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Adapting Community and Economic Development Tools to the Study of Local Foods: The Case of Knox County, Ohio

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Abstract: In this article we seek to identify how diverse community and economic development tools in the Extension portfolio might be adapted to the assessment of local food and farming developments. We report on an assessment of the economic development opportunities and impacts of local food system development in Knox County, Ohio. The data and analysis are drawn from several different sources, including

demographic census data and retail and economic activity data. The assessment findings and the process of coordinating the assessment effort reveal some of the opportunities and challenges of Extension effectively supporting community development related to local food systems.

Efforts to develop more locally based food systems are gaining momentum across the U.S. (Hinrichs & Lyson, 2007; Lyson, 2004; Vallianatos, 2004; Allen, 2004; Feenstra, 2002; Norberg-Hodge, Merrifield, & Gorelick, 2002). Substantial policy interest in local food system development as a strategy to improve public health and/or reduce food insecurity among vulnerable populations has emerged in recent years (Center for Disease Control, 2009). However, until recently, attention to local food system development as a viable community economic development strategy has been more modest. Lyson observes "it is time to put agriculture and food on the political agendas of local communities," (2007, p. 29), and he argues "local agriculture and food businesses need the same access to economic development resourcesâ such as grants, tax incentives, and loansâ as nonfarm-related businesses" (p.30).

As more communities across the country look at local agriculture and food production to identify economic development opportunities, we anticipate a growing demand for Extension to provide leadership and research to these efforts (Colasanti, Wright, & Reau, 2009; Brasier, 2006). In this article, we report results from our response to one rural Ohio county's request for data concerning the opportunities and economic impacts of local food system development. The project was initiated in summer of 2008, and results were reported back to the community in Spring 2009.

We seek to answer two questions in reporting on our project: 1) What might be the economic impacts of farming and food system development in our study county? and 2) Can existing community and economic development assessment tools be adapted to understand the food and farming system? While the analytical results will be of interest to Extension professionals, we believe the innovation of our project is answering question two, which can provide added depth to existing Extension programming related to local food and farming development.

Local Food Systems as Community Economic Development

Attention to local food and farming as a viable community economic development (CED) activity is consistent with the longstanding CED focus on job creation and increasing economic activity through local business development (Green & Haines, 2002; Blakely, 1994; Flora, Flora, Green, & Schmidt, 1991). Attention to local firms (in contrast to efforts to recruit extra-local, often industrial-scale firms) recognizes the strengths of local resources and talent, and the benefits of pooling community resources to support these local assets (Sharp, Agnitsch, Ryan, & Flora, 2002).

To justify local government investment in food and farming system development, there may be a need to assess the potential economic outcomes (job creation, increased income, etc.) of these investments. The potential economic outcomes are often assessed for other types of development (such as manufacturing), but generally not for developments in the food and farming sector. For example, what is the impact of keeping more food dollars circulating locally in the community as a result of locally produced foods being consumed locally? We believe there are a number of tools in the Community Development Extension toolbox that could be adapted to identify these economic impacts and provide insight into how to focus development efforts for maximum impact.

We identified three specific programs in the Community Development Extension portfolio at Ohio State University that were able to generate information germane to the request of understanding the economics and

opportunities of local food systems in a particular county.

The Exurban Change Project is a land-use and demographic analysis program that provides topical information to local planners and decision-makers grappling with various changes at the rural-urban interface. (See http://exurban.osu.edu/ for sample outputs from this program.) We expected analysis from this project could help identify food system opportunities and challenges associated with a community's geographic location, such as an understanding of the population of the local and regional markets.

The Retail Market Analysis (RMA) program, a popular community "Main Street" evaluation tool, aims to identify strengths and weaknesses of a community's retail sector. (See http://aede.osu.edu/programs/RMA for more detail about RMA and sample projects.) We anticipated that RMA techniques could help us better understand the flow of grocery and restaurant retail dollars in the community and region, and could identify strengths and weaknesses of local food retailing.

Third, the Local Economic Analysis Program, which utilizes input/output (I/O) modeling techniques to help us better understand changes to employment and income resulting from various economic development scenarios. (See http://localecon.osu.edu/economic_analysis.htm for more detail about this technique and example outputs.) In this project, I/O modeling was expected to help identify the estimated economic impacts of specific food system developments.

While each of these programs could individually be useful to analyze local food system development, we opted to draw on all three to provide a more comprehensive and nuanced explanation of the opportunities and impacts in our particular study site.

About Knox County

Knox County, population 54,500 (US Census, 2000), is an agricultural county located at the rural-urban interface. While the county is relatively rural, it is on the edge of two metropolitan areas (Columbus and Mansfield). Agricultural production accounts for about 62% of Knox County's land use, and agriculture and the food system is a central industry in the county, accounting for 13% of the county's total gross domestic product and 20% of the county's jobs (IMPLAN, 2006). The sale of raw products off farms brings in 50-60 million dollars annually. Corn, soybeans, wheat, oats, and hay account for about half of the total agriculture income, while dairy, beef cows, sheep, goats, and poultry make up the other half (USDA, 2009). A substantial number of farms exist in Knox County, although many of these are relatively small, with many operators working off the farm part- or full-time. Average sales per farm were $62,642 in 2007, which is about two thirds of the statewide average for Ohio farms. Over 9% of the farmers in Knox County reported having some amount of sales directly to consumers.

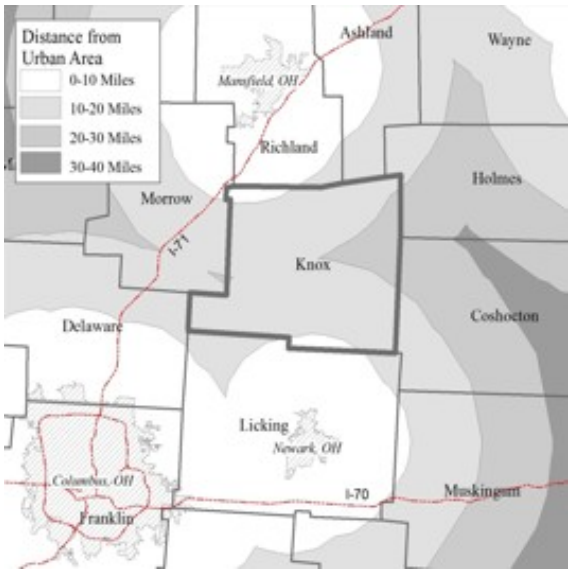
Knox County also has a state (and national) reputation for progressive local food initiatives. Knox County was one of the first counties in the state to create a local food council, and its county Extension program has provided leadership for a number of local food system development activities, including organization of the farmers' market and publication of a local foods guide. Knox County is also home to Kenyon College's Rural Life Center, which has a program, Food for Thought, that works to build a sustainable local market for foods produced in and around Knox County. Food for Thought has been instrumental in bringing local foods to the campus dining experience, and in 2005 Kenyon hosted the National Farm to Cafeteria Conference.

Knox County at the Rural-Urban Interface

Figure 1 shows the location of Knox (county line in bold) in relation to several nearby metropolitan and

urban areas (Columbus, Mansfield, and Newark). The distance rings from each of the nearby urban areas reveal Knox County is within a reasonable commuting distance (~30 miles) to these three urban areas. Based on previous work with Ohio counties located on the edge of larger cities, we had some assumptions about Knox County's population and pattern of employment. To confirm our assumptions, geographic and demographic analyses were conducted by the Exurban Change project.

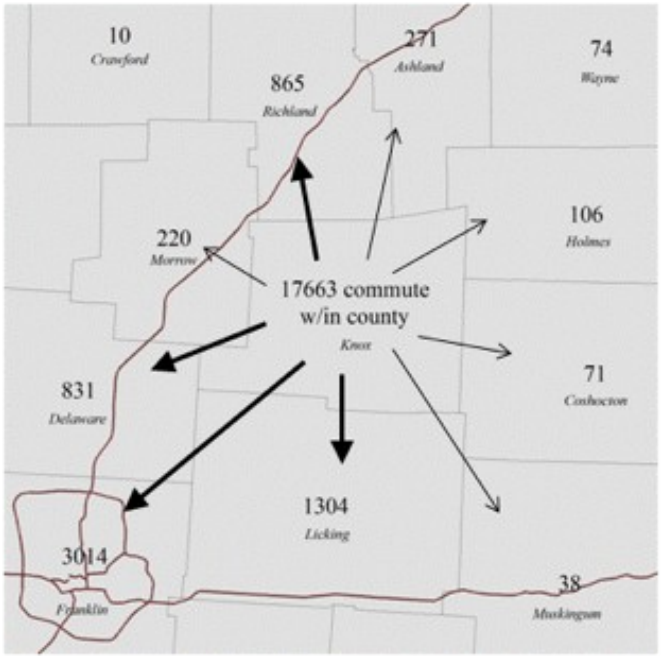
Figure 1.
Knox County Within the Region, Including Urban Buffers



Because of its geographic location, we assumed Knox County would be quite reliant on the job opportunities of the neighboring urban areas. Commuting data were reviewed to assess this potential dependency. Contrary to expectations, we found that a large proportion of Knox County residents worked within the county. Figure 2 shows how many of the just over 25,000 workers in Knox County are employed in Knox County and the surrounding counties. Only 29.5% of the employed residents commuted outside the county for employment in 2000 (accurate data for more recent years is not yet available), compared to 63.5% in nearby Delaware County and 67.0% in nearby Morrow County. A little over 70% of Knox County workers, or 17,663 workers, reside and work within the county, with the most popular external employment destination being the nearby metro counties, Franklin (3,014 workers) and Licking (1,304 workers).

The proportion of residents living and working locally is significant because typically areas nearer to larger urban areas "leak" retail dollars because of the ease with which local residents can access larger retail markets in these urban areas. Thus, while Knox County has relatively easy access to several metropolitan markets, generally speaking, the county is not economically reliant on these markets for employment. We expect in other rural counties near the rural-urban interface the situation might be quite different, entailing different recommendations regarding development opportunities or needs.

Figure 2.
Knox County Out-Commuting Pattern, Number of Residents Commuting to Each County for Employment



Retail Market Analysis: Grocers and Restaurants

Our next step was to look more directly at Knox County's food system, specifically food retailing, using the tools of the RMA program. Our analysis focused on the health of food retailing (groceries and restaurants) within Knox County to determine the extent to which county retailers are meeting the food needs of county residents. We began by estimating the total value of retail food demand of Knox County residents (potential sales) and the estimated actual retail sales in the county (provided by InfoUSA). Potential sales were calculated by estimating sales (a function of population, income, and known regional food demand in particular business categories) that could be achieved in the county if the local population shopped within the county only.

We then compared actual sales to potential sales. Where actual sales exceeded potential sales, we identify the existence of a sales **surplus**. A surplus implies either that (1) people travel to Knox County to shop or (2) people living within Knox County consume more than would be typically expected given their income levels. In cases where actual sales were less than potential sales, a sales **leakage** is identified. A leakage indicates that either (1) people living within the county shop outside the county or (2) people living within Knox County consume less than would be expected given their income levels. A leakage does not imply that retail businesses are failing. On the contrary, these businesses may be doing quite well. A leakage simply means that total sales within the local area are not as much as they could be based on the local area's population and income, signaling an opportunity for local businesses to better serve demand and capture more retail dollars from local residents.

Our analysis revealed that, overall, Knox County grocers were more than meeting local demand (with a surplus of $6.3 million) (Table 1). However, we identified an estimated leakage of $18.47 million among supermarkets within the retail grocery sector. This leakage might mean that residents are purchasing more of their staple goods at smaller local food retailers rather than supermarkets or that they are visiting supermarkets outside of the county. Sales at specialty outlets, convenience stores, and smaller groceries, though, exceeded estimated local demand, perhaps because residents frequent these specialties and smaller

stores due to the absence of supermarket choices or simply as a result of local preference for these types of outlets.

Table 1.
Knox County Retail Grocery Surplus and Leakage Findings

Retail Grocery Type	Potential Sales	Estimated Sales	Surplus/Leakage*
	$ in 000		
Specialty	5,450	15,020	9,569
Convenience	8,857	15,994	7,137
Small Grocery	13,403	21,476	8,073
Supermarket	73,071	54,600	-18,470
Total	100,782	107,090	6,308
*A positive value indicates estimated sales were in excess of expected potential sales, a negative value indicates estimates sales were less than expected potential sales.			

In contrast to its retail grocery sector, Knox County's local restaurant sector may not be meeting potential local demand (Table 2). Knox County appears to be relatively well served by non-chain, local restaurants, reporting a modest surplus (about $2.2 million). However, our analysis revealed a substantial leakage in the chain restaurant and bakery and cafÃ© category. Overall, $12.5 million of restaurant sales (including bakeries and cafes), or 18.2% of estimated potential sales, were not occurring within the county. These results suggest Knox County may be well served on some accounts (non-chain restaurants) but less so on others (chain restaurants).

Table 2.
Knox County Restaurant Surplus and Leakage Findings

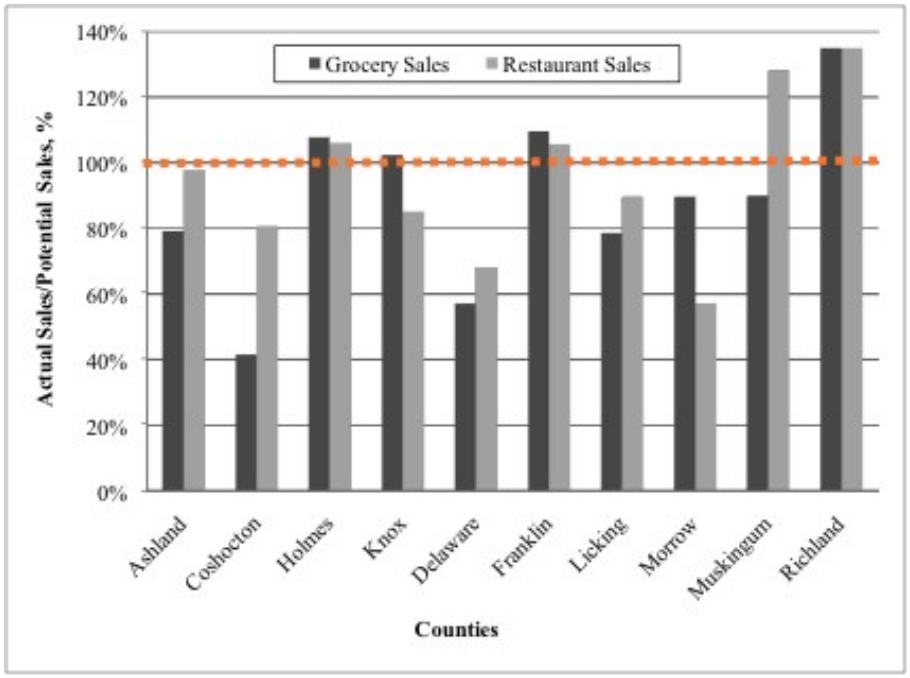
Restaurant Type	Potential Sales	Estimated Sales	Surplus/Leakage*
	$ in (000)		
Bakery/cafÃ©	2,222	1,552	-670
Chain Restaurant	43,079	29,000	-14,079
Nonchain/Local Restaurant	23,562	25,760	2,198
Total	68,683	56,312	-12,551
*A positive value indicates estimated sales were in excess of expected potential sales, a negative value indicates estimates ales were less than expected potential sales.			

In a second set of retail market analyses, we expanded the market region and modified our analytical strategy

to examine the retailing opportunities in nearby counties. We computed (1) the proportion of food purchased for home consumption by county residents compared to estimated grocery sales within the county, and (2) the amount of food purchased away from home by county residents with estimated restaurant sales in that county.

We found that the food retailing needs of residents in several neighboring counties, particularly the more rural counties, may not be met locally (Figure 3). In the figure, columns extending above the horizontal dotted line representing 100% (the point at which potential sales equal actual sales in the county) indicate that the county has a surplus of sales in that category; columns below the line indicate the existence of leakages in the county. Figure 3 illustrates a potential opportunity for Knox County food retailers to draw in customers from neighboring counties that are currently underserved (e.g., Coshocton and Morrow).

Figure 3.
Surplus (>100%) and Leakage (< 100%) of Grocery and Restaurant Sales per County



One potentially significant fact revealed by the RMA analysis is the sheer volume of food retailing occurring in other counties, particularly nearby Franklin County (Figures 4 and 5). A Knox County food system development strategy that focuses on food retailers within the county may have merit, but the potential sales in Knox County pale in comparison to the potential sales in nearby urban counties, and development strategies should take this into account. With over $1.8 billion in restaurant sales and over $2.5 billion in grocery sales in Franklin County, Knox County food system development strategies should consider seriously how to tap into this nearby retail market for foodstuffs.

Figure 4.
Actual Restaurant Sales for Knox and Select Neighboring Counties

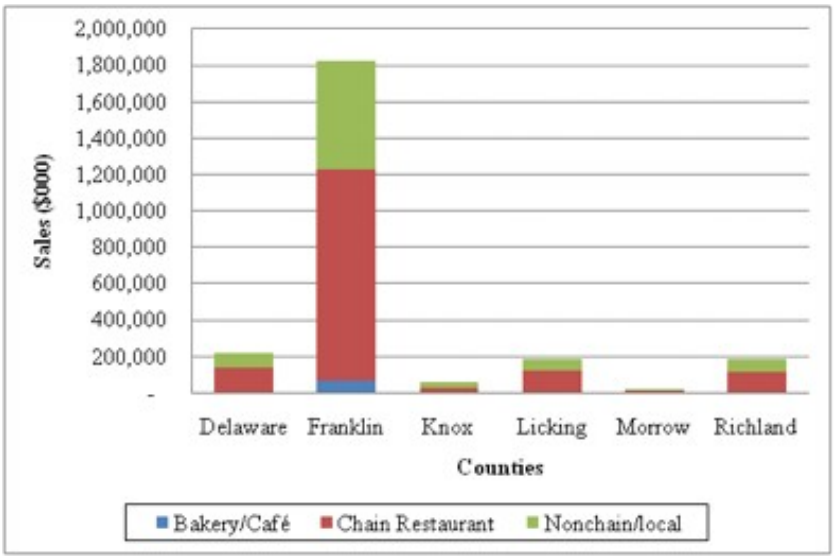
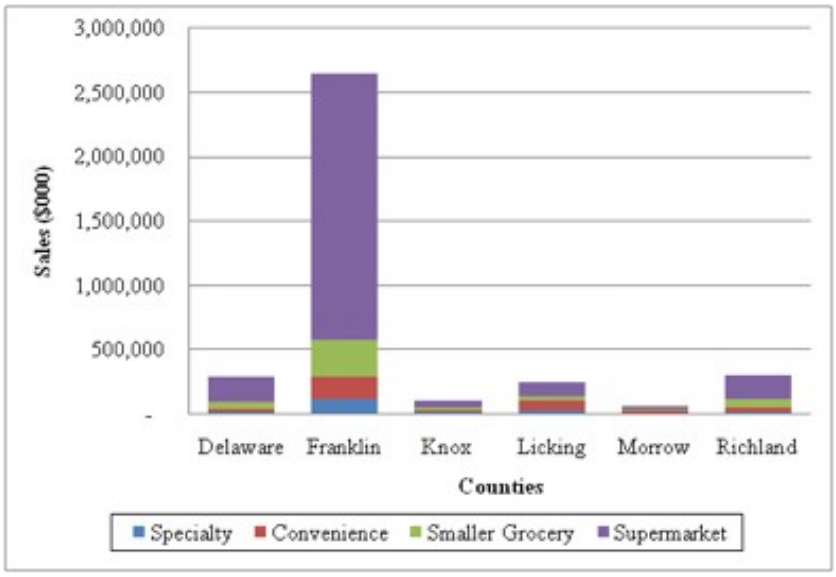


Figure 5.
Actual Grocery Retail Sales for Knox and Select Neighboring Counties



Impact of Three Development Scenarios

Recognizing the opportunities of increasing local production and serving local and regional markets, the next step was to investigate what might be the impacts of successful efforts to develop Knox County's farming and food sector using Input/Output analysis conducted by OSU Extension's Local Economic Analysis program.

Based on appropriate and reasonable strategies to expand local production, retailing, and value-added processing in the county, three different scenarios involving development of Knox County's agriculture and food system sectors were identified. They included:

1. Increasing Knox County's higher value specialty crop farm sales by 5%.

2. Expanding Knox County's retail food sales (restaurant/grocery) by 10%.

3. Adding a new food processor in Knox County that would create 20 full time jobs.

Input/Output analysis (I/O) attempts to quantify how changes in one industry within an economy might impact other sectors within that area's economy (Leontief, 1966). For example, five new jobs created in one sector impacts other businesses in the community; those five new employees make purchases at local restaurants or stores, use local health care and other local services, and may rent an apartment or purchase a house in the community. Additional new spending in the local economy might compel the owner of a local business to hire additional help and/or make new business investments, which again grows demand for local goods and services, thus creating a ripple of additional economic expansion in the county.

Using I/O software (IMPLAN in our case), we modeled growth scenarios and estimated the anticipated economic effects of our scenarios. The results (Table 3) illustrate the estimated effects to the Knox County economy resulting from expansion of Knox County's food and farming sectors. Of the three scenarios, the modeling estimated that the effects of growing the food retailing (Scenario #2) and food processing (Scenario #3) sectors would have the greatest potential to impact the Knox economy, with an estimated combined potential to support nearly 340 new jobs, increase sales tax collections by roughly $450,000, and add nearly $5.5 million to the $1.7 billion annual personal income of Knox County residents.

Table 3.
Knox County Ag-Sectors Economic Analysis Estimates

Restaurant Type	**Scenario #1**	**Scenario #2**	**Scenario #3**
	$ in (000)		
Sales	$1,158	$12,793	$15,857
Employee Earnings	$159	$3,917	$1,687
Sales Tax	$14	$344	$98
Proprietor Income	$111	$269	$255
Employment	11 jobs	243 jobs	96 jobs

Even the most conservative estimated growth scenario (Scenario #1), a modest increase in specialty crop farm sales, could support an estimated 11 new jobs, increase sales by over $1.1 million, and add nearly $160,000 to employee earnings in the county.

Given the size and scope of the entire Knox County economy (around $1.5 billion), the economic impact of enhancing its food and farming sectors in the ways identified in the three scenarios might seem relatively modest (the impact of the three scenarios combined have an impact of roughly 1% on the gross county product), but the employment gains are not inconsequential in a relatively rural area such as Knox County. Further, the food and farming sector is a county strength and asset that may have substantial long-term

potential for incremental development.

Conclusions

As previously stated, contemporary interest in food and farming system development creates an opportunity for Extension to provide leadership and expertise. The research and Extension programmatic response reported in this article sought to answer two questions and reported on way Extension could contribute to efforts related to food and farming system development.

Our first question focused on understanding the opportunities and impacts of local food and farming development in Knox County. We conclude that the existence of a relatively diverse and large food and farming sector with a large number of farmers and firms, proximity to large urban markets, and a relatively vibrant small retailer and local restaurant sector are all county strengths that might be built upon. And while the specific impacts will vary according to the particular effort employed, our input/output analysis indicated that successful development efforts would contribute to positive economic impacts.

Our second question concerned the applicability of existing Community and Economic Development-oriented tools to the evaluation of the food and farming system. Across the three OSU Extension Community Development programs applied to this effort, the findings and the interpretations of these findings show how these tools (demographic analysis, RMA, economic impact analysis) can be adapted to the study of community food systems. Other tools and programs exist in the Extension portfolio that might be adapted to the food and farming context as well, including programs focusing on business incubation, business planning, etc.

We do note a potential limitation to the more expansive use of these tools, however. Coordinating several disciplinary specialties to carry out an Extension project such as the one reported here can sometimes be difficult to manage, especially when expertise is located across departments and levels of the organization.

To address this issue, our team relied on a department-based faculty specialist who was familiar with the social and economic data analysis capacities available for Extension purposes at The Ohio State University and who also had developed relationships with county-level Extension personnel and local food system leaders across the state. The specialist was also adept at coordinating the efforts of diverse team members and was capable of clearly communicating the Knox County need so as to guide the application of research tools by technical staff to answer new questions. Interestingly, classic community development theory anticipates that successful projects require generalized leaders who can coordinate the efforts of various facets of the community (Sharp, Agnitsch, Ryan, & Flora, 2002), and this sort of leadership was integral to this multidisciplinary work as well.

Extension has a history of facilitating the development of community coalitions. Our experience with the project reported here suggests that building such coalitions within the organization to better link the diverse knowledge and tools of the organization can meaningfully contribute to local food system development efforts. Furthermore, how we as an organization choose to structure ourselves to foster more interdisciplinary collaborations may have far-reaching implications on the degree to which Extension can successfully address complex issues in the future.

References

Allen P. (2004). *Together at the table, sustainability and sustenance in the American agrifood system.* University Park, PA: The Pennsylvania State University Press.

Blakely, E. J. (1994). *Planning local economic development: Theory and practice*. 2nd edition. Thousand Oaks, CA: Sage Publications.

Brasier, K. J., Collins, T., Kelsey, T. W., Lenihan, M. H., & Whitmer, W. (2006). The future of agriculture in our community: A pilot program to increase community dialogue about agricultural sustainability. *Journal of Extension*. [On-line], 44(2) Article 2FEA3. Available at: http://www.joe.org/joe/2006april/a3.php

Center for Disease Control. (2009). *State indicator report on fruits and vegetables, 2009*. Washington, DC: Department of Health and Human Services, Centers for Disease Control and Prevention.

Colasanti, K., Wright, W., & Reau, B. (2009). Extension, the Land-Grant mission, and civic agriculture: Cultivating change. *Journal of Extension* [On-line], 47(4) Article 4FEA1. Available at: http://www.joe.org/joe/2009august/a1.php

Feenstra, G. (2002). Creating space for sustainable food systems: Lessons from the field. *Agriculture and Human Values,* 19(2), 99-106.

Flora, C., Flora, J. L., Green, P. G., & Schmidt, F. E. (1991). Rural economic development through local self-development strategies. *Agriculture and Human Values* 8(3), 19-24.

Green, P. G., & Haines, A. (2002). *Asset building & community development*. Thousand Oaks, CA: Sage Publications.

Hinrichs, C. C & Lyson T. A. (2007). *Remaking the North American food system: Strategies for sustainability.* Lincoln, NE: University of Nebraska Press.

Leontief, W. (1966). *Input-output economics.* Oxford University Press.

Lyson, T. A. (2004). *Civic agriculture: Reconnecting farm, food, and community.* Medford, MA: Tufts University Press.

Norberg-Hodge, H., Merrifield, T., & Gorelick, S. (2002). *Bringing the food economy home: Local alternatives to global agribusiness*. Bloomfield, CT: Kumarian Press, Inc.

Sharp, J.S., Agnitsch, K., Ryan, V., & Flora, J. (2002). Social infrastructure and community economic development strategies: The case of self-development and industrial recruitment in rural Iowa. *Journal of Rural Studies* 18(4), 405-417.

U.S. Department of Agriculture. (2009). Census of Agriculture, 2007. Washington, DC, U.S.: Department of Agriculture, National Agricultural Statistics Service.

U.S. Census Bureau. (2000). U.S. Census of Population and Housing. Washington, D.C.

Vallianato, M., Gottlieb, R., & Haase, M. A. (2004). Farm-to-school: strategies for urban health, combating sprawl, and establishing a community food systems approach. *Journal of Planning Education and Research*, 23, 414-423.
