

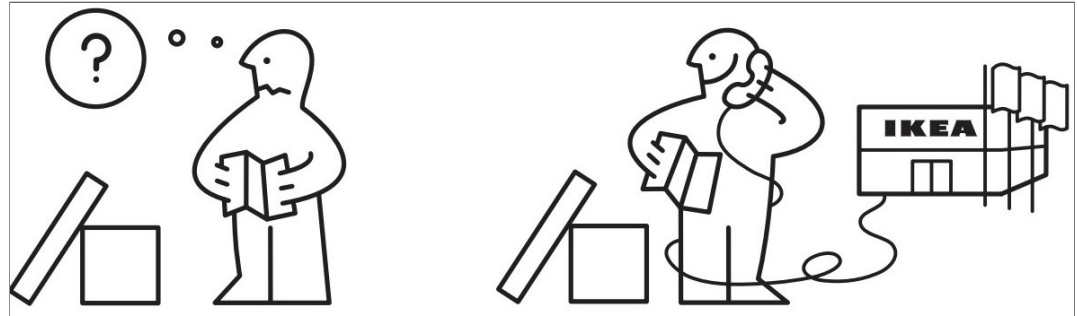
Statistical Programmers Embrace R to Expand their Toolkits

Kangjie Zhang

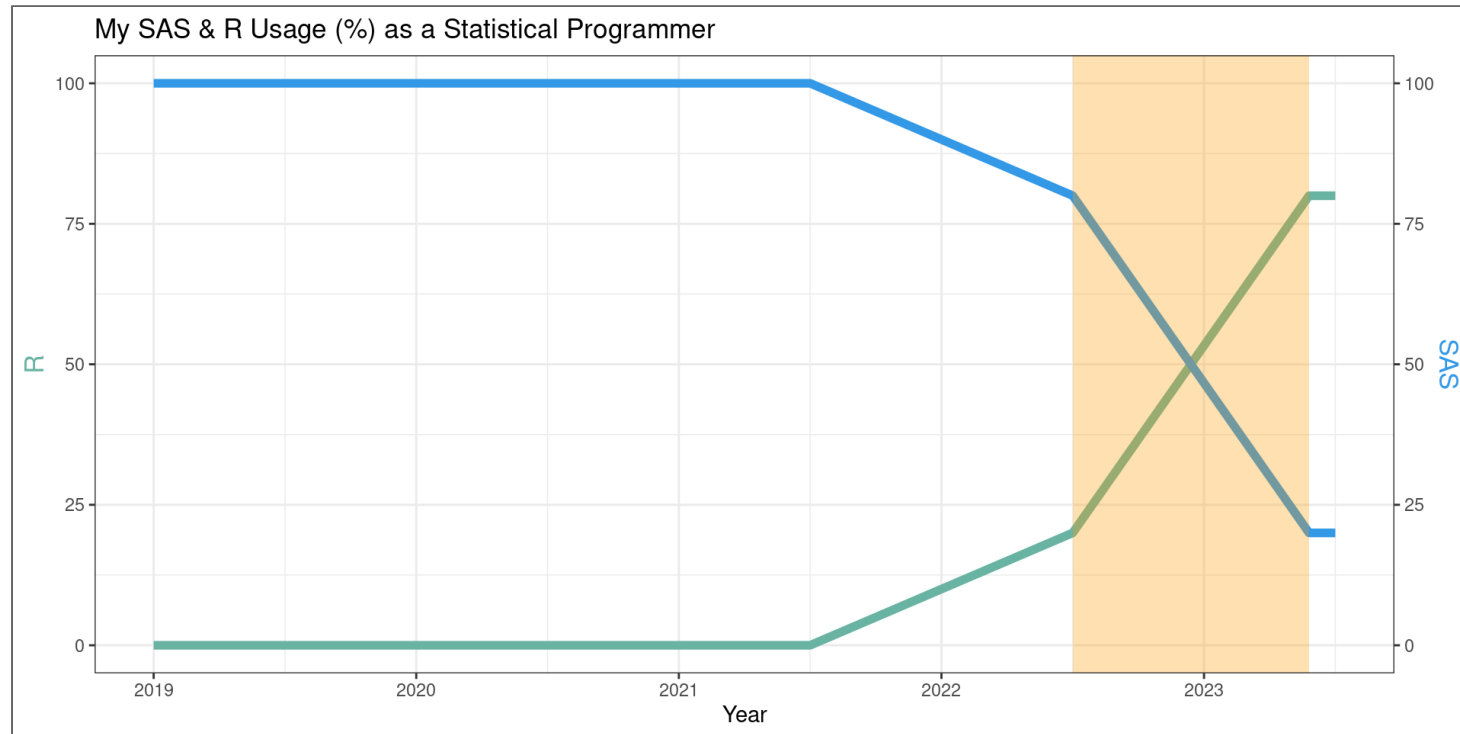
2023-08-19



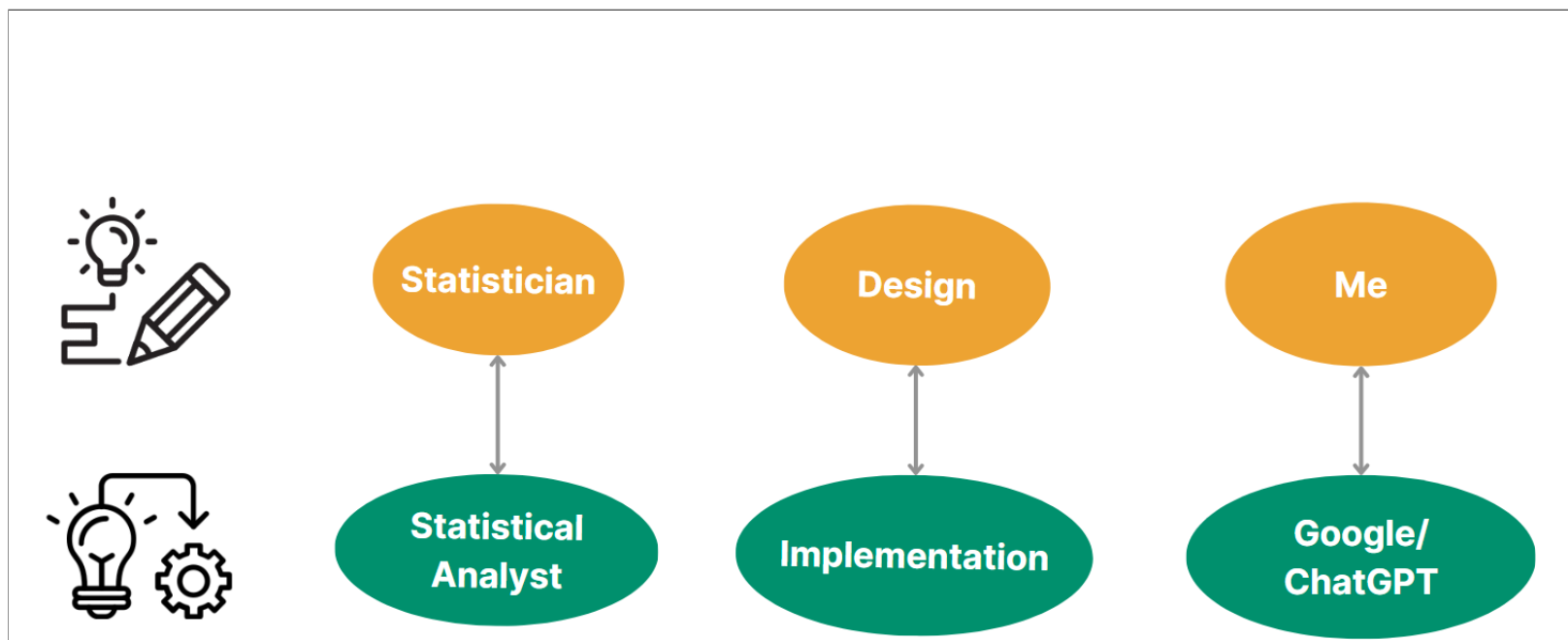
My day-to-day work



Four Years



Three Pairs of Relationship

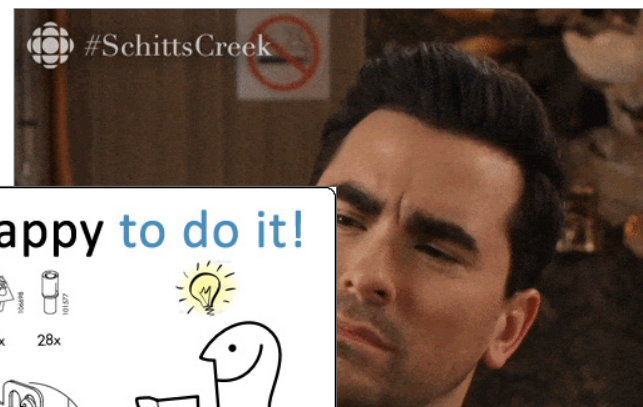


Two Attitudes

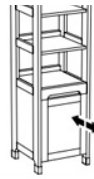
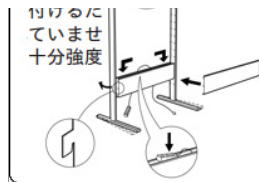


Implementation based on specifications

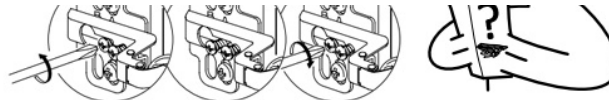
Understanding the “why” to help us better support statisticians



One Job



Statistical Programmers Embrace R to Expand their Toolkits



When it seems impossible



Initiatives in R

Data Visualization

```
1 %BoxPlot(  
2     data  
3     , X  
4     , y  
5     , class  
6     , title  
7     , subtitle  
8     , legendtitle  
9     , legend_pos  
10    , xlabel  
11    , ylabel  
12    , style  
13    , xrange  
14    , xincrement  
15    , yrange  
16    , yincrement  
17    , boxcolor  
18    , boxsize  
19    , dot
```

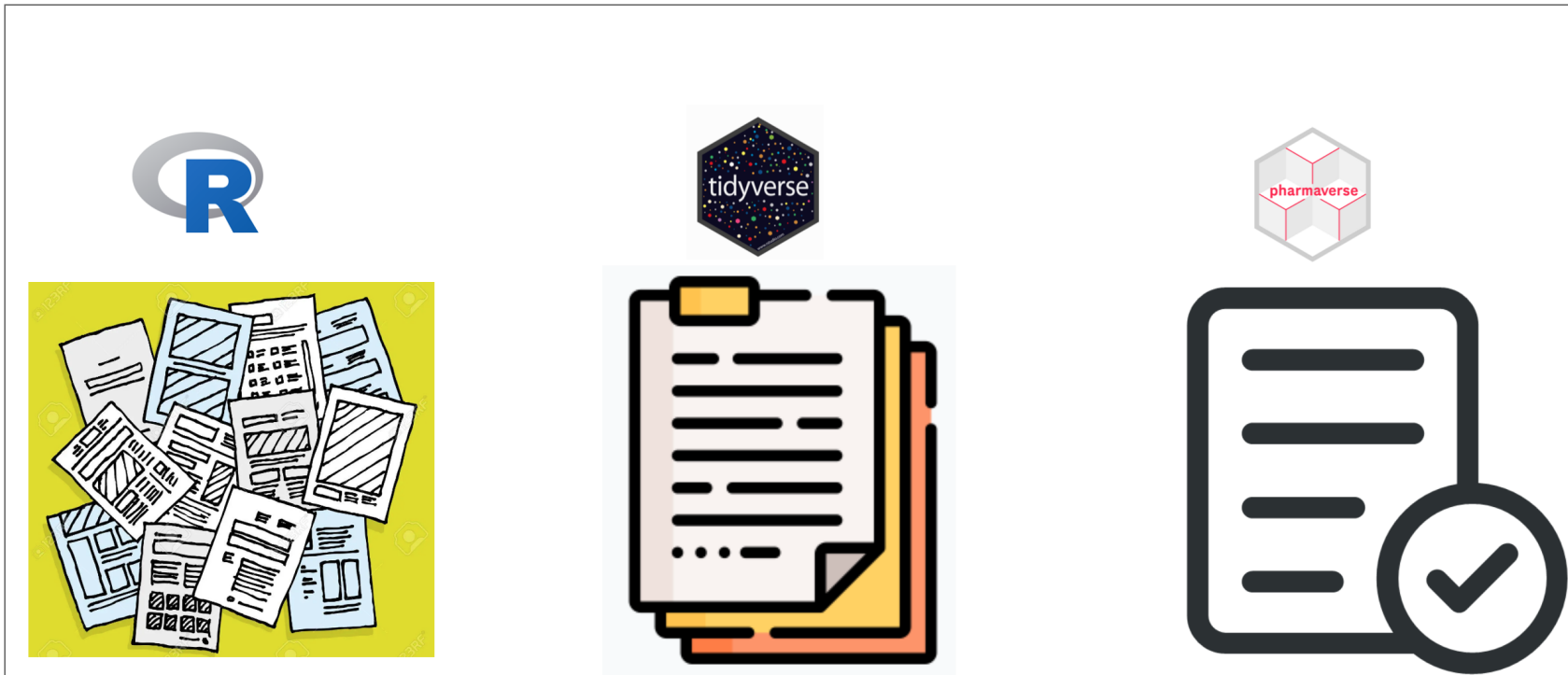


Develop ADaM datasets

What's CDISC/ADaM?

- CDISC: Clinical Data Interchange Standards Consortium
- ADaM standards outline how to create analysis datasets and associated metadata

Why Pharmaverse?



How does it work?

- Collaborate with CDISC to align with the latest standard
- Pilot submissions to FDA through R Consortium's R Submission Working Group
- Advertising through conferences, social media, and blog post



How to take advantage of existing tools?

- Actively evaluate what's available in the industry
- Become familiar with company-specific metadata/standards
 - Compare them with internal SAS macro system
- Bridge the gap between open-source R packages and the company's internal resources



St

3 REPOS/WORKING GROUPS

TESTING

Study work with R

- Test open-source tools with real studies;
- Identify issues and the missing pieces, and classify them as either company-specific (document in the internal websites) or general issues (contribute back to open-source community).

QUARTO WEBSITE

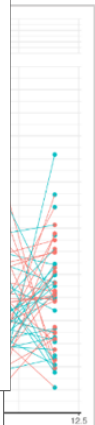
A Quarto website for knowledge sharing

- Compare internal macro systems with pharmaverse;
- Document Bug report and provide workaround;
- Include example use-cases and template programs.

R PACKAGE

Internal R package: a toolbox that

- provides functions for company-specific standard;
- enables smooth utilization of pharmaverse and other R packages internally.



Conclusion

- R can serve as a powerful complement to SAS, particularly for data visualizations
- Collaborate across the industry to tackle common problems
- Growing user base and closer relationship between user & developers lead to the delivery of better products
- Expanding talent pool benefits recruitment, fostering innovation, and driving continuous improvement.

Reference

- Pharmaverse: <https://github.com/pharmaverse>
- CDISC: <https://www.cdisc.org/>
- R Submissions Working Group: <https://rconsortium.github.io/submissions-wg/>
- Survival plot: <https://rpkgs.datanovia.com/survminer/>
- Box plot: https://bookdown.org/kdonovan125/ibis_data_analysis_r4/creating-graphs-with-ggplot2.html
- Waterfall & Spaghetti plots: <https://bayer-group.github.io/sas2r/figures-plots.html>