FORWARD-LOOKING MODEL OF MULTIDIMENSIONAL POVERTY FOR SOUTH AFRICA

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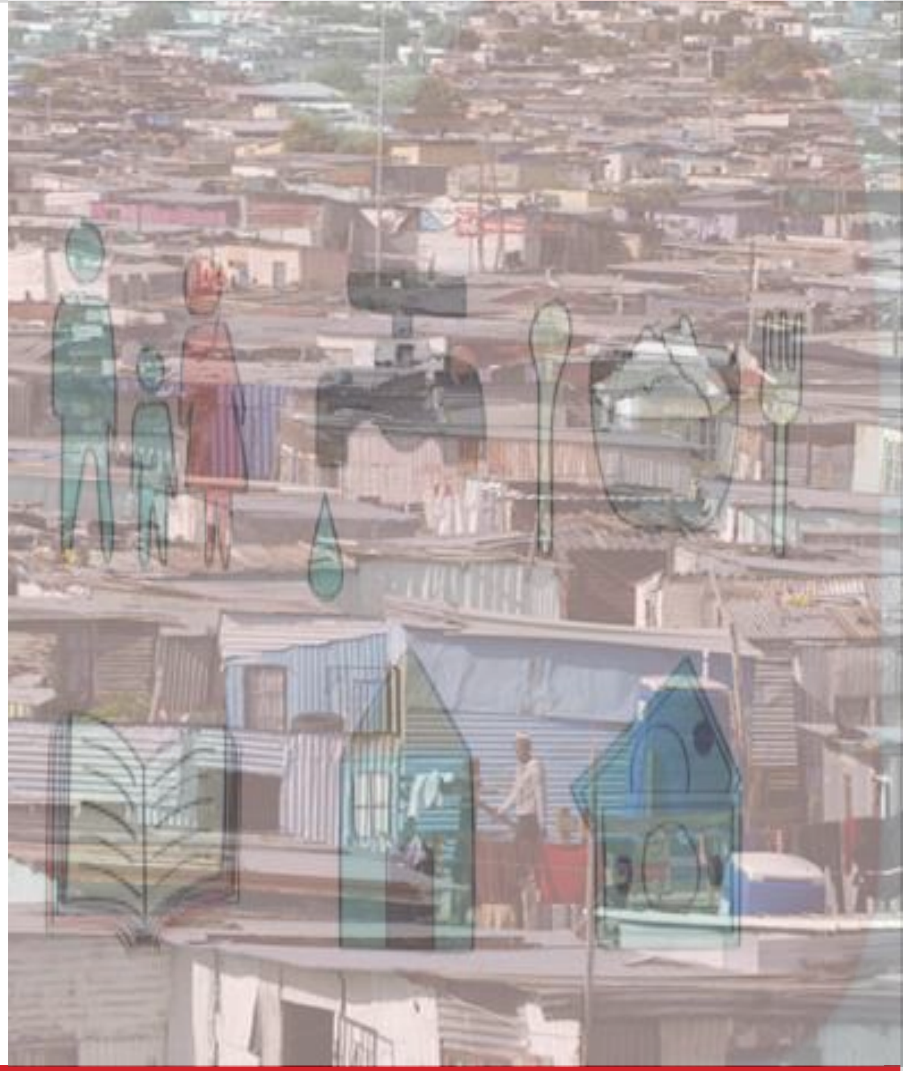
Presentation to:
South Africa Parliament Workshop on MDP
17-18 October 2024

ADRS
Applied Development Research Solutions



BACKGROUND

- Poverty is complex and multifaceted. In their seminal work, Sen and Anand (1997) describe poverty as deprivation across several dimensions of a person's life, such as education, health, and living conditions. These dimensions reveal how individuals experience poverty.
- Multidimensional poverty measurement has been developed and applied globally, including the 2014 South African Multidimensional Poverty Index (SAMPI) developed by Statistics South Africa.

BACKGROUND

- Historically, studies on MDP focused on measuring and exploring the determinants of MDP.
- Our study extends the research on MDP by proposing an approach to produce forward-looking projections of MDP indicators under alternative economic and social policy scenarios.
- By applying the approach to South Africa, we now have a policy tool that can be used to design anti-poverty policies and assess the likely impacts of policies on the outlook for the MDP in South Africa. It allows policymakers to better anticipate the likely effects of their decisions on multidimensional poverty.

BACKGROUND

- The purpose of this presentation is to introduce you to this forward-looking tool and demonstrate how it works without getting too technical.
- The accompanying paper provides more in-depth technical information if you're interested in exploring the methods further.

STEP 1:

Measurement of multidimensional poverty

UNDERSTANDING MDP

- Measuring multidimensional poverty (MDP) involves selecting relevant **poverty dimensions**, identifying corresponding **indicators**, and setting appropriate **thresholds** for each.
- For measuring MDP, we drew from both the Statistics South Africa (2014) and the global Multidimensional Poverty Index (Alkire & Santos, 2010), and **selected education, health, living conditions, and assets** as the four distinct dimensions of poverty in South Africa.
- To quantify the extent (or degrees) of deprivation across various dimensions experienced by individuals and households in South Africa, two likely thresholds (i.e. cut-off points) were chosen for each indicator to denote **low (acute) and high (moderate) deprivation** associated with that indicator.

FOUR DIMENSIONS OF POVERTY: EDUCATION

- Importance: Literacy and education levels impact deprivation.

- Indicators:
  1. Years of schooling
  2. School attendance

- Indicators' Cut-off Points:

Indicators	Cut-off Points	
	Low Deprivation	High Deprivation
Years of Schooling	Individuals aged 15+ with less than 5 years of school attendance and no current enrolment.	Individuals aged 15+ with less than 9 years of school attendance and no current enrolment.
School Attendance	If aged between 7 years and 15 years old and not in school.	Any school-aged child who is not attending up to class 12.

FOUR DIMENSIONS OF POVERTY: HEALTH

- Importance: The level of access to healthcare services and perceptions about health impact deprivation.

- Indicators:
  1. General health
  2. Distance to the nearest healthcare centre
  3. Medical aid cover

- Indicators' Cut-off Points:

Indicators	Cut-off Points	
	Low Deprivation	High Deprivation
General Health	Individuals who perceive their health as fair or poor instead of good, very good or excellent.	Individuals who perceive their health as fair or poor instead of good, very good or excellent.
Distance to Nearest Healthcare Centre	Not included.	Households who travel more than 30 minutes or more with usual means of transport.
Medical Aid Cover	Not included.	If individual does not have medical aid cover.

FOUR DIMENSIONS OF POVERTY: LIVING CONDITIONS

- Importance: The quality of life and living conditions influence deprivation.
- Indicators:
  1. Dwelling type
  2. Fuel for lighting
  3. Fuel for cooking
  4. Fuel for heating
  5. Water source
  6. Sanitation
- Indicators' Cut-off Points:

Indicators	Cut-off Points	
	Low Deprivation	High Deprivation
Dwelling Type	Households whose main dwelling is informal shack, traditional dwelling, caravan, tent, other.	Households who live in informal dwellings.
Fuel for Lighting	Households using candles, parafin, none and other unspecified types.	Households who use dung, sand or other.
Fuel for Cooking	Households using using parafin, wood, coal, dung, none and other unspecified types.	Households who do not have electricity.
Fuel for Heating	Households using parafin, wood, coal, dung, none and other unspecified types.	Households who use dung, wood, coal, paraffin, and candles.
Water Source	Households who do not have	Households who use water vendor,
Sanitation	Households who do not have a flush toilet.	Households who use pit latrine, bucket toilets, ecological sanitation and open defecation.

FOUR DIMENSIONS OF POVERTY: ASSETS

- Importance: Ownership of assets and household appliances affect levels of deprivation.

- Indicators:
  1. Domestic asset ownership
  2. Car ownership

- Indicators' Cut-off Points:

Indicators	Cut-off Points	
	Low Deprivation	High Deprivation
Domestic Asset Ownership	If household does not own a radio/TV/telephone/fridge.	If household owns less than 10/20 home assets.
Car Ownership	Not included.	If household does not own car in working condition.

STEP 2:

Establishment of associations between MDP and socio-economic factors

ASSOCIATION BETWEEN MDP AND SOCIO-ECONOMIC FACTORS

- To determine the association between MDP and socio-economic factors, the **Multinomial Logistic Regression (MLR) technique** was employed.
- MLR is a statistical method used to **predict the probability of different outcomes** when there are more than two possible categories.

ASSOCIATION BETWEEN MDP AND SOCIO-ECONOMIC FACTORS

- To use the MLR techniques, we considered five categories (outcomes) for the MDP:
  - not deprived
  - deprived in one of four dimensions
  - deprived in two of four dimensions
  - deprived in three of four dimensions
  - deprived in all four dimensions or fully deprived
- We applied two MLR models to investigate possible associations between individuals' social and economic conditions and the five deprivation levels using low and high deprivation cut-offs

ASSOCIATION BETWEEN MDP AND DEMOGRAPHIC FACTORS

- The regression results highlight a significant statistical association between demographic factors and poverty in South Africa. The demographic factors are:
  - Race
  - Gender
  - Region
  - Age

ASSOCIATION BETWEEN MDP AND ECONOMIC FACTORS

- The estimation process also captures the statistical relationship between individuals' dimensions of deprivation and five economic indicators related to:
  - The labour market (employed/unemployed)
  - Household income
  - Government public works programmes
  - Income poverty
  - Income inequality

STEP 3:

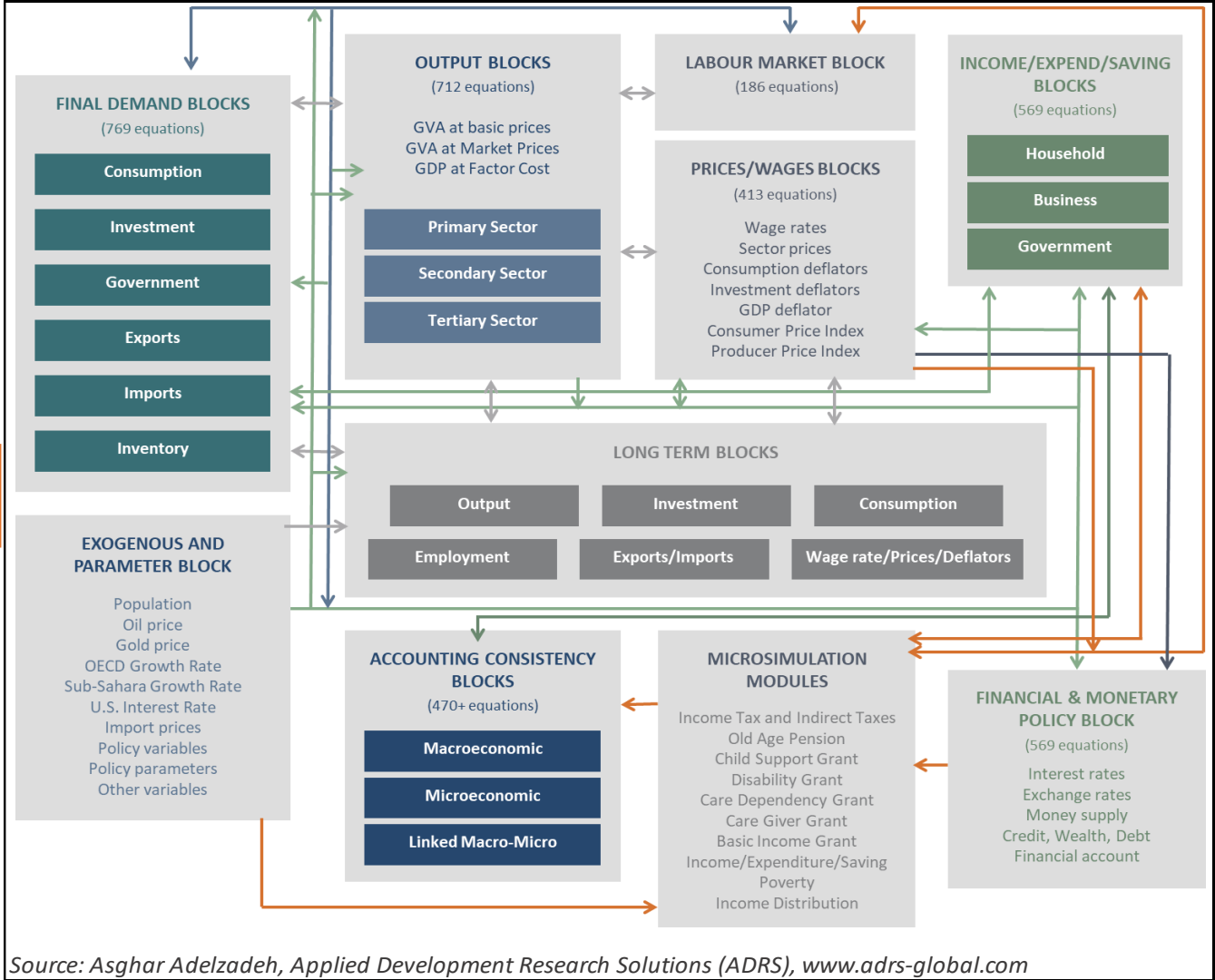
Adding a MDP module to ADRS' linked macro-micro model

ADRS Dynamically Integrated Macro-Micro Model of South Africa (DIMMSIM™)

Replicating the economy

Identifying policy choices and future possibilities

Forecasting likely future outcomes



Source: Asghar Adelzadeh, Applied Development Research Solutions (ADRS), www.adrs-global.com

MDP AUGMENTED LINKED-MACRO-MICRO MODEL

- The process of expanding DIMMSIM to generate projections of MDP measures involved integrating the estimated regression equations into the model's system of equations and in the process expanding DIMMSIM's output to include annual projections of MDP indicators.

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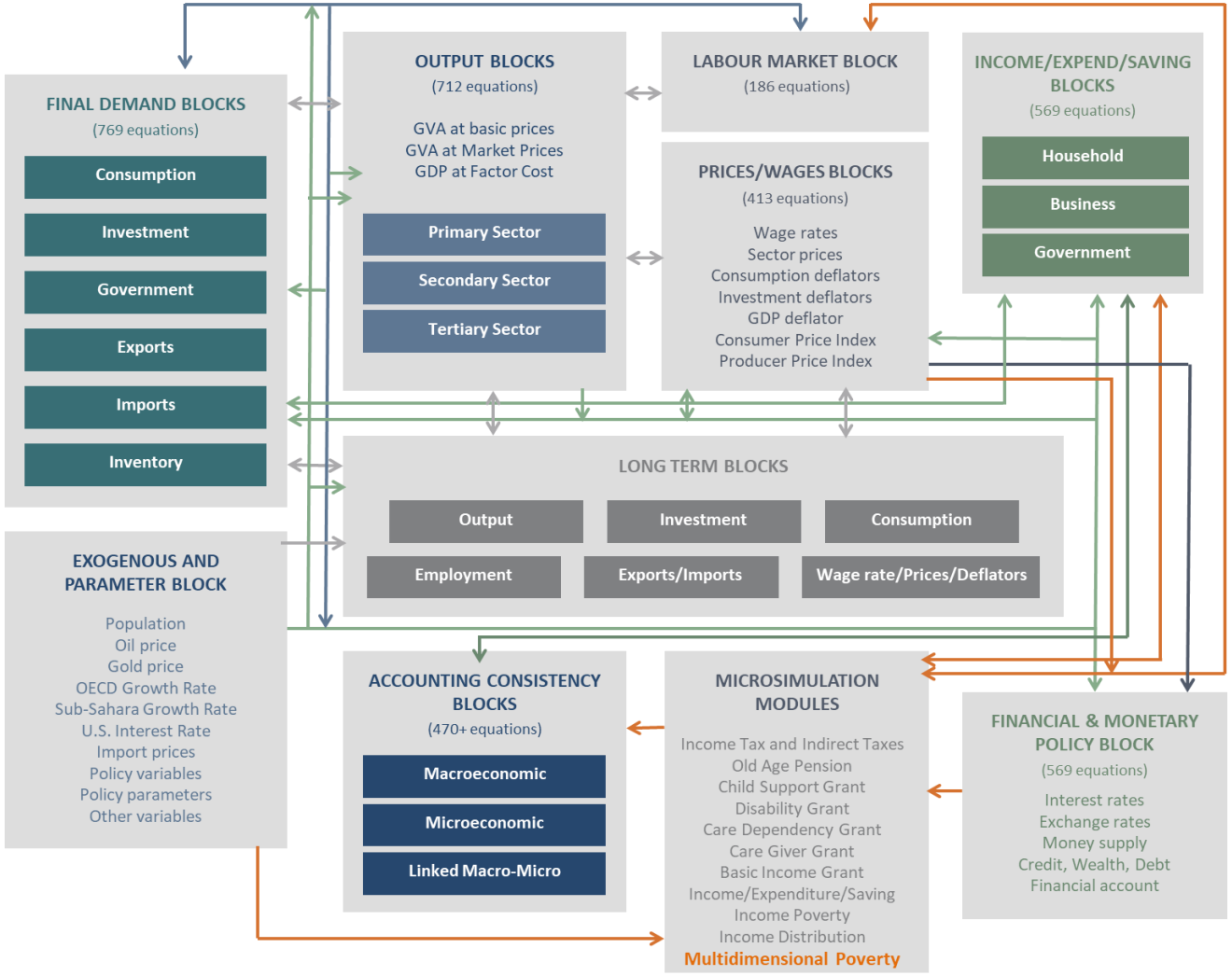


MDP AUGMENTED LINKED-MACRO-MICRO MODEL

- DIMMSIM's projections of rates of deprivation are estimated probabilities that represent the likely distribution of a population among five dimensions of poverty.
- The model generates annual rates of deprivation at national and provincial levels and by race and gender for the forecast period.

STEP 4:

Policy scenarios and the future outlook for MDP in South Africa (2024-2030)

POLICY SCENARIOS AND MDP FUTURE OUTLOOK (2024-2030)

- To demonstrate the utility and outputs of the final model, it was used to assess the impact of **six cumulative economic and social policy scenarios** on the evolution of multidimensional poverty indicators for the period 2024 to 2030.
- Each scenario adds new measures or changes to the previous scenario. They include:
  - A baseline scenario
  - A fiscal policy scenario
  - A monetary policy scenario
  - A private sector investment scenario, and
  - Two social policy scenarios, public employment and social grant scenario.

SIX POLICY SCENARIOS

BASELINE (BUSINESS AS USUAL) SCENARIO

What if…

Annual growth of government current spending is restricted to 6% yearly.

Annual growth of public sector investments is limited to 4% yearly.

Monetary authorities continue to enforce inflation targeting, with inflation rate ceiling of 6%

AIM:
To generate projections of MDP indicators under the Baseline policy scenario

ALTERNATIVE SCENARIO 1

BASE SCENARIO WITH FEW FISCAL POLICY CHANGES

What if…

There’s a 10% annual increase in government and public corporations' investment (2024-2030) in economic, social, and business infrastructure

There’s an 8% annual increase in government spending on goods and services (2024-2030)

AIM:
To assess the likely impact of fiscal policy on MDP measures

ALTERNATIVE SCENARIO 2

ALT SCENARIO 1 PLUS FEW MONETARY POLICY CHANGES

What if…

The Reserve Bank's mandate is changed to a dual mandate of targeting 6% real GDP growth and inflation upper limit of 8% rate.

Monetary authorities take measures to raise the annual growth of credit extension to the private sector to 15%.

AIM:
To assess the impact of monetary policy on MDP measures

ALTERNATIVE SCENARIO 3

ALT SCENARIO 2 WITH PRIVATE SECTOR COMMITMENT TO INCREASE INVESTMENT

What if…

The Public Private Growth Initiative (PPGI) increases investment in the South African economy by R500 billion over the next seven years

AIM:
To quantify the potential role of private sector investment in reducing MDP

ALTERNATIVE SCENARIO 4

ALT SCENARIO 3 WITH EXPANSION OF PUBLIC EMPLOYMENT PROGRAMME

What if…

EPWP job opportunities increase by 10% annually, doubling the program size by 2030.

The daily remuneration rate for the government public works program is raised to R160 in 2024, increasing by 6% annually thereafter.

duration of all EPWP works is set at 120 days

AIM:
To quantify the impact of government public employment programme on MDP

ALTERNATIVE SCENARIO 5

ALT SCENARIO 4 WITH EXPANSION OF SOCIAL PROTECTION PROGRAMME

What if…

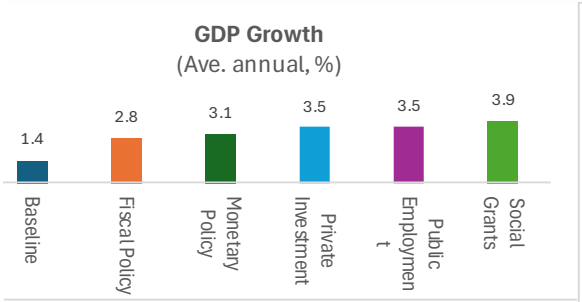
The monthly child support grant increases to the official Food Poverty Line from 2024

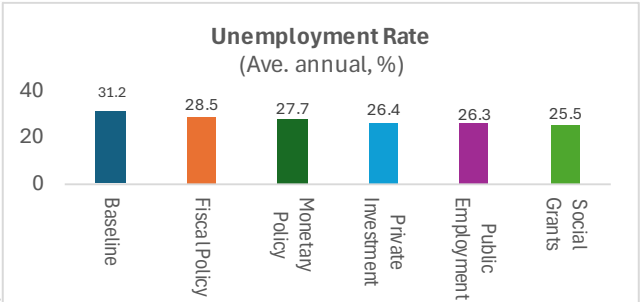
A caregiver grant is introduced at Food Poverty Line, annually increasing by 6%.

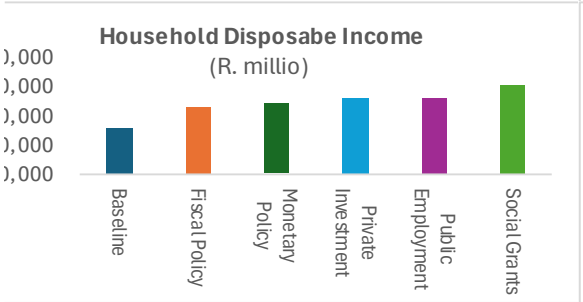
AIM:
To assess the impact of changes to the social grant programme on the MDP measures.

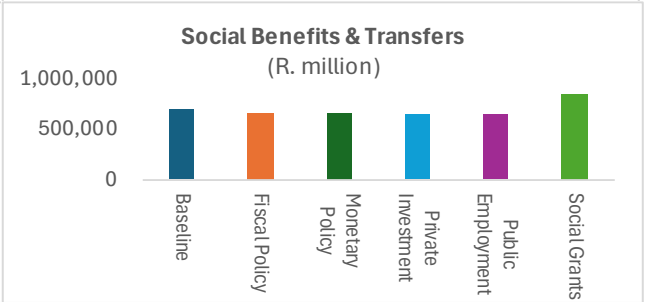
MODEL RESULTS

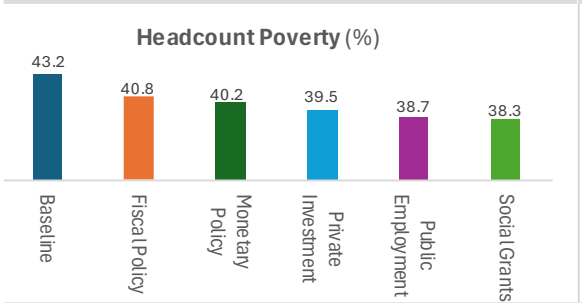
MACROECONOMIC, INCOME POVERTY & INEQUALITY (Ave. Annual, 2024-2030)

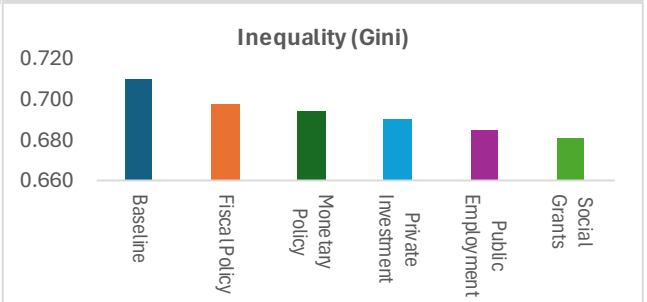








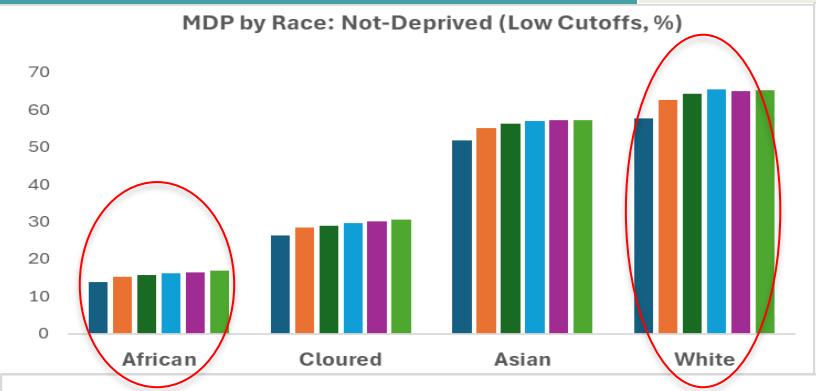


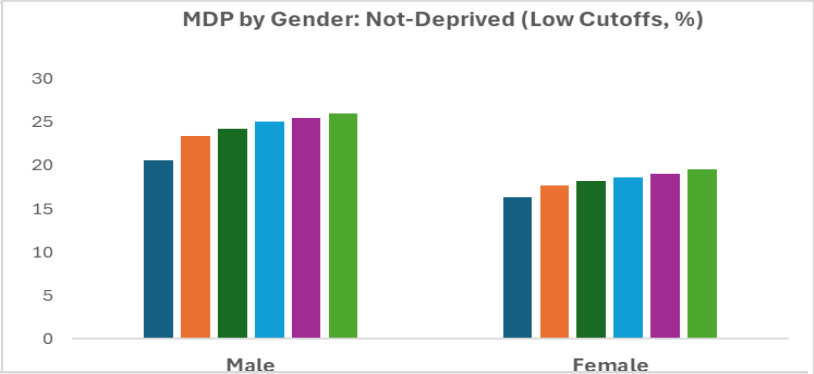


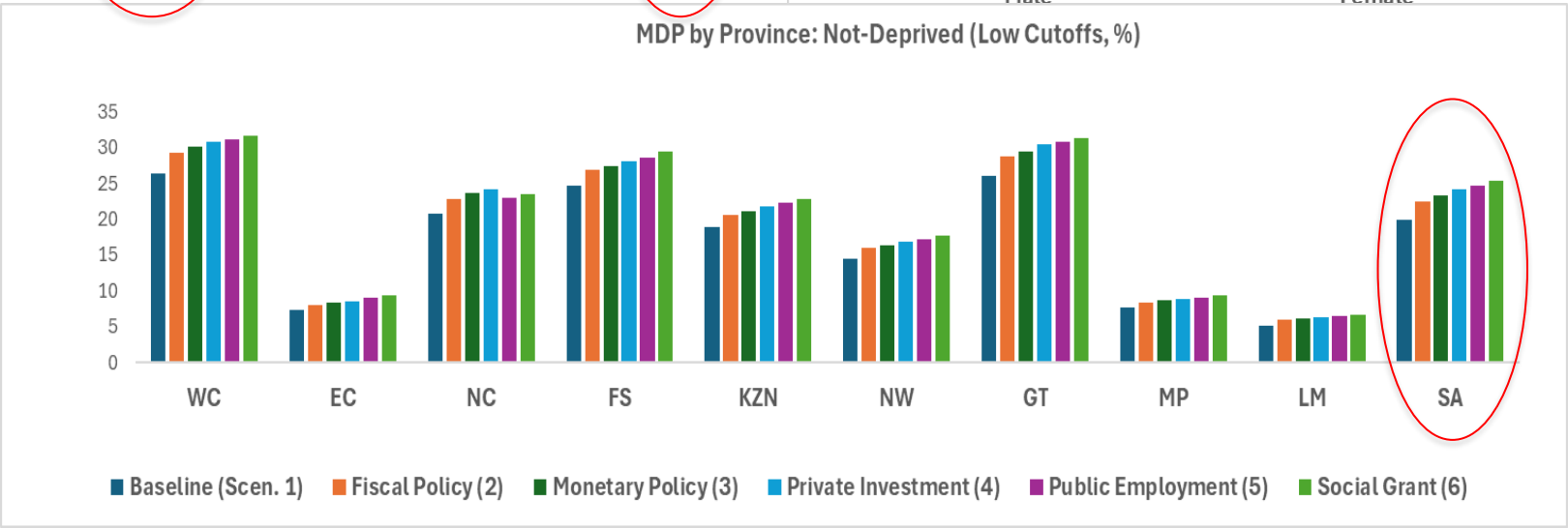
AIM:
To assess the impact of changes to the social grant programme on the MDP measures.

MODEL RESULTS: MDP

OUTLOOK FOR MULTIDIMENSIONAL POVERTY (**Not-Deprived**, Ave. Annual, 2024-2030)



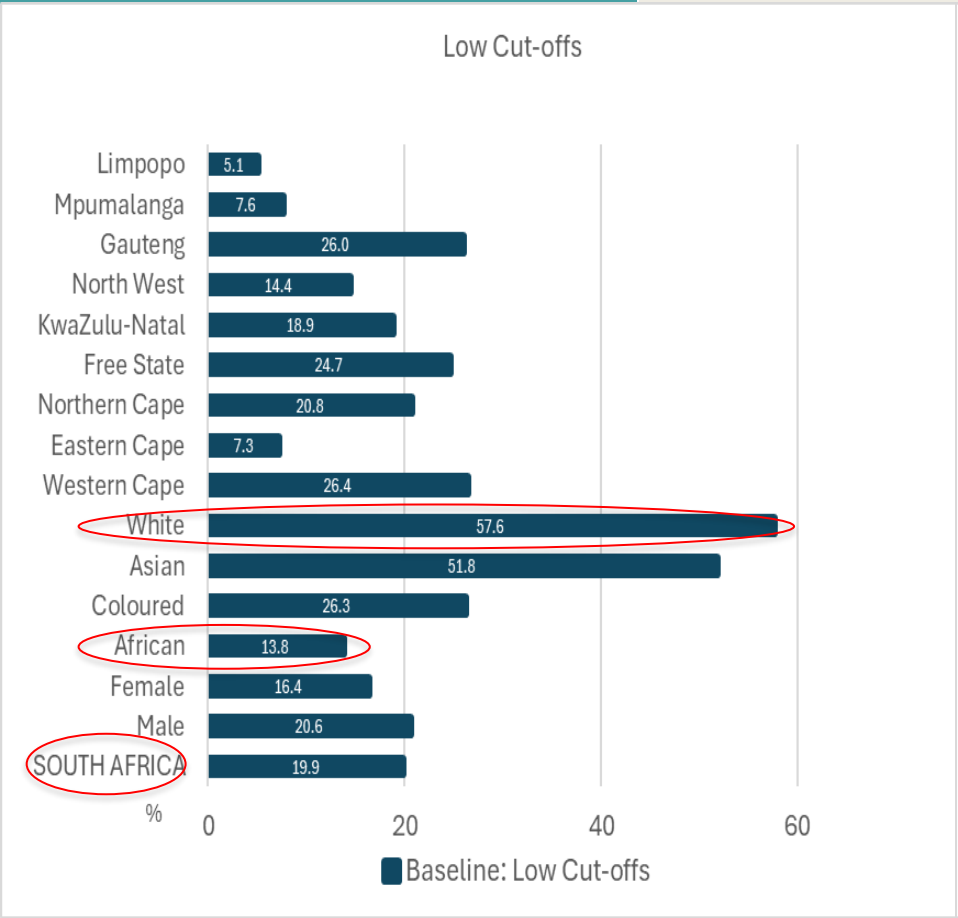


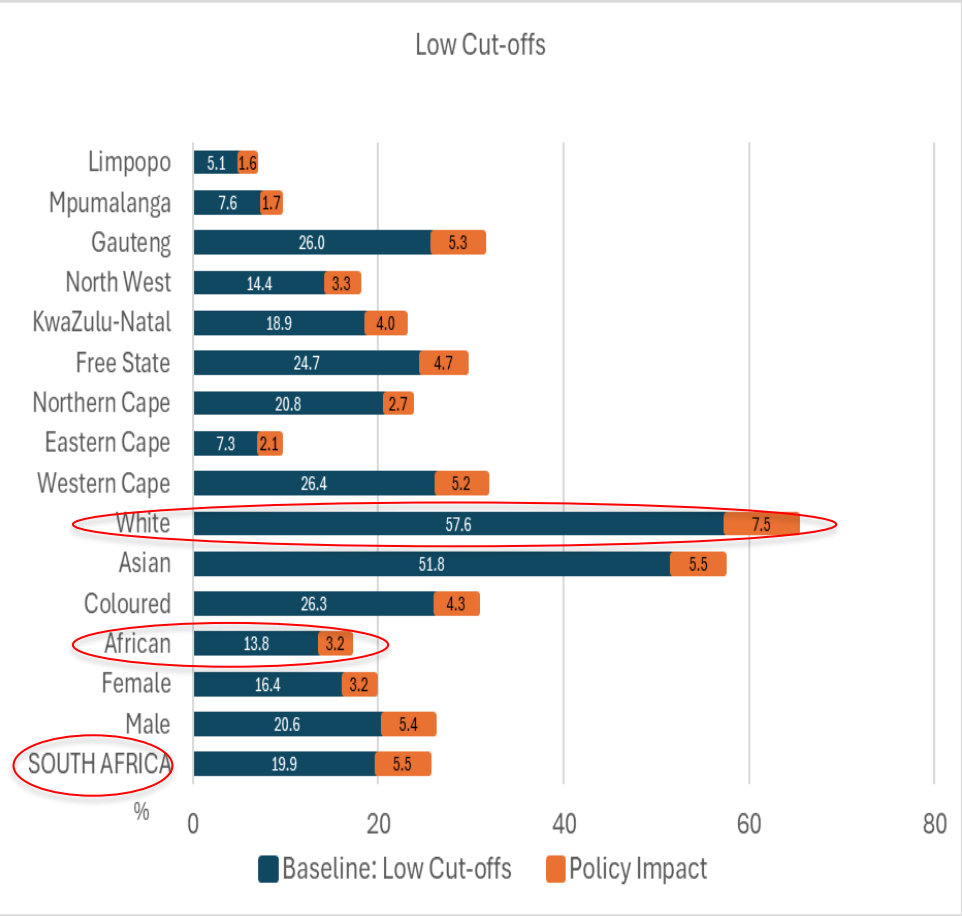


AIM:
To assess the impact of changes to the social grant programme on the MDP measures.

MODEL RESULTS: ALT SCEN 5

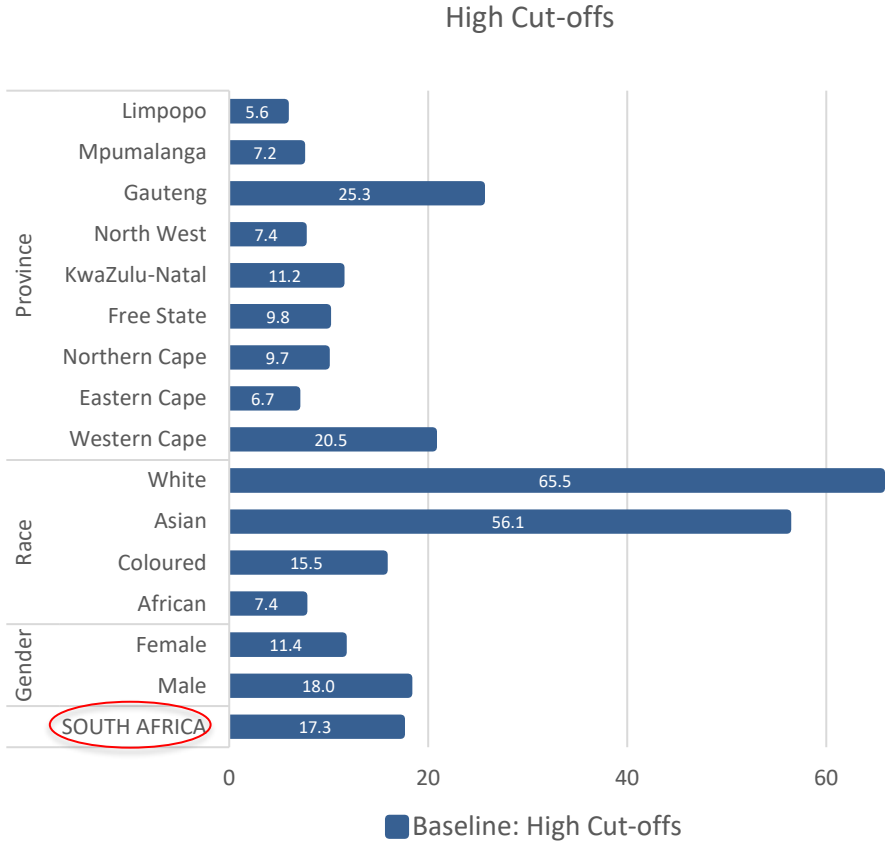
Projections of **Not-Deprived** Population Shares (Ave. Annual, 2024-2030)

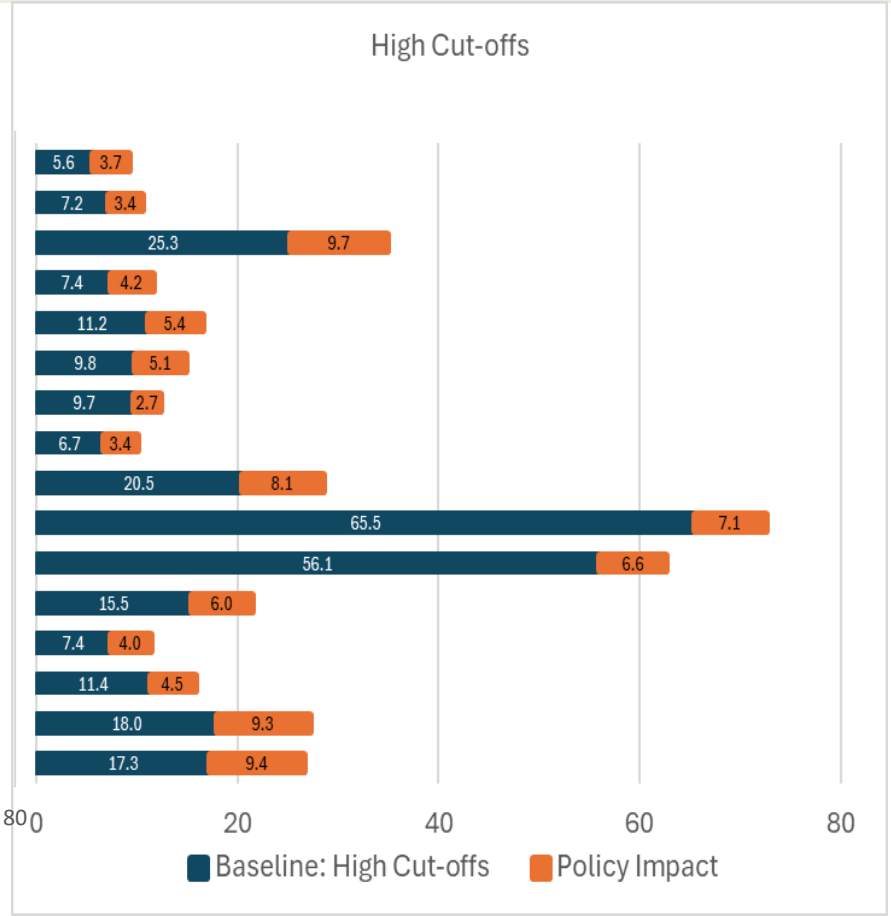




MODEL RESULTS: ALT SCEN 5

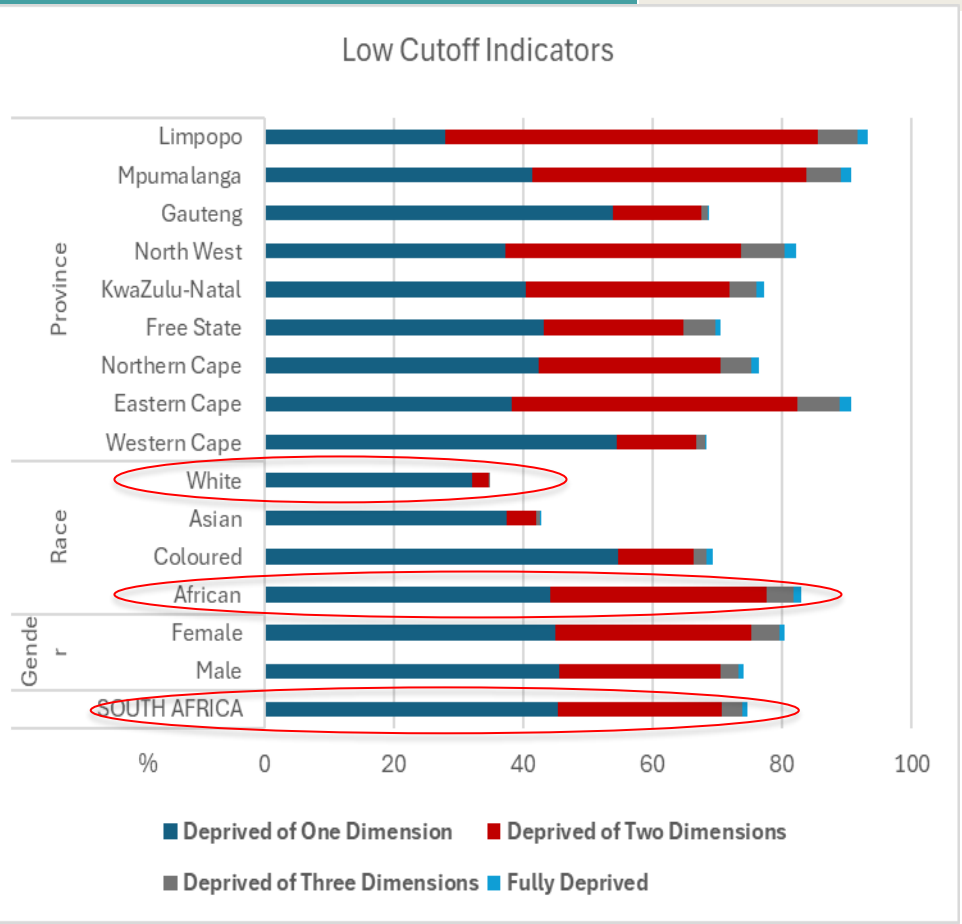
Projections of **Not-Deprived** Population Shares (Ave. Annual, 2024-2030, %)





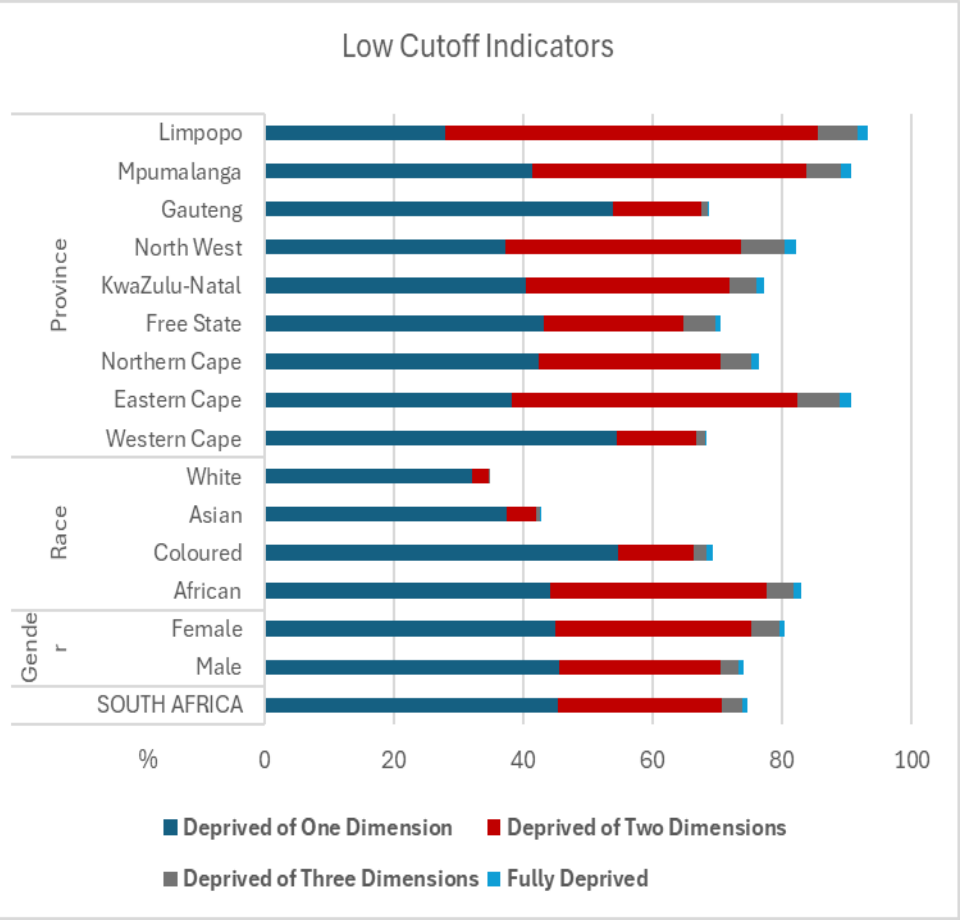
PROJECTIONS: ALT SCEN 5

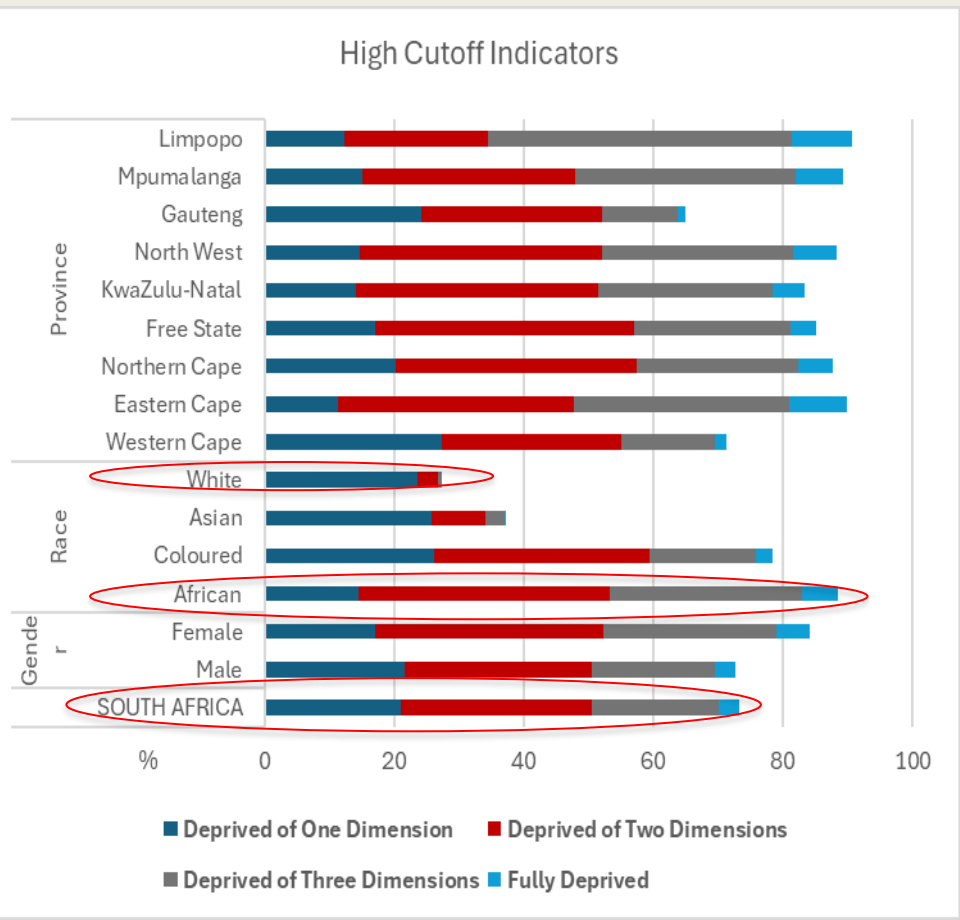
RESULTS: Composition of Total Deprivation (Ave. Annual, 2024:2030)



PROJECTIONS: 2024-2030

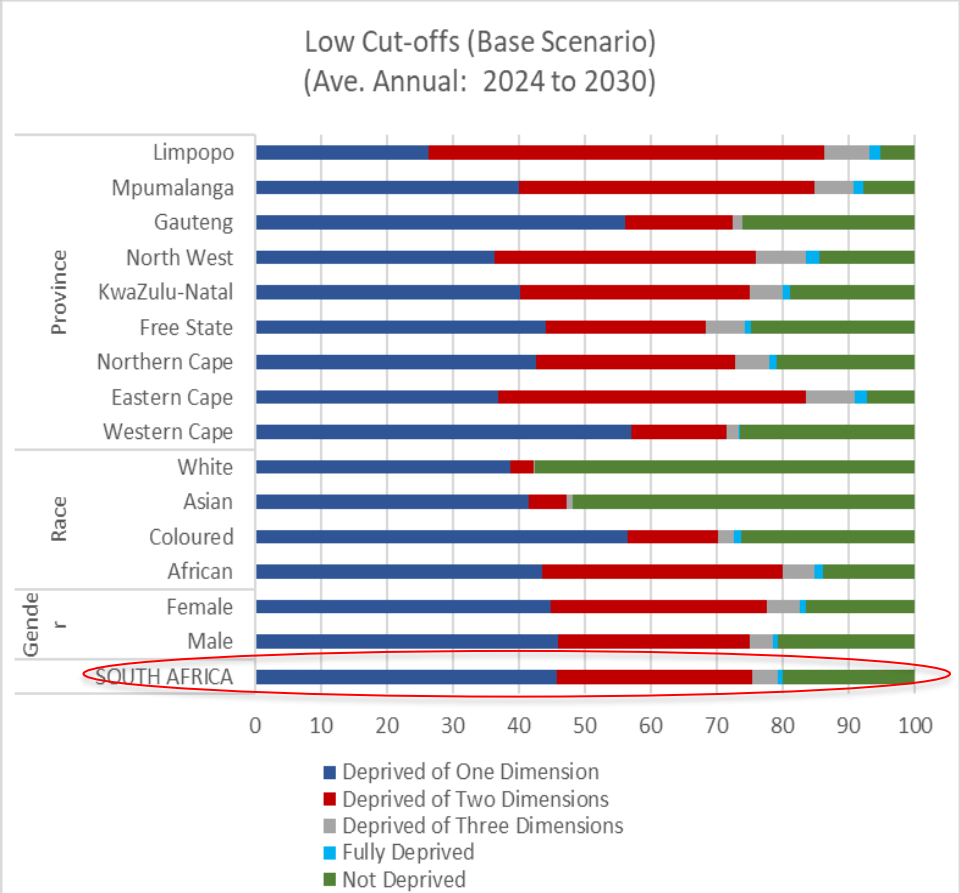
RESULTS: Composition of Total Deprivation (Ave. Annual, 2024:2030)

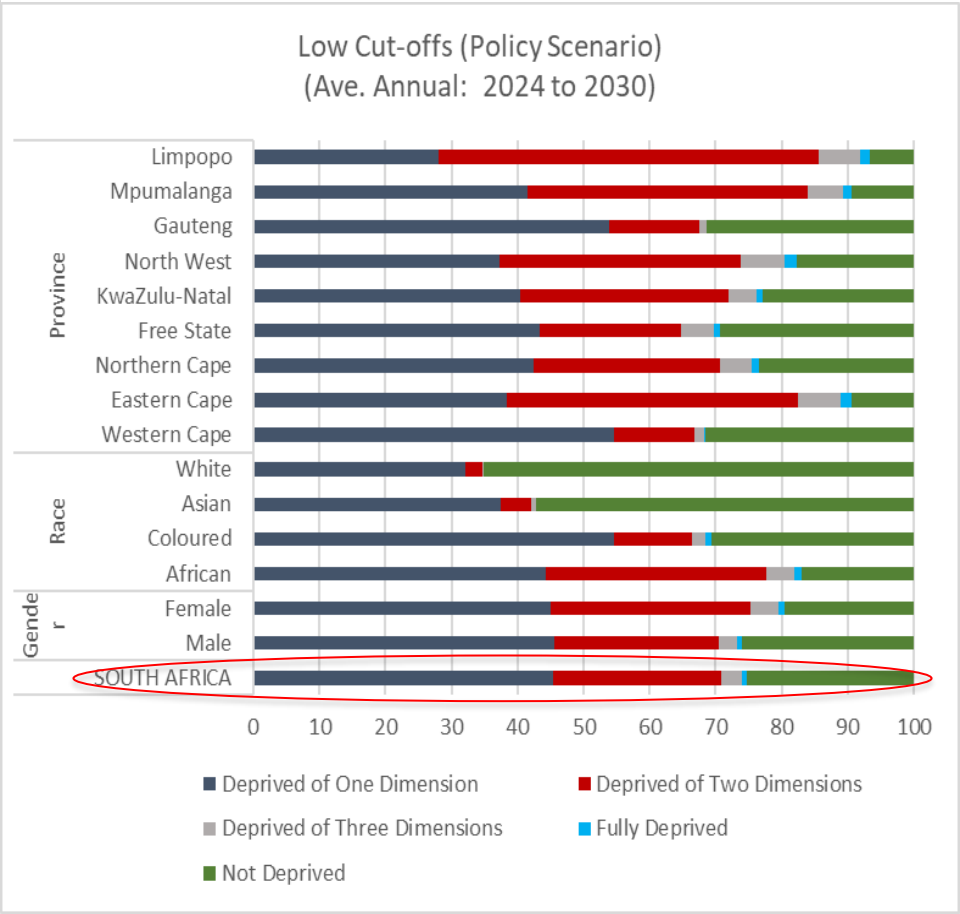




PROJECTIONS: ALT SCEN 5

Composition of Deprivation Across Scenarios
(Ave. Annual, 2024:2030)





Conclusions

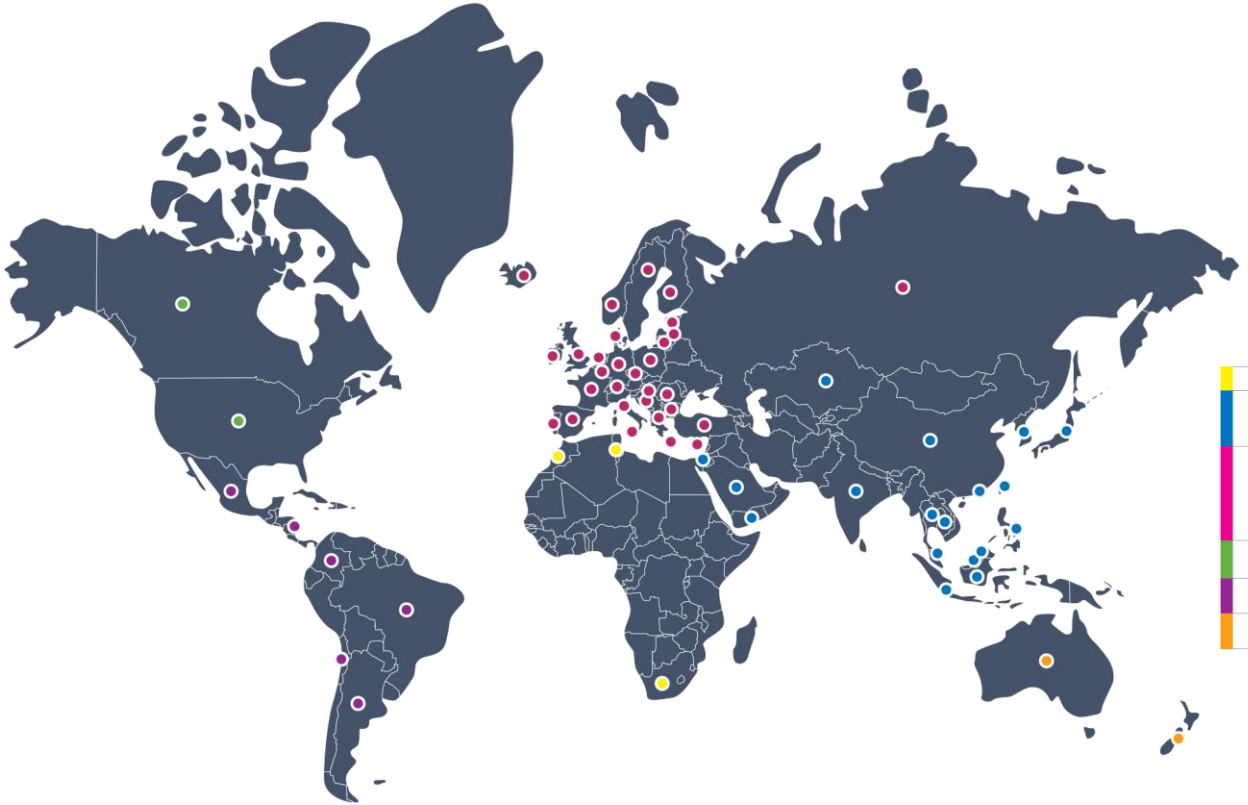
CONCLUSIONS

- We have developed a forward-looking approach to MDP that allows for the examination of the likely impact of economic performance, policy measures, and shocks on the future values of MDP indicators.
- The proposed model links the likely evolution of deprivation measures to
  - the dynamic of the economy,
  - the country's demographic evolution, and
  - socioeconomic policy interventions.
- The proposed model can be used as a policy tool for designing anti-poverty policies and producing ex-ante assessments of their impact on MDP.

CONCLUSIONS

- The model helps identify policy pathways to future national and regional targets for MDP.
- Since the MDP measures are built using several indicators that relate to the Sustainable Development Goals (SDGs), they provide an integrated understanding of the SDGs. The proposed modelling technique that integrates MDP provides the possibility to link SDGs to the economy, making it possible to design and test targeted policy interventions that have a better chance of meeting the SDGs.
- Finally, the South African economic model with its MDP component is available on ADRS' web-based platform and is used for the EMA-GIBS' executive course on Poverty and Inequality Modelling.

ADRS COUNTRY MODELS



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Applied Development Research Solutions is an independent economic consultancy organization with extensive experience in economic model building, capacity building, policy research, and advisory services in Africa.

Our innovative web-based interface gives users the power to design policies and test their impact prior to embarking on implementation. ADRS was founded as South Africa's new democracy embarked on economic, political and government transformation based on a new set of inclusive ideals. It was a time of incredible excitement and energy, ripe with optimism for the new dispensation and many ideas about how to right the economic wrongs of the past. Yet, it quickly became apparent that many well-meaning ideas had negative unintended consequences.

ADRS was created to provide critical foresight through innovative economic modeling tools to better inform economic policymaking. We have always been driven by the belief that intelligent policy design is a prerequisite to better and more sustainable economic development. We share these tools throughout Africa and beyond, in order to contribute to the economic well-being of people throughout the continent and the developing world.