



## Health Impact Assessment in Relation to Examining Health Inequities

Presentation to:

**GTA Clean Air Council**

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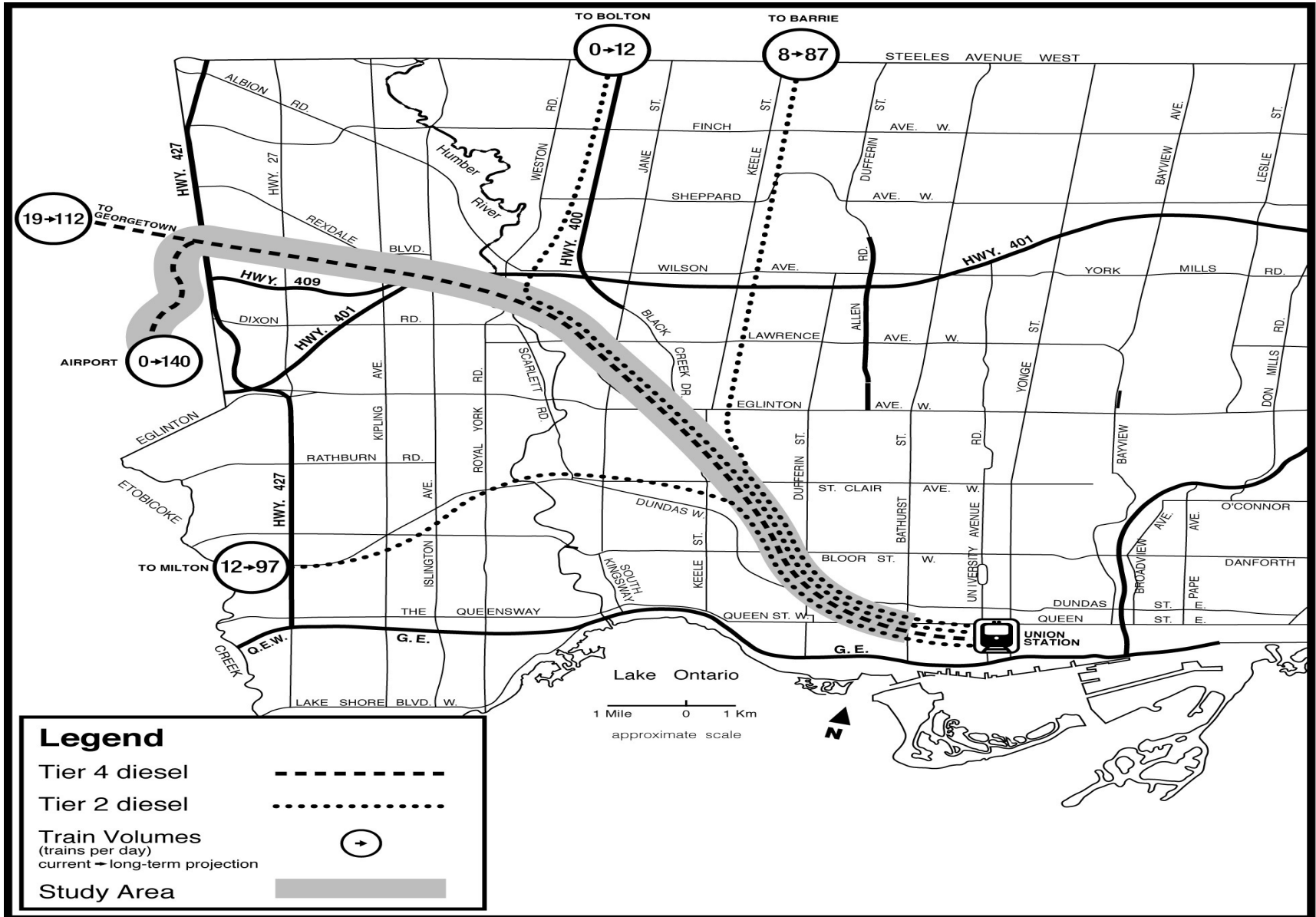
Toronto Public Health

January 22, 2010



- Case example:  
Metrolinx diesel train expansion
- Health assessment approaches
- Why HIA is important in decision-making
- Health inequalities in Toronto
- Magnification of inequities

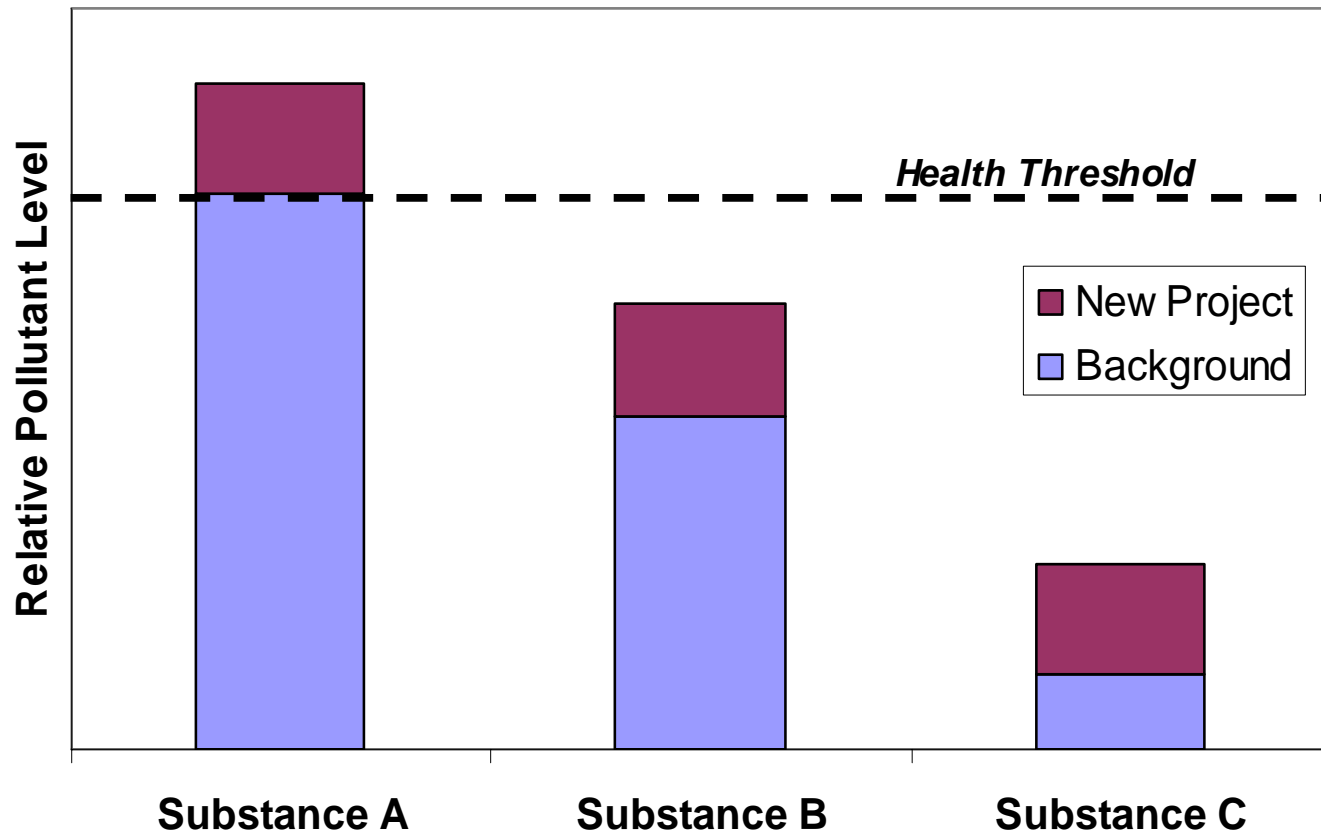
# Projected Expansion in Diesel Train Traffic





- Modelled air emissions and quantified health risk due to selected pollutants
- Some emissions projected to more than double yet HHRA predicts minor health risk

# Cumulative Impacts of Air Pollutants: Pitfalls in Perception

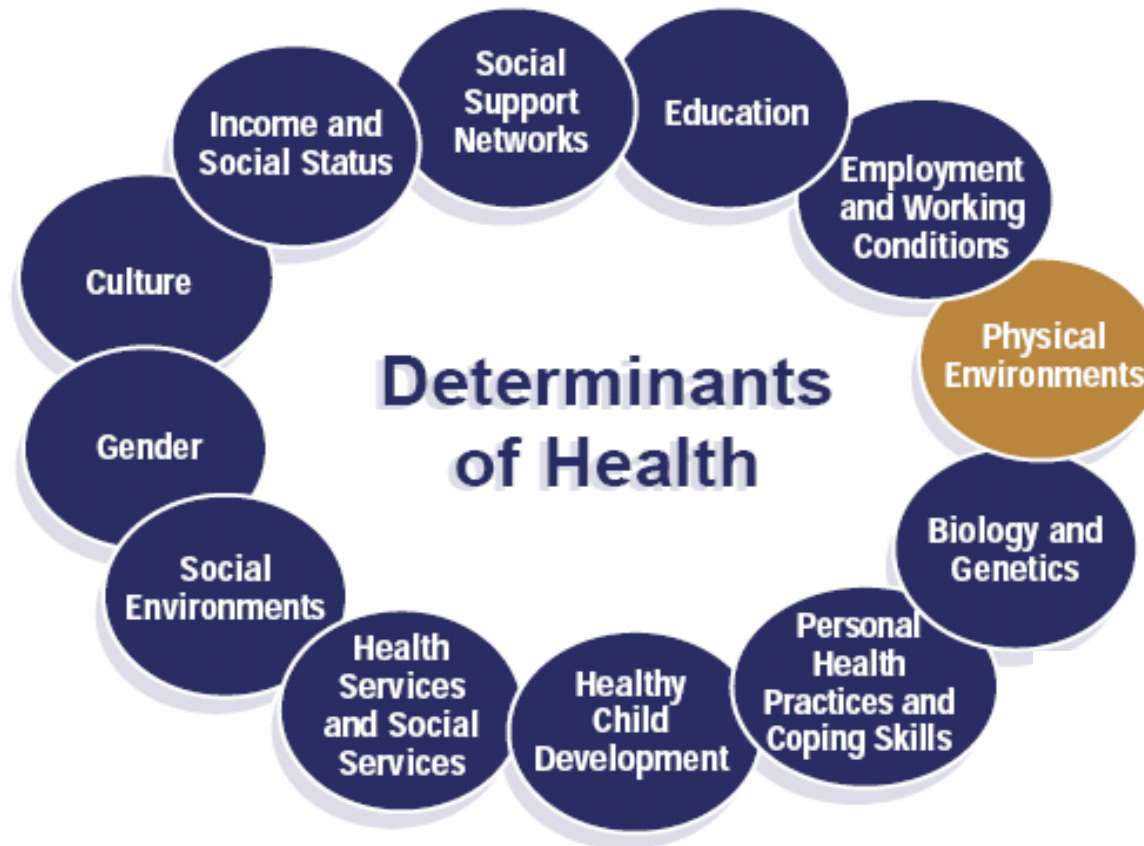


## What is a HHRA?

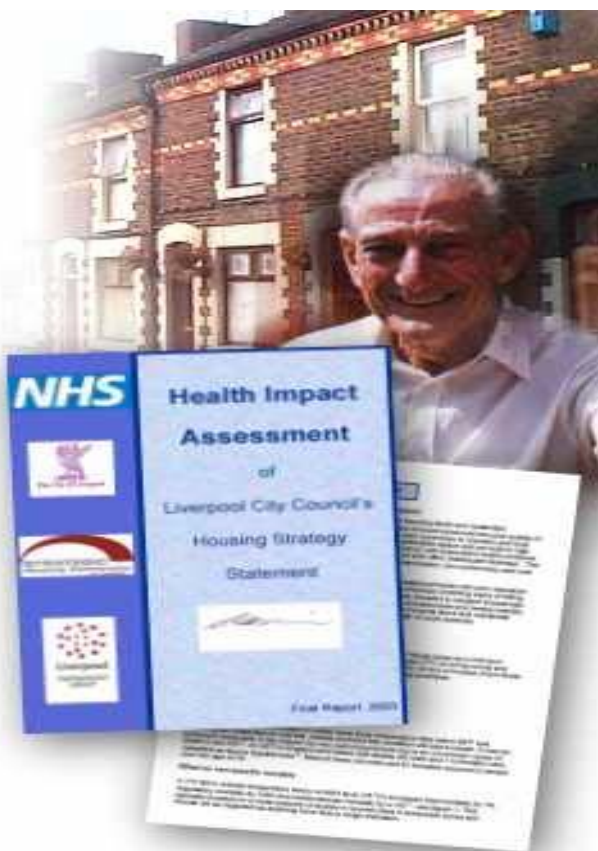
A quantitative evaluation of the health risk resulting from exposure to a chemical or physical agent. It combines exposure assessment results with toxicity assessment results to estimate risk.

Source: Adapted from U.S. EPA definition of risk assessment

# Broadening Consideration of Other Factors that Impact Health



HIA evolved because health not adequately addressed with other methods such as traditional risk assessment



- Systematic method to assess how a proposal or policy affects population health, and the distribution of effects within the population
- Can predict health effects of a policy or project, inform decision-making and mitigate health consequences
- Can complement environmental and/or traditional health risk assessments



<b>Human Health Risk Assessment (HHRA)</b>	<b>Health Impact Assessment (HIA)</b>
Expert driven	Stakeholder driven
Quantitative	Qualitative
Narrow focus on how contaminants affect physical health	Broad focus on multiple determinants of health
Does not consider SES and other underlying health issues	Examines distribution in health risks across a population

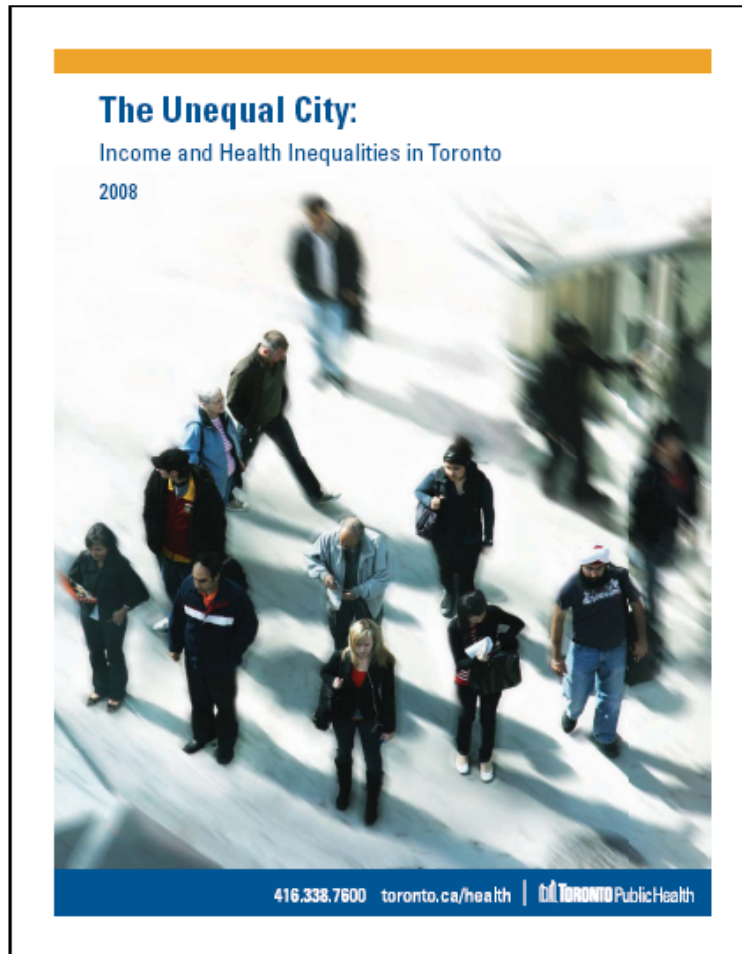
# HIAs Examine Risks and Benefits



- What risks?
- What benefits?
- How are they distributed?
- Why is this important to health?

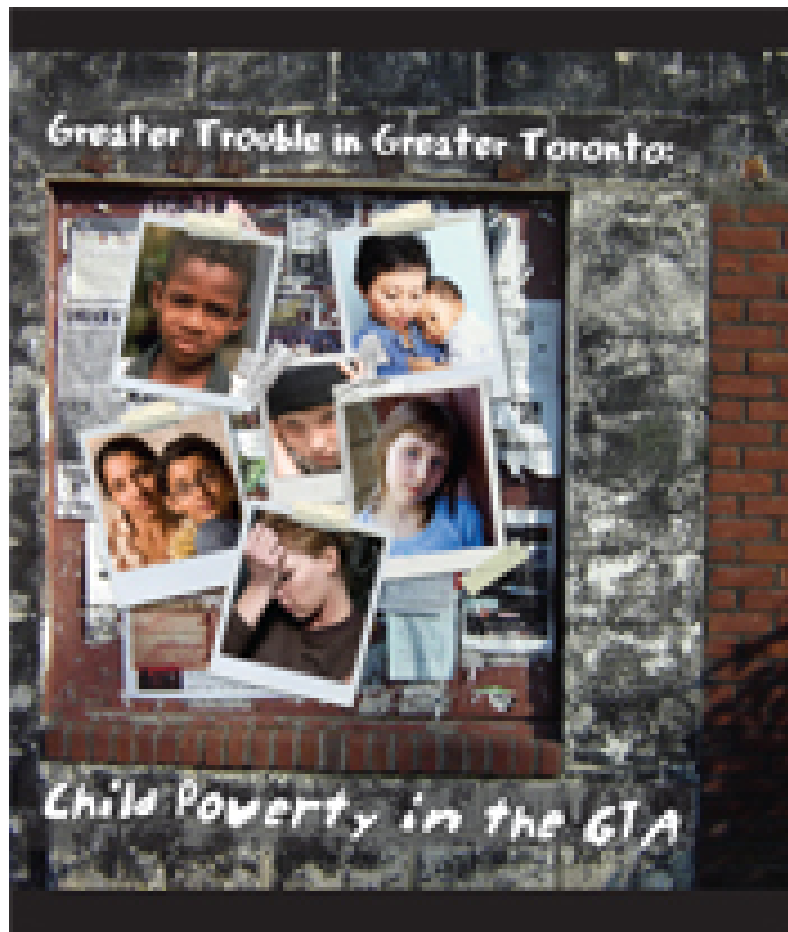
Health inequities are differences in health that are unnecessary, avoidable, unjust and unfair (Whitehead, 1992)

Equity in health is absence of systemic disparities in health between groups with different levels of social advantage (e.g. wealth, power, prestige) or disadvantage (e.g. by being poor, female, member of disenfranchised racial, ethnic or religious group) (Braveman & Gruskin, 2002)

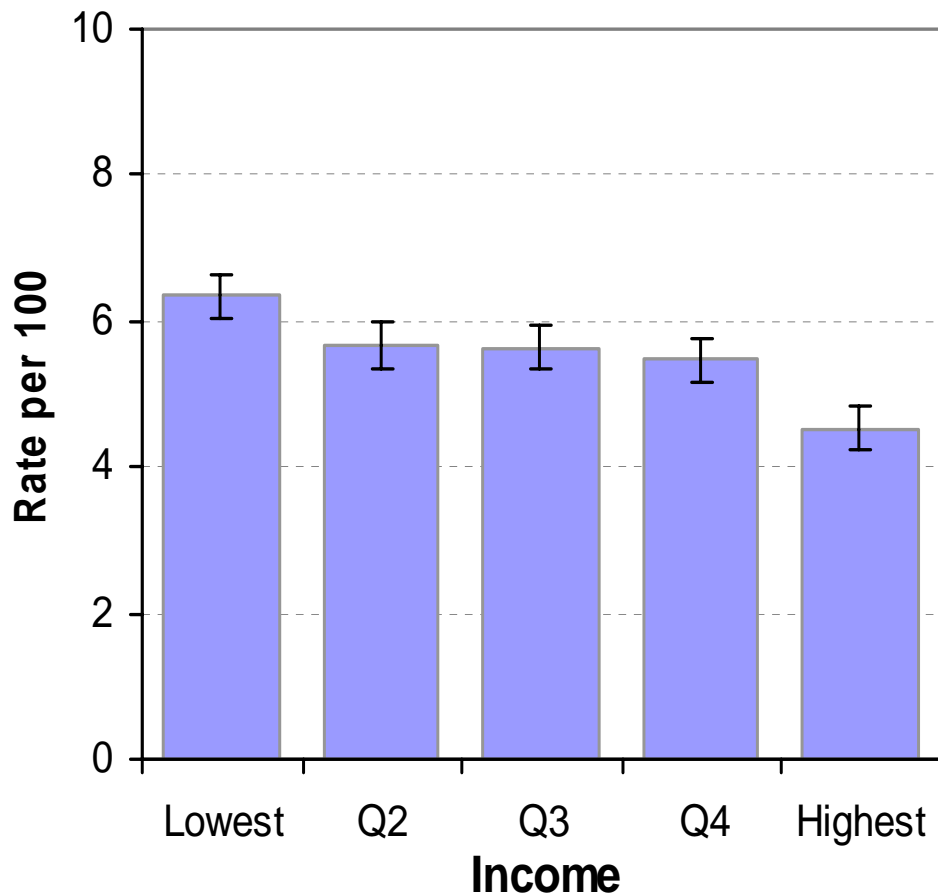


- Link between health and income
- People living with low income experience
  - more illness
  - higher rates of disease
  - death at an earlier age
- Most indicators show a gradient of health relative to income

(Source: Toronto Public Health, 2008)

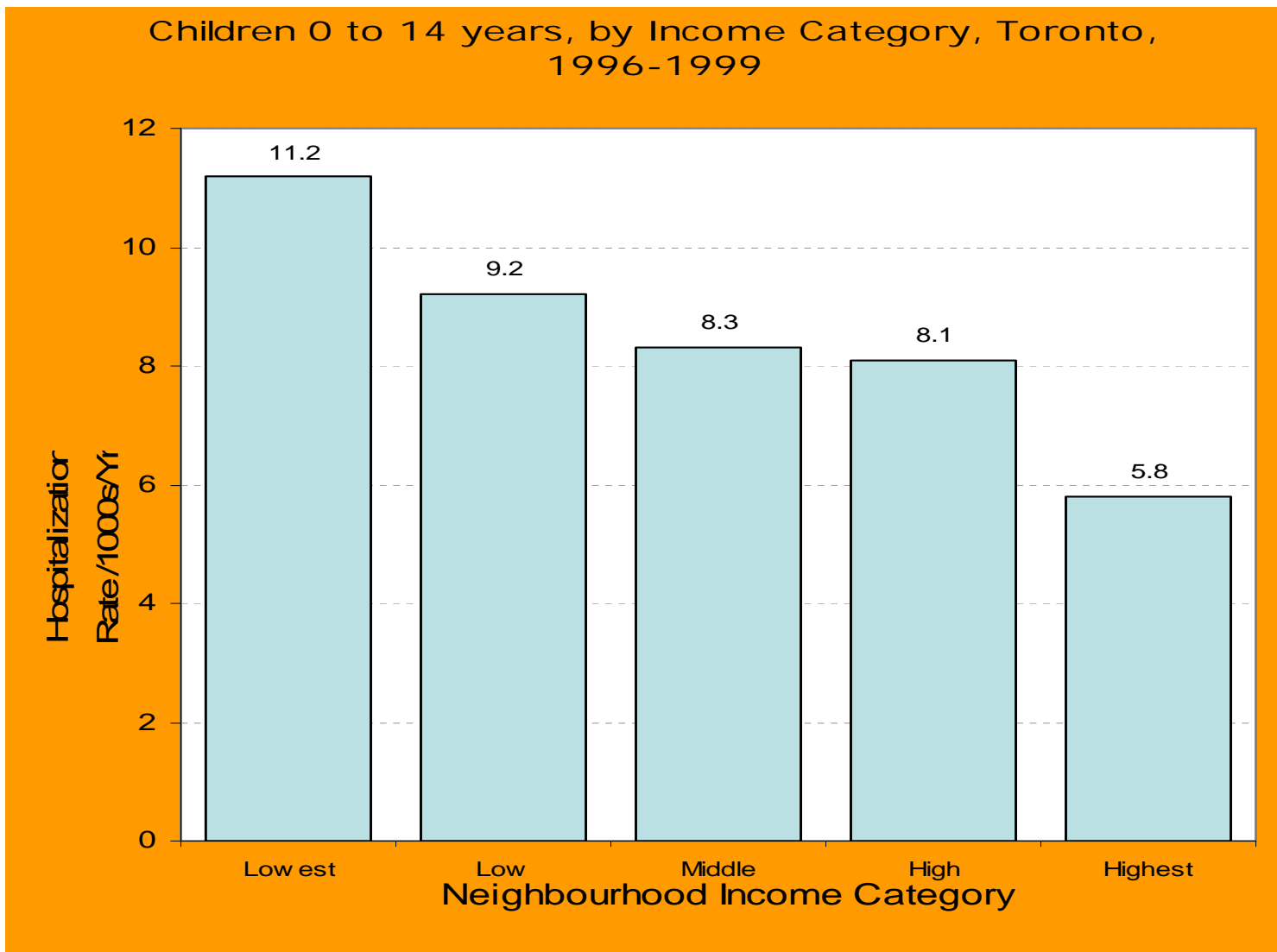


- Child poverty is urbanized
- Child poverty rates are increasing
- Child poverty is racialized



**LBW rate 1.4 times higher in lowest vs. highest income quintile**

# Child Respiratory Hospitalizations





- Poverty associated with greater likelihood of exposure to harmful pollutants
- Poverty also linked to increased susceptibility to harm from those substances
- Concern about chronic exposures and cumulative risks

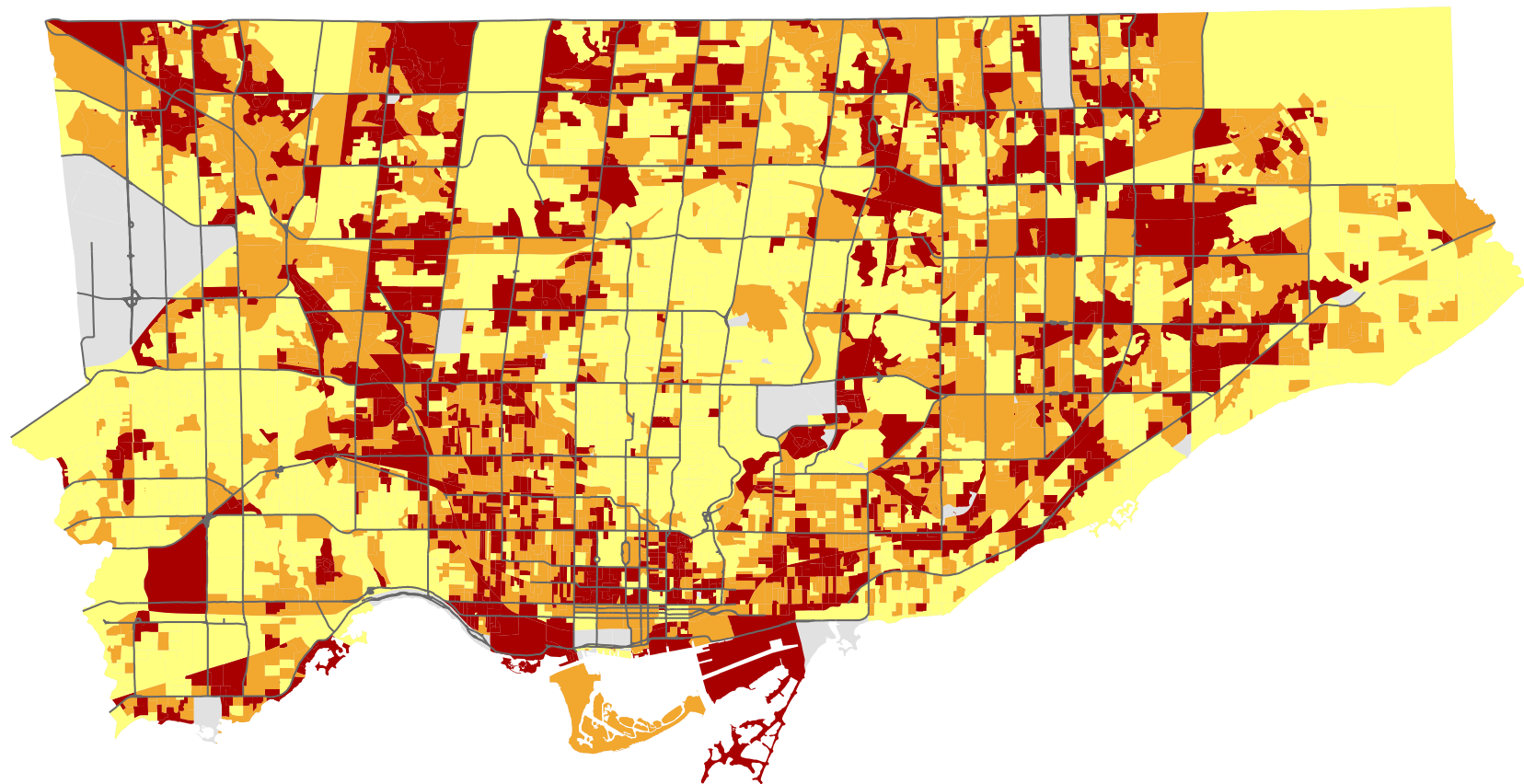


# Poverty, Health and Environment: Emerging Research





- Evans et al (2004) showed positive correlation between cumulative risks (e.g. noise, crowding, poor state of repair) and elevated blood levels of stress-related hormones (e.g. epinephrine, cortisol) in low-income but not middle-income children
- These hormones are indicators of chronic stress, implicated in lowering immune response & increasing cardiovascular disease later in life
- Need to consider cumulative risk exposure, not just isolated individual risk factors

- Wakefield and Baxter (2008) suggest that our understanding of **environment – health – disparity** connections is too narrow if rely on biomedical focus (i.e. single exposure – single health outcome)
- They suggest a more holistic focus to improve understanding and move us to more effective action
- They pose the concept of **compounded disadvantage**
- Defined as “*the cumulative hardship experienced by marginalized populations as a result of multiple and overlapping challenges to well-being and autonomy*”

# Low Income Families in the City of Toronto, by Dissemination Area, 2001



## \*Low Income Families (%)

-  < 10.7 (871)
-  10.7 - 22.7 (1295)
-  > 22.7 (1289)
-  No Data

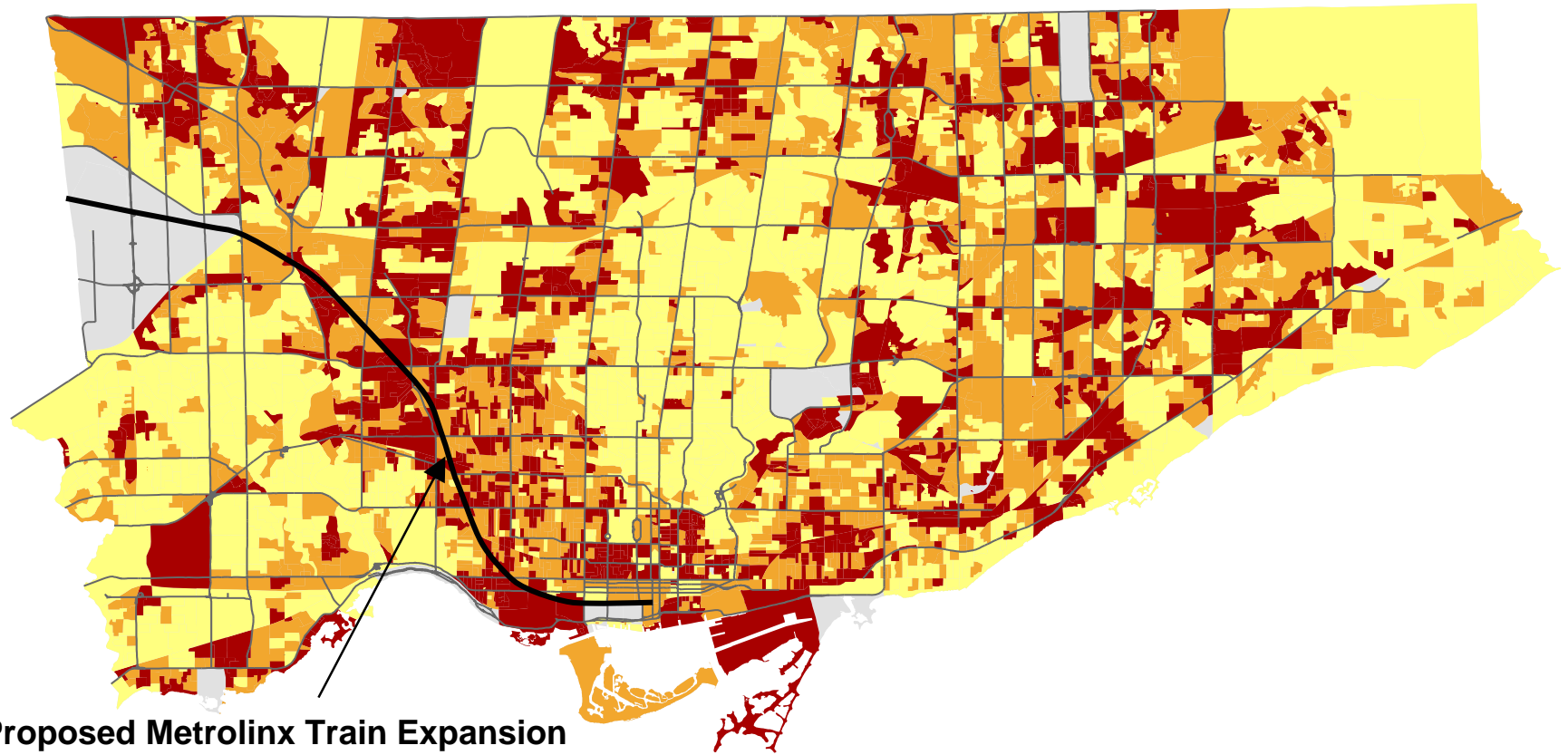
— Street

\*Low income values classified using quantile method








Projection: UTM Nad 1983 Zone 17N  
Source: Statistics Canada, 2001

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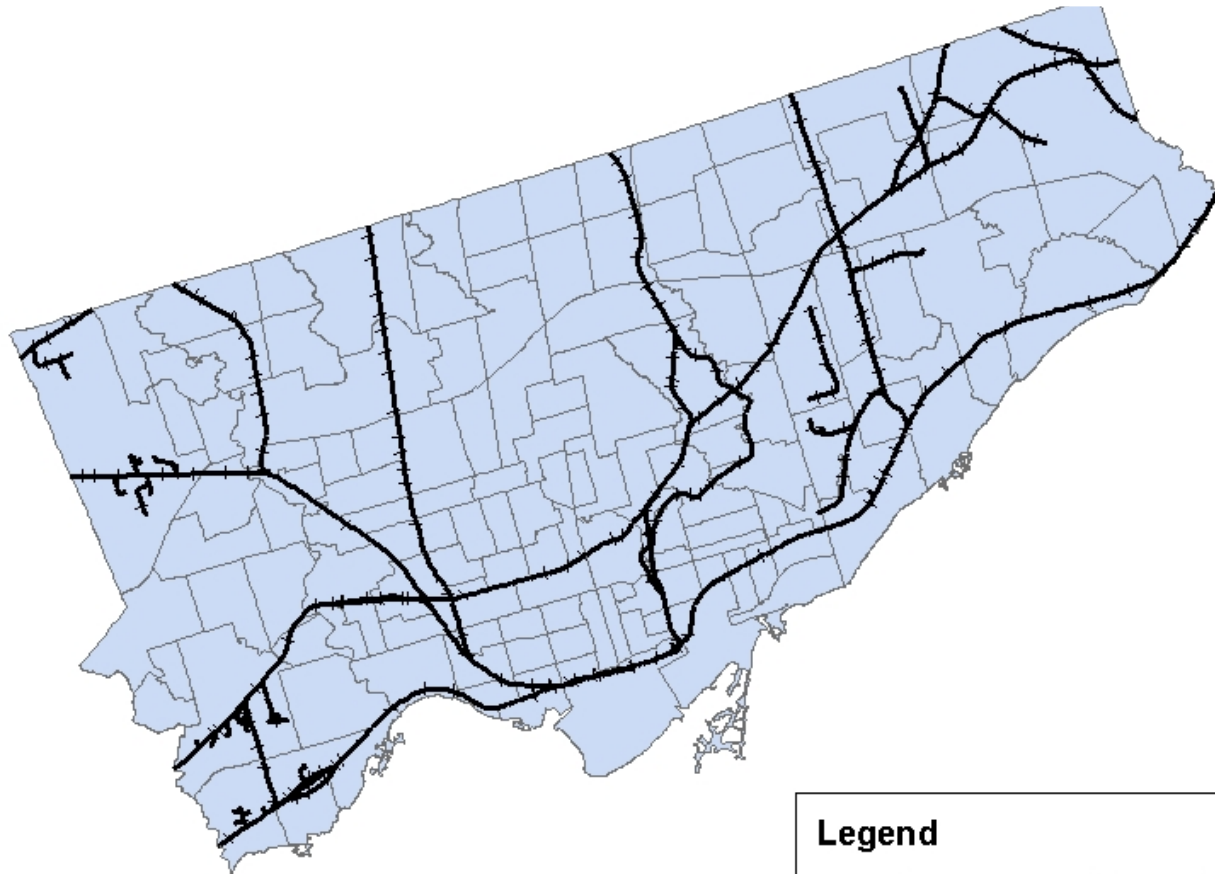
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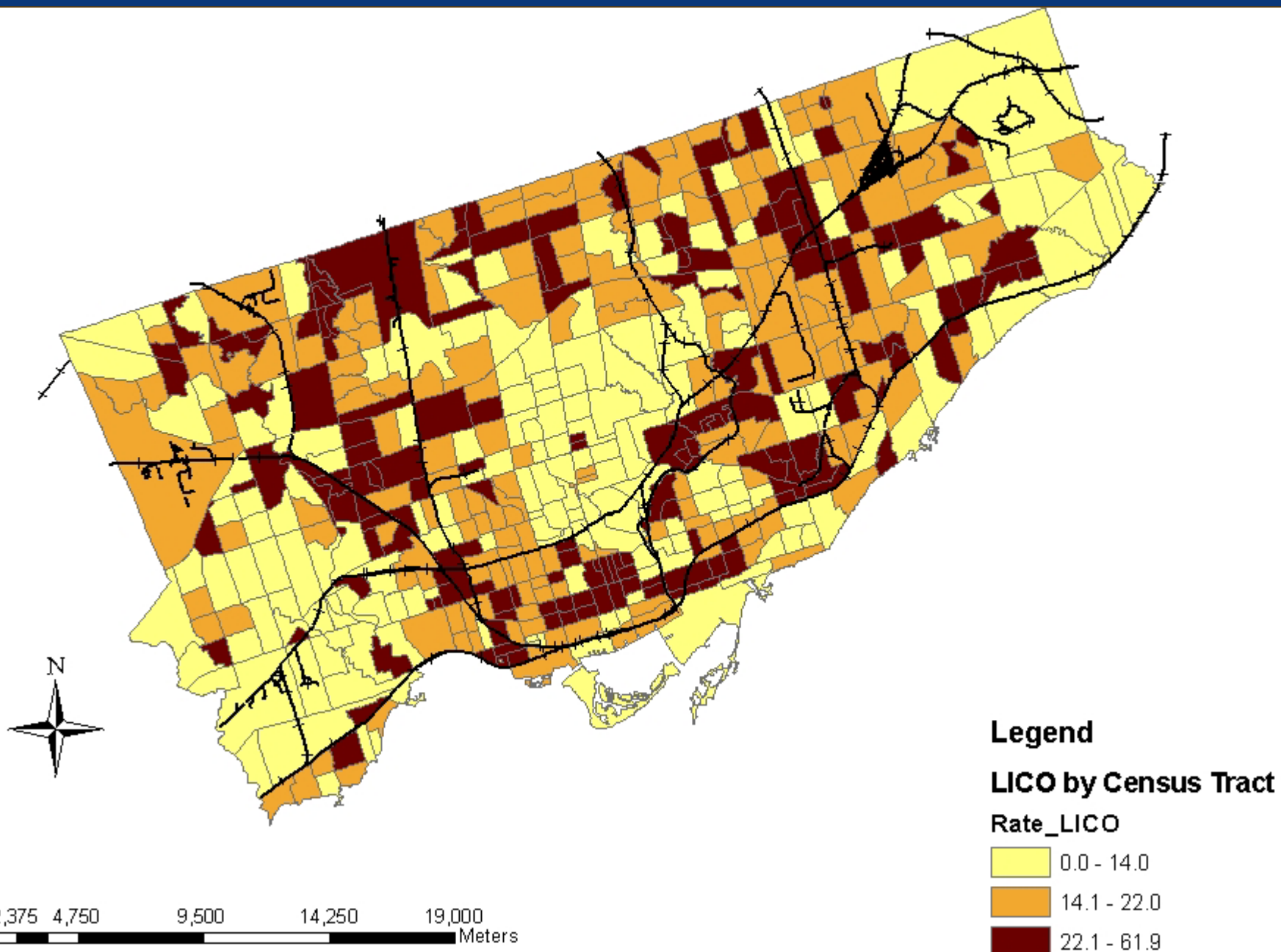
# Railway Lines in Toronto

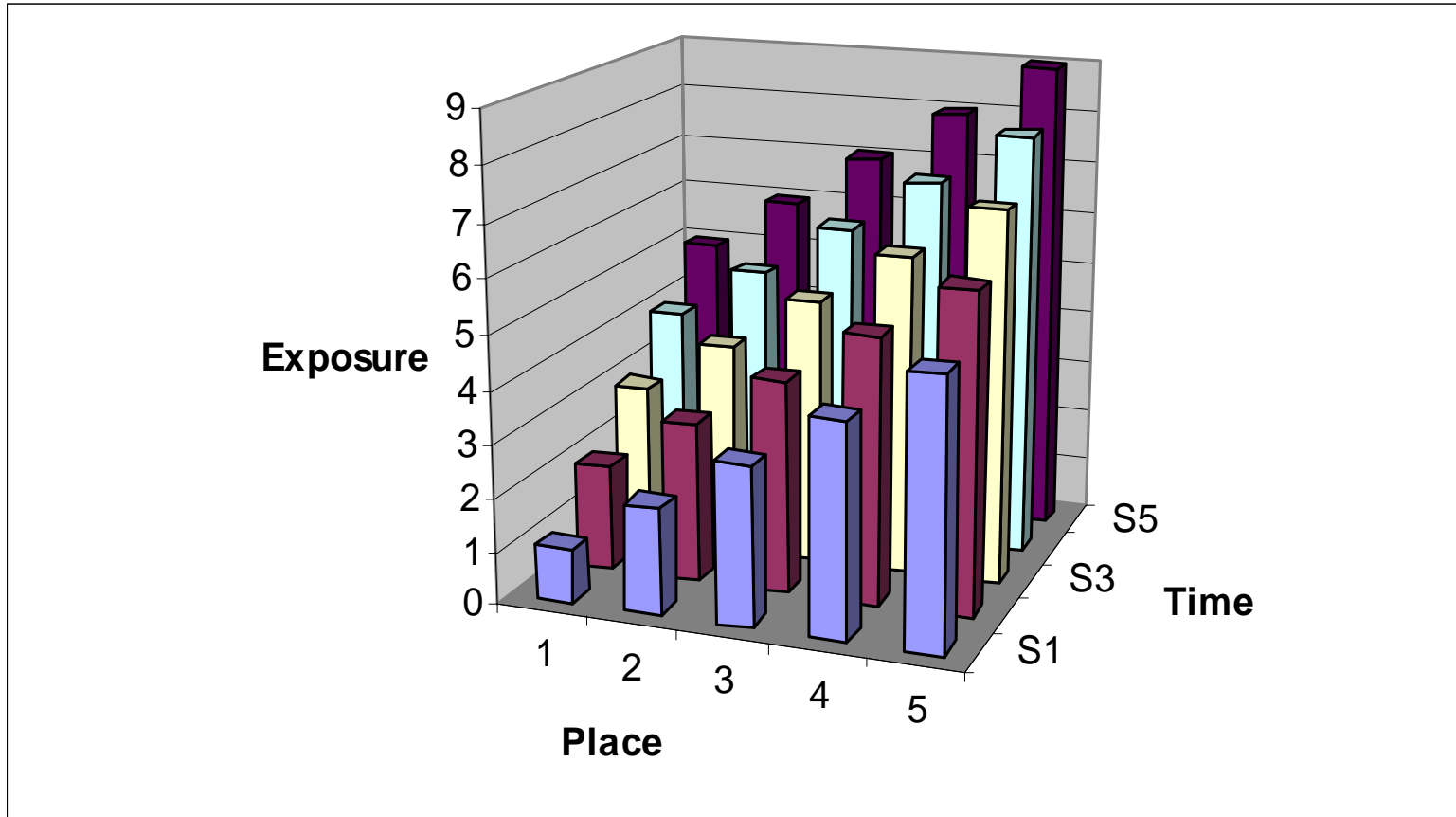


**Legend**

-  Railways Lines in Toronto
-  Toronto Neighbourhoods

0 2,550 5,100 10,200 15,300 20,400 Meters





**Exposure:**  
Multiple environmental  
pollutants

**Place:**  
Neighbourhood  
effects

**Time:**  
Life stage  
Cumulative





How will differences in equity drive differences in health outcomes over one's lifetime?



Can HIA be a useful tool in averting or mitigating situations of health inequity arising from major new policies, practices or projects?



Many thanks to my colleagues

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