

SOCIAL AND DECISION ANALYTICS LABORATORY

Rural Action Caucus

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Social and Decision Analytics Laboratory
<http://sdal.vbi.vt.edu/>

Our Mission

The Social and Decision Analytics Laboratory brings together statisticians, social, and behavioral scientists to embrace today's data revolution, developing evidence-based research and quantitative methods to inform policy decision-making.

One of our Research Areas

The **Science of "All" Data** which aims to integrate disparate sources of data — designed surveys and experiments; local, state, and federal administrative government records; social media; mobile technology, and geographic information — in service of the common good.

Bringing the **ALL** data revolution to communities

State, Federal, Local – Civilian and Defense

to deliver a comprehensive understanding of social problems.

Designed Data



Administrative Data



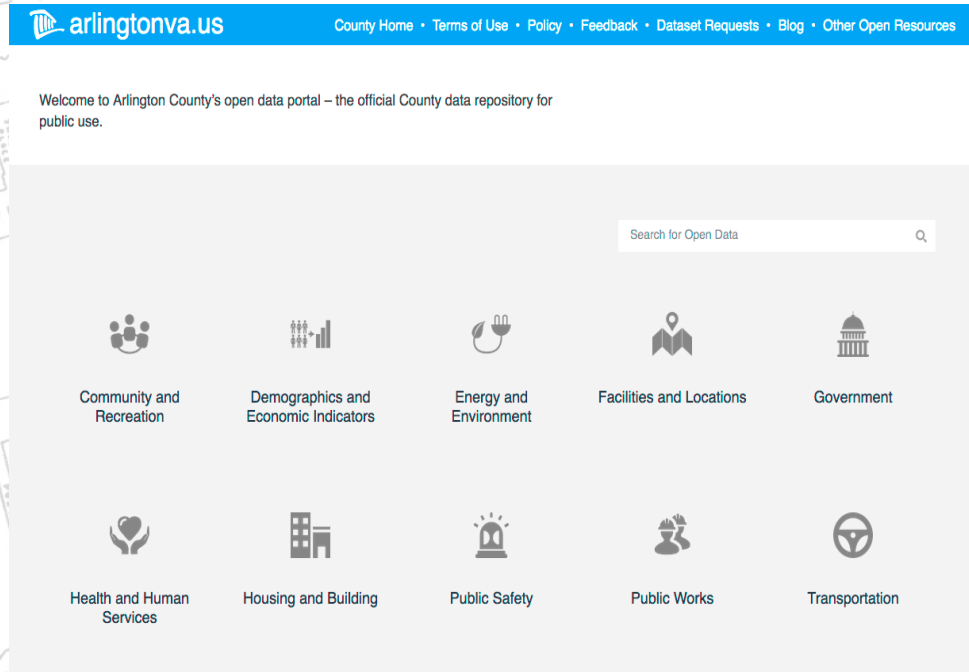
Opportunity Data



Procedural Data



Bringing the **ALL** data revolution to Arlington, VA



Large cities use data to support governance and evidence-based decisions. They have created Open Data Portals and established Offices of Performance Management, hiring statisticians, data scientists, sociologists, information architects, policy researchers, and others.

Example: Arlington Operation FireSafe



Operation FireSafe – the goal of the operation is to increase the number of single family homes in Arlington County with smoke alarms.

ACFD visited 5,623 unique addresses in Arlington.

Only 1,733 visits (approximately 31%) resulted in contact with the occupant.

Of the 1,733, 32% of the homes did not have a smoke alarm, so the ACFD installed at least one smoke alarm in each home.

Example: Arlington Operation FireSafe

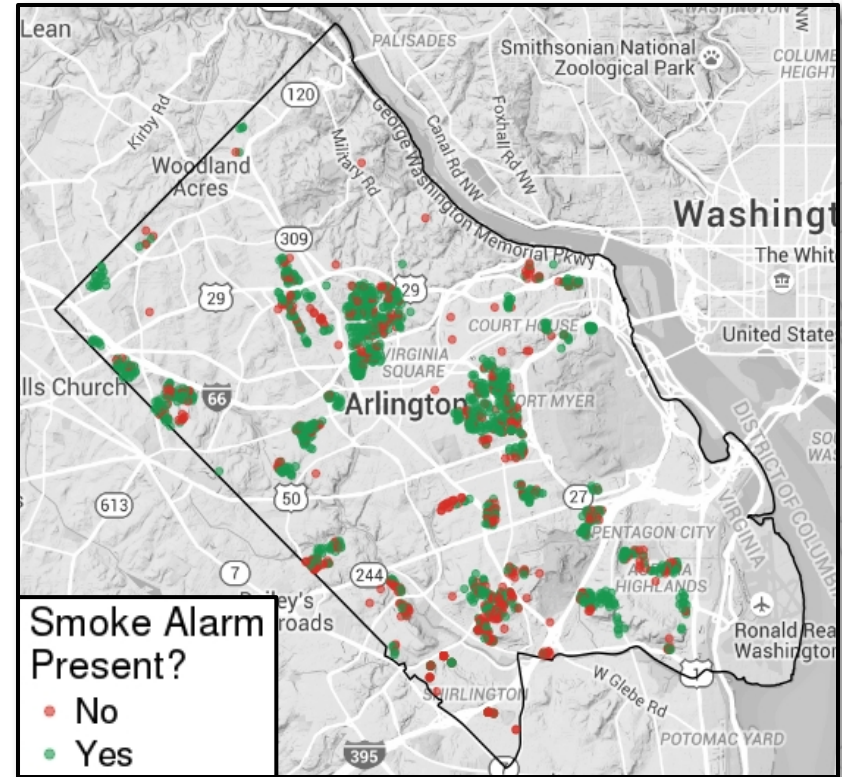
SDAL Goal – to construct a predictive model to identify the homes with no smoke alarm that would allow the ACFD to be more efficient.

Data Sources:

Arlington County Property Tax Assessment Data – home value, age, tenure, construction material

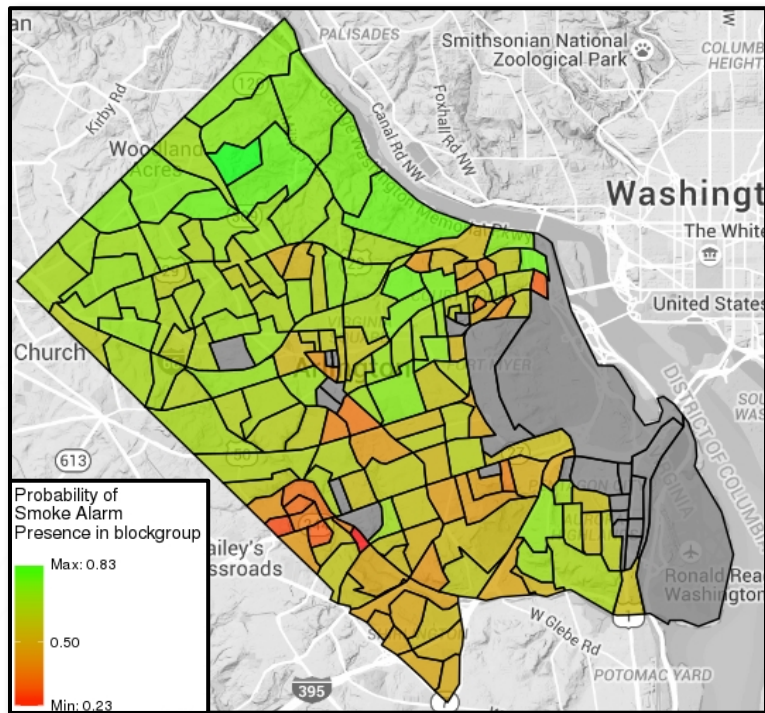
American Community Survey (census block group level) – age of occupants, income level, poverty, education

National Fire Protection Association – the most likely to die in a house fire are children ≤ 5 years old and adults ≥ 65 .

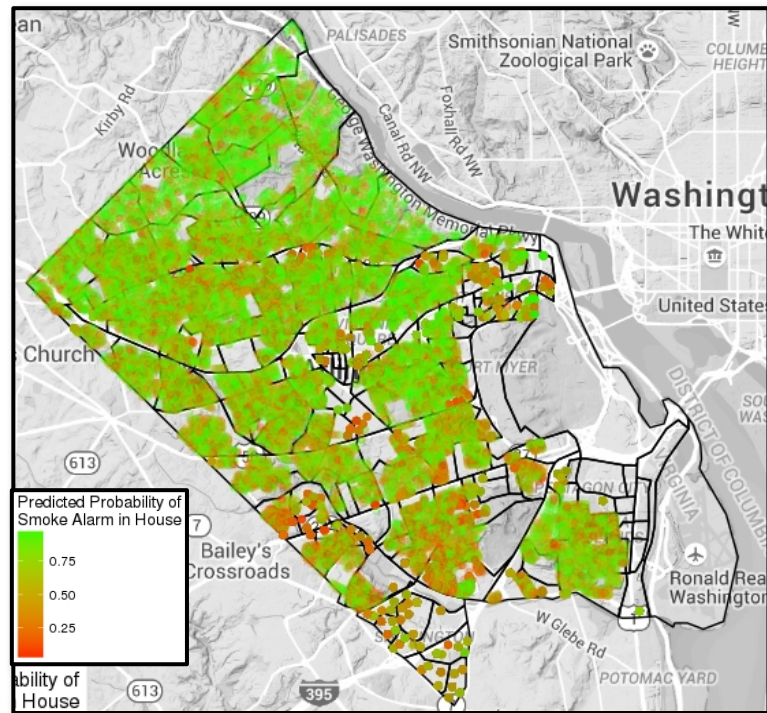


Probability of Having a Smoke Alarm

Bayesian logistic regression model with conditionally autoregressive spatial effects



Census Block Level



Housing Unit Level Predictions



Bringing the **ALL** data revolution **ALL** communities

Despite the enormous potential of data to advance the public good, many small and rural governments lack the financial and analytical resources to utilize data to support governance and evidence-based decision making.

Virginia Tech and Iowa State propose to change this. These two Land Grant Universities are working together to bring data-driven governance to every community in the U.S.



Land-Grant Partnership for Data-Driven Governance



IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Scalable & Sustainable

The **Cooperative Extension Service (CES)** of **Land Grant Universities (LGU)** has extension agents in **every city and county across the U.S.**

The **CES** mission is to use research findings emanating from **LGUs** to provide Americans with the knowledge and skills to solve community problems.

The **CES** can be repositioned to bring data science and statistical learning to every community.

Our research has begun ...

I. Data Science Processes and Platforms:


- statewide-federated data science processes & platforms will be part of the LGU infrastructure;
- adherence to data privacy, confidentiality, security, & governance constraints;
- infrastructure will be accessible to local communities, researchers, & state agencies



Our research has begun ...

2. Templates and Tools:

- templates for baseline characterization of communities & data sharing agreements;
- data sharing practices that involve statistical & geospatial integration of local, state, & federal data sources;
- development & sharing of research on experimental designs for policy interventions & evaluations, statistical methods, statistical & geospatial indicators, visualizations

A faint, stylized map of Oxford, England, serves as the background for the slide. It shows various streets and landmarks, including St. Castle St., Oxford Market, and several other street names like St. Giles, St. Martin, and St. Andrew. The map is rendered in a light, sketchy style that doesn't distract from the text.

Our research has begun ...

3. Integrated Web Resources:

- overview of issue-based data driven discovery for evidence-based policy interventions & evaluations;
- best practices & lessons learned across communities;
- a list of successful policy interventions & their contextual constraints;
- community & blogs pages for sharing news ideas & best practices;
- funding sources



Our research has begun ...

4. Communities of Practice:

- training, meetings, & workshops where practitioners, academics, & government colleagues share research findings & best practices;
- local, regional, state, & national communities of practice;
- online forums to create & maintain these communities of practice

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Our research has begun ...

5. Workforce Pipeline:

- LGUs will develop a workforce of data scientists to join the CES and local government;
- experiential learning & academic mentoring provide a perfect fit for developing a workforce dedicated to community-based research;
- VA Tech's Data Science for the Public Good serves as an incubator to educate & train the next generation of government data scientists by exposing them projects that integrate data from all levels of government

Thank You