
Amita Toprani MD, MPH
Wenhui Li PhD
James L. Hadler MD, MPH

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Background

- Major goal of HP 2020 is to eliminate health disparities
- Low socioeconomic status (poverty) is associated with mortality, but magnitude of association can change over time
- Knowledge of trends in mortality by SES/poverty can inform public health practice
Objectives

- Document changes in NYC mortality disparities from 1990-2010 by census tract poverty
  - Race/ethnicity
  - Nativity

- Determine causes of death for which disparities are greatest
Census Tract Poverty

- Percent of individuals in a census tract living below federal poverty threshold
  - Threshold for four-person household with two children in 2015 is $24,250

- Validated SES measure

- Independently predicts health outcomes

- Standard variable for NYC Health Department analyses
Methods

- New York City and New York state mortality data 1990, 2000 and 2010
- Geocoded to census tract based on residential street address at death
- Population data from Census 1990, 2000, 2010
Methods

- Age-adjusted all-cause mortality rates by census tract poverty
  - Race/ethnicity
  - Nativity

- Age-adjusted cause-specific mortality by census tract poverty for leading causes of death

- Mortality disparities
  - Difference in age-adjusted mortality rates between highest (>30%) and lowest (<10%) poverty groups
RESULTS
All-cause Age-adjusted Mortality by Census Tract Poverty, 1990, 2000, 2010

- Year: 1990, 2000, 2010
- Age-adjusted mortality per 1,000 Population
- Poverty Levels: <5%, 5 to <10%, 10 to <20%, 20 to <30%, 30 to <40%, ≥40%
All-cause Age-adjusted Mortality by Race and Census Tract Poverty, 2010

Race/Ethnic Group

- Non-Hispanic white
- Non-Hispanic black
- Hispanic
- Non-Hispanic Asian/Pacific Islander

Age-adjusted Mortality per 1,000 Population

- <5%
- 5 to <10%
- 10 to <20%
- 20 to <30%
- 30 to <40%
- ≥40%
Mortality Disparity* by Race/ethnicity
NYC, 1990, 2000, 2010

* Difference between highest and lowest poverty groups
All-cause Age-adjusted Mortality by Nativity and Census Tract Poverty, 2010
Mortality Disparity by Nativity
NYC, 1990, 2000, 2010

- Mortality Disparity by Nativity
- NYC, 1990, 2000, 2010
- U.S.-born
- Foreign-born
- 1990
- 2000
- 2010
Mortality Disparity by Selected Cause of Death
New York City 1990, 2000, 2010

Cause of Death

- Human immunodeficiency virus disease
- Homicide
- Influenza and pneumonia
- Malignant neoplasm

Mortality Disparity

- 1990
- 2000
- 2010
Mortality Disparity by Selected Cause of Death
New York City 1990, 2000, 2010

- Heart disease
- Essential hypertension and renal disease
- Diabetes mellitus

Cause of Death

Mortality Disparity

1990 2000 2010
Selected Causes of Death and Contribution to Mortality Disparities, 1990 and 2010

Percent of Total Disparity

1990
- Other: 56.1%
- Heart Disease: 14.3%
- Homicide: 11.4%
- Diabetes: 3.6%

2010
- Other: 50.2%
- Heart Disease: 24.4%
- Homicide: 5.8%
- Diabetes: 8.9%

HIV: 14.6% in 1990, 10.7% in 2010
Heart Disease: 14.3% in 1990, 24.4% in 2010
Homicide: 11.4% in 1990, 5.8% in 2010
Diabetes: 3.6% in 1990, 8.9% in 2010
Summary

- Higher mortality with higher CTP in almost every subgroup
- Mortality disparities narrowed from 1990 to 2010 for all-cause mortality and within race/ethnic groups
- Disparities progressively narrowed for most causes of death but increased for diabetes and hypertension
- Heart disease and HIV comprise large proportion of 2010 disparities
Limitations

- Exclude deaths outside of New York state (3% of total)
- Poverty groups assigned by residence at time of death
- High population turnover and variable migration patterns
- Changes in death reporting
  - Multiple race/ethnicity option available 2003
  - Intervention reducing heart disease overreporting 2009-2010
Conclusions

- Relationship between socioeconomic status and mortality can change
- Focus on areas contributing most to current disparities
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Area-based Poverty Measures

- Describe socioeconomic conditions of geographic areas
- Widely available
- Independently predict health outcomes
- Used in addition or as proxy for individual SES
Federal Poverty Threshold (FPT)

- Income thresholds defined by Census Bureau
  - Thresholds vary by family size and composition
  - Income includes pretax earnings and cash benefits (unemployment, Social Security)
  - Does not include non-cash benefits (food stamps)

- Created in 1963–1964 using food budgets designed by Department of Agriculture

- Updated annually for inflation

- FPT for four-person household with two children in 2015 is $24,250
All-cause Age-adjusted Mortality by Sex and Census Tract Poverty, 2010

- Sex
- <5%<br>5 to <10%<br>10 to <20%<br>20 to <30%<br>30 to <40%<br>≥ 40%

- Male

- Female
Mortality Disparity by Sex
NYC, 1990, 2000, 2010

- Female: Mortality disparity decreases over the decades.