

Who Knew Auditors Made Maps!?

Adaptive Use of Technology Bridging
Audit Data and Spatial Analysis



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THOMAS P. DiNAPOLI

2017 NYS GeoCon • Hilary Papineau and Marsha Daugherty

Overview

- About Us
- Why Do Auditors Make Maps?
 - Mapping Visualization
 - Risk Analysis
 - Efficiencies in Data Collection, Analysis and Staffing
 - Innovation and Creative Problem-Solving
- Moving Forward



About the Office of the New York State Comptroller (OSC)

The New York State Comptroller is the State's chief fiscal officer who ensures that State and local governments use taxpayer money effectively and efficiently to promote the common good.



State Government Accountability (SGA) Mission Statement

SGA's mission is to improve government operations by conducting independent audits, reviews and evaluations of New York State and New York City taxpayer-financed programs.



The Audit Process

- Planning
- Field Work
- Reporting
- Follow Up



Why Do Auditors Make Maps?

- Smarter analysis (risk; trends/patterns)
 - Shapefiles can be treasurer troves, especially when linked to other data analytics tools (IBM Modeler).
- Public data and opportunities for data matching.
 - Open Data NY; NYC Open Data
- Efficiency in data collection and analysis.
- Better customer service.
 - Visualization!



Mapping Visualization



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Do You Prefer This?

County	Percent_Installed
Albany	36%
Allegany	29%
Broome	40%
Cattaraugus	31%
Cayuga	25%
Chautauqua	23%
Chemung	30%
Chenango	27%
Clinton	28%
Columbia	33%
Cortland	34%
Delaware	27%
Dutchess	32%
Erie	31%
Essex	33%
Franklin	8%
Fulton	21%
Genesee	38%
Greene	25%
Hamilton	26%
Herkimer	25%
Jefferson	38%

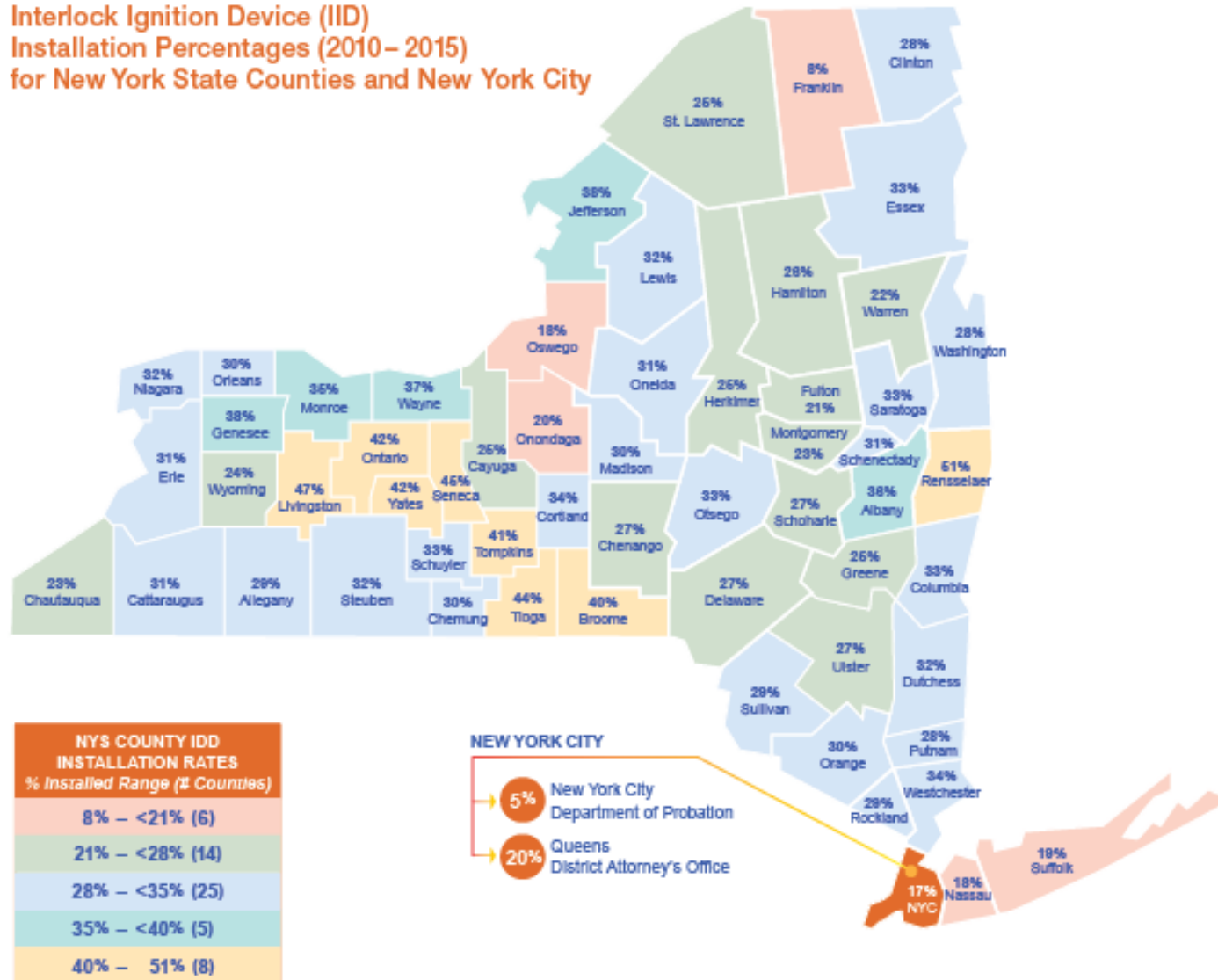
Lewis	32%
Livingston	47%
Madison	30%
Monroe	35%
Montgomery	23%
Nassau	18%
Niagara	32%
NYC	17%
Oneida	31%
Onondaga	20%
Ontario	42%
Orange	30%
Orleans	30%
Oswego	18%
Otsego	33%
Putnam	28%
Rensselaer	51%
Rockland	29%
St Lawrence	25%
Saratoga	33%
Schenectady	31%
Schoharie	27%
Schuyler	33%
Seneca	45%
Steuben	32%
Suffolk	19%

Sullivan	29%
Tioga	44%
Tompkins	41%
Ulster	27%
Warren	22%
Washington	28%
Wayne	37%
Westchester	34%
Wyoming	24%
Yates	42%



Or This?

Interlock Ignition Device (IID)
Installation Percentages (2010–2015)
for New York State Counties and New York City



GIS as a Public Engagement Tool

- Visualize and more easily convey complex, data-rich analyses in written reports.
- Add a geographic dimension to analyses to represent results at a localized level.
- Communicate regional-level patterns.
- Map books to highlight regional profiles.

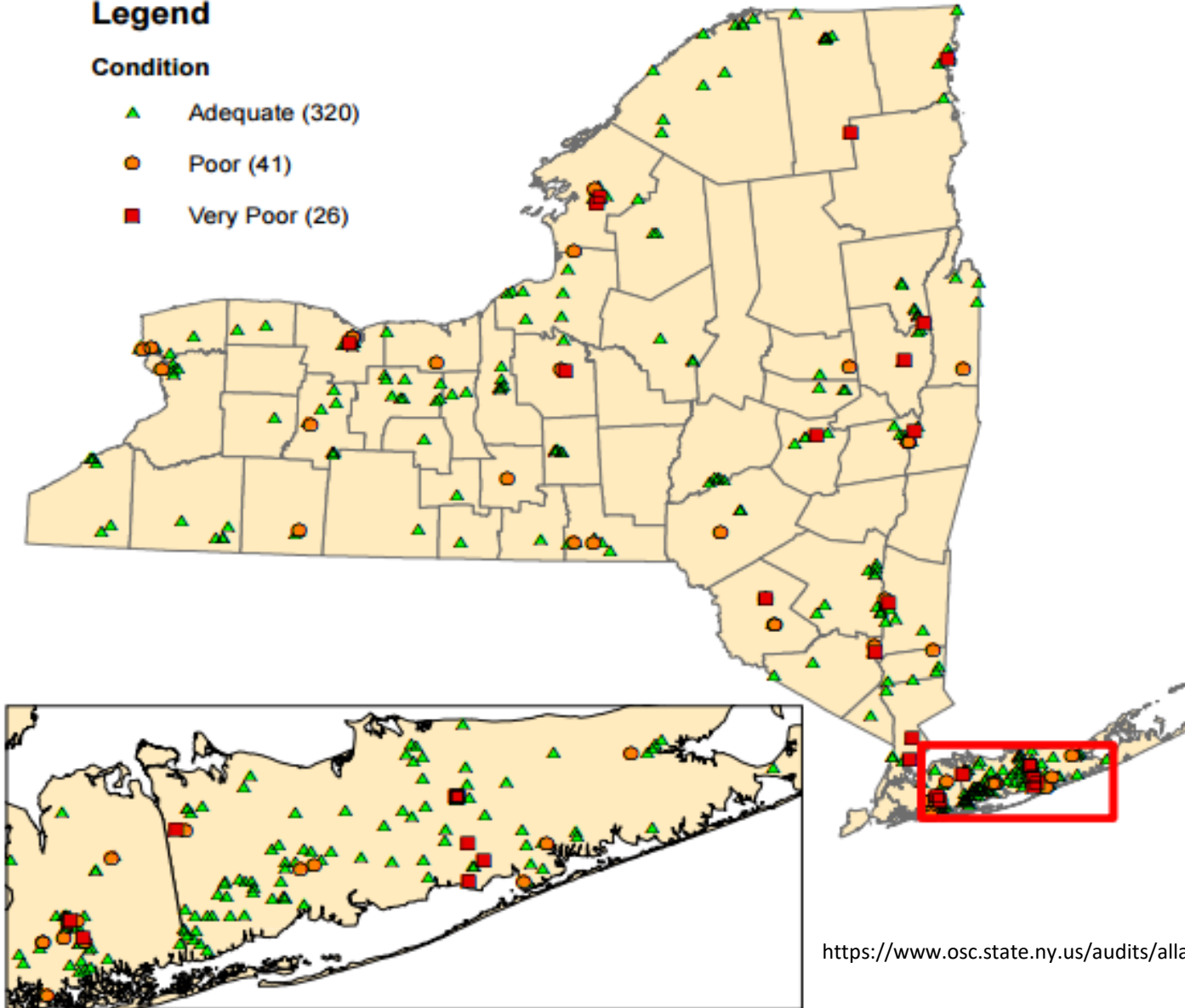


Condition of Homeless Shelters Visited

Legend

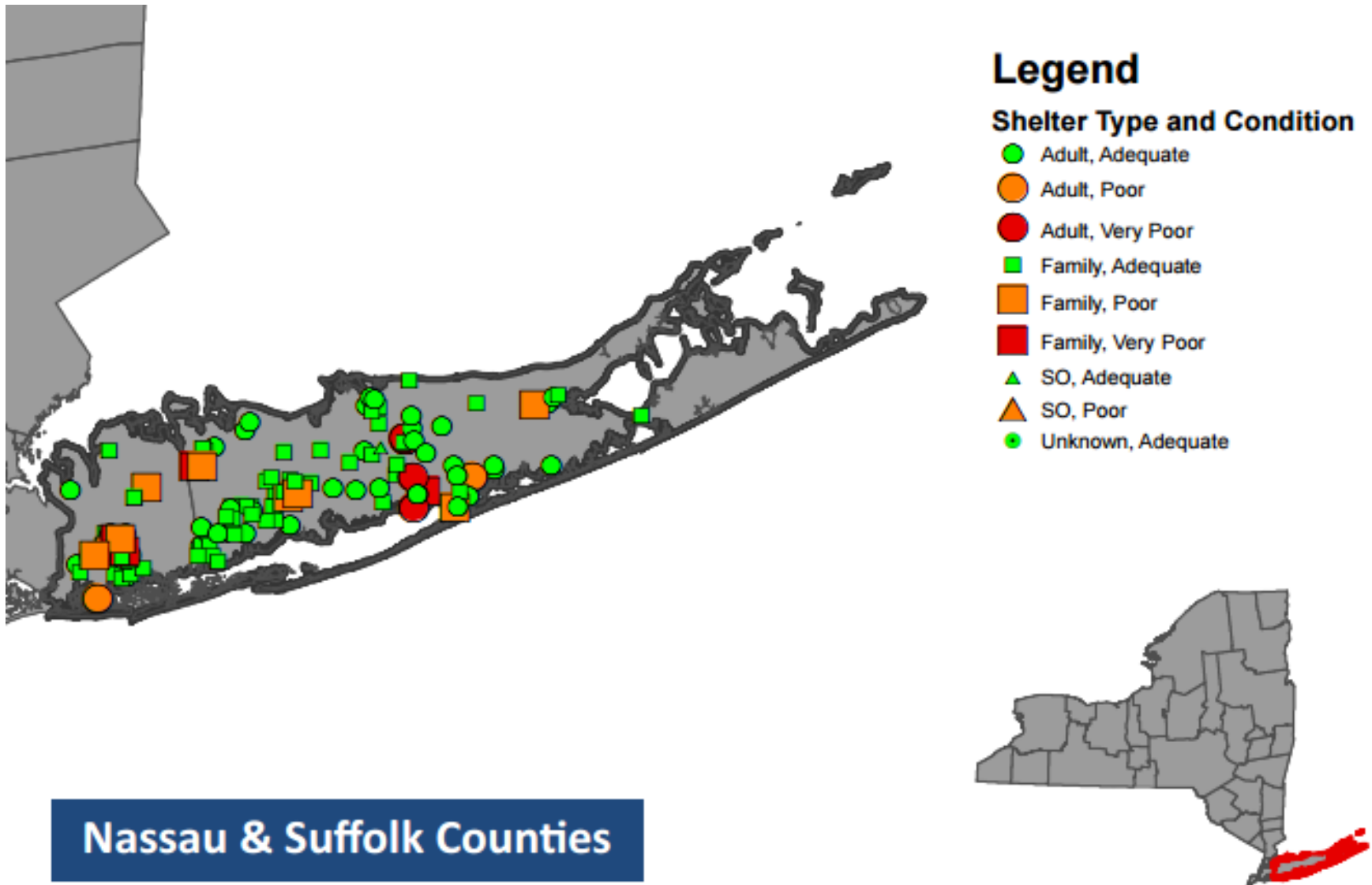
Condition

- ▲ Adequate (320)
- Poor (41)
- Very Poor (26)



<https://www.osc.state.ny.us/audits/allaudits/093016/16d3.pdf>

Profile of Continuum of Care NY-603



NYPD, state Liquor Authority must crank up volume of enforcement on noise complaints: state controller

BY GLENN BLAIN

DAILY NEWS ALBANY BUREAU Friday, June 9, 2017, 7:15 PM



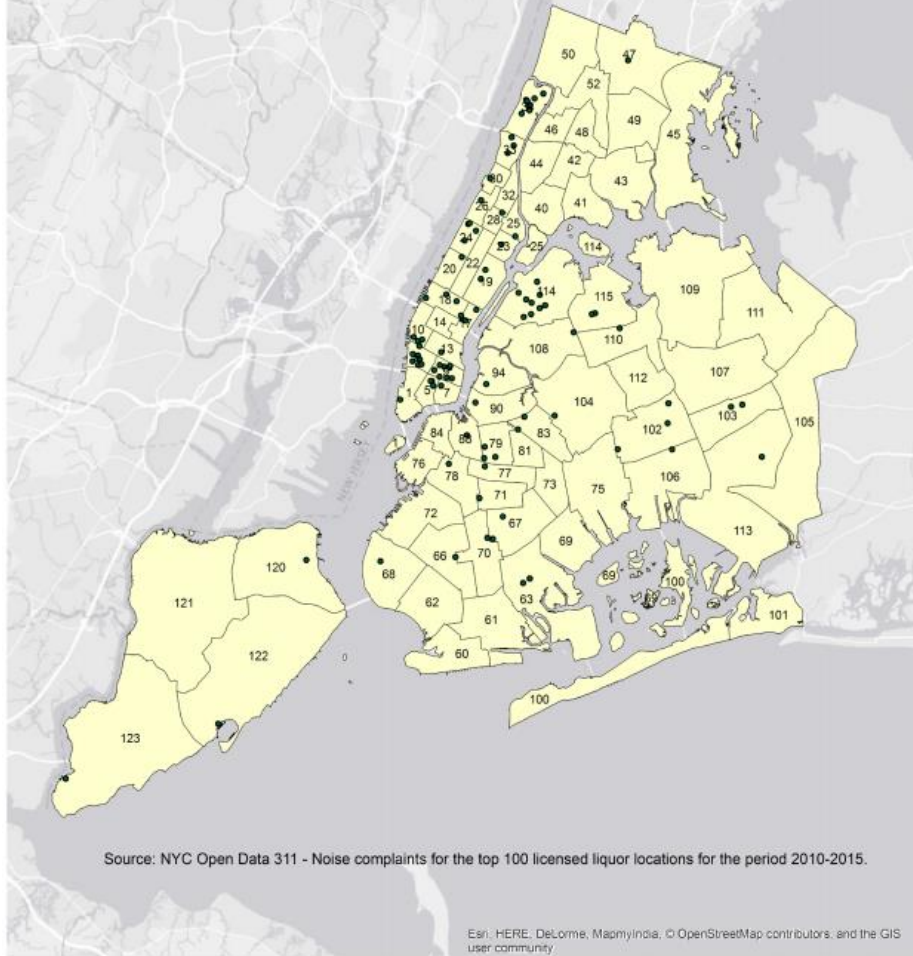
Noise may be OK in Times Square (above), but complaints involving nightlife establishments in the city increased from 38,401 to 93,412 between 2010 and 2015, with 277 locations having 100 or more complaints lodged against them, DiNapoli said. (TOMMI/GETTY IMAGES)

ALBANY -- City nightlife is getting noisier and not enough is being done to keep things quiet, an audit released Friday revealed.

State Controller Thomas DiNapoli's audit found that noise complaints in the city nearly doubled between 2010 and 2015, with much of it being generated from bars and nightclubs. DiNapoli said the state Liquor Authority and the NYPD need to do a better job coordinating their efforts and cracking down on establishments that repeatedly generate noise complaints.

100 Establishments With the Most 311 Noise Complaints by Precinct

Licensed Liquor Locations by NYC Precinct



<https://www.osc.state.ny.us/audits/allaudits/093017/16s37.pdf>



Risk Analysis



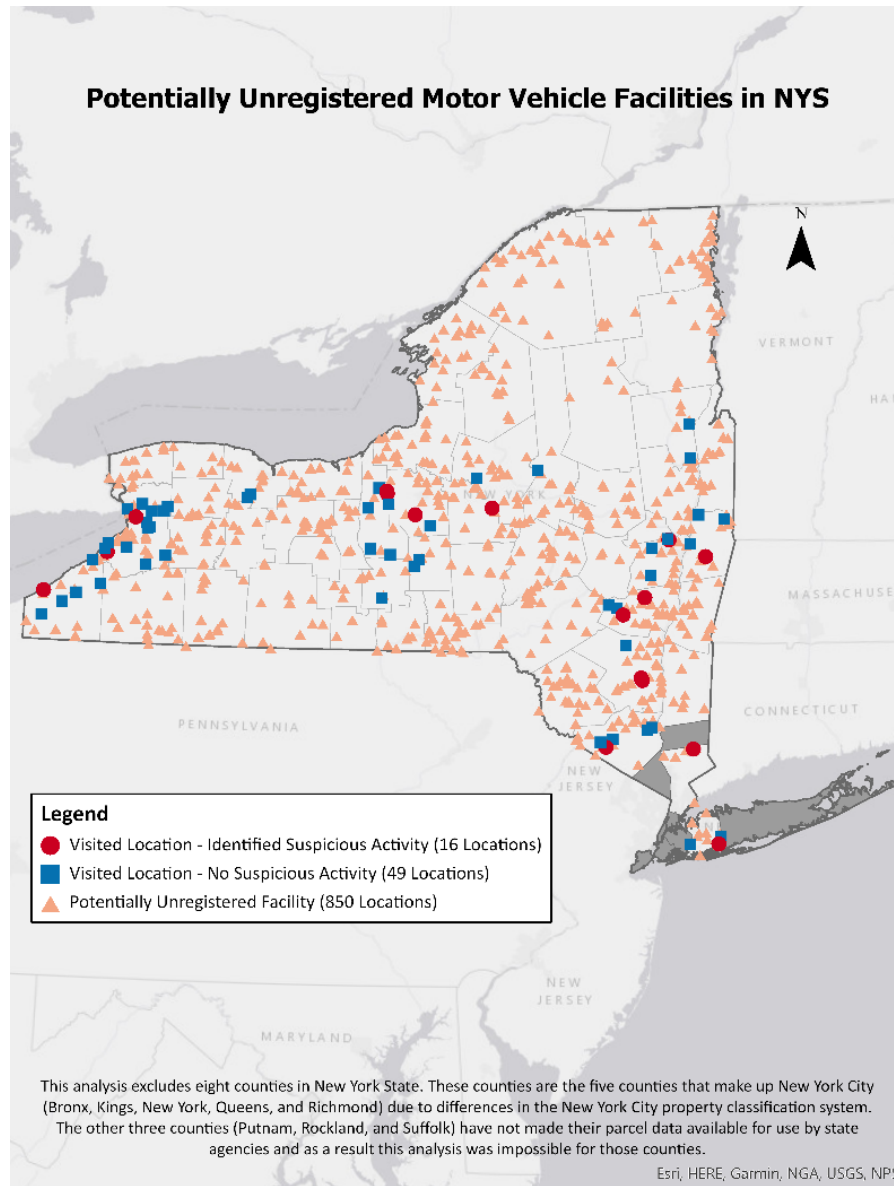
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Spatial Risk Analysis

- Linking diverse data sets based on spatial location:
 - Value-added analysis and results;
 - Publically available datasets;
 - Impact on the public health, safety, and quality of life.



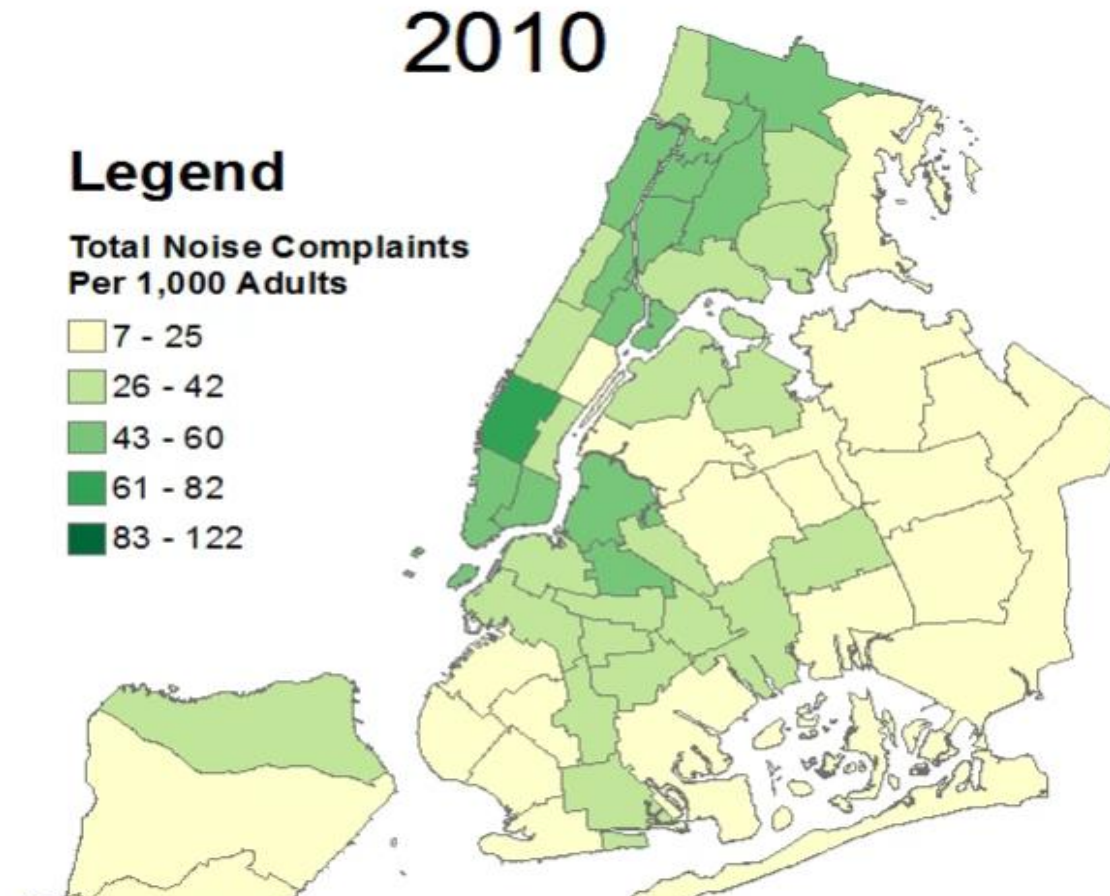
Potentially Unregistered Motor Vehicle Facilities in NYS



<https://www.osc.state.ny.us/press/releases/aug17/081517.htm>



Noise Complaints from 2010-2015



Efficiencies in Data Collection, Analysis, and Staff Deployment



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Mobile Field Data Collection (MFDC)

- What is mobile field data collection?
 - A suite of ArcGIS tools and apps to remotely collect, analyze, and visualize data.
- System components OSC is using:
 - Portal for ArcGIS 10.5;
 - ArcGIS Survey123;
 - ArcGIS Survey123 Connect; and
 - Dashboard and widgets.



Portal

- Can connect to results directly from Pro and ArcMap.
- Results can be exported via a user interface or Scripts against the service.



Mobile Field Data Collection (MFDC)

- 2 Key Components
 - Survey collection (iPads) – Survey123
 - Crafting quantifiable questions is key.
 - Flexibility – group questions, repeat questions, images, etc.
 - Near-real-time monitoring of audit results (web-based from your PC) – ArcGIS Portal
 - Driven by survey questions.
 - Interactive mapping capability to visualize survey results.
 - Monitoring views can be customized for each project.

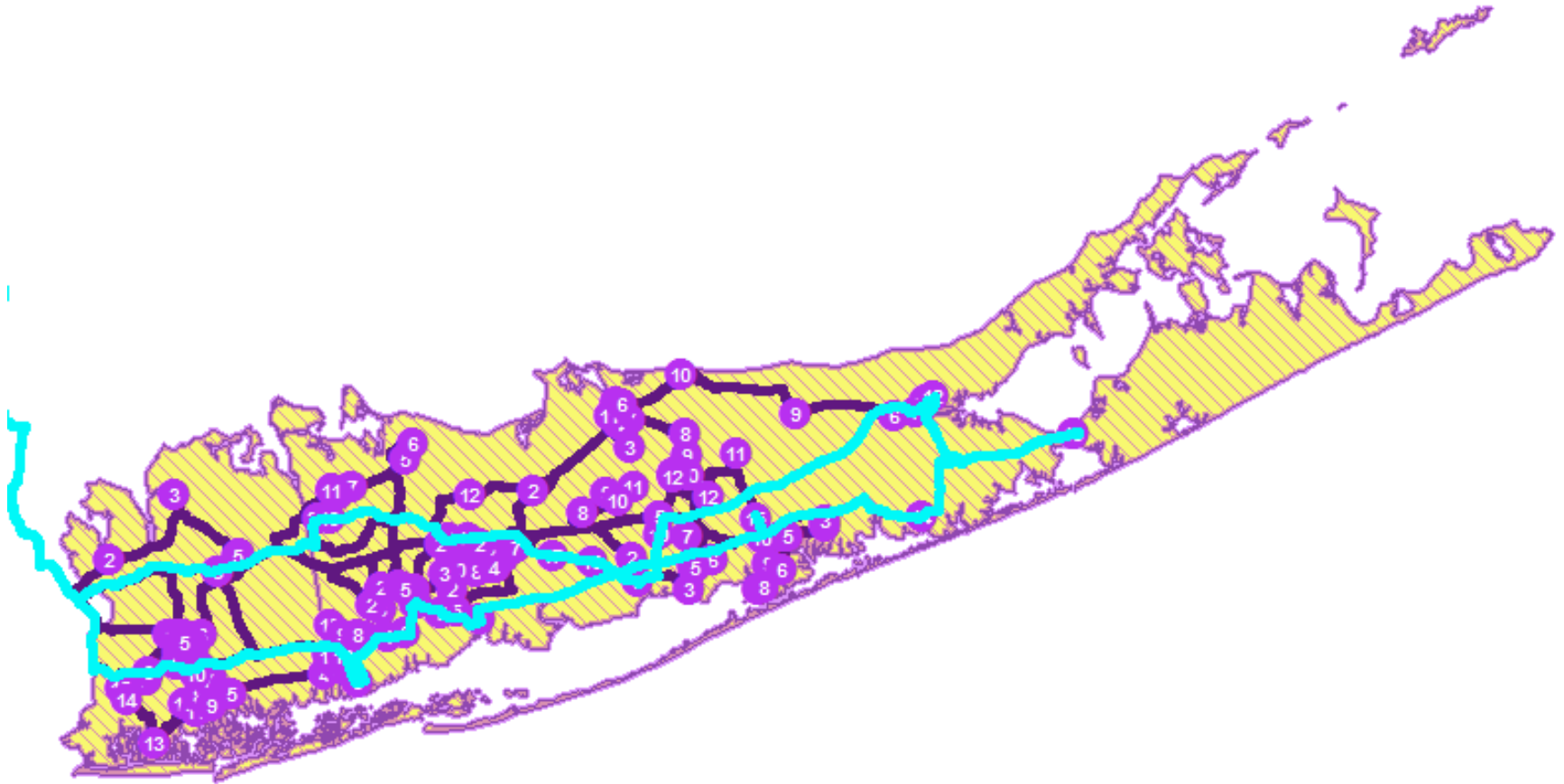


User Feedback

- “The amount of time spent collecting data and other information in the field would have taken longer without MFDC.”
- Staff highlighted professional growth as a benefit.
- iPads were well received; one device ideal!
- Outcome-focused system.



Network Analyst Routing Analysis



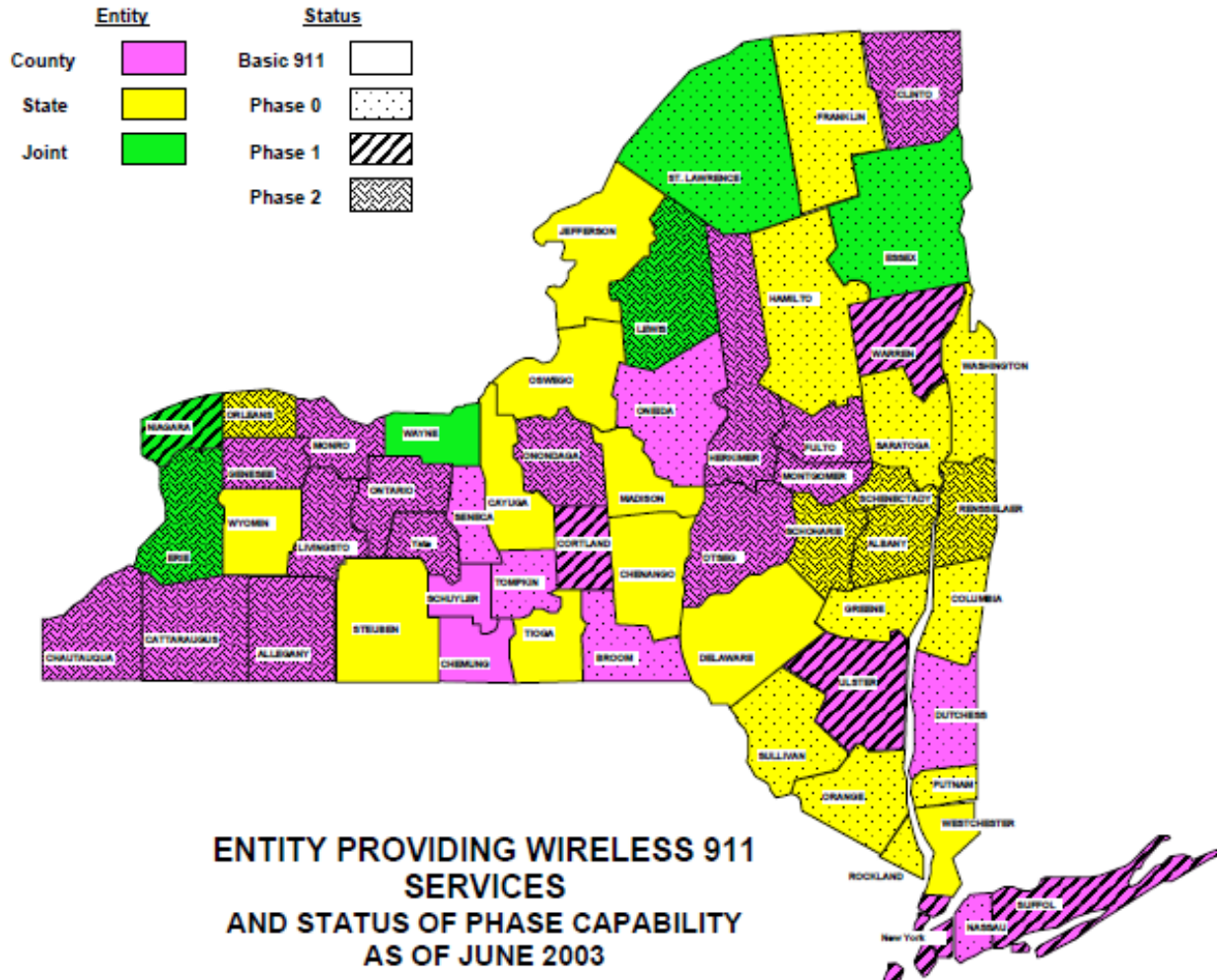
Innovation and Creative Problem-Solving through GIS



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In the Beginning...

Maps Made Manually



Fostering Growth

- Professional development through exposure to new technology.
- Changing the mindset of how we approach our work.
- Problem-solving throughout the audit process.
- Educating leadership on investing resources in evolving technology.



Moving Forward



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Challenges

- Not our everyday work, and we need to practice to keep up.
 - Resource constraints
- Symbols, labels, and designing maps.
 - Consistency is elusive!
- Working with limited portions of the software package and experimenting with the others.
- Color-blind and printer-friendly color schemes.
- Exporting maps for publication.



Opportunities

- Thinking spatially, throughout the audit process
- Skill development with MFDC, Portal, and Pro
 - GIS analysts
 - Audit staff
- Professionalization
 - Color Brewer
- Contests, conferences, and recognition



Discussion Questions

- Who has used Survey123, Portal, or Pro?
- If not, do you see your organization using these tools?
- What challenges or opportunities does your organization face implementing a GIS program?



Questions?

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