

**Tracking Progress or Regress: Constructing a Healthy Community Index
for Lane County**

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Abstract: We examine the disparity between the perceived benefit of gains to the economy compared to the changes in various societal factors. For example, will a focus on the improving the economy simultaneously improve the levels of child care and crime rates in a community? To assess these relationships, we have constructed an index for Lane County that includes the standard indicators of the economy (per capita income, wage rates), but also includes a variety of social indicators (prenatal care, high school dropout rate, etc.) Through this process, we have discovered that an increase in the economy does not coincide with an increase in the levels of various social indicators. Additionally, through survey results, we contrast the mentality of two community groups, The United Way of Eugene and the United Way of Eugene. As the survey results demonstrate a marked difference between the concerns of these two groups, the groups' resulting indices vary, providing information about one's focus and fulfillment with the current state of Lane County.

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Introduction

When determining the strength of a particular city, attention initially turns to the typical economic indicators of the economy's strength, such as per capita income and unemployment. However, when trying to understand the dynamics in the entire community, one must include other factors outside of the "economic forum". The combination of these social indicators, such as crime and child abuse, coupled with the purely economic indicators, reveal a more complete picture of the city's economy, specifically of the city's "healthy economy". In this project, our goal is to construct a healthy economic index for the Eugene/Springfield area.

The practice of translating sets of data into indicators and then indices transforms information, which might otherwise only be helpful to social scientists and statisticians, into simpler and more understandable representations of the data for policy makers and the general public.

In the 1950s the National Bureau of Economic Research (NBER) created a list of eleven economic indicators¹ that could predict what the economy might do in the near future. The index usually changed direction a few months before the economy did and it therefore became known as the 'Index of Leading Indicators' (Clayton and Giesbrecht, 1995: 30). The index is one of the most well-known and popular indices because it is designed to predict what will happen with the economy - in theory, three consecutive downturns in the index forecasts an economic downturn in the following months (Clayton and Giesbrecht, 1995: 30). Therefore, its simplicity and applicability make it a helpful forecasting tool and indicator of the national economy.

¹ The list of eleven indicators are: 1) Average weekly hours of production or nonsupervisory workers in manufacturing, 2) Average weekly initial claims for unemployment insurance, state programs, 3) Manufacturers' new orders for consumer goods and materials, 4) Vendor performance – slower deliveries diffusion index, 5) Contracts and orders for plant and equipment, 6) New private housing authorized by local building permits, 7) Change in manufacturers' unfilled orders in durable goods, 8) Change in sensitive materials prices, 9) Stock prices, 500 common stocks, 10) Money supply M2, and 11) Index of consumer expectations (University of Michigan Series) (Clayton and Giesbrecht, 1995: 30).

There have been many regional indices developed over the years modeled after the NBER leading economic index. For example, in the last few years Professor Duy of the University of Oregon created the “UO Index of Economic Indicators” which also follows in the path of the Index of Leading Indicators by aiming to forecast at a state level what is expected to happen in the Oregon economy in future months. In his explanation of the interpretation of the index Professor Duy states that “As a general rule, a decline in the index of greater than 2 per cent over six months, coupled with a decline in more than half of its components, signals that a recession is likely imminent,” (Duy, 2006: 1). Again, like the Index of Leading Indicators, the strength of such a statistic model is its simplistic, predictive power of the economy. Both of these indexes use economic indicators in the construction of the index for the primary reason that they are indexes designed at predicting the economy only.

The ultimate goal of an economic indicator is the ability to predict GDP growth. Although not an index itself, perhaps the most well known indicator used to gauge economic performance is Gross Domestic Product (GDP) (Morse, 2004: 34), which is most commonly calculated on an aggregate or per capita level. However, issues arise if we focus our evaluations on purely direct economic figures like GDP in evaluating the progress of a community, state, or nation. For example, if GDP is measured using total expenditure it cannot represent who has been doing the spending and how much. If GDP was high in a country one might conclude the country is doing well. However, if ninety-five percent of this expenditure is done by only 1 percent of that population, because wealth is so unequally distributed, we might question if this is representative of how “healthy” the nation is for the majority of its residents. Furthermore, following Hurricane Andrew’s destruction of Florida and Louisiana in 1992, the GDP increased

significantly as a considerable amount of money was spent on the rebuilding process² (Cashell 2005). Thus, if we took GDP as the only indicator of the state of Florida and Louisiana we might surmise they were improving. Yet following such a horrific natural disaster one would struggle to rationally argue that those areas were doing well. Additionally, GDP can miss or fail to capture other examples of the social or environmental costs that are associated with production. For example, a factory's production may increase GDP while simultaneously exacting large costs on the nearby community through pollution and environmental damage.

Some examples of indices that have tried to build on GDP as an indicator and be more “representative of what is ‘valued’ by a community” (Morse, 2004: 54) are the Measure of Economic Welfare (MEW), Economic Aspects of Welfare (EAW), and more recently in the U.S. the Genuine Progress Indicator (GPI). The GPI, for example, takes into account other indicators of “health” in an economy such as volunteer work, cost of crime, family breakdown, and environmental damage (Morse, 2004: 55).

Our project aims to maintain this tradition by taking series of local community data and constructing an index which more accurately represents if the local community is moving in a “healthy” direction (improving both economically and socially) or becoming more “unhealthy” (declining both economically and socially).

Two Eugene based non-profit organizations are interested in this project, namely the United Way of Eugene and the Eugene Chamber of Commerce. Both groups are interested to see how the measures of social well-being differ, or coincide, with the strictly economic measures of success. The results of this study will provide these organizations with helpful insight concerning the areas of need in the Lane County. Specifically, the index will demonstrate

² According to the Congressional Research Service (CRS) Report for Congress on the Macroeconomic Effects of Hurricane Katrina, gross domestic products only measures *new* production. GDP does not measure any destruction of existing capital stock, and therefore provides an inaccurate measure of well-being.

how much a change in a certain field, child abuse for example, will affect the overall “health” of the community.

The aim of this project is to demonstrate one method of constructing a “healthy community” index for Lane County and provide the foundation for a longer-term creation of an index that accounts for both economic and social factors in presenting local citizens, and community members a brief indication as to the “health” of the economy.

Broadly speaking based on the grouped responses, elicited through the online web survey, all the indices trended up to some degree or another for the years examined, 1997-2005. Therefore, despite some fluctuations over this period, based on the respondents rankings of the importance of varied issues, the indicators included within the index, and the categorization of these components, it can be asserted that the ‘health’ of Lane County improved between 1997 and 2005. The generation of the indices also finds that the Eugene Area Chamber of Commerce and United Way of Lane County, over the period 2001-2005, could well have viewed the health of Lane County moving in the opposite directions. With the Chamber seeing it as improving and United Way viewing it as declining. We also found that there was little difference based on years of residence in the local community, slightly more substantial differences based on gender, and differences based on current and changing satisfaction with the local community.

Literature Review

Much of the literature on regional indicators remains focused on the generation and refinement of an index based on traditional economic indicators such as the unemployment rate, nonagricultural payroll employment, and average hours worked in manufacturing (such as Crone and Clayton-Matthews 2005, Crone 2000, and Kozlowski 1987).

In the case of the Crone and Clayton-Matthews (2005) article they used the index to group together states that had similar business cycles and consistently measure a state's economic activity (Crone and Clayton-Matthews, 2005: 601). The Coincident Index as they named it, comprised four separate indicators, three monthly (nonagricultural payroll employment, the unemployment rate, and average hours worked in manufacturing) and one quarterly series (real wage and salary disbursements) (Crone and Clayton-Matthews, 2005: 594). The index is based on the Stock-Watson model where each indicator is first-differenced and then normalized by subtracting its sample mean and then dividing by its standard deviation, and it is these deviations that then go on to comprise the Coincident Index (Crone and Clayton-Matthews, 2005: 594). As they assumed the economy to be relatively smooth they required that the index also be smooth (Crone and Clayton-Matthews, 2005: 598). The primary goal of the Coincident Index was designed to provide a set of indexes that tracked relative economic activity in each of the fifty states. The index was then used to group states by the similarity of their business cycles so that comparisons can be made on the timing of state business cycles (Crone and Clayton-Matthews, 2005: 601).

However, the work on regional indices, such as the one mentioned above, solely focuses on state level comparisons, not county level, as we seek to produce. Nor do they account for some of the "social" or alternate indicators that we propose to include in the Lane County

Healthy Community Index. Therefore, we hope to build on the regional economic indices literature through narrowing the geographical area of interest and through the inclusion of some alternate indicators in addition to some of the more traditional economic indicators used to generate the index. One reason that many research papers go no lower than state level analysis is because of insufficient monthly data. Even more common indicators, such as the unemployment rate data, are limited for county level analysis (Crone 1998/ 1999: 259/260). We address this issue in greater detail in the methodology section.

One example of a paper that did seek to incorporate both alternative indicators and research at a micro level was Blomquist, Berger, and Hoehn's paper on the "New Estimates of Quality of Life in Urban Areas" (Blomquist, Berger, and Hoehn 1988). The paper focuses on generating a Quality of Life Index that is static by design, rather than a dynamic model, as the researchers are interested in comparing levels between different urban areas. For example, the Eugene-Springfield Area recorded an 884 versus Tucson, AZ, which reached 1341.86, suggesting that the quality of life, as measured by this index, is better in Tucson than in the Eugene-Springfield Area (Blomquist, Berger, and Hoehn, 1988: 98). The index is estimated by using a hedonic model to approximate the dollar value of amenities³ which are then regressed on the housing and labor market. Again the higher the value of the index, the higher the quality of life because it indicates a higher value received from the non-tradable amenities.

However, two major differences arise between the aim of their paper and ours. First, in generating an urban area index for quality of life they sought to rank the urban areas by comparing levels at a static point in time. Our paper will concentrate on tracking the Lane

³ The list of non-tradable amenities are: Precipitation, Humidity, Heating degree days, Cooling degree days, Wind speed, Sunshine, Violent crime, Teacher-Pupil ratio, Visibility, Total suspended particulates, NPDES Effluent discharges, Landfill waste, Superfund sites, Treatment, storage and disposal sites, and central city/ urban area location (Blomquist, Berger, and Hoehn, 1988: 95).

County area over successive periods in time. Secondly, we aim to extend even the inclusion of alternative indicators beyond that of Blomquist, Berger, and Hoehn. In their paper they focused on wages, housing prices, and climatic and environmental variations. Our index shall go further by accounting for such indicators as public safety, healthcare, and child welfare.

Diener and Suh (1997) in their discussion of the inclusion of “social” indicators into indexes, effectively argue that the inclusion of such indicators as doctors per capita and the infant mortality rate along with more traditional economic indicators can lead to very different indices and comparative results. In their paper from 1997 they found that even though Tunisia has half the income of Israel they achieved approximately the same quality of life on the social indicator index (Diener and Suh, 1997: 193). This is one example of the literature that examines the benefits obtained by casting the indicators’ net further out into the ocean of potential variables and approaches.

Diener and Suh evaluate the relative merits of the value of economic, social or subjective indices and they argue that the most well rounded indices would incorporate aspects of all three in order to capture an accurate picture of a nation’s quality of life. By including these different approaches they argue the index would then be able to capture both the internal and external factors that determine how a person evaluates their situation (Diener and Suh, 1997: 213). They outline some of the major strengths of including social indicators into the creation of an index which include:

- 1) Objectivity of the data - as it does not rely on peoples’ feelings as a subjective indicator does; the data can also be measured far easier than subjective feelings. (193)

- 2) People may also value something that does not directly make them happy. (194) That is to say people may value lower child abuse rates even though it might not make them happier per se.
- 3) By taking measures across varying life domains, social indicators are able to capture societal factors that are valued, but are not sufficiently reflected by purely economic indicators. (194)

The main weaknesses of social indicators Diener and Suh outline are:

- 1) Social indicators can be fallible in that they are sometimes under or over reported. Diener and Suh use the example that rape is often underreported, thus resulting in measurement problems. (195)
- 2) There is also some subjectivity in selecting which indicators are included within the model. For example, as proxies for housing affordability do you include mortgage data, rental data, property taxes, or the ratio of owned to rental properties. (195)
- 3) Because weights and variables are often assigned on an “ad hoc” basis the index cannot avoid creating controversies among researchers as to why certain indicators were included, and why certain indicators received certain weights. (197)
- 4) Finally, Diener and Suh also argue that it can often be debated as to what exactly society’s notion of “good” is and therefore trade-offs arise between specific indicators as the relative merits are assessed. (196)

Another increasingly popular field in alternative indices is in the area of development indices. One example of this is the “Human Development Index (HDI) created by the United Nations Development Program. The index is aimed at measuring varying nation’s human development; however the scope of this index appears very limited given the fact it only includes

three variables: life expectancy, education, and income (Morse, 2004:150). The combined Quality of Life Index includes a wide scope of economic and social indicators included to compare nations (Diener 1995). Yet again, however, this is at a national level and focuses on level versus changes within the index. There has been nothing so extensive even at the state level within the U.S.

Overall therefore, this research paper will begin to address what has been a relatively untouched area within economics. Though our own study will be limited for varying reasons, which will be discussed at length in the methodology section, this paper will advance the field by its distinct combination of both multiple economic and social/ alternative indicators coupled with a county level analysis in the U.S. Our aim is to begin the foundations of an area of research that will enhance local citizens and policy makers' impressions as to the "health" of the local community.

Data

Below is a table of the collected variables that make up the indicators in the “Healthy Community Index” the methodology section will discuss at length the determination for the inclusion of each of these components. The first table provides the full name and units for each indicator.⁴ The second table is the raw data collected for each indicator from the year 1996 through 2005.

Table 1

Indicator	Label	Units
Unemployment Rate	Unemp	Civilian labor force unemployment rate (lane county)
Per Capita Income*	PC Incom	Total personal income divided by the total population (2000\$)
% Per Capita Income	PC Incom %	Oregon’s per capita income as a percent of the United States per capita income
Uncompensated Health Care* ⁵	Uncmp HC	Total dollar amount of health care services provided to patients unable to pay (2000\$)
Child Abuse and Neglect Rate	Child A&N	Number of reported children per 1,000 children under 18
Crimes Against Persons	Person CR	Total number of documented crimes against persons
Behavior Crime Rate	Behav CR	Behavior crimes per 1,000 persons
Air Quality	Air Quality	Particulate Matter (ppm)
Housing Prices*	House \$	Fair Market Rent Prices (2000\$)
High School Dropout Rate	Drop Rate	Percentage of high school students who drop out
Poverty Rate	Poverty	Percentage of Oregonian’s below the 100% poverty rate
Low Birth Weight	Low B Wt	Infants born with under 5 lbs, 8 oz (rate per 1,000 live births)
Early Prenatal Care	Prenatal	Percentage of mother receiving inadequate prenatal care (rate per 1000 live births)
Property Crime Rate	Prop CR	Total number of documented crimes against property
Solid Waste Accumulation	Solid Waste	Total amount of solid waste (tons)
Average Wage*	Avg Wage	Average Wage for workers in Lane County (2000\$)
Growth in Employers Health Insurance Premiums*	% G Emp HI P	Annual Growth in Employers Health Insurance Premiums as an annual percent change

⁴ Sources for all of the data are provided in the appendix to this paper. Those with an asterisk were in nominal changes, and we therefore altered these figures to account for inflation. For example, Per Capita Income was in nominal dollars and we converted it into real Per Capita Income.

⁵ It should be noted that Uncompensated Healthcare was the only state level data used. This was done as the most current equivalent data was not available for Lane County. However, we compared the change between both levels and for the range of data available Oregon and Lane County numbers are correlated over 0.98. As it is change we are interested in with the index this extremely high correlation meant we did not feel we lost any value in using Oregon level data.

Table 2

<u>Year</u>	<u>Unemp</u>	<u>*PC Income</u>	<u>PC Incom %</u>	<u>*Uncmp HC</u>	<u>Child A&N</u>	<u>Person CR</u>	<u>Behav CR</u>	<u>Air Qual</u>	<u>*House \$</u>
1996	6	23,089	89.3	138891427	8.1	4676	45.4	18.5	608.6
1997	5.1	23,653	88.5	146393174	10	4756	49.3	20.7	608.8
1998	5.7	24,584	87.8	149684981	8.9	4619	44.6	16.9	612.5
1999	5.3	24,916	87	157989067	14.5	4233	45.7	18.3	611.7
2000	5.4	25,497	89.4	177009854	16	4326	46.8	18.7	600
2001	6.8	25,413	84.9	201213524	13.5	4192	45.3	18.2	593.5
2002	7.1	25,625	84.3	247202024	13.5	3525	45.4	16.1	599
2003	8	25,396	83.7	331836433	12.7	3439	48.3	14.5	626
2004	7.3	26,214	85.9	469680168	11.5	3472	48.6	13.9	622.7
2005	6.1	26,763	86.6	584191481	11.4	3102	41.6	15.4	616.1
Min	5.1	23088.8	83.7	138891427	8.1	3102	41.6	13.9	593.5
Max	8	26763.2	89.4	584191481	16	4756	49.3	20.7	626
Avg	6.28	25115.06	86.74	260409213.3	12.01	4034	46.1	17.12	609.89
St Dev	0.9727	1108.67236	2.033715811	154517572.3	2.5092938	598.43091	2.2632327	2.1358319	10.3288646

<u>Year</u>	<u>Drop Rate</u>	<u>Poverty</u>	<u>Low B Wt</u>	<u>Prenatal</u>	<u>Prop CR</u>	<u>Solid Waste</u>	<u>*Avg Wage</u>	<u>* % G Emp HI P</u>
1996	6.8	13.1	53.5	53.7	27380	1570.7	25,143	4.7
1997	5.6	13.3	55	50	29462	1680.8	25802	0.6
1998	5.4	13.7	53.7	53.5	26724	1663.2	26499	4.4
1999	4.5	12.8	53.9	53.7	24779	1650.5	26849	2.6
2000	5.4	12	56.6	55.9	24975	1581.8	27140	4.8
2001	3.9	12.7	55.6	50.5	23901	1478.9	27576	8.5
2002	3.8	12.9	57.9	52.2	22730	1575.3	27475	10.7
2003	3.5	13.8	61.6	55.5	22937	1556	27497	12.1
2004	3.2	14.9	60.6	57.9	22149	1565	27615	7.7
2005	3.3	14.9	61.2	58.3	24089	1587	27952	5.6
Min	3.2	12	53.5	50	22149	1478.9	25143	0.6
Max	6.8	14.9	61.6	58.3	29462	1680.8	27952	12.1
Avg	4.54	13.41	56.96	54.12	24912.6	1590.92	26954.8	6.17
St Dev	1.20572707	0.9374315	3.18719661	2.8153547	2311.6586	59.66917686	897.25282	3.570263

Methodology

The Conference Board's⁶ method of constructing composite indices, as outlined by the Conference Board's Technical Appendix, was the method we selected to use because of its focus on percent changes of each component, and its methods of controlling for volatility for each component. Morse notes that composite indices have a great appeal because of their ability to reduce complexity and make data "easier to digest" (Morse, 2004: 114). Therefore, as reducing a complex system of data into a more manageable, comprehensible set of numbers is one aim of an index, the composite method used by the Conference Board seemed both appropriate and applicable. Our methodology deviates from the Conference Board's procedure in two ways. Firstly, the Conference Board's composite indices are month-to-month where as our index focuses on annual-to-annual changes. Altering this does not affect the index methods, simply the time scale and reference on the axis. Secondly, and more importantly we adapt their methods by including a weighting of each indicator/ component based on the survey responses of the Eugene Area Chamber of Commerce. Specifically, the method entails the following steps (in the notation below, the "t" and "t-1" subscripts refer to the current and prior month, respectively, and the "x" and "m" subscripts refer to a particular component of the index.)⁷:

1. First, one must calculate the year-to-year changes for each component. If indicator data is in percent change form or an interest rate, simple arithmetic differences are used:

$$x_t = X_t - X_{t-1}$$

However, if the indicator data is not in percent change form (total number of incidents, total tonnage of waste, etc) a symmetric alternative to the conventional

⁶ It is a private, not-for-profit organization which produces a monthly "Business Cycle Indicators" report as part of their *Business Cycle Indicators Project*. Thank you to Professor Duy for his help in understanding and applying this particular methodology.

⁷ See the July 12th "Business Cycle Indicators" report (provided by Professor Duy) Technical Appendix (6) which is the source for the majority of this information and mathematical computation, and is simply adapted below in order to suit our particular methodological goals.

percent change formula is used. This enables the raw data to be comparable as annual percent changes, without this conversion we would be trying to compare changes in percentages with changes in millions of dollars, for example. The calculation for symmetric change⁸ is:

$$x_t = 200*(x_t - x_{t-1}) / (x_t + x_{t-1})$$

2. The annual-to-annual changes across all components must then be adjusted so that their volatility is equalized and accounted for. This conversion is made so that a component that is highly volatile does not skew the index from year-to-year⁹. This second step involves calculating the standard deviations, v_x , of the changes for each component, and then inverting those measures of volatility:

$$w_x = (1/v_x)$$

Inverted volatility measures are then summed:

$$k = \text{Sum}_{x=1} w_x$$

and expressed so as to equal one:

$$r_x = 1 / (k*v_x)$$

The adjusted change for each component can then be understood as being its annual-to-annual change multiplied by the standardization factor r_x

$$m_t = r_x * x_t$$

3. All the standardized annual-to-annual changes are summed to obtain the growth rate (positive or negative) for any particular year t :

$$i_t = \text{sum}_x m_{x,t}$$

4. At this point, we make the largest divergence from the Conference Board's method through our innovative inclusion of weighting each component/ indicator based on the survey responses. In the survey, respondents were asked to divide a total weight of 90 over the nine broad categories of influence. The resulting weight elicited for each category was then evenly distributed over the indicators within each category. For example, weights of 10 assigned to each of the categories for Education and the Environment will be distributed differently, as the whole weight of 10 will go to the one indicator in the Education category, while weight of 5 will go to each of the two indicators in the Environment category.

5. The next step involves the process by which the index is updated form year to year. The first calculation is to generate the first year's value:

⁸ Symmetric Percent Changes: the formula treats positive and negative changes symmetrically. When it shows a one percent increase followed by a one percent decrease, the level of X has returned to its original value. This is not true of the more conventional method. The symmetric percent change formula has been used since the public debut of the composite indexes in the late 1960s. (Technical Appendix)

⁹ There are of course trade-offs with this conversion as it then assumes that people do not care about the volatility of any one particular indicator but their relative changes.

$$I_t = (200+i_t/200-i_t)$$

The second year's value is then derived by multiplying the trend-adjusted growth rate by the previous year's index level:

$$I_t = I_{t-1}*(200+i_t/200-i_t)$$

6. Finally, each year's value is multiplied by 100 with the index beginning in 1997 as it is the first year of change¹⁰.

Through this method, all of the changes in the data are simplified into a single number derived from a much larger system of data. While the individual number does not provide beneficial information i.e. if the index in 1997 was 103.4, and was in isolation, we cannot infer anything as the index's purpose and value comes through its comparison of numbers across time. The ability to track the index over many years, and the subsequent changes in the numbers provide the useful information about the relative level of the community.

Finally, we used the Microsoft Excel program to calculate the index using inputted formulas as this will enable both United Way and the Chamber of Commerce the ability to recalculate the index for the following year by simply inputting that year's data and re-running the equations.

Determining the Set of Indicators

In order to deduce what specific indicators to include we began by generating, in close collaboration with the Chamber of Commerce and United Way, broad issue categories that local community members felt were important areas of concern when examining the health of Lane County. Through a process of back and forth input from the local organizations we came up with nine broad categories which we then assumed were necessary to consider in order to evaluate

¹⁰ In 1996 $t=0$ so there have been no annual changes, though this is simply the base year of 100 from which point the index fluctuates from.

what made up a healthy community.¹¹ The nine broad categories are as follows: Average Community Household Income, Child Welfare, Education, Employment Opportunities, Environment, Healthcare, Housing, Income Inequality, and Public Safety.

The method of generating a set of indicators/ components that make up the index incorporated a process of both removing unnecessary, unusable potentials and including ones that, although more difficult to obtain, seemed important considerations in answering what one considers makes up a ‘healthy community. In 2005, the United Way produced a report of over fifty social indicators for Lane County. However, as few indices comprise this many indicators, one must synthesize the number down to a reasonable amount. In previous indices, there have been eight to eleven indicators included (Connolly 2006, Duy 2005, and Gazel 1997). To arrive at a condensed number, each index followed the process enumerated by the Department of Commerce. Their “adjusted score system” methodology for index construction is contained in their “Handbook of Cyclical Indicators”, and suggests three questions to ask when considering each indicator:

1. What is the economic (or social) importance of the indicator?
2. How well can one understand the role of the component as an indicator of economic (or social) activity?
3. Does it make theoretical sense to include a particular indicator in an index?

It is important to note that the number of indicators used in previous studies do not set the parameters for future studies. As long as a specific indicator “passes” all the tests enumerated by the Department of Commerce, the indicator is acceptable for use in the index¹².

¹¹ However, the survey method allowed respondents to assign weights of zero if they did not feel the improvement in one of these categories was of any importance when considering the relative importance of improvement in the others. But the inclusion of all nine of these categories meant that a respondent had to at least consider whether the improvement of each category was of importance to them.

¹² The issue then simply becomes one of time and cost in compiling all the data for the numerous indicators.

Additionally, any designer of an index will have to cope with the fact that data may self select due to the inadequacy of some collection processes. In their construction of the Southern Nevada Index of Leading Indicators, Gazel and Potts admit that their choice of indicators was largely influenced by the “conjugation of smoothness and the currency of the series” (Gazel 1997). In other words, all the data in an index needs to be collected to the same consistency and for the same period. Indices cannot combine bi-annual data with annual data, with monthly data, and manipulating the data can cause issues with autocorrelation. This need for consistency can eliminate many possible indicators, and help to simplify the overall index.

We adapt this basic format to suit the circumstances and thus our criteria were as follows:

- 1) Take the data from the United Way Leading Indicators Report and assume that we should include at least one indicator from each of the five major categories: 1) Jobs, Housing and the Economy, 2) Health Care, 3) Children, 4) Youth, 5) Community.
- 2) Exclude variables with insufficient data. Some of the variables were simply census based data which are only collected every five to ten years resulting in an extremely limited set of observations.
- 3) Exclude variables that are based on self-reporting. The collection method of some of the indicators means they are invalidated from inclusion in the model because of the unreliable and varied methods of collection or reporting. One example of such an indicator is “Percent of infants whose mothers used alcohol during pregnancy.” The main issue with this indicator is that the information is self-reported by mothers. As it is frowned upon by society to drink much alcohol during pregnancy, respondents are discouraged to admit that they had consumed alcohol during the pregnancy. As a result

the data is biased downwards as fewer mothers report using alcohol than are likely to have consumed alcohol during term.

- 4) Compare the correlations of the remaining variables/ indicators. By comparing correlations it is hoped that multicollinearity within the model is restricted as much as possible. Also, when indicators have high correlations over 0.85 the variance between the two is so limited that one variable is able to act as a proxy for others. By using proxy variables this allows for the inclusion of a greater number of variables that are not directly related. For example, per capita income was found to be (as expected) highly correlated with average annual payroll (0.99), and as per capita income was also highly correlated with the “crimes against persons” rate (- 0.955) these other indicators were dropped in favor of including per capita income. This indicator is both a common economic variable to include in an index but also it now becomes a proxy for the variance in these other two variables.

Through this process, we were able to narrow down the possible indicators to seventeen indicators that seemed applicable to representing what made up a ‘healthy community’ in Lane County. The seventeen indicators were then sub-divided into according to their applicability to each of the nine categories:

- **Average Community**
 - **Household Income**
 - Per Capita Income
 - Per Capita Income %
- **Child Welfare**
 - Child Abuse and Neglect
 - Low Birth Weight
- **Education**
 - High School Drop Rate
- **Environment**
 - Air Quality
 - Solid Waste Levels

- **Employment Opportunities**
 - Unemployment Rate
 - Average Wage

- **Healthcare**
 - Uncompensated Health Care
 - Prenatal Care
 - % Growth in Employers Health Insurance Premiums

- **Housing**
 - Average Housing Prices

- **Income Inequality**
 - Poverty Rate

- **Public Safety**
 - Crimes Against Persons
 - Behavior Crime Rates
 - Property Crimes

Determining Weights

Two possibilities existed for trying to determine unbiased weights for the different indicators – regression analysis and revealed preference responses. The first method is explained in the Central Oregon Economic Indicator construction. The process involves discovering the usefulness of an indicator in explaining a dependent outcome. For example, strictly economic indicators are regressed against a dependent variable such as GDP. The level of explanation demonstrated through the regression can then be used to set weights for the individual indicators. However, because a varying group of social indicators lack a common dependent variable, this process will not work.

For social indicators, public surveys provide an alternative substitute. To elicit weights for social indicators, such as healthcare or public safety, the public’s response to a survey may provide informative results. However, there are certainly problems with revealed preference surveys that must be addressed. In their paper on the disparity between respondents “true feelings” and their responses, Zaller and Feldman found that there is a “Common tendency for

seemingly trivial changes in questionnaire form to affect the expression of attitudes” (Zaller 1992). The paper discusses the theory that answers to responses are not necessarily the respondent’s opinions or preexisting views of a problem, but are simply the result of the questioning process. Additionally, Converse found that respondent’s attitudes vary even more when questions concern “abstract issues”, issues commonly associated with questions of social justice (Converse 1964). These are issues that must be considered if public opinion surveys are used to illicit weights for the social indicators.

Social surveys are also appropriate in this situation as one of the aims of the project was to try and assess whether or not the United Way and the Chamber of Commerce differ in their evaluations of what community issues are greater importance, and to potentially involve the greater Eugene-Springfield community in creating an index.

The survey was designed to elicit respondents’ revealed preferences of the relative importance of each of the nine broad issue categories. The aim is for people who feel healthcare is twice as important as the environment to reveal this by assigning twice the value to healthcare than to the environment e.g. healthcare = 20, environment = 10. If then the respondent feels child welfare is twice as important as healthcare it would receive a value of 40. Additionally, these trade-offs gain importance as resources are limited. Therefore, respondents are limited to assigning 90 points across the nine broad categories¹³. This arbitrary level of total points is not important – the relative weighting provides the explanatory power of the survey. It is these relative values that reveal a person’s preference and greater valuation of one issue over another. The online survey allows members of both the United Way of Lane County and the Eugene Area Chamber of Commerce to assign weights at their convenience and discretion. Had this been a

¹³ Where a couple of respondents total assigned values added above 90 (each case added to 100) we simply used simple percentage conversions so that their weights were altered and then comparable to the other respondents.

general survey solicited to all members of the community, there would have been greater concerns about the respondent limitations inherent with the internet. However, given the specific groups involved in the survey, the implications of this issue are somewhat downplayed.

One concern is the tendency of respondents to assign values ending in 5 or 0 because of ease of calculation of how much weight has been assigned and is still left to assign. We hoped that the automatic calculation of weight assigned helps resolve this issue, but also with a large number of respondents this arbitrary change up or down will be averaged out across all the respondents to capture more accurate figures for each of the categories.

The completion of the index hinges on the ability to develop weights for each indicator. The weight determine how much effect each indicator will have on the overall index as heavily-weighted indicators will exert much more control on the index. Once the survey responses have been collected, each weight given to a specific “group” will then be distributed over the indicators in that group. For example, the child welfare group contains two indicators – child abuse and neglect and low birth weight. Therefore, if respondents provide the child welfare group with a weight of 10, that weight will be evenly distributed over the two indicators, providing a weight of 5 to each indicator.

Below is a re-creation of the first section of the online survey that persons affiliated with both United Way and the Eugene Chamber of Commerce responded to, and revealed their weights or relative importance of each broad category:

Components of a Healthy Community *Survey*

When considering what constitutes a healthy community, how much importance (or weight) would you put on the following components? Distribute points across these components so that

total points add up to 90. For example, you could assign 50 points to one component and 5 points to each of the other 8 components to add up to 90 points. We will assume that a component getting, say, 20 points indicates it is twice as important as a component that gets 10 points. One can assign 0 to 90 points on any of the components, as long as total points sum to 90

<u>Components</u>	<u>Points</u>
1. Average Community Household Income	_____
2. Child Welfare (for example, lower child abuse and neglect)	_____
3. Education (for example, lower high school drop-out rates and more affordable higher education)	_____
4. Employment Opportunities (for example, a lower unemployment rate and higher average wages)	_____
5. Environment (for example, better local air quality)	_____
6. Health Care (for example, affordability and prenatal care)	_____
7. Housing (for example, lower homelessness and more affordable rent)	_____
8. Income Inequality (more equally-distributed income)	_____
10. Public Safety (for example, lower crime rates)	_____

Points across all 9 components must add up to: 90

It is important to be aware that in using the survey and comparing the different groups, that will be discussed in the results section, we had to assume that all respondents understood what the survey was asking them and how they were expected to assign weights. The survey also asked for responses to the nine broad categories rather than specifically listing each of the

indicators individually, as we are truly interested in the relative importance of broad issues, not specific ones. The specific indicators are exactly that *indicators* or proxies and it would be unrealistic to expect respondents to understand that air pollution is representative of concerns about the whole environment, or that per capita income partially accounts for the overall crime rate in local community as well as local incomes.¹⁴ Furthermore, we felt it was important to not generate too large a number of categories to seek responses to as the greater the number asked the more and more complex it becomes for the respondent to consider the sum of the components as they assigned the weight to each individual component. Also, this is an index designed to be representative of Lane County as a whole however, not only were responses only drawn from United Way and the Eugene Area Chamber of Commerce but as both organizations are based in the Eugene-Springfield area the respondents most likely primarily came from this locale rather than the greater Lane County. Therefore, it must also be kept in mind that respondents in Florence, for example, could potentially respond collectively in a different manner than respondents from the Eugene-Springfield area.¹⁵ A final note must be made, in using these weights in calculating the index we had to assume that their elicited weights could be held constant over the time period that we examined, and that their current responses could be applied to previous years.¹⁶ This is unavoidable as we are unable to accurately ask them to convey their valuations of each issue from up to ten years ago.

The second section of the online survey asked respondents some basic questions to elicit varying characteristic so that we could compare different groups to see if and how this would alter the look of the index over the time period examined. For example, we will be able to

¹⁴ Because of its high correlation to per capita income (-0.856)

¹⁵ For example, everyone residing in Florence could hypothetically value improving the health of the environment more than those residing in the Eugene-Springfield area because of its location by the Pacific Ocean, and its reliance on tourism.

¹⁶ i.e. their evaluations of these categories was the same from 1997-2005 as it was when they filled out the survey.

compare the relative weights of United Way and Chamber affiliates, and also how the relative importance of issues might vary by the respondent's satisfaction with the community, their gender, and the length of time living in the local community. The second section is displayed below:

What is your overall satisfaction with the Eugene-Springfield community? Check one.

- Very satisfied** _____
 - Somewhat satisfied** _____
 - Somewhat dissatisfied** _____
 - Very dissatisfied** _____
-

How has your overall satisfaction with the Eugene-Springfield community *changed* over the last 5 years? Check one.

- Improved significantly** _____
 - Improved some** _____
 - Neither improved nor worsened** _____
 - Worsened some** _____
 - Worsened significantly** _____
-

A couple questions about you ...

- 1. Male or female?** _____
- 2. How many years have you lived in the Eugene-Springfield area?** _____
- 3. Affiliated with the Eugene Area Chamber of Commerce? (Yes or No)** _____

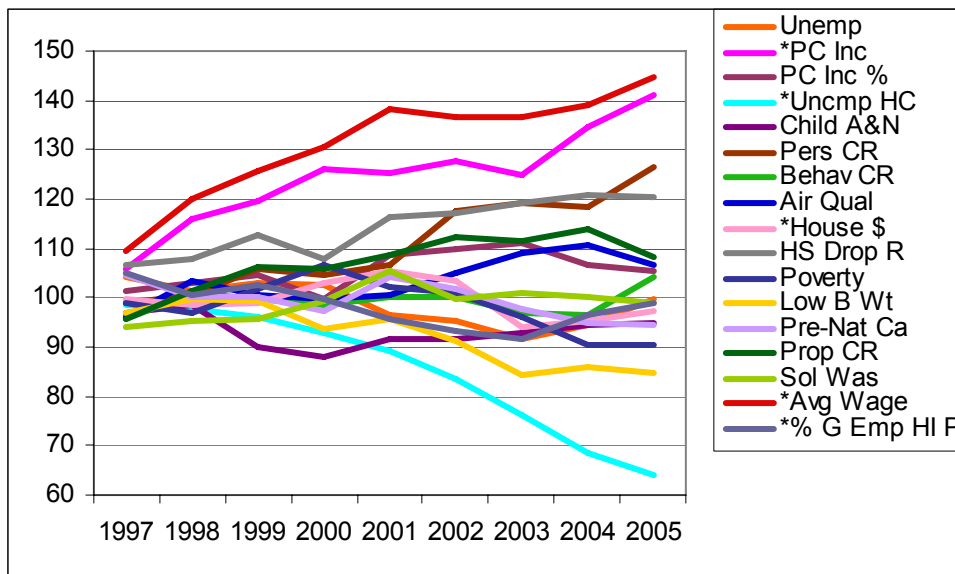
3. Affiliated with the United Way of Lane County? (Yes or No) _____

The survey responses were then collected over a period of one week and were then used to assign the weights to each of the indicators included in the “Healthy Community Index”, as well as comparing between groups of respondents. The following section will examine and discuss the varying indices that were generated using local community members input and elicited weights applied to Lane County data.

Empirical Results

Before we examine the particular indices¹⁷ generated by local community members. We will first artificially generate a series of indices in order demonstrate the flexibility and adaptability of the index based on respondents' valuations of the varying indicators/ components *and* issue categories. It is also worth reviewing these artificially generated indices as it demonstrates the great advantage of an index in simplifying a complex set of data into a far more comprehensible single final number. Below (Figure 1) is a graphical depiction of what it would look like if each indicator was assigned the full weight of 90, i.e. the imaginary respondent only cared about that one particular indicator and no other.

Figure 1:

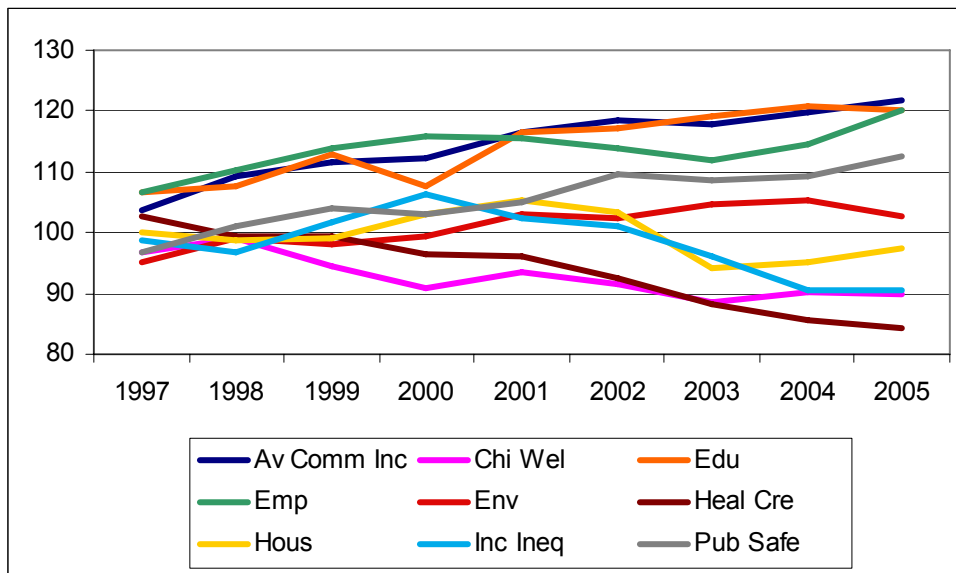


Given this picture it would seem impossible to determine if Lane County had improved or worsened over the period 1997-2005. The upper and lower limits of any plausible index, given the indicators included, are captured by the upper and lower lines. This means for example, that over the period examined it would not be possible to generate a number of 200 for the index in

¹⁷ All tables for actual figures of the indices can be found at the end of the paper in the section: Appendix 2.

any one year as the sustained annual changes were not great enough to achieve such a figure. It does suggest that if this contrived person only cared about the average wage (* Avg Wage) in Lane County, when considering the health of the local community, they should feel, based on the indicator and assigned weight that the health of Lane County had improved overall between 1997 and 2005.

Figure 2:



In Figure 2 above, the indicators were then grouped into their particular categories and then, like Figure 1, each of these categories was assigned the entire weight of 90. This picture would still make it exceedingly difficult to determine whether Lane County had become healthier over the period. Like in the first example a person that only cared about Education (Edu) for example, should feel that Lane County had improved overall during this period, versus someone who only cared about Healthcare (Heal Cre) who we would anticipate felt Lane County had declined in health over the same period.

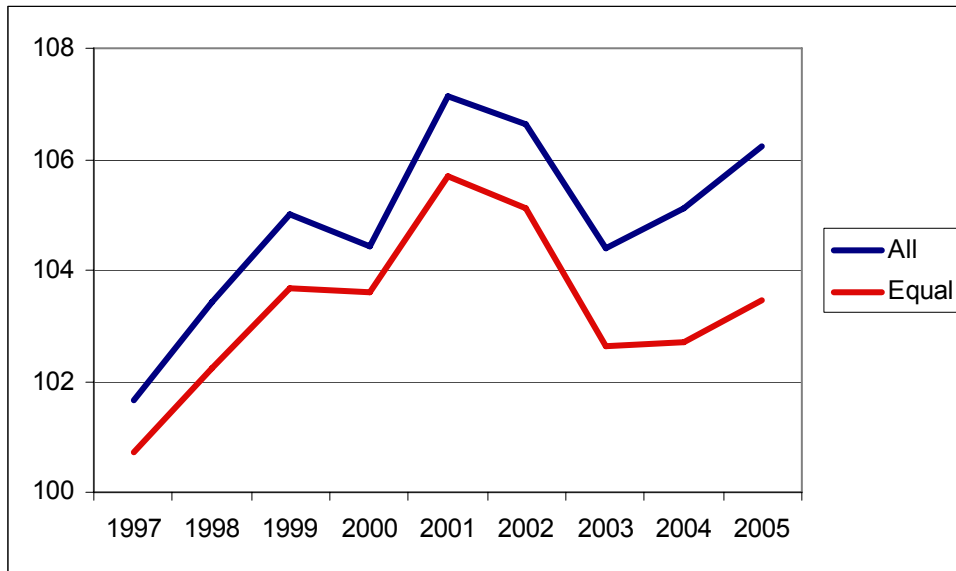
The next stage was to begin generating indices based on survey respondents. In total there were forty-three respondents¹⁸ to the survey from a distribution number of eighty potential respondents. The usual collection bias must be kept in mind when assessing the outcomes. Due to the survey being available online only those members of the organizations with internet could have accessed the survey, both the Chamber of Commerce and United Way determined who received the opportunity/ request to fill out the survey etc. One should certainly be mindful of the low number of respondents overall and in particular when we consider the implications of United Way's responses as there were only five respondents affiliated with United Way, versus seventeen associated with both organizations and sixteen affiliated with just the Chamber of Commerce. It would not take many more respondents to potentially alter the indices for varying groups significantly, and when looking at the results this should be kept in mind. Finally, when presenting an index for "United Way" for example, we took the responses of all those affiliated with just this organization and averaged their responses¹⁹. Therefore, the "United Way" index is based on the average respondent and not on any one respondent in particular.

Based on all elicited responses we obtained their average valuations of the nine broad categories and compared it with what the index would look like if someone valued improvement in each of the nine categories equally (see Figure 2).

¹⁸ Of the forty-three respondents: Five respondents did not fill out parts of the second section of the survey designed to enable us to group the data. These respondents were therefore included in calculating the averages of all respondents but were excluded in the cases where they did not respond to a particular question.

¹⁹ Making sure the figure remained at effectively 90.

Figure 3:



Broadly speaking the index generated by all the elicited responses (denoted by ‘All’ on the graph, Figure 3) suggests that the health of Lane County improved between 1997 and 2005. These indices together also suggest that, based on the indicators included and the given/ generated responses, the average survey respondent would feel that the local community is healthier at any given point over the nine year period compared to the imaginary individual that valued each of categories’ improvement equally. Furthermore, if we look at the period from 199-2005 we would surmise that the average survey respondent had felt the local community had improved in health versus the ‘equally weighted’ person who, we would anticipate, would feel that the local community’s health had declined over the same period. One should also pay attention to how over the last three graphs the variation in the change in the indices has been getting smaller and smaller. This demonstrates how the creation of an index incorporates and

offsets that, and it seems like a plausible assumption, that when a decline in one indicator can be offset by the improvement in another.²⁰

Before taking a closer look at the indices generated based on affiliation to an organization we will briefly discuss what the elicited responses came out to be when averaged over each of the groups (Figure 4A).

Figure 4A:

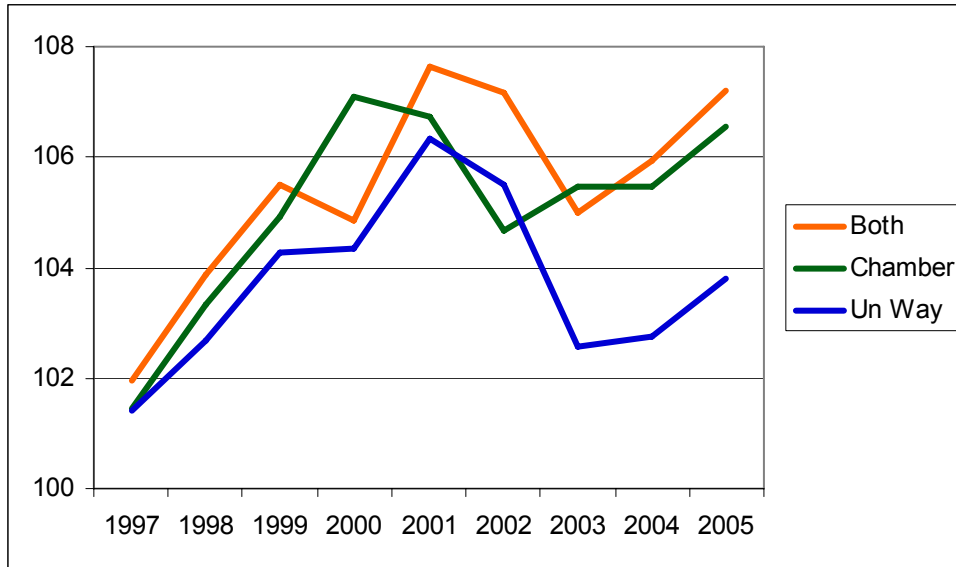
<u>Category</u>	<u>Affiliated Both</u>	<u>Chamber Only</u>	<u>United Way Only</u>
Avg. Comm. Inc.	10.085	8.406	8.9
Child Welfare	9.469	8.656	7.6
Education	15.292	15.375	10.4
Employment Opp.	17.35	14.156	14.3
Environment	6.573	9.156	7.6
Healthcare	9.557	9.719	11.9
Housing	9.851	10.125	13.5
Income Inequality	1.867	2.281	8.4
Public Safety	9.956	12.125	7.4

Based on these figures we then assumed for example that those affiliated with the Chamber of Commerce (8.656) valued an improvement in Child Welfare over those respondents only affiliated with United Way (7.6), and United Way only affiliates cared more than Chamber only respondents about Employment Opportunities (14.3 versus 14.156). Some might see this as unexpected given traditional perceptions of the goals of these organizations. However, firstly it is possible that these numbers to accurately portray these different valuations of improvement in different categories. Secondly, in calculating the index we have to assume all respondents understand the survey equally (i.e. improving Child Welfare means the same thing to each respondent) and if this were not the case the figures might be biased insignificantly *or*

²⁰ Imagine for example if you lost \$10 but then found \$20, one can easily imagine that although you were disappointed in losing the \$10 your outlook improved overall because the discovery of the \$20 more than offset this loss, and therefore the ‘health’ of your financial situation improved when factoring in both changes.

significantly. Thirdly, if respondents were aware of what other organization was participating this may or may not have affected their responses. If we are to take these average responses as accurate, given the limitations of the survey and collection methods, below in Figure 4B is what the indices would look like for each group based on affiliation with organization.

Figure 4B



In a similar fashion to the ‘All’ elicited responses and ‘Equal’ weighted indices all three generally trend up over the entire period. Suggesting that on average Lane County became a healthier community between 1997 and 2005.²¹ If we look from 2001-2005 we would expect that the average respondent affiliated with only United Way would have viewed Lane County as declining in health at a faster rate than the average respondent affiliated with both. Set against the average Chamber Only respondent who would have seen only a very slight decline over the same period. From the indices we could also say that given the average of their elicited responses 2002 was the only year in which United Way Only affiliates would have viewed Lane County in a healthier situation than the Chamber Only respondents. These community generated indices

²¹ As throughout taking into account the average elicited responses and the indicators and categorization that was determined.

substantiate that people do have different preferences or valuations, and that many view and evaluate the local community from very different perspectives.

Below are the average elicited responses based on gender (Figure 5A), we show this response table once more to demonstrate the flexibility and responsiveness of the index, and that even with different valuations of each of the categories the indices do not have to look different as they were in the graph based on affiliation (see Figure 5B).

Figure 5A:

<u>Category</u>	<u>Male</u>	<u>Female</u>
Avg. Comm. Inc.	7.950	10.469
Child Welfare	8.325	8.943
Education	14.575	15.637
Employment Opp.	15.225	16.858
Environment	8.4	6.680
Healthcare	9.800	9.526
Housing	10.75	9.832
Income Inequality	3.100	2.847
Public Safety	11.875	9.208

Figure 5B:

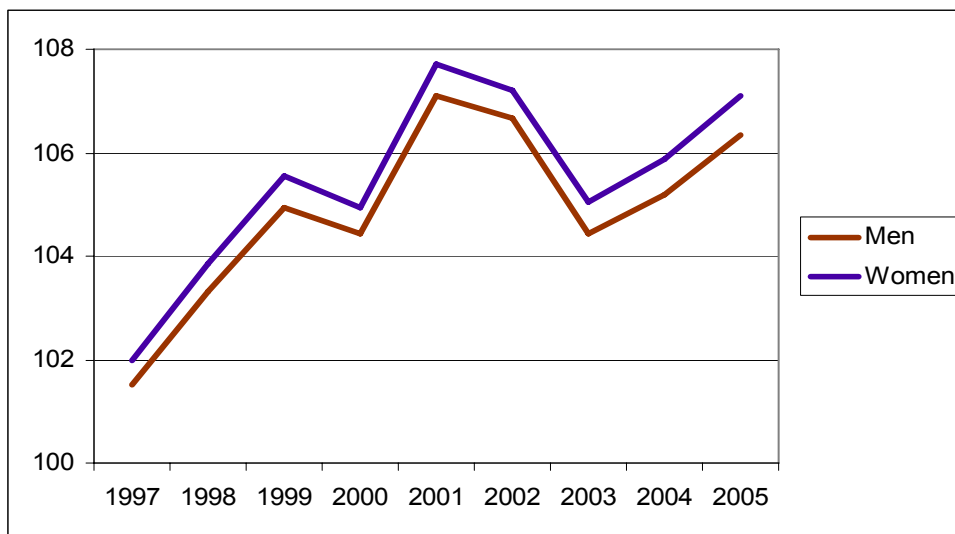


Figure 5B continues to suggest that based on the indicators included, the categorization of these indicators, and the elicited survey responses Lane County improved in health overall from 1997 to 2005. The results also suggest that despite the differences in valuations the indices based on gender largely track together, and that over the whole period examined, given their average responses Women viewed Lane County as slightly healthier than Men over the whole time series.

Figure 6 below breaks the survey respondents out based on the length of time they have resided in the Eugene-Springfield Area, less than or equal to twenty years, twenty-one to forty years, and forty-one years and greater. As the graph shows there is little difference in the average valuations of the health of Lane County over the period. With all three improving and responding in much the same fashion. Like Male and Female respondents this close symmetry is despite differences in valuations of the different categories.

Figure 6:

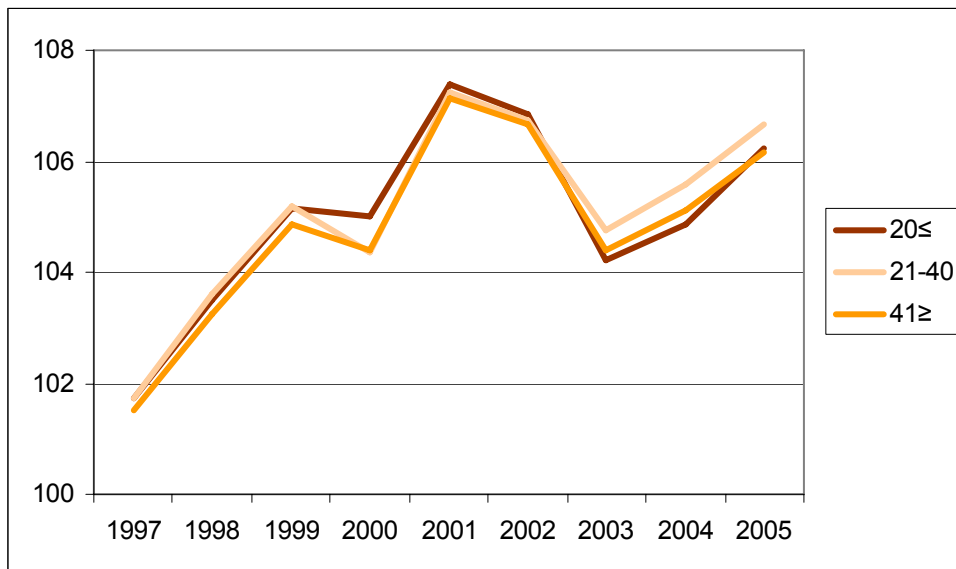


Figure 7:

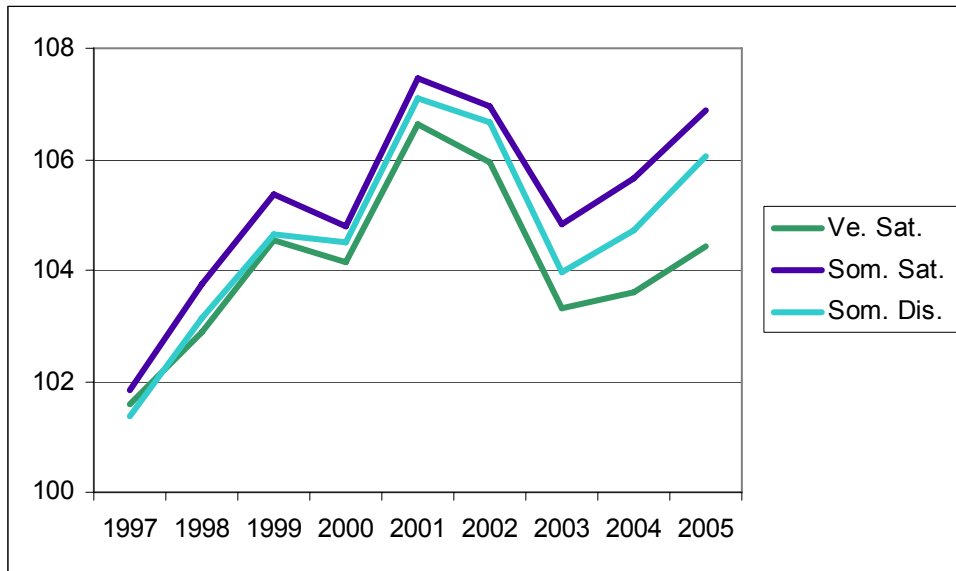


Figure 7 above, is the graphical depiction of the indices based on how satisfied or dissatisfied respondents currently are within the Eugene-Springfield area. It should be noted that no respondents stated they were 'Very Dissatisfied' with the local community. Interestingly enough those respondents that stated they were 'Very satisfied' with the local community, based on their responses, the indicators included and their categorization saw the least amount of increase in the health of Lane County. However, what one person considers to be 'satisfied' can certainly vary across individuals, and it would therefore be incorrect to take from these results that the average respondents are not 'Very Satisfied'. We can only say that those that label themselves 'Somewhat Dissatisfied', based on the calculation of the index, see Lane County relatively healthier overall than those that label themselves 'Very Satisfied', but that does not mean their self-evaluation and labeling is incorrect.

Figure 8:

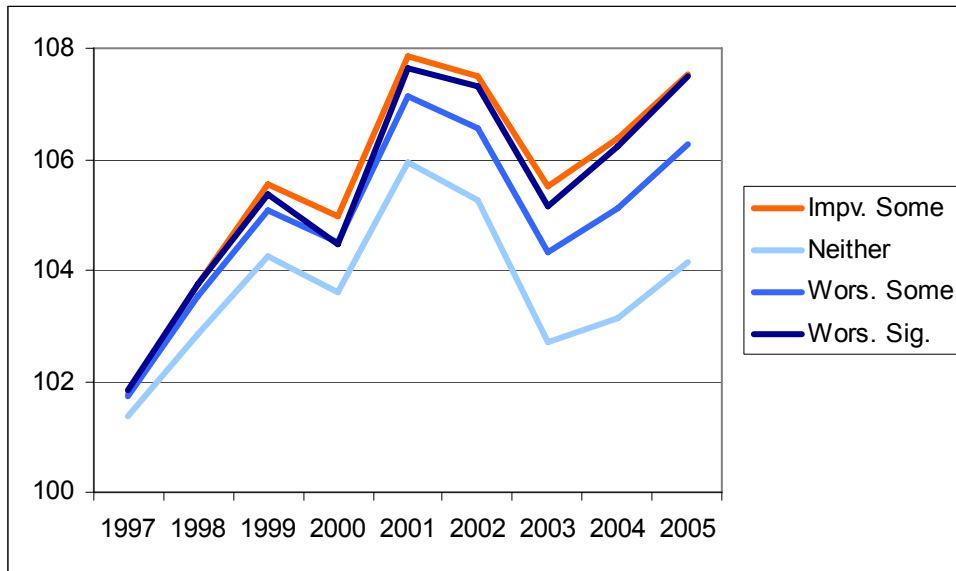


Figure 8 above, is the graphical depiction of the indices based on how satisfaction or dissatisfaction has changed for respondents over the last five years within the Eugene-Springfield area. there are varied potential explanations for his occurrence. No respondent stated that they felt the Eugene-Springfield area had ‘Improved Significantly’ over the last five years. At first glance this might appear to go against the over trend upwards of all four indices graphs, especially when one also notes that those that stated it has gotten either ‘somewhat’ or ‘significantly’ worse both trended up overall. However, the index does not account for 2006²² or the first half of 2007 which could alter the final look of the indices. As elicited responses are held constant and mapped on to all previous years included this might mean the index overlooks changing responses over the last five years which could potentially alter the movement of the index. However, we can still make the same claims as previously made that those that felt the Eugene-Springfield area had neither improved nor worsened should believe that the health of the community declined from 2001 to 2005 at a faster rate relative to the other grouped respondents.

²² Due to the limitations of data availability at the county level on many indicators. Only a handful of 2006 numbers have been produced for those indicators included.

The graphs would also suggest that in 2005 those that stated the local community had ‘improved some’ and those that felt it had ‘worsened significantly’ should assess the health of the community to be at the same point, given their elicited responses.

Conclusion

Through this paper, we have demonstrated that preferences within a community do vary along all lines of division, be it company affiliation, gender or years of residency. Depending on the unique combination and value of these components the Healthy Community Index may or may not look dramatically different. As a result of this work, we foresee the continuity of this index, along with the expansion of the index to other realms.

At this point, the Lane County Healthy Community Index is up and running and able to accept new data as and when it becomes available. The addition of future years' data to the index is a relatively simple process. Therefore, so long as interest remains, this index may be updated, as is, for every future year of data availability²³.

Furthermore, as the index has been constructed using an excel file available to all, individuals are able to modify the index to reflect their specific interests and preferences. As mentioned earlier in this paper, many possible indicators were left out of the index. While we feel the inclusion of some indicators and exclusion of other was justified, some individuals may feel that a certain indicator need be included in the index. If this is the case, and the data is available, an individual may add the specific indicator to the index with little effort.

Along with the possible extrapolations concerning Lane County, this index also provides a means of future comparisons between different counties or communities within the United States. Like in the effort to add indicators to the Lane County index, the cross community comparison hinges on the availability of data and the constraint of holding preferences constant across communities in order to make an unbiased comparison. A complete comparison would

²³ Doing so would implicitly mean our indicators and their categorization is broadly accepted as plausible, realistic, and to the extent possible representative of broader issues of concern.

require the use of the same indicators in both indices. However, this possibility seems entirely feasible, assuming the data collection efforts in other counties are on par with Lane County's.

Finally, we hope that this is not the last step in a potentially ongoing long-term project. We hope that the index could be accessed and generated online by individual community members or organizations, perhaps through a collaborative initiative by both the Eugene Area Chamber of Commerce. And/ or a large scale determination of indicators, categories, and weights could be obtained across a much larger cross section of Lane County so that a truly Lane County Healthy Community Index could be generated and reported in the media in much the same way so many other statistics are nowadays.

Appendix 1: Data Sources

- 1) **Unemployment**: Obtained from USDA Economic Research Service – Bureau of Labor Statistics - <http://www.ers.usda.gov/Data/Unemployment/RDList2.asp?ST=OR>
- 2) **Per Capita Income**: <http://www.qualityinfo.org/pubs/single/pcpi.pdf>
- 3) **Per Capita Income as a Percent of US Income**: Obtained from the Oregon Benchmark Website - <http://www.oregon.gov/DAS/OPB/obm.shtml> - Also, Bureau of Economic Analysis <http://www.bea.gov/regional/reis/default.cfm?catable=CA1-3§ion=2>
- 4) **Uncompensated Health Care**: <http://www.oregon.gov/DAS/OHPPR/>
- 5) **Child Abuse and Neglect Rate**: Obtained from the Oregon Benchmark Website - Also, Department of Human Services <http://dhsforms.hr.state.or.us/Forms/Served/DE1535.pdf>
- 6) **Persons Crime Rate**: http://egov.oregon.gov/OSP/CJIS/annual_reports.shtml#1997
- 7) **Behavioral Crime Rate**: Obtained from the Oregon Benchmark Website
- 8) **Air Quality**: Obtained from the Oregon Department of Air Quality's website - <http://www.deq.state.or.us/aq/forms/annrpt.htm>
- 9) **Housing Prices**: <http://www.huduser.org/Datasets/il/fmr97/hud97or.txt>
- 10) **High School Drop Out Rate**: Obtained from the Oregon Benchmark Website
- 11) **Poverty Rate**: Obtained from the US Census Bureau Website
- 12) **Low Birth Weight**: Obtained from Oregon Vital Statistics Annual Report - <http://www.dhs.state.or.us/dhs/ph/chs/data/arpt/05v1/section1.shtml>
- 13) **Prenatal Care**: <http://www.dhs.state.or.us/dhs/ph/chs/data/arpt/05v1/section1.shtml>
- 14) **Property Crime Rate**: http://egov.oregon.gov/OSP/CJIS/annual_reports.shtml#1997
- 15) **Solid Waste Levels**: Obtained from the Oregon Benchmark Website - Also, <http://www.deq.state.or.us/lq/pubs/docs/sw/2005MRWGRatesReport.pdf> (pg. 15)
- 16) **Average Wage**: Obtained from Bureau of Economic Analysis Website - <http://www.bea.gov/regional/reis/drill.cfm>
- 17) **Percent Change in Employer Health Insurance Premiums**: Obtained from the Insurance Division of the Oregon Government Website http://www.cbs.state.or.us/ins/health_report/health-report_intro.html

Appendix 2: Indices Numbers

Individual indicator Based Indices Numbers:

	Unemp	*PC Inc	PC Inc %	*Uncmp HC	Child A&N	Pers CR	Behav CR	Air Qual	*House \$
1997	104.0652	105.8046	101.5356	98.37834	96.96582	99.03386	95.77436	96.10387	99.93053
1998	101.3373	115.8028	102.8986	97.70063	98.71095	100.7043	100.8899	103.2357	98.65801
1999	103.1478	119.4858	104.4788	96.07478	90.1367	105.8593	99.66987	100.369	98.93111
2000	102.6922	126.0991	99.80897	92.742	87.97064	104.5509	98.46277	99.60366	103.0563
2001	96.51894	125.134	108.7478	89.12402	91.61061	106.4505	100.1113	100.5638	105.4583
2002	95.24556	127.5845	109.9979	83.61664	91.61061	117.5299	100.0005	105.0196	103.4206
2003	91.5249	124.9327	111.2623	76.34813	92.80677	119.203	96.84124	108.9808	94.20745
2004	94.40573	134.5447	106.6952	68.59878	94.63039	118.5533	96.5202	110.6232	95.26655
2005	99.55767	141.2247	105.282	64.11586	94.78396	126.4448	104.3002	106.6849	97.43809

	HS Drop R	Poverty	Low B Wt	Pre-Nat Ca	Prop CR	Sol Was	*Avg Wage	*% G Emp	HI P
1997	106.5304	98.89281	96.86723	104.7128	95.59646	94.19976	109.4866		105.0411
1998	107.6591	96.71501	99.57646	100.2493	101.5	95.07846	120.2027		100.3606
1999	112.8893	101.685	99.1548	100.0001	106.3241	95.72347	125.8541		102.5508
2000	107.6591	106.685	93.63267	97.29938	105.8104	99.38116	130.695		99.88027
2001	116.5196	102.2529	95.64063	104.0651	108.7078	105.4554	138.196		95.54438
2002	117.1353	101.1208	91.08452	101.8866	112.1162	99.74268	136.4321		93.0563
2003	119.0019	96.17834	84.20403	97.78674	111.4932	100.8331	136.8149		91.50687
2004	120.8983	90.46387	86.00979	94.90922	113.9147	100.3215	138.8815		96.46648
2005	120.2628	90.46387	84.92177	94.43797	108.187	99.09379	144.9068		98.927

Category Based Indices Numbers:

	Av Comm	Inc Chi	Wel	Edu	Emp	Env	Heal Cre	Hous	Inc Ineq	Pub Safe
1997	103.6477	96.91651	106.5304	106.7404	95.14717	102.6639	99.93053	98.89281	96.78895	
1998	109.1577	99.14275	107.6591	110.3632	99.07231	99.42901	98.65801	96.71501	101.0307	
1999	111.728	94.54037	112.8893	113.9319	98.01795	99.50586	98.93111	101.685	103.9053	
2000	112.1837	90.75978	107.6591	115.8455	99.49139	96.59496	103.0563	106.3166	102.8901	
2001	116.648	93.6062	116.5196	115.4878	102.9791	96.05031	105.4583	102.2529	105.0254	
2002	118.4597	91.34973	117.1353	113.9889	102.346	92.55161	103.4206	101.1208	109.6296	
2003	117.894	88.40479	119.0019	111.8972	104.8266	88.07413	94.20745	96.17834	108.7729	
2004	119.8063	90.22124	120.8983	114.4996	105.3452	85.64144	95.26655	90.46387	109.2343	
2005	121.9282	89.7215	120.2628	120.1059	102.8181	84.30033	97.43809	90.46387	112.5734	

Indices Based on All Elicited Responses, Equal Weights, and by Affiliation:

	All	Equal	Both	Chamber Only	Un Way Only
1997	101.6476	100.7253	101.9465	101.452	101.4114
1998	103.43	102.2432	103.8863	103.3461	102.6629
1999	105.0262	103.6846	105.5141	104.915	104.2584
2000	104.4326	103.6073	104.8368	107.0971	104.3557
2001	107.1237	105.6917	107.637	106.7343	106.334
2002	106.6265	105.1319	107.1565	104.6684	105.5006
2003	104.388	102.6264	104.9825	105.4595	102.5673
2004	105.1237	102.6986	105.9277	105.4595	102.7533
2005	106.2517	103.4672	107.2016	106.5343	103.7829

Indices Based on Gender, and Number of Years Residing in Eugene-Springfield Area:

	Male	Female	20≤	21-40	41≥
1997	101.5101	101.9775	101.7241	101.7463	101.5267
1998	103.3202	103.8565	103.4847	103.6008	103.2277
1999	104.9412	105.556	105.1511	105.1995	104.8635
2000	104.4177	104.9381	104.9996	104.348	104.4025
2001	107.0934	107.714	107.3789	107.228	107.1429
2002	106.6743	107.2151	106.8601	106.7476	106.6494
2003	104.4483	105.0313	104.2251	104.7596	104.3914
2004	105.1765	105.8818	104.8788	105.598	105.1024
2005	106.3343	107.1169	106.2376	106.6639	106.1794

Indices Based on whether the respondent felt the Eugene-Springfield area had Improved or Worsened over the last 5 years, and how Satisfied or Dissatisfied the respondent Currently was with the Eugene-Springfield area:

	Impv.	Some Neither	Wors. Some	Wors. Sig.	Ve. Sat.	Som. Sat.	Som. Dis.
1997	101.7836	101.3676	101.7366	101.8326	101.5907	101.8448	101.3709
1998	103.7502	102.8484	103.5283	103.7572	102.8872	103.7304	103.1483
1999	105.5326	104.2346	105.0835	105.361	104.543	105.3826	104.6652
2000	104.9673	103.6028	104.5023	104.4635	104.16	104.7873	104.4982
2001	107.8541	105.939	107.1393	107.6491	106.6476	107.4642	107.0934
2002	107.4948	105.2617	106.5666	107.298	105.9458	106.9625	106.6774
2003	105.5257	102.6913	104.3262	105.1581	103.3072	104.8137	103.9537
2004	106.3609	103.1487	105.1119	106.2497	103.6028	105.6512	104.7256
2005	107.5265	104.1477	106.2791	107.4845	104.4448	106.8959	106.0655

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