HealthCORR

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Acknowledgements

• Todd Park, our sponsor who is willing to clear time in his busy schedule for some grad students

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• Ben Shneiderman, for his continued guidance and support

• Reviewers who gave us smart feedback

And also a lot of anonymous open source-loving nerds who have contributed their time and energy into building tools so we don't have to!
Motivation

- Health care is among the most important issues facing the United States in the near future
  - It is not always clear to those in charge what the problem is or even that a problem exists
  - Example: McAllen, TX has the worst health care record in the country (highest costs, lowest quality) and the mayor of McAllen did not know until he read about it in The New Yorker

"Knowledge will forever govern ignorance, and a people who mean to be their own Governors must arm themselves with the power knowledge gives." -- James Madison, 1822
Data

Community Health Status Indicators
Various indicators about risk factors and general health quality

Center for Medicare & Medicaid Services
Detailed Medicare spending/quality data

County level data
HRR level data

Quality
Access
Public Health
Cost
Goals

- **Target audience**: "people in charge" -- hospital administrators, mayors, local government representatives, etc.
  - People with some knowledge, but not "experts"

"Someone without a PhD in health economics should be able to use this tool" - Todd Park
Goals

- Those using the tool should be able to consider how an area of interest is doing along the four main axes

**Comparison**

Easy to compare a region (county or HRR) to state average, national average

**Filtering**

Filter out "excuse factors" (such as average age, median income, poverty levels, etc.) that aren't necessarily health indicators.
Why a Web App?

Ease of access
Interoperable with any operating system, processor, network you are on. Nothing to download, nothing to configure, no compile errors.

Ease of updates
Tool (and data) can evolve over time without having to push new versions.

Ease of Open Source tools
We are leveraging some industrial grade open source technologies (more on this in a second).
System Architecture

Client
- Browser
  - Google Closure (UI widgets)
  - Javascript (glue code)
  - Open Layers (map/interactions)

Server
- Apache http server
  - php
  - pChart (graphs)
- PostGIS (spatial database)
- Apache Tomcat
  - GeoServer (map rendering)

Connections:
- AJAX
- HTTP
- WMS
Main Features

- Initially start searching an area of interest by zip code

<table>
<thead>
<tr>
<th>Map view</th>
<th>For both map and table</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Draw the map</td>
<td>✓ Can apply dynamic filter with defining the ranges by double sided sliders</td>
</tr>
<tr>
<td>✓ Zoom in &amp; out to see the overview and detail</td>
<td></td>
</tr>
<tr>
<td>✓ Allow to choose health indicators to want to see</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table view</th>
<th>Graph view</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ See different types of data by tabs</td>
<td>✓ Compare all selected variables with national averages of each</td>
</tr>
<tr>
<td>✓ Sort by columns to find correlated variables and areas</td>
<td></td>
</tr>
</tbody>
</table>
Demo
Feedback and conclusion

- Todd Park commented as
  - “This is incredibly cool, I think it’s spare, elegant, and Intuitive”
  - “The White House and HHS see this as a powerful seed for changing health care in the United States.”

- We think that this tool has great potential to help people understand patterns that result in low cost, high quality healthcare
Future works

- Discover similar areas as benchmark
- Add more types of graphs
- Add more excuse factors for filter