PROVINCE-LEVEL INCOME INEQUALITY AND HEALTH OUTCOMES IN CANADIAN ADOLESCENTS

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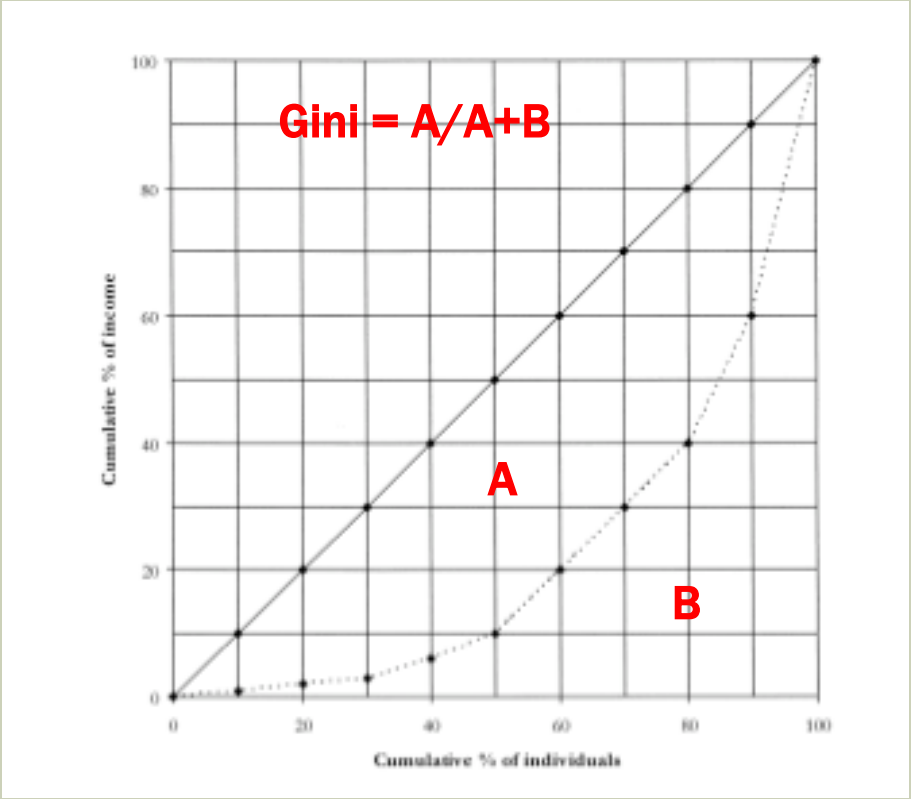
OUTLINE

- Background
- Objectives
- Methods
- Results
- Conclusions and Implications

BACKGROUND: INCOME INEQUALITY

- Defined as the scale of income distribution in a society

- Measured by:
  - Gini coefficient
  - Coefficient of variation
  - Robin Hood index
  - Median share
  - Top 20%: bottom 20%



BACKGROUND: INCOME INEQUALITY AND HEALTH

- Social comparison pathway
  - Income inequality leads to low social capital and stressful social comparison, which affect health through psychological processes and physiological changes
  - (Wilkinson, 1997; Wilkinson & Pickett, 2009)
- Policy pathway
  - Income inequality is related to social and health policies (health care, welfare spending, child care, tax policy, and unemployment compensation) which may be related to health
  - (Subramanian & Kawachi, 2004)

BACKGROUND: INCOME INEQUALITY IN CANADA

- In a group of 17 peer countries, Canada has the 6th highest income inequality
  - Lower than United States, United Kingdom, Italy, Australia, Japan
  - Higher than Switzerland, Ireland, France, Sweden, Denmark, and others
- Canada considered to have "moderate" income inequality levels

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BACKGROUND: PREVIOUS RESEARCH

- Between-country effects:
  - Health Behaviour in School-aged Children study, country-level inequality
    - Self-related health; Torsheim et al., 2006
    - Alcohol use (young adolescents only); Elgar et al. 2005
    - Life satisfaction (steeper gradient); Levin et al., 2011
- Within-country effects:
  - United States, state-level inequality
    - Obesity; Singh et al., 2008
    - Physical activity levels; Singh et al., 2009
    - Birth-control usage (univariate only); Crosby et al., 2003

BACKGROUND: GAPS IN PREVIOUS RESEARCH

- Only a few multi-level studies on income inequality and adolescent health
  - Some have not adequately controlled for state/country mean income
- Single adolescent health outcomes; less on mental health outcomes
- Less known about within-country effects, especially in more equal countries

OBJECTIVE

- To examine the effect of province-level income inequality on health outcomes in Canadian adolescents using a within-country design

METHODS: DATASET

- National Longitudinal Survey of Children and Youth (NLSCY)
- 0-11 years in original cohort, 1994-1995
- To capture all between ages 12-17 years
  - Cycle 4, 2000-2001 (*n*= 5,580)
  - Cycle 7, 2006-2007 (*n*= 6,319)

METHODS: SES MEASURES

- Individual-level: from NLSCY
  - *Household income* (before taxes and transfers) from all sources of income for all family members during the previous 12 months
  - *Parental education* (years) was derived from questions about the highest level of education attained for parent and spouse
- Province-level: from the Canadian Socio-economic Information Management System database
  - *Income inequality* was measured using the Gini index based on household income after taxes and transfers, adjusted for household size
  - *Mean income* was measured as the average household income after taxes and transfers, adjusted for household size

METHODS: HEALTH OUTCOMES

- 19 health outcomes
  - *Self-rated health*
  - *Mental health*: self esteem, indirect aggression, physical aggression, emotional disorder, hyperactivity/inattention, prosocial behaviour, property offences
  - *Health behaviours:* television watching, physical activity, breakfast eating
  - *Substance use behaviours*: alcohol use, cigarette use
  - *Physical health:* limiting condition, injuries, chronic conditions, body mass index, general symptoms, sleep difficulties

METHODS: DATA ANALYSIS

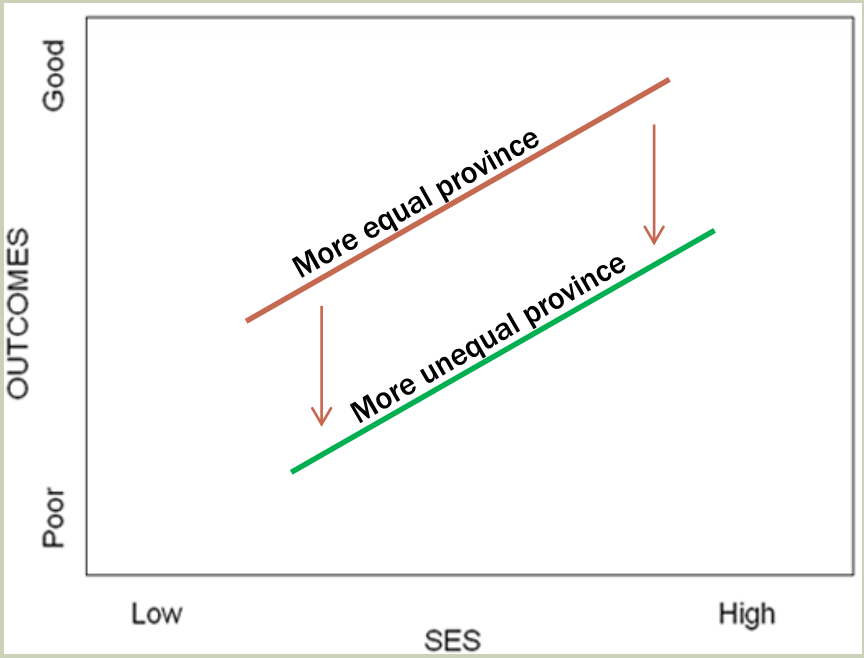
- Multiple imputation for partial non-response; used unweighted data
- Multi-level modeling: participants nested within province/year

- Hypotheses + Analyses
  1. Higher income inequality related to poorer adolescent health outcomes
     → Main effects of province income inequality
  2. Stronger associations between family SES and adolescent health in more unequal provinces
     → Cross-level Interactions

- Covariates: province mean income, household income, parental education

RESULTS: MAIN EFFECTS

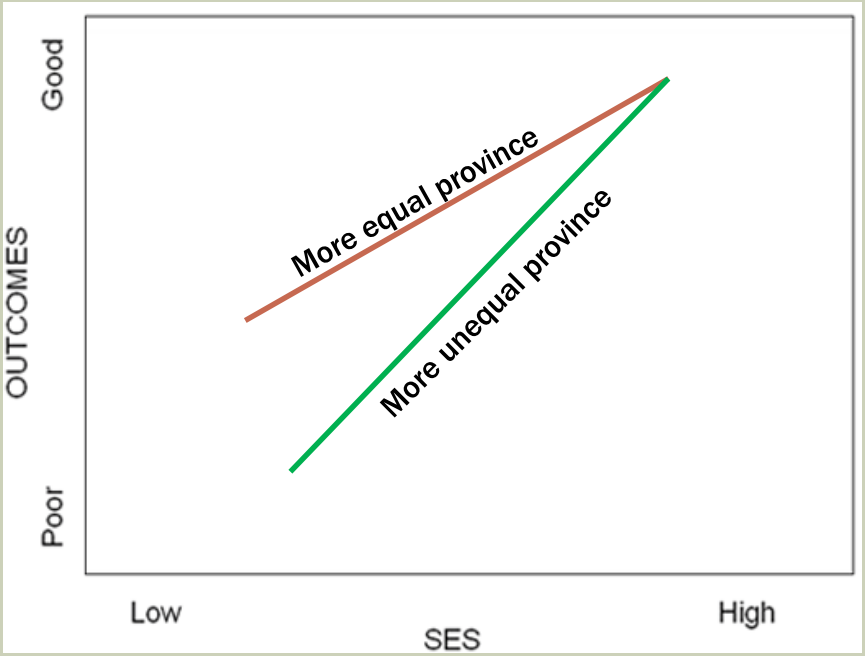
- Main effect hypothesis



- Main effect findings
  - Higher income inequality associated with
    - More injuries
    - More general symptoms
    - More life-limiting conditions
  - Not associated with
    - Self-rated health
    - Mental health
    - Health behaviours
    - Substance use behaviours

RESULTS: INTERACTIONS

- Interaction hypothesis



- Interaction findings
  - Steeper SES gradients in health in more unequal provinces for
    - Life-limiting conditions
    - Physical aggression
    - Hyperactivity/inattention
    - Property offences
  - Less steep SES gradients in health in more unequal provinces for
    - Cigarette use

CONCLUSIONS

- General conclusions:
  - Few main effect associations for province-level income inequality in Canadian adolescents
  - Some evidence of interaction with family SES for mental health, especially externalizing conditions

- Limitations
  - Cross-sectional
  - Variability in income inequality across provinces
  - Self-reported health outcomes

IMPLICATIONS & FUTURE DIRECTIONS

- Theoretical implications
  - Policy pathway:
    - Safety guidelines, access to special education, mental health care
  - Social comparison pathway:
    - Social cohesion/Crime
- Future directions
  - Level of measurement of income inequality – school, neighbourhood, province/state, country
  - Longitudinal design
  - Interactions between income inequality, family SES, subjective SES

THANK YOU

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