

# Community Decision Support and the Role of the Public in Regional Policy Analysis

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## 1. Introduction

Recently, Martin Shields used the occasion of his MCRSA Presidential Address to ask a panel of regional policy scholars and practitioners, "Why don't people pay more attention to regional policy analysis?" (Macke, et al., 2003). Shields noted that regional science has demonstrated a clear and sustaining commitment to policy-relevant research. The field has also contributed important new insight for policy makers in such areas as regional cluster studies and regional economic modeling. Despite this record of achievement, Shields finds that regional policy decisions are often made without consulting regional scientists.

Shield's conclusion begs the question as to whether regional scientists are effectively incorporating elements into their research that regional policy makers feel are relevant to policy decisions. Tom Johnson in his fellows address to the Southern Regional Science Association argued that regional scientists should be conducting research that identifies "the place in space" (2002). Stephen Macedo and colleagues (2005) argue that regional policy outcomes depend on "place" – and the civic engagement of the people of place. Mark Henry states that the mission of regional science is to assist regions that "seek higher levels of well-being (for at least some of) its people" (2004). If we accept this charge, regional scientists may need to work more closely with people to "earn the right to be heard".

This paper responds to Shield's Presidential Address, by turning his question around. We ask, when conducting policy analysis, do regional scientists pay sufficient attention to the concerns and insights of the public? Would an expanded role for the public increase the policy relevance of regional science? To address these issues, we ask three related questions: 1) are the potential benefits and costs associated with increased stakeholder involvement in local and re-

gional policy research?; 2) what tools or methods could be used in *participatory* regional policy research?; and 3) what are the implications of an expanded public role for both regional research and regional policies?

The paper is developed in four sections. First, we describe recent trends in various social science and policy research fields towards more public participation. Second, we review the "typical" process applied in regional policy analysis projects, and propose a more participatory approach for regional science we call *community decision support*. Third, we illustrate how this approach has been applied in a recent research project to assess the economic importance of higher and adult education in a rural Ozarks region called Howell County, Missouri. Finally, we discuss implications of increased public participation for policy and future regional science research.

## 2. The Participatory Paradigm

Since the 1990s, the use of public participation in policy research and decision making has virtually exploded (Cf., Roberts, 2004; Rogers and Robinson, 2004; Lantz, et.al, 2001; Box, 1998; Thomas, 1995). Midgely et. al, (1986) define popular participation as: "the voluntary and democratic involvement of people in 1) contributing to the development effort, 2) sharing equitably in the benefits derived there from, and 3) decision-making in respect of setting goals, forming policies and planning and implementing economic and social development programs." Tikare et al. (2001) define participation as "the process through which stakeholders influence and share control over priority setting, policy making, resource allocations, and access to goods and services". Increased public involvement in policy making has occurred across the world at all levels of jurisdiction, but particularly, at the local or regional level (McLaverly, 2002). Public involvement

now occurs across a wide range of policy sectors, including transportation, natural resources management, (Syme and Sadler 1994; Prisco 1990) economic and community development, (O'Dubhchair, Scott and Johnson 2000) land use and planning, (Beierle and Cayford, 2002) law enforcement (Skogan, et.al, 2000), public education (Roberts, 2002) health planning (Minkler and Wallerstein, 2002) and others (Lovan, Murray and Shaffer, 2004).<sup>1</sup>

Beierle and Cayford (2002) review over 200 case studies of participatory projects in (US) environmental decision making. They evaluate the trend toward increased stakeholder involvement, and attempt to place it in historical context. Early US natural resource policy was based on "scientific forestry" - designed to serve the public interest by applying conservation policies that produced the greatest public good for the greatest number of people for the longest time. This scientific forestry managed natural resources based almost exclusively on scientific judgment and methods, including risk assessment, impact assessment and cost/benefit analysis. However, this expert managerial approach existed in tension with the democratic system, and with the demand for public accountability. Citing Kerwin (1999), Beierle and Cayford argue that each time there was a major expansion of (federal) scientific management, Congress responded by passing new legislation to mandate more public oversight and involvement. For example, in 1946 The Administrative Procedure Act introduced requirements for agencies to post public notice and invite public comment on draft rules.<sup>2</sup> This legislative response evolved into a kind of paradigm shift from scientific managerialism to regulatory pluralism. Gradually, the role of agencies changed from one of science-based steward of public interest, to one of arbiter and enforcer of a "contingent" public good -- negotiated by (diverse) stakeholder interests. The demand for public involvement is now a long-term, institutionalized feature in local and regional policy decisions (Rogers and Robinson, 2004; Blomgren-Bingham, et.al, 2005). In fact, Beierle and Cayton (2002) believe that regulatory pluralism is evolving into a much more grassroots-based popular (or direct) democracy approach to policy decisions, which allows not just special interest professionals, but individual interested citizens direct involvement in policy making (Cf., Elster, 1998; Coleman and Götze, 2003).

<sup>1</sup> For useful recent reviews and critiques of participatory research, see Ashworth, 2000; Hayward et.al, 2004; Mohan and Stokke, 2000; Burton, 2004; McClaverty, 2002; and Cooke and Kothari, 2001.

<sup>2</sup> For a recent comprehensive review of statutory changes related to public participation, see Blomgren-Bingham, et.al, 2005.

### 3. Regional Policy Decision Making

At this point, it is important to consider how regional science involves the public in its work. A review of leading regional science journals suggests that the shift toward public participation has received very little attention in the regional science literature. Full text searches of major regional science journals in the past five years including *Journal of Regional Science*, *Papers in Regional Science*, *Annals of Regional Science*, and *Growth and Change* found few articles containing key words such as "civic engagement," "community involvement," "stakeholder involvement," and "public participation." The journal, *Regional Studies* represents an important exception. One section of this journal is dedicated to policy review. Typically, articles in this section present a case study analyzing particular regional or national policies. In most cases, public participation is evaluated as to whether or not it achieved the goals of specific government programs. Examples include analyses of policies used to increase community involvement in an effort to promote community development and regeneration (Osborne, Williamson and Beattie 2002; Hall and Hickman 2002). Yet, none of these peer-reviewed accounts focus on the extent to which the public is involved directly in the research process.

#### 3.1 Potential Benefits of Participatory Research

Participatory research methods start from the premise that the outcomes from this type of analysis could be improved by increased public involvement at any or all of the stages in applied regional policy research projects. Apologists argue that this approach is a politically viable way to address "wicked problems" - those problems with complex causes, no solutions, and only temporary and imperfect resolutions (The World Bank Group, 2001).

Recent research suggests that increased public involvement in regional policy analysis offers a number of other important potential benefits. For example, participatory research can lead to:

- Improved understanding of key issues by the public (Beierle and Cayton, 2002; The World Bank Group, 2001)
- Improved understanding of key issues by policy makers (Beierle and Cayton, 2002; The World Bank Group, 2001; Bowles and Gintis, 2001)
- Increased citizen ownership of issues and increased peer pressure for community involvement (Rogers and Robinson, 2004)

- Personal development and increased community leadership capacity (Rogers and Robinson, 2004)
- Mitigation of conflict (Beierle and Cayton, 2002; Karl, 2000; Leeuwis, 2000)
- New policy solutions and productive multi-sectoral collaboration and cooperation (World Bank Group, 2001)

The importance of public participation is widely accepted in key institutions involved in international development efforts. Scholars at the World Bank also conclude that increased public participation leads to increased understanding. In a recent publication, they argue that "...(l)earning often doesn't occur by reading, but mainly by doing. If you want people to learn about local economic or social issues, involve them in research." (World Bank Group, 2001). They also find that participants identify new institutional and functional relations to address their problems. Several recent articles published in *The Journal of Regional Policy Analysis and Policy* confirm and illustrate many of these benefits (Cf., Deller and Shields, 1998; Leatherman and Deller, 2001; Scott and Johnson, 1998).

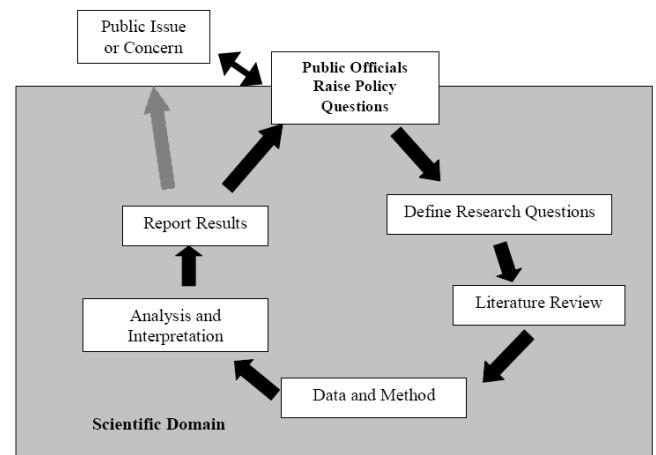
### 3.2 Potential Barriers to Participatory Research

In many ways, an expanded role for stakeholders seems contradictory to the basic principles of the scientific method. Science is, by definition, systematic, objective inquiry, pursued by disciplinary experts independent of political influence. Involving public officials and the public in designing and completing research on complex and controversial issues risks all sorts of potential problems, including inaccurate or inappropriate problem definition, limiting the quality – and quantity – of relevant data collection, and misappropriation or interpretation of research findings. It also often increases transactions costs for all involved – researchers, public officials and stakeholders. In a study of New England town meetings, Mansbridge (1983) found that many residents disliked participation because of demands it placed on their time and other resources.

Other problems can occur. For example, participants may not accurately represent stakeholder interests. This may be due to lack of understanding or communication. It may also be the result of attracting "the usual suspects" to participate. Mohan and Stokke (2000) also warn that participatory projects may lead to a kind of "romanticized localism". They argue that often participatory research overstates the power and effects of local action. The methods can isolate regional stakeholders from political and economic forces that also affect them. If they are poorly designed

or implemented, participatory projects can lead to ill-defined roles. Who is eligible to participate? How much control or authority can they exert? What alternative actions can they take? Finally, participatory research offers no guarantees of success. Stakeholders may not be satisfied with the process pursued, the principals involved or the outcomes achieved.

Recent peer-reviewed accounts of regional policy research projects describe a more conventional scientific research approach, which proceeds with very limited public input or involvement. This process in ideal typical fashion is depicted in Figure 1.



**Figure 1.** Conventional regional science policy research process

An applied research project often begins when public officials recognize an important public issue that invites or requires policy action. If the issue is of sufficient importance, and if time and other resources permit, public officials might contact regional scientist(s) with questions. This interaction takes place on the boundary between the policy arena and the scientific domain. If principal parties agree, the regional research proceeds largely apart from political or public influence. Based on disciplinary knowledge and experience, analysts sort and translate the relevant policy questions into questions that can be addressed by scientific research. The research questions are further filtered and refined in a review of relevant research literature. Based on previous research, analysts pursue appropriate data and methods, conduct analysis and report results to public officials – often in draft form. Initial feedback from policy makers at this stage often leads to further refinement and iterations of the research process. Such an approach can yield efficient, valid and reliable results. However, a process that involves little or no direct interaction between researchers and interested stakeholders can limit the decision-

making value of the results. For example, a recent review by Steve Smith (2005) of articles in the *Review of Regional Studies* between 1990 and 2002 showed that while 40 percent of all articles contained either an explicit policy statement or were focused on policy, only 49 percent of these policy-oriented articles solidly identified policy factors or variables that were amenable to policy action. While some of these studies may have not benefited from a participatory process, others may have gained insight into the desired policy variables for research with greater interactive input from policymakers and interested stakeholders.

## 4. Community Decision Support

In the context of strong political support, social scientists have developed a broad array of participatory research methods or techniques (Cf., Whyte, 1990; Slocum, et.al, 1995; Chambers, 1994; Swantz, 1975). However, most of these techniques are designed to support policy advocacy, particular policy actions and the interests of particular groups (Hall, 1992; Park, 1992). In this section of the paper we propose an alternative approach that shifts the focus of participatory research from policy *action* to policy *decision* we call **Community Decision Support**.

### *Basic Principles of Community Decision Support*

CDS is not one method, but a process that may include multiple methods designed to address unique issues faced by particular communities. It may require more resources than conventional projects. This might include assembling multi-disciplinary teams of researchers, practitioners, relevant public officials and stakeholders in a lengthy process. It draws on regional economics, information and decision sciences and other social science disciplines. It is designed to simultaneously elicit the benefits of participatory research methods, and advance theory and method in applied regional science.

CDS can be summarized in four basic principles described below.

### 4.1 Community-centered

First, as much as possible, this approach to regional policy analysis begins from the experience, the interests and practical concerns of communities. For our purposes, community is defined as *a body of people having common rights, privileges, or interests, or living in the same place under the same laws and regulations*. Examples of communities might include self-identified neighborhoods, cities, or geographic regions that span multiple public jurisdictions (Johnson, 2002). Community boundaries and membership may change ac-

ording to the issues faced, and are defined through public debate and discussion. We make this distinction because, as suggested by the process outlined in Figure 1, many conventional regional science projects are centered on the process of scientific inquiry. CDS starts from a clear intention to respond to local stakeholder interests and perspectives.

### 4.2 Decision-focus

CDS is applied when communities or regions face real policy decisions. Unlike many other participatory research methods (Cf., Whyte, 1990; Chambers, 1994; Slocum, et.al, 1995; Hall, 1992), CDS is not designed to advocate for particular policy actions or interests. Rather, it provides research support for questions that are defined through community dialog or debate. It draws on advances in information sciences developing new tools called *decision support systems* (DSS) (Marakas, 1999; Powers, 2002). Turban (1995) defines a DSS as "an interactive, flexible, and adaptable [computer-based] information system, especially developed for supporting the solution of a non-structured management problem for improved decision making. It utilizes data, provides an easy-to-use interface, and allows for the decision maker's own insights." Decision support systems emerged when advances in information technology began to be applied to management decisions that had to be made regularly (such as inventory control, distribution/transportation networking, pricing, etc.). Most decision support systems combine relevant information systems, a simulation engine and a user interface that allows decision makers to directly engage the system.

Sometimes, particularly in early stages of development, this user interface can not be integrated into the DSS software. In that event, the developers of the information systems and simulation engines assume the role of intermediary between the decision makers and the information that's pertinent to their decision. Their objective is to enhance decision makers' capacity to conduct complex scenario analysis. Regional scientists regularly use information systems and simulation engines (such as I/O, CGE or other modeling tools) to address regional policy questions. With modifications in practice, regional scientists can make these potentially powerful simulation tools more accessible to communities facing difficult policy choices.

### 4.3 Collaborative research

CDS is designed to elicit collaboration between regional scientists and community stakeholders in the research process. To enhance decision making, it

seeks to combine *formal knowledge* (e.g., REIS or other relevant government data, peer-reviewed regional science theory and method) with *informal knowledge* from community stakeholders (e.g., intuition, guesses, rules of thumb, questions, observations). Toward this end, community involvement is sought at all stages in the research process. This can be achieved by establishing a community advisory panel, whose membership represents a broad range of stakeholders (Scott, O'Dubhchair and Johnson, 1999). Other mechanisms for community involvement can also be used, such as focus groups, town meetings, and multi-attribute decision models (Cf., Cox, 2000) to name a few. In CDS, the research team and community stakeholders share final decisions about the research process. Participants negotiate roles and responsibilities for specific circumstances of the community decision. Decisions may evolve over time - through changing context, changing opinion, and feedback loops. Each decision has its own timeline. CDS is designed to accommodate these dynamic conditions. The primary goal is knowledge creation and decision making by the community. The community must ultimately decide if and when to act on the knowledge created through the process.

#### 4.4 Cumulative effects

As improvements are made in decision support systems, new applications and innovations often emerge. Often, one community-based project leads to others. Over time, the scope of the information system, the decision criteria, the simulation model(s) and the user interface may broaden and deepen. CDS can generate learning for both community stakeholders and regional researchers. These projects can lead to productive ongoing relationships, and provide unique laboratories or observatories for regional policy analysis.

Our research group has developed and applied CDS principles<sup>3</sup> to a variety of community policy decisions, including land use planning (Scott and Cox, 2001) and conflicts (Hamed, 1998), public finance issues (Cox, Johnson and Mundell, 1999), highway location studies (Mundell, Kovalyova and Johnson, 2002) and general economic and community development (O'Dubhchair, Scott and Johnson, 2000). To illustrate this approach, we describe a recent application to as-

sess the economic impact of higher and adult education in Howell County, Missouri.

## 5. A CDS Case Study: Adult Education

The authors were members of a team of university faculty and students that have worked with public officials, local leaders and interested residents in Howell County Missouri for several years to improve our understanding of the regional economy, and to enhance the quality of life<sup>4</sup>. In this context, the Howell County Commission asked us to work with local stakeholders to assess the economic importance of higher and adult education for the region. Specifically, they had three objectives for this project: 1) highlight the role of higher and adult education for the future of the regional economy, as well as the range of learning opportunities available to adults in the region; 2) build productive relations between higher education institutions and regional employers; and 3) challenge the educational institutions to work more closely together. The

Howell County is located in the Ozark Mountains of south central Missouri. This area of the State is remote, and sparsely populated. In 2000, the County had 37,238 residents, with nearly 60 percent living outside of incorporated areas.<sup>5</sup> Its largest town, West Plains, Missouri, (pop. 13,500) is at least one hundred miles in any direction from the next larger municipality. Consequently, the town serves as a retail trade center for residents of neighboring counties in the region. In addition to retail and other services, the County's economic base includes small manufacturing, wood products, and part-time agriculture. Counties in this region have historically lagged behind other parts of the State in economic and population growth. Comparisons of Howell and surrounding counties against the state on selected variables are provided in Table 1. Leaders throughout the region believe that increasing the educational attainment among adults is critical to the area's economic future. They wanted to determine what policy actions they

<sup>3</sup> CDS is one of several interactive or participatory approaches developed by regional and community development scholars and practitioners. Alternative approaches include participatory rural appraisal (Chambers, 1994) and community visioning (Walzer, 1996; Walzer, et.al, 1995)

<sup>4</sup> For further information about this project, see <http://www.cpac.missouri.edu/projects/MOCommunity/howelleducation/index.htm>.

<sup>5</sup> ([http://www.oseda.missouri.edu/tables/open\\_country/mocopop\\_open\\_country\\_1990\\_2000\\_co.html](http://www.oseda.missouri.edu/tables/open_country/mocopop_open_country_1990_2000_co.html)). Accessed 1 Nov, 2004.

**Table 1.** Key indicators for Howell and surrounding Missouri Ozark Counties.

Location	Per Capita Income <sup>1</sup>	Per Capita Income	% Pop. Poverty	% Pop. Poverty	% Pop. College Grads	% Pop. College Grads
	1990 (\$)	2002 (\$)	1989	1999	1990	2000
Missouri (state)	23,832	28,512	13.0	11.4	17.8	21.6
<b>Howell</b>	<b>15,664</b>	<b>20,442</b>	<b>22.1</b>	<b>18.6</b>	<b>8.7</b>	<b>10.9</b>
Carter	14,552	19,601	27.1	22.4	8.8	10.8
Douglas	13,000	17,466	24.8	18.2	7.5	9.9
Oregon	13,641	17,408	30.3	21.2	7.8	9.1
Ozark	14,679	17,770	25.3	20.4	8.0	8.3
Ripley	12,928	18,522	34.7	21.6	6.1	7.8
Shannon	12,883	17,001	32.1	23.9	6.0	7.6
Texas	14,257	16,765	20.6	18.3	7.0	10.8
Wright	14,554	17,206	23.0	19.9	7.4	9.8

<sup>1</sup>Adjusted to 2002 dollars.

Sources: Regional Economic Information System. 2004. Local Area Personal Income. Bureau of Economic Analysis, US Dept of Commerce. Online at <http://www.bea.gov/region/reis>. Accessed 28 Oct, 2004; U.S. Census Bureau. 2000(a). Census 1990 and 2000 Summary File 3 (SF3). Online at <http://factfinder.census.gov>. Accessed 28 Oct, 2004; U.S. Census Bureau 2000(b). Small Area Income and Poverty Estimates. Online at <http://www.census.gov/cgi-bin/saie/county.html>. Accessed 28 Oct, 2004.

could take to encourage workers to seek more education and training.

Four institutions within the county provide post-secondary education and training opportunities including a church-sponsored four-year university (Southwest Baptist University – Mountain View), a two-year community college (Southwest Missouri State University – West Plains), a vocational technical institution (South Central Career Center), and the county extension service of the University of Missouri System (Howell County Outreach and Extension). The County Commission invited each of these institutions to participate in a county wide assessment of higher and adult education. Although they had never formally collaborated in this way, each agreed to participate. With commitment from these principal stakeholders, the Commission recruited a twelve-member community advisory panel (CAP) to represent a range of stakeholder interests and serve as a primary mechanism for public involvement. The panel included representatives from each of the four institutions, as well as eight additional area residents representing major private employers, secondary public schools, agriculture, and the general public. In general, panel members were well connected to public life in the region. Several had served as advisors on previous CDS projects; however, a majority of them were new to the

process. In all, these individuals were members of over thirty-five different service clubs, civic groups or other local voluntary organizations.<sup>6</sup> Panelists were asked to engage and inform members of these organizations about the project, and serve as liaisons between the CAP and other interested community stakeholders.

### 5.1 The CDS Process

Once the advisory panel was in place, the County Commissioners arranged a series of meetings with the panel and the authors to refine the objectives and scope of the project, and to discuss possible outcomes, project planning, as well as key roles and responsibilities. The Presiding Commissioner convened these meetings and served as an *ex officio* member. The authors provided research and decision support to the panel. In accordance with Missouri Sunshine Law CAP meetings were open to the public, and meeting notices and summaries were made available.<sup>7</sup>

<sup>6</sup> For a list of these organizations, see: [http://www.cpac.missouri.edu/projects/MOCommunity/howelleducation/online\\_collaboration/org\\_ties.htm](http://www.cpac.missouri.edu/projects/MOCommunity/howelleducation/online_collaboration/org_ties.htm). Accessed 3 Nov, 2004.

<sup>7</sup> For a summary of Missouri Sunshine Law provisions, see: <http://www.ago.state.mo.us/sunshinelaw/sunshinelaw.htm>. Accessed 4 Nov, 2004.

**Table 2.** List of products for Howell County Higher and Adult Education Project.

Expected Product	Product Description	Key Responsibilities	Target Completion Date
1	A brief history and overview of each institution of higher and adult education in the County	Members of the advisory panel	July 30
2	A catalogue of higher and adult educational services available through County institutions	Members of the advisory panel	June 30
3	A profile of students and clients who use these services	Members of the advisory panel	July 30
4	A profile of County students who have completed education/certification	Members of the advisory panel	July 30
5	Analysis of the added earnings potential of higher and adult education for individual students	Authors	Sept. 30
6	A summary of the social and cultural benefits of local higher education institutions	Members of the advisory panel	Sept. 30
7	A profile of the economic impacts of higher and adult education on the county	Authors and four institutions	Sept. 30
8	Estimated economic impacts of future expansion	Authors – and advisory panel scenario comm.	TBD

From the outset, the CAP took a strong role in shaping the scope and the key products for the research on higher and adult education, which expanded significantly from the Commission's initial expectations. These products and the work responsibilities assigned by the CAP are summarized in Table 2.

A full discussion of each product is beyond the scope of this paper. The authors were most responsible for products 5, 7 and 8, because each involved the development of a specific information system and simulation or modeling tools. For purposes of this paper, we will focus the remainder of this section on the process and results of our collective work on product 7 – the economic importance of County higher and adult education.

The main steps, responsibilities and expected time line for completing this product are reported in Table 3. The (near-term) economic impact of higher education to states and communities has been widely analyzed (Kennedy 1984; Beck et. al, 1995). These studies typically identified four main sources of direct effects that occurred locally within the regional economy including: 1) institutional expenditures on goods and services required to run day-to-day activities; 2) ex-

penditures on wages and salaries of institutional employees; 3) expenditures by students; and 4) expenditures by people visiting the institution to see students or participate in a special event such as conferences and camps (Kott 1987-88).<sup>8</sup> Once these direct effects are calculated, input-output models are used to estimate the total effects (Isard, et. al, 1998).

The accuracy of any regional economic impact analysis is affected at three different research stages. First, analysts must have the capacity to model the structure of the regional economy, and how it is linked with "the rest of the world". Second, they must have a general *and* specific understanding of the phenomena of interest that "shocks" the economy. Third, they must be able to represent that knowledge in an accurate impact scenario. As researchers involved in the Howell County project, we sought to enhance impact analysis by including local knowledge at each stage in

<sup>8</sup> Educational institutions have potentially much broader economic effects than those discussed here. For example, these institutions increase human capital, and so increase productivity and earning power of its students and their employers. These institutions also produce new knowledge and innovation, which can lead to new economic opportunities in their region and beyond. For a recent discussion of these and other economic effects of academic institutions, see (Goldstein and Renault, 2004).

**Table 3. The CDS Process and the Economic Importance of Higher Education in Howell County**

Research Steps	Community Advisory Panel	Researchers	Expected Project Timeline													
			Month													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
Problem Definition	Define boundaries and objectives	Narrow problem	x	x	x	x										
Product Planning And Selection	Refine to specific achievable product	Define broad spectrum of feasible products		x	x	x										
Research Design	Select data collection methods for impact scenario	Select/prepare economic simul. model			x	x	x									
Primary Data Collection	Collect surveys from students and institutions	Collect special events data from focus group						x	x	x						
Data Entry and Analysis	Review summary statistics	Summarize survey data/ Est. indirect/ induced effect										x	x	x		
Report Writing	Review and revise report	Draft report													x	x

Note: Items in bold show the primary contributor during each research step.

this process. The advisory panel was used extensively to define the impact scenario.

In order to quantify the impact scenario, the advisory panel participated in identifying each financial inflow of dollars into the county from outside the region from the existence of the higher and adult educational institutions. The research team and advisory panel created a diagram to show the inflow of dollars into the economy, the spending that occurred within the local economy from the institutions (linkages) and the outflow of money to non-local sectors (leakages). Inflows included external funds from government (federal and state), tuition, fees, and other student spending (books and supplies, room and board, gas, entertainment, etc.) from students living outside the county, and other private sector funds (alumni and foundation donations, privately funded scholarships), and special event spending (athletic events, camps,

conferences, concerts, etc.) from individuals living outside the county. Local linkages identified from the advisory panel to the institutions included county residents' spending on tuition, fees, books and supplies; donations to the university by county alumni, and local resident spending at special events. Local linkages from the institutions included expenditures on school and office supplies, maintenance and upkeep of campus buildings, and local retail spending from wages and salaries earned at each of the institutions. Leakages include non-local purchases of supplies and non-local retail spending of locally earned wages and salaries.

The advisory panel chose a number of methods to collect the data necessary to build the impact scenario. The advisory panel and researchers developed a brief survey instrument that was distributed to a sample of students from each of the institutions. The chief finan-

cial officer at each institution was also surveyed. To collect data on special events spending, a focus group was formed representing each of the major special event sectors of the county. This focus group estimated local attendance of special events plus any local spending that occurred at these events from dining and lodging.

The surveys collected more information than was minimally required to construct the impact scenario. We recommended to the advisory panel a base set of questions required to complete the scenario. They edited these questions to make them more understandable to their local audience and added questions to address the panel's desire for additional information. During the survey creation process, the overall depth of the impact including the geographic area of impact was chosen. Based on the available information, costs, and goals of the panel, the advisory panel chose to limit the geographic area of analysis to Howell County. The panel recognized that this approach would generate conservative estimates given that the local expenditures of employees not residing in Howell County would be ignored. Another issue that needed to be addressed was the depth of the economic impact. Since the advisory panel chose to include all higher education institutions as part of the scenario, then all students were considered part of the impact scenario.

## 6. Findings

The IMPLAN input-output model (IMPLAN 1999) was used to measure the indirect and induced economic benefits from the provision of higher educational services in the county. Higher education institutional expenditures, student expenditures, and special event expenditures were each treated as separate exogenous changes in final demand. For non-labor institutional and special event expenditures, each spending category was classified into one of the appropriate 528 IMPLAN sectors. The total expenditure in each sector was downward adjusted by the default IMPLAN regional purchase coefficients. For student spending, expenditures were margined using default IMPLAN household margins to accurately reflect the proportion of total retail spending that was kept by the retailer locally. Regional purchase coefficients from student expenditures were calculated from the proportion of Howell County spending reported on the student survey. Wages and salaries of higher and adult educational institution employees residing in Howell County were distributed based on the \$30,000-\$40,000 household spending group event defined in IMPLAN. Direct, indirect, and induced effects for

output, employment, and value added are included in Table 4.

The total impact on output from a one-time exogenous change in final demand was over \$12 million dollars in 1999. For every dollar increase in final demand output, an additional twenty-nine cents of output was produced locally in the Howell County economy. Over \$5 million dollars in total value added was created from the institutions with each additional dollar of value added contributing almost forty additional cents in value-added to the local economy.

Over 187 jobs were created as a result of existence of higher and adult education institutions. These four institutions accounted for over \$18 million in total personal income for the County in 1999.

Use of the CDS approach required more time – and other resources – at every stage of the process. The level of involvement from CAP members and other interested stakeholders created uncertainties and management challenges that were unanticipated by all involved. It increased transactions costs for all involved. It is difficult, if not impossible, to compare the quality of results from this project against a more conventional economic impact assessment. However, one of the main advantages for using this approach in the Howell County case was that it brought together for the first time representatives from all four higher education institutions around the same table. Collaboration lowered the walls that had been erected through years of competition for students in the region. Through successive meetings of the advisory panel, these representatives learned to become partners in promoting the overall benefits that higher education brings to the county.

An increased ownership of the research process by the members of the advisory panel was achieved through the distribution of the responsibilities of each of the expected products. A perceived increase in the quality of the impact scenario also came about through the direct involvement of the advisory panel in the survey creation, distribution, and more complete data collection processes. Panel members and public officials also developed a much greater appreciation for the practical strengths and limitations of regional policy analysis, and for the information systems and simulation tools employed. The authors also gained new knowledge of economic linkages and opportunities in the region, and learned much about the challenges of involving stakeholders in the policy research process. This mutual learning increased the credibility and acceptance of project results by the citizens of Howell County. The various products generated by this project have led to increased public interest and involvement in the future of higher and adult education

**Table 4.** Economic importance of higher and adult education in Howell County.

Category	Direct Effects (\$)	Indirect Effects (\$)	Induced Effects (\$)	Total Effects (\$)
<b>Output</b>				
Institutional Purchases	1,270,658	137,403	238,294	1,646,355
Institutional Labor	2,758,077	387,813	470,621	3,616,511
Student Purchases	5,000,401	586,754	700,574	6,287,729
Special Events	363,729	86,002	81,332	531,063
<b>Total</b>	<b>9,392,865</b>	<b>1,197,972</b>	<b>1,490,821</b>	<b>12,081,658</b>
<b>Value Added</b>				
Institutional Purchases	594,505	76,391	143,751	814,647
Institutional Labor	1,045,197	204,204	283,903	2,864,660
Student Purchases	2,137,063	304,975	422,622	246,481
Special Events	150,467	46,951	49,063	1,533,304
<b>Total</b>	<b>3,927,232</b>	<b>632,521</b>	<b>899,339</b>	<b>5,459,092</b>
<b>Employment*</b>				
Institutional Purchases		2.4	4.9	7.3
Institutional Labor	137	6.4	9.6	153
Student Purchases		9.6	14.3	23.9
Special Events		1.4	1.7	3.1
<b>Total</b>	<b>137</b>	<b>19.8</b>	<b>30.5</b>	<b>187.3</b>

\*Employment represented as full-time equivalents.

in the region. Materials have been used by the institutions to attract and retain students, engage regional employers, and to seek new resources through grant proposals. In addition, the materials have been used by the County Commission to build stronger collaboration with the regional workforce investment board, in an attempt to better match the supply and demand for local workforce training and development.

## 7. Discussion

In this paper we explore the role of the public in regional policy analysis. We offer a brief review of the development and practice of participatory research in a variety of social science and policy fields, drawing mainly on literature from the fields of international development and public administration. Despite a

significant increase in political and institutional support for participation, and the development of standard participatory methods or processes in other social science fields, peer-reviewed articles in regional science journals seldom examine how increased stakeholder involvement might affect the refinement of theory, data and methods in regional science, as well as its relevance to policy decision making.

Specifically, in this paper we also introduce an approach to participatory research we believe is well-suited for applied regional science called **community decision support**. This approach draws on advances in information and decision sciences, and places the regional science professional at the interface between local decision makers and the information systems and simulation tools we develop and use. By playing this role, and by supporting increased local stakeholder

involvement, regional scientists can make powerful simulation and scenario analysis tools more accessible to communities making difficult policy decisions. Working closely with local stakeholders on regional policy decisions also enhances data quality, and refines theory and methods in regional science.

Returning to Shield's original question - regional scientists can "earn the right to be heard" by adopting participatory research methods. This can only happen if academic institutions encourage and reward faculty involvement in regional and community policy research. Universities that support public participation in regional policy decisions can greatly enhance their relationship to constituents, and can improve policy outcomes. Faculty members interested in this kind of public service need institutional support, such as mentoring, fund raising assistance, explicit acknowledgment toward tenure and promotion, (Ahmed, et al, 2004; Nyden 2003; Boyer, 1990) and public recognition.

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