



Harrisburg CrimeViz

Geovisual Analytics for Crime Analysis

Harrisburg Bureau of Police

Harrisburg, PA: 27 April 2011

Robert E. Roth

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GeoVISTA 
Center

GeoVISTA CrimeViz: <http://www.geovista.psu.edu/CrimeViz>

an extensible web-based geovisualization application that supports exploration of & sensemaking about criminal activity in space & time



VACCINE Center of Excellence

Visual Analytics for Command, Control, and Interoperability Environments:
A United States Department of Homeland Security (DHS) Center of Excellence

Mission Statement:



“To help this nation’s 2.3 million extended homeland security personnel, including first-responders, perform their jobs more effectively by turning mass amounts of data into manageable information”

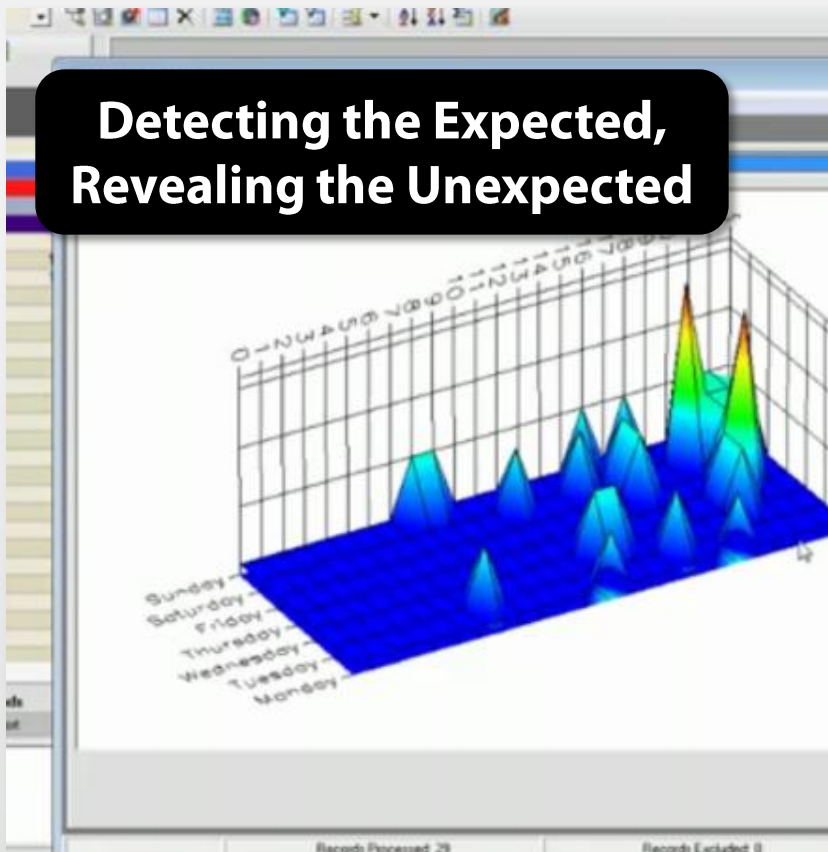
Supported Missions Areas (among others):

- border patrol/protection
- counter-terrorism & intelligence analysis
- emergency response & crisis management
- epidemiology and disease control
- risk assessment and predictive analysis
- ***law enforcement & policing***

Visual Analytics defined

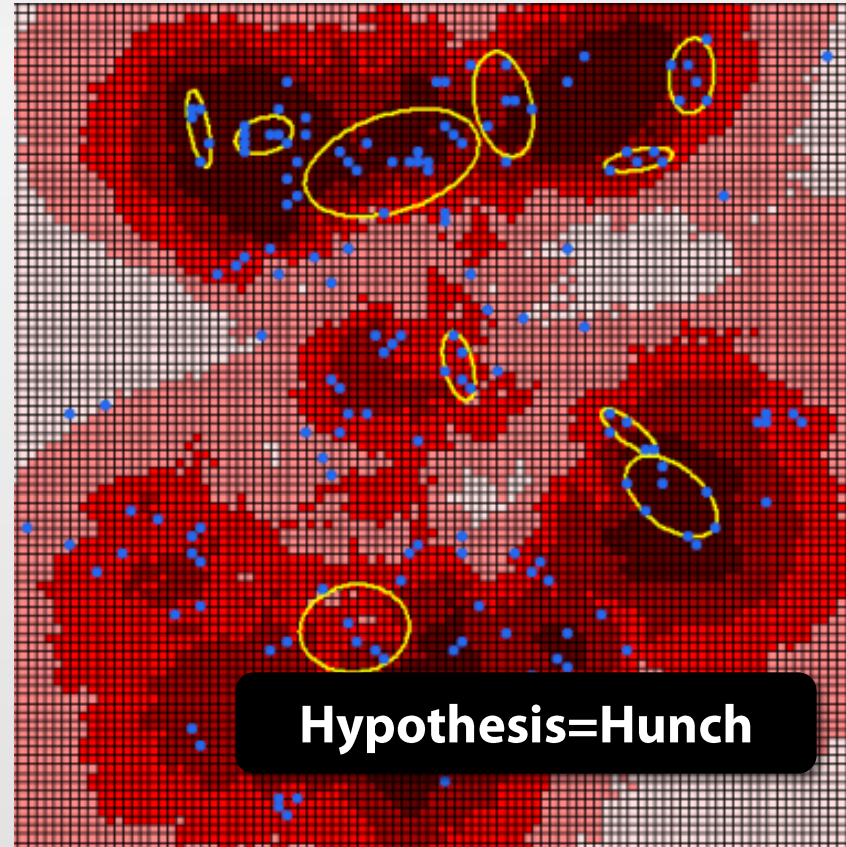
provision of visual interfaces to computation methods to support sophisticated human reasoning and decision-making that is informed by information

**Detecting the Expected,
Revealing the Unexpected**



ATAC

City of Harrisburg Bureau of Police
Harrisburg, PA: 27 April 2011



Hypothesis=Hunch

CrimeStat

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Member Institutions



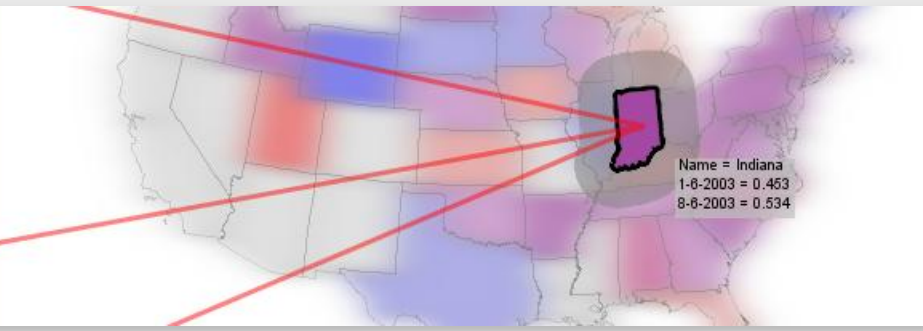
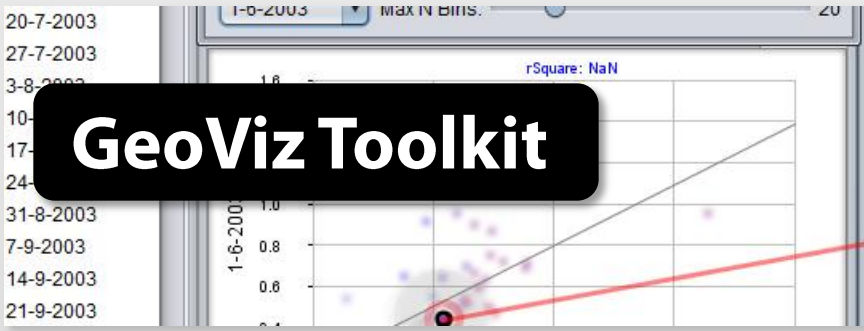
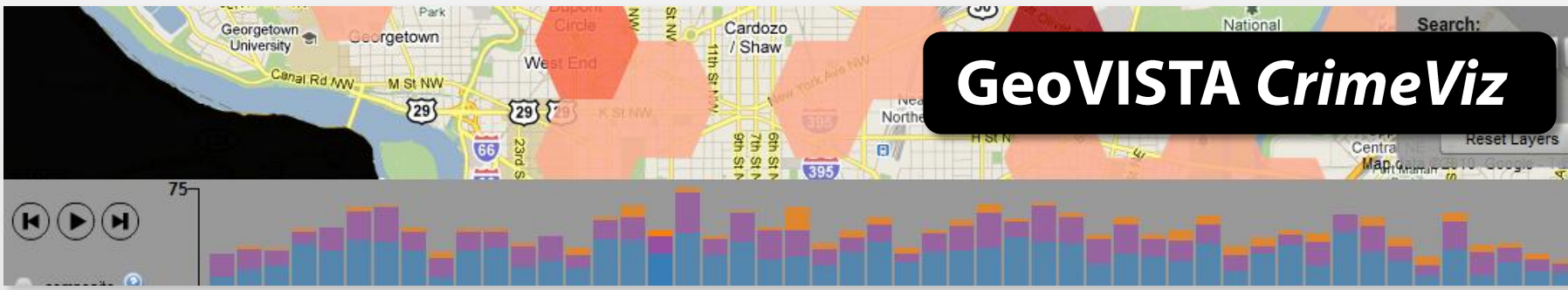
- Florida International University
- Georgia Institute of Technology
- Indiana University
- Jackson State University
- Justice Institute of British Columbia
- Navajo Technical College
- ***Pennsylvania State University***
- Purdue University
- Simon Fraser University (Canada)
- Stanford University
- Swansea University (UK)
- University of British Columbia (Canada)
- University of Houston
- University of North Carolina at Charlotte
- University of Stuttgart (Germany)
- University of Texas at Austin
- University of Washington
- Virginia Tech

Penn State GeoVISTA Center

<http://www.geovista.psu.edu/>

Contact:
Dr. Alan MacEachren, Director
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SensePlace



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VACCINE focus areas:



1. **Innovation and Science Leadership:** research, evaluate, and transition new methods and techniques visual analytics
2. **Education Innovation, Leadership, & Outreach:** educate the next generation of homeland security professionals to harness the power of visual analytics for effective decision making
3. **Transition and Engagement:** engage with homeland security partners to provide real-world grounding, impetus, validation, evaluation, and transition of visual analytic tools and techniques

Usability vs. Utility spatiotemporal crime mapping tools

Date: 01/15/11 To: 03/15/11

View all Arrest Arson Assault Burglary Robbery

high usability

Harrisburg

Spot Crime

TIME OF DAY
Show All | Hide All
Light | Dark [nearest hour]
Commute | Nightlife
Day | Night | Swing Shift

NOON

AM 6 3 6 PM
12
MIDNIGHT

DATE Past Week
Feb 2010

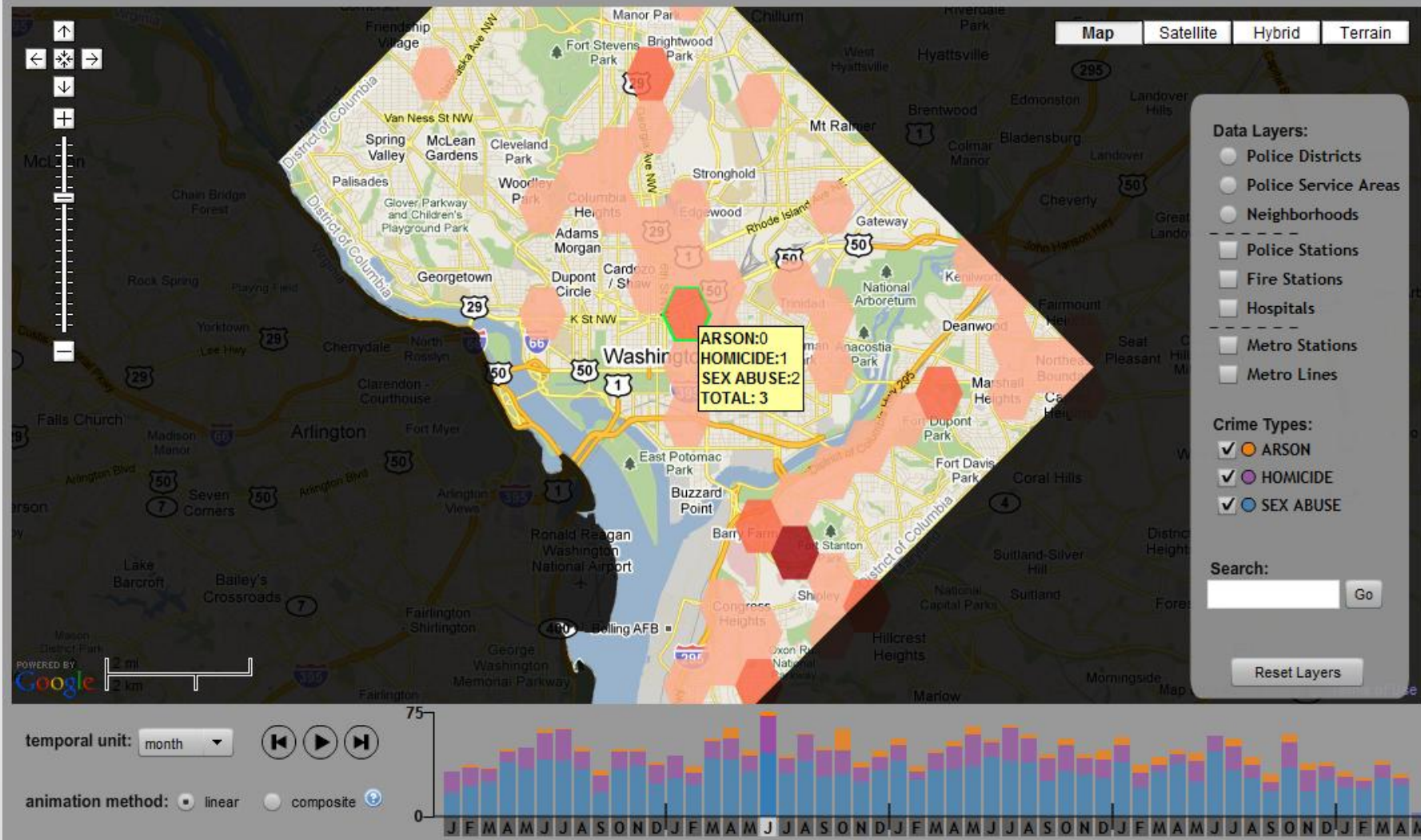
Oakland Crimespotting

high utility

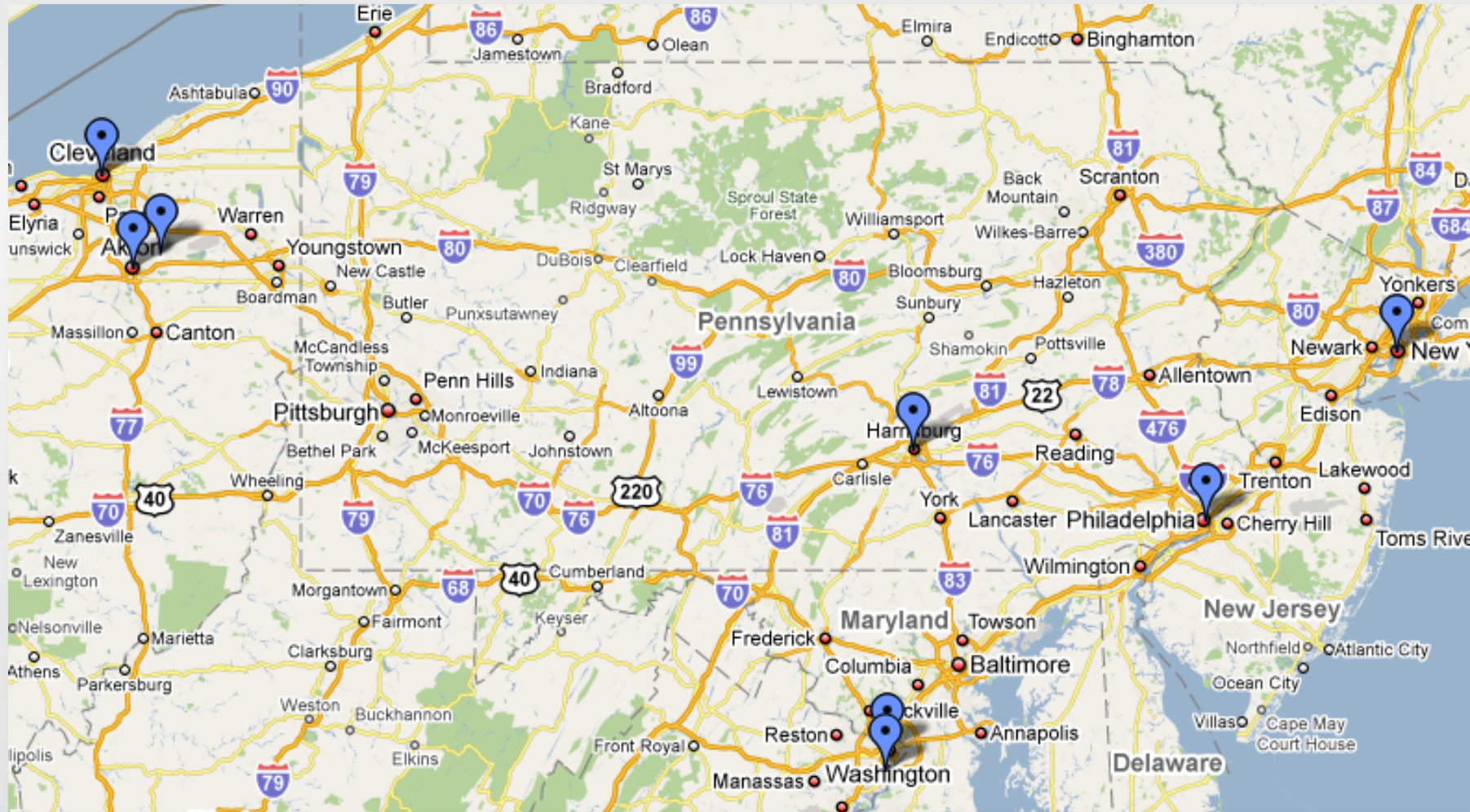
0700 0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800

Azavea Hunchlab

GeoVISTA CrimeViz: DC Prototype



User-Centered Design: Utility vs. Usability



Harrisburg CrimeViz: Personnel

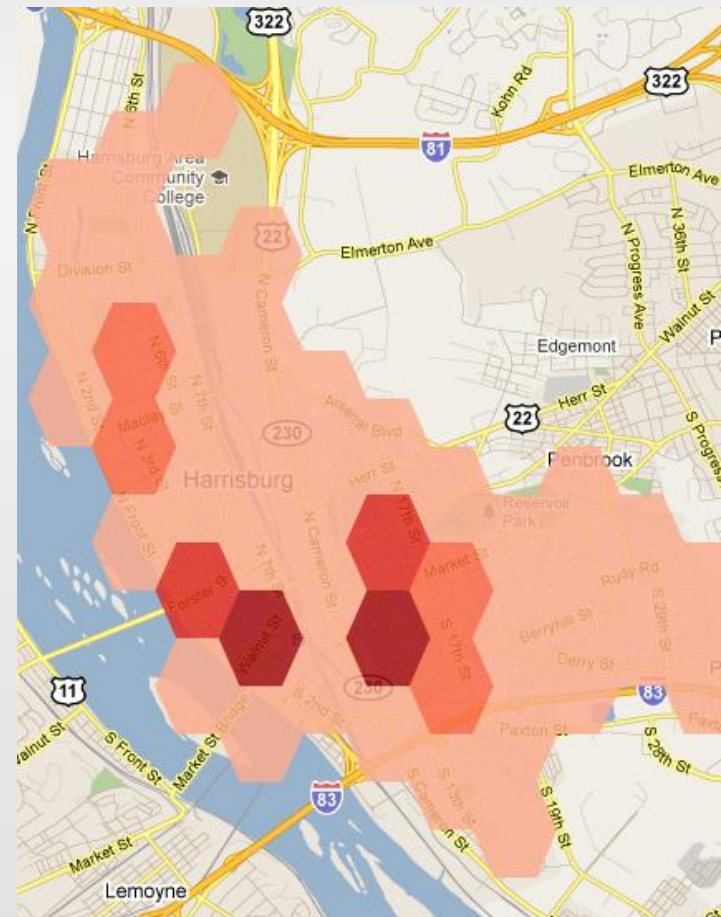
<http://www.geovista.psu.edu/CrimeViz/HPD>

Harrisburg Bureau of Police

Cpt. Cindy Baldwin	Larry Eikenberry
Cpl. Deric Moody	Roger Swinehart
Cpl. Gabe Olivera	Steve Zimmerman
Camilla Robinson	

GeoVISTA Center

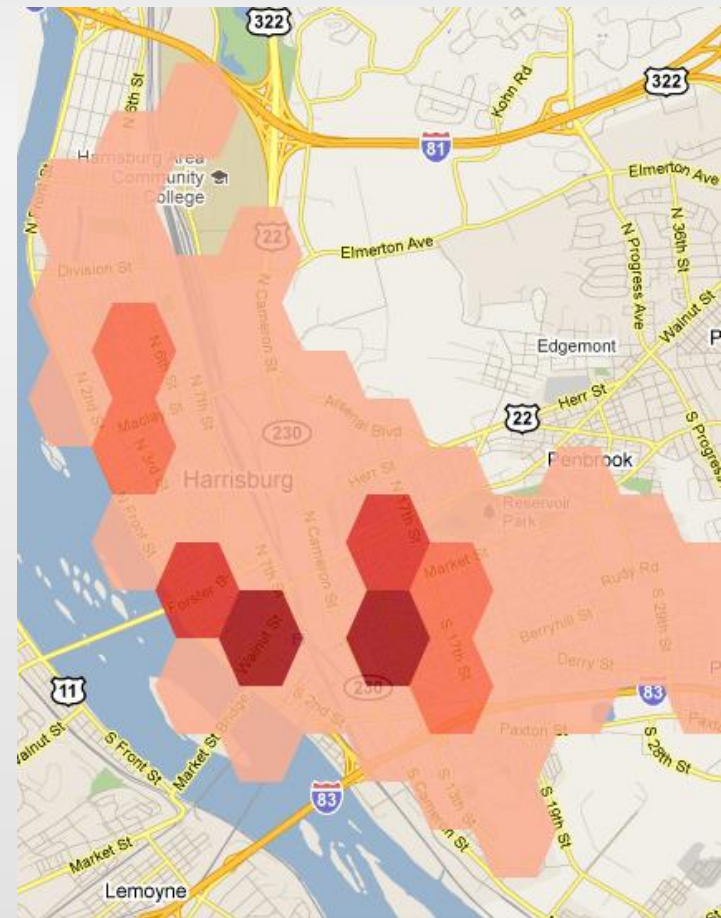
Robert E. Roth
Kevin S. Ross
Scott Pezanowski
Alan M. MacEachren

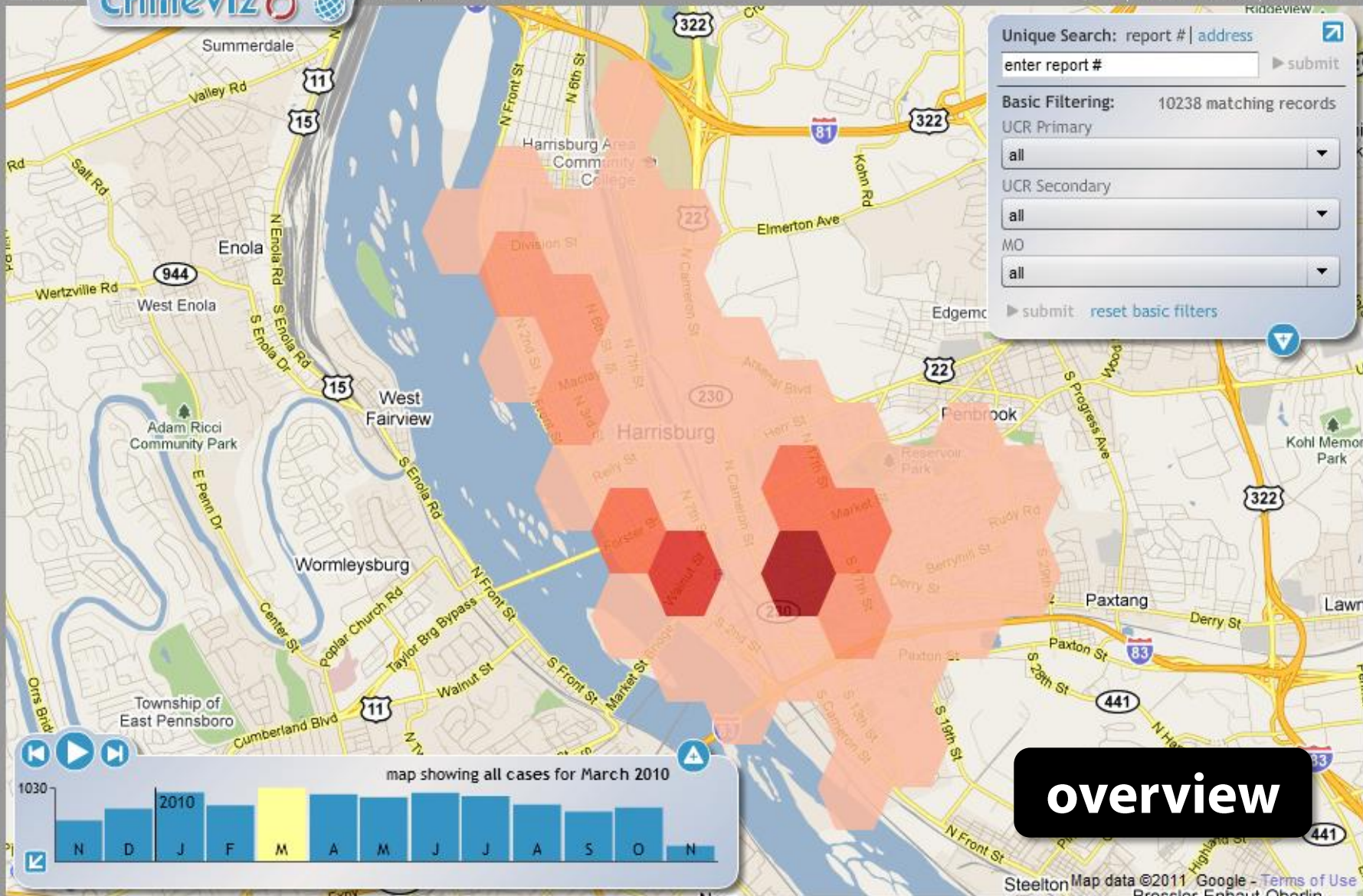


Harrisburg CrimeViz: Project Goals

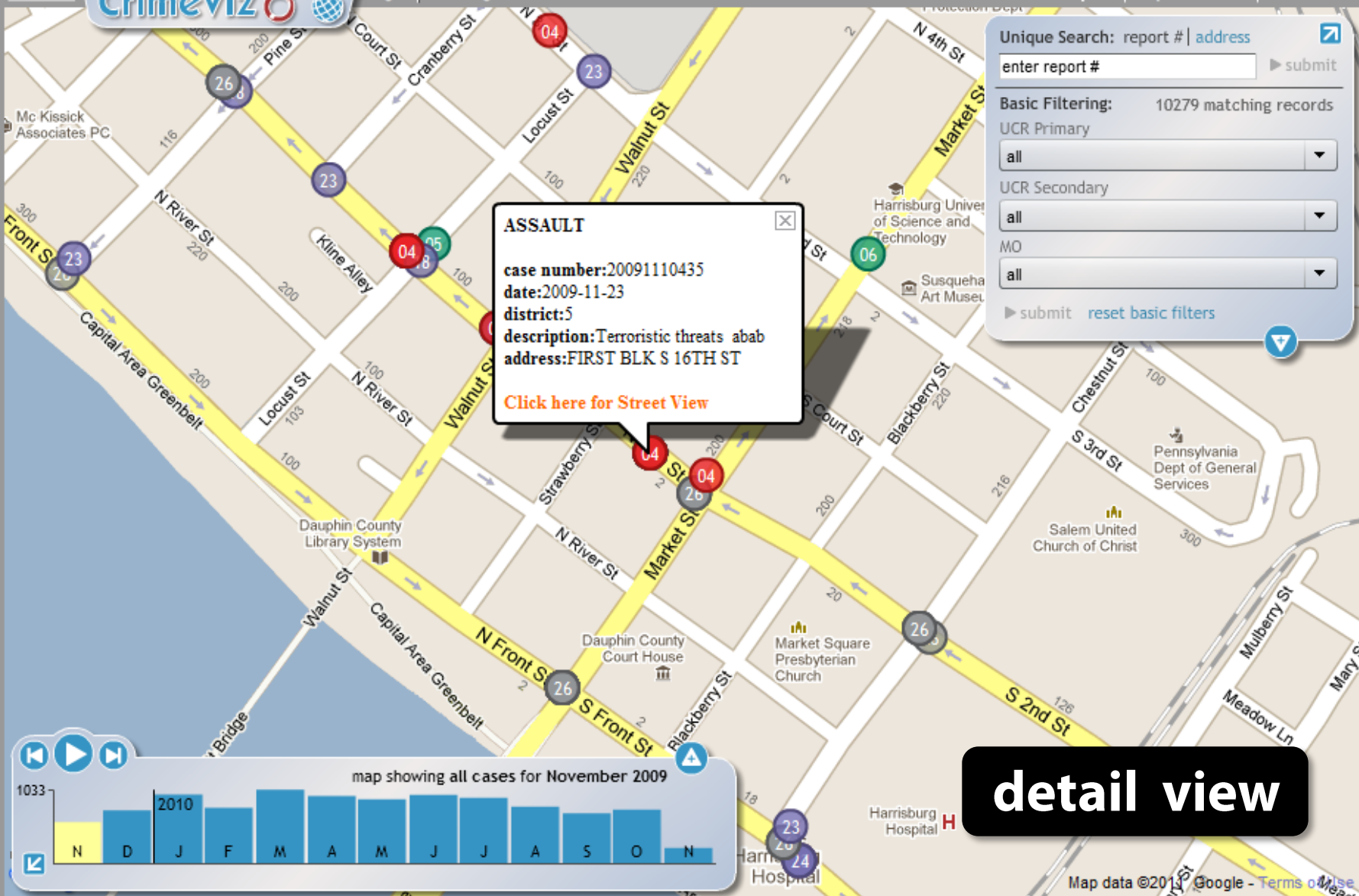
<http://www.geovista.psu.edu/CrimeViz/HPD>

1. Provide situational awareness for officers and supervisors
2. Enhance tactical and strategic crime analysis with spatial and temporal visualizations
3. Provide quality control of records management system
4. Enhance administrative decision making, grant writing, and reporting





overview



detail view

Harrisburg
Amtrak

Aberdeen St

**incident
filtering**

Unique Search: report # | [address](#)

enter report #

submit

Basic Filtering: 1470 matching records

UCR Primary

04 aggravated assault

UCR Secondary

04 all

04 all

0410 gun

0411 gun - upon police officer

0420 knife or cutting instrument

0421 knife or cutting instrument - upon po

temporal filtering

Temporal Parameters: Sequencing Method: linear timeline Binning Unit: month reset temporal parameters submit

Linear: past: week | month | year | all
from: M 11 D 10 Y 2009
until: M 11 D 9 Y 2010

Cyclical: all | none
winter spring
summer fall
weekend weekday
am pm night commute

10279 matching records

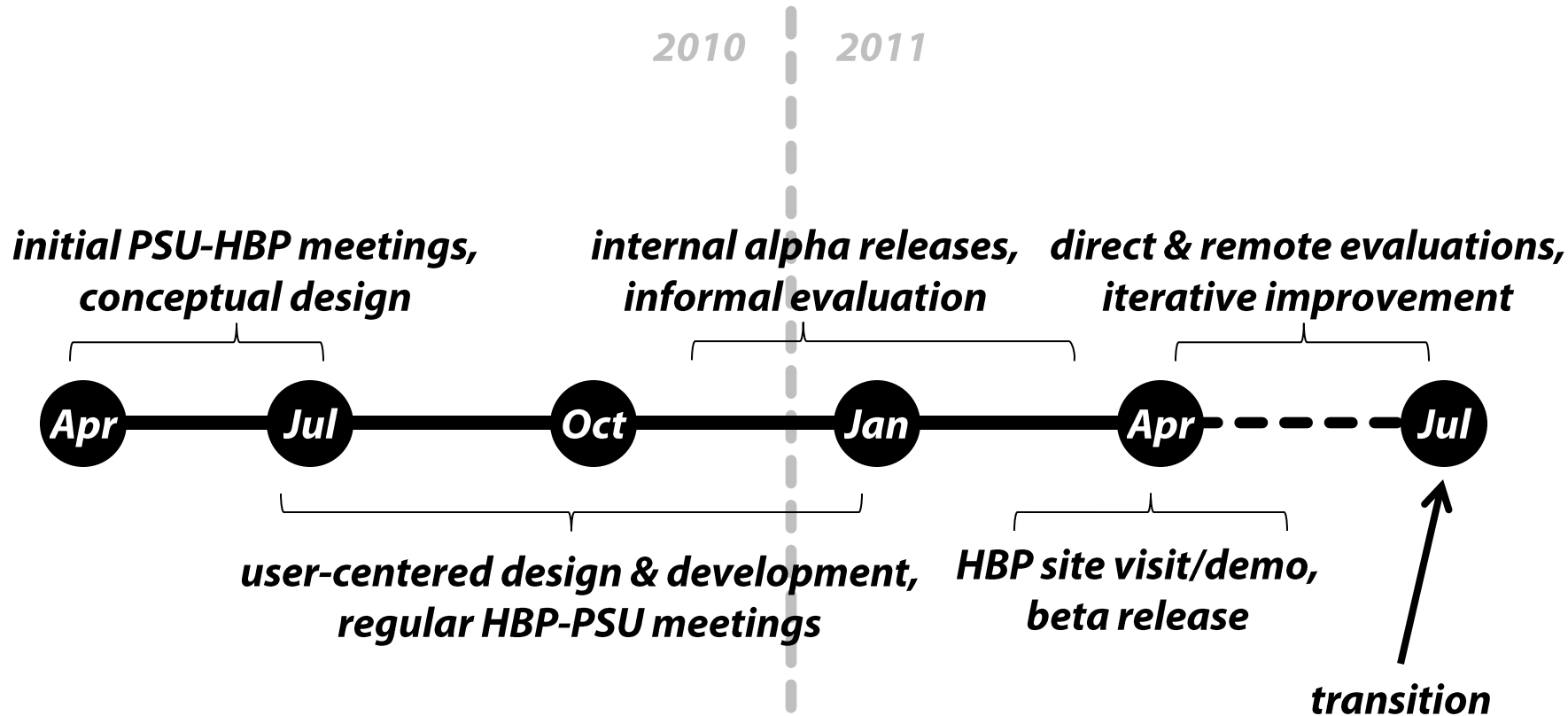
map showing all cases for November 2009

Day	Number of Cases
N	~1000
D	~1000
J	~1000
F	~1000
M	~1000
A	~1000
M	~1000
J	~1000
J	~1000
A	~1000
S	~1000
O	~1000
N	~1000

export to RMS

Harrisburg CrimeViz: Development Schedule

<http://www.geovista.psu.edu/CrimeViz/HPD>



learn more about the project & try out the application at:
<http://www.geovista.psu.edu/CrimeViz/HPD>

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