

R Markdown and Git for Collaborative Actuarial Research and Analysis

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GROWTH IN A TIME OF DEBT

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- The analysis was done by highly trained, experienced professionals.
- The economic and/or social impact of the analysis was significant.
- And ...

All of the results contained
material errors

Common themes

- Multiple iterations of data collection and analysis
- Movement of analysis and files across systems
- Collaboration
- Must be easily peer reviewed
- High financial stakes
- Duty to the public

Sound like what you do?

It also sounds like enterprise risk

- Sarbanes/Oxley
- Solvency II/ORSA
- Actuarial Standards of Practice

Another massive collaboration

Linux[™]

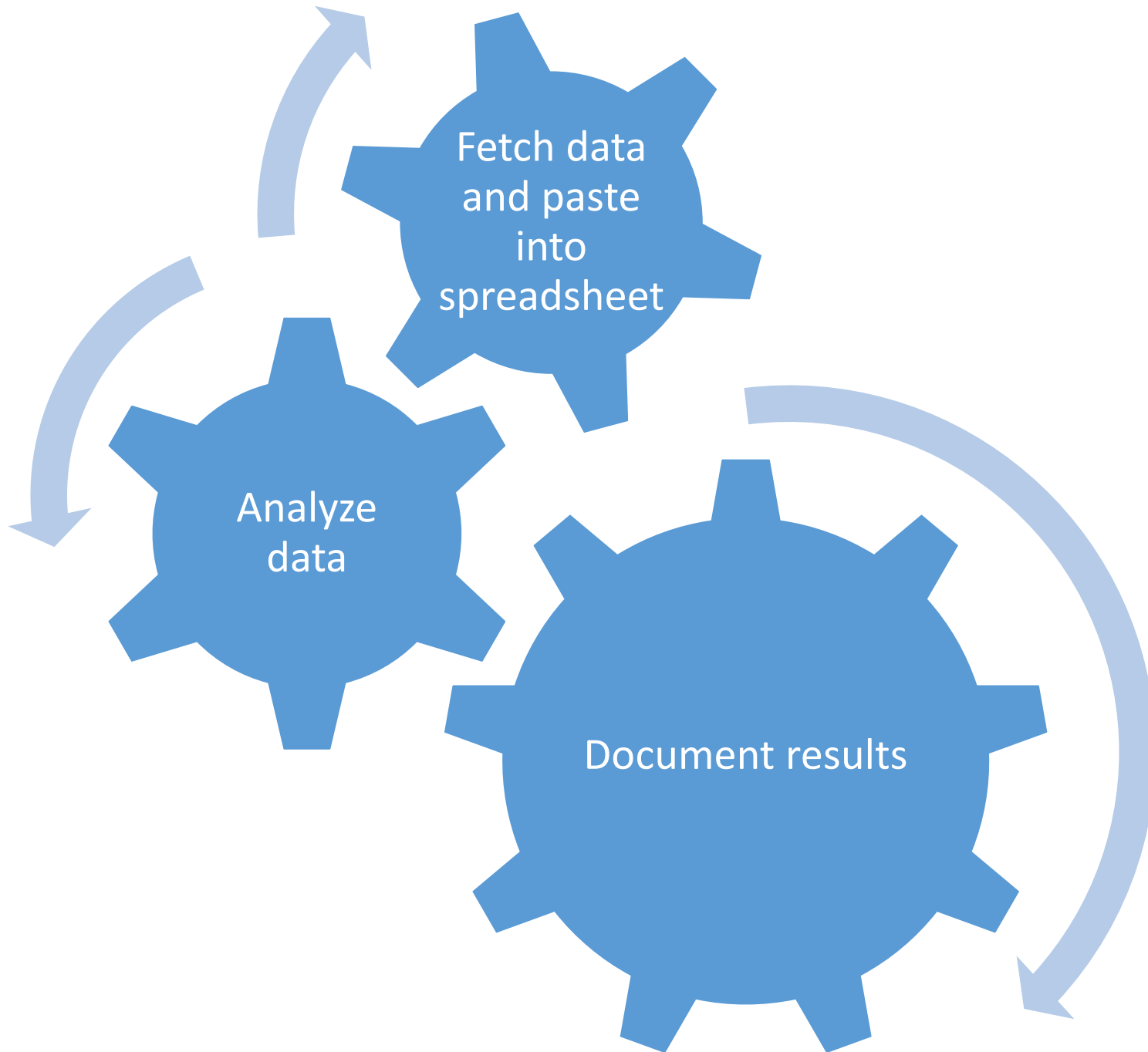
The Linux logo consists of the word "Linux" in a bold, black, serif font. Below the text is a horizontal brushstroke that transitions from yellow on the left to orange on the right.

Why git?

- Collaboration
- Easy to move whole sets of files
- Track changes in a secure way

Live demo

How about documentation?



Each step is likely repeated over and over again.

Have you ever forgotten to update your documentation with the latest stage of analysis?

R Markdown to the rescue!

The R Series

Reproducible Research with R and RStudio

Root			
Research Project			
Data	Analysis	Presentation	
MainData.csv	MainAnalysis.R	Article	Other
GatherSource	ResultsFigures	Paper.Rnw	Slideshow
Makefile	Figure1.R	Main.bib	Slideshow.Rnw
MergeData.R	Figure2.R	Packages.bib	Website
Gather1.R	Figure3.R	figure	Website.Rmd
Gather2.R		Figure1.pdf	
Gather3.R		Figure2.pdf	
		Figure3.pdf	

Christopher Gandrud

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The R Series

Dynamic Documents with R and knitr

Second Edition



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R Markdown

- R code and documentation are contained in a single document.
- Easy to use with git, particularly if you're using R Studio.
- “Literate programming” means that the code exists alongside explanations of what's going on.
- Visual output appears in the document automatically.
- Output to Word, PDF or HTML.

Live demo

Conclusion

- git facilitates collaboration and tracking of analysis changes
- R Markdown streamlines the work cycle

Thank you!