

Advancing Obesity Solutions through Investments in the Built Environment

Roundtable on Obesity
Solutions
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21st century global health challenges

- » Chronic disease
- » Depression
- » Road traffic injuries
- » Air pollution
- » Chronic noise
- » Social isolation
- » Personal safety
and fear of crime
- » Health inequities



Global recognition of the role of city planning



United Nations
Sustainable
Development
Goals



UNITED NATIONS

TRANSFORMING OUR WORLD:



THE 2030 AGENDA FOR
SUSTAINABLE DEVELOPMENT

Urban design, transport and health:
6 goals and 14 targets



Lancet series moving from 'what' to 'how'?

✓
Eight integrated planning
and transport interventions

Urban & transport planning
& design interventions

Regional Planning

Destination accessibility

Distribution of employment

Demand management

Local urban design

Design

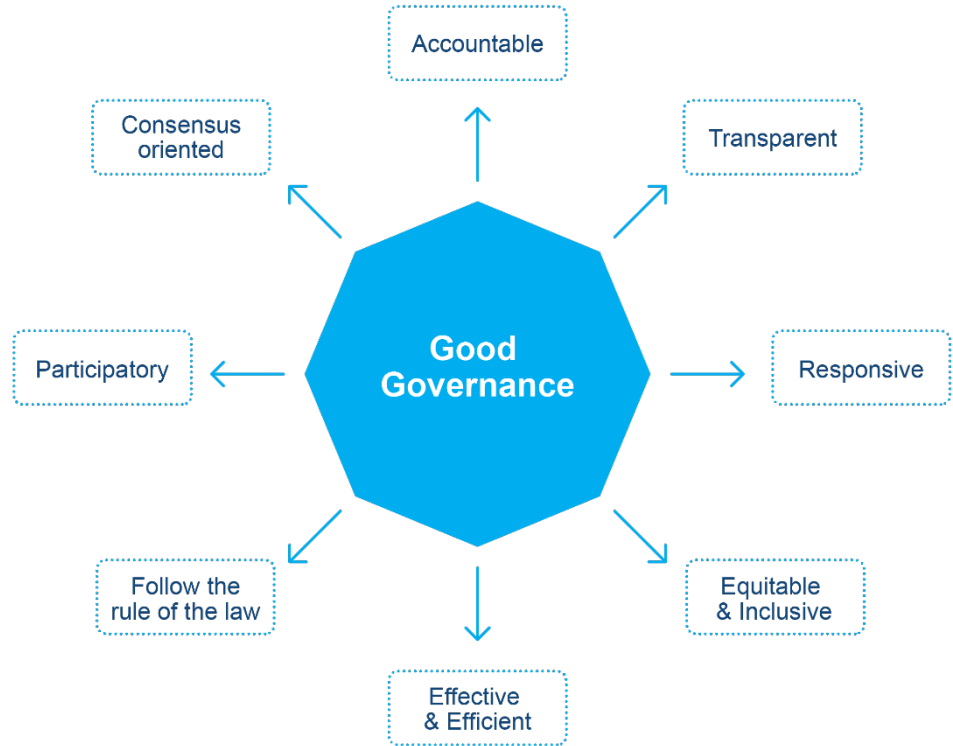
Density

Distance to transit

Diversity

Desirability

Integrated city governance



Eight integrated urban systems policies



Transport



Employment & economic development



Social & health services



Education



Land use & urban design



Housing



Public open space & recreation



Public safety

Urban system policies

Transport

Social & health services

Education

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Land use & urban design

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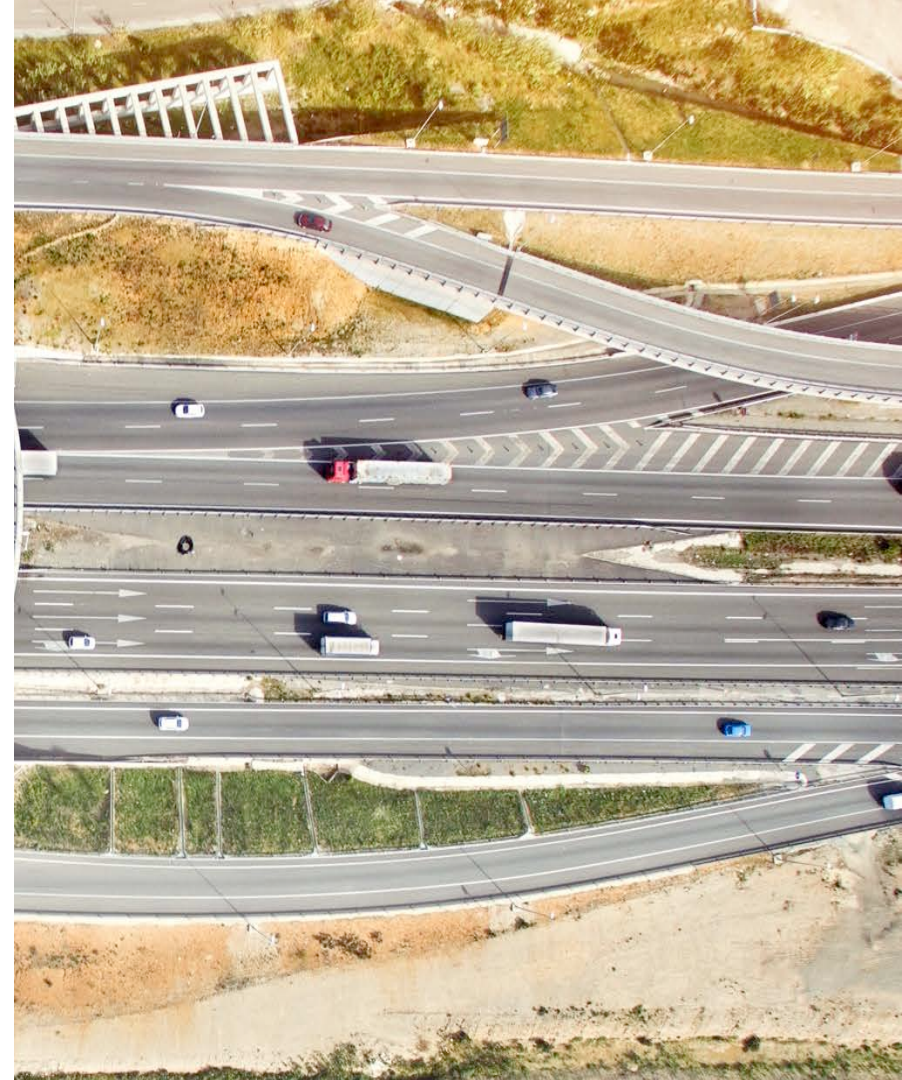
Design

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Urban system policies

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Design

Density

Distance to transit

Diversity

Desirability

Transport mode & daily living outcomes

Transport mode outcomes

Private motor vehicle

Public transport

Cycling

Walking / Cycling

Demand

Attitudes & preferences

Social & cultural norms

Mobility needs

Daily living outcomes

Employment & education access

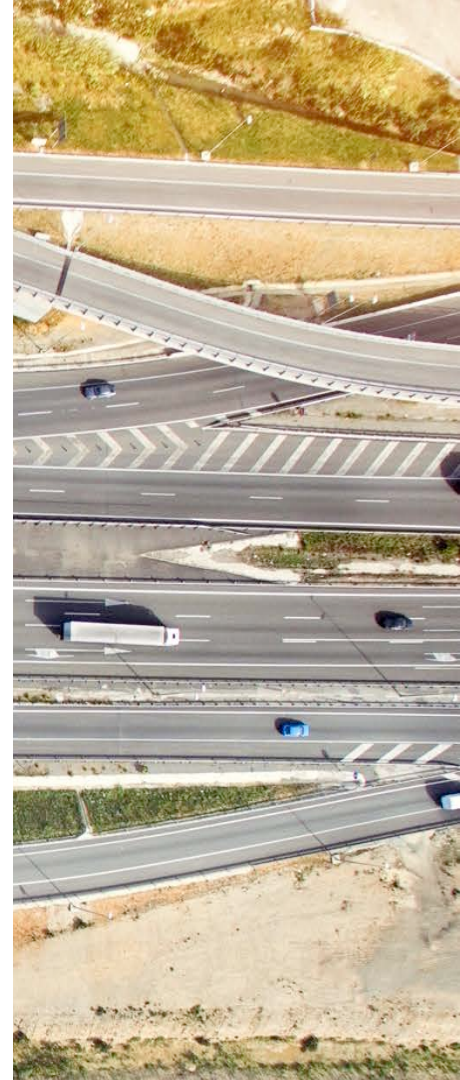
Food & health service access

Social & recreational access

Demographics

Age

Gender



Eight risk exposures

Environmental

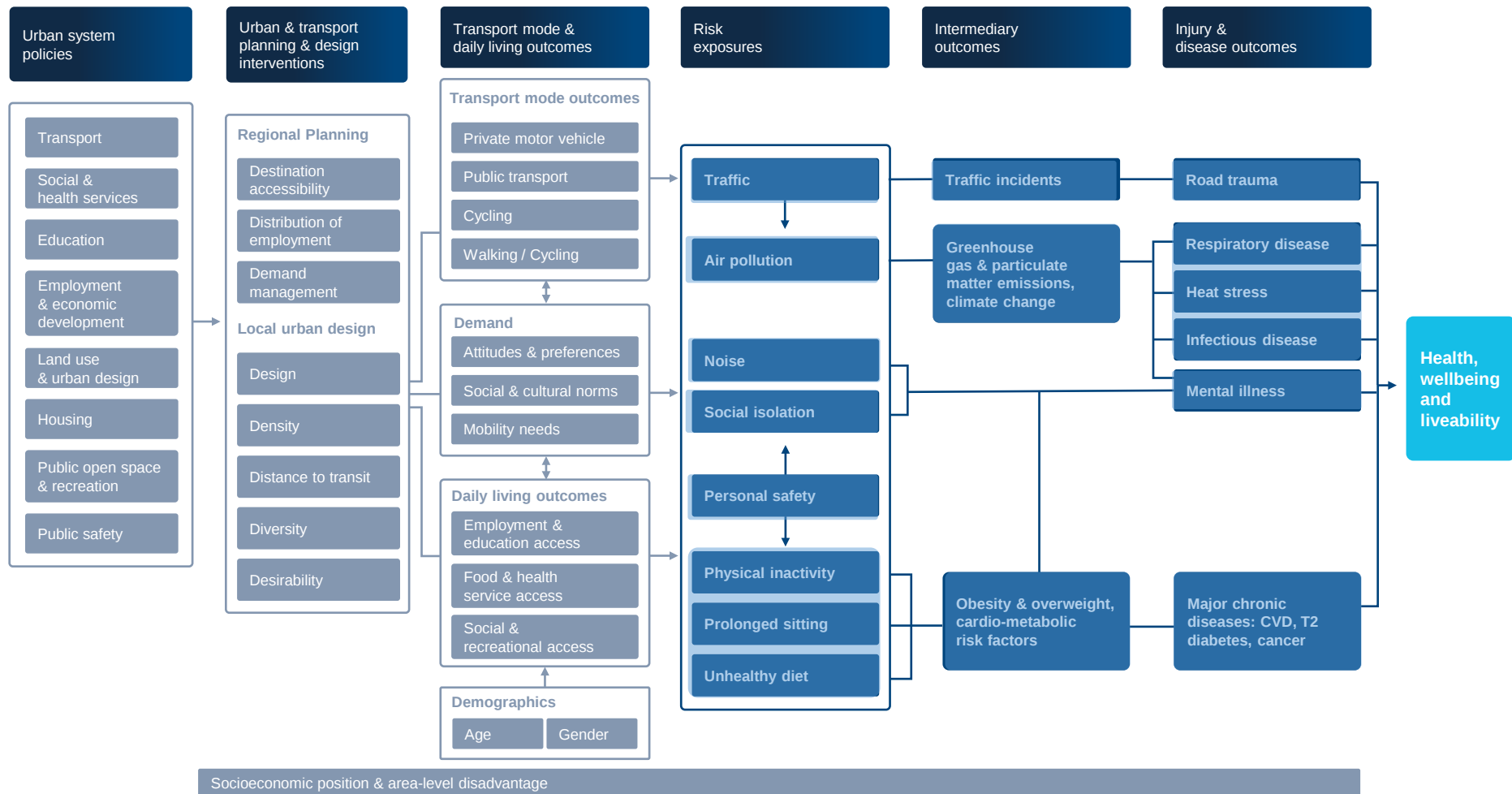


Social



Behavioural

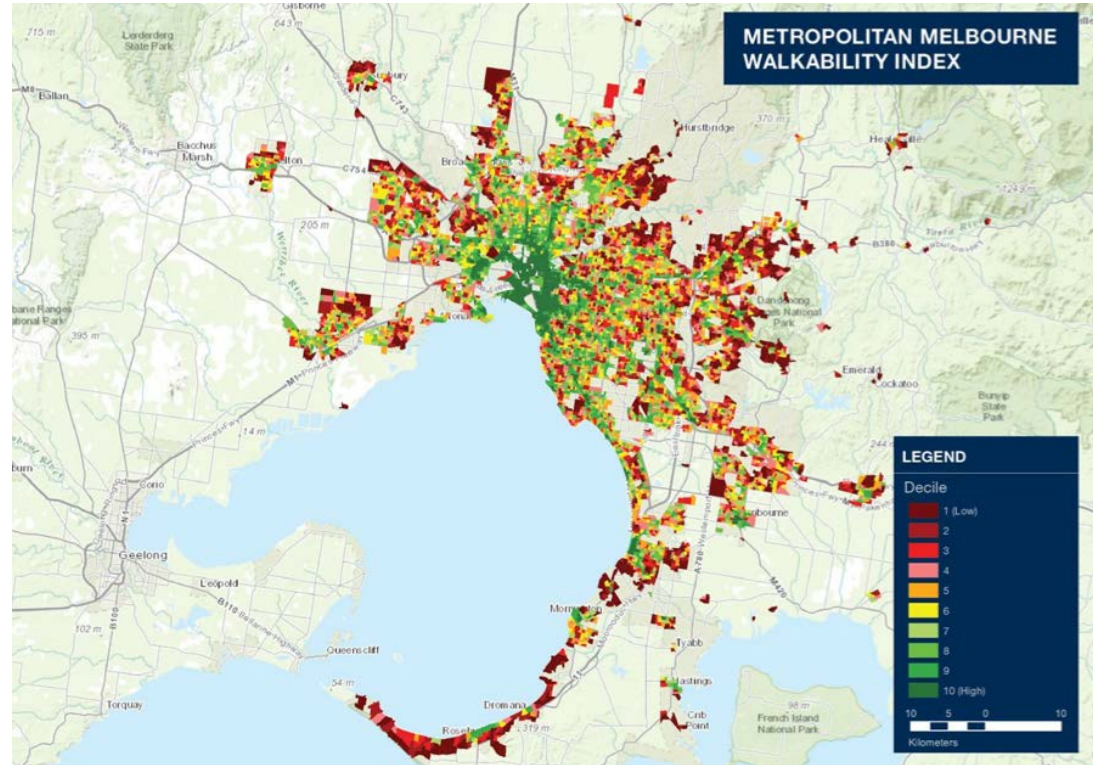




What gets
measured,
gets done



Creation of City
Planning Indicators

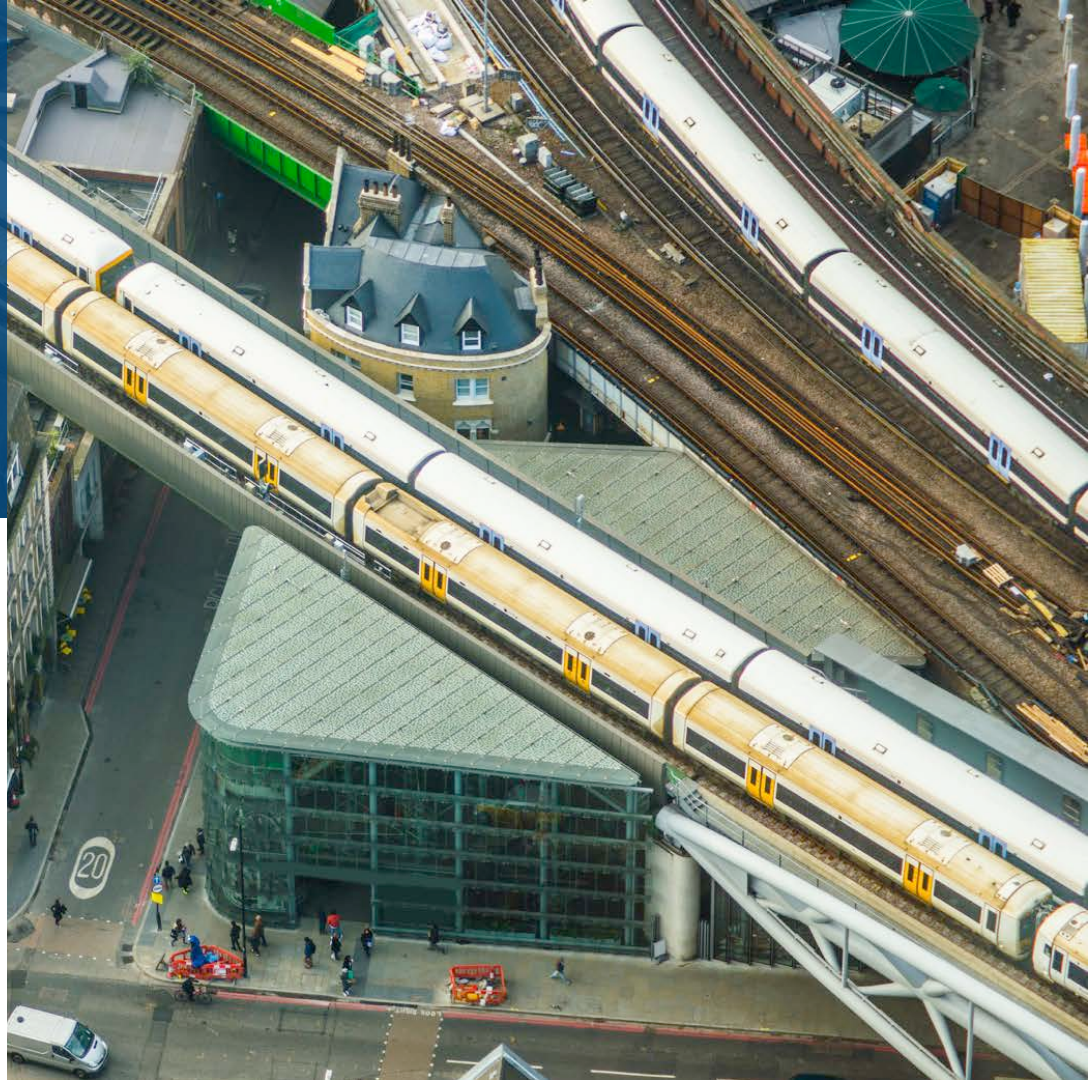


City indicators to monitor policies, interventions & outcomes



Indicators

- » Legislation and policies
- » Government transport investment
- » Urban and transport planning and design interventions
- » Transport outcomes
- » Risk exposure outcomes



To achieve SDGs



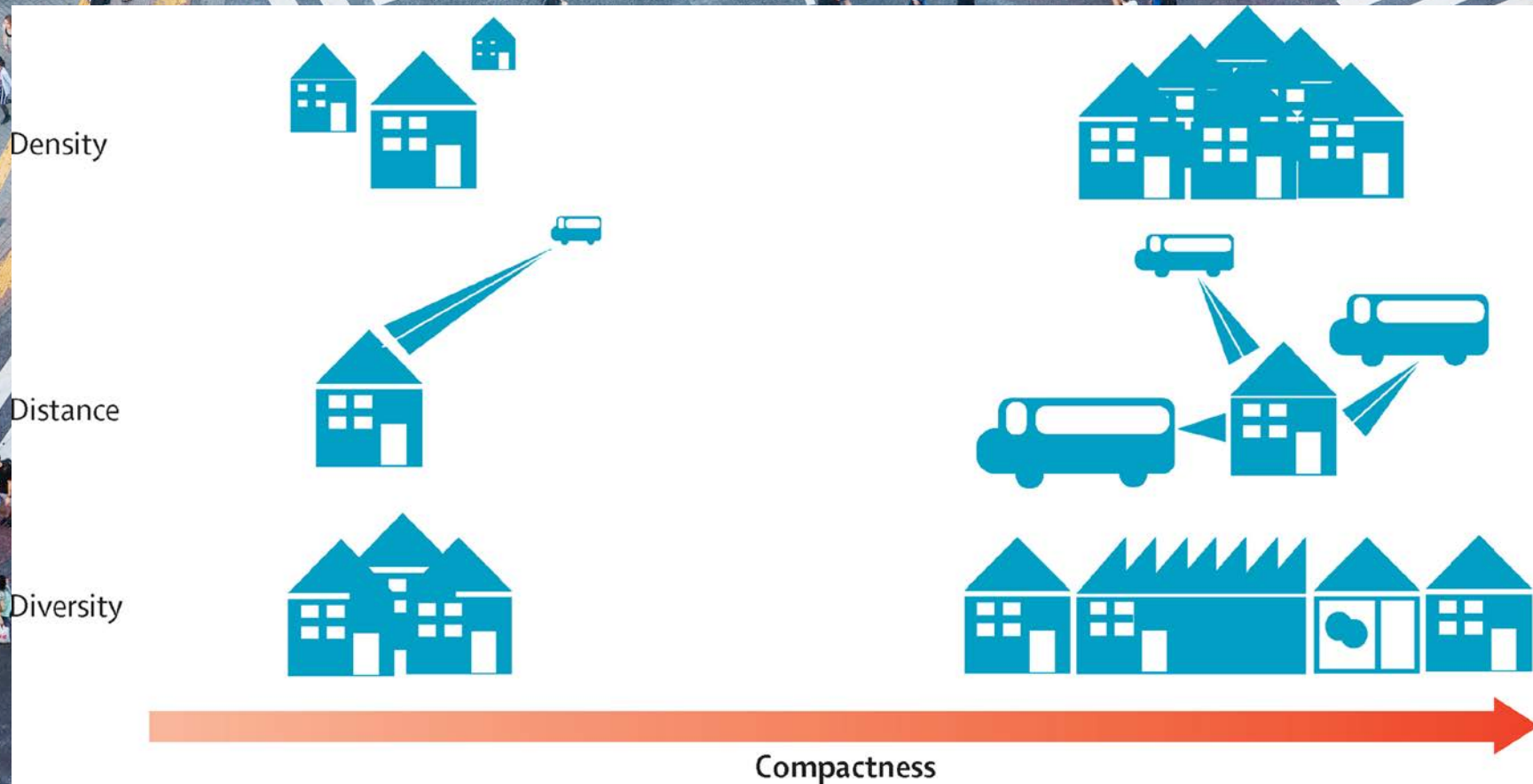
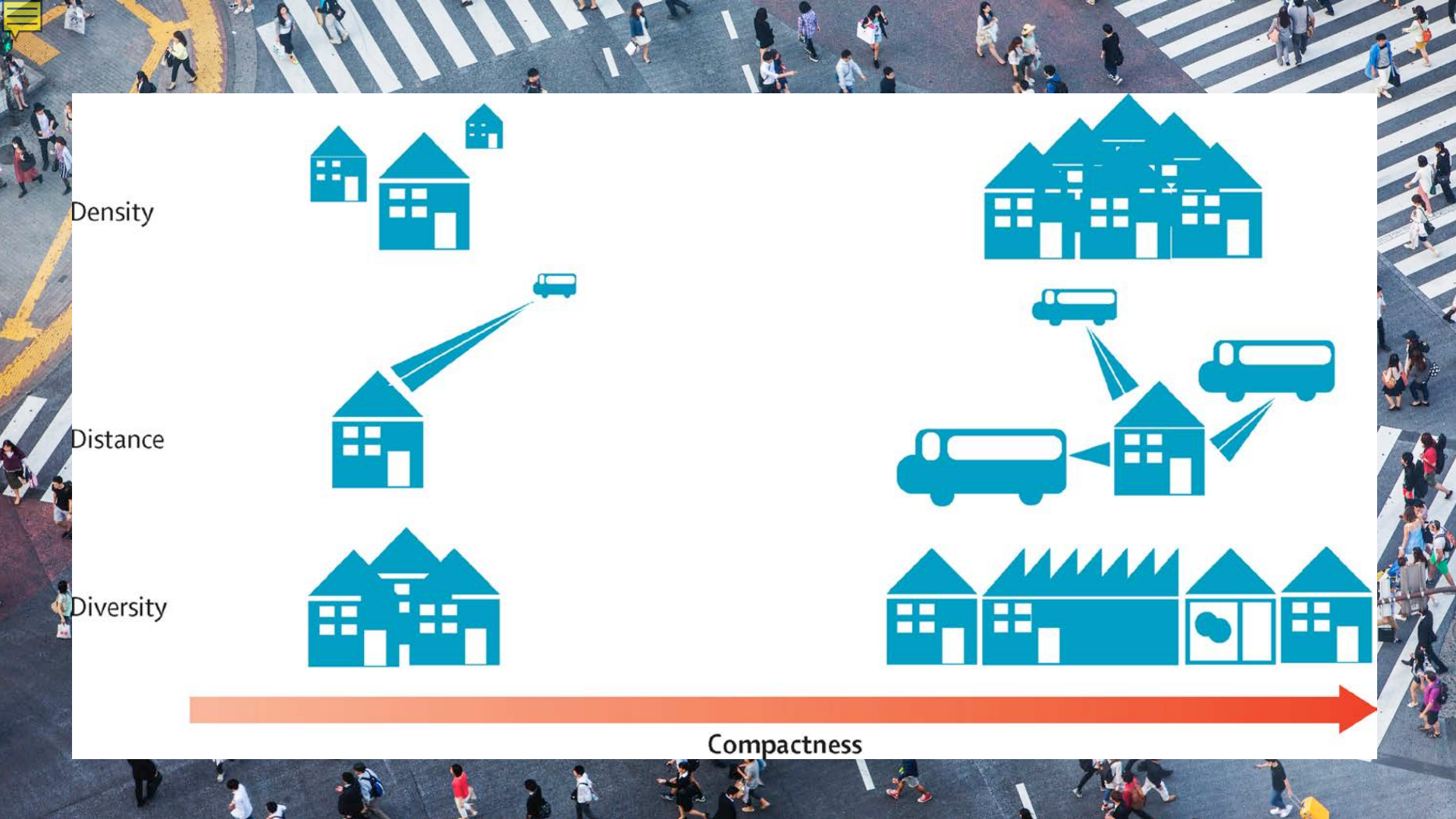
8 integrated urban policies needed to create

8 integrated urban and transport planning interventions to impact

8 city-related risk exposures

What might be the health impact?



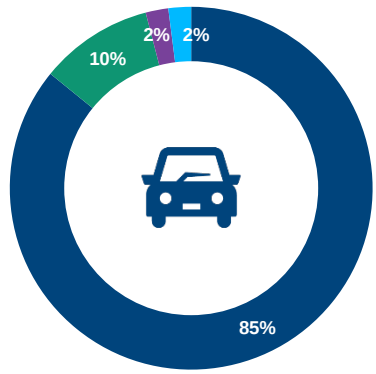


Comparison of Cities

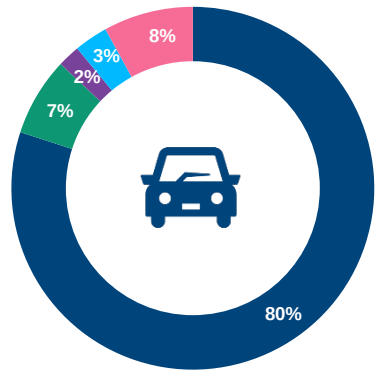
Transport mode

- Vehicle driver or passenger
- Tram or subway
- Bus
- Walking or cycling
- Other

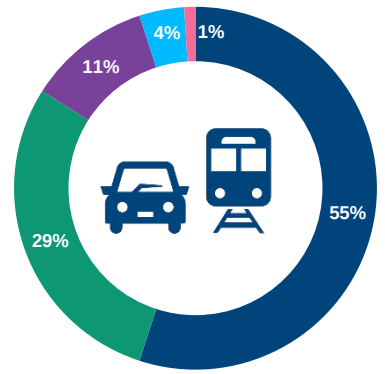
Melbourne



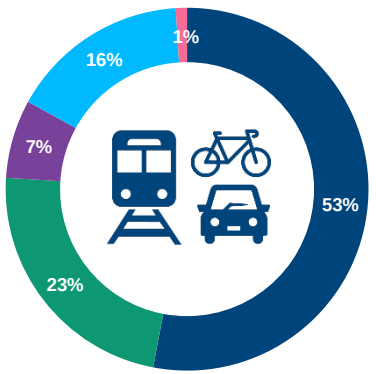
Boston



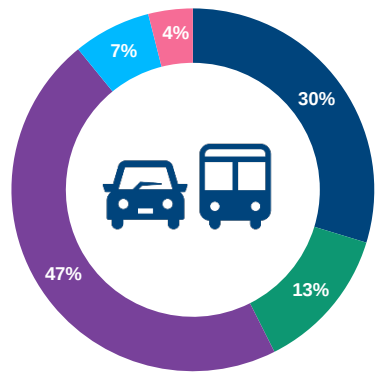
London



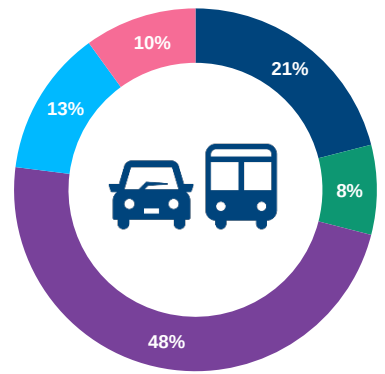
Copenhagen



Sao Paulo



Delhi

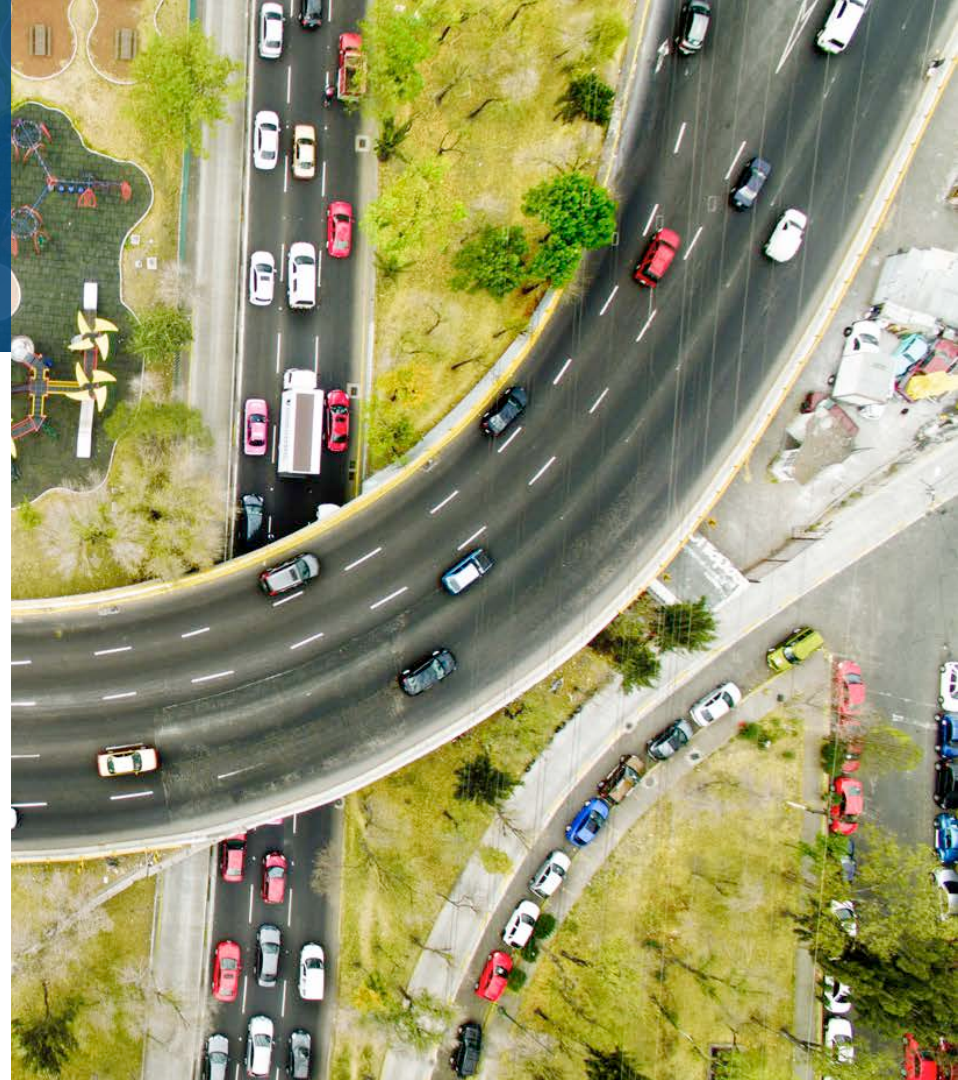


Comparison of Cities

Health burden due to land-use
and transport mode choice

Population Health Outcomes (DALY's lost per 100,000 population)	Melbourne	Sao Paulo	Delhi
Cardiovascular Disease	3277	4961	13770
T2 Diabetes	606	1116	2996
Respiratory Disease	1642	1623	3927
Road Trauma	536	1447	2892

Population Health Outcomes (DALY's lost per 100,000 population)	London	Boston	Copenhagen
Cardiovascular Disease	4579	5092	4315
T2 Diabetes	368	868	976
Respiratory Disease	2191	2126	2268
Road Trauma	411	635	454





Opportunity for cities to enhance population health



Compact city scenario

» What's a compact city?

» The modelled compact city scenario – 30% increase in land-use density, diversity and reduced average distance to public transport by 30%

» Modelled *sustainable transport policies*

- a 10% modal shift away from private motor vehicle VKT's to cycling and walking

Land use



Density



Distance



Diversity

Transport modes



Risk exposures



Health & wellbeing



Comparison of Cities

Health gain produced by
the compact city scenario

Population Health Outcomes (DALY's gained per 100,000 population)	Melbourne	Boston	London	Copenhagen	Delhi	Sao Paulo
Cardiovascular Disease	622	765	582	337	565	363
Type 2 Diabetes	86	94	27	53	28	55
Respiratory Disease	2	3	8	2	22	3
Road Trauma	-34	-34	-41	-1	2	-4
Total	679	826	581	393	620	420



Complex relationship between land-use, transport and population health



- » Policies need to target the health of growing city populations
- » Infrastructure investment for active travel
- » Focus on new urban mobility





Priority action for
developing or creating
livable cities and
communities?

Design
Parks and recreation
Planning
Public Health
Transportation



Cities are creating
healthier & more
sustainable environments



They use research
in different ways

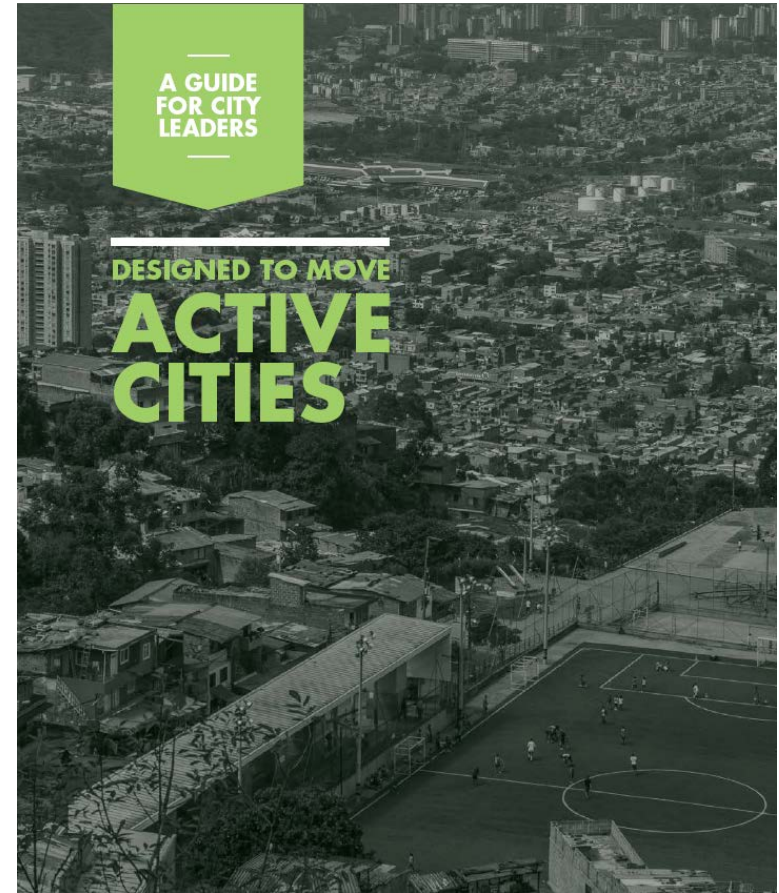


Making the Case for Active Cities

The Co-Benefits of Designing for Active Living

Active Cities

- A follow-up to Nike's "Designed to Move" report
- Focused on how cities can be designed to help people reintegrate physical activity into daily life
- Physical activity is likely not a priority for decision makers such as mayors who have to address many topics
- Making the Case findings serve as 1st chapter



Settings



- These settings must be considered in the design of Active Cities
- What are the key modifiable features of these settings that have evidence of association with physical activity?
- A short list of features was identified for each setting, and co-benefits of those features were searched

Outcome / Co-Benefit	Description
Physical health	Chronic diseases, obesity
Mental health	Depression, anxiety, other disorders
Social benefits	Neighborhood/social cohesion, human capital
Environmental benefits	Carbon dioxide emission, pollutants
Injury prevention	Crime, violence, car crashes
Economic benefits	Land value, governmental infrastructure costs, real estate profitability, productivity/job performance, health care costs, economic performance of cities
Other	Automobile congestion, findings related to disparities, polls showing public support or opposition to an environmental feature

Open spaces / Parks / Trails summary scores

Table 8: Open Spaces / Parks / Trails Summary Scores						
Built Environment Attribute	Physical Health	Mental Health	Social Benefits	Environmental Sustainability	Safety / Injury Prevention	Economic Benefits
Presence, proximity	54+ 3.5(o)	88.5+	26.5+ 4(o)	16+ 4(o)	11+	7.5+ 4(o)
Design features	3.5+		7.5+			
Trails						11.5+
Physical activity programs/ promotion		4.5+	4+	4+	4+	
Incivilities					3.5+	
Public gardens			4.5+		4.5+	

69 entries. Of 36 cells, 3 had strong evidence of co-benefits, 3 had good evidence, and 7 had moderate evidence

Urban design / Land use summary scores

Table 9: Urban Design / Land Use Summary Scores						
Built Environment Attribute	Physical Health	Mental Health	Social Benefits	Environmental Sustainability	Safety / Injury Prevention	Economic Benefits
Residential density	19+ 21.5(o) 7.5-		13.5+ 14.5(o)	88+ 21(o) 3.5-	4.5(o) 7.5-	15+ 3.5(o)
Mixed land use	28+ 17(o) 4-	4.5+ 4-	33+ 11(o)	95+ 21(o)	4.5(o) 11-	22.5+ 3.5(o) 4-
Streetscale pedestrian design	7.5+		7.5+	7.5+		7+
Greenery	20.5+ 3.5(o)	26.5+	12+	39.5+		12+
Accessibility & Street connectivity	30+ 12(o) 7.5-		14.5+ 3.5(o)	35.5+ 3.5(o)	4.5(o)	12.5+ 3.5(o)

202 entries. Of 30 cells, 8 had strong evidence of co-benefits, 5 had good evidence, and 6 had moderate evidence of positive effects. 5 cells with negative effects.

Transportation systems summary scores

Table 10: Transportation Systems Summary Scores						
Built Environment Attribute	Physical Health	Mental Health	Social Benefits	Environmental Sustainability	Safety / Injury Prevention	Economic Benefits
Pedestrian / Bicycle facilities		3+	7+	10.5+ 3.5(o)	27.5+ 4(o)	22.5+ 3.5(o)
Crosswalk markings					6(o) 4-	
Traffic calming	3.5+	3.5(o)	3+	3+ 3-	23+	3+
Public Transportation	3.5-			28.5+ 17.5(o)		20+ 4-
Traffic speed/ Volume	3.5+		3+	14+	7+	7+
Safe routes to school			3+	3.5+	9.5+ 4(o)	
Ciclovia / Play streets			7+			3.5+
Managed parking				10.5+		

81 entries. Of 48 cells, 5 had strong evidence of co-benefits, 2 had good evidence, and 6 had moderate evidence of positive effects. 1 cells with negative effects.

Schools summary scores

Table 11: Schools Summary Scores

Built Environment Attribute	Physical Health	Mental Health	Social Benefits	Environmental Sustainability	Safety / Injury Prevention	Economic Benefits
School siting	3.5+	4.5+		21.5+	3-	4+
Recreation facilities	16+ 3.5(0)	16.5+	3.5+			3.5+
Shared use agreements			7.5+		4+	7.5+

27 entries. Of 18 cells, 2 had strong evidence of co-benefits, 1 had good evidence, and 5 had moderate evidence of positive effects.

Summary table by sector – Summing across features

Table 13: Quantitative Estimates of Co-Benefits by Setting						
Built Environment Attribute	Physical Health	Mental Health	Social Benefits	Environmental Sustainability	Safety / Injury Prevention	Economic Benefits
Open spaces / Parks / Trails	57.5+ 3.5(o)	93+	42.5+ 4(o)	20+ 4(o)	23+	19+ 4(o)
Urban design / Land use	105+ 54(o) 19-	31+ 4-	80.5+ 29(o)	265.5+ 45.5(o) 3.5-	13.5(o) 18.5-	69+ 10.5(o) 4-
Transportation systems	7+ 3.5-	3+ 3.5(o)	23+	70+ 21(o) 3-	67+ 14(o) 4-	56+ 3.5(o) 4-
Schools	19.5+ 3.5(o)	21+	11+	21.5+	4+ 3-	15+
Workplaces / Buildings	55+ 3.5(o)	18.5+ 4-		20.5+		48+ 3.5(o)

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