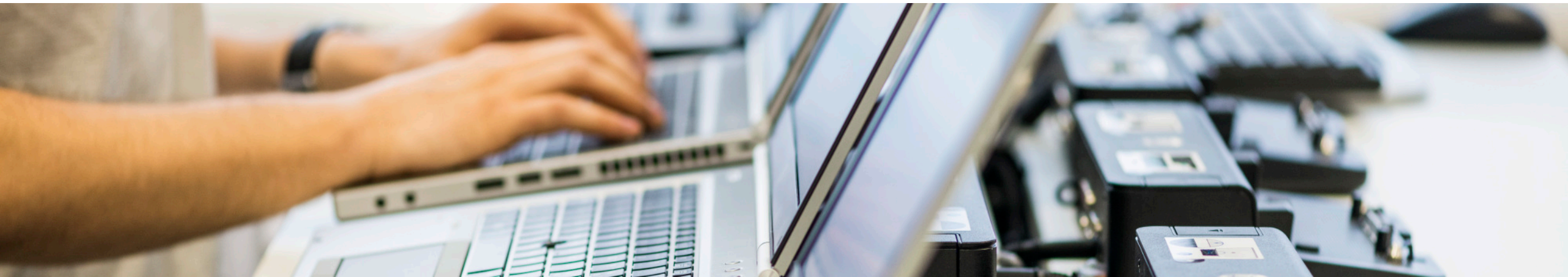

An Interactive Visualization Application for Patient Reported Outcomes with Spotfire

Paper CM06

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Disclaimer

The data depicted in this application is fake and was generated specifically for the purpose of this presentation. None of the figures displayed should be taken as fact.

Agenda

- Background
- Application Overview
- Development Process
- Reusability

Background

- Create dashboard and interactive visuals with TIBCO Spotfire™
- Patient Reported Outcomes – Patients complete questionnaires during a trial
- Spotfire provides a tool to analyze this data

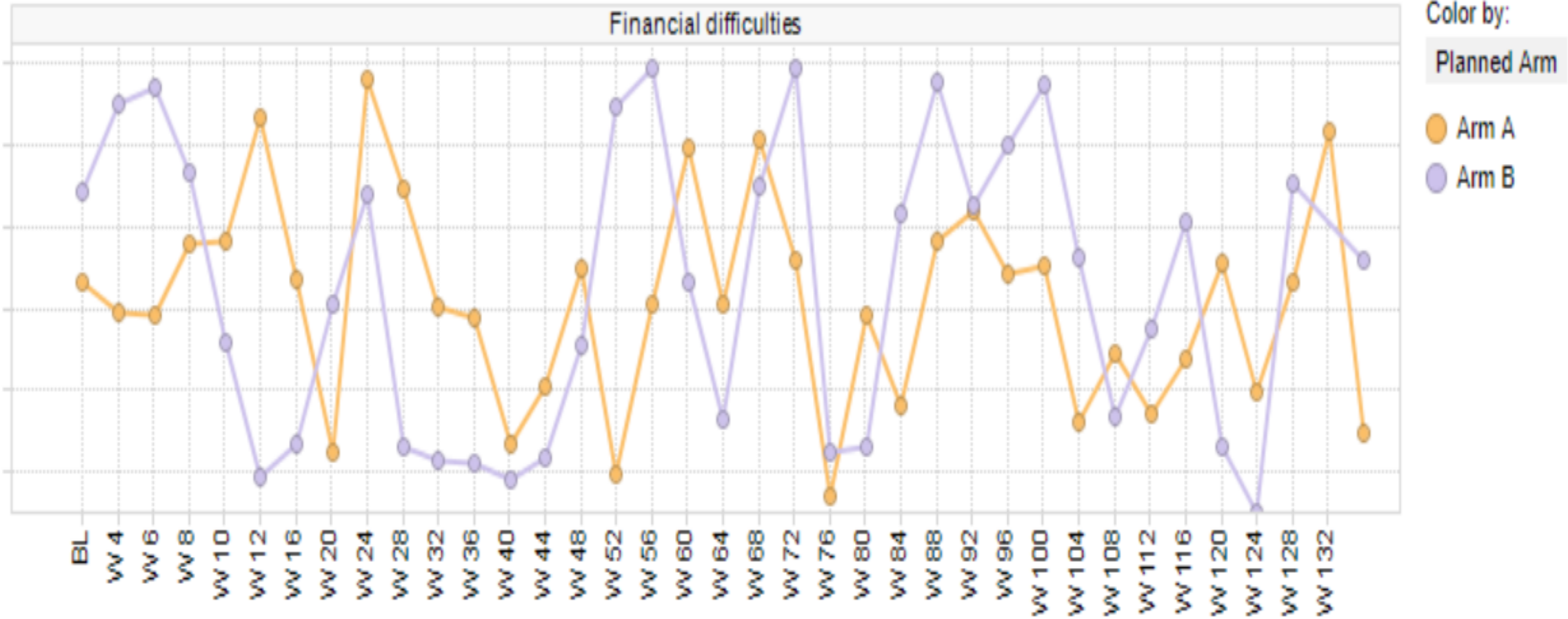
Background

- Spotfire has been successfully used within Roche for exploratory analyses purposes
- The work depicted in this presentation was built for CDISC ADaM compliant datasets

Application Overview

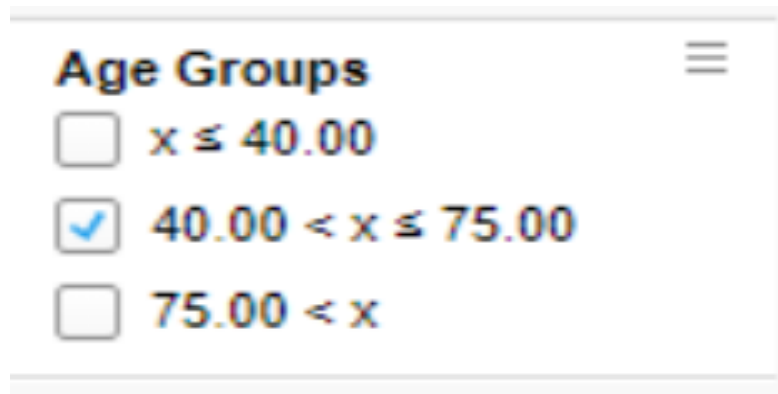
- Developed an application for exploratory analysis of Patient Reported Outcomes
- Allows scientists to discover trends
 - Across visits
 - By scale / measurement
 - Across other parameters of interest

Application Overview



Application Overview

Filtering and marking allows users to focus on populations of interest



Age Groups

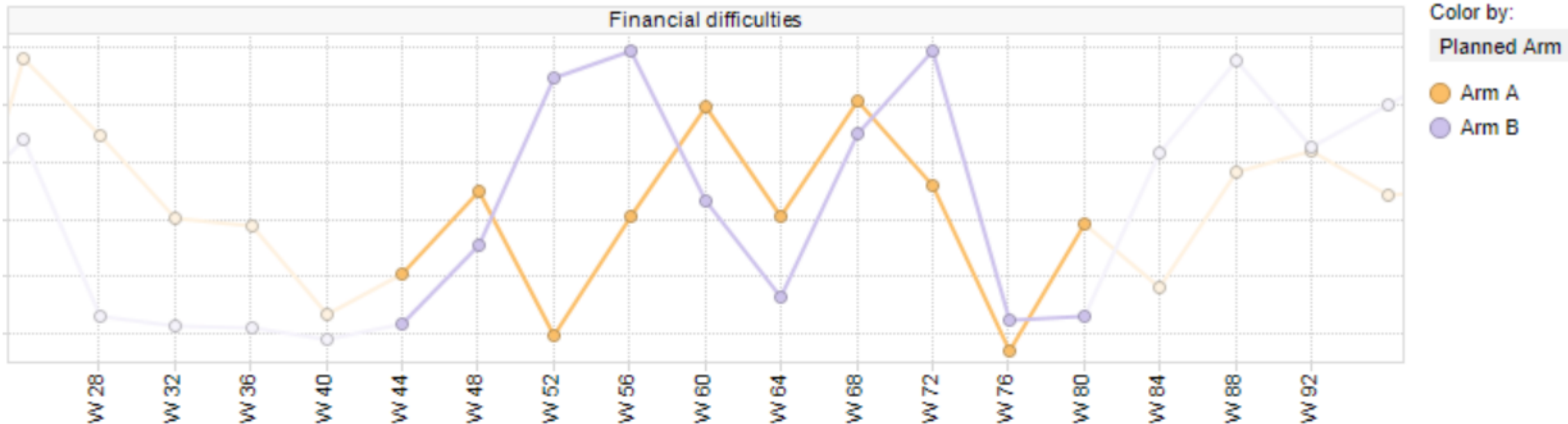
☐ $x \leq 40.00$

☒ $40.00 < x \leq 75.00$

☐ $75.00 < x$

Marking restricts analyses based on a collection of sub-setting rules

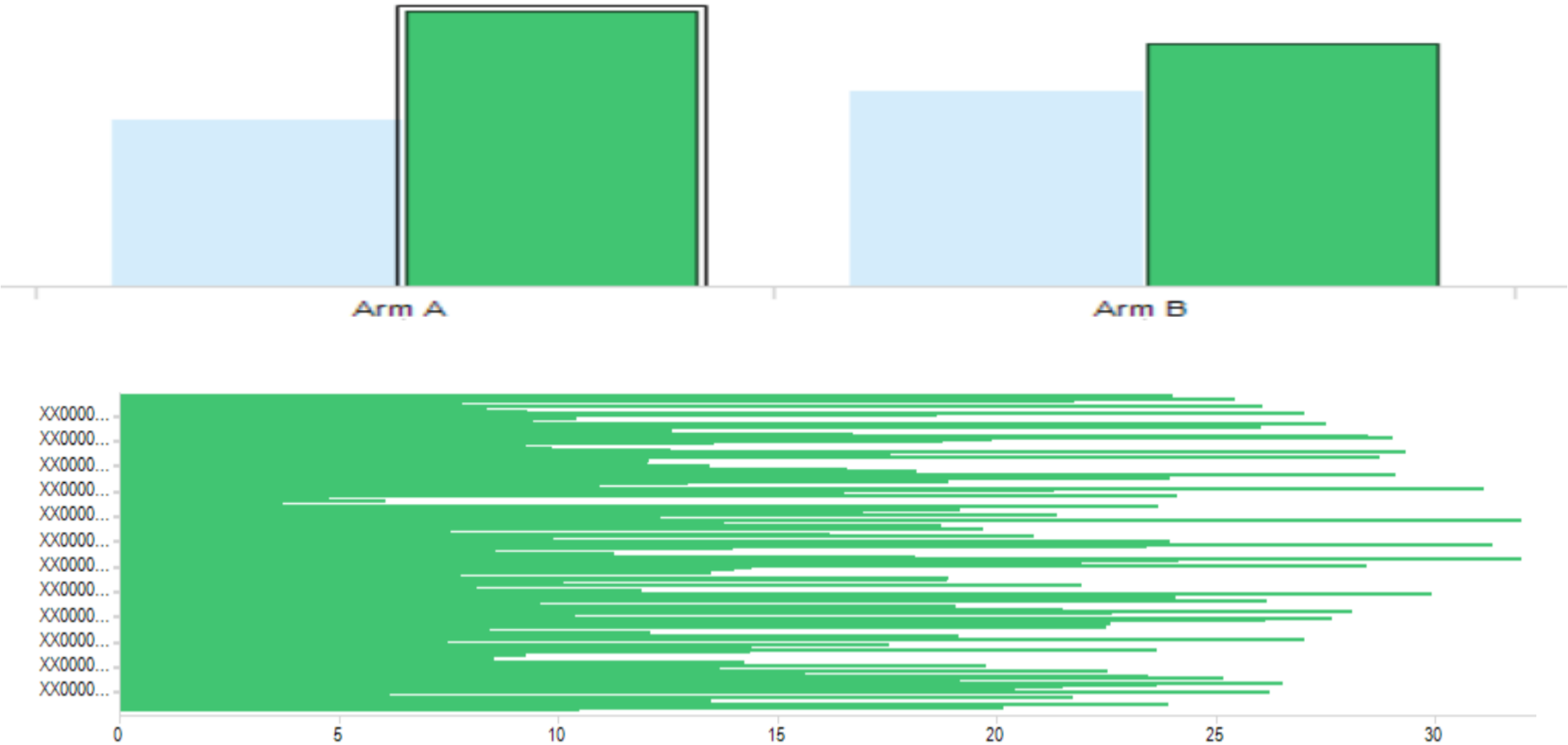
Application Overview



Selected Observations

[illegible]

Application Overview



Application Overview

- Spotfire parameters guide analysis and allow users to concentrate their efforts across multiple visuals
- Parameters can be used to change the layout of charts and figures
- Leads to new insights and questions not previously considered

Application Overview

Please define key analysis information:

1. Select analysis population: Full Analysis Set Population Flag ▼

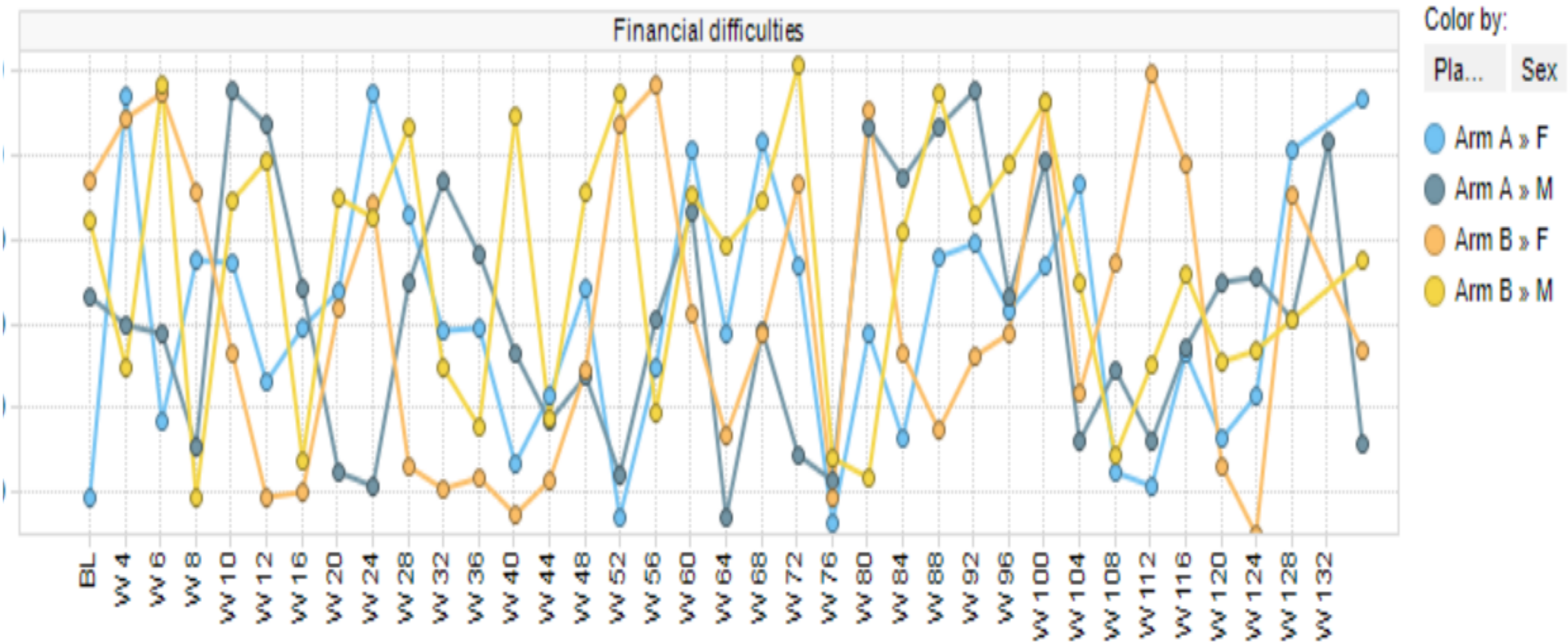
2. Select group variable(s) to summarize data by *(the order of grouping variables selected determines how data will be summarized in nested hierarchy):*

- Sex
- Ethnicity
- Planned Arm
- Actual Arm

Select group variable(s) to summarize by:

- Sex
- Ethnicity
- Planned Arm
- Actual Arm

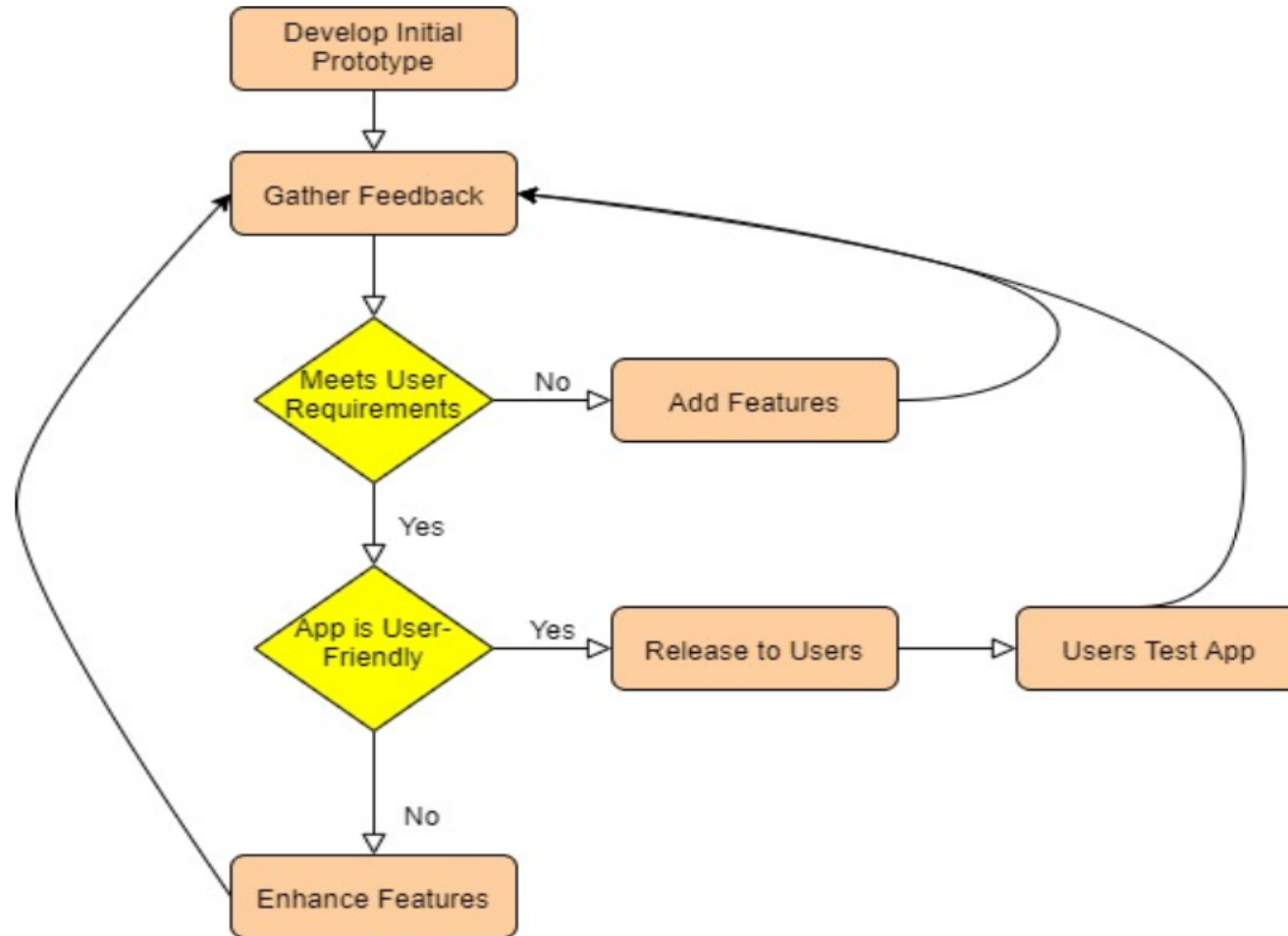
Application Overview



Development Process

- Application built in an agile manner
 - Built in small iterations
 - Gather user feedback at each stage
 - Streamline development and tailor the application to needs of end users

Development Process



Development Process

- Spotfire has very strong dashboarding and visualization capabilities
- SAS is a robust statistical software capable of complex analysis
- By combining these, developers can leverage the strong capabilities of each
 - Use the best tool for each task

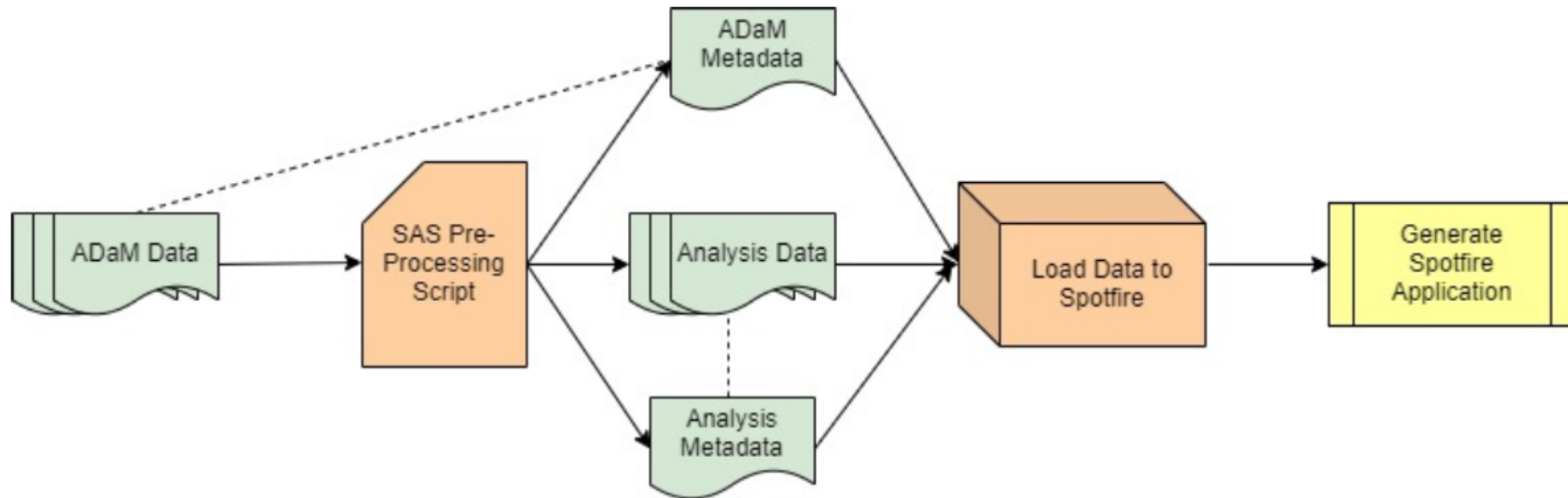
Development Process

- Complete a pre-processing step using SAS
- ADaM datasets are transformed to the data used by Spotfire
- Ensures the operations are done once and can be traced to a single location
- Operations are organized in clearly defined sections

Development Process

- SAS script also outputs metadata used in the Spotfire application
- Metadata specifies information about the raw ADaM datasets and their transformations used in the application
- Provides clear traceability and reproducibility

Development Process



Reusability

- Originally developed using EORTC QLQ-C30
(<https://qol.eortc.org/questionnaire/eortc-qlq-c30/>)
 - European Organization for Research and Treatment of Cancer
 - Assesses quality of life for cancer patients
 - 30 questions organized into scales / measures

Reusability

- References to the questionnaire are stored in ADaM data and SAS pre-processing script
- Can easily be substituted with other questionnaires for different studies
- Parameters used by Spotfire will automatically update with the change

Reusability

- SAS script organized into small, clearly-defined sections
- Set of key variables drive the analysis and can be easily changed
- Even within CDISC, multiple deviations can arise
- Separate variables are defined to drive the analysis
- Altered for different variable names / derivations

Reusability

Some columns could not be matched automatically.

From current data:

Reason Specify for Discon...	String	^
Histologic Grade	String	
Nuclear Grade	String	
Number of Positive Lymph ...	String	
Patient Unblinded Flag	String	
Reason for Unblinding	String	
Female Reproductive Status	String	
Nodal only Disease Flag	String	
Brain Metastases Flag	String	
DDI 1 IC Data Score	Real	▼

From new data:

Visit Number	Real	^
Visit Name	String	
Planned Study Day of V...	Real	
Epoch	String	
Evaluation Interval	String	
Collection Mode	String	
Parameter	String	
Parameter Code	String	
Parameter Category 1	String	
Parameter Category 1 (A)	Real	▼

Match Selected

Reusability

- Used across multiple Oncology studies
- Used with different questionnaires
- Can be updated rapidly

***Doing now what patients need
next***