Analysis of Asset Ownership Using 2009 -2010 HIES Dataset

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Background

- Government is concerned that "… some of the worst living conditions and highest levels of poverty are found in urban settlements…" [2010-2030 Development Strategic Plan]

- Government wish for the people to "… accumulate the necessary assets that underpin [*support or justify*] higher living standards…" [2011-2015 Medium Term Development Plan]

- Government vowed to "… aim for nothing less than the highest quality of life for our people…" [PNG Vision 2050]

Introduction

- PNG has abundant resources – land, cash crops, forests, oil, gas, minerals, fisheries, etc. that should contribute to better living standards for the people. How can we know this?

- Since 1980s Living Standards Measurement Surveys (WB), it is common to measure welfare or living standards using household survey data.

- Household assets play a vital role in the analysis of living conditions of households:
  - Contribute to poverty alleviation e.g. agricultural implements, PMVs, boats, etc.
  - Contribute to well-being of households

Objectives

- Literature suggests that:
  - ✓ Low-income households are asset-poor
  - ✓ Ownership of key assets may be a good indicator of well-being
  - ✓ The more diverse range of assets, the better-off is the household
- What does the 2009/10 HIES data reveal about ownership of household durable assets in NCD/POM?
  - ✓ material capital accumulation occur in cities than in rural areas
- Look at ownership of 16 assets in the HIES and compare households living in NCD/POM settlements with those in non-settlement areas;
- Determine whether inequality exists within/between POM/NCD neighbourhoods/suburbs.

2009/10 HIES and Data Sample

- Data collected (by NSO) from a cross-section of 4,191 households at the national level

- 652 households in the NCD/POM

- Households were asked their ownership of a range of durable household/consumer goods/assets

- 622 households responded to questions = Response rate: 95.5%

- 10 households have missing asset ownership data

- 612 households with usable asset data

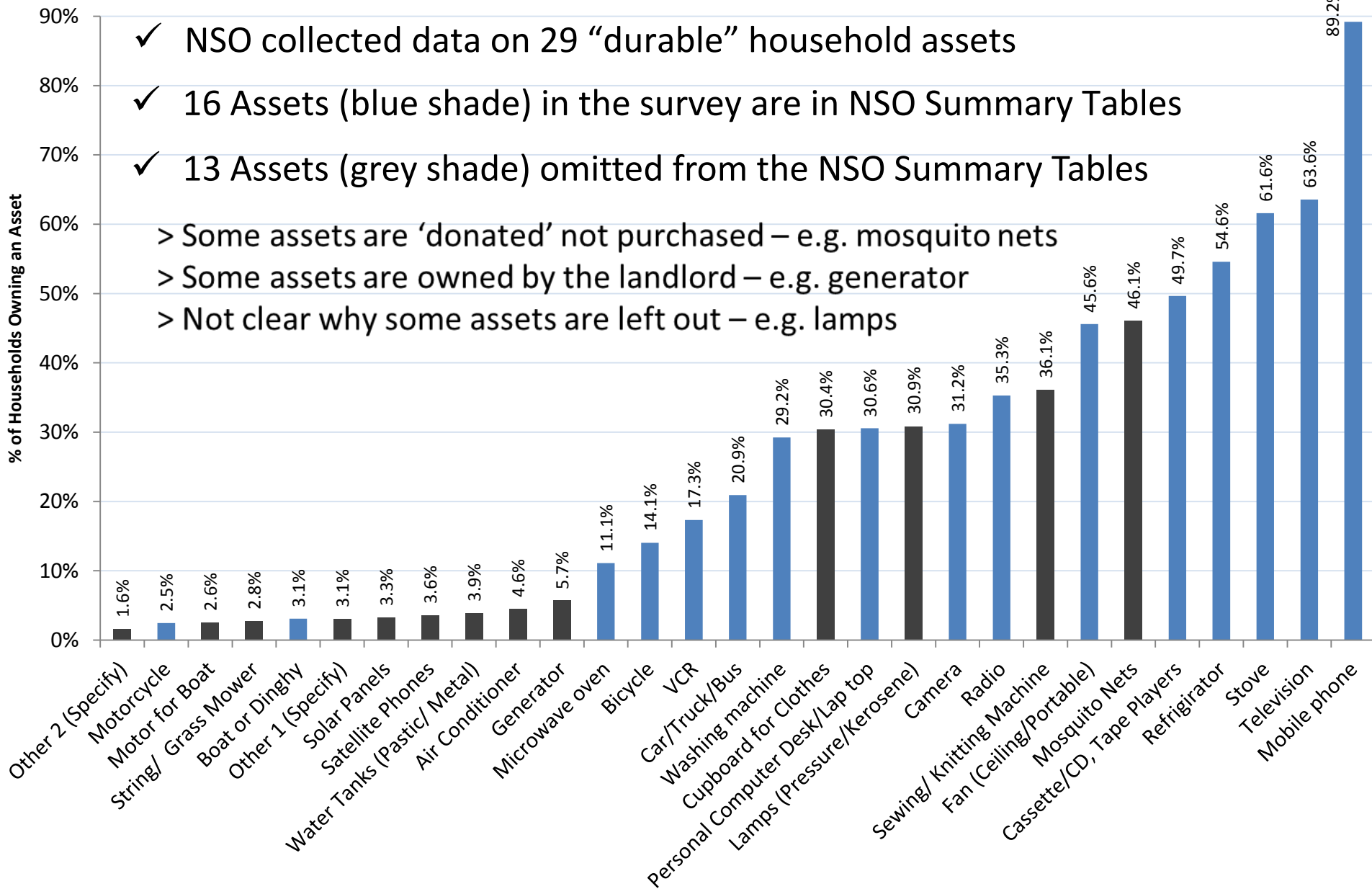- 136 households lived in settlement areas

Disaggregating Settlement Households in NCD/Port Moresby

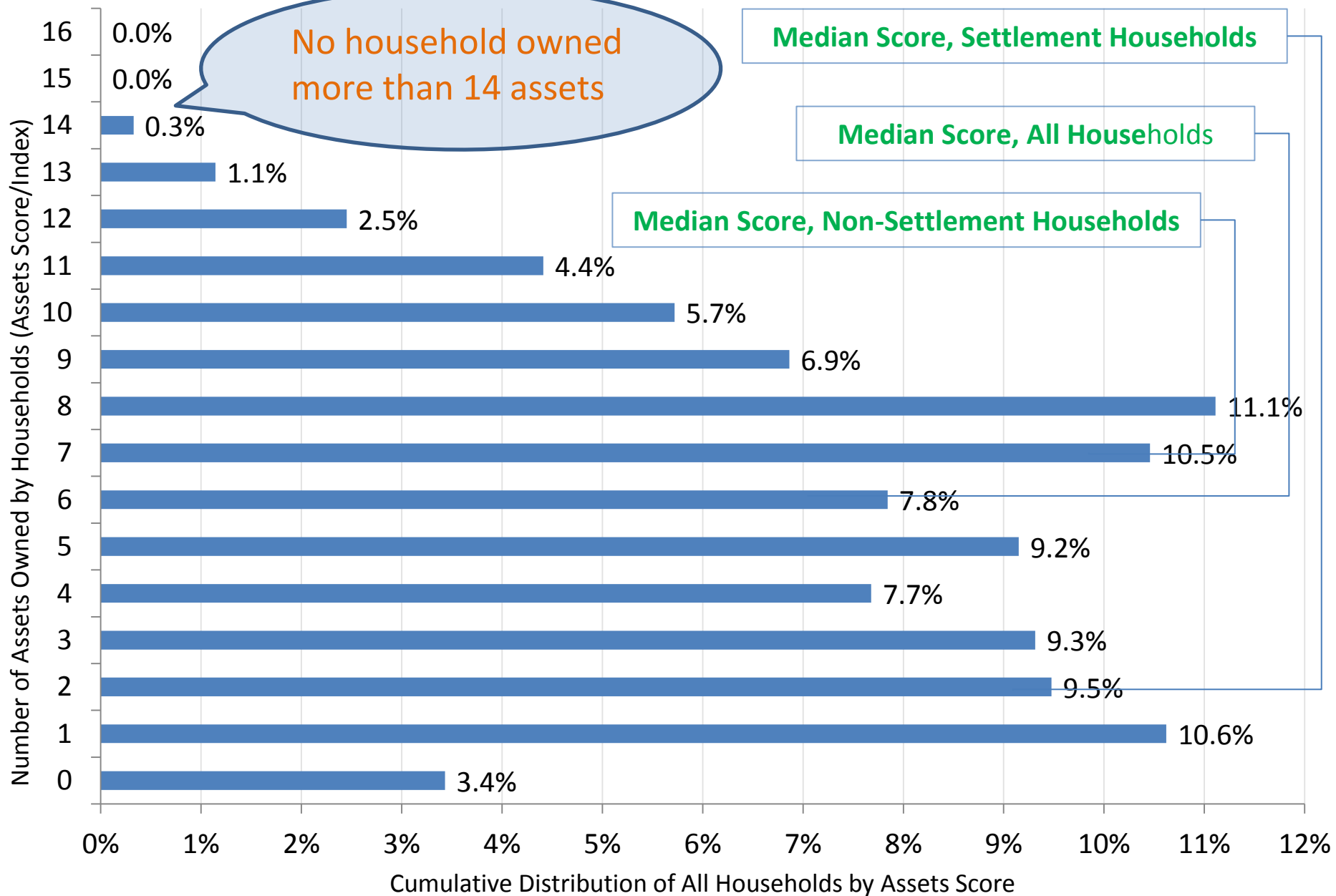| Area of Residence	All Households	Settlement	% Settlement
Gerehu	51	0	0.0%
Waigani/University	67	0	0.0%
Tokorara	90	0	0.0%
Gordons/Saraga	89	18	20.2%
Boroko/Korobosea	100	24	24.0%
Kilakila/Kaugere	70	30	42.9%
Town/Hanuabada	83	24	28.9%
Laloki/Napanapa	33	23	69.7%
Bomana	29	17	58.6%
NCD/Port Moresby	612	136	22.2%

Measuring Asset Ownership

- To determine asset score X
  - 1 point for each affirmative response owning a particular asset
  - Sum ALL the affirmative responses = asset score
- Which assets appear most frequently in
  - All NCD Households
  - Households Living in the Settlements
  - Households Living in Non-Settlements
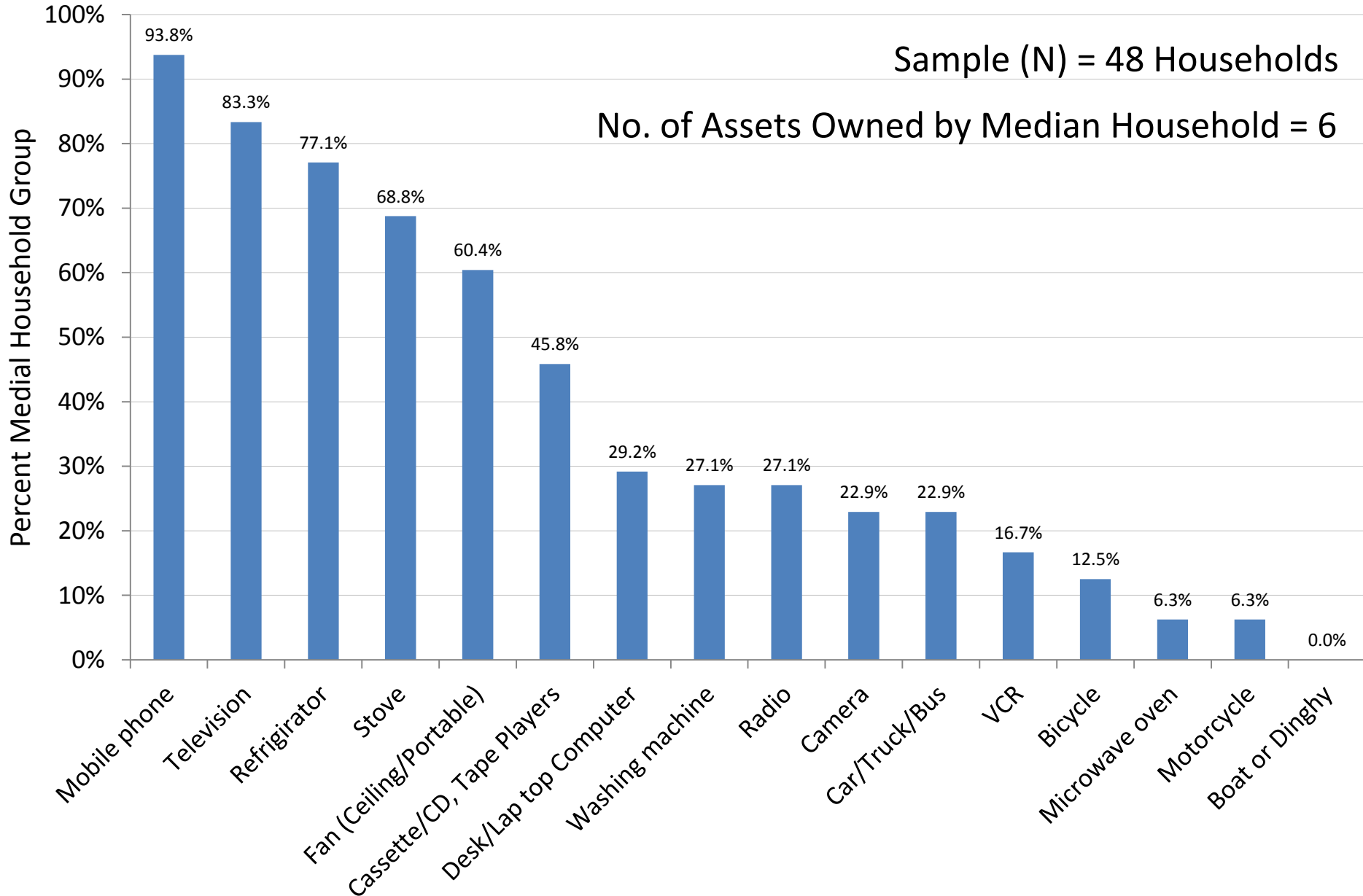 - Median household

Distribution of Assets Owned by NCD/Port Moresby Households

✓ NSO collected data on 29 "durable" household assets

✓ 16 Assets (blue shade) in the survey are in NSO Summary Tables

✓ 13 Assets (grey shade) omitted from the NSO Summary Tables

> Some assets are 'donated' not purchased – e.g. mosquito nets
> Some assets are owned by the landlord – e.g. generator
> Not clear why some assets are left out – e.g. lamps

% of Households Owning an Asset (y-axis)

Asset	%
Other 2 (Specify)	1.6%
Motorcycle	2.5%
Motor for Boat	2.6%
String/ Grass Mower	2.8%
Boat or Dinghy	3.1%
Other 1 (Specify)	3.1%
Solar Panels	3.3%
Satellite Phones	3.6%
Water Tanks (Pastic/ Metal)	3.9%
Air Conditioner	4.6%
Generator	5.7%
Microwave oven	11.1%
Bicycle	14.1%
VCR	17.3%
Car/Truck/Bus	20.9%
Washing machine	29.2%
Cupboard for Clothes	30.4%
Personal Computer Desk/Lap top	30.6%
Lamps (Pressure/Kerosene)	30.9%
Camera	31.2%
Radio	35.3%
Sewing/ Knitting Machine	36.1%
Fan (Ceiling/Portable)	45.6%
Mosquito Nets	46.1%
Cassette/CD, Tape Players	49.7%
Refrigirator	54.6%
Stove	61.6%
Television	63.6%
Mobile phone	89.2%

Distribution of NCD Households by Assets Score

Which Assets Does the Median **<u>NCD Household</u>** Own?

Sample (N) = 48 Households

No. of Assets Owned by Median Household = 6

Percent Medial Household Group

- Mobile phone: 93.8%
- Television: 83.3%
- Refrigirator: 77.1%
- Stove: 68.8%
- Fan (Ceiling/Portable): 60.4%
- Cassette/CD, Tape Players: 45.8%
- Desk/Lap top Computer: 29.2%
- Washing machine: 27.1%
- Radio: 27.1%
- Camera: 22.9%
- Car/Truck/Bus: 22.9%
- VCR: 16.7%
- Bicycle: 12.5%
- Microwave oven: 6.3%
- Motorcycle: 6.3%
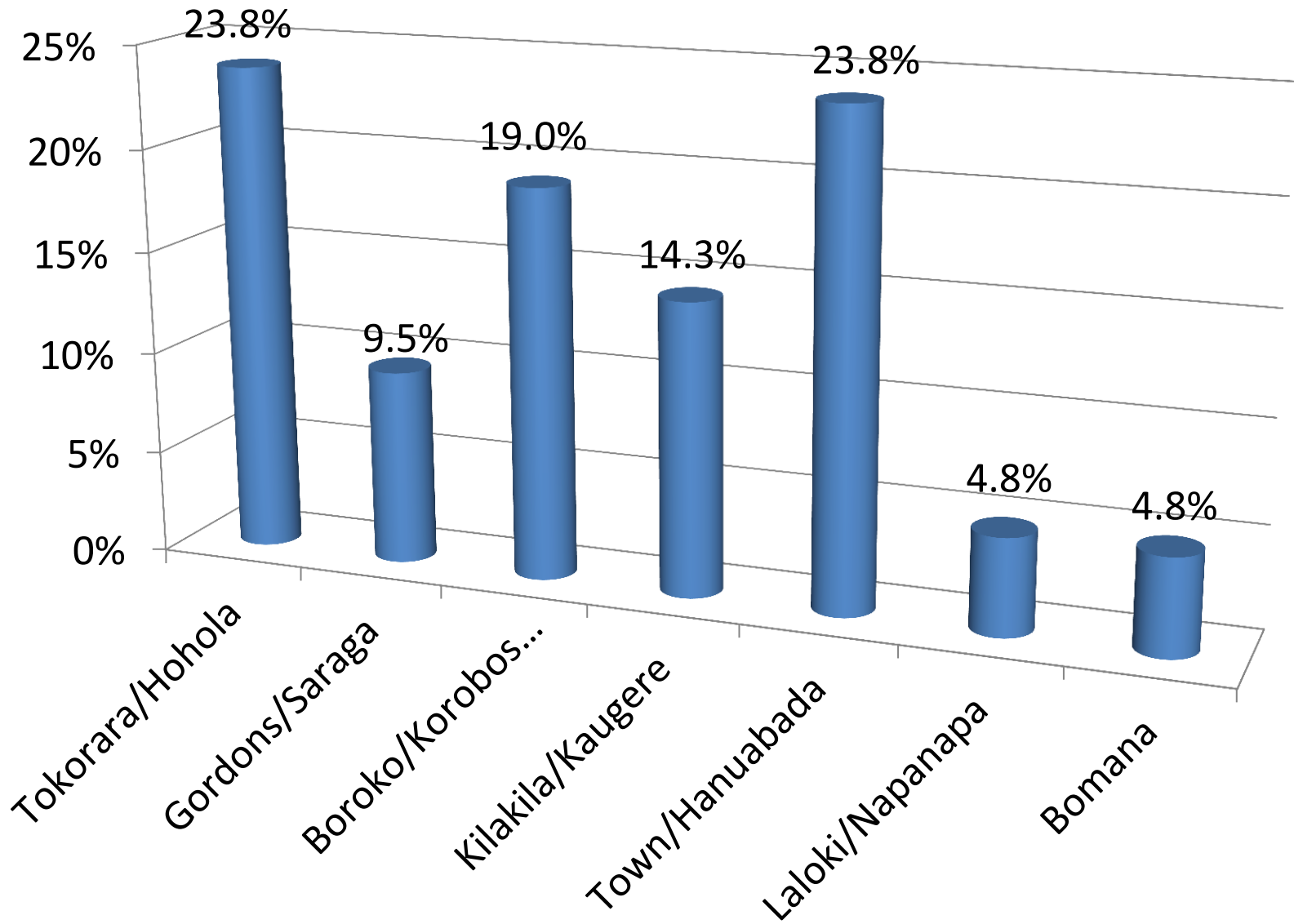- Boat or Dinghy: 0.0%

Assets Which Appeared Most Frequently Within the Median Household Group, All NCD

Which Assets Does the Median Household Group Own?
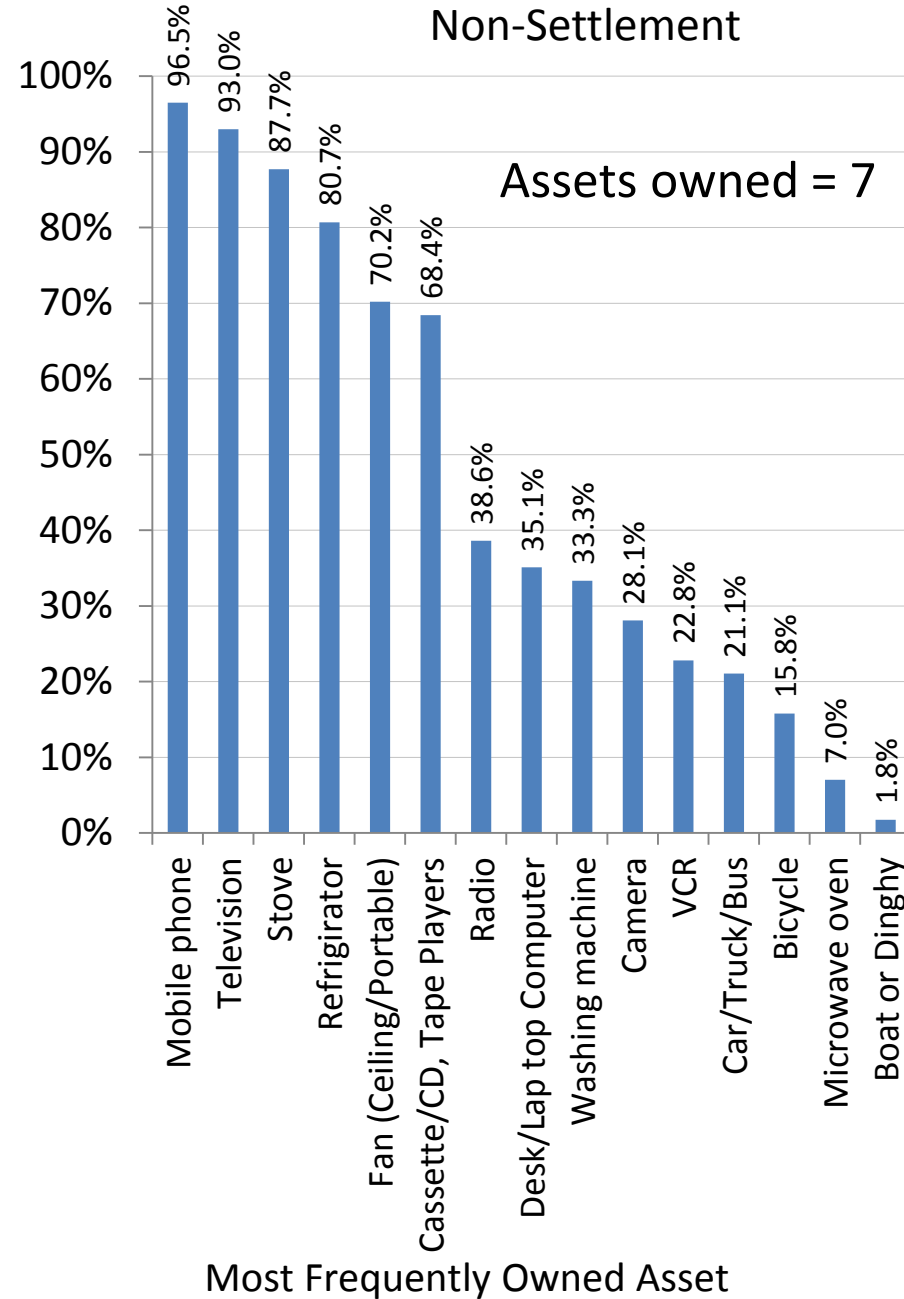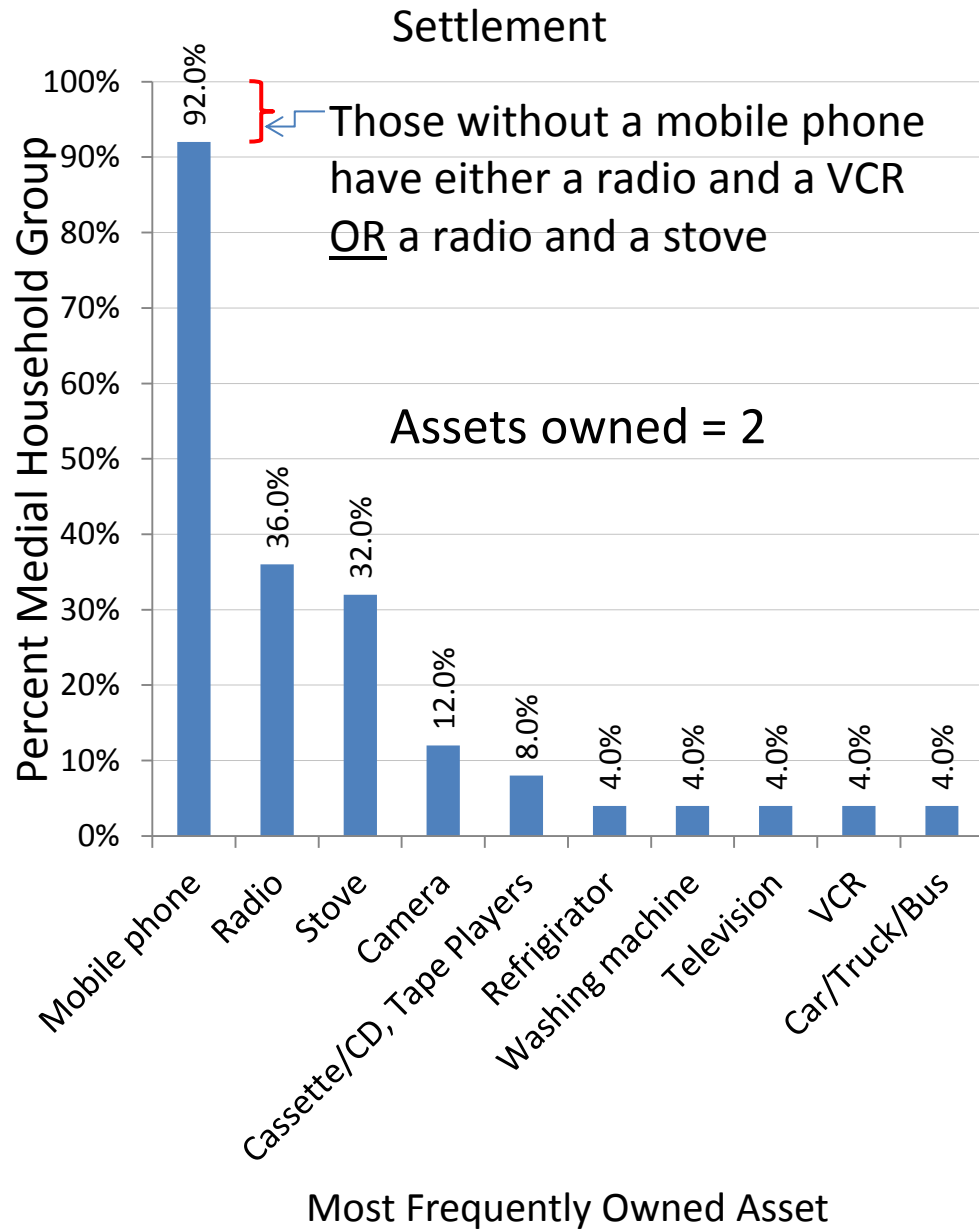
Distribution of Households with "Zero"

Note: Households in **Waigani/University** and **Gerehu** suburbs have at least one asset of convenience.
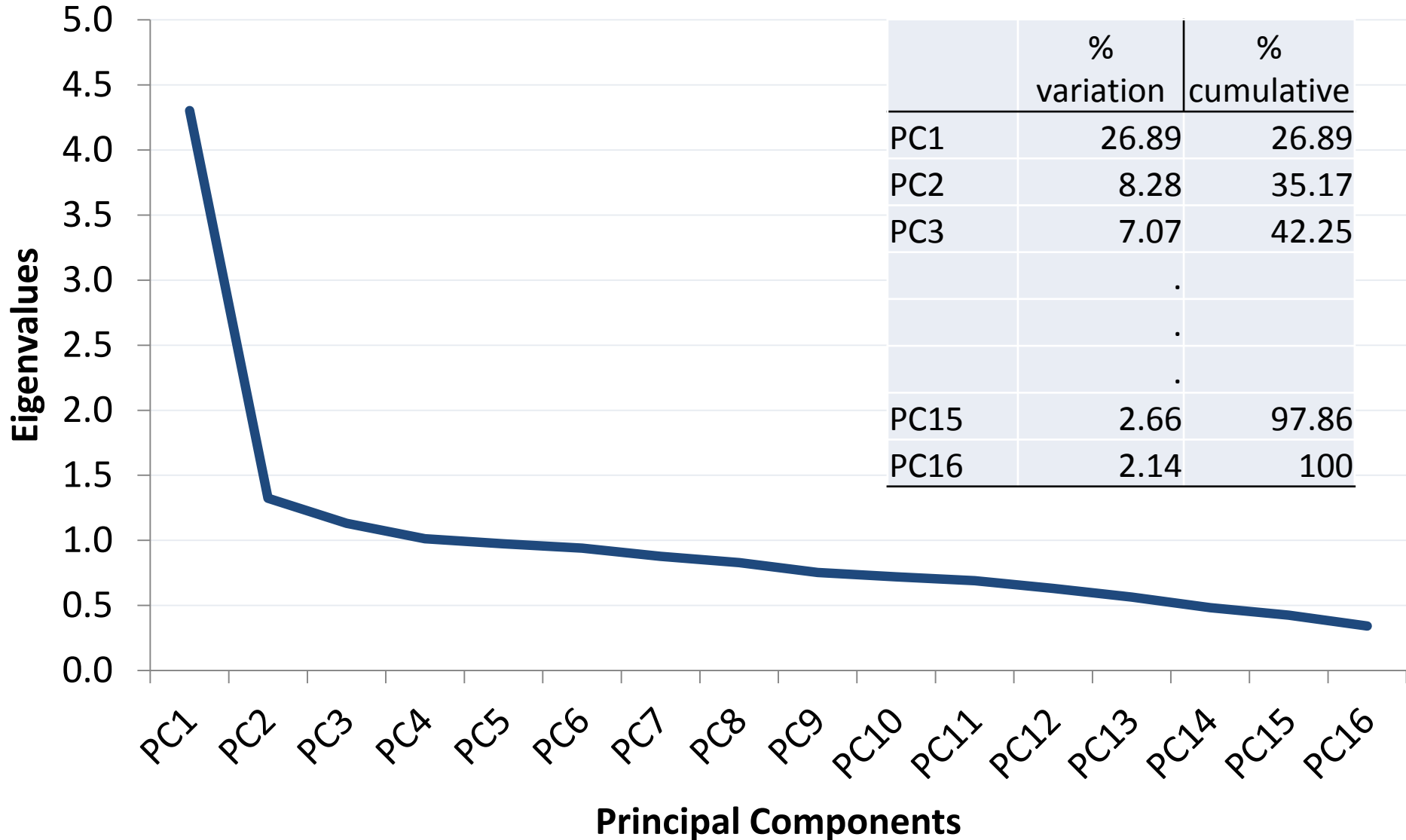
Measuring Inequality between Suburbs

- Use a formula proposed by MacKenzie (2003), based on the method of Principal Component (PC) Analysis:

- For the community in suburb s, the inequality index

  $$I_s = \frac{\sigma_S}{\sqrt{\lambda}};$$

  σ_s = sample standard deviation of the PC index across households in suburb s;

  λ = variance of the over the whole sample (= NCD/POM)

- The first PC gives the index providing maximum discrimination between households:

  $$PC_1 = a_{11}x_1 + a_{12}x_2 + \cdots + a_{1n}x_n$$
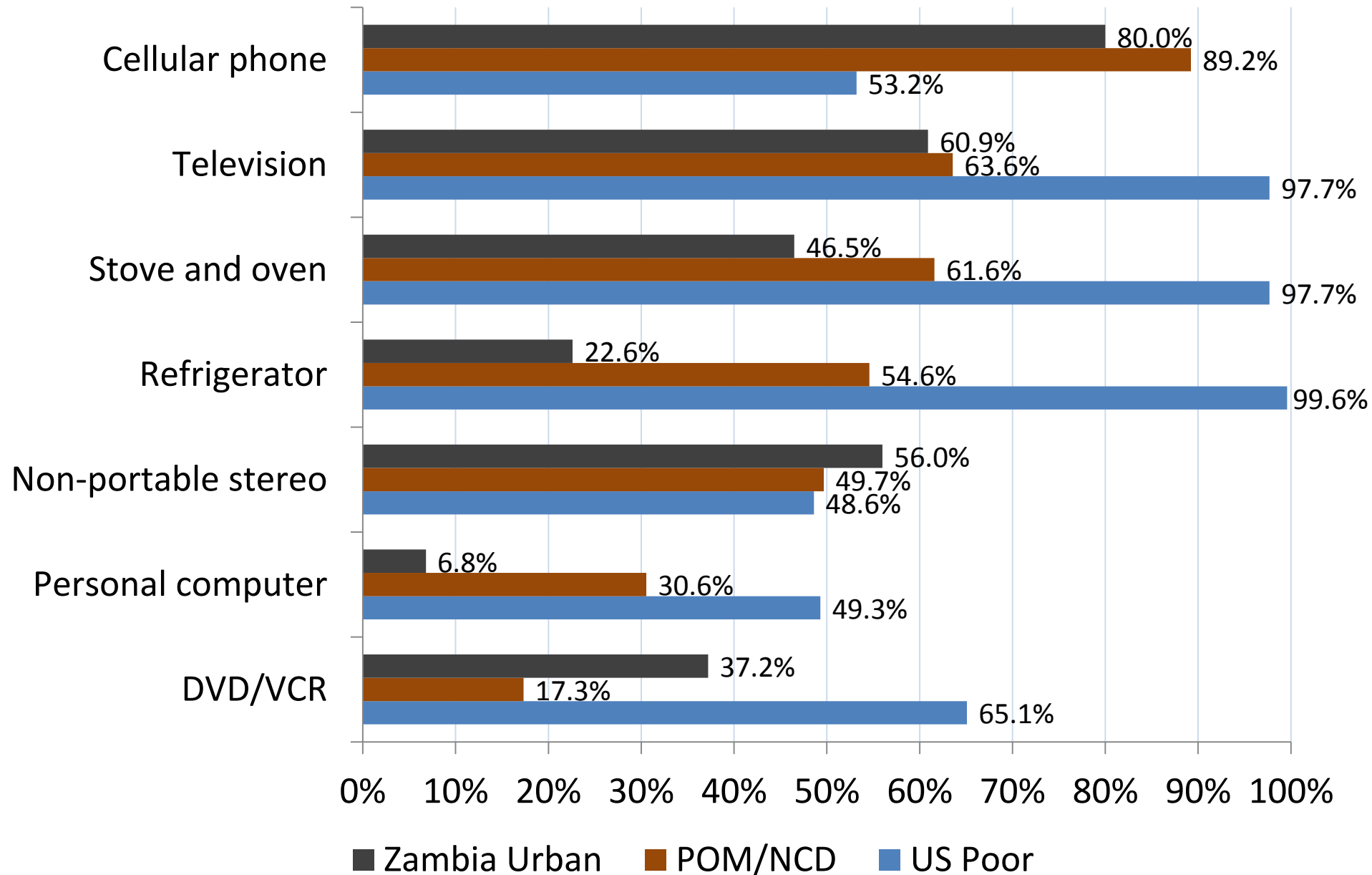
Scree Plot: Eigenvalues vs. Principal Components

	% variation	% cumulative
PC1	26.89	26.89
PC2	8.28	35.17
PC3	7.07	42.25
	.	
	.	
	.	
PC15	2.66	97.86
PC16	2.14	100

Eigenvalues

Principal Components

NCD Neighbourhood Inequality Index

Suburb/Neighbourhood	Inequality Index, I_s
Gerehu	1.001
Waigani/University	1.004
Tokorara/Hohola	0.701
Gordons/Saraga	1.139
Boroko/Korobosea	1.054
Kilakila/Kaugere	0.943
Town/Hanuabada	0.964
Laloki/Napanapa	1.111
Bomana	0.635

$I_s > 1$ if community in suburb s displays more inequality within it than does the NCD sample as a whole.

There is **no difference** in relative inequalities between NCD suburbs: Applying $t - ratio$ test for equality between **Gordons** and **Bomana** give $t = 0.121$, which is not significant at the 5% level.

Comparing POM/NCD with …

	Zambia Urban	POM/NCD	US Poor
Cellular phone	80.0%	89.2%	53.2%
Television	60.9%	63.6%	97.7%
Stove and oven	46.5%	61.6%	97.7%
Refrigerator	22.6%	54.6%	99.6%
Non-portable stereo	56.0%	49.7%	48.6%
Personal computer	6.8%	30.6%	49.3%
DVD/VCR	37.2%	17.3%	65.1%

Summary & Conclusion

- The assets may be considered good indicator of the living standards of the typical POM/NCD household

- If the basis is the US standard of living:
  - Majority in POM/NCD have very few assets of convenience compared to even the poor households in the US; hence, living standards are generally low here.

- Inequality exists within NCD/POM suburbs but no significant difference from one suburb to another.

- To achieve better outcomes, additional indicators, such as the severity of poverty, are necessary for targeting and tailoring development projects to different suburbs in the NCD/POM.

End

Thank You