

Optimizing User Experiences in Foodborne Outbreak Analysis

Dan Guo

Goal

Personalize data visualization experience by leveraging data from previous users.

For a particular user, the system will suggest specific views of the data that have been well-received in similar users.

Motivation: FOOD Tool [CDC]

Foodborne Outbreak Online Database (FOOD Tool)



View: [Dashboard](#) [Tabular](#)

Search Options:

▼ Year

From: 1998 ▼

To: 2014 ▼

[More](#)

> State

> Location of Preparation

> Food/Ingredient

> Etiology

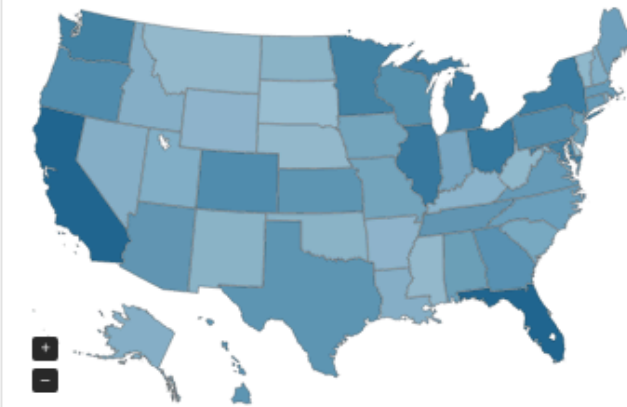
This data was last updated on 10/16/2015.

Disclaimer: FOOD Tool was developed by the Centers for Disease Control and Prevention (CDC) to make Foodborne Disease Outbreak Surveillance System data more available to the public and stakeholders. CDC uses more detailed information for its analyses of the causes and risk factors of foodborne disease outbreaks. Please read the full [disclaimer](#) before using this data.

Current Search: 1998 to 2014

Outbreaks per State

Display: U.S. Map ▼

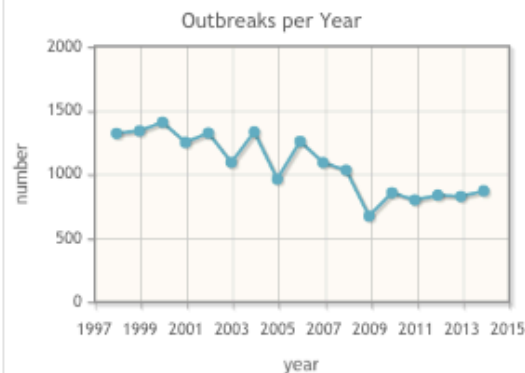


Quick Stats - Overall

18,211	Outbreaks
358,391	Illnesses
13,715	Hospitalizations (3.8%)
318	Deaths (0.1%)

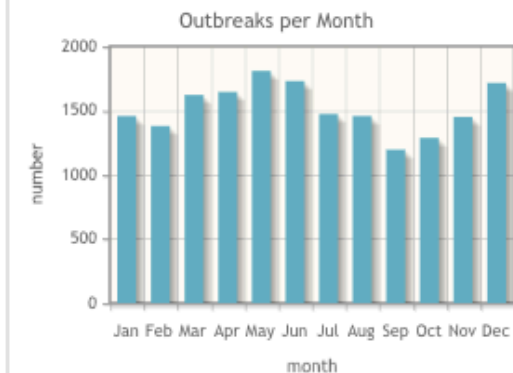
Year

Display: Outbreaks ▼



Month

Display: Outbreaks ▼



Previous Works

Automatic Selection of Partitioning Variables for Small Multiple Displays

Anushka Anand and Justin Talbot

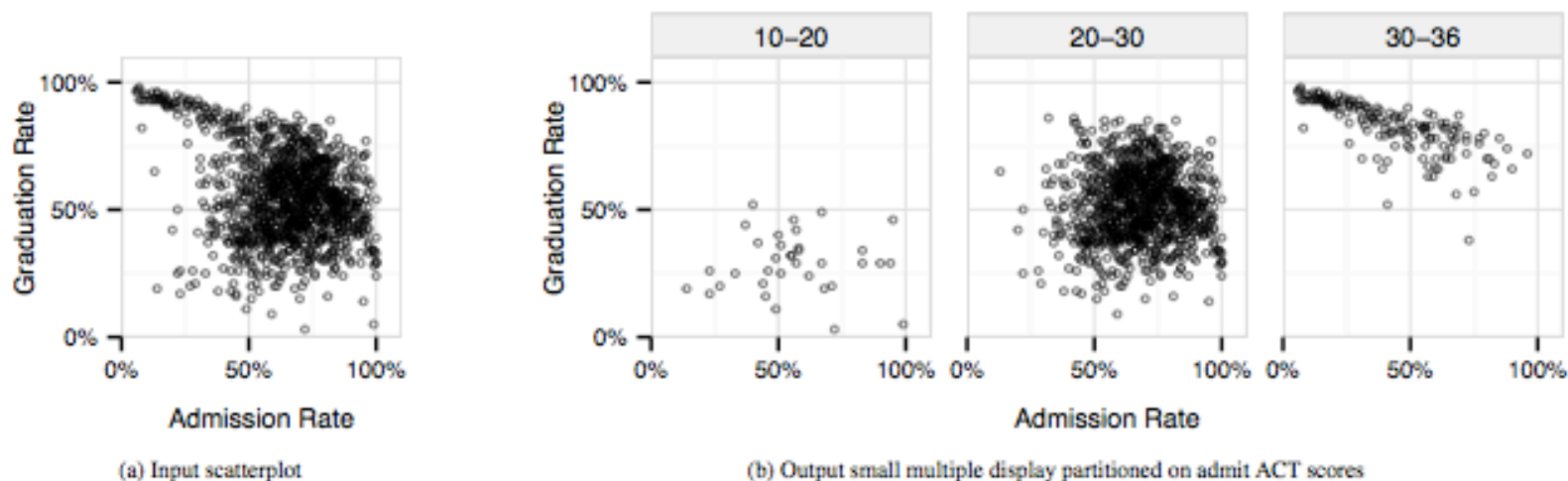


Fig. 1: On the left is an input plot showing the complex relationship between admission and graduation rates at US universities. On the right is the top ranked small multiple display automatically picked by our algorithm to help explain this data. It partitions the data on aggregate admit ACT scores, revealing that for universities with very high ACT scores, there is a strong linear relationship between selectivity and graduation, while for other universities, there is no clear relationship.

Amazon.com [Linden 2003]

Your Recommendations
Software Requirements

LOOK INSIDE! "Requirements" are essential for creating successful software because they let users and developers agree on what features will be delivered in new systems. Karl Wingers's *Software Requirements* shows... [Read more](#)
| [\(Why was I recommended this?\)](#)

More Recommendations

- [Star Wars - Episode I: The Phantom Menace](#) DVD ~ Liam Neeson [\(why?\)](#)
- [The Sopranos - The Complete Second Season](#) DVD ~ Sopranos [\(why?\)](#)
- [Death March](#) by Edward Yourdon [\(why?\)](#)
- [The Pragmatic Programmer](#) by Andrew Hunt, et al [\(why?\)](#)

Figure 1. The "Your Recommendations" feature on the Amazon.com homepage. Using this feature, customers can sort recommendations and add their own product ratings.

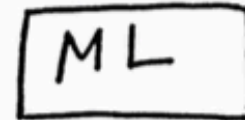
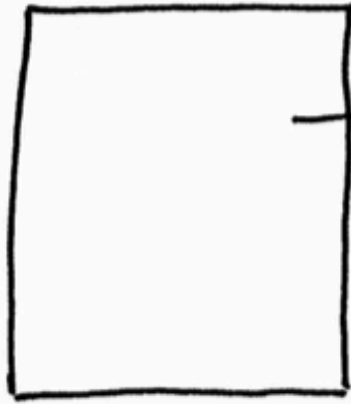
Customers who bought items in your Shopping Cart also bought:

 Mathematics for 3D Game Programming & Computer Graphics by Eric Lengyel Our Price: \$49.95 7 used from \$37.76 Add to cart	 Game Programming Gems 2 Mark DeLoura (Editor) Our Price: \$69.95 6 used from \$52.35 Add to cart	 All Game Programming Wisdom (with CD-ROM) by Steve Rabin (Editor) Our Price: \$69.95 7 used from \$52.20 Add to cart
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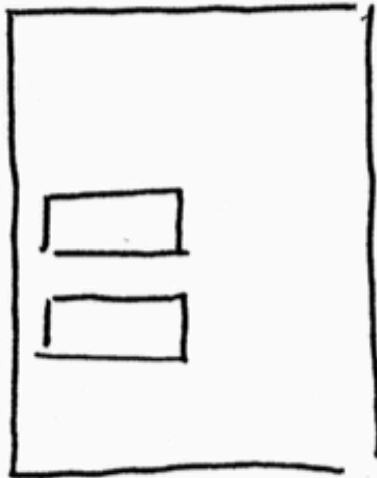
Figure 2. Amazon.com shopping cart recommendations. The recommendations are based on the items in the customer's cart: The Pragmatic Programmer and Physics for Game Developers.

Current Works

V1 Website



V2 Website



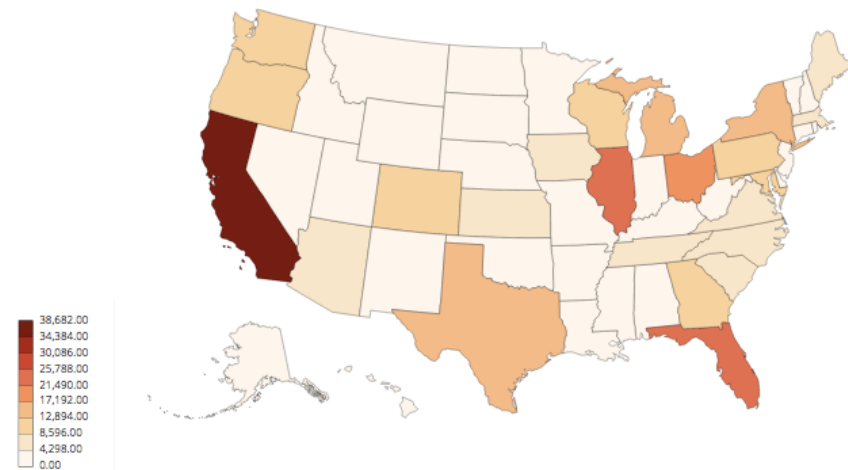
Users

Milestone 1: Subset of FOOD Tool

Top Level Control

- Choropleth
- Breakdown by Time

US Map View



Adjust Incidents by Population

- Unadjusted
- Population Adjusted

Incident Metric

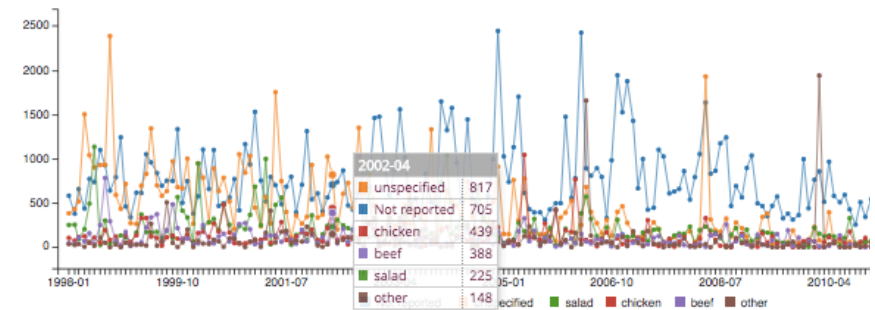
- Illnesses
- Hospitalizations
- Deaths

Foods
State
Genus

Top Level Control

- Choropleth
- Breakdown by Time

Breakdown of Disease by Time



Incident Metric

- Illnesses
- Hospitalizations
- Deaths

Time Granularity

- Month
- Year

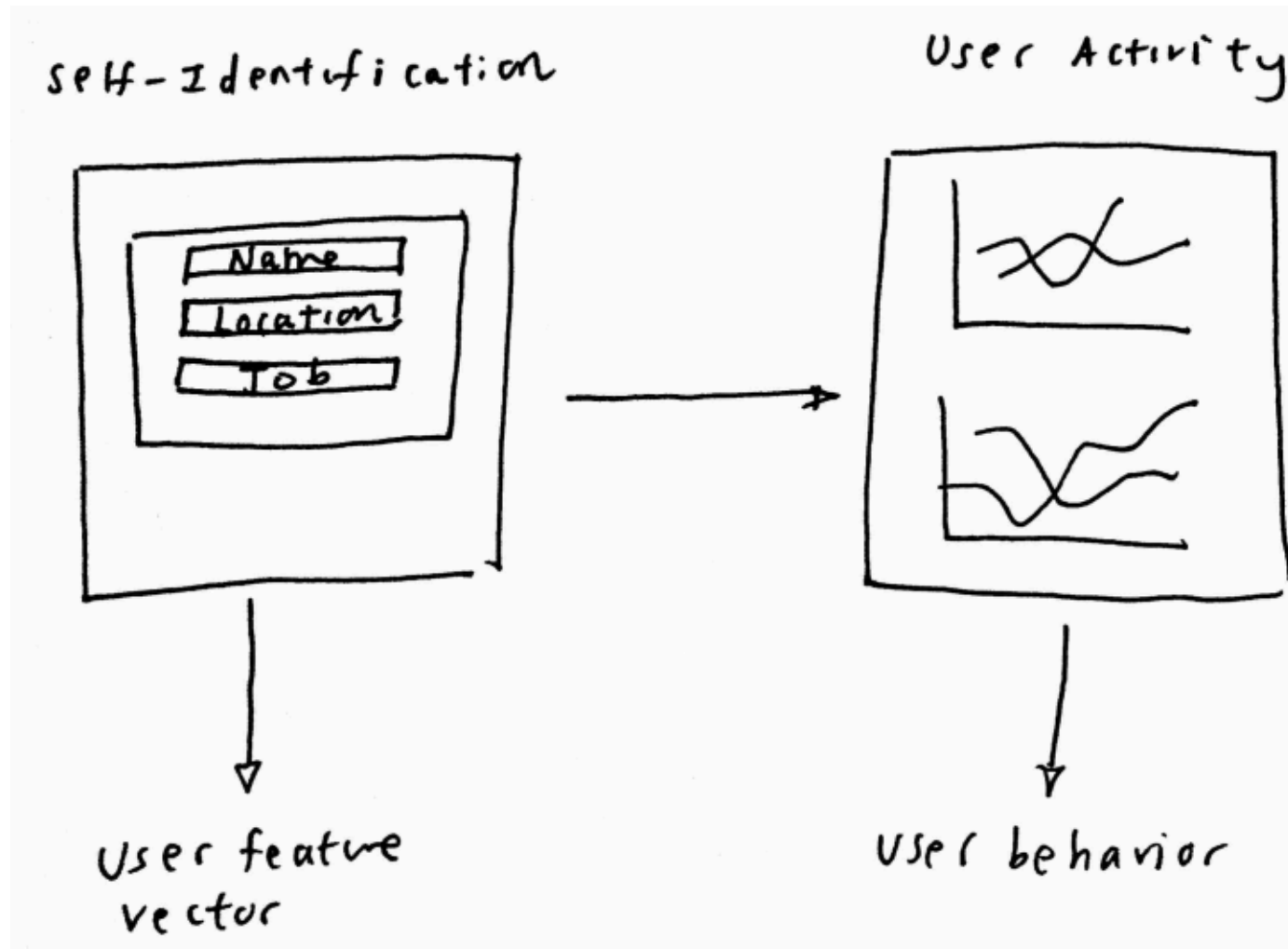
Breakdown of Variable

- Foods
- Genus Tag
- State

Foods
State
Genus

Milestone 2: Short Survey for Users

Milestone 3: Activity Recording system



Future Milestones

- Milestone 4: Public website
- Milestone 5: Machine Learning Algorithm
- Milestone 6: Final website

Feedback Questions

- Any particular ML algorithms seem promising for this task?
- Any other relevant works to look into?
- Any guidance on how to design the recommendation system?
- Most meaningful way to test the system and collect data?