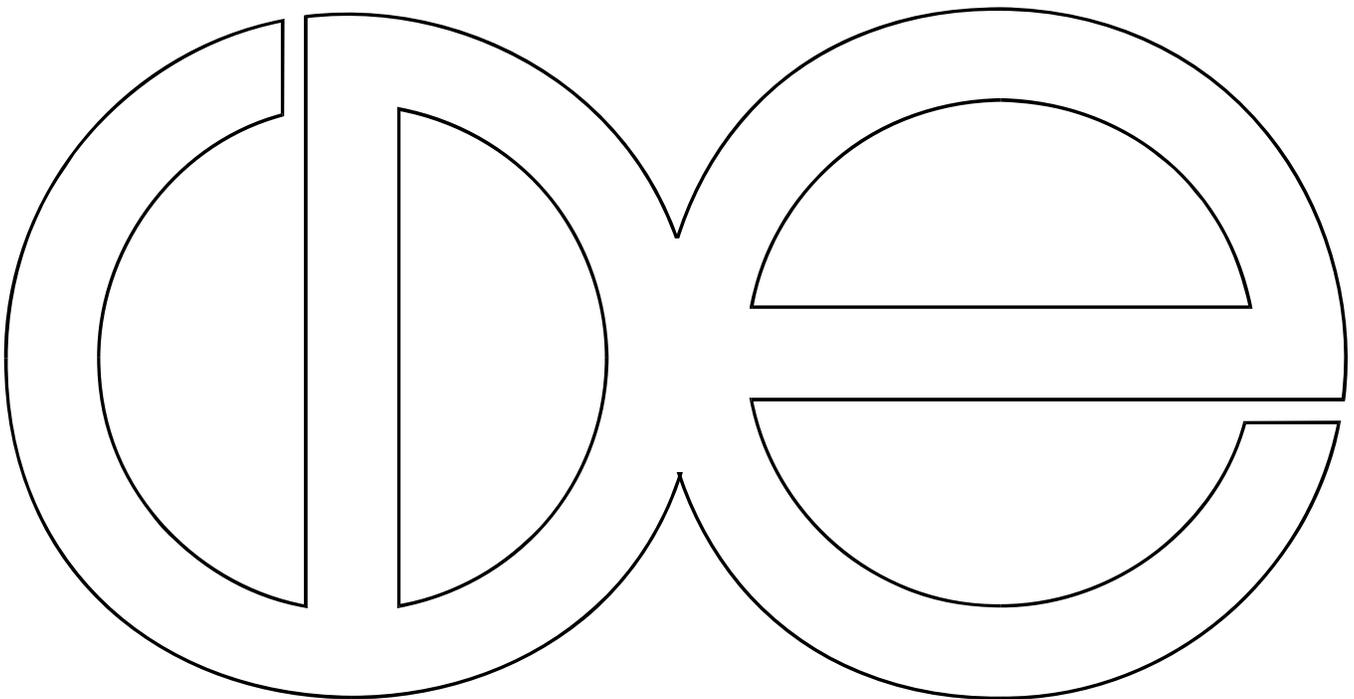# Center for Demography and Ecology

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Neighborhood Context, Age and Self-Reported Health

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Does the community context matter when examining the health of older populations? Most studies investigating community-level variables and health outcomes cover all adults 18 and older (Fiscella and Franks, 1997; Mellor and Milyo, 1999; Robert, 1998; Boardman et al., 2001; Ross and Mirowsky, 2001). These studies assume that social and economic conditions at the neighborhood level impact all individuals the same regardless of their age. And hence their results – many times indicating a weak relationship between community conditions and health – could be concealing a stronger association for certain segments of the population. Yet few studies have focused on how the community environment affects people at later stages in the life-cycle. There has been some evidence that suggest that the community environment may be more important to the lives of older adults than younger adults and therefore community socioeconomic status may be a stronger predictor of health for older populations (Lawton, 1977). In contrast, another line of research demonstrates that individual-level and family-level measures of income and education are more salient predictors of health and mortality during earlier stages of the life course (Robert, 1998). Consequently, context may not be as important to health at older ages.

But what is it about a neighborhood that should impact the health of older adults more than younger adults? Evidence from several studies indicates that the socioeconomic characteristics of neighborhoods can affect the physical, service, and social environments of a community, which consequently can influence health outcomes (see Robert, 1998 for a review).

But can we expect poor access to quality health and social services to influence health outcomes for the elderly more or less than at younger ages? This paper will attempt to answer this question and as such it will depart from previous studies examining context and health in two ways. First it will test the hypothesis that age is an important ingredient in the context and health relationship. 'Context' in this sense refers to the socioeconomic conditions of the community, which can take on several dimensions. Older populations may find living in poorer communities threatening, discouraging healthful outdoor activities such as walking or gardening, and this of course would lead to worse outcomes. On the other hand, the elderly may have better social networks which buffer them from the harsh environments they live in, leading to better health outcomes.

Second, this research will add to this previous work by hypothesizing that there are three different dimensions of community context, which each have a unique contribution to make when examining the context and health relationship – a problem-solving dimension of community context, an absolute deprivation dimension, and a relative deprivation dimension. Structural approaches exploring the relationship between social and economic conditions and health suggest that the harsh economic, political and social realities facing a population account for the disparate rates in health outcomes. In this line of research, also known as *Neighborhood Deprivation* (Boardman et al., 2001; Ross and Mirowsky, 2001), most attention is focused only on the negative aspects of the community. But there clearly are positive things about communities that might influence health outcomes. Seeing community context as a multidimensional construct allows us to examine how each aspect of community organization (or disorganization) might affect individual health separately. For example, a community's

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educational level may be a stronger predictor of health for older populations than its poverty rate since educated populations are in a better position to put pressure on community leaders to find solutions to their health problems (Young, 1998). Similarly, the average income of a community may not matter as much to the health of an aging population whose members have already prepared for major adjustments in income due to retirement.

Dimensions of Community Context

The Problem-Solving Dimension

The first dimension of community context is problem-solving. Problem-solving, usually measured by aggregated education levels, is a principal indicator of social development and is a powerful predictor of health (Young, 1998). A better educated population should be more aware of medical, sanitary and nutritional information and this should lead to attitudinal and lifestyle changes that promote better health. Therefore educated communities are hypothesized to press the government for social change, including better health care, and this should have the effect of increasing life expectancy. It is also hypothesized that the more of these types of associations present within the community, the more likely there is to be free and open contestation of ideas, and thus the more responsive the government will be to the needs of its citizens (Putnam, 1995; Young and Lyson, 2000).

Likewise Caldwell (1986) advances the thesis that grassroots political activism and radicalism are key elements in making health systems work. He asserts that in societies with exceptionally low mortality there is an "open political system, a large civilian society without a rigid class structure, a history of egalitarian and radicalism and of national consensus arising from political contest with marked elements of populism" (Caldwell, 1986:182). As an

illustration, once a community is able to pinpoint a particular problem they galvanize their specialized skills and knowledge to solve it. If this does not work the problem then becomes "political" and hence there are political debates, town meetings, and editorials all bringing attention to the many sides of the issue. Again if this does not work "the community may mobilize behind some belief or ideology that embodies a completely different perspective on the problem" (Young and Garcia, 1998:8) and a reform movement might take place.

The problem-solving dimension is also a fundamental dimension of the social structure of the community. Another way it is hypothesized to improve the health of communities is through promoting community norms which keep the population healthy. For example, communities with higher education levels and thus higher problem-solving capacity levels "are more likely to hit upon and maintain socially-backed practices that contribute to superior levels of biological performance" (Young and Garcia, 1995:8). Young refers to these practices as "health-oriented practices" and they differ from "health technology" such as immunizations and medical equipment because they are *community supported customs* such as breast feeding, avoiding nonfood intake, and "settling down" before having children, that promote optimal biological health; whereas health technology such as hand washing and chlorinated water, is supported by *scientific research*.

Indeed health-oriented practices have been found in infant mortality literature to be more important than health technology in determining population health. For example, teenage pregnancy, an indicator of weak social structure, has been found to have a positive impact on infant mortality (Markides and McFarland, 1982; Young and Garcia, 1995; Lobao, 1990), while there is an ongoing debate about the relative importance of the relationship between aggregated

community heath technology/care and health status. To illustrate, many studies have found that physician availability and prenatal care visits are not associated with improvements in infant mortality (Farmer et al., 1984; Young and Garcia, 1995; Brockerhoff, 1995).

The Absolute Deprivation Dimension

A second dimension of community context is absolute deprivation, also known as neighborhood deprivation. Neighborhood deprivation is normally measured by the prevalence of poverty and mother-only households (Ross and Mirowsky, 2001). It is characterized by weak social ties, low levels of home ownership, and poor, uneducated, and single parents. And the combination of all of these insults culminates in a disordered environment characterized by chaos and crime. Using the life stress paradigm, Boardman, et al. (2001) have stated five possible reasons why neighborhood deprivation may be related to individual health.[1] First they argue, deprived neighborhoods have higher frequencies of key stressful events such as criminal victimization and job turnover. In these kinds of neighborhoods individuals are also exposed to social strain "through negative social interactions with others and the experience of discriminatory behaviors." Second, neighborhood deprivation weakens an individual's psyche by fostering a sense of worthlessness and lack of control of one's life. Third, living in a deprived neighborhood may decrease or render ineffectual the social networks of an individual. If all of the neighbors, for example, are exposed to similar kinds of stressors themselves, then the whole community is handicapped in obtaining "the traditional arenas of support [that] can be tapped in times of stress." Fourth, deprived neighborhoods may increase levels of psychological distress.

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[1]In their article they examine how neighborhood deprivation is related to individual level drug use.

In this instance the amount of crime, violence, drugs, and decrepit infrastructure is thought to increase the psychological distress among residents in a deprived community. Finally, neighborhood deprivation may be associated with health through "unmeasured physical, cultural, or social characteristics unique to different neighborhoods." Neighborhood context may in fact be a proxy for availability of drugs, or normative context.

The Relative Deprivation Dimension

Finally, the last dimension of community context is relative deprivation. The "relative income hypothesis" coined by Wilkinson (1996) suggests that social relativities, particularly in countries that have passed the epidemiological transition,[2] are more important than absolute material living standards in determining population health because of their effects on the social fabric of society. Also in this model of health, *relative income* is more important than *absolute income* as health is hypothesized to be "powerfully affected by the social position and by the scale of social and economic differences among the population" (Wilkinson, 1996:3), and not solely through absolute deprivation. The concept of income inequality is not new in population health literature. For example, in developing countries researchers have found income distribution to be correlated with national mortality even after controlling for GNP, maternal literacy, and fertility. Likewise in developed countries this relationship also holds net of absolute levels of poverty, smoking, and racial and ethnic differences (Wilkinson, 1996). But while social scientists have taken an interest in the relationship between health and income

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[2]The epidemiological transition refers to the point in time "when infectious diseases give way to the cancers and degenerative diseases as the main causes of death. During the same period, the so-called 'diseases of affluence' became the diseases of the poor in affluent societies" (Wilkinson, 1996:3).

inequality (Eberstein, 1989; LaViest, 1989; Bird, 1995), they usually have assumed that

inequality decreased access to local services and amenities.

> Absolute income may affect through exposure to toxic materials, through poor diet, damp
> housing and inadequate heating. The powerful influence which relative income seems to
> have suggests that it is not so much a matter of what your circumstances are in
> themselves, but of their standing in relations to others: of where they place you in the
> overall scale of things, and of the impact which this has on your psychological, emotional
> and social life (Wilkinson, 1996:113).

> Advocates of the relative income hypothesis also assert that societies which are healthier

tend to be more egalitarian and have a strong community life (Kawachi et al., 1999; Wilkinson,

1996). They also tend to be more civically engaged, as evident by their greater involvement in

social and voluntary activities, and tend to have fewer incidences of antisocial aggressiveness.

Conversely inegalitarian societies, such as the U.S., have less social cohesion and greater rates of

infections, cancers, ischaemic heart disease, other circulatory diseases, respiratory diseases,

chronic liver disease and accidents (Wilkinson, 1996).

The notion that health can be affected by something other than the access to health technology is

not new in population health literature either. In their relative income hypothesis Wilkinson

(1996) and Kawachi et al., (1999) assert that income inequality leads to social disintegration.

Also, there are two plausible mechanisms by which income social disintegration might influence

health through group-level effects without being mediated through health technology:

> First, social cohesion may influence health behaviors of neighborhood residents by
> promoting more rapid diffusion of health information, or increasing the likelihood of
> adoption of healthy norms of behavior such as exercise, or exerting social control over
> deviant health-related behavior, such as adolescent smoking, drinking, and drug abuse
> (Kawachi et al., 1999:xxiv).

Second, there are more direct psychosocial pathways (such as social support, hopelessness, sense

of control, and job insecurity), by which social disintegration might impact health.

There is also a rapidly growing literature on the ways in which biological mechanisms such as those that are associated with chronic stress can give rise to a wide range of health problems. ...Impacting on both the immune system and on cardiovascular health, the results may be analogous to more rapid aging and so provide the general vulnerability factor which the social gradient in health seems to imply (Kawachi et al., 1999:xxiv).

To feel depressed, cheated, bitter, desperate, vulnerable, frightened, angry, worried about debts or job and housing insecurity; to feel devalued, useless, helpless, uncared for, hopeless, isolated anxious and a failure: these feelings can dominate people's whole experience of life, couloring their experience of everything else. It is the chronic stress arising from feelings like these which does damage (Wilkinson, 1996:215).

Hypotheses

From the literature review above I develop four hypotheses that guide my study:

1. There is a positive relationship between the problem solving capacity of a neighborhood and better health outcomes for the elderly, and this relationship will remain after controlling for individual-level SES variables.

2. There is a negative relationship between neighborhood deprivation and better health outcomes for the elderly, and this relationship will remain after controlling for individual-level SES variables.

3. There is a negative relationship between relative neighborhood deprivation and better health outcomes for the elderly, and this relationship will remain after controlling for individual-level SES variables.

4. Each community context measure will make a unique contribution to explaining health outcomes after adjusting for individual-level SES variables.

Data and Methods

The individual-level data for my analysis come from the Wisconsin Longitudinal Study. The WLS started as a 1/3 random sample (N = 10,317) of women and men who graduated from

Wisconsin high schools in 1957. The next two rounds of the survey were collected from the graduates or their parents in 1964 and 1975. Those data provide extensive information on social background, high school curriculum, youthful aspirations and social influences, schooling, military service, family formation, labor market experiences, social contact, exchanges, and health, and social participation (Sewell, et al., 2004).

In 1992, both telephone and mail surveys of 8500 WLS graduates were conducted. There were 6900 responses to both the telephone and mail surveys. These surveys not only updated measurements from the previous rounds, but they also expanded the survey to include information on a number of items including psychological well-being, and mental and physical health. Only those respondents who responded both in the telephone and mail surveys in 1992 are included in this study. The WLS has several clear advantages as a resource for studies of midlife and aging. For this study the most important elements of the survey lie in its exceptional sample retention, and the content and quality of survey data. It has followed a large and diverse sample of individuals from high school graduation to the point of retirement, while documenting a number of social and economic characteristics that are important for this study. However, a great weakness of the study is that the waves mirror Wisconsin in the 1950s, and as such few minorities are present. Since these individuals are all high school graduates, average education, occupation and income are all relatively high.

Since this is a preliminary study to examine the effects of context and health on the elderly, in the analysis presented here, I have dropped all cases outside the state of Wisconsin. By separating out those individuals who live in Wisconsin I can better understand what is going on at the contextual level, without having confounding influences such as region to complicate

the results. Fortunately approximately 70 percent of the original graduates still live in

Wisconsin. These deletions combined with approximately 207 cases which were unable to

match geocoded information for respondent's census tracts left me with a final N of 4535.[3]

Contextual-level data come from the 1990 census. Like others I will use the census tract

to best approximate a neighborhood (Robert, 1998; Boardman et al., 2001; Ross and Mirowsky,

2001). Census tracts are designed to be demographically homogeneous and their boundaries are

relatively stable over time (Boardman et al., 2001). The first data set in this category was

extracted from the Census Summary Tape file 3 from the 1990 Census of Population and

Housing. The second data set was the Neighborhood Change Database (NCBD). This is a

database created by the Urban Institute which combines tract-level data from the 1970-2000

decennial censuses. It includes detailed questions from the 1990 Census long form, asked of

about one every six households regarding population, household, and housing characteristics,

such as income, poverty status, education, employment, housing costs and immigration. These

data were then matched to the geographic location of each respondent in the WLS. In total the

WLS graduates lived in 1075 of the 1340 tracts in the State of Wisconsin.

Individual-level Measures

Self-reported health. Self-reported health is a common health indicator, and several studies

have found it to be significantly correlated with mortality even after controlling for more

objective indicators of individual health (Idler and Benyamini, 1997). It reflects how the

respondent rated their health at the time the survey was administered. For this study I have

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[3]Several national studies that match individual-level data with census data suffer from missing data issues because there was an inability to match respondents with their corresponding census-level information (Robert, 1998).

measured self-reported health in two ways. In the first measure, *self-reported health* could take

the values (1) very poor, (2) poor, (3) fair, (4) good and (5) excellent. Following Mellor and

Milyo (1999) I also constructed two other measures of health which are dummy health indicators

from the aforementioned variable. The first measure is called *goodhealth* and is created from the

response category (excellent =1, else =0). The second measure *poorhealth*, is created from the

response categories (very poor, poor, and fair = 1, else=0).[4]

Individual-level Socioeconomic Status. If not controlled, individual-level socioeconomic

status may produce contextual effects that are actually compositional, since deprived individuals

tend to also live in deprived neighborhoods. My full models include two individual-level

socioeconomic controls. (1) education (continuous variable measuring total number of years of

education); and (2) income (the natural log of total household income in 1992 + 5000).

Demographic controls. Most studies on health also have identified relationships between

health and several sociodemographic indicators. Since this is an exploratory study I will only

use one basic demographic statistical control; (1) female (female=1, else=0).

Contextual-level Measures

My interest is primarily in the dimensions of contextual effects and the contribution they

make in explaining health outcomes beyond individual-level attributes. To measure the three

dimensions of neighborhood composition (at the census tract level) I use five variables: (1) *The*

problem-solving dimension. Percent high school graduate will serve as a proxy for this variable.

It is measured as the number of individuals in a tract between 25 to 34 who are high school

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[4]Note that while others usually construct a poor health measure from the first two
categories (very poor and poor), since there was so little variation in these two categories I added
the fair response into this construct.

graduates, divided by the population of 25 to 34 years old for the year 1990. To reduce the negative skew I transformed this variable by taking its natural log divided by (100 - variable). (2) *Absolute Deprivation*. This variable is measured using three summary statistics: (i) the family poverty rate, (ii) percent of households that are headed by a female, and (iii) percent of families receiving public assistance. To create this measure I standardized each variable and then summed the measures to create an index. To reduce the positive skew I transformed this variable by taking its natural log divided by (100 - variable). (3) *Relative Deprivation*. While there are several different types of income inequality measures appropriate for this study, I will employ the coefficient of variation. The coefficient of variation is measured by taking the (standard deviation / mean) expressed as a percentage of total household income in each census tract. And again to reduce the positive skew I transformed this variable by taking its natural log divided by (100 - variable).

Statistical Analyses

I first present means and standard deviations, as well as a correlation matrix of the variables of interest in Tables 1 and 2. In Figure 1 I also present a graphical representation of the neighborhood deprivation variables in the State of Wisconsin. Following a discussion of these descriptive statistics, I regress each of the three health measures on the separate dimensions of community context (Tables 3,4, and 5). These models do not include individual-level SES measures. In the final models in these tables, I estimate a baseline contextual effects model to assess if there is a relationship between community context and health. Table 6 presents a full model with community context variables and individual-level SES variables to ascertain whether the community context matters above and beyond individual-level socioeconomic status. For

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self-reported health I employ a linear regression model, and for the goodhealth and poorhealth dependent variables I use logistic regression models.

Model estimation for this analysis requires one to employ multilevel techniques. Analyzing data at multiple levels can introduce special problems for researchers. Correlated error terms are often a by-product of hierarchically organized data. This data is analyzed with regression techniques for clustered data. The robust regression routine available in the statistical software package Stata adjusts for clustering within hierarchical structures and produces conservative error terms, guarding against the production of biased estimates, artificially deflated standard error terms, and subsequent inflated t-ratios. That is, robust regression allows for a relaxation of the assumptions of independence within groups (census tracts). For example, in comparing the standard errors between my full models using regression with robust standard errors versus a model using regular OLS regression, the standard errors are larger and the t-ratios are smaller for the study variables and constant in the model using regression for robust standard errors.[5]

Findings

Descriptive statistics are presented in Table 1. These results indicate that while Wisconsin may be an ethnically and racially homogeneous state, there is quite a lot of socioeconomic diversity, particularly at the census tract level. In Table 2, I examine the bivariate associations between the community context variables and health in the correlation matrix. The community context variables are weakly correlated to self-reported health,

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[5]For the constant, in the full model using regression for standard errors its value is .998 and its t-ratio is 4.52, while for the regular model the corresponding values are .916 and 4.92.

goodhealth, and poorhealth (although income inequality and goodhealth are not significantly correlated with each other). Individual-level education and income also were both moderately correlated with all three health measures. We also see from this bivariate analysis that for older populations individual-level SES variables are stronger predictors of individual-level health outcomes than are the contextual predictors.

Figures 1-3 are graphical representations of all three contextual variables. In these maps we see even more clearly the heterogeneity of the state of Wisconsin. In Figure 1 the darker shades represent census tracts with high rates of individuals completing high school. Not surprisingly some of the highest rates are found around Dane county (where the University of Wisconsin-Madison is located) and the city of Milwaukee. In Figures 2 and 3, the darker shades represent areas of greater deprivation while the lighter shades represent areas of more affluence. In Figure 2 the high levels of deprivation are found near Milwaukee, and in Northeastern and Northwestern Wisconsin. Figure 3 shows a similar trend yet it also includes Southwestern Wisconsin as well. In sum, these maps indicate that there is quite a lot of contextual variation in Wisconsin and hence context could play a role in determining health outcomes.

Table 3, 4 and 5 present the results of the multivariate analysis. Note that these tables do not include individual-level SES measures, and female is the only individual-level variable in this part of the analysis. In these tables I regress each of the three health measures on the contextual variables. The purpose of these tables is to understand the effects of contextual variables on individual health outcomes for older populations, without confounding the effects of individual-level variables. In Table 3, Models 1, 2, and 3 show that each dimension of community context is a statistically significant predictor of self-reported health, with income

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inequality having the weakest association. Problem-solving capacity is positively related to self-reported health, while absolute deprivation is negatively related to self-reported health. Female is also significant in all four models. WLS graduates living in communities with higher problem-solving capacity have, on average, better self-reported health than those living in communities with less problem-solving capacity. Likewise, individuals living in communities with more absolute and relative deprivation, have on average, worse self-reported health than those living in more affluent and egalitarian communities. Models 4 shows that when all of the dimensions are included into the equation, only problem-solving capacity and absolute deprivation are statistically significant predictors of self-reported health.

Turning to our other measures of health, Tables 4 and 5 show similar results. In Table 4 two of the three dimensions are statistically significant predictors of good health (education and the deprivation index) whereas income inequality was not significant. While problem-solving capacity is positively related to goodhealth, absolute deprivation is negatively related to this variable. Yet in Model 4, when all the dimensions are included in the equation, only percent high school graduate is a statistically significant predictor of goodhealth. Income inequality approaches significance in this model but the effect is not in the hypothesized direction. Again we also see that female is significant in all of these models.

In Table 5, again, as in the case of self-reported health all of the dimensions are significant predictors of poorhealth, with relative deprivation having the weakest association. Problem-solving capacity is negatively associated with poorhealth, while absolute deprivation and relative deprivation are positively associated with poorhealth. However the only individual-level variable in these models, female, is no longer statistically significant in any of the four

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models as it was with the other health variables. And when all of the dimensions are included in the equations, the problem-solving and absolute deprivation dimensions remain significant predictors of poorhealth.

In sum, these results are fairly consistent with most studies examining context and health which find community context associated with individual-level health. These results also support the first part of my first three hypotheses. There is a positive relationship between problem-solving capacity and better health outcomes for the elderly (Hypothesis 1). There is also a negative relationship between absolute deprivation and better health outcomes for the elderly (Hypothesis 2). The results, however, only partially support Hypothesis 3. Relative deprivation was only significant in predicting self-reported health and poorhealth. Yet since individual-level SES was not included in any of these models it could be that community-level SES is just a proxy for individual-level SES. In the following Models we examine if contextual variables are associated with health even after controlling for individual-level SES.

Table 6 presents the full models including individual-level and contextual-level variables for all of our measures of health. As stated earlier, this part of the analysis tests whether context matters above and beyond individual-level effects. In Model 1 regressing self-reported health on all of the variables, two of the dimensions (problem-solving and absolute deprivation) remain statistically significant predictors. Individual-level education and income are also highly significant predictors of health. These findings show some support for my hypothesis that context should matter beyond the individual-level attributes. In Model 2, regressing goodhealth on all the variables, of the contextual dimensions only the problem-solving variable remains significant. Again, the individual-level SES variables remain highly significant. And finally in

Model 3 regressing poorhealth on all of the variables, absolute deprivation is significant, while problem-solving capacity approaches significance. Individual-level education and income remain highly significant.

These results also lend partial support to the last part of my first three hypotheses. Hypothesis 1 asserted that problem-solving capacity would remain significant with the inclusion of individual-level SES variables as well as the contextual dimensions. This hypothesis was supported with both self-reported health and goodhealth (it approached significance with this variable), but not poorhealth. Hypothesis 2, again, only partially supported my results – absolute deprivation remained a significant predictor of self-reported health and poorhealth. Finally, Hypothesis 3 was not supported by my results. Relative deprivation was not a significant predictor of any health indicator in the full models. Hypothesis four also was partially proven. Both problem-solving capacity and absolute deprivation made unique contributions to explaining health outcomes even after adjusting for individual-level SES.

Conclusions

This preliminary study adds to the growing literature examining neighborhood context and health outcomes by examining the relationship between community-level SES indicators and self-reported health for elderly populations. This research contributes to this literature in two ways. First it looks at how context effects the elderly, specifically. And secondly it specifies community structure as multidimensional. That is, just as there are several dimensions to individual-level SES (i.e., education, income, occupation and assets) there are also several dimensions to the structure of a community.

The results indicate that the problem-solving capacity dimension of community context

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(percent high school graduate), has a significant effect on self-reported health, and the likelihood of an elderly individual being in good health or poor health, even beyond the influence of individual-level SES. This indicates that the collective education level of a community to problem-solve and find solutions to local issues matters for health outcomes, even though we do not know how this process works. The other dimensions of community context were not as strong predictors of health. Absolute deprivation remained significant above and beyond individual-level SES only for self-reported health, and relative deprivation was not significant in any of the full models after controlling for individual-level SES. And while these estimated net effect are small, in comparison to individual-level socioeconomic status, they are still important since even small changes in neighborhood socioeconomic status could potentially impact thousands of residents (Boardman et al., 2001).

This, however, is only a preliminary study and as such has several limitations. As people age, they are exposed to a variety of individual and social conditions that challenge their sense of control and independence. Yet our findings do not elucidate the process through which community context could influence health. It could be that older residents encounter more social stressors or more negative life events that will indirectly influence their outcomes. It also could be that as individuals age they have more access to health care networks and services that serve as a buffer for them. Future work in this area should try to investigate the process through which community context predicts health status for the elderly. Another limitation to this work is that there were few individual-level predictors in the models. Again, since this was a preliminary study only basic individual-level indicators were used. There are several correlates of health, however, that can be added to a future study, such as marital status, smoking, and obesity.

Individual-level assets should also be used as an additional SES indicator, since research

suggests that for older populations assets may be even more important than education or income

(Robert, 1998).

Finally, further work in this area should investigate the role of race and how it influences

the community context and health connection. Criminologists have long asserted that the color

of skin is very important in the type of risks that one is exposed to. It therefore seems likely that

community context will work differently for different racial and ethnic groups. It also may be

that we need to include a broader array of contextual indicators into our models. In sum, a closer

look at all of these issues will help us to better understand how contextual variables influence

health and well-being.

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Table 1 Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
Self-reported Health	1	5	4.11	.66
Goodhealth	0	1	.26	.44
Poorhealth	0	1	.13	.33
Female	0	1	.54	.50
Individual-level education	12	21	13.25	2.04
Individual-level income	7.82	12.63	10.75	.89
Problem-Solving Capacity (% High School Graduate)	-1.02	4.60	1.50	.58
Absolute Deprivation (Deprivation Index)	.-7.88	-3.85	-6.03	.54
Relative Deprivation (Income Inequality)	-4.85	-4.05	-4.40	.08

Table 2. Correlations Among Study Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Self-reported Health	1								
(2) Goodhealth	.791***	1							
(3) Poorhealth	-.727***	-.221***	1						
(4) Percent high school	.113***	.111***	-.076***	1					
(5) Deprivation Index	-.090***	-.067***	.071***	-.506***	1				
(6) Coefficient of variation	-.035***	-.013	.033*	-.284***	.359***	1			
(7) Female	.032*	.036**	-.017	-.026	.018	-.004	1		
(8) Individual-level education	.134***	.137***	-.074***	.223***	-.070***	-.009	-.130***	1	
(9) Individual-level income	.128***	.103***	-.085***	.169***	-.135***	-.057***	-.157***	.220***	1

Table 3

Self-Reported Health Regressed on Contextual-level Variables, Controlling for Female

Independent Variables	Model 1	Model 2	Model 3	Model 4
Problem-Solving Capacity (% High School Graduate)	.130*** (.017)			.104*** (.021)
Absolute Deprivation (Deprivation Index)		-.110*** (.018)		-.060** (.021)
Relative Deprivation (Income Inequality)			-.300* (.139)	.073 (.145)
Female	.045* (.020)	.043* (.020)	.040* (.020)	.045*(.020)
R²	.014	.009	.002	.016

Cell entries are unstandardized coefficients and standardized errors are in brackets
Indicators of significance: *** = p < .001; ** = p < .01; * = p < .05; @ = p< .10.

Table 4

Goodhealth Regressed on Contextual-level Variables, Controlling for Female

Independent Variables	Model 1	Model 2	Model 3	Model 4
Problem-Solving Capacity (% High School Graduate)	.432*** (.056)			.412*** (.067)
Absolute Deprivation (Deprivation Index)		-.285*** (.062)		-.109 (.072)
Relative Deprivation (Income Inequality)			-.373 (.430)	.800 @ (.455)
Female	.175* (.070)	.162* (.070)	.155* (.070)	.178*(.070)
R²	.012	.005	.001	.013

Cell entries are unstandardized logistic regression coefficients and standardized errors are in brackets
Indicators of significance: *** = p < .001; ** = p < .01; * = p < .05; @ = p< .10.

Table 5

Poorhealth Regressed on Contextual-level Variables, Controlling for Female

Independent Variables	Model 1	Model 2	Model 3	Model 4
Problem-Solving Capacity (% High School Graduate)	-.436*** (.089)			-.313** (.099)
Absolute Deprivation (Deprivation Index)		.401*** (.086)		.239* (.101)
Relative Deprivation (Income Inequality)			1.303* (.636)	.107 (.687)
Female	-.111 (.091)	-.106 (.091)	-.099 (.091)	-.111 (.091)
R²	.009	.007	.002	.010

Cell entries are unstandardized logistic regression coefficients and standardized errors are in brackets

Indicators of significance: *** = p < .001; ** = p < .01; * = p < .05; @ = p< .10.

Table 6

Health Variables Regressed on Contextual-level Variables, Controlling for Individual-level SES and Female

Independent Variables	Self-Reported Health	Goodhealth	Poorhealth
Female	.084*** (.020)	.308*** (.071)	-.221* (.093)
Individual-level Education	.035*** (.005)	.118*** (.017)	-.097*** (.027)
Individual-level Household Income	.079*** (.012)	.222*** (.046)	-.242*** (.047)
Problem-Solving Capacity (% High School Graduate)	.056** (.021)	.257*** (.070)	-.191$^@$ (.104)
Absolute Deprivation (Deprivation Index)	-.057** (.021)	-.108 (.073)	.232*(.102)
Relative Deprivation (Income Inequality)	.023 (.143)	.607 (.462)	.178 (.687)
R²	.041	.031	.023

Cell entries are unstandardized coefficients and unstandardized logistic regression coefficients standardized errors are in brackets
Indicators of significance: *** = p < .001; ** = p < .01; * = p < .05; $^@$ = p< .10.

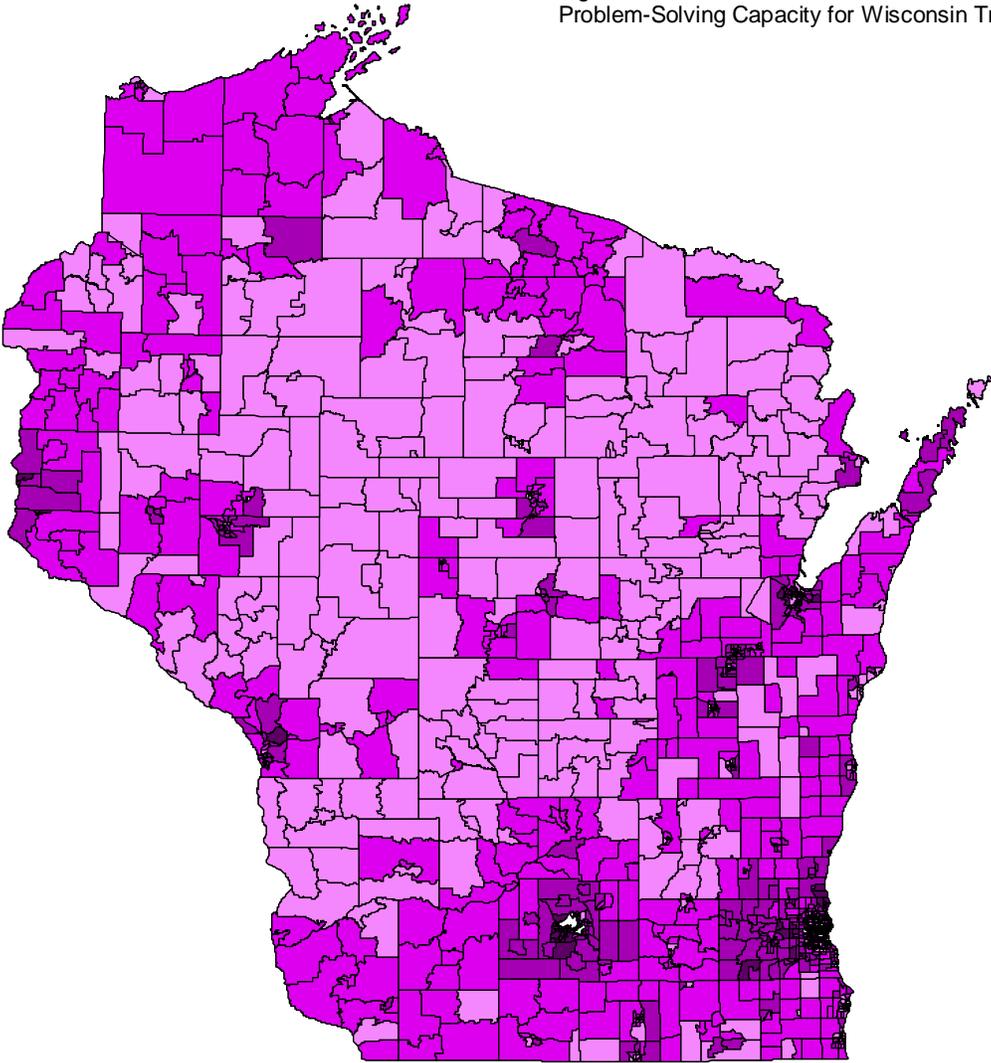Figure 1.
Problem-Solving Capacity for Wisconsin Tracts, 1990
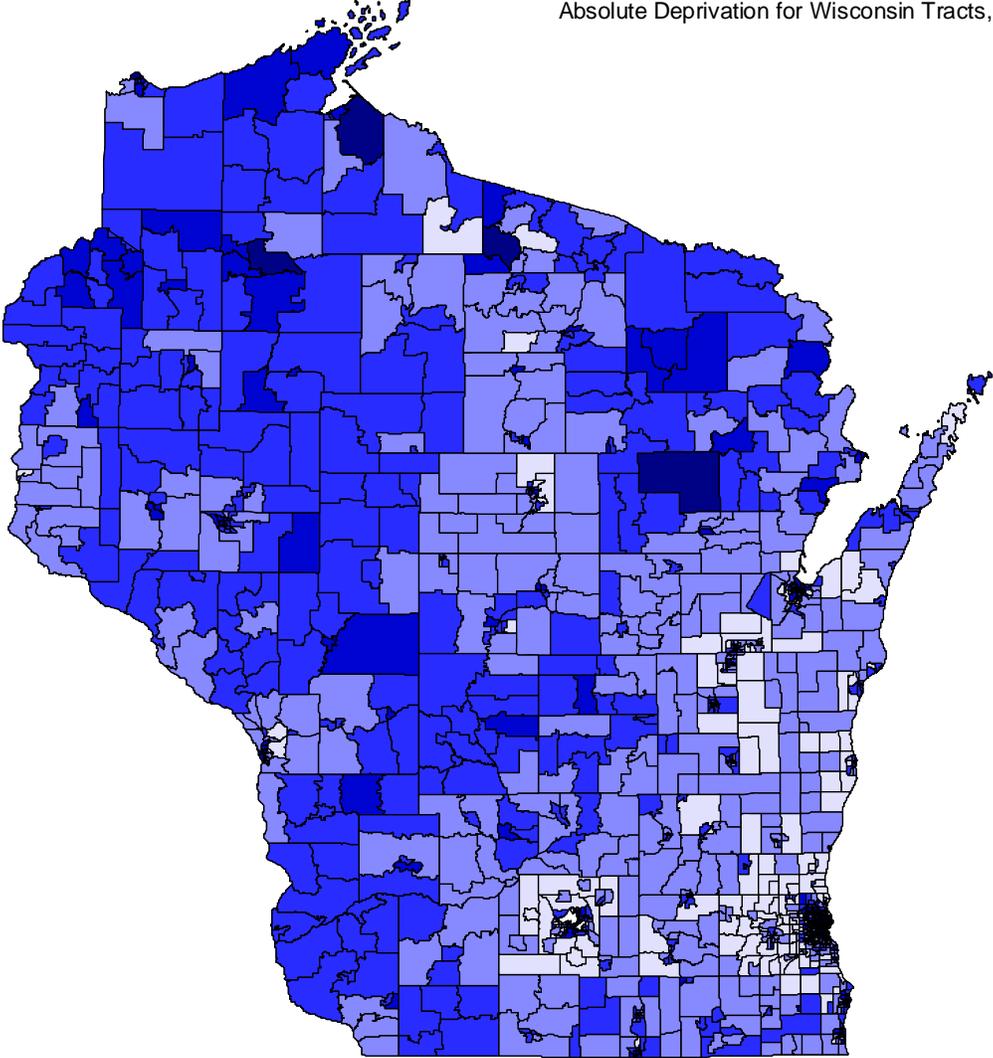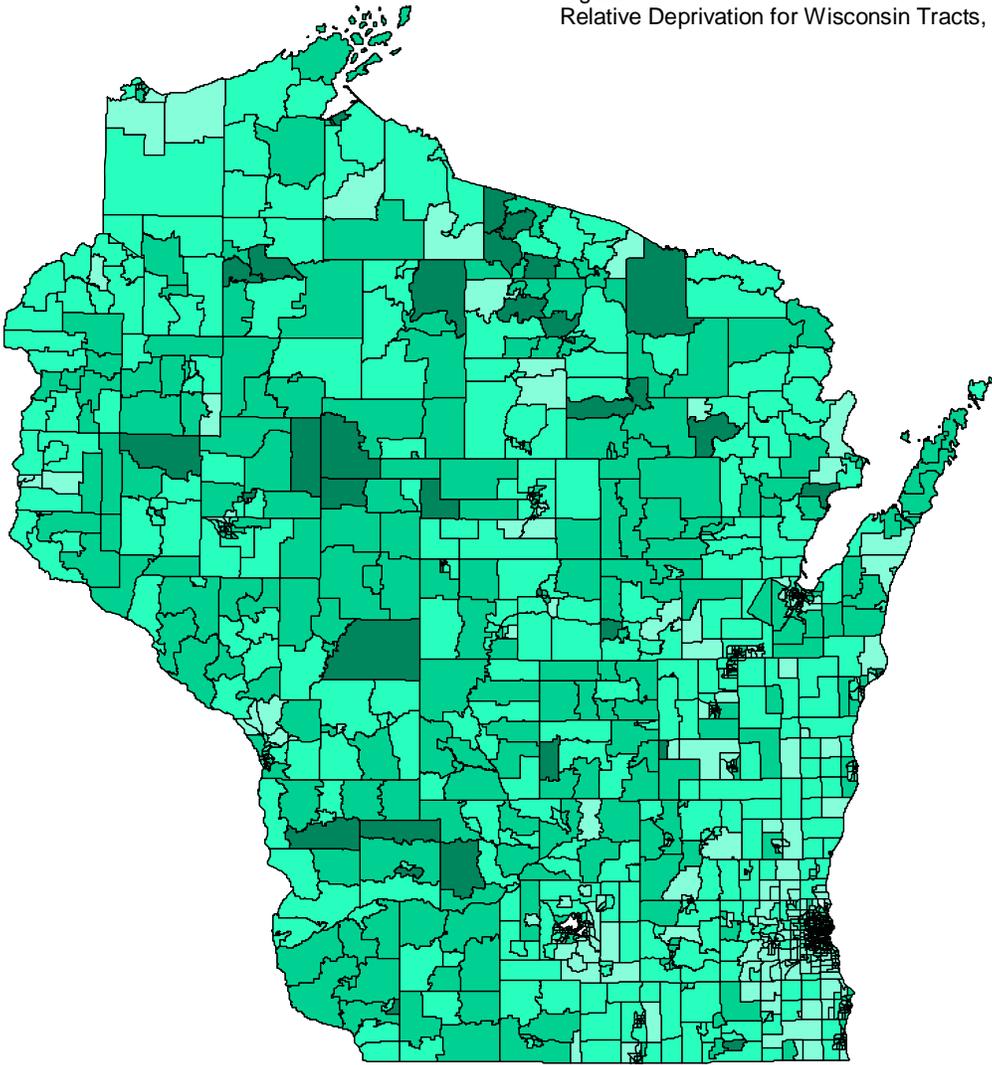
Figure 2.
Absolute Deprivation for Wisconsin Tracts, 1990

Figure 3.
Relative Deprivation for Wisconsin Tracts, 1990

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