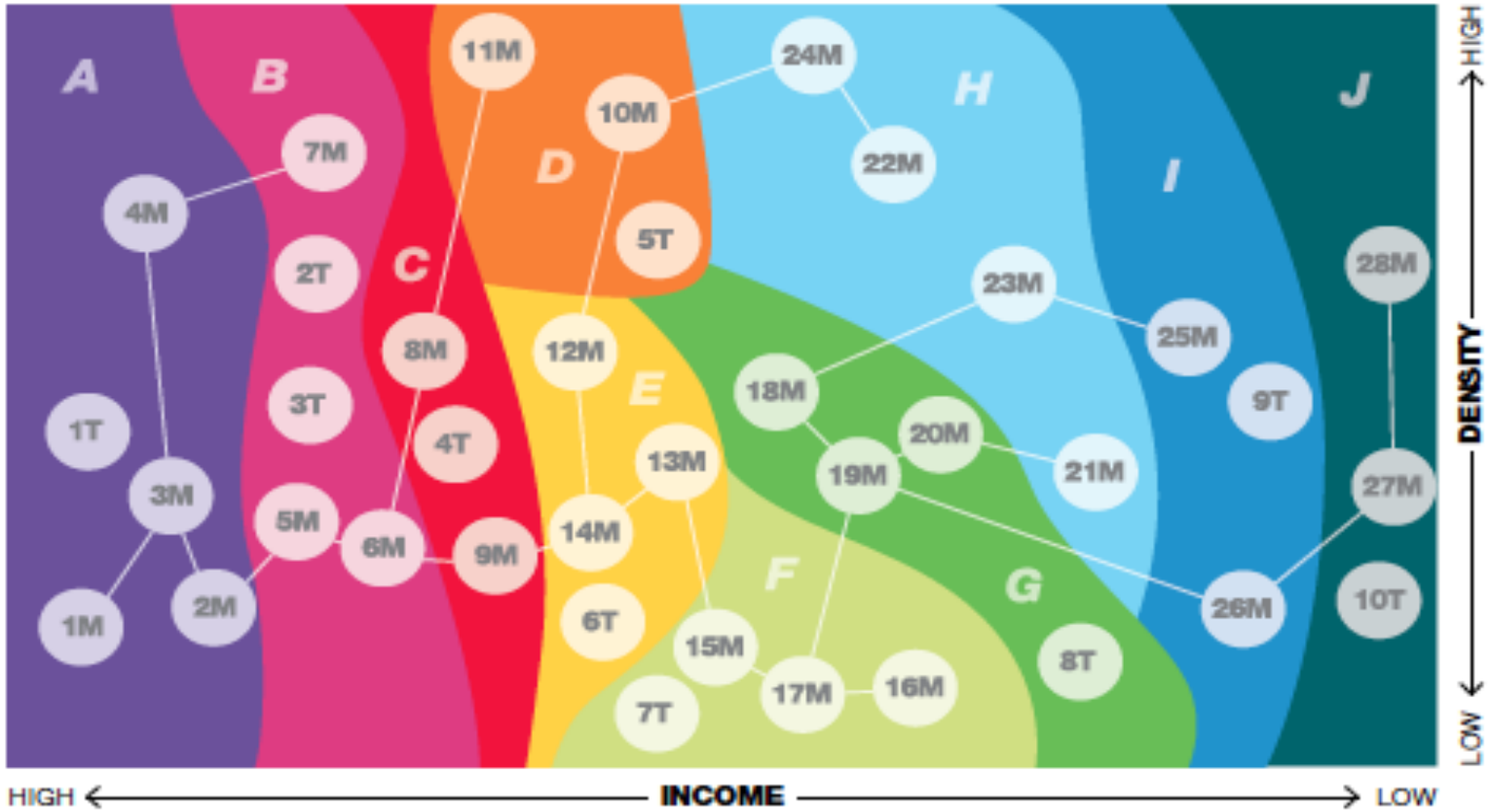
science & technology
Department: Science and Technology
REPUBLIC OF SOUTH AFRICA

HSRC
Human Sciences Research Council

# The Family Tree

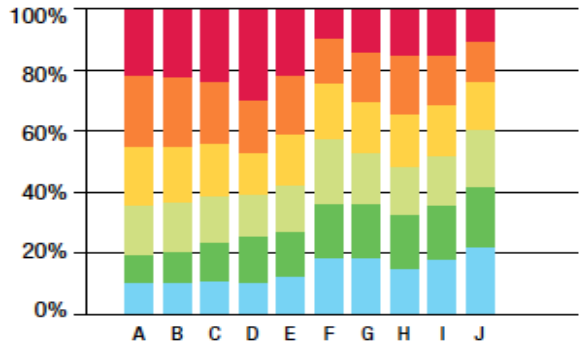
**How to interpret the family tree**

The family tree runs roughly from high to low income as one moves from left to right and high to low density from top to bottom. Cluster 4M can therefore be described as "high income, high density". The linkage indicated on the family tree shows which customers are closest in profile. Cluster 4M – high income, high density, (exclusive cluster homes and expensive but small homes) – is relatively close to cluster 7M – slightly lower income, high density, (cluster homes and townhouses).



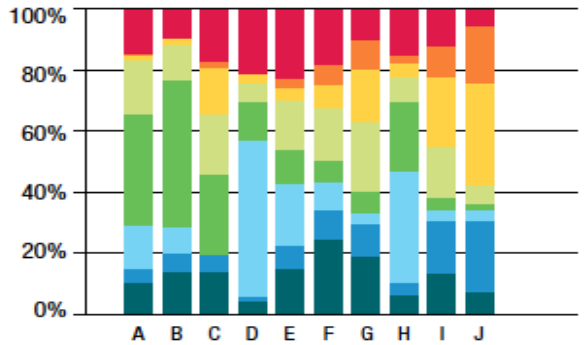

clusterplus

## Age Distribution Per Group



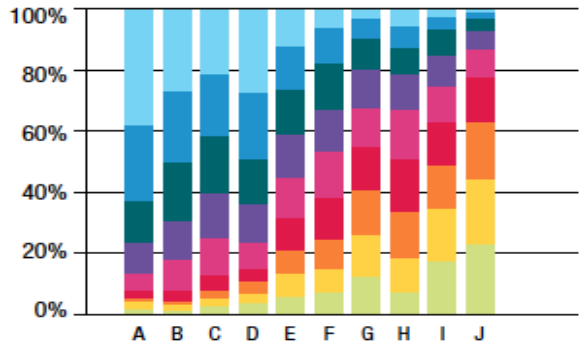

- 0 - 19
- 20 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- 65 plus

## Dwelling Type Per Group



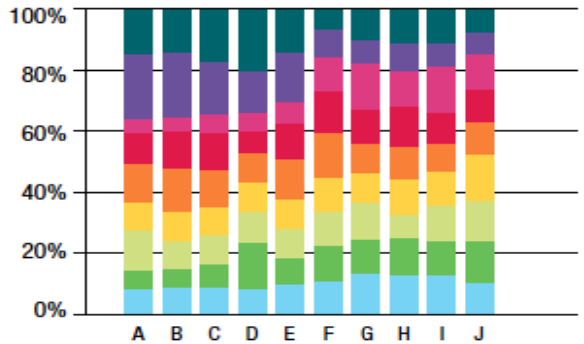

- House
- Traditional
- Flat
- Townhouse
- Room in back
- Shack in back
- Informal dwelling
- Living quarters

## Education Levels Per Group



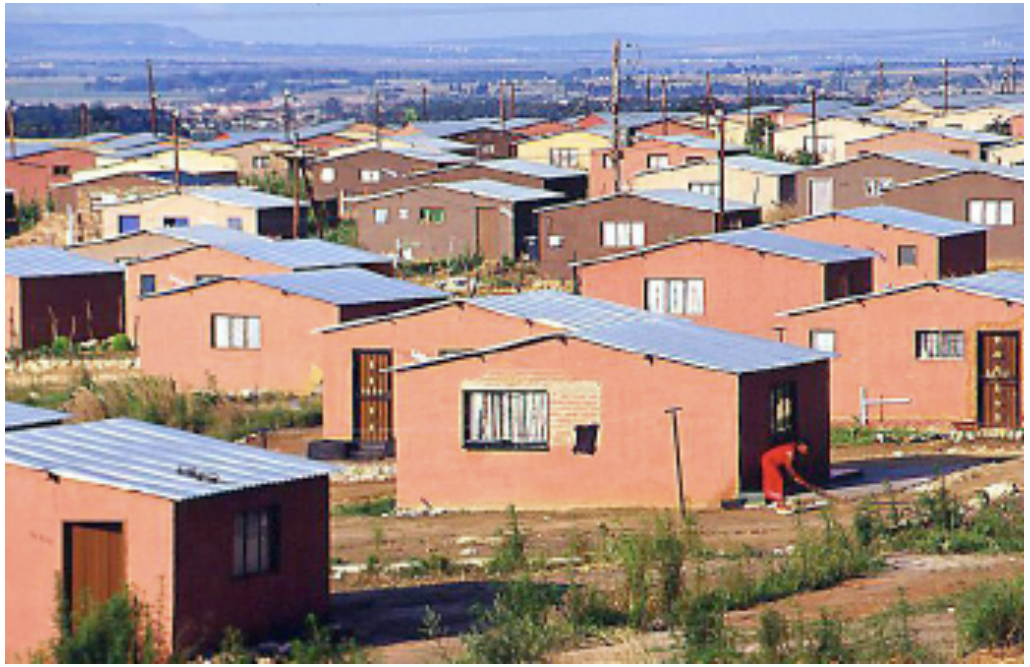

- No schooling
- Some primary
- Primary
- Some secondary
- Matric
- Certificate
- Diploma
- Degree
- Post graduate

## Lifestage Levels Per Group




- At home singles
- Starting out singles
- Mature singles
- Young couples
- New parents
- Mature parents
- Single parents

clusterplus




(“Free”)

(R400 000)

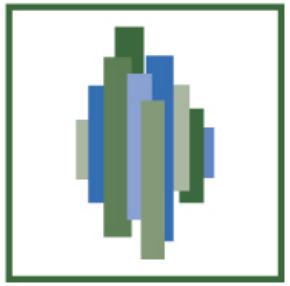
# RDP houses sold in contravention of Housing Act to be confiscated

Peter Luhanga
12 February 2011

RDP houses in the province transferred to beneficiaries less than eight years ago, which have been sold by their owners, will be confiscated and given to the needy, says Housing MEC Bonginkosi Madikizela.

Location specific audits have revealed that in some cases, as in George, up to 90 percent of RDP houses have been sold by beneficiaries, and a visit by former housing MEC Richard Dyantyi in 2008 revealed that up to 60 percent of RDP houses in Du Noon had been sold or let.

(http://westcapenews.com)



| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 82.70% | 86.30% | 84.10% | 84.80% | 83.50% | 82.60% | 80.10% | 79.40% | 75.57% | 73.49% |
| 17% | 14% | 16% | 15% | 17% | 17% | 20% | 21% | 24% | 27% |

(Gallow et al, 2011)

| Cape Town Monthly Household Income | Black African | | Coloured | | Asian | | White | | Other | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Num | % | Num | % | Num | % | Num | % | Num | % | Num | % |
| No income | 85 427 | 19.2% | 37 399 | 10.4% | 1 542 | 10.8% | 19 522 | 8.4% | 2 627 | 14.5% | 146 517 | 13.7% |
| R 1 - R 1 600 | 120 800 | 27.2% | 53 104 | 14.8% | 965 | 6.8% | 7 445 | 3.2% | 2 754 | 15.2% | 185 068 | 17.3% |
| R 1 601 - R 3 200 | 102 325 | 23.0% | 55 849 | 15.6% | 966 | 6.8% | 8 633 | 3.7% | 3 051 | 16.9% | 170 824 | 16.0% |
| R 3 201 - R 6 400 | 64 708 | 14.5% | 66 488 | 18.5% | 1 459 | 10.2% | 18 853 | 8.1% | 2 919 | 16.2% | 154 427 | 14.5% |
| R 6 401 - R 12 800 | 35 420 | 8.0% | 62 286 | 17.4% | 2 149 | 15.1% | 37 117 | 15.9% | 2 376 | 13.1% | 139 348 | 13.0% |
| R 12 801 - R 25 600 | 20 520 | 4.6% | 47 952 | 13.4% | 2 852 | 20.0% | 53 255 | 22.9% | 2 046 | 11.3% | 126 625 | 11.8% |
| R 25 601 - R 51 200 | 10 835 | 2.4% | 26 390 | 7.4% | 2 564 | 18.0% | 51 619 | 22.2% | 1 452 | 8.0% | 92 860 | 8.7% |
| R 51 201 - R 102 400 | 3 122 | 0.7% | 6 889 | 1.9% | 1 240 | 8.7% | 26 190 | 11.2% | 577 | 3.2% | 38 018 | 3.6% |
| R 102 401 or more | 1 615 | 0.4% | 2 257 | 0.6% | 523 | 3.7% | 10 151 | 4.4% | 268 | 1.5% | 14 814 | 1.4% |
| Unspecified | 9 | 0.0% | 15 | 0.0% | 6 | 0.0% | 41 | 0.0% | 2 | 0.0% | 73 | 0.0% |
| Total | 444 781 | 100.0% | 358 629 | 100.0% | 14 266 | 100.0% | 232 826 | 100.0% | 18 072 | 100.0% | 1 068 574 | 100.0% |

75%

(Census, 2011)

# …therefore, we need a far more sophisticated and nuanced understanding of the housing sub-markets…

**Acknowledgement:**

**The report draws extensively on the following research:**

- Hogarth, K., 2015, *Analysis of the Cape Town Housing Market: Supply, Demand and Housing Submarkets*, City of Cape Town.
- Lendor, B., Ndiziba, N., and Oertel, M. 2015, *The Propensity of Different Households to Demand Certain Housing Types in Cape Town*. MSc. Property Studies Honours Thesis. UCT.

**Acknowledgement is also given to:**

- Mr. Antony Marks from the City of Cape Town for initiating and guiding the original research project.
- Mr. Jawu Nyirenda and Ms. Reshma Kassanjee from the UCT Department of Statistical Sciences for their advice regarding the statistical approaches proposed in the report.

# Disaggregation & segmentation

…Disaggregation is the process of dividing the total housing stock into submarkets, within which housing units have certain characteristics (e.g. type, value, location or size) which enable them to be substitutes for each other (supply-side).

…Segmentation is the process of dividing the total population of households into submarkets, within which households have certain characteristics (e.g. income, age, or size) which generate similar preferences & levels of demand for certain products (demand-side).

(Carn, 1988)

# Methodology outline

Step 1: Theoretical basis: Consumer Choice Theory

Step 2: Segment & disaggregate the market based on **single attributes**

Step 3: Segment & disaggregate the market based on single household attributes **over different periods**

Step 4: Analyse results

- Propensity of demand
- Gap analysis

Step 5: Segment & disaggregate the market based on **multiple attributes**

- Clustering
- Decision tree

Step 6: Analyse results

- Propensity of demand
- Gap analysis

Step 7: Assess **future** demand based on demographic projections

# Segmentation & disaggregation based on single attributes (2 & 3)

Various approaches to segmenting housing submarkets:

- Gender
- Age
- Size
- Income
- Race
- Etc.

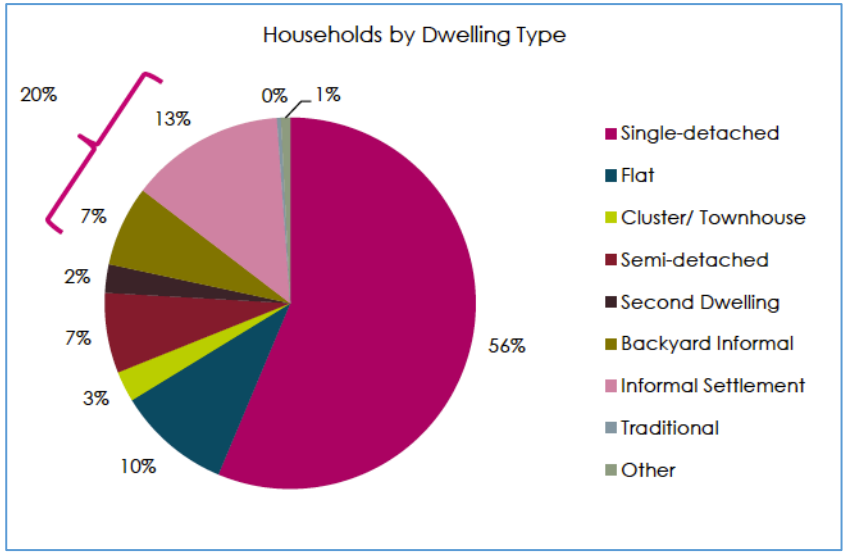
| Household Characteristic | df | Cramer's V Statistic | Effect Size |
|---|---|---|---|
| Gender of Household Head | 1 | 0.08 | Small Effect |
| Age of Household Head | 2 | 0.24 | Medium Effect |
| Household Size | 2 | 0.39 | Large Effect |
| Household Income | 2 | 0.24 | Medium Effect |
| Race of Household Head | 3 | 0.29 | Medium Effect |

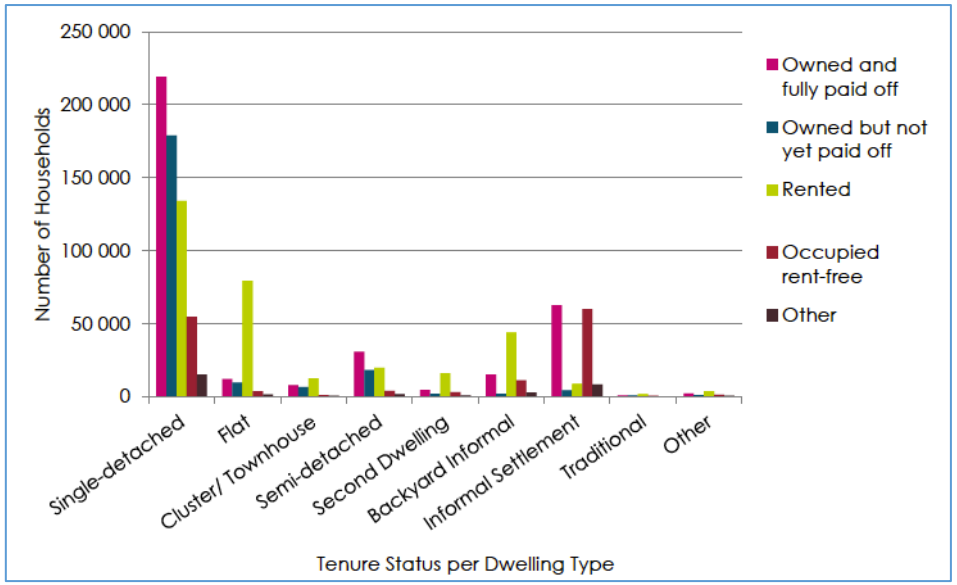
(Lendor *et al*, 2015)

# Segmentation & disaggregation based on single attributes (2 & 3)

Various approaches to disaggregating housing submarkets:

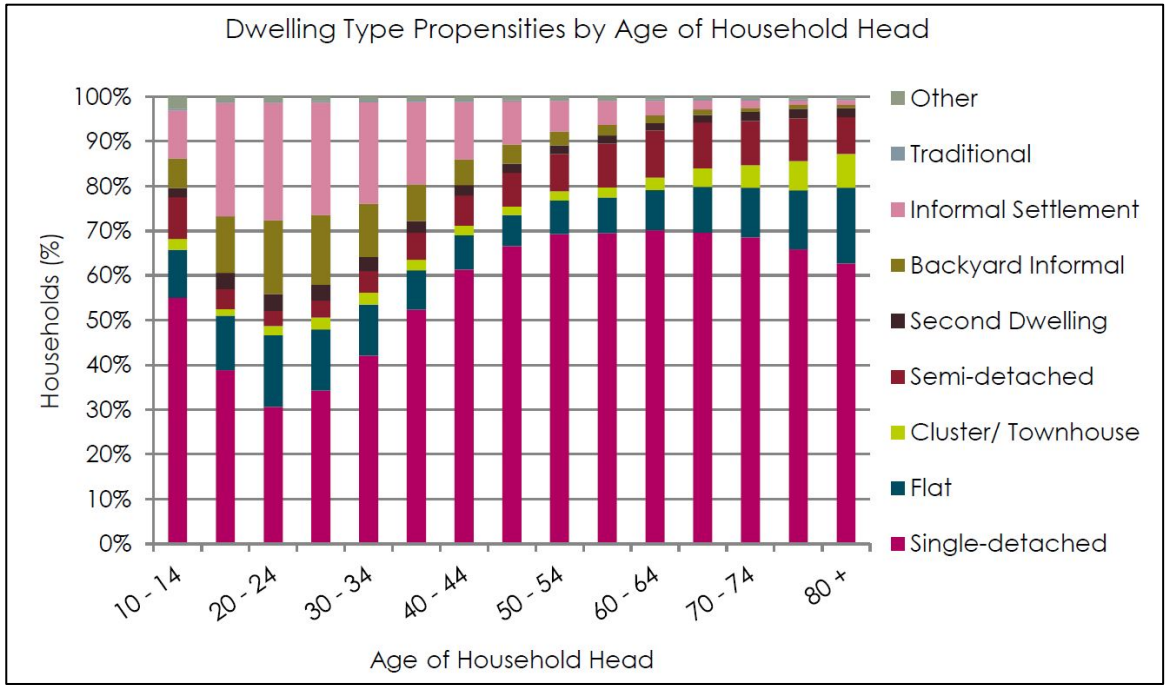
- Structural (type, tenure)
- Spatial
- Affordability

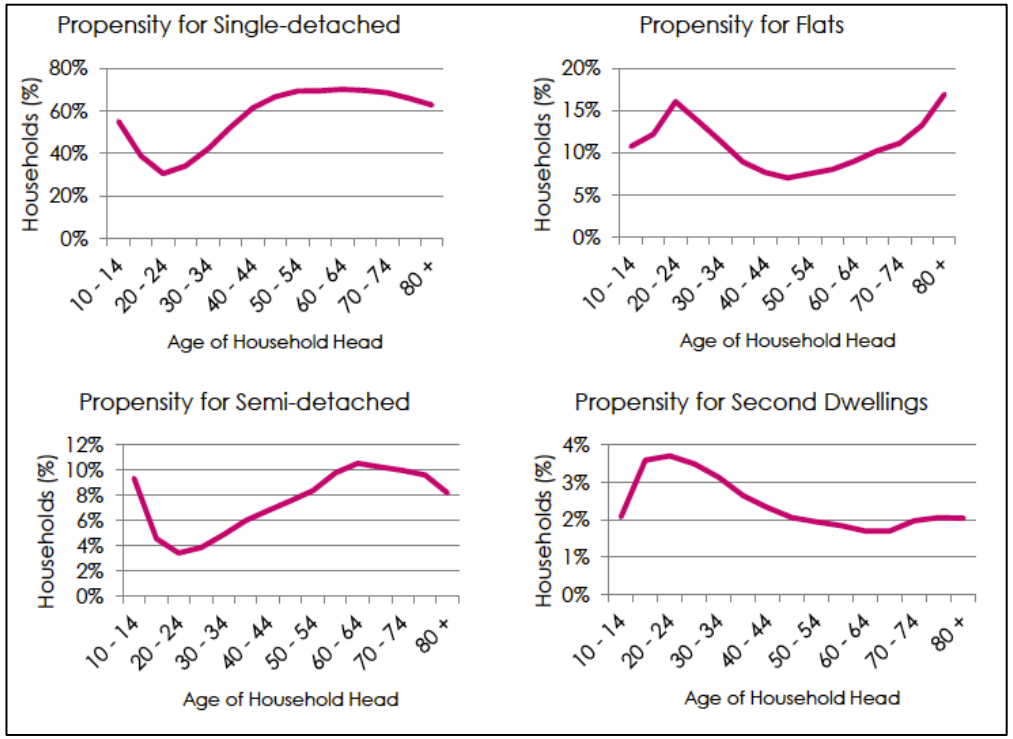



(Hogarth, 2015)

# Propensity to demand - analysis (4)



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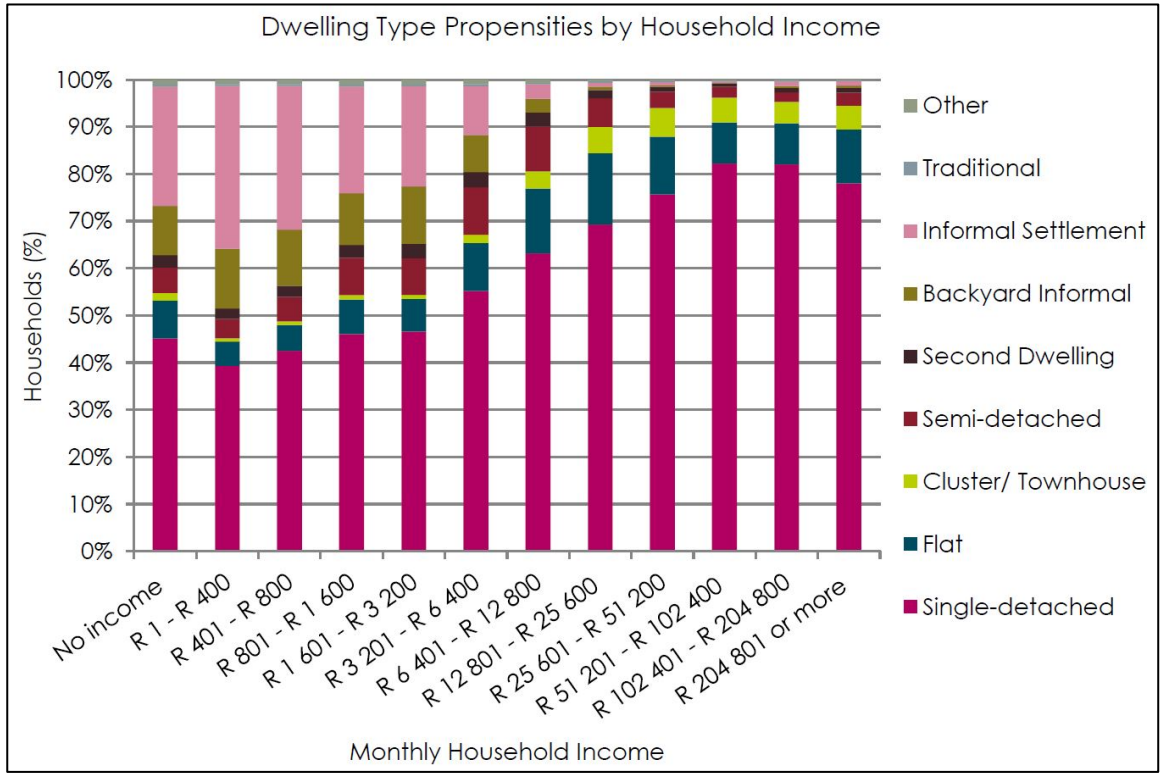
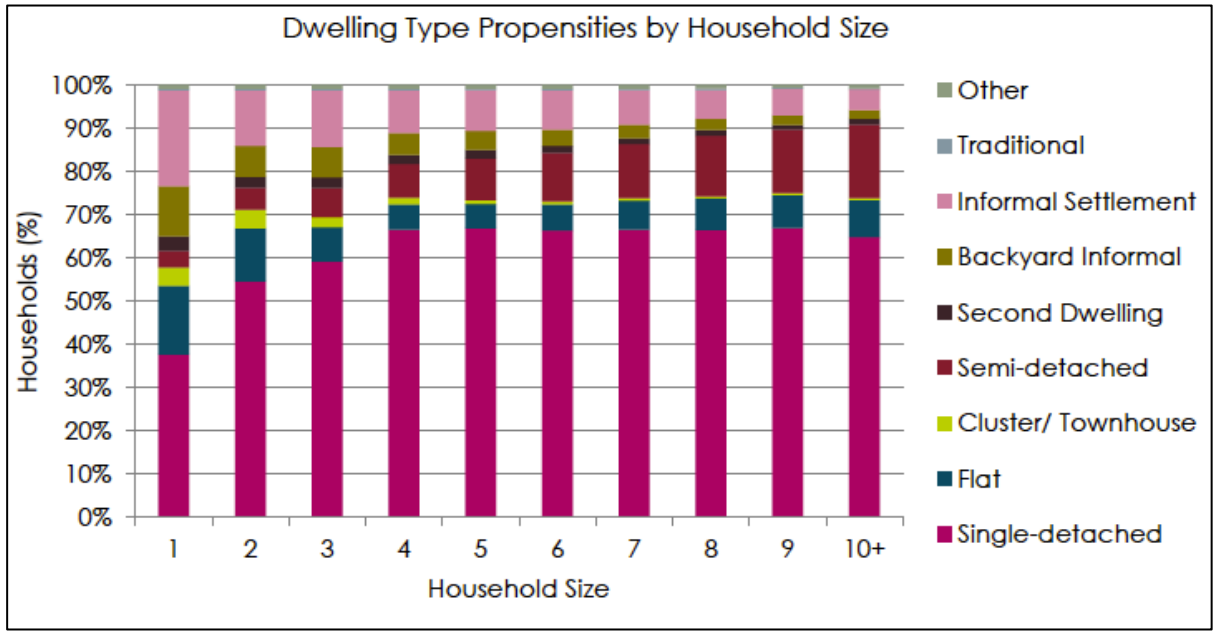
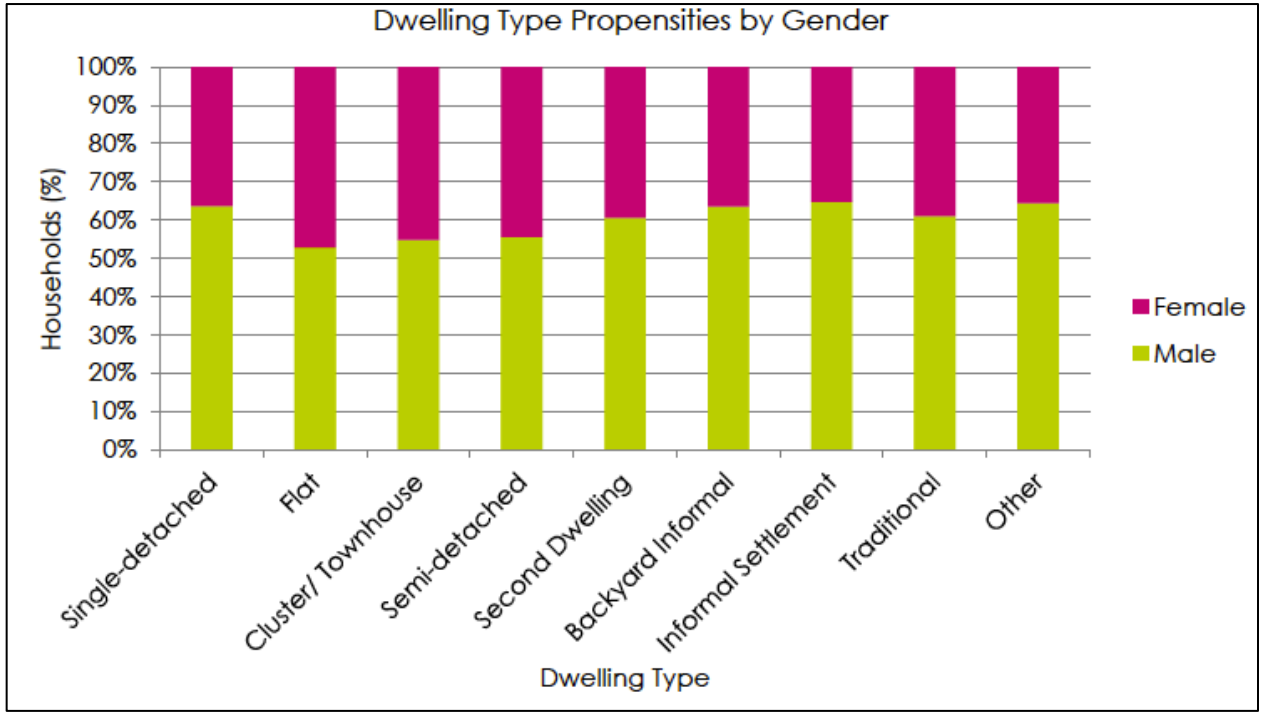


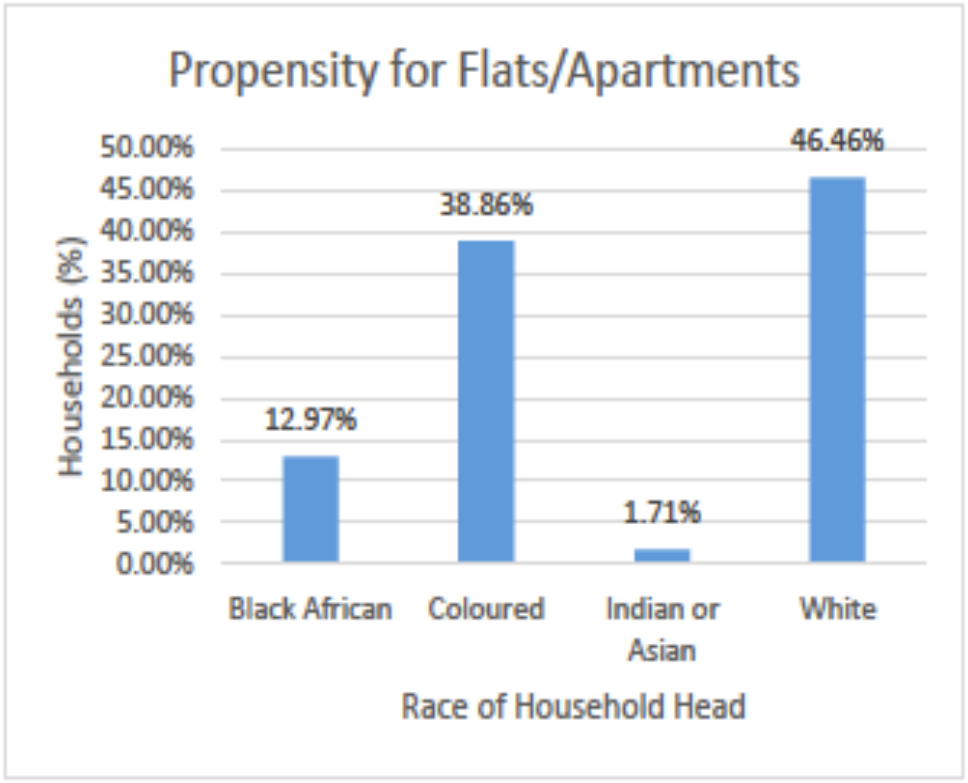




(Hogarth, 2015)

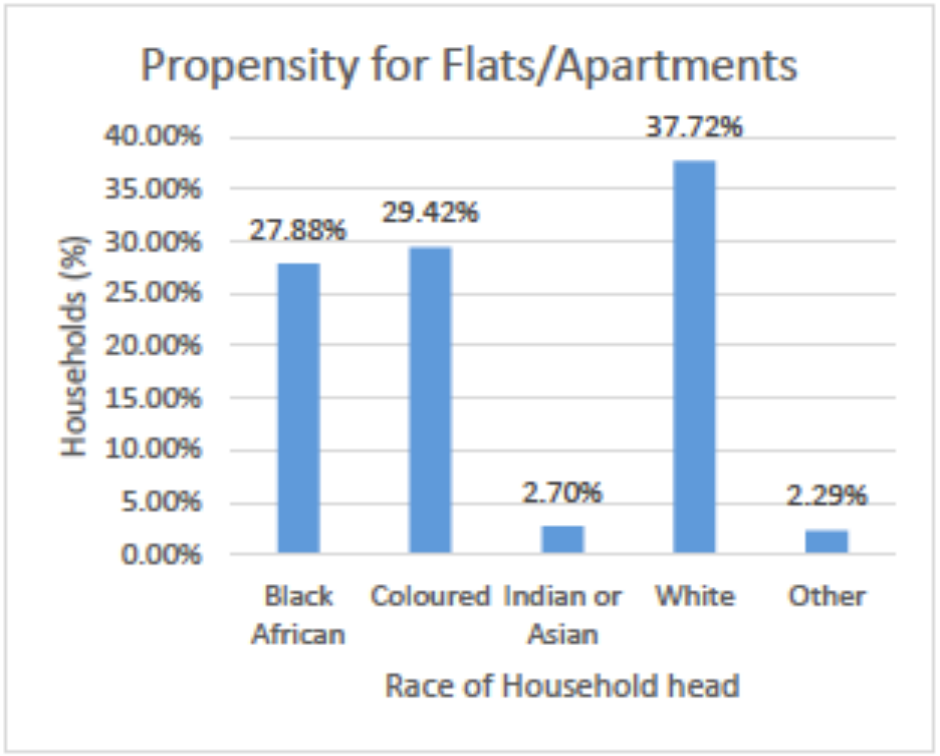
# Propensity to demand analysis (4)



# Propensity to demand trends (4)

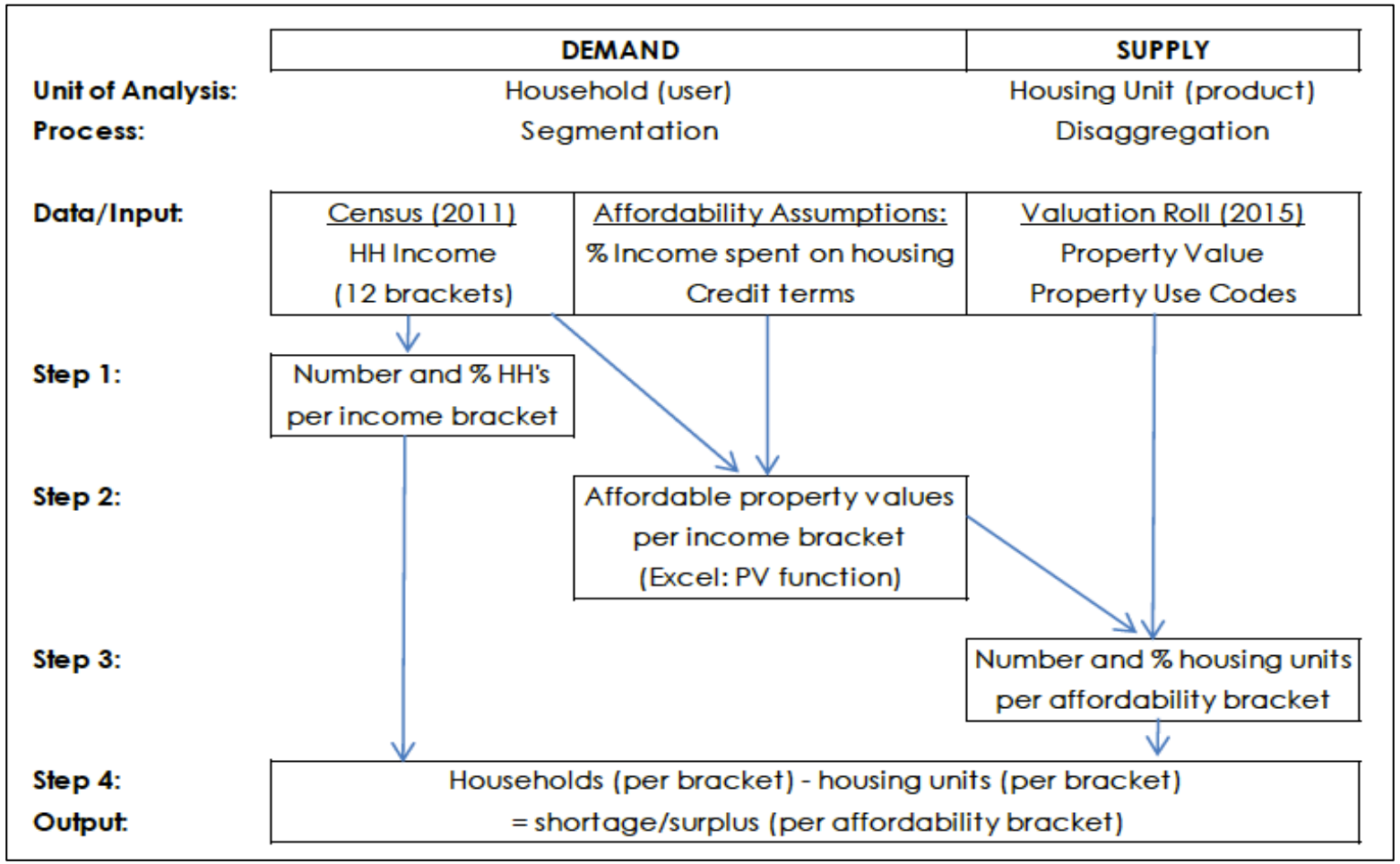



2001




2011

# Gap analysis (step 4)



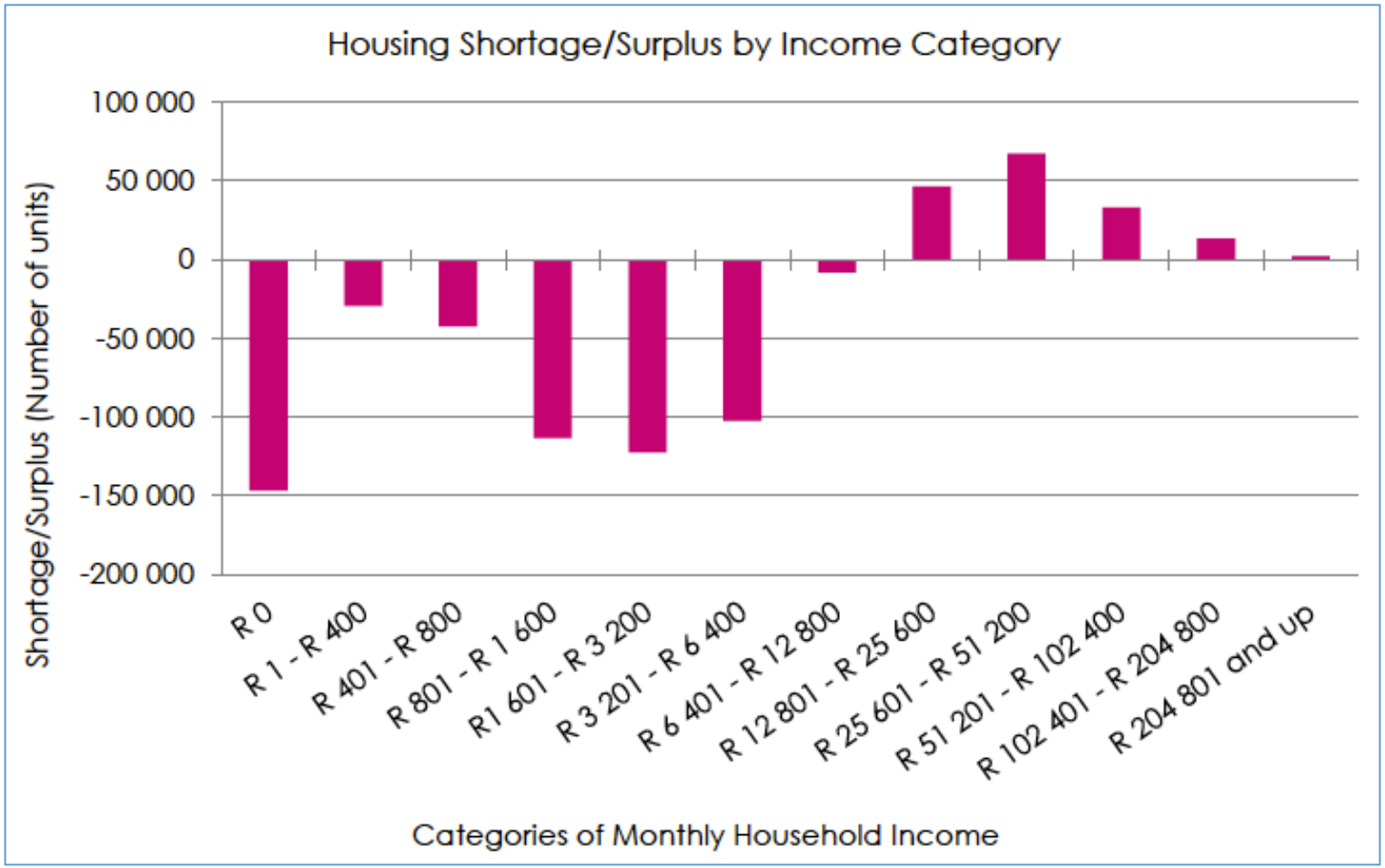

(Hogarth, 2015)

# Gap analysis (4)

| Demand: Households | | | | Supply: Residential Properties | | | | Shortage/Surplus[1] | |
|---|---|---|---|---|---|---|---|---|---|
| Income Category | | No. Households | % of Total | Value Category | | No. Properties | % of Total | No. Properties | % of Total Stock |
| R 0 | | 146 517 | 13.71% | R 0 | | 0 | 0.00% | **-146 517** | **-22.02%** |
| R 1 | to R 400 | 29 373 | 2.75% | R 1 | to R 11 514 | 0 | 0.00% | **-29 373** | **-4.41%** |
| R 401 | to R 800 | 42 418 | 3.97% | R 11 515 | to R 23 028 | 0 | 0.00% | **-42 418** | **-6.37%** |
| R 801 | to R 1 600 | 113 277 | 10.60% | R 23 029 | to R 46 055 | 0 | 0.00% | **-113 277** | **-17.02%** |
| R 1 601 | to R 3 200 | 170 824 | 15.99% | R 46 056 | to R 92 111 | 48 354 | 7.27% | **-122 470** | **-18.40%** |
| R 3 201 | to R 6 400 | 154 427 | 14.45% | R 92 112 | to R 184 222 | 52 021 | 7.82% | **-102 406** | **-15.39%** |
| R 6 401 | to R 12 800 | 139 348 | 13.04% | R 184 223 | to R 368 443 | 131 106 | 19.70% | **-8 242** | **-1.24%** |
| R 12 801 | to R 25 600 | 126 625 | 11.85% | R 368 444 | to R 736 886 | 172 874 | 25.98% | **46 249** | **6.95%** |
| R 25 601 | to R 51 200 | 92 860 | 8.69% | R 736 887 | to R 1 473 772 | 160 284 | 24.08% | **67 424** | **10.13%** |
| R 51 201 | to R 102 400 | 38 018 | 3.56% | R 1 473 773 | to R 2 947 545 | 70 919 | 10.66% | **32 901** | **4.94%** |
| R 102 401 | to R 204 800 | 9 748 | 0.91% | R 2 947 546 | to R 5 895 089 | 22 880 | 3.44% | **13 132** | **1.97%** |
| R 204 801 | and up | 5 066 | 0.47% | R 5 895 090 | and up | 7 075 | 1.06% | **2 009** | **0.30%** |
| **TOTAL** | | **1 068 501** | **99.99%** | | | **665 513** | **100.00%** | **-402 988** | **-60.55%** |

(Hogarth, 2015)

# Gap analysis (4)




(Hogarth, 2015)

# Projected demand

- Attain demographic projections (e.g. WC PwC 2040 projections)
- Calculate number of households (headship rate)

$$Yi = Y1i \times [(Y2i - K)/(Y1i - K)]Y\text{-}Y1Y2\text{-}Y1$$

- Apply propensity ratio
- Adjust propensity ratio based on trends
- Calculate estimated house type demand

| PROPENSITIES BY AGE GROUP AND DWELLING TYPE | | | | | |
|---|---|---|---|---|---|
| | Single - detached | Flat or apartment | Town/cluster/semi-detached house | Informal dwelling | Total |
| 2011 | | | | | |
| 0 to 14 | 477 | 91 | 102 | 143 | 813 |
| 15 to 64 | 517626 | 90992 | 84072 | 215420 | 908110 |
| 65+ | 83826 | 15078 | 18751 | 3211 | 120866 |
| | 601929 | 106161 | 102925 | 218774 | 1029789 |
| | | | | | |
| 2001 | | | | | |
| 0 to 14 | 72 | 13 | 6 | 30 | 121 |
| 15 to 65 | 389246 | 61795 | 44148 | 139856 | 635045 |
| 65+ | 56094 | 13313 | 9047 | 3081 | 81535 |
| | 445412 | 75121 | 53201 | 142967 | 716701 |

| HEADSHIP RATES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Age Group | Y2i - 2011 | Y1i - 2001 | K | Y1i - K | Y2i - K | (Y2i – K)/ (Y1i – K) | (Y-Y1)/ (Y2-Y1) | Yi - 2040 |
| | | | | | | | | |
| 0 to 14 | 0,00079 | 0,00017 | 1,00 | -1,000 | -0,999 | 0,9994 | 3,9 | 0,0002 |
| 15 to 64 | 0,88184 | 0,88607 | 0,00 | 0,886 | 0,882 | 0,9952 | 3,9 | 0,8697 |
| 65+ | 0,11737 | 0,11376 | 1,00 | -0,886 | -0,883 | 0,9959 | 3,9 | 0,1120 |
| | 100% | 100% | | | | | | 98,18% |

| NUMBER OF HOUSEHOLDS IN 2040 | | | |
|---|---|---|---|
| Age Group | 2040 Population | Headship Rate | Number of Households (2040) |
| 0 to 14 | 972724 | 0,02% | 164 |
| 15 to 65 | 3185671 | 86,97% | 2770575 |
| 65+ | 518163 | 11,20% | 58019 |
| | | | 2828757 |

| DWELLING TYPE PROPENSITIES | | | | | |
|---|---|---|---|---|---|
| | Single - detached | Flat or apartment | Town/cluster/semi -detached house | Informal dwelling | Total |
| 2011 | 601929 | 106161 | 102925 | 218774 | 1029789 |
| 2001 | 445412 | 75121 | 53201 | 142967 | 716701 |
| | | | | | |
| 2011 | 58,45% | 10,31% | 9,99% | 21,24% | 100% |
| 2001 | 62,15% | 10,48% | 7,42% | 19,95% | 100% |
| | -5,95% | -1,65% | 34,65% | 6,50% | |
| | Percentage change in proportion | | | | |

# Shortcomings

- A-spatial
- Simplistic – housing choice based on a number of household characteristics

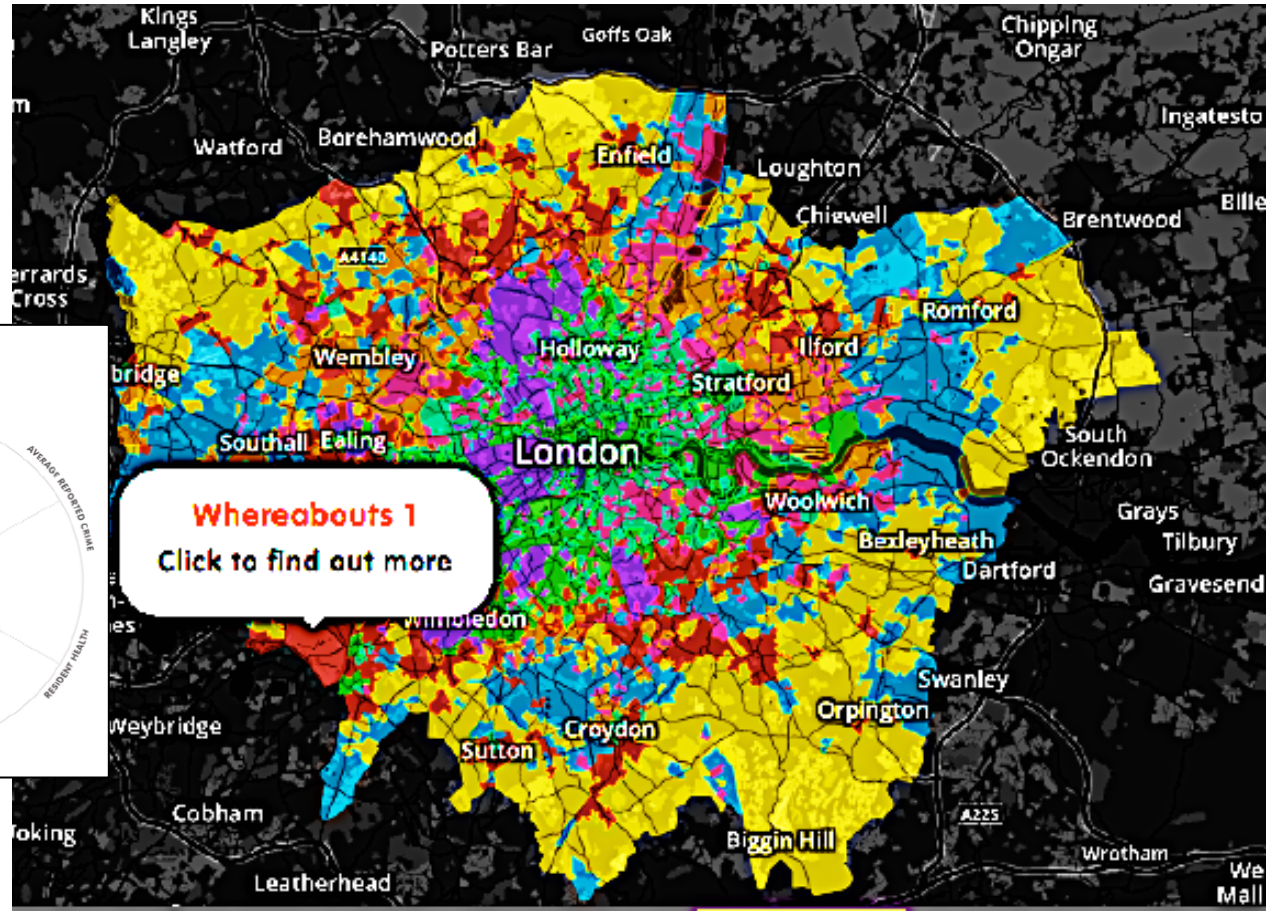
…therefore need to segment & disaggregate based on multiple attributes (5)

# Clustering approach

Whereabouts London:

“K-means Clustering”

(Whereaboutslondon.org)

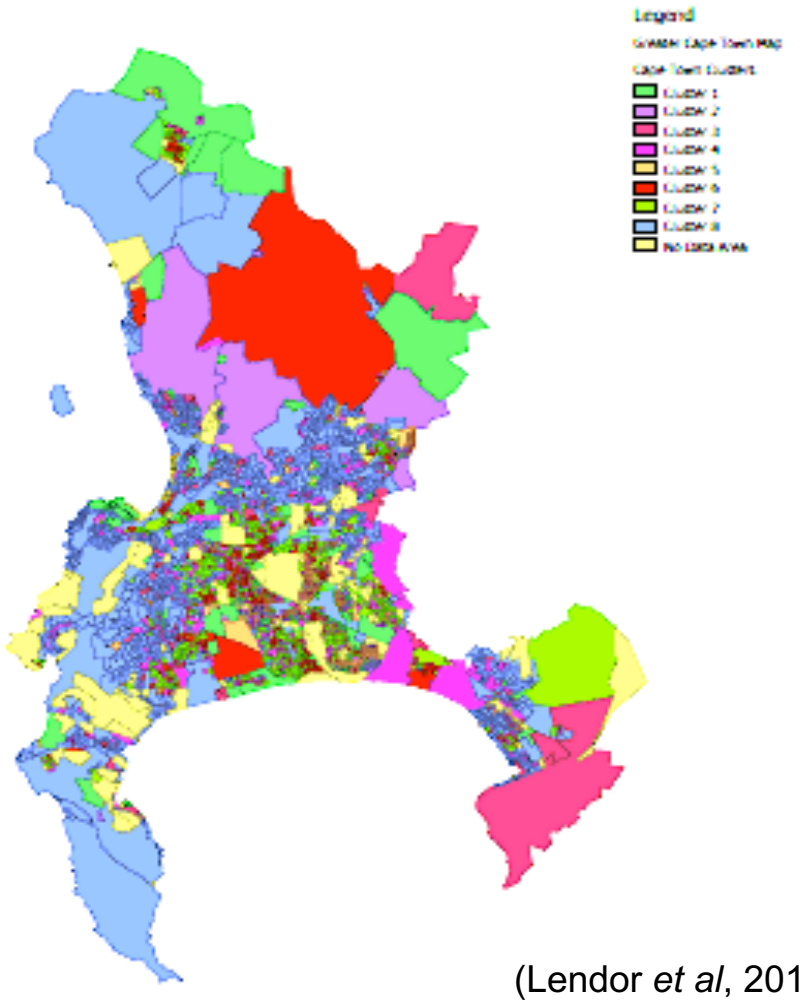



# Clustering approach

Whereabouts Cape Town:

**Whereabouts 6** (e.g. Tafelsig, Mitchell's Plain, Manenberg):

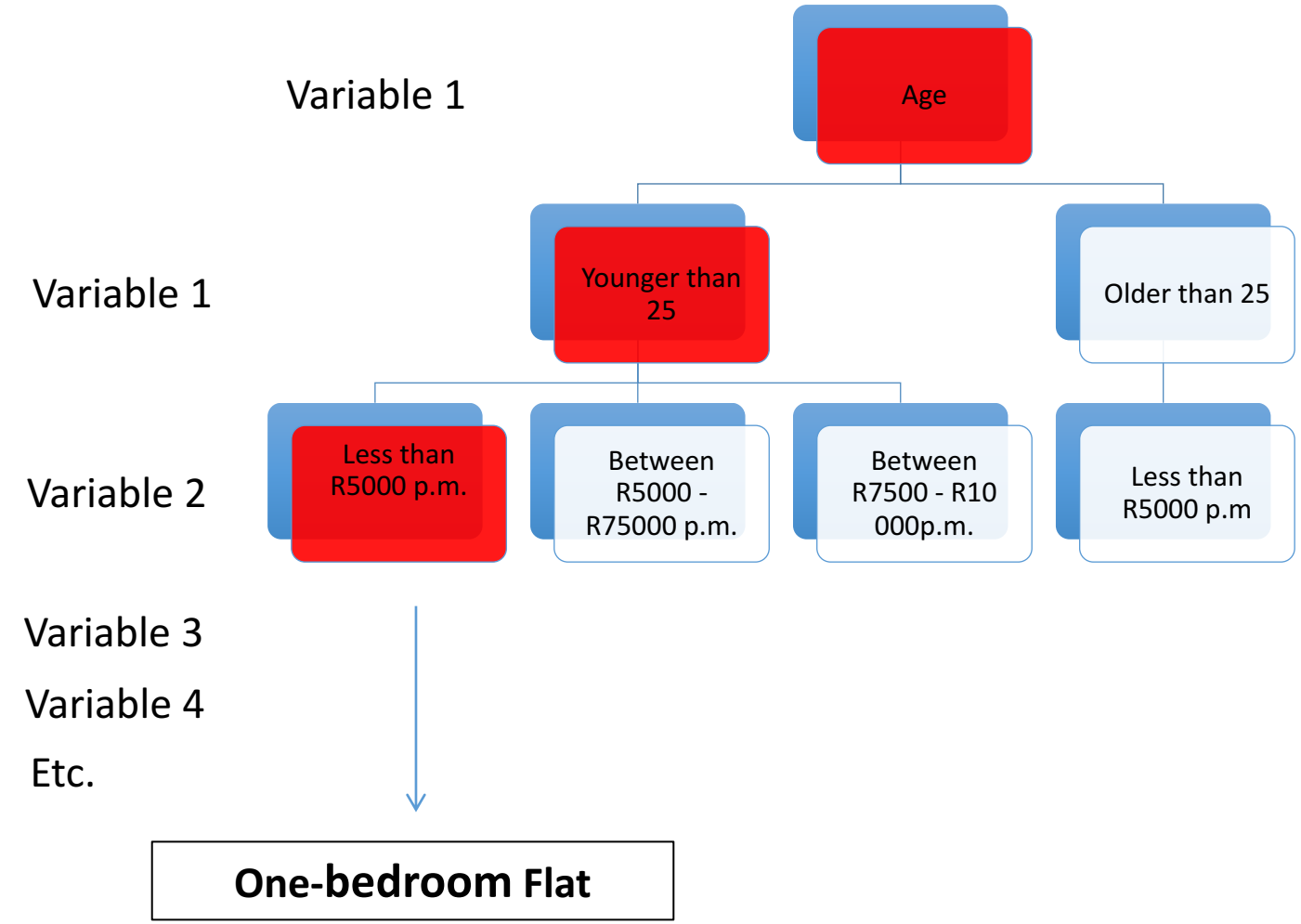
- Annual Income; R38 401 to R76 800
- Dominant Age Group; 45-54
- Dominant Household Size; 4
- Dominant Housing Type; brick/concrete block house



(Lendor *et al*, 2015)

# Supervised decision tree modeling

A “clustering” technique based on household choice



URBAN REAL ESTATE RESEARCH UNIT

# UCT Nedbank Urban Real Estate Research Unit

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