

Translating Data into Useful Information: Program Assessment & Application of GIS

Presenters
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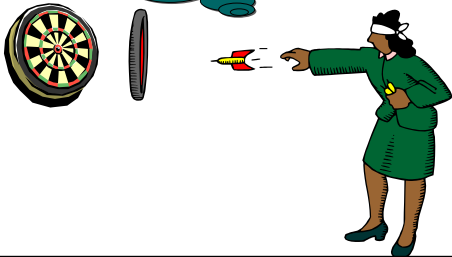
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UW Population Health Fellow

Objective

- Describe methodologies to enhance program effectiveness using quality data
- Translating data into useful information.
 - Using a case study involving FDA Program Assessment #9
 - the use of Geographic Information System (GIS) technology,

Using Data for Quality Improvement

"There must be a better way to make decisions."





Restrictions to data collection

- Same as FDA
- Hard to observe cooling when only in facility for 30 min
- Many values end up being NO
- Many practices have too few observations to get useful data ie: roasts, double hw

% IN COMPLIANCE Overall

Oregon Restaurants	% In Compliance Observable Items	FDA Improvement Goal
Fast Food	74%	81%
Full Service	67%	75%

FDA Restaurants	% In Compliance Observable Items	FDA Improvement Goal
Fast Food	74%	81%
Full Service	60%	70%

IN Compliance Observations for Risk Factors



Facility Type	Food From Unsafe Sources	Inadequate Cook	Improper Hold	Contaminated Equipment	Poor Personal Hygiene	Other
OR Fast Food	97%	92%	56%	82%	65%	94%
FDA Fast Food	97%	89%	51%	85%	63%	82%
OR Full Service	94%	97%	47%	71%	54%	98%
FDA Full Service	91%	85%	37%	56%	47%	80

Items of Concern

- Determined by the number of OUT of compliance observations
- Oregon chose to use 28 OUT of compliance observations required for an item of concern
- Not discounting the rest of the data, just forming interventions for the items above 28

The top three out of compliance areas of concern for both Full Service and Fast Food Restaurants were:



- Bare hand contact
 - Proper handwashing as required
- Cold holding below 41F
- Date marking

Fast Food

the major items of concern are:



- Proper handwashing as required
- Food is protected from environmental contamination

Full Service

the major items of concern are :

- Proper handwashing as required
- Protection of food from environmental contamination

Full Service

the major items of concern are :

- Food contact surfaces clean and sanitized as necessary
- Cross contamination between raw and RTE





Comparison of Baseline Data to Inspection Results for 2002


- Total number of violations cited for each of the five risk categories statewide:
 - Improper Hold 7,290
 - Contaminated Equipment 4,495
 - Poor Personal Hygiene 1,742

Interestingly, the same top three Items of Concern indicated in the Oregon baseline

What Did Oregon Learn?

No one washes their hands!

Which was suspected, but now there is a quantitative way to measure the success of interventions to promote handwashing statewide



Interventions

- Based on 2 studies
 - EHSNET Food Safety Communication Study (Beegle, Mack, Pippert)
 - EHSNET Handwashing Study (Pragle, Harding, Mack)
- Handwashing Posters

Part II: Translating Data into Useful Information: Program Assessment & Application of GIS

Geographic Information System
Technology: Applications for
Environmental Health

Geographic Information System (GIS)

What is GIS?

- a technological tool for comprehending geography to inform data analysis and decision making

How does it work?

- Organizes data for geographic display using layers
- Multiple data sources can be integrated including data from a global positioning system (GPS)
- Maps are interactive and some GIS applications are capable of sophisticated calculations
- GIS applications can be used real-time

Caveat: A Good Map Requires Quality Data!

- Addresses and related variables

Your experiences....

Who is using it? : Applications in for Food Safety and Recreational Licensing

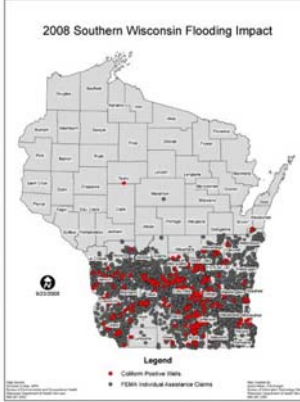
- **Businesses and Private Sector**
 - Drive time analysis for deliveries
 - Population-based marketing
 - Track regional property values, income tax
- **Governments and Policy Makers**
 - Jurisdictional population issues
 - Strategic localization of emergency services
 - Track crime in communities
- **Scientific Investigators**
 - Impacts of climate change and weather forecasting
 - Population patterns and demographics related to diseases or general health

Application for Environmental Health - FSRL

- Plotting location-specific events
- Regional properties
 - Geographically correlated data
- Route planning and surveillance
- Resource allocation or workload distribution

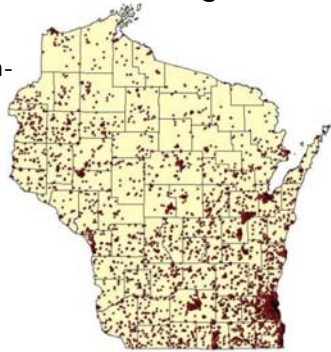
Flooding 2008

- Plotting location-specific events



Childhood Lead Poisoning

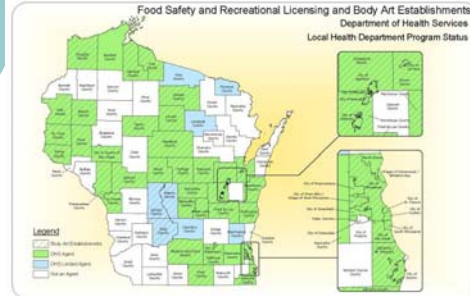
Plotting location-specific events



Distribution of Lead-Poisoned Children Under Age 6 (1996-2006)

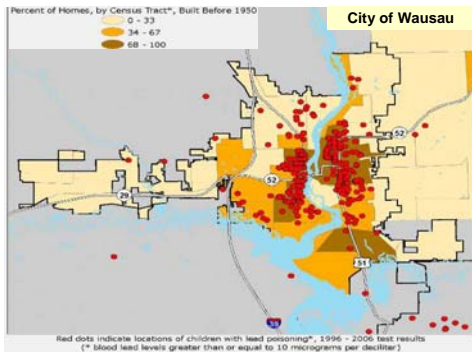
DHS FSRL Agent status

- Regional properties



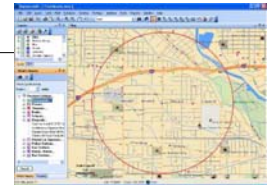
Lead Poisoning Clusters in Older Neighborhoods

Geographically Correlated Data



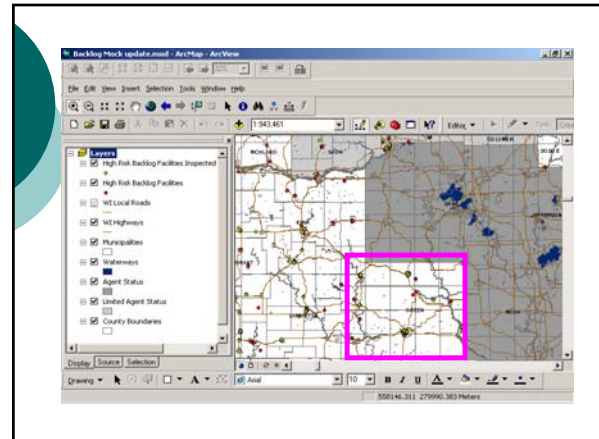
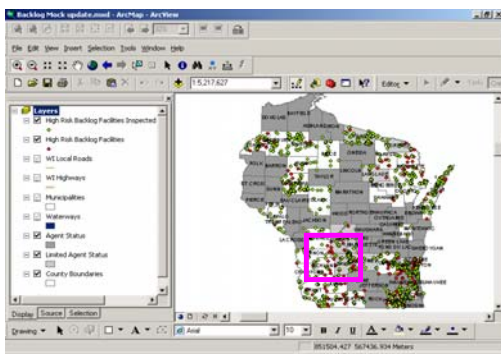
Route Planning

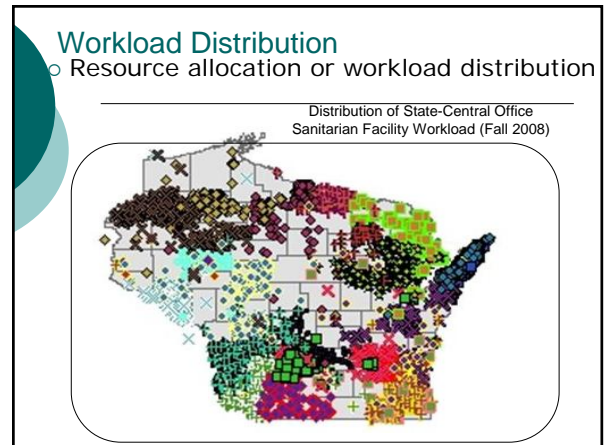
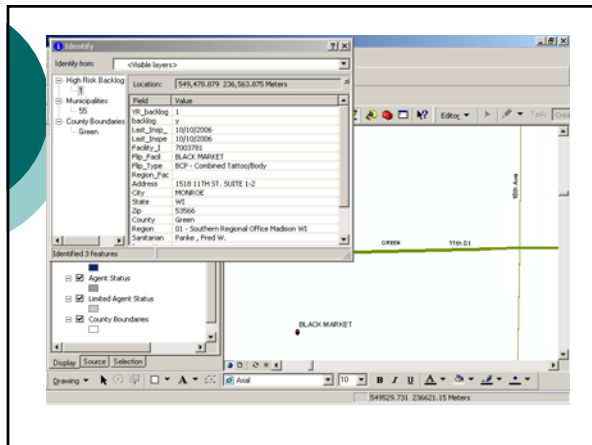
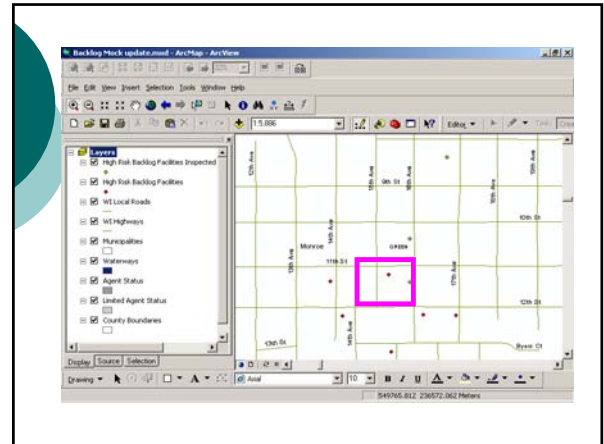
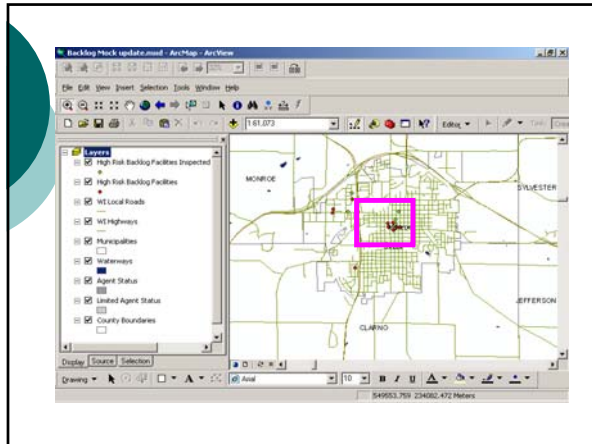
- Find facilities within a given radius
 - Improve work area balancing, work scheduling, and route optimization.
- Drive time radius
 - Calculate realistic travel times and distances between facilities.



FSRL Backlog Fall 2008

Route planning and surveillance





Environmental Health: GIS Applications

- What do you use GIS for?
- How could GIS be applied to your work?

QUESTIONS