Transforming Data Analysis with R Shiny

Regeneron

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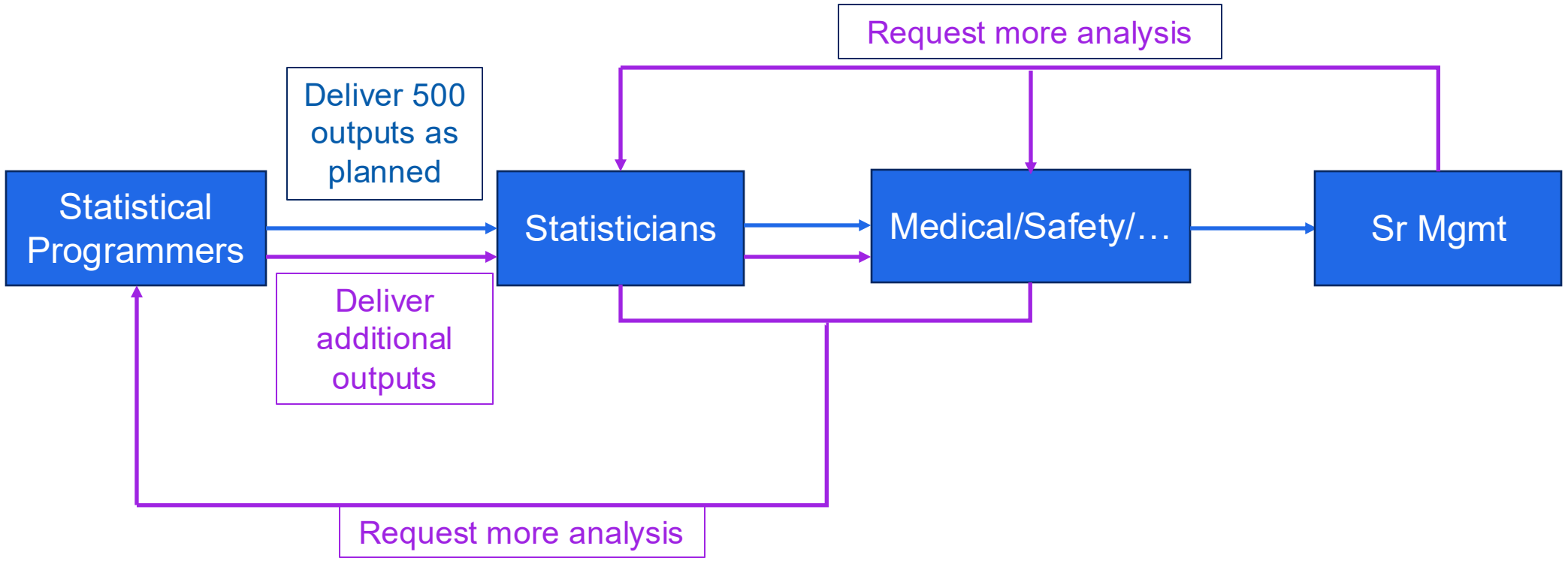
Agenda

01	Introduction
02	Overview of R Shiny
03	Best Practices for Developing R Shiny Applications
04	Real-World Insights
05	Future Trends
06	Q&A

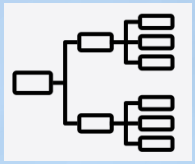
Traditional Data Review Process



Statistical Programming Technology Vision

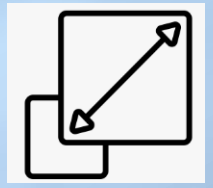
Real Time

Reports reflect the latest data in Regeneron's network



Dynamic

Interactive and dynamic reports with drill down to patient level values



Scalable

Solutions applied to all studies and sufficient computing power

Overview of R Shiny

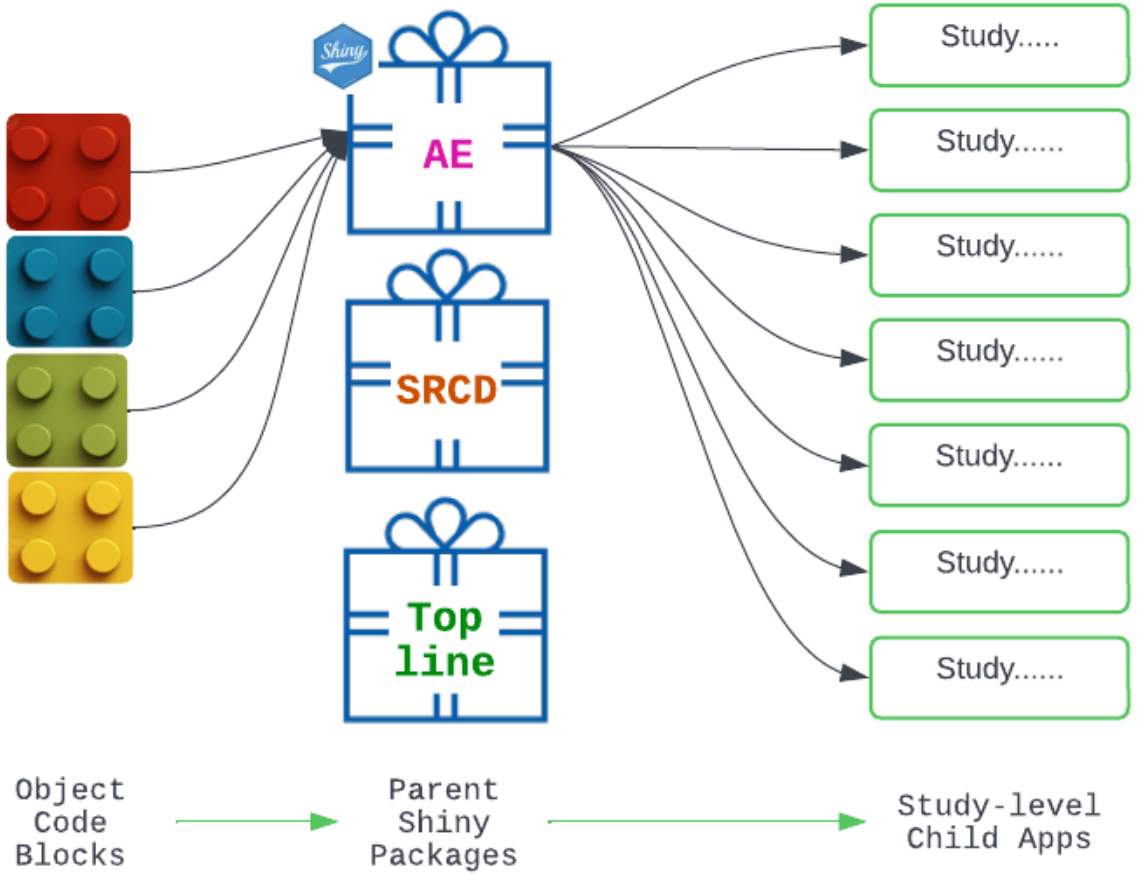
- Framework for creating web applications using R code, with no knowledge of HTML, CSS, or JavaScript
- Seamless integration with R's powerful statistical and data visualization packages
- Strong R community ensures continuous development, support, and resources
- Shiny applications can be extended with custom HTML, CSS, and JavaScript, allowing for more advanced customization and functionality
- Overall, R Shiny is the preferred choice for web app development in clinical trial data analysis

Best Practices

Package/App Design

- Generic parent packages & study-level child Apps
- Lego-like object code blocks cover different types of data analysis and presentation
- Meta yaml specs for child app development, feasible for new R programmers

Low Code Modular Package Design



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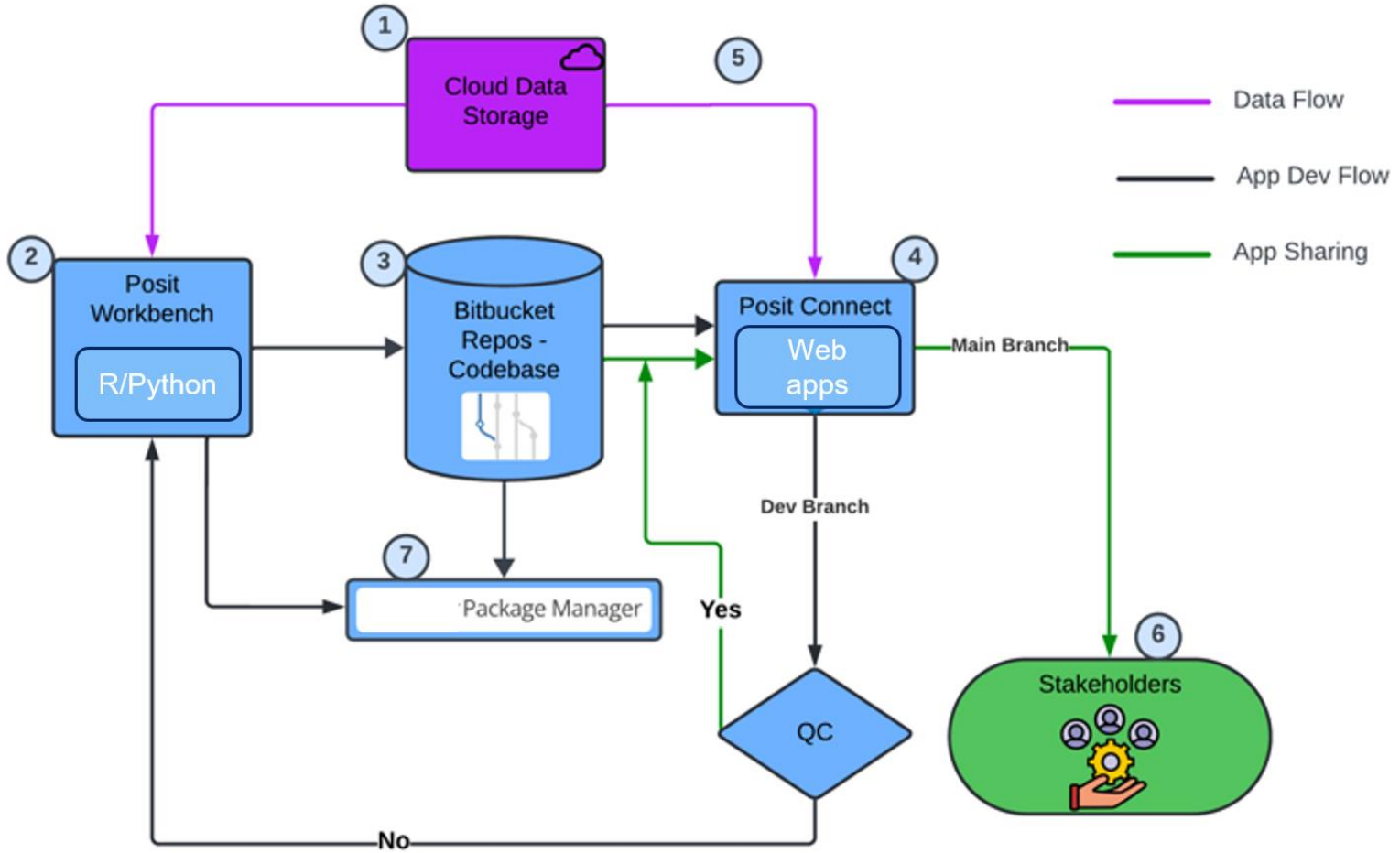
Best Practices

Computing Environment

- Posit workbench, Posit connect, and Posit package manager
- Centralized data cloud storage
- Git and Bitbucket for version control and collaboration
- Build data flow, app development flow and app sharing process

Development Process



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Real-World Example

- Safety Review – Adverse Event app

AE Report for CDISC Pilot Study | AE Events/Incidence | AE Frequency | AE Timeline | Overview of TEAE | Summary By SOC/PT | Summary By SOC/PT/Severity | Summary by PT

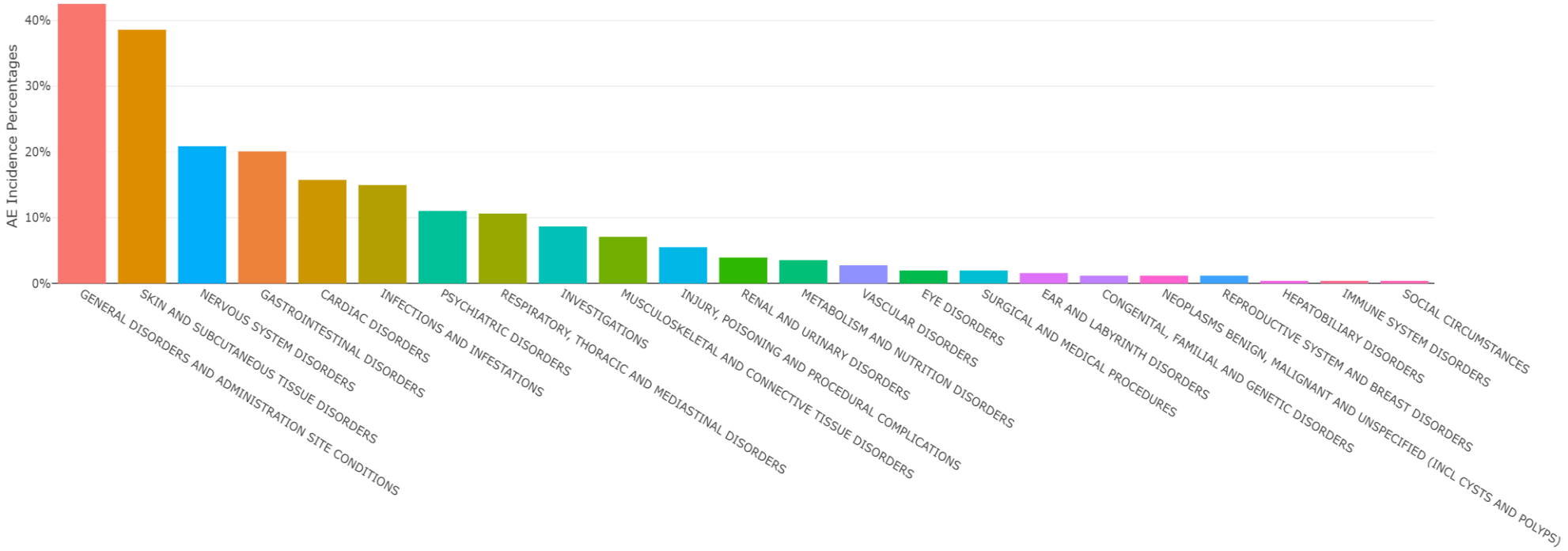
Report Generated:
2025-08-17 20:37:51 UTC

CDISC Pilot Study

Study Information

Adjusted Global Filter Settings:

No Global Filters Applied.



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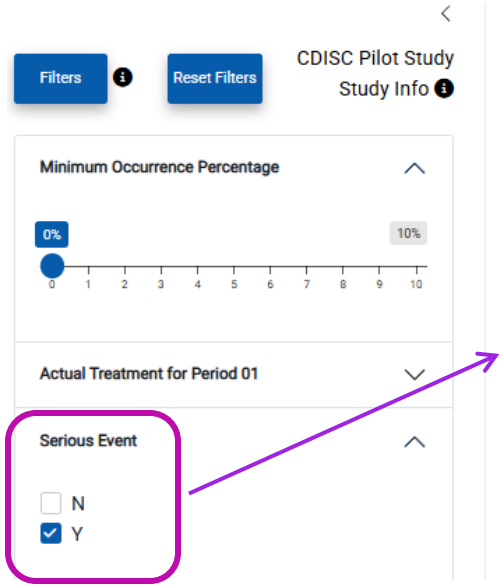
Real-World Example - Continued



Summary by SOC/PT

Click on a table cell to see population data

	Placebo (N= 86)	Xanomeline High Dose (N= 72)	Xanomeline Low Dose (N= 96)	Total (N= 254)
Number of participants with at least one TEAE	0 (0%)	1 (1.4%)	2 (2.1%)	3 (1.2%)
NERVOUS SYSTEM DISORDERS	0 (0%)	1 (1.4%)	2 (2.1%)	3 (1.2%)
SYNCOPE	0 (0%)	0 (0%)	2 (2.1%)	2 (0.8%)
PARTIAL SEIZURES WITH SECONDARY GENERALISATION	0 (0%)	1 (1.4%)	0 (0%)	1 (0.4%)

Pop-up window

Number of participants with at least one TEAE x Xanomeline Low Dose

Value: 2 (2.1%)

n = 2

Unique Subject Identifier	Actual Treatment for Period 01
01-709-1424	Xanomeline Low Dose
01-718-1170	Xanomeline Low Dose

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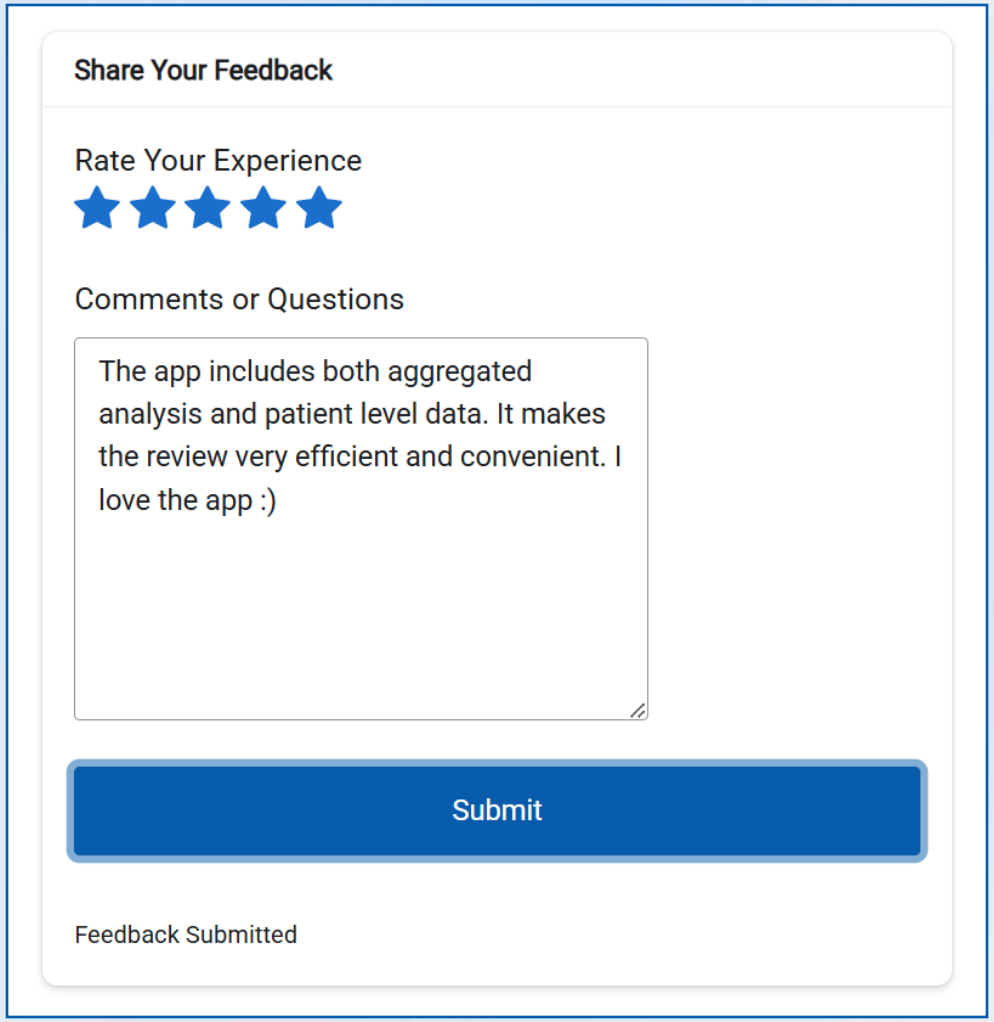
Key to Success

- Powerful functionality
- UI/UX is critical
- Provide trainings and guidelines to end users
- Engage with end users’ feedback



Real-World Insights

- # of outputs in one app: almost unlimited (> 2^100)
- Development time: ~ 2 hours/app
- Review efficiency: enable faster decision making
- Up versioning: improve for stakeholders' satisfaction over time
- Visibility: present powerful tool in Sr management meeting

Future Trends

- Increased adoption for interactive data visualization
- R Shiny is the preferred choice but not the only choice
- Integration with AI
- Regulatory reporting and transparency
- More capability of analyzing big data


Q
A


Thank You