Crime Mapping and Hot Spot Analysis

UMASS Amherst

by
Laurent Wilson

Welcome to the ZOO

- A few things we are known for (according to the Princeton Review)

- Number 9 Party school in the Nation.
- Number 13 in “Reefer Madness”.
- Number 9 in students (almost) never study.
A violent campus?

- Primetime named UMASS Amherst the most violent campus in the country for the over 11,000 students category.

- Concerns raised over Primetime methodology.
  - Use of old 2002-2003 data.
  - 50% drop in violent crime for 2004.

UMPD’s Figures

```
<table>
<thead>
<tr>
<th>Year</th>
<th>Violent</th>
<th>Non-Violent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

- UMPD figures are reported to other campus agencies. They should only be cited by UMPD.
- UMPD acquires police data from both crime and law violations and non-law violations - the more serious offenses.
My Goals

- Through GIS, is it possible to paint a different picture of UMASS?
- Learn something about crime at the local level, and more specifically, within a college campus.
- Graduate with a sense that I actually accomplished something useful.

-Can this happen?-
My Methodology

- I compiled a month's worth of data from the UMPD’s daily crime log, which is available online.
- Why just November?
- Any problems with data management?
  - Tremendous amount of information.
  - UMPD website and staff not very user-friendly.

The Excel layout at a glance
Managing the Nightmare
I employed the use of a color digital ortho photo of the Umass campus (raster) at the ½ meter resolution.


Created a personal geodatabase containing the polygon sets for all the Umass buildings (digitized by hand with some difficulty)

The geodatabase was then related to the Crime data by building name. (again with some difficulty)
Some Results: Drug Law Offenses

Useful Comparisons and Analysis

Drug Violations  Vandalism
Future Possibilities

- More thorough analysis
  - Calculating distance of police department and troopers from criminal activity
    - Finding the highest concentration of crime numerically, and not only spatially.
    - Digitizing the parking lots, and including all the crime in the UMPD’s record
    - Line of sight analysis. Etc....
While my involvement in this project has halted for now, it is one that can continue to be updated regularly, and become a useful tool for UMPD and UMASS to change their reputation.