



CAPE TOWN

24 - 25 October 2018

A Projection of the SA government's social security obligations

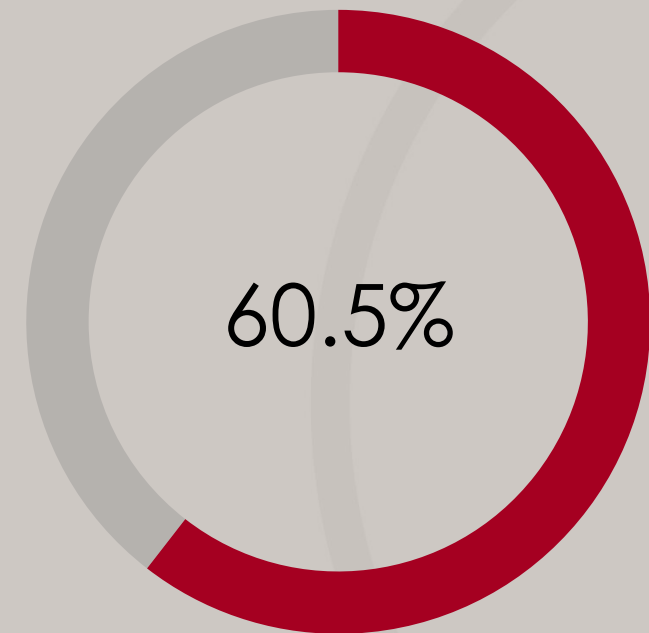
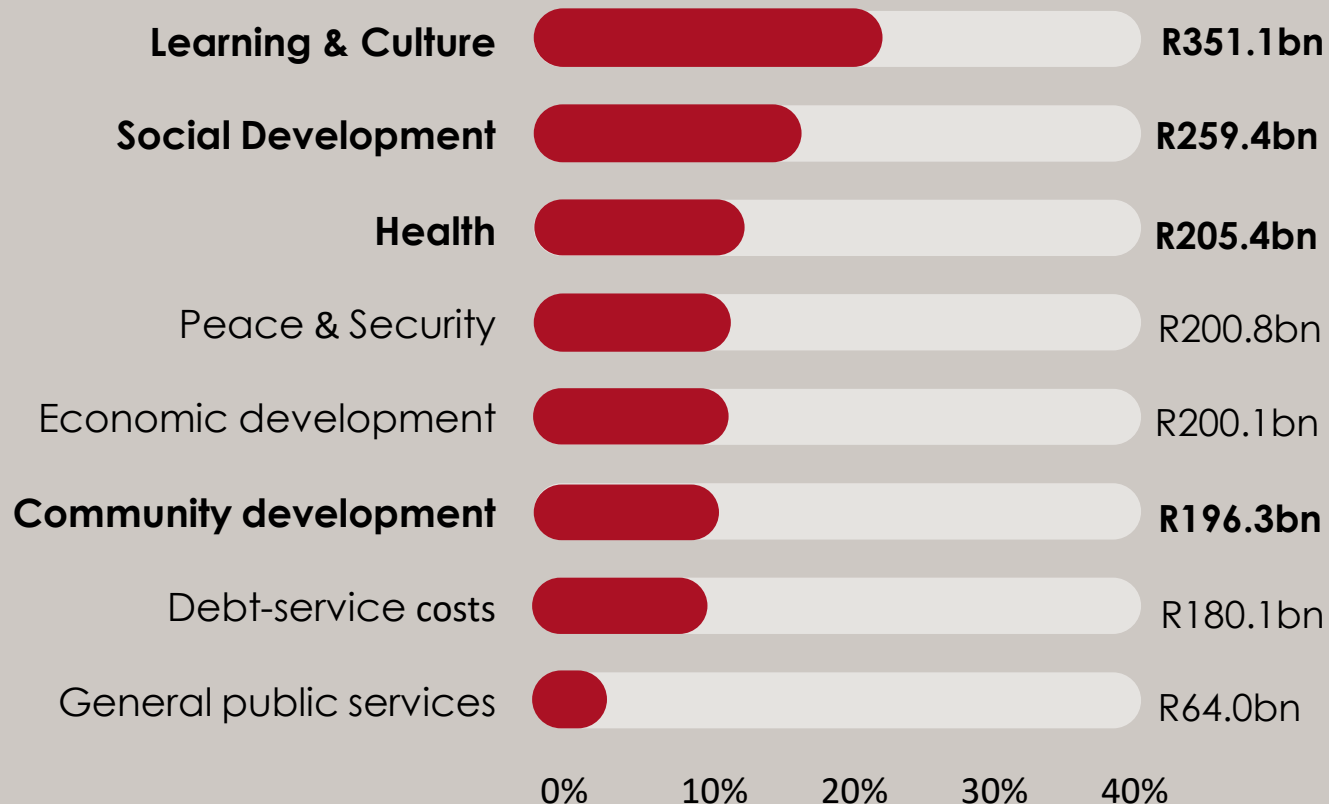
2017 - 2037

A billion here, a billion there, pretty soon, you're talking real money.

Misattributed: Everett Dirksen (1896-**1969**)



The 1.67 trillion budget



Social Services

Our team

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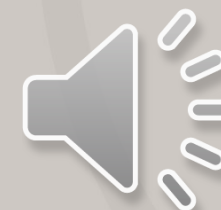
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1. Measuring the wood
2. The South African reality: The individual trees
3. Modelling communalities
4. Modelling approaches
5. Modelling results
6. Switching gears



01 Measuring the wood



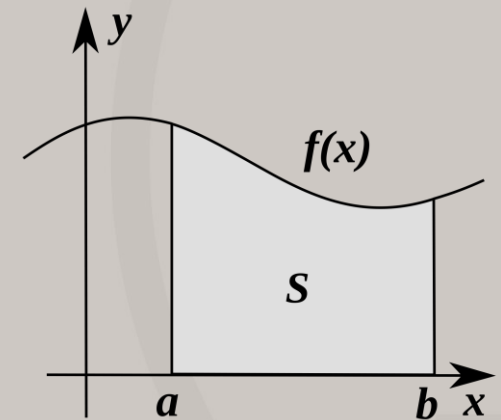
Actuaries

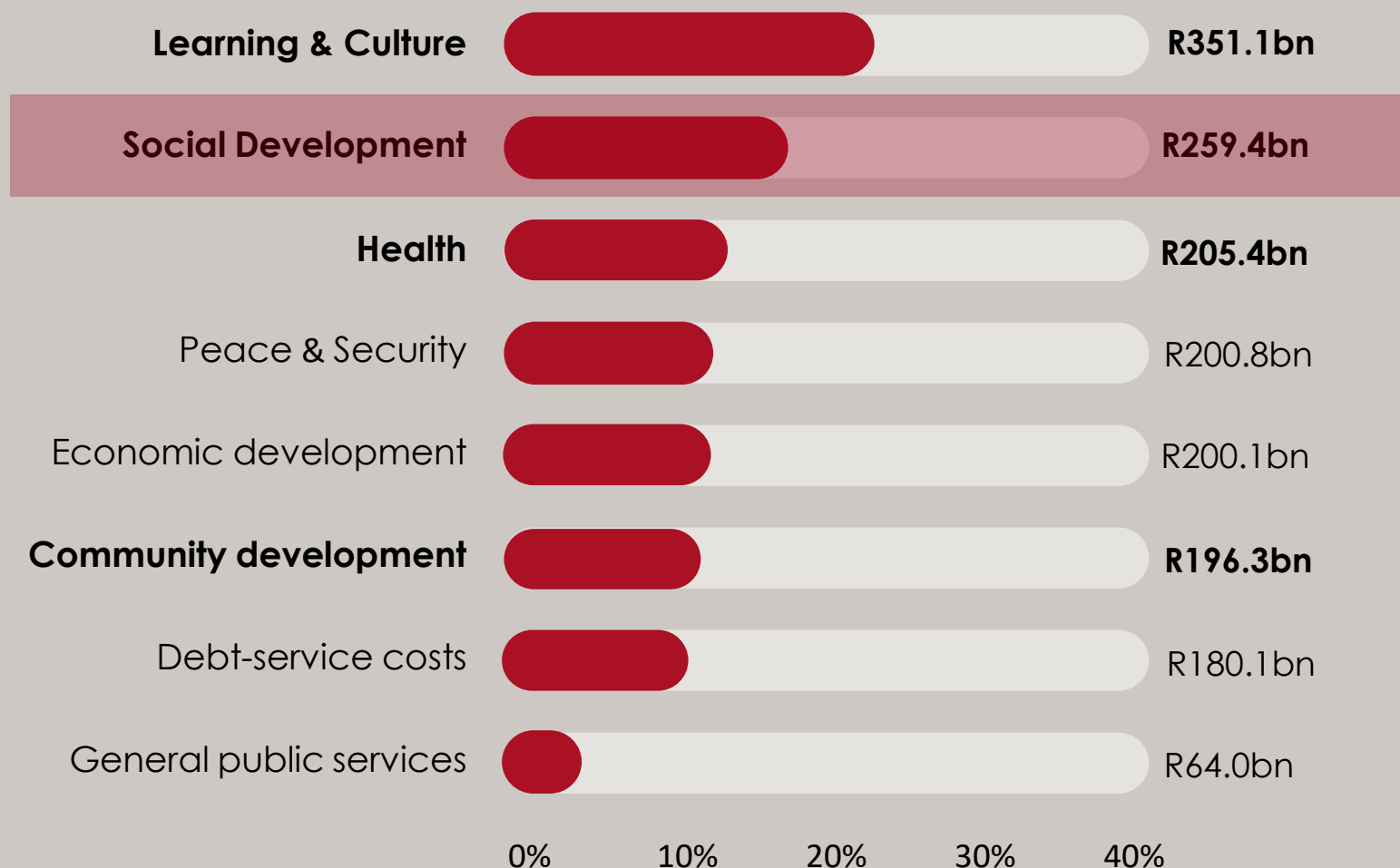
We're good at measuring the wood

$${}^2m|\bar{A}^1_{x:\overline{n}|}$$

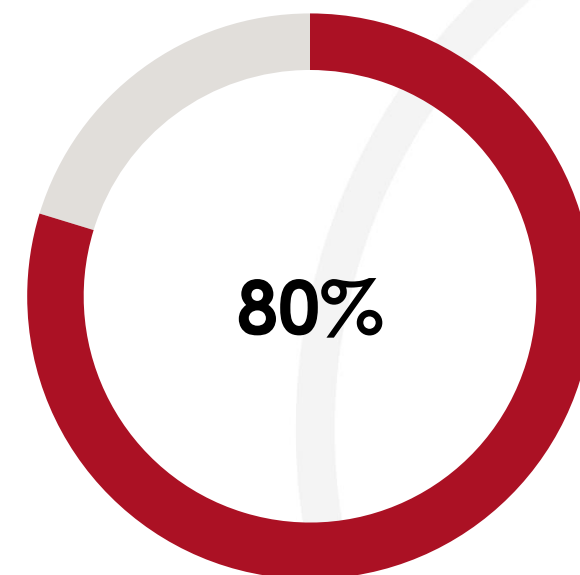
Diagram illustrating the components of the actuarial symbol ${}^2m|\bar{A}^1_{x:\overline{n}|}$ with numbered arrows:

- 1: Points to the annuity symbol $\bar{A}$.
- 2: Points to the premium rate 2 .
- 3: Points to the term n .
- 4: Points to the valuation rate 1 .
- 5: Points to the deferral period m .
- 6: Points to the premium rate 2 .





Social Development

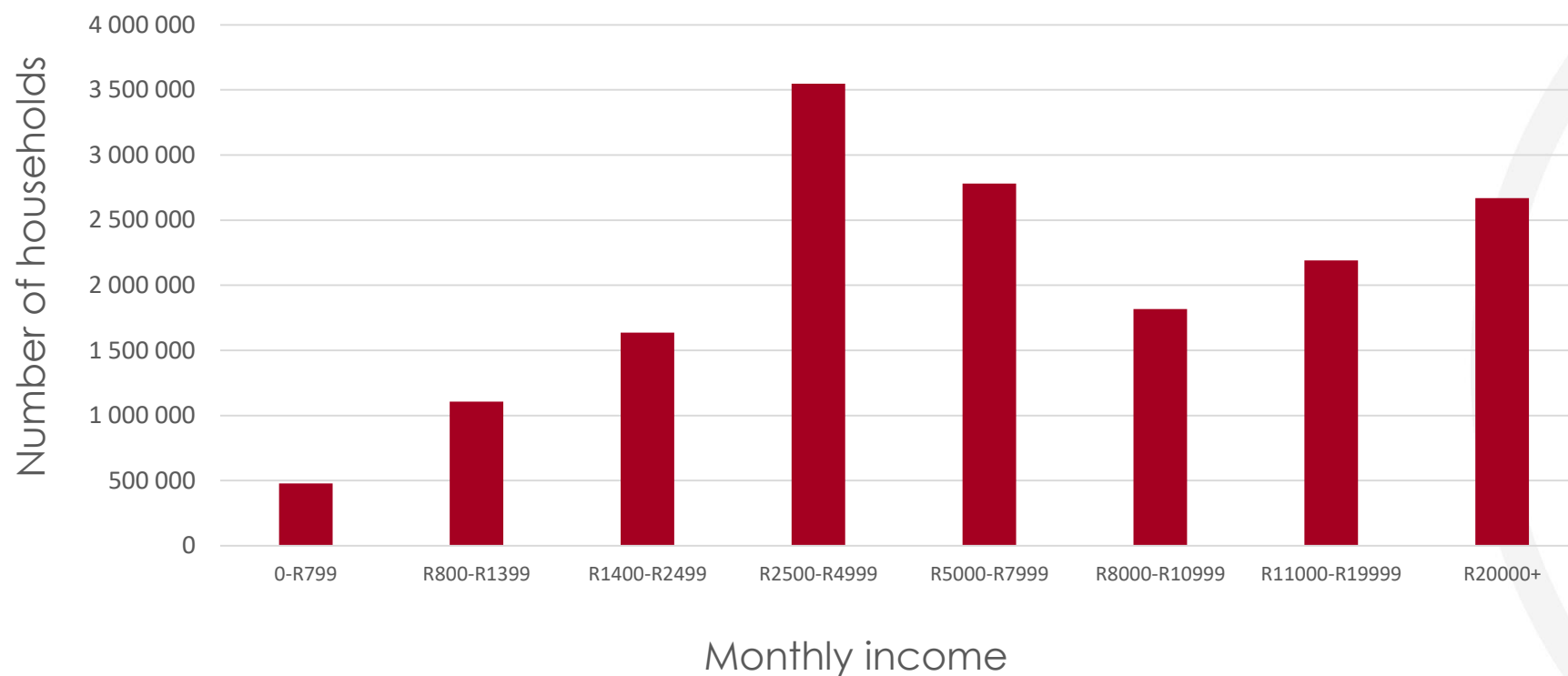


Social Grants
R163bn





Household income distribution



*Income distribution, AMPS 2015



SA grant values: National Treasury

Grant	2017/18	2018/19
State old age grant	R1 600	R1 690
State old age grant, over 75s	R1 620	R1 715
War veterans grant	R1 620	R1 715
Disability grant	R1 600	R1 700
Foster care grant	R920	R960
Care dependency grant	R1 600	R1 700
Child support grant	R380	R400

Grants are means tested

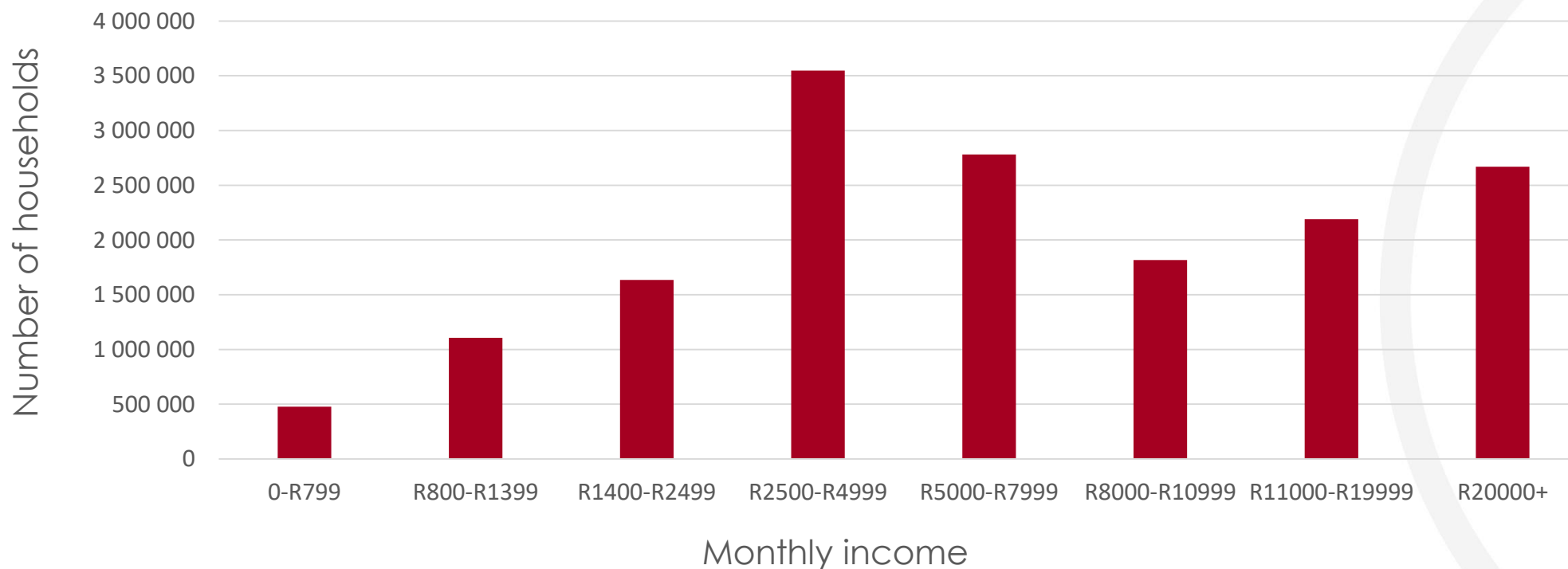
Means test criteria for old age grants (SASSA 2018)	
Income threshold (single person)	R78 120 p.a (R6 510 p.m.)
Income threshold (married person)	R156 240 p.a (R13 020 p.m.)

Question

How many South African households lives below the pensioner threshold income?

60% - 70%

Household income distribution



*Income distribution, AMPS 2015



“It’s not just money that a job provides. It provides dignity and structure and a sense of place and a sense of purpose.

So we’re gonna have to consider new ways of thinking about these problems, like a universal income.”

~ Barack Obama, Nelson Mandela Centenary Address, July 2018

Can you imagine living on R1700 a month...
Time for some reality checks

Estimation Game

Expense Type	Amount
Housing	Table 1
Food	Table 2
Transport	Table 3
Clothing , Health, Communication	Table 4
Recreation and entertainment	Table 5
Other	R276
Total	R1700

*Urban pensioner CPI weights, 2012

Estimation Game

Expense Type	Amount
Housing	R614
Food	R334
Transport	R237
Clothing , Health, Communication	R125
Recreation and entertainment	R114
Other	R276
Total	R1700

*Urban pensioner CPI weights, 2012

WE'LL MAKE SURE EVERY
RAND YOU SPEND
WORKS AS HARD
AS YOU DO

1,2kg
24⁹⁹

FRESH
39⁹⁹

AS SEEN ON TV
10⁹⁹

39⁹⁹

59⁸⁹

1,5kg
129⁹⁹

LOVIES
 premium nappies
34
109⁹⁹

SIZE	PACK OF	PRICE PER NAPPY
NEWBORN	Pack of 24	R1,92
MINI	Pack of 30	R2,20
MAXI	Pack of 42	R2,30
MAXI	Pack of 42	R2,45
JUNIOR	Pack of 48	R2,73

SEE INSIDE FOR OTHER BABY PROMO LINES

R415 – 7 products on promotion

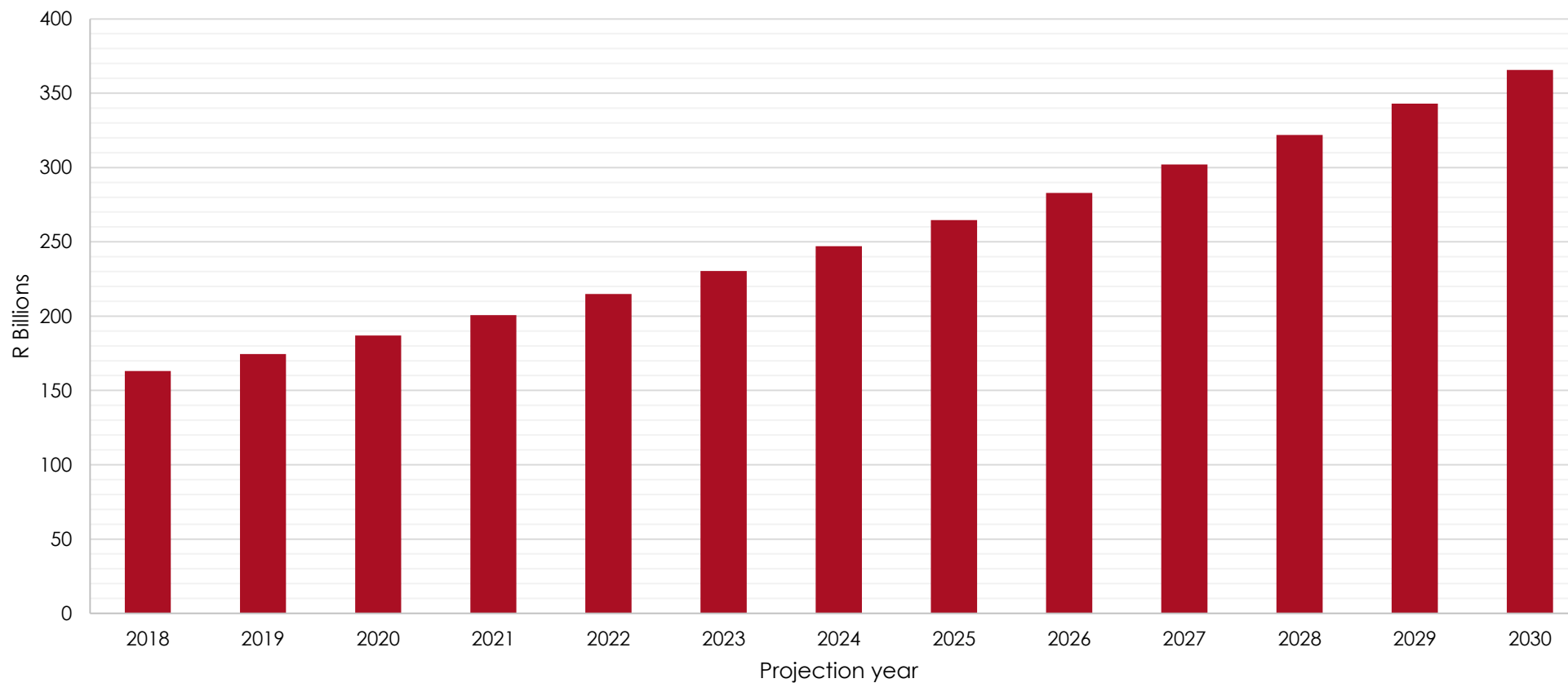
**“R50 here, R1 700 there (to around 16 million beneficiaries), soon
you’re talking real money and real lives”**



Who is brave enough to estimate the total projected South African social grant cost in 2030?

Estimated R163 billion in 2018/2019 year per budget

Nominal grant cost 2018-2037



**R365 bn by
2030**

Sense check (AvE)

Actual expected 2018 = R153 bn

Model projection in 2016 for 2018 = R155 bn

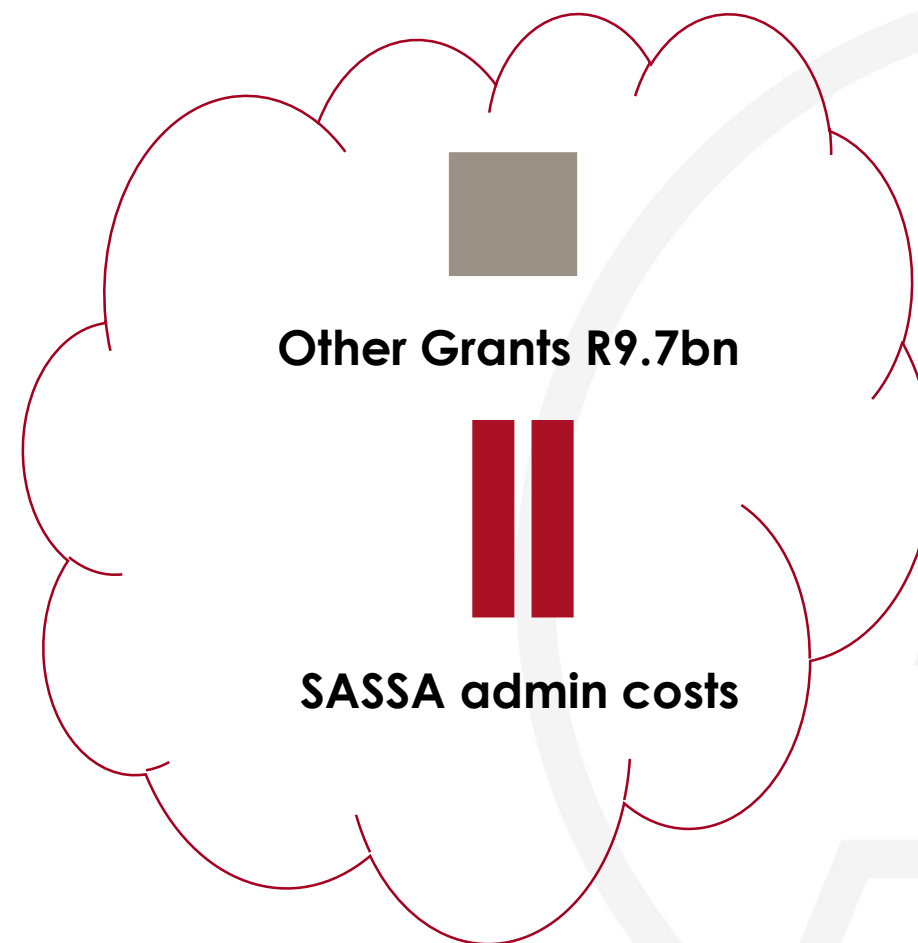
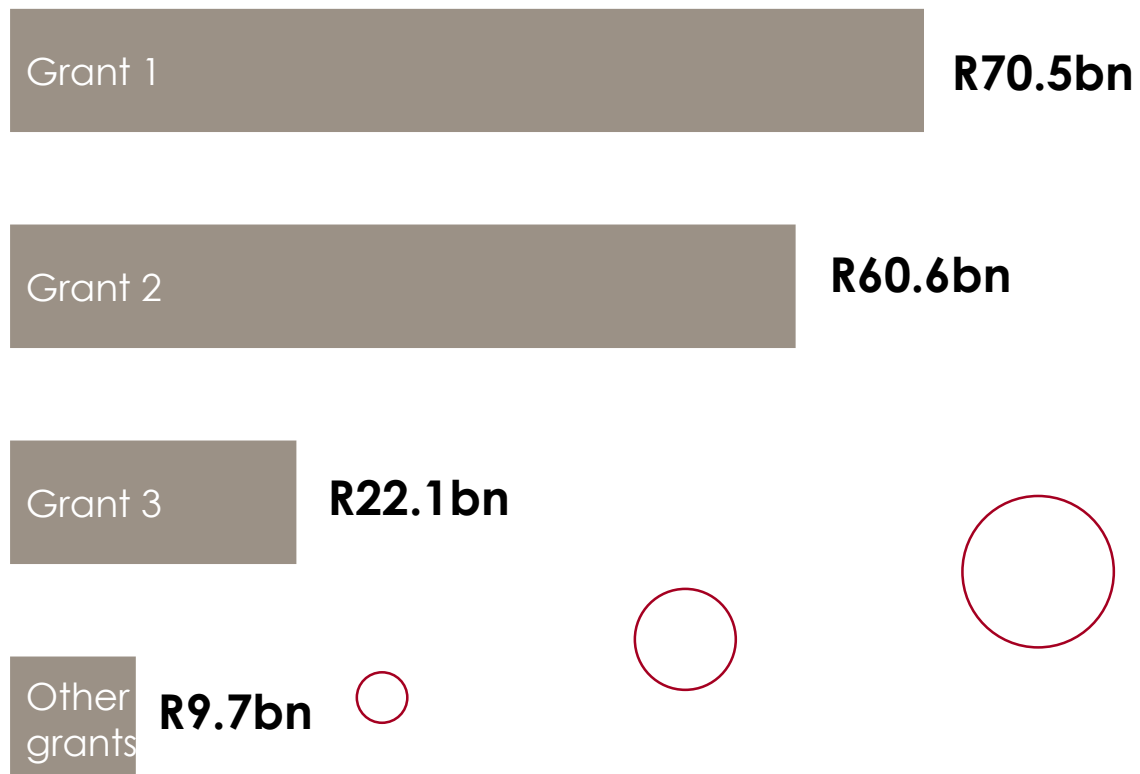
THE MODELLING APPROACHES

■ General considerations

- Type of social grants assumed
- Size of social grants
- Eligibility criteria for social grants.

■ Projection model(s) used

- Three different approaches
- Based on the eligibility criteria



Main modeling
requirement

Eligibility

Qualifying for
the grant

Income

Age

Modeling
approaches

Proportional

Statistical

Population
projection

Time series modelling

Population projection models

- Initially ASSA2008
- Now updated for Thembisa

Inflation

- Assumed increase in the grant value
- Based on data provided by Stellenbosch BER

GDP growth rate

- Used for the income distributions
- Based on data provided by Stellenbosch BER

South African Population Pyramid 2017



National treasury



Statistics South Africa



SASSA



national treasury

Department:
National Treasury
REPUBLIC OF SOUTH AFRICA



STATS SA
STATISTICS SOUTH AFRICA



sassa
SOUTH AFRICAN SOCIAL SECURITY AGENCY

■ Change in age eligibility

- OAP age equalisation
- Increased coverage of child grants by age

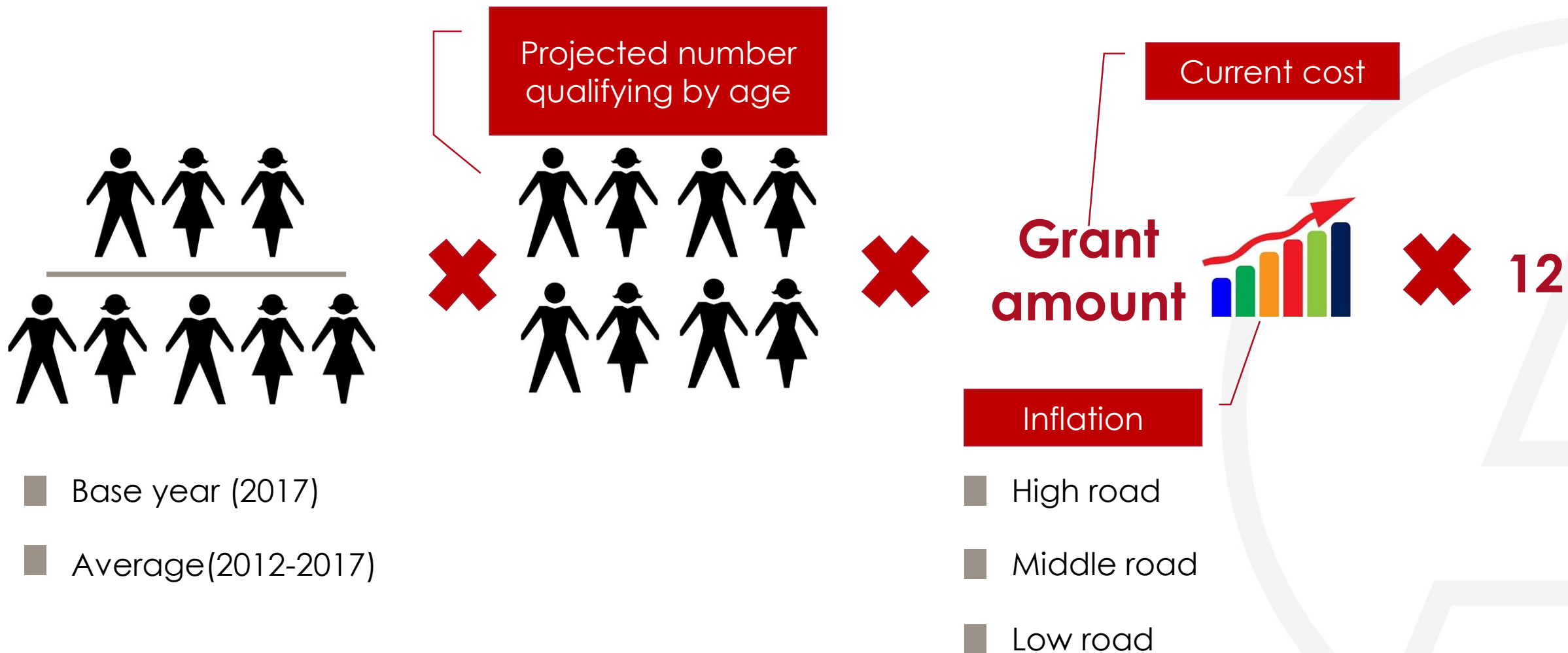
■ Income data

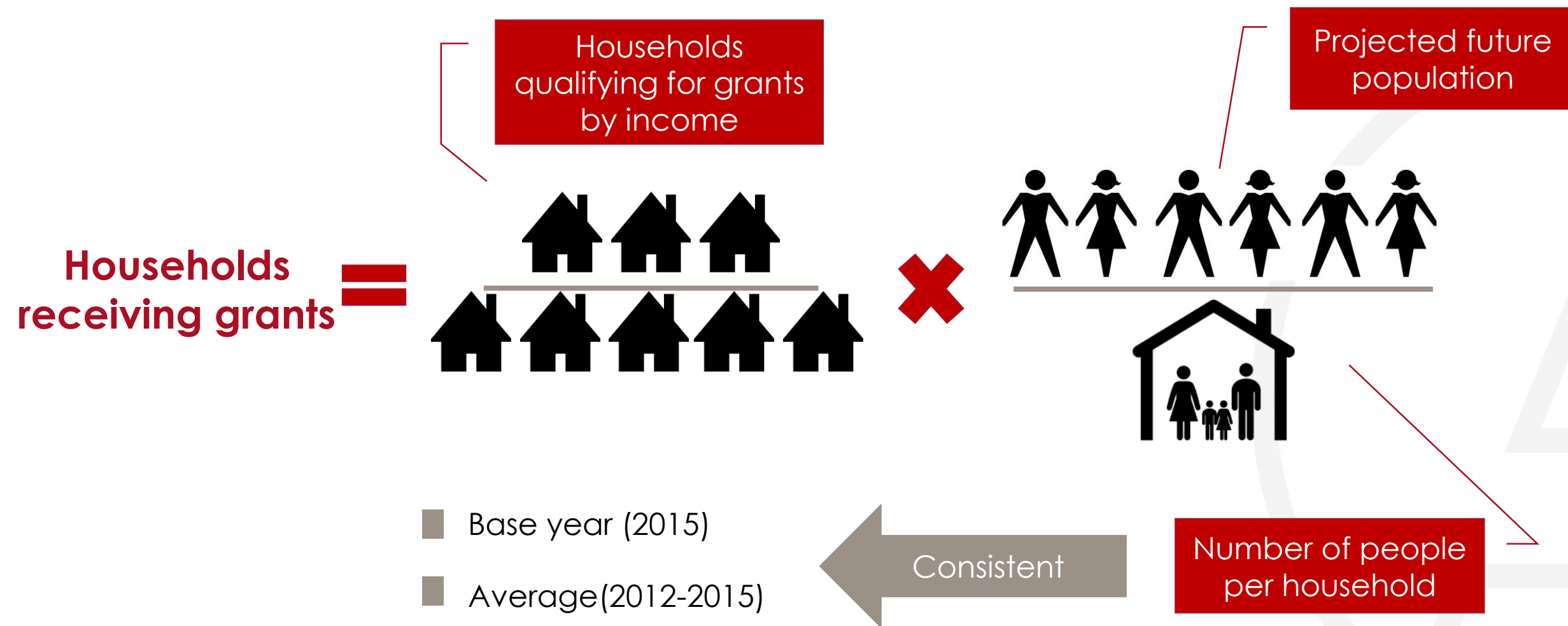
- Income data surveys are sporadic

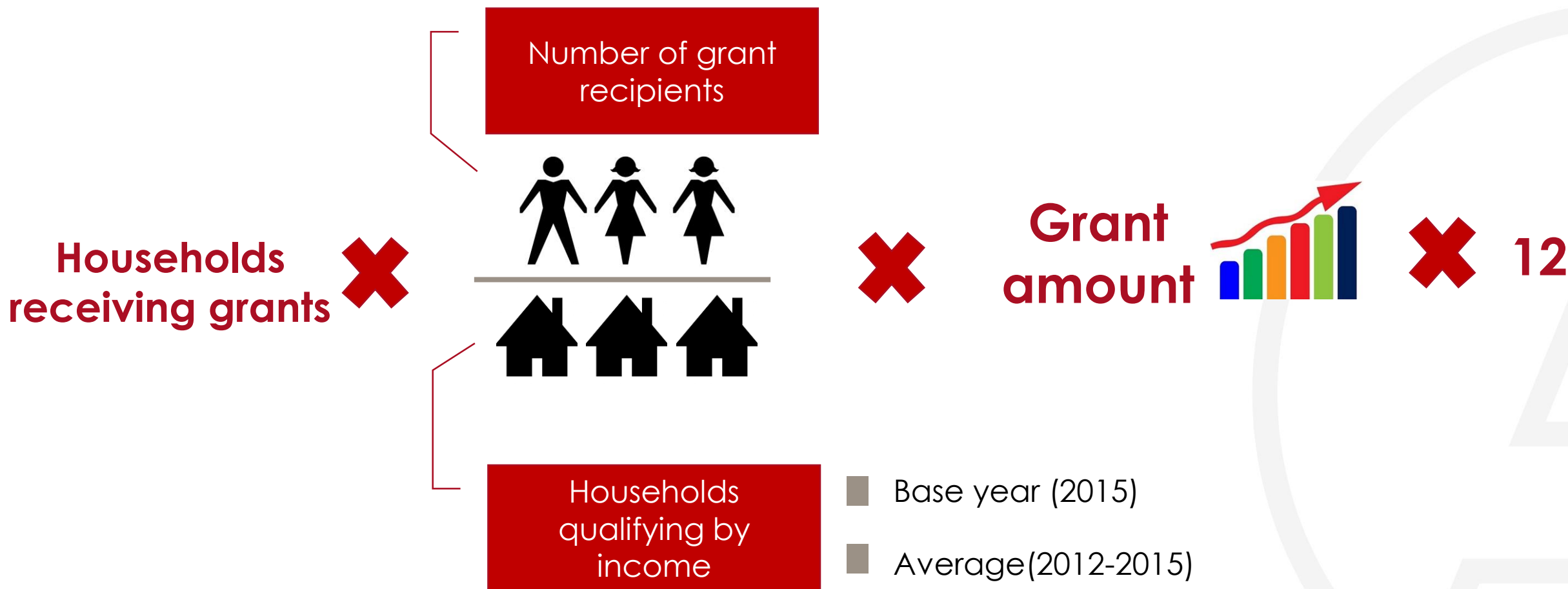


04

Age eligibility model: how it works







■ **Conceptually similar to proportional approach, also assumes:**

- A constant number of grants per eligible household
- A constant number of people per household

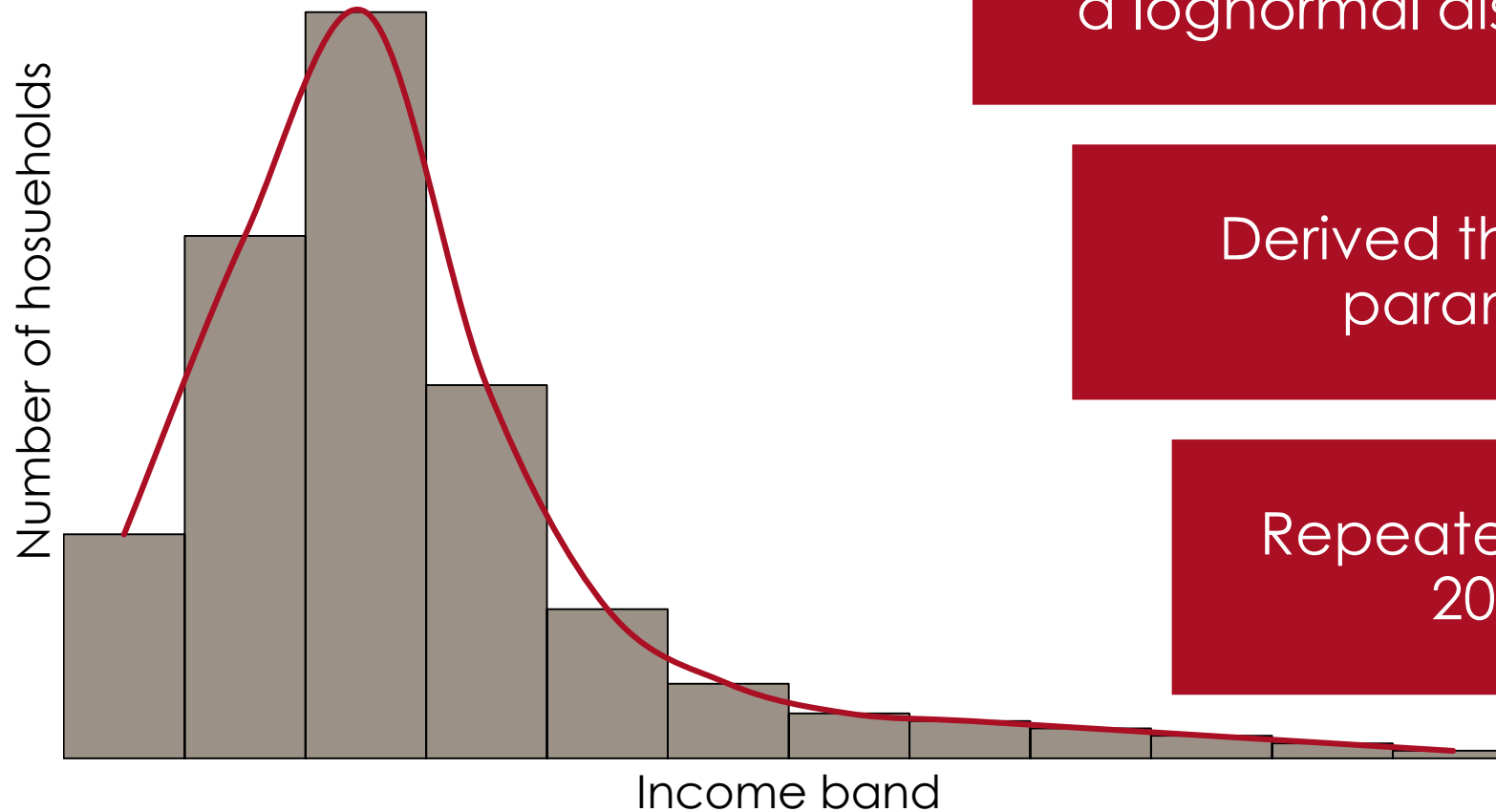
■ **It differs by:**

- The proportion of households assumed to be eligible
- Instead an assumed income distribution is used



04

Statistical income eligibility model: fitting the distribution



Fitted the income data with a lognormal distribution

Derived the μ and σ parameters

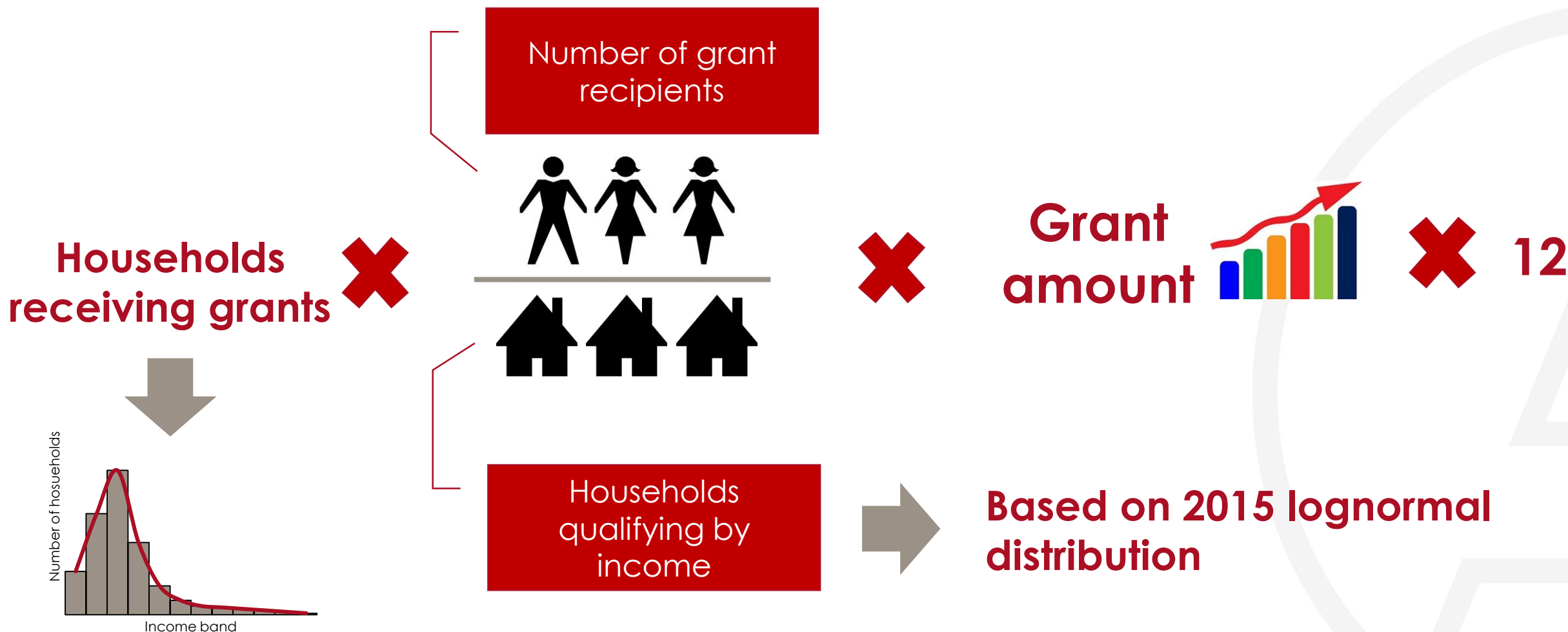
Repeated for each year 2004 to 2015

Projected these parameters forward

- Used simple linear regression
- Predicted the mean income based on the growth in nominal GDP
 - $Mean\ income_t = Nominal\ GDP_t \times \beta_1 + \beta_0$
- Kept sigma constant at the average value over the period
 - Assumes that income inequality will remain unchanged

Results in a projected μ and σ in each future year

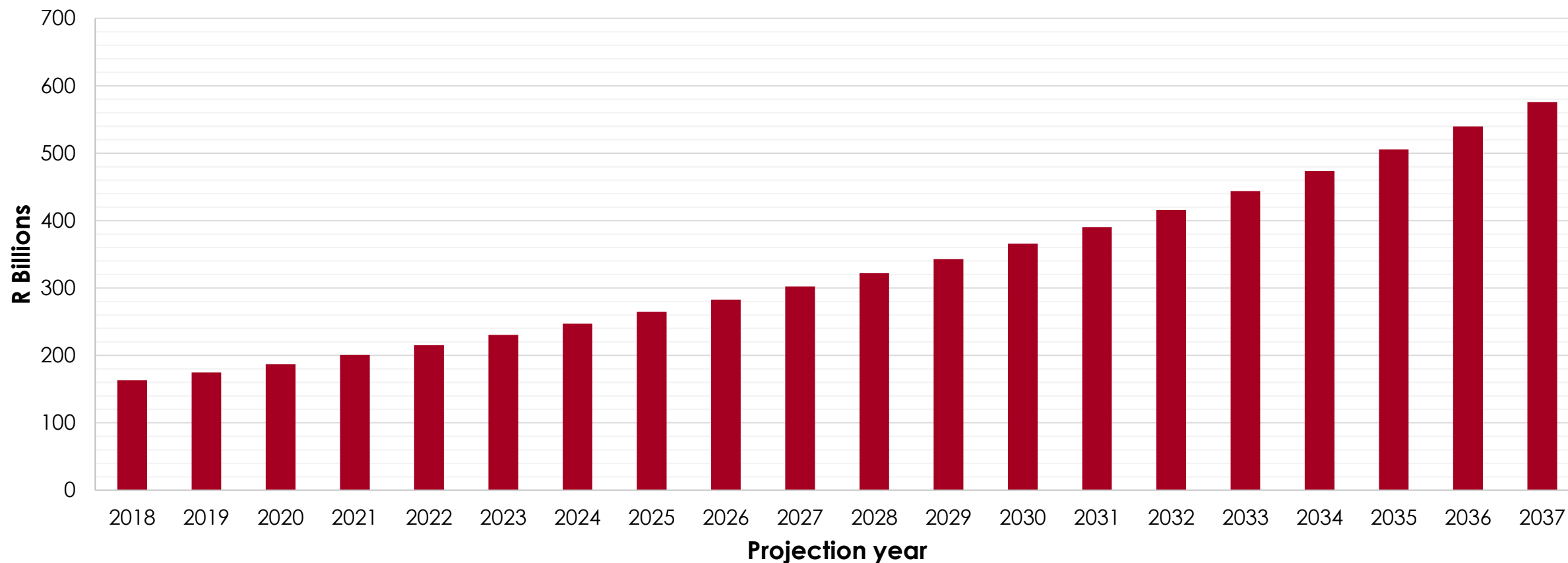
- Can then determine the proportion of households qualifying by income
- Assumes that the means test increases by inflation



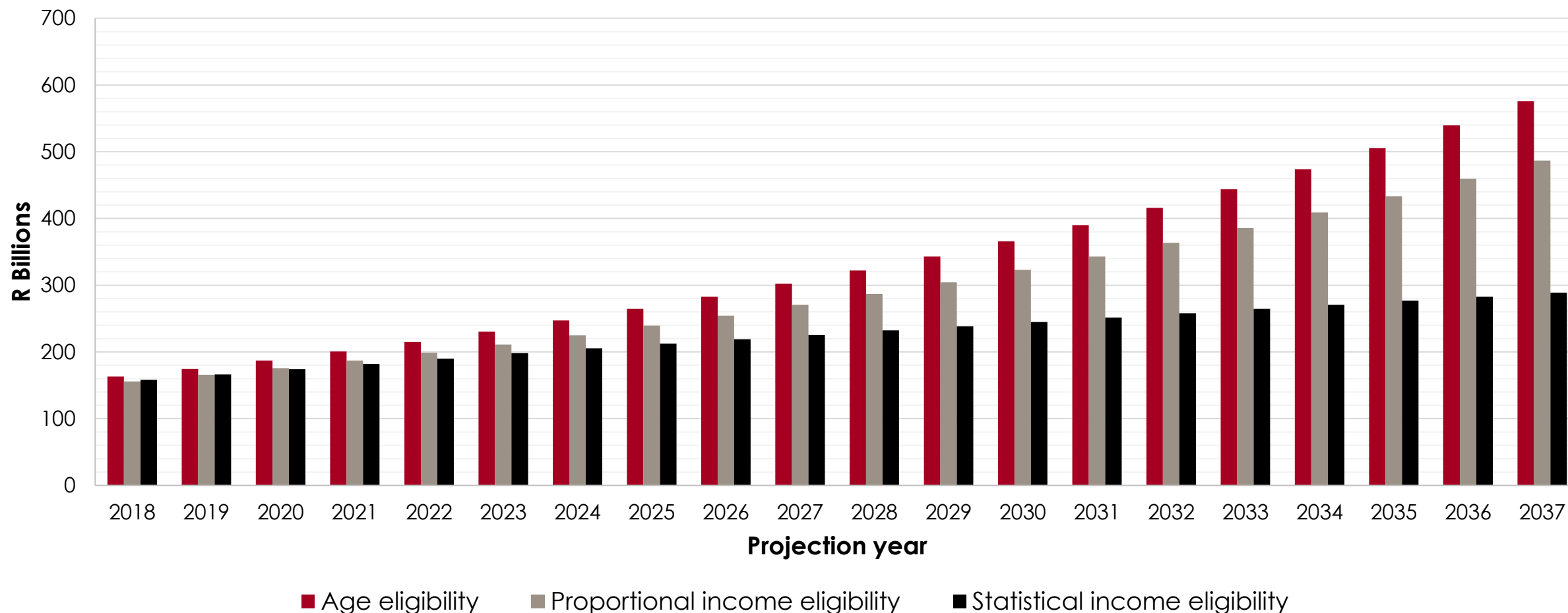
Which modelling approach
did you like most and Why?

Model results and applications

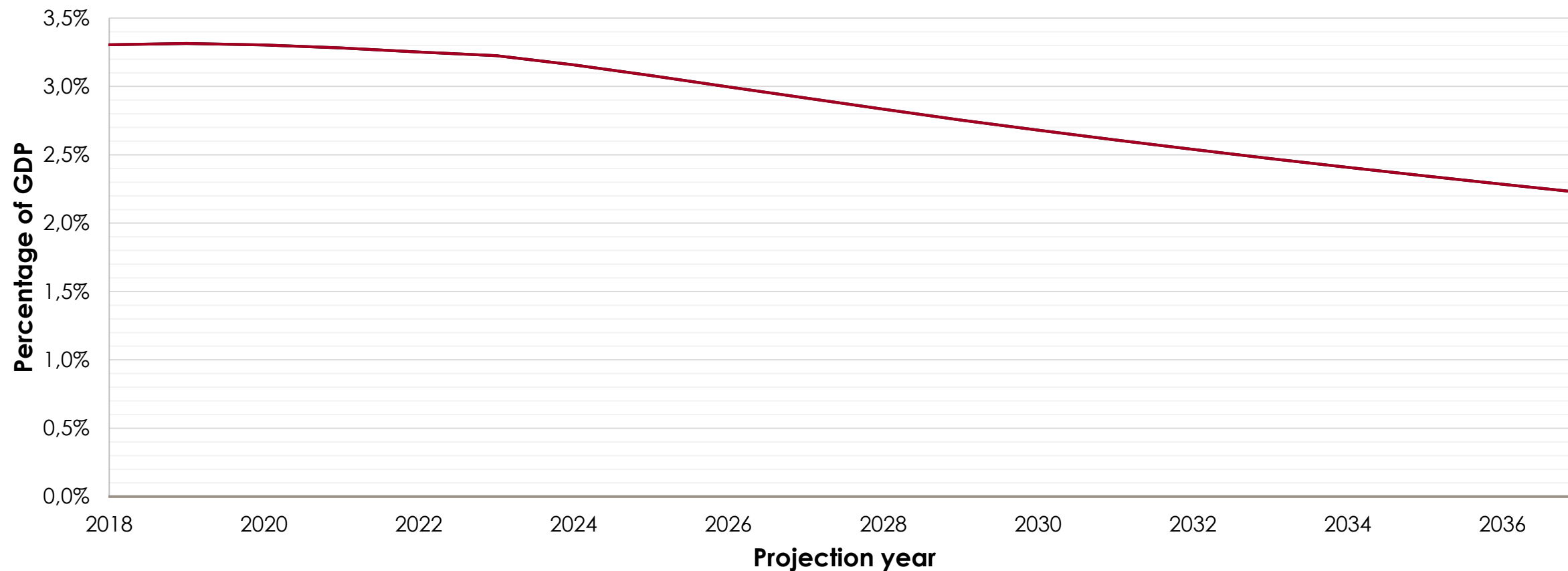
Nominal grant cost 2018-2037



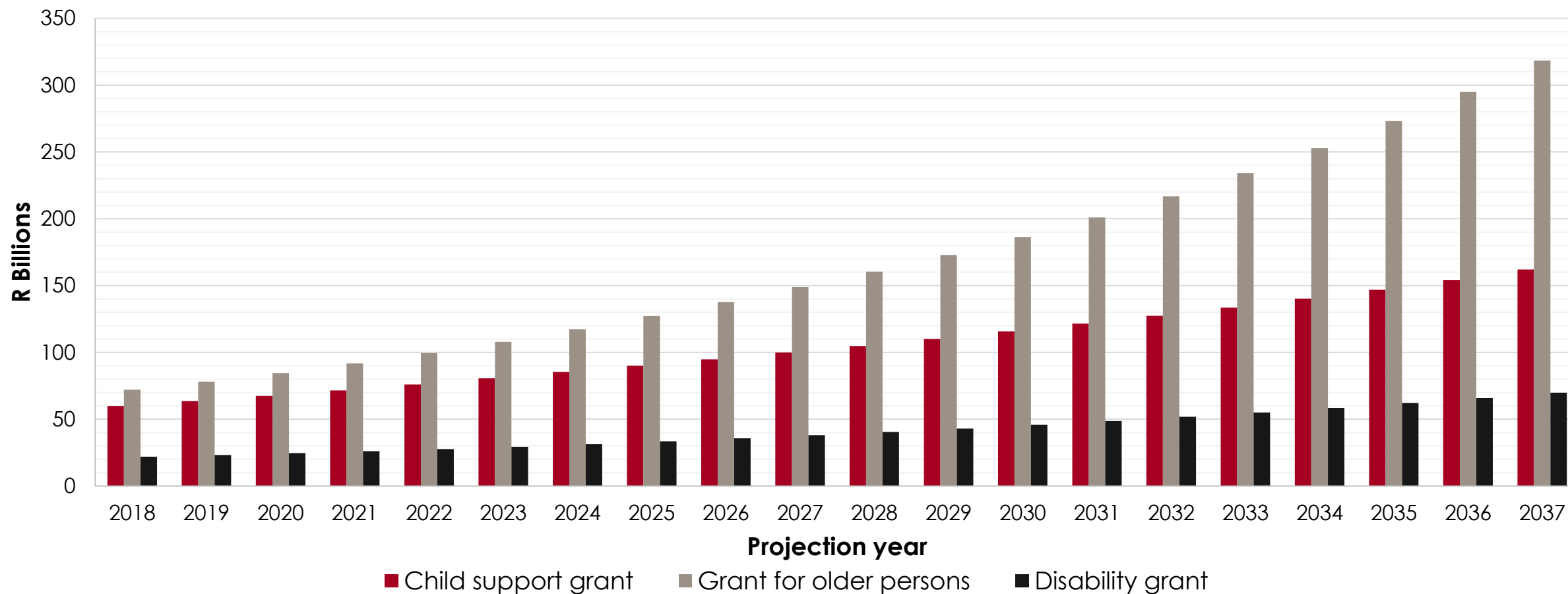
Nominal grant cost for the three methods



Grant cost as a proportion of GDP 2018-2037



Nominal grant cost for the three largest grants



Password

ASSASGC2018

(case sensitive)



Universal basic income

Age eligibility model

- Do you think it is affordable?
- Did you see any surprising results

Model results projection

- R100 per month for all working aged people
- Starts in 2018 and increases by inflation
- 95% take-up rate
- Cost is R119 bn



Does a R1000 seem more reasonable?
Then we are looking at R1.19 trillion in
2037 or about 5% of GDP.

Then there are other spending priorities

- Free tertiary education
- NHI
- Housing



We can only stretch our budget so far...

05 There's more than meets the eye



Any Questions?

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Thank you.