"I want to congratulate EC for jumping on this. I have been doing geo-spatial analysis since before I was an EC student in 1998. It is an absolutely essential skill, and the one that opened many doors for me after graduation, both at George Washington Univ. (MA) and in the work force. My skills are now in high demand and I currently work as an independent consultant in the housing policy industry, primarily relying on my GIS expertise.

I envy your students, because they will have the benefit of learning what they need to know through an organized approach and be able to put it to use immediately."

- *Cathy Saidat* (EC Alumni, Class of '00)
Anderson, SC

Here is a summary of some of my work using GIS:

EXAMPLES OF GIS APPLICATIONS:

Most of my earlier work was in time-series studies. Although I primarily use Census data (the best we've got nationwide), there are two forces at work that make time-series studies difficult, particularly going back as far as 1970. First, in 1970, there were still many parts of the nation that had not been assigned to a Census Tract. Secondly, since a Census Tract is made up of from 8,000 to 11,000 people (a Census Bureau decision), as populations change, the Bureau moves boundaries to accommodate these changes. Most often tracts are divided and sometimes they are combined. Changing the boundary makes it difficult to compare across survey years.

1997-2000: HEALTHCARE INDUSTRY

Clients were hospital systems needing help with management decisions. Used 1970, 1980 and 1990 Census data showing rate of growth of specific populations, primarily based on age and income. For example, Blue Cross Blue Shield wants to expand its services in an existing market but is unsure whether to focus on geriatric or pediatric care. A trend analysis helps identify which age cohort has experienced greatest growth. Showing the rate of this growth by block group illustrates where the growth has taken place, indicating other decisions that need to be addressed. For example, growth in the number of children in poor areas of the market indicates an entirely different approach than the same growth in affluent areas. The company ultimately developed a 'tool' that would "read" Census data for the target MSA and automatically produce a series of maps and graphs, which were analyzed and compiled into reports for the clients.

2000-2002: RACE AND HOUSING STUDIES (RESEARCH ASSISTANT)

Assisted in studies of classic sociological issues: white flight, steering and discrimination in housing acquisition, using data from Census, American Housing Survey, General Social Survey and phone calls to recent movers. Primarily used Census data to compare block groups to one another to learn how widespread similar traits or tendencies were and how those traits changed over time (i.e., comparing 1970, 1980 and 1990 data).
Part of the work included developing algorithms to compensate for boundary changes from 1970 to 1990. One of the greatest dangers of this, of course, is to presume that the 1970 tract was divided in half and so one-half of each trait can be retroactively attributed to each new tract. For example, if the tract population in 1970 was 8,000 White and 1,500 Black, and grew to 16,000 White and 3,000 Black in 1980 (and so was divided into 2 tracts of 9,500 population in each), can we attribute a 1970 population of 4,000 White and 750 Black to each "new" tract? Of course, the answer is no. We would need to see where those Black and White households were located within the 1970 tract to determine if, perhaps, the entire Black population is now located wholly in one of the new tracts and the other is entirely White. Reducing the study area to block groups was not always possible, since 1970 data were not always available at this level or not all tracts were subdivided into block groups. This is the stuff migraines are made of!

2002-PRESENT: HOUSING POLICY RESEARCH

Clients are municipalities that need to meet reporting requirements to HUD. Areas of focus include Community Profiles, Fair Housing, and potential of lead poisoning from dust emitted from Lead Based Paint. Maps included in Community Profiles show demographic characteristics such as wealth and poverty, prevalence of owner-occupied, renter-occupied and vacant housing, and racial composition. Fair Housing maps include locations of establishments that may be financially exploiting the poor (pawn shops, pay check cashing storefronts, etc.) as an indication of possible predatory lending. Lead poisoning risk maps show a composite of prevalence of young children living in homes built prior to 1980 (as proxy for 1978, when residential lead-based paint was banned) in low-income areas. Once municipalities see what the potential is for childhood lead poisoning, they know where to focus their efforts for remediation.

Of course, the pretty pictures are just the tip of the iceberg (as you know). Once the maps are made up, it's essential to examine them and try to figure out what they're really telling you. Two of the most interesting combinations I've seen are:

Predominantly young (18-35) female population with very high incomes living in an area with very high rental occupancy. First blush suggested a "red-light district"! It was actually students renting housing near an exclusive women's university and the high incomes were not locally acquired.

Exceedingly high black population combined with the highest incomes. Although certainly not impossible, it seemed a bit suspicious in the middle of rural Pennsylvania. Turned out to be the location of the state penitentiary, and the incomes were from a nearby elite subdivision where the administrators and staff lived.

"The timing of this program is great; it looks like I may have an opportunity here to be using this knowledge for a client on an actual project. The firm that I work for is actively seeking projects that utilize GIS technology."

- Elmhurst College GIS Student

"I wanted to take the time to tell you how great the [GIS] program has been and how well it has fit in with my fulltime job and active family. It is really coming together and I'm very excited about my next class."

- Elmhurst College GIS Student