Employment Instability and Food Insecurity of Rural North Carolinians during the Recession

Final Report

December 21, 2012

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Abstract

During the Great Recession the US experienced its longest and worst recession since the Great Depression, evidenced by high unemployment, unprecedented job losses, and long-term unemployment. Particularly hard hit, in North Carolina the unemployment rate remained higher for longer than the four previous recessions (NC Employment Security Commission, 2011). This study uses data from the North Carolina sample of the Family Life Project, a representative sample of predominantly low-income, rural families oversampled for African American and low-income families, to examine how the economic downturn impacted residents' employment in the rural South and how those conditions are related to economic strain and food insecurity. There is a comparative dearth of information available on rural poverty, however, it is critical to address these issues because of disproportionate rates of poverty and limited access to services in low-wealth, rural communities. We use NC data from the 36-month home visit, collected 7/06 – 10/07, to capture conditions prior to the recession and the 58-month home visit, collected 7/08 – 12/09, to capture conditions during the recession. During the recession 36% of these NC families reported a major employment change (starting/stopping a job, major changes in responsibilities, such as a promotion/demotion, significant change in hours); 23.5% went from working a standard to a nonstandard shift (evening, night, and rotating); while over 10% saw their employment become less stable, moving from permanent to temporary jobs. In regression analysis, maternal education and rurality predicted work distress. Work distress was related to increased economic strain and lead to increased use TANF, SNAP, and Unemployment Insurance. Social support and SNAP use buffered experiences of food insecurity. This knowledge will enable policy-makers to make more informed decisions about how to modify policies and programs to better match the situations present in these communities.

Introduction

With the Great Recession from December 2007 to June 2009, the United States experienced its longest, and by most measures, worst economic recession since the Great Depression, evidenced by unprecedented job losses, high rates of unemployment, and long-term unemployment (McNichol, Oliff, & Johnson, 2011) and increases in food insecurity across all parts of the nation (Coleman-Jensen, 2012). As a result, need for food assistance programs in the United States is the highest it has been in 34 years (Economic Research Service [ERS], 2010a). Expenditures for these public programs increased 29% since fiscal year 2008 and have been growing for nine years. In North Carolina, a state hard hit by the recession, the unemployment rate remained higher for longer than the four previous recessions (NC Employment Security Commission, 2011), depressing revenues at the state level, and leading to increased demand for public services (McNichol et al., 2011). North Carolina's food and nutrition services (FNS) caseload rose by more than 30% over the last two years (North Carolina Division of Social Services, 2010) and even higher in some regions of the state. In the midst of the recession in 2008, food stamp usage rates were 11.3% in rural North Carolina compared to 8.8% in urban parts of the state (North Carolina Rural Center, 2009). Further, potentially due to the downturn in the economy, households that have never before received FNS benefits are entering the system. Caseloads rose from 345,199 NC households in January 2005 to 601,820 in January 2010 (Duncan, Kum, Flair, & Stewart, 2010). In addition to caseload increases due to the economic conditions surrounding the Great Recession, participation continued to climb in NC following July 2010 policy changes, which eased the application process and relaxed income eligibility (Duncan et al., 2010). Following the policy change in July 2010, caseloads rose to 666,246 households by August 2010. This policy change masks some of the caseload change attributable to the recession.

One important support for individuals and families encountering economic distress is access to food assistance programs that sustain the nutritional needs of these populations. Participation in such programs is vitally important to the well-being of children and families, particularly in rural regions, where the burden of nutrition-related disease is greater (Sharkey, 2009) and where there is less access to supermarkets and healthy food (Larson, Story, & Nelson, 2009). Although the largest numbers of low-income families eligible for nutrition programs live in urban areas, the proportion of families who are income-eligible is higher in rural areas (Wauchope & Shattuck, 2010). Further, after combining suburban and central cities as metro rates, participation in the School Breakfast program and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is 50% higher in rural areas, Child and Adult Care Food Program participation is 31% higher, and National School Lunch Program participation 37% higher. The discrepancy is similar for the Supplemental Nutrition Assistance Program (SNAP, formerly the Food Stamps Program). Further, in rural settings food cost is high and food quality is limited due to the distance from major distribution centers and lack of competition given the dearth of food stores (Blanchard & Lyson, 2006; Zimmerman, Ham, & Frank, 2008). In this study we use data from the Family Life Project (FLP), a unique sample of families (n=653) from low-wealth rural counties in North Carolina, to examine how the economic downturn has impacted parents' work, how those conditions are related to economic strain, food insecurity, and public assistance program participation, and supports that may buffer these experiences.

Literature Review

Figure 1 below depicts the conceptual framework that guided this study. Susceptibility to employment distress is hypothesized to be predicted by a series of family and human capital characteristics. Community and social supports are hypothesized to moderate the relationship between employment distress and outcomes, including food insecurity and economic strain.

Public assistance is not shown as an outcome for clarity. All factors are fully described and operationalized in the Methods section below.

Figure 1. Conceptual Framework
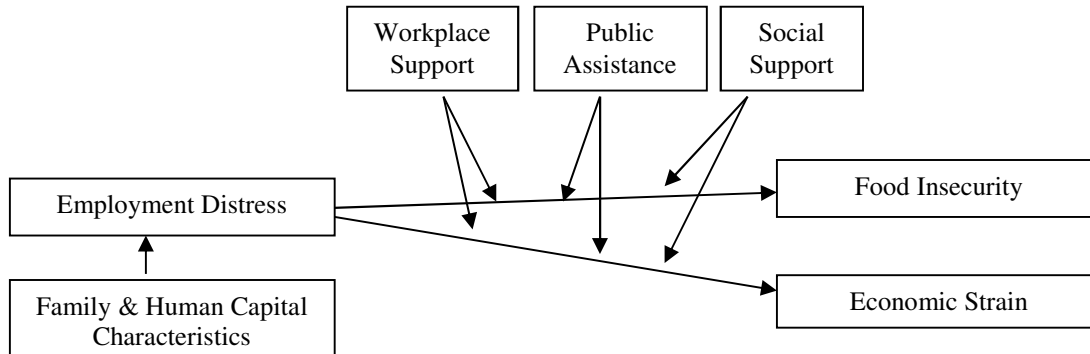
An idealized image of idyllic country life may have been true 50 years ago but today rural communities look much different given the dramatic changes in rural life, mainly due to the economic changes of the last 30 to 50 years. Rural areas of the United States have seen a loss of both farming and manufacturing jobs, with a concomitant rise in service sector low-wage jobs with nonstandard work hours (O'Hare, 2009; Vernon-Feagans, Gallagher & Kainz, 2010). In addition, rural areas did not gain from the economic boom of the 1990's for they did not participate in the development of technology-related companies and the expertise needed in the technology area that has dominated the creation of new jobs. This reality has left many poor rural communities even more vulnerable to economic losses in the 21st century (Vernon-Feagans et al., 2010), with disproportionate rates of poverty among rural families.

There has been an enduring gap between poverty rates in rural versus urban areas, for both residents in general (ERS, 2010b) and for rural children, who have experienced ever increasing poverty rates since the late 1990s (O'Hare, 2009). Other data support these overall rural poverty rates, finding that over half the children in rural areas live below 200% of poverty compared to 37% in urban areas (Rivers, 2005). In addition, children in rural areas live in much deeper poverty and for longer periods of time than children in more urban settings (O'Hare,

2009). Moreover, concentrated poverty has increased in rural communities as well as in those with distinct racial/ethnic minorities, such as in the South (Farrigan & Parker, 2012). Concentrated poverty, or the clustering of poverty in certain regions, counties, and neighborhoods, is associated with poor housing and health conditions, higher crime and school dropout, and employment dislocations. This poverty persists even though two thirds of rural poor families have at least one family member with a full-time job and one quarter have two or more employed household members (Summers, 1995). These data suggest that available jobs in rural areas are often low wage with poor benefits and hours, jobs that may be more at risk during economic downturns (Lichter, Roscigno, & Condron, 2003).

Work Conditions. Recessions don't just impact unemployment rates, they also drive down family incomes, partly because family members experience layoffs, longer periods searching for work, and reductions in work hours even when members are working, and partly because recessions have a tendency to depress workers' wages (Schmitt & Baker, 2008) and cause growth in underemployment, or involuntary part-time work (Katz, 2010). These employment conditions have implications for the well-being of both workers and their families, and may be especially acute in rural regions. Looking at work shift, in the US nearly half of employed adults regularly work non-standard shifts, that is outside the hours of 9AM to 5 PM (Presser, 2003), with working-poor parents overrepresented (Presser & Cox, 1997). Rural residents are more likely to be underemployed and to work in service industries that require non-standard shifts (Gorham, 1992; Jensen, Findeis, Hsu, & Schachter, 1999; O'Hare, 2009). These schedules can negatively impact the well-being of both employees and their children. Adults working these nontraditional shifts experience more stress and fatigue, less time to spend with their children, challenges finding stable child care arrangements (Hsueh, 2007), increased health complaints, reduced feelings of well-being, poorer sleep quality (Martens, Nijhuis, Van Boxtel, & Knottnerus, 1999), and increased food insecurity (Coleman-Jensen, 2011). Job losses can

negatively affect the economic security of families, evidenced by decreased consumption and food expenditures and reliance on public assistance (Farber, 1993; Jacobson, LaLonde & Sullivan, 1993; Stephens, 2004). Moreover, in households where the head has multiple jobs, works varied hours, or works part-time food insecurity is more likely than in households with a head in a regular full-time job, even when accounting for income and other social demographic characteristics (Coleman-Jensen, 2011).

Jobs characterized by high levels of support and flexibility allow parents to better meet family obligations, are related to reduced distress for both working men and women, and are related to the selection of higher quality child care (De Marco, Crouter, & Vernon-Feagans, 2009; Roxburgh, 1996). Further, parents with less flexible jobs reported less ability to be involved with their children (Glass & Estes, 1997; Yoshikawa, Lowe, Bos, Weisner, Nikulina, & Hsueh, 2007). Workplace support and flexibility may also be a buffer or support for families, as described below. Over the course of the recession many workers lost their jobs, saw their hours or pay reduced and had to compensate by picking up extra jobs or hours at odd hours or resort to temporary positions to get by (Seyfried, 2010). This is particularly challenging in rural settings where there are already fewer job opportunities (McLaughlin & Coleman-Jensen, 2008; Lohmann & Lohmann, 2005).

Supports. Given these challenges, individuals and families find ways to buffer themselves from the effects of economic distress such as food insecurity. In their study of low income North Carolinians, Ahluwalia and colleagues (1998) found that participants used public assistance programs such as the Food Stamp Program (now the Supplemental Nutrition Assistance Program, SNAP) or the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); frequented food banks and soup kitchens; participated in gleaning programs; gardened; scavenged; foraged; and attempted to stretch food dollars to cope with the possibility of food insecurity. Gardening, hunting, fishing, foraging, and raising livestock are common

coping strategies in rural communities (Hoisington et al., 2002). People also draw on relationships with others to cope with economic strain and food insecurity (Gross & Rosenberger, 2005; Hoisington et al., 2002; Holben et al., 2004; Schwartz-Nobel, 2002). Examples of coping strategies that draw on social relationships include obtaining information from others about where to get food cheaply and how to apply for food stamps and sending children to relatives' or friends' homes for meals (Schwartz-Nobel, 2002). Food assistance programs, as mentioned above, are another key support for economically disadvantaged individuals and families.

Supports may also be found in the workplace. A supportive workplace, characterized by flexible work policies, supportive relationships with co-workers, and support from management, is relevant to home and family well-being, including parenting and child behavior (Hill, Grzywacz, Allen, Blanchard, Matz-Costa, Shulkin, et al., 2008). Parents with jobs characterized by high levels of support report an increased ability to meet family obligations and reduced distress for both working men and women (Roxburgh, 1996). We are interested in examining to what extent these supports are drawn upon in this sample of rural families from low-wealth North Carolina counties and if they buffer experiences of economic strain and food insecurity that often accompany employment distress.

Community factors. A number of community factors, including collective socialization and rurality, may also be related to employment distress. Collective socialization suggests a level of trust and cohesion among neighbors (Bursik & Grasmick, 1993). The effect may be stronger in rural settings where residents experience a stronger sense of community, solidarity, and deeply shared values and identity (Lev-Wiesel, 2003). Rurality, or geographic isolation, is an indicator of how far one resides from jobs, shopping outlets, and public institutions and may be a risk factor for economic distress given less access to services, or a protective factor given less exposure to drugs, violence, and other social ills (Burchinal, Vernon-Feagans, Cox, & The

Family Life Project Key Investigators, 2008). Moreover, in a qualitative study, geographic isolation exacerbated the experience of poverty (Atchinson, 2001).

Research Objectives & Questions

This study uses secondary data from the longitudinal Family Life Project (FLP), a unique, representative sample of families from low-wealth rural counties in North Carolina, to examine how the recent recession has impacted parents' work conditions in the rural South and how those conditions are related to economic strain, food insecurity, and public assistance program participation, including food assistance programs (i.e. Supplemental Nutrition Assistance Program (SNAP), WIC, the National School Lunch Program, and the School Breakfast Program, and TANF, and what supports may buffer these experiences. There is a comparative dearth of information available on poverty in rural areas, largely due to the challenges associated with conducting research in rural settings (Taylor, 2001). However, it is critical to address these issues because of the disproportionate rates of poverty (Snyder & McLaughlin, 2004) and the limited access to services in rural settings (Whitener, Duncan, & Weber, 2002). The FLP data distinctively allows us to examine these issues. The research questions are as follows.

1a. Have there been job changes during the recession (36 and 58 month waves of FLP data collection) including changes in shift, job losses, reductions in hours, changes in responsibilities, demotions, more jobs, less jobs, changes in pay, or work becoming temporary, indicating employment distress?

1b. Which families are susceptible to these indicators of employment distress?

2. How are these changes related to economic strain, food insecurity, and public assistance program participation, including food assistance programs?

3. Is this experience buffered by any social or community supports (e.g. social and workplace support, public assistance programs including Food and Nutrition Services)?

Methods

Study Sample. This study utilized the North Carolina data from the Family Life Project, a longitudinal study of 1,292 families recruited in rural communities: 519 in Pennsylvania and 773 in North Carolina. The FLP has collected extensive information on work, income, marriage, parenting, family processes, health, child care, and child development and well-being. The families in this project have been carefully followed from their child's birth, with many home visits across early childhood, at 6, 15, 24, 36, 48, and 58 months of age and is ongoing as the children enter formal school. Data from this project are important to understanding rural life as it exists today.

Recruitment procedures called for an epidemiologically valid sample of non-African-American and African American families from three counties in eastern North Carolina and three counties in central Pennsylvania, capturing the contexts of the "Black South" in North Carolina, and the "Appalachian Mountain" region of Pennsylvania, two geographic centers of poverty in the United States (Dill, 1999). Families were recruited in hospitals at the time of their child's birth from September 15, 2003 to September 14, 2004, during which demographic and poverty information was gathered. Low-income families in both states and African American families in NC were over-sampled to ensure adequate power for dynamic and longitudinal analyses of families at elevated psychosocial risk (African-American families were not over-sampled in PA because the target communities were at least 95% non-African-American). Families were designated as low income if they reported household income below 200% of the federal poverty line, used social services requiring a similar income requirement (e.g., SNAP/food stamps, WIC, Medicaid), or mothers had less than a high school education. Based on this information, families were randomly selected for participation and were again contacted and visited at two months of child age for formal enrollment. Ultimately, enrollment consisted of 59% non-African-American and 41% African American families, of which a total of 78% were below 200% of the federal

poverty level. The FLP sample is representative of poor rural children with an 82% acceptance rate among those eligible and a 2% attrition rate. For further details about sampling and recruitment see Crouter and colleagues (2006). For this project we used data from the 36-month home visit, collected July 2006 – October 2007, to capture conditions prior to the economic downturn and the 58-month home visit, collected July 2008 - December 2009, to capture conditions during the recession. We restricted the sample to families in North Carolina (n = 653 at 58 months).

Measures

Work constructs. Work variables were constructed based on data collected at 36 and 58 months. These include change in shift, job loss, reductions in hours, changes in responsibilities, demotions, working more jobs, working fewer jobs, reductions in pay, and work becoming temporary. Employment distress was created in two ways: 1) as a count variable of the number of distress indictors experienced (loss of a job, reductions in pay, reductions in work hours, moving into temp work, and moving to a nonstandard shift) and 2) a dichotomous variable equaling yes if any indicator of distress was experienced. Occupational self-direction was used as an indicator of job quality. The Occupational Self-Direction Scale is a modified measure containing portions of Lennon's (1994) Measures of Work Conditions Scale. The modified, 11 item scale measures levels of occupational complexity in the workplace, focusing specifically on levels of autonomy, control over others, organizational control, complexity, routine, and closeness of supervision. Items include: "You decide when to come to work and when to leave." Reliability was high (α = .87). A seasonality question was used to get at the stability of employment. The question asks: "Is this employment seasonal, year-round, or by the academic/school calendar?"

Outcome variables. Outcome variables at 58 months include Economic Strain (Conger & Elder, 1994), food insecurity, adapted from Nelson & Smith's (1999) Self Provisioning

Questionnaire, and use of public assistance programs, specifically SNAP/FSP, WIC, School

Breakfast/Lunch, and TANF. Economic Strain was based on the Economic Strain Questionnaire,

a modified six-item index, completed by the mothers at each wave, assessing the degree to which

families are able to make ends meet and the degree to which there is enough money in the

household for housing, food, clothing, and medical care (Conger & Elder, 1994). Conger and

Elder (1994) calculated reliability using a sample of 451 families participating in a study of

economically distressed farm families in central Iowa. Cronbach's Alpha was .89 for mothers

and fathers. Items such as "How difficult is it for you to pay your family's bills each month"

were rated on a five-point scale ranging from *great deal of difficulty* to *no difficulty at all*. The

questions about having enough money ("My family has enough money to afford the kind of

home we need") were rated on a four-point scale ranging from *strongly agree* to *strongly

disagree*. In the present study Cronbach's alphas were high (α = .84 at 36 months and .82 at 58

months). The Self Provisioning Questionnaire is a six-item measure designed to collect

information about the extent to which household members had to cut or reduce the size of their

meals, or not had enough money to purchase food for meals in the past 12 months. Items

included: "At any time in the past 12 months, did you or other adults in your household cut the

size of your meals or skip meals because there wasn't enough money for food?" and "At any time

in the past 12 months, was [target child] hungry but you just couldn't afford more food?" If the

target child has skipped meals in the past year because there was not enough money for food, a

follow up question was administered to determine how frequently this occurred. Responses to the

questions were summed to create an index. Public assistance programs were dichotomous

variables examined individually.

  Moderators. Community and social supports at 58 months were included as potential

moderators. These included public assistance programs, social support, and workplace support.

Public assistance programs were used as described above. Social support was based on a score

from the four subtests of the Questionnaire of Social Support (community involvement, friendship, family, and intimate relationships). A sample item is, "If you were to become upset or angry, would you have someone to talk honestly to, who is not involved? How satisfied are you with this situation?" rated on a four-point scale ranging from *very dissatisfied* to *very satisfied*. Cronbach's alpha was high at each wave (α = .84 at 36 months and .83 at 58 months). Supportive workplace was a composite variable composed of the mean scores of three variables: flexible work arrangements, co-worker support, and supervisor support. The Flexible Work Arrangements Questionnaire is a four-item measure adapted from the Workplace Culture Questionnaire from the 1997 National Study of the Changing Workforce (Bond, Galinsky, & Swanberg, 1998). Four items, such as "At my place of employment, employees who put their family or personal needs ahead of their jobs are not looked on favorably," were answered on a four-point Likert scale, ranging from *strongly agree* to *strongly disagree*. For the variables co-worker support and supervisor support, the FLP used a modified version of two sub-scales from the Moos' Work Environment Scale (WES) (Moos & Moos, 1983): co-worker support (e.g., "People go out of their way to help a new employee feel comfortable") and supervisor support (e.g., "Supervisors really stand up for their people"). Participants make their responses on a four-point scale from *strongly agree* to *strongly disagree*. Reliability was satisfactory in the FLP sample (De Marco et al., 2009). Potential coping strategies such as use of food banks and soup kitchens; participating in gleaning programs; gardening; scavenging; foraging; hunting, fishing, and attempting to stretch food dollars were not examined as they were not systematically collected in the FLP.

Family & Human Capital Factors/Control Variables. The following series of variables were used in multivariate analysis: maternal age, number of children, family structure, maternal education, income-to-needs ratio, and race as those whose household head is unmarried, African-American, or has less than a high school education are more negatively impacted by recessions

or more likely to experience food insecurity than other households (Bartfeld & Dunifon, 2003; Duncan et al., 1994; Genda, Kondo and Ohta, 2010; Schmitt & Baker, 2008; Yeung, Linver, & Brooks-Gunn, 2002). Maternal age, number of children, and maternal education were all continuous variables. Child gender was coded as female equals one. Family structure was coded such that married equals one. Race is a dichotomous variable in the FLP sample (non-African American or African American, which is coded as one). Poverty status was based on an income-to-needs ratio, a standard measure of a family's economic situation, where 1.0 indicates the poverty line and was used as the cut-off point for poor and non-poor. This ratio was computed by dividing family income, exclusive of federal aid, by the federal poverty threshold for that family's size. In 2011-12 the federal poverty level for a family of four was $22,350/year (US Department of Health and Human Services, 2012).

The Family Life Project investigators developed a construct to measure rurality/geographic isolation using Global Positioning System technology (Burchinal et al., 2008). Latitude and longitude measurements were taken with GPS units at each residence. These measurements were used to compute the physical distance from the residence to the nearest 10 key community services: gas station, physician's office (any type), library, fire station, elementary school, high school, public park, supermarket, freeway on-ramp, and public transportation. A summary score was computed as the mean of the 10 distances and log transformed to reduce distributional skew. Collective socialization was assessed through a computer-based questionnaire. The 14-item measure (true/false) evaluated individual perceptions of the level of trust between neighbors, for example, *"People in this neighborhood can be trusted"* (Brody et al., 2001). Collected from the primary caregiver, typically the mother, at the 36-month wave of data collection, items were summed and averaged to create a mean scale score (Cronbach's alpha = .84).

Data analysis

For research question 1, examining the existence of job changes, analysis involved descriptive statistics to determine the range of economic difficulty present in the lives of the North Carolina FLP families across the course of the recession. Variables were created to represent changes across the two periods. Bivariate comparisons of work characteristics, economic strain, food insecurity, public program use, and supports across time were conducted. For 1b regression analysis was used to determine which families, based on family and human capital factors, were more susceptible to negative economic consequences from the economic downturn. We utilized hierarchical logistic regression to examine predictors of individual indicators of distress (job loss, reduction in hours, moving to a nontraditional shift, and moving to temporary work), the distress composite, and the dichotomous distress indicator. In these models, the first block of predictors included demographic variables: maternal age, number of children, family structure, maternal education, income-to-needs ratio, and race at 36 months. Block two added work characteristics at 36 months: shift, status (temp or permanent job), seasonality, co-worker support, supervisor support, workplace flexibility, and level of job self-direction. Block three added community factors: level of rurality and collective efficacy. All continuous variables were centered prior to entry into the regression models. For research question 2, how changes are related to economic strain, food insecurity, and public assistance program participation, separate regression models were run for economic strain, food insecurity, and public assistance program participation. To address research question 3 we conducted moderation analyses by adding interaction terms to the regression models predicting economic strain and food insecurity. Here public assistance program use was treated as a potential moderator. Interaction terms were created for each potential buffer a) social support; b) workplace support; and c) public assistance programs (SNAP/FSP, Unemployment Insurance [UI], and TANF). Hierarchical regressions were used with the first block adding the family and

human capital variables, the second block adding the employment distress and the main effects terms of the buffers, and the final block adding the interaction terms.

Results

Sample description. A description of the sample can be found below in Table 1. There was little change in demographic characteristics from the 36 month wave to the 58 month wave. Maternal education changed very little. A score of 14 indicates standard high school graduation and 15 is equal to standard high school graduation plus additional training. There were no significant differences or changes in the sample, such as it becoming less African American over time, demonstrating the low attrition rate in the Family Life Project.

[Insert Table 1 About Here]

Table 2 provides detail about the employment characteristics of the FLP participants pre-recession (36 months) and during the recession (58 months). Well over half were employed across the waves with the large majority holding only one job at full-time status. Monthly pay rose by slightly less than $200 on average. About two thirds worked traditional shifts with a slight increase at 58 months. Roughly 30% of families at both waves did not have a secondary caregiver. Among those that did this was most often the other biological parent, the majority of whom were employed across waves.

[Insert Table 2 About Here]

The next table presents data about job changes across the data collection period (see Table 3). At both time points over one third of respondents had experienced a big work change, which included promotions, demotions, changes in responsibilities, or changes in hours, with about equal numbers increasing and decreasing hours. During the recession more saw changes in job responsibilities than prior to the recession.

[Insert Table 3 About Here]

Table 4 below displays changes in shift, changes in number of jobs, changes in hours, changes in pay, changes in temporary/permanent status, and changes in employment status across the waves. A quarter of respondents who were employed at both time points moved into nontraditional shift work compared to about 14% who moved into traditional shifts. Over this period 13.3% saw their pay reduced. Most workers did not see a change in their temporary/permanent status although slightly more than 10% did move into jobs where they were less stable, taking on temporary positions. Further, close to 50% of the sample experienced at least one indicator of employment distress, which may have been a lost job, a reduction in pay or hours, moving to a temporary position, or moving to a nonstandard shift, with a fair amount experiencing more than one (25.3%).

[Insert Table 4 About Here]

In the next table we present data about hardships experienced by FLP participants both prior to and during the recession. TANF participation was very low particularly compared to SNAP take-up, which rose slightly across time. In addition, more respondents reported some of these changes as negative experiences during the recession compared to those who experienced similar hardships prior to the recession. This may indicate that the changes during the recession were those that workers had less control over, such as involuntary reductions in hours or pay due to economic impacts on the business. Over this period there was a significant increase in food insecurity but little change in economic strain.

[Insert Table 5 About Here]

Multivariate analysis. The following tables present the results of multivariate regression analyses for research questions 1b, 2, and 3. Table 6 presents results examining predictors of employment distress using the dichotomous outcome variable. In this model few predictors were significant. Mothers with lower levels of education were more likely to experience distress (*OR* = 0.84, $p < .05$). There was also a trend for families living in more rural communities to

experience distress ($OR = 1.05$, $p < .10$). Further, in tables not displayed due to space, we examined the relationship between employment distress, economic strain, food insecurity, and participation in public assistance programs, controlling for family and human capital characteristics of maternal age, number of children in the household, family structure, maternal education, income-to-needs ratio, and race. Worker distress was significantly related to higher economic strain but not to food insecurity. Distress was also related to increased use of SNAP and Unemployment Insurance. Moving into nonstandard shift work and becoming unemployed was significantly related to increased TANF, SNAP, and Unemployment Insurance take-up. Moving into a temporary position was not related to public program participation.

[Insert Table 6 About Here]

We then looked at potential buffers between distress and economic strain and food insecurity, including public assistance programs and indicators of Social Support (community, family, and intimate partner) and Global Social Support with a standard set of control variables (Table 7-9). Social support from family members and an intimate partner and global social support were significant buffers against food insecurity. Community-level social support was not significant and thus was trimmed from the final model (Table 7). Table 8 shows the results examining Food Stamps/SNAP as a buffer against food insecurity. TANF was also examined but trimmed from the model when it was found to be non-significant. However, accessing SNAP benefits did buffer FLP families from experiencing food insecurity during the Great Recession ($b = 0.15$, $p < .05$). In the final analysis, we examined buffers between distress and economic strain, trimming the insignificant interaction terms from the final model displayed in Table 9. Significant buffers were unemployment insurance ($b = 1.34$, p < .01) and community social support ($b = -0.60$, $p < .01$).

[Insert Tables 7, 8, & 9 About Here]

Discussion

In this study we used a unique sample of families from the longitudinal Family Life Project to examine the employment experiences of low-income rural families in North Carolina during the Great Recession, as well as how those experiences were related to economic strain, food insecurity, and public assistance program participation, and the supports that may help to buffer those hardships. While economic output falloffs were less severe in NC than in the US as a whole, recovery has been slower and employment trends have been more volatile, hammering a labor market that never fully recovered from the recession of 2001(Gitterman, Coclanis, & Quinterno, 2012). Our findings indicate that a relatively large number of families experienced employment distress during the recession including reductions in work hours, moving to challenging nontraditional schedules, and reductions in pay or loss of jobs altogether. Close to half of FLP participants experienced at least one indicator of employment distress. However, we also saw that this may not have been unique to the recession period as there was substantial employment turbulence in these communities even prior to the start of the recession, evidence of the fact that these are low-wealth, low-resourced communities that have been experiencing economic challenges for quite a while (O'Hare, 2009; Vernon-Feagans et al., 2010). Experiences of work distress lead to increased economic hardships as well as increased use of TANF, SNAP, and Unemployment Insurance. Although we also found that some public assistance programs were accessed more than others. Very few families availed themselves of TANF, while over half reported applying for or using SNAP benefits as a way to cope with the effects of the recession. TANF use was rare in this sample both before and during the economic downturn. Poverty and welfare use is stigmatized in rural areas where there is less anonymity than in more urbanized areas (Rank & Hirschl, 1988; Rost, Smith, & Taylor, 1993). This lack of anonymity impacts the utilization of many services, preventing families from taking up services for which they are eligible.

Rural residents are more likely to be underemployed and to work in industries that require non-standard shifts (O'Hare, 2009), which increased in this sample over the recession. These schedules can negatively impact employees who experience more stress and fatigue, increased health complaints, reduced feelings of well-being, and poorer sleep (Martens et al., 1999). Further, while only a trend, we did find that increased geographic isolation, or rurality, was related to increased economic strain. Given the limited job opportunities and resources in the most rural settings it is only surprising that this was not a more significant predictor. It may be a function of the way rurality is measured in this study, as the distance to 10 key community services. The measure does not take into account the accessibility or quality of the closest service so it may be that families aren't able to financially access those services or may not select them because of low quality. There is often a shortage of skilled practitioners in rural communities and the distance to offices is greater requiring reliable personal transportation or more extensive public transportation systems than often exist in rural regions (McConnell & Ohls, 2002). We are working on additional operationalizations of geographic isolation, such as rural-urban commuting area codes (RUCAs), which may more adequately capture this construct. RUCA codes are a detailed and flexible system for demarcating sub-county sections of the US settlement system, currently based on data from the 2000 decennial census (Economic Research Service [ERS], 2012). Updated codes using the 2010 census will be ready by mid-2013. RUCA codes were developed using the same theoretical concepts of the Office of Management and Budget (OMB) to define county-level metropolitan and micropolitan areas. Similar criteria were applied to measures of population density, urbanization, and daily commuting to classify urban cores and adjacent area that is economically integrated with those cores. Census tracts are used as RUCA code building blocks as they are the smallest geographic unit for which reliable commuting data are available. The classification contains 10 primary and 30 secondary codes. The 10 codes provide a straightforward and complete delineation of metropolitan and

nonmetropolitan settlement based on the population size of the area and commute direction. The 10 primary codes can be further subdivided into 4 categories, urban, large rural, small rural, and isolated.

We also found that a number of supports, from both personal networks and public programs, buffered families from the effects of the recession. Social support and SNAP use buffered experiences of food insecurity. Social support and Unemployment Insurance buffered against economic strain. While TANF use was low, the increased usage of SNAP benefits mirrored the surge seen across the state (Gitterman et al., 2012) and indeed across the United States (Hanson & Oliveira, 2012). This is encouraging because nutrition assistance programs were designed to support the nutritional needs of low-income families and are even more important during economic downturns when families who have never utilized assistance turn to the program. Nutrition programs reduce the likelihood of experiencing food insecurity (Anderson, 1990; Cook, 2002; Tarasuk, 2001; Vozoris & Tarasuk, 2003) and improve the nutritional status of participants (Basiotis, Kramer Le Blanc, & Kennedy, 1998; Devaney & Moffitt, 1991). This is of particular importance for residents of low-income communities who eat fewer fruits, vegetables, and seafood (Diez-Roux, Nieto, Caulfield, Tyroler, Watson, & Szklo, 1999).

Implications

This research has implications for policy, practice, and future research. As labor-market recessions last far longer than the technical recession periods declared by the NBER, long after financial markets and employers have begun to recover from this economic downturn, workers will continue to suffer from high levels of unemployment, depressed levels of employment, falling incomes, and poverty (Schmitt & Baker, 2008). As a result, findings from this study may be immediately beneficial for individuals who continue to experience this employment distress. These findings support previous research suggesting that over the course of the recession many

workers lost their jobs, saw their hours or pay reduced and had to compensate by picking up extra jobs or hours at odd hours or resort to temporary positions (Seyfried, 2010). This knowledge will enable policy-makers to make more informed decisions about how to modify policies and programs to better match the situations present in these communities. Further, individuals should be able to access services for which they are eligible as these programs have been shown to improve well-being (e.g. Basiotis, et al., 1998). Community practitioners can develop community building strategies to increase access to social supports and provide outreach to rural residents around existing public programs. The buffering effect of public assistance programs, SNAP in particular, provide evidence for policy-makers at all levels that the programs are having their desired effects, are very much in need, and should see further investment rather than cuts.

Findings related to educational attainment suggest the need for workforce training programs and training for displaced workers. Programs exist but are harder to access from rural communities suggesting the need for innovative planning and programming to address these needs. Economic development initiatives are also essential to address limited job opportunities in rural settings.

Limitations

Although this study has important implications for social policy, practice, and future research, the findings should be considered in light of the limitations. The primary limitation is that the findings are limited in their generalizability as the sample was drawn from rural counties in one Southern state and was not a national sample. The relationship between employment distress, food insecurity, and public assistance use may differ in other regions. However, the Family Life Project is representative of the study counties and as such, can be generalized to similar settings.

Future research

This area of research is particularly important given the continued high rates of unemployment and underemployment in rural North Carolina. As a next step we plan to look separately at two parent and dual-earner families to explore how they have responded to the recession. We might expect that two parent families in which one was the breadwinner may have had to change that dynamic as a result of the economic downturn. It would also be valuable to pull in data collected following the official end of the recession and even further out to continue to examine how families in these rural, low-wealth communities have fared. We are in a good position to pursue this line of research as data collection with the Family Life Project continues and much of this data will be available. We will also soon be able to look more closely at the relationship with geographic isolation as RUCA data is updated and linked to the FLP dataset. It would also be valuable to look at additional ways rural residents have coped with the economic downturn, including use of food banks and soup kitchens; participating in gleaning programs; gardening; scavenging; foraging; hunting, fishing, and attempting to stretch food dollars, which were not systematically collected in the FLP.

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Table 1

Sample Description

Characteristic	Mean (SD) or %	Range
Maternal Age (years; 36 month wave)	28.9 years (6.9)	17.3-69.2
Child Age (months; 36 month wave)	37.3 months (1.96)	34.5-47.3
Maternal Education[a]		
36 month wave	14.6 (2.6)	7.0-20.0
58 month wave	14.9 (2.6)	7.0-20.0
Number of People in the Household		
36 month wave	4.5 (1.6)	2.0-12.0
58 month wave	4.6 (1.5)	2.0-11.0
Number of Children in the Household		
36 month wave	2.5 (1.3)	1.0-9.0
58 month wave	2.6 (1.2)	1.0-8.0
Income-to-Needs Ratio		
36 month wave	1.61 (1.36)	0-11.41
58 month wave	1.65 (1.37)	0-9.27
Race (% African-American)		
36 month wave	68.3%	---
58 month wave	68.8%	
Marital Status (% Married)		
36 month wave	41.1%	
58 month wave	40.3%	---
Child Gender (% Female)		
36 month wave	53.4%	---
58 month wave	52.5%	

[a]Maternal education = 14 is equivalent to high school diploma/GED

Table 2

Employment Characteristics

	Pre-Recession (36 months)	Recession (58 months)
PC employed	63% (n=423)	63% (n=413)
PC number of jobs	91.4% 1 job	90.7% 1 job
PC total hours worked/week	35.1 (11.5)	35.8 (11.5)
PC total pay/month	$1,944 (1579.46)	$2131.14 (1382.76)
PC shift (traditional)	66% (n=292)	69.7% (n=304)
PC job status (permanent)	92% (n=442)	93% (n=443)
SC employed	79% (n=240)	77% (n=224)
SC number of jobs	92.1% 1 job	93.6% 1 job
SC total hours worked/week	42.9 (12.9)	42.6 (12.3)
SC total pay/month	$2,877 (1989)	$3,055.93 (2195.49)
SC shift (traditional)	64.6% (n=162)	65.7% (n=151)
SC job status (permanent)	94.5% (n=254)	93.7% (n=238)

Note: PC = Primary Caregiver, SC = Secondary Caregiver

Table 3

Job Changes across Waves

	Pre-Recession (36 months)	Recession (58 months)
PC Big Work Changes	39% Yes	36% Yes
PC Number of Job Changes[a]	70.4% 1 change	66.4% 1 change
PC New Jobs	65.6 % 1+ jobs	61.8% 1+ jobs
PC Number of Jobs Stopped	58.9% 1+ jobs	60.2% 1+ jobs
PC Major Job Responsibility Changes	51% 1+ jobs	63.1% 1+ jobs
PC Job Hour Changes	31% No change	30.9% No change
	32% Decreased hours	35.5% Decreased hours
	34% Increased hours	31.8% Increased hours
	1% Both	1.8% Both

[a]Promotion, demotion, change in responsibilities, change in hours

Table 4

Work Changes during Recession

	Change from 36 – 58 month wave
Change in shift	23.5% traditional to nontraditional
	14.4% nontraditional to traditional
	61.2% no change
Reduced number of jobs	16.5%
Reduced hours	15.3%
Reduced pay	13.3%
Change in status	10.8% permanent to temporary
	15.5% temporary to permanent
	73.7% No change
Change in employment status	11.7% became unemployed
	18.2% became employed
	47.5% consistently employed
	22.6% consistently unemployed
Number of employment distress indicators[a]	52.2% 0
	22.5% One
	21.1% Two
	3.9% Three
	0.3% Four
Any employment distress	47.8%

[a]Lost job, pay reductions, reductions in hours, moving to temp status, moving to nonstandard hours.

Table 5

Hardships Experienced Prior to and During the Recession

	Pre-Recession (36 months)	Recession (58 months)
Receiving TANF	4%	4%
Receiving SNAP	50%	52%
Support from relatives	11%	7%
Support from friends	3%	2%
Unemployment Insurance	8%	11%
Have a car	82.8%	86.4%
Foreclosure (% experiencing)	5%	2.3%
Experienced work change	37%	36.3%
	9% bad change	12.5% bad change
	28% good change	24% good change
Experienced significant income decrease	19.7%	23.9%
	16.5% bad experience	22.5% bad experience
	3% good experience	1% good experience
Experienced losing a job	8%	12%
	7% bad experience	10% bad experience
	1% good experience	2% good experience
Food insecurity score*	.08 (.38)	.13 (.54)
Economic strain	13.53 (4.26)	13.31 (4.08)

† *p*<.10, * *p*<.05, ** *p*<.01, *** *p*<.001

Table 6

Hierarchical Logistic Regression Predicting Employment Distress (n=334)

Predictor	Block 1: Demographics		Block 2: Work Characteristics		Block 3: Community Factors	
	OR	*SE*	*OR*	*SE*	*OR*	*SE*
Race (Black)	1.17	0.33	1.11	0.32	1.28	0.41
Maternal Education	0.83**	0.06	0.84*	0.06	0.84*	0.06
Marital Status (Married)	1.38	0.38	1.39	0.39	1.42	0.40
Maternal Age	0.98	0.02	0.98	0.02	0.98	0.02
Number of children under 18	1.08	0.11	1.08	0.12	1.09	0.12
Income-to-needs ratio	0.97	0.11	0.97	0.11	0.97	0.11
Job Traditional Shift			0.98	0.08	0.98	0.08
Job is Temporary			0.85	0.39	0.81	0.38
Job is Seasonal			0.93	0.42	0.92	0.42
Coworker Support			0.70	0.29	0.68	0.29
Supervisor Support			1.10	0.41	1.15	0.44
Flexible Workplace			0.99	0.05	0.99	0.05
Self-Direction			1.01	0.02	1.01	0.02
Rurality					1.05†	0.04
Collective Efficacy					0.98	0.04
Neighborhood Safety					0.97	0.31

OR: Odds ratio; *SE*: Standard error

† *p*<.10, * *p*<.05, ** *p*<.01, *** *p*<.001

Table 7

Hierarchical Regression Predicting Food Insecurity & Social Support Buffers (n=347)

Predictor	Block 1: Demographics		Block 2: Supports		Block 3: Interaction Terms	
	b	*SE*	*b*	*SE*	*b*	*SE*
Race (Black)	0.01	0.06	0.003	0.06	-0.02	0.06
Maternal Education	0.02†	0.01	0.03*	0.01	0.02†	0.01
Marital Status (married)	-0.07	0.06	-0.09	0.06	-0.07	0.06
Maternal Age	0.001	0.004	0.001	0.005	0.002	0.005
Number of children under 18	0.04†	0.02	0.03	0.02	0.03	0.02
Income-to-needs ratio	-0.04†	0.02	-0.03	0.02	-0.04†	0.02
Work distress			0.01	0.03	-0.02	0.09
Unemployment			0.08	0.08	-0.02	0.09
Family Support			-0.13**	0.04	-0.13**	0.04
Intimate Partner Support			0.04	0.05	0.06	0.05
Global Support			-0.08*	0.03	-0.09*	0.03
Distress*Unemployment					0.21**	0.08
Distress*Family Support					-0.09*	0.05
Distress*Partner Support					0.14*	0.06
Distress*Global Support					-0.08*	0.04
R^2	0.03		0.09†		0.13*	

b: regression coefficient; *SE*: standard error

† $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.001$

Table 8

Hierarchical Regression Predicting Food Insecurity and SNAP Buffering (n=524)

Predictor	Block 1: Demographics		Block 2: Main Effects		Block 3: Interaction Terms	
	b	*SE*	*b*	*SE*	*b*	*SE*
Race (Black)	-0.01	0.06	-0.04	0.06	-0.04	0.06
Maternal education	0.10*	0.01	0.13*	0.01	0.13*	0.01
Marital status (married)	-0.03	0.05	-0.02	0.05	-0.02	0.05
Maternal age	0.06	0.004	0.08†	0.003	0.08†	0.004
Number of children under 18	0.15†	0.04	0.12	0.04	0.12	0.004
Number in household	-0.07	0.03	-0.04	0.03	-0.04	0.03
Income-to-needs ratio	-0.10†	0.02	-0.06	0.02	-0.07	0.02
Work distress			0.05	0.05	-0.04	0.07
Food stamps/SNAP			0.17**	0.05	0.09	0.07
Distress*SNAP					0.15*	0.09
R^2	0.03*		0.05**		0.06**	

b: regression coefficient; *SE*: standard error

† *p<.10*, * *p<.05*, ** *p<.01*, *** *p<.001*

Table 9

Hierarchical Regression Predicting Economic Strain with Social Support and Public Assistance Buffers

(n=401)

Predictor	Block 1: Demographics		Block 2: Supports		Block 3: Interaction Terms	
	b	*SE*	*b*	*SE*	*b*	*SE*
Race (Black)	0.52	0.45	0.66	0.44	0.58	0.43
Maternal Education	-0.07	0.09	-0.06	0.08	-0.05	0.08
Marital Status (married)	0.02	0.46	0.26	0.44	0.33	0.44
Maternal Age	0.09**	0.03	0.09**	0.03	0.09**	0.03
Number of children under 18	0.09	0.18	0.06	0.17	0.01	0.17
Income-to-needs ratio	-0.56**	0.18	-0.50**	0.17	-0.57**	0.17
Work distress			0.28†	0.20	0.13	0.21
Unemployment			0.19	0.62	-0.47	0.68
Community Support			-1.38**	0.23	-1.22**	0.24
Distress*Unemployment					1.34*	0.61
Distress* Community Support					-0.60**	0.23
R^2	0.08**		0.16**		0.19**	

b: regression coefficient; *SE*: standard error

† *p*<.10, * *p*<.05, ** *p*<.01, *** *p*<.001