

Transport Economics Knowledge Hub

The Ministry's Social Impact Assessment Framework

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Some Acronyms...or Initialisms?



GPS...?

LSF...?

CBA...?

EEM...?

CIA...?

HIA...?

SIA...?

DIA...?

Policies, impacts, and assessments



Transport priorities generate transport-related policies

Policies lead to costs & benefits – the impacts

Impacts contribute to outcomes

(Transport Outcomes)

(Wellbeing Outcomes)

(Four Capitals)

(Wellbeing Budget 2019)

GPS 2018 has 4 priorities...



NZTA's EEM lists several transport impacts

Environment

Financial impacts

Health

Wider economic impacts

Safety

National strategic factors

Travel time savings

Connectivity

Accessibility

*Note some of these impacts are only expected during construction phase of road projects

Transport Outcomes Framework has 5 outcomes



Inclusive access

Enabling all people to participate in society through access to social and economic opportunities, such as work, education, and healthcare.

Economic prosperity

Supporting economic activity via local, regional, and international connections, with efficient movements of people and products.

A transport system that improves wellbeing and liveability

Healthy and safe people

Protecting people from transport-related injuries and harmful pollution, and making active travel an attractive option.

Environmental sustainability

Transitioning to net zero carbon emissions, and maintaining or improving biodiversity, water quality, and air quality.

Resilience and security

Minimising and managing the risks from natural and human-made hazards, anticipating and adapting to emerging threats, and recovering effectively from disruptive events.

The Living Standards Framework

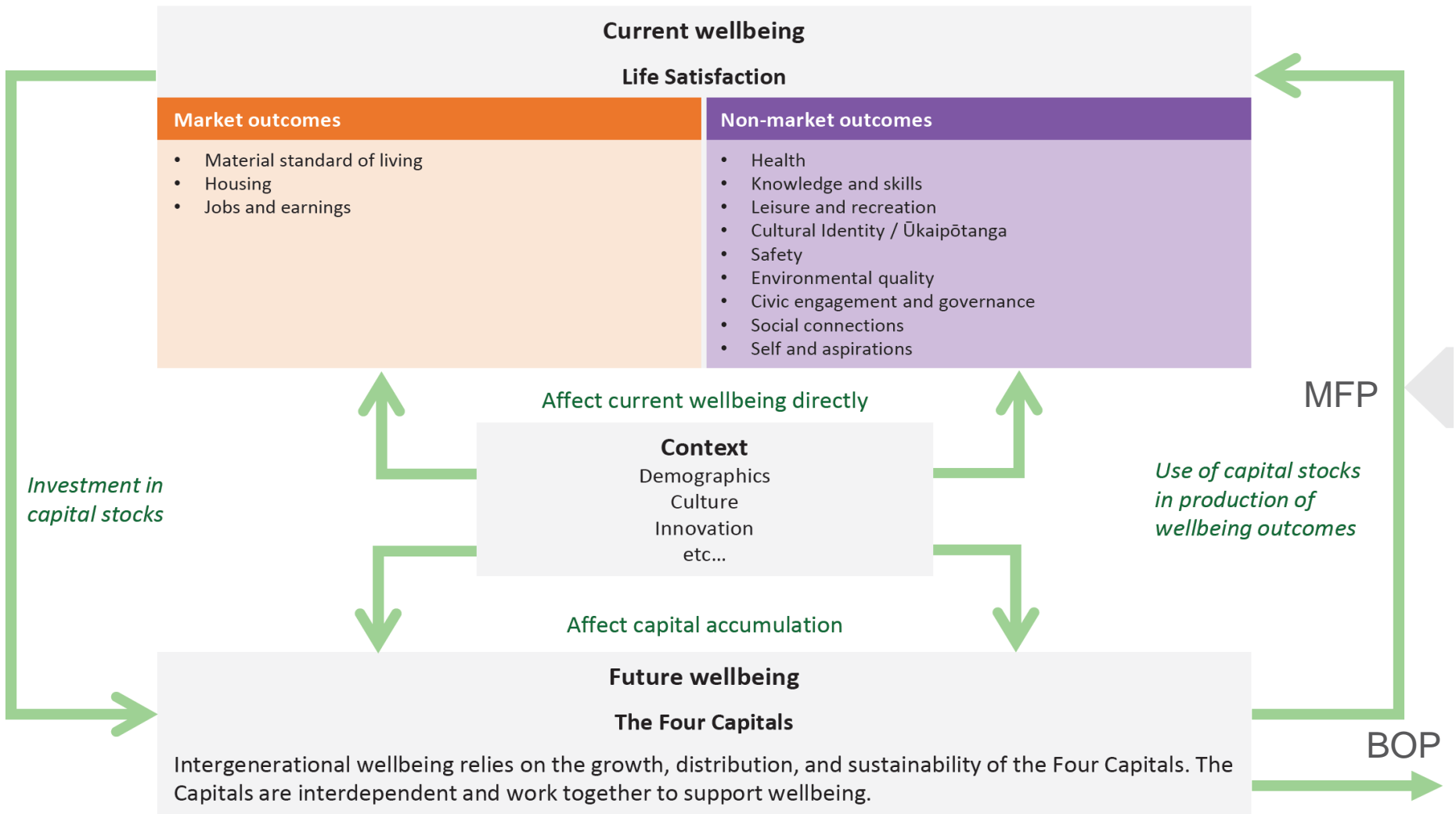


Wellbeing outcomes: 3 market + 9 non-market

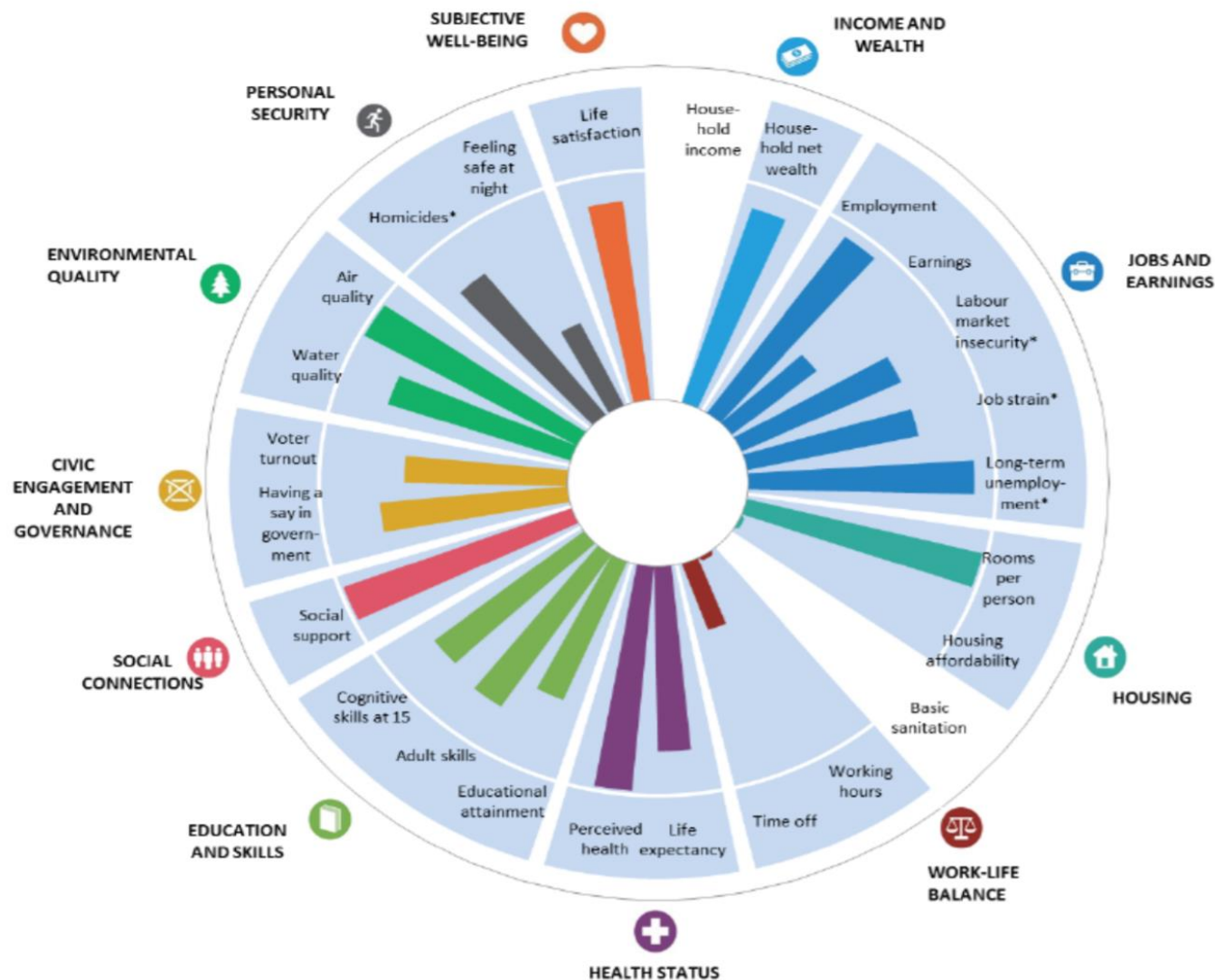
- Relate to current wellbeing / life satisfaction
- Drive investment in the 4 capitals

Four capitals: human, social, natural, physical/financial

- Future / intergenerational wellbeing is measured by the 4 capitals
- Future wellbeing relies on the growth, distribution and sustainability of the 4 capitals
- Foreign inflows / outflows of capitals affect the foreign investment position (BOP)
- The 4 capitals generate wellbeing outcomes via multifactor productivity (MFP)



New Zealand's average level of current well-being: Comparative strengths and weaknesses



Treasury's LSF has 4 capitals...



The Four Capitals

Intergenerational wellbeing relies on the growth, distribution, and sustainability of the Four Capitals. The Capitals are interdependent and work together to support wellbeing.



Natural Capital



This refers to all aspects of the natural environment needed to support life and human activity. It includes land, soil, water, plants and animals, as well as minerals and energy resources.



Social Capital



This describes the norms and values that underpin society. It includes things like trust, the rule of law, the Crown-Māori relationship, cultural identity, and the connections between people and communities.



Human Capital



This encompasses people's skills, knowledge and physical and mental health. These are the things which enable people to participate fully in work, study, recreation and in society more broadly.



Financial / Physical Capital



This includes things like houses, roads, buildings, hospitals, factories, equipment and vehicles. These are the things which make up the country's physical and financial assets which have a direct role in supporting incomes and material living conditions.

Treasury: social capital issues



“Social capital has a large and well-evidenced impact on economic performance, democratic functioning, public safety, educational outcomes, labour market outcomes, and individual health and wellbeing.”

The particular risk is that government agencies take it for granted because it is rarely measured.

Potentially detrimental effects include increased income inequality, poverty, housing mobility and ownership rates, family and whanau wellbeing, institutional quality, educational outcomes and individual health and wellbeing.”



Cost/benefit analysis (CBA)

- Add up all the costs (and discount them to Present Values)
- Add up all the benefits (and discount them too)
- Divide benefits by costs B / C
- Benefit / cost ratio (BCR) = a number

BCR > 1 means yeah

BCR < 1 means nah

BCR = 1 means...?

CBA versus SIA / DIA



CBA is an aggregate analysis

But there may be different impacts on different groups of people

Therefore, segment the population to see how the impacts are distributed

That's a Social Impact Assessment (SIA)

Or, at least a Distributional Impact Assessment (DIA)

Segmenting the population

Total Benefits & Costs:

- By region, or by urban / rural, or by meshblock, etc (spatial)
- By income group, age group, ethnicity, gender, disability status, etc

Other ways of slicing the population:

- Family size, single parent, car / non-car owner, number of cars
- Household, whanau, individuals, communities
- Household characteristics

But: disaggregation depends on good data!

SIA versus DIA



DIA = disaggregated CBA

SIA is so much more...as one peer reviewer noted:

“A full SIA seeks to understand the issues; predict, analyse and assess the likely impact pathways; develop and implement strategies; and design and implement evaluation & monitoring programmes.”

SIA also generally involves consulting with those likely to be impacted by a policy or measure

Impacts and outcomes

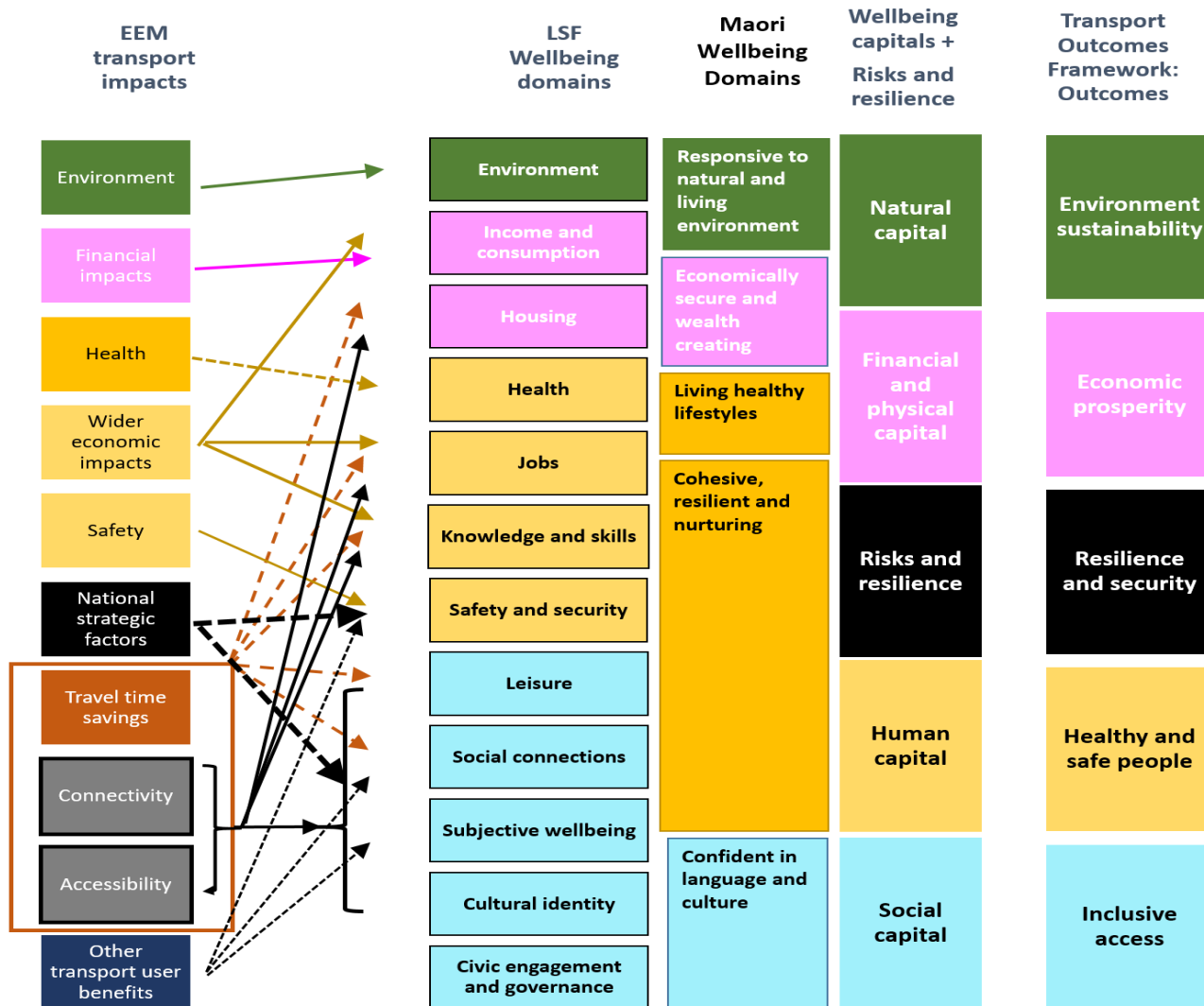


Impacts of policies correspond to:

- Priorities in the GPS on Land Transport
- Transport outcomes in the Transport Outcomes Framework
- Wellbeing outcomes in the Living Standards Framework

Common ground across these frameworks:

- Access...to work, education, healthcare, recreation, social connections
- Safety...security, resilience, health (accidents)
- Environment...air quality, noise, amenity
- Health...active transport modes, obesity, safety



Inclusive (and affordable) access



If one combines the Capabilities Approach of Amartya Sen and the Egalitarian Approach of John Rawls, then transport-related policies and measures can impact on three transport inequalities:

- Inequality of transport-related resources,
- Inequality of observed daily travel behaviour, and
- Inequality of transport accessibility levels.

The Accessibility Standard suggests that it is best to address the third inequality

Accessibility defined



Analysis of the distributional effects of transport policies on accessibility should take account of:

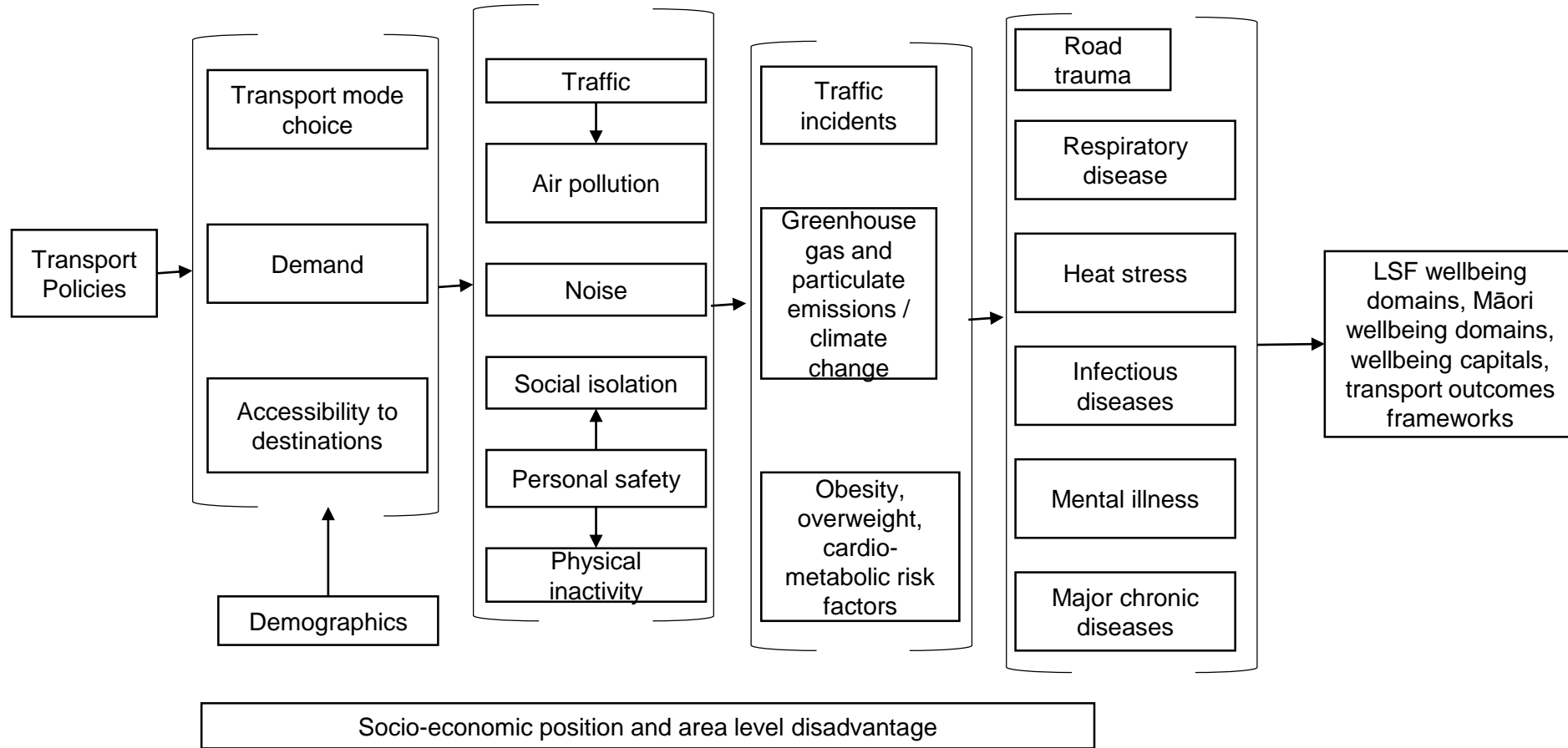
- the setting of minimum standards of accessibility to key destinations,
- prioritising disadvantaged groups,
- reducing inequalities of opportunities, and
- mitigating transport externalities

Social/Distributional Impact Assessment



The Ministry will mostly do desktop DIAs rather than full-blown SIAs:

- Perform a CBA
- Disaggregate the impacts by segmenting the population
- Identify groups who will be negatively / positively impacted
 - Think about impact pathways
- Are any groups vulnerable? => Equity considerations
- Can the policy be amended so that impacts on vulnerable groups can be more positive or less negative?
- If not, can compensation or mitigation be applied?



Equity standards



Vertical equity – differential impacts on people with different abilities or needs, e.g. income, ethnicity, disability, gender

Horizontal equity – impacts on people with same ability and need, but in different areas

Equity standards

- Basic needs standard
- Accessibility (capabilities) standard

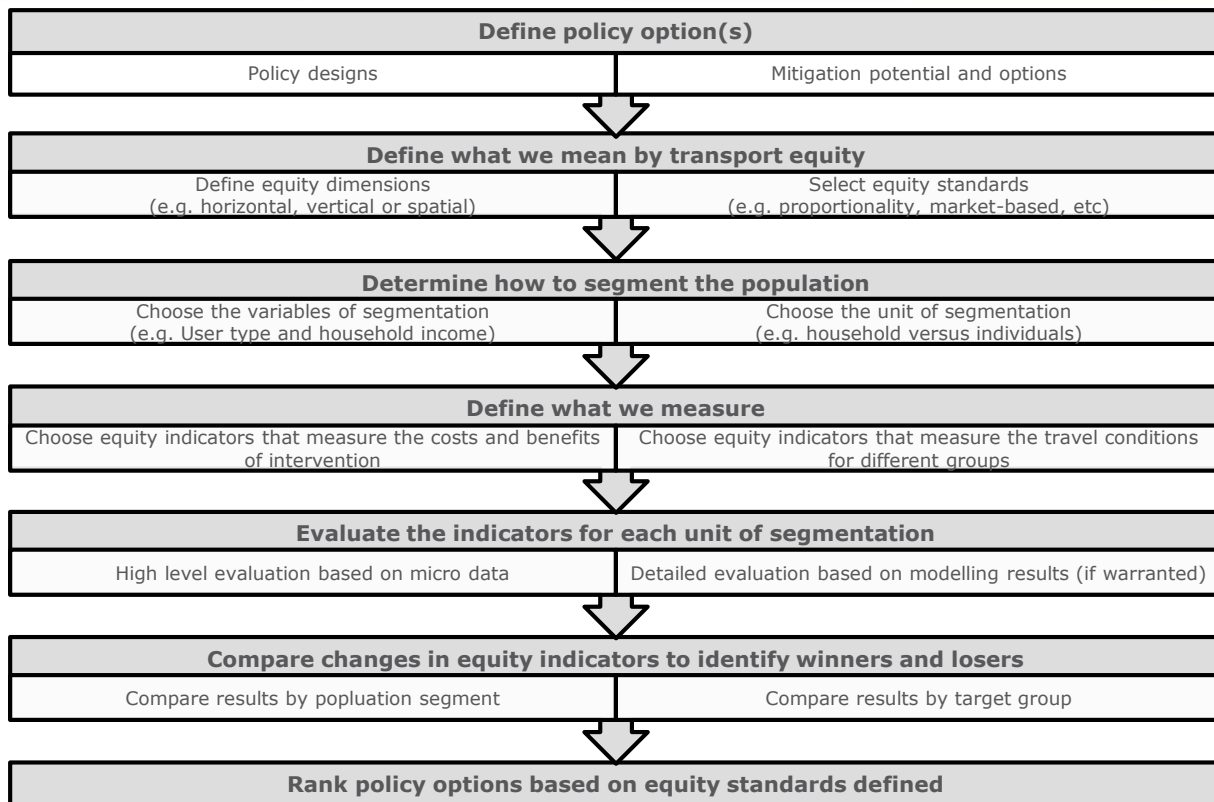
Remember: health, safety, environmental and affordability impacts

Some equity indicators



- Congestion impacts (depends on measure)
- Vehicle km travelled/passenger km travelled
- Number of trips
- Mobility need (depends on measure)
- Affordability (% of income)
- Availability of alternative travel options (e.g., public transport)
- Mode change (car to PT)
- Route change
- Time change

SIA / DIA Framework



Source: ITF and Bills & Walker (2017)

Examples of policy CBAs/SIAs



Mandating ABS / CBS on motorcycles
(anti-lock / combined braking systems)

CBA:

- Costs are (mainly) the extra price of bikes with ABS / CBS
- Benefits are safety-related: the majority of crashes are braking-sensitive

SIA:

- Segment the population
- Examine differential impacts on income groups, urban/rural, ethnic, ...?

Examples of policy CBAs/SIAs



SuperGold public transport card

CBA:

- Costs are borne by other PT users or taxpayers in general
- Benefits are accessibility for the elderly
 - Especially those with low incomes

SIA:

- Segment the population
- Examine differential impacts on the aged (beneficiaries), and on fare-paying PT users?

Examples of policy CBAs / SIAs



Potential low-emissions policies (re Productivity Commission report)

- Feebates
- Vehicle Fuel Efficiency Standard
- Vehicle Scrappage Scheme for Auckland

CBAs give an idea of the overall viability of these proposed interventions

SIAs examine the distribution of impacts on vulnerable groups, especially in terms of affordability of new costs imposed

Putting into practice



Why Measure Social Impact?



- **Transport Policy Interventions may target:**
 - Price of the vehicle (e.g. import tax)
 - Use of the vehicle (e.g. fuel tax, WoF)
 - Places the vehicle is driven to/from (e.g. toll charge)
 - Time it takes for the vehicle to be driven to/from a place (e.g. congestion charge)
- **SIA sheds light on the impact on specific households and;**
- **One or more (or all) of the above may impact the same household type -> and to varying degrees.**

Data Sources



- **Households:** Census, Household Expenditure Survey, Household Travel Survey (HTS)
 - HTS is a continuous personal travel survey run by MoT:
 - 2,886 households fully completed (2015-2017)
 - 7 day travel diary (2015-2018)
- **Vehicles:** Motor Vehicle Register (MVR), Private Companies (on vehicle prices)
- MVR addresses matched with HTS addresses (with permission)
 - ▶ *matched vehicle and household info*
- MVR data on vehicles and owners

Possible Segmentation



HTS distinguishes between the following household types:

- Single adult living with children
- Person living alone
- Married/de facto couple only
- Family with children
- Family with adults only

SIA requires further disaggregation; e.g. by vulnerable households:

- Person living alone & over 65 years old
- Large families with a low income
- Households with at least 1 Maori (or other ethnicity)

Definitions are Important



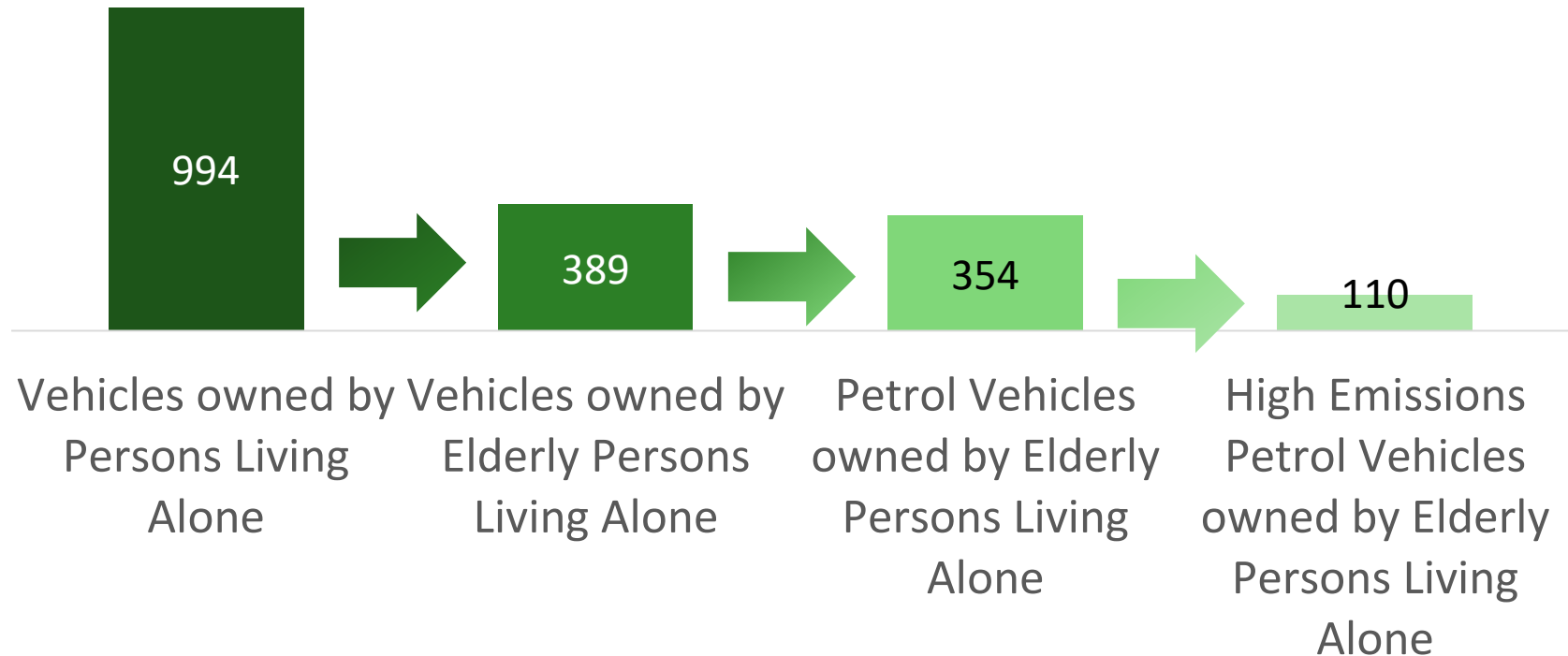
Various ways to define **Household income**

- Before tax e.g. HTS
 - After tax
 - After tax and housing cost/basic needs/living expenses
 - Equivalised income:
 - Per Capita
 - Square Root
 - Easton (1973) & (1980)
 - Jensen (1978) & (1988)
 - Smith (1989)
 - Michelini (1999)
- } Different weightings for adults & children

The Problem of Digging Too Deep



Sample size quickly dwindles with greater disaggregation



Two Way Output Table



Household by district	Equalised household income per annum							
	Under \$20,000 (\$288 per week)		\$20,001 to \$50,000 (\$673 per week)		\$50,001 to \$75,000 (\$1,202 per week)		Over \$75,000 (\$1,923 per week)	
Basic information – number of households								
District A	50	1%	500	6%	500	6%	200	3%
District B	100	1%	500	6%	700	8%	100	1%
District C	400	5%	1000	13%	500	6%	100	1%
District D	200	3%	1000	13%	500	6%	50	1%
Total	750	9%	3000	38%	3700	47%	450	6%
Equity indicator - estimated increase in travel cost per HH per week and as a % of income								
District A	\$5	1.7%	\$5	0.7%	\$5	0.4%	\$5	0.3%
District B	\$5	1.7%	\$10	1.5%	\$15	1.2%	\$20	1.0%
District C	\$10	3.0%	\$10	3.0%	\$30	2.4%	\$40	1.6%
District D	\$20	6.9%	\$30	4.5%	\$50	4.2%	\$80	4.2%
Average	\$12	4.0%	\$19	2.8%	\$26	2.2%	\$27	1.4%

► 22% of the population most impacted

► Highest percentage impact

► Highest \$ impact

Some Limitations



- Inherent limitations of surveys
 - Info only as good as people supply
 - *e.g. Decline to give income, ethnicity: Jedi...*
- Data entry errors in the MVR
- Mismatches during the MVR/HTS matching process
- Sample size not representative

Future work

- Increased detail
- Increased sample

Questions



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Thank you



Upcoming TKH events

Transport Knowledge Conference 2018

- Rydges Hotel, Wellington
- Thursday 15 November
- Registrations open this week

TKH research colloquium

- Wednesday 14 November

<https://www.transport.govt.nz/resources/conferences/2018-transport-knowledge-conference/>

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