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Health inequalities and transportation policies

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Centre national de collaboration en santé publique

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The NCCHPP

- One of six centers accross the country
- Mandate : Support public health actors of Canada in their efforts to promote healthy public policies

Population health rationale

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

Fine-Particulate Air Pollution and Life Expectancy in the United States

C. Arden Pope III, Ph.D., Majid Ezzati, Ph.D., and Douglas W. Dockery, Sc.D.

ABSTRACT

BACKGROUND

Exposure to fine-particulate air pollution has been associated with increased morbidity and mortality, suggesting that sustained reductions in pollution exposure should result in improved life expectancy. This study directly evaluated the changes in life expectancy associated with differential changes in fine particulate air pollution that occurred in the United States during the 1980s and 1990s.

METHODS

We compiled data on life expectancy, socioeconomic status, and demographic characteristics for 211 county units in the 51 U.S. metropolitan areas with matching data on fine-particulate air pollution for the late 1970s and early 1980s and the late 1990s and early 2000s. Regression models were used to estimate the association between reductions in pollution and changes in life expectancy, with adjustment for changes in socioeconomic and demographic variables and in proxy indicators for the prevalence of cigarette smoking.

RESULTS

A decrease of 10 μg per cubic meter in the concentration of fine particulate matter was associated with an estimated increase in mean (±SE) life expectancy of 0.61±0.20 year ($P=0.004$). The estimated effect of reduced exposure to pollution on life expectancy was not highly sensitive to adjustment for changes in socioeconomic, demographic, or proxy variables for the prevalence of smoking or to the restriction of observations to relatively large counties. Reductions in air pollution accounted for as much as 15% of the overall increase in life expectancy in the study areas.

CONCLUSIONS

A reduction in exposure to ambient fine-particulate air pollution contributed to significant and measurable improvements in life expectancy in the United States.

Objectives of workshop

1- Collectively identify health inequalities
that arise from current transportation policies in Edmonton

2- Collectively explore public policy resolutions
to these health inequalities

Our roles!

- Me: facilitation, and not conference presentation or prescription
- You: participation in discussions, i.e. most of the work!

Agenda

1- Introduction

2 -Presentation of participants (9:15)

3 –Transportation policies and health inequalities: an introduction to the problems (9:45 – 10:15)

4. Mapping the problems (10:30 – 12)

5 – Imagining and assessing strategic resolutions (13 – 14)

6 – Assessing political feasibility (14:20)

7- Strategy presentations

8- Next steps (15:45)

Definition of public policies

- «...to talk of public policy is to refer to the action taken by a public authority (alone or in partnership) to treat a situation perceived as posing problem (…) public policies are a collective action that participates to the creation of a social and political order, to the direction of society, to the regulation of tensions, to the integration of the groups and to the resolution of conflicts.»
- (Lascoumes et Galès, 2006, transl. FG, p.5)

Transportation and transportation-related policies: a working definition

- any public action that affects how, where and how far people and goods move in cities

Transportation and transportation-related policies

- - All actions by transportation authorities (infrastructure, technologies, etc.)
- Include for e.g.:
- -Dimensions of urban planning policies
- (zoning, density, parking regulation, types of housing, etc.)
- -Other (emissions regulations, gas tax, fiscal measures, etc.)

A few indicators of «how we move»

-In Canadian cities (1995), daily trips to work and leisure are made:
by bike (10%) walk (2%)

-In Denmark's cities:
-21% by bike, 20% by walk

Pucher, 2003, p.1510

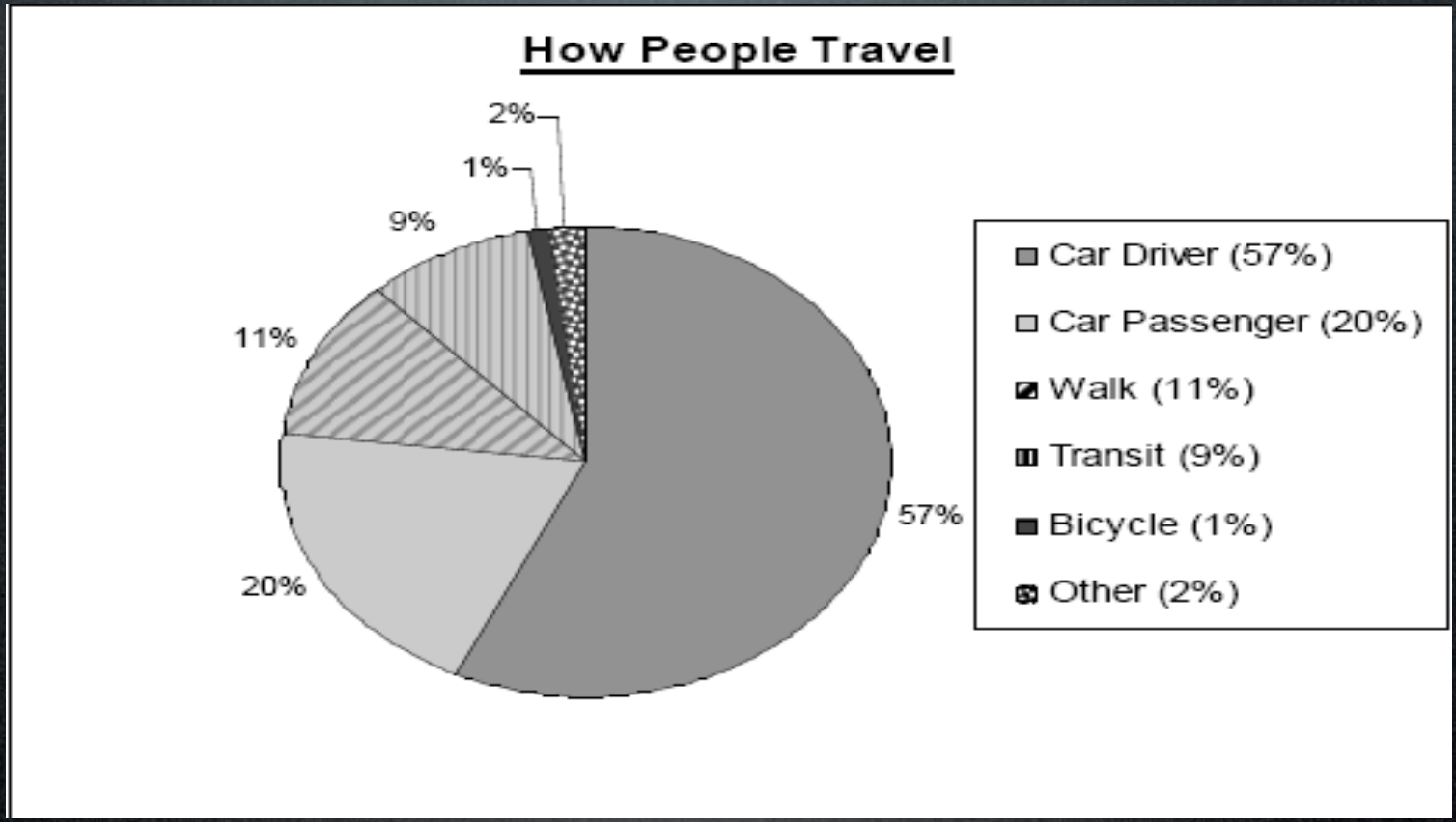
A few indicators of «how we move»

-In Edmonton, 77% of population aged 18 and over make all trips by car

-In Montreal, it is 65%

Stats Can, 2008, in Capital Health, 2007, p.45

A few indicators of «how we move»



City of Edmonton, Draft Transportation Master Plan, October 2008, p.13

How did we get here?

-Cheap energy and economic growth

- «The automobile has probably done more to shape the character of 20th-century Canada than any other piece of technology. (…) Cars and their associated infrastructure use resources, consume energy (…) on a substantial scale.» (Environment Canada, http://www.ec.gc.ca/soer-ree/English/products/factsheets/93-1.cfm)

How did we get here?

- Transportation policies: from 1940s on, active and sustained, focused support of car circulation growth by different technologies

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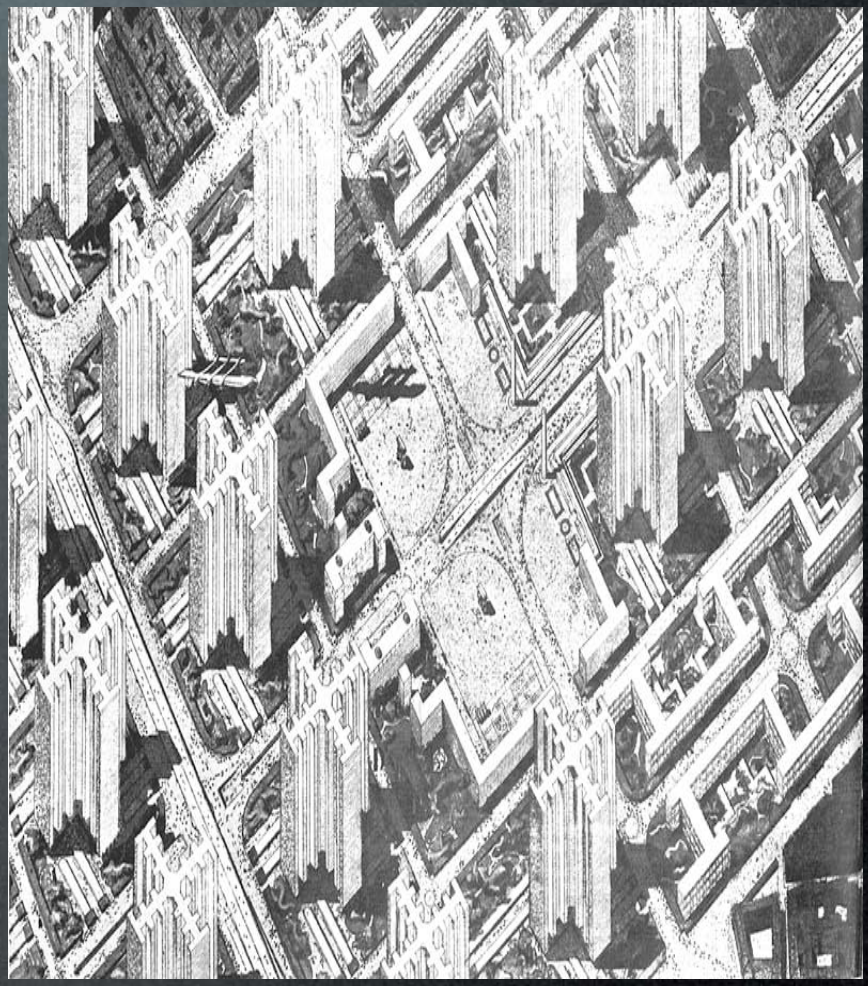
- «An indirect benefit of subways is the reduction in pedestrian traffic. The movement of street car passengers in the crowded downtown and uptown areas would no longer conflict with motor vehicle operation near crowded street intersections.» (Montreal Tramways Company, 1944, p.14)

How did we get here?

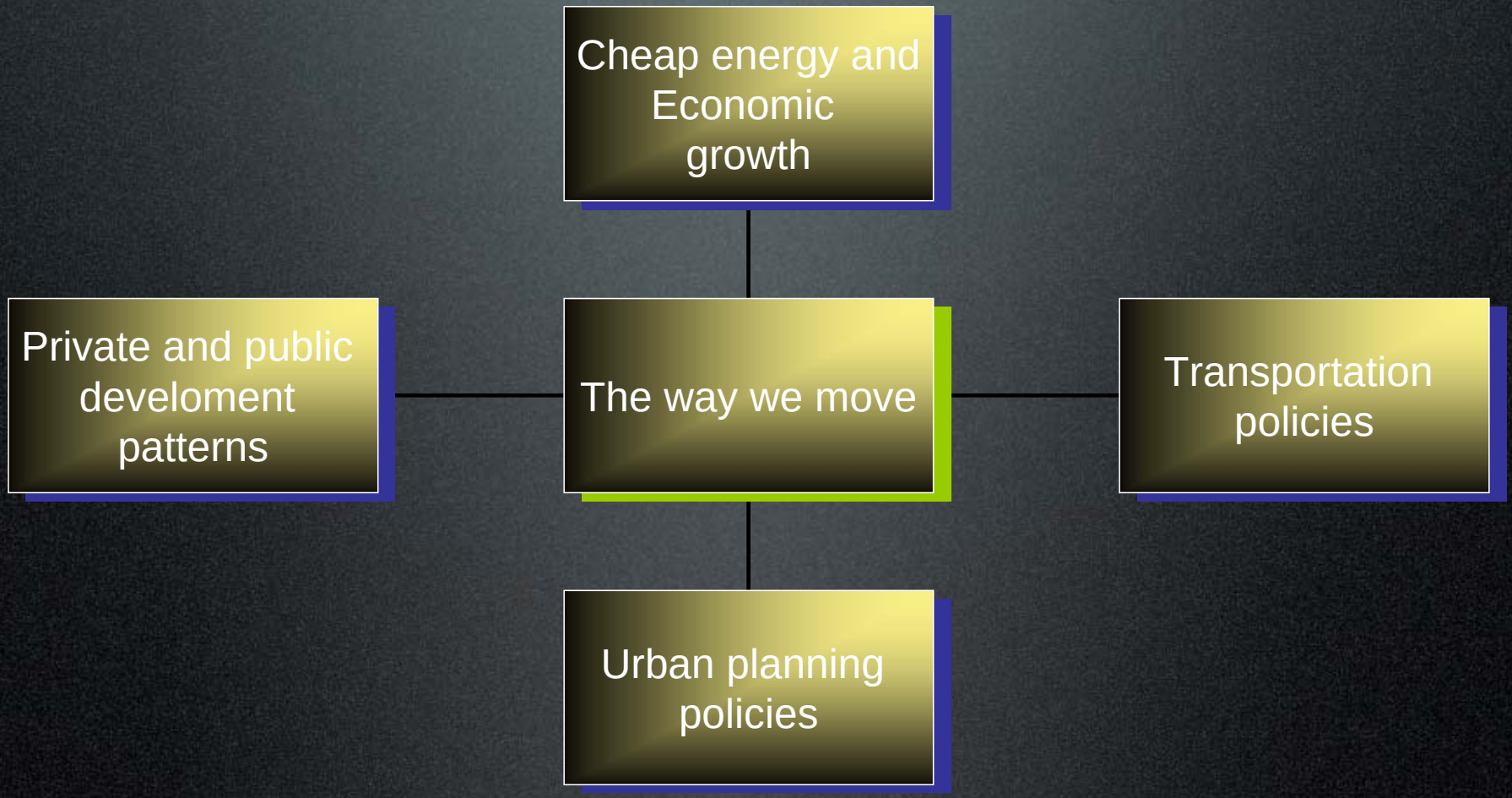
- Urban planning policies organized around automobile time and distance



How did we get here?

- Private and public development patterns

How did we get here?

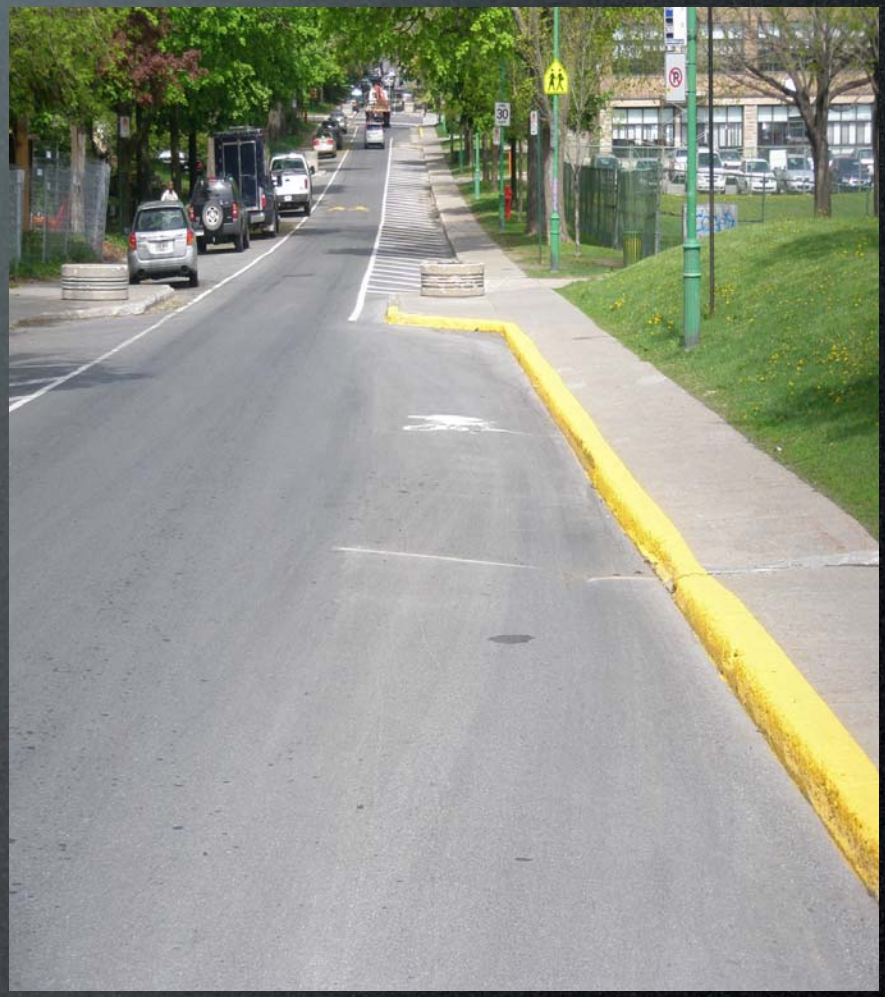


How can transportation and transportation-related policies be tied to unequal health outcomes?

Their general orientation and/or some of their features create unequal environmental conditions, and impact or promote unevenly the health of different segments of urban populations.

Creating unequal environmental conditions

Creating unequal environmental conditions



How did these inequalities come to be?

- Differentials in socio-political organization generally, and around transportation issues in particular

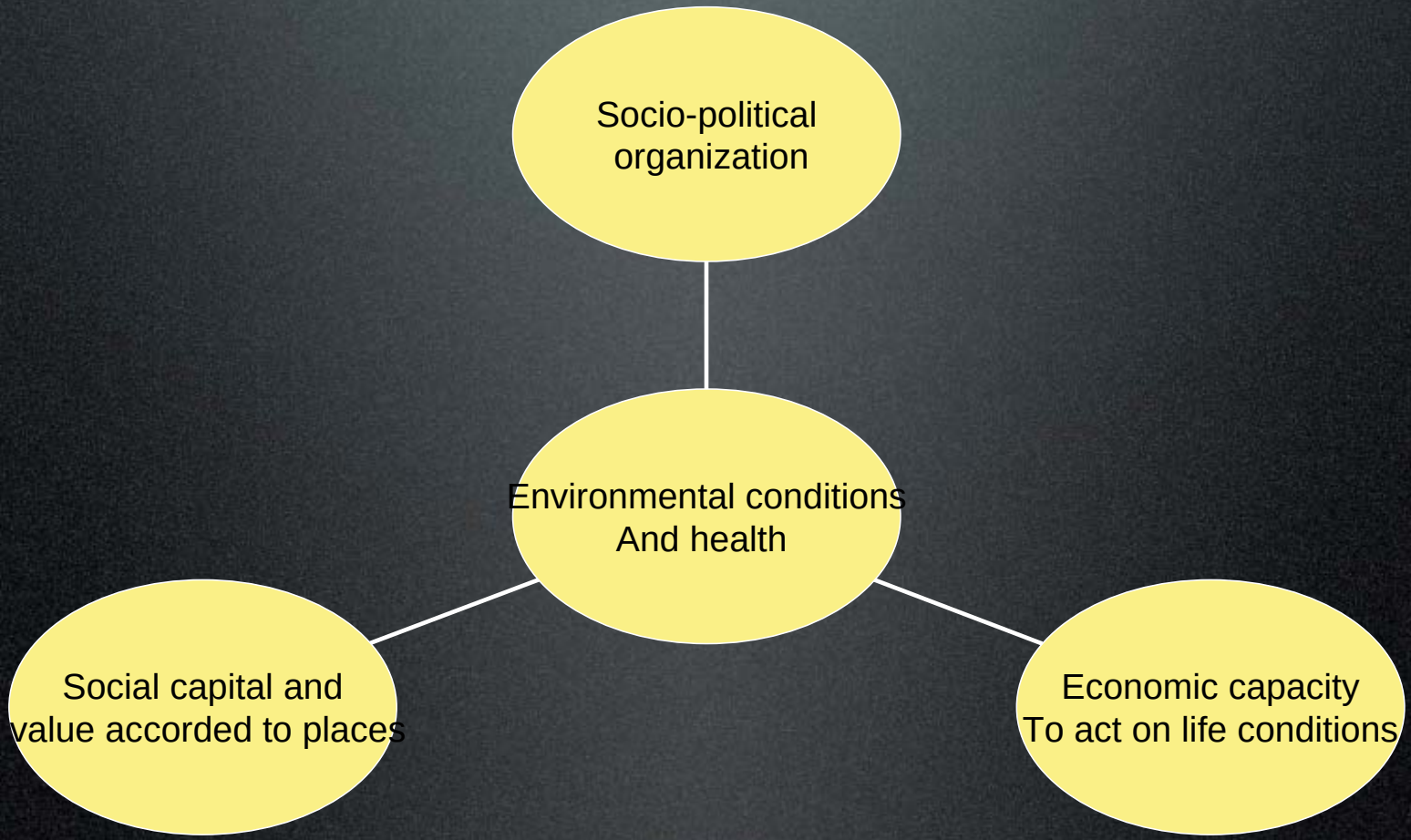
How did these inequalities come to be?

- Differentials in economic capacity to act on life conditions (such as built environment)

How did these inequalities come to be?

- Differentials in social capital of groups and in value recognized to places

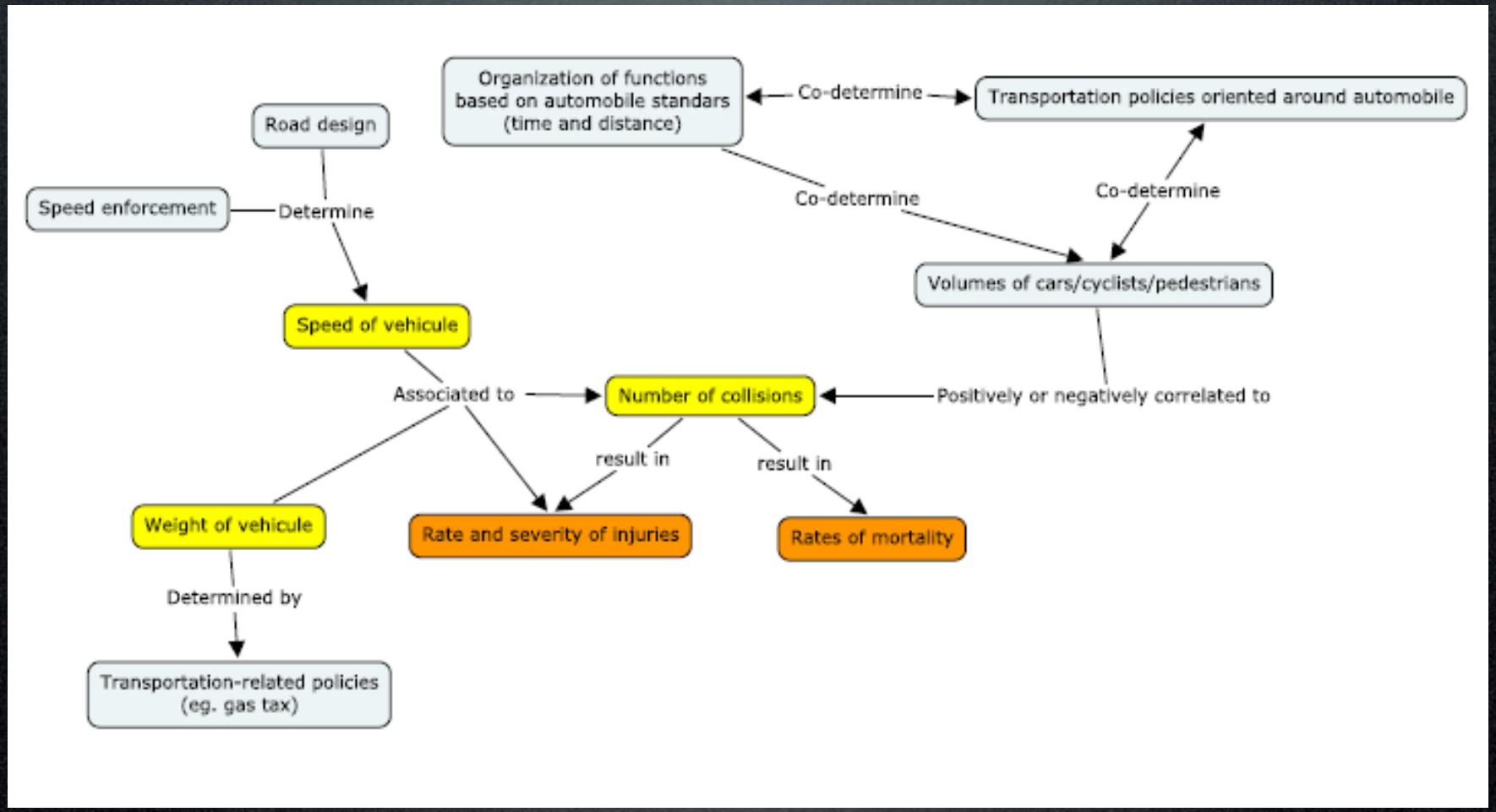
How did these inequalities come to be?



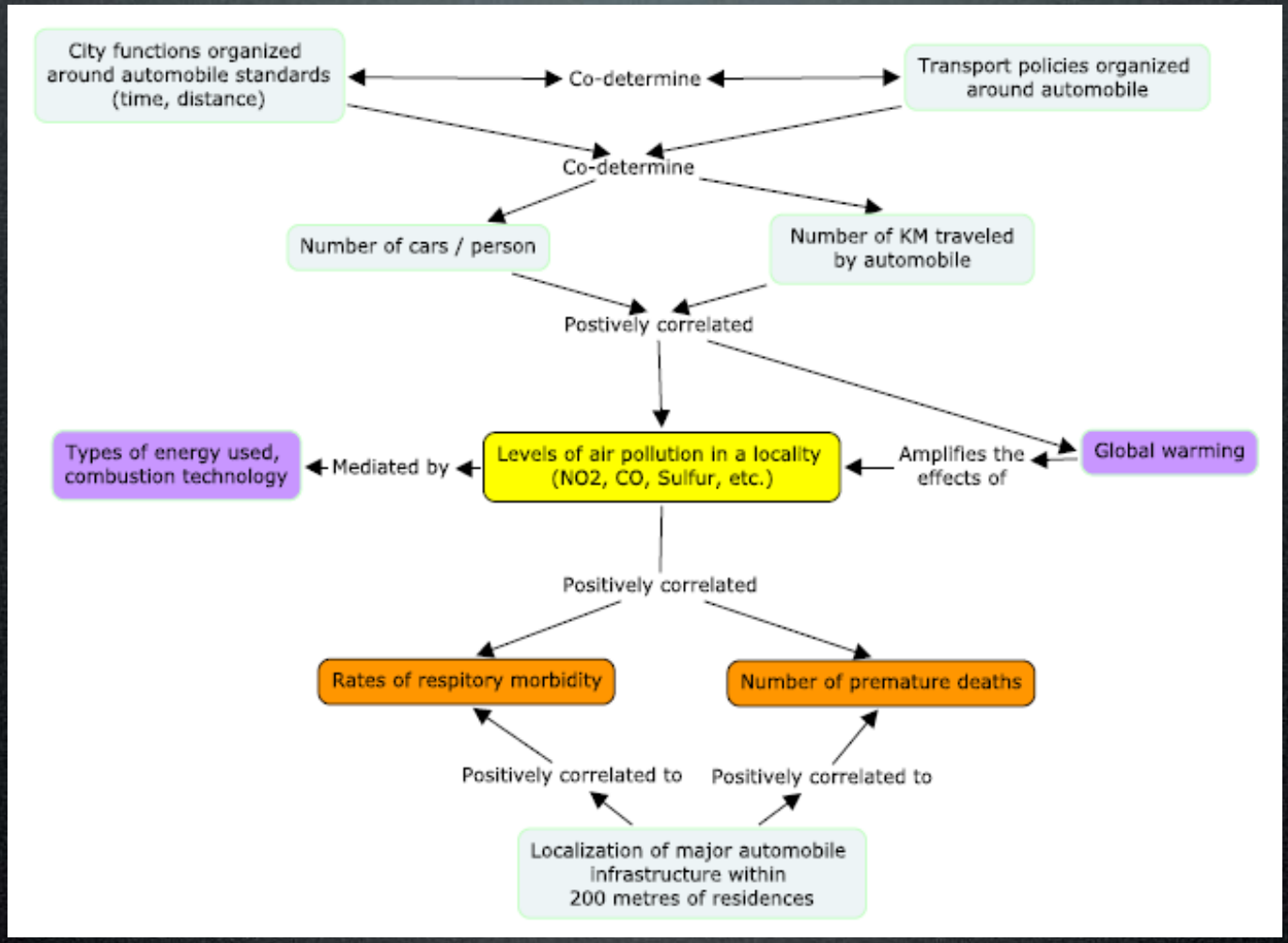
In the literature: outcomes and determinants

1. Unintentional injuries (speed and weight of vehicles, collisions)
2. Respiratory (air pollution)
3. Chronic disease (obesity, social network)
4. Mental health (social network, stress, physical activity, sleep)

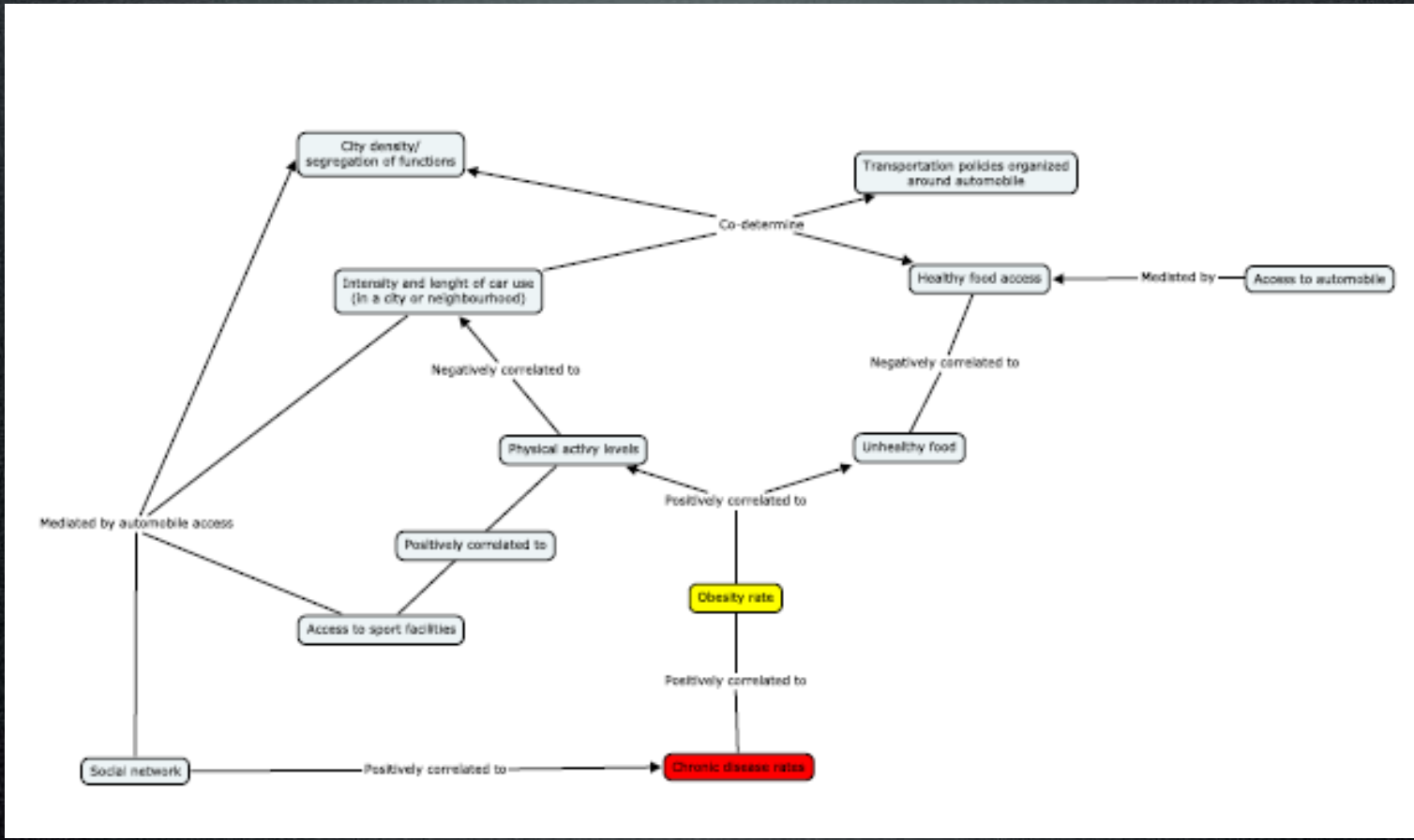
From unintentional injuries and mortality to policy



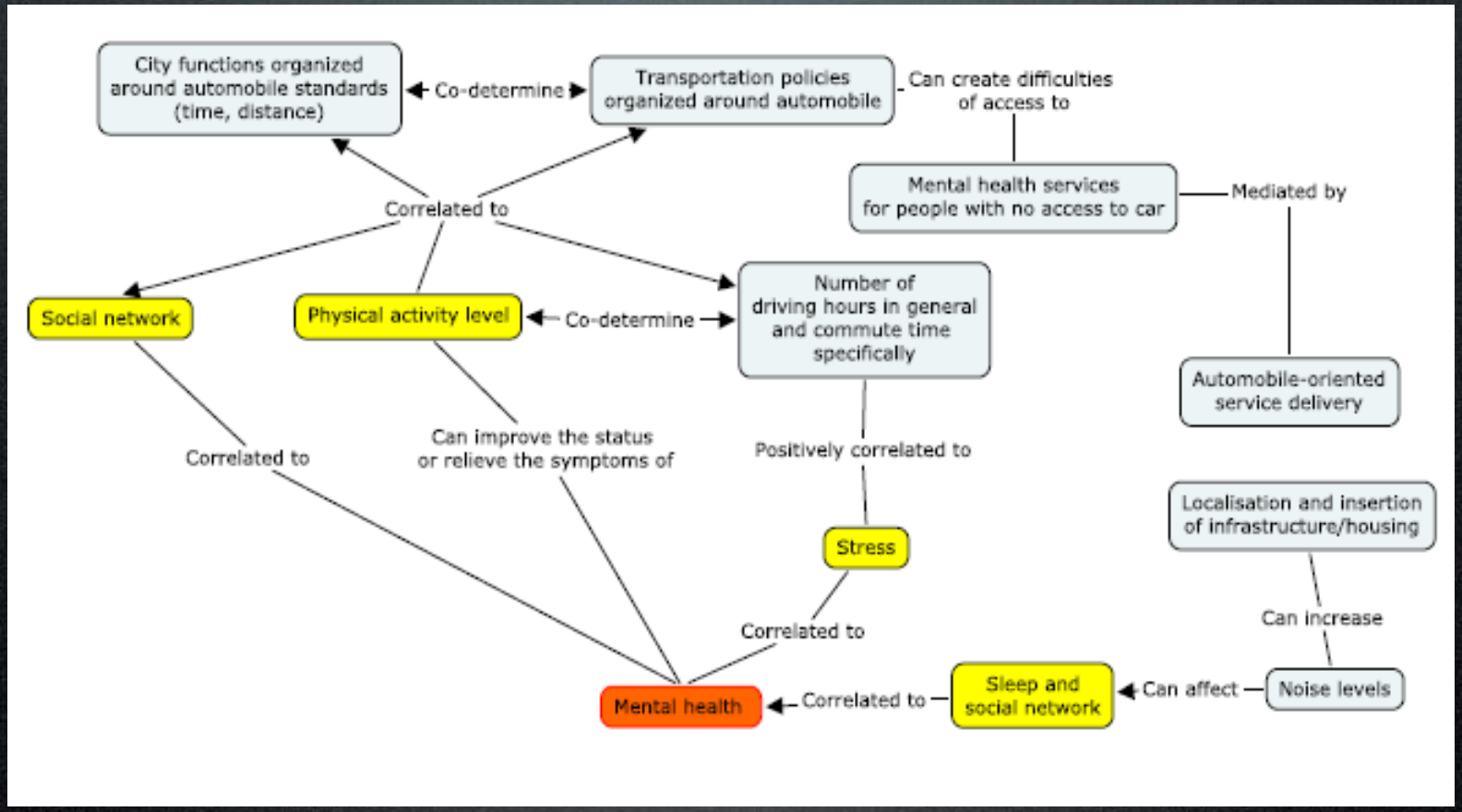
From respiratory morbidity and mortality to policy



From chronic disease to policy



From mental health to policy



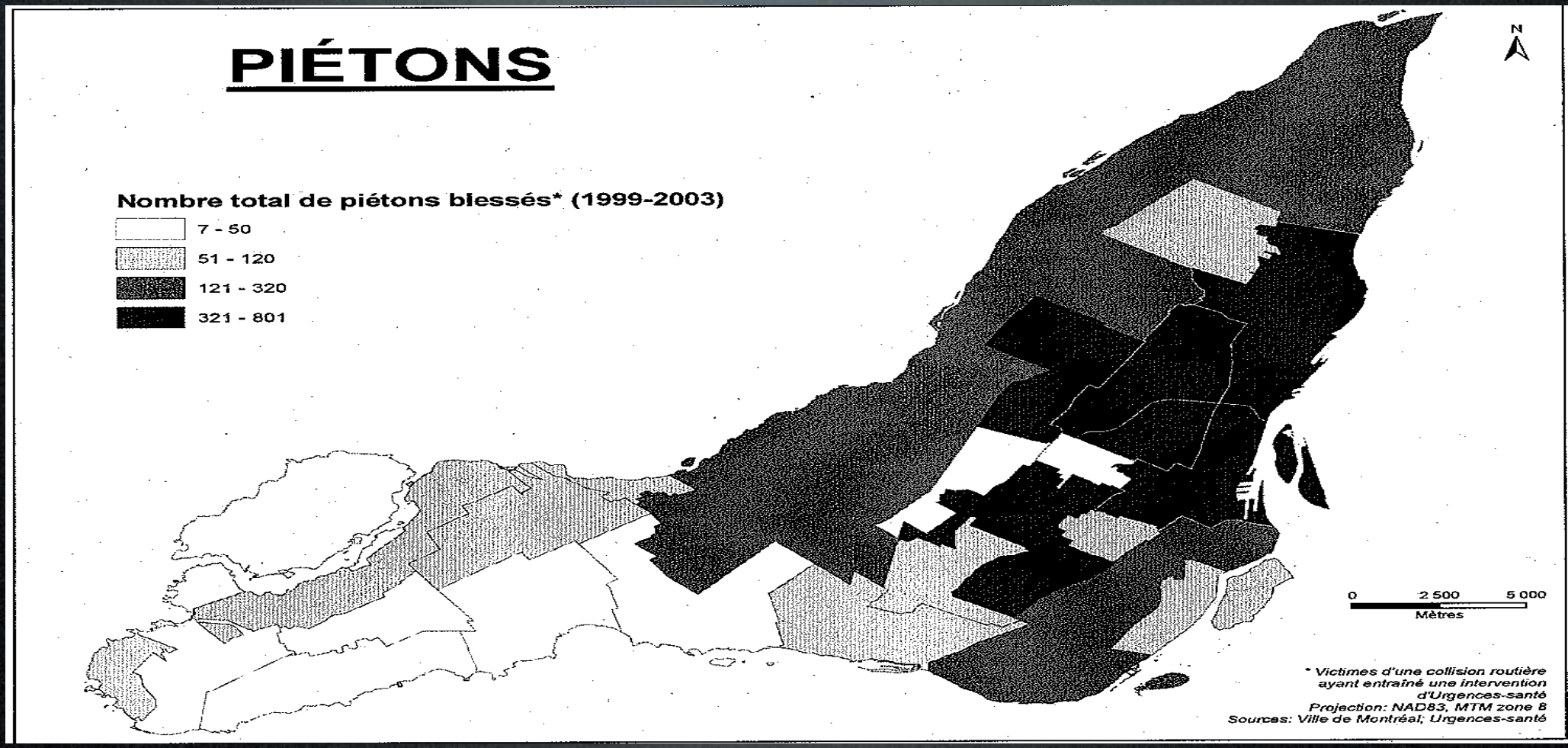
In the litterature:
Population segments defined by

1.Income level or
Socio-economic status (SES)
2.Ethnic/racial characteristics
3.Geographical situation in city
4.Transport mode used
5.Age
6.Occupation
...

1- Transport mode

- The majority of such deaths are currently among “vulnerable road users” – pedestrians, pedal cyclists and motorcyclists. In high-income countries, deaths among car occupants continue to be predominant, but the risks per capita that vulnerable road users face are high. (WHO, p.3)

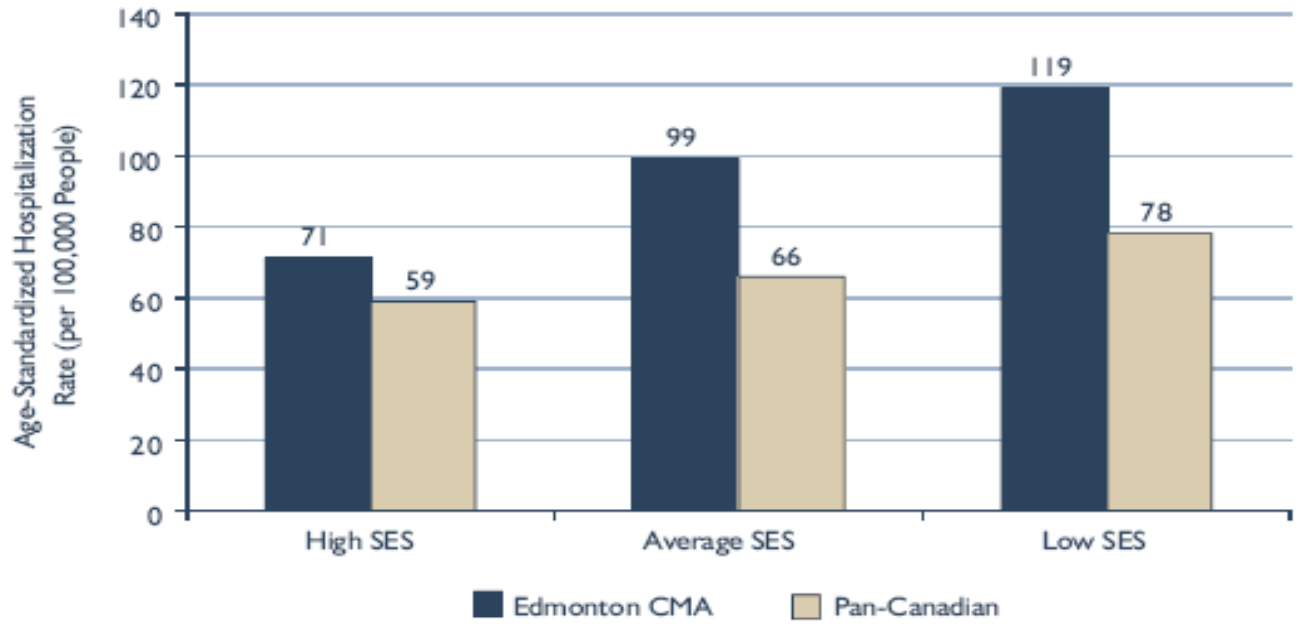
2- Geographic situation



DSP-Mtl (2004)

3- SES vs Average vs High groups

Pan-Canadian and Edmonton CMA Age-Standardized Hospitalization Rates for Land Transport Accidents by Socio-Economic Status Group*



Note

* See detailed data tables (Appendix D) for significance testing.

Source

CPHI analysis of 2003–2004 to 2005–2006 National Trauma Registry data, Canadian Institute for Health Information.

CIHI, 2008, p.54

3 or 4 discussion groups

Objective 1:
Identify health inequalities that arise from transportation policies

3 or 4 discussion groups

1. Unintentional injuries (speed and weight of vehicles, collisions)
2. Respiratory (air pollution)
3. Chronic disease (obesity, social network)
4. Mental health (social network, stress, physical activity, sleep)