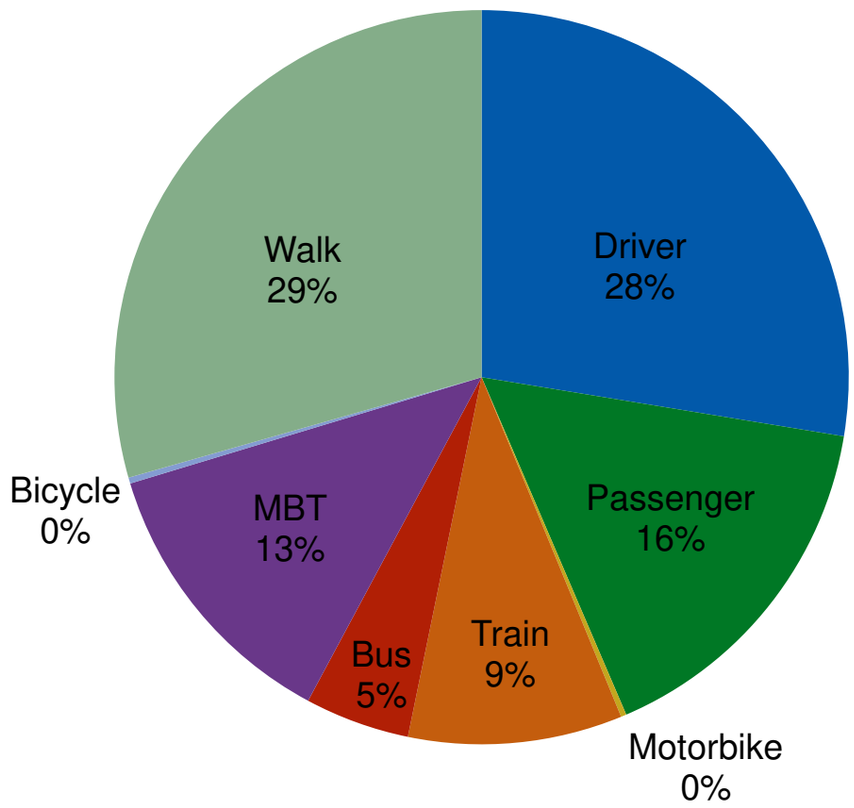
SARF – NMT SEMINAR

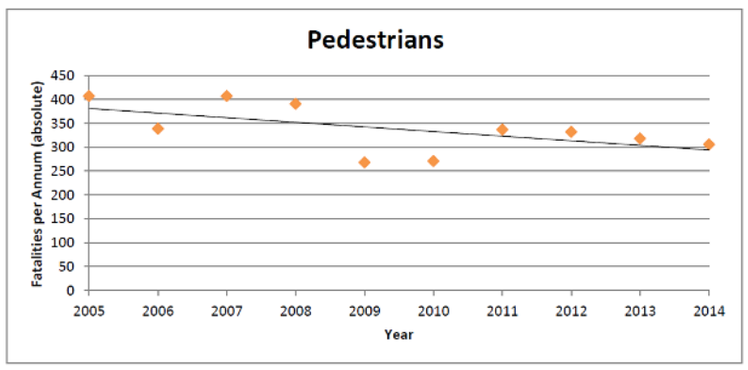
NMT for Sustainable African Cities

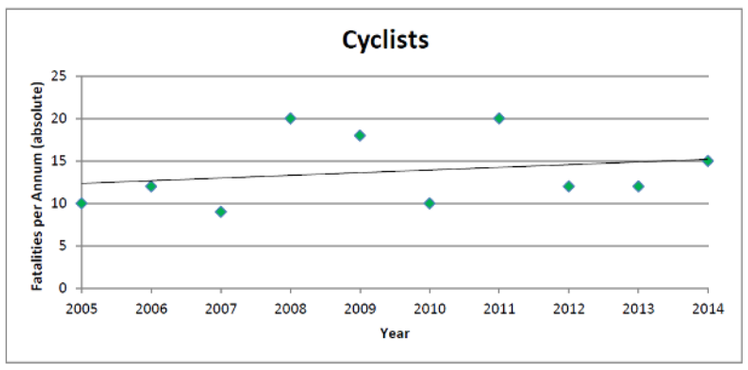
Importance and benefits of NMT

A/PROF MARIANNE VANDERSCHUREN

IMPORTANCE OF NMT AND ITS BENEFITS







Pedestrian and Cyclist fatalities in the Western Cape

1.1.d Road Infrastructure Investment Programme

1.1.d.1 Concrete Roads Upgrading Project

The focus is on the rehabilitation and upgrading of minor roads throughout the City, and, in particular the rehabilitation of existing concrete roads in low income areas. This project was initiated in the last term and, subject to resources will be completed in the next 5 years.

The main objective is to deliver quality public infrastructure using labour intensive methods wherever possible. The end result is a "fence-to-fence" improvement of the entire road reserve. This is a City wide project with phased implementation taking place at present in the areas of Bishop Lavis, Gugulethu, Hanover Park, Heideveld, Manenberg , Imizamu Yethu and Ocean View. This will be ongoing for at least the next 10 years. Approximately R827 million has been budgeted in this regard over the next 5 years, in order to expedite this delivery.

1.1.b.2 Road Congestion Relief Project

In 2013, the TomTom global traffic index revealed that Cape Town is the most congested city in South Africa, with a global ranking of 55th place. Congestion results in time and money lost, and also impacts on pollution and its long-term effect on the environment.

The survey also revealed that motorists are spending an extra 71% of their time in traffic. Morning peak-hour on major arteries has increased from two hours to the current four hours (06:00 to 10:00).

The Road Congestion Relief Project, inherited at the end of 2015 has three components, namely operational, behavioural and infrastructure interventions. With congestion being a major constraint for the citizens of Cape Town there is a need for a comprehensive strategy. Infrastructure interventions on their own will not be enough.

Operational Interventions

This reduces the strategy management of the public transport operations, tariff management related to the peak and off-peak periods. Further implementations of TOD development so as to curb the necessary morning/afternoon peaks.

48

Term of Office Plan 1 July 2017-30 June 2022

Behavioural Interventions

Travel Demand Management (TDM) is critical to introduce and give effect to behavioural change. The TDM strategy has now been approved and over the next 5 years interventions will include flexitime, starting with the City's personnel, carpooling etc.

Infrastructure

Traffic congestion alleviation projects over the 5 year term will be aimed at addressing major pressure points inclusive of the areas detailed below. The City has assigned approximately R750m over the coming 5 years for these congestion alleviation interventions that will include:

- The Kuils River area around Bottelary, Amandel and Saxdown Roads; Kommetjie around Ou Kaapse Weg and Kommetjie Road.
- The Blaauwberg area around Plattekloof, Blaauwberg and Sandown Roads.
- The M3, M5, N1 and N2 freeways.
- The V&A Waterfront and foreshore.

1.1.d.3 Resource Management for Road Investment Project

The City decided to resist the imposition of e-tolls due to its economic impact and lack of consultation with affected communities. The City won an extended legal battle which resulted in a Supreme Court of Appeals decision in favour of the City.

1.1.e Economic Development and Growth Programme

IMPORTANCE OF NMT AND ITS BENEFITS

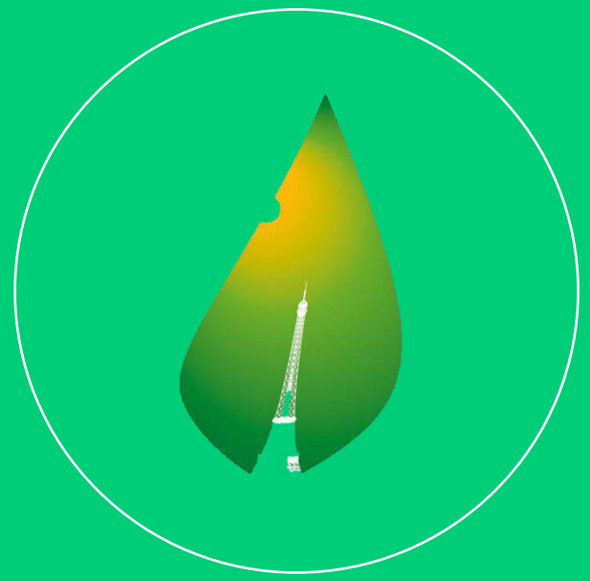
Traditional Assessments:

- Economic benefits
  including time gains

Holistic Assessments:

- Environmental benefits
- Health benefits
- Economic benefits
- Social benefits
- Benefit evaluation

01 ENVIRONMENTAL BENEFITS



ENVIRONMENTAL BENEFITS

Air pollution and greenhouse gas emissions

Beijing took **5 million cars** off the road:

Particulate matter dropped **73.2%**

Beijing Times, 2015

ENVIRONMENTAL BENEFITS

Air pollution and greenhouse gas emissions

Climate value of cycling: A case study of Bogotá, Colombia, Massink et al. (2011)

investinbogota.org

thebogotapost.com

Cycling mode split: 3.3% → Avoided CO_2: 55 115 tons/annum → Carbon credits: Up to $7 million

ENVIRONMENTAL BENEFITS

Energy usage savings

Transport accounts for 1/3 of Global energy use

USEIA, 2011

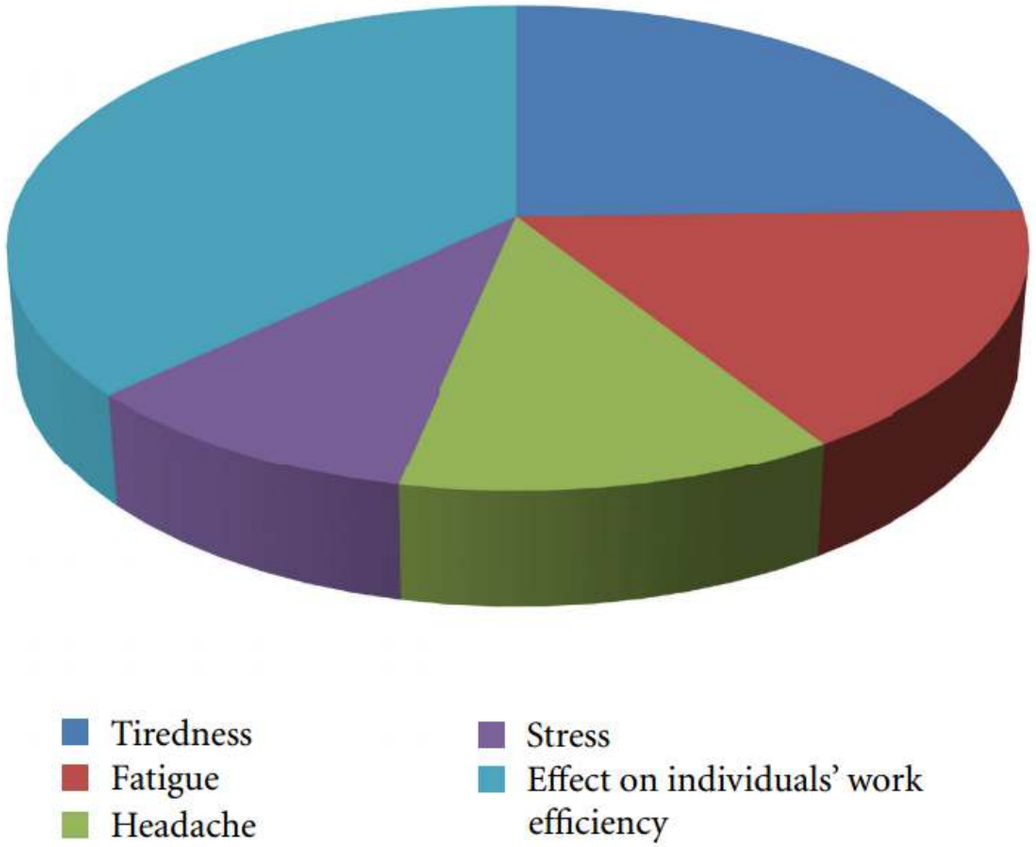
ENVIRONMENTAL BENEFITS

Noise pollution

The estimated annual social cost of urban road noise in England is **£7 to 10 billion**

Gov.uk, 2015

Results of a survey of workers in Agartala, India

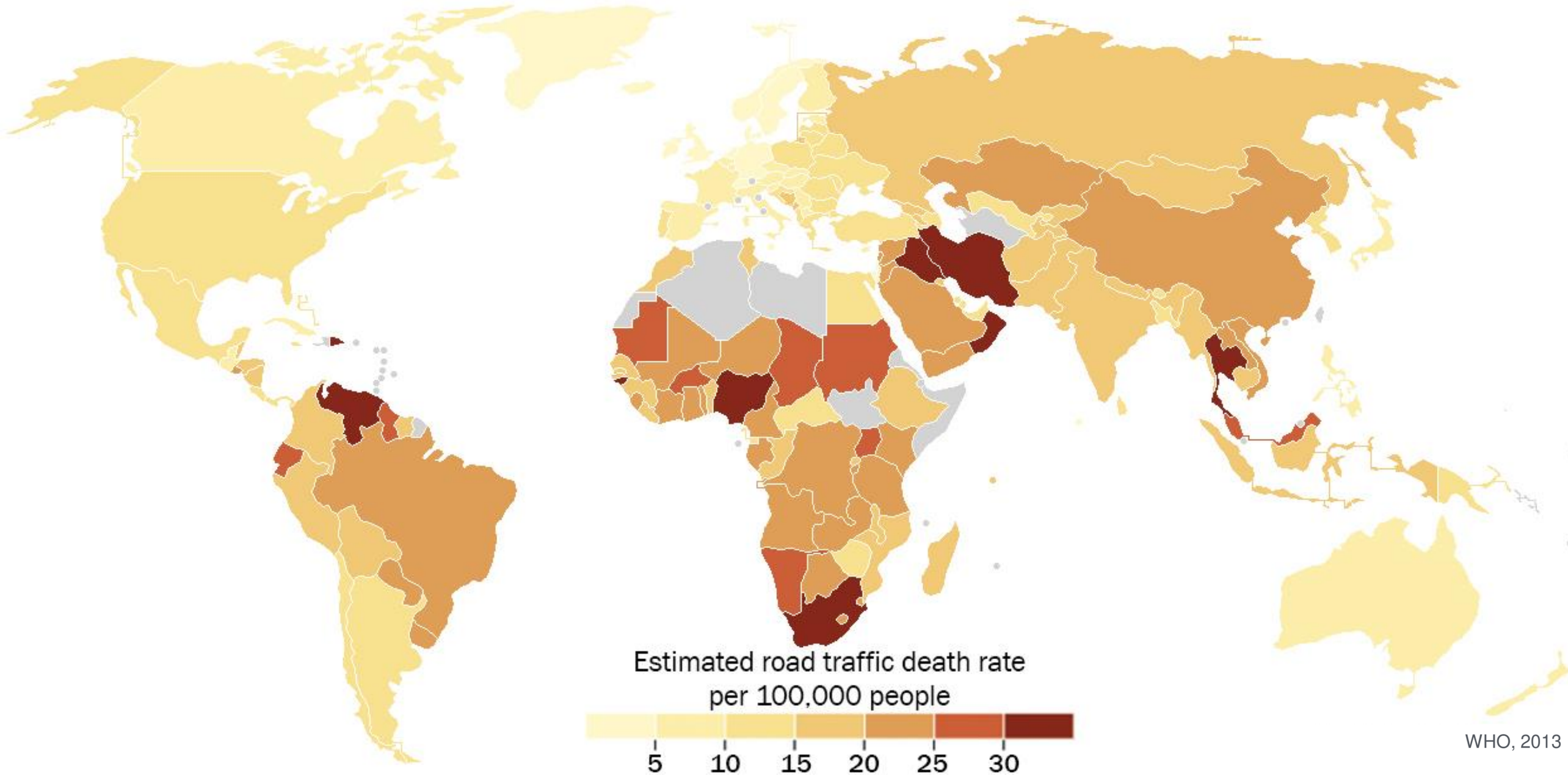


Pal & Bhattacharya, 2012

02 HEALTH BENEFITS

HEALTH BENEFITS

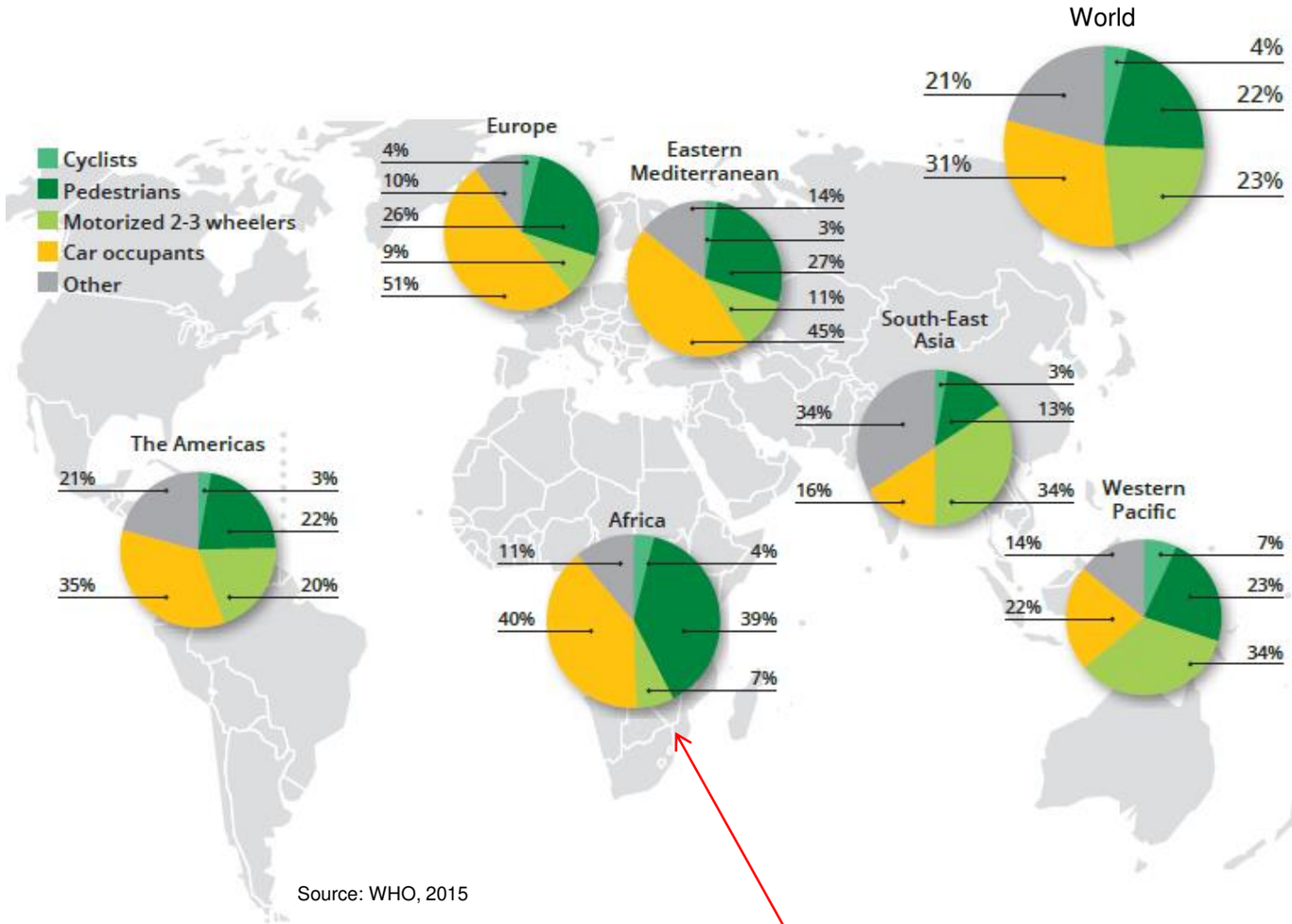
Road traffic fatalities



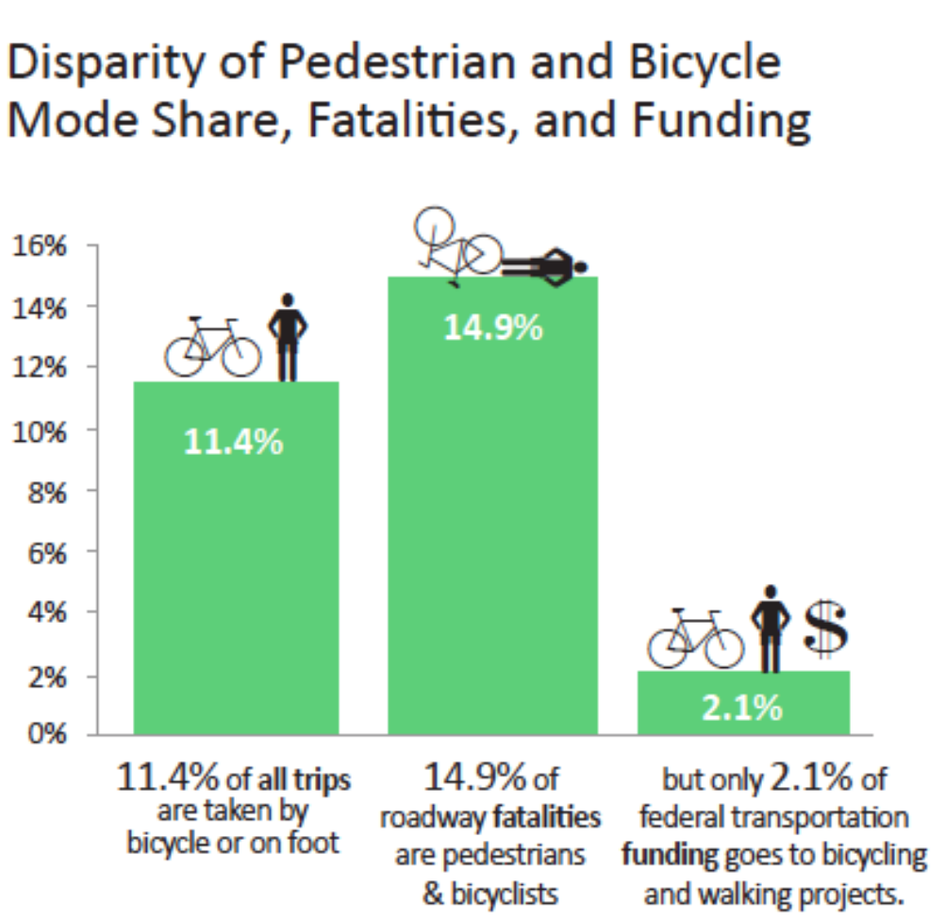
WHO, 2013

HEALTH BENEFITS

Road traffic fatalities



Source: WHO, 2015



Highest percentage of NMT fatalities
In the world

HEALTH BENEFITS

Physical activity

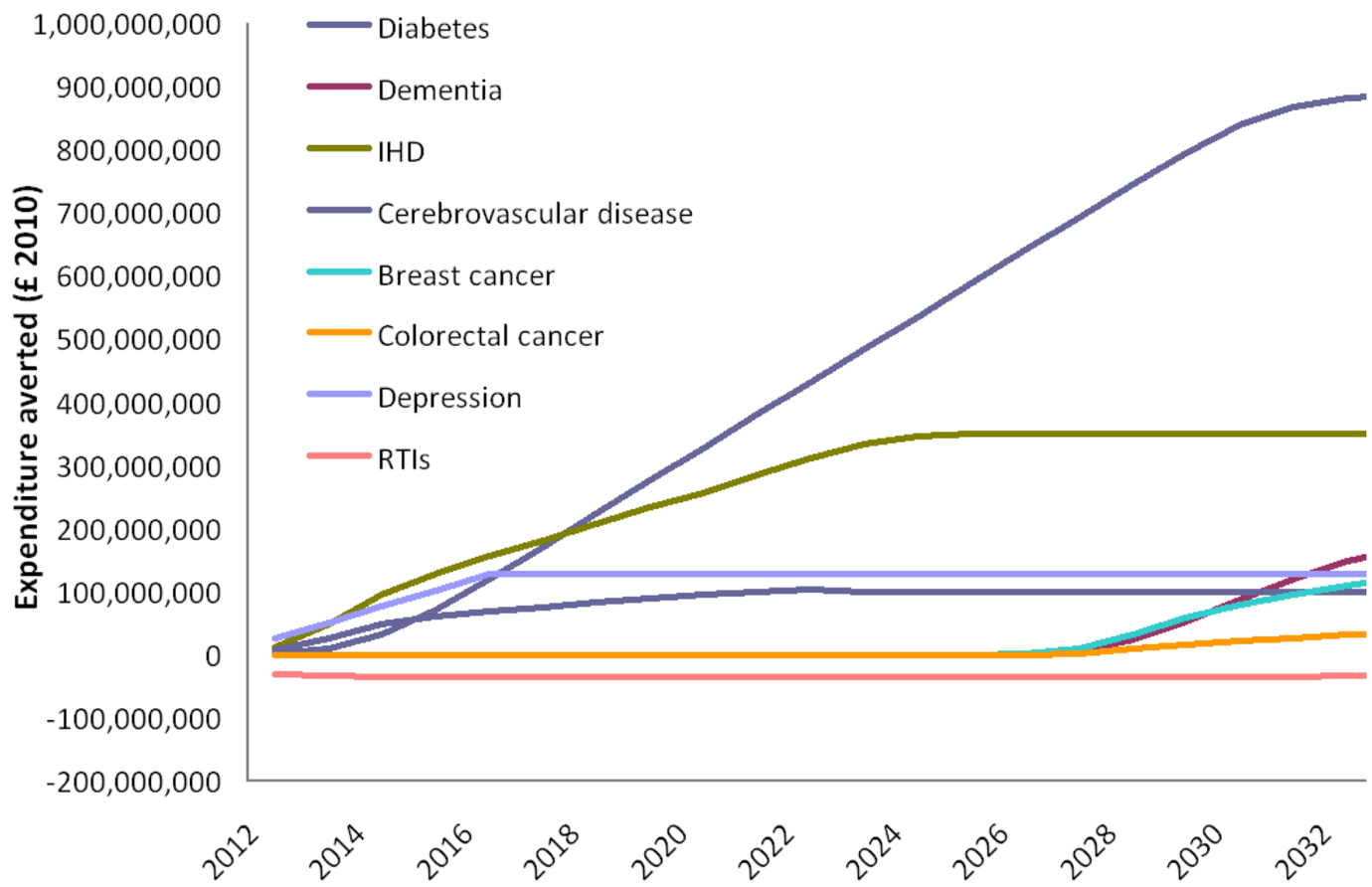
Shift in walking and cycling habits to that of Denmark

Legend	
Extreme risk	
High risk	
Medium risk	
Low risk	
No Data	

Rank	Country	Rating
1	Mexico	Extreme
2	USA	Extreme
3	Russia	Extreme
4	Egypt	Extreme
5	South Africa	Extreme

Rank	Country	Rating
6	Turkey	High
7	Brazil	High
8	United Kingdom	High
9	Argentina	High
10	Saudi Arabia	High

Maplecroft, 2013



Jarrett et al., 2012

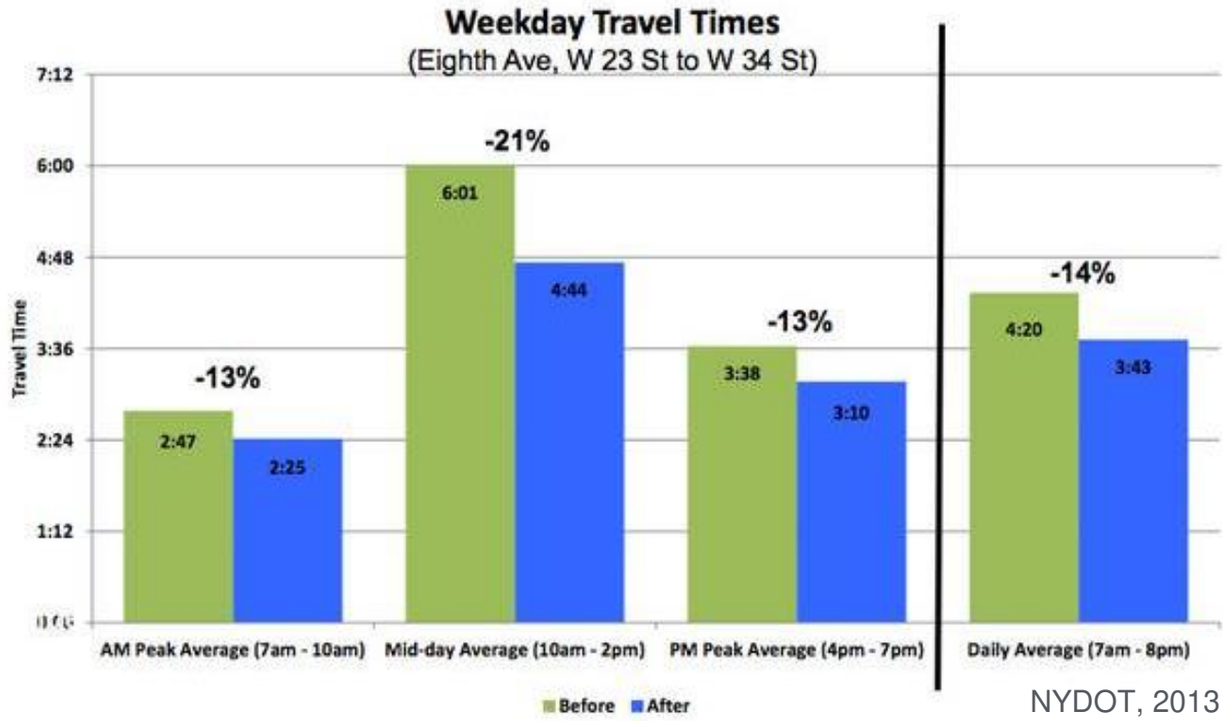
The dominant cause of death in Cape Town over the past ten years has been cardiovascular and metabolic diseases

03 ECONOMIC BENEFITS

ECONOMIC BENEFITS

Travel time savings

- Travel times on 8th Avenue improved post-implementation by an average of 14%



NYDOT, 2013

ECONOMIC BENEFITS

'Mohring' effect

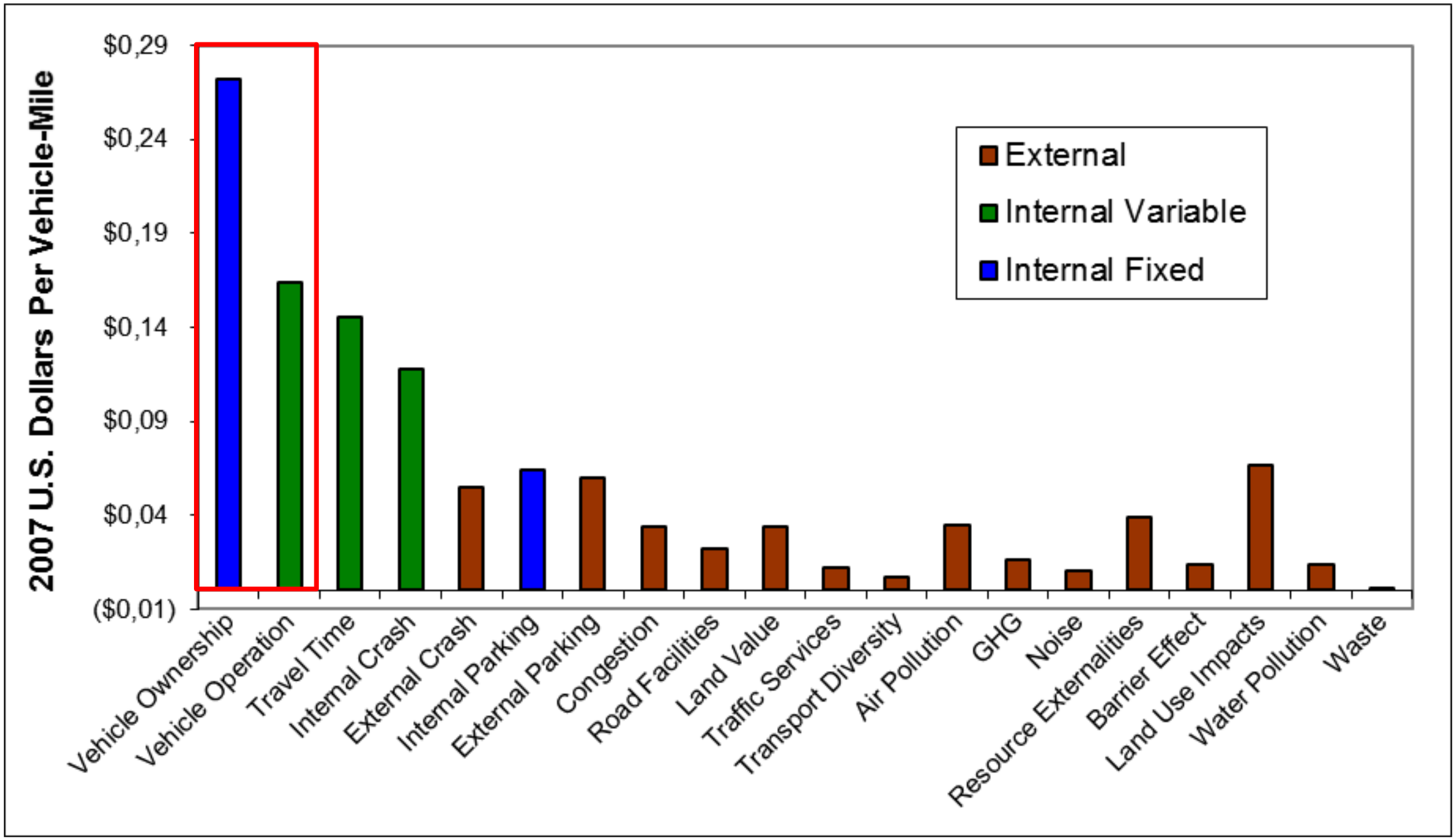
Demand = *Supply* = *Level of service*

NMT access = *Level of service*

Mohring, 1972

ECONOMIC BENEFITS

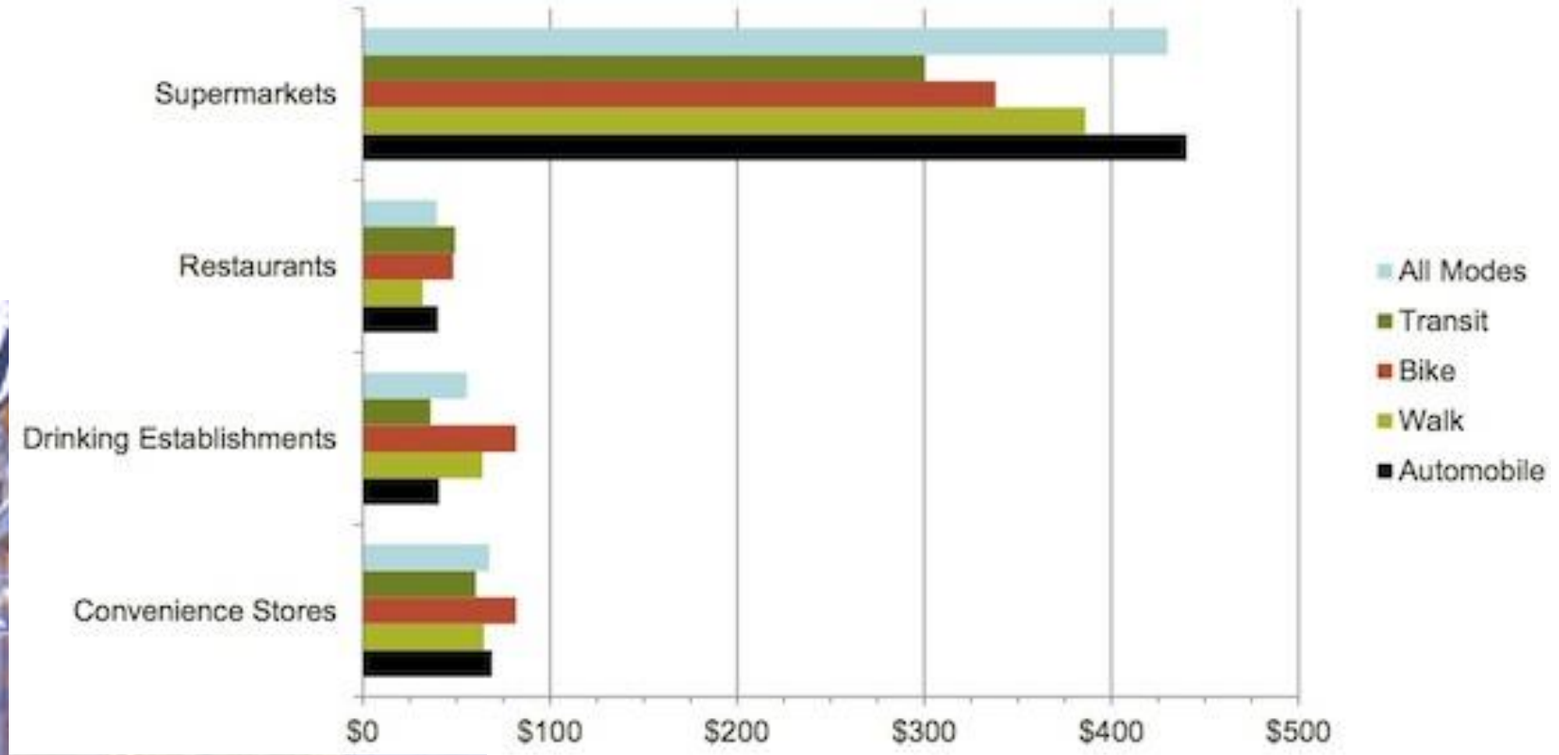
Transport cost savings



Litman, 2009

ECONOMIC BENEFITS

Purchasing habits

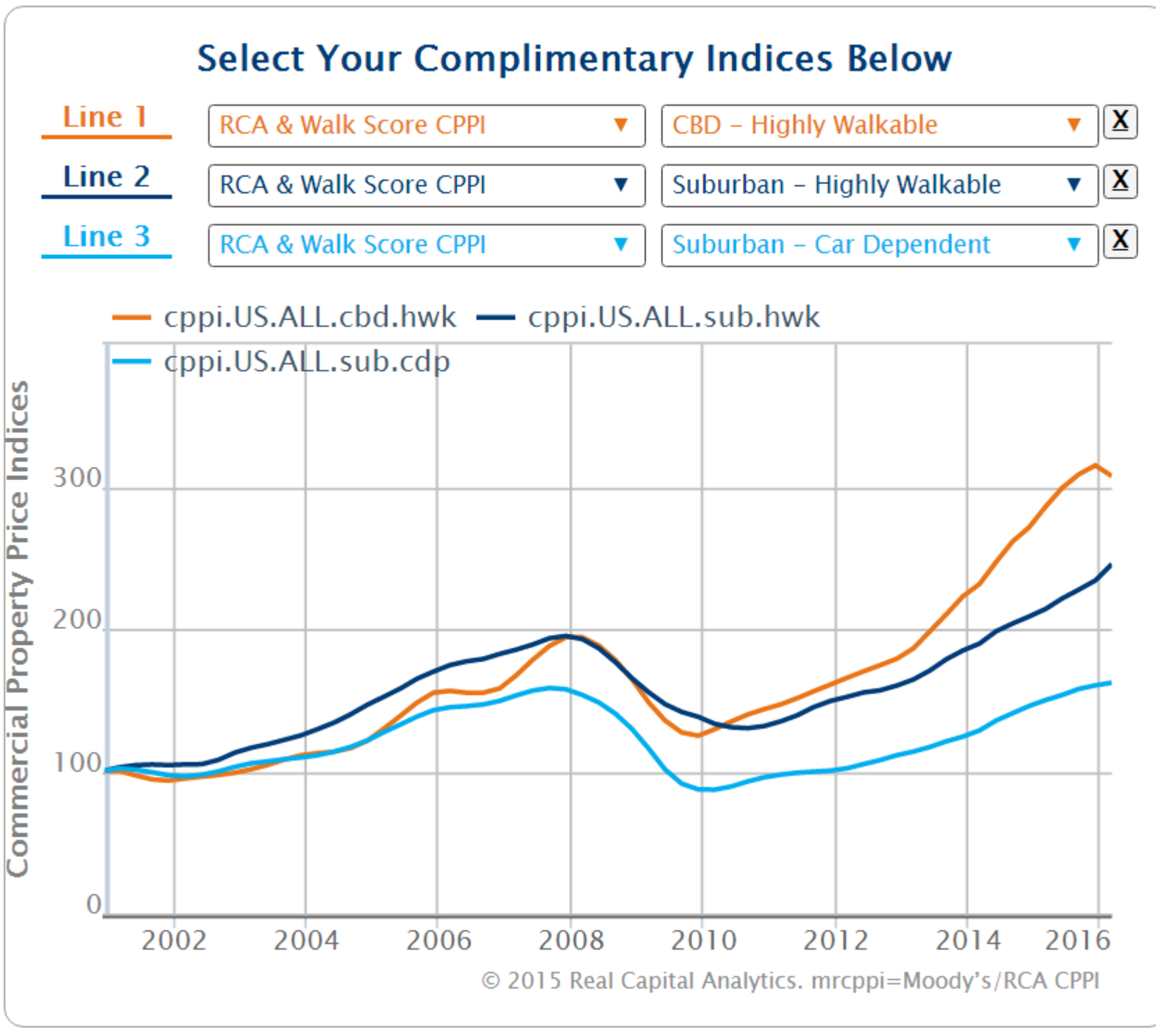


Oregon Transportation Research and Education Consortium, 2013

Intelligentspace.com

ECONOMIC BENEFITS

Land value



04 SOCIAL BENEFITS

SOCIAL BENEFITS

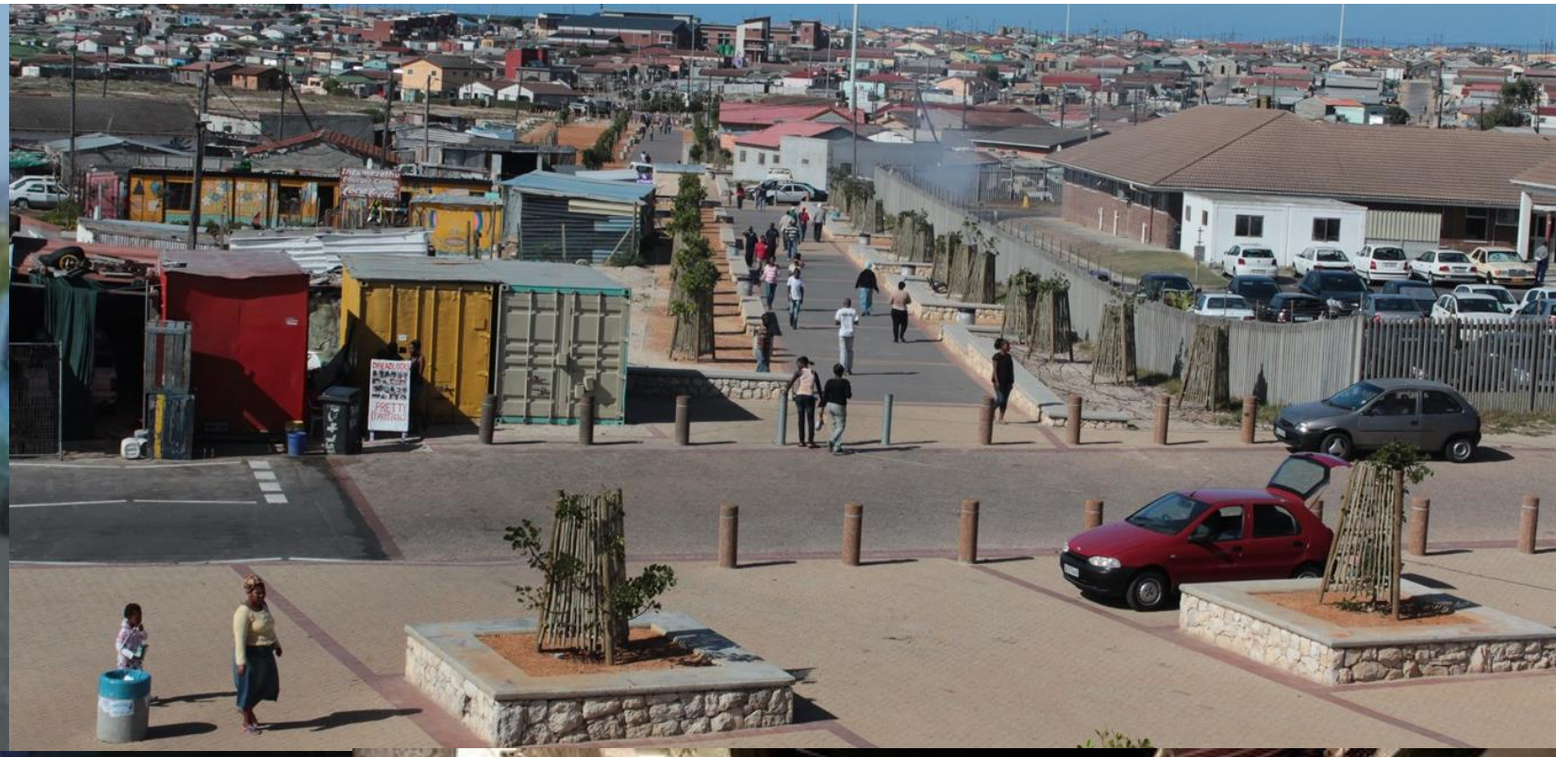
Empowerment of vulnerable groups

SOCIAL BENEFITS

Gender equality

SOCIAL BENEFITS

Security and Journey quality



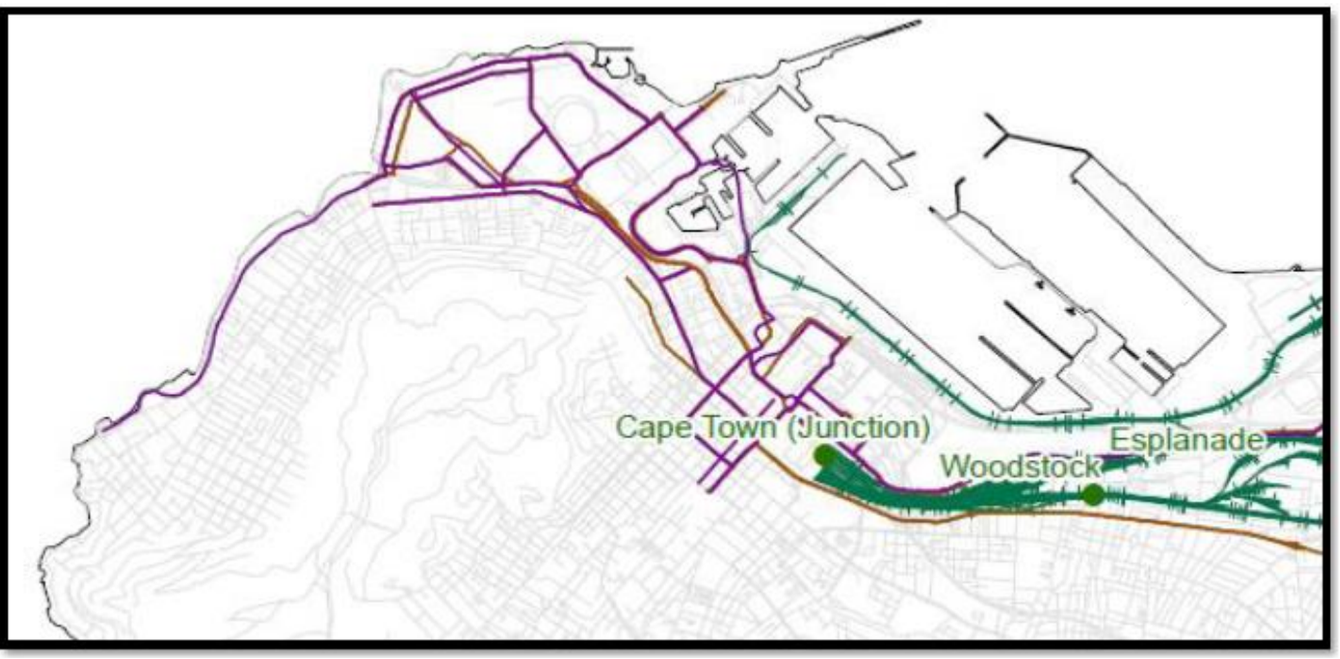
SOCIAL BENEFITS

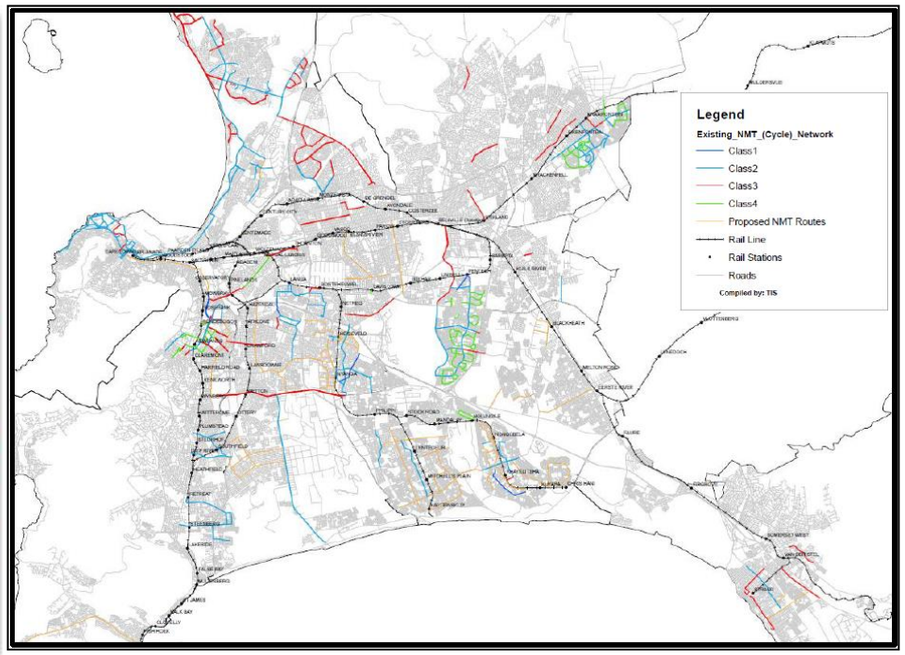
Liveability

05 BENEFIT EVALUATION

NON-MOTORISED TRANSPORT PROJECT APPRAISAL TOOL

Cape town NMT network





Modal split	Base - 2015	Business as usual - 2030	With project - 2030
Walking	2%	3%	5%
Cycling	0%	0%	3%
Bus	6%	6%	7%
BRT	1%	1%	1%
Minibus taxi	10%	7%	11%
LRT & rail	19%	16%	19%
Cars	61%	65%	51%
Motorcycles	0%	0%	1%
Taxi	1%	1%	1%
Other	0%	1%	1%

Modal split	Base - 2015	Business as usual - 2030	With project - 2030
Walking	21%	22%	25%
Cycling	0%	0%	10%
Bus	13%	10%	15%
BRT	0%	0%	1%
Minibus taxi	15%	10%	16%
LRT & rail	11%	8%	10%
Cars	37%	47%	20%
Motorcycles	1%	1%	1%
Taxi	1%	1%	1%
Other	1%	1%	1%

NON-MOTORISED TRANSPORT PROJECT APPRAISAL TOOL

Potential returns on NMT investments

Indicators		Bogota Cicloruta cycleway scheme	Nairobi metropolitan area network	Cape Town Metropolitan NMT network
Health	Physical activity	$ 1 043 615 959.76	$ 2 254 659 003.11	R 15 819 451 575
	Accidents/injuries	$ 146 826 552.46	$ 314 558 492.43	R 6 518 839 647
Economic	Time saving	$ -51 717 755.94	$ 62 904 877.83	R 212 987 676
Net Present Benefit (NPB)		$ 1 138 724 756.28	$ 2 632 122 373.38	R 22 551 278 899
Net Present Cost (NPC)		$ 118 960 438.45	$ 297 419 234.71	R 2 977 011 494
Net Present Value (NPV)		$ 1 019 764 317.83	$ 2 334 703 138.66	R 19 574 267 405
Holistic BCR		9.57	8.85	7.58
Conventional BCR		-0.43	0.21	0.07