Mental Well Being &
Neighborhood Socioeconomic Context:
Comparing Measures of Mental Health
in a Multiethnic Urban Environment

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Study Objective

To compare the effects of different aspects of neighborhood socioeconomic context on several dimensions of mental health.

Healthy Environments Partnership Steering Committee

- Brightmoor Community Center
- Detroit Department of Health & Wellness Promotion
- Detroit Hispanic Development Corporation
- Friends of Parkside
- Henry Ford Health System/AIMHI
- Rebuilding Communities Incorporated
- University of Michigan School of Public Health
- Community members

Healthy Environments Partnership:

Uses community based participatory research to examine and address aspects of the social and physical environments that contribute to racial, ethnic and socioeconomic disparities in health.

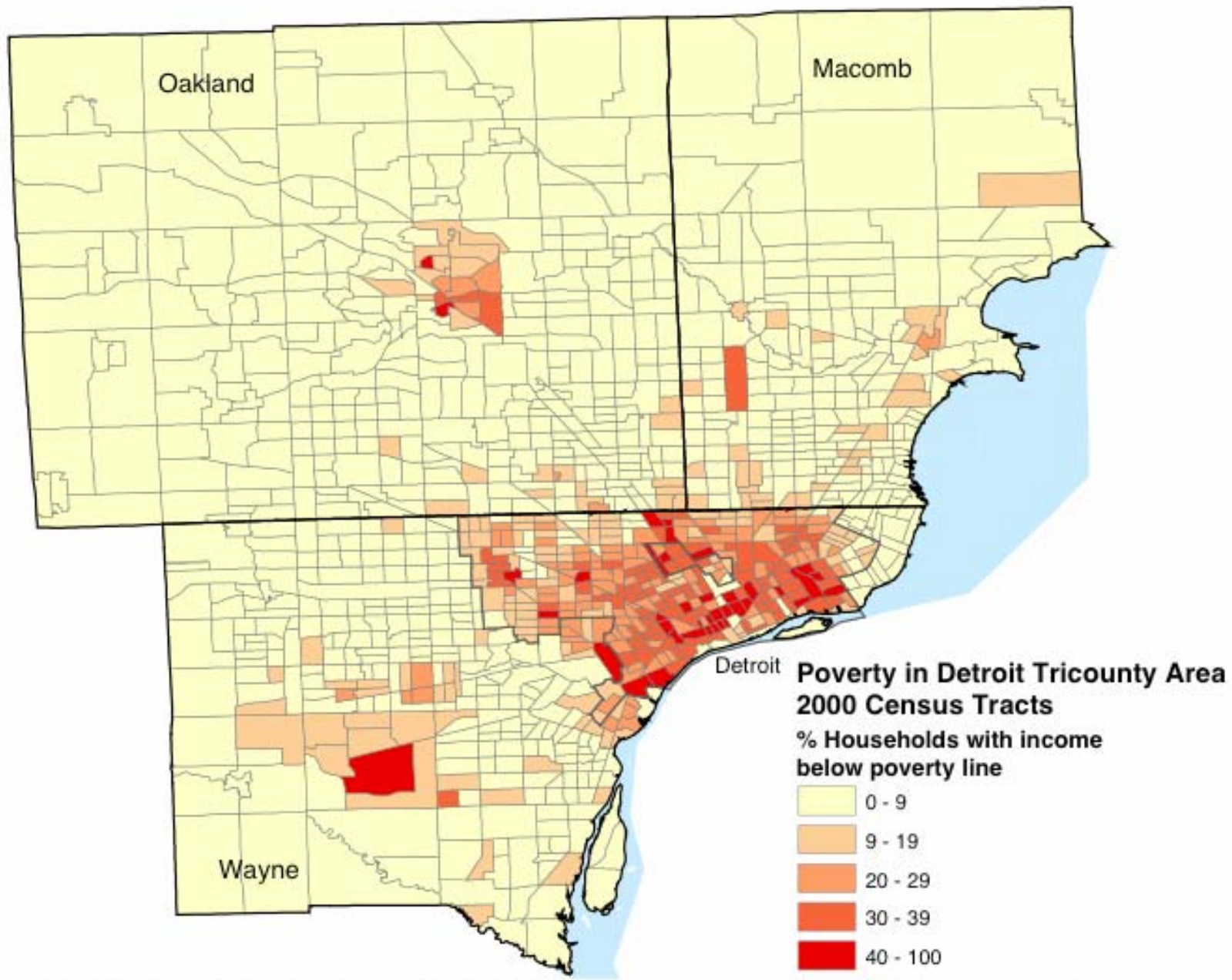# *Community Based Participatory Research*

- Engages partners from academic, public health and community perspectives in all aspects of the research process.

Detroit, Michigan

- Historically vibrant, prosperous city

- Regional economic restructuring and pervasive racism
  - Racial residential segregation
  - Concentration of wealth and poverty

	Population (million)	% African American
1950	1.8	16.2
2000	.9	82.3

Poverty in Detroit Tricounty Area
2000 Census Tracts

% Households with income
below poverty line

0 - 9
9 - 19
20 - 29
30 - 39
40 - 100

Source: US Census Bureau, 2000 SF3

Oakland

Macomb

Detroit

Wayne

2000: Percent African American Detroit, MI Tricounty Area

% African American (nonhispanic) by census tracts

- 0 - 9 %
- 10 - 29
- 30 - 59
- 60 - 89
- 90 - 100
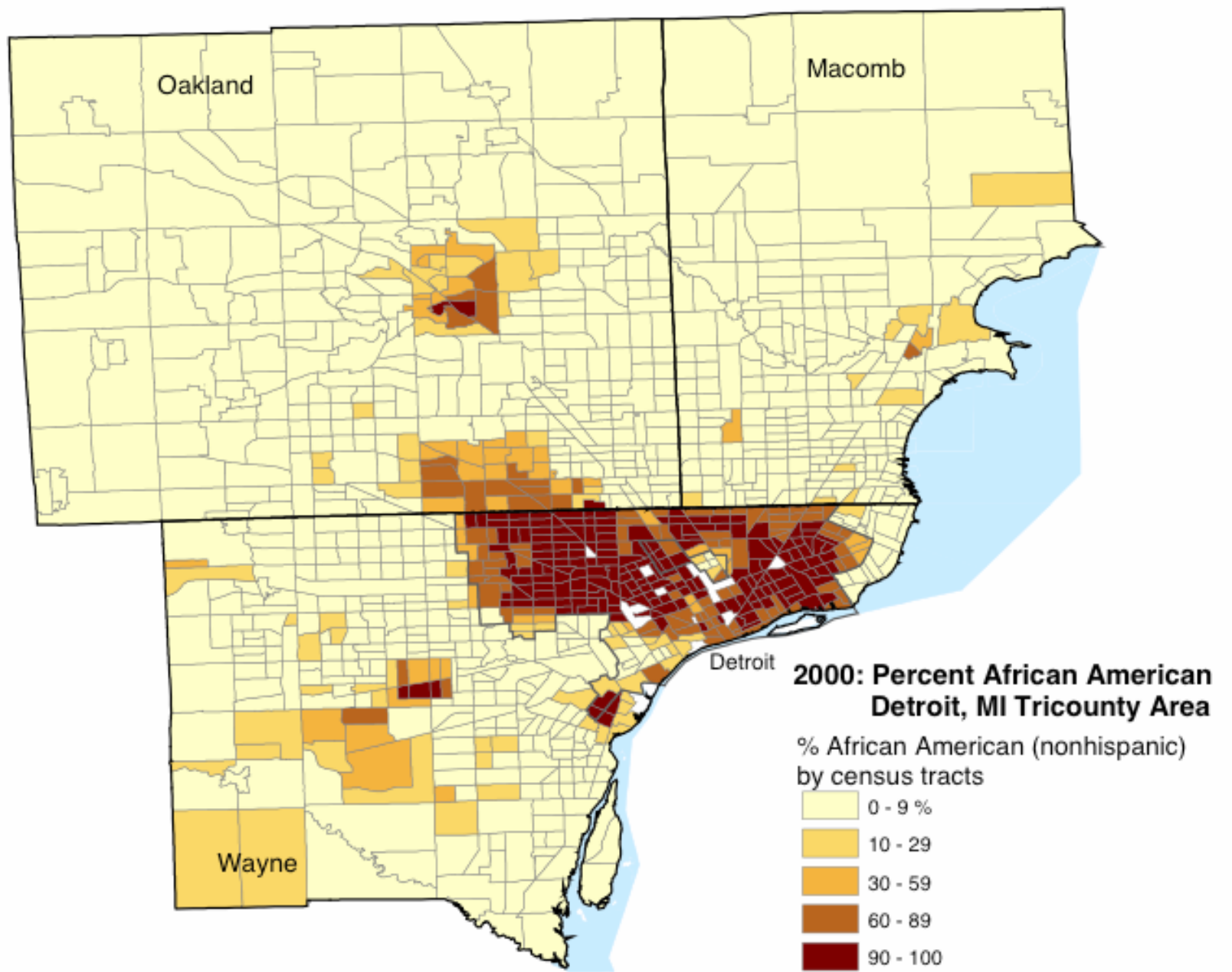
Healthy Environments Partnership   www.hepdetroit.org   2004

Source: Geolytics Neighborhood Change Data Base

Fundamental Determinants of Health...

- *"... involve access to resources, resources that help individuals avoid disease and their negative consequences."*

  – Link and Phelan 1995

Research Objective

To compare the effects of neighborhood residential socioeconomic context on 3 dimensions of mental health:

Life Satisfaction

Depressive Symptoms

Major Depression

Methods: Multilevel Modeling (HLM)

Individual Level   (N = 919):

   HEP Community Survey

   – **Stratified, multi-stage probability sample**

Neighborhood Level (J = 69):

   U.S. Census Summary File 3

   – **Block Group level**

Characteristics of Sample

	Percent:
African American	56
White (non-Hispanic)	18
Latino	22
Household income	
– < $10,000	27
– 10 – 19,999	27
– 20 – 39,999	29
– $40,000 and over	16
Homeowner	49
Length of residence neighborhood	17 years (mean)
Mean age	46 years

Characteristics of Neighborhoods

	Percent	Range
African American	68	0 - 100
White (non-Hispanic)	14	0 - 72
Latino	15	0 – 84
Residential Stability	57	21 - 88
Middle income composition	32	7 - 77
Poverty	30	6 – 58
Concentrated Poverty (>40%)	16% (19 BGs)	
Median Household Income	$27,419	$10,583 – 83,115

Mental Health Outcomes

- **Life Satisfaction**

- **Symptoms of Depression**

- **Major Depressive Disorder (12 month)**

Life Satisfaction

– **Looking back over your life, how satisfied would you say you are with your life overall?**

	Percent
• Not satisfied at all	2.8
• Not very satisfied	8.1
• Somewhat satisfied	50.5
• Very satisfied	38.5

Symptoms of Depression

- **Center for Epidemiologic Studies (CES-D)***
- **Mean of 11 questions on scale of 1 – 5 (always – never)**

Mean = 2.62

*Radloff, 1977

Major Depressive Disorder

Diagnosable depression within previous 12 months

– Composite International Diagnostic Interview (UM-CIDI), World Health Organization

● **Prevalence:**

	African American	White
– National*	5.9	6.9
– HEP survey	18.1	21.8

*Williams et. al., 2007

Individual Covariates

- **Age**
- **Gender**
- **Race**
- **Latino ethnicity**
- **Marital status**
- **Education**
- **Household income**
- **Number of persons in household**
- **Homeownership**
- **Length of residence in neighborhood**

Neighborhood Measures

Middle Income and Above	Mean	Range
Household income > $40,000	32%	2 - 77%
Poverty	30%	6 - 58%
Household income below poverty		
Residential Stability	57%	21 -88%
Percent residents living in same house 5 years earlier		

Results: Effects of Interaction of Neighborhood Income and Stability

<u>**Neighborhood effects**</u>

- **Life Satisfaction**   ns
- **Depressive Symptoms**   ns
- **Major Depression   Significant p=0.008**

Results similar for Neighborhood Middle Income and Poverty: Middle income stronger effect

Proportion of Total Variance that is at the Neighborhood Level

	ICC	Design Effect
● **Life Satisfaction**	**0.07**	**1.86**
● **Depressive Symptoms**	**0.03**	**1.37**
● **Major Depression**	**0.18**	**3.21**

Intraclass Correlation = Level 2 variance / Total variance
Design Effect = 1 + (average cluster size x ICC)

Predicted Probability of Depression for High Risk Group by Neighborhood Stability for High, Medium, and Low Percent Middle Income Neighborhoods
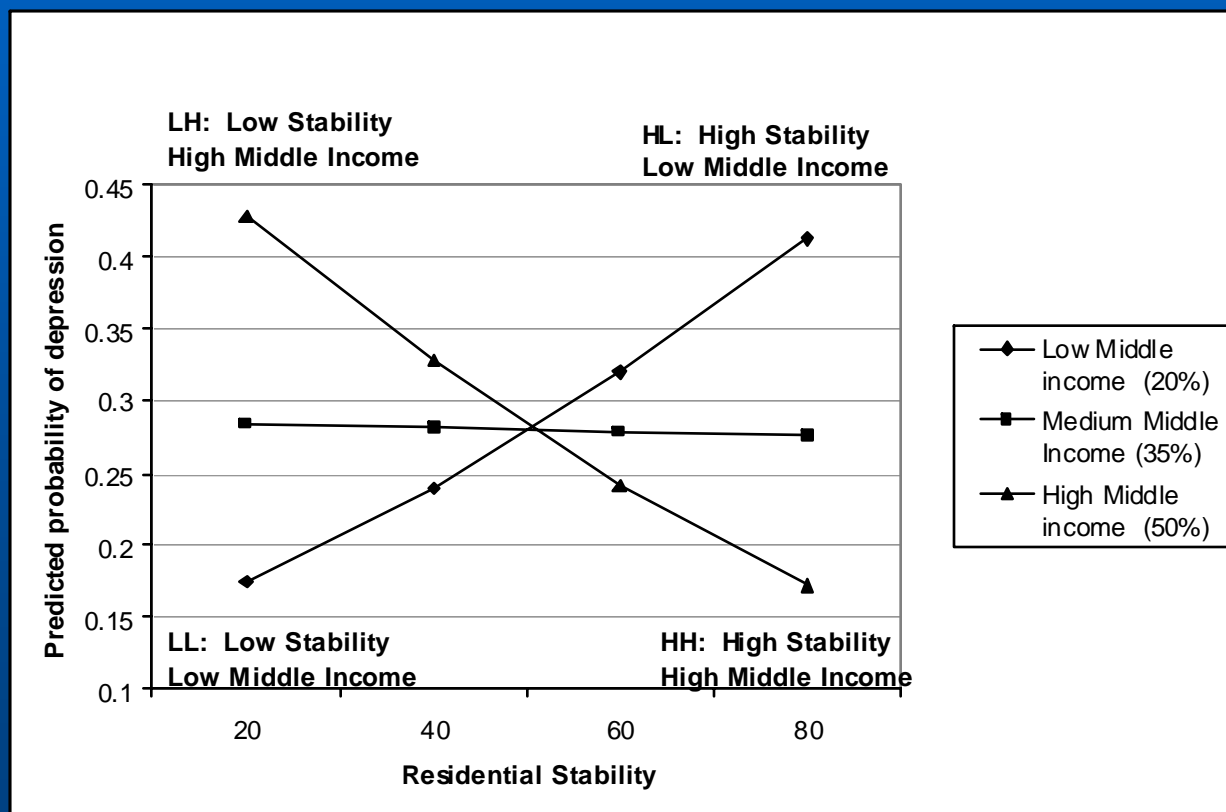
Why These Effects in High Turnover Neighborhoods?

High Turnover, Middle Income:
- Disinvestment—Deteriorating infrastructure, declining property values
- Powerlessness, hopelessness, acute stress

High Turnover, Low Income:
- Neighborhood for "transition"
- Hopefulness, resiliency
- Availability of economic buffers—services, rental housing, jobs

Why Major Depression but not Depressive Symptoms or Life Satisfaction?

- Chronic exposure to stressful daily residential environments
- Cumulative effects of chronic and acute stressors
- May be more sensitive, more variation at the local level
- Composition

Limitations & Strengths

- **Cross-sectional**
- **Measures**
  - **Life satisfaction**
  - **Residential stability does not include *loss***
  - **Middle income composition $40,000 *and above***

- **How neighborhood structural features interact**
- **Small area level, low-income disinvested city**
- **Identified high prevalence of major depression**

Implications

- **Need for research on mechanisms**

- **Treatment and structural interventions targeting specific neighborhood conditions**

- **Regeneration of neighborhoods that includes economic support and mobility for lower income residents, while attracting and retaining middle income residents**

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Multilevel Logistic Regression of Major Depression on Neighborhood Stability and Percent Middle Income

	Odds Ratio	95% CI
Intercept	0.09	(0.04, 0.21)
Individual:		
Age	0.98	(0.97, 0.99)
Female	1.82	(1.22, 2.73)
African American (non-Hispanic)	0.54	(0.33, 0.91)
Latino	0.44	(0.20, 0.97)
Income <$10,000	2.35	(1.07, 5.18)
Neighborhood:	*Beta*	*p-value*
Residential Stability	0.003	
Percent Middle Income and above	-0.009	
Stability * Middle Income	-0.001	0.008
ICC = 0.10, Design Effect = 2.20		

Residential Stability

- One end of a continuum of flux or continuity of people living in a neighborhood

- Proportion of residents living in same house five years earlier

- Long considered beneficial to health through ties that can generate social, psychological, organizational, political, and economic resources

Conceptual Model of Social Determinants of Neighborhood Residential Environments on Depression in Detroit, Michigan

National *Regional* *Neighborhood* *Individual*

Economic Restructuring

Racism & Institutionalized Racial Discrimination

Inequitable Geographic Distribution of Health Related Resources & Hazards

- Concentrated Wealth and Poverty

- Racial Residential Segregation

Residential Stability

- Stability
- Instability/Mobility

Income Composition

- Middle Income
- Change in Middle Income

Racial Composition

- Percentage African American

Hypothesized Pathways (not tested here):

- Economic Climate

- Social & Physical Environments

- Infrastructure & Services

- Political Influence

Financial Vulnerability

Emotional Social Support

Intrumental Social Support

Socio-demographic Character-istics

Depression

Summary of Results

Neighborhood percent middle income modifies the effect of residential stability on depression, controlling for individual factors.
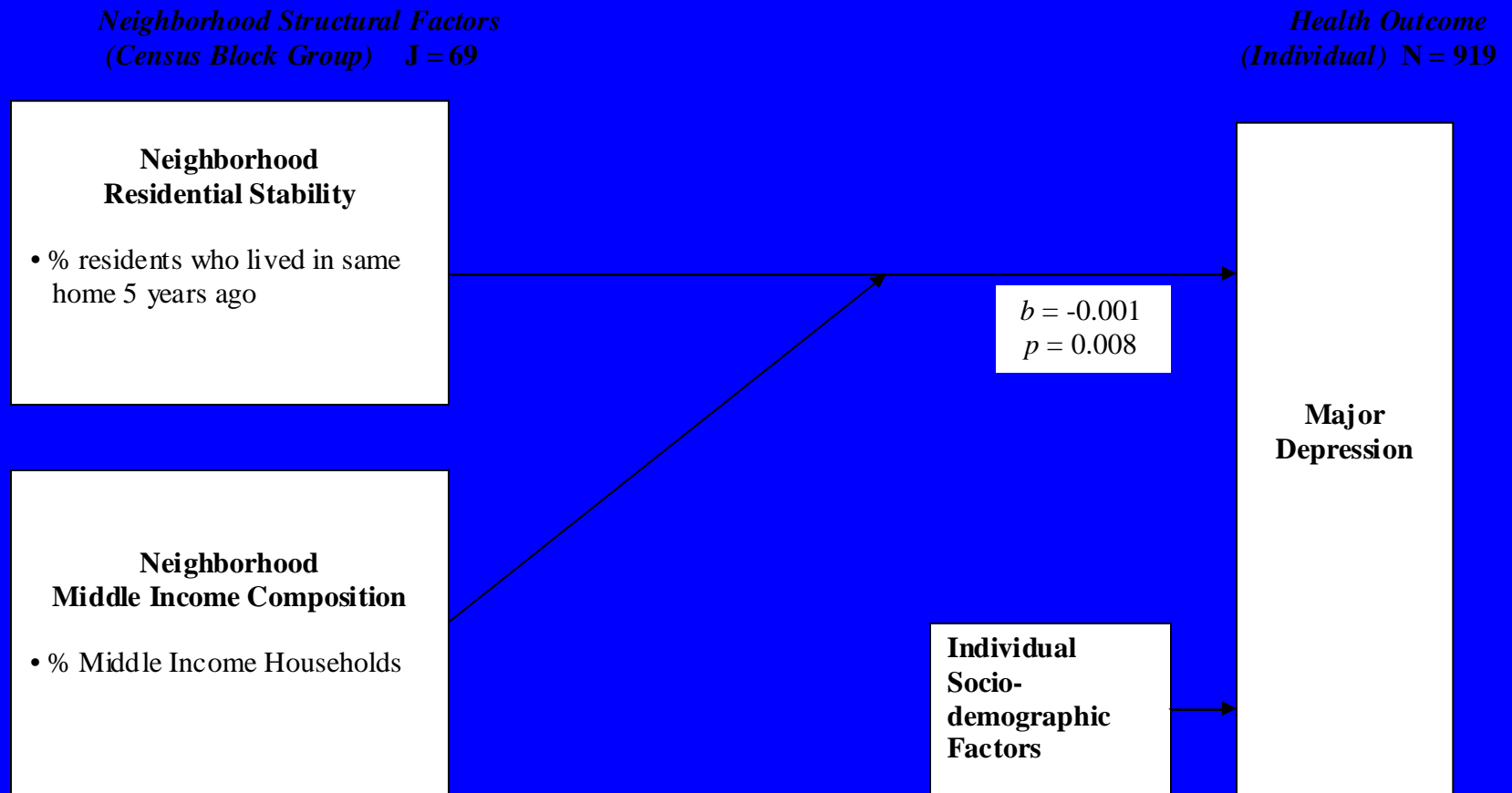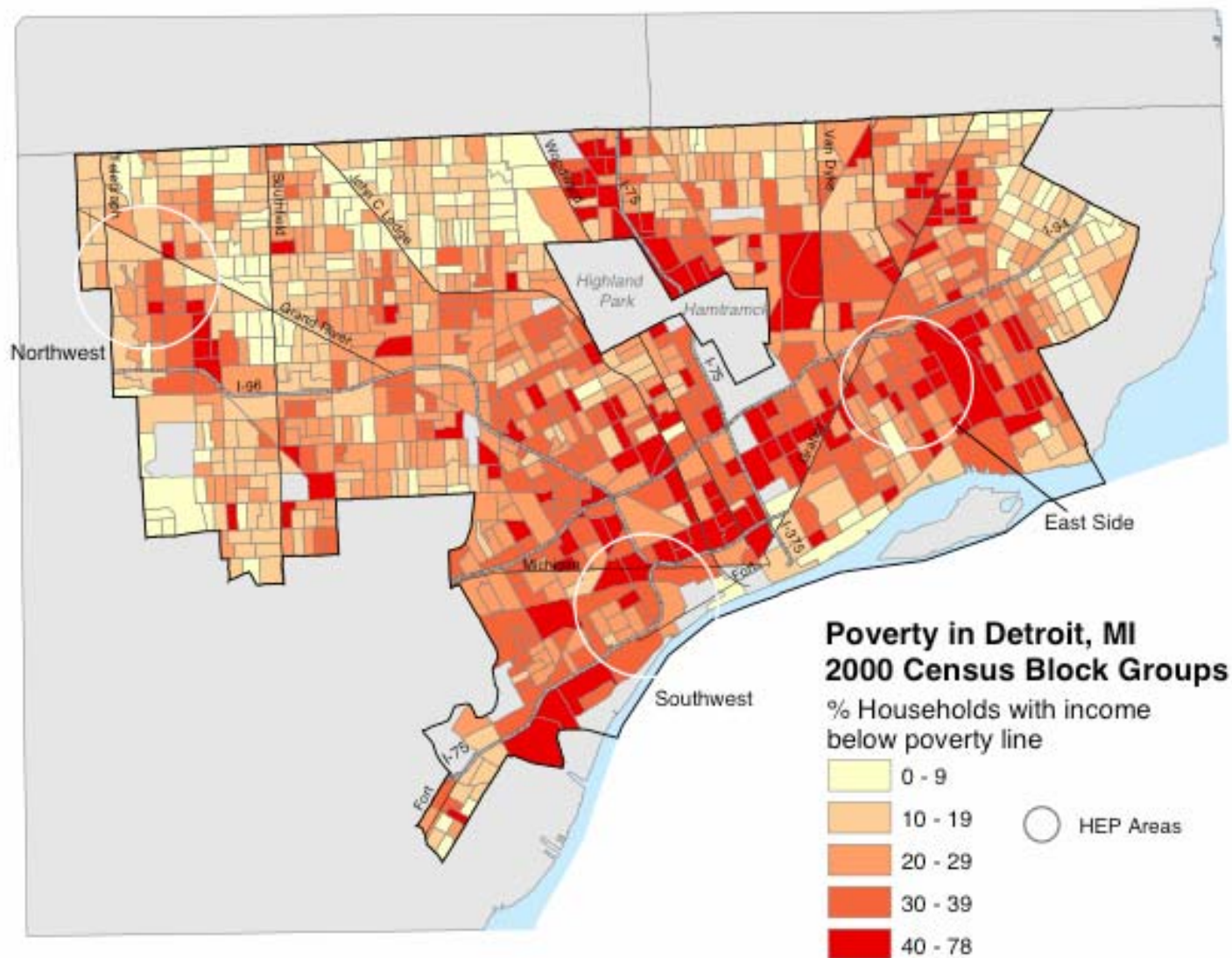
Multilevel Logistic Regression of Depression by Neighborhood Residential Stability and Percent Middle Income (partial results*)

Variable	Model 1 OR	Model 1 95% CI	Model 2 OR	Model 2 95% CI	Model 3 OR	Model 3 95% CI	Model 4 OR	Model 4 95% CI	Model 5 OR	Model 5 95% CI
Intercept	0.09	(0.04,0.21)	0.09	(0.04,0.22)	0.10	(0.04,0.24)	0.10	(0.04,0.24)	0.09	(0.04,0.21)
Individual:										
Age	0.98	(0.97,0.99)	0.98	(0.96,0.99)	0.98	(0.96,0.99)	0.98	(0.96,0.99)	0.98	(0.96,0.99)
Female	1.75	(1.17,2.61)	1.75	(1.17,2.61)	1.76	(1.18,2.63)	1.76	(1.18,2.63)	1.82	(1.22,2.73)
African American NH	0.59	(0.36,0.98)	0.56	(0.33,0.96)	0.56	(0.34,0.92)	0.54	(0.32,0.92)	0.54	(0.33,0.91)
Latino	0.45	(0.21,0.99)	0.45	(0.21,0.98)	0.43	(0.20,0.95)	0.43	(0.20,0.95)	0.44	(0.20,0.97)
Income <$10,000	2.45	(1.12,5.37)	2.44	(1.12,5.33)	2.34	(1.08,5.09)	2.34	(1.08,5.08)	2.35	(1.07,5.18)
Neighborhood:										
Residential Stability			1.01	(0.99,1.03)			1.00	(0.99,1.02)	1.003	(0.985,1.023)
% Middle Income					0.98	(0.97,1.00)	0.99	(0.97,1.00)	0.991	(0.973,1.009)
Stability * Middle Income									0.999	(0.998,1.000)
Intercept only model	0.21	(0.17,0.26)								
ICC = 0.18										

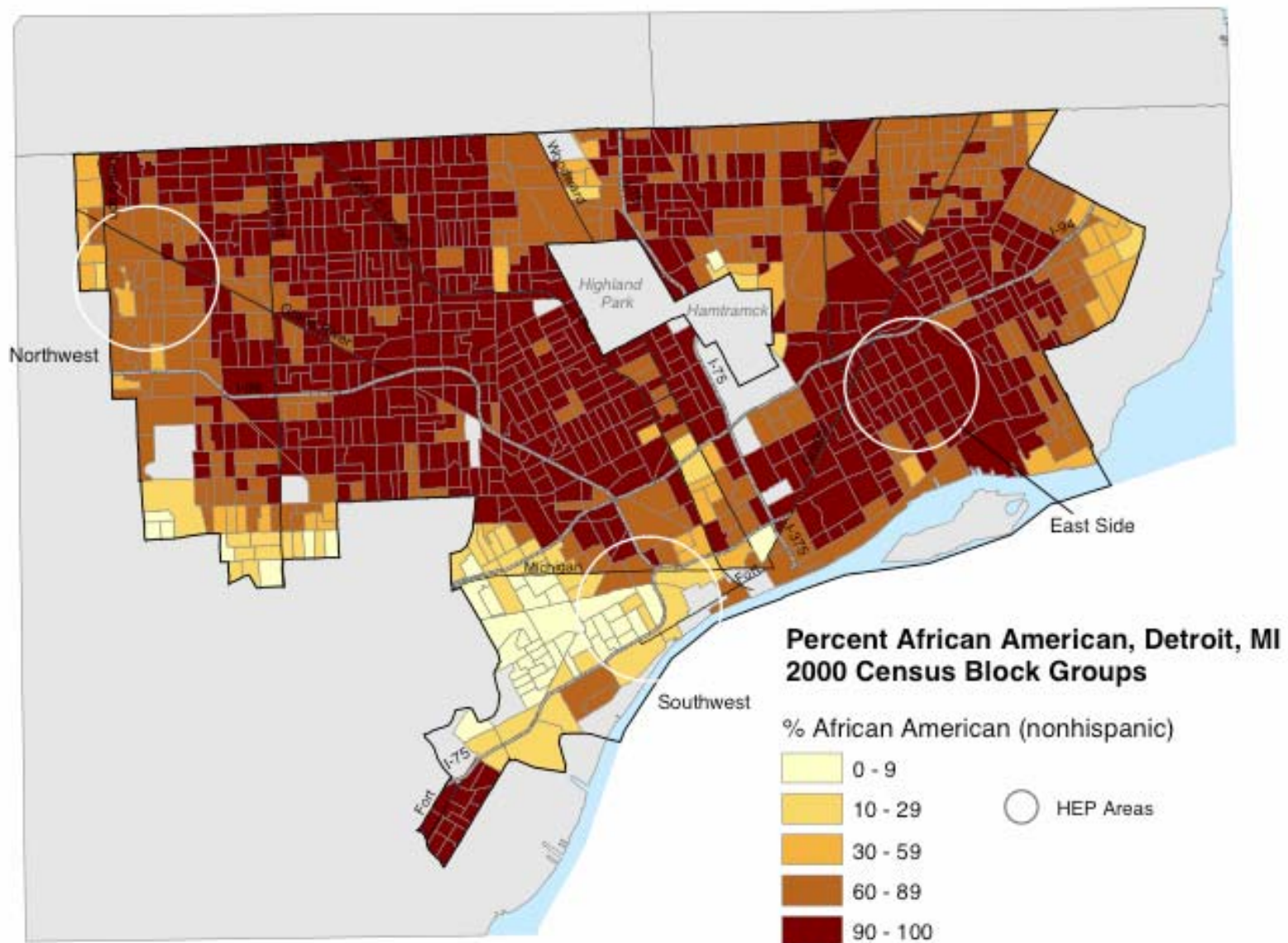*Other variables included in all models but not statistically significant at p<.05:
Other Race NH, Not Married, Education, Income $10-19,999, Income $20-39,999,
Number in Household, Not Homeowner, Length of Residence in Neighborhood.

Stability*Middle Income   b = -0.0014, p = 0.008

Poverty in Detroit, MI
2000 Census Block Groups

% Households with income
below poverty line

- 0 - 9
- 10 - 19
- 20 - 29
- 30 - 39
- 40 - 78

◯ HEP Areas

Source: US Census Bureau, 2000 SF3 data

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Percent African American, Detroit, MI
2000 Census Block Groups

% African American (nonhispanic)

- 0 - 9
- 10 - 29
- 30 - 59
- 60 - 89
- 90 - 100

◯ HEP Areas

Northwest

Highland Park

Hamtramck

East Side

Southwest

Michigan

Fort

Healthy Environments Partnership   www.hepdetroit.org   2004

Source: US Census Bureau, 2000 SF3 data

Detroit City Population Change, 1950-2000

	Pop. (million)	Percent African American
1950	1.8	16.2
1960	1.6	28.9
1970	1.5	43.7
1980	1.2	63.0
1990	1.0	75.7
2000	0.9	82.3

Community–Based Participatory Research

● Engages partners from academic, public health and community perspectives in all aspects of process, including:

  – *Identification of research questions*

  – *Data collection methods and processes*

  – *Interpretation of results*

  – *Dissemination of results*

  – *Decisions about how to apply results to address health concerns*