

Power BI + R Visuals Made Easy for Medical Cross Review

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Hypothesis



How to make cross review **easier**?

Agenda

Background

How to use Power BI

Demo: Power BI+R cross review





01

Background

Medical Cross Review

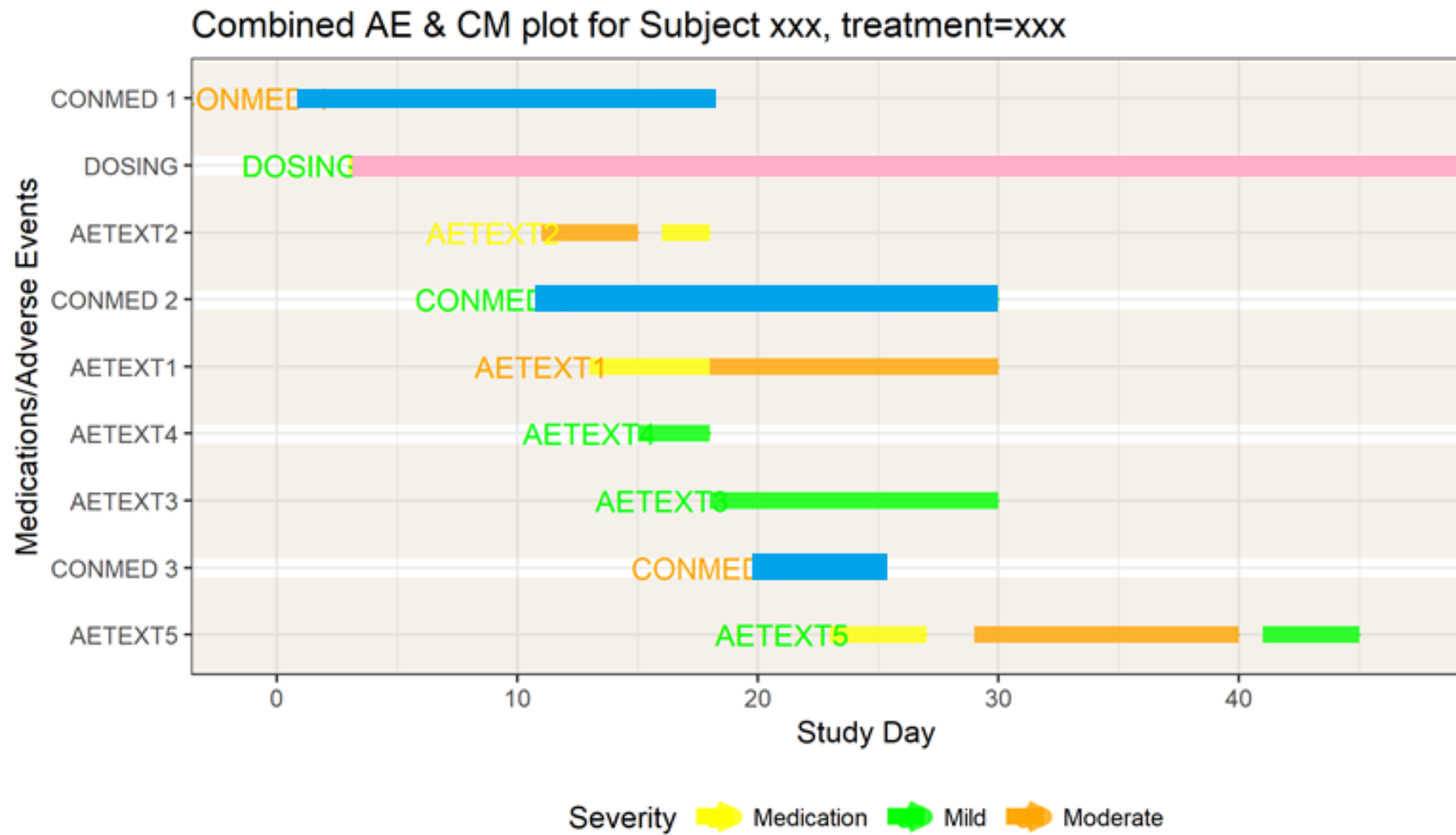
USUBJID
☐ 01-701-1028
☐ 01-701-1034

Exposure						
USUBJID	VISIT	EXDOSE	EXTRT	EXSTDTC	EXENDTC	EXDOSFRQ
01-701-1028	BASELINE	54.00	XANOMELINE	2013-07-19	2013-08-01	QD
01-701-1028	WEEK 2	81.00	XANOMELINE	2013-08-02	2014-01-06	QD
01-701-1028	WEEK 24	54.00	XANOMELINE	2014-01-07	2014-01-14	QD
01-701-1034	BASELINE	54.00	XANOMELINE	2014-07-01	2014-07-15	QD

Concomitant/Prior Medications				
USUBJID	VISITNUM	VISIT	CMTRT	CM
01-701-1028	6.00	AMBUL ECG REMOVAL	CENTRUM	201
01-701-1028	3.00	BASELINE	CENTRUM	201
01-701-1028	1.00	SCREENING 1	CENTRUM	201
01-701-1028	2.00	SCREENING 2	CENTRUM	201
01-701-1028	9.00	WEEK 12	CENTRUM	201
01-701-1028	10.00	WEEK 16	CENTRUM	201
01-701-1028	4.00	WEEK 2	CENTRUM	201
01-701-1028	11.00	WEEK 20	CENTRUM	201
01-701-1028	12.00	WEEK 24	CENTRUM	201
01-701-1028	13.00	WEEK 26	CENTRUM	201
01-701-1028	5.00	WEEK 4	CENTRUM	201
01-701-1028	7.00	WEEK 6	CENTRUM	201
01-701-1028	8.00	WEEK 8	CENTRUM	201
01-701-1028	6.00	AMBUL ECG REMOVAL	HYDROCORTISONE	201
01-701-1028	9.00	WEEK 12	HYDROCORTISONE	201

Adverse Events					
USUBJID	AETERM	AESTDTC	AEENDTC	AESOC	AEDECOD
01-701-1028	APPLICATION SITE ERYTHEMA	2013-07-21		GENERAL DISORDERS AND ADMINISTRATION SITE CONDITIONS	APPLICATION SITE ERYTHEMA
01-701-1028	APPLICATION SITE PRURITUS	2013-08-08		GENERAL DISORDERS AND ADMINISTRATION SITE CONDITIONS	APPLICATION SITE PRURITUS
01-701-1034	APPLICATION SITE PRURITUS	2014-08-27		GENERAL DISORDERS AND ADMINISTRATION SITE CONDITIONS	APPLICATION SITE PRURITUS
01-701-1034	FATIGUE	2014-11-02		GENERAL DISORDERS AND ADMINISTRATION SITE CONDITIONS	FATIGUE

Medical Cross Review



Tools for Data Review



Figure 1. Magic Quadrant for Business Intelligence and Analytics Platforms

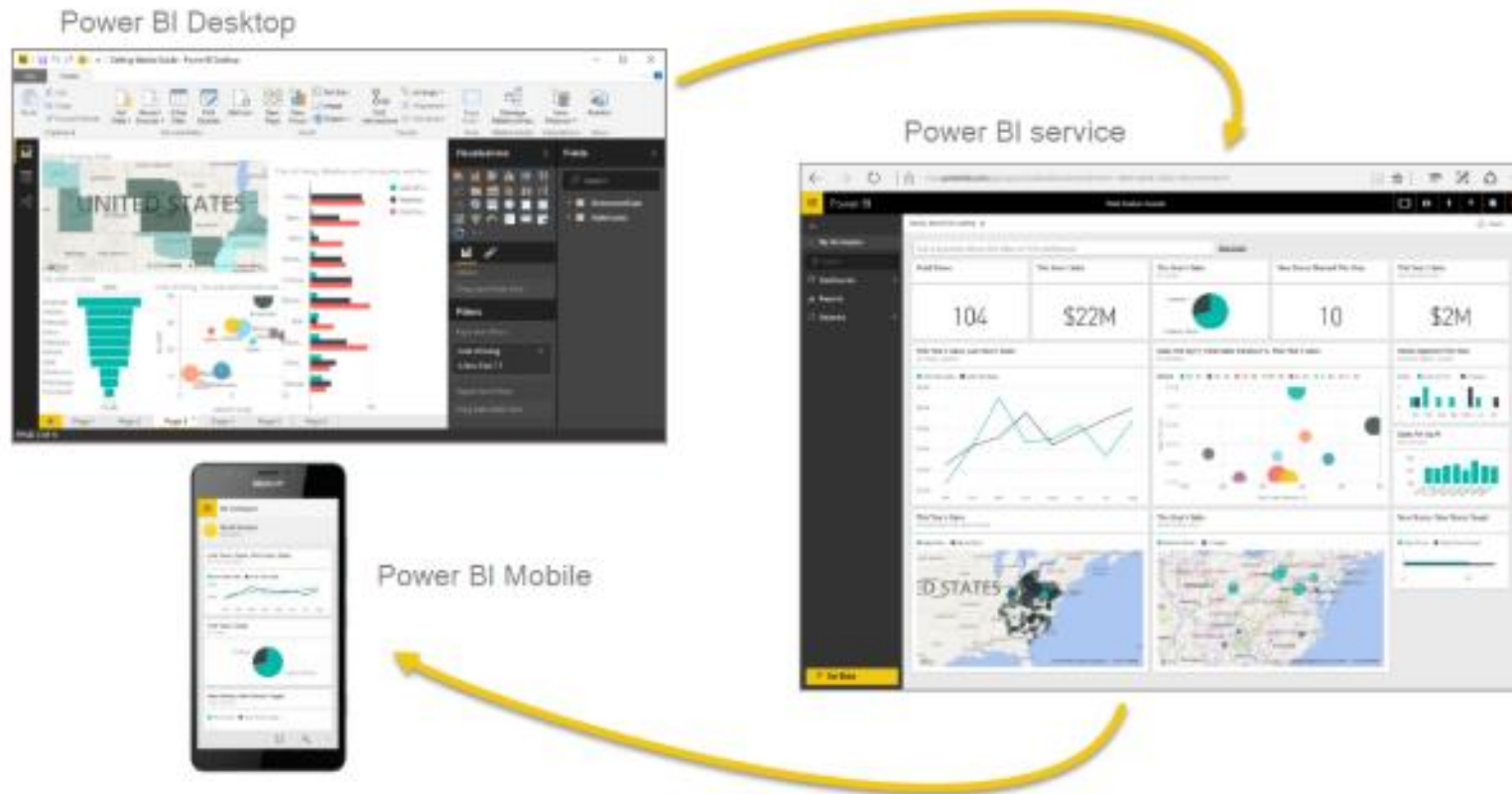


Source: Gartner (February 2017)

As of February 2017

Power BI

- A Windows desktop application called **Power BI Desktop**
- An online SaaS (*Software as a Service*) called the **Power BI service**
- Power BI **mobile apps** for Windows, iOS, and Android devices



Advantages of Power BI

- Easy to use
- Data analysis
- Data visualization
- Low costs 😊

Power BI provides multiple touch points for R

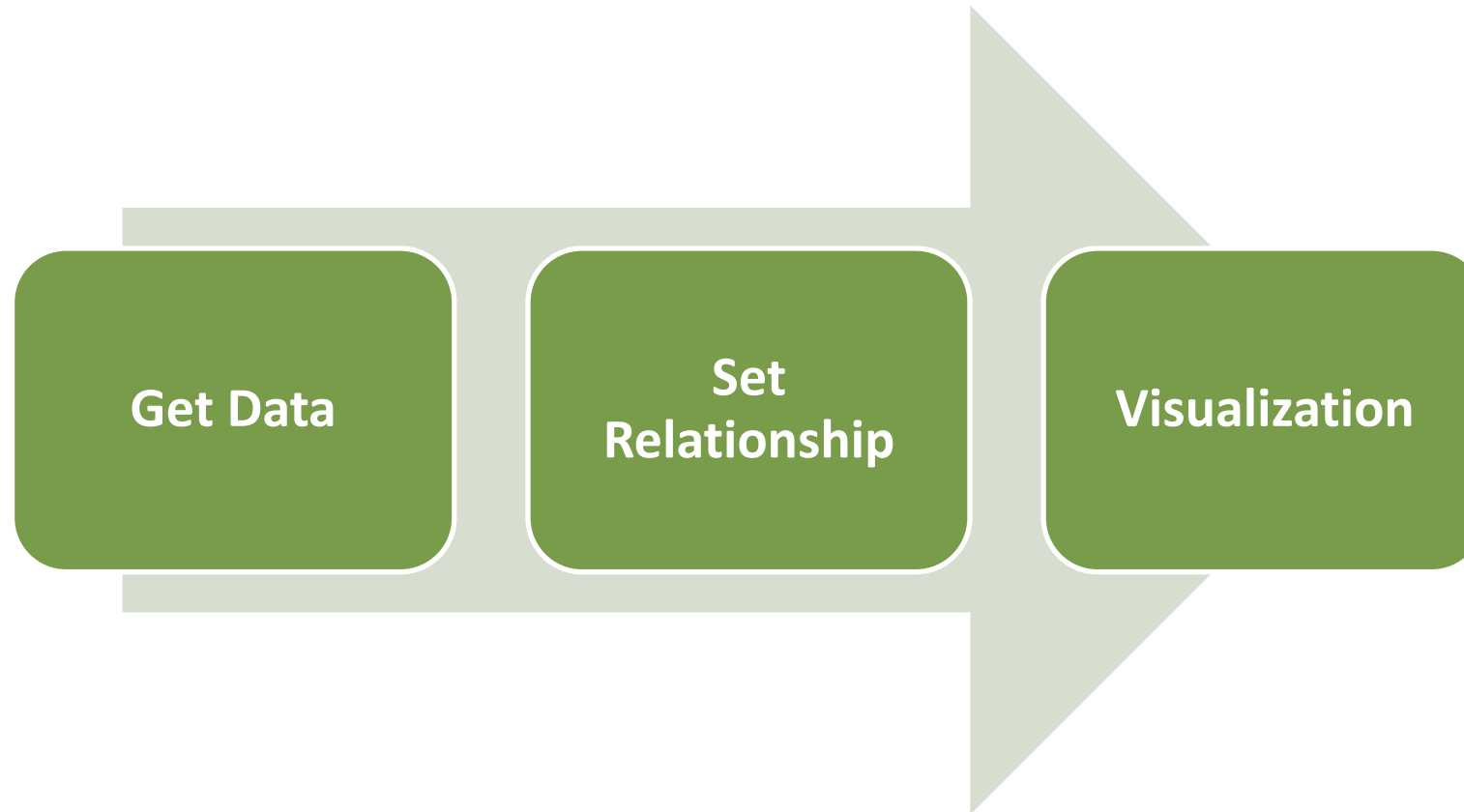
- Allows R scripts as data sources
- Data transformations as part of Power Query steps
- R visualizations



02

How to use Power BI

Power BI Work Flow



Get Data

- **Files**

Excel/text/csv/xml/JSON/SharePoint folder

- **Database**

SQL Server database/Access Database/Oracle database/...

- **Azure**

Azure SQL database/...

- **Online Services**

Power BI service/ SharePoint Online List/Google Analytics/Adobe Analytics/...

- **Other**

R script/ODBC/HDFS/...

Get Data

All

File

Database

Azure

Online Services

Other

All

Excel

Text/CSV

XML

JSON

Folder

SharePoint folder

SQL Server database

Access database

SQL Server Analysis Services database

Oracle database

IBM DB2 database

IBM Informix database (Beta)

IBM Netezza

MySQL database

PostgreSQL database

Sybase database

[Certified Connectors](#)

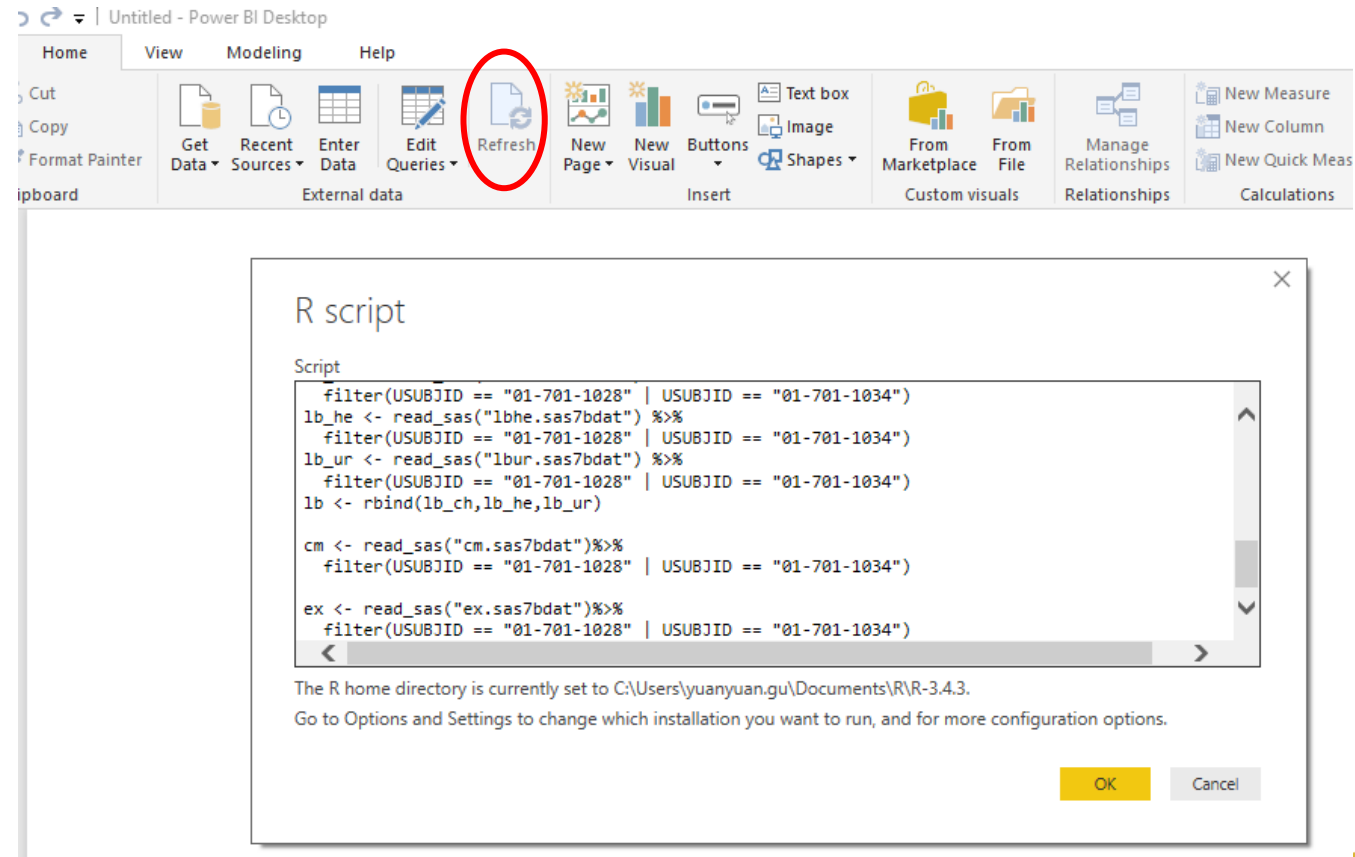
Connect

Cancel

Get Data- Power BI+ R Scripts

WHY R?

R scripts to read SAS datasets, do data wrangling



Set Relationship

Types of relationship (Cardinality)

- One to One(1:1)
- One to Many(1:*)
- Many to One(*:1)

Cross filter direction

- Single
- Both

Edit relationship

Select tables and columns that are related.

trtp

TRTPN	TRTP
2	IBI308 100 mg IV Q3W
1	IBI308 200 mg IV Q3W

aedecod

AEDECOD
淋巴细胞计数升高
白细胞计数升高
天门冬氨酸氨基转移酶升高

Cardinality

Many to one (*:1)

Cross filter direction

Both

☒ Make this relationship active

☐ Apply security filter in both directions

☐ Assume referential integrity

OK

Cancel

Visualization

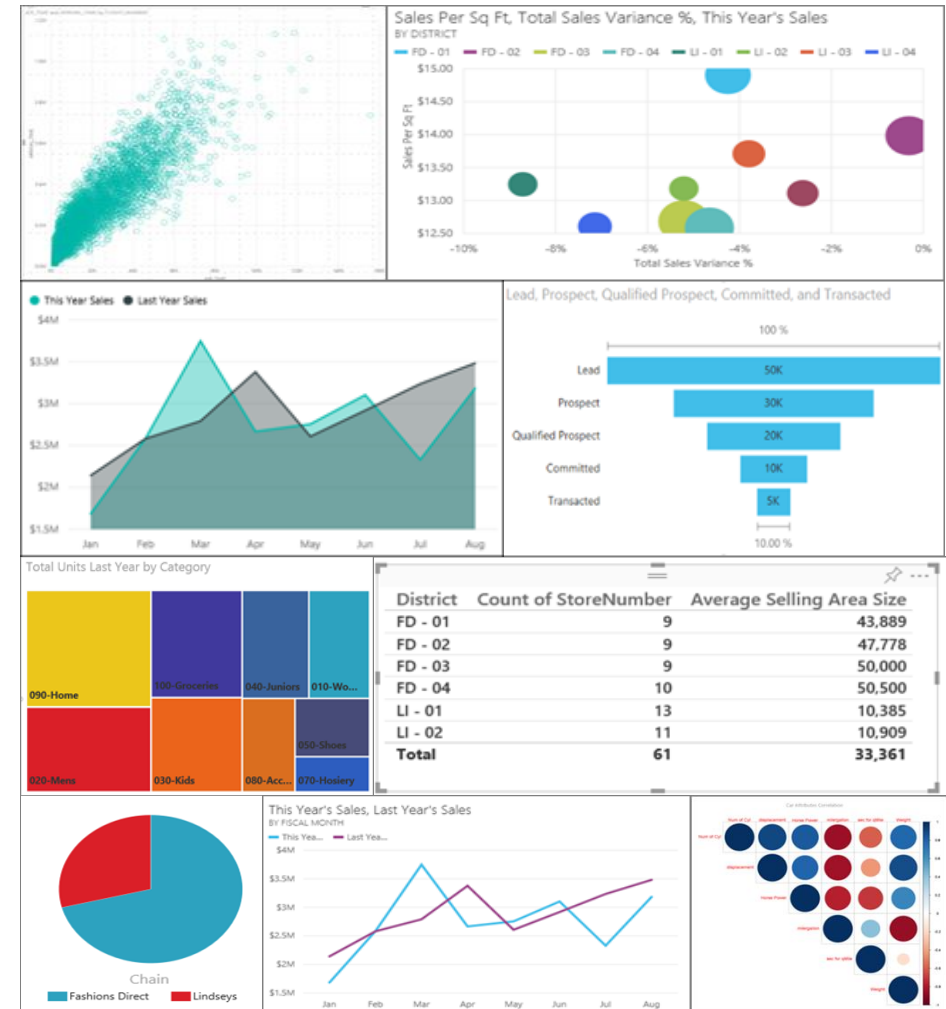
• Visualizations available in Power BI

❖ Built-in

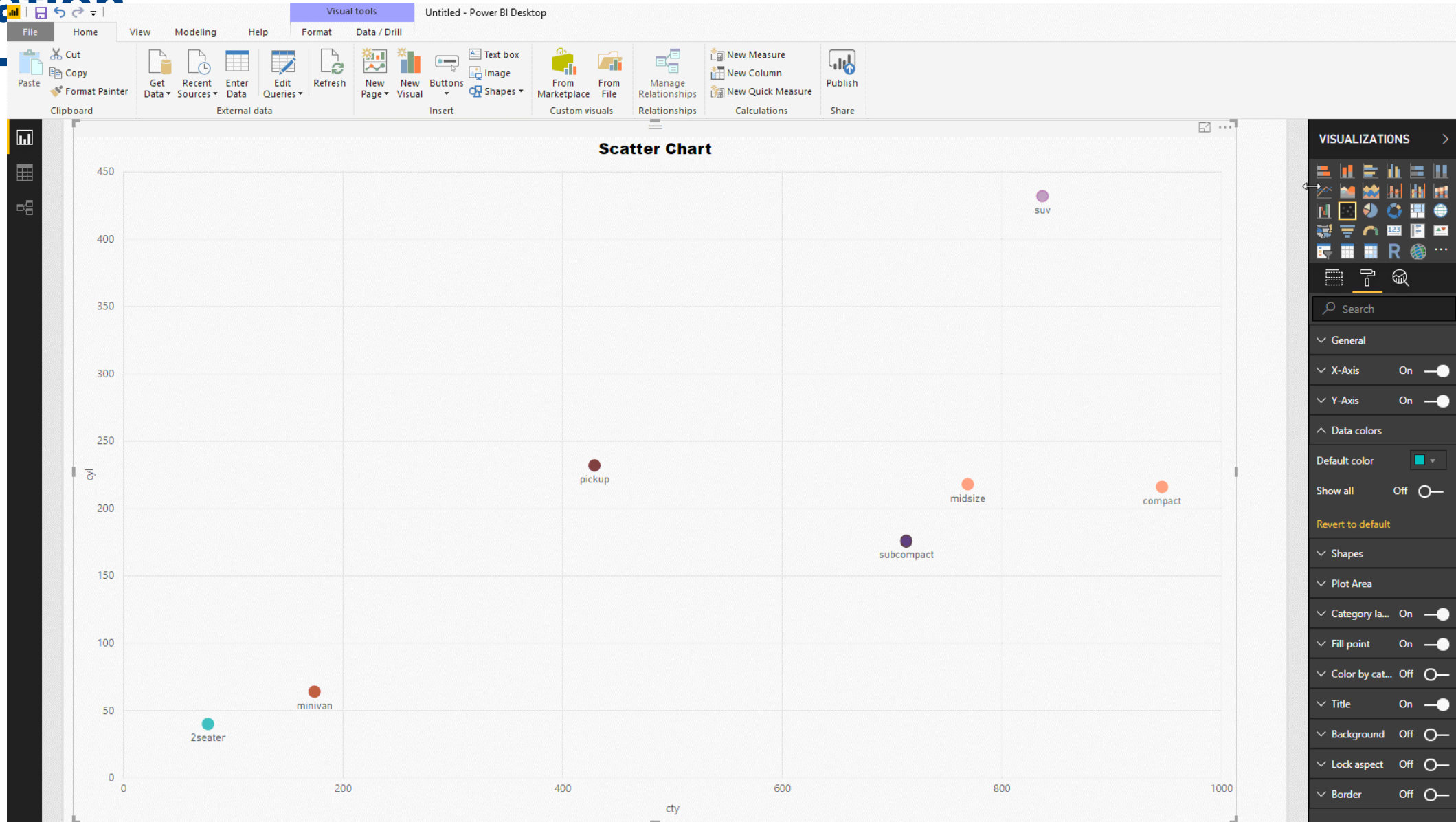
- Table
- Treemap
- Chart
- Pie chart
- Scatter and Bubble chart
- Scatter-high density

❖ R powered visuals

❖ Custom visuals



Visualization





03

Demo

Power BI+R cross review

Demo

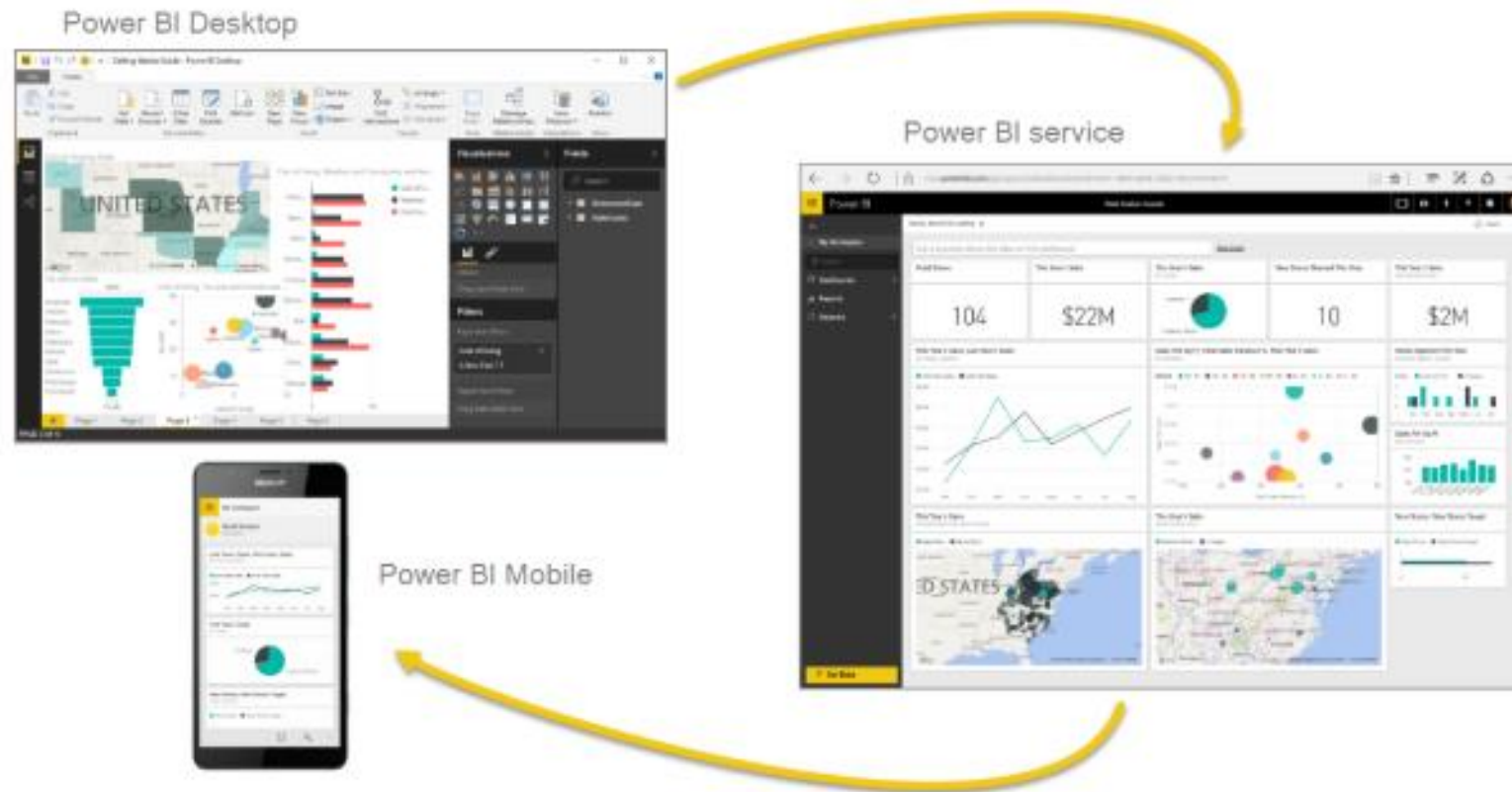
Safety Datasets:

DM, AE, CM, EX and LB

Power BI+R cross review

Share Report

Publish your reports to the Service, to the cloud and then you can share it with others



Power BI for Medical Cross Review



Report Generation

Connect to clinical data and create listings and visuals using Power BI Desktop
Publish those reports to the Power BI service



Report Review

Review data and visuals on Power BI service to make medical decisions

THANK YOU!