

# Incubators in Rural Environments: A Preliminary Analysis

Peter Schaeffer, Shaoming Cheng, and Mark Middleton

## 1 Introduction

State policy makers and local leaders have long placed a high priority on local economic development (Isserman 1993; Pulver 1989; Ekstrom and Leistritz 1988), but the changing structure of traditional industries and the impact of those changes on local communities have challenged the efficacy of established policies and strategies. Many of the forces responsible for past economic changes continue to have an impact. One of these changes was the emergence of computer-based technology in production, administration and information, which has reduced the role of economies of scale in many sectors. Studies by Loveman and Sengenberger (1991) and Acs and Audretsch (1993), for example, have shown a shift in industry structure toward decentralization and an increased role for small firms. This was mainly due to changes in production technology, consumer demand, labor supply, and the pursuit of flexibility and efficiency. These factors led to the restructuring and downsizing of large enterprises and the entry of new firms. Brock and Evans (1989) provide extensive documentation of the changing role of small businesses in the US economy, which are likely the result of responses to structural adjustments.

In addition, new patterns of consumer expenditures and demand resulting from rising living standards contributed to the emergence of fragmented consumer markets that also favor small consumer-oriented firms over high volume, production-oriented firms. Thus, new business opportunities in small and medium size enterprises resulted as large firms downsized in response to a changing environment. The emerging view among policy makers is that small business and

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P. Schaeffer (✉) and M. Middleton

Assistant Professor, Division of Resource Management and Regional Research Institute West Virginia University, P.O. Box 6108, Morgantown, WV 26506-6108, USA  
e-mail: peter.schaeffer@mail.wvu.edu

S. Cheng

Professor, Department of Public Administration, PCA 350A, Florida International University, 11200 SW 8th Street, Miami, FL 33199, USA  
e-mail: scheng@fiu.edu

entrepreneurship are key elements for generating economic development. This paradigm shift has brought about a revival in small businesses promotion and entrepreneurial initiatives at local, national and international levels.

The hypothesis of this research is that a dynamic economic environment poses a special challenge to rural regions to adapt to changing conditions because of their distance from centers of innovation and venture capital. The small size of rural markets and their distance from major consumer and supplier markets add to the challenge for rural entrepreneurs trying to exploit emerging opportunities. The cost advantage of rural over urban locations does not necessarily compensate for such disadvantages, particularly when offshore locations offer the promise of even lower production costs. To counter such disadvantages and help rural regions adjust with due speed, programs supportive of entrepreneurs, entrepreneurship, and new businesses may be needed. Public support for such programs may be justified since it is likely that some rural disadvantages are the result of market failure (Scorsone and Weiler 2004; Tödttling and Wanzenbock 2003; Weiler 2000).

The support program investigated in this article is the business incubator. The purpose of business incubators is to improve the probability of creating new firms, as well as their likelihood of survival and success relative to new firm formation without such assistance. If the hypothesis that in a dynamic economic environment rural areas are at a disadvantage relative to urban areas is true, then it follows that rural incubators are faced with a more difficult task than their urban counterparts (Cheng and Schaeffer 2009). Therefore, first, is it possible that incubators are relatively less common in rural than in urban regions? Second, if incubators are relatively less common in rural areas, what alternatives exist to providing services and support to entrepreneurs and new businesses in their place? These are the two main questions this article will try to answer.

The rest of the article is organized as follows. Section 2 provides a brief introduction to business incubators. This is followed by an analysis of the geographical distribution of incubators by rural versus urban counties. Section 4 presents possible alternatives to business incubators, and Sect. 5 provides a summary and conclusions.

## 2 Introduction to Business Incubators

Business incubators provide a nurturing environment, through an array of business support resources and services, where entrepreneurs, start-ups, and small businesses can commercially validate and transform their ideas and concepts into viable and tangible products and services (Acs and Armington 2006; Storey 2003; Yu et al. 2006). Business incubation, consequently, has been increasingly recognized as a viable approach for promoting new business formation and accelerating new business growth.

The first incubator in the United States appeared in Batavia, NY, in 1959 (Adkins 2001; Lewis 2002) and the number grew to only 12 by 1980 (ASME

1996–2008). In the mid-1980s the US Small Business Administration (SBA) supported several business incubator initiatives, as well as the founding of the National Business Incubator Association (NBIA). It was estimated that more than half of the currently existing incubation projects were established since the late 1980s, in part because business incubators were treated as a means to utilize idle manufacturing facilities and create jobs in response to economic recession (Adkins 1996). Hackett and Dilts (2004), however, maintained that the fundamental reason for the flourish of business incubators in the late 1980s and early 1990s was the passage of the Bayh-Dole Act that expanded and amplified commercialization of federally funded research and hence produced significant profit opportunities. Lalkaka (2000) added that incubators in the 1980s essentially offered affordable space and shared facilities, while incubators in the 1990s provided a wide range of professional counseling, skill enhancement, and networking services to seed capital, suppliers, and potential buyers. The number of business incubators in the EU-15 has also increased to currently over 900 (Costa-David et al. 2002). Our own research in the United States found 726 incubators. This number should be viewed with caution, however, because the definition of what constitutes an incubator is not rigorous. Thus, some claim some 1,000 incubators in the United States (ASME 1996–2008), but based on our research, we suspect that not all of them are offering the services of business incubators but may be little more than landlords to start-up businesses.<sup>1</sup>

Incubators are often funded by public resources. About 90% of incubators in the United States have non-profit status; in the EU-15 77% are organized as non-profit organizations (ASME 1996–2008; Costa-David et al. 2002). Universities and colleges sponsor 25% of all US incubators, economic development corporations 15%, and governments 16%. Nineteen percent have no sponsor; multiple sponsorships exist in 5% of all US incubators (ASME 1996–2008). The rationale for publicly funded business incubators lies ultimately in addressing market failures, i.e., gaps and deficiencies in the support structure available to new and small firms. These market failures stem from the relatively high costs and risks of providing services to new and small companies compared with larger firms and the unwillingness of the private sector to assume these costs and risks given the often modest returns and/or the fact that private incubators need “deep pockets” to survive for often considerable periods of time before returns sufficient to even recover costs can be achieved (for relationship between high fixed costs and market provision of services, see Waldfoegel 2007). Most existing business incubators are publicly funded, despite visions that incubators should become financially self-sufficient and profit oriented (Bearsé 1998; Quittner 1999). Large numbers of for-profit

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<sup>1</sup>We established our database with information on incubators from lists such as the kept by the NBIA and by state organizations. We cross-checked the lists and then attempted to establish contact with the listed incubators, to find out if they were still active. We had to drop quite a large number of incubators from our database at that point. After this paper was completed in summer 2009, we conducted a survey of the incubators in our data base; the survey was completed in spring 2010. In summer 2010 we plan visits to a sample of incubators to achieve more insight and learn more about metro/urban and rural differences.

incubators were founded only during the dot.com boom of the 1990s and not many of them survived the eventual bust. Apparently, most current for-profit incubators are sponsored by large companies (ASME 1996–2008).

Services provided by incubators almost always include facilities, that is, space. Beyond this basic offering, incubator services span a range that includes financing, business support services, know-how and technical support, and management consulting (ASME 1996–2008). Table 1 lists incubator sponsors and the types of services that incubators provide.

While some incubators focus on a particular sector (e.g., manufacturing) or industry (e.g., “high tech”), others accept a mix of businesses. According to ASME (1996–2008), 47% of US incubators belong to the latter group, 37% specialize in technology industries, and 7% in manufacturing.

### 3 Geographical Distribution of Incubators in the United States

Previous research indicates that incubators in rural regions do not perform as well as those in urban regions. Compared to their urban peers, business incubators in economically challenged and rural regions typically operate in a much more challenging context, e.g., small and often insufficient budgets, and fewer qualified and promising new businesses. In a competitive market, this would imply that business incubators are relatively more common in urban regions. As we have learned in the previous section, however, incubator sponsors are not necessarily entirely market-driven and only approximately one-fifth of all US incubators are without sponsors. Therefore, we cannot assume that market forces alone decide the geographical distribution of incubators.

Our main interest in this research is the difference between urban and rural areas. Unfortunately, the concept of rurality is ambiguous and different definitions exist (Isserman 2005, 2007; US Census Bureau 2005). We suspect that specific results with respect to density are sensitive to the choice of within-region geographical unit of analysis. To check this suspicion, we look at the incubator data using different urban and rural definitions.

#### 3.1 *Geographic Distribution of US Business Incubators by Major Region*

We first look at US Census Divisions as major regions (Fig. 1), utilizing the Office of Management and Budget (OMB) definitions for Metropolitan Statistical Area (core area containing a population nucleus of 50,000 or more) and Micropolitan Statistical Area (core area containing a population nucleus of between 10,000 and 50,000). In both definitions, an additional criterion is that adjacent communities

**Table 1** Incubator sponsors and incubator services

Sponsors	Facilities and equipment	Access to capital	Business support services	Management consulting and training	Know-how and technology
Universities and colleges	Office space	Investment/strategic partner linkages	Secretarial services	Business training	Research
Economic development corporations	Manufacturing space	Loan guarantees	Bookkeeping and accounting	Business plan preparation	Access to researchers
Local government	Conference room	Grant writing assistance	Legal services	Management team development	Product design assistance
State government	Computer laboratory	Financial proposal preparation assistance	Tax advice and services	Product and product design evaluation	Access to research libraries and collections
Federal government	Research laboratory	Loan application assistance	Marketing	Mentoring programs/ shadow boards	Intellectual property rights assistance
Private investors ( <i>For-profit and Not-for-profit</i> )	Kitchen		Management services		Technology commercialization
Multiple sponsorships are possible	Warehousing space		Regulatory compliance		
	Broadband access		Information systems management		
	Hardware		International trade assistance		
	Software				
	Business equipment				
	Video conferencing				
	Furniture				

Source: Based on ASME (1996–2008)



**Fig. 1** Census regions and divisions

have a high degree of economic and social integration with the core. All other regions are referred to as Outside Core Based Statistical Areas (OCBSAs) (HAC 2008). Table 2 provides information about the geographical distribution of incubators, measured in number of incubators per 100,000 inhabitants.

Table 2a presents a mixed result. The density of incubators relative to population size differs as much between major regions as between OMB areas within a region. Overall, the density is lowest in the Pacific region and almost as low in the Mountain region. The similarity between these two regions ends there, however. Although the Pacific region has a very low incubator density in OMB Metro areas, the density in OMB Micro areas is the fifth-highest and the density in OCBSAs is the fourth-highest in the nine regions. By contrast, the density in the Mountain region ranks last in all three OMB areas. Thus, it appears that in the Mountain regions business incubators are comparatively rare, while in the Pacific region they are relatively rare only in the OMB Metro areas.

The East South Central region has the highest total business incubator density per population by a clear margin. However, the density in its OCBSAs is the second lowest in the United States, indicating that in this region, business incubators are largely a core urban phenomenon. In fact, the data suggest that incubators in the East South Central region are primarily located in OMB Metro areas.

**Table 2** Distribution by major US region and by (a) OMB area (business incubators per 100,000 population); (b) HAC area (business incubators per 100,000 population)

(a)						
Region	OMB metro area	OMB micro area	OMB OCBSA	Total		
East North Central	0.2684	0.3923	0.3621	0.2901		
East South Central	0.3171	0.1865	0.0373	0.5409		
Middle Atlantic	0.2766	0.3690	0.1231	0.2798		
Mountain	0.0864	0.0257	0.0151	0.1043		
New England	0.1968	0.0926	0.7693	0.2155		
Pacific	0.0926	0.2379	0.2504	0.1022		
South Atlantic	0.2824	0.2579	0.3682	0.2859		
West North Central	0.4534	0.3904	0.0562	0.3691		
West South Central	0.2324	0.0801	0.0401	0.3526		

(b)						
Region	HAC urban	HAC rural	OMB OCBSA	Total	HAC rural rank	OMB OCBSA rank
East North Central	0.2745	0.3437	0.3621	0.2901	1	3
East South Central	0.3171	0.2238	0.0373	0.5409	5	8
Middle Atlantic	0.2781	0.2966	0.1231	0.2798	3	5
Mountain	0.0872	0.0378	0.0151	0.1043	9	9
New England	0.1994	0.3177	0.7693	0.2155	2	1
Pacific	0.0933	0.2162	0.2504	0.1022	6	4
South Atlantic	0.2844	0.2915	0.3682	0.2859	4	2
West North Central	0.4994	0.1870	0.0562	0.3691	7	6
West South Central	0.2324	0.1202	0.0401	0.3526	8	7

The West North Central region has the highest incubator density per population in OMB Metro areas and the second-highest density in OMB Micro areas, just barely behind the nation-leading East North Central region. Although it ranks fifth in the nation, the density in the OCBSAs is very low, almost as low as those of the regions ranked sixth through eighth. Only the last ranked Mountain region has a density in its OCBSAs that is much lower (more than three times lower) than that of the East North Central region.

In three regions incubators are relatively more common in non-core areas (OMB OCBSAs) than in core urban areas (OMB Metro and Micro areas). In the East Central region this difference is not very pronounced. In the other five regions, incubators are relatively more common in the core urban areas. The highest incubator density in non-core urban areas occurs in the New England region, with a density more than twice that of the second-ranked South Atlantic region.

Table 2b presents the same information as Table 2a, except that we use the urban and rural definitions of the Housing Assistance Council (HAC 2008). To check for sensitivity of results to the choice of definitions, we focus on the comparison of columns HAC Rural and OMB OCBSA in Table 2a, b.

The comparison reveals significantly different densities between HAC Rural and OMB OCBSA areas. For example, when HAC definitions are used, the ratio of urban-to-rural density is higher in the Mountain, Pacific, West North Central, and West South Central regions than in New England, which ranks first when the OMB

definitions are used. However, New England still has the second-highest rural incubator density when the geographical unit of analysis is HAC areas, but it has the highest density by a factor of more than two when the unit of analysis is OMB. The highest rural incubator density occurs in the East North Central region (HAC definition); this region is third when using the OMB OCBSAs, just barely lagging the South Atlantic region.

Table 2b confirms the existence of substantial differences in business incubator density by major region. Some of the differences between using HAC Rural or OMB OCBSA are large, but qualitatively the results in the two table point in the same general direction. This is indicated by the value of the rank correlation between the two columns, which is 0.777 and statistically significantly different from 0 with level of confidence better than 0.01 (the correlation between the raw densities is 0.679). The difference one minus the correlation coefficient reflects that the definitions in the two tables measure related but not identical urban and rural (or metro and non-metro)<sup>2</sup> areas. We also calculated the rank correlation between OCBSA and Total ranks in Table 2a and obtained a value of  $-0.28\bar{3}$  (the correlation between the raw densities is  $-0.290$ ). The result indicates a certain trade off tendency in major regions in the United States between business incubator densities in Outside Core Based Statistical Areas and in core urban areas, respectively. The rank correlation between HAC Rural and Total ranks is 0.000 (the correlation between the raw densities is 0.172), which indicates at best a weak relationship between incubator densities in rural and non-rural areas between major US regions and no tradeoff, unlike the tradeoff between core urban areas and the rest of the country.<sup>3</sup>

### 3.2 *Distribution of US Business Incubators by State*

Because of great population and economic size differences between states, a meaningful comparison between them is one by densities. Figure 2 presents a map that reflects the regional differences in business incubator density that we already observed in Sect. 3.1. Specifically, incubators are comparatively less common in the Pacific region than elsewhere. In this region, California and Washington belong to the states with the lowest incubator densities.

The Mountain region is much more diverse in its use of incubators, measured by incubators per 100,000 inhabitants, than the earlier Sect. 3.1 suggests. While Arizona and Nevada are among the states with the lowest incubator densities, Idaho and New Mexico belong to the states with the highest densities. The Upper Midwest also has high densities, particularly North Dakota and Wisconsin. The two rural states Maine (New England) and West Virginia (South Atlantic) also belong to the eight states with the highest densities. By contrast, Arkansas and Texas in the

<sup>2</sup>Although rural and non-metro are sometimes used as synonyms, their definitions differ.

<sup>3</sup>A significance test has not been performed because the degree of freedom is too small to justify using an approximate t-distribution.

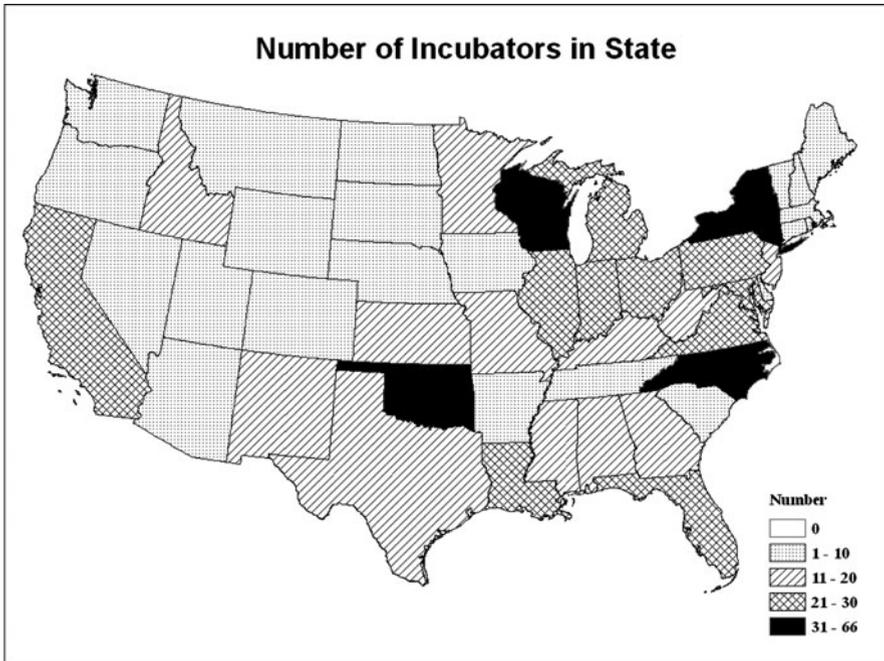


Fig. 2 Business incubators per 100,000 inhabitants by state

West South Central region, South Carolina in the South Atlantic region, and Massachusetts in the New England regions have among the lowest densities.

### 3.3 *Distribution of Incubators by Rural Versus Urban Areas*

The third look at the spatial distribution is by rural versus urban areas (Fig. 3). In 9 of 48 states, at least half of all incubators are located in rural areas (Oregon, Montana, Wyoming, Oklahoma, Mississippi, Kentucky, Vermont, New Hampshire, and Maine). In 13 states, we found no record of business incubators in rural areas (Oregon, Nevada, Arizona, Colorado, Texas, Arkansas, Tennessee, Florida, New Jersey, Connecticut, Rhode Island, Massachusetts, and Alaska – not shown on map).

Some of these findings are expected. For example, New Jersey is a primarily urban and Vermont is maybe the most rural state in the United States. Other results, however, are not as easily explained. For example, there is no obvious reason why there should not be any incubators in rural areas in Oregon, Texas, or Arkansas. There is also no easy explanation for the stark difference between the neighboring states Kentucky and Tennessee, both of which have counties located in rural

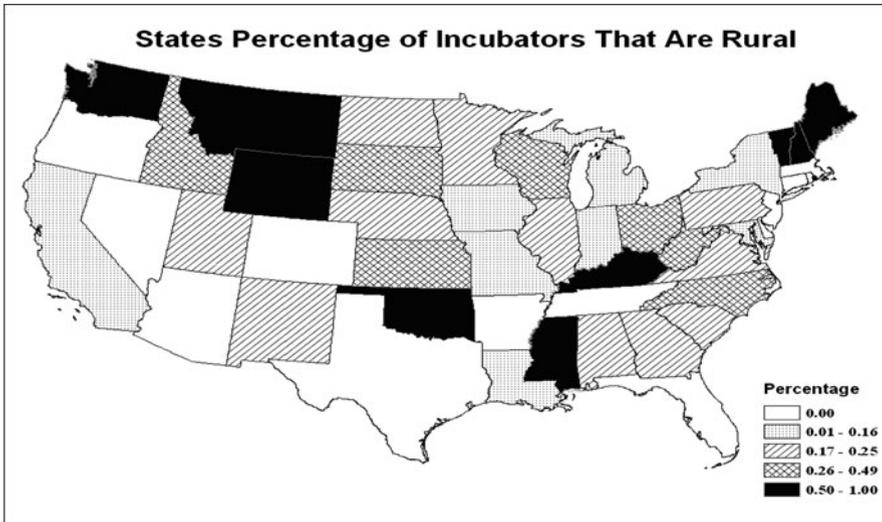


Fig. 3 Business incubators in rural versus urban areas

Appalachia, a region that is targeted for economic development by the federal government through the Appalachian Regional Commission.

The correlation coefficient between HAC Rural and HAC Total incubator densities at the state level is 0.803, and the correlation coefficient between OMB OCBSA and OMB Total is 0.680. This result differs from that obtained at the Census Division level and indicates that states that use incubators more frequently (higher incubator density) also use them more frequently in rural areas. The correlation coefficients are even higher at the county level and have the values of 0.981 (HAC definitions) and 0.907 (OMB definitions). These results indicate no significant differences in the use of incubators between core urban and metro areas on one side, and non-core statistical and rural areas on the other side. The result shows, however, how important the choice of the geographical unit of analysis can be.

### 3.4 *Distribution of Business Incubators by County*

Four-hundred and sixty-five counties, or 14.8% of the 3,141 counties in the United States, have at least one incubator. However, only 6.6% of the 2,213 rural counties (HAC definition) have at least one incubator, compared to 40% of 463 urban counties. This suggests that business incubators fit better in urban than in rural areas, but the evidence is inconclusive because it is possible that incubators serve a geographically larger area to compensate for thinner markets in rural regions. Of the 726 incubators that we were able to identify, 54.9% located in 138 counties with multiple facilities. All but 12 of these multi facility counties are classified as OMB-

**Table 3** Number of counties with (a) at least one incubator; (b) incubator counties; (c) non-incubators counties

	Metro	OMB rural/urban		HAC rural/urban		Total
		Micro	OCBSA	Urban	Rural	
<b>(a)</b>						
Incubator	317	100	48	309	156	465
	29.11%	14.84%	3.48%	40.03%	6.59%	14.80%
Non-incubators	772	574	1330	463	2,213	2,676
	70.89%	85.16%	96.52%	59.97%	93.41%	85.20%
<b>(b)</b>						
Per capita income	20,794.00	16,700.50	15,434.50	20,883.00	16,342.00	19,219.00
Household median income	40,421.00	32,780.00	29,958.50	40,617.00	32,132.00	37,485.00
Family median income	50,111.00	41,002.00	36,821.50	50,196.00	39,719.00	46,452.00
Percentage of families below poverty level	8.06%	10.08%	11.16%	8.00%	10.33%	8.81%
Percent colleges	93.06%	86.00%	47.92%	93.53%	73.72%	86.88%
High school degree	83.40%	80.73%	77.80%	83.46%	79.38%	82.52%
BA degree	25.27%	17.23%	13.05%	25.39%	16.01%	22.47%
<b>(c)</b>						
Per capital income	18,653.50	16,782.50	15,817.50	19,516.00	16,246.00	16,680.50
Household median income	39,523.50	33,460.00	30,534.00	41,541.00	31,943.00	33,001.50
Family mid income	46,337.00	40,526.50	36,918.50	48,674.00	38,455.00	39,926.00
Percentage of families below poverty level	7.55%	9.57%	10.96%	6.93%	10.27%	9.69%
Percent colleges	46.63%	53.66%	15.11%	66.95%	25.26%	32.47%
High school degree	80.11%	78.45%	76.61%	81.62%	77.18%	78.54%
BA degree	16.17%	14.10%	12.68%	19.20%	13.02%	13.79%

metro counties. The 12 non-metro counties tend to be counties with large land masses and more than one large area of clustered development.

The economic profile (Table 3) of counties with incubators indicates that they have per capita, household, and family incomes above the national median. When separated into metro and non-metro counties, we find that the former account for the higher income level, whereas the latter tend to be below the national median. Using the OMB definition, metro areas with incubators have substantial higher economic indicators for per capita, household median and family median incomes than counties without incubators. The same does not hold for OMB micro and OCBSA incubator counties, which show income levels near or below the national and non-incubator counties median incomes. Incubator counties also tend to have a higher percentage of families living below the poverty level than counties without incubators. This is the case for urban and rural, and metro and non-metro counties and suggests that incubators do locate in response not only of economic opportunities, but also economic development need.

The population in counties with incubators tends to have higher levels of education and they are also far more likely to have a college offering at least a 2-year degree than non-incubator counties. This may partially account for the seeming paradox of higher education levels and higher poverty in rural incubator compared to rural non-incubator

counties. In some counties with a college, students may account for a sizeable percentage of the population. Since they usually have very low incomes while in school, statistics show a higher degree of poverty than is actually the case.

Forty-seven percent of OMB OCBSA incubator counties and 73% of HAC rural incubator counties have a college, compared to 15% of OMB OCBSA and 25% of HAC rural counties without an incubator. At least in part, this reflects the significant role of colleges as sponsors of business incubators. The number of residents in incubator counties with a high school degree is 2% higher in rural and 3% higher in urban counties than in their non-incubator counterparts. Similarly, the percentage of the population with a college degree is also higher (Table 3).

### 3.5 Evidence of Clustering

We found evidence of clustering of incubators, and most clusters are found in the Northeastern United States and Great Lakes Region, the so called rust belt of the country (Fig. 4). This seems to support a view that incubators are created in response to industrial decline. The p-value that these clusters are chance events is very low. The observed mean distance is 0.34 km versus an expected mean distance of 0.91 km.

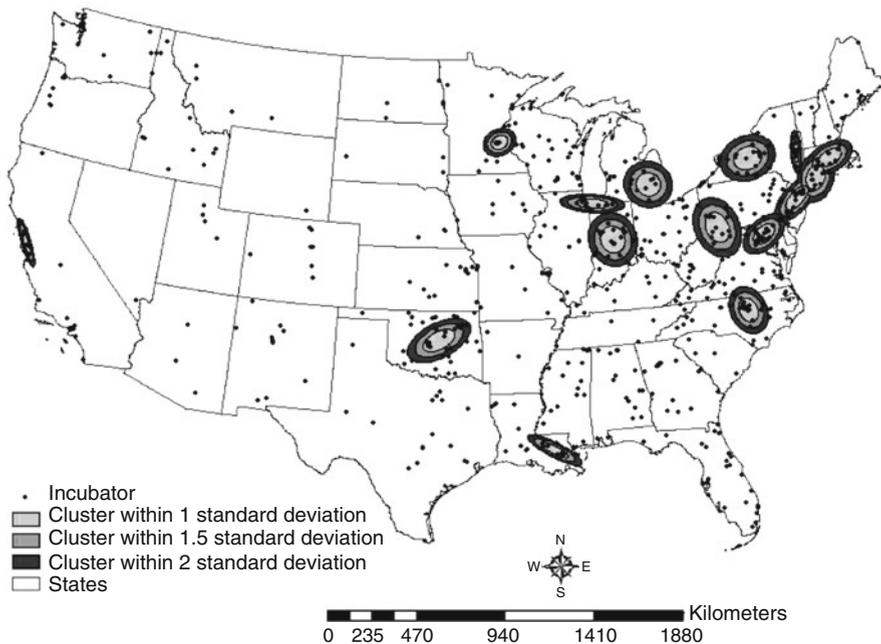


Fig. 4 Incubator clusters

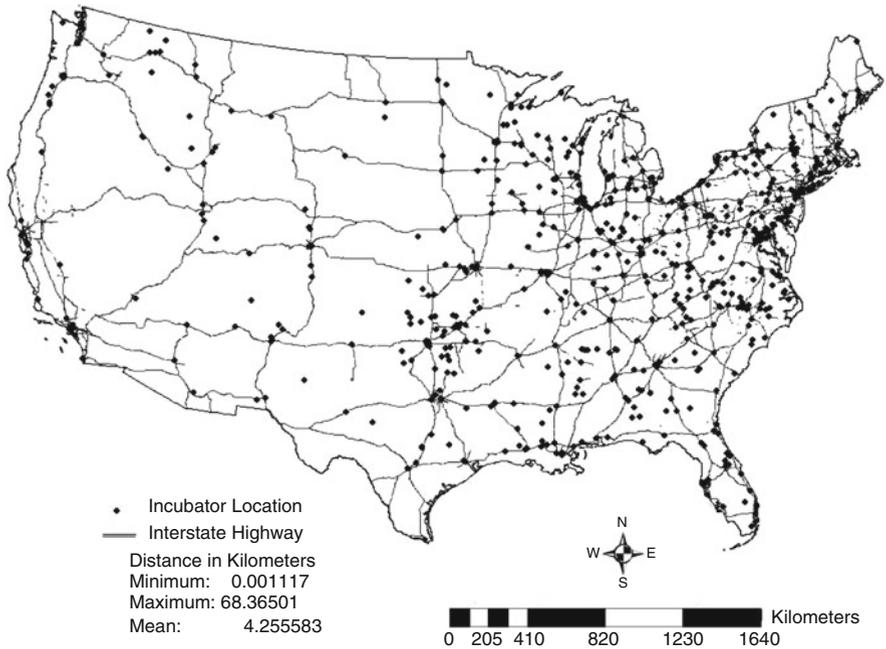


Fig. 5 Incubator clusters and interstate highways

Since accessibility is important to all businesses, we also checked for clustering of incubators along Interstate highways, and such clustering is indeed readily apparent (Fig. 5). The clusters along highways replicate some of the clusters shown in Fig. 5, particularly in the Northeast. The likelihood that the incubator location patterns relative to Interstate highways are a chance event is extremely low. Thus, Fig. 5 provides some plausible insight into why remote rural areas may be at a significant disadvantage, particularly if they are not served by an Interstate highway.

### 3.6 Summary of Review of Geographical Distribution

There are indications that incubators are used somewhat relatively less frequently in rural than in urban areas. Additional insights result from the use of the rural-urban continuum codes of the United States Department of Agriculture (USDA) (data not shown). The data based on these definitions show that in rural areas, business incubators are relatively more common (density is higher) in rural counties that are adjacent to a metro area than elsewhere, even a bit greater than in metro areas. This could indicate a greater need for business incubation in these than in metro counties and possibly better conditions for incubator success than in non-adjacent rural counties.

Since rural areas have fewer inhabitants than urban areas, we are not surprised that rural incubators are a majority in only a few states, but we are surprised that in about a quarter of all states we found no incubators in rural areas. The very large differences between Census Divisions, and even more those between states, are of great interest. The reasons for these differences are not obvious and deserve to be explored because they might be reflections of specific programs, agency initiatives, regional or state needs, or legal frameworks that favor incubators, in general, or urban over rural incubators. Thus, an exploration of differences might yield information relevant for an improved understanding of incubator performance.

## 4 Alternatives to Incubators

We considered the possibility that business incubators may not be as well suited to rural as to urban areas. This is generally not the case, however, although there are indications that the most remote rural areas, those that are not adjacent to metro areas, have lower incubator densities than other areas. As Weiler's (2000) research suggests, it is possible that market failure results in too few opportunities being recognized and exploited in sparse markets. This applies to many remote rural areas. It is also likely that some markets are just too sparse to support an incubator, even with sponsors picking up some of the costs. In such areas, where according to Weiler (2000) and Scorsone and Weiler (2004) informational market failures are relatively likely, alternatives to business incubators will be most valuable.

### 4.1 Results of Literature Search

Our literature search for alternatives to business incubators yielded few relevant results.<sup>4</sup> The most interesting idea, and one particularly applicable to sparse markets, is that of a virtual incubator (Zedtwitz 2003). Schwartz et al. (2008) describe the Palestine-Israel Virtual Incubator, which is to be focused on information and technology businesses. A major aspect of the proposal put forward by the authors is the establishment of a knowledge network, primarily on-line based. In addition to facilitating access to and the exchange of technical information, in general, a particular advantage of the proposed network is that it allows trading of tacit knowledge, such as how a process is best organized, that is not readily available otherwise without regular face-to-face contact. Thus, the network overcomes one of the major disadvantages of remote or otherwise isolated regions, which is their effective distance from technology, knowledge, and innovation centers. A somewhat related idea is currently being promoted by Microsoft in its Mobile Incubation Week program (Hoskins 2009) and

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<sup>4</sup>We conducted searches on Google, Business Source Premier, and EconLit.

some incubators include virtual tenants, that is, start-up companies that are not co-located with the incubator but that receive services.

Cooper and Dunkelberg (1986) list and analyze the various paths someone might take to business ownership, such as start-up, purchase, or inheritance. Each path comes with different needs for entrepreneurial skills. A new owner of an existing business has some, but not all, of the same needs for information, knowledge, and support as a start-up entrepreneur, and therefore could also benefit from some of the services provided by an incubator (see Table 1). In the case of the purchase of a business, for example, the network providing access to sources of capital may be as valuable to the transfer of the management-ownership of an existing business, as it is in the building of a new business. In the case of an inheritance, the new owner may not be well prepared take over and run the business, and might benefit from management services. Thus, the study of entrepreneurship and its support by incubator organizations should include management ownership transfers. After all, it is well known that independently owned business are particularly vulnerable during their start-up, and again during the transfer-of-ownership phase. Mucalov and Mucalov (not dated) mention that 70% of family businesses in Canada do not survive the transition to the second and only 10% survive the transition to the third generation.

Cooper and Dunkelberg (1986) analyzed a sample of some 1,800 owner-managers. They found that 49% (890 firms) had started, 28% (504 firms) had inherited, and 15% (275 firms) had purchased the business. The remaining 8% had been promoted, brought in, or had acquired ownership through other means. What is noteworthy is that the parents of half of those who started a new business had also been business owners. In the case of purchases, this percentage was 43. Not surprisingly, with 83%, it was highest in the case of inheritance. These percentages suggest that entrepreneurial skills can be passed on from parents to children. If this is indeed the case, then maybe entrepreneurial programs in schools should consider involving the students' parents to increase the success of such programs.

The importance of the entrepreneurs' prior activities in the start-up of is one of the factors influencing success of knowledge intensive start-ups in the business service sector (Koch and Stahlecker 2004). The owner brings knowledge and connections from previous experiences and activities, and spatial proximity was found to be important to the exchange of knowledge. This does not come as a surprise, as it is well known that many high technology firms were started by former employees of other computer or software firms. Early in the twentieth century, the same phenomenon was observed in the automobile industry. Thus, firms/previous employers seem to fulfill some of the same functions as an incubator.

Related to the contributions of Cooper and Dunkelberg (1986) and Koch and Stahlecker (2004), Zander's (2007) research calls attention to the reasons of why new firms are being established. While we have learned much about why firms exist, the reason of why they are being started has not yet been well researched.

We found some interesting adaptations of the concept of an incubator. One of these is Bucketworks in Milwaukee, Wisconsin, which was started in May 2002. On

its website, it refers to itself as a health club for the brain (Bucketworks 2007–2009). Its facility has 22,000 square feet that house a café, art gallery, theater, business combinator,<sup>5</sup> workshops and labs for a variety of crafts and arts, computer labs, print shop, and a library. The organization also has a garden. The geographical target area of Bucketworks is its community. The idea is that bringing together individuals with a wide range of skills and interests, and by offering training programs, the organization will create an environment that produces new ideas, encourages their implementation, and supports risk-taking.

Bucketworks claims 700 members who, in the last 5 years, “. . . have created 28 new companies, 65 new jobs, a high school, a student film festival, 7 theatre companies, 3 technology companies, and innumerable pieces of art, items for sale, performances, gatherings, shows, and events – there were over 863 events a Bucketworks in 2006” (Bucketworks 2007–2009). Members represent a wide range of professions, from lawyers and accountants to artists. Membership fees range from \$20 a year for students to \$200 for corporations and membership is open to anyone at least 14 years old. Educational and training programs range from business and entrepreneurship to dance and theater. Bucketworks also rents out space. The organization’s name alludes to the water bucket that was passed from person to person to put out fires before more effective methods came about. It reflects Bucketworks’ philosophy that economic and community revitalization require a holistic approach and the involvement of all members of the community.

Finally, we know of instances where local governments purchased an old building and turned it into space for rent to new and existing businesses. This type of cohabitation provides only the most basic of incubator services, space, but by bringing a number of such businesses together under one roof, they may be able to share services and facilities, and to the extent that they share challenges, it is easier to provide them with services to deal with them.

## ***4.2 Other Start-Up Support Organizations***

Our research alerted us to the importance of prior family entrepreneurial experience, and of the new entrepreneurs’ experiences in previous jobs and activities. This suggests that parents and employers play a role as business start-up facilitators. We also find some of these roles played by established members and/or the management of cooperatives, when new members join. This applies particularly to agricultural cooperatives, because each individual producer has an interest in the competence, knowledge, and success of the other producer-members. This may

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<sup>5</sup>Unfortunately, the term is not defined on Bucketworks’ homepage, but it seems to be a business accelerator or something similar.

also be true for cooperatives that bring together craftsmen and/or artists for the purpose of joint marketing and selling.

Non-profit economic development organizations other than incubators can also provide services to facilitate business start-ups. For example, one of the authors was part of an effort that resulted in the establishment of a non-profit supported by a local government that provides funding to new and existing small businesses. Although the organization provides loans, the major objective is to help businesses to become “bankable” by assisting them with the preparation of the business plan and other for a sound start. The organization also seeks to facilitate the application for conventional loans, by performing much of the work of a loan officer, so that a bank would only have to meet due diligence requirements and not have to spend time and resources on other activities that normally make small loans expensive to provide. In the start-up phase, the non-profit organization may give the new firm a line of credit to finance operating expenses, but leave the financing of facilities and/or equipment to conventional lenders who are more inclined to give loans if they are backed by assets such as real estate or tradable equipment. This reduces the funds requirement for the non-profit and serves local and regional banks to make more business loans, develop new clients, as well as meet the requirements of the Community Reinvestment Act.

For businesses that receive start-up funding from venture capitalists, the venture fund may enforce sound business practices by placing representatives in the top management of the start-up firm, particularly in the position of chief financial officer (CFO). Thus, in addition to capital, some venture funds also provide managerial expertise to protect their investment.

Finally, there are a number of organizations that provide management and entrepreneurial training. Land grant universities are particularly well positioned to provide such services, and most of them do, through their Extension service. The advantage of this delivery organization is that Extension has a state-wide presence and can therefore bring expertise and knowledge to, or close to, where it is needed. Local Extension offices may also have facilities where interactive online courses can be delivered. Other colleges also provide entrepreneurial training and many also have incubators. Increasingly, business schools host new business competitions among students to encourage them to start their own business. Many high schools offer related programs to their students. Last but definitely not least, the United States Small Business Administration (SBA) provides many services to small businesses that are also relevant for start-up businesses. One of these is SBA’s Service Corps of Retired Executives, which brings managerial and marketing experience to small businesses. SBA also maintains Small Business Development Centers (SBDC), most of them located on university campuses. The range of SBA services includes financing, from loans to grants. For small business owners and those interested in starting a business, SBA offers online training courses. Finally, the mission of SBA includes the facilitation of small businesses’ access to government contracts (SBA not dated).

## 5 Summary and Conclusions

Although the focus of this research was incubators, we do not want to lose sight of the ultimate goal, which is the facilitation of business start-ups, business survival, and entrepreneurship, in general. A look at the services provided by incubators in Table 1 makes it clear that most of those services can also be delivered through other types of organizations, though maybe not in the same combination or not always as effectively. The reason we are interested in this issue is because we do not think that incubators are equally viable in all environments. Although we did not discover a systematically reduced presence of incubators in rural areas, we did find evidence that the most remote rural areas, that is, those not adjacent to a census metro area, have among the lowest business incubator densities. Since these regions already face many challenges to adapt to changing economic conditions, such as sparse or thin markets, distance from centers of innovation and often also from suppliers and customers, searching for substitutes for and alternatives to incubators serves an important policy purpose. In this article, we provide preliminary results and some first ideas of incubator alternatives and substitutes.

We also leave some questions unanswered, particularly the question of why different census regions and states use incubators to very different degrees. The answers might provide new information about conditions that are supportive or incubators in particular, and entrepreneurship in general. Factors responsible for different degrees of popularity of incubators may include tax provisions for start-ups, rules related to initial public offerings (IPO), including the tax treatment of the proceeds, degree of complexity of complying with regulations, access to venture capital, entrepreneurial training in schools and colleges, availability of appropriate facilities, existence of industrial clusters, or the characteristics of the available labor force. In addition, we should not forget need. Unfortunately, public policy, in particular, becomes active only after a problem has occurred. In the case of new start-ups, it is harder to create new businesses when the economy is down than when it is doing well. This is also an important suggestion for those responsible for policies supportive of entrepreneurship.

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