Adaptation and Implementation of an Undergraduate Spatial Analysis Curriculum for Social Science Majors

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Recent Developments at Columbia University in GIS and Spatial Analysis

• Increased Institutional Commitment
  - Particularly a grant from University’s Academic Quality Fund

• Growing Links Among Researchers Examining Spatial Issues

• Great Interest Among Students and Faculty
  - Partly driven by research on important local issues
Importance of Local Issues: Asthma Rates

Asthma cases by ZIP Code, 2000

Rate of hospital admissions per 1000, age 0 - 17 by ZIP Code
- No Data
- 0 - 3
- 3 - 6
- 6 - 9
- 9 - 15.76

Source: United Hospital Fund, 2000; map prepared for the New York League of Conservation Voters
Importance of Local Issues: Quality of Life

Concentration of Mice and Rats in New York City - 1999

Percent of households reporting presence of mice and rats:
- less than 15%
- 15% - 30%
- 30% - 59%

Areas with more than 30% are labeled with actual percentage.

“Spillover Effects” of Efforts in Research

- Boom at Columbia in research that incorporates spatial analysis:
  - Examining how features of physical urban environment influence children’s activity levels and obesity
  - Analysis of location of non-profits who receive funds from NYC government
  - Spatial analysis of mortality in West Africa
  - Incarceration and voter participation rates in New York City
  - History of Garbage in NYC and effects on current health
Undergraduate Curriculum

- Next year we will implement two-sequence course in GIS/Spatial Analysis for students majoring in a social science.
  - Course One - focus on conceptual issues
    - Offered through Barnard College’s Urban Studies Program.
  - Course Two - focus on methodological issues
    - Offered through Columbia’s Sociology Department
Undergraduate Course One: Conceptual Issues in Spatial Analysis

• Offered through Barnard Urban Studies (required course for majors)

• Focus on developing understanding of the spatial organization of the social world

• Course comprised of discipline-specific modules
  - Can then offer these modules to other faculty
Undergraduate Course One: Conceptual Issues in Spatial Analysis

- Modules use existing studies on topic to establish theoretical grounding and review previous research (particularly limitations).
- Then use spatial analysis tools to extend findings in new directions.
- Modules on:
  - Legacy of Federal housing policy
  - Access to credit institutions
  - Political redistricting
Undergraduate Course Two: Methodological Issues in Spatial Analysis

• Offered through Columbia Sociology department

• Focus is on advancing technical skills and developing deeper understanding of statistical issues particular to spatial data

• Drawing heavily upon instructional materials and resources of NCGIA and SPACE
“Spillover Effects” of Efforts in Graduate Coursework

• Increasing number of courses offered to graduate students as well
  - Two course sequence in Urban Planning
  - Population and Land Use through SIPA
  - QMSS to offer course next fall
  - Plan to offer short courses for faculty
Obesity Trends* Among U.S. Adults

BRFSS, 1990

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” woman)
Obesity Trends* Among U.S. Adults

BRFSS, 1993

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” woman)
Obesity Trends* Among U.S. Adults

BRFSS, 1996

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” woman)
Obesity Trends* Among U.S. Adults

BRFSS, 1999

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” woman)
Obesity Trends* Among U.S. Adults

BRFSS, 2002

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” woman)

Source: Behavioral Risk Factor Surveillance System, CDC