Visualizing Data to Support Regional Policy and Economic Development
“A good sketch is better than a long speech”

-Napoleon Bonaparte
“A good sketch is better than a long spreadsheet”

-Napoleon Bonaparte
Background
MAG Region: By the Numbers

- **10,650 Square Miles**
- **32 Member Agencies**
- **4.4 million 2016 Population**
- **64% of State's Population**
- **72% of State's Tax Base**

4.1 million of State Populatin
March 2010
63,182 Properties
Distressed
(Foreclosed & Pending)
Residential Properties

Source: Information Maricopa
Map Prepared by Maricopa Association of Governments (MAG). April 2017
While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.
March 2016
5,576 Properties
Distressed
(Foreclosed & Pending)
Residential Properties

Source: Information Market
Map Prepared by Maricopa Association of Governments (MAG) April 2017
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Renewed Focus on Data Analytics
“Data just don’t leap off the page and convert themselves into high-quality, useful information.”

-Slotnick & Orland
Travel Time within 30 Minutes to Bell Road and Loop 101
Finance and Insurance

Source: Maricopa County Trip Reduction
### Demographic Profile, 2010

#### Demographic Profile

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>191,456</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>RACE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>118,633</td>
<td>61.8%</td>
</tr>
<tr>
<td>Black or African American</td>
<td>29,281</td>
<td>15.3%</td>
</tr>
<tr>
<td>American Indian</td>
<td>5,069</td>
<td>2.6%</td>
</tr>
<tr>
<td>Asian</td>
<td>4,312</td>
<td>2.2%</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
<td>1,028</td>
<td>0.5%</td>
</tr>
<tr>
<td>Some other race</td>
<td>22,393</td>
<td>11.7%</td>
</tr>
<tr>
<td>Two or more races</td>
<td>11,771</td>
<td>6.1%</td>
</tr>
<tr>
<td><strong>SEX</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>93,091</td>
<td>48.3%</td>
</tr>
<tr>
<td>Female</td>
<td>98,365</td>
<td>51.7%</td>
</tr>
<tr>
<td><strong>EDUCATIONAL ATTAINMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 9th grade</td>
<td>16,800</td>
<td>8.7%</td>
</tr>
<tr>
<td>9th grade or higher</td>
<td>39,900</td>
<td>20.9%</td>
</tr>
<tr>
<td>Some high school or less</td>
<td>40,200</td>
<td>20.9%</td>
</tr>
<tr>
<td>High school graduate and higher</td>
<td>73,466</td>
<td>38.3%</td>
</tr>
<tr>
<td>College or more</td>
<td>32,330</td>
<td>16.8%</td>
</tr>
<tr>
<td>Unknown</td>
<td>6,715</td>
<td>3.5%</td>
</tr>
<tr>
<td><strong>EARNED INCOME</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median household income</td>
<td>$42,184</td>
<td></td>
</tr>
</tbody>
</table>

#### Major Land Area

- **Navajo Nation**
  - Total population: 191,456
  - Median household income: $42,184
  - Educational attainment:
    - Less than 9th grade: 8.7%
    - 9th grade or higher: 20.9%
    - Some high school or less: 20.9%
    - High school graduate and higher: 38.3%
    - College or more: 16.8%
  - Land area: 11,400 square miles, or about 30,000 square kilometers.
Commute Shed Analytics
30 Minute A.M. Inbound Travel Time to Glendale Ave and State Route 101, Glendale

The Phoenix-Mesa-Scottsdale Metropolitan Statistical Area (MSA) is made up of Maricopa County and Pinal County. For this document, the MSA is referred to as the Phoenix MSA. Within the Phoenix MSA, the average commute time is about 28 minutes, which is slightly less than the US average. Rounding to a 30-minute commute time provides a useful picture of the residents, workers, and employers near a given location. Note: for some rural communities, a 15-minute commute shed was used because a larger area of analysis was necessary.

The map to the right shows the area from which a worker can commute in 30 minutes or less to a location near Glendale Avenue and State Route 101, Glendale. The analysis in this document compares data from within this 30-minute commute shed to similar data for the MSA and the nation.

The analysis provides a brief overview of available data for the commute shed. To receive about a more detailed analysis refer to the contact information on page 5.

2015 Population

<table>
<thead>
<tr>
<th>Commute Shed</th>
<th>Phoenix MSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,889,892</td>
<td>4,482,900</td>
</tr>
</tbody>
</table>

Source: Arizona Office of Economic Opportunity
2015 Population Estimates

Projected Population

<table>
<thead>
<tr>
<th>Year</th>
<th>2020 Projection</th>
<th>2030 Projection</th>
<th>2040 Projection</th>
<th>2050 Projection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commute Shed</td>
<td>Phoenix MSA</td>
<td>Phoenix MSA</td>
<td>Phoenix MSA</td>
<td>Phoenix MSA</td>
</tr>
<tr>
<td>6,094,400</td>
<td>7,345,900</td>
<td>7,221,600</td>
<td>6,601,700</td>
<td>7,731,700</td>
</tr>
</tbody>
</table>

Source: Maricopa Association of Governments (MAG), 2018 Population Projections. The Phoenix MSA is the Phoenix-Mesa-Skilsdale Metropolitan Statistical Area (MSA). Its geographic boundary includes the land area of Maricopa and Pinal counties.

Age Distribution in Commute Shed

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24</td>
<td>33.3</td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td>35.8</td>
<td></td>
</tr>
<tr>
<td>35-44</td>
<td>37.6</td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, 2019 5-Year American Community Survey (ACS) 5-year Estimates
ASU and UoA Graduates by Degree

The bar chart shows the distribution of graduates by degree category from ASU and UoA. The degrees are categorized into fields such as Business, Education, Engineering, and more. The chart also includes data on the percentage of graduates in each category.

Household Income

The pie chart illustrates the distribution of median household income. The chart shows ranges such as less than $15,000, $15,000 to $19,999, and so on. The chart also indicates the percentage of households in each income bracket.

Major Occupations of Residents

The table presents the major occupations of residents in the commute shed. It includes fields such as Office and administrative support, Healthcare practitioners and technical support, Management, business, and financial. The table shows the percentage of residents in each occupation category.
Top Employers

This map is on the right shows the locations of each of the employers with five or more employees within the commute shed. The size of the dots indicates the size of the employer based on its total number of employees. Below is a list of the top ten employers, based on total number of employees, within the commute shed.

<table>
<thead>
<tr>
<th>Employer</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of Arizona</td>
<td>11,006</td>
</tr>
<tr>
<td>Barnes &amp; Noble</td>
<td>11,006</td>
</tr>
<tr>
<td>County of Riverside</td>
<td>1,981</td>
</tr>
<tr>
<td>City of Phoenix</td>
<td>1,715</td>
</tr>
<tr>
<td>Honda</td>
<td>1,502</td>
</tr>
<tr>
<td>Walmart</td>
<td>1,502</td>
</tr>
<tr>
<td>Fry's Food Stores</td>
<td>1,000</td>
</tr>
<tr>
<td>Avon Way Express</td>
<td>1,000</td>
</tr>
<tr>
<td>United States Department of the Interior</td>
<td>1,000</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>1,000</td>
</tr>
</tbody>
</table>

Source: 2013 MAG-Employer Database, as of June 2013

Worker Commute Flows

Commute shed flow rates are derived from the MAG, initial demand concepts models which incorporate the FHWA O-D model. Data can be found online here: http://www.fhwa.dot.gov/ transgender/ohio/flows/hqflows.html

U.S. Census Bureau, 2011-2013 American Community Survey (ACS), 5-year estimates. ACS data are based on sample and are subject to sampling variability. The degree of uncertainty for an estimate is represented through the use of a margin of error (MOE). In addition to sampling variability, the ACS estimates are subject to non-sampling error. The ACS can also affect the accuracy of small area representation estimates.

Source: U.S. Census Bureau, Commuter Flow Inventories

Contact Information
City of Glendale
business@glendale.com
623-930-2001

About the Data Sources

The data used in this report is derived from the MAG, initial demand concepts models which incorporate the FHWA O-D model. Data can be found online here: http://www.fhwa.dot.gov/ transgender/ohio/flows/hqflows.html

U.S. Census Bureau, 2011-2013 American Community Survey (ACS), 5-year estimates. ACS data are based on sample and are subject to sampling variability. The degree of uncertainty for an estimate is represented through the use of a margin of error (MOE). In addition to sampling variability, the ACS estimates are subject to non-sampling error. The ACS can also affect the accuracy of small area representation estimates.

Documentation for the American Panel of Economic Opportunity estimates is available at: http://www.americanpanel.com

Documentation for the MAG O-D Model is available at: http://transport.nist.gov

Documentation for the 2015 MAG-Employer Database is available at: http://glendale.oh.us/employment

2015 MAG-Employer Database includes only employers with 5 or more employees.

Created by
The American Panel of Economic Opportunity
2015 MAG-Employer Database includes only employers with 5 or more employees.

Source: 2013 MAG-Employer Database, as of June 2013
Automating the Process

✓ Set up Illustrator Objects
✓ Modify design as needed
✓ Develop scripts to:
  1. Query and compile the data
  2. Create map graphics
  3. Import data into Illustrator
  4. Adjust design “work arounds”
  5. Export final documents
Keys to Success

Know Your Audience

Stakeholder Buy-in

The Right Team

Collaboration

QA/QC Checks

Professional Design
"good is the mortal enemy of great"
—Jim Collins

1. Keep it Simple
2. Color Matters
3. Limit Fonts
4. Learn Good Design From Bad
5. Remember the Audience
6. Know your limitations
7. Understand the Data
8. Be Open to Change
Resources

• Adobe Illustrator Variables

• Variable Importer Script Tutorials
  • http://hypertransitory.com/blog/2015/04/26/illustrator-variable-data

• ACS 5-year Summary Files in MS Access databases (by State)
  • http://gisdiva.com/downloads/acs2015-5yr/

• Infographic and Data Display Tips
  • https://blog.kissmetrics.com/12-infographic-tips/
  • http://www.infobrandz.com/great-big-list-of-infographic-ideas/
  • http://flowingdata.com/
  • (Book) The Visual Display of Quantitative Information by Edward R. Tufte (available on Amazon)
  • http://colorschemer.com and http://colorbrewer2.org