Where in the World? Demographic Patterns in Access Data

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### Web-based Educational Systems

**Instructional Architect (IA)**
- A tool for collecting and reusing online learning resources
- Utah-based
- Outreach program in New York and Michigan

**Exploratorium Learning Resources Collection (ELRC)**
- A digital library of over 700 science activities and instructional resources
- Based on a hands-on museum in California

### Procedure

1. Track web metrics using Google Analytics.
2. Collect geo-referenced visits data.
3. Join and map geo-referenced data with public demographic datasets.
4. Analyze the association between the two.

### Datasets

<table>
<thead>
<tr>
<th>Geo-referenced data</th>
<th>Demographic data</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA's Google Analytics report</td>
<td>Per capita income</td>
</tr>
<tr>
<td>ELRC’s Google Analytics report</td>
<td>Median family income</td>
</tr>
<tr>
<td>Number of schools</td>
<td>Number of school districts</td>
</tr>
<tr>
<td>Population</td>
<td></td>
</tr>
</tbody>
</table>

### Highlights

- Collect geo-referenced data for two web-based educational systems.
- Map geo-referenced data with public demographic datasets.
- Conduct statistical analyses of these relationships to highlight significance predictor variables.

### Visits from the Contiguous US

- Both groups were successful in local dissemination activities.
- The ELRC also showed more widespread U.S. visitors.

### Mapping Data

#### Statistical Analysis

- Used negative binomial regression to account for skewed data.
- **Dependent Variable:**
  - Number of visits
- **Three independent variables:**
  - Population
  - Number of school districts
  - Per capita income

<table>
<thead>
<tr>
<th>Population</th>
<th>School districts</th>
<th>Per capita income</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>190.18</td>
<td>.000</td>
</tr>
<tr>
<td>ELRC</td>
<td>71.16</td>
<td>6.96</td>
</tr>
</tbody>
</table>

- Population density significantly predicted number of online visitors.
- Per capita income also significantly predicted number of online visitors. This may be a function of the amount of resources (e.g., computers) available in the local schools and communities.