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The health and wealth of US counties: how the small business environment impacts alternative measures of development

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In this paper, we evaluate the prospects of small business-driven job creation by assessing the link between small business and population health, an alternative measure of economic development. We combine two literatures from the social capital perspective of aggregate community well-being to model the effects of small-business concentration on aggregate measures of population health. We argue that entrepreneurial culture facilitates collective efficacy for a community and provides a problem-solving capacity for addressing local public health problems. Our analysis demonstrates that communities with a greater concentration of small businesses, ceteris paribus, have greater levels of population health. Implications for theory and research are discussed.

Keywords: small business, community well-being, public health, entrepreneurship
JEL Classifications: I, O0

Introduction

The link between economic development and population health for countries is well established. Researchers have demonstrated that increases in productivity measured as per capita income result in improved living conditions in terms of diet, sanitation and availability of health services (McKeown, 1976; Preston, 1975). In the USA, health insurance is the key variable that affects access to an increasingly less affordable health-care system. Moreover, in the USA, access to health insurance comes primarily through employer compensation and benefits plans. Since the late 1970s, the US economy has experienced significant restructuring, and traditional large/core economy employers have rescaled the organization of work with practices that have reduced pay, benefits and job tenure (Edmiston, 2007; Hollister, 2004; Variyam and Kraybill, 1998).

When it comes to economic development, US policy makers have traditionally pursued a smokestack chasing approach to enhance the welfare of local residents. Communities sought to lure large employers from the outside to provide residents with high-paying jobs (see Cobb, 1982; Isserman, 1994). Sociologists proposed a dual economy theory, a paradigm shift in the way sociologists and other social scientists thought of the organization of work (Granovetter and Tilly, 1988; Tolbert et al.,

1980). The prevailing conclusion from this body of work was that 'bigger was better' as larger firms offered higher-quality jobs in the core sector of the economy (Villemez and Bridges, 1988). These jobs provided high levels of compensation, extensive benefits packages, internal labour markets, union access and a number of other work structures that provided employees a lifetime of secure employment (Kalleberg and Van Buren, 1996). The periphery economy firms, in contrast, were either small locally oriented employers who practised nepotism and provided little opportunity for individual growth and advancement or firms that were extremely vulnerable to market competition. Periphery firms offered lower pay and few, if any, benefits. Health care was more accessible to those working in the core sector of the economy. Therefore, places with a greater concentration of core sector jobs would have greater levels of population health.

Globalization has transformed the organization of work in Western democracies. Traditional US core economy manufacturing jobs have been supplanted by technology or migrated to offshore low-wage markets, putting downward pressure on a once robust middle class and increasing aggregate levels of inequality (Falk and Lobao, 2004; Sullivan et al., 2000). Some scholars continue to demonstrate, however, that large business jobs have higher wages, higher-quality benefits, due process in hiring/dismissal and a longer duration (Edmiston, 2007; Haltiwanger et al., 2009; Mencken and Winfield, 1998). Others question whether bigger is still better because larger firms are more vulnerable to global competition and have had to restructure in order to survive (Hollister, 2004). Part of this process included trimming or eliminating work structures (unions, internal labour markets, full-time employment) with alternatives (contract/contingency work, part-time work, consolidation) that give workers a more tenuous connection to employment and benefits.

The existing literature on the firm size compensation effect uniformly concludes that larger firms pay better and offer more benefits (Amato and Amato, 2007; Cubbins and Parmer, 2001; Useem, 1988). Hollister (2004), however, finds that between 1988 and 2003, there has been a significant drop in firm size-based wage differences (33% in real dollars) and in firm size-based differences in access to health insurance. Small firms are not adding greater compensation or benefits, however; large firms offered less of both in 2003 than in 1985. What restructuring has meant to the US economy is reduced access to health insurance and lower (real) wages to purchase health care.

More recently, economic development strategists have shifted focus away from efforts to attract external capital into making investments locally to stimulate the creation of small businesses (Edmiston, 2007). This approach has been fuelled by statistics showing that from 1990 to 2003 the small-business sector was responsible for 79.5% of US job creation (Edmiston, 2007; U.S. Census Bureau, Statistics of U.S. Businesses, 1990–2003). Though the quantity of jobs generated by the small-business sector is substantial (see Neumark et al., 2008), the quality of jobs in the small-business sector has historically been inferior to those in large enterprises (Variyam and Kraybill, 1998). And while Hollister (2004) documents a shrinking wage/benefit gap between large and small firms, there is still a persistent gap. Small firms do not have the advantages of scale to offer high wages and extensive benefits packages, in particular health insurance (Edmiston, 2007; Keene et al., 2010).

This transition in economic development policy begs an important question: will small business-based economic development efforts have a negative impact on the health and well-being of community residents? The public health literature suggests two competing outcomes. On the one hand, traditional income-based explanations of population health portend that the prospects for community health are bleak because jobs in small businesses usually offer lower wages and are less likely to provide health insurance coverage. Moreover, economic restructuring has 'created' a class of independent contractors, with large businesses furloughing employees from full-time benefits eligible positions and rehiring them as short-term

contract workers with no benefits (see Arum and Mueller, 2004). Second, for some workers, self-employment is a survival adaptation to changing economic circumstances. It becomes an escape from the roller coaster cycles of furloughs and call-backs that have characterized life with big firms during the last decade. Without health insurance coverage, access to medical care, both therapeutic and preventative, will be limited (see Gortmaker and Wise, 1997; Olafsdottir, 2007). Therefore, we should see a positive correlation between small-business concentration and aggregate measures of poor health (higher rates of mortality, obesity and diabetes).

On the other hand, a well-established literature in public health research, which focuses on the role of social capital and collective efficacy, indicates that there is a positive relationship between collective efficacy and community health (see Islam et al., 2006; Macinko and Starfield, 2001). Collective efficacy focuses on the connectedness of community members that occurs through organizational activity directed at problem solving (Dominguez and Arford, 2010; Gutierrez and Lewis, 1999). We maintain that an important implication of the small-business sector for public health is that small locally oriented businesses contribute to the collective efficacy of a community. In the literature review and analysis that follows, we attempt to connect these two literatures on the role of collective efficacy and community health with that pertaining to the importance of the small-business sector in creating a climate of local orientation and local civic engagement.

The small-business environment, civic community and collective efficacy

Over the past decade, researchers have paid increasing attention to the role of small business in economic development (Lyson et al., 2001; Tolbert et al., 1998, 2002). In this line of study, communities with a strong entrepreneurial culture experience improved economic outcomes, such as median household income, poverty and income inequality. These authors argue that, unlike large manufacturing plants and chain retail big box stores, small businesses are embedded in the community and have a greater investment in the well-being of local residents (see also Mitchell, 2006).

An important aspect of the entrepreneurial culture is the capacity for a community to self-develop. Self-development refers to an economic development activity that requires investment of local resources to stimulate the formation of locally owned business enterprises (Green et al., 1990). For rural communities, this approach has been utilized to create economic development programmes (for an example, see Korsching and Allen, 2004).

With respect to the well-being of communities and public health, the notion of self-development implies that community residents and leaders have a higher level of collective efficacy or the capacity and willingness of community members to take responsibility for solving local problems (Sampson et al. 1997, 1999). Collective efficacy requires a milieu of trust, cooperation and local orientation (Araya et al., 2006). The presence of small-business owners enhances collective efficacy because these owners are agents in local economic development. Many small businesses are operated by entrepreneurs who are important fixtures in the local community and who have accumulated substantial human and social capital (Dunn and Holtz-Eakin, 2000; Hout and Rosen, 2000). Because they are investing in the local community, the local entrepreneur classes are seeking significant returns on their investments. It is in their financial interest to use their resources to maximize the efficacy of the community. In contrast, communities seeking to develop through outside investment become dependent on the actions of external entities to address problems.

The value of the entrepreneurial spirit and community self-development was described decades ago by Mills and Ulmer (1946). In a comparative analysis of communities with and without a strong small-business sector, the authors found that small businesses are central to local problem solving through two mechanisms. First, small-business owners were motivated to help solve local problems because community improvement enhanced their quality of life and the profitability of their business.

In contrast, communities lacking a strong small-business sector demonstrated a diminished capacity to address local problems.

A second point raised by Mills and Ulmer is the concentration of community power. A strong small-business environment creates a diffusion of economic activity across a larger number of business owners. This results in a pluralistic power structure where a large number of business leaders compete for prestige and influence in local decision-making. Communities with a higher concentration of economic activity through the presence of large employers tended to be dominated by the interests of the corporation (Mills and Ulmer, 1946). When community interests diverge from the interests of the corporation, a large employer may threaten to relocate or withhold support.

More recently, the multilevel association between small-business environments and collective efficacy has been documented by Blanchard and Matthews (2006). These authors find that the prevalence of large employers within a community reduces participation in community affairs because residents are alienated from the decision-making process as corporate goals take priority over the needs of local residents. Similar to the findings of Mills and Ulmer (1946) regarding small-business communities, residents in communities with smaller competitive business environments are far more active in local problem solving and demonstrate a higher level of community efficacy.

The small-business environment and local population health

We hypothesize that communities with a strong entrepreneurial culture will demonstrate higher levels of population health than communities lacking a strong small-business sector. This hypothesis is based on the self-development orientation of communities possessing a strong small-business sector. Within the context of public health, collective efficacy is conceptualized as a community-level form of social capital that has been linked to a variety of health outcomes (Dominguez and Arford, 2010). Collective efficacy focuses on the connectedness of community members that occurs through organizational activity directed at problem solving (Gutierrez and Lewis, 1999). An important implication of the entrepreneurial culture for public health is that the small-business sector contributes to the collective efficacy of a community.

The literature suggests several pathways through which collective efficacy may influence health outcomes (Islam et al., 2006). One mechanism for linking collective efficacy to population health is through a community's willingness to invest in local health infrastructure. Prior studies of population health find that investment in the local health-care system is directly associated with improved population health (Daly et al., 1998, Lynch et al., 2000). Health-care infrastructure may include hospitals and other medical facilities, physicians and other medical personnel.

A second and closely related mechanism is investments in other aspects of health, such as educational programming, environmental safety, affordable housing and recreational facilities (Lynch et al., 2004). Likewise, community health promotion programmes are vital instruments through which local populations are educated about their health status and learn intervention information to avoid or manage chronic illnesses (Hawe and Shiell, 2000). Community health programmes depend on vertical integration among national, state, regional and local health authorities and community stakeholders in order to be successful. Yet one programme does not fit all communities or health issues. As a result, no one agency has sufficient resources to identify community needs and to design the right programme for a specific community. What is required is significant input and coordination from stakeholders, local government entities, private businesses, faith-based organizations and the like. Green et al. (2001) argue that if trust is not established among all constituents, then the programme will not be successful. Moreover, this trust is also necessary to institute local legislation, such as banning smoking in local restaurants and bars, in order to minimize community division and backlash to the legislation (see Stebbins, 1997).

Recent research by Payne and Williams (2008) serves as an example. They document the role of

collective efficacy in Riverside, California. In this case, a variety of local organizations, such as churches and civic groups, and local government agencies organized to develop a community centre in an impoverished neighbourhood to provide information and health services for local residents. With respect to obesity, Cohen et al. (2006) argue that high levels of collective efficacy help to maintain the built environment in terms of safety and walkability of the community. According to these authors, safety and walkability influence levels of physical activity and body mass index (Ross and Mirowsky, 2001). Another mechanism through which the entrepreneurial culture relates to health is the social control of health behaviours. In a social environment with high collective efficacy, community members are better able to enforce formal and informal norms regarding public behaviours, such as smoking, violence, alcohol consumption or poor diet. In addition, because collective efficacy involves community participation and the protection of the well-being of others, collective efficacy may lead individuals to avoid unhealthy behaviours by enhancing self-accountability (Ewing et al., 2003; Folland, 2007). Cohen et al. (2006) identify two pathways through which collective efficacy influences health outcomes via social control. First, residents of communities with low collective efficacy experience higher levels of stress due to the lack of social ties and social support. A second pathway involves the level of care shown by adults in high collective efficacy neighbourhoods towards the behaviour of children in the community. A high level of collective efficacy results in adult community members being involved in local sports leagues and encouraging healthier food options for children in addition to expressing disapproval towards sedentary activity.

We expect that a thriving small-business sector will yield salutary health benefits to communities. The entrepreneurial culture generated by the small-business sector will create local orientation among community leaders from the small-business class. This, in turn, will enhance the level of collective efficacy in communities. In turn, the higher level of collective efficacy will yield higher level of public health by providing residents with health infrastructure, the trust necessary to implement community health programmes and a greater capacity for social control of negative health behaviours.

The literature establishes two competing hypotheses. First, the income model provides that a higher concentration of small businesses represents diminished access to health care because the small businesses are less likely to offer health benefits to employees. Therefore, counties with a greater concentration of small businesses should have higher rates of poor health. The alternative is the entrepreneurial culture argument. The small-business sector is part of the locally oriented, civically engaged independent middle class. We argue that this creates greater collective efficacy, which in turn leads to positive health outcomes, for reasons mentioned above. From the entrepreneurial culture argument, we expect to find that counties with a greater proportion of small businesses will have lower rates of poor health.

Data and methods

We test our hypotheses using the 2000 Census of Population and Housing, Summary Files 3, the 2002 County Business Patterns, 2002 Nonemployer Statistics, the 2007 Centers for Disease Control Obesity and Diabetes Estimates, and the National Center for Health Statistics Compressed Mortality records from 1994 to 2006. The units of analysis for our study are 3060 counties in the contiguous USA. In the event that a county contained an independent city, data for the independent city and county were combined to a single-county unit.

Dependent variables

The dependent variables in our analysis include the age-standardized mortality rate from 2000 to 2006, the percent of the population that is classified as obese and the percent of the population diagnosed with diabetes. For the mortality rate, we examine age-standardized rates using the 2000 US population as our standard. Standardization purges the mortality rate of differences due to unevenness in the distribution of age across counties.

Our direct standardization of the mortality rate by age takes the following form:

$$m = \frac{\sum m_a P_a}{P} \times 100,000, \quad (1)$$

where m refers to the age-standardized mortality rate per 100,000 persons, m_a is the age-specific mortality rate in a given county, P_a is the number of persons in the standard population (2000 US population) for a given age group and P is the total 2000 US population. Age-specific mortality rates (m_a) are obtained by dividing the number of deaths in a county for a given age, sex and race group by the number of persons in the county that are in that group. We then obtained the average standardized rate across the 7-year period.

Independent variables

The independent variables in our analysis include measures of the business structure in the community and control variables. Our measures of the business structure draw on data from the 2002 County Business Patterns and the 2002 Nonemployer Statistics. We operationalize entrepreneurial culture as the number of small businesses per 100,000 people. We classify small businesses as those business establishments with zero to four employees. We also include measures of the number of large manufacturing and the number of large retail establishments per 100,000 people. Large manufacturing establishments are defined as manufacturing establishments with 500 or more employees. Large retailers include those retailers with 100 or more employees.

Recent work on the importance of the cultural economy in regional economic development suggests that a higher concentration of creative class occupations, such as education, law, health care, arts, culture, entertainment and science/engineering (to name a few), are vital to regional economic growth and development (McGranahan et al., 2011). This creative class is composed of highly skilled individuals with extensive entrepreneurial capabilities (see Florida et al., 2008, 616). The creative class consumes locally produced goods and services and generates products and services that have export capacity (see Markusen and Schrock, 2006). In addition to being creative and innovative, this class is a comparative advantage for locales. It signals to other highly skilled talent that a particular place is a good place to live and work.

We control for the percent of the workforce in each county in 2000 employed in the creative class and the bohemian class (arts) occupations. Creative class occupations include workers employed as top executives, managers (advertising, marketing, promotions, public relations and sales), financial managers, operations specialities managers (except financial managers), other management occupations (except farmers and farm managers), business operations specialists, other financial specialists, computer specialists, mathematical science occupations, architects, surveyors, cartographers, engineers, drafters, technicians (engineering and mapping), life and physical scientists, social scientists and related workers, postsecondary teachers, librarians, curators, archivists, media and communications workers, sales representatives (services, wholesale and manufacturing), other sales and related occupations (including supervisors). Bohemian occupations include art/design workers and entertainers (performers, sports and related workers).

These occupational classifications are provided by the Economic Research Service (ERS), U.S. Department of Agriculture (www.ers.usda.gov/data/creativeclasscodes/, see also McGranahan and Wojan, 2007). Given that creative class members are entrepreneurial, highly skilled and innovative, we need to make sure that our small-business measure of entrepreneurial culture is not in actuality capturing the effects of the local creative class. Moreover, it is sound theoretical reasoning to expect that these two measures have the same effects on health outcomes. Perhaps, the creative class is composed of healthier people. It may also be that the creative class helps to create the type of collective efficacy that will lead to healthier places.

With the exception of health insurance coverage and creative class measures, our choice of variables is based on prior research on mortality rates for counties (see McLaughlin et al., 2001). We measure the level of health insurance coverage in the

population by including a control for the percent of the population without health insurance. This measure comes from the U.S. Census Bureau Small Area Health Insurance Estimates Program. The models also include control variables for health insurance coverage, per capita income, income inequality, minority concentration, health infrastructure, metropolitan status and population size.

Per capita income is measured from the 2000 Census of Population and Housing using total household income per person. We also control for the percentage of the population 65 years and older. Following prior research, we measure income inequality using the Gini coefficient of inequality (McLaughlin et al., 2001). We include a measure of the percent of the county population that is non-Hispanic Black and the percent Hispanic to account for the effects of minority concentration noted in prior sociological analyses of mortality (LaVeist, 1992; McLaughlin and Stokes, 2002). The local health infrastructure is operationalized as the number of physicians per 1000 residents in 2002. Metropolitan status is classified using the 2003 Urban Influence Codes (ERS 2003: http://www.ers.usda.gov/data/urbaninfluencecodes/2003/). We control for metropolitan status because the availability of health-care facilities and professionals varies substantially across rural and urban localities (Pathman et al., 2004). We also include a control for the natural logarithm of the county population size. Descriptive statistics for the variables in the analysis are reported in Table 1.

Analytical technique

To test our hypothesis regarding the effect of the entrepreneurial culture on population health outcomes, we estimate fixed-effect weighted least squares (WLS) regression models that include a time-lagged measure of the level of population health in the county. We employ a WLS technique where models are weighted by the population size. We do so because ordinary least squares regression

Table 1. *Descriptive statistics.*

	Mean	SD
Entrepreneurial culture (establishments per 100,000 people)		
Number of businesses with 0–4 employees	7603.560	2364.000
Other businesses (establishments per 100,000 people)		
Number of large manufacturers (500+ employees)	1.587	2.913
Number of large retailers (100+ employees)	4.586	4.845
Creative occupation measures		
Percent of labour force employed in creative class occupations	17.300	5.900
Percent of labour force employed in Bohemian class occupations	0.700	0.400
Controls		
Percent of population uninsured	17.754	7.320
Income inequality (Gini coefficient)	42.416	3.488
Per capita income	17451.820	3883.940
Percent of population non-Hispanic Black	8.593	14.402
Percent of population Hispanic	6.156	12.135
Number of physicians per 100,000 persons	151.065	319.587
Population size, natural log	10.242	1.407
Percent of population aged 65 and older (2000)	14.750	4.230
County part of metropolitan area (1 = yes, 0 = no)	0.344	0.475
Dependent variables		
Age-adjusted mortality rate (deaths per 100,000), 2000–2006	876.370	130.939
Age-adjusted mortality rate (deaths per 100,000), 1994–1998	922.687	128.182
Percent obese, 2007	28.287	3.623
Percent with diabetes, 2007	9.645	2.009

weights all counties equally such that a county with 1,000,000 residents exerts the same influence in the model as a county with a population of 5000. In supplementary analyses, we estimated models with and without weights and obtained similar findings.

Our fixed-effect models include binary variables for each state. We utilize a fixed-effect approach because our exploratory analyses suggested that average levels of population health varied substantially across states. For example, Louisiana, Mississippi and West Virginia contain large clusters of counties with exceptionally high rates of mortality, obesity and diabetes.

To account for possible endogeneity in our analyses, we include the 1994–1998 age-adjusted mortality rate in all models. In models predicting the percent obese and the percent with diabetes, time-lagged measures (that is, measurements prior to 2000) are not available. Including the time-lagged measure of mortality provides a more robust test of our hypothesis because our findings are less likely to be a function of reverse causality where healthier communities may select specific population or businesses.

We also examined our regression models for evidence of multicollinearity. Neter et al. (1989) note that a variance inflation factor (VIF) value of 10 is evidence of problematic multicollinearity. No coefficients related to our hypothesis tests had VIF values that indicated collinearity. Three of the control variables in the model exhibited VIF values that exceeded this threshold. These occurred for the variables percent uninsured (10.0), per capita income (10.5) and the percent employed in creative class occupations (13.6). We evaluated a number of model specifications where each of the three variables were omitted to assess the consistency in the model coefficients and standard errors. In all models, the central findings of the analysis were consistent with those presented here.

Results

In our analyses, we test two hypotheses about county-level health measures. We proposed that the presence of a strong entrepreneurial culture, measured as the number of small businesses with zero to four employees, would be associated with healthier communities. We find support for this argument. The concentration of small businesses is associated with lower rates of mortality, obesity and diabetes (see Table 2). We obtain this finding after accounting for between-state variations in the baseline level of the dependent variables in addition to the control variables in the model. Moreover, this finding holds after adjusting for the lagged age-adjusted mortality rate from 1994 to 1998.

In addition to statistical significance, the coefficient for our small-business measure has a large effect in each of the models. In the model predicting the mortality rate, the standardized coefficient for our small-business measure is exceeded only by the standardized coefficients for the race distribution (percent non-Hispanic Black and percent Hispanic), the percent of the labour force employed in creative class occupations and the lagged value of the dependent variable. For the obesity model, our small-business variable has the largest standardized coefficient in the model. This is an important finding given the salience of obesity as a persistent social problem in the USA. In the model predicting diabetes, the standardized coefficient for the small-business measure is exceeded by the standardized coefficients for the creative class, percent uninsured, per capita income, percent non-Hispanic Black, percent Hispanic and the percent of the population aged 65 and older.

These findings provide robust support for our hypothesis that a small-business sector is important for local development and that these effects extend beyond job growth. Moreover, these effects are significant, controlling for two measures of creative class concentration. Both of these measures (proportion employed in creative class occupations, proportion employed in bohemian occupations) have significant effects: the greater the concentration of both, the lower the level of obesity, death rate and diabetes. Community health is not just the types of jobs that are located there but also the structure of the business sector. A place with a greater proportion of small businesses will have a healthier population.

The data also show some support for the income model of community health. The percent of the

Table 2. *Fixed-effect regression estimates predicting age-adjusted mortality rate (2000–2006), percent of adults obese (2007) and percent of adults with diabetes (2007).*

	Age-adjusted mortality				Rate percent obese				Percent diabetic			
	b		s.e.	*β*	*b*		s.e.	*β*	*b*		s.e.	*β*
Entrepreneurial culture (establishments per 100,000 people)												
Number of businesses with 0–4 employees	−0.004	***	0.00060	−0.074	−0.0005	***	0.00002	−0.229	−0.0001	***	0.00001	−0.126
Other businesses (establishments per 100,000 people)												
Number of large manufacturers (500+ employees)	−0.665		0.39990	−0.011	0.0055		0.01790	0.002	0.0105		0.00800	0.010
Number of large retailers (100+ employees)	1.647	***	0.22600	0.061	0.0872	***	0.01020	0.086	−0.0036		0.00400	−0.008
Creative class occupations												
Proportion creative class	−2.344	***	0.30300	−0.157	−0.112	***	0.01300	−0.203	−0.073	***	0.00600	−0.308
Proportion Bohemian class	−10.17	***	1.88000	−0.058	−0.249	*	0.08500	−0.039	−0.089	*	0.03800	−0.032
Controls												
Percent uninsured	−0.226		0.28600	−0.014	0.107	***	0.01290	0.176	0.0586	***	0.00500	0.222
Income inequality (Gini coefficient)	2.122	***	0.36300	0.067	−0.1378	***	0.01630	−0.117	−0.022	***	0.00700	−0.043
Per capita income	0.00004		0.00100	0.002	−0.0003	***	0.00000	−0.051	−0.00003	*	0.00001	0.187
Percent non-Hispanic Black	−0.998	***	0.09200	−0.118	0.0392	***	0.00410	0.125	0.0245	***	0.00100	0.181
Percent Hispanic	−1.395	***	0.11100	−0.194	−0.0488	***	0.00500	−0.183	−0.0241	***	0.00100	−0.209
Number of physicians per 100,000 persons	0.0024		0.00410	0.005	−0.0007	***	0.00010	−0.039	−0.0002	***	0.00008	−0.031
Ln population size	−0.2818		0.83800	−0.004	−0.289	***	0.03700	−0.117	0.0728	***	0.01700	0.068
County part of metropolitan area	1.872		2.36100	0.007	0.151		0.10600	0.014	−0.071		0.04700	−0.015
Age-adjusted mortality rate, 1994–1998	0.8122	***	0.01120	0.742	0.004	***	0.00050	0.108	0.0019	***	0.00020	0.111
Percent 65+	−1.641	***	0.30000	−0.053	−0.0531	***	0.01360	−0.047	−0.1181	***	0.00600	0.240
Intercept[a]	167.290	***	21.80000	—	35.797	***	0.98200	—	4.904	***	0.51000	—
N	3059				3060				3060			
R^2	0.91				0.87				0.85			

[a]Model includes binary variables for each state.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

population that is not insured is associated with higher levels of obesity and diabetes. Increases in per capita income are associated with improved population health via lower levels of obesity and diabetes. We are not arguing that the income model is irrelevant. However, beyond the explanatory power of variables like health insurance and income, the nature of the business sector does matter. Our models also yield a number of important findings regarding the association between the presence of large establishments and population health. First, the number of large manufacturing establishments per 100,000 persons is not significantly associated with any of our measures of population health. This finding is interesting because to our knowledge prior studies have not explored the link between the presence of large enterprise and population health outcomes.

A second important finding in our analyses is that the presence of large retailers has a detrimental effect on two population health measures. In terms of the age-adjusted rate of mortality and the percent of adults obese, the presence of large retailers is related to poorer health outcomes. Large big box retail operations are not conducive to improving community health, net of other important business sector and demographic controls.

With few exceptions, our control variables generally conform to findings from prior studies. Counties with a large presence of physicians per 100,000 persons enjoy less obesity and diabetes. We also find that the percent of the population that is Hispanic is negatively associated with mortality, obesity and diabetes rates. This finding is consistent with prior studies that find a Latino health paradox where despite lower levels of socio-economic well-being, health among Hispanics is similar to that of non-Hispanic whites (for a review, see Franzini et al., 2001).

However, the percent non-Hispanic Black yields inconsistent findings. Prior studies have observed that the percent non-Hispanic Black is associated with lower levels of population health. Model results for the percent obese and percent with diabetes largely conform to this trend. However, counties with a high percent non-Hispanic Blacks have lower rates of age-adjusted rates of mortality. In supplementary analyses, we observed that the direction of this coefficient changed from positive to negative after controlling for the time-lagged value of the mortality rate. This finding suggests that after adjusting for prior levels of mortality, the percent non-Hispanic Black is actually related to improved population health outcomes. Though not a common finding, we identified one study (Blanchard et al., 2004) that found a similar finding for the rural South. Moreover, prior studies have not included time-lagged values of the dependent variable to account for possible endogeneity.

A second inconsistent finding in our models is that income inequality, as measured by the Gini coefficient, is associated with lower rates of obesity and diabetes but higher rates of age-adjusted mortality. We found similar results using alternative model specifications that did not include fixed effects or the time-lagged measure of mortality. We also estimated models with categorical measures of the Gini coefficient to test for nonlinearities in the effect and obtained the same results.

Conclusions

In this study, we draw on the civic community tradition to develop an alternative framework for understanding the linkage between economic development and health. We argue that economic development strategies aimed at growing the small-business sector have a latent beneficial effect on health outcomes. Our findings support a small businesses perspective. We find that counties with a vibrant small-business sector have lower rates of mortality and a lower prevalence of obesity and diabetes. Small-business owners produce important *noneconomic rewards* for communities, such as enhanced stocks of social capital and collective efficacy. In this way, the small-business sector may produce salutary rather than unfavourable community health outcomes.

In the past, communities largely sought to develop using external investment. More recently, community development experts have shifted focus to investments in local infrastructure that foster

small-business growth (Edmiston, 2007). With respect to health, this approach is counter intuitive because small businesses generate lower-paying jobs with fewer benefits. Theories of modernization and development largely posit that growth in productivity yields improved health conditions through expansion of payrolls, which also provides access to health insurance, the gatekeeper for high-quality medical care in the USA. We are not arguing that the income model is without validity. Our own shows that income-related measures (per capita income, percent uninsured, income inequality) do have predicted effects on some health indicators. However, the small-business effects in our models point out some potential limitations in the income model approach.

We posit an alternative theoretical approach that explains how small-business development improves population health by enhancing the entrepreneurial culture of the community. Entrepreneurial culture provides a local orientation that allows for greater levels of interaction and trust among community members. This, in turn, helps to create collective efficacy, which has positive effects on community health in a number of ways discussed previously in the paper. In the publically available county-level data, valid measures of collective efficacy are non-existent. Therefore, we have to assume that the process of entrepreneurial culture works as we described it in this paper. However, we show that effects of small-business concentration are robust in each model and are net of important measures from income-based models (percent uninsured, per capita income, concentration of large employers). Small businesses matter, and we argue that they matter in the way proposed in the hypothesis. However, future research with intervening measures of collective efficacy is necessary to confirm our conclusions. Furthermore, while we control for percent uninsured, a better measure would be the types of health insurance (if any) the small businesses provide. These data are not available from government sources. Perhaps, future studies can do community case studies that include this potentially important measure.

Another key contribution of this paper is to highlight the role of health as an indicator of development. Recently, researchers have begun to examine the reciprocal relationship between health and economic development (Bloom et al., 2004). Studies suggest that health may be not only a good indicator of community well-being but also an engine to drive productivity. Though not addressed in our analyses, future analyses should consider the degree to which a healthy population is better able to produce nascent entrepreneurs.

More importantly, our analysis demonstrates that investment in locally grown enterprise has the potential to yield large returns for communities. Fostering an entrepreneurial culture in a community may stimulate self-determinism and proactivity by local residents to manage local affairs and address problems. This model of social organization stands in stark contrast to the orientation of communities dominated by a handful of large employers. In these communities, residents are less likely to be involved in community affairs such as voting, participating in rallies, signing petitions and the like (Blanchard and Matthews, 2006). In addition to health, we expect that our entrepreneurial culture approach could be applied to a variety of indicators of well-being, such as crime, suicide, population growth and school performance. Moreover, researchers also should explore the manner in which the entrepreneurial culture may interact with religious institutions that provide a theological underpinning for entrepreneurship.

We also note that this paper has treated the effects of small businesses as homogenous. Professional small businesses are qualitatively different from non-professional small businesses. The former are often formed by local entrepreneurs seeking greater earnings that would be typically offered through a corporation (that is, accountant, legal services). The latter is often characterized by individuals starting their own business because they are having a difficult time locating stable employment with larger businesses (Boden, 1999; Budig, 2006). In addition, small non-professional businesses owned by women may be significantly different (and less profitable) than those operated by men

(that is, day-care centre versus appliance repair). Unfortunately, there are disclosure issues at the county level with many of the data we used in this study. We are unable to tell which industries the small employers are from. Therefore, future studies should, when data permit, recognize the diversity of operations within the small-business category.

While our study focused on the effects of the small-business sector on community health outcomes, the data from the creative class measures show opportunities to integrate these two theoretical perspectives (civil society/entrepreneurial culture and creative class). Members of the creative class may constitute part of the small-business class in a local community; however, our analysis shows that all three measures have expected and significant effects on community health measures. This suggests that small business and creative class measure different aspects of the community that all lead to the same expected outcome. More exploration of this interconnection is warranted.

Finally, we note that the results are based on counties in the USA, a nation without a comprehensive state health system. One might expect that similar results do not apply in nations that have such state-sponsored policies. However, these results should be of interest to international scholars. First, the results are more about collective efficacy and not how one gets health care. A small-business sector could lead to other prosocial outcomes (for example, less delinquency) via collective efficacy. Second, the small-business sector can be helpful in promoting community health education programmes, which lead to higher levels of health. Finally, in a more draconian sense, the current fiscal crisis that is gripping many nations, particularly in the European Union, may lead to a reduction in social benefits, including health care.

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