2000 Baseline Assessment of Rural Community Vitality

by

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INTRODUCTION

The Ford Institute Leadership Program, overseen by the Ford Institute for Community Building, has been providing leadership development programming in rural Oregon and Siskiyou County, CA since 2003. The goal of the Ford Institute Leadership Program is to increase the leadership capacity of individuals and organizations in rural communities so that they can be successful citizens and work to increase the vitality of their rural communities. Just as this leadership program seeks to increase the vitality of rural communities, many rural development initiatives share the goal of making rural communities vital, prosperous, sustainable, or resilient. Despite the fact that rural vitality is the ultimate goal of many development efforts, little work has been done to develop a measure of vitality that can be used to measure the extent to which these efforts have their intended effect on rural communities. Consequently, there have been relatively few assessments of rural vitality or wellbeing across the nation (exceptions include: Isserman et al. (2009), the Appalachian Regional Commission (2009), and Ferriss (1998)), let alone Oregon and northern California.

This paper seeks to contribute to the discourse on rural community wellbeing by addressing the following:

1. Operationalizing rural vitality in such a way that yields a quantitative index of vitality
2. Establishing a baseline assessment of rural Oregon and Siskiyou County, CA communities' vitality
3. Examining the attributes of the rural vitality index to understand its internal dynamics

RURAL WELLBEING MEASURES

In 2007 the Ford Institute for Community Building contracted with faculty at Oregon State University to evaluate the Leadership Program. At that point a logic model for the program was developed, and the desired outcomes for the program were articulated. As mentioned previously one of the key outcomes of the program is the maintenance of or improvement in rural community vitality. In order to determine the extent to which the program has had an influence on rural community vitality it was necessary to define that concept and operationalize it in such a way that it can be systematically observed in communities. What follows is a discussion of contemporary rural wellbeing measures and the final operationalization of vitality that the Institute chose for its evaluation.

There are relatively few scholars who have sought to measure and examine the processes and attributes of thriving rural communities. More often, rural researchers focus on examining particular social or

economic issues facing rural areas, and seek to understand their genesis and perpetuation. In addition, scholars who do study the rural community for its own sake are typically associated with the economic development discourse and here again, tend to examine particular issues, for example job growth and population growth. Relatively few studies have been done that seek to define rural community wellbeing broadly and then examine the factors associated with that state. Those that have include studies by Andrew Isserman, Edward Feser, and Drake Warren (2009), Mark Partridge, Linda Lobao, Ayesha Enver, Wilner Jeanty, Bo Beaulieau, Roberto Gallardo, and Stephan Goetz (2009) for the Appalachian Regional Commission, Charles Tolbert and Thomas Lyson (1998), William Grigsby (2001), and a few others. Each of these studies defines community vitality, wellbeing, or prosperity uniquely, but generally tend to focus on a few social and economic outcomes, namely: income, poverty, housing, education, population change, inequality, and employment. We can think of this strain of scholarship as representing a socio-economic view of vitality.

While these socioeconomic studies bring us closer to understanding how to define community vitality in a succinct and measurable manner, they touch on only a few aspects of life in rural communities. Though socioeconomic outcomes are salient to the population, other branches of development literature suggest the importance of additional aspects of community life, for example environmental quality and features. Indeed, as the national and international discourse surrounding development has adopted notions of sustainability, practitioners and scholars are increasingly recognizing the importance of the physical environment in development outcomes. In particular, these practitioners and scholars posit that sustainable communities realize a balance of social, environmental, and economic outcomes (Hart, 1999; Basiago, 1999; Delegates of the UN Conference on Environment and Development, 1992). Thus perhaps a vital community should be considered one that realizes specific and targeted social, economic, and environmental outcomes. Given that the vitality concept being developed here is to be applied to rural areas of the state, it makes sense that the environment should be included. Rural community residents rely on natural resources for their productive and consumptive values. Excluding the environment from a measure of vitality would be ignoring a very important part of rural life. Including the environment in our notion of vitality thus moves us toward a more holistic view of rural success; one that is consistent with global views of development and rural realities.

The literature discussed so far has pointed out that prevailing notions of community wellbeing, sustainability, or vitality define it as a function of social, economic, and environmental factors. By

merging the socioeconomic and sustainability views of vitality we are moving toward a more holistic view of community vitality; one that more fully encompasses the many aspects of rural life and the prevailing development discourse. An additional branch of the development discourse should be acknowledged and incorporated into our holistic notion of vitality, however, and that is the community development discourse. According to rural community development scholars, the importance of building capacity, the ways people in the community work together, the knowledge and the skills they have to garner and distribute resources, etc. is paramount to success in a community (Wilkinson, 1991; Goodman et al., 1998; McGuire et al., 1994; Flora and Flora, 1990). Though judging the wellbeing of rural communities based solely on their capacity potentially leads one to conclude that a "successful" community is one that is able to get things done even if it is at the expense of the environment, some community residents, or the economy, this notion of community capacity can and should be integrated into our definition of a vital community (Black, 2003). It should be included because it expands our concept of vitality to include the community processes that must be functional for residents to have the power to make a difference. In fact, these processes are the initial targets of the Leadership Development program.

Based on the three discourses briefly summarized above, we can see that a modern and grounded conceptualization of community vitality reflects four specific dimensions, implying the following equation:

Community Capacity	+	Positive Social Outcomes	+	Positive Economic Outcomes	+	Positive Environmental Outcomes	=	Community Vitality

While this framework is helpful in guiding our thinking about vitality, it falls short of elucidating the exact attributes of vital rural communities. Knowing which economic outcomes should be improved and measured is crucial to examining the extent to which any development effort is contributing to the vitality of a community. Unfortunately, there is no clear consensus regarding which social, capacity, economic, and environmental outcomes are positive and desirable. Determining the desirability of particular outcomes is a subjective judgment call, influenced by values and beliefs that are hardly universal. In order to move from the vitality framework to the specific attributes of vital communities requires that the individual or group of individuals judging the vitality of communities make their own call with respect to those attributes. Toward this end, the Ford Institute for Community Building

developed its own vision of rural community vitality in 2009. This vision encompasses six dimensions of human life and represents the Institute's framework of community vitality:

1. Safety
2. Environment
3. Education
4. Public Safety
5. Economy
6. Arts/Culture

Within these six dimensions of vitality, the Institute has identified the following as the corresponding indicators of rural community vitality:

1. Population - manageable growth/decline
2. Youth in population - number and percent
3. Volunteerism - participation in organizations
4. Criminal Activity - decline in index
5. Early Education - 3rd graders reading
6. High school - increase in percent graduating
7. College - increase in percent attending
8. Improvement in fire rating
9. Decrease in births to single mothers
10. Availability of social services - index
11. Availability of arts, culture, rec - index
12. Local government - increase in satisfaction
13. Increase in collaboration
14. Participation in government - voter turnout
15. New business - permits increase
16. Living Wage Jobs - number and percentage
17. Median household income - increase
18. Employment
19. Entrepreneurship
20. Trade Balance - increase in exports
21. Banking Deposits
22. Home ownership
23. Utilities - to standard
24. Transportation/communication - to standard
25. Public buildings to govern
26. Public gathering buildings/places - index
27. Amenities - number and use
28. Water - to target quantity/quality
29. Energy - decrease in import of
30. Vegetation/wildlife - indicator species

Though the Ford institute established this list of 30 indicators independent of this review of rural wellbeing indicators, their indicators map onto the four dimensions of vitality: economic, social,

environmental, and capacity, and resonate with the notions of wellbeing scholars use. In this paper we will use the Ford Institute for Community Building's indicators of vitality as a starting point for the development of a vitality index and assessment of rural Oregon and Siskiyou County, California vitality.

METHODS

The purpose of this research is to begin to answer the following questions:

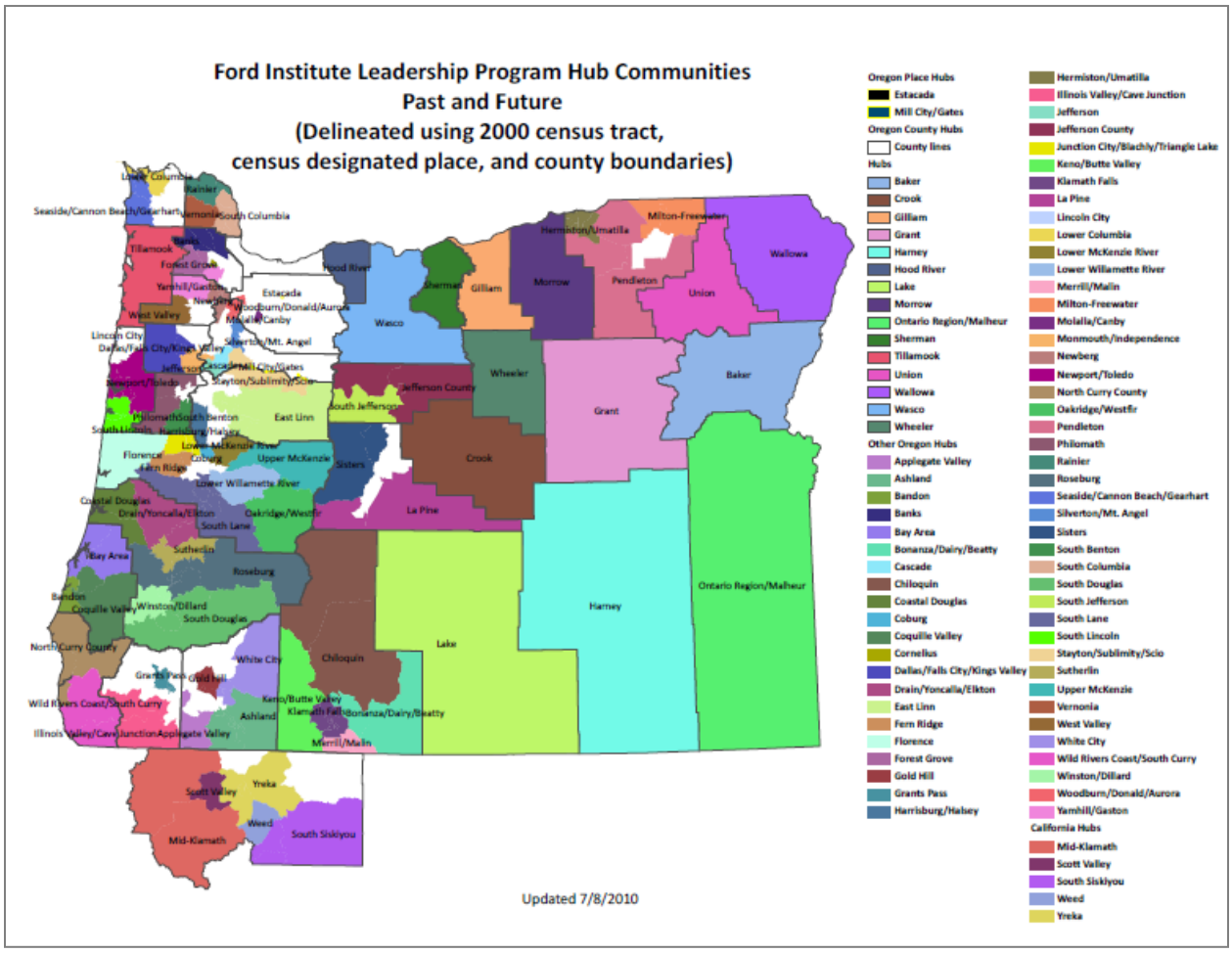
1. How vital are rural Oregon and Siskiyou County, CA communities?
2. How can the Ford Family Foundation (and other rural development initiatives) have an impact on the vitality of rural communities?

In this section, the methods used to answer these questions are discussed.

GEOGRAPHIC SCOPE

Before assessing the vitality of Oregon's and Siskiyou County, California's rural communities, we must understand what the geography of this rural area is. This rural area corresponds to the 86 hub-communities that have received the Leadership Program, or that will receive the Leadership Program. The geographic boundaries of these hub-communities were defined by the Ford Institute for Community Building director. Figure 1 illustrates the boundaries and coverage of the Ford Institute Leadership Program hub-communities. Of note is the fact that some hub-communities are entire counties, typically in Eastern Oregon, but that most often there are multiple hubs within a given county. Only in the case of Estacada, OR does a hub-community correspond only to the city limits; by and large, these hub-communities correspond to one or more census tracts surrounding a town or city.

FIGURE 1. FORD INSTITUTE LEADERSHIP PROGRAM HUB-COMMUNITY MAP



The map of hub-communities also reveals that, as expected, there are parts of Oregon and California that are not included in the Leadership Program catchment area. Mostly these are the cities and suburbs of Portland, Salem, Corvallis, Eugene, and Bend. Other areas of the map are blank because they have not been identified as future recipients of the Leadership Program, with one exception, namely the area in the northeastern section of Siskiyou County, CA. That area is part of the Merrill, OR/Malin, OR/Tulelake, CA hub-community, which clearly crosses state lines. In order to construct the vitality index it was impossible to combine California data with Oregon data because they were often measured in slightly different ways. In order to avoid errors associated with the aggregation of mismatched data, the northeast portion of Siskiyou County was excluded from the analysis.

COMMUNITY VITALITY VARIABLES

In order to answer the research questions, the set of 30 indicators the Ford Institute adopted in 2009 was used as the foundation for the construction of a community vitality index. The Institute's 30 indicators could only serve as the foundation, and not the exact indicators of vitality, because it was not possible to compile the data for all of those indicators. Some of the 30 indicators did not have data, collected and made publicly available at the county, place, or census tract level, associated with them. In particular, no data at the county or sub-county level were available for the following indicators:

- volunteerism
- college attendance
- fire ratings
- satisfaction with government
- collaboration
- trade balance
- transportation/communication infrastructure quality
- public buildings to govern
- public gathering places
- amenities
- energy import/export
- flora/fauna indicator species

In addition, when these 30 indicators were presented at a community forum in Siskiyou County, California a significant amount of opposition was expressed regarding the indicator: births to single mothers. Given the lack of available data for many of these indicators, and the expressed opposition to some indicators, the Institute's 30 indicators were modified slightly. Table 1 presents the indicators that were used to construct the vitality index, along with information about the exact measure, source information, and the availability of the data at the county, versus sub-county level.

TABLE 1. FINAL COMMUNITY VITALITY INDICATORS

Indicator	Measure	Mean	Standard Deviation
1. Young Adults	% of population, age 25 - 34	10.28%	2.3%
Source:	US Census Bureau, census SF1 (www.census.gov)		
2. Youth	% of population, age 0 - 17	25.15%	3.1%
Source:	US Census Bureau, census SF1 (www.census.gov)		
3. Early education, 3rd grade reading (County-level data)	% met or exceeded state standards	80.80%	8.2%
Source:	OR Dept. of Education (http://www.ode.state.or.us/data/reports/toc.aspx)		
4. Early education, 3rd grade math (County-level data)	% met or exceeded state standards	74.10%	7.5%
Source:	OR Dept. of Education (http://www.ode.state.or.us/data/reports/toc.aspx)		
5. Criminal activity (County-level data)	Index Crime Rate per 100,000 population	3825.03	1237.1
Source:	OR State Police, OR Uniform Crime Reporting (http://www.oregon.gov/OSP/CJIS/annual_reports.shtml)		
6. Population Change	% Change 1990 to 2000	15.63%	17.8%
Source:	US Census Bureau, census SF1 (www.census.gov)		
7. Housing	% owners paying more than 30% of income on housing costs	23.71%	4.1%
Source:	US Census Bureau, census SF3 (www.census.gov)		
8. High School Dropout Rate (County-level data)	% of 9 - 12 graders, dropped out	5.30%	2.0%
Source:	OR Dept. of Education (http://www.ode.state.or.us/data/reports/toc.aspx)		
9. Teen Pregnancy Rate (County-level data)	Pregnancies, 10-17 year olds, per 1,000 population	9.08	4.2
Source:	OR Center for Health Statistics (http://www.dhs.state.or.us/dhs/ph/chs/data/cdb.shtml)		
10. Availability of Social Services per capita (County-level data)	# of social assistance establishments per person	.00057	.00029
Source:	US Bureau of Economic Analysis (www.bea.gov)		
11. Social Service Demand	% of population <185% of poverty	31.07%	7.3%

Indicator		Measure	Mean	Standard Deviation
	Source:	US Census Bureau, census SF3 (www.census.gov)		
12. College		% of population, Associate's deg. or more	23.65%	6.1%
	Source:	US Census Bureau, census SF3 (www.census.gov)		
13. Available Arts, Culture, Recreation per capita (County-level data)		# of Arts, Entertainment, Recreation establishments per person	.00043	.00019
	Source:	US Bureau of Economic Analysis (www.bea.gov)		
14. Voter Turnout (County-level data)		% of registered voters voting (General Elections)	80.08%	2.7%
	Source:	OR Secretary of State (http://www.sos.state.or.us/elections/other.info/stelec.htm)		
15. Health Services per capita (County-level data)		# of health care establishments per person	.00206	.00054
	Source:	US Bureau of Economic Analysis (www.bea.gov)		
16. Third Places per capita (County-level data)		# of food service & drinking places establishments per person	.00221	.0007
	Source:	US Bureau of Economic Analysis (www.bea.gov)		
17. Civil Society per capita (County-level data)		# of religious, civic, professional, similar organizations per person	.0012	.00033
	Source:	US Bureau of Economic Analysis (www.bea.gov)		
18. Public Places (County-level data)		% of land publicly owned	45.44%	20.0%
	Source:	OR Geospatial Enterprise Office (http://gis.oregon.gov/DAS/EISPD/GEO/alphalist.shtml)		
19. Water Quality (County-level data)		Miles of streams, 303d listed (Water quality limited)	802.56	554.8
	Source:	OR Geospatial Enterprise Office (http://gis.oregon.gov/DAS/EISPD/GEO/alphalist.shtml)		
20. Material Recovery Rate (County-level data)		% of total waste recovered (recycled, composted, etc.)	31.53%	10.6%
	Source:	OR Department of Environmental Quality (http://www.deq.state.or.us/lq/sw/recovery/materialrecovery.htm)		
21. Entrepreneurship (County-level data)		% of employed who are proprietors	24.65%	6.0%

Indicator		Measure	Mean	Standard Deviation
	Source:	US Bureau of Economic Analysis (www.bea.gov)		
22. Entrepreneurship (County-level data)		Average Proprietor Income	$14,255.47	$6,050.62
	Source:	US Bureau of Economic Analysis (www.bea.gov)		
23. Unemployment		% civilian labor force unemployed	7.74%	2.4%
	Source:	US Census Bureau, census SF3 (www.census.gov)		
24. Median Income		Median household income	$45,942.68	$36,385.42
	Source:	US Census Bureau, census SF3 (www.census.gov)		
25. Home Ownership		% of housing units owner occupied	72.30%	7.1%
	Source:	US Census Bureau, census SF3 (www.census.gov)		
26. Living Wage Jobs (County-level data)		Ratio of County Avg. Wage to Cost of Living: 1 parent, 1 child	1.07	0.1
	Source:	OR Housing & Community Services (http://www.oregon.gov/OHCS/docs/PovRpt/PRCountiesAll.pdf), US Bureau of Economic Analysis (www.bea.gov)		
27. Deposits in Banks (County-level data)		Deposits made, millions, per person	$ .0083	$ .0021
	Source:	FDIC (http://www2.fdic.gov/sod/SODSummary2.asp)		
28. Jobs per capita (County-level data)		# of jobs per person	.41	.06
	Source:	US Bureau of Economic Analysis (http://www.bea.gov/regional/reis/default.cfm?selTable=CA34&section=2)		
29. Employment (County-level data)		# of people employed	61,943.55	65,053.9
	Source:	OR Labor Market Information System (http://www.qualityinfo.org/olmisj/labforce)		

The 29 indicators listed in table 1 represent the best available approximations of the 30 community vitality indicators desired by the Ford Institute. Data for nine of the twenty-nine indicators came from the U.S. Census Bureau, and were available at the county, place, and census tract level. The remaining indicators were only available at the county level. Indicator data were compiled for all 86 hub-communities that have received or will receive the Ford Institute Leadership Program.

COMMUNITY VITALITY INDEXING

In order to construct the community vitality index score for each hub-community, these 29 indicator measures were combined in such a way as to represent the overall vitality of each hub, relative to all other hubs. Hubs may be above average in overall vitality or vital if they have a positive community vitality index score. Other hubs may be average in overall vitality or considered typical if their community vitality index score is close to zero, while hubs with negative community vitality index scores are considered not vital as they have below average overall vitality.

The community vitality index score is a composite of values for the 29 indicators of vitality, some of which correspond to the hub community geography and some of which correspond to the county in which the hub is located. In cases where hubs cross county lines, the indicator values for the two counties were averaged and assigned to that hub community. Each indicator value was converted from counts, rates, or dollar figures to standard deviation units, called Z-scores, in order to facilitate the combination of indicators with different measurement units. Transforming indicator values into Z-scores converts the statistic from a raw value to a value relative to an average. The average is set to zero, values below the average get a negative Z-score, and values above the average get a positive Z-score. For example, the average median household income for all 86 hub communities was $45,942.68 in 2000 and the standard deviation was $36,385.42. To standardize the indicator, the mean and the standard deviation were used to calculate a Z-score of median household income for each hub. The mean was set to equal zero and the standard deviation was set to equal one. If a hub community's median household income was $100,000, then the community would receive a Z-score greater than 1.0 as $100,000 is more than one standard deviation unit above the average for all hubs. Specifically, this particular hub

community would be assigned a Z-score of 1.2. If a hub community's median household income was less than $9,557 (the average median income minus the standard deviation) the community would receive a Z-score less than -1.0. The median household income indicator was thus transformed from a dollar value to a standard deviation unit value for each hub indicating if it was above average, below average, or about average for all 86 hubs. This standardization procedure was done to all indicators and allows variables of different measurement units to be combined with one another in the overall vitality score.

Some Z-scores were further manipulated to make their sign of negative or positive indicative of a positive or negative outcome. For example, hubs with below average unemployment rates would receive a negative Z-score using the basic Z-score calculation. Being below average in unemployment is actually a good thing, however, so all unemployment rate Z-scores were multiplied by -1 to switch their sign. When added with Z-scores for the other indicators, the overall vitality score will thus appropriately represent positive and negative outcomes for communities. This sign transformation was carried out for the teen pregnancy rate, the crime rate, high school dropout, housing cost burden, percent of population 185% of poverty, 303d listed streams, and the unemployment rate.

To calculate the total community vitality index score for each hub, individual item Z-scores were summed across each of the 29 indicators. The community vitality index score for a given hub community is thus the sum of all of its indicators' relationships to the averages. Some individual item Z-scores for a hub community may have been negative (below average), while others may have been positive (above average) or very close to zero (average). If the number and size of positive Z-scores was greater than the number and size of negative Z-scores, then the community would have an *overall* positive vitality score. Some hubs may have a positive overall vitality score because very few indicators were negative while other hubs may have a positive overall vitality score despite being below average for many indicators (negative Z-scores) because the magnitude of the community's positive Z-scores in a few indicators was large enough to offset the negative values of other indicators. As with any composite measure this nuance about how a community measures up with respect to particular components of vitality is lost because of the aggregation of many statistics into one summary measure.

ANALYSIS

The analysis of community vitality involved the utilization of exploratory descriptive methods including Geographic Information System (GIS) mapping, correlation analysis, and Ordinary Least Squares (OLS) regression analysis.

Geographic Information System (GIS) mapping was used to visually portray the geographic distribution of community vitality across hub-communities. The method involves linking hub-community geographic units with their corresponding community vitality index scores, assigning color codes to ranges of score values, and displaying those colors in a map. By mapping community vitality index scores it is possible to see if certain areas of the state tend to be more or less vital than others, or if the spatial distribution of vitality appears more random.

Correlation and regression analyses were conducted on the community vitality index measure components in order to understand the internal associations among indicators and to the vitality score itself. The correlation analysis relies on information about the variance (or distributional spread) for each of two variables, along with the covariance between the two variables to summarize the linear relationship between the two variables. While correlation analysis can reveal the direction of a relationship between two variables it assumes that the relationship is linear and direct. This assumption can be inaccurate, however, thus Ordinary Least Squares (OLS) regression methods are used to better estimate the relationship between variables. OLS regression examines the extent to which a unit increase in an independent variable, like pregnancy rate, is associated with the outcome variable, like overall vitality, net of other factors that vary across communities. OLS has the power to hold certain factors that vary across hub-communities constant, in order to isolate a "more pure" relationship between an independent variable and a key outcome variable. OLS is useful and necessary if multiple independent variables are, to some extent, correlated with each other.

RESULTS

According to the 2000 data on community vitality among the 86 hub communities, the vitality index was, on average, -0.9 The hub-community that was highest in overall vitality was Wallowa County (at 13.93) and the hub-community that was the least vital overall was Coastal Douglas (at -16.64). For those two communities we can examine sub-components of the vitality index to see how they measure up in the different dimensions of vitality. Table 2 displays those results for these most extreme hub-

communities along with two communities that were average in their overall vitality index (close to zero) in 2000.

TABLE 2. 2000 COMMUNITY VITALITY AND COMPONENT INDICES

Hub-community	Overall Vitality Index Score	Social Index Score	Environment Index Score	Capacity Index Score	Economy Index Score
Coastal Douglas	-16.64	-8.64	-3.25	-1.57	-3.04
Stayton/Sublimity/Scio	-0.09	-3.58	0.05	-0.14	3.03
Baker County	0.40	1.91	-1.61	1.65	-0.67
Wallowa County	13.93	8.02	-0.27	6.25	0.56

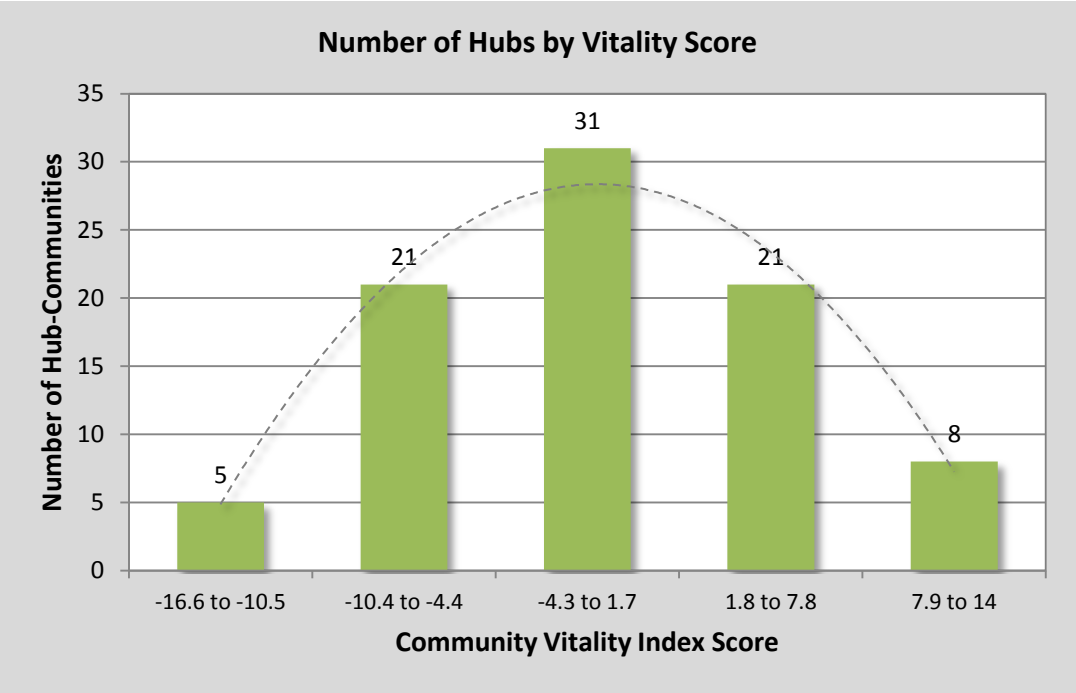
By examining the social, economic, environmental, and capacity index scores (all of which make up the total vitality score) we can see which dimensions of vitality are particularly important for determining the overall vitality in each of these hub-communities. As table 2 illustrates, in 2000, the Coastal Douglas hub fared so poorly in terms of overall community vitality largely because it had very low social outcomes (far below average for all of the hubs), and moderately low environmental and economic outcomes. Also of note, is the fact that all four dimensions of vitality were negative for this hub in 2000. By contrast, table 2 reveals that Wallowa County's high overall vitality is due in large part to its very high social and capacity outcomes, as its environmental and economic outcomes were very close to average for all of the hubs. For the two hub-communities in the middle of the pack (Stayton/Sublimity/Scio and Baker County) the story of strength and weakness differs as well. In Stayton/Sublimity/Scio, their near average overall vitality was due to the fact that their poor social outcomes were almost completely offset by their positive economic outcomes. In Baker County, however, we see that its overall vitality is so close to average because each of the four index components are close to zero. As this brief examination illustrates, relying on an overall vitality index can obscure the specifics regarding vitality in an area. As a summary statistic, however, it allows us to quickly identify high and low vitality areas, and summarize the overall vitality of the state.

The previous discussion touched on issues related to the spread of the community vitality index data, the minimum and maximum values, but also revealed issues related to sub-components of vitality being obscured by the overall summary measure. In addition to understanding the data in these terms it is important to understand the distribution of vitality data, in a statistical sense and in ways we suspect

might be related to that overall vitality. First we will examine the statistical distribution of the data to see if the data are skewed toward one end or another of vitality.

Figure 2 presents the number of hub-communities that fall into each of five, equal-interval, community vitality score categories. This figure illustrates that the data are normally distributed, a requirement for some statistical analyses.

FIGURE 2. DISTRIBUTION OF COMMUNITY VITALITY SCORES



It is important to note, however, that the number of communities with negative vitality scores is greater than the number of hubs with positive vitality scores. The median value is -2.0, meaning that half of the hubs have vitality scores less than -2 and half have vitality scores greater than -2. Fifty-one of the 86 hubs, or 59% of all hubs, had a negative overall vitality score in 2000.

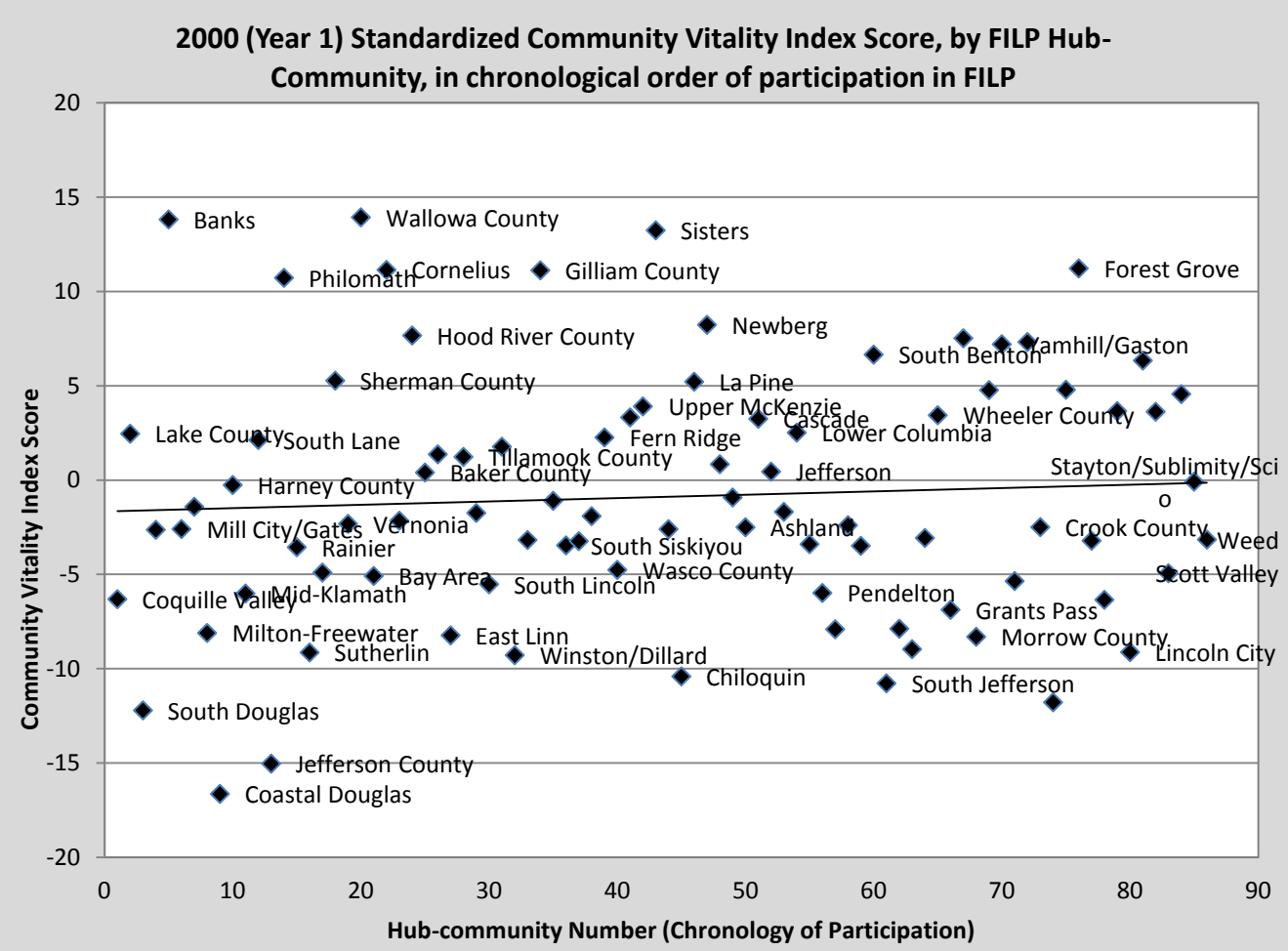
Now that we have a handle on the skew of the data and its spread we can turn our attention to examining the distribution of vitality across other variables like order of Leadership Program participation and space.

According to the director of the Ford Institute for Community Building, the Ford Institute Leadership Program operates in communities that demonstrate a certain level of "readiness." "Community readiness" is determined by Institute staff and the key Leadership Program contractor, Rural Development Initiatives, Inc. It is a subjective assessment of the extent to which

> "the community is already demonstrating some success in working together for positive change, that there is a diverse group of leaders who will help us bring the program to the community, the community is not suffering from major internal crisis such as a recall, and the community would benefit from additional capacity building" (Gallagher, 2008; personal communication).

The director has also clarified that at the onset of the Leadership Program in 2003 they chose to implement the program in communities that were very "ready" and that as time progressed the Program has been offered to communities that were less "ready" than the first hubs. Though readiness is a subjective concept, and it pertains largely to community capacity-like ideas (leadership and collaboration), we might expect community readiness to be associated with community vitality. Also, if hub-community participation in the Leadership Program actually progressed in this "more ready" to "less ready" fashion over time, then we would anticipate a relationship between order of program participation and vitality. Charting community vitality index score by hub-community number (which indicates order of participation in the Leadership Program) is one way to explore the potential of this relationship. Figure 3 depicts the charted relationship between vitality and order of participation in the Leadership Program.

FIGURE 3. SCATTERPLOT OF COMMUNITY VITALITY INDEX SCORE BY HUB-COMMUNITY

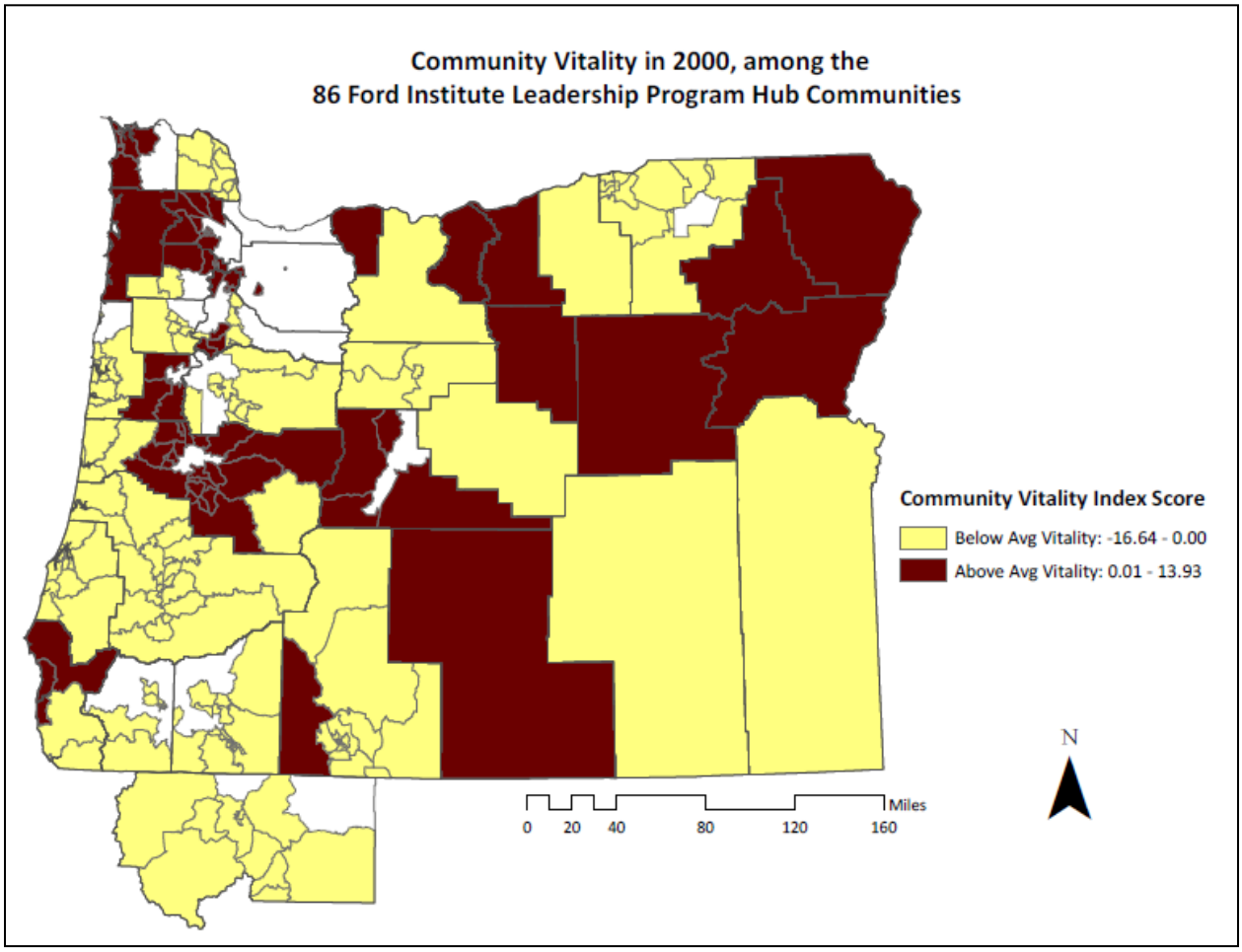


According to the data presented in Figure 3, there does not appear to be a strong relationship between community vitality and order of participation in the Leadership Program. The upward slope of the trend-line is very shallow, which suggests there is no significant relationship between the two variables. It does appear, however, that earlier communities (on the left side of the horizontal axis) were more diverse in their vitality than later hub-communities. The chart also gives us a sense of the vitality scores of various hub-communities. Though not all hub names are provided, all dots on the chart represent the 86 hub-communities. See Appendix 1: Community Vitality by Hub-community for a complete listing of vitality scores by hub-community.

Next, we turn to an examination of the spatial distribution of community vitality, by hub in 2000. By mapping the vitality of all 86 hubs in 2000 we can see if there appears to be any geographic clustering of vitality. Figures 4 and 5 present those data, categorized in two different ways. Figure 4 maps

communities by dividing vitality scores into two categories: below average vitality (less than 0.01) and above average vitality. These categories could also be considered, vital or not vital. Figure 5 maps communities by separating vitality scores into four categories: far below average vitality, below average vitality, near average vitality, and above average vitality. These four categories represent the quartiles into which equal quarters of the hubs fall.

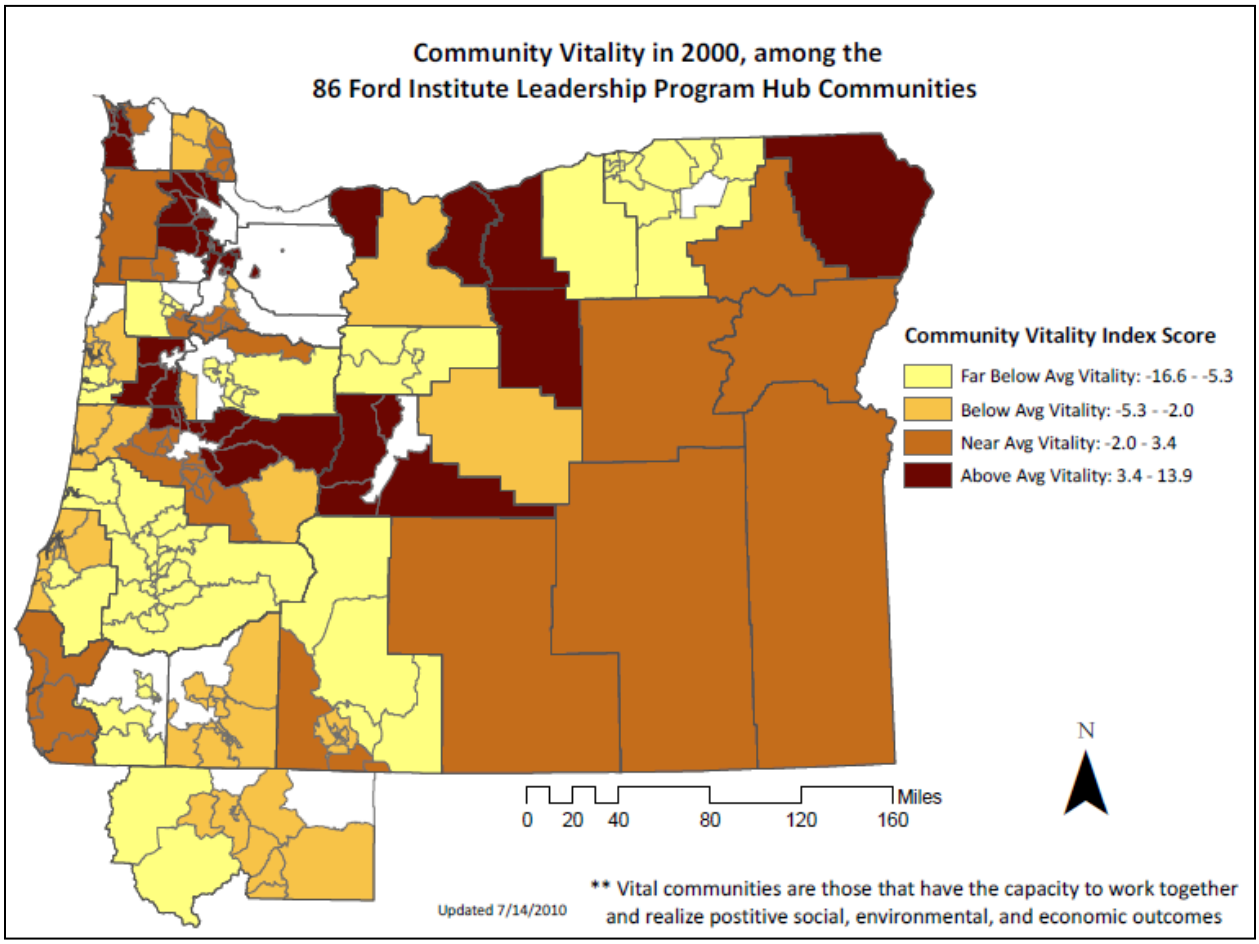
FIGURE 4



Examining Figure 4 first, in which communities are categorized as either vital or not vital, a few trends are apparent. First, by and large, vital hubs are close to the major urban areas, or at least easily accessible to Portland, Salem, Corvallis, Eugene, and Bend. Proximity to those urban areas does not guarantee vitality, however, as there are hubs close to these cities that are below average in vitality. That may be due to the strong effect the overall county's wellbeing has on depressing any positive outcomes hubs that are close to urban areas could have, because they are across the county lines. A few

exceptions to the notion that proximity to urban areas has anything to do with vitality are apparent in Keno, North Curry County, Lake County, Sherman County, Gilliam County, Wheeler County, Wallowa County, Union County, Grant County, and Baker County hubs. These hubs are all isolated rural areas, so the fact that they are above average in vitality suggests there may be factors that offset the potentially negative effect isolation could have on vitality in the community. Of note is that Morrow and Umatilla counties are not vital, despite their being surrounded by vital counties. Further analysis will be done to try to unearth the factors that may explain these differences in vitality. In the meantime, unfortunately, this map does not provide much insight into the nuance of vitality across the state, as it characterizes hubs as vital or not. Figure 5 is a map that does reveal some nuance, as hubs are characterized as belonging to one of four different vitality categories.

FIGURE 5



With four categories of vitality, instead of two, we can see that there were quite a few hubs that were categorized as vital in the first map that were actually only near average in their vitality in 2000. With the map in Figure 5 we can now identify the hubs that stand out as highly vital, and see if there are any spatial effects among this group. Again, we note that most of the highly vital hubs tend to be close to urban areas, or often visited by urban Oregonians (Seaside/Cannon Beach and Hood River County), but interestingly, according to this map, hubs close to Salem do not make the high vitality cut. In addition to the areas close to Portland, Corvallis, Eugene, and Bend, some of the isolated, rural counties of the state continue to stand out in their vitality. In particular Sherman, Gilliam, Wheeler, and Wallowa counties all had above average vitality scores in 2000.

These maps suggest there is some regional dimension of vitality, with low vitality areas concentrating in the southwestern part of Oregon, Siskiyou County, CA, the western portion of northeast Oregon, and in the northern portion of central Oregon. An analysis of spatial autocorrelation would give us the ability to confirm or reject that hypothesis, but at this point such an analysis is outside the scope of the research project. Later, correlation and Ordinary Least Squares regression techniques will be used to unearth any other factors of these communities that are associated with greater or lesser vitality. Before we do so, it is important to understand the internal dynamics of our vitality index. Such an understanding can reveal insights to the potential impact of the Leadership Program, as well as a focus for future statistical analyses.

In order to examine the internal dynamics of the community vitality index we pose the following question: to what extent is each indicator responsible for explaining variation in the overall vitality score? Each of the 29 indicators has its own variation across the state, and some indicators vary across communities to a large degree while others vary much less. In addition, there may be some indicators that are highly correlated with one another, thus when they are combined into the overall vitality score they interact with one another and influence greatly the overall level of vitality across hub communities. In order to reveal the extent to which each indicator contributes to the overall vitality of hubs, we conducted a Pearson correlation analysis on the hub-level data. The results are displayed in Table 3.

TABLE 3 CORRELATION OF VITALITY INDICATORS WITH OVERALL VITALITY SCORE

	Correlation with 2000 Community Vitality Index Score	
% of population, age 0 - 17	0.11	
% of population, age 25 - 34	0.06	
% met or exceeded state reading standards	0.57	*
% met or exceeded state math standards	0.46	*
Index Crime Rate per 100,000 population	0.00	
% Population Change	-0.05	
% owners paying more than 30% of income on housing costs	0.09	
% of 9 - 12 graders, dropped out	-0.40	*
Pregnancies, 10-17 year olds, per 1,000 population	-0.55	*
# of social assistance establishments per capita	0.36	*
% of population <185% of poverty	-0.55	*
% of population, Associate's deg. or more	0.51	*
# of Arts, Entertainment, Recreation establishments per capita	0.27	
% of land publicly owned	-0.07	
Miles of streams, 303d listed (Water quality limited)	-0.25	
% of total waste recovered (recycled, composted, etc.)	0.32	*
% of registered voters voting (General Elections)	0.58	*
# of health care establishments per capita	0.07	
# of food service & drinking places establishments per capita	0.19	
# of religious, civic, professional, similar organizations per capita	0.15	
% of employed who are proprietors	0.08	
Average Proprietor Income	0.00	
% civilian labor force unemployed	-0.50	*
Median household income	0.24	
% of housing units owner occupied	0.24	
Ratio of County Avg. Wage to Cost of Living: 1 parent, 1 child	0.17	
Deposits made, millions, per capita	0.08	
# of jobs per capita	0.44	*
# of people employed	0.42	*

* indicates that the variable is correlated at .3 or greater

Table 3 presents the results of the analysis correlating all 29 indicators with the overall vitality score of the 86 hub communities. As the table reveals, there were two indicators (crime rate and average proprietor income) that were not correlated with overall vitality at all (correlation equal to 0.0). These factors, though included in the overall vitality score, did not explain any of the variation in vitality across hubs. Most other factors were only slightly correlated with overall vitality, suggesting that the pattern of

their variation was more arbitrary than the variation in overall vitality observed in the hubs in 2000. There were twelve indicators that were somewhat to moderately correlated with the overall vitality score (correlation of .3 or higher). These are the variables that explain quite a bit of the variation in vitality across hubs. In other words, it is along these dimensions that communities' vitality is likely to be highly dependent. At this point, we cannot be sure that all 12 of these indicators are associated with the vitality of hubs, because it is possible that some of these indicators are correlated with each other, and one explains the variation in vitality to a greater extent than the other. OLS regression will allow us to parse out the most significant variables and eliminate those that are highly correlated with each other.

In order to determine which vitality indicators are most strongly associated with overall vitality a step-wise regression technique was used to settle on a statistical model that efficiently explains the greatest amount of variation in overall vitality. To this end, the initial OLS model regressed community vitality on all twelve of the highly correlated variables. This was a model that explained roughly three quarters of the overall variation in community vitality across hubs (R^2 = .7577). In this model, only five out of the twelve indicators were statistically significant at $p < .05$: high school dropout rate, social assistance establishments per capita, percent with an Associate's degree or higher, voter turnout, and jobs per capita.

If we were to rely on this full model to help us understand which components of vitality explain the most variation we might be led astray, because if some variables in the model are highly correlated with one another they cancel each other out and are thus statistically insignificant. This is referred to as a problem of multi-collinearity, and should be avoided in regression model estimation. To reduce the potential for multi-collinearity and to reach greater parsimony in our model, three variables were dropped from the equation, namely; math achievement, unemployment rate, and number of people employed. These were the insignificant variables in the first model. The second model explained just over three quarters of the variation in community vitality and showed that seven variables were statistically significant at $p < .05$, compared to the initial model's five. Greater parsimony may be possible, however, so in the final model an additional statistically insignificant variable was dropped from the equation: teen pregnancy rate.

The final model thus omitted four variables from the initial model: math achievement, teen pregnancy rate, unemployment rate, and number of people employed. This third model explained three-quarters

of the variation in overall community vitality (R^2 = .7540), thus still represents a very good fit to the data. And in this model all eight of the included variables were significantly associated with overall community vitality at $p < .05$: percent of 3rd graders meeting reading requirements, high school dropout rate, social services per capita, percent 185% of the poverty line, percent with an Associate's degree or higher, material recovery rate, voter turnout, and jobs per capita. Table 4 presents the full results of this third OLS regression model.

TABLE 4 – OLS REGRESSION RESULTS ON 2000 COMMUNITY VITALITY INDEX SCORE

	Coefficient	Std. Err	t	P>t	Beta
% 3rd graders met or exceeded state reading standards	24.40	5.30	4.6	0.000	0.30
High School Dropout Rate	-93.69	23.25	-4.03	0.000	-0.28
# of social assistance establishments per capita	3940.67	1597.97	2.47	0.016	0.17
% individuals with income less than 185% of the poverty line	-19.39	6.68	-2.9	0.005	-0.21
% of adults with an Associate's degree	23.59	6.95	3.39	0.001	0.22
Material recovery rate	12.27	4.18	2.93	0.004	0.20
Voter Turnout	42.31	15.94	2.65	0.010	0.17
Jobs per capita	28.18	6.62	4.25	0.000	0.27
_cons	-66.71	13.98	-4.77	0.000	.

In Table 4 the estimated size and direction of association between these eight variables and overall community vitality in 2000 is reflected in the coefficients. From the coefficient column it looks as though the number of social assistance establishments has a very large effect on community vitality at 3940.67 (for a unit increase in the number of social assistance establishments a community's vitality increases 3,940 units). This effect size is an artifact of the measure itself, as the number of social assistance establishments per capita has a much larger minimum and maximum value than the other variables. To standardize all the measures we rely on the Beta value of the coefficients (represented in the Beta column of the table). This standardized the coefficients into standard deviation units so we can see what effect a standard deviation unit increase in an independent variable has on the dependent variable (community vitality). Using the beta values we see that for a one standard deviation unit increase in the percent of 3rd graders who meet or exceed state reading requirements, the overall community vitality in a hub increases by .30 units. Conversely, for a one standard deviation unit increase in the high school dropout rate the vitality of the hub drops by .28 units. The next strongest variable is jobs per capita,

followed by educational attainment, percent of population with income less than 185% of poverty, material recovery rate, social assistance establishments per capita, and voter turnout.

These results point to the importance of eight vitality indicators in explaining the variation in community vitality observed across hub communities. This is not to say that the other 21 vitality indicators are insignificant; by definition they are significant to the concept of vitality, these other variables simply did not explain much of the variation in vitality in 2000. They were distributed across hubs in a manner that was either more random than vitality or in a manner that is not related to vitality.

In addition to examining the ways in which each indicator of vitality explains the variation in overall vitality across hubs, an examination of the ways in which the indicators are related to one another provides further insight into the internal dynamics of the index. A Pearson correlation matrix was generated for the 29 indicators of vitality to reveal the relationships among them. The correlations could not be run on the entire hub database, however, because there were over 65 instances of multiple hub communities being located in the same county. If the analysis included these hubs, those counties would be represented more than once in the dataset. This would erroneously weight the statistical relationships toward those counties. In order to eliminate this potential, repeated counties were dropped from the dataset. This left 36 counties in the dataset, but because no data about living wage jobs and miles of 303d listed stream reaches was available for Siskiyou County, California the county was omitted from the correlation analysis.[1] The correlation was run on all of the variables for which county-level data only were available. A second correlation matrix was run on the full hub community database for the nine indicators that were collected by the U.S. Census Bureau. These indicator values correspond to each hub community's actual boundaries, therefore do not present the same problem as the county-level data. Tables 5 and 6 contain the correlation matrices for the county-level variables and table 7 presents the correlation matrix for the Census Bureau data.

[1] A supplemental analysis revealed that omitting Siskiyou County does not affect the results of the correlation matrix very much at all. In this supplemental analysis, the correlation omitted the variables for which there was no data for Siskiyou (living wage jobs and the number of 303d listed streams); the magnitude and direction of the remaining correlation coefficients was very similar to the coefficients in the matrix that excluded Siskiyou County.

TABLE 5

	Index Crime Rate per 100,000 population	Pregnancies, 10-17 year olds, per 1,000 population	% of registered voters voting (General Elections)	# of jobs per capita	# of people employed	# of social assistance establishments per capita	# of Arts, Entertainment, Recreation establishments per capita	# of health care establishments per capita	# of food service & drinking places establishments per capita
Index Crime Rate per 100,000 population	1								
Pregnancies, 10-17 year olds, per 1,000 population	0.3513	1							
% of registered voters voting (General Elections)	-0.308	-0.5413	1						
# of jobs per capita	0.3971	0.1573	0.0949	1					
# of people employed	0.4985	0.0208	-0.1311	0.443	1				
# of social assistance establishments per capita	-0.4061	-0.492	0.4397	0.0589	-0.2671	1			
# of Arts, Entertainment, Recreation establishments per capita	-0.3121	-0.351	0.3501	-0.0607	-0.1889	0.3969	1		
# of health care establishments per capita	0.1961	0.1589	-0.1316	0.4642	0.2157	-0.2439	-0.0203	1	
# of food service & drinking places establishments per capita	-0.2222	-0.525	0.4148	-0.0234	-0.3315	0.6751	0.4887	-0.0612	1
# of religious, civic, professional, similar organizations per capita	-0.1191	-0.2134	0.3628	0.3146	-0.3119	0.3086	0.1304	0.4278	0.4162
% of employed who are proprietors	-0.6668	-0.6338	0.4177	-0.5844	-0.5025	0.4624	0.5095	-0.3066	0.6038
Average Proprietor Income	0.5613	0.4463	-0.6058	0.127	0.4372	-0.7491	-0.3208	0.285	-0.5229
% of total waste recovered (recycled, composted, etc.)	0.511	0.1469	-0.1214	0.1642	0.7047	-0.4722	-0.3304	0.2919	-0.4409
Ratio of County Avg. Wage to Cost of Living: 1 parent, 1 child	0.1851	0.1062	-0.0819	0.4398	0.5669	-0.0666	-0.5293	-0.0125	-0.329
Deposits made, millions, per capita	-0.1379	0.0907	0.1501	0.1845	-0.1944	0.0145	0.3268	0.5346	0.1727
% met or exceeded state reading standards	-0.4709	-0.5918	0.3696	-0.1675	0.0054	0.3586	0.585	-0.1846	0.2844
% met or exceeded state math standards	-0.3037	-0.5039	0.1863	-0.3342	0.0626	0.1312	0.1249	-0.1107	0.2398
% of 9 - 12 graders, dropped out	0.636	0.5817	-0.4256	0.2046	0.319	-0.5484	-0.1881	0.3348	-0.3723
Miles of streams, 303d listed (Water quality limited)	0.1391	0.1018	-0.1262	0.0084	0.197	-0.2872	-0.1218	0.2805	-0.1479
% of land publicly owned	-0.0144	0.2416	-0.0962	0.1113	-0.1074	-0.2547	0.1145	0.3939	0.0261

Yellow highlight indicates correlation value of .5 or greater
Correlation values range from -1.0 to 1.0

TABLE 6

	# of religious, civic, professional, similar organizations per capita	% of employed who are proprietors	Average Proprietor Income	% of total waste recovered (recycled, composted, etc.)	Ratio of County Avg. Wage to Cost of Living: 1 parent, 1 child	Deposits made, millions, per capita	% met or exceeded state reading standards	% met or exceeded state math standards	% of 9 - 12 graders, dropped out	Miles of streams, 303d listed (Water quality limited)	% of land publicly owned
# of religious, civic, professional, similar organizations per capita	1										
% of employed who are proprietors	0.1389	1									
Average Proprietor Income	-0.314	-0.5137	1								
% of total waste recovered (recycled, composted, etc.)	-0.3193	-0.5016	0.4752	1							
Ratio of County Avg. Wage to Cost of Living: 1 parent, 1 child	-0.1083	-0.4481	0.0328	0.2505	1						
Deposits made, millions, per capita	0.4374	0.1481	0.0305	-0.1646	-0.2942	1					
% met or exceeded state reading standards	-0.0438	0.5959	-0.3515	-0.1629	-0.2633	0.0798	1				
% met or exceeded state math standards	-0.1329	0.5468	-0.0828	-0.0526	-0.1554	-0.1547	0.6441	1			
% of 9 - 12 graders, dropped out	-0.2119	-0.6661	0.5636	0.4809	0.0057	-0.0876	-0.5191	-0.3996	1		
Miles of streams, 303d listed (Water quality limited)	-0.0172	-0.0478	0.1577	0.0836	0.0367	0.1969	0.0019	0.1873	0.0624	1	
% of land publicly owned	0.1033	0.0897	0.1853	-0.0869	-0.2956	0.5074	0.0927	0.1297	0.0359	0.4887	1

Yellow highlight indicates correlation value of .5 or greater
Correlation values range from -1.0 to 1.0

TABLE 7

	% of population, age 0 - 17	% of population, age 25 - 34	% Population Change	% owners paying more than 30% of income on housing costs	% of population <185% of poverty	% of population, Associate's deg. or more	% civilian labor force unemployed	Median household income	% of housing units owner occupied
% of population, age 0 - 17	1								
% of population, age 25 - 34	0.668	1							
% Population Change	0.1231	0.2918	1						
% owners paying more than 30% of income on housing costs	0.0542	0.1394	0.3925	1					
% of population <185% of poverty	-0.1306	-0.1852	0.0043	-0.1391	1				
% of population, Associate's deg. or more	-0.2012	-0.1846	-0.1138	0.0424	-0.4313	1			
% civilian labor force unemployed	-0.0945	-0.212	0.0398	-0.0829	0.7227	-0.3961	1		
Median household income	0.2089	0.1984	0.0497	0.1871	-0.2249	0.1064	-0.2115	1	
% of housing units owner occupied	-0.0359	-0.2945	-0.1014	-0.1029	-0.498	0.0126	-0.2412	0.089	1

Yellow highlight indicates correlation value of .5 or greater
Correlation values range from -1.0 to 1.0

The correlation matrices in tables 5 and 6 reveal some interesting relationships among the 20 county-level indicators. First, we note that many of the indicators are at least slightly correlated with each other at .2 or -.2 and higher. Next, the preponderance of indicators that are correlated with each other at .5 or -.5 or greater, reveals that a large number of variables are moderately to highly correlated with one another. Some of those relationships will be discussed shortly. Finally, the matrices quickly reveal that only a few indicators are not highly correlated with many other indicators at all. The miles of stream 303d listed and the number of religious, civic, professional, and similar organizations per capita were not highly correlated with any other indicators; and % of land publicly owned, # of health care establishments per capita, and # of jobs per capita were only moderately to highly correlated with one other indicator.

Turning now to the instances in which the indicators were moderately to highly correlated with one another, tables 5 and 6 show that many associations exist among the indicators. A few are particularly notable for their magnitude or direction of association. The crime rate in these counties, for instance is negatively correlated with % of employed who are proprietors, but positively with average proprietor income. So in counties with high percentages of self-employed people the crime rate tends to be lower, but in those counties where self-employed people have high incomes the crime rate tends to be high. This curious set of relationships is likely explained, to some extent, by the influence of population size. It is well-established that as population increases crime rates tend to as well, and population size may also share some positive association with proprietor income in a county. Thus the apparently linear relationship we are observing in the correlation between proprietor income and crime is not a linear one at all; it is mediated by a variable unaccounted for in the correlation, namely population. This example is a good one to illustrate the potential pitfalls associated with correlation analysis.

The prevalence of the self-employed in the hub counties is also notable as it is highly associated with a large number of other vitality indicators. The percentage of workers who are sole-proprietors of businesses is moderately to highly correlated with eleven of the twenty other county-level indicators. It is positively associated with: the number of arts, entertainment, and recreation establishments per capita as well as the number of "third places" (food service & drinking places establishments per capita), but also early education outcomes (% of 3rd graders that met or exceeded state reading standards and % of 3rd graders that met or exceeded state math standards). Thus in counties with large numbers of sole proprietors we tend to see encouraging educational outcomes among youth and a good number of

physical spaces where community residents can come together to get to know one another and enjoy the arts and culture. Perhaps these factors exert a positive influence on the prevalence of sole proprietors, or having a large number of sole proprietors encourages these outcomes – the correlation analysis cannot reveal the causal direction of these relationships.

The percentage of workers who are sole proprietors is negatively associated with the following variables: crime, teen pregnancy, the number of jobs, the number of people who are employed, average proprietor income, material recovery rate, and high school dropout. Thus in counties with high rates of sole proprietorship there tends to be lower rates of crime, teen pregnancy, high school dropout, and recycling, but also these counties tend to have fewer jobs per capita, fewer people who are employed, and lower average incomes for proprietors. Most of these are desirable attributes of communities, but others like lower average proprietor income and lower employment are not so desirable. The causal direction of these relationships is unclear, but it is likely that in counties with poor employment prospects, many individuals are driven to become sole proprietors in circumstances that are less than ideal for making a living. Clearly, the correlation analysis shows that the prevalence of individuals who own and operate their own businesses is very important to the vitality of rural communities, but their prevalence does not automatically indicate positive outcomes in all aspects of vitality.

Table 7 presents the results of the correlation among the indicators that were available at the hub community level (not simply county). In this matrix all 86 hubs are represented and we note very few moderate to high correlations among the nine variables. One exception is that the percent of population in the two age groups are strongly and positively associated with one another. This association is not surprising as people age 25 to 34 tend to be the parents of children age 0 to 10 (children included in the 0-17 age group). The only other strong correlation among these variables exists between the percentage of people with income 185% or less of the poverty line (these are people who are income-eligible for Supplemental Nutrition Assistance Program [SNAP, formerly known as Food Stamps] and other low-income programs) and unemployment. Here again, the association is not surprising as those who are unemployed do not receive an income through paid work and therefore easily approach poverty. Unfortunately, due to the problem clarified before regarding the overrepresentation of many counties in the hub community level data it was not possible to explore the associations between these Census Bureau derived indicators and the other 20 indicators. It is highly likely that they are associated in some very important ways. Perhaps future analyses can seek to explore those relationships.

The county-level and hub-level correlation matrices have revealed that there are many indicators of vitality that are associated with each other. More often than not, the direction of these relationships is beneficial: higher prevalence of a desirable indicator is associated with a greater prevalence of another desirable indicator or a lesser prevalence of an undesirable indicator. In some cases, however, the direction of these relationships is counter-productive for vitality, as greater levels of a desirable indicator may be associated with a lower level of an indicator we wish to see more of or an increased level of in an indicator we wish there was less of.

The correlation matrices also reveal that affecting certain indicators may produce ripple effects in the community. This observation suggests the importance of strategic development efforts. Targeting efforts on early education outcomes, high school dropout, or sole proprietorship may lead to positive outcomes in other areas of the community, benefiting overall community vitality greatly. But also, we have hypothesized in this analysis that in order to affect early education outcomes, high school dropout, or sole proprietorship we may need to cultivate other aspects of the community like arts and cultural opportunities, places for residents to get together, and a reduction in teen pregnancy. These observations can help communities and external investors focus their efforts on things in the community that are going to yield real increases to the vitality of the place.

DISCUSSION

By constructing a composite index of community vitality it is possible to quickly and easily gauge the wellbeing of rural communities throughout the Ford Institute for Community Building's service area. Such an index allows us to identify the hub communities that are particularly low in vitality and those that are notably high in vitality. The index that was constructed relied on the Ford Institute's designation of 30 attributes of communities as important and desirable to them. Though we found that the vitality index has some attractive properties, namely that it is normally distributed and fairly evenly splits the service area into high and low vitality categories, because the index contains so many indicators, some of the nuanced differences and similarities between hubs is lost. Some high vitality hubs are so vital because they are highly vital in all four components of vitality, but others are so vital because they are highly vital in only a few areas. These nuances are inevitably obscured when relying on a composite index, but should be appreciated by those who use the index.

The analysis revealed that in 2000, hub communities throughout the Ford Institute for Community Building's service area varied in their levels of vitality. This variation did appear somewhat regional, perhaps due to spatial spill-over effects: high vitality hubs influencing the vitality of their neighboring hubs; or perhaps due to clusters of hubs sharing similar economic, social, political, environmental, or other attributes. Future analysis should be done to identify the factors that are associated with greater or lesser rural vitality among these hubs, and if spatial location does have some influence.

The analysis also sought to examine the attributes of the rural vitality index to understand its internal dynamics. To that end we examined the components of the index in such a way to reveal the extent to which they explain the variation in vitality overall across hub-communities. Such an analysis can reveal the aspects of vitality that in these hubs, in 2000, explained the variation in vitality index values across communities and should be more deeply examined for their potential to help the vitality of communities improve in the future. Indeed, this analysis found that the percent of 3rd graders who meet or exceed state reading requirements, high school dropout rate, jobs per capita, percent of adults with an Associate's degree or higher, percent of population with income less than 185% of poverty, material recovery rate, social assistance establishments per capita, and voter turnout were the most important components of the community vitality index in 2000. Thus if communities had large positive levels of these attributes, they likely had strong positive overall vitality.

By correlating the indicators of vitality with each other, this analysis was also able to uncover the ways in which the indicators are associated. Such information can help the Ford Institute, the evaluation team, and other rural development practitioners understand the potential ripple effects a change in an indicator will have in the community as well as any indicators that need to be addressed simultaneously in order to realize change in a targeted indicator. The findings suggest that entrepreneurship (the percent of the employed who are sole proprietors and the average income of sole proprietors), teen pregnancy, high school dropout, and early education outcomes are all highly associated with many other aspects of vitality. Targeting these indicators and realizing change in them will likely yield or require real changes in many other indicators.

CONCLUSION

The ultimate goal of the Ford Institute Leadership Program is to increase the vitality of rural communities in Oregon and Siskiyou County, California. In order to determine if the program has had this effect on communities it is necessary to clearly define vitality in a measurable manner. Once the concept has been operationalized, or defined in a measureable manner, the vitality of hubs can be examined. To this end, a framework of vitality was developed that reflects the prevailing discourse on development and the realities of life in rural communities. Within that framework, the Ford Institute for Community Building developed its own set of indicators that reflect the values and beliefs of its staff. This value-driven approach is not inappropriate; it simply must be recognized as such. Perhaps as more research is done on community well-being, prosperity, sustainability, and quality of life consensus will be reached regarding the best definition of these ideas, but until then values and beliefs will dominate any conceptualizations of vitality we create.

The community vitality index that was constructed and analyzed revealed that certain hub communities are more vital than others. If the Ford Family Foundation or any other development initiative intends to have a marked impact on the vitality of rural areas it may be wise to explore more deeply the relationships between a few key elements of the community and vitality. According to the analysis, the percent of 3rd graders who meet or exceed state reading requirements, high school dropout rate, jobs per capita, percent of adults with an Associate's degree or higher, percent of population with income less than 185% of poverty, material recovery rate, social assistance establishments per capita, and voter turnout explain much of the variation in vitality overall in 2000. In addition, entrepreneurship, teen pregnancy, high school dropout, and early education outcomes tend to be associated with the greatest number of other indicators. These are the factors that may produce ripple effects in the community if they are changed. This analysis provides some initial insight into the vitality index and variables that are associated with it. With deeper analysis it may be possible to isolate causal relationships to determine if improvements in these and other key indicators will yield lasting improvements in the vitality of rural communities.

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APPENDIX 1: COMMUNITY VITALITY BY HUB-COMMUNITY

hub#	hub_name	CVIndex00	CVISocial00	CVIEnviro00	CVICapacity00	CVIEconomy00
9	Coastal Douglas	-16.64	-8.64	-3.25	-1.57	-3.04
13	Jefferson County	-15.03	-4.05	0.86	-5.12	-5.76
3	South Douglas	-12.21	-5.95	-3.25	-1.57	-1.30
75	Drain/Yoncalla/Elkton	-11.79	-6.81	-3.25	-1.57	-0.02
62	South Jefferson	-10.79	-3.85	0.86	-5.12	-1.72
46	Chiloquin	-10.41	-6.28	-0.85	-1.13	-2.11
33	Winston/Dillard	-9.29	-3.25	-3.25	-1.57	-1.07
16	Sutherlin	-9.15	-4.96	-3.25	-1.57	0.77
81	Lincoln City	-9.12	-6.26	-0.45	3.97	-6.58
64	Illinois Valley/Cave Junction	-8.97	-5.43	1.31	-2.51	-2.56
69	Morrow County	-8.31	1.45	-1.72	-6.80	-3.29
27	East Linn	-8.24	-4.60	-0.67	-0.91	-2.18
8	Milton-Freewater	-8.11	-4.41	-0.84	-1.37	-1.86
58	Roseburg	-7.92	-2.87	-3.25	-1.57	-0.09
63	Dallas/Falls City/Kings Valley	-7.89	-0.17	-0.28	-3.59	-4.40
67	Grants Pass	-6.88	-2.11	1.31	-2.51	-3.80
79	Hermiston/Umatilla	-6.35	-2.95	-0.84	-1.37	-1.56
1	Coquille Valley	-6.32	-3.22	-1.64	0.31	-1.72
11	Mid-Klamath	-6.02	-7.39	3.30	-0.16	-2.67
57	Pendleton	-5.99	-2.61	-0.84	-1.37	-1.54
31	South Lincoln	-5.53	-8.52	-0.45	3.97	-0.72
72	Bonanza/Dairy/Beatty	-5.36	-2.92	-0.85	-1.13	-0.42
21	Bay Area	-5.09	-1.55	-1.64	0.31	-2.16
84	Scott Valley	-4.94	-6.86	3.30	-0.16	-2.12
17	Bandon	-4.91	-2.72	-1.64	0.31	-0.81
41	Wasco County	-4.77	-6.17	0.67	1.91	-0.94
15	Rainier	-3.57	2.59	-0.66	-2.20	-3.14
60	Klamath Falls	-3.49	0.09	-0.85	-1.13	-1.56
37	South Siskiyou	-3.47	-5.96	3.30	-0.16	-1.54
56	Newport/Toledo	-3.40	-5.67	-0.45	3.97	-1.45
38	Oakridge/Westfir	-3.25	-5.60	-0.60	0.70	1.41
78	Harrisburg/Halsey	-3.22	-0.80	-0.67	-0.91	-0.96
34	Florence	-3.19	-5.30	-0.60	0.70	1.17
87	Weed	-3.16	-3.94	3.30	-0.16	-3.25
65	Silverton/Mt. Angel	-3.07	-5.49	0.77	0.03	0.66
4	Yreka	-2.64	-5.21	3.30	-0.16	-1.47
45	White City	-2.61	-1.61	-0.63	-1.22	-0.01
6	Mill City/Gates	-2.61	-8.37	0.05	-0.14	5.31
51	Ashland	-2.50	-0.19	-0.63	-1.22	-1.33
74	Crook County	-2.50	1.49	0.25	-2.31	-1.34
59	Applegate Valley	-2.41	-3.16	-0.63	-1.22	1.73
19	Vernonia	-2.33	3.04	-0.66	-2.20	-2.35
23	Gold Hill	-2.16	-2.09	-0.63	-1.22	0.91
39	Ontario Region/Malheur County	-1.91	-2.83	0.46	0.13	-0.50
30	Monmouth/Independence	-1.75	-1.79	0.25	-0.94	-0.01
54	West Valley	-1.69	-0.91	0.98	-0.06	-1.84

hub#	hub_name	CVIndex00	CVISocial00	CVIEnviro00	CVICapacity00	CVIEconomy00
7	Merrill/Malin	-1.42	0.51	-0.85	-1.13	0.09
50	Wild Rivers Coast/South Curry	-0.93	-1.92	2.37	0.58	-2.10
36	South Columbia	-0.42	4.92	-0.66	-2.20	-2.31
10	Harney County	-0.27	0.27	0.11	1.26	-1.07
86	Stayton/Sublimity/Scio	-0.09	-3.58	0.05	-0.14	3.03
25	Baker County	0.40	1.91	-1.61	1.65	-0.67
53	Jefferson	0.44	-4.13	0.77	0.03	2.81
49	North Curry County	0.83	-0.49	2.37	0.58	-1.76
29	Tillamook County	1.22	-0.46	0.74	0.35	0.11
26	Keno/Butte Valley	1.35	0.35	-0.85	-1.13	3.02
32	Union County	1.76	0.02	-0.04	2.50	-0.45
12	South Lane	2.12	-0.69	-0.60	0.70	1.86
40	Fern Ridge	2.25	-1.50	-0.60	0.70	2.80
2	Lake County	2.45	5.00	-1.17	0.86	-1.62
55	Lower Columbia	2.51	0.80	-0.03	4.34	-2.73
52	Cascade	3.24	-3.26	0.77	0.03	4.74
42	Grant County	3.32	5.61	-1.70	2.64	-2.23
66	Wheeler County	3.43	11.96	-1.48	-2.82	-3.03
83	Lower Willamette River	3.61	-0.90	-0.60	0.70	3.57
80	Junction City/Blachly/Triangle Lake	3.65	0.07	-0.60	0.70	2.63
43	Upper McKenzie	3.89	-1.16	-0.60	0.70	4.10
85	Seaside/Cannon Beach/Gearhart	4.55	0.36	-0.03	4.34	-0.25
70	Woodburn/Donald/Aurora	4.77	-2.63	1.05	-0.96	6.43
76	Estacada	4.79	2.36	1.32	-1.83	2.14
47	La Pine	5.20	0.07	2.69	0.79	0.98
18	Sherman County	5.26	6.30	-1.50	3.36	-0.27
82	Lower McKenzie River	6.32	0.72	-0.60	0.70	4.65
61	South Benton	6.64	3.54	0.52	0.02	2.77
71	Yamhill/Gaston	7.19	0.20	0.96	-1.43	7.03
73	Coburg	7.30	1.70	-0.60	0.70	4.66
68	Molalla	7.51	4.30	1.32	-1.83	2.92
24	Hood River County	7.66	5.54	0.89	2.95	-1.84
48	Newberg	8.22	0.65	0.88	0.20	5.96
14	Philomath	10.71	7.07	0.52	0.02	3.31
35	Gilliam County	11.11	11.10	-1.97	4.39	1.37
22	Cornelius	11.14	3.61	0.93	-2.10	7.97
77	Forest Grove	11.21	4.67	0.93	-2.10	6.99
44	Sisters	13.22	4.59	2.69	0.79	4.47
5	Banks	13.80	3.87	0.93	-2.10	10.38
20	Wallowa County	13.92	8.01	-0.27	6.25	0.56