Visualisation tools

Agenda

1. Introduction
2. Things to consider when choosing a tool
3. Tool examples
    - Power BI
    - Tableau
    - R Shiny
    - Excel
4. Others
5. A few tips to end on
6. Summary
7. Questions

Introduction

- Data has increased, and so have the number of tools available to visualise it!
- Can capture whole story of dataset in a single graph.
- Tools allow:
  - Build of interactive dashboards tracking key business metrics
  - Automatic updates of visuals
  - Connecting and visualising many data sources in one place
  - Easy download of visuals for static reports…
  - …and don’t need to be able to code to do all of above.

Benefits of data visualisation tools

- Publish data reports and dashboards online - easy to share.
- Interactive (user can drill into data)
- Hold a lot more information in single view
- Can handle much bigger datasets
- Automatic updates of visuals if new data
- Connecting and visualising many data sources in one place
- Multiple collaborators on single dashboard
- Easy download of visuals for static reports

…and you don’t need to code!

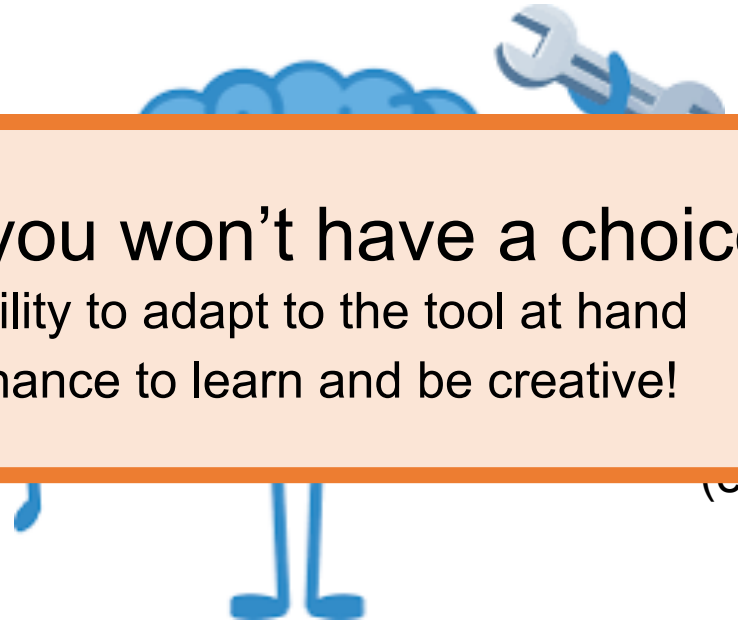
Things to consider when choosing your tool

End users (mobile vs desktop)

Community support & forums

Shareability & security

Reproducibility
& maintenance



Often you won't have a choice…

Ability to adapt to the tool at hand

Chance to learn and be creative!

(e.g. mapping, timelines)

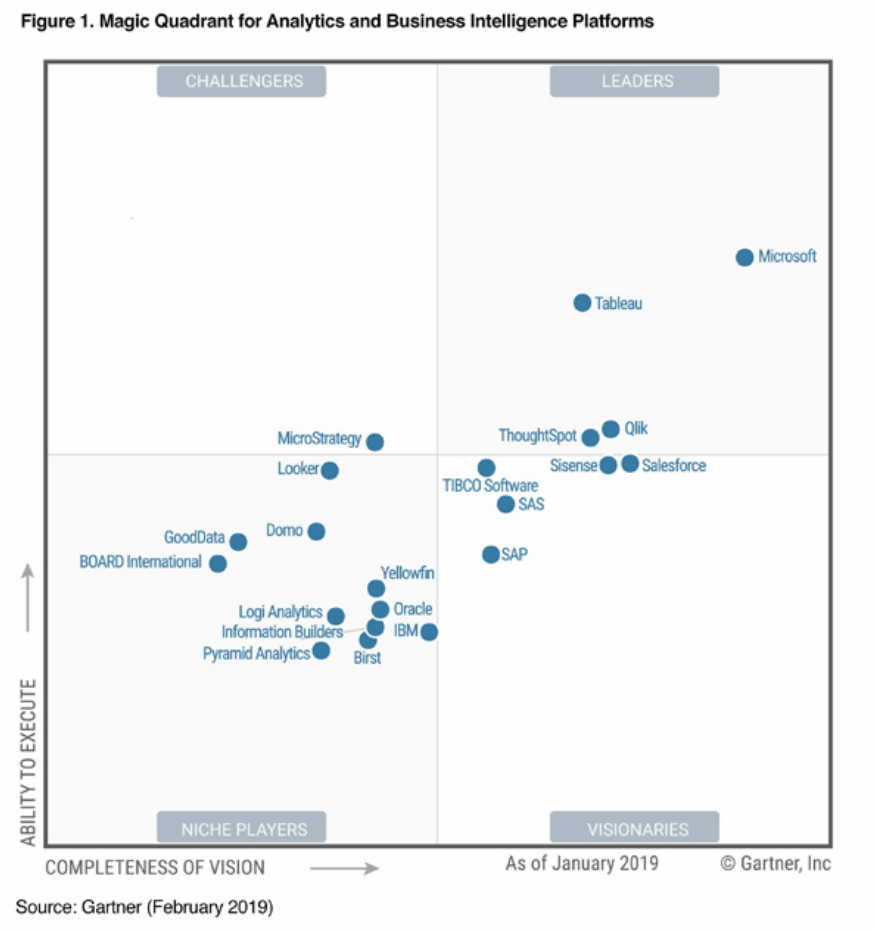
Necessary additional
features & complexity

Connecting your
data sources
(number of sources,
static vs. live)

Number of users
(view only vs authors)

Comparisons

Gartner



Benjamin Bach

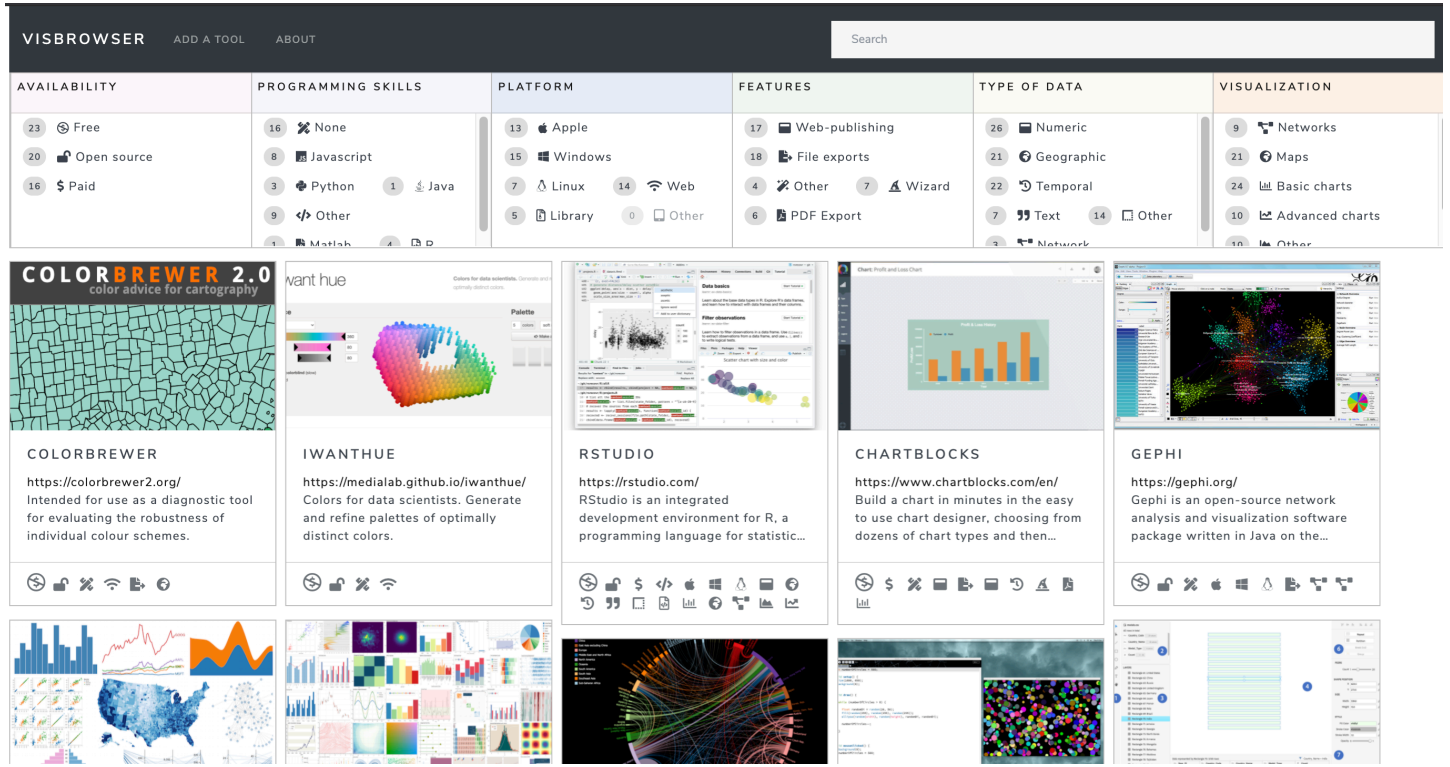
[DataTech Talk]

(slide 8)

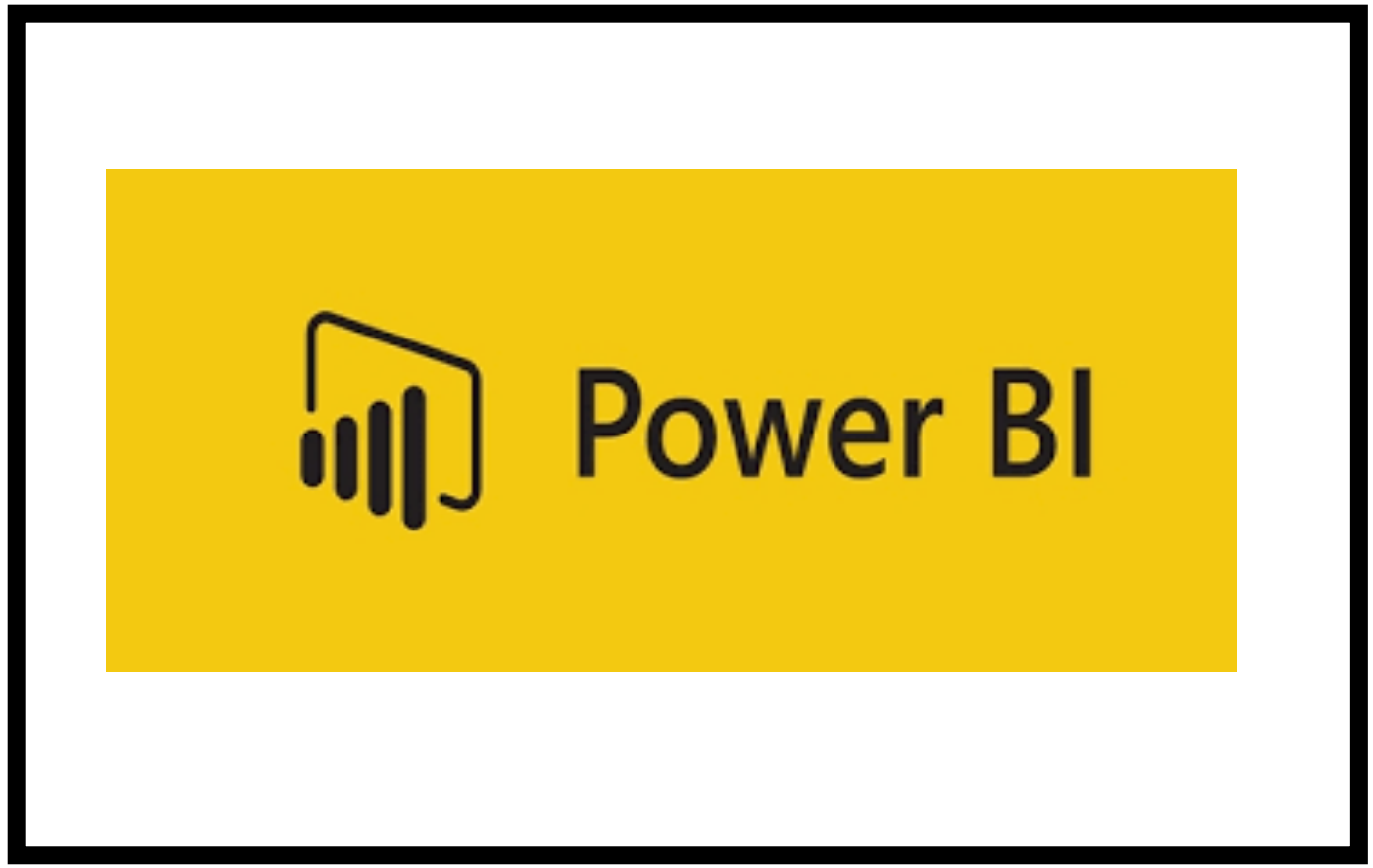
Vistools project

Can be found here.

Project aims to help with making choices when searching for visualisation tools, and is developed at the University of Edinburgh.



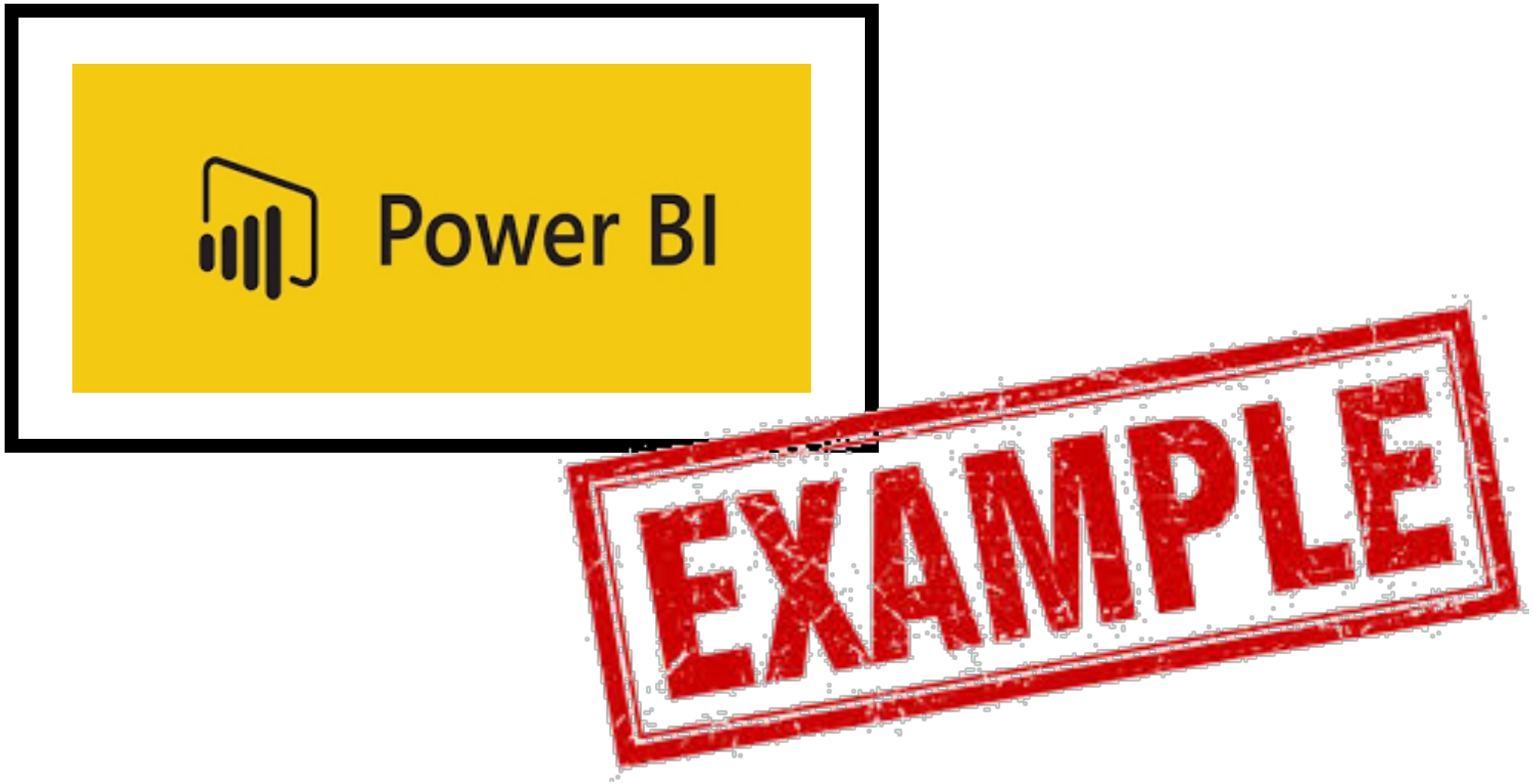
Examples


Power BI

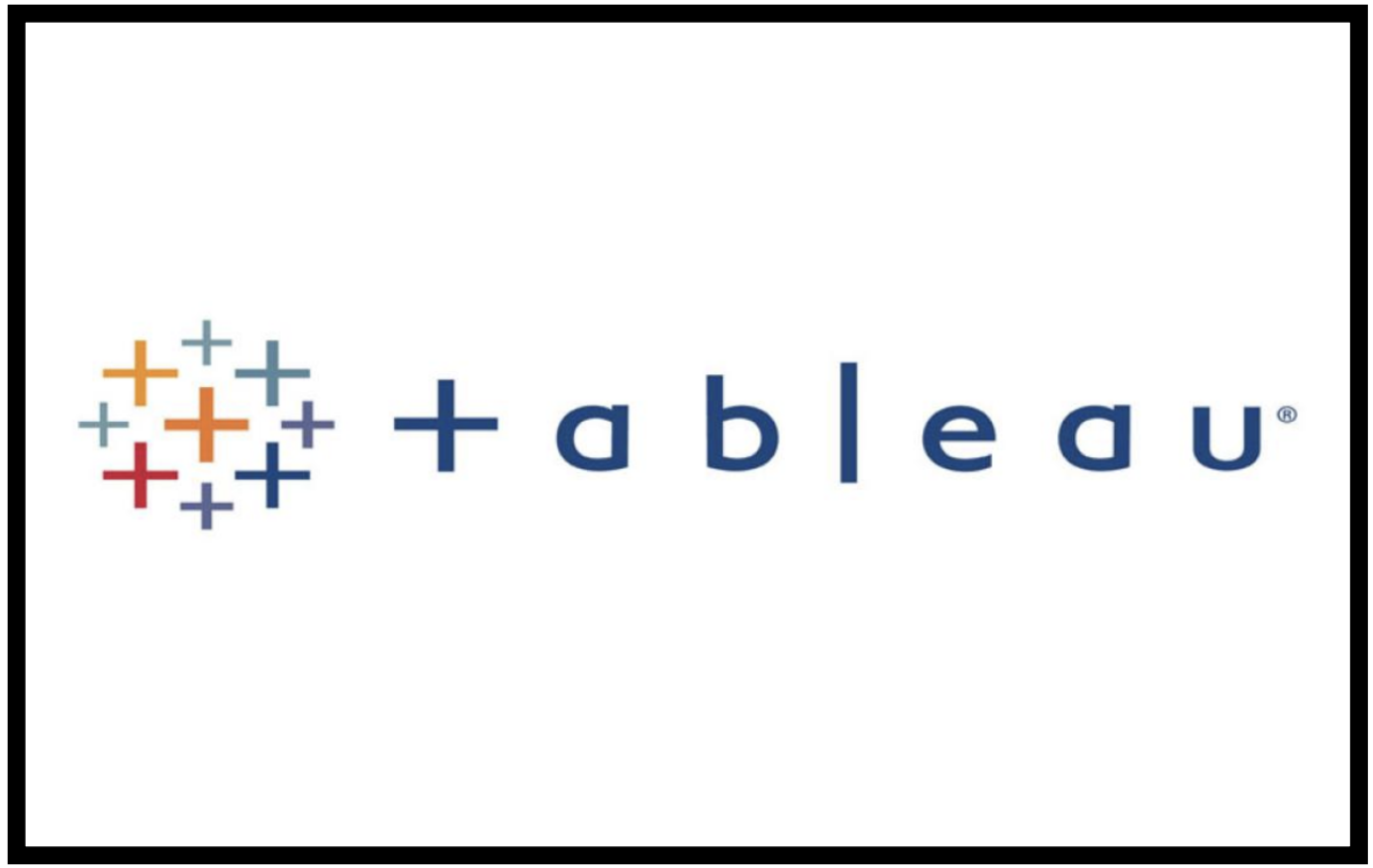
Power BI

- A lot cheaper than many other options
  - Free (with Microsoft Office) BUT only if creating own reports or ok posting publicly (so not secure data)
- Can run R scripts
  - Need Pro license to render visuals
  - Not all packages supported
- Custom visuals
- Regular updates
  - Can post suggestions on community forums
- Lots of community support & blogs
- Connect to lots of data sources
- Accessible to non technical audience (intuitive for excel users).
- Mobile version – can get notifications for changes
- Interacts well with other Microsoft products
- Real time updates

- Not available on macOS
- Not free to publish or share securely (Pro license is $10 a user per month)
- Rigid structure
  - Data structure
  - Report structure
- Limit data size
  - 10GB per workspace – any bigger…the cloud
- DAX (Data Analysis Expression) can complex after basic manipulation.
- Limit to the data preparation abilities



Example

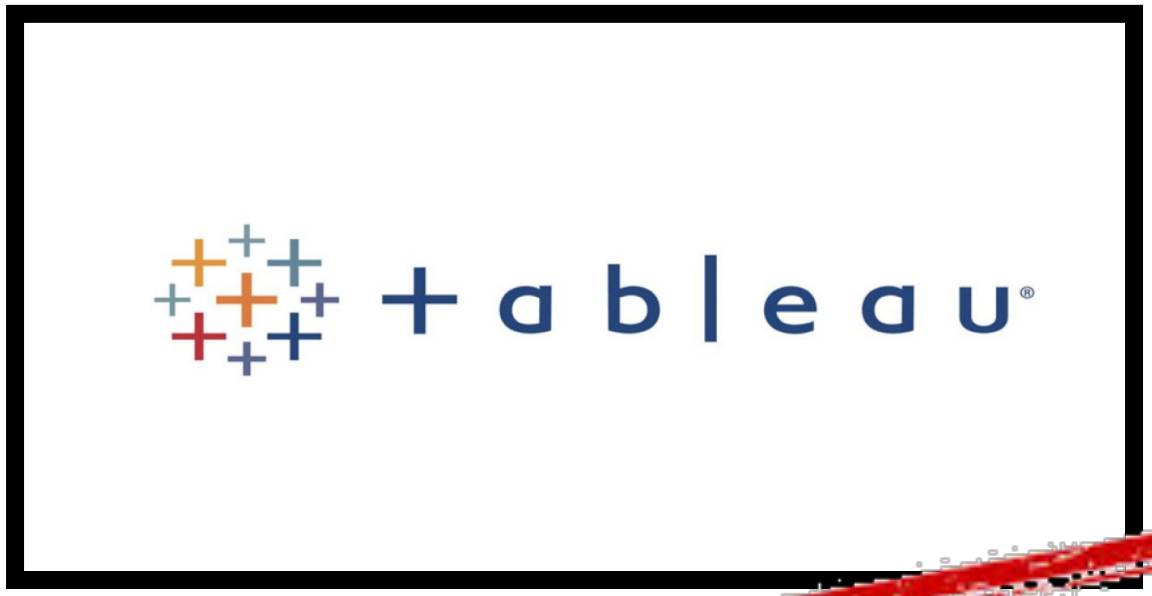


tableau

Tableau

- Free Tableau Public (BUT can only save dashboards publicly so needs to open data).
- Has ‘story’ functionality which is nice for presenting dashboards.
- Available across operating systems.
- Can run R scripts
- Lots of community support & blogs
- Connect to lots of data sources
- Accessible to non technical audience
- Mobile version – can get notifications for changes
- Real time updates

- Can be expensive if have many people creating dashboards and want to save securely ($70/per person/ month as Creators license)
- Limited data prep - have ‘Tableau Prep’ tool but part of paid ‘Creator’ license.



Example dashboard

Example story

Examples

R Shiny

- Customisable & flexible
- Open source
- Good support & tutorials
- Outside of server hosting costs, R Shiny is completely free
- Use all of R tools for analysis/ visualisation/modelling
- Customisable with CSS and HTML
- Interactive to user input

- Not really a ‘package’ – beyond base R skills required
- Skilled needed to modify or update
- Difficult to debug
- Documentation not as good as other R packages


Excel

Excel

- Most businesses have it
- Most business people have experience/ can use
- Free (with Microsoft Office)
- Quick
- Good for prototype before investing

- Much less flexible
- Only handles very small amount of data
  - Can aggregate but reduces flexibility
- Can’t connect to data/auto refresh
- Not good for sharing/collaborating
- Limited visuals
- Slow if too many formulas/data


Excel
EXAMPLE

Others

Drag & drop

- **Datawrapper** – prepared data, data journalists (here)
- **Flourish** - Data journalism, nice story functionality (here)
- **Qlik** – Qlikview & Qliksense

Coding

- **Plotly** - 'Dash' (Shiny for Python), plots on ggplot2 can be made interactive **(**here**)**
- **D3** – JavaScript library, R package 'r2d3'
- **Leaflet** – package in R, specific to mapping

A few tips to end on…

1. If get into an issue where have built in a tool and **can't securely share**
   - Potential work around - delete all data but keep one a dummy row to maintain structure then share
2. Get **end users** & **purpose agreed** before building:
   - Questions – why are you tracking this KPI? What action will you take if there is a change?
3. Sketch out or **wireframe** up design and get it agreed upon before by all end users before beginning.
   - Balsamiq (https://balsamiq.com)
4. Avoid overload, **simple** is often better.
5. **Flaticon** for icons (https://www.flaticon.com)

Summary

- Data visualisation is key of communication for any data analyst.
- A lot of factors to consider when choosing tool, but may be restricted by business/ client.
- **Power BI** can be cost effective and relatively accessible to non-coders but does have limitations in structure, and not available on macOS.
- **Tableau** is relatively accessible to non-coders but can get pricey for secure data.
- **R Shiny** is hugely flexible and open source but can be a steep learning curve.
- **Excel** can be great for prototypes before more investment but hugely limited in creativity and data size.
- Many players in the market and need to consider budget, purpose and data before making a choice.

Go give some a go!

Questions?