Quantifying the potential of active transport for health

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Burden of Disease Epidemiology, Equity and Cost-Effectiveness Programme

Background

- High car dependency
- Low physical activity
- High transport-related GHG emissions
- Reducing car use and increasing active transport shown to improve health from city-level to internationally

Modelling health impacts

- Common metric:

  Quality Adjusted Life Year (QALY)

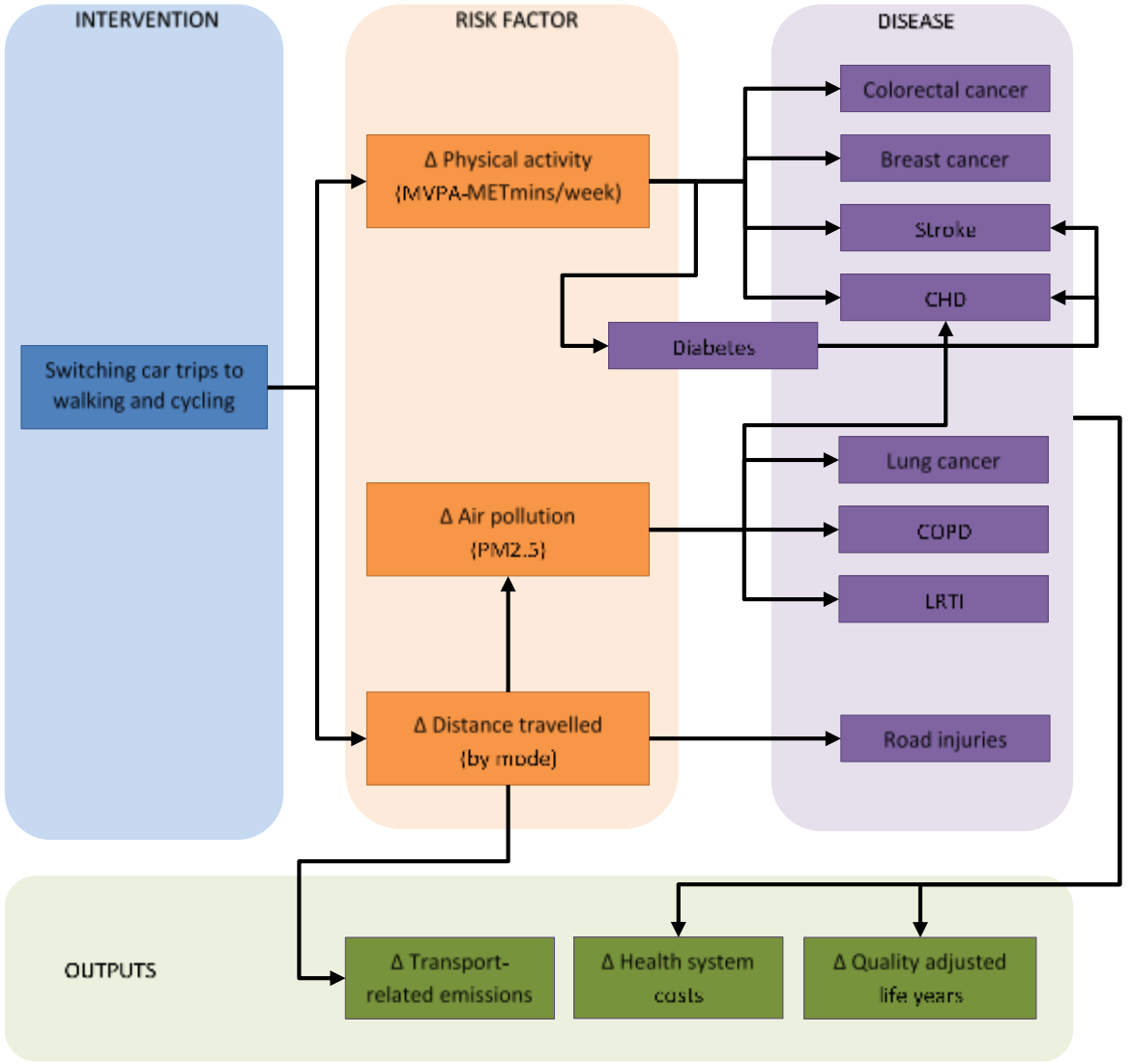
- Longitudinal

- Necessity of comparison

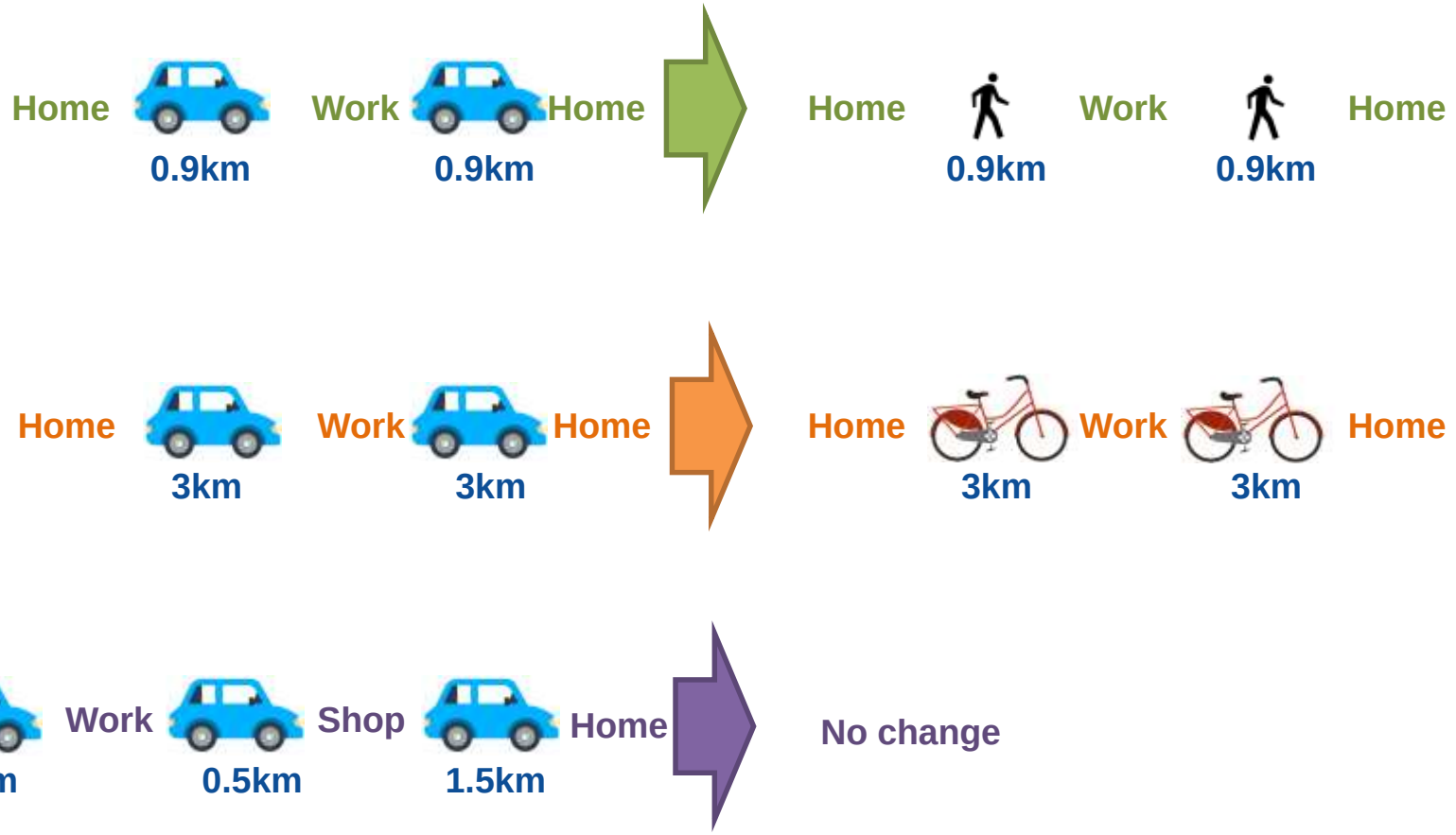
Aims

- To estimate the health impact (in QALYs) of switching short trips to walking and cycling
- To estimate health system costs associated with modelled changes in transport patterns
- To estimate change in transport-related carbon emissions associated with changes in transport patterns

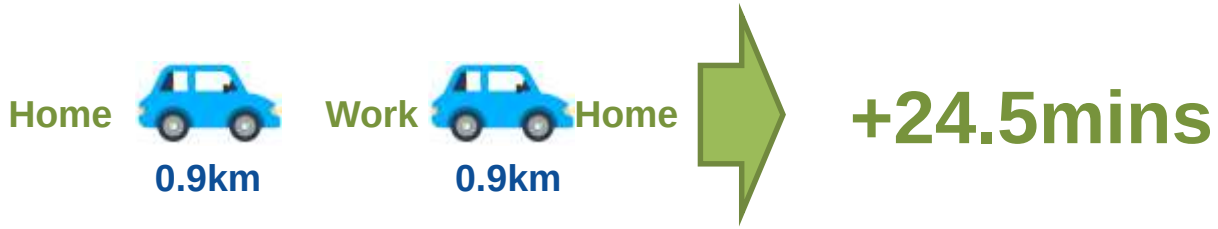
Model Structure



‘There-and-back’



Physical activity increases

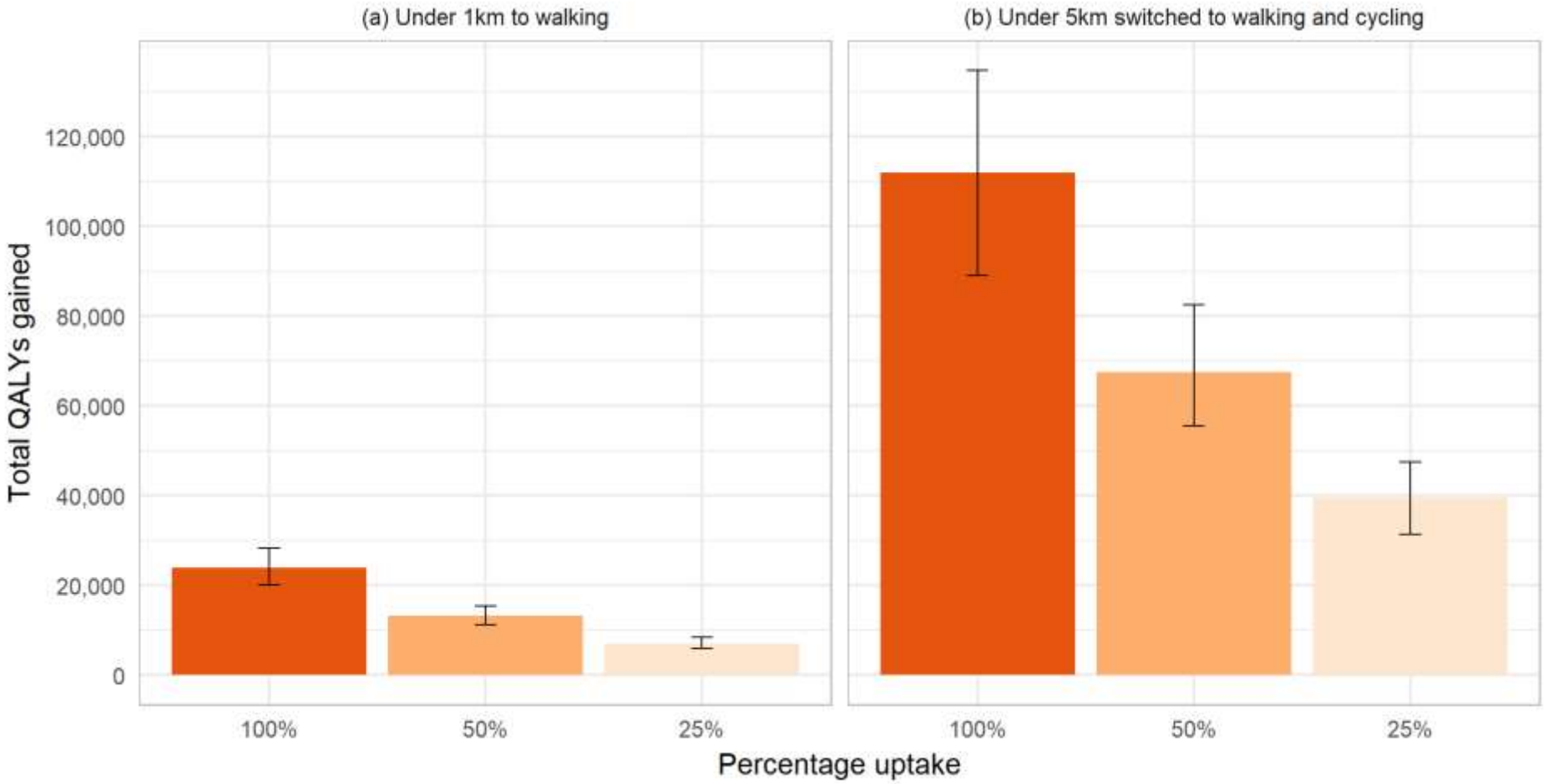


Proportion of trips by mode

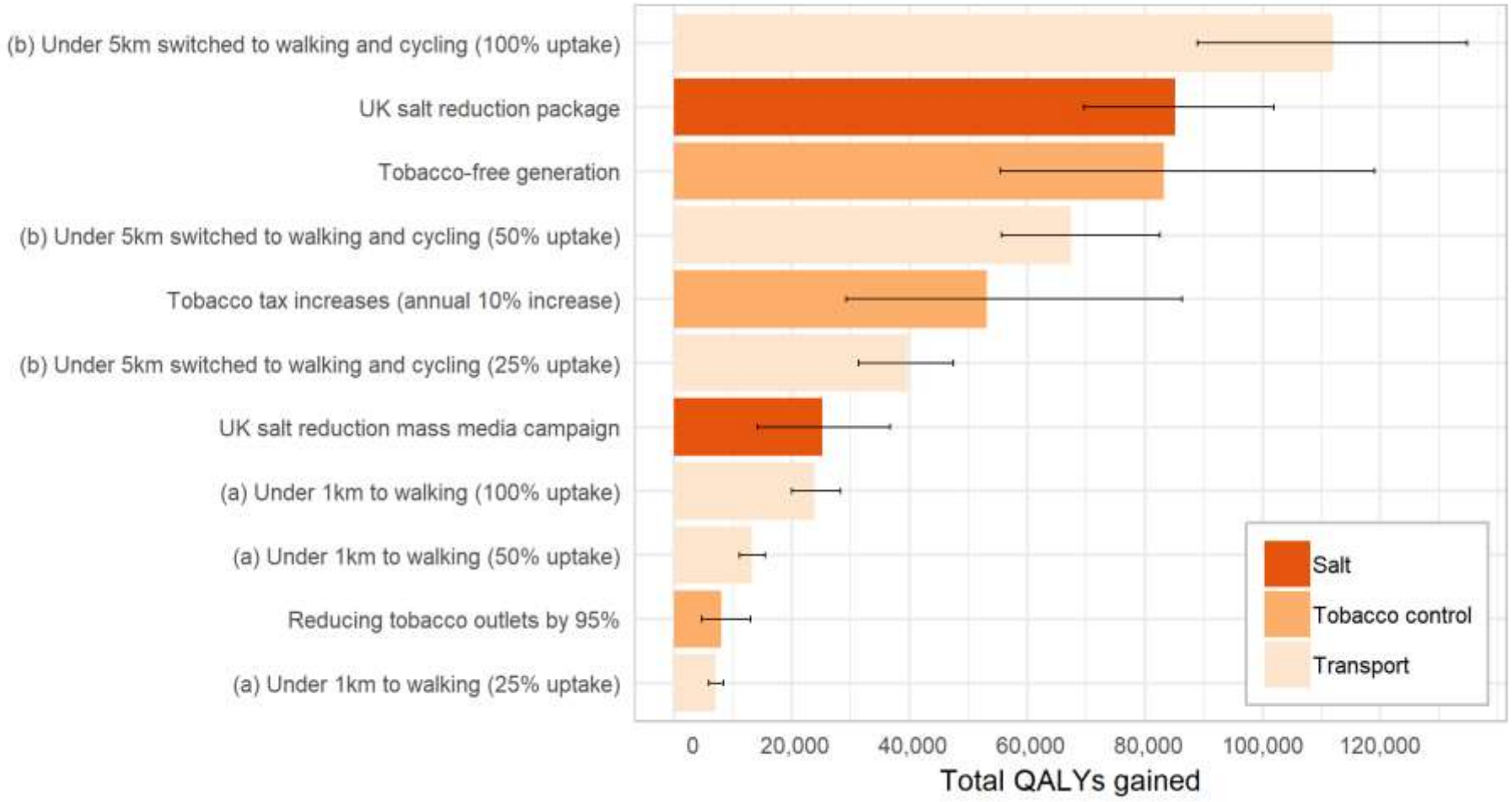
	Baseline	Walking scenario*	Walking and cycling scenario*
Pedestrian	16	19	19
Cyclist	1	1	16
Motorbike	1	1	1
Motor vehicle	82	79	64

***100% uptake**

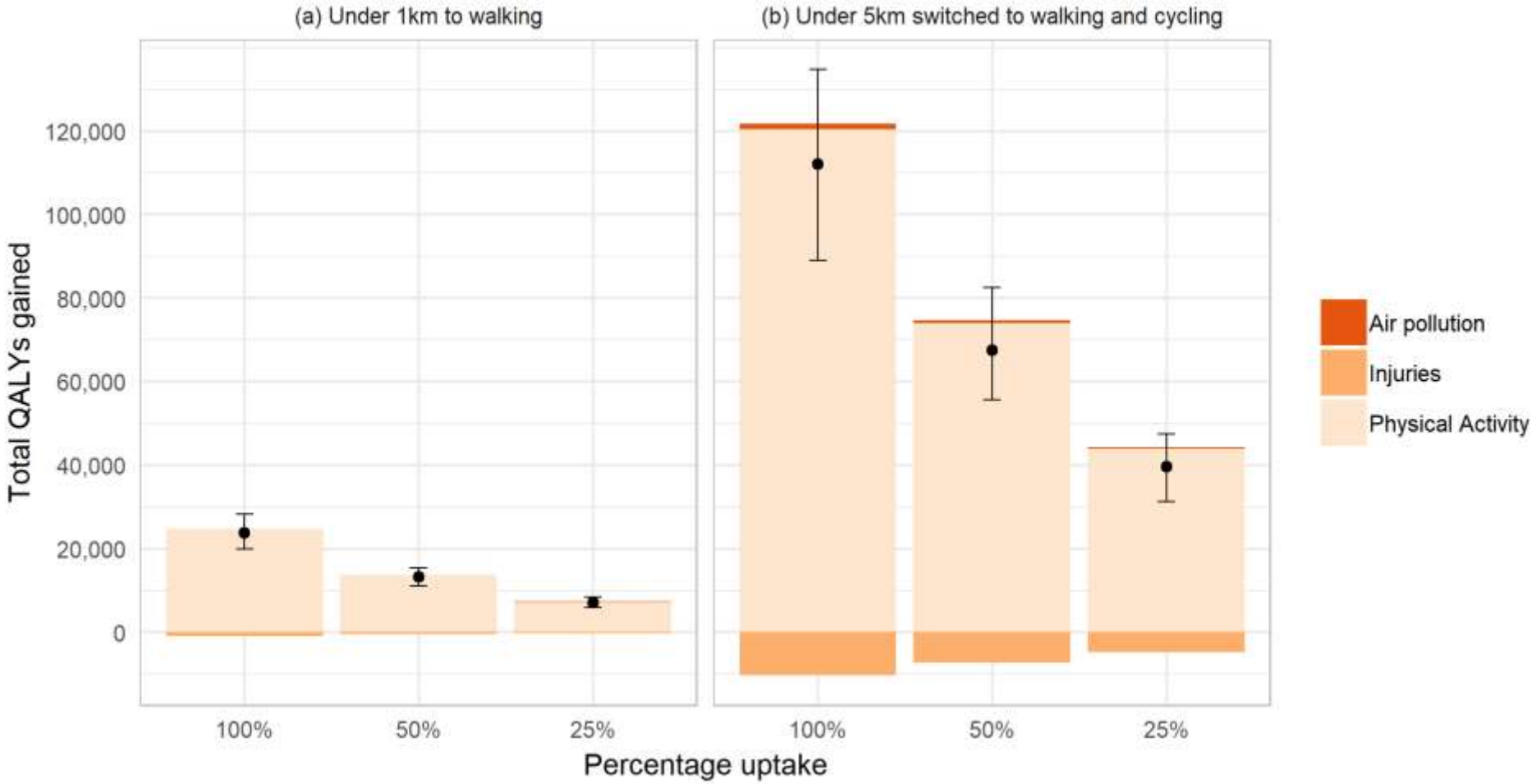
Health impact



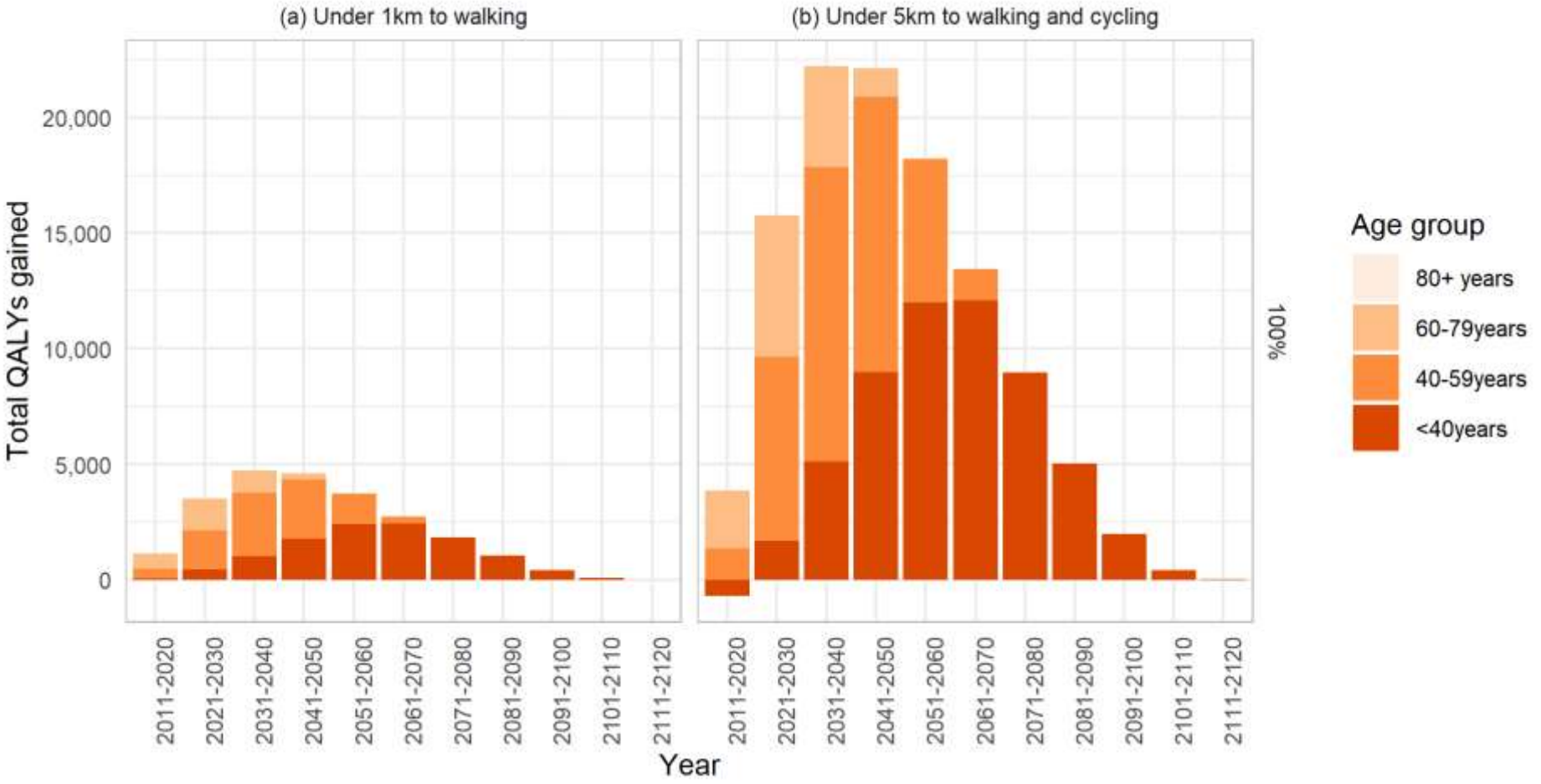
Comparison of health gains



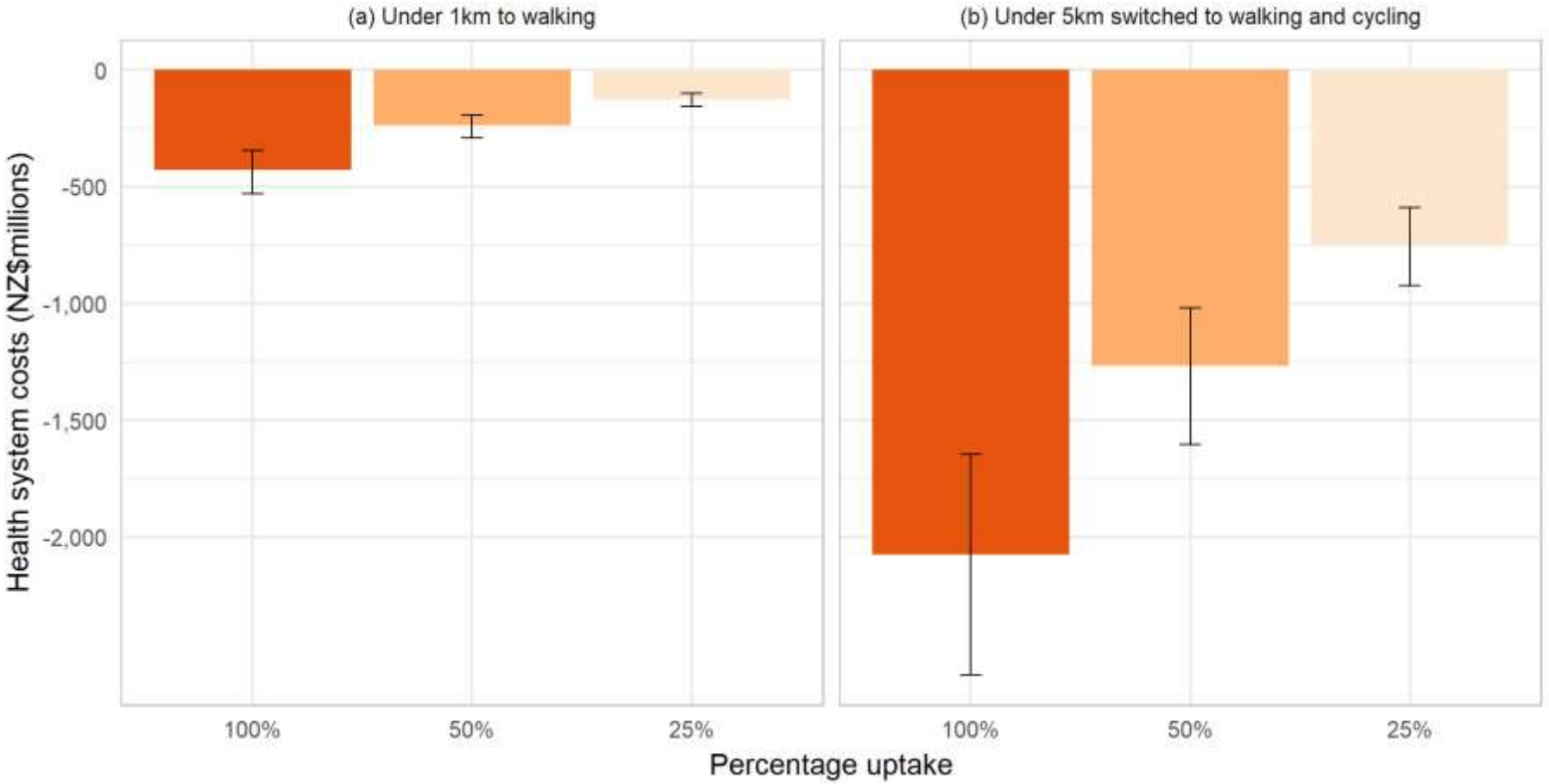
Risk factor contribution



Timing of health gains



Health system cost savings



Emissions impacts

		Change in emissions ($kgCO_2e$)
Scenarios	Percentage uptake	Vehicular
(a) switching car trips ≤1km to walking	100%	-22.5 (-32.0 to -13.5)
	50%	-11.3 (-15.8 to -6.9)
	25%	-5.6 (-7.8 to -3.4)
(b) switching car trips ≤1km to walking and those 1-5km to cycling	100%	-436.4 (-607.2 to -267.6)
	50%	-218.0 (-302.5 to -136.0)
	25%	-108.1 (-153.3 to -65.7)

Emissions impacts

		Change in emissions ($kgCO_2e$)		
Scenarios	Percentage uptake	Vehicular	Dietary	Total
(a) switching car trips ≤1km to walking	100%	-22.5 (-32.0 to -13.5)	24.8 (15.4 to 34.5)	2.4 (-11.1 to 15.3)
	50%	-11.3 (-15.8 to -6.9)	12.4 (7.6 to 17.5)	1.1 (-5.3 to 7.6)
	25%	-5.6 (-7.8 to -3.4)	6.1 (3.7 to 8.5)	0.5 (-2.7 to 3.8)
(b) switching car trips ≤1km to walking and those 1-5km to cycling	100%	-436.4 (-607.2 to -267.6)	241.3 (156.6 to 330.2)	-194.4 (-377.2 to -3.1)
	50%	-218.0 (-302.5 to -136.0)	121.3 (79.0 to 163.8)	-97.5 (-192.5 to -2.7)
	25%	-108.1 (-153.3 to -65.7)	60.3 (39.6 to 81.8)	-47.2 (-96.9 to -1.9)

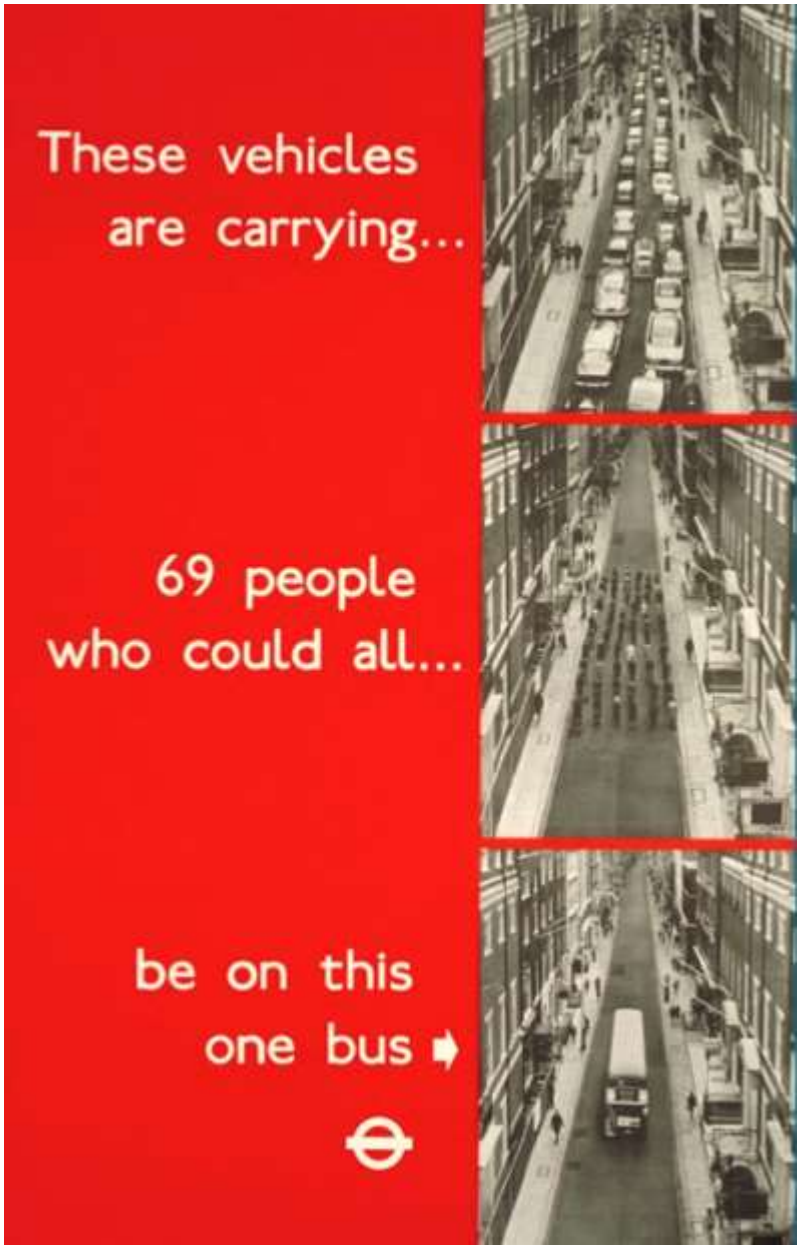
Strengths and limitations

- Value of comparison
- Individual level trip switches
- Active transport → BMI association

Obesity impact?

Policy options

- Reduce speeds
- Cycle lanes
- Urban space allocation
- Enforcement



Urban space allocation

Urban space allocation

Next steps?

- Total burden of transport
- Zero Carbon Act
- Dissaggregation
- Intersection with other health issues

Summary

- Switching short trips to walking and cycling would have positive health impacts, reduce healthcare costs, and may also reduce greenhouse gas emissions

- Modelling allows us to compare the health gains from different policy options

Thank you!

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