Spatial Analysis of Externally Funded Research Activity at the University of Missouri

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GIS1 Class, Fall 2008, Dept. of Geography, University of Missouri, Columbia, MO

Introduction

Understanding a place like the University of Missouri can be expanded by a visual representation of the activities that occur here. An example is the import and significance of externally-funded research. As an unusual combination of a land-grant research university, MU balances three major activities: teaching, research & outreach/extension. MU’s FY08 Budget is $1.75 Billion. Externally-funded research in FY08 exceeded $200 million.

Methods

Step 1 – Gather external-funded grant expenditures from the Office of Research web site. Organize in Excel, weed out errant data, calculate average of FY05-FY07.
Step 2 – Acquire data on full-time equivalent (FTE) numbers of faculty.
Step 3 – Request and receive shapefiles of campus buildings and roads from.
Step 4 – Identify a location for each department
Step 5 – Combine the data – since ArcGIS join and relate did not work, I had to gather X and Y for relevant buildings from the shapefile and add that data to Excel file.
Step 6 – Import the expenditures data in ArcMap
Step 7 – Use ArcGIS and other tools to analyse and present the data.

Results

¾ Analysis of Grant Activity by School/College
¾ Analysis of Numbers of FTE Faculty and Numbers of student credit hours taught (FTE Students) along with grant activity by School/College
¾ Map of grant activity by School/College
¾ Map of grant activity by Department

Conclusions

1. Reliable data is difficult to find – even with good organizational contacts.
2. Assigning place to data (georeferencing) can be challenging especially when the software does not perform as hoped.
3. Even for data that does not have a strong spatial connection, a map can be very useful in understanding data.

Data Sources

Intro info: http://www.missouri.edu/about/mufacts.php
MU’s Office of Institutional Research - data on Ranked Faculty FTE and student FTE
Campus addresses for departments, are from “Find A Department” at: http://www.missouri.edu/directories
MU Campus Facilities provided ArcGIS Shapefiles of campus buildings and streets and roads.

Fig. 1. Distribution of grant expenditures by school and college

Fig. 2. Comparison of types of activity performed by schools and colleges (Each bar represents that school or colleges percent of total)

Fig. 3 Graduated symbol representations of the fifteen schools and colleges at MU that generate significant amounts of grant activity

Fig. 4. Graduated symbol representations of the over 100 departments at MU that have significant amounts of grant activity