

Visualization of BLS Geospatial Data using R/Shiny

**Elizabeth Cross
Kenneth Cho**

**FCSM Research Conference
December 2nd, 2015**



CAN WE DEVELOP A DYNAMIC MAPPING TOOL FOR OES DATA USING R?

**CAN WE DEVELOP A DYNAMIC
MAPPING TOOL FOR OES DATA
USING R?**

Can we do this in R - Why R?

- R is an open source software.
 - ▶ Free
 - ▶ Versatile
 - ▶ Functional
 - ▶ Trendy
- FREE!

- And, Yes, it can make maps.

CAN WE DEVELOP A DYNAMIC MAPPING TOOL FOR OES DATA USING R?

**CAN WE DEVELOP A DYNAMIC
MAPPING TOOL FOR OES DATA
USING R?**

What is OES?

- OES provides employment and wage estimates for
 - Over 800 occupations
 - Over 300 industries
 - More than 375 Metropolitan areas
 - 34 metropolitan divisions
 - All 50 states, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands
 - Non-metropolitan areas.
- Published annually.

CAN WE DEVELOP A DYNAMIC MAPPING TOOL FOR OES DATA USING R?

**CAN WE DEVELOP A DYNAMIC
MAPPING TOOL FOR OES DATA
USING R?**

OES maps

- OES Maps

Making a Dynamic Tool: Using Shiny

- Shiny is a package within R for interactive applications
 - ▶ Works with other packages in R for maps, graphs, tables, etc.
 - ▶ Deployed via a server
 - Deployment options include a local server or cloud based server
 - Users do not require R, the packages, or data to use the application

Mapping in R

■ ChoroplethR package

- ▶ Pros: very useful to make a quick state map
- ▶ Cons: limited interactivity and difficult to incorporate shape files to map MSAs

OES map

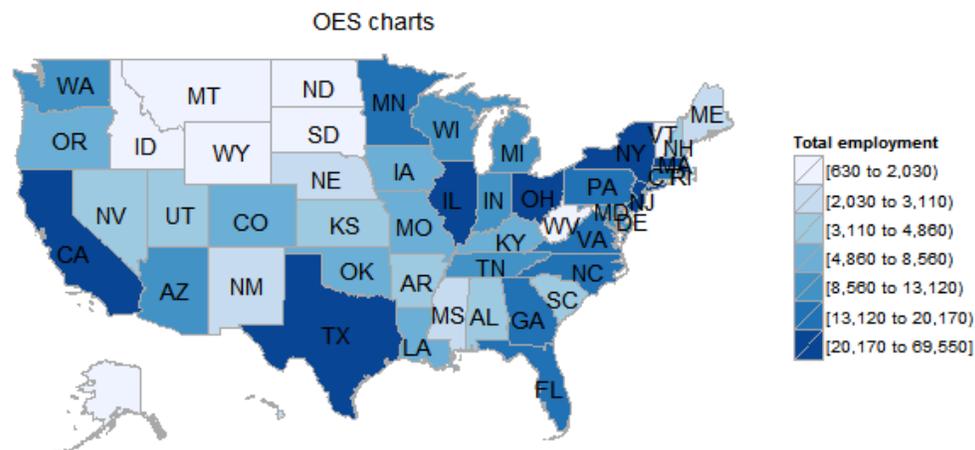
Inputs will go here

Choose a statistic

mean annual wage ▼

Choose a job

Financial Managers ▼



Early trials with Leaflet

- Pros: Increased interactivity with maps, Easy compatibility with shape files
- Cons: Difficult to change projection

OES map

Choose a statistic
mean annual wage

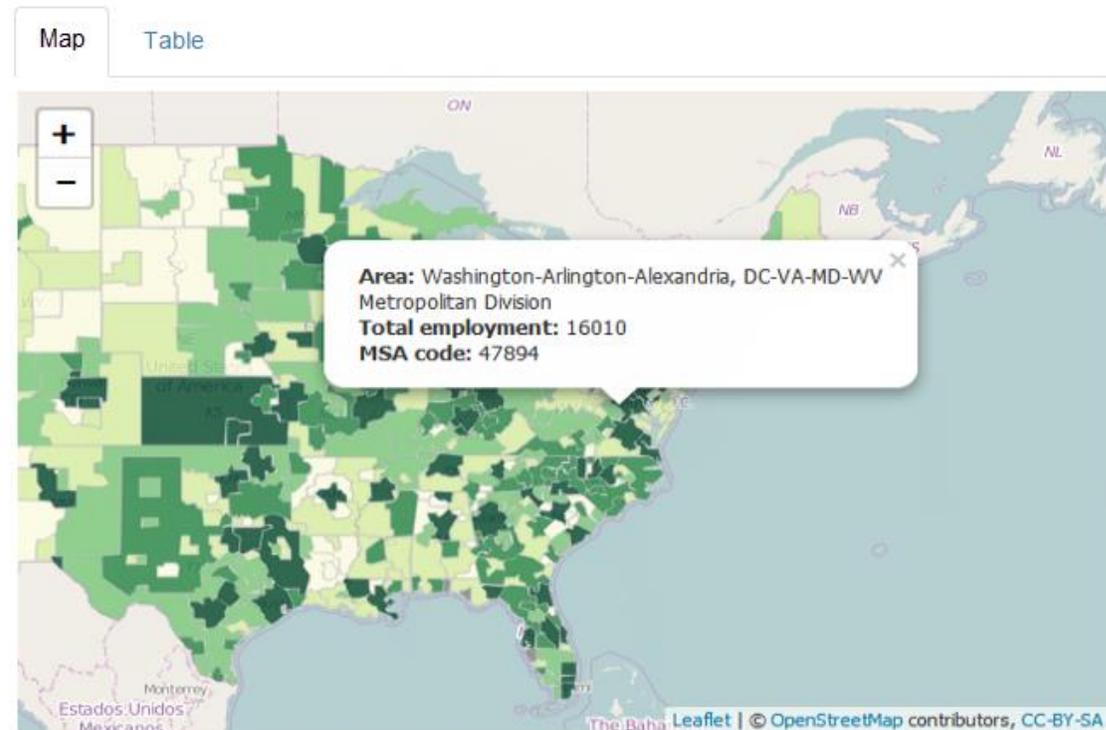
Choose a major occupational group
Computer and Mathematical Occs

Choose a job
Computer Programmers

Choose map type
 State
 MSA
 County

Year
1,995 2,003 2,011

Plot Data



Can we add a legend?

■ No.

▶ Leaflet had a legend tool, but not dynamic.

▶ Joe Cheng, Leaflet developer, showed us how. Special Thanks!

Show values instead of percentile ranges in legends that use colorQuantile palette #113

 chokn opened this issue on Jun 5 · 2 comments



chokn commented on Jun 5

When using a `colorQuantile` color palette, is it possible to have the legend show the numeric values corresponding to the percentile ranges instead of the percentile ranges themselves?



jcheng5 commented on Jun 5

Owner

You can do it by providing your own `labFormat` function:

```
leaflet() %>% addLegend(pal=colorQuantile("Blues", 1:10), values=1:10, labFormat = function(type, c
n = length(cuts)
p = paste0(round(p * 100), '%')
cuts = paste0(formatC(cuts[-n]), " - ", formatC(cuts[-1]))
# mouse over the legend labels to see the percentile ranges
paste0(
  '<span title="' , p[-n], " - ", p[-1], '">', cuts,
  '</span>'
)
})
```



chokn commented on Jun 5

Thanks so much for the quick response!

 chokn closed this on Jun 5

CAN WE DEVELOP A DYNAMIC MAPPING TOOL FOR OES DATA USING R?

**CAN WE DEVELOP A DYNAMIC
MAPPING TOOL FOR OES DATA
USING R?**

Thanks to Everyone!

- Other features added with input from
 - ▶ Jean Fox
 - ▶ David Hiles
 - ▶ Ben Cover
 - ▶ Michael Schwarz
- Resources
 - ▶ Shiny Tutorial at <http://shiny.rstudio.com/>
 - ▶ SuperZip Example by Rstudio
 - ▶ GitHub
 - ▶ StackOverflow

CAN WE DEVELOP A DYNAMIC MAPPING TOOL FOR OES DATA USING R?

CAN WE DEPLOY OUR DYNAMIC MAPPING TOOL FOR OES DATA?

Demonstration

Contact Information

Elizabeth Cross
(202) 691-5089
Cross.Elizabeth@bls.gov
Economist, OES

Kenneth Cho
(202) 691-6248
Cho.Kenneth@bls.gov
Economist, OCWC

