Bar Chart, Scatterplot, Bubble Plot, and Time Series

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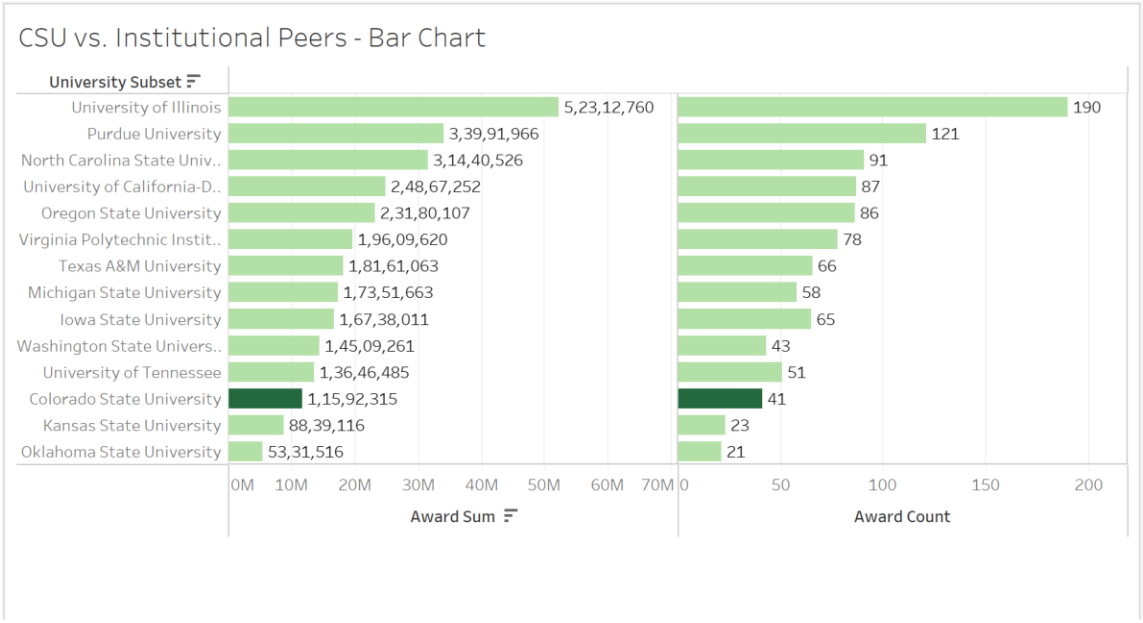
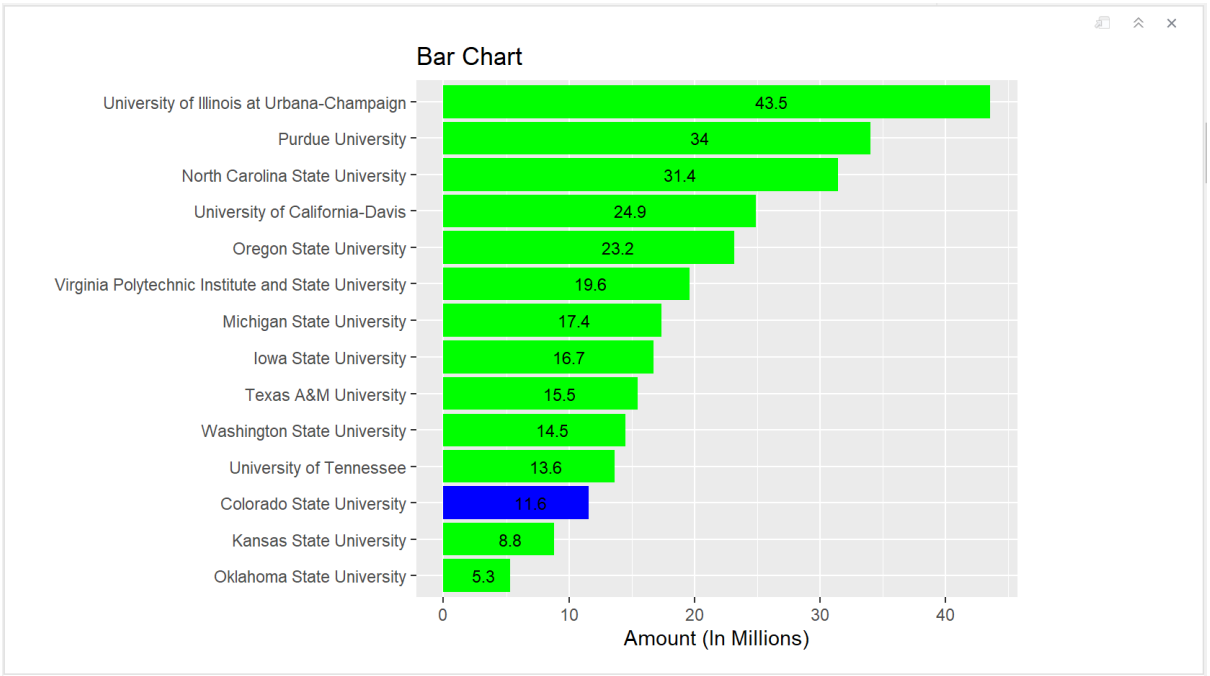
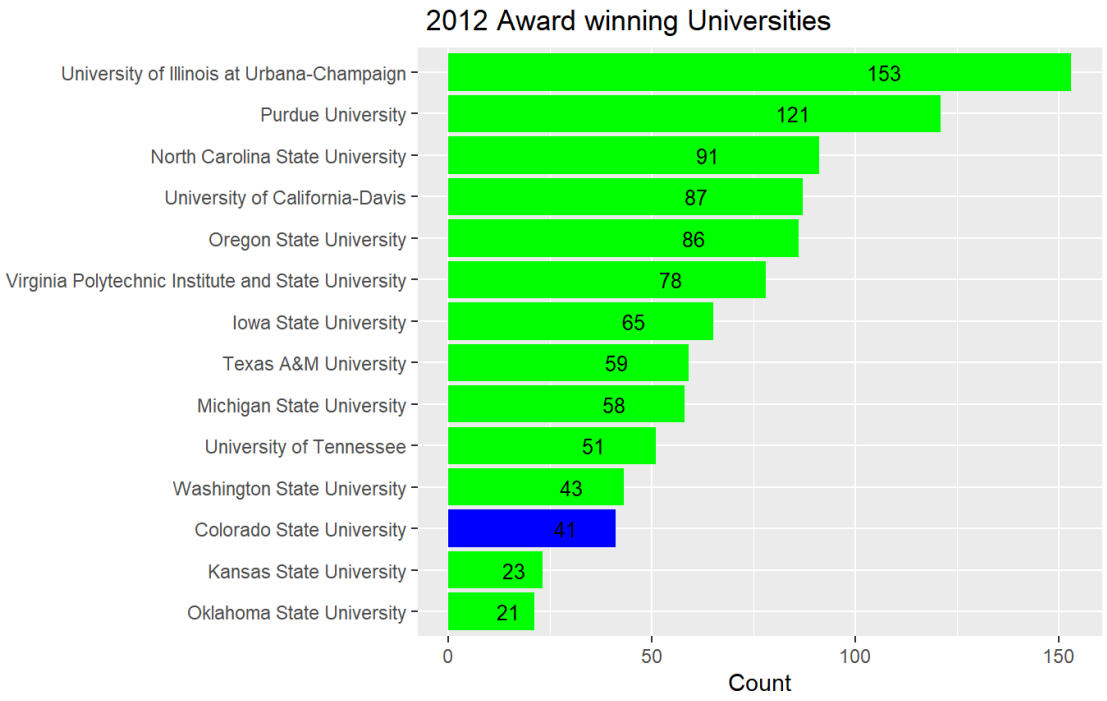
Tableau & R

Bar Chart

- The below bar chart depicts the total number of awards and the total sum of awards for each university.
- Used different colours to represent each university.
- For the pane showing the sum of award counts, labelled the marks with the total number of awards.
- In the pane displaying the sum of award sums, labelled the marks with the total sum of awards.
- Apply filters to only show data from the year 2012 and filter further to focus on specific universities.

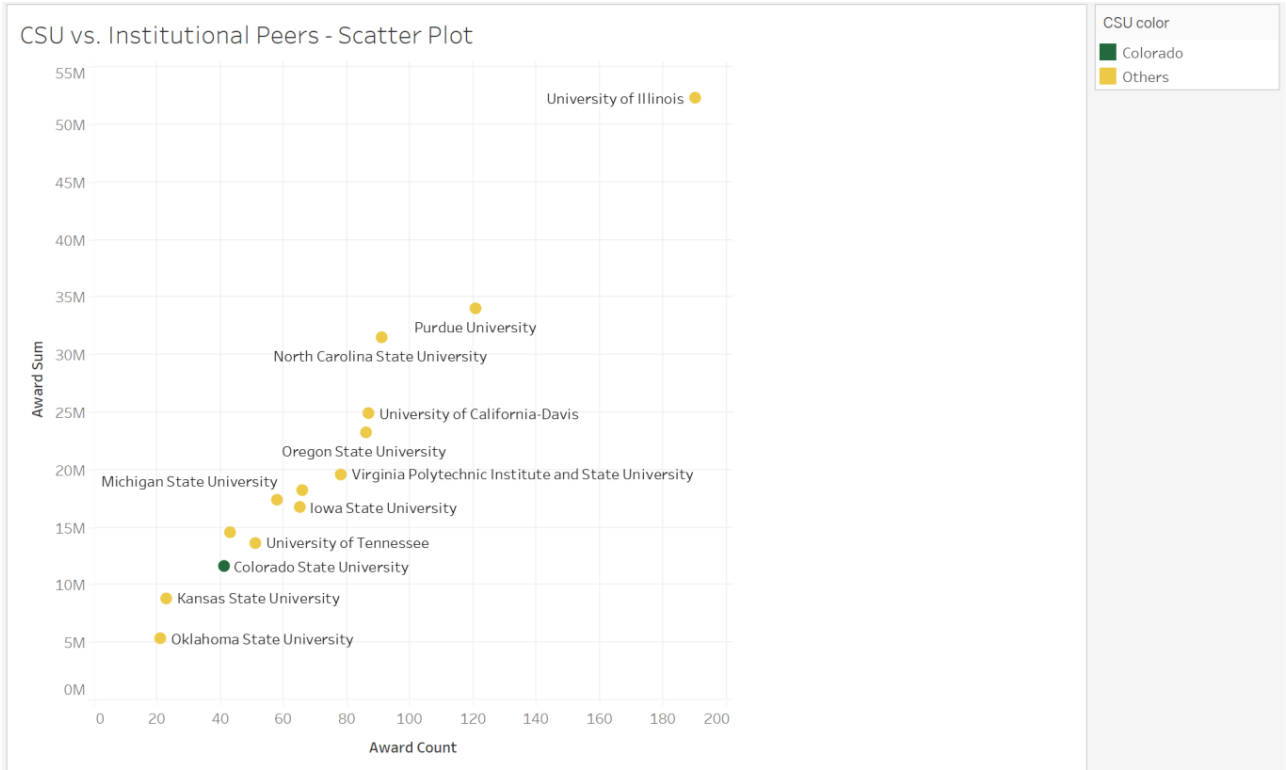


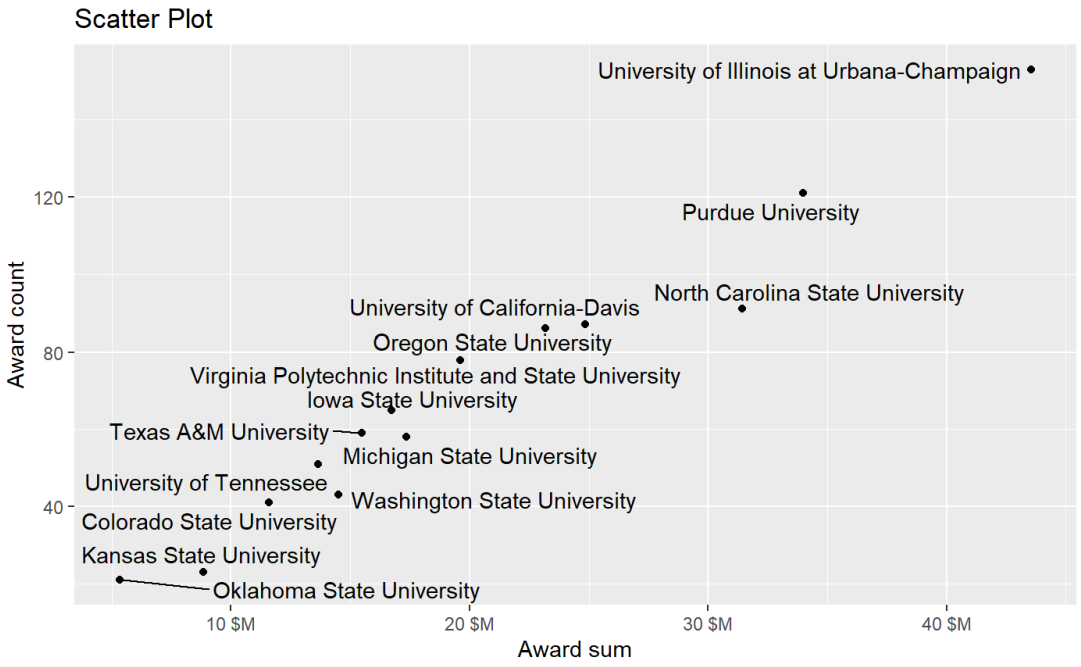

Bar Chart
University of Illinois at Urbana-Champaign
Purdue University
North Carolina State University
University of California-Davis
Oregon State University
Virginia Polytechnic Institute and State University
Michigan State University
Iowa State University
Texas A&M University
Washington State University
University of Tennessee
Colorado State University
Kansas State University
Oklahoma State University
43.5
34
31.4
24.9
23.2
19.6
17.4
16.7
15.5
14.5
13.6
11.6
8.8
5.3
0
10
20
30
40
Amount (In Millions)


2012 Award winning Universities
University of Illinois at Urbana-Champaign
Purdue University
North Carolina State University
University of California-Davis
Oregon State University
Virginia Polytechnic Institute and State University
Iowa State University
Texas A&M University
Michigan State University
University of Tennessee
Washington State University
Colorado State University
Kansas State University
Oklahoma State University
153
121
91
87
86
78
65
59
58
51
43
41
23
21
0
50
100
150
Count

Scatter chart.

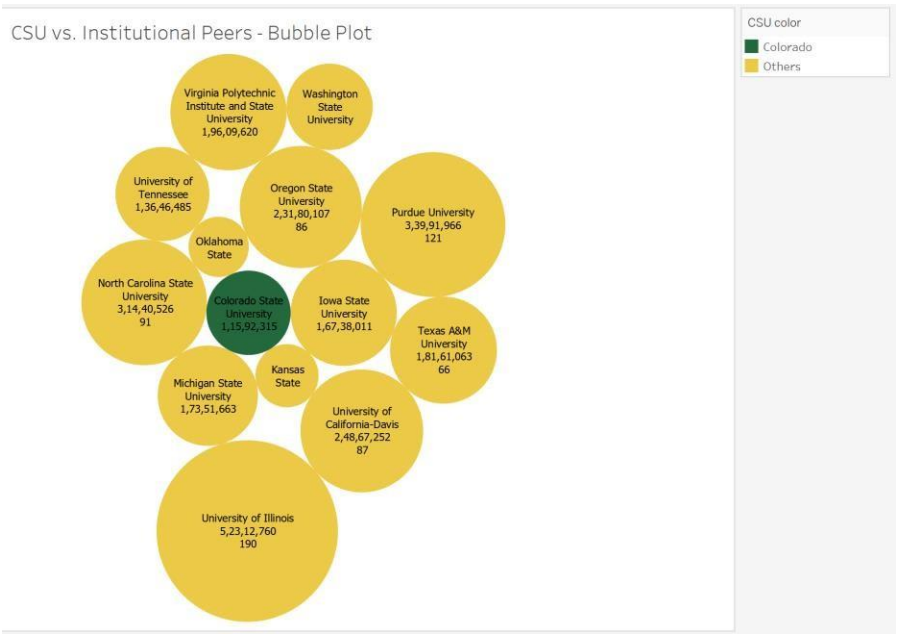
- The visualization displays two key metrics: the sum of Award Count and the sum of Award Sum.
- Each data point represents a university, and the colour coding distinguishes between different universities and CSU.
- The marks on the graph are labelled with the names of the respective universities.
- The data is filtered to include information only for the Award Year 2012.
- This ensures that the analysis focuses specifically on awards granted during that year.
- Additionally, the view is filtered to include specific universities, narrowing down the analysis to those universities of interest.

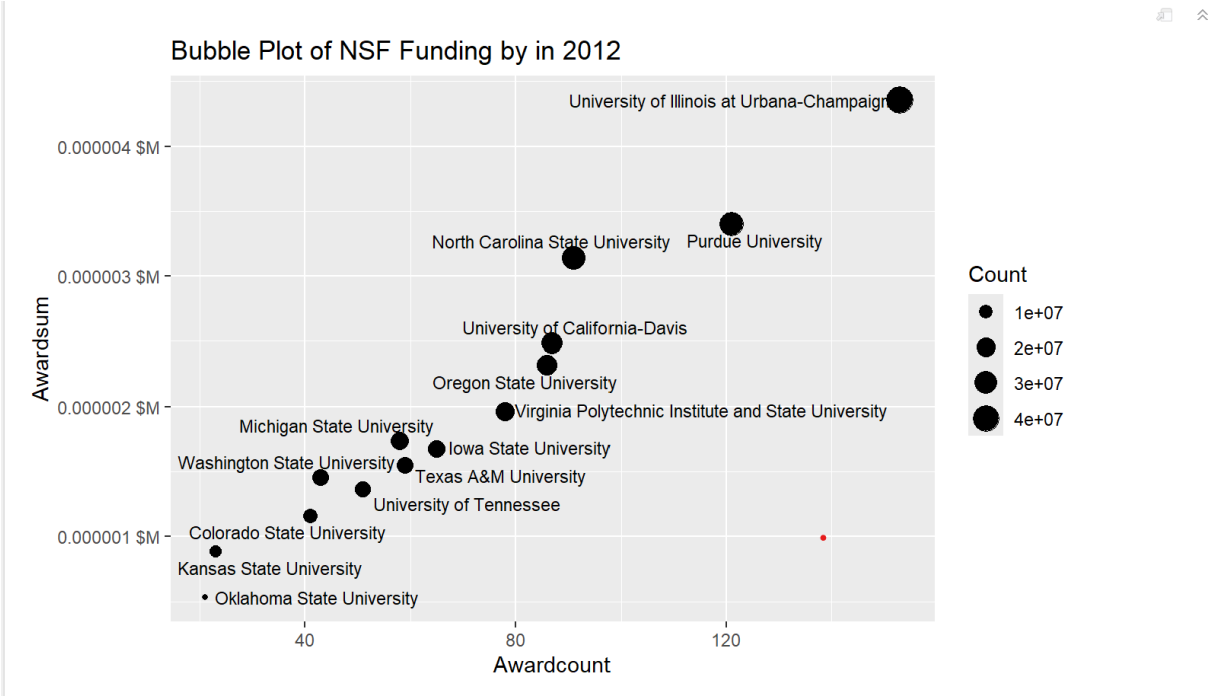




Bubble Plot

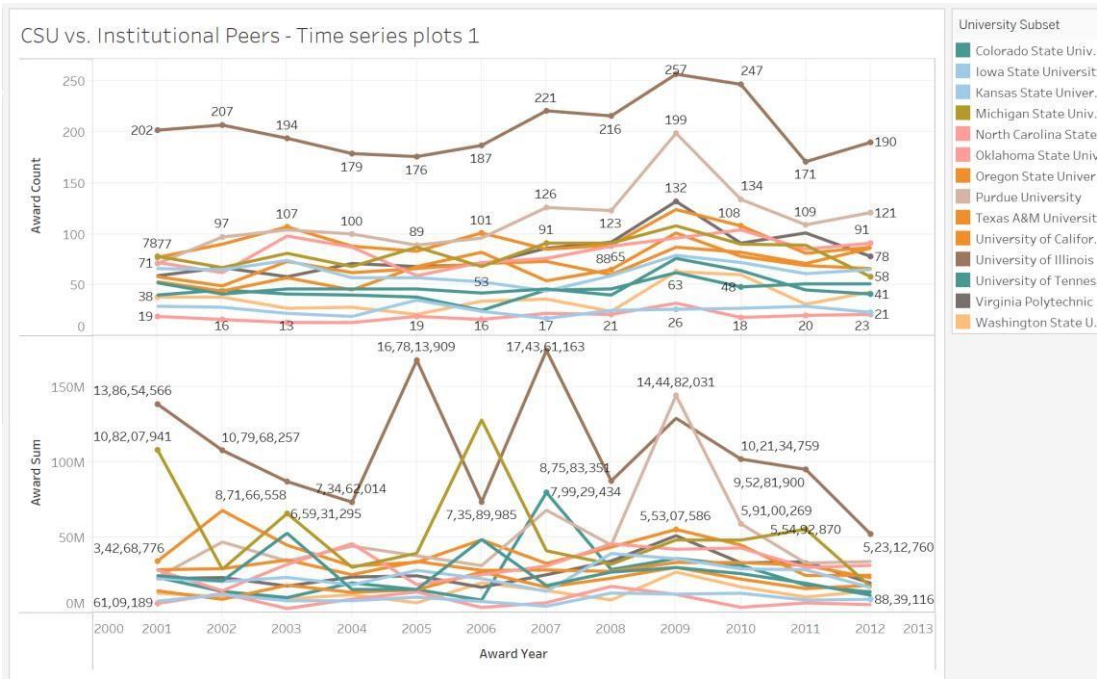
- The visualization compares the total count of awards versus the total sum of awards for universities, with colours indicating different universities and the size of the marks representing additional details about them.
- Each mark is labelled with the respective university.
- The data is filtered based on the award year, spanning from 2012 to 2012, and the view is also filtered by universities.



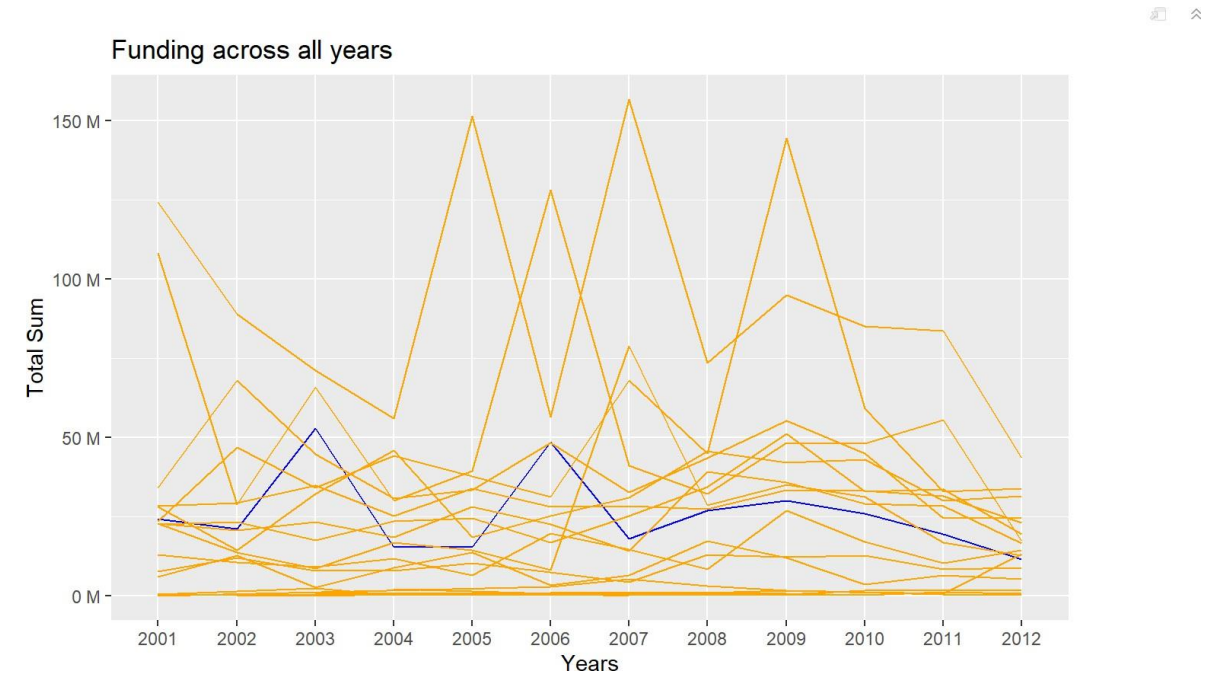


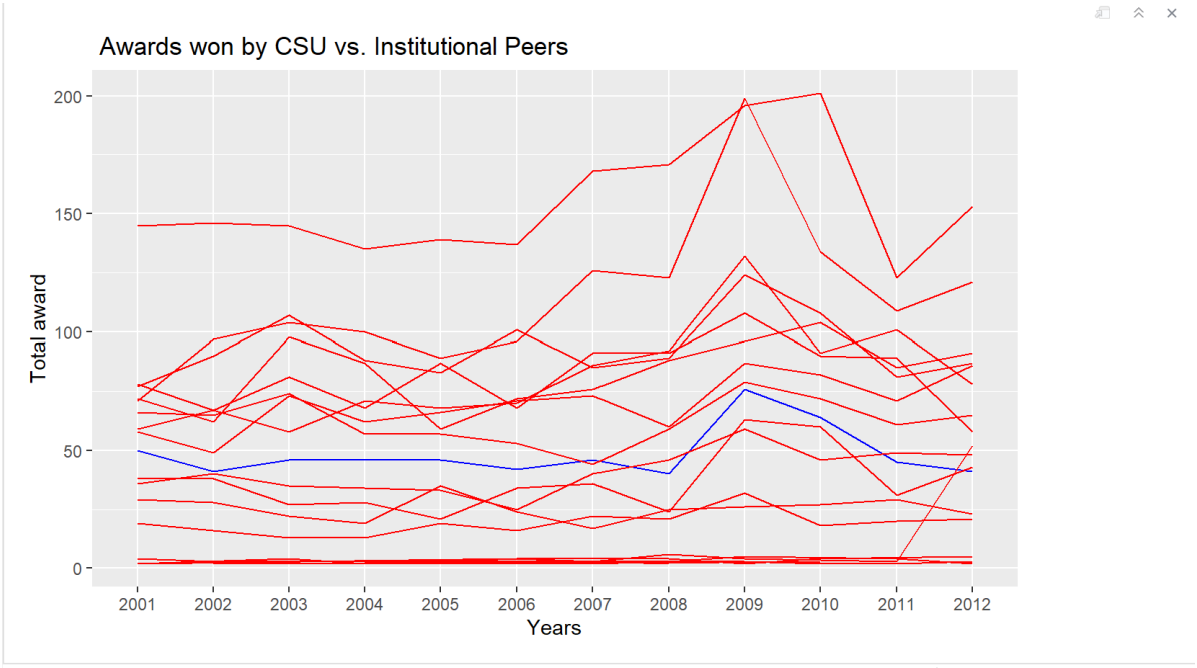
Time series plots

- The visualization displays trends for the total count and sum of awards by award year, with each university's data differentiated by color.
- The view is currently focused on university-specific data.



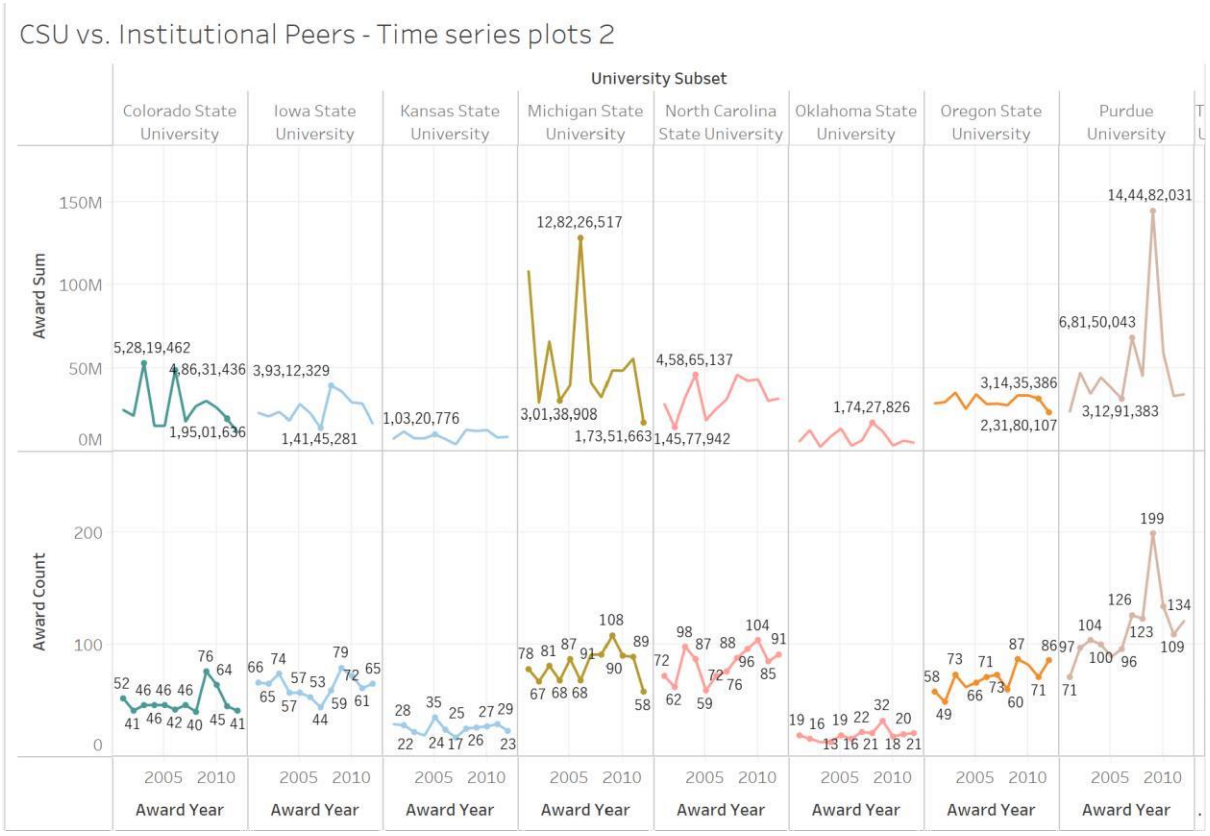
R

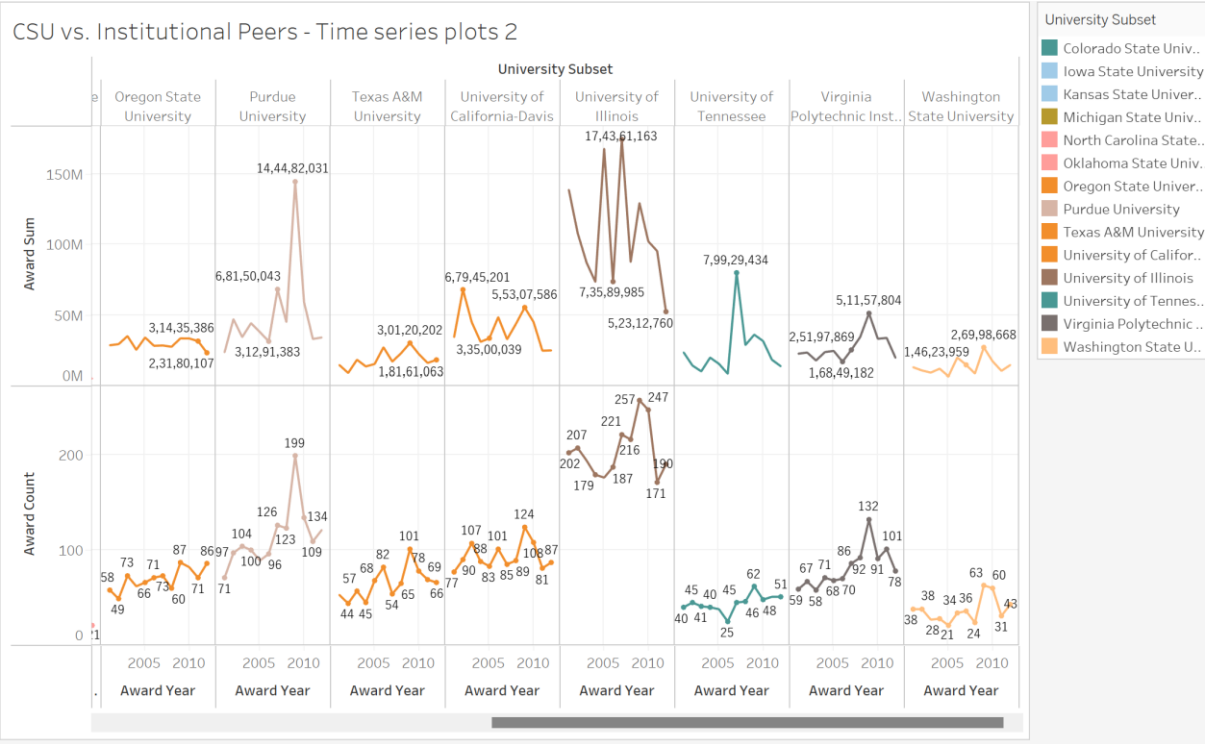

Funding across all years
150 M
100 M
50 M
0 M
Total Sum
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Years


Awards won by CSU vs. Institutional Peers
200
150
100
50
0
Total award
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Years

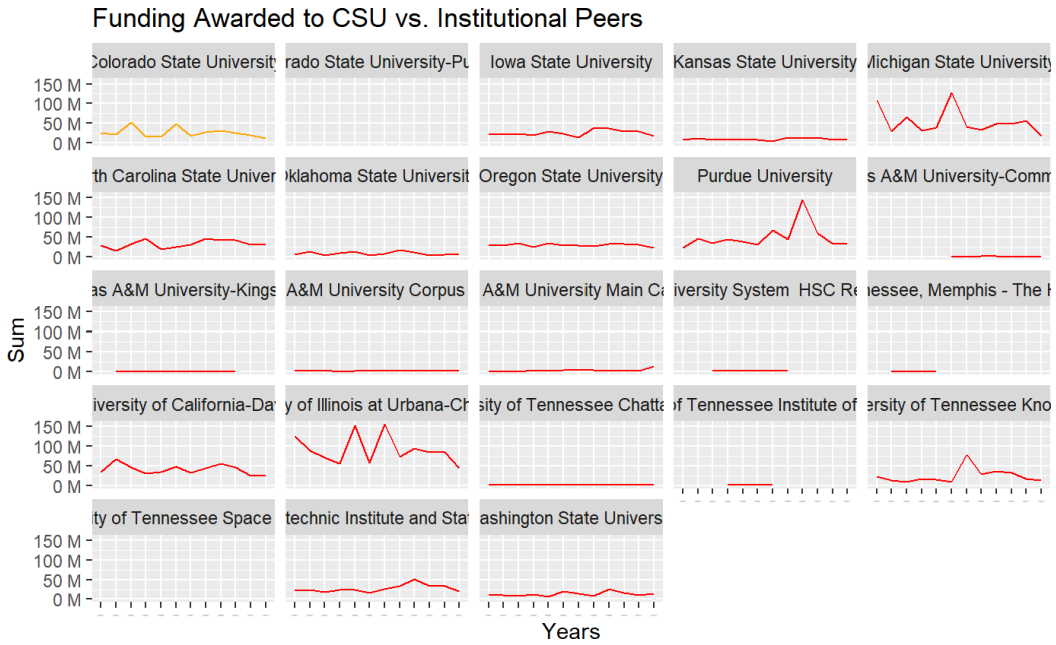
Small multiples of all institutions

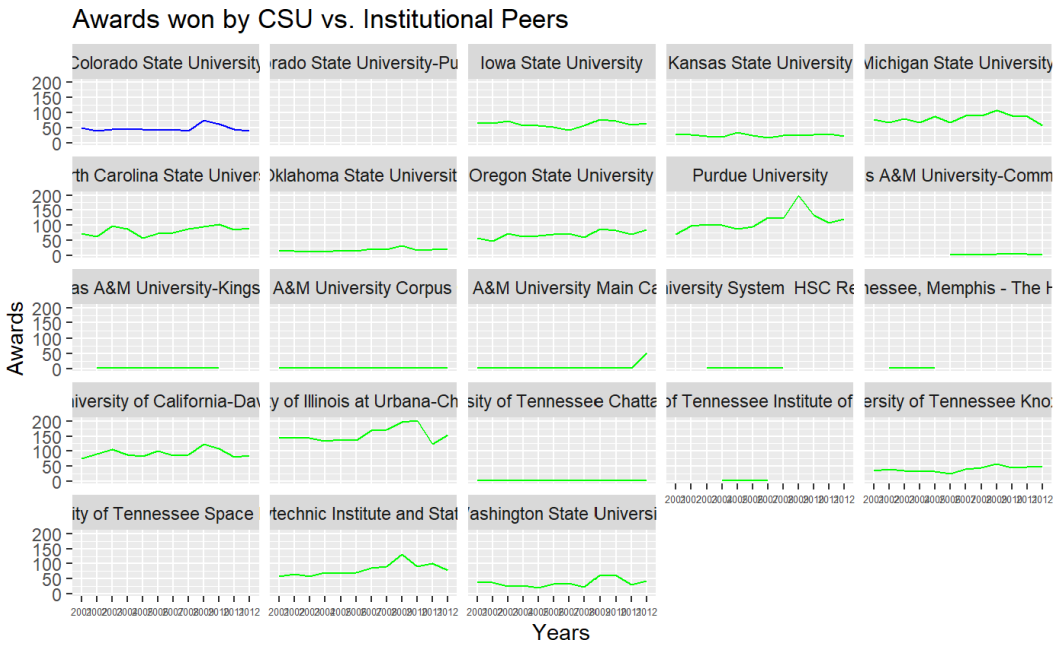
- The visualization depicts the trends of the sum of Award Count and the sum of Award Sum for each Award Year, segmented by universities.
- Each University is represented by a distinct colour.
- In the first pane, which showcases the sum of Award Count, the data points are labelled with the corresponding sum of Award Count for clarity.
- In the second pane, which illustrates the sum of Award Sum, the data points are labelled with the respective sum of Award Sum values.
- Additionally, the view is filtered to focus specifically on the data pertaining to universities.





Small multiples of all institutions





3) Strengths of R:

- Allows for highly customized plots and precise control over aesthetics.
- Integrates seamlessly with statistical models and packages for complex analysis.
- Suitable for automation, reproducibility, and scalability.
- Vibrant community and extensive package ecosystem for diverse visualization tools.

Weaknesses of R:

- Steeper learning curve, especially for non-programmers.
- Creating highly interactive visualizations may require additional effort.
- Initially daunting for new users or those preferring graphical interfaces.
- Rendering complex visualizations may be slower, especially with large datasets.

Strengths of Tableau:

- Intuitive drag-and-drop interface for quick visualization creation.
- Robust interactive capabilities for dynamic data exploration.
- Optimized for fast rendering, even with large datasets.
- Strong user community and comprehensive support resources.

Weaknesses of Tableau:

- Less granular control over aesthetics compared to R.
- Relatively expensive, especially for enterprise-level licenses.
- Visualizations heavily rely on the structure of underlying data.
- Basic statistical functions may not suffice for advanced analysis.

In a nutshell, Tableau excels in offering intuitive interfaces for creating diverse visualizations like bar charts, scatterplots, and bubble plots with minimal coding. Its drag-and-drop functionality facilitates

quick exploration of data relationships. However, for advanced statistical analysis or complex customizations, Tableau may lack the depth and flexibility compared to R.