

Clusters and Neighborhoods in Economic Development

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Abstract

The jobless recovery of the Great Recession has led policymakers and citizens alike to ask what can be done to better protect regions from the cascading effects of an economic downturn. Economic growth strategies that aim to redevelop a waterfront for tourism or attract high growth companies to the area, for example, have left regions vulnerable by consolidating resources in just a few industry sectors or parts of town. A promising answer that coincided with growing interest in regional innovation policy has been to promote entrepreneurship for bottom-up, individual-led regional development. However, these policies have also failed to maximize the potential for bottom-up development by focusing on high skill entrepreneurs and high tech industry sectors, such as green energy and nanotechnology.

This study uses mix methods to determine whether cluster theory can be usefully extended from regional networks of high skill innovators to solo entrepreneurs in traditional trades. It is within spatially proximate clusters that we find the positive externalities associated with agglomeration economies and regional growth. Whether it is due to entrepreneurial ideas, skills diffusion or shared resources, small co-located firms are thought to create an environment ripe for entrepreneurship and regional economic growth. The study uses U.S. Census data in 12 representative regions to assess whether traditional entrepreneurs cluster at the neighborhood level. In-person interviews are also conducted in cluster and non-cluster neighborhoods in Dayton, Ohio to determine whether social networks explain high rates of neighborhood self-employment. Whereas, case studies of entrepreneurs have been confined to mega-cities on the coasts (largely anomalies in the American landscape), Dayton, Ohio better represents typical American regions and neighborhoods because it is mid-sized, has average population density and has no major public train transport. This has implications for the frequency and diversity of network-building that have not yet been explored and for cluster development in depressed economies.

The quantitative analysis documents, for the first time, a minor degree of neighborhood-level entrepreneur clustering in the sample regions. These cluster scores (locational Gini coefficients) are compared to other worker groups and previous census years. Moreover, in over a dozen interviews, entrepreneurs offered clear examples of social networks that demonstrate positive externalities and resemble those spillovers and linkages shown to make regional clusters successful. The interviews help clarify that a slightly larger geography than the neighborhood and smaller than the region, may reveal more clustering. The research informs growing policy interest in bottom-up urban development by offering evidence of how local mechanics, seamstresses, lawn care businesses and many others can be regional assets.

Introduction

Entrepreneurs and the spirit of entrepreneurialism represent an enduring American value. Over time, names like Ford and Rockefeller have been replaced by Dorsey and Zuckerberg, entrepreneurs of the digital age. Today's policy research on entrepreneurship is focused on highly skilled individuals in knowledge-intensive industries with the capacity to innovate and catalyze economic growth. Their innovation networks and industry clusters are a significant departure from firm-based analyses because they suggest that entrepreneurs located near one another can be both competitive and collaborative. It is within spatially proximate clusters that we find the positive externalities associated with agglomeration economies and regional growth. The positive externalities of small co-located firms, whether due to entrepreneurial ideas, skills diffusion or shared resources, are thought to create an environment ripe for entrepreneurship and regional economic growth (Acs & Armington, 2006).

At the same time, innovation-related research—and commensurate public policy—have largely ignored a significant percentage of the self-employed population because higher education is viewed as a proxy for innovation capacity (Rosenthal & Strange, 2004). Over half of the self-employed persons have high school and not college degrees, and thus would be missed in studies of entrepreneurship and innovation (Hipple, 2010). Always alongside the start-ups, spinoffs, and eventual industry titans, have been the shop owners and mechanics, the pizzeria and the salon, the artist, the seamstress, and scores of other traditional entrepreneurs that comprise the 14 million Americans who have chosen to work for themselves (Hipple, 2010).

Recent data show that during the Great Recession, entrepreneurship grew the most among those with only a high school diploma (Fairlie, 2012). And although the (net) stock of entrepreneurs fell, unincorporated businesses, which are more likely to operate informally and

without employees, have fared significantly better than incorporated ones in terms of remaining open (Shane, 2011). Traditional entrepreneurs then, may help regions recover from economic shocks or even insulate them from experiencing precipitous decline over the long run.

For generations, these entrepreneurs have contributed to a viable and vibrant economy by supplying a needed service in their local economy, creating their own job, and even creating jobs for others. Yet little is known about how self-employed, high school-educated individuals in these traditional trades operate as a group and how they contribute to the so-called knowledge-based economy. Even within the broader urban affairs literature, the experience of entrepreneurs who do not possess college degrees has been confined to ethnic enclaves on the one hand and the chronically poor operating in the informal economy on the other (Wacquant, 2008). Although considerable neighborhood research indicates that the economic outcomes of working class residents rise and fall together (e.g. Kefalas, 2003; Sampson, Raudenbush, & Earls, 1997), urban studies scholars have not looked at entrepreneurs in this light.

This research begins to fill the gap in entrepreneurship research by offering new quantitative analysis of census data and qualitative data gathered directly from a sample of traditional entrepreneurs. Drawing on insights from innovation and cluster theory, it posits that urban neighborhoods are the traditional entrepreneur's analogy to high skill innovation networks. The research asks whether locally-owned firms in non-distressed areas with a low proportion of college graduates (i.e. working class neighborhoods) generate positive externalities akin to the agglomeration effects identified at the regional level.

Who are Traditional Entrepreneurs

As it stands, most workers in the U.S. do not have a college degree. Although college graduates are over-represented in the entrepreneur ranks, the sheer size of the non-college

graduate population means that the majority of entrepreneurs (54 percent) have a high school diploma, but no college degree (Hipple, 2010).¹ Educational attainment is associated with a number of other firm characteristics that, when taken together, create a portrait of the average non-college educated entrepreneur as somewhat distinct from the average college-educated entrepreneur.

Traditional entrepreneurs are small operations, very small. From the standpoint of firm-based economic analysis, many are on the tail end of the size distribution. A standard economic definition of small business is one with less than 500 employees, but almost two-thirds of business owners without a college degree have no employees at all (Survey of Business Owners, 2007).² These single-employer or non-employer firms, as they are called, are large in number but they comprise less than five percent of business receipts (Acs, Headd, & Agwara, 2009). Many female traditional entrepreneurs operate home-based businesses, such as child care or book-keeping and several male dominated traditional entrepreneurship avenues are “on-call” services with no physical location, namely construction subcontractors. About half of all self-employed males and the majority of females are home-based (U.S. Census Bureau, 2011). The rate of home-based businesses by educational attainment is not available.

Table 2-1. Type of Self-Employment by Educational Attainment, 2010

Final educational attainment	Total self-employed (14 million)	Unincorporated (9 million)	Incorporated (5 million)
College graduate	38%	32%	49%
High school graduate	54%	57%	48%
Less than high school	9%	11%	4%

¹ Although there are several data sources for self-employment figures, this distribution is fairly consistent. For example, Doms et al. (2010) found a nearly identical distribution when they used the 2000 Decennial Census and limited self-employment to those who worked at least 1500 hours in the year and have no wage income.

² Incidentally, the number is only slightly lower for those with a college degree. About 19 percent of single-employer firms are in the Professional, scientific and technical services industry group (Acs et al., 2009).

Total	100%	100%	100%
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Source: Hipple, S. (2010). Bureau of Labor Statistics, Current Population Survey

Entrepreneurs without a college degree typically start businesses in industries with low barriers to entry. Bates, Lofstrom, & Servon (2011) define barriers by the necessary human capital and financial requirements for entry. They use the U.S. Census Characteristics of Business Owners to identify personal services, repair services, construction, transportation, and miscellaneous services as low-barrier, while high-barrier industries include manufacturing, wholesale, professional services, business services, finance, insurance, and real estate. Retail businesses lie at the cutoff between low and high capital and education requirements.

Those in low-barrier industries start businesses out of necessity and opportunity. For example, interviews with entrepreneurs in four cities revealed that economic necessity was the primary reason for starting an informal business (The Aspen Institute, 2004; Williams & Nadin, 2010), but the same interview respondents report that they were also motivated by the desire for more flexibility and autonomy; more control in an economy of routine firings; and dissatisfaction with formal employment options. In addition to a potentially undesirable start, self-employment may not produce a livable income, it may be an inefficient use of the worker’s time, or it may require a stressful and difficult lifestyle. About 15 to 30 percent (depending on the industry) of those who are self-employed are in the bottom quarter of the income distribution (Glaeser, 2007a). In some cases then, wage work may be a better situation for the entrepreneur and it is important that public policy does not rely on entrepreneurship as a social safety net program (Jurik, 2005).

To help exclude instances in which entrepreneurship is primarily a necessity, I focus on people and places we may think of as working class rather than poor. Similar to my notion of a traditional entrepreneur, Lamont defines the working class as those with “stable employment and

high-school diplomas, but no college degrees, which means they face severe barriers to jobs and other social benefits” (2000, p. 2). A more anthropologically-based definitions describes working class as a culture and identity, “grounded in everyday life, in human interactions, and in the relationship between work, place and community” (Russo & Linkon, 2005, p. 9). For the purposes of this research, an entrepreneur is defined as a self-employed person, and ‘traditional’ entrepreneurs by the level of education and poverty in their residential area, which is closely tied to income level and industry choice, but which constitutes its own class identity that significantly influences with whom you socialize (Hyra, 2006; Lamont, 1992; Vallejo, 2009). For this reason, my definition of a traditional entrepreneur has a significant geographic component that constitutes the entrepreneur group in my dissertation.

Cluster Theory and Literature

Scholars have identified a number of potential reasons that clusters occur. None have strayed far from Marshall’s (1920)original triad of labor pooling, shared inputs and information spillovers, but Duranton & Puga (2004) offer a potentially valuable theory-based classification. They group sources of agglomeration into sharing, matching and learning mechanisms, each of which has a distinct explanation for the positive externalities that characterize agglomeration economies (see Table 3-1).

Table 3-1. Sources of Agglomeration Economies

Agglomeration source	Example of mechanism generating positive externality
Sharing	The ability of co-located firms to minimize costs by sharing indivisible goods like production facilities
Matching	The greater access that co-located firms have to a specialized labor market, improving their odds of finding a qualified worker
Learning:	

-Ideas	Generation of new ideas or knowledge through the interaction of co-located firms
-Skills	Transfer of skills between differently skilled workers in co-located firms
-Information	Diffusion of information among co-located firms

The source of positive externalities in agglomeration is just one puzzle. There are also several debates about what exactly constitutes a cluster of firms. For example, one long-standing question in agglomeration research is about the industrial scope of a cluster. Thus far we have referred to clustering among firms in a specialized industry. Jane Jacobs' (1969) observations of New York neighborhoods are often used to support the notion that learning mechanisms operate on a much wider industrial scope. She argued that the interaction of different types of firms and people within diverse city environments generate economic growth through innovation, or as she said it, the invention of 'new work.'

The geographic scope of clusters is as puzzling as their industrial scope. To understand why geographic scope matters, we have to think about how spillovers occur in the real world. Marshall (1920) said it was simply more ideas 'in the air,' but researchers have since developed concrete possibilities. Inter-organizational collaborations, particularly with universities are probably the most well-studied explanation (Bruneel, D'Este, & Salter, 2010; Powell et al., 1996). Trade organizations or other professional networks for interacting is another candidate, and labor mobility across related firms is a third (Breschi & Lissoni, 2003). Interestingly, it was the idea of learning mechanisms that first directed innovation research from the national to subnational level (Cooke et al., 1997). However, the actual distance between economic agents over which spillovers could be expected to occur is not clear. This is a major criticism of the cluster concept: that clusters are said to operate anywhere from the district to the metropolitan to

the state level with no theory to guide the geography assessed (Martin & Sunley, 2003). Agglomeration sources are typically studied at the metropolitan level (Rosenthal & Strange, 2004). But just how close must people be for spillovers to occur? Glaeser and company's well-referenced quote is useful here (Glaeser, Kallal, Scheinkman, & Shleifer, 1992). They remarked that intellectual breakthroughs *must* travel across hallways easier than across oceans. Consequently, other authors have suggested that a better theoretical framing of the issue is to say that agglomeration economies diminish with a firm's distance from a cluster (Rosenthal & Strange, 2003).

The last puzzle in agglomeration theory is how clusters generate regional economic growth. The most direct effect of agglomeration is increased productivity at the firm level, but because these data are hard to come by, agglomeration is often measured indirectly according to employment growth (Beaudry & Schiffauerova, 2009; Rosenthal & Strange, 2004). Entrepreneurs have also been theorized as a *key* input to agglomeration economies. Large firm agglomeration is a collection of firms with a common focus that realize gains through collective action (Audretsch & Feldman, 2004). But entrepreneurs actively organize resources and institutions to support their work and the work of emerging entrepreneurs (Feldman, Francis, & Bercovitz, 2005). Further, an environment of many small scale suppliers (versus vertically integrated firms) is more hospitable to starting a new venture because the entrepreneur has easier access to resources he needs (Chinitz, 1961). In a slightly different view, economic churning in the form of high rates of small business entry and exit is the creative destruction process at work (Acs & Armington, 2006). It is this activity that results in faster regional development, but also growth, a main reason being that small firms add more employment than large firms (Acs et al., 2008).

Empirical evidence of clustering. The largest body of empirical work documents the scope of agglomeration across industries, locations and time, and their relationship to economic growth (Rosenthal & Strange, 2004). Economists are much less likely to take on the third puzzle, an investigation or comparison of sources of agglomeration economies (this is more common in economic geography and sociology). Importantly, traditional entrepreneurs have received almost no attention under any of the puzzles in cluster theory. One study that makes a direct comparison of skill level is Gabe & Abel (2010) who find that employees in low skill industries are not as likely as those in high skill and creative industries to cluster in metropolitan areas. Specifically, they use a locational Gini coefficient to show that workers in the social sciences, engineering, physical sciences and arts are the most geographically concentrated groups, while those in personal services and sales, clerical positions, mechanical occupations, and low-skilled labor are more spread out across metropolitan areas.

While it is reasonable to think traditional entrepreneurs would not cluster in particular regions, research from sociology and urban studies indicate they maintain local social networks that directly and indirectly effect entrepreneur success. Studies of minority (Valdez, 2011) and women (Loscocco, Monnat, Moore, & Lauber, 2009) entrepreneurs indicate family members are one of the most important sources of support, for example by providing unpaid labor. Strong social networks may explain why some studies have found formal education is important for starting, but not succeeding (profiting) at a new venture (Davidsson & Wiklund, 2001; Montgomery et al., 2005). Thus, social networks that influence business in traditional trades may be more accurately captured at the neighborhood level.

A large literature on ‘neighborhood effects’ finds that regardless of individual characteristics, such as education, the fates of low income residents (e.g. the ability to find a job)

tend to rise or fall together (Clampet-Lundquist & Massey, 2008; Forrest & Kearns, 2001; Guest & Wierzbicki, 1999; Sampson, Morenoff, & Gannon-Rowley, 2002; Woolcock, 1998). Whether intentional or not, neighborhood social capital influences economic success. This thinking has been applied to entrepreneurship in the Survey of the Social Networks of Entrepreneurs in the Netherlands, which surveyed 385 entrepreneurs in any industry that are home-based or work within their neighborhood (i.e. a ten minute walk or less). They find that the more highly educated entrepreneurs have more network ties, but the medium educated ones have more neighborhood ties (Schutjens & Völker, 2010). Moreover, in statistical tests of the survey, neighborhood ties were found significantly (positively) associated with job satisfaction and employment growth (though not profits).

Few agglomeration studies are conducted at a geography smaller than the city. Rosenthal & Strange (2003) produced the seminal study in this regard. They found that new businesses are most likely to cluster within a mile of the zip code of other firms in their industry and the effects drop off sharply by five miles distance. That is, new firms born in 1997 were most likely to spring up in close proximity to similar firms clustered in 1996, for the six industries they studied (e.g. software, manufacturing). Their study excluded low-barrier industries because one criterion of selection was that the industry must have a national or international sales scope and their data did not allow them to capture entrepreneurs without employees or a physical location. Nevertheless, they provide some of the only evidence that firms cluster at the neighborhood level.

Applying cluster theory to neighborhoods suggests some interesting mechanisms by which groups of traditional entrepreneurs would either be more productive themselves or generate growth through an environment hospitable to new firm entry and spinoffs. Learning-

based agglomeration, specifically the generation of ideas and the diffusion of information are good places to start. Entrepreneurial succession is a well-documented contributor to the propensity for entrepreneurship, especially among middle-class families (Valdez, 2011). As Valdez says, those with a family history of business ownership “reveal a confidence in pursuing entrepreneurship as an alternative to wage work that is unique when compared to their peers without such experience” (p. 51). If traditional entrepreneurs tend to stay in the neighborhood they grew up in, learning through succession could create an entrepreneur cluster over time.

Information diffusion and idea generation among co-located entrepreneurs may also foster cluster growth. Glaeser (2007) argues that erstwhile customers may ‘learn’ from a local entrepreneur and become one him/herself. Though he does not find support at the regional level, the type of services supplied by traditional entrepreneurs are highly localized, so customers are more likely to come from the immediate area and may therefore demonstrate clustering. Along these lines, Sassen (2001) finds that entrepreneurs in the informal economy serve local demand for services that are not offered by the mainstream economy, such as home-based child care and gypsy cabs which sprung up in New York’s low income neighborhoods that formal companies refused to serve. An entrepreneur’s customers are important networks for idea generation and information (Boschma & Ter Wal, 2007; Glaeser, 2007a; Porter, 1998; Rosenthal & Strange, 2004). Monitoring consumer demand and how it might be supplied with available resources is specific information that may only be accessed by living within the community and moving in the same social circles.

Sharing mechanisms also constitute some possibilities for clustering in traditional entrepreneurship. Bartering and trading services is a common occurrence among entrepreneurs in the informal economy (Losby et al., 2002; Williams & Nadin, 2010). These activities help

entrepreneurs start their business and operate on thin margins during tough times. Being part of a group could make the difference for business survival. Another potential sharing mechanism among traditional entrepreneurs with physical establishments is to share the cost of political action. Whereas mobile entrepreneurs can select their location from across the metropolitan area, low-barrier services are more closely tied to their neighborhood customer base. At the same time, to stay viable, working class neighborhoods must organize against the economic development interests of the city. Individual entrepreneurs in a neighborhood will have little political power, but Sutton's (2010) case study of a New York neighborhood showed that acting collectively, neighborhood small businesses have been able to access resources to prevent land use decisions that would be detrimental to their businesses.

Methods and Analytic Tactics

To determine the extent of neighborhood clustering, this study uses data from the American Community Survey (ACS) to calculate neighborhood locational Gini coefficients of self-employed workers, and then collects primary data from entrepreneurs in working class neighborhoods. The first 5-year file, the 2005-2009 ACS (hereafter 2007*), is used to report neighborhood self-employment information for 12 regions that are representative of the U.S. census divisions and vary on important economic development measures, including population size, population growth rate, and self-employment rate (see Table 3-3). Because the ACS is a neighborhood-level database, I cannot identify traditional entrepreneurs directly. Instead, I focus on neighborhoods in which traditional entrepreneurs are likely to live and/or work. For ease of communication, I call these working class neighborhoods.

Working class neighborhoods are those with a below average rate of college attainment but average poverty level (i.e. not in concentrated poverty). From this population of

neighborhoods, I exclude ethnic enclaves because immigrant clusters are known for their entrepreneurialism (Fairchild, 2010). The downside of defining entrepreneurship by neighborhood is that it restricts what can be said about ‘traditional entrepreneurs’ to a potentially non-representative sample of traditional entrepreneurs who live in neighborhoods of a particular character. There is also no way to verify the extent of sample selection bias and whether it could be improved upon by better operationalizing a ‘typical’ working class neighborhood. I take steps to make this process as data-driven as possible, but it is a limitation of using the ACS. Another limitation is that the ACS is a household level survey so the location of self-employed respondents reflects their residence, not business (if they work outside of their home). The upside of starting with neighborhood characteristics is that many local and federal community economic development programs also target neighborhoods of a certain demographic. Therefore, the findings can more accurately be applied to place-based development strategies.

Table 3-2. Sample Demographics

County seat	Average			Working class neighborhoods	
	B.A./graduate degree rate	Poverty rate	Foreign born rate	Number	Percent
Scranton, Pennsylvania	22	15	4	38	66
Flint, Michigan	17	20	2	71	55
Abilene, Texas	20	19	4	18	51
Sarasota, Florida	29	10	11	42	51
Dayton, Ohio	22	18	3	70	48
Spokane, Washington	26	15	5	46	43
Cincinnati, Ohio	30	18	4	79	35
Phoenix, Arizona	27	15	17	178	27
Raleigh, North Carolina	46	12	12	14	13
Denver, Colorado	40	18	15	14	10
Los Angeles, California	27	16	35	120	6
Brooklyn, New York	28	20	36	27	4
County average	28	16	12	60	34

Source: U.S. Census Bureau, 2005-2009 American Community Survey

Clustering within working class neighborhoods is measured with the locational Gini coefficient, similar to that constructed by Gabe & Abel (2011) and others. A locational Gini coefficient measures the extent to which self-employed people are equally likely to live in any working class neighborhood (adjusted for the total number of employed people in that neighborhood) or whether they cluster in certain neighborhoods. It is calculated for each county k 's working class neighborhoods, as follows:

$$Gini_k = \frac{\Delta}{4u}$$

where,

$$\Delta = \left\{ \frac{1}{[n(n-1)]} \right\} \sum_{j=1}^n \sum_{i=1}^n |x_i - x_j|$$

i, j = working class neighborhoods³ ($i \neq j$)

u = mean of x_i

$x_{i(j)}$ = neighborhood i 's (j 's) share of self-employment / neighborhood i 's (j 's) share of total employment

n = number of working class neighborhoods

The calculation results in values between 0 and .5 depending on whether the county's aggregate entrepreneur rate is evenly represented in each neighborhood (0) or perfectly concentrated in one neighborhood (.5). The Gini coefficient is most common statistic to measure employment concentration (rather than industry/firm concentration) (Beaudry & Schiffauerova, 2009).

³ The notation for a neighborhood is both i and j because it must represent the average absolute deviation about a fixed X_i for all other X 's, noted by X_j .

Interviews: The U.S. Census Bureau data was used to identify entrepreneur clusters in two working class neighborhoods in Dayton, Ohio. A cluster neighborhood is one with an above average self-employment or self-employment growth rate between 1990 and 2007*. Two non-cluster neighborhoods were also selected to offer a point of comparison and aid in drawing causal inferences about the relationship between social networks and self-employment rates. A non-cluster neighborhood was one with a below average self-employment or self-employment growth rate between 1990 and 2007*. In addition, two entrepreneur clusters in two working class neighborhoods in Raleigh, North Carolina were selected. While Dayton is a stagnant industrial region, Raleigh is a fast growing technology hub, which allows provides some diversity in the context. When I arrived in the regions, it became clear that the administrative boundaries of a Census Tract were often not distinct enough to reasonably believe that residents would perceive any difference. Therefore a final criterion of selection was that the clusters and non-clusters had a more visible boundary like a major thoroughfare, and/or were neighbored by tracts with dissimilar self-employment rates. These steps helped to ensure that the biggest demographic difference between the neighborhoods is the self-employment rate.

I conducted over a dozen site visits to the neighborhoods between March and August of 2012. I walked into establishments of low-barrier industries to meet the founder/owner and solicit an interview. Accessing traditional entrepreneurs with no physical establishment was naturally much more difficult. I called the numbers on business cards left in the area for subcontractors and other services and I called the phone numbers on work trucks parked in the driveways of the neighborhood after business hours. In the end, I conducted 27 interviews that averaged an hour in length (see Appendix 2 for list of interviewees). There is no way to determine the extent to which the sample represents the self-employed population in these

neighborhoods because demographics of entrepreneurs are not available at the neighborhood level. I sought representation from many demographic sectors, such as race, gender, immigrant status and age, and from a variety of industries (see Table 3-12 for sample characteristics).

Table 3-3. Demographic and Firm Characteristics

Entrepreneur	
Age (average)	47
Female	19%
Foreign-born	15%
Non-white	37%
College degree	19%
Firm	
Business start (average)	1996
Has full-time employee(s)	30%
Home-based business	33%
Industry	
<i>Lawn/cleaning service (commercial and residential)</i>	15%
<i>Salon/Barber</i>	15%
<i>Auto service</i>	11%
<i>Food or alcohol sales</i>	11%
<i>Martial arts</i>	7%
<i>Remodeling</i>	7%
<i>Other</i>	33%
Interview length (average)	61 min

The interviews were semi-structured and revolved around two themes: what people and organizations have been important to your entrepreneurship and how has your entrepreneurship changed over the years. Most interviews were conducted in-person, but a few were over the phone after I had met the entrepreneur. I recorded the interviews using an iPhone and transcribed them in full. Analysis was completed with the online, mixed methods software package, Dedoose.com. I coded the interviews for specific information, such as the source of important

social networks, which I could then cross-referenced with the entrepreneur’s location to determine if there were marked differences between the neighborhoods and regions.

Findings

Statistical Analysis: First, I present the locational Gini coefficients for the major employment groups, regardless of region (see Table 3-5). As expected, wage and salary workers in for-profit firms are almost (.037) uniformly divided across neighborhoods. Entrepreneurs who have formally incorporated their business (suggesting they have paid employees) are the most highly clustered worker type, with a coefficient of .245. This means their spatial distribution is at the halfway mark between being equally spread across all neighborhoods and concentrated entirely in one neighborhood. Minor clustering also occurs among the unincorporated self-employed, at a level similar to government and nonprofit workers and the unemployed. Comparing Gini coefficients to one another as I have done, has become the conventional method for interpreting when clustering above zero is particularly noteworthy (Bertinelli & Decrop, 2005; Ellison & Glaeser, 1997). Another useful comparison is between worker types and occupations. For example, the coefficient of for-profit worker clustering is similar to Gabe & Abel's (2011) lowest coefficient in regional occupation clustering, which is secretaries (.037 compared to .052)⁴; self-employment clustering (.162) is comparable to engineer (.189) and scientist (.154) clustering; and the most concentrated occupation was shoe machine operators at .490, nearly twice the most concentrated worker type at the neighborhood level.

Table 3-4. Neighborhood Clustering by Type of Worker in All Study Counties

Type of worker	Workers (in 000s)	Percent of total workforce	Locational Gini coefficient
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⁴ Research using a different index of concentration found that the average level of concentration at the district level compared to the township level was .04 and .02, respectively, and concluded that smaller geographies are likely to reveal more spatial concentration, all else equal (Bertinelli & Decrop, 2005).

For-profit	1,086	65.0	0.037
Government	225	13.5	0.126
Nonprofit	106	6.4	0.144
Self-employed	88	5.3	0.162
Self-employed (inc.)	42	2.5	0.245
Unemployed	122	7.3	0.141
Total	1,670	100.0	NA

Source: Author’s calculations; U.S. Census Bureau, 2005-2009 American Community Survey
 Note: 717 neighborhoods in 12 counties

An improvement on the descriptive statistics I report is to use significance tests of the locational Gini coefficient to determine how slight changes in the underlying data effect it or whether differences in the coefficients (such as between self-employment and nonprofits) are statistically significant. Currently, there is no one test for any of the spatial concentration indices, and the variance calculation needed to test the hypotheses that the coefficients are statistically different is fairly complicated according to statisticians and economists working on the problem, and not yet a standard practice in concentration analyses (Bertinelli & Decrop, 2005; Davidson, 2009; Ellison & Glaeser, 1997; Giles, 2004).

Note that the aggregate self-employment Gini coefficients could be heavily weighted by counties with many census tracts and workers. To look more closely at neighborhood self-employment clustering, Table 3-6 shows the locational Gini coefficients by region. All but one coefficient falls between .11 and .16, which demonstrates a very minor degree of clustering. Brooklyn is an outlier with a coefficient of .24, but it is also the region with the fewest self-employed persons so the score may be rather unstable. Although the primary purpose of this research is to investigate the scope of potential agglomeration economies, according to the theory these figures would be more meaningful if they demonstrated a relationship to economic growth

on some level. I use the word relationship purposely because the self-reinforcing cycle of agglomeration-related growth makes it nearly impossible to identify causality.

Table 3-7 ranks the regions by their locational Gini coefficient. Consequently, the self-employment rates should generally fall in descending order. Neither the region nor neighborhood self-employment rate shows a clear relationship to the cluster score. In fact the least clustered region, Sarasota, has the highest rate of entrepreneurship in working class neighborhoods and neighborhoods overall.

Table 3-5. Neighborhood Clustering and Self-employment Rates at the Regional and Neighborhood Level

County seat	Locational Gini coefficient	Self-employment rate	
		All neighborhoods	Working Class neighborhoods
Brooklyn, New York	0.242	8.7	5.2
Dayton, Ohio	0.156	6.9	6.0
Los Angeles, California	0.154	12.9	9.2
Abilene, Texas	0.148	9.5	8.7
Cincinnati, Ohio	0.146	8.0	6.5
Spokane, Washington	0.138	10.2	9.1
Raleigh, North Carolina	0.133	9.2	8.0
Scranton, Pennsylvania	0.129	8.3	7.8
Denver, Colorado	0.125	10.8	8.1
Flint, Michigan	0.124	8.4	8.2
Phoenix, Arizona	0.123	9.9	8.5
Sarasota, Florida	0.111	17.6	14.9
Average	0.144	10.0	8.4

Source: Author's calculations; U.S. Census Bureau, 2005-2009 American Community Survey

Note: Includes 717 neighborhoods and 131,000 workers

The most precise test of the theory may be to reveal a relationship between neighborhood cluster *growth* and cluster score. If clustering is caused by agglomeration, regions with higher Gini scores should be associated with greater increases in neighborhood entrepreneurship. These

data cannot capture the dynamic measure of firm births used in many studies, but linking 2007* working class neighborhoods to 2000 and 1990 data allows a basic measure of self-employment change.⁵ In this analysis, self-employment statistics are limited to unincorporated firms due to constraints in the 1990 Census. Table 3-8 shows the results. The second and third columns show changes in the self-employment rate over the preceding period (2000). Self-employment was about equally likely to grow as to decline in each region. That is, about 50 percent of neighborhoods in each region saw their entrepreneurship grow. More to the point, the variation that does exist does not correspond to the Gini score. This conclusion also holds when change is measured by degree: clustered regions do not see larger increases (and smaller decreases) in their neighborhood entrepreneurship rate on average. The far right columns, show the same analysis, but this time I draw on an earlier reference period to simulate a lag between entrepreneurship growth in the 2000s and the cluster score determined in 2007*.

Table 3-6. Neighborhood Clustering and Self-employment Growth in Working Class Neighborhoods

County seat	<u>2007*</u>	Change in self-employment rate (unincorp.)			
		<u>2007* - 2000</u>		<u>2000 - 1990</u>	
Locational Gini coefficient	Percent of neighborhoods that grew	Percentage point (avg.) growth/decline	Percent of neighborhoods that grew	Percentage point (avg.) growth/decline	
Brooklyn, NY	0.242	25.9	-0.59	55.6	0.73
Dayton, OH	0.156	50.0	0.02	40.0	-0.40
Los Angeles, CA	0.154	51.7	0.56	50.8	0.01
Abilene, TX	0.148	50.0	0.34	27.8	-2.01
Cincinnati, OH	0.146	48.1	-0.32	53.2	0.20
Spokane, WA	0.138	50.0	-0.05	26.1	-1.26
Raleigh, NC	0.133	57.1	0.88	35.7	-1.05
Scranton, PA	0.129	47.4	-0.20	44.7	-0.27

⁵ The * symbol is used to indicate that the 2007 data file includes data from 2005-2009. See the methods section for more explanation.

Denver, CO	0.125	64.3	1.08	50.0	-3.40
Flint, MI	0.124	47.9	0.18	42.3	-0.11
Phoenix, AZ	0.123	44.9	-0.15	37.6	-1.02
Sarasota, FL	0.111	35.7	-1.00	52.4	-0.03
Average	0.144	47.8	0.06	43.0	-0.72

Source: Author's calculations; U.S. Census Bureau, 2005-2009 American Community Survey; 2000 Decennial Census and 1990 Decennial Census

Note: All calculations are based on the 717 neighborhoods identified as working class in 2007*

It is important to remember that these data are far from definitive on the relationship between neighborhood clustering and neighborhood change. Several factors that are unrelated to cluster growth effect change in neighborhood self-employment. For example, an increase in unemployment among former wage workers, all else equal, would artificially increase the self-employment rate because the total neighborhood population employed (the denominator) would decrease. Residential mobility is another factor that could effect self-employment rates and erroneously suggest cluster growth. Change analysis also introduces problems with small sample sizes.

Qualitative analysis: Interviews with traditional entrepreneurs revealed three findings.

1. Inter-industry learning and sharing are the most common potential sources of clustering among traditional entrepreneurs.

About two-thirds of the Dayton and Raleigh interviewees offered one or more examples of social networks that demonstrate a potential source of agglomeration (see Table 3-13). Important business networks were more often in related industries than within the same industry. This is consistent with findings from regional analyses of the service sector. Earlier agglomeration studies also suggest that at smaller geographies, both urbanization and localization economies (inter and intra-industry relationships, respectively) are evident. And in these data too we find several (nine) instances of intra-industry networks, in addition to the 13

examples of inter-industry networks. Learning mechanisms were the most common source of clustering mentioned. Recall that learning mechanisms take three interpretations: idea generation, skills transfer and a more social, information diffusion process (see Table 3-1. Sources of Agglomeration Economies). Interviewees discussed all three. A classic example of inter-industry learning is the local lawn equipment store owner who invested in a uniquely knowledgeable management staff, a characteristic that has allowed them to compete with Home Depot and Lowes. This investment has been passed on to the benefit of hundreds of local lawn care entrepreneurs who are now paired with the most reliable, cost-effective equipment, according to George and Kenneth, the owner and a lawn service customer, respectively.

Table 3-7. Number of Dayton and Raleigh Interviewees that Discussed a Type of Clustering (N=27)

Cluster type	Result
Agglomeration	18 of 27 interviewees (67%) offered at least one example of being part of a learning or sharing spillover
Inter-industry	13 of 18 interviewees offered at least one example where the spillover was between related or unrelated industries
Intra-industry	9 of 18 interviewees offered at least one example where the spillover was within the same industry
Spinoff	11 of 27 interviewees (41%) offered at least one example of generating or being the product of another venture

The more counter-intuitive learning examples involve intra-industry relationships because they require collaboration with competitors. For instance, Ed and Vincent have relationships with other local mechanics and pass their knowledge on to help these competitors solve their car troubles. Sam had a local pastor ask for his advice on starting a convenience store and not only did Sam offer advice, he worked with his suppliers to make sure the pastor got the same deals he negotiated for his own store. When I asked why these entrepreneurs were willing

to help competitors, they often simply cited confidence in their own abilities or the right to an open playing field in the free market.

Twenty-two percent of interviewees also discussed a strong customer loyalty in traditional trades and services, which may explain why networking with competitors was not as much of a threat as economic theory would predict. Kenneth describes both sentiments in the lawn care industry:

Jen: Do you have any problem giving [others in your industry] advice?

Kenneth: No I don't. Because I want to see them do as good, as well, as I have done. And in that way, you're doing something for yourself. And you'll have your own.

On working with competitors:

Kenneth: ...That means that if I've called one of the guys in and said look, this is something that, both of us might be interested in working together on this project. And I go over and introduce them to the, you know, customer or future customer. Then I may get a call and they say, well such and such came back over asking me about the job, that he can do it for this amount or that amount. Kind of like undercutting basically. But they didn't get far. Because once you've built up a relationship with a customer, or say by your character or appearance, nine times out of ten it doesn't work when they try to do that.

Phil's customer loyalty pushed him into hiring mechanics so he could be the face of the business.

Jen: How do you think you became so popular?

Phil: I got word of mouth and advertising. But my thing is, if somebody calls and I don't answer the phone, they'll call back. They won't talk to anybody else. So it got to the point that I couldn't work on cars and try to talk on the phone so that's when I gave up working on cars.

Loyalty and reputation demonstrate another potential agglomeration source: sharing. Reputation has been studied as a learning spillover between current and future transactions with a customer (Mayer, 2006) and as a resource passed down from a parent company (Dahl & Sorenson, 2012). But viewing reputation as a sharing mechanism makes it a candidate for clustering. Sharing reduces costs because one investment is spread over more entrepreneurs, rather than learning from one another where some individually-acquired knowledge/skills spill over in a positive externality to others. The typical examples in regional analyses are firms sharing (or supporting) the cost of intermediate suppliers such as accountants and even janitorial services by locating in a city center.

The present analyses revealed two unusual and important avenues for these cost reductions in traditional entrepreneurship. They are sharing a positive reputation and sharing work under one physical or contractual structure. Often these occur together. Entrepreneurs were emphatic that their success was dependent on their reputation passed on through word of mouth advertising about their quality and honesty. According to interviewees, a good reputation is built over time and once acquired, the entrepreneur is very protective of it and acts as a gatekeeper for customers. As a result, the referral of another successful and well-respected entrepreneur can be invaluable, particularly when starting out, but also in growing a reputation collectively.

The importance of sharing reputation was indicated time and again in interviews. Kenneth works with others in lawn service and also in related trades like stump removal; Derrick and Simon work with other construction workers in home remodeling and also electricians and bricklayers; Ellie linked up with another residential cleaner as she got too old to complete the largest houses herself; William's photography business refers a handful of wedding DJs and they refer his photography services. In each case, the entrepreneurs either cross promoted the service

of trusted individuals or pulled together a project-based team of skilled and honest workers. The entrepreneur guaranteeing a service then, assumes a large share of the reputation risk, even if one team member fails to come through.

It was somewhat surprising to hear given their status as low barrier industries, but finding skilled and quality workers is a problem in traditional trades (discussed by nine interviewees), as it is in high skilled work. Derrick and Simon, for example, worry about the number of subcontractors on the market who make significant structural mistakes, while Greg avoids hiring people who worked for a corporate employer in his industry because their standards for quality cleaning are far below Greg's own standards. Reputation is a critical resource for entrepreneurs, both in identifying collaborators and in gaining or maintaining customers.

Traditional entrepreneurs share more than their reputation with other entrepreneurs. Gwen shares her venue for those on consignment with her military paraphernalia store. Two or three interviewees brought up the economic benefits of these consignment arrangements and they reveal an interesting collaboration between home-based producers and traditional entrepreneurs with an establishment. Sharing a formal contract is another more tangible type of sharing. A successful entrepreneur can end up with more work than he/she can complete, and the customer or contract must be passed to a trusted colleague. For instance, Simon has been able to maintain a high volume of home remodeling by sharing his reputation, but he also sees more direct economic benefits to sharing, as he explains:

Simon: Like I said I'm working 16-18 hours. Now I'm down to like 10-12 hour days. So it doesn't leave a lot of time for paper work.

Jen: Is it less now because you have a year under your belt?

Simon: Yeah. Plus like I said, I've found some other contractors that I can use. That's really helped out with my work load. I don't have to do two houses a month. Now I got someone else who does a house and I make a little bit of money off his jobs.

Jen: Because you're the one getting the business?

Simon: Right.

Eli's customer at the barber shop passed him a contract for transportation services. Eli plans to buy a van and start the work part-time. More often, Eli's shop and reputation serve the broader entrepreneur community, reducing the hiring risk and associated costs by connecting quality entrepreneurs and workers.

Jen: Well what about, do [your friends in business for themselves] say stuff, specific [stuff], like any business advice?

Eli: I guess, the biggest headache, like I say, is good help. Most of the time if you get good help, your business will flourish. If you can't get good help, you have to deal with it as it comes. So I guess the main thing is good help.

Jen: So do you guys end up referring people you know to each other?

Eli: Oh I definitely do. Actually we all do. I send my buddies a lot of business through the barbershop. And they do the same for me. Because I know five of everybody that does everything. Seriously. I'm like a network man...I'll put it like this, due to the economy there's been a lot of people in and out of jobs. And I've got a couple people jobs just from people I know. You know what I'm saying? A couple people that didn't have jobs and I say, call so and so and so and so. And they call them and possibly, most of the time, well half the time they might get a job through someone I knew. So that kind of thing comes back to me.

Jen: Oh wow. And do they just come in the next time like, 'thank you so much'?

Eli: Oh, 'Thank you so much!' I have guys that call me and just be like, I do appreciate you. I've had that happen a couple of different times.

Jen: That's kind of cool. Do you have any criteria for who you're going to help?

Eli: Yeah because if I see you're not one that, I guess your morals aren't all there, I kind of shy away from it. But if you're a people person. Good people. Most of the people I've been cutting for years so I know who to lead in the right direction, who I can just be like, deal with a little differently.

The collaborative relationships described here have helped entrepreneurs alter their services when times got tough (usually through learning) and kept them afloat when their own advertising efforts were not producing (usually through reputation sharing). They do not necessarily explain cluster or firm growth, but they point to why some areas see fewer firm exits and therefore have more entrepreneurs than other areas. Then again, we must bear in mind the information source. It could be that networks are important for starting a new business, but because most of the interviewees were established businesses, they might not readily recall the people and information that helped them get started. There are also supportive environmental factors in a cluster, of which individuals would be unaware. For example, fewer large firms and more individual service providers could make for easier entry into the market. But no one entrepreneur would likely identify this as a beneficial local condition. Sam hinted at this fact when he discussed getting out of the convenience store business when Wal-Mart's 'neighborhood' stores come to his area.

2. There are few systematic differences between traditional entrepreneurs in cluster and non-cluster neighborhoods.

Collaboration with other local business owners seems to be an important factor in the success of traditional entrepreneurs, but the relationships discussed in the previous findings were not predominately within the neighborhood. Eli's barber shop is one of very few clear examples where customers (and the owner) came from the same local neighborhood and the learning and sharing that occurs between traditional entrepreneurs frequenting the shop has a highly local component. After asking entrepreneurs about people or organizations that were important to their business in a very open-ended way, I specifically asked whether they interacted with the local businesses in their neighborhood, or other home-based entrepreneurs or even potential employees from their neighborhood. The neighborhoods I visited are very unlike the walking-friendly neighborhoods of New York City studied by Jane Jacobs and other scholars of innovation, and much more similar to the vast majority of mid-sized, car-dependent cities. My interview sites are primarily low-density residential, with one main thoroughfare of local and corporate businesses. Entrepreneurs had varying levels of responses to using 'local' resources. Simon's home-based remodeling business has the potential to serve the local area and to meet other potential handymen to network with or learn from. Greg's home-based kitchen equipment business has a smaller potential for neighborhood networks. Though neither entrepreneur expressed much connection to the neighborhood, it seems that some industries are more conducive to neighborhood-based relationships beneficial to the business.

For entrepreneurs with a physical location, it is approximately equal effort for neighborhood residents to travel to their 'local' business as it is to travel to one in the next neighborhood over because both would most likely be done via car. Two neighborhoods had small business districts and these entrepreneurs had a greater potential to develop positive externalities among the group due to their co-location. Hanna was glad that her sewing and

alternations business is located in their small business district (approximately two blocks) because she easily accessed supplies and personal items. She also held FedEx packages for a neighboring barber shop, which allowed that entrepreneur to hold limited hours that corresponded with the volume of business he maintained. Nick is also located in a business district and leads the district business association. His investment in video surveillance likely benefits the whole block and therefore represents a positive externality closer to the spirit of cluster theory. Locating in a business district was beneficial for these and other reasons, but a qualitative assessment of the interviews did not reveal clear neighborhood-based connections, and both Hanna and Nick were located in areas with low levels of self-employment.

The research design allows for a more quantitative look at the question of whether there are systematic differences that could explain neighborhood entrepreneur clustering. Perhaps the examples offered did not demonstrate a neighborhood network, but the more networked or collaborative interviewees are also more likely to live in a neighborhood cluster. The following results draw on the Dayton sample only to compare entrepreneur behavior between the cluster and non-cluster neighborhoods I visited. Limiting the analysis to Dayton helps interpret any neighborhood differences because it ‘controls for’ regional influences that might be apparent between Dayton and Raleigh. Table 3-14 is similar to Table 3-13, but uses the Dayton subsample to show that interviewees who collaborate with or ‘spinoff’ other traditional entrepreneurs are not more likely to come from a cluster neighborhood. The counts indicate some neighborhood differences in the number of inter-industry networks and spinoffs in the expected direction. Cluster neighborhoods have a higher number of the group dynamics theorized to facilitate entrepreneurship. Results from the Raleigh cluster support the relationship as well (not shown).

Still, the qualitative evidence that described relationships as non-neighborhood based and the small sample size suggest cautious optimism regarding this result.

Table 3-8. Percentage of Dayton Interviewees that Discussed a Cluster Type, by Neighborhood Type

Cluster type	Cluster (n=9)	Non-cluster (n=9)
Inter-industry linkage	5	3
Intra-industry linkage	2	3
Spinoff	4	2

Another way to examine the question of neighborhood differences is to determine where important social networks come from if it is not neighborhoods. Systematic differences in networks between the two neighborhood types would support the notion that entrepreneur relationships effect entrepreneurship rates. Table 3-15 shows the most common types of networks discussed by interviewees. On the whole, I find no consistent difference in the networks of entrepreneurs in cluster and non-cluster neighborhoods. The counts include instances of agglomeration already discussed, as well as other network relationships that entrepreneurs said had been helpful to them, such as learning something useful from a corporate competitor. The largest difference is in those reporting a family member who was an entrepreneur; however, we would expect the opposite relationship. Family entrepreneur norms are expected to foster clusters and instead interviewees in non-cluster neighborhoods were more likely to report a family entrepreneur (five compared to two in the cluster neighborhoods).

It is interesting that entrepreneurs living in a cluster were twice as likely as non-cluster entrepreneurs to network with industry competitors, while non-cluster entrepreneurs were three times as likely to network in service organizations. Statistics in the Raleigh cluster also support that high self-employment is related to a relatively high rate of competitor networking and

relatively low rate of networking in service organizations (not shown). These relationships are especially interesting because those in cluster neighborhoods are not more highly networked than non-cluster entrepreneurs overall.

Table 3-9. Percentage of Dayton Interviewees that Discussed the Network, by Neighborhood

Network type	Cluster (n=9)	Non- cluster (n=9)	Example
Business organization	4	3	Got a new business idea from another member- Chamber of Commerce, Transmission Association
Customer or supplier	3	4	Learned of a new, top-selling product for the local market from a customer
Former colleague	3	3	Met a business partner in trade school
Industry competitor	4	2	Got new customer through a competitor referral
Succession	2	5	Had a parent/close relative entrepreneur Accessed new markets through the group- Knights of Columbus, Veterans Club, church
Service organization	1	3	Acquired money from friend/family; learned of available real estate from
Other networks	5	7	Licensing Board rep

If industry relationships do not explain why some neighborhoods have consistently high (or low) self employment rates, there may be factors related to the natural advantage of the area or economic factors such as high crime and low rent. Having spent several months in the neighborhoods, there is no obvious evidence that these other explanations are at work. There is one potential reason for consistently low self employment areas: government workers. Until recently, city employees in Dayton were required to live within the city limits. One non-cluster neighborhood I chose happened to be the most desirable and furthest from the city core. According to long time residents, the neighborhood had a disproportionate number of police,

fire-fighters and EMTs. The second non-cluster neighborhood visited in Dayton is near the Wright Patterson military base so it may also be explained by an unusually high number of government workers.

3. Sub-regional geographies offer unique insights to traditional entrepreneurs' success

One potential sharing mechanism at work in a Dayton cluster is bartering. Adam started an electronic component and computer repair business near his home at the height of the recession, after his former employer went out of business and he was unable to find another job that paid enough to support his family. Other interviewees from this cluster did not engage in bartering so it seemed unlikely that sharing was a major factor in the high rate of self-employment in this area. Nonetheless, Adam's comments suggest it was more than physical proximity that helped him benefit from his location in a cluster.

Adam: So it's a lot of bartering too to get me to where I've been because I haven't had the money in my pocket to really spend out for anything.

Jen: And people seem pretty receptive to that around here?

Adam: Yeah. I think that's a bonus of being in a lower income neighborhood probably. Because I come from West Carrolton, Miamisburg area and it's a lot different here. But I've always been kind of a barterer, I haven't had a problem talking with people. I kind of fit in here with the way I look. I used to be a tattoo artist when I was really young so that's why I got all the tattoos. Mainly on the left hand side of my body, that's the stuff I did, just playing around and learning. For the area, it doesn't hurt me in this area. But whenever I go to nicer areas and stuff, I put on, you can't see anything whenever I go in. And I cut my hair usually. But it's been. You can't do enough to get people to like you I should say. You do whatever it takes and hopefully the other people are receptive to you. I've never had anybody get upset for saying, hey you want me to help

you out? What do you have laying around your house that's electronic? Because sometimes people do that and we can fix what they brought into us because they think it's junk. And we're honest with um. Hey, if it's been sitting around your house, it's been sitting there for a year, we can put it to good use. I've gotten tools that way too. Things that I need for tools for fixing the computers.... Yeah, this type of area will bend over backwards for you more. They're a little more understanding too. The people with the money say, well I can buy whatever I wanna buy, they don't want to wait 2-3 days. They expect it to be number one right on top. So here people are a little bit more understanding. So it's probably a benefit for me to be here first and eventually step out toward a little bit nicer areas to see how it works.

For the variety of reasons Adam discusses here, working class neighborhoods may offer a unique environment for burgeoning entrepreneurs. The analysis of entrepreneur networks also recommends looking at specific neighborhoods (rather than the region as a whole) to identify social resources for traditional entrepreneurs. Table 3-15 listed different types of networks entrepreneurs identified as important to their business and Table 4-4 shows the percentages for the full sample of Dayton and Raleigh interviewees. What is notable is the frequency with which informal networks such as customers and competitors are important sources of information or resources. Research on high skill regional clusters emphasizes the trade organizations and formal networks to facilitate cluster growth. Indeed, many regions have started cluster membership associations, and the Small Business Administration's cluster initiative is focused on improving these formalized organizations (Demiralp, Turner, & Monnard, 2012). Although 44 percent of the Dayton and Raleigh entrepreneurs (12 of 27) noted that they benefited from a formal organization operating at the city, regional or national level, higher proportions in both places noted that they preferred to avoid these types of organizations, particularly those at the city and

regional level. Some interviewees distrusted the formal organizations and others simply felt their goals were not well aligned. The entrepreneurs' reliance on members of service organizations in which they took part, though not nearly as frequent, is especially relevant in this light. The service organizations discussed by interviewees were all city-level chapters of national organizations or church affiliations.

The existence of these less business-oriented service networks may contribute to successful entrepreneur clusters. And their location and geographic representativeness in terms of membership would help identify relevant sub-regional geographies to study traditional entrepreneurs. This is further supported by the importance of other informal networks. Customers and suppliers are the most consistent and unquestionable source of vital information, mentioned by 56 percent of the full entrepreneur sample (89 percent in Raleigh). Although their customers are not all (or even majority) from the local neighborhood, they are far from randomly located throughout the metropolitan area. This appears to be less a product of travel distance than of network-based advertising. Almost 70 percent of interviewees (18 of 27) discussed the importance of word of mouth advertising over public advertising, which means that initial business leads have resulted in specific types of neighborhoods and customers. The home-based entrepreneurs I spoke with were willing to travel where ever the client happened to be. But Simon, for example, gets much of his remodeling business through a real estate company buying abandoned and foreclosed properties. Similarly, Hugh has a lawn care service niche in a housing development near the military base due to neighbor referrals. It started by giving a good price and quick service to a friend from a military-related service organization called the American Legion.

It is reasonable to see how referrals for home-based workers could lead to a client network with some geographic constraints, as when your neighbor's remodeled porch causes you to ask who did the work. Entrepreneurs with physical establishments showed some of the same geographic bias. They talked about their customers coming from "all over." Yet they often listed other working class parts of town. Moreover, the entrepreneurs that (re)opened in a second location—including Rebecca, Harris, Phil and Jim—all located in another working class area, according to my study definition of these areas. Their reasons included not wanting to drive far between locations, not wanting to move too far from clientele and of course reasonable rents.

Regional cluster studies have identified customers as a source of innovation (Boschma & Ter Wal, 2007; Porter, 1998; Saxenian, 1994) and firms even seek out ways to leverage technology to use customers in co-production for innovation (Auh, Bell, McLeod, & Shih, 2007). Conversely, traditional entrepreneurs in this study have built strong social ties with customers organically through word of mouth advertising and ongoing face-to-face interaction. What these informal networks suggest is that cognitive, social or institutional forms of proximity seem to be more important than geographic proximity for explaining important business connections among traditional entrepreneurs. However, given neighborhood sorting by socioeconomic classes, these other forms of proximity have spatial implications that should not be ignored.

Conclusion

This analysis relied on mixed research methods to characterize and to a lesser extent quantify the degree of traditional entrepreneur clustering. In this case, the multiple forms of evidence did not point uniformly in one direction. This means we should be extra cautious with the small sample size used to draw inferences about clusters. By talking to traditional entrepreneurs, I found some support that positive externalities exist among them in the form of

sharing and learning mechanisms. As expected, sharing and learning occurred more between entrepreneurs in different industries (inter-industry linkages), but there was an interesting degree of collaboration among direct competitors, intra-industry linkages. These relationships seemed most beneficial for navigating tough times and maintaining a positive reputation and new referrals. Indeed, simply staying in business could be a more important indicator of success in these highly competitive local services with low barriers to entry, than growing one's business.

On the other hand, I found little support that firm linkages are neighborhood-based. With the quantitative analysis, I found that traditional entrepreneurs cluster more than other worker types, such as government workers. But the regional variation in clustering does not have the expected relationship to economic outcomes suggested in agglomeration theory. The qualitative analysis supports the quantitative, that traditional entrepreneurs are not primarily clustered in neighborhoods. According to the entrepreneurs' descriptions of who and what is beneficial to their business, and an analysis of systematic differences in the responses of entrepreneurs in cluster and non-cluster neighborhoods, there is little evidence to show that neighborhood networks or environments explain variation in traditional entrepreneurship. The interviews revealed that unique networks develop in working class neighborhoods, even if they are not confined within one neighborhood, and these relationships are useful extensions of cluster theory to traditional entrepreneurs. Sharing one's reputation with other entrepreneurs has not been identified as a source of positive externalities in the high skill arena, but among entrepreneurs in traditional trades reputation is a vital resource and referrals can be a source of cost saving. Learning was also a source of positive spillovers and thus is usefully extended to traditional entrepreneurs. As mentioned, these networks did not appear to relate to cluster or regional growth. However, the extension of cluster theory to regional resilience outcomes is promising.

Learning networks offered some entrepreneurs ideas to diversify their business during tough economic times, which suggests their importance for resilience. These networks are likely to come from informal sources, such as customers, rather than trade and industry organizations. In addition, more flexible methods of exchange (e.g. bartering) or service options (e.g. paying in weekly installments) provided on an as-needed basis were discussed by interviewees as benefits to themselves and/or the area in which they are located. These sub-regional relationships could support entry and survival of traditional entrepreneurs over corporate competitors in working class neighborhoods. They could help these areas maintain a positive quality of life through economic challenges in the region, even if they do not ultimately transform them into high growth components of the region.

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APPENDIX A: Interviewees

Name (alias)	Industry	Start Year	Full time employee	Home based	Age	College grad- uate	Race/ ethnicity
<i>Raleigh cluster</i>							
Jim	Automotive parts and art	1973	No	Yes	69	No	
George	Hardware and lawn store	1980	Yes	No	58	No	
Stuart	Martial arts studio	1982	No	No	40s	No	Black
Eli	Barber shop	1996	No	No	40s	No	Black
Kenneth	Lawn service	1996	No	Yes	40s	Yes	Black
Matt	Online advertising and computer assistance	2001	No	Yes	43	No	Black
Sam	Convenience store	2007	Yes	No	34	No	Non-US
Julie	Salon	2009	Yes	No	40s	No	
Ed	Mechanic shop	2011	No	No	50s	No	
<i>Dayton cluster</i>							
John	Restaurant owner	1967	Yes	No	60s	Yes	
Harris	Martial arts studio	1980	No	No	57	No	Non-US
Phil	Transmission service	1989	Yes	No	50s	No	
Ellie	Cleaning service	1992	No	Yes	70	No	
Gwen	Military memorabilia store	1994	Yes	No	63	Yes	
Fred	Eyeglass store	2002	Yes	No	61	Yes	
Derrick	Home remodeling	2004	No	Yes	40s	No	
Adam	Computer and electronics repair	2011	No	No	39	No	
Tray	Gun accessories and iPad board games	2011	No	Yes	26	No	
<i>Dayton non-cluster</i>							
William	Wedding photography	1978	Yes	No	60	Yes	
Nick	Beer store and sandwich shop	1984	Yes	No	59	No	
Rebecca	Salon and tanning	1986	No	No	40s	No	
Hanna	Sewing alternations	1995	No	No	40s	No	Non-US
Hugh	Janitorial and lawn service	2001	No	Yes	50s	No	Black

Vincent	Mechanic shop	2006	No	No	50s	No	Non-US
Simon	Home remodeling	2010	No	Yes	37	No	
Tim	Barber shop	2011	No	No	32	No	Black
Greg	Restaurant equipment cleaning	2012	No	Yes	30s	No	

Appendix B: Entrepreneur Summary Statistics

Entrepreneur	
Age (average)	47
Female	19%
Foreign-born	15%
Non-white	37%
College degree	19%
Firm	
Business start (average)	1996
Has full-time employee(s)	30%
Home-based business	33%
Industry	
<i>Lawn/cleaning service (commercial and residential)</i>	15%
<i>Salon/Barber</i>	15%
<i>Auto service</i>	11%
<i>Food or alcohol sales</i>	11%
<i>Martial arts</i>	7%
<i>Remodeling</i>	7%
<i>Other</i>	33%
Interview length (average)	61 min.
