

## Experiential and Service Learning through Local Data Projects

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### Abstract

An increased focus on high-impact pedagogical practices at a small, residential, higher education institution led to a grant-funded project to gather and analyze multi-dimensional data on 10,155 residential foreclosures in central Illinois from 2006 to 2013. Student researchers applied skills gained through academic coursework to investigate a real-world issue in the local community and communicated their findings to a variety of stakeholders, including local governments, nonprofit organizations, banks, and social agencies. The direct assessment of 85 capstone-level research projects reveals that those with a community service focus displayed a stronger mastery by students of particular expected proficiencies relative to research projects with a traditional scholarly focus.

**Keywords:** *community-based projects, data, economics, experiential learning, service learning*

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The undergraduate research projects described in this article exemplify three different types of collaboration: *between faculty and students* engaged in several modes of research; *across the disciplines of geography and economics*, incorporating the concepts of proximity and density into a statistical analysis of the socioeconomic determinants of residential foreclosures; and *between “Town and Gown,”* in which the tools of statistical analysis taught in the classroom are applied to a locally relevant issue and then proactively shared with diverse members of the community through various media, including print, radio, and

presentations to those invested in economic development within the community.

Although the educational value of the type of high-impact pedagogy known as *experiential and service learning* is well documented, the literature on economic education is relatively scarce on sophisticated examples of this type of pedagogical strategy. The pioneering work of describing strategies for bringing service learning into the instructional toolkit of economists was done by McGoldrick (1998). The theoretical and practical underpinnings of this pedagogical strategy have been subsequently expanded upon by McGoldrick, Battle, and Gallagher (2000), McGoldrick and Ziegert (2002), and Ziegert and McGoldrick (2008). This body of work emphasizes the fact that “service learning suggests an active approach to learning” (McGoldrick 1998, 365) and that it connects student education with experiences that “cannot be simulated within the classroom” (McGoldrick et al. 2000, 45). Service learning in economics can be “situated anywhere along a continuum” of complexity, scale, and format (Ziegert and McGoldrick 2008, 45). For example, it can range from a “limited volunteer experience focused mainly on exposure” to a “more in-depth experience culminating in a research-focused project benefiting the organization as well as the student” (McGoldrick et al. 2000, 45). The research project developed took on the latter form.

Compared to many of the applications of service learning in economics documented in the work edited by McGoldrick and Ziegert (2002), this data-focused research project contributed skilled analytical services to the local community. Similarly to the applications described by Hoyt

direct relationships had been developed with organizations and agencies central to social and economic well-being in the community. This social capital build-up would carry the town-gown partnership forward in new directions. Seeing the institution as a trusted and reliable partner, local organizations and agencies will suggest new and varied opportunities for undergraduate research.

### Design and Execution

This project was designed and completed over a course of three years (2012–2014) and was funded through three separate grants: one small (\$1,000) internal seed grant and two medium-sized (\$25,000 each) external grants. In addition to faculty stipends, the grants provided summer financial support for seven students and covered the hiring of an external consultant, the purchase of state-of-the-art instructional equipment, and professional travel expenses for all members of the research teams.

Undergraduate research in economics at the home institution has traditionally adopted a scholarly focus. This focus influenced its intended audience (i.e., fellow scholars), its message (e.g., international currency unions and migration topics), and its media (i.e., written communication through research papers suitable for peer review). A robust partnership with the library has included instructing students in information literacy, searching databases, accessing data sources, and using information ethically. The design of this particular project built on that foundation and offered an alternative instructional approach.

research partnerships with organizations

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data points and overlaid them on a new database: the US Census American Community Survey. That way, linear regression analysis could be used to determine the relative influence of factors such as educational attainment, rates of unemployment, percentage of population living below the poverty line, and racial/ethnic composition of census blocks on the relative volume of foreclosures. As this work moved along, the team delivered presentations to local nonprofit organizations, including a consortium administering a multiyear housing-related grant from the State of Illinois Attorney General's Office. Finally, the three students presented their work at a regional scholarly conference, and one of them was awarded academic research honors upon graduation.

In October 2013, the geographical scope of the project was once again expanded through a second PNC Bank Community Development grant. This external grant, of the same size as the previous one, funded summer stipends for

two new counties, and allowed for the rehiring of the GIS consultant. As in earlier stages of this project, working with new databases demanded high levels of technological adaptability from the research team. Depending on the source of the data, the research team worked with data presented in online, proprietary software, print, and machine-readable formats. Data gathering, reading, and cleaning work were always the first step, contributing to the development of new software skills among the students. Once the 3,958 multidimensional data points were mapped and analyzed, the team's findings were shared with local and regional audiences through media releases to print press and radio as well as oral presentations to local nonprofit organizations. These included the Community Preservation Clinic at the University of Illinois's College of Law, an organization dedicated to guaranteeing renters' rights during the foreclosure of a landlord's property.

### Evolution

As external funding for the study of local housing was exhausted, new avenues opened for creating experiential and service-learning opportunities that were data intensive. The new teaching and learning opportunities, built on the foundation laid by the multiyear study of residential foreclosures, pushed subsequent faculty-student research teams in new directions, employing new analytical tools and diversifying engagement with local organizations.

After sharing the work on residential foreclosures with the local economic development council, the team next was asked to employ its expertise in quantitative analysis to estimate the economic impact of a potential new downtown hotel and conference center. To do so, a different tool was employed: the IMPLAN (Impact Analysis for Planning) software from MIG Inc. IMPLAN, a well-established program for economic modeling, can be used to estimate the impact of a variety of business activities through a series of regional economic multipliers. The team first used a borrowed copy of the software/hardware package and later one that had a dedicated license purchased with institutional funds to complete a series of economic impact studies on behalf of local nonprofit organizations. During the next several summers, the team was able to quantify the contribution to local employment, sales, and tax revenue of the human and social services provided by Habitat for Humanity and the United Way of McLean County (IL). Depending on the project, data were collected through either large-scale dedicated surveys or file/archival research of each particular organization. Summer stipends for students were provided through competitive, institution-wide research fellowships in which the students received \$5,000, and the faculty mentor received \$500.

This particular line of undergraduate research, employing data analysis in experiential and service-learning projects, has expanded in scope and increased in frequency.

Research teams composed of a faculty member and one or several students have produced large-scale local economic impact studies for the arts (i.e., painting, sculpture, performance) and higher education. Simultaneously, individual students have seized the analytical tools used in these studies, including the Bureau of Economic Analysis Regional Input-Output Modeling System (RIMS II) tables, to estimate the economic impact associated with tourism flows to the county's history museum and patronage of the summer Shakespeare theater festival. These studies have been supported by local organizations through internships and student stipends. When completed by fourth-year students, as either part of their capstone experience or in pursuit of research honors, the work has received academic credit. A list of the 19 research projects based on local data and completed under faculty guidance by 21 undergraduate students is presented in Table 1.

The data-focused experiential and service-learning research projects listed in Table 1 vary in terms of analytical methods employed, degree of input from local partners/clients, amount of financial support received, breadth of distribution of their end product, and alignment with existing graduation requirements. The methods of analysis have included linear regression (both with and without a GIS component for data mapping), descriptive statistics, and the use of economic multipliers through either IMPLAN or RIMS II. In specific projects, local partners have been able to define both the nature and the scope of the project, although most frequently it was the faculty-student team or the individual student who chose the topic. Financial support for the research, either from internal or external grants, has been sporadic. Nonetheless, the end product of most research projects has been presented to interested parties, including local government agencies and nonprofits, and shared with the public through news releases and interviews. As for their alignment with existing credit-bearing coursework, all projects completed during a regular academic term have accrued academic credit for the participating student. In fact, the research projects that were completed as part of the credit-carrying capstone course Senior Project provide the material basis of the assessment effort.

### Assessment

In 2012, the Economics Department at Illinois Wesleyan University articulated its student learning goals into a set of measurable proficiencies, designed a rubric for their evaluation, and began a five-year assessment cycle (see Illinois Wesleyan University n.d.a, n.d.b). In short, between 2012 and 2016, the department of six faculty members evaluated 85 student-authored research papers written in fulfillment of the graduation requirement embodied in the capstone course Senior Project. To assess student mastery of the "methodology," "communication," and "initiative and synthesis" proficiencies, the faculty employed a rubric that breaks down each learning goal into distinct areas. For


example, proficiency in economic methodology includes separate proficiencies in reviewing literature, selecting and applying theoretical frameworks, as well as describing and working with data sets. The first column of Table 2 names all the rubric categories ascribed to each learning goal. Each category was evaluated in a discrete scale of mastery

and assigned numerical scores: Weak (1–2), Capable (3–4), Strong (5–6), and Exceptional (7–8).

From the rich set of data produced in this assessment exercise, the Senior Project papers identified with a local, experiential, and service-learning experience were tagged

as “Service.” The more traditional student papers that ranged in topic area from international economics to industrial organization were tagged as “Scholarly.” All student papers were able to be sorted into these two categories. Table 2 presents the average score by rubric category of all the “Service” papers ( $N = 9$ ), all the “Scholarly” papers ( $N = 76$ ), and the difference in average rubric category scores between “Service” and “Scholarly” papers. To test the impact on specific student proficiencies of undertaking “Service” research projects vis-à-vis “Scholarly” research projects, independent-sample equality of mean  $t$ -tests were conducted. In all cases, the tests were found to be statistically insignificant, with differences ranging from -0.17 to 0.34. The lack of statistical significance likely results from a small observation sample. Lacking demographic and academic information for the student researchers and having multiple sections of Senior Project taught each year, the researchers did not control for student or instructor characteristics. Also, as in every study of this nature that does not randomly assign students/participants to treatment and control groups, there is a possibility of self-selection bias. With those provisos, the findings are discussed below.

On the student learning goal related to “methodology,” “Service” research projects were found to display a more proficient use of empirical methods and visuals (i.e. diagrams and data plots) than “Scholarly” research projects. The opposite is the case regarding a proficient command of the academic literature or the use of abstract theories. On the student learning goal related to “communication,” almost no difference in organization or writing skills was documented across “Service” research projects and “Scholarly” research projects. It is on the student learning goals related to “initiative and synthesis” where more marked differences in assessed proficiencies are observable. Although “Scholarly” research projects display a more capable command

of data than “Service” research projects, the latter exhibit a stronger understanding of the research question and include an effective testing strategy. Similarly, “Service” research projects display a higher student proficiency in presenting conclusions: drawing practical policy implications from the research exercise as well as describing possible extensions of this research work. Finally, and at a holistic level, the “Service” research projects are evaluated as marginally more competent than the “Scholarly” research projects.

### Summary and Conclusions

The range of projects described in this article exemplify three different types of collaboration: *between faculty and students*

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