

Measuring Community Wealth

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A report for the Wealth Creation in Rural
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Wealth Creation in Rural Communities

This report is part of the Wealth Creation in Rural Communities initiative, funded by the Ford Foundation. The aim of the initiative is to help low-wealth rural areas overcome their isolation and integrate into regional economies in ways that increase their ownership and influence over various kinds of wealth. Previous papers produced by the initiative can be found at <http://www.yellowwood.org/wealthcreation.aspx>. The goal of this report is to advance the initiative's broad aim of creating a comprehensive framework of community ownership and wealth control models that enhance the social, ecological, and economic well-being of rural areas.

Appendices to this paper are available as a separate document, "Measuring Community Wealth: Appendices," which can be downloaded at <http://www.yellowwood.org/wealthcreation.aspx>.

Author Organizations

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Wealth Creation In Rural Communities

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Forward

The research contained in this report was conducted in 2008 and 2009 prior to developing the Wealth Matrix used by Ford Foundation grantees and others in planning and implementing the wealth creation approach to development. We hope it is useful both as a record of how our thinking is evolving and as grist for those who wish to learn more about how to measure multiple forms of wealth. The Wealth Matrix can be viewed at <http://www.yellowwood.org/Project%20Summary%20and%20Wealth%20Matrix.pdf>.

Introduction

WHAT DOES IT MEAN TO RESTORE, CREATE OR MAINTAIN COMMUNITY WEALTH IN RURAL AMERICA?

Historically, the wealth of rural communities has been owned and controlled by outside forces that extract it and exploit it for their own benefit. In the process, much of the potential wealth of rural communities has become degraded. Degradation looks different in different places. Buildings and infrastructure are in disrepair; people are obese and ill; water, air, and land are polluted; more money is paid out in taxes than comes back; creativity has been squashed and conditions are ripe for further exploitation that will ensure a continued cycle of poverty. Decisions made regarding community investments are so fragmented as to make it nearly impossible to visualize the full range of asset development costs and opportunities in a systems framework.

Community wealth refers only to assets the community or low wealth individuals own or have significant decision-making authority over. The decision-making authority must include decisions with respect to how and how much to invest or reinvest in any given asset and how to allocate returns from that investment.

If we define wealth broadly to include built, individual, social, natural, financial, and intellectual capital, what does it mean for a community to own or have decision-making authority over assets in each area sufficient to contribute to overall community resilience and improve quality of life for all people? How do we reconceptualize the purpose of economic development from a focus on short-term job creation and income production to longer term wealth restoration, creation, and maintenance? Income feeds you once. Wealth, if properly maintained, generates income on an ongoing basis. The income from one source of wealth can be reinvested to grow the underlying asset, reallocated to invest in another asset, or used to support consumption. ***Measuring Community Wealth*** is designed to help people recognize the full range of wealth and potential wealth in their communities, understand the income streams that can flow from community wealth, and recognize the connections between community wealth and resilience.

When we use the phrase “community wealth indicators,” we mean indicators that suggest opportunities for investment to create greater wealth and produce income streams to support consumption, savings and reinvestment. These indicators connect natural, social, individual, intellectual, built, political, and financial wealth in a systems context.

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WHY DEVELOP SAMPLE COMMUNITY WEALTH INDICATORS?

By developing sample indicators using real world data, we hope to contribute to:

- understanding what we mean by investing in wealth that sticks in poor rural communities.
- recognizing the difference between generative investments that result in new wealth across several different types of capital and dead end investments that either exploit one or more forms of wealth to create other forms or do not add to the stock of multiple forms of wealth where they could.
- showing how measuring outcomes in terms of wealth creation can create a framework to redirect public and private investments for the greater good.

WHAT ARE THE FORMS OF COMMUNITY WEALTH?

The seven forms of wealth discussed in this document include:

Intellectual capital is the stock of knowledge, innovation, and creativity or imagination in a region. Imagination is what allows us to create new knowledge and discover new ways of relating. Investment in intellectual capital is through research and development and support for activities that engage the imagination, as well as diffusion of new knowledge and applications. Earnings from intellectual capital include inventions, new discoveries, new knowledge, and new ways of seeing.

Social capital is the stock of trust, relationships, and networks that support civil society. Investments in bridging social capital are those that lead to unprecedented conversations, shared experiences, and connections between otherwise unconnected individuals and groups. Investments in bonding social capital are those that strengthen relationships within groups. For example, sponsoring a town-wide festival could be seen as an investment in bonding social capital for town residents. Earnings from investment in social capital include improved health outcomes, educational outcomes, and reduced transaction costs, among others.

Individual capital is the stock of skills and physical and mental healthiness of people in a region. Investments in individual capital include spending on skill development (e.g. literacy, numeracy, computer literacy, technical skills, etc.) and health maintenance and improvement. Earnings from investments in individual capital include psychic and physical energy for productive engagement and capacity to use and apply existing knowledge and internalize new knowledge to increase productivity.

Natural capital is the stock of unimpaired environmental assets (e.g. air, water, land, flora, fauna, etc.) in a region. Natural capital is defined by Fikret Berkes and Carl Folke as having three major components: 1) non-renewable resources such as oil and minerals that are extracted from ecosystems, 2) renewable resources such as fish, wood, and drinking water that are produced and maintained by the processes and functions of ecosystems, 3) environmental services such as maintenance of the quality of the atmosphere, climate, operation of the hydrological cycle including flood controls and drinking water supply, waste assimilation, recycling of nutrients, generation of soils, pollination of crops, and the maintenance of a vast genetic library. Investments in natural capital include restoration and maintenance. Earnings or income includes a sustainable supply of raw materials and environmental services (Fikret Berkes and Carl Folke, A systems perspective on the interrelations between

natural, human-made and cultural capital, <http://dieoff.org/page117.htm>). Natural capital and its systems are essential for life. People can destroy, degrade, impair and/or restore natural capital but cannot create it.

Built capital is the stock of fully functioning constructed infrastructure. Built capital includes buildings, sewer treatment plants, manufacturing and processing plants, energy, transportation, communications infrastructure, technology and other built assets. Investment in built capital is in construction, renovation, and maintenance. Built capital depreciates with use and requires ongoing investment to maintain its value. The income or earnings generated by built capital exist only in relation to its use. For example, sewer and water treatment plants contribute to individual capital (health). Schools contribute to individual capital (skill development) and social capital (if they are used as community gathering places) and may contribute to natural capital (if they include natural areas that are maintained or protected by the school).

Financial capital is the stock of unencumbered monetary assets invested in other forms of capital or financial instruments. Financial capital, if well-managed, generates monetary returns that can be used for further investment or consumption. For example, financial capital can be invested in land protection through outright purchase or purchase of easements. Public financial capital can be accumulated in a variety of ways including building budget surpluses by collecting more in tax revenues than is spent on services, borrowing through bonding, and charging fees for public services over and above the real cost of services. “Rainy day funds” are an example of public stewardship of financial capital, designed to help society weather risks and uncertainties. In addition, through the growth of the non-profit sector, private philanthropic capital is often tapped for investment in other forms of capital that yield public goods, for example, preventive health care programs to increase individual capital. Stewardship of financial capital implies responsible investment to generate added income as well as elimination of unnecessary cost or waste in providing public goods and services. In creating wealth, we strive to invest financial capital in ways that increase and improve the quality of the other six forms of capital.

A seventh form of wealth, **political capital**, was added to the wealth creation framework after the research presented here was completed. We define political capital as the stock of power and goodwill held by individuals, groups, and/or organizations that can be held, spent or shared to achieve desired ends. Political capital is evidenced by the ability of an individual or a group to influence the distribution of resources within a social unit, including helping set the agenda of what resources are available. Investments in political capital are made through inclusive organizing that includes information gathering and dissemination, and increasing voice, access to and inclusion among decision-makers. Engaging players throughout a given value chain for mutual self-interest can build political capital. Earnings from investments in political capital include increased influence in decision-making, increased access to and control over other forms of capital, and the ability to engage in reciprocal relationships, among others. Political capital can affect how rural areas are viewed in a regional context. Regions where political capital is equitably distributed or shared are typically characterized by leadership that is broad, deep and diverse; that uses research-based evidence to inform decisions; and that welcomes questions, open discussion, public involvement and help from the outside.

STRUCTURE OF THIS PUBLICATION

In this paper, we:

1. Illustrate how to understand stocks and flows of wealth in a real world context that provides measurable targets to work toward.
2. Show the interconnections between different forms of wealth.
3. Document the opportunity costs of current investment patterns and the potential returns on alternative investments that create new wealth.
4. Begin to understand how to define and measure wealth creation outcomes.
5. Shine a light on the presence or absence or spottiness of data to allow for the development of a wealth creation approach.
6. Investigate initiatives that are attempting to impact multiple forms of wealth.
7. Discuss the issues around measurement of different forms of wealth and share some lessons learned.

The paper is divided into four sections:

- Components of a Wealth Indicator describes stocks and flows and defines “community wealth.”
- Sample Indicators of Community Wealth discusses sample indicators of six forms of wealth, using a study area of 14 counties in Appalachian Kentucky. The Appendices to this document contain detailed information on each of the sample indicators and are available online at www.yellowwood.org/wealthcreation.aspx.
- Case Studies of Wealth Creation in Action analyzes three on-the-ground projects that are attempting to impact several types of wealth.
- Lessons Learned and Next Steps summarizes some of the lessons learned about measuring wealth and describes the next steps we will be taking to continue to learn more.

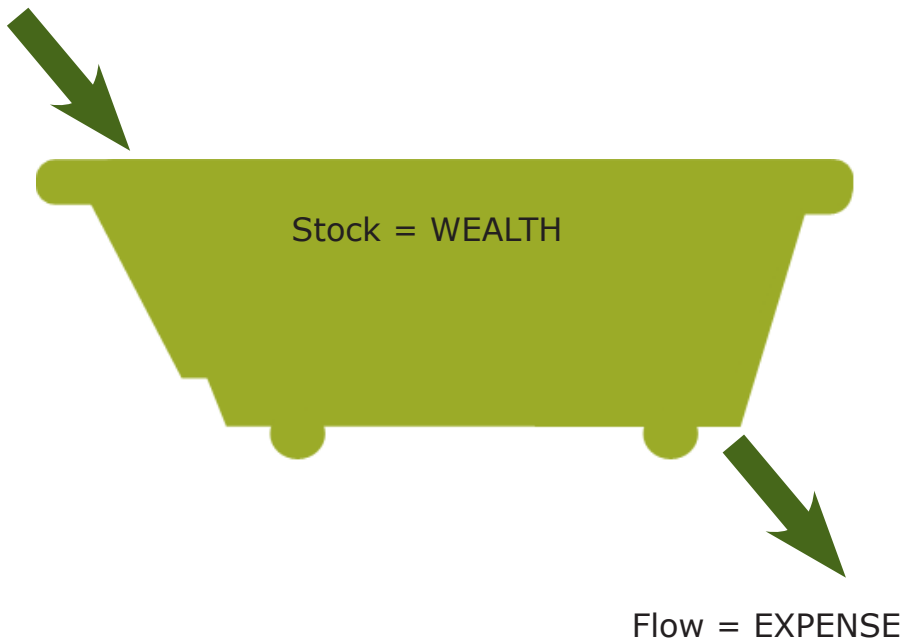
Components of a Wealth Indicator

STOCKS AND FLOWS

These community wealth indicators operate under the systems behavior of stocks and flows. A stock is the foundation of any system. Stocks are the elements of the system that you can see, feel, count, or measure at any given time. A system stock is a store, a quantity, an accumulation of material or information that has built up over time. Stocks change over time through the actions of a flow. If you think of a stock as a bathtub, the flows account for the filling (through the faucet) or draining (through the drain).¹

Stocks can grow in one of two ways:

Flow = INCOME



Making wealth stick means building stocks of wealth and preventing leakage out of the stock.

Figure 1: Stocks and Flows of Wealth

1. increasing flows into the stock
2. decreasing flows (leakage) out of the stock.

These indicators are useful because they begin to show the quantity and quality of available stock (assets) and the capacity for generating positive income flow and/or reducing leakage in the future. Making wealth stick means building stocks of wealth and preventing leakage out of the stock. Where possible, in the section on [Sample Indicators of Community Wealth](#), we've attempted to show stocks of wealth for the state and the study area.

OWNERSHIP AND CONTROL

Ownership and control of wealth is a qualifier of the stock. (e.g. proportion locally controlled). There are many different ways in which a community can own or exercise control over decision-making with respect to the various forms of wealth. Some, like community cooperatives, are well known and established, while others, like fair exchange agreements, are just beginning to surface more widely. Since expanding community wealth is synonymous with expanding ownership and decision-making authority, being able to assist communities in establishing ownership and decision-making authority over wealth is key to wealth-based development.

INCOME FLOWS

In terms of income flows, we have attempted to quantify the costs and benefits of increasing the stock of wealth. These income flows, where possible, are provided for the state and the study area.

OPPORTUNITY COSTS

Failure to invest or re-invest in a stock is not cost-free. Ask any community with crumbling infrastructure, for example. It is important to acknowledge the costs of doing nothing to allow for informed decision-making.

SAMPLE WEALTH CREATION APPROACHES TO INCREASING THE STOCK

For each stock of wealth, we have explored sample wealth creation approaches to increasing the stock through both increasing the flow and reducing the leakage. Some of these approaches have been used elsewhere and are shown as best practices case studies.

WHAT IS A COMMUNITY WEALTH STRATEGY?

A wealth strategy aims at improving the ability of communities and individuals to increase asset ownership, anchor jobs locally, expand the provision of public services, and ensure local economic stability and resilience.²

Community wealth strategies are designed to increase the stocks of shared wealth in the community — by raising the financial assets of individuals and communities, by increasing the level of “common” assets within a community that are locally owned, and by leveraging the use of funds from institutions that are based in the community (such as city governments and universities) for community-benefiting purposes. Community wealth building strategies are, by definition, socially inclusive.

Sample Indicators of Community Wealth

INTRODUCTION

For six type of community wealth (individual, social, intellectual, natural, built, and financial), we chose one indicator of community wealth on which we would attempt to find data for our study area. The indicators were chosen by considering interest but also the ease of acquiring data about the indicator. These sample indicators are not the only nor necessarily the most useful indicators. They are merely examples of how this approach can work, using readily available data.

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THE VALUE OF EXAMPLES – HOW TO USE THIS SECTION

The value of this section is in the examples of wealth indicators from six different forms of community wealth in an actual place, eastern Appalachian Kentucky. The use of an actual place allows us to show the current and potential future implications of wealth indicators for a particular location and to learn about the limitations of available data.

The following are the indicators we have chosen to profile to date:

- Individual Capital
 - Healthy Weight People
- Social Capital
 - Broadband Access
- Intellectual Capital
 - Patents in Use
- Built Capital
 - Electric Generation Capacity
- Financial Capital
 - Savings, Net Worth, Debt, and Income
- Natural Capital
 - Agriculture and Food

This section contains a short summary of each indicator of wealth including stocks, income flows, ownership and control, opportunity costs, and sample wealth creation strategies. Supporting data and analysis for each indicator is featured in “Measuring Community Wealth: Appendices,” along with a discussion of data limitations and their implications for designing effective wealth creation strategies.

STUDY AREA

In searching for a study area for this exercise, we were seeking an area that had both lower wealth areas and higher wealth areas to better understand the potential for regional benefits. The Appalachian Region was particularly attractive. We initially considered areas in South Carolina and Kentucky. In the end, we chose Kentucky due to its location in Appalachia and also due to it being the location of the Triple Bottom Line Working Group’s field work. While the relevance of this work is not primarily for practitioners in Appalachia, if it is beneficial to them, that will be an added bonus.

Our study area is a 14 county area in eastern Appalachian Kentucky. The counties include the entire Cumberland Valley Area Development District (lower wealth counties) and about half of the Bluegrass Area Development District (higher wealth counties). Table 1 shows the two sets of counties, along with their demographic information. Figures 2 and 3 show the study area in relation to Area Development Districts and to counties.

Table 1: Study Area Demographics

U.S. averages			\$26,178	\$50,007	27%	13.3%													
County	Pop.	Adult Pop.	County Seat	Pop.	per capita income	median HH income	% BA or higher	% < poverty	total employed	% gov't. workers	% self-employed	median home value	% renting	% vacant	heat w/ electric-ity				
Bluegrass Area Development District																			
Clark	35,101	26,887	Winchester	16,724	\$22,846	\$44,540	16%	15.8%	16,380	17%	6%	\$130,000	34%	7%	50%				
Estill	15,307	11,740	Irvine	2,843	\$12,285	\$23,318	7%	26.4%	5,491	14%	8%	\$50,200	26%	11%	40%				
Garrard	14,792	11,449	Lancaster	3,734	\$16,915	\$34,284	11%	14.7%	6,933	15%	11%	\$81,300	24%	11%	51%				
Lincoln	25,093	18,970	Stanford	3,430	\$17,301	\$32,680	11%	18.1%	10,452	16%	7%	\$77,900	27%	9%	58%				
Madison	80,022	62,257	Richmond	28,435	\$20,155	\$39,260	28%	18.0%	38,854	19%	6%	\$136,000	38%	11%	70%				
Powell	13,237	10,206	Stanton	3,029	\$13,060	\$25,515	7%	23.5%	5,275	17%	7%	\$63,000	26%	9%	33%				
Cumberland Valley Area Development District																			
Bell	29,544	22,956	Pineville	2,093	\$13,562	\$20,817	12%	32%	9,432	20%	5%	\$51,400	31%	12%	68%				
Clay	24,052	18,640	Manchester	1,738	\$11,707	\$20,202	10%	31%	4,123	22%	5%	\$47,400	21%	26%	54%				
Harlan	31,692	24,403	Harlan	2,081	\$15,401	\$27,588	11%	26%	8,143	20%	5%	\$51,300	25%	22%	80%				
Jackson	13,810	10,606	McKee	878	\$10,711	\$20,177	7%	30%	2,281	17%	10%	\$48,300	20%	13%	69%				
Knox	32,527	24,233	Barbourville	3,589	\$13,693	\$20,586	10%	36%	9,221	17%	9%	\$65,300	31%	13%	50%				
Laurel	56,979	43,133	London	5,692	\$17,393	\$33,325	14%	20%	24,247	15%	9%	\$93,100	23%	14%	73%				
Rockcastle	16,857	13,081	Mt Vernon	2,592	\$12,337	\$23,475	8%	23%	3,473	15%	11%	\$57,000	20%	NA	53%				
Whitley	38,142	29,140	Whitley City	1,111	\$14,914	\$27,481	14%	27%	12,207	15%	8%	\$66,500	29%	17%	42%				
Totals	427,155	327,702		77,969					156,512										
Averages					\$15,163	\$28,089	12%	24.4%		17%	8%	\$72,764	27%	13%	56%				

Figure 3: Study Area in Relation to Kentucky Area Development Districts



INDIVIDUAL CAPITAL - STOCK OF HEALTHY WEIGHT PEOPLE

Statewide

Nearly two-thirds (63%) of Kentucky's adults are either overweight or obese, leaving 36% of Kentucky adults as healthy weight. Just under 30% are obese and over 30% are overweight. Some 15% of Kentucky's youth are at risk for being overweight or obese as adults.³ Kentucky's rank of overweight children ranks third in the nation.⁴ In our study area, the prevalence of obesity ranges from 17-52%. Since 1990, obesity among adults in the U.S. has almost doubled and continues to grow. Obesity in Kentucky, however, has more than doubled during this time and has stayed steadily above the national percentage each year.⁵

Study Area

The counties with the lower levels of obesity and higher levels of healthy weight people are mostly in the more northern higher wealth area of the Bluegrass Area Development District (ADD), while the higher obesity levels are found in the higher poverty southern area of the Cumberland Valley Area Development District (ADD). All counties in the Bluegrass ADD have obesity rates lower than the state, while the rates of the Cumberland Valley ADD counties are generally above the state, except for Laurel, Knox and Whitley.

Ownership – N/A

Income Flows

Costs of Obesity

The health status of residents has a direct impact on our collective medical bill and on productivity in the workplace. Kentucky's estimated annual obesity-attributed medical expenditures (in 2003 dollars) is \$1.1 billion with \$340 million paid by Medicaid. This represents 6.2% of Kentucky's adult medical expenditures, 7.5% of Medicare expenditures, and 11.4% of Medicaid expenditures.⁶ Moderately or extremely obese workers experienced a 4.2% health-related loss in productivity, 1.18% more than all other employees.⁷ To the extent that income is spent at medical establishments and unhealthy food providers that send profits out of the region, there is an additional net loss of income and a reduced capacity to build local wealth.

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Results

The medical costs of obesity per capita in Kentucky are \$282, compared to \$258 nationally.⁸ This translates to an estimated \$120,457,710 currently for the study area. Health-related productivity costs equate to an additional \$506 annually in lost productivity per (obese) worker⁹ or an estimated \$21,023,364 for the study area. Given the relatively high rates of obesity throughout the study area, the benefits of a wealth creation approach would particularly benefit low wealth areas, which would reduce the burden on state support and benefit all taxpayers.

Sample Wealth Creation Approaches to Increasing the Stock of Healthy Weight People

A wealth creation approach increases the stock of wealth by reducing wasteful spending and increasing savings and investment. Ways of increasing the stock of healthy weight people could include investment by state and local agencies in programs and education around obesity, exercise, and healthy food; investment in increasing access to healthy affordable food; local food system work to increase the availability of healthy, fresh food; WIC Farmers' Market Nutrition Program (FMNP); using venison as a public food; community and school gardens; and increased access to parks, open space and trails for increased physical activity. Specifically, these approaches could be partially funded by a tax on fast food or a tax on foods with corn syrup. Obesity prevention can happen at school, at worksites, within the community, or at home. A review of 73 published studies of worksite health promotion programs shows the average return on investment is \$4.30 for every \$1 spent on wellness programming.¹⁰



SOCIAL CAPITAL - STOCK OF RESIDENTS WITH BROADBAND AVAILABILITY AND ACCESS

Statewide

According to the U.S. Census Bureau¹¹, approximately 40% of Kentucky residents have broadband access. The Leichtman Research Group, which publishes state-by-state analyses of broadband, shows that as of the beginning of 2007 Kentucky was 46th of the 51 areas measured (50 states and Washington, D.C.) in residential broadband penetration. Today, Kentucky is leading the nation in broadband expansion. There were approximately 1.3 million additional Kentucky residents with broadband access as of 2008. Broadband subscription has increased 100%. Broadband availability has increased from 60% to 95%, a 58% growth. Broadband availability means that residents can subscribe to broadband service, if they so choose; broadband access means that residents do subscribe to broadband service.

Study Area

Even with the great increases in broadband availability in Kentucky, the lower wealth areas of our study area are still spottier in terms of broadband availability and access than the northern higher wealth areas. As of 2005, the vast majority of our study area counties were still below the statewide average with respect to having a computer at home, having Internet access at home, and having broadband available at home.

Ownership

There are 115 broadband providers in our study area, of which 30 are based in Kentucky and locally owned. There are 27 regional providers also, providing broadband

access to Kentucky and one or more adjacent states. Almost 30% of the providers in the higher wealth counties were Kentucky-owned, as opposed to almost 24% for the lower wealth counties.

Income Flows

Broadband can have a positive impact on jobs in rural areas. For example, jobs involved in the building and expansion of broadband networks pay 42% more than the average for manufacturing jobs.¹² From 1998 to 2002, employment in communities with broadband grew 1 percentage point more than in communities without it.¹³ To the extent that income is spent on broadband access companies that send profits out of the region, there is an additional net loss of income and a reduced capacity to build local wealth.

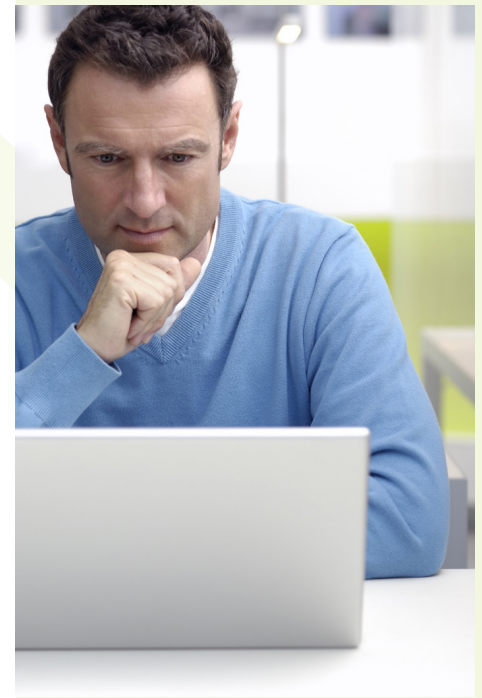
According to a study funded by the U.S. Department of Agriculture CSREES program,¹⁴ “rural broadband networks could improve some of the conditions of rural life that lead to depopulation and despair, including access to health care and education.” This, in turn, may stem the out-migration of youth from rural areas and attract new residents and businesses from more urban areas. Broadband has the potential to increase dimensions of social well-being such as perceived social integration, community satisfaction, access to unbiased sources of local news and linkages to other communities.

Increasing the stock of broadband users in lower wealth areas can connect these residents with resources available in higher wealth areas, such as health care services, educational programs, and employment opportunities.

Sample Wealth Creation Approaches to Increasing the Stock of Residents with Broadband Access

Ways of increasing the stock of residents with broadband access include encouraging locally owned infrastructure; providing assistance in technology adoption; ensuring accurate data on service availability and adoption; and working toward uniform and transparent federal policies. Increasing broadband access and usage, as well as encouraging local ownership of such networks, has triple bottom line wealth creation implications. Broadband can facilitate telecommuting, reducing the need for travel outside of the community and expanding the possibilities for place-based employment. Local networks provide mentoring and training opportunities for community youth, creating a digital workforce for new local businesses. Broadband connects rural residents with the global economy, providing opportunities for shared knowledge and innovation that otherwise do not exist.

The actual networks can create local jobs. Broadband can help provide more opportunities for existing businesses as well as encouraging entrepreneurial endeavors. Broadband can help facilitate education and provide health services (through the use of telemedicine), increasing individual capital. Though it is debatable whether internet use by itself creates social capital, access to broadband can increase social capital by allowing greater possibilities for civic engagement, social interaction, and networking once relationships are established.



According to a study funded by the U.S. Department of Agriculture CSREES program, “rural broadband networks could improve some of the conditions of rural life that lead to depopulation and despair, including access to health care and education.”

INTELLECTUAL CAPITAL - STOCK OF PATENTS IN USE

Statewide

From July 1, 2001 through June 30, 2008, intellectual property actions in Kentucky numbering 977 included 517 patents, 34 provisional patents, 107 invention disclosures, 114 patent applications, one utility patent, 21 trade secrets, 49 copyrights, and 63 trademarks.¹⁵ These forms of intellectual property are a measure of an individual's creativity and innovation.

People of many education levels and backgrounds develop patents and there is no necessary connection between where a patent is developed and where (or if) it is commercialized. Nevertheless the capacity to develop patents relevant to areas of the economy expected to grow nationally as well as areas that may hold special potential for Kentucky such as energy efficiency and wood products depends, in part, on education. The U.S. Bureau of Labor Statistics provides national indicators of job growth and decline, such as the expected growth of 27 percent or more in the following areas for the ten-year period between 2004 and 2014: computer science, database administration, software engineering, biomedical engineering, environmental engineering, healthcare, medical research, and internet publishing. The STEM (science, technology, engineering, mathematics) disciplines may be essential to the economic prosperity of Kentucky's citizens and communities, particularly if applied to economic opportunities relevant to Kentucky such as creating a competitive sustainable wood products sector. STEM disciplines fuel innovation, per capita income, and the creation of 21st century jobs. Yet, Kentucky continues to perform poorly compared with other states. Kentucky is ranked 49th in the nation in the number of bachelor's degrees conferred in science and engineering (2003) and 48th in science and engineering degrees as a share of degrees conferred. Additionally, Kentucky is ranked 47th in the number of scientists and engineers, 45th in the number of patents issued, and 42nd in the number of high tech jobs.¹⁶

Study Area

The overall data from 1990-2008 shows that the higher wealth counties of the Bluegrass ADD have more than 5 times as many patents as the lower wealth counties of the Cumberland Valley ADD. All counties in our study area have significantly fewer patents than the state's number of patents per 10,000 people, which is almost 35.

Ownership

Patents are owned by the inventor to whom the patent is granted. However, according to Ron Sampson, the secretary of the not-for-profit National Institute for Strategic Technology Acquisition and Commercialization in Manhattan, Kansas, about 90 to 95 percent of all patents are idle. Those that are used may not be commercialized in the inventor's hometown or even home state. Without researching each individual patent, it is difficult to determine which patents are being used or commercialized and which are idle. If we use Sampson's statistic, then 5-10% of the 353 patents in our study area (or 17-35) are actually being used or commercialized.

Income Flows

"Patents are a major force in the world economy, and one of only a few metrics commonly employed to gauge the ties of new ideas and innovations that are driving our economy."¹⁷ Patent applications and grants may be a reasonable indicator of the

People of many education levels and backgrounds develop patents and there is no necessary connection between where a patent is developed and where (or if) it is commercialized.

degree of innovation in a particular area. Innovations like patents can create opportunities for entrepreneurship, which can then create financial wealth in communities. The U.S. is currently the country with the most patents in the world (as of 2007).¹⁸

Patent values vary depending on the technologies and types of owners. Even if a patent is not marketed or used, value can be extracted from a patent by licensing it or selling it. The mean value of a United States patent across all groups of United States patent holders at the time of the patent grant runs between \$50,000 and \$80,000 in 1992 dollars. The median is closer to \$10,000. According to Bessen and Meurer, the median is a reasonable measure of what a typical patent is worth. The mean value is more appropriate for a large firm that holds a portfolio of patents, while the median is more representative of a cash-constrained independent inventor with only a few patents.¹⁹

What would be useful to know is the value of patents in use. However, there is no readily available data on which patents that were registered are actually in use or the value of that use. If patents are commercialized in the inventor's location, the benefits of those patents have implications for the local economy. To the extent that commercialized patents may be used outside of the region, there is an additional net loss of income and a reduced capacity to build local wealth.

Sample Wealth Creation Approaches to Increasing the Stock of Patents

Ways of increasing the stock of patents could involve interventions that increase patent development and patent utilization. Ways to increase patent development could involve increasing the science, technology, engineering and mathematics educated workforce or increasing the number of government grants for programs such as the Small Business Innovation Research and Small Business Technology Transfer programs. One way of influencing patent utilization is by increasing the number of patents that are actually commercialized. This might involve the work that the Center for Advanced Technology and Innovation is doing in terms of facilitating donations of unused patents and assisting businesses in acquiring and using those patents. It could also involve more technical assistance for inventors after they have been granted a patent. Other countries, such as Sweden and Singapore, are intentionally pursuing and investing in innovation by mixing intellectual capital, social capital and financial capital to go beyond patents and facilitate a more holistic approach to innovation including user-driven innovation in designs, processes, and marketing as well as product development.

BUILT CAPITAL - STOCK OF ELECTRIC GENERATION CAPACITY

Capacity & Ownership

The study area's power plants have generating capacity of 913 Megawatts (MW) with another 838 MW under development.²⁰ Most of the facilities are owned by East Kentucky Power Cooperative (EKPC) which is owned by sixteen local distribution co-ops.

Fuel

70% of the capacity is (or will be) coal fired. The coal is provided by five out of state companies.

“Patents are a major force in the world economy, and one of only a few metrics commonly employed to gauge the ties of new ideas and innovations that are driving our economy.”

Income Flows

Electric generation is capital intensive and EKPC has substantial debt (\$2 billion).²¹ As a result, huge sums leave the area each year for debt service (\$103 million in 2007). The company continues to invest in new facilities, incurring more debt. The distribution co-ops that own EKPC do not earn profits per se, but members accrue equity in the company.

Costs of Electricity

Kentucky has some of the lowest electric rates in the country.²² [Note: Although comparatively cheap, the price does not include externalities such as mountain top removal, valley fills, sludge ponds, greenhouse gases, and adverse health effects.] Not surprisingly, consumption is high because low prices encourage greater consumption. As a result, average monthly bills are comparatively high. We estimate residents of the study area paid over \$170 million for electricity in 2007.²³ Commercial and industrial use represents 62% of total electric revenue. Therefore, total expenditures for electricity in the study area are approximately \$450 million per year.

Results

Kentucky wastes enormous amounts of electricity and money (a great deal of which leaves the community). And EKPC's reliance on coal has serious adverse environmental and health impacts.

Sample Wealth Creation Approaches: Efficiency and Renewables

One way to increase the stock of electric generating capacity is to redirect EKPC investments to efficiency (which requires no state action because EKPC is locally owned). If consumption were reduced to the national average, residential users in the study area would save \$39 million per year. If businesses reduced consumption by 10%, it would save an additional \$28 million. An infusion of \$67 million into the local economy would have substantial multiplier effects: 1) new jobs from efficiency investments; 2) new jobs from indirect and induced effects; 3) more money for other household and business expenditures; 4) more competitive businesses; and 5) more tax revenue.

Another option for increasing the stock is to stop the construction of planned fossil fueled generating plants and begin a phased shift to renewables. The state has significant woody biomass resources, including in four counties in the study area.²⁴ If only half of this potential was used (and efficiency improved), it would be enough power to supply over half the residents and businesses in the study area.

A switch from coal to biomass of this magnitude would have many benefits. Reduced SO₂ and NO_x emissions would save Kentucky \$6.6 million per year in avoided health costs.²⁵ And the switch to biomass would reduce CO₂ emissions by 149,000 tons per year. Other benefits include: 1) jobs for loggers, processors, truck drivers, etc.; 2) revenue for property owners from biomass sales; 3) improved forest management if "best practice" harvesting standards were adopted; 4) approximately 200 jobs to operate six 50 MW biomass power plants; 5) new property tax revenue to the host towns and counties; and, 6)

Kentucky has some of the lowest electric rates in the country. Not surprisingly, consumption is high because low prices encourage greater consumption.



stable long-term electric rates because wood prices are not as volatile and will not be subject to a carbon tax regime likely to be implemented by the federal government.

FINANCIAL CAPITAL - STOCK OF FINANCIAL WEALTH

Assets²⁶

There is limited data available for the study area. Nationally, 66% of family assets are non-financial and almost half of that is the value of primary residences (next is business equity). Residential property in the study area was assessed at \$9.3 billion in 2008. [There are no details because counties charge high fees for “grand list” data.]

Financial assets are dominated by retirement accounts (35%), stocks (18%), and pooled investment funds (16%).

Net Worth (national data)

The median net worth of the top 10% was 138 times that of the bottom 20% in 2007. Among other factors, low net worth for the lowest quintile reflects low rates of homeownership, comparatively low home values, and high mortgage debt.

Debt (national data)

Except for the top 10%, all families have seen large increases in their debt to income ratios since 1989. For median income families, the “leverage ratio” is now 25% and has increased 68% since 1989. For low- and moderate-income families, the increases appear to be the result of higher mortgage debt (254% for the lowest quintile) rather than credit card debt. Only a quarter of those in the lowest quintile had credit card debt in 2007 and the median amount was only \$1,000 (median installment debt – education & autos – was much higher at \$6,500). However, the share of debtor families with a debt to income ratio greater than 40% has grown for all families, reaching 27% for the lowest quintile.

Savings Capacity²⁷

Study area personal income was \$9.8 billion in 2006. It consisted of wages (43%), transfer payments (29% - Social Security, Disability, Veterans benefits, Medicare/Medicaid, etc.); dividends, interest & rent (10%); employer contributions for pensions & insurance (8%); and non-farm proprietors’ income. Non-farm proprietors’ income was only 5.6% of personal income; the national figure is 8.7%. Nationally, the frequency of saving increases with income (one third of the lowest quintile and 85% of the top 10%). Median home values in the study area are well below U.S. and statewide averages so the potential for homeowner equity is limited for all but the top quintiles.

Ownership:

Assets

The largest single asset is the primary residence but national homeownership rates vary greatly by income: 41% in the lowest quintile and 94% in the top 10% of earners. There is no data on ownership of financial assets in the study area but we can infer significant concentration because (statewide) the top 1.7% of filers earned 57% of all investment income. Less than 10% of those in the lowest quintile hold financial assets.

The median net worth of the top 10% was 138 times that of the bottom 20% in 2007. Among other factors, low net worth for the lowest quintile reflects low rates of homeownership, comparatively low home values, and high mortgage debt.

Income (savings capacity)

Study area per capita income is well below state and national levels so total income is comparatively low. Statewide, those earning greater than \$100,000 represent 8% of all filers; the national figure is 17%. Thus, there are fewer high-end filers. In Kentucky, this group earned 37% of all adjusted gross income (AGI); the national figure is 55%. Thus, there is comparatively less concentration at the top. [There is no statewide data for income classes greater than \$200,000.]

Income Flows

The “geography” of financial assets is unknown but Fortune 500 stocks and government securities comprise the majority of most portfolios. Thus, outflow of financial capital from the study area is likely to be substantial, reducing opportunities for local investment and the related multiplier effect. Limited assets for low-income families lead to increased demand for public assistance after retirement. Income from assets in the study area is only 10%; the national figure is 17%. Government transfers represent 29% of total income; the national figure is 15%. With bundled securitized mortgages, most mortgage interest leaves the community.

Sample Financial Wealth Creation Approaches for Families & Communities

One way to increase the stock of financial assets is to increase business equity by 1) shifting business subsidies to small business; 2) increasing support for micro-business development; and 3) promoting employee ownership with technical assistance and funding. Other options include:

- Increasing opportunities for homeownership at the low end with down payment assistance and interest buy downs.
- Creating (or expanding) community development credit unions (CDCUs) and promoting savings for low-income families (IDA’s).
- Investing aggressively in energy efficiency to reduce costs and free up money for savings.
- Allocating a portion of public pension funds for “economically targeted investments” in the region.

NATURAL CAPITAL - STOCK OF AGRICULTURAL LAND AND FOOD PRODUCED FOR LOCAL CONSUMPTION

Land

There were 8,810 farms in the study area in 2007, down from 9,709 in 1997.²⁸ The farms encompass 1.2 million acres of land, which is 39% of all land in the study area.

Uses & Value of Production

Farming in the study area is dominated by cattle and calves, which represent 67% of the total market value of all commodities. Excluding non-food commodities (tobacco, hay, horses, etc.), the total market value of food produced in the Study Area in 2007 was \$150 million. [Note: With the exception of baked goods, there is almost no food manufacturing in the study area so most food grown locally is shipped elsewhere for processing.²⁹]



The majority of farms are small, locally owned, and only marginally profitable.

Income Flows

The majority of farms are small, locally owned, and only marginally profitable. Presumably, any profits stay local. [Note: While some large “corporate” farms exist, USDA does not publish data on whether they are based in Kentucky or out of state.] Total production expenses in the study area were almost \$230 million (including depreciation). Some expenditures for inputs stay within the community but a good deal flows out. For example, while feed, livestock, and seed may be purchased from local dealers, most of the money leaves the area since the products are produced elsewhere. Likewise, fuel and chemicals are not generally produced in Kentucky.³⁰ Finally, it’s likely that substantial amounts of interest leave the area since out of state banks control so much of the market.³¹ Therefore, \$50 million to \$100 million of the money spent for agricultural inputs flows out of the study area.

Costs of food

Residents of the study area spent approximately \$740 million for food in 2007 (not including money spent in schools and hospitals, or by tourists³²). Of the food produced locally, only \$1.6 million was sold directly to consumers through farmer’s markets and community supported agriculture (CSAs).³³

Results

Study area residents and farmers are exporting approximately \$800 million per year for food and farm inputs even though 1.2 million acres are devoted to farming (almost 3 acres per person). In the process, they support a system of industrial agriculture that is not environmentally sustainable.

Sample Wealth Creation Approaches: Local Production for Local Use

Some potential ways of increasing the stock of agricultural land and food produced for local consumption include:

- Shifting 5% - 10% of existing cropland to production for local consumption.
- Encouraging the state to shift agricultural development funds to local production for local consumption.
- Supporting the creation of more CSAs and retail co-ops.
- Subsidizing CSA shares for low-income families to improve diets/nutrition and reduce obesity.
- Working with officials at local schools, hospitals, and other institutions to substitute local food for some of the federal commodities.
- Substituting organic compost for imported fertilizer (farmers spent \$13 million for fertilizer in 2007), which will regenerate soils, create jobs, and divert material from landfills.
- Implementing aggressive energy efficiency programs (farmers spent \$4.6 million for electricity in 2007).
- Substituting biomass for fossil fuel electric generation to help create new markets for farmers with large woodlots.

\$50 million to \$100 million of the money spent for agricultural inputs flows out of the study area.

Case Studies of Wealth Creation in Action

To further test the applicability of the wealth creation framework and to learn about the extent to which wealth creation could be and is being measured in the field, we identified three interventions that have been going on for some time which were designed to create more than one form of wealth and could, by their very nature, impact at least six. The three interventions are Farm-to-Hospital as implemented by Fletcher Allen Health Care in Burlington, Vermont; Perpetually Affordable Housing: Shared Equity Model as implemented by Champlain Housing Trust in Burlington, Vermont; and Municipal Telecommunications as implemented by Glasgow, Kentucky. We analyzed each to determine the extent to which its wealth creation impacts had been or could be measured. We explored different ways of characterizing return on investment. The case studies are presented with a summary of lessons learned.

FARM-TO-HOSPITAL: FLETCHER ALLEN HEALTH CARE, BURLINGTON, VERMONT

Farm-to-Hospital (F2H) is a national initiative started by Health Care Without Harm (HCWH), an international coalition of hospitals, medical professionals, community groups, health-affected constituencies, labor unions, environmental and environmental health organizations and religious groups. HCWH began in 1996 in response to concerns about dioxin from medical waste incineration.

Since then, HCWH's goals have grown to include "support [for] sustainable food production and distribution, and [the provision of] healthy food on-site at health care facilities." F2H seeks to leverage the enormous purchasing power of health care institutions to advance socially responsible and environmentally sound procurement policies. Participating facilities (271 to date) agree to:

- Increase offerings of fruit and vegetables, and reduce unhealthy fats and sweetened foods.
- Implement a stepwise program to identify and adopt sustainable food procurement.
- Work with farmers and suppliers to increase availability of fresh, locally-produced food.
- Encourage vendors to supply food that is produced in systems that eliminate the use of toxic pesticides, prohibit the use of hormones and non-therapeutic antibiotics, support farmer and farm worker health and welfare, and use ecologically protective and restorative agriculture.
- Communicate interest in foods whose source and production practices are identified, so there will be informed consent and choice about the foods purchased.
- Develop a program to source from producers and processors which uphold the dignity of family, farmers, workers and their communities and support sustainable and humane agriculture systems.
- Educate and communicate within our system and with our patients and community about our nutritious, socially just and ecologically sustainable healthy food practices and procedures.
- Minimize and beneficially reuse food waste and support the use of food packaging and products that are ecologically protective.
- Report annually on implementation of the Pledge.³⁴



This initiative is an excellent example of a comprehensive wealth creation strategy that encompasses six wealth creation categories. In addition, it offers an opportunity to (re)establish important connections between urban and rural economies.

Fletcher Allen Health Care (FAHC) is a non-profit hospital affiliated with the University of Vermont's medical college. It has 562 beds, 6,700 employees (including part time employees), and serves 5,000 meals per day.

FAHC was an early signatory of F2H but had started down this road some years before. Specifically, the hospital partnered with a nearby non-profit in the early 1990s to send its food waste (20,000 tons per month) to a commercial compost project. Some of the compost was used to improve the soils of land leased by local farmers. The hospital then purchased small amounts of fresh produce from these farmers.³⁵

Taking the F2H pledge spurred FAHC to do more. The hospital (which expanded during this period) revised the menus, began actively seeking more local suppliers, renegotiated its contract with its primary vendor to allow for the purchase of more locally-produced goods, switched to hormone-free milk and fair trade coffees, and shifted entirely to biodegradable serving materials.

However, there is more to do. Although a necessary first step, adopting new policies cannot by itself force changes in the food system. While some national and regional wholesalers are adapting, their business models do not easily accommodate small local suppliers. And the need for a reliable supply of large quantities of fresh food is a challenge for small farmers, especially in the Northeast. Nevertheless, institutional buyers can play a critical role by providing a large and stable market that will reduce risk and allow farmers to justify needed capital expenditures for expansion (and make financing easier).

Furthermore, a motivated institutional buyer can work with local stakeholders to help create the infrastructure necessary for a more efficient and integrated local food system. Indeed, FAHC is doing just that by seeking funding and partners to help establish a local "food hub." Such a facility would: 1) have greenhouses for year-round vegetable production (preferably using thermal energy from the nearby wood-burning power plant to heat the greenhouses); 2) provide washing services in a state inspected facility so small farmers can avoid the cost and regulations; 3) aggregate locally-produced food from area farmers to simplify deliveries to area hospitals; and 4) expand local cold storage capacity for root crops.

An important part of the F2H initiative is data collection and analysis, including baseline data, in order to measure progress over time. Unfortunately, the hospital did not devote the time or resources at the outset. Although that opportunity was lost, FAHC should now take several steps to allow for evaluation going forward. At minimum, this means asking large suppliers to provide more information about the products supplied (e.g., geo-coded source, production practices, transportation modes) and modifying internal bookkeeping systems to include fields for all the new data.

There are other challenges for those interested in tracking outcomes. Some of the

A motivated institutional buyer can work with local stakeholders to help create the infrastructure necessary for a more efficient and integrated local food system.

Table 2: Template of Performance Measures for each Wealth Category-Fletcher Allen

Wealth Category	Expected Benefits	Performance Measures
Natural	<ul style="list-style-type: none"> • Improve the health & productivity of local soils 	<ul style="list-style-type: none"> • Describe changes and estimate acreage improved¹
	<ul style="list-style-type: none"> • Reduce pollution and greenhouse gases (GHGs) from long-distance shipping 	<ul style="list-style-type: none"> • Estimate impacts from food-mile reductions²
Financial	<ul style="list-style-type: none"> • Expand in-state food production 	<ul style="list-style-type: none"> • Farm and processor sales³
	<ul style="list-style-type: none"> • Retain \$ in VT 	<ul style="list-style-type: none"> • \$ retained⁴
	<ul style="list-style-type: none"> • Expanded multiplier effects including job growth 	<ul style="list-style-type: none"> • Estimate economic and fiscal impacts, including jobs⁵
Social	<ul style="list-style-type: none"> • Greater “buy local” efforts by hospital staff, patients, etc. 	<ul style="list-style-type: none"> • Track CSA, farmstand, and farmer’s market sales⁶
	<ul style="list-style-type: none"> • Lessons learned shared with other institutions 	<ul style="list-style-type: none"> • Track changes in policy and practice at other institutions⁷
Individual	<ul style="list-style-type: none"> • Enhanced understanding of the relationship between food and health 	<ul style="list-style-type: none"> • Track staff eating habits and health outcomes
Intellectual	<ul style="list-style-type: none"> • Theory to Practice: Demonstrate the practical value of the new paradigm and thereby encourage other such experiments 	<ul style="list-style-type: none"> • Track journal articles, media reports, foundation funding, and legislative action within the region
Built	<ul style="list-style-type: none"> • Increased in-state value added food production 	<ul style="list-style-type: none"> • Track investments in facilities and equipment⁸

Footnotes

1. Estimate increased acreage using production per acre figures from USDA <http://www.nevegetable.org/>.
2. Food-mile estimates from the Leopold Center for Sustainable Agriculture (http://www.leopold.iastate.edu/pubs/staff/files/food_travel072103.pdf). Emissions data from EPA (cars <https://www.whatcomsmarttrips.org/pdf/Emission%20Facts%202005.pdf>)
3. Statewide farms sales from the USDA Census of Agriculture (not annual; every five years). Processor figures from the Economic Census (every five years).
4. Analysis of FAHC purchasing records.
5. Dollars retained run through IMPLAN software.
6. Statewide “direct sales” figures from the Census of Agriculture (every five years).
7. Annual surveys of purchasing officers at major institutions.
8. Economic Census (every five years) or survey major processors.

goals of the initiative involve data and measurements that are beyond the core mission of a hospital. This suggests the need for a partnership with other stakeholders who have the expertise necessary to collect and report the information required for a thorough analysis.

Table 2 provides a template with performance measures for six wealth categories. As noted, non-financial performance measures present challenges. For example, invoices allow for tracking of purchases by item and vendor, but the lack of geo-coding means it is not always possible to know the source. Without that, it is not possible to say how much money has been retained in Vermont that once left the state (or the related multiplier effects). There is data from an in-state wholesaler that provides a growing share of the hospital's fresh produce (sales up 63% in two years), but the vendor buys from out of state in the off season.

Beyond sales figures, it would be useful to measure land use changes from greater local production. To do so, we need to know (or estimate) how many additional acres are farmed as a result of increased purchasing by hospitals and other institutions. This information is not collected by the wholesaler.

And it is not just more locally-produced goods because the project hopes to stimulate improvements in farming practices also. To quantify the expansion of agricultural “systems that eliminate the use of toxic pesticides, prohibit the use of hormones and non-therapeutic antibiotics, support farmer and farm worker health and welfare, and use ecologically protective and restorative agriculture,” we need to collect even more data from farmers. Presumably, organic certification would cover some of the issues, but the hospital does not specify organic. Furthermore, while many farmers are anxious to promote their products as “sustainable,” there may not be common standards for all of the elements. Finally, farmers are busy so any new reporting regime needs to be easy to use.

In addition, some products are supplied by in-state processors that add value to raw materials that cannot be produced here (e.g., coffee). So while the state gets the benefit of the manufacturing jobs, this activity has no impact on local agriculture.

Clearly, collecting and analyzing data from the entire value chain is a complex undertaking.

Another category with challenges is “individual” wealth. Among other goals, the F2H initiative seeks to improve the eating habits of staff and patients in order to improve health outcomes. The hospital knows what is being purchased and served, but has no information about staff behavior off site. Moreover, it does not track the health of its employees (other than sick days). Presumably, a system could be created to collect such information without compromising staff confidentiality but it is not currently in place.

Since there is so little hard data available, one could use statewide data until a new reporting system is in place. Table 3 shows the areas for which statewide data is available.

The quality of statewide data has improved considerably with changes to the Census

Table 3: Areas for Which Statewide Data is Available - Fletcher Allen

Wealth Category	Performance Measures	Outcomes (statewide data; 2007 USDA Census of Ag)
Natural	<ul style="list-style-type: none"> Describe changes and estimate non-dairy acreage improved 	<ul style="list-style-type: none"> # vegetable farms up 20%¹; acreage unchanged; no reliable information on sustainable practices
	<ul style="list-style-type: none"> Estimate impacts from food-mile reductions 	<ul style="list-style-type: none"> Insufficient data
Financial	<ul style="list-style-type: none"> Non-dairy farm sales 	<ul style="list-style-type: none"> Inflation adjusted non-dairy farm sales grew by 25% from 2002 (\$30.3 million)²
	<ul style="list-style-type: none"> Processor sales 	<ul style="list-style-type: none"> Awaiting 2007 Economic Census for sales data
	<ul style="list-style-type: none"> \$ retained 	<ul style="list-style-type: none"> Insufficient data
	<ul style="list-style-type: none"> Estimate economic & fiscal impacts, including jobs 	<ul style="list-style-type: none"> Food manufacturing employment grew by 3.7% from second quarter 2005 to second quarter 2009³; awaiting new econometric model
Social	<ul style="list-style-type: none"> Track CSA, farmstand, and farmer's market sales 	<ul style="list-style-type: none"> Inflation adjusted direct sales increased by 108% from 2002 (\$11.0 - \$22.9 million)⁴
	<ul style="list-style-type: none"> Track changes in policy and practice at other institutions 	<ul style="list-style-type: none"> FAHC is working with other VT hospitals; no major changes yet
Individual	<ul style="list-style-type: none"> Track staff eating habits and health outcomes 	<ul style="list-style-type: none"> Insufficient data
Intellectual	<ul style="list-style-type: none"> Track journal articles, media reports, foundation funding, and legislative action 	<ul style="list-style-type: none"> Significant activity in all areas; for now, only anecdotal information
Built	<ul style="list-style-type: none"> Track investments in facilities and equipment 	<ul style="list-style-type: none"> Awaiting 2007 Economic Census

Footnotes

1. 2007 USDA Census of Agriculture.
2. Ibid.
3. Vermont Dept. of Labor, QCEW; note that food manufacturing is one of only three subsectors that grew during this period.
4. Op cit, Census of Agriculture.

of Agriculture. Unfortunately, it is only published every five years, which is also the case for the Economic Census. However, these data can be used for context when project specific data becomes available.

Measurement Issues

Farm-to-Hospital (F2H): The program is intended to have a positive impact on at least six wealth categories.³⁶ Fletcher Allen Health Care (FAHC) in Burlington, VT was chosen because it is a large facility (6,700 employees, 5,000 meals per day) and it has a history of working with a partner non-profit that promotes local food production.³⁷



In the 1990s, FAHC sent its food waste (20,000 tons/month) to a compost project that improved the soils of land leased by local farmers. The hospital then purchased fresh produce from these farmers. After taking the F2H pledge in 2006, FAHC revised the menus, renegotiated its contract with the primary vendor to allow for the purchase of more locally-produced goods, and switched to hormone-free milk, fair trade coffees, and biodegradable serving materials. The hospital has increased its purchases of local produce, baked goods, and chicken but there is a long way to go.³⁸

FAHC did not develop a robust data collection plan at the outset. Moreover, some goals involve data that are beyond the core mission of a hospital. This suggests the need for a partnership with other stakeholders, but it also presents some challenges. For example, measurement challenges include:

- Money retained in Vermont: need product geo-coding or some other way to track food origins.
- Changes in agricultural economics and land use: need the number of farmers in the supply chain and how many additional acres are farmed due to increased purchasing by hospitals / institutions.
- Improvements in farming practices: third-party certifications can help with organics but no such certifications are available for subjects like farm worker health and welfare, waste disposal, etc.
- Growth in in-state manufactured food: need information about the extent to which inputs are sourced locally.
- Staff health outcomes: need information about staff behavior off site, as well as data on employee health.
- Context: need statewide data to determine if the overall effort is making a dent; however, the relevant public data is only published every five years (Census of Agriculture and the Economic Census).
- Has the model been replicated: need data from other hospitals.
- Impacts on state policy: need information about legislation and appropriations.

PERPETUALLY AFFORDABLE HOUSING: SHARED EQUITY MODEL - CHAMPLAIN HOUSING TRUST, BURLINGTON, VERMONT

Note: This work is based in part on a report entitled *Lands in Trust, Homes That Last: A Performance Evaluation of the Champlain Housing Trust*.³⁹ The principal author (John E. Davis) is a clear thinker and a fine writer. Therefore, unless otherwise noted, all quotations are from that source.

“There are many types and tenures of third sector housing, including nonprofit rentals, mutual housing associations, limited equity cooperatives, community land trusts, and resale-restricted houses and condominiums with affordability covenants lasting many years.

In most of these models of third sector housing, the occupants are homeowners. They hold many of the same rights that any other homeowner would expect to possess when gaining title to residential property, an ownership stake that is secured by possession of a deed, a ground lease, and/or corporate shares that are transferable and inheritable. They are homeowners, too, because of the security they enjoy, the control they exercise, the responsibilities they assume, and the risks they bear in occupying and operating their housing.

Unlike their counterparts in market-rate housing, however, some of these rights, responsibilities, risks, and rewards are shared with a nonprofit organization that remains in the picture long after these homes are sold. Hence the name that is often given to those models of third sector housing that is clustered at the homeownership end of the tenure continuum: shared equity housing.

Part of what is shared is the financial gain from owning a home. The owners...typically recoup at resale whatever personal investment they have made in buying, maintaining, and improving a home, augmented by a modest return. They are not allowed to walk away, however, with all of the value embedded in their property, since much of it – perhaps most of it – is a product of the community’s investment: equity created at the time of initial purchase if a public grant, charitable donation, or mandated concession from a private developer was used to reduce the home’s price; and equity created during the course of the homeowner’s tenure if public investments in infrastructure, private improvements in surrounding properties, or changes in the regional economy have increased the home’s appraised value. Such socially created value is retained in the home, keeping it affordable for the next homebuyer of modest means, one resale after another; one generation after another.”⁴⁰

The Champlain Housing Trust (CHT, formerly the Burlington Community Land Trust) has been active in shared equity housing for a quarter century. “Between 1984 and 2008, the CHT developed 424 modestly-priced single-family houses and condominiums; all...subject to durable contractual controls over their occupancy, use, and resale. The first resale of a CHT home occurred in 1988. By the end of June 2008, CHT had overseen the resale of 205 houses and condominiums.” This pool of

The name that is often given to those models of third sector housing that is clustered at the homeownership end of the tenure continuum: shared equity housing.



resales provided an opportunity to evaluate the model's performance.

The goals of the CHT shared equity program include:

- **Expand Homeownership:** Improve access to homeownership for persons excluded from the market.
- **Create Individual Wealth:** CHT homeowners receive a positive return on investment at resale.
- **Enable Residential Mobility:** At resale, CHT households will have the option and wherewithal to buy unrestricted, market rate homes (or another resale-restricted CHT home).
- **Preserve Affordability:** Ensure that CHT housing units are affordable for subsequent generations of low-income homebuyers.
- **Retain Community Wealth:** Preserve public subsidies invested in CHT homes to maintain affordability.
- **Enhance Residential Stability:** Continue stewardship of CHT homes by keeping them in portfolio and retaining occupancy, use, and resale controls.

CHT's performance evaluation is exemplary. Nevertheless, any review of an affordable housing program should be viewed in context. For example, for most of its existence, the CHT "has operated in a housing market with rising prices, a growing demand for modestly-priced housing, and a chronic shortage of houses and condominiums within the financial reach of persons earning less than 80% of area median income (AMI)." Some of these factors are advantageous, and some are not. Ideally, CHT's experience should be compared to similar programs in other jurisdictions.

In any case, while data for financial outcomes were available, many of the other wealth categories presented challenges that were not addressed directly in the report. [In fairness, the scope of the CHT report did not include these other categories.] Table 4 provides a template with performance measures for six wealth categories.



Table 4: Template of Performance Measures for each Wealth Category - Champlain Housing Trust

Wealth Category	Expected Benefits	Performance Measures
Financial	<ul style="list-style-type: none"> • Expand homeownership opportunities for low- and moderate-income families 	<ul style="list-style-type: none"> • # and income levels of families served
	<ul style="list-style-type: none"> • Create wealth for new homeowners 	<ul style="list-style-type: none"> • % of land trust (LT) sellers that purchased homes • ROI for LT homeowners at sale
	<ul style="list-style-type: none"> • Preserve affordability when homes are sold and repurchased 	<ul style="list-style-type: none"> • At what % of area median income (AMI) are units affordable?
	<ul style="list-style-type: none"> • Retain community wealth 	<ul style="list-style-type: none"> • Amount and % of public investment retained in the properties
Social	<ul style="list-style-type: none"> • Preserve / enhance neighborhood stability 	<ul style="list-style-type: none"> • Track turnover and changes in home values (decline vs. gentrification)
	<ul style="list-style-type: none"> • Increase neighborhood civic participation 	<ul style="list-style-type: none"> • Trends for voting, PTA, etc. compared to other neighborhoods
	<ul style="list-style-type: none"> • More stable families 	<ul style="list-style-type: none"> • Compare data for homeowners vs. renters on various social indicators
Individual	<ul style="list-style-type: none"> • Stability reduces stress; savings invested in education and training for adults and children 	<ul style="list-style-type: none"> • Health outcomes • Educational outcomes • Employment and wages
Intellectual	<ul style="list-style-type: none"> • Greater understanding of policies that promote homeownership and perpetual affordability instead of short-term rental subsidies 	<ul style="list-style-type: none"> • Track journal articles, media reports, foundation funding, and legislative action within the region
Natural	<ul style="list-style-type: none"> • Help prevent sprawl and protect undeveloped natural land 	<ul style="list-style-type: none"> • # of LT-developed units located on bus lines in existing neighborhoods
Built	<ul style="list-style-type: none"> • Increased stock of affordable units 	<ul style="list-style-type: none"> • # and type of units

Some of the measures selected are problematic because of the sample size. That is, although the number of resales is sufficient for an examination of the model's financial costs and benefits, the units are located in several different neighborhoods of the city and represent only a modest percentage of total units in each neighborhood. These factors make it difficult to measure the program's impacts on social wealth indicators such as neighborhood stability or civic participation.

In addition, most assume that moving from renting to homeownership produces greater security and results in more stable families. But the direct local impacts can only be measured in a longitudinal study of the families residing in CHT homes (along with control groups).

In the alternative, one can review the literature to see if research supports the hypothesis. A 2001 report from Harvard's Joint Center for Housing Studies surveyed the literature and found mixed results (all quotations in this section are from the Harvard report⁴¹).

- **Satisfaction:** Published research has generally found a positive relationship between homeownership and satisfaction, although the reasons vary and reflect many different factors (e.g., stage of life, characteristics of the individual, age and condition of the housing unit, and the status of the neighborhood). Some other variables have not yet been considered, such as the type of ownership (e.g., home, condo, co-op, fee simple, land trust, etc.).
- **Self-esteem:** Measures of self-esteem reflect a sense of 1) how people are viewed by others; 2) an individual's self-perception; and 3) feelings of self-efficacy. For a variety of reasons, homeownership should be positively related to higher self-esteem. For example, homeowners have higher social status and are generally doing better than renters, have accomplished an important personal goal, and are in control of important life choices. However, some low-income homeowners may fear losing their homes or getting stuck in a declining neighborhood. The authors found that additional research is needed in this area.
- **Neighborhood stability:** Homeownership is strongly correlated with mobility (owners less mobile than renters) and usually correlated with increased property values. "Yet, a growing body of empirical literature suggests that, in some instances, rather than improving the environment for residents of distressed neighborhoods, homeownership acts to trap households in those neighborhoods. In those cases, length of tenure may reflect the greater obstacles to mobility among homeowners rather than a desire to stay put."
- **Social involvement:** "The empirical evidence on the relationship between homeownership and participation in both voluntary organizations and local political activity is both extensive and consistent." It is thought that there are two main reasons for this: as a means of protecting an economic investment and because greater tenure fosters or reinforces social attachments (although it may sometimes lead to exclusionary behavior).



- **Youth behaviors:** Limited research suggests positive associations between homeownership and better school performance, lower dropout rates, and lower rates of teen parenthood. “Although further findings from National Longitudinal Study of Youth hold promise, there is simply not enough research on this topic to draw any firm conclusions at this time. Future research needs to address the impacts of homeownership on a full set of possible youth behaviors including youth employment, educational attainment, sexual behavior, drug use, and crime.”

Thus, it appears that the available research supports the hypothesis, but some of the findings are not well understood and more research is needed. Nevertheless, the financial benefits reported by the CHT are impressive (see next page) and the model addresses a critical need.

The inability to quantify some of the expected social and individual wealth creation benefits is unfortunate but not surprising in a society that routinely measures all things monetary but is historically less concerned with ancillary issues not so easily monetized. The wealth creation framework is a reminder about the value of research in these other areas. Table 5 (on the following page) includes information on outcomes for which data is available.

Presumably, academics will continue to mine the available data sets and undertake new studies to address the outstanding issues. Hopefully, they will also disaggregate homeowners and focus on limited equity homeowners. But while we wait, there is another alternative for filling the data gaps.

Land trusts have unique access to this class of homeowners and already deal with confidential personal financial information. As such, land trusts occupy a position of trust. It is at least conceivable that new homeowners assisted by the land trusts may be willing to provide or authorize access to other types of personal information for research purposes. The information requested could include data over time for adults and children on employment, income, health, education, criminal activity, etc. This would require a respected third party to hold the data and perhaps confidentiality waivers from schools, medical professionals, and police.

This approach has advantages and disadvantages compared to traditional academic studies. But, over time, it could become a valuable asset for researchers. Indeed, a research partner might find the potential so appealing that it could justify offering a modest incentive to homeowners to help increase the level of participation. In any case, it is unlikely that land trusts could undertake this type of research without assistance so there would be a need for outside funding; perhaps a collaboration between government, academia, and philanthropies.

The inability to quantify some of the expected social and individual wealth creation benefits is unfortunate but not surprising in a society that routinely measures all things monetary but is historically less concerned with ancillary issues not so easily monetized.

Table 5: Outcomes for Which Data is Available - Champlain Housing Trust

Wealth Category	Performance Measures	Outcomes
Financial	• Number of families served	• 410 shared equity homes + 205 resales = 615 families ¹
	• Income of families served	• 82% of homes sold went to families less than 80% of Area Median Income (AMI) ² ; the rest went to families between 80% and 100% of AMI
	• At what % of AMI are units affordable and how did that change over time?	• At initial purchase, average unit affordability was 57% of AMI (currently \$42,807)
		• On average affordability increased by 5.7% at resale ³
	• % of LT sellers that purchased homes	• 73% (67% market rate & 6% LT homes)
	• Net increase in personal wealth	• Average a net increase in personal wealth of \$11,992 at sale ⁴
	• Annualized return on investment for LT homeowners at sale ⁵	• For homes with appreciation, average return was 27.5%
	• Annualized net gain on equity for LT homeowners at sale ⁶	• For homes with appreciation, average net gain was 36.5%
	• Amount of public subsidy	• For homes resold, average public subsidy = \$6,085 (\$2.2m)
	• Percent of public investment retained in the properties	• 96% of resales required no additional subsidy to preserve affordability
	• Maintain perpetual affordability	• Only 14 of 424 units were lost to the market in 25 years ⁷
Social	• Neighborhood stability: compare turnover for LT and non-LT owners	• Time required for data collection and analysis is beyond the scope of this project
	• Trends for voting, PTA, etc. compared to renters	• No data for LT homeowners. The literature finds a consistent and positive relationship between homeownership and participation
	• Compare data for homeowners vs. renters on various social indicators	• No data for LT homeowners. The literature is mixed but generally positive. ⁸
Individual	• Improved health and educational outcomes leads to better jobs and pay	• No data for LT homeowners.
Intellectual	• Track journal articles, media reports, foundation funding, and legislative action within the region	• Beyond the scope of this project
Natural	• # of units located on bus lines (reduced demand for autos)	• Virtually all units are on or very near bus lines
Built	• # and type of units	• Detached single family homes already existed; about half the condos were new construction ⁹

Footnotes

1. 258 homes are owned by the original buyers (258 families); 357 families involved in resales [105 homes have been resold once (210 families); 42 homes have been resold twice (126 families); four homes were resold three times (16 families); and one home was resold four times (five families)]; total = 615 families.
2. AMI is Area Median Income and the figures are published annually by HUD.
3. Of the 205 resales, 115 gained in affordability; 81 lost; and 9 remained the same. However, all but one of those that lost affordability were still affordable at 80% of AMI.
4. On average, sales occurred after 5.5 years of residency.
5. Includes owner's share of appreciation (limited by the LT model) and retirement of principal.
6. Includes downpayment, retirement of principal, and appreciation. Tax benefits are not included here.
7. In each instance (including 10 condos in one location), there were unusual circumstances. However, the embedded subsidies were recovered in each case.
8. Op cit, "The Social Benefits and Costs of Homeownership: A Critical Assessment of the Research."
9. Some condos constructed by the LT but most were built by developers subject to the City's "inclusionary zoning" ordinance which requires a certain percentage of new units to be affordable and added to the LT's portfolio.

Measurement Issues

Shared equity housing:⁴² The goals of this affordable housing program are primarily financial (build and retain wealth) but it is assumed that other benefits will accrue. The Champlain Housing Trust (CHT) was chosen because it has a long history (25 years), has developed 424 modestly-priced single-family homes, and has records of resales for 205 units, which provided an opportunity for an evaluation of the program's performance.

CHT met its core goals including (among others) serving families below Area Median Income (82% at less than 80% of AMI); providing a net increase in personal wealth (average \$12,000) sufficient for families to buy market homes after selling a CHT home (67% did so); and retaining public investment in the property to preserve affordability (96% of units required no additional subsidy to remain affordable after resale).⁴³ No effort was made to collect data on the other wealth categories. It will be difficult. Measurement challenges included:

- **Neighborhood stability:** units are scattered in different neighborhoods making it hard to measure.
- **Civic participation:** see above; data is needed from residents instead of ward or neighborhood figures.
- **Stable and healthy families:** need a longitudinal study of the families residing in CHT homes; the literature shows mixed results; more research needed.
- **Individual outcomes:** need information on educational performance and attainment, as well as health, employment, and wage data for parents and children over time.

MUNICIPAL TELECOMMUNICATIONS, GLASGOW, KY

The City of Glasgow, Kentucky is in Barren County in the south central part of the state. The city's population is 14,000, one-third of the county's total. Glasgow has a municipal electric system but buys all of its electric power from the TVA. Although not exceptional by Kentucky standards, Glasgow is relatively poor.⁴⁴

In the mid-1980s, the city was investigating new methods of electric load management (shifting usage away from peak load times) and recognized some other related technical and economic challenges. Like many other rural communities across America, Glasgow was served by monopoly cable and telephone companies, and the absence of competition resulted in high monthly bills. In addition, the small population and rural environment offered little incentive for providers to upgrade the infrastructure so the area had no internet network.

After considerable research, the city decided in 1987 to build a fiber network that would reach every home and business. The first step was cable TV (first hook-up in 1989). This was followed by telephony trials in 1990, intra-city broadband and distance learning applications in 1992, and citywide high speed internet service in 1995.⁴⁵

Immediate goals included reduced bills from the new competition, retention of money in the community that had previously been siphoned off, enhanced capabili-

Like many other rural communities across America, Glasgow was served by monopoly cable and telephone companies, and the absence of competition resulted in high monthly bills.

ties and efficiencies in city government, and improved learning opportunities in the schools. Longer term, it was believed that “Glasgow’s broadband network [would be] be the economic engine that will power Glasgow...into economic prosperity during the coming information age.”⁴⁶

The capital costs for the network exceeded \$4 million for fiber, a cable TV headend, antenna towers, and earth stations, as well as internet hardware (file servers, switches, routers, etc.).⁴⁷

Clearly, the city and the municipal utility (the Electric Plant Board - EPB) demonstrated vision and courage (they had to fend off numerous lawsuits). And they understood the potential for wealth creation in several wealth categories. In this case, however, success in non-core wealth categories requires other parties to use the resource as intended. The utility only has control over the infrastructure and the direct services provided. For example, progress in social wealth creation is dependent on the city’s and county’s willingness and ability to develop and implement new methods of civic engagement. Similarly, individual wealth creation requires action by the school system, as well as motivated adults, who will take advantage of opportunities created by access to broadband.

Table 6 provides a template with performance measures for each wealth category. Table 7 shows outcomes for those performance measures where data is available.

“Glasgow’s broadband network [would be] be the economic engine that will power Glasgow... into economic prosperity during the coming information age.”



Table 6: Template of Performance Measures for each Wealth Category - Glasgow, Kentucky

Wealth Category	Expected Benefits	Performance Measures
Built	<ul style="list-style-type: none"> • Municipal fiber telecom system to reach every home and business 	<ul style="list-style-type: none"> • Results of the build out
Financial	<ul style="list-style-type: none"> • Use new fiber network to better manage the municipal electric system 	<ul style="list-style-type: none"> • System energy purchases (quantity and predictability)
	<ul style="list-style-type: none"> • Customers save through electric load management and competitive cable, telephone, and digital rates 	<ul style="list-style-type: none"> • Change in average usage and bills • Money retained in the community • Rate comparisons
	<ul style="list-style-type: none"> • New tax revenues from PILOT for system property 	<ul style="list-style-type: none"> • Amount received
	<ul style="list-style-type: none"> • Broadband leads to economic growth and jobs 	<ul style="list-style-type: none"> • Various economic and labor market indicators
Social	<ul style="list-style-type: none"> • Increased participation in local civic and community affairs 	<ul style="list-style-type: none"> • Change in registered voters • Change in # and % voting • # of public meetings broadcasted • Use of community bulletin board
Individual	<ul style="list-style-type: none"> • Enhanced K-12 educational opportunities 	<ul style="list-style-type: none"> • Outcomes of enhanced in-school and distance learning capabilities
	<ul style="list-style-type: none"> • Enhanced continuing education opportunities 	<ul style="list-style-type: none"> • Outcomes of continuing education
	<ul style="list-style-type: none"> • Greater educational attainment leads to better paying jobs 	<ul style="list-style-type: none"> • Employment and wage data
Intellectual	<ul style="list-style-type: none"> • Expanded stock of knowledge, innovation & creativity 	<ul style="list-style-type: none"> • R&D expenditures; new patents; expanded activity in the arts
Natural	<ul style="list-style-type: none"> • Reduced energy use leads to lower emissions and greenhouse gases (GHG) 	<ul style="list-style-type: none"> • Estimates of emissions reductions

Table 7: Outcomes for Which Data is Available - Glasgow, Kentucky

Wealth Category	Performance Measures	Outcomes (all data from the Glasgow EPB)
Built	<ul style="list-style-type: none"> Results of the build out 	<ul style="list-style-type: none"> 120 miles of fiber; all homes and businesses connected
Financial	<ul style="list-style-type: none"> Subscribers 	<ul style="list-style-type: none"> Cable: Comcast pulled out so the city has the entire market Internet: Virtually the entire market Phone: Limited (no details available)
	<ul style="list-style-type: none"> System energy purchases (quantity and predictability) 	<ul style="list-style-type: none"> No change (they claim TVA wholesale pricing does not reward load management)
	<ul style="list-style-type: none"> Change in average electric usage 	<ul style="list-style-type: none"> No change (no investment in efficiency)
	<ul style="list-style-type: none"> Money retained in the community from lower rates 	<ul style="list-style-type: none"> \$31.2 million over the term (estimate from the municipal utility)
	<ul style="list-style-type: none"> New tax revenue from PILOT 	<ul style="list-style-type: none"> \$534,000 in 2009 alone
	<ul style="list-style-type: none"> Various economic and labor market indicators 	<ul style="list-style-type: none"> Neither ACS or BLS data are available for small towns; 2000 Census is the latest data and it is not adequate for these purposes
	Social	<ul style="list-style-type: none"> Change in registered voters
<ul style="list-style-type: none"> Change in # and % voting 		
<ul style="list-style-type: none"> # of public meetings broadcasted 		<ul style="list-style-type: none"> Limited
<ul style="list-style-type: none"> Use of electronic community bulletin board 		<ul style="list-style-type: none"> No response from local officials
Individual	<ul style="list-style-type: none"> Use and outcomes of distance learning capabilities 	<ul style="list-style-type: none"> No response from local officials
	<ul style="list-style-type: none"> Outcomes of continuing education 	<ul style="list-style-type: none"> No response from local officials
	<ul style="list-style-type: none"> Employment and wage data 	<ul style="list-style-type: none"> Public data not available for small towns
Intellectual	<ul style="list-style-type: none"> R&D expenditures; new patents; expanded activity in the arts 	<ul style="list-style-type: none"> No R&D, patent, or “arts” industry data available by city or county;
Natural	<ul style="list-style-type: none"> Estimates of emissions reductions 	<ul style="list-style-type: none"> Zero (no change in usage)

The local utility has good data on the core outcomes but, as noted above, has no direct responsibility for (or data regarding) the ancillary categories. Efforts to obtain the necessary data were not successful for the following reasons:

- **Civic engagement:** The county clerk does not maintain electronic records.⁴⁸
- **Educational attainment:** This data is only available every ten years in the decennial census.
- **Employment and wages:** There is no data for small towns.
- **Intellectual:** There is no data for small towns or counties.

In the end, the Glasgow municipal telecom system succeeded in 1) breaking the private monopolies (replaced in part by a publicly owned monopoly); 2) providing state of the art infrastructure; 3) saving money for ratepayers; 4) retaining money in the community; and 5) increasing local tax revenue. However, it is impossible to say if the system has created other types of wealth because existing public data sources are unable to provide the information necessary to measure progress. This suggests the need for a collaborative effort among the parties (public and private) and a long-term commitment to data gathering.

Measurement Issues

Municipal telecommunications network: Glasgow, KY built a fiber network in the 1980s and 1990s to create competition, reduce bills, keep money in the community, improve learning opportunities, and promote economic development. To a large extent, Glasgow succeeded. It broke the private monopoly; provides state of the art infrastructure; saves money for ratepayers (\$31 million), much of which remains in the community; and increased local tax revenue (\$534,000 in 2009 alone).

However, while the original planners understood the potential for wealth creation in other categories, there were barriers. First, the utility only had control over the infrastructure and direct services. Second, the city has no control over elections (county) or public schools (state and county). As a result, success in ancillary categories requires other parties to use the resource as intended. Presumably, the parties could have worked together from the outset but this did not happen.

Furthermore, it is impossible to say if the system has created other types of wealth because existing public data sources are unable to provide the information necessary to measure progress. This suggests the need for a collaborative effort among the parties (public and private) and a long-term commitment to data gathering. Measurement challenges include:

- **Social wealth:** This depends on the city's ability to develop new methods of civic engagement; the county clerk does not maintain electronic voting records.
- **Individual wealth:**
 - **Education:** This requires action by the schools, as well as motivated adults who will take advantage of opportunities created by broadband; this data is only available every ten years in the decennial census.
 - **Employment and wages:** There is no data for small towns
- **Intellectual:** There is no data for small towns on R&D, patents, or arts industry activities

In the end, the Glasgow municipal telecom system succeeded in
1) breaking the private monopolies (replaced in part by a publicly owned monopoly);
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3) saving money for ratepayers;
4) retaining money in the community; and
5) increasing local tax revenue.

Lessons Learned and Next Steps

A more comprehensive and rigorous approach to measuring outcomes is essential if wealth creation policies and programs ever hope to reach scale. Practitioners need measures to understand their impact and progress toward outcomes and to learn how to become more effective. Private funders and practitioners need this data to determine best practices. Advocates need it to build alliances and educate elected officials. Policy makers need it to rationalize resource allocation (and apply it to traditional development practices so comparisons will be apples to apples). Government needs it to reduce waste and maximize return on investment. To get there, we will need to address significant deficiencies in available data and create a new culture of measurement in action.

READILY AVAILABLE DATA

Readily available data is often inadequate to capture wealth creation outcomes. Too often it is focused on deficits like obesity or infant mortality and not on the stock of unimpaired assets like healthy weight individuals. This causes a focus on reducing a negative instead of increasing a positive which is not the same thing. Also, data often does not tell us what types and magnitude of investments are needed to bring impaired assets back to full functioning whether these are natural, built, individual or other forms of wealth. It is difficult to translate data with confidence from one setting or point in time to another. Many important indicators of wealth, like degrees of financial literacy, are not well documented. Data on social wealth and intellectual wealth are particularly lacking. The geography of data is also a limitation. Some data may be available nationally but not regionally, or regionally but not locally. When data is available locally, it is often not current. Some data is self-reported which brings its accuracy into question.

However, even given the inadequacies of available data, looking at what is available in a geographic framework can be informative. For example, knowing that people in even the poorest places are producing and registering patents suggests the presence of intellectual capital that might otherwise be assumed to be nonexistent. Likewise, using data to frame the extent of any given challenge helps determine the likely relative impacts of any specific intervention and highlights the power of involving multiple interests to aggregate resources.

MEASUREMENT IN ACTION

Even smart, well-intentioned actors typically forget to plan for data collection, analysis, and reporting and, when they do, it is often less rigorous and comprehensive than it needs to be to capture the full range of wealth creation impacts and outcomes. The three cases studies suggest how an intentional wealth creation approach would change the composition of stakeholders and the design of development interventions. It would also change the types of information required to track impacts and outcomes. No single entity has all the information necessary to capture all seven forms of wealth creation. It is important to talk with a range of stakeholders about data they have and the best ways to create new flows of existing information and even new information. Depending on the scope of the intervention, customized data collection will likely be required to understand place-based conditions. Some outcomes only emerge over a long period of time; therefore data collection systems must be institutionalized and maintained to capture long-term changes.

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Even smart, well-intentioned actors typically forget to plan for data collection, analysis, and reporting and, when they do, it is often less rigorous and comprehensive than it needs to be to capture the full range of wealth creation impacts and outcomes.

Most interventions do not focus on measurement and fail to put the pieces in place that allow tracking over time such as release forms for individual information and appropriate protocols to share information while protecting confidentiality.

Measurement is powerful. We have a great deal to learn about how to harness this power to help us create wealth that sticks while we avoid exploiting one form of wealth to achieve another. Wealth creators need better processes that will assist them in identifying the information they really need to make decisions that will move them toward desired outcomes, and then in finding effective ways to collect and share that information.

NEXT STEPS

Wealth Creation in Rural Communities is committed to continuing to learn about approaches to incorporating measurement that work. We are doing that by sharing what we learn and inviting comments and feedback. We are actively working with grantees to implement meaningful measurement processes, identify protocols that can be adapted and shared, and develop new tools. For updates as this work progresses, we invite you to visit www.yellowwood.org/wealthcreation.aspx/.

Measurement is powerful. We have a great deal to learn about how to harness this power to help us create wealth that sticks while we avoid exploiting one form of wealth to achieve another. Wealth creators need better processes that will assist them in identifying the information they really need to make decisions that will move them toward desired outcomes and then in finding effective ways to collect and share that information.

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 32. Author's calculations based on Census data and the Consumer Expenditure Survey.
 33. CSA's are examples of "community supported agriculture" where farmers sell shares of their expected harvest to residents who pick up produce each week. This reduces or eliminates risk for farmers and brings consumers closer to the land.
 34. See http://www.noharm.org/lib/downloads/food/Healthy_Food_in_Health_Care.pdf for the Pledge and http://www.noharm.org/us_canada/issues/food/signers.php for the participating facilities.
 35. Kulick, Marie. *Healthy Food, Healthy Hospitals, Healthy Communities: Stories of Health Care Leaders Bringing Fresher Healthier Food Choices to their Patients, Staff, and Communities*, Institute for Agriculture and Trade Policy, Food and Health Program, May 2005, pp. 23-24.
 36. Farm-to-Hospital is an initiative of Health Care Without Harm.
http://www.noharm.org/us_canada/issues/food/pledge.php
Participating facilities agree to:
 - Increase offerings of fruit and vegetables, and reduce unhealthy fats and sweetened foods.
 - Implement a stepwise program to identify and adopt sustainable food procurement.
 - Work with farmers and suppliers to increase availability of fresh, locally-produced food.
 - Encourage vendors to supply food that is produced in systems that eliminate the use of toxic pesticides, prohibit the use of hormones and non-therapeutic antibiotics, support farmer and farm worker health and welfare, and use ecologically protective and restorative agriculture.
 - Communicate interest in foods whose source and production practices are identified, so there will be informed consent and choice about the foods purchased.
 - Develop a program to source from producers and processors which uphold the dignity of family, farmers, workers and their communities and support sustainable and humane agriculture systems.
 - Educate and communicate within our system and with our patients and community about our nutritious, socially just and ecologically sustainable healthy food practices and procedures.
 - Minimize and beneficially reuse food waste and support the use of food packaging and products that are ecologically protective.
 - Report annually on implementation of the Pledge.
 37. The Intervale Center <http://www.intervale.org/>.
 38. A review of hospital invoices showed modest progress in some areas but the majority of goods are still provided by a large national wholesaler. In addition, "local" sources can include soda bottlers and coffee packaged locally. Furthermore, a Vermont wholesaler that supplies local produce must import goods out of season and invoices do not indicate the amount of in-state vs. out-of-state purchases.
 39. John E. Davis and Alice Stokes, 2009.
http://www.champlainhousingtrust.org/assets/files/Lands-In-Trust_Homes-That-Last.pdf
 40. *ibid*
 41. Rohe, Van Zandt and McCarthy, "The Social Benefits and Costs of Homeownership: A Critical Assessment of the Research", Joint Center for Housing Studies, Harvard University, October 2001.
 42. "Some of [the] rights, responsibilities, risks, and rewards [of homeownership] are shared with a nonprofit organization. Part of what is shared is the financial gain from owning a home. The owners...typically recoup at resale whatever personal investment they have made in buying, maintaining, and improving a home, augmented by a modest return. They are not allowed to walk away, however, with all of the value embedded in their property, since much of it – perhaps most of it – is a product of the community's investment: equity created at the time of initial purchase if a public grant, charitable donation, or mandated concession from a private developer was used to reduce the home's price; and equity created during the course of the homeowner's tenure if public investments in infrastructure, private improvements in surrounding properties, or changes

in the regional economy have increased the home's appraised value. Such socially created value is retained in the home, keeping it affordable for the next homebuyer of modest means, one resale after another; one generation after another." Lands in Trust, Homes That Last: A Performance Evaluation of the Champlain Housing Trust, 2009, John E. Davis & Alice Stokes. http://www.champlainhousingtrust.org/assets/files/Lands-In-Trust_Homes-That-Last.pdf

43. CHT shared equity housing goals:
- Expand Homeownership: Improve access to homeownership for persons excluded from the Market.
 - Create Individual Wealth: CHT homeowners receive a positive return on investment at resale.
 - Enable Residential Mobility: At resale, CHT households will have the option and where-withal to buy unrestricted, market rate homes (or another resale-restricted CHT home).
 - Preserve Affordability: Ensure that CHT housing units are affordable for subsequent gen-erations of low-income homebuyers.
 - Retain Community Wealth: Preserve public subsidies invested in CHT homes to maintain affordability.
 - Enhance Residential Stability: Continue stewardship of CHT homes by keeping them in portfolio and retaining occupancy, use, and resale controls.

Davis, John E. and Alice Stokes, Lands in Trust, Homes That Last: A Performance Evaluation of the Champlain Housing Trust, 2009.

44. Census data for income measures (e.g., median household, median family, and per capita) shows Glasgow lagging behind Barren County, which in turn is lower than the Kentucky statewide averages.
45. Glasgow Electric Plant Board (EPB) web site, FAQ.
46. Ibid.
47. Op cit, EPB FAQ.
48. February 10, 2010 telephone conversation with the Barren County Clerk.