

Ecosystem Interrupted: How Waste, Culture, and Corruption are Stifling Economic Development and Entrepreneurship in Eastern Kentucky

David Snow
Fort Hays State University

Justin Prater
BB&T Bank

Entrepreneurship Ecosystem studies abound, as this is currently a popular topic. It is important to understand the elements necessary to facilitate entrepreneurship and enhance the standard of living in communities. However, this research examines the phenomenon from the perspective of why it is so difficult for Eastern Kentucky to develop an effective entrepreneurship ecosystem, despite all of the efforts and resources brought to bear over the past fifty years. Statistics and peer-reviewed research were used to establish the results. The findings indicate corruption and a non-entrepreneurial culture are major factors, with deficiencies in all the domains of an entrepreneurship ecosystem.

INTRODUCTION

Much has been written about entrepreneurial ecosystem development and the components comprising them (Acs et al., 2017; Auerswald & Lokesh, 2017; Regele & Neck, 2012). Whether on the local, regional, or national level, frameworks have been structured to study vibrant ecosystems and guidelines created for how to foster these entrepreneurship networks (Acs et al., 2014; Isenberg, 2011b; Neumeyer, 2016; Spigel, 2017). It is important to understand how best to support and facilitate entrepreneurship because it is integral in the efforts of innovation and economic development (Acs & Audretsch, 2003; Morris, Neumeyer, & Kuratko, 2015). However, it is difficult to find a body of research concerning the difficulties in developing an entrepreneurial ecosystem. More specifically, what actions and attitudes are actually detrimental to efforts to support entrepreneurship and its contribution to economic development.

This exploratory research examined an area of the United States where vast sums of financial aid have been spent over several decades in attempts to reduce the high levels of poverty and revitalize the region. Since 1965 when the Appalachian Regional Commission was founded, Eastern Kentucky has received 9 billion dollars in financial aid. However, this region remains behind in economic development, educational attainment, wages, employment levels, and standard of living (Baumann, 2006; Franklin, 1981; Gebremariam et al., 2011; Hansen & Yukhin, 1970; Jung et al., 2015). In analyzing the current economic and entrepreneurial landscape of Eastern Kentucky, Lamsdorff's (2006) model for the causes of corruption was used to establish conditions negatively affecting the advancement of an ecosystem and Isenberg's (2011a) Domains of the Entrepreneurship Ecosystem was used to establish the issues within

each major category and how these issues are inhibiting ecosystem progress. Statistics and peer-reviewed research were used to establish the results

CORRUPTION

Research has shown corruption is more prevalent in poor countries than in rich countries (Bai et al., 2013). With the use of vertical theory borrowing, it seems prudent to posit poor regions may be more corrupt than rich regions (Fawcett et al., 2014; Whetten et al., 2009). There is research to support distinguishing one region from another in regard to the level of corruption. It has been established southern states in the US are more corrupt than the other states (Goel & Nelson, 2011). Depending upon the measures taken to determine the corruption levels, Kentucky has been ranked as high as first to tenth as “most corrupt state” in studies (Dincer & Johnston, 2014; Liu & Mikesell, 2014). Actual cases are provided in the Policy section.

Because of their small structure and lack of resources, smaller cities are susceptible to corruption (CAPI, 2016). Other than Boyd and Greenup Counties who are classified as Medium-size Metro counties because of the city of Ashland and their close proximity to Huntington, West Virginia, all of the Eastern Kentucky counties are labeled as Noncore or Micropolitan by the Centers for Disease Control and Prevention in its report for the classification of US counties. The status of Noncore means a county does not have an urban cluster (city) of at least 10,000 people. The designation of Micropolitan means a county has an urban cluster between 10,000 and 50,000 within it. Out of the twenty easternmost Kentucky counties (not including Boyd and Greenup, as already mentioned) only one is designated as Micropolitan, the other nineteen are Noncore (CDC, 2013; OMB, 2013). According to Lambsdorff (2006), factors such as culture, values, and geography are all causes of corruption. The conditions in Eastern Kentucky correspond exceptionally well with these factors. Culture is also one of the domains of the entrepreneurship ecosystem and will be discussed in that section.

Values

According to Lambsdorff (2006), societies developing impersonal values as opposed to particularistic or family values are less corrupt. In settings where traditional religious values dominate, corruption is more prevalent. Eastern Kentucky is known for its deeply religious underpinnings and that churches play a central role in community life for its residents (Guth, 1989; Leonard, 1999; Schoenberg et al., 2015). Data gathered from the Association of Religion Data Archives (2017) was used to assemble a table displaying the number of churches per capita (table 1). The thirty easternmost counties were selected and their average calculated. The counties containing cities in Kentucky were also analyzed, along with counties containing other US cities. The statistics clearly indicate the number of churches per capita in Eastern Kentucky is three to four times higher than in other areas.

**TABLE 1
CHURCHES PER CAPITA**

County	Churches	Population	Per Capita
Eastern KY Counties	1,572	467,154	297.17
Jefferson (Louisville)	704	741,096	1,052.69
Fayette (Lexington)	266	295,803	1,112.04
Kenton (Covington)	148	159,720	1,079.19
Warren (Bowling Green)	163	113,792	698.11
Fulton (Atlanta)	755	920,581	1,219.31
St. Louis (St. Louis)	411	319,294	776.87
Cook (Chicago)	3,354	5,194,675	1,548.80
Hamilton (Cincinnati)	666	802,374	1,204.77
Davidson (Nashville)	782	626,681	801.38
Allegheny (Pittsburgh)	1,148	1,223,348	1,065.63

Lipset and Lenz (2000), studied familism (a high loyalty to one's kin) and determined it is positively related to corruption. Central Appalachia is known for the value of familism (Drake, 2001; Milstead, 2012). Billings and Blee (2000) also support a strong presence of familism. However, in their investigation of Eastern Kentucky Appalachia they found it exists so strongly in this region because of the economic hardships of the majority caused by the corruption of the local elites.

Geography

One way in which geography contributes to corruption is when there is an abundance of natural resources. Studies explain, when the situation exists of abundance of natural resources and the exporting of these resources, such as fuels as minerals, it is found to significantly increase the levels of corruption (Kunicova, 2002; Lambsdorff, 2006; Weidemann, 1999). The situation in Eastern Kentucky is historically one of dependence on the harvesting of timber and more importantly coal (O'Dell, 1999; Santopietro, 2002). A lack of industry diversification ensued with this single-minded focus in the region to exploit the coal industry as the main method of economic development (Maher & McGinty, 2013; Marley, 2016; Sherafat et al., 1978).

WASTE

It is evident public funding is needed to address the poverty, low educational attainment, health problems, and the high unemployment issues plaguing this region. However, more scrutiny over which projects are funded and how the money is spent needs addressing. Without substantial, measurable improvements, eventually funding will be cut and efforts to change the region will be abandoned. Writers, researchers, citizens, and politicians already express this sentiment, and President Trump has proposed eliminating the Appalachian Regional Commission. The agency started to address all of these problems (Franklin, 1981; Lowrey, 2014; Volcovici, 2017).

Waste, the inefficient use of public funds, is pervasive. With multi-million-dollar grants frequently entering the region, it is common to see fruitless projects start and then fail. It was thought a passenger airline should operate in Eastern Kentucky, since it takes two hours to reach even the smallest airport capable of connecting passengers to a larger airport, in order to reach any destination. Agreements between Pike County, Pikeville, the Pike County Airport Board, and the Southeast Kentucky Chamber of Commerce were formed to execute this plan. Two grants totaling \$1,420,588 were awarded for the project (SEK Chamber, 2013). However, this project was destined for failure. The airline only flew to and from Nashville, with limited scheduling. It was not TSA approved, meaning upon arrival to Nashville passengers would have to go through security there. Tickets cost \$400 to Nashville and passengers would have to purchase separate tickets to fly to another destination. It was not classified as a connecting flight.

Therefore, total airfare was double the expense for a typical US destination. Often, flights to Nashville occurred with only one or two passengers. Money from the grants was used to subsidize the expense of the flight because passenger revenue was insufficient. So, it was not surprising just seven and a half months after its first flight, the airline announced it was ending its service (WSAZ, 2015).

Many other examples can be highlighted. The construction of industrial parks to lure businesses to a community is a common practice, even in Eastern Kentucky. Millions of dollars have been spent for industrial parks in remote areas without access to interstates, waterways, airports, or a workforce. The map below (figure 1) is of the industrial parks, most of which sit vacant and have for several years (red and blue squares). The red square represents an industrial park in Bell County which never attracted a single company to locate within it. The site was purchased for \$850,000 in 2001. Several million dollars was spent for infrastructure and a bridge to the site. In 2015, it was sold for \$750,000 to the Appalachian Wildlife Foundation (Estep, 2015). Now, plans are to build a wildlife center for elk viewing. It is estimated as much as \$29 million is needed to develop the center. Thus far, \$12.5 million in grants have been approved for the project (Estep, 2017a).

Even after these examples, a new industrial park has been proposed for Magoffin County (represented by the green square). So far, \$2.11 million has been awarded for the project. Magoffin County is one of the poorest performing counties by every metric. The population is only 12,684, only 6.5% hold a bachelor's degree, only 69% have finished high school, 37.8% are chronically absent from school, the poverty rate is 32.6%, the labor participation rate is only 40.2%, 21.9% under the age of 65 claim disability, and the life expectancy is only 72.6.

**FIGURE 1
EASTERN KENTUCKY INDUSTRIAL PARKS**



A final example focuses on the efforts to develop a skilled work force by training people in computer coding. Phrases coined such as “Silicon Holler”, “coalminers to code”, and “code country” are bandied about. The publicity and marketing for these projects have been tremendous. The most notable national news programs and business magazines have praised the efforts of these organizations to provide Eastern Kentuckians with a new skillset (Beam, 2017; Field, 2017; Peters, 2016). Although, if one lives in the region or delves beyond the fluff journalism, it becomes apparent these efforts are not sustainable as structured. Ongoing government funding is the only mechanism keeping these entities alive. Interapt is a company who located in Paintsville to train people in computer coding and secure them employment afterwards. They received \$2 million of an approved \$4.5 million in government grants which were supposed to fund them through 2019, to successfully train and employ 200 people. Due to underperformance (only 17 jobs created), the operation was cancelled in less than one year and Interapt has moved on (Harkness, 2017).

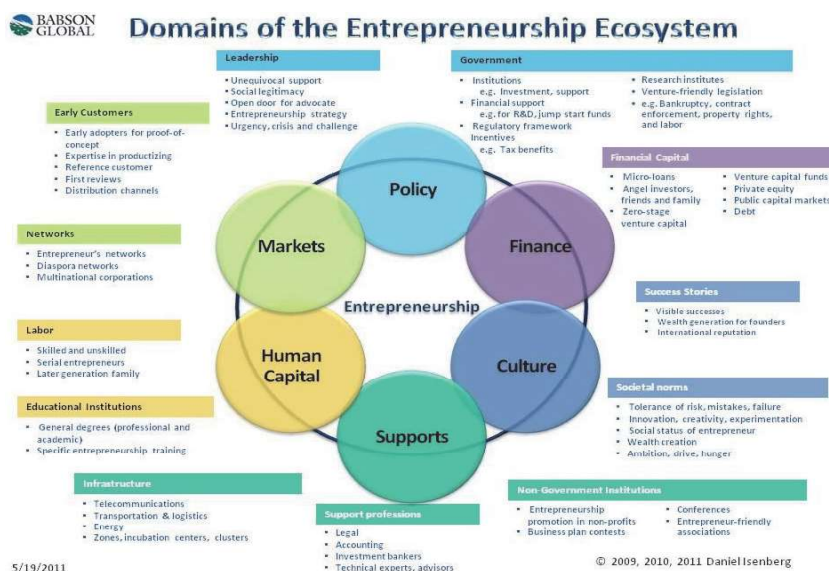
Other organizations operate in a similar fashion, with grant money subsidizing the hiring, training, and ongoing wages of the employees (Smiley, 2015). This can be expected to assist companies in the

startup phase, but not as a permanent solution. And afterwards, small businesses are wheedled to apply for government grants used to overpay for basic websites, as much as \$25,000, which is given to the coding company to fulfill the purposes of the grant (ARC, 2017). Therefore, an entity classified as a for-profit business is actually a government funded operation. This has been perpetuated to give the appearance of a “win” for the region. It is not a sustainable business model. And, website building has become ubiquitous, not innovative to enter into at this late stage of the industry, in this manner. Companies such as Wix, Weebly, and Squarespace offer inexpensive, effective websites for small businesses. More complex website and application building with artificial intelligence will soon become the norm (Coren, 2016; Muchmore, 2017).

ENTREPRENEURSHIP ECOSYSTEM

Spigel (2017) defines entrepreneurship ecosystems as “combinations of social, political, economic, and cultural elements within a region that support the development and growth of innovative startups and encourage nascent entrepreneurs and other actors to take the risks of starting, funding, and otherwise assisting high-risk ventures.” Babson College is well-respected as a leader in entrepreneurship education. A current program of Babson is the Babson Entrepreneurship Ecosystem Project (BEEP). The model of an ecosystem used by BEEP was created by Isenberg (2011a), the Domains of the Entrepreneurship Ecosystem (figure 2). This is the model used in this research to expound upon the characteristics of the entrepreneurial environment in Eastern Kentucky and highlight the deficiencies.

FIGURE 2
DOMAINS OF THE ENTREPRENEURSHIP ECOSYSTEM



Culture

The meaning of culture has been debated and defined by researchers with over one-hundred and fifty definitions of the word. A well-respected definition by Matsumoto (1996) is the set of attitudes, values, beliefs, and behaviors shared by a group of people. According to Leonard (1999), “the Appalachian areas in particular have proven to be a virtual fortress protecting faith and culture.” This region is known to have a distinctive “mountain culture” (Cooke-Jackson & Hanson, 2008; Milstead, 2012). Territorialism is a long-standing behavior here where clan versus clan became city against city and county against county. Academic studies have stated prominent features of this culture to be individualism, self-reliance, familism, distrust of government, and a “collective narrow-mindedness” (Brashear, 2014; Drake, 2001;

Gottlieb, 2001; Milstead, 2012; Smith and Tessaro, 2005). The residents of Eastern Kentucky maintain a strong attachment to their coal heritage and many still believe a resurgence of this industry is the best path forward to improve the economy of the region (figures 3 & 4). This is illustrated by the photographs below. The picture on the left of the roadside billboard was taken in Pike County on September 23, 2017. The picture on the right with the bumper stickers and coal miner decal is a common sight.

**FIGURE 3 & FIGURE 4
EASTERN KENTUCKY ATTITUDE TOWARDS COAL**



In the context of entrepreneurship ecosystems, culture is the underlying beliefs and outlooks about entrepreneurship (Spigel, 2017). The two prominent attributes in this domain are success stories and societal norms (Isenberg, 2011a). The majority of successful entrepreneurs are those whose companies were in the coal industry. Prominent examples of entrepreneurs from a variety of industries simply do not exist. In entrepreneurship, the concept of failure has utility in that founders learn from their mistakes contributing to future endeavors (Hsu, Wiklund, & Cotton, 2015). Areas with strong ecosystems consider failing part of the journey of entrepreneurship and although not an ideal outcome, it is accepted (Maney, 2015; Markowitz, 2012). However, in Eastern Kentucky failure is seen as an end, not part of learning. Therefore, the culture is resistant to change and more risk averse with fewer people starting opportunity-based businesses and less likely for entrepreneurs to make multiple business attempts (Elam, 2002; Ezzell, Lambert, & Ogle, 2012). Another contributing factor is the entrepreneurs in Eastern Kentucky are overwhelmingly “necessity entrepreneurs” as opposed to “opportunity entrepreneurs”. So, the types of businesses they operate are mundane in nature, do not make headlines, and are not scalable (Acs, 2006; Stephens et al., 2013).

Supports

The University of Pikeville is truly the only university in far Eastern Kentucky. Eastern Kentucky University is actually located in central Kentucky. Morehead State University is located in the northeast portion of the state. Morehead teaches entrepreneurship courses at the undergraduate level. Several community colleges are scattered across the region. Entrepreneurship has not been taught for several years in the Kentucky community college system. Big Sandy Community and Technical College has three campuses in southeast Kentucky. Their Workforce Development program is addressing issues of workers’ skills and has opened an incubator space at their Paintsville campus. A faculty member from Morehead State and one from the University of Pikeville have taken it upon themselves to lead entrepreneurship education programs for K-12 students. Each teaches a separate program in the region. Since Junior Achievement and other K-12 programs do not exist in this region, their efforts are noble. These programs need to scale significantly to impact the entire region.

According to Neumeyer (2016), two of the most commonly found components a university contributes to an ecosystem are the entrepreneurship center and the technology transfer office. The University of Pikeville does not possess either. Numerous efforts have been made since 2013 by this

researcher/faculty to persuade university leadership to make entrepreneurship a priority and dedicate resources to establishing a center and programs. It simply is not seen as important by the administrators. A minor in entrepreneurship was created by this faculty member and entrepreneurship is now also taught in the MBA program. Attracting students to enroll in the minor courses is proving a challenge because other faculty and staff are not assisting in the marketing of the program or encouraging students to take the courses. If the executive administration voiced support for entrepreneurship, others would follow.

The University of Pikeville does host the only business plan competition in the region. It is the third largest collegiate competition in the state. However, the University does not invest in the event. This faculty member secured a grant to establish an innovation office and sponsors the event from the office budget. This event is open to all residents of Eastern Kentucky, not only college students. Extensive marketing is conducted for the event through the various forms of media and the people of the region simply do not seem interested. Although \$10,000 in cash is awarded to the winners at this annual event, it often proves difficult to garner enough applications to hold the competition. More support from the university and surrounding agencies could prove helpful.

Several organizations exist in Eastern Kentucky attempting to serve the needs of small businesses and entrepreneurs. The most prominent agencies include: Small Business Development Centers (SBDCs), the Mountain Association for Economic Development (MACED), Southeast Kentucky Economic Development Corporation (SKED), Shaping Our Appalachian Region (SOAR), the Kentucky Innovation Network (KIN), and others. Services offered include business model consulting, business plan construction, loan and investment assistance, growth planning, employment assistance, skills workshops, and networking. Various levels of commitment and expertise can be found across these entities. Research asserts the economic development organizations lack in effectiveness, especially in the areas of collaboration (Compton et al., 2015).

The quality and extensiveness of the infrastructure is an important consideration for startups. Below is a map of Eastern Kentucky and the interstate system (figure 5). The red lines are major US highways. Much of Eastern Kentucky is at least two hours of driving time from an interstate. The yellow lines represent the roadways leading to the major thoroughfares. These roads are not built for transit of goods. Many are mostly two lane roads or have stop lights as the roads bisect towns along the way. For manufacturing companies, the added time and expense of distribution is prohibitive. So much so, any company with national or global customers is not likely to locate in the region. Much of Eastern Kentucky is also two hours of driving time away from an airport with passenger and freight airlines. Three of the four are small regional airports with limited flight selections and connections are necessary. The closest international airports are over three hours away in Louisville and Cincinnati.

FIGURE 5
EASTERN KENTUCKY INTERSTATE SYSTEM



Broadband connectivity is integral to succeed in today’s economy. Much has been publicized about ‘Silicon Holler’, the \$324M to build the 3,000 mile network, how it can create a technology corridor in the mountains of Eastern Kentucky, and now how delays and additional costs may increase the amount to more than \$3B and delay it by three years (Lee, 2017). In some communities of Eastern Kentucky the price of internet access for both residential and business purposes is extremely expensive, relative to other areas. This is largely because of monopolistic practices by the incumbent companies. Some counties only have one internet service provider. Therefore, the cost is much higher than areas with multiple service providers.

For example, Intermountain Cable (IMC) offers internet service in Pike, Floyd, and Knott Counties in Kentucky. Often, IMC is the only provider of internet in the areas they serve. Without competition they charge substantially more than urban areas and rural areas with multiple providers (see table 2). For a 50 megabyte download speed and a 5 megabyte upload speed, IMC charges businesses \$229.00 per month. Elsewhere, internet fees average 68% less, and with greater speeds. So, even if all of Eastern Kentucky acquires high-speed internet access, which companies will find it appealing to pay these exorbitant fees? Their residential offerings for cable and internet follow this same pricing scheme (IMC, 2017). Not only are the prices high, but customers also frequently experience reductions in speed and interruptions in service.

**TABLE 2
BROADBAND PRICING**

Broadband Pricing (Packages Containing FCC Minimum Definition of Broadband (25/3)(Commercial)									
Pikeville, Kentucky*		Lexington**		Louisville**		Georgetown, KY		Covington, KY	
Speed (DL/UL)	Price	Speed (DL/UL)	Price	Speed (DL/UL)	Price	Speed (DL/UL)	Price	Speed (DL/UL)	Price
50/5	\$229.00	60/5	\$79.99	75/75	\$85.00	50/50	\$50.00	60/5	\$80.00
IMC		Spectrum Cable		Verizon FIOS		AT&T IP-DSL		Spectrum Cable	
With Data Caps after 1 TB & extra fees thereafter		No Data Caps		No Data Caps		No Data Caps		No Data Caps	
*Inter-Mountain Cable				**Cheapest Price Found		Data gathered from www.broadbandnow.com			

Human Capital

The domain of human capital includes the skills of the available workforce, the existence of entrepreneurs, the contributions of educational institutions for professional and academic degrees, and specific entrepreneurship training (Isenberg, 2011a). According to Spigel (2017), high levels of human capital are a mandatory prerequisite for success in today’s economy and skilled employees are essential elements for the competitiveness of new ventures (Audretsch et al., 2011; Qian et al., 2012). It has been highly publicized in announcements and press releases in recent years the high levels of motivation and skills of Eastern Kentucky workers (Johnson, 2017; Peterson, 2017; Sexton, 2017; Volcovici, 2017).

However, the facts simply prove otherwise. Residents of Eastern Kentucky have a lower educational attainment than people of other areas of the state and nation, and it has always been this way (Baumann, 2006; Sanders, 1969). A nine-county area of far Eastern Kentucky was chosen because it is the service area for the Innovation Office in the region. As displayed in table 3, the average for earning at least a high school diploma among the nine-county area is 72.51%, whereas nationally the completion rate is 85.1% and the cities in Kentucky are: Louisville 88.9%, Lexington 89.8%, Bowling Green 87.3%, and Covington 89.2%. The average for attaining at least a bachelor’s degree in this nine-county area is 11.24%. Nationally, the average is 29.8% and the cities in Kentucky: Louisville 31.5%, Lexington 41.2%, Bowling Green 28.1%, and Covington 28.9% (US Census Bureau, 2017). These statistics are significant and emphasize the problem of Eastern Kentuckians possessing lower levels of skills which translates into a lack of competitiveness for the people seeking jobs and for the region seeking companies to locate in Eastern Kentucky. As explained by Bollinger et al. (2011), the use of modern technological resources in today’s economy favors college-educated workers. Goetz and Freshwater (2001) found human capital is positively related with entrepreneurial activity.

**TABLE 3
EDUCATION COMPLETION RATES**

Education Completion Rates			
High School		Bachelor's Degree	
Pike	73.5	Pike	13.3
Floyd	75.1	Floyd	12.8
Letcher	73.5	Letcher	11.8
Perry	73.1	Perry	14
Martin	71.9	Martin	6.5
Magoffin	69	Magoffin	8.5
Johnson	77.1	Johnson	10.8
Breathitt	68.9	Breathitt	11.2
Knott	70.5	Knott	12.3
Fayette (Lexington)	89.8	Fayette (Lexington)	41.2
Jefferson (Louisville)	88.9	Jefferson (Louisville)	31.5
Kenton (Covington)	89.2	Kenton (Covington)	28.9
Warren (Bowling Green)	87.3	Warren (Bowling Green)	28.1
State	84.2	State	22.6
Nation	85.1	Nation	29.8

*US Census Bureau 2011-2015

In addition to level of education, another important component of human capital is health. This plays a role in the availability and motivation of the workforce. A recent study by researchers for the Journal of the American Medical Association examined the inequalities of life expectancy across US counties and found eight counties in Eastern Kentucky experienced the largest declines in life expectancy from 1980 to 2014 (Dwyer-Lindgren et al., 2017). Risk factors contributing to this decline are obesity, physical inactivity, hypertension, smoking, and diabetes. High levels of poverty and unemployment, and low levels of education also play a role (Khazan, 2017). Central Appalachian Eastern Kentucky is known for its high rate of drug abuse and high levels of smoking which are twice the national average (Moody et al., 2017; Schoenberg, 2010). The term “pillbillies” has become popular to describe drug addiction in Central Appalachia (Burris, 2014). Data was gathered to examine the mortality rate (per 100,000) and the life expectancy of nine Eastern Kentucky counties and the counties in Kentucky with cities (table 4). Both rates are noticeably worse for the Appalachian counties.

**TABLE 4
MORTALITY & LIFE EXPECTANCY RATES**

County	Mortality*	Life Expectancy**
Pike	1,124	72.41
Floyd	1,166	71.97
Letcher	1,150	72.35
Perry	1,303	70.60
Martin	1,048	72.56
Magoffin	1,114	72.60
Johnson	1,082	73.54
Breathitt	1,281	70.22
Knott	1,123	72.98
Fayette (Lexington)	759	78.40
Jefferson (Louisville)	853	77.01
Kenton (Covington)	890	77.06
Warren (Bowling Green)	853	77.26
State	909	76.26
Nation	823	79.08

*KY Vital Statistics ** Institute for Health Metrics

The last set of metrics to examine related to human capital are labor participation rate (table 5) and the percentage of the population less than 65 years of age claiming to be disabled (table 6). These numbers address the availability of healthy, motivated people to start businesses, work for companies, or otherwise make some contribution to the ecosystem. The labor participation rate is substantially lower for the Eastern Kentucky counties and the percentage with disabilities is two to three times higher than the cities and the nation.

Concerning the entrepreneurial mindset, Snow and Prater (2017) conducted a study of the entrepreneurial attitudes of high school seniors in Eastern Kentucky and the results show only 2.15% of the respondents scored in the high range of entrepreneurial attitude. Scores for need for achievement, creative tendency, and calculated risk-taking also were low. Demographic information was gathered from the 233 respondents. Up to 54% plan to leave Eastern Kentucky after high school to pursue college and career. This supports the phenomenon of “brain drain” representing the outward migration of educated workers from Central Appalachia to urban areas, thus negatively affecting attempts to attract businesses because of the lack of a skilled workforce (Stephens, Partridge, & Faggian, 2013). Also interesting, of the group desiring to stay in Appalachia, 14 do not plan to go to work or go to college after high school (Snow and Prater, 2017).

**TABLE 5 & TABLE 6
LABOR PARTICIPATION & DISABILITY RATES**

Labor Participation Rate		% w/ Disability <65	
Pike	45.5	Pike	24.4
Floyd	42.2	Floyd	23.7
Letcher	43.5	Letcher	25.3
Perry	48.0	Perry	22.1
Martin	30.1	Martin	25.8
Magoffin	40.2	Magoffin	21.9
Johnson	42.3	Johnson	24.6
Breathitt	43.5	Breathitt	29.1
Knott	42.8	Knott	24.2
Fayette (Lexington)	67.6	Fayette (Lexington)	8.2
Jefferson (Louisville)	65.6	Jefferson (Louisville)	10.8
Kenton (Covington)	67.6	Kenton (Covington)	11.1
Warren (Bowling Green)	65.1	Warren (Bowling Green)	11.6
State	59.1	State	12.9
Nation	63.3	Nation	8.6

*US Census Bureau 2014

Markets

The existence of local markets, entrepreneur networks, early customers and multinational corporations are critical elements of the market domain (Isenberg, 2010; Spigel, 2017). Eastern Kentucky is a difficult region to grow these necessary components. The mountainous terrain and the absence of flat land simply make infrastructure development timely and expensive. This results in sparsely populated counties lacking the numbers of people and companies to establish large entrepreneurial networks, a sufficient group of early adopters, and multinational corporations to act as suppliers, customers, or strategic alliances for new ventures (Reid, 1987). An analysis of the population density (table 7) in the Eastern Kentucky counties highlights the lack of a critical mass of people to represent, for many companies, an opportunity for locating a business in the region for the purposes of hiring skilled employees or having an adequate base of customers to purchase products or services. Innovation is often measured by the number of patents an area generates. Table 8 displays the cities in Kentucky, some well-known entrepreneurial cities (Austin, San Francisco) and some emerging entrepreneurial cities, at least relative to size (Boulder, Chattanooga, Cincinnati, and St. Louis).

**TABLE 7 & TABLE 8
POPULATION DENSITY & PATENTS FILED**

Population Density Per Square Mile		Patents in 2016	
Pike	77.0	Pike	3
Floyd	94.3	Floyd	0
Letcher	67.4	Letcher	0
Perry	80.5	Perry	0
Martin	52.3	Martin	0
Magoffin	41.1	Magoffin	1
Johnson	87.7	Johnson	0
Breathitt	27.0	Breathitt	0
Knott	44.2	Knott	0
Lexington	1,115.4	Lexington	253
Louisville	2,353.1	Louisville	324
Cincinnati	3,833.7	Cincinnati	889
Chattanooga	1,291.7	Chattanooga	64
Boulder	4,383.2	Boulder	518
Austin	3,181.9	Austin	4,036
San Francisco	18,580.9	San Francisco	7,032
St. Louis	5,029.9	St. Louis	969

Policy

The two primary categories in the Policy domain are Government and Leadership. Government’s role is to enact policies supportive of entrepreneurship and fund programs to facilitate business starts and growth (Feldman & Francis, 2004; Roundy, 2016). On the state level, the last two administrations, one Democratic and one Republican, both have made economic development and entrepreneurship priorities in Kentucky. The Kentucky Cabinet for Economic Development has created numerous incentive and finance programs (KCED, 2017). This agency also manages the Kentucky Innovation Network. This is a statewide organization whose purpose is to support business starts and growth through free consulting, workshops, training, networking, and capitalization assistance. Offices are present in Eastern Kentucky (KIN, 2017).

At the national level, US Congressman Hal Rogers has been a staunch advocate for Eastern Kentucky. He is a member and former Chairman of the Appropriations Committee and is responsible for securing millions upon millions of dollars for a variety of purposes, for Eastern Kentucky and Appalachia (Estep, 2017a). President Trump has stated he will bring back the lost coal jobs to the region, while simultaneously proposing to cut the budget for the Appalachian Regional Commission (ARC) and eliminate it. This agency funded 650 projects from 2011-2015 in the thirteen Appalachian states. It spent hundreds of millions of dollars, educated 49,000 people and is expected to create or retain 23,670 jobs (Estep, 2017c; Volcovici, 2017). Appalachia and Eastern Kentucky would be in much worse condition without the efforts of the ARC.

However, at the local level, there are many examples of government leaders misusing and embezzling funds. The mayor of Prestonsburg was charged with misusing funds (Estep, 2017b). The mayor of Paintsville was sentenced to 48 month in prison for misuse of city funds (Department of Justice, 2017). The mayor of Martin was sentenced to 90 months in prison for several offenses including fraud and identity theft (Department of Justice, 2014). The Harlan County Sheriff was indicted for misuse of public funds and property (Department of Justice, 2016). Eastern Kentucky is fraught with and has a long history of corruption. In an atmosphere such as this, it is difficult to receive consistent support from local government in the creation of a stable, thriving ecosystem. One of the most publicized incidents of corruption involved a local attorney, Eric C. Conn. He was convicted of defrauding the government of \$550 million in Social Security disability payments (Wolfson, 2017). This is the largest crime of its kind in US history and underscores the exceptionally high levels of people under 65 claiming disability and the exceptionally low levels of people participating in the workforce within the region.

Finance

The presence of available capital, in the form of loans, private and public investment is critical for entrepreneurial endeavors and the development of an ecosystem (Malecki, 2011). Local banks, the SBA, and MACED are available to provide debt financing. Kentucky Highlands Investment Corporation (KHIC) is an organization offering investment for businesses in southern and eastern Kentucky. Angel groups are present in Louisville, Lexington, Northern Kentucky and even Ashland Kentucky. Directors from the Kentucky Innovation Network are intimately involved with the operation of these angel groups. If startup companies from Eastern Kentucky are ready for investment, presentations with the angel groups can be arranged. Presently, there is a lack of scalable startup companies fit for angel investment or venture capital. Not enough deal flow exists to warrant the formation of an angel group. According to Isenberg (2011a), attracting or providing venture capital without deal flow or exit possibilities, actually retards the development of private equity by driving it away.

RECOMMENDATIONS

Development of an entrepreneurship ecosystem is seen as a cost-effective strategy for economic development (Isenberg, 2011a). Policies aimed at increasing entrepreneurship, specifically opportunity entrepreneurship are encouraged (Stephens et al., 2013). Attempts are underway throughout Eastern Kentucky. A multitude of organizations believing in entrepreneurship and small business ownership are available to offer assistance, some are proactive, some are rather passive. Nonetheless, there is not a critical mass of residents wanting to start their own ventures. And, many of those who do are engaged in small and medium enterprise (SME) entrepreneurship, not innovation-driven entrepreneurship (IDE) (Aulet, 2013; Chrisman, et al., 2002). Both are needed.

According to Huggins and Williams (2011), regions with entrepreneurially supportive institutions and cultures may attract investment, skills and talent. Culture shapes what individuals see as opportunities. However, changing a culture to one more supportive of entrepreneurship is difficult (Isenberg, 2010). This is where education must play a more prominent role in the region, from K-12 education through graduate school. Many of the high schools teach business and economics, but none teach entrepreneurship (Snow & Prater, 2017). One local high school, Pikeville Independent, has even eliminated its business program. It also must be understood that business education and entrepreneurship education are not synonymous (Morris & Kaplan, 2014; Morris et al., 2013). Entrepreneurial experience contributes to the development of human capital and enhances skills and abilities which positively impact future career opportunities (Burton, Sorensen, & Dobrev, 2016; Parker, 2013). Entrepreneurship education affects students' entrepreneurial attitudes, entrepreneurial competencies, and desire to become entrepreneurs (Abu Talib et al., 2012; Morris et al., 2013). It has also been proven entrepreneurship positively impacts economic development, even in rural areas (Ghio et al., 2015; Mojica, Gebremedhim, T., & Schaeffer, 2010) and is a powerful driver of job growth (Decker et al., 2014).

At the college level, Morehead State University and more importantly, the University of Pikeville (UPIKE) must make an earnest commitment and investment into creating entrepreneurship programs, providing support to the region for entrepreneurial efforts, and becoming a vocal champion at the forefront of leading a cultural change to build an entrepreneurial ecosystem. UPIKE has developed professional schools of optometry and rural medicine, but the majority of those students are from outside the region and will leave the region after graduation. They will return to their hometowns or to more populated areas to build practices or work in hospitals. Therefore, consideration for the future prosperity of the Central Appalachian region should also take priority. At the K-12 level, these schools need to incorporate entrepreneurship education into the daily curriculum. State government may need to intercede to make this mandatory. Forty two states claim entrepreneurship curriculum is required (JA, 2015). But, if you examine actual documents for the state standards, many states are requiring business or economics education which is not the same as entrepreneurship education. For example, the Kentucky Department of Education requires economics in the category of social studies, but makes no mention of entrepreneurship in the standards (KDE, 2015).

Instead of a shotgun approach spending millions of dollars on disparate activities throughout Appalachia without a significant impact, government funding and private investment must focus on industry diversification and developing “clusters of innovation” within the region (Engel, 2015; Gebremariam et al., 2011; Stephens et al., 2013). Simply put, some areas will always remain rural without much in the way of industry or residents. However, areas in the region are capable of developing infrastructure and human capital to amass a confluence of activity and grow entrepreneurship ecosystems. Instead of the traditional territorialism pitting county against county and a city against the county within it resides, a regional perspective and attitude must emerge. The understanding of “a rising tide lifts all boats” is a phrase befitting of the stance needed in this situation. Entrepreneurial communities must arise by geographically concentrating public resources. According to Isenberg (2011a), to disperse resources equitably is self-defeating. Therefore, areas in Eastern Kentucky must develop ecosystems facilitated by the resources in the community and by growing their own, to create a unique entrepreneurship network. They should not attempt to duplicate Silicon Valley. One area cannot duplicate another’s ecosystem (Isenberg, 2011a). The emphasis of the local, state, and federal governments should be the encouragement, through policy and funding, of the development of these clusters by incentivizing innovative businesses to locate into the region while simultaneously changing the culture to one conducive to entrepreneurship and enhancing the skills of the inhabitants. The impact of the education will be a transformed economy for a poverty-stricken region. This will reduce the brain drain in the region by inculcating the attitude that instead of leaving the area to seek opportunity, people can create their own opportunities in their hometowns. Programs targeting poverty and educating low-income individuals are already underway in other areas and making an impact (Morris, 2017).

CONSIDERATIONS FOR FUTURE RESEARCH

Although this study extensively utilized reliable statistics and established research, it is limited by not developing and testing hypotheses. Opportunities exist to advance this research by studying each domain of the ecosystem in further detail. Qualitative information can be gathered to ascertain the behaviors and perspectives of the environmental actors involved. Quantitative data can be collected to analyze relative and absolute measures of entrepreneurial activity, and compare this region to other entrepreneurial ecosystems. A formal mapping of the regional ecosystem will also provide actionable information to assess and improve the entrepreneurial network.

CONCLUSION

Cronyism, corruption, and waste must be eliminated. Who gets the money and what it is used for must yield results. If quantifiable improvements are not realized, the millions in aid entering Eastern Kentucky will dwindle. With the publicity and press releases, the outside world is led to be overly optimistic. However, those of us here see what happens after the headlines and who actually benefits. There are young people here with determination and skills. Students here are accepted into Harvard, Yale, and Princeton. It simply is not the norm. And, those people are not likely to return. A cultural shift away from fatalism, drug addiction, and dependence upon the government to save the region must transpire. A strong, concerted effort for education and entrepreneurship must become the focus. Universities, government, and local leaders must genuinely strive to create this atmosphere. It is possible. Improvements are occurring, led by progressive, hard-working individuals genuinely wanting to make a difference. There just is not enough of this at the present time and there are too many people seeking “free money” to line their own pockets at the expense of progress and everyone who could benefit from the legitimate use of the time, effort, and money.

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