Curated & Reproducible Reports

Empowering Institutional Research

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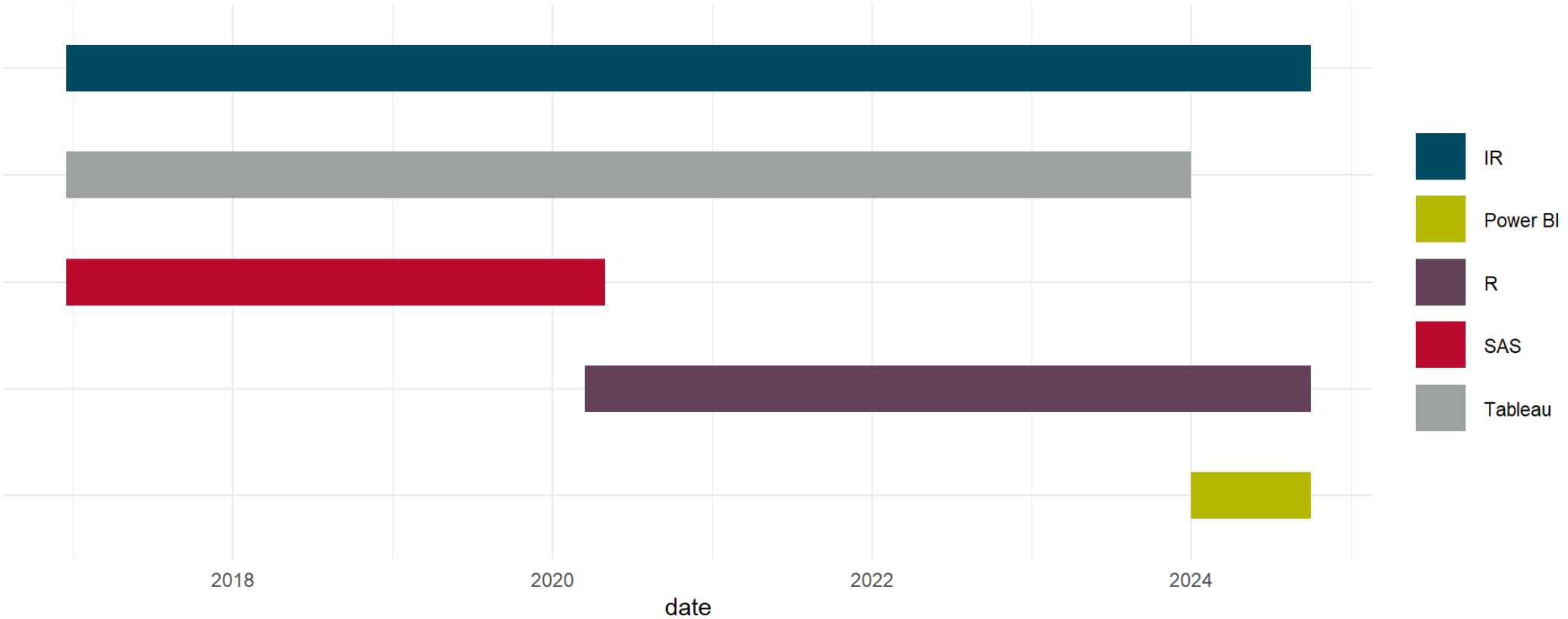
Agenda

- Issues IR staff face with B.I.
- Potential Solution
- Live Demo
- UGA use cases
- Other potential use cases
- Future possibilities
- Q&A

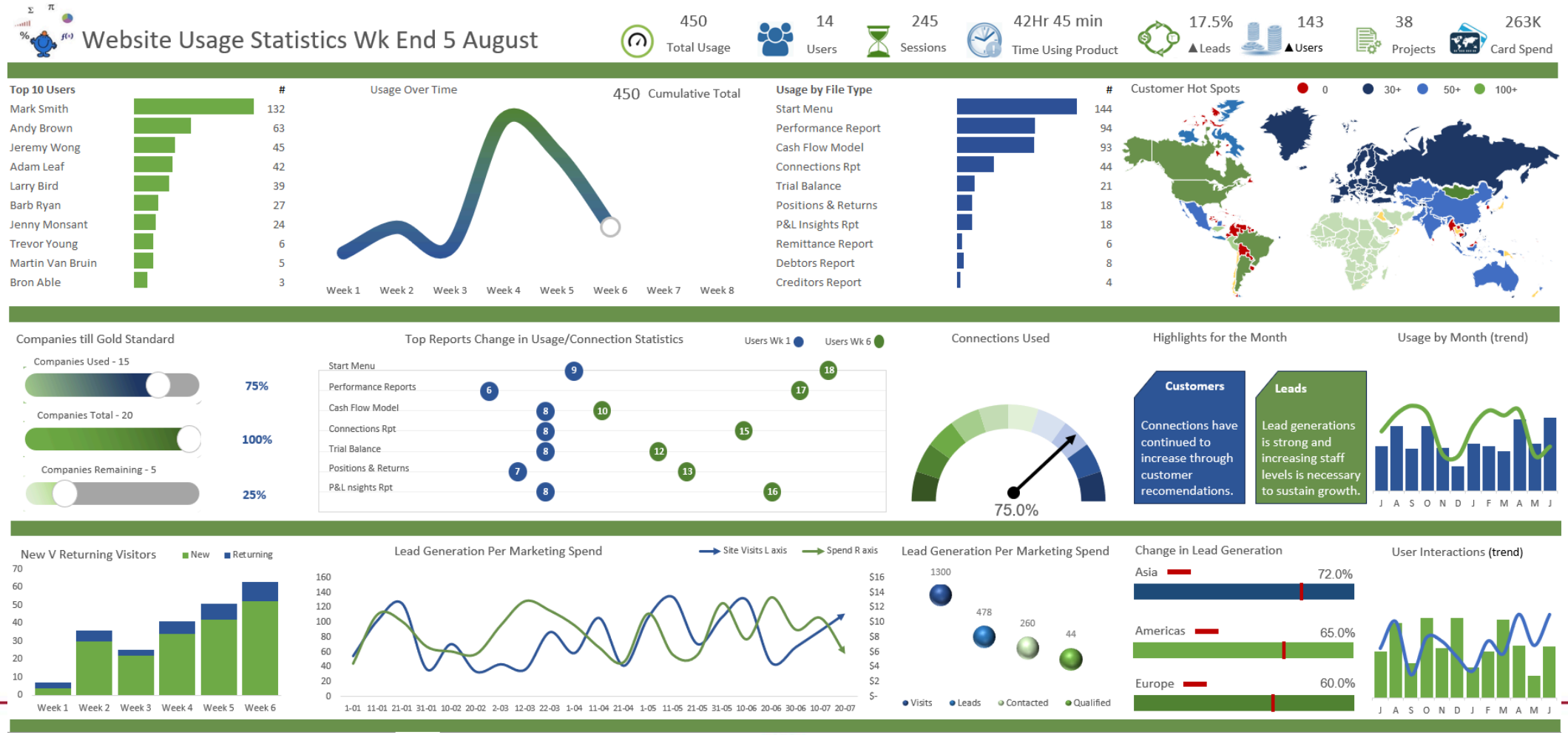
About Me



Problems with “Big B.I.”

Let’s discuss some pain points when using classic B.I. tools

Lacking Context



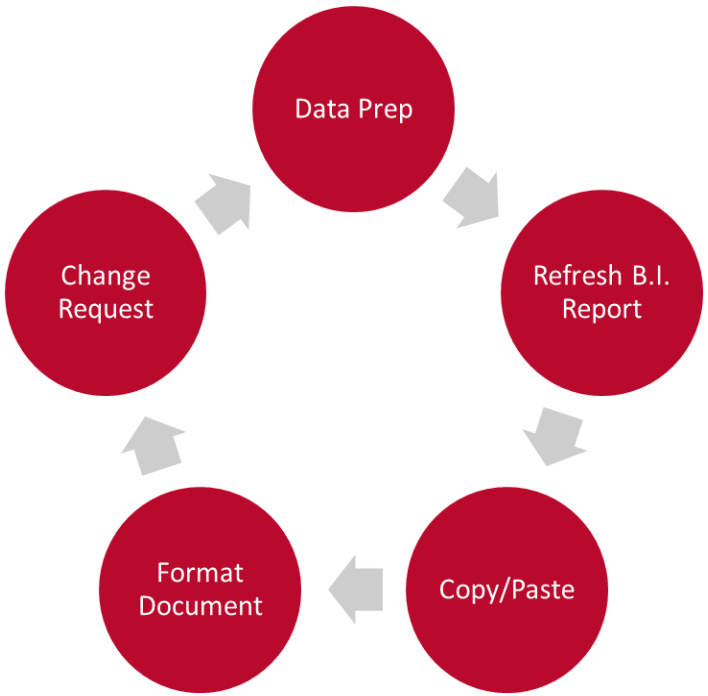
Data Prep

- Are you pulling data from multiple sources?
- Are you doing data prep in R, Python, Julia, etc.?
- Are you doing complex statistical work?

Public Dashboards

- Many B.I. tools have limitations when publishing to their public service

Copy/Paste Cycle



Potential Solution!

- Quarto is a *new* markdown platform that natively works in R, Python, Julia, and Observable. It blends scripts, output, and word processing to create beautiful documents, pdfs, presentations, and interactive HTML files
- Since R/Python etc. are open source, there are very few limitations (and they are FREE!)
- Downside is that the learning curve quickly steepens with additional complexities
  - Security, scheduling, etc.

Quarto can…

- **be authored** in your favorite code editor
- **render** from qmd or Jupyter notebook to PDF, Word, HTML, etc.
- **execute** code in R, Python, and more
- **publish** to GitHub Pages, Netlify, and more
- **orchestrate** multiple inputs and outputs with Quarto projects

Quarto can…

````
---
title: "ggplot2 demo"
author: "Andrew"
date: "9/30/2024"
format: html
---

## IPEDS

This chart shows IPEDS data

```{r}
#| warning: false

library(educationdata)
library(ggplot2)
library(dplyr)
sfa <- get_education_data(level = "college-university",
    source = "ipeds",
    topic = "sfa-grants-and-net-price",
    filters = list(year = 2017, unitid = 139959)) %>%
  select(unitid, year, type_of_aid, income_level,
         average_grant, total_grant, net_price,
         number_of_students, number_receiving_grants) %>%
  filter(type_of_aid==9,income_level != 99) %>%
  arrange(income_level) %>%
  mutate(income_level_desc = case_when(
    income_level == 1 ~ 'Less than $30,000',
    income_level == 2 ~ '$30,001–$48,000',
    income_level == 3 ~ '$48,001–$75,000',
    income_level == 4 ~ '$75,001–$110,000',
    income_level == 5 ~ '$110,001 or more'))

ggplot(data=(sfa %>%
  mutate(income_level_desc=factor(income_level_desc,
                                  levels=income_level_desc))),
       aes(y=income_level_desc, x=average_grant)) +
  geom_bar(
  stat="identity",
  color="blue",
  fill=rgb(0.1,0.4,0.5,0.7)
)

```
````

ggplot2 demo

AUTHOR
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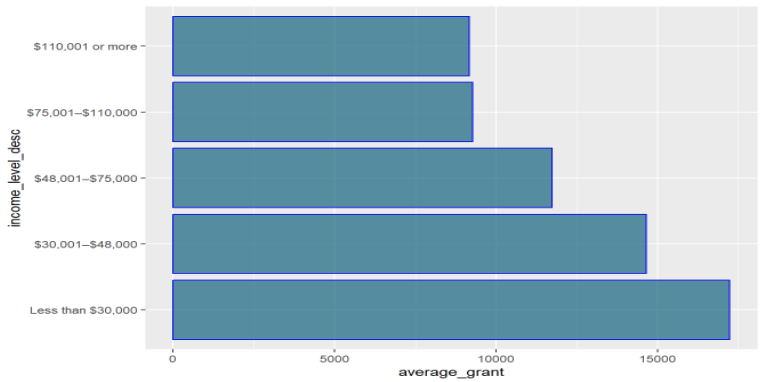
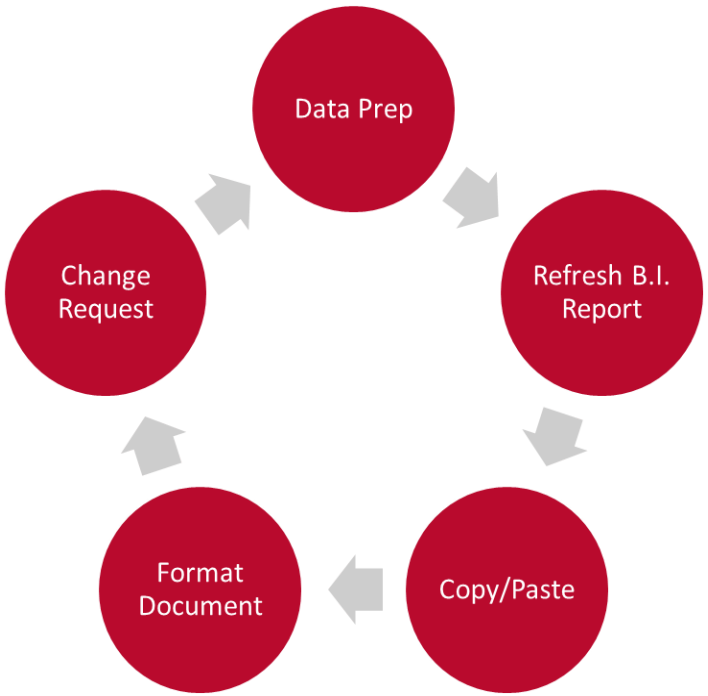
IPEDS

Lorem ipsum dolor sit amet, consectetur adipiscing elit. In rutrum, purus non pulvinar feugiat, erat nisl efficitur magna, pharetra congue metus mi ut lectus. Proin auctor est vel est facilisis, et consequat sem varius. Cras dignissim ultricies velit, id porttitor augue sagittis non. Quisque rhoncus, sapien eu commodo fringilla, est augue pellentesque lectus, ornare finibus mauris ex quis lectus. Donec interdum in mi ut luctus. Fusce luctus auctor tincidunt. Vivamus posuere arcu in erat dignissim viverra. Nulla pellentesque urna in arcu semper lobortis.

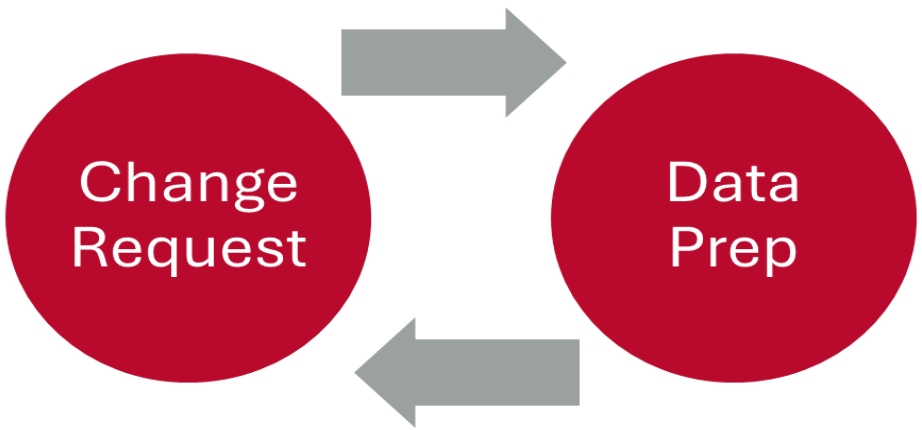
Nam tristique eros vel venenatis mattis. Nullam in ultrices neque, id dapibus sem. Vivamus non facilisis purus. Quisque venenatis, velit elementum efficitur sollicitudin, dolor lacus placerat mi, quis ullamcorper dolor odio id purus. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis ornare est magna, et cursus ante gravida eget. Sed lorem massa, luctus id facilisis et, auctor non nibh. Morbi quis metus mi. In vitae volutpat ex. Donec auctor blandit elit, quis scelerisque purus ornare vitae. Maecenas maximus felis nec efficitur cursus. Vivamus a tortor scelerisque lorem sodales tincidunt. Praesent tortor mauris, accumsan et est ac, commodo vulputate ipsum. Vivamus in dui vel lectus semper feugiat ut vitae felis. Orci varius natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aenean interdum velit et ipsum tempus sagittis.



Quarto Cycle



Quarto Cycle

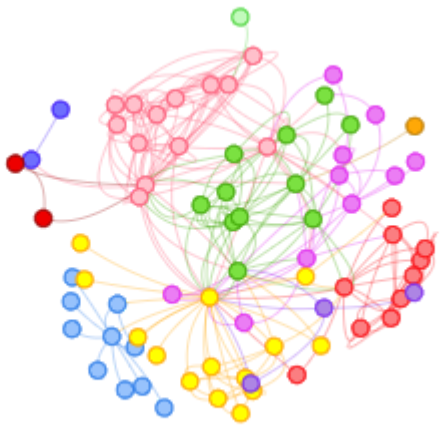


Quarto takes code and (and text) and creates output locally

```
# Libraries
library(visNetwork)

nodes <- jsonlite::fromJSON("https://raw.githubuse

edges <- jsonlite::fromJSON("https://raw.githubuse


visNetwork(nodes, edges, height = "300px", width =
  visOptions(selectedBy = "group",
             highlightNearest = TRUE,
             nodesIdSelection = TRUE) %>%
  visPhysics(stabilization = FALSE)
```

Select by id

Select by group



Live Demo

Using IPEDS data to display financial aid data and net price at specific institutions.

UGA use case

- Law School Admissions Report
- Budget Planning Process
- Technical Documentation

Back to reality

- Quarto will *not* replace your enterprise B.I. tools
- It will work for some niche projects
  - Document creation, parameterization, reproducible
  - Complex math
  - nasty data prep
  - cool visualizations

Future Considerations

Because Quarto and R are open source, users are making more flexible applications

Serverless deployment:

- webR
- Shinylive
- quarto-live

Q&A - awestbrook@uga.edu

All files available here: