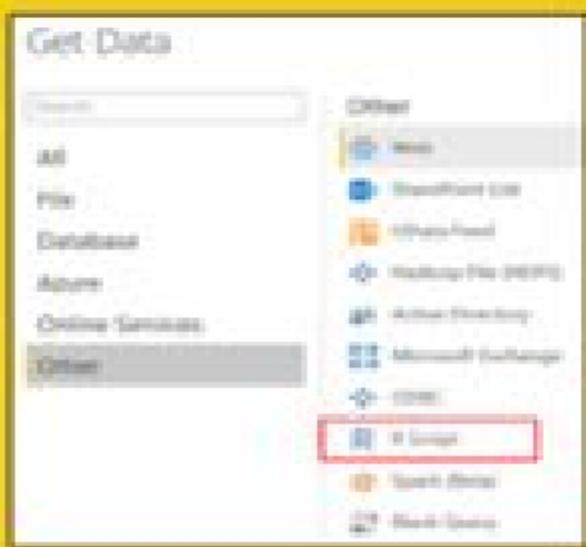


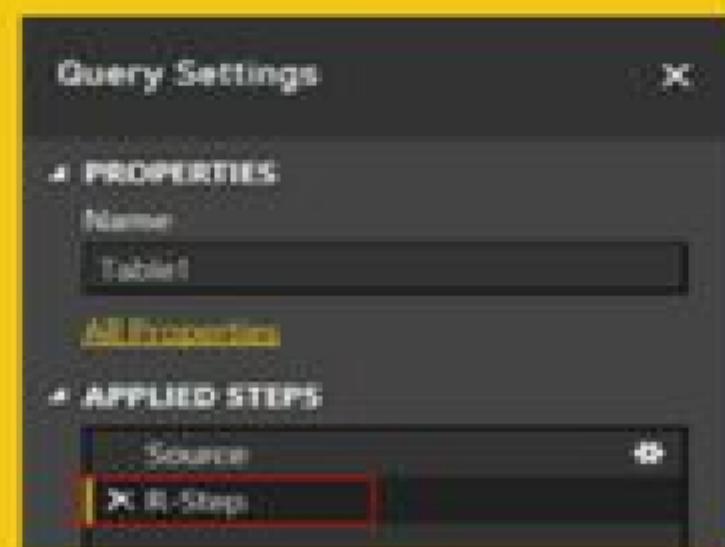
# The R in Power BI Capabilities



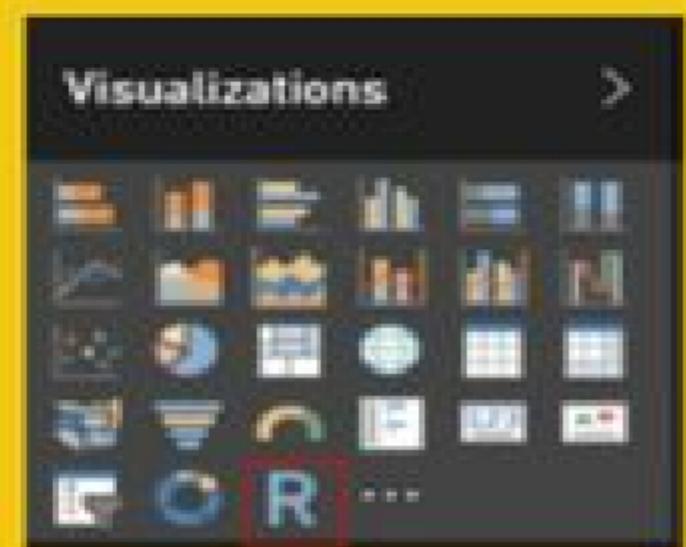
## R Connector



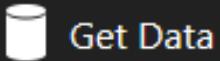
## R Steps in Power Query



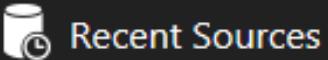
## R Visuals



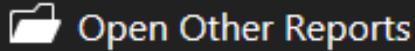
# Power BI Desktop



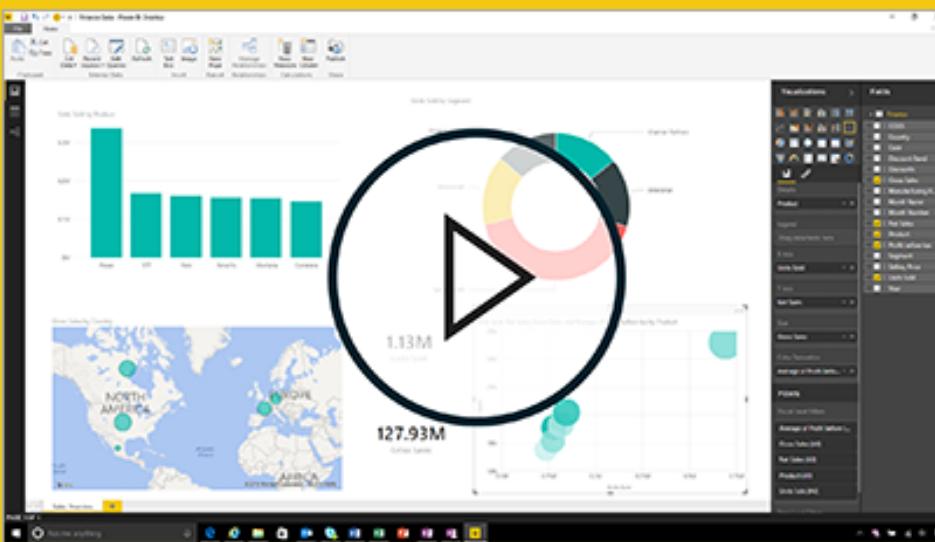
Get Data



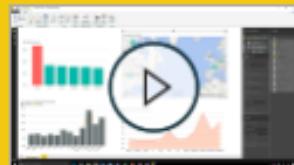
Recent Sources



Open Other Reports



Getting started with Power BI Desktop



Building reports



Query view concepts



Uploading your reports

[View all videos](#)

Show this page on startup

## FORUMS

Visit the Power BI Forum to ask questions or interact with other users in the Power BI community.

## POWER BI BLOG

Keep up to date with the latest news, resources, and updates from the Power BI team.

## TUTORIALS

[Analyzing Sales Data](#)

[Facebook Analytics](#)

[Importing data from a Web page](#)



## Businesses are moving to **PowerBI** for multiple purposes...



Optimize **infrastructure** costs and achieve scale



Gain value from **data** to predict business outcomes



Build new **apps** and experiences



Connect to **business platforms** of services and partners



Make teams productive with secure **mobile/devices**



Create your own R visualization inside Power BI using R codes

Write your own R code inside Power Query to do ML

### R and Power BI

Use R Custom Visual in Office Store

Create your Own Power BI Custom Visual using R



# Sam Chatterjee



Business Intelligence Developer at H&M, Denmark.

- Speaker in Microsoft, lyngby 2017.
- Meetup groups in PowerBI Denmark, Norway, Australia.
- Youtube channel in sambidata.
- Whatsapp group on Global PowerBI and R ML .



# Power BI

genda

**Why, how and What is R**

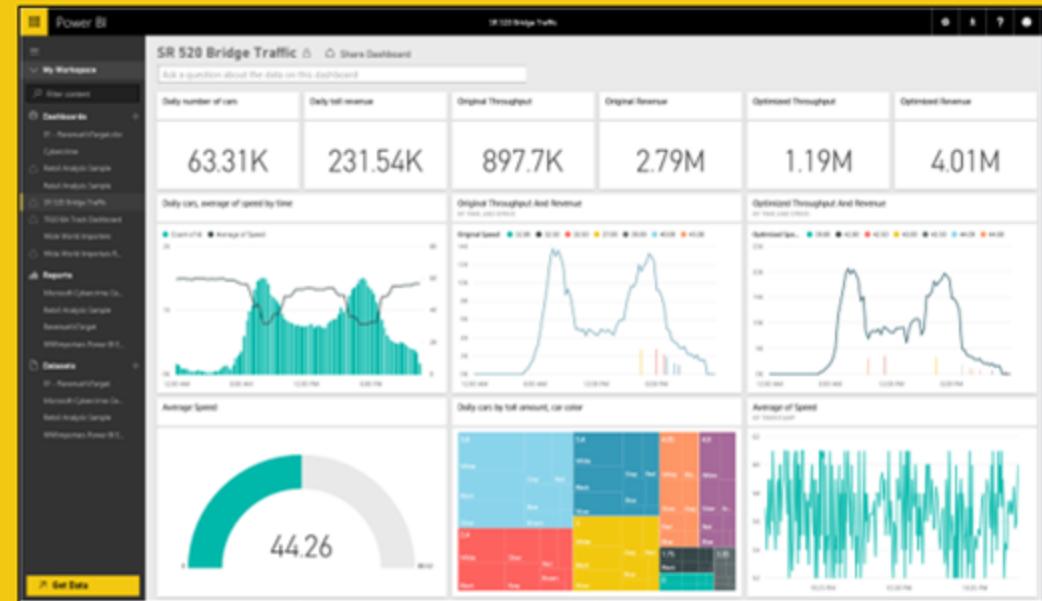
**Why, how and What is PowerBI.**

**Simple programming in R script.**

**ggplot analysis using R + PBI.**

**Correlation analysis with R + PBI.**

**Market Basket analysis with R + PBI.**



*Experience Your Data. Any Data, Any Way, Anywhere.*

# POWERBI FUNDAMENTALS

## Core Fundamentals

- Query Editor
- Relationships
- DAX
- Visualization
- Power BI Platform

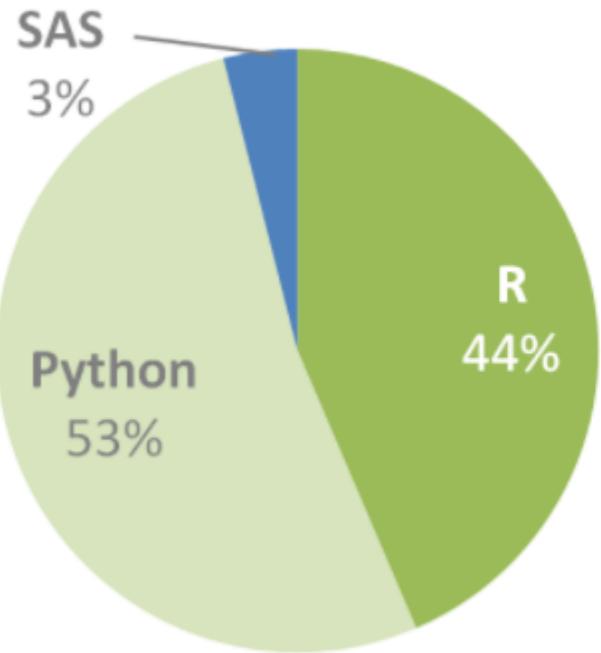
Download PowerBI from

<https://powerbi.microsoft.com/en-us/downloads/>

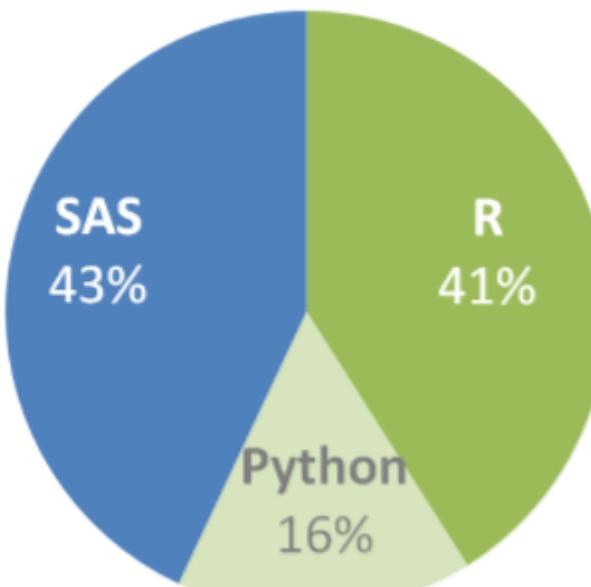


# R , PYTHON or SAS WHICH ONE?

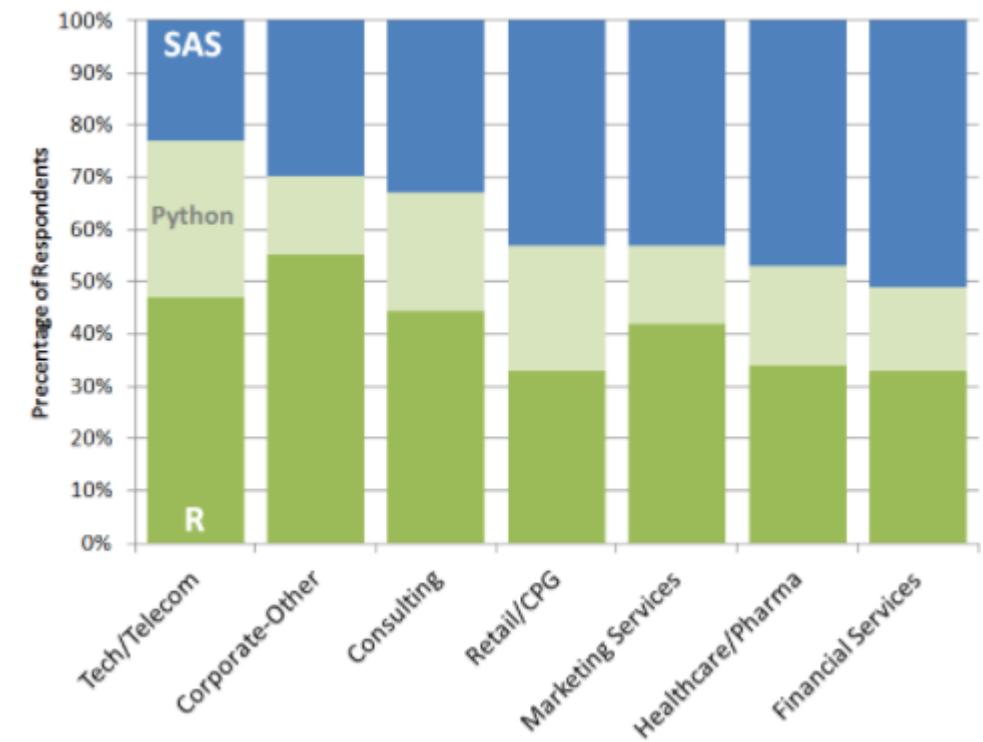
## Data Scientist



## Predictive Analytics



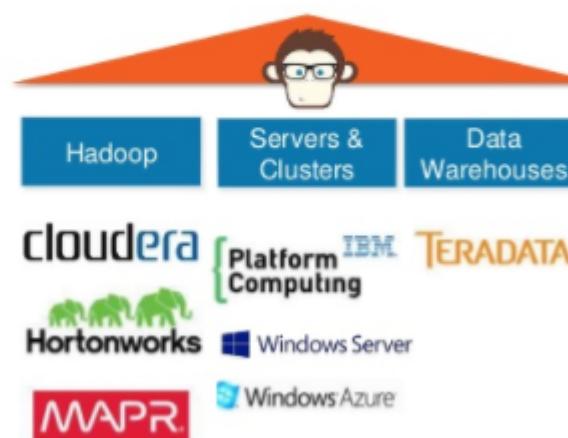
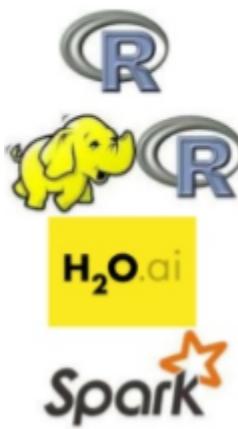
## Tool Preference by Industry



R is an open source programming language and software environment for statistical computing and graphics that is supported by the R Foundation for Statistical Computing. The R language is widely used among statisticians and data miners for developing statistical software and data analysis.

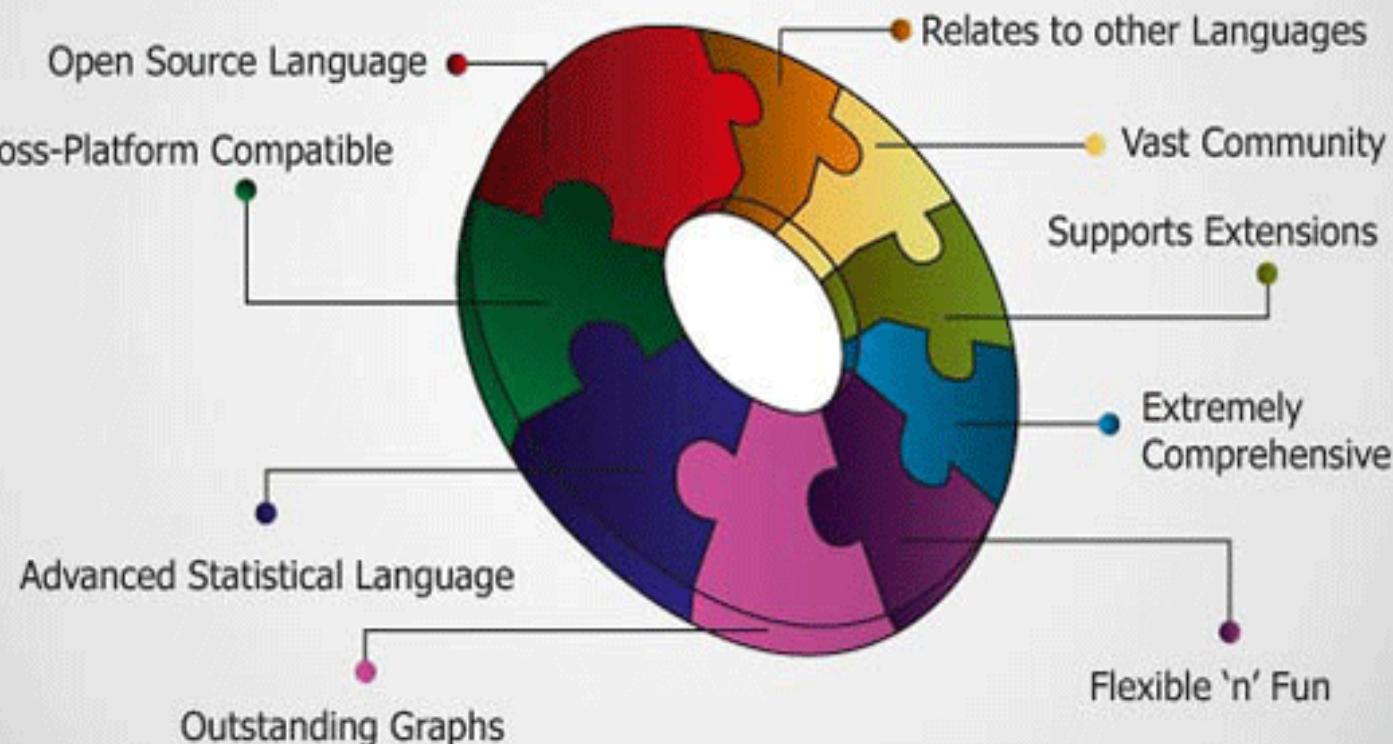
## Why R for Data Science

### R Scales



## Why Learn R?

edureka!



# Top Tier Companies using R

The following is a list of top brands or large organizations using R.

1. Facebook - For behavior analysis related to status updates and profile pictures.
2. Google - For advertising effectiveness and economic forecasting.
3. Twitter - For data visualization and semantic clustering
4. Microsoft - Acquired Revolution R company and use it for a variety of purposes.
5. Uber - For statistical analysis
6. Airbnb - Scale data science.
7. IBM - Joined R Consortium Group
8. ANZ - For credit risk modeling
9. HP
10. Ford
11. Novartis
12. Roche
13. New York Times - For data visualization
14. McKinsey
15. BCG
16. Bain



# What is R?

The R statistical programming language is a free open source package based on the **S language** developed by Bell Labs.

R was created by **Ross Ihaka** and **Robert Gentleman** at the University of Auckland, New Zealand



# Introduction to R

- R is a programming language and environment developed for statistical analysis by practising statisticians and researchers.
- Most widely used Data Mining and Machine Learning Package
  - Machine Learning
  - Statistics
  - Software Engineering and Programming with Data
  - But not the nicest of languages for a Computer Scientist!



# INSTALL R

1) R software download

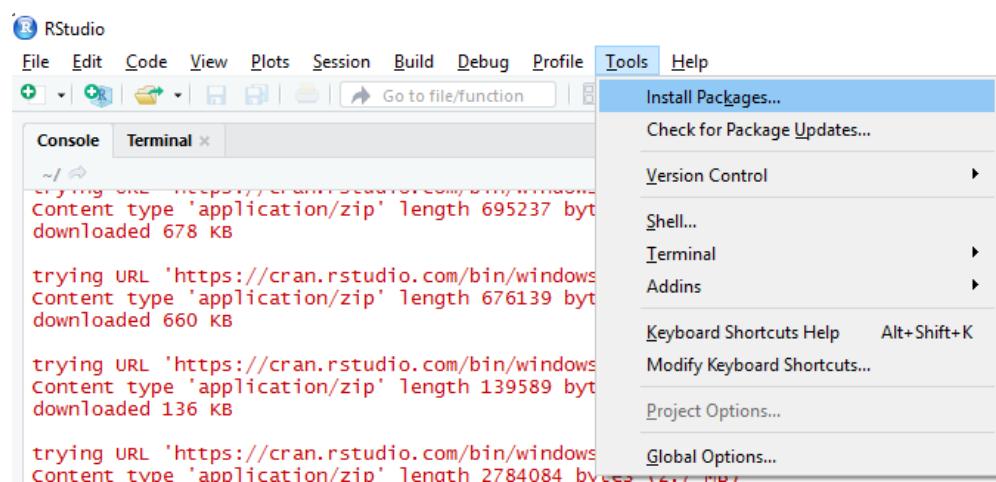
<https://www.r-project.org/>

2) Install R software.

3) Download and install R-studio

<https://www.rstudio.com/>

4) Install R packages



# >install.packages("package name")

1. Data Visualization ggplot2, googleVis
2. Data Transformation plyr, data.table
3. Missing Value Imputations MissForest, MissMDA
4. Outlier Detection Outliers, EVIR
5. Feature Selection Features, RRF
6. Dimension Reduction FactoMineR, CCP

## Pre Modeling Stage

## Data Analysis Useful Libraries in



## Modeling Stage

1. Continuous Regression car, randomforest
2. Ordinal Regression RMiner, CoreLearn
3. Classification Caret, BigRF
4. Clustering CBA, RankCluster
5. Time Series forecast, LTSA
6. Survival survival, Basta

## Post Modeling Stage

3



## Other Libraries

- A. Improve performance Rcpp, parallel
- D. Text Mining tm, twitteR

- B. Work with web XML, jsonlite, httr
- E. Database sqldf, RODBC, RMongo

- C. Report results shiny, RMarkdown
- F. Miscellaneous swirl, reshape2, qcc

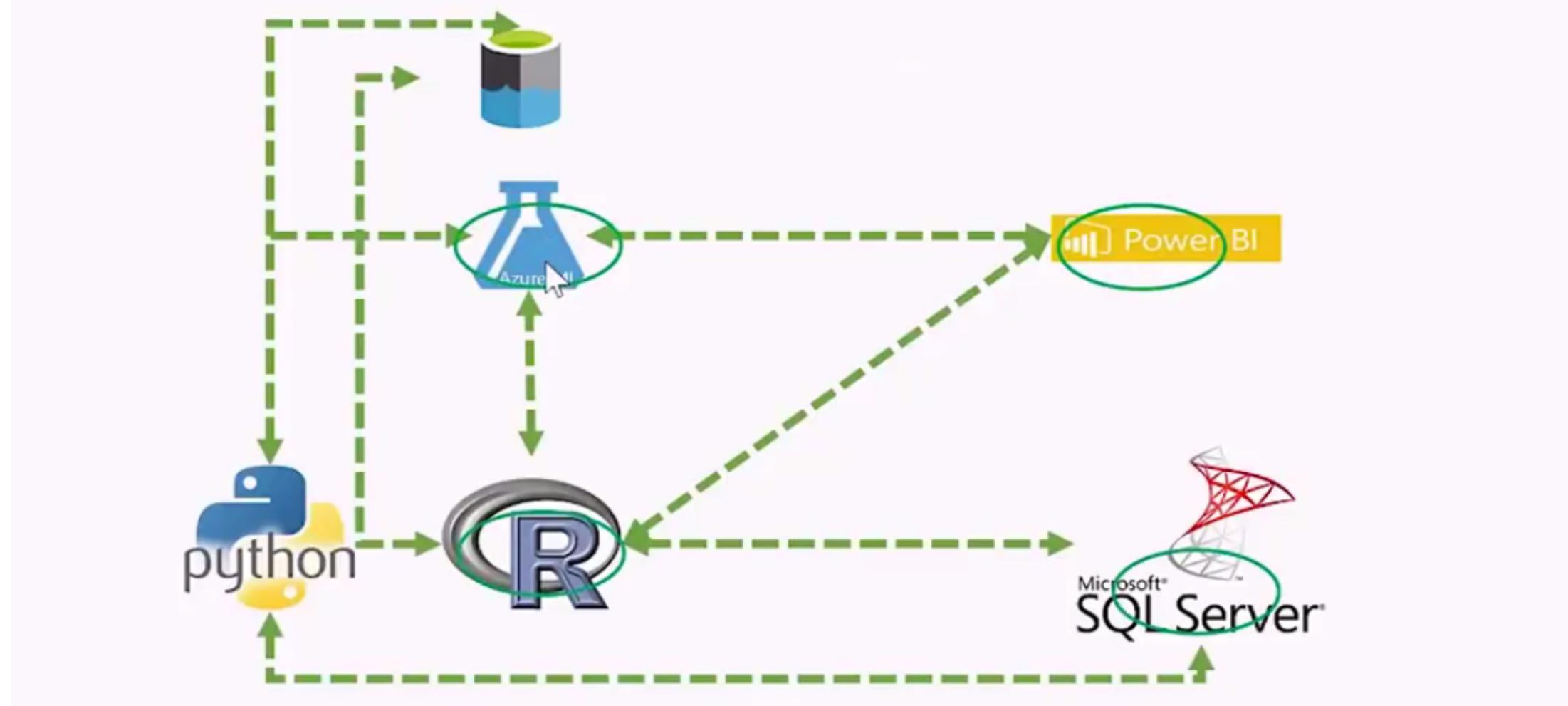


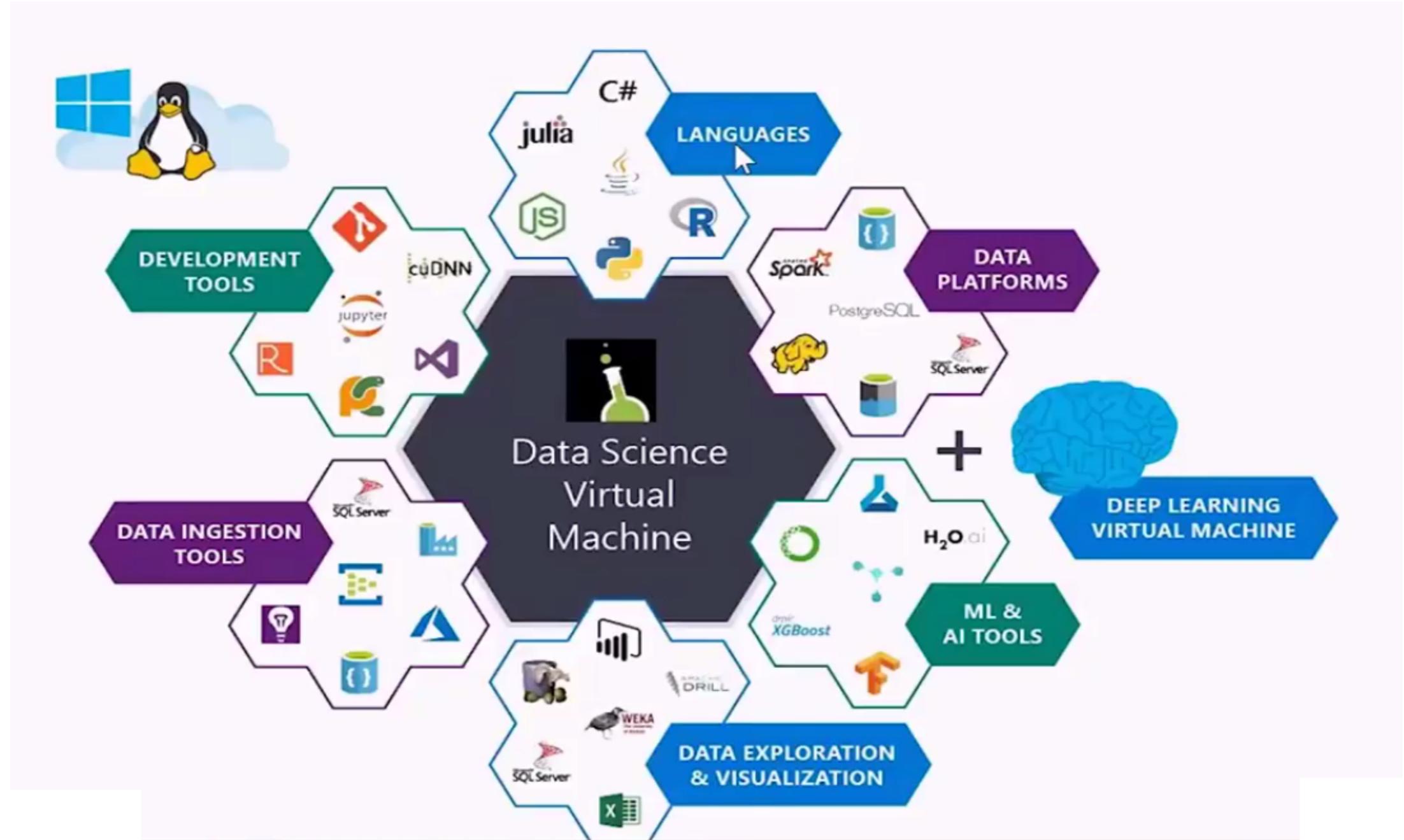
# Working with R

- **Highly Functional**
  - Everything done through functions
  - Strict named arguments
  - Abbreviations in arguments OK  
(e.g. T for TRUE)
- **Object Oriented**
  - Everything is an object
  - “`<-`” is an assignment operator
  - “`X <- 5`”: X GETS the value 5



# R Helps Business Intelligence Developers



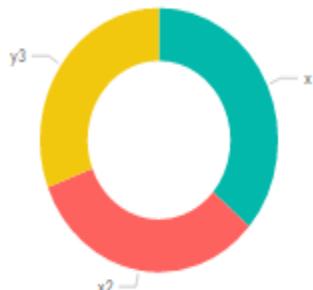


# R script

## Script

```
x<-rnorm(100)
y<-rnorm(100)
df1<-data.frame(x,y)
x1<-rnorm(200)
y1<-rnorm(200)
df1<-data.frame(x1,y1)
x2<-rnorm(300)
y2<-rnorm(300)
df1<-data.frame(x2,y2)
x3<-rnorm(400)
y3<-rnorm(400)
df1<-data.frame(x3,y3)
```

x, y1, x2 and y3



X

12

10

8

6

4

2

0

-2

-4

x, y1, x2 and y3

● x ● y1 ● x2 ● y3



0

20

x, y1, x2 and y3

● x ● y1 ● x2 ● y3

10

5

0

-5

-10



Download file : <http://www.ecb.europa.eu/stats/eurofxref/eurofxref-hist.zip>

Follow us

**Statistics**

+ Main features

- ECB/Eurosystem policy and exchange rates

Official interest rates

Minimum reserves and liquidity

Eurosystem balance sheet

+ Banknotes and coins

TARGET balances of participating NCBs

**Euro foreign exchange reference rates**

# Euro foreign exchange reference rates

The reference rates are usually updated around 16:00 CET on every working day, except on TARGET closing days. They are based on a regular daily concertation procedure between central banks across Europe, which normally takes place at 14:15 CET.

## Euro foreign exchange reference rates: 27 November 2017

All currencies quoted against the euro (base currency)

Currency

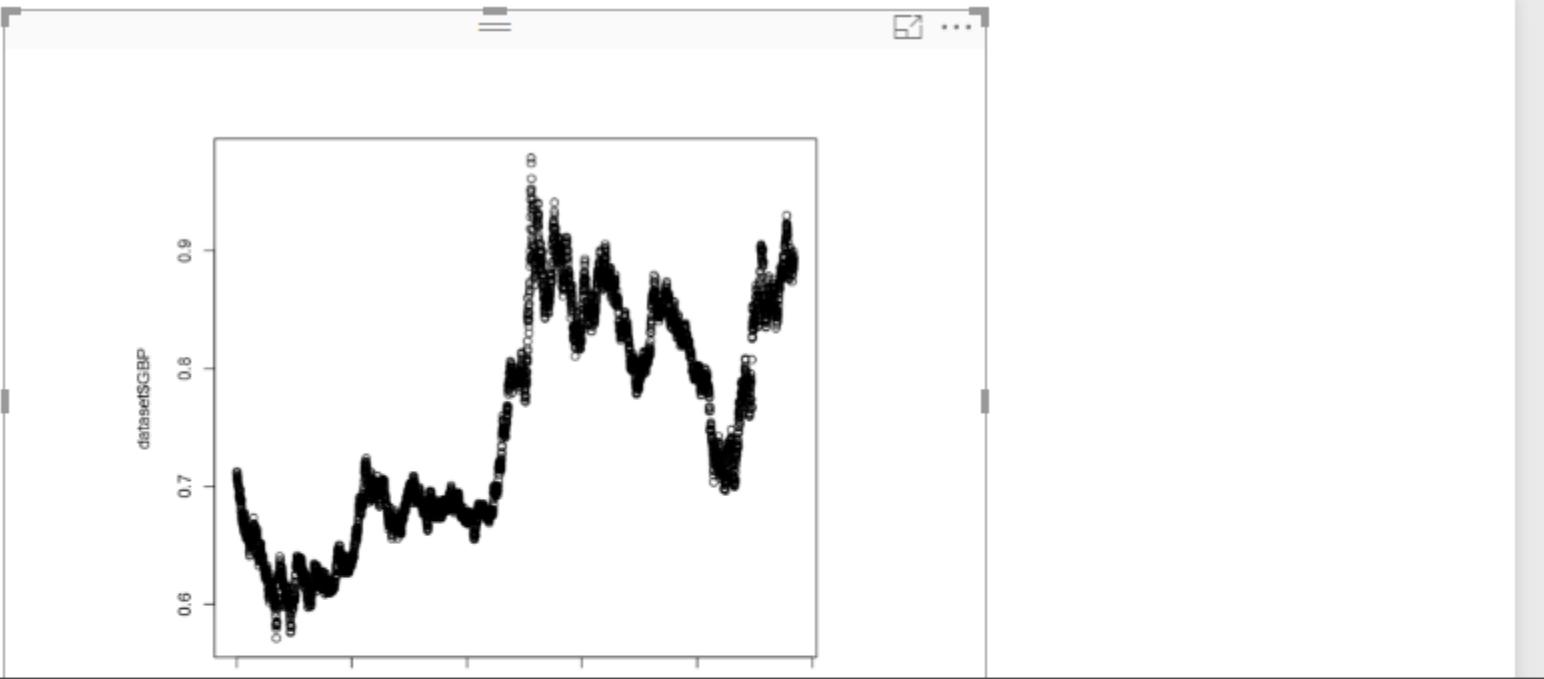
Spot Chart

## Statistical Data Warehouse

Time series for bilateral exchange rates



```
plot(dataset$GBP)
```



VISUALIZATIONS >

FIELDS

Search

eurofxref-hist

- AUD
- BGN
- BRL
- CAD
- CHF
- CNY
- Column1
- CYP
- CZK
- Date
- DKK
- EEK
- GBP
- HKD
- HRK
- HUF
- IDR
- ILS
- INR
- ISK

Values

- Date
- Year
- Quarter
- Month
- Day
- GBP

FILTERS

Visual level filters

- Date - Day (All)
- Date - Month (All)
- Date - Quarter (All)
- Date - Year (All)

## R script editor

Duplicate rows were removed from the data.

```
# Remove duplicated rows  
# dataset <- unique(dataset)  
plot(dataset$GBP)
```

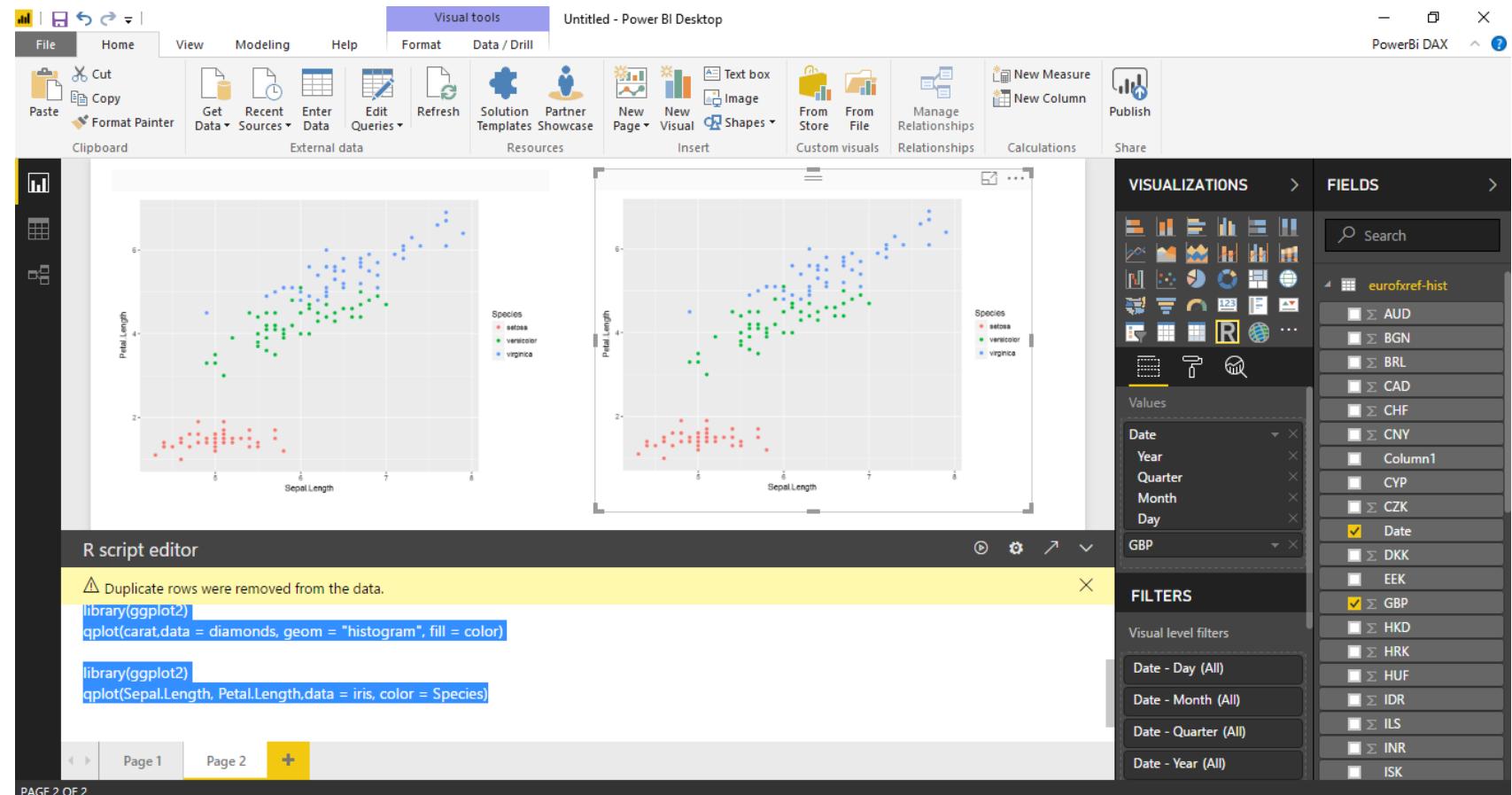
Page 1

Page 2



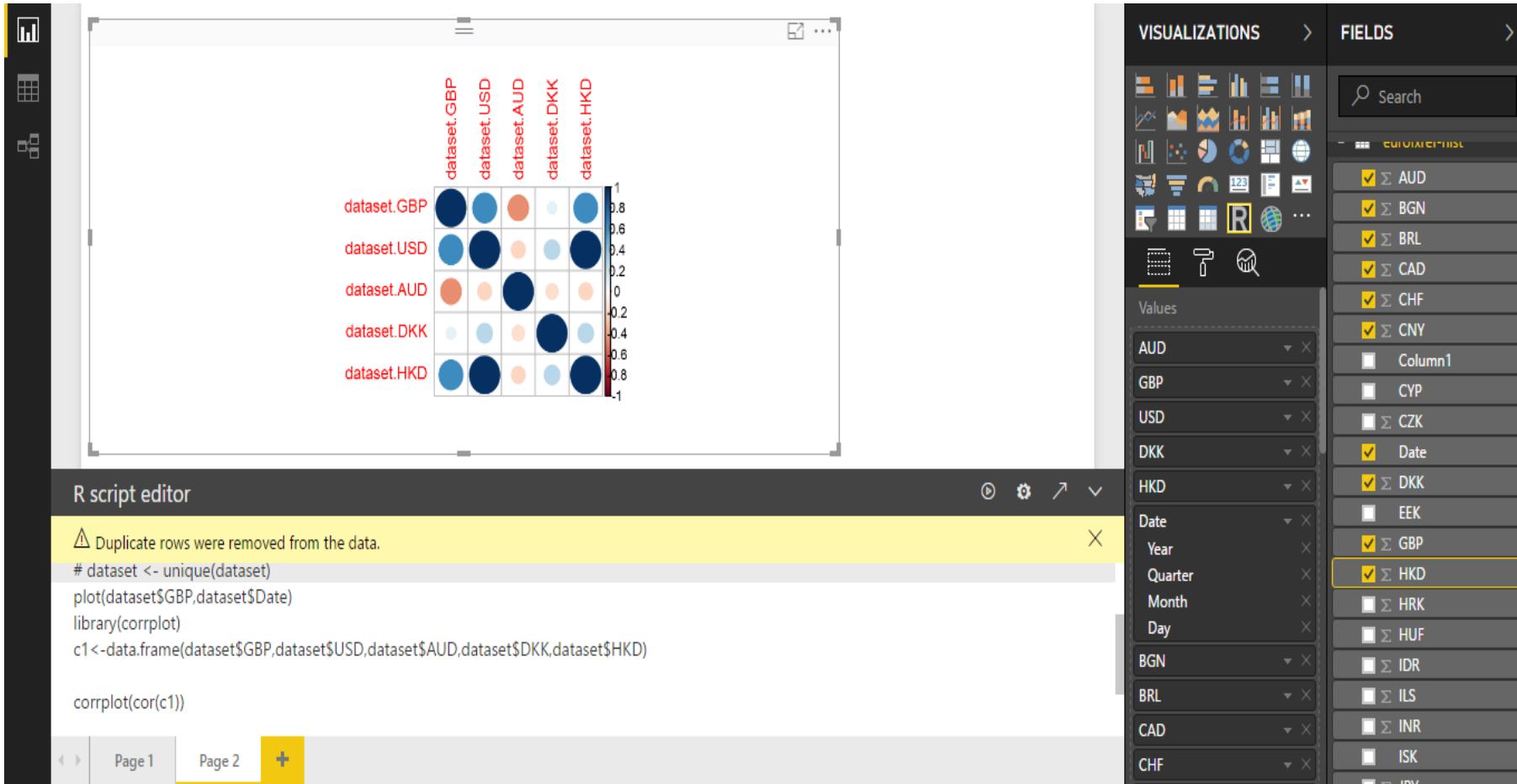
```
library(ggplot2)  
qplot(carat,data = diamonds, geom = "histogram", fill = color)
```

```
library(ggplot2)  
qplot(Sepal.Length, Petal.Length,data = iris, color = Species)
```

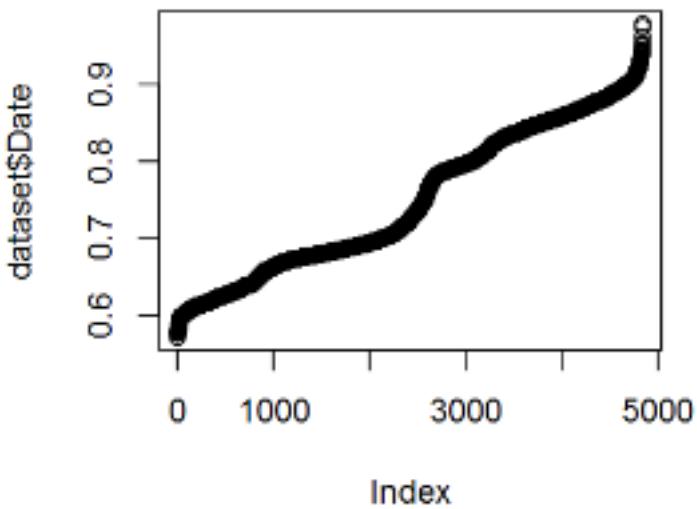


```
plot(dataset$GBP,dataset$Date)
library(corrplot)
c1<-
data.frame(dataset$GBP,dataset$USD,dataset$AUD,dataset$DKK,
dataset$HKD)

corrplot(cor(c1))
```



```
#forecast  
plot(dataset$GBP,dataset$date)  
c1<-data.frame(dataset$GBP)  
library(forecast)  
fitm<-auto.arima(c1[c(1:100),c(1)])
```



# Resources

- Get Power BI (Free) <http://tinyurl.com/hj5hdg6>
- Power BI Jump Start <http://bit.ly/1ktON16>
- Power BI Getting Started <http://bit.ly/1FF88KA>
- Power BI Team Blog <http://bit.ly/1vwbTLG>
- Power BI Channel 9 <http://bit.ly/1a9Q0gv>
- Power BI <https://powerbi.microsoft.com>

# Thank You For Attending !



Q &