

The Social Determinants of Health: How Neighborhoods Matter

Kathleen A. Cagney
University of Chicago

Federal Reserve Community Affairs Research Conference
April 29, 2011

Neighborhoods & Health

- Evidence suggesting a link between neighborhood social and physical context and individual health
 - Asthma
 - Depression
 - Heat wave mortality
 - Impaired functional status
 - Increased cardiovascular risk

The Study of Neighborhoods & Health

- Challenges to research in neighborhoods
 - Causality and selection
 - Measurement
 - Data limitations
 - Mechanisms linking neighborhood to health
- Challenges to research in health
 - Individual-level concentration
 - Focus on demographic-based disparities
 - Disparities may exist at neighborhood level, and may extend beyond composition (e.g., Wilson)

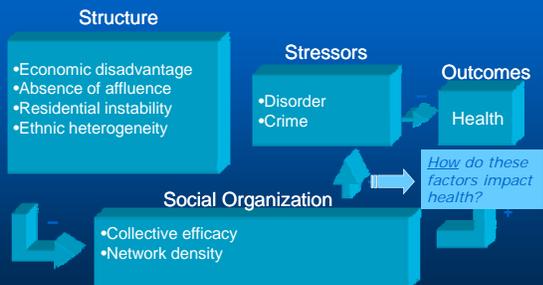
Innovation in Neighborhood Research

- Project on Human Development in Chicago Neighborhoods (PHDCN)
- LA Family and Neighborhood Survey (LA-FANS)
- The Moving to Opportunity Study (MTO)
 - Evidence indicates that context matters (Kling et al 07):
 - Adults
 - Obesity
 - Mental health
 - Children
 - Mental health (girls only)
 - Health related behaviors
 - Girls get better, boys get worse

Other Approaches

- *How else might we contribute to the understanding of the neighborhood-health relationship?*

Collective Efficacy Theory, Neighborhood Stressors & Health



Neighborhood Context and BMI

- Neighborhood structural effects:
 - Racial composition / economic disadvantage (Boardman et al 2005; Chang et al 2009; Ruel et al, 2010)
 - Built environment (Sallis et al 2007; Zick et al 2009)
- Neighborhood social process effects:
 - Disorder / psychosocial hazards (Burdette & Hill, 2008; Chang et al 2009; Glass et al 2006)
 - Suggestion that focus on individual-level treatment may be ineffective (Cubbin et al, 2006; Glass et al 2006)

Crime as Neighborhood Stressor

- Cohesive social environment associated with reduced crime (Sampson, Raudenbush & Earls 1997)
- Crime may influence:
 - *Health behaviors*: e.g., use of outdoor space for recreation, changes in diet (“comfort food”)
 - exposure to stressors may increase caloric intake, disproportionately saturated fat and carbohydrates (Dallman et al. 2004; Tataranni, et al. 1996; Yacano-Freeman & Gill 2004)
 - *Stress response*: Perceived threats trigger fight-or-flight response that can lead to higher BMI
 - Release of hormone epinephrine and neurotransmitter norepinephrine; follow-up stage results in release of cortisol – linked with slowed metabolism, weight gain (esp around middle)
 - Over time, frequent strains can lead to heightened reactivity

Crime “Spikes” and BMI

- Neighborhood research tends to neglect changes in psychosocial environments
- Health consequences of significant increases in crime *within* neighborhood—crime “spikes”—may independently affect BMI
 - Weight fluctuation is associated with higher risk of all-cause and cardiovascular disease mortality

Social Cohesion

Contingent Effects of Crime Spikes

- *Buffering*: Social cohesion reduces the positive effect of crime spike on weight gain
 - Fear reduction
- *Amplifying*: Social cohesion enhances the positive effect of crime spike on weight gain
 - Social ties disseminate information about local crime
- Gender??

Data

- Dallas Heart Study (n = 1573)
 - Area probability sample of Dallas County
 - Detailed SES, biomarker and imaging data
 - Aggregated measure of social cohesion from DHS Social Survey data (Visit 1)
- National Neighborhood Crime Data:
 - 1999-2001 incident-based crime data geocoded to census tract level
- 2000 Decennial Census
- Overlapping DHS/crime data a unique opportunity

Independent Measures

Neighborhood Social Cohesion

- Social cohesion measure based on Sampson, Raudenbush, and Earls (1997)
- Neighbors ...
 - close-knit
 - trustworthy
 - helpful
- $\alpha = .68$
- Final measure is empirical Bayes residual from a three-level rating scale analysis (ordinal logit) of cohesion items

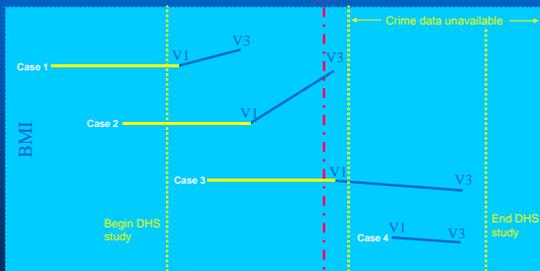
Independent Measures

Neighborhood Crime Rates

- Evidence on fear by type of crime (Skogan 1986; Sprott & Doob 1997)
- Burglary rate by year ('99, '00, '01)
 - City of Dallas 3-year average rates per 100,000 population (NNCS data): 1603.8
- Change in burglary rate (crime “spike”):
 - Top 20% of neighborhoods on change in burglary rate in year prior to Visit 1 interview date
 - On average, crime spike characterized by 60% increase in crime rate

Analytic Strategy

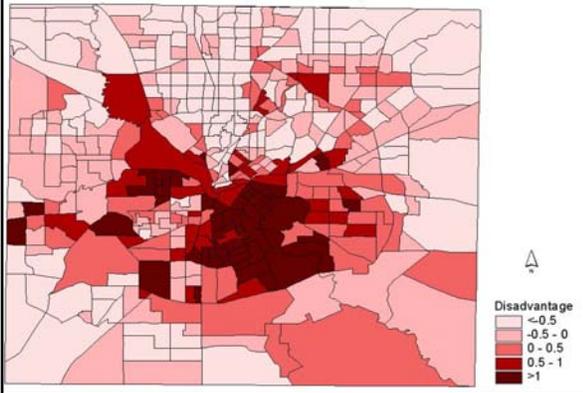
Crime data/DHS Longitudinal Data Structure

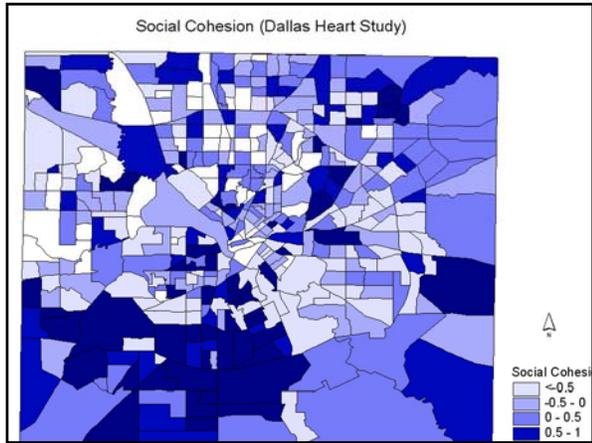


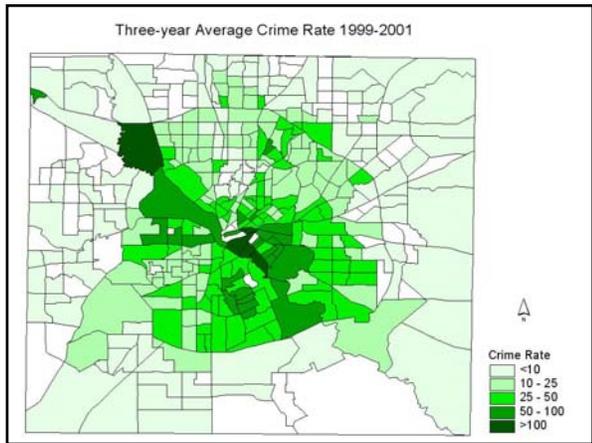
July, 1999 July, 2000 Dec, 2001 Dec, 2002

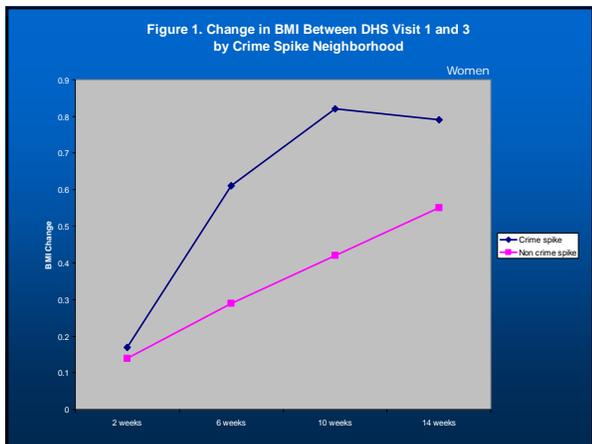
— Yr prior to V1 Interview; Crime rate/crime change
 — Trajectory/Period of observation; BMI change

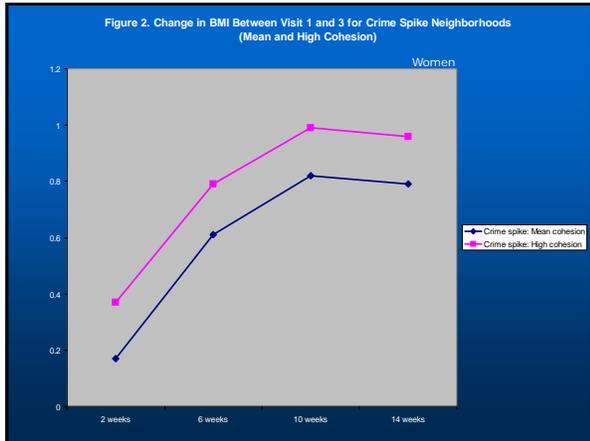
Socioeconomic Disadvantage
(Dallas County--2000 Census)











1 extra/evening = 155 cals ½ bag extra/evening = 620 cals

Potential for 15.5 lb weight gain over 10 weeks
(assuming 3500 cal leads to one lb weight gain)

Conclusions

- Social cohesion reduces the rate of weight gain
- Neighborhood crime spikes associated with change in BMI (effect dissipates over time)
- More cohesive neighborhoods amplify the effect of crime spikes on BMI

Implications

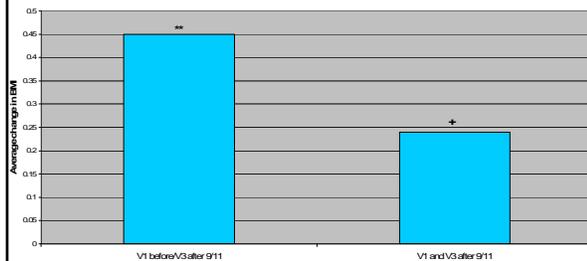
- Stronger evidence of potential causal impact of neighborhood stressors on health
- Evidence that crime volatility is more important than overall crime rate for women, opposite for men
- Signal of the “downside” of neighborhood social cohesion
- Changing individual behaviors in isolation may be more difficult than modifying environmental risk factors (Diez Roux 2003)
- Important to continue to investigate role of exogenous events
 - 9/11 may have induced fear-related changes in health behaviors and physiology. (may be more consequential for Latinos, consistent w/ Do et al 2007)
- Role of activity space (GPS monitoring)

Fear, Food & 9/11

Fear-inducing events

- Neighborhood (e.g., crime spike)
- National (“9/11 effect”)
 - Few analyses that examine changes in fear threshold/temperament nationally
 - May be particularly relevant to examine by race/ethnicity
 - Immigration concerns
 - Skin color
- Fear-related behavior
 - Do we eat more when we are scared?
 - Do we gravitate toward “comfort food?”

Figure 3. Average BMI change Between DHS Visits 1 and 3 by Timing of Visits (September 11)



p < .10 *p < .01

as compared to V1 and V3 before 9/11
Analyses control for gender, age, marital status, fb status, race/ethnicity, health behaviors, ed, income, neigh structural characteristics

