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Community Economic Change and Depression: Evidence from the 1980's Farm Crisis[1]

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Abstract

This paper examines the effect of aggregate economic conditions in communities on individual levels of depression. While the effect of economic conditions on mental health has been examined at the aggregate level and at the individual level, models including both individual and aggregate processes are necessary to differentiate contextual from individual processes impacting mental health status. Both cross-sectional and panel data from a sample of respondents representative of a Great Plains state on which data were available in 1981, 1986, and 1989 were used in the analysis. The cross-sectional analysis in 1989 consisted of 2,485 respondents. Panel data from 916 respondents in 1981-1986 and from 1,299 respondents in 1986-1989 also analyzed. In both the cross-sectional and panel data there was little evidence of an effect of living in economically distressed communities on mental health independent of the relationship to the individuals' economic conditions. The research found that while individuals were able to evaluate the state of the local economy with some degree of accuracy, and their perception of the local economy was related to depression, this effect was not strong enough to produce a significant relationship between aggregate economic measures and depression. Implications of these findings for understanding community climate effects in smaller communities is discussed.

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INTRODUCTION

Over the past forty years, a preponderance of studies in psychiatric epidemiology have been guided by a social stress model. Making use of individual-level variables, researchers have tried to establish the relationship between mental disorder and a variety of risk factors. Economic distress figures prominently in many of these studies. Although researchers often note that macroeconomic conditions establish the context within which economic distress is experienced, stress models typically do not include the ecological variables necessary to test the proposition.

In contrast to the stress/distress literature, the work of Brenner (1973; 1976) and others has focused on the relationship between economic conditions and rates of mental disorder/ hospitalization. Using aggregate measures of both independent and dependent variables, these studies find, with some consistency, that there is a significant relationship between economic and mental health variables. Unfortunately, few of these studies have included individual-level variables in the analysis. Consequently, the research casts little light on the factors or processes through which local economies impact individual well-being.

Nowhere are the limitations of these two research strategies more clear than in the literature which has arisen in response to the farm crisis of the mid-1980's. Most of these studies have been guided by an individual stress model; in focusing on the distress produced by personal economic hardships, research has frequently ignored the volatility of the farm economy over time and has failed to empirically consider the variation in economic conditions that exists between different types of rural and urban communities.

The farm crisis literature shows, for instance, that farmers and farm families that were experiencing high levels of economic distress in the early to mid-1980's reported higher levels of depression and emotional strain than farmers with fewer financial problems (Hoyt 1988; Kettner, Geller, Ludtke, and Kelly 1988; Marlowe and Little 1985; Ortega, Johnson and Craft 1995; Conger and Elder 1994). However, the "farm crisis" studies have generally been cross-sectional and many have included farmers only in their samples; when urban respondents have been included, the comparison made is often simply between metropolitan and non-metropolitan residents. Although research appears to indicate that the mental health problems of farmers are exacerbated by economic distress, research has not yet demonstrated whether (1) over time, changes in economic stress -- desirable or undesirable --have led to changes in mental health status, nor (2) whether farmers are any different in this regard, than other rural residents or city dwellers. In addition, existing research does not permit an adequate assessment of the extent to which changes in the local economy impacts mental health solely through its relationship to individually experienced economic events or whether other processes are also involved.

Dooley, Catalano and Brownell (1986) identify at least four possible avenues by which changes in the local economy might affect individual well-being. First, the simplest form of the "provocation hypothesis" holds that aggregate economic change is no more than the sum of individual economic events. Consistent with a general stress model, the provocation hypothesis anticipates that negative economic events

such as the loss of a job or income, bankruptcy, difficulty paying bills, etc. increase the probability that an individual will experience significant emotional distress (See also Catalano and Dooley 1977). Thus, changes in the local economy affect mental health simply because they alter the probabilities that an individual will experience negative economic events.

A second mechanism is outlined in the "anticipation hypothesis". Even in the absence of personally experienced economic hardship, changes in the local economy could affect mental health insofar as those changes lead to anxiety about possible future undesirable financial events (Dooley et al. 1986; Dooley and Catalano 1980). To the extent that individuals feel helpless regarding their economic futures, are pessimistic about their economic prospects, and believe that relative to individuals in other communities their financial outlook is poor, this hypothesis would predict that declines in the local economy would lead to increased levels of psychological distress, independent of individually-experienced negative economic events.

The third and fourth explanations that Dooley et al. (1986) propose rest on a presumed interaction between local economies and individual stressful life events. The third hypothesis holds that the amount of mental distress an individual experiences as a result of financial hardship depends upon whether or not financial problems are seen as a reflection on personal competencies; persons who are unemployed during times of full employment may suffer more distress than those who are unemployed during times when the unemployment rate is high simply because they have fewer, or less compelling, structural/systemic justifications for their financial plight. According to Dooley et al., an assessment of whether one's economic hardships are a result of personal incompetence or factors beyond one's control depends upon an individual's awareness of local economic conditions.

Finally, it is possible that the economy and stressful events interact without the individual being aware of the status of the local economy; individuals may be less able to cope with personal economic hardships in those communities where social support systems have been disrupted by patterns of out-migration and economic decline. Dooley et al. (1986) treat this explanation as a type of interaction hypothesis; the literature, however, generally finds that social support has direct, as well as buffering, effects on mental health. It is possible, therefore, that economically-based changes in social support systems may have effects on individual mental health that are independent of stressful life events.

The 1986 Dooley et. al. paper is a notable exception to the general rule that research has failed to use a longitudinal design that includes both aggregate and individual-level variables and both metropolitan and nonmetropolitan subjects. Using panel data collected in Kansas City, Missouri (metropolitan) and Washington County, Maryland (nonmetropolitan) in 1972 and 1973, these authors report that aggregate economic conditions have no significant direct or interactive effects on depression, once respondents' age and prior levels of depression are controlled. Individual economic events had a similarly low relationship to depression once prior symptoms were controlled. This pattern of "non-effects" held for both metropolitan and nonmetropolitan samples, and generally for both males and females. Despite the apparent robustness of the findings, there are two major reasons why it is premature to reject any of the hypotheses outlined above. First, the Dooley et al. samples

included communities and data points that contain relatively little variation in unemployment rates or structural change in the labor force. It is possible, therefore, that changes in the local economy do have effects on psychological well-being, but that the effects occur only when fluctuations in the economy are more extreme or take place over a longer period of time. Second, it remains possible that the effects of economic change vary across community types (Clausen and Kohn 1959; Dooley, Catalano, Jackson, and Brownell 1981; Dooley et al. 1986). As a number of scholars have pointed out (Bender et al. 1985; Cordes 1989), studies must take into account the cultural, demographic, and economic diversity of rural America. It is unlikely that the metropolitan/nonmetropolitan distinction captures the heterogeneity that exists within different types of rural and urban communities.

This study is designed to overcome many of the limitations noted above. Data come from a representative sample of Nebraskans, first interviewed in 1981, and subsequently interviewed in 1986 and 1989. This time period saw rather dramatic change in the state and the farm economy, from a period of prosperity it the early 1980's, to the depths of the farm crisis in the mid-1980's, to a period of economic recovery and resurgence in the last years of the decade. Included in the sample are farmers and ranchers, residents of very small rural communities, city-dwellers, and residents of metropolitan areas. Both aggregate and individual-level economic indicators are used to predict levels of depressive symptomatology. Because more refined measures of social support and economic stress were available in the 1989 survey, the analysis takes place in two stages. In the first stage of the analysis, cross-sectional data are used to test the four explanations that Dooley et al. propose for the relationship between economic conditions and mental health; particular attention is given to the way in which community type modifies these relationships. In the second stage of the analysis, panel data are used to test a somewhat less comprehensive model of the relationship between changes in the economy and changes in depression.

STUDY DESIGN

Samples. The data used in this study were collected in three telephone surveys conducted in 1981, 1986, and 1989. The 1981 survey consisted of a representative sample of 1,890 adults living in Nebraska households. Sampling was done by random digit dialing. A random procedure was used to select the adult to be interviewed in the selected households. Of the 1,870 respondents to the 1986 survey, 60 percent were selected from the 1981 survey, and the rest were new respondents, also drawn by random digit dialing techniques. The 1989 survey also involved a panel component. All respondents to the 1986 survey were included in the sample. The 1989 survey also included a sample of new respondents selected using similar sampling procedures but disproportionately stratified to over-represent the rural and non-metropolitan areas. Fifty percent of the supplemental sample came from rural counties, 40 percent from non-metropolitan, and 10 percent from metropolitan. There were a total of 2,554 respondents in the 1989 survey. Of these, 1,411 were from the 1986 panel. Of the 1986 respondents, 969 were also in the 1981 survey. Johnson et al. (1992) present a detailed description of the study design. Non-response analysis found no evidence to suggest that non-respondents to the panel components of the

survey had higher rates of depression, alcohol use, or economic distress than respondents.

Measure of Depression. Depression was measured at all three times points by the 17-item Warheit depression subscale (Schwab et al. 1979), This measure is part of a larger general impairment scale that has been used in a number of community surveys throughout the United States (Warheit et al. 1976; 1986). Reliability and validity tests conducted by Schwab et al. (1979) found that the scale was able to differentiate between clinical and nonclinical populations, was consistent with the judgments of psychiatrists, and had an alpha reliability coefficient in excess of .80.

Aggregate Economic Measures and Community Size. Two measures of local economic conditions are used in the analyses. The first indicator is a measure of change in the total number of persons employed in a county and is computed as a 3-year moving average, The second indicator is the county-wide average wage per employee in 1988. Because the employment and wage variables are highly correlated, the effects of each variable are analyzed separately.

Community size is also measured in two ways; it enters most of the analyses as a straight measure of population size. In the analyses which focus on community interaction effects, communities are categorized into five types, reflecting different points on the rural/urban continuum: farms, rural (open country and towns with populations of less than 2500), towns with populations of 2500 to 10,000, cities with populations from 10,000 to 50,000, and metropolitan areas larger than 50,000.

Individual Measures of Economic Well-being and Social Support. Four indicators of individual economic well-being and social support are used in our analyses. In order to test the "provocation hypothesis", we use an index of negative economic events, that is based on the work of Tausig (1982). The measure is a simple count of the number of economically stressful events a person has experienced within the past three years. It includes items such as being laid off or fired, taking a second job to make ends meet, putting off medical care because it could not be afforded, loan foreclosures, etc. Scores on the economic distress index can range from 0 to 12; because the variable is highly skewed, scores of 5 or more are coded as 5.

The "anticipation hypothesis" is assessed by including in the analysis a variable which taps an individual's evaluation of his or her own financial prospects. The item asks: What about your financial prospects: Do you feel that you are better off this year than you were two years ago at this time, about the same, or worse off? This item is available at all three time points in the survey, and so is used in both the cross-sectional analysis and in the analysis of change.

A perceptions of the local economy indicator is used to test the hypothesis that the psychological consequences of individual economic hardship varies depending upon the state of the economy and upon an individuals cognitive appraisal of whether their personal economic distress is a reflection of local economic conditions or personal shortcoming. The item asks: How would you rate the economy in your local area? Would you say it is excellent, good, fair, or poor? Finally, an Available Social Support index is used to test the hypothesis that declines in the local economy affect mental health by disrupting social support systems. The measure used in this study is derived from the 40-item Interpersonal Support Evaluation List developed by Cohen, Mermelstein, Karmack and Hoberman (1985). It includes items

from each of four domains of social support/resources: tangible, appraisal, self-esteem, and belonging. The measure used in this paper is a count of the number of different types of support the respondent perceives to be available to him/her through their existing support networks. Scores range from 0 to 13, but the variable is highly skewed. Consequently, scores of 0 through 7 were set equal to 7.

Control variables. In all analyses, controls are introduced for the possibly confounding effects of age, gender, and education. Age is a respondent's actual age in years and education is measured in terms of years of school completed.

Methods. Using both a cross-sectional and a panel design, multiple regression techniques are used to test each of the four hypotheses, outlined by Dooley et al. (1986). Multiple regression is also used to test for the presence of interaction effects by community type. Means, standard deviations, and zero-order correlations for all dependent and independent variables used in the 1989 cross-sectional analyses are presented in Table 1.

According to the "provocation hypothesis", local economic conditions impact mental health because they alter the probabilities that an individual will experience economic distress. In our data, there is virtually no support for this hypothesis. First, the zero-order correlations between the two indicators of the local economy and individual depression were not significant. Second, only average wage per county was significantly related to personal economic distress and that relationship was not strong; the beta coefficient, after controlling for demographic variables was .07 (data not shown). Third, and perhaps most importantly, economic distress does not appear to mediate the relationship between aggregate economic conditions and mental health. Consistent with previous literature, economic distress is significantly and strongly related to depression, with a beta of .28 (analysis shown in Table 2); it remains significant both before and after controlling for aggregate economic variables. The effects of county wage level remains significant when individual economic hardship enters the equation; however, the effects are small and in a direction opposite of that predicted by the hypothesis; after controlling for individual economic distress, the higher the average wage level in the county, the higher the level of depression (Beta =.05). In sum, findings provide little support for either the basic proposition that local economic conditions impact individual well-being or the provocation hypothesis that they do so by increasing or decreasing the probabilities that individuals will experience negative economic events.

Results from an analysis of the effects of community size are also reported in Table 2. As a preface, it is important to note that even though 1989 was a relatively good year for the agricultural economy, larger communities in Nebraska experienced substantially greater gains in employment in the three years prior to the survey than had smaller communities (r=.47) and they had a significantly higher wages overall than rural areas (r=.68). Nevertheless, there is no evidence that farmers and other rural residents had any higher levels of depression in 1989 than the residents of larger communities. In fact, community size has a very modest, but statistically significant, positive effect on depression, after controls are introduced for personal economic distress. Despite their personal and community economic (mis)fortunes, rural and small town residents are slightly less depressed than urban and metropolitan dwellers. This finding stands in rather stark contrast to what might be expected on the basis of

Table 1. Correlations, means and standard deviation of variables in the 1989 cross-sectional sample. (N=2485)

Variables	Mean	Std. Dev.	Gender	Age	Educ.	Comm. Size	Economic Distress	Cnty Avg. Wage	Cnty Employ Change	Econ Prospects	Rate Local Econ.	Social Support
Gender	1.582	.490	1.									
Age	48.88	17.5	.089	1.								
Education	13.20	2.64	-.07	.286	1.							
Community Size	66.85	114	-.05	.105	.169	1.						
Economic Distress	1.372	1.84	.029	.281	.018	.035	1.					
County Average Wage	12.60	2.68	-.04	.123	.174	.68	.052	1.				
County Employment Change	0.033	.029	-.05	.11	.169	.47	.025	.683	1.			
Economic Prospects	1.75	.694	.061	.334	.167	.048	.091	.065	.083	1.		
Rate Local Economy	2.559	.729	.046	.03	.093	.209	.209	.244	.303	.195	1	
Social Support	12.05	1.395	.082	.159	.188	.001	.078	.003	.014	.163	.128	1.
Depression	13.89	6.859	.066	.062	.111	.020	.282	.011	.001	.130	.134	.359

Table 2. Standardized regression coefficients showing the effects on depression (dependent variables) of aggregate economic indicators, community size, and individual perceptions and social support. (Gender, age and education were included as controls in the regression). (N = 2,451).

Independent Variables	1	2	3	4	5	6	7	8	9	10
Community Size	0.04			0.05*			0.04	0.05	0.03	0.04
County Change in Employment		0.01			0.03		0.04		0.02	
County Average Wage			0.03			0.05*		0.03		0.01
Economic Distress				0.28*	0.28*	0.28*	0.25*	0.25*	0.21*	0.21*
Perceived Local Economy							0.07*	0.07*	0.04	0.04
Economic Prospects							0.09*	0.09*	0.07*	0.07*
Social Support									-0.34*	-0.34*

Note: * p<.01

much of the farm crisis and mental health literature. Two explanations seem plausible. First, even though rural economies remained depressed relative to those of larger communities, the late 1980's was a period of economic recovery in the agricultural sector. If local economic conditions affect mental health only under conditions of economic crisis, the recovery of the late 80's may have eliminated the range of economic conditions which produce a significant increase in depression. Thus, as was true for Dooley et al., our study may not have included communities with enough variation in wage and employment levels to detect a significant relationship between aggregate economic conditions and depression.

Alternatively, it may be that the effects of actual economic conditions are contingent upon an individual's subjective interpretation of them. Although there was a recovery in the farm-based economy during the late 1980's, this recovery did not eliminate community differences in relative levels of employment or wages nor did it reverse the pattern of long-term rural economic decline. Nevertheless, short-term improvements may have been sufficient to eliminate both the actual economic hardships of the immediately preceding years and the "crisis mentality" that had developed in many small communities. Relative to even a few years earlier, rural residents in 1989 may have been more optimistic about their own personal economic prospects and more positive in their evaluations of the economic health of their communities. Thus, by 1989, changes in subjective evaluations of the economy may have reduce the elevated levels of depression observed among farmers in the early to mid-1980's. If this explanation is appropriate, we would expect to find that change in aggregate economic variables is more important to mental health than absolute levels and that community size, local economic conditions, and even individual economic distress affect depression indirectly, and primarily through subjective evaluations of the local economy or personal financial prospects. The effects of economic change are analyzed in the second stage of our analysis. However, subjective assessment of the economy is the key explanatory variable in the "anticipation hypothesis", to which we now turn.

Recall that the anticipation hypothesis states that even in the absence of negative economic experiences, individuals can be negatively impacted by economic conditions if, as a result of those changes, they become worried and less optimistic about their own economic prospects. This hypothesis would be supported, then, if perceptions of the local economy or one's own economic future are significantly related to both actual economic conditions and depression.

As expected, there was a significant relationship between actual economic condition and respondent's evaluation of them; this relationship held independent of community size and level of individual economic distress. Furthermore, small town residents perceived their local economies to be in poorer condition than urban dwellers did, even after controlling for actual economic conditions and level of personal economic distress. Although perceived personal economic prospects are related to perceptions of how the local economy is doing, neither actual county-level economic indicator impacted individual assessments of their own personal financial prospects (data not shown). Together, these results suggest that aggregate economic conditions must influence mental health, if they do so at all, indirectly through their association with subjective evaluations of the economy.

Table 2 arrays findings from the regression analysis in which personal economic distress, perceptions of the local economy, economic prospects, community size, and control variables are used to predict depression. Results are consistent with the "anticipation hypothesis". That is, respondents' perceptions of local economic conditions do have significant effects on depression, even after controlling for individual level of experienced economic distress (see columns 7 and 8 of Table 2).

There was no support in our data for either variation of the interaction hypothesis. Hypothesis 3 assumes that an individual's perception of the local economy impacts the extent to which his or her own personal economic distress leads to depression. We created an interaction term between perceived local economy and economic distress and added it to the overall regression equation. Because the interaction term failed to reach statistical significance, interaction hypothesis 3 was not supported (data not shown).

Hypothesis 4 also is an interaction hypothesis. It states that the economy can disrupt social support systems, which in turn can affect the relationship between economic distress and depression. As anticipated, social support is strongly, directly, and inversely related to depression (columns 9 and 10 of Table 2). Low social support is association with higher levels of depression. Analyses further demonstrate that social support has the significant and substantial buffering effect that Pearlin et al. (1981) and others have reported (data not shown). That is, social support not only has direct effects on mental health, it has its most substantial effects during periods of high economic distress. However, there is no evidence in our data that local economic conditions significantly impact social support networks. For this reason, hypothesis 4 is not supported.

Before turning to the change analysis, several comments on the effects of community size are in order. It is possible that the effects observed in the model vary by community size. For example, in smaller communities economic changes might be more visible to the residents and the closer ties among community residents often found in small communities might increase the accuracy of their awareness of economic changes. To test for community size differences in the model, the analyses were repeated for three groups--rural, urban, and metropolitan communities. The pattern of findings was very similar across community types. There is little reason, then, to believe that the effects of aggregate economic conditions on depression vary by community size.

CHANGE ANALYSIS

The panel data provide an opportunity to test whether changes in depression occurring among the respondents during the decade correspond to changes in the local economic conditions and individual changes in economic conditions. Because the measures of individual economic distress available for all respondents at each point in time are limited, we are unable to test all the hypotheses with the panel data and restrict this analysis to answering three questions:

1. Do changes in an individuals economic situation correspond to changes in depression?

2. Do changes in aggregate economic conditions produce changes in depression.
3. Are changes in depression due to aggregate economic conditions mediated by changes in the individual's economic situation?

The change analysis focuses on two panels: one compares changes in scores of respondents interviewed in 1981 and 1986 and the other compares change scores for those interviewed in 1986 and 1989. The measure of economic distress used in the cross-sectional analysis for 1989 was not available on either the 1986 or 1981 survey instrument. Two measures of change in individual economic conditions were substituted–change in economic prospects and change in total family income.

Aggregate economic situation was measured by change in number of employees and change in average wage per employee. Change was measured over three years and three-year moving averages were calculated to smooth out some of the irregularities in the data. Substitution of longer periods and other aggregate indicators (e.g., change in number of farm and non-farm proprietors, change in farm and proprietor income, change in population) had little effect on the outcomes of the analysis.

Because of the results of the panel analysis found no support for an effect of change in aggregate economic measures on change in depression, we only provide a brief summary of the findings here (more detailed tables are available from the authors by request). The answer to the first question is affirmative, changes in individual economic conditions were found to has a significant effect on changes in depression with improving economic prospects and income associated with lowered depression scores. However, in both correlation and regression analyses, none of the aggregate economic indicators were significantly related to individual change in depression in either panel, both before and after controlling for individual economic conditions, so the last two research questions yielded negative answers.

DISCUSSION AND CONCLUSIONS

This research provides additional support for linking individual economic distress and depression, but there is little evidence to link aggregate local economic conditions to depression either in the panel or the cross-sectional samples. While respondents were able to evaluate the state of the local economy with some degree of accuracy and these perceptions were related to depression independently of individually experienced economic distress, this indirect effect was too small to produce an observable effect of aggregate economic conditions on depression. It is tempting to conclude that the lack of a relationship with the aggregate measures is due to weak or incomplete measures. However, there is considerable evidence that the measures, particularly in the cross-section model, are at least as reliable and valid as those used in the economic stress/depression literature. The magnitude of the relationships between individual negative economic events and depression observed here closely parallel those found in other studies. Furthermore, the strong correlations between aggregate indicators and community size is consistent with what is known about the effects of changes in the rural agricultural economy on overall economic

performance in Nebraska. If methodological or measurement flaws have prevented us from detecting the significant effects of local economies, it probably stems either from factors that influence how people perceive their own economic situation, or from inadequate variation in the range and duration (i.e., acute versus chronic nature) of rural economic changes during our study period.

Clearly local economic conditions impact how people assess their own economic situation. Nevertheless, this relationship is probably tempered and overshadowed by the individual's own particular niche in the local economic system. The local grocer, for instance, may see a declining population as a threat to his/her livelihood, but this may have little effect upon the farmer. The farmer, however, is likely to be concerned with trends in interest rates, land values, and commodity prices and supports. The very weak relationship between perceived economic prospects and aggregate economic indicators found in both the cross-sectional and panel analyses suggests that the local economy may not be a useful focus for studying an anticipation effect on depression.

The relatively long term decline in rural and agricultural based communities may be another reason why we find little evidence of the effects of aggregate economic conditions on individual psychological well-being. While there have been periods when the process accelerated, the mid-1980s for example, loss of family farms and declining population has been occurring in the Midwest for decades. The chronicity of this process may have lead to coping mechanisms that attenuate the psychological consequences that might attend more acute and unexpected situations, such as large plant closing. While the loss of a farm through foreclosure is a serious acute event that can have serious psychological consequences for the farm family involved, it is a rarer occurrence than the decline in number of farms through retirement, consolidation into larger farms, or sons and daughters of farm families seeking employment elsewhere In sum, because underemployment and the outmigration of young adults are common occurrences in rural and small town populations, they may have no particular mental health consequences. Urban/rural wage and employment differentials are simply a reality that community residents have come to expect.

Clearly, more research is needed in which sectorial and national economic factors are taken into consideration in models exploring the psychological consequences of change in local economies. However, our findings do raise serious questions about whether or not local economic conditions have any effect on mental health, beyond their effects on individual economic circumstances.

Our findings have implications for people living in rural areas and small town in the Great Plains. We found that the mid-1980s farm crisis jeopardized people's mental health but when the economy improved, so did their mental health. While rural residents are subjected to the substantial ups and down of an agricultural economy, living in small towns and rural areas appears to also incur advantages for mental health that may cancel out these negative effects. The bottom line is that in terms of mental health rural and small town dwellers are doing at least as well as their urban counterparts. There is little support for the notion that living in declining rural communities compounds the negative effects on individual well-being of their own economic situation.

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