Rotterdam
November 25, 2021

Power BI Training

Basics & Standards

DUX DATA
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Contents

"There is no such thing as a dumb question" - Carl Sagan

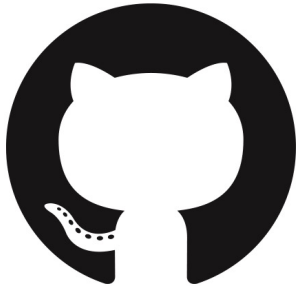
Pre-requisites

Power BI Desktop

- Download via: https://bit.ly/2ZkpsZI
- Windows only
- Alternative: RDP (see Appendix)

Azure SQL Server / DB

- SQL Server Management Studio: https://bit.ly/3nOFJQ4
- DBeaver: https://bit.ly/3cLwp9c
- SQL Pro for MS SQL: https://bit.ly/3FNJXgW



Github:

- https://www.github.com/atheys/Training
- Data sets in *data* folder
- DB Connector in *code* folder
- Power BI report template in *reports* folder

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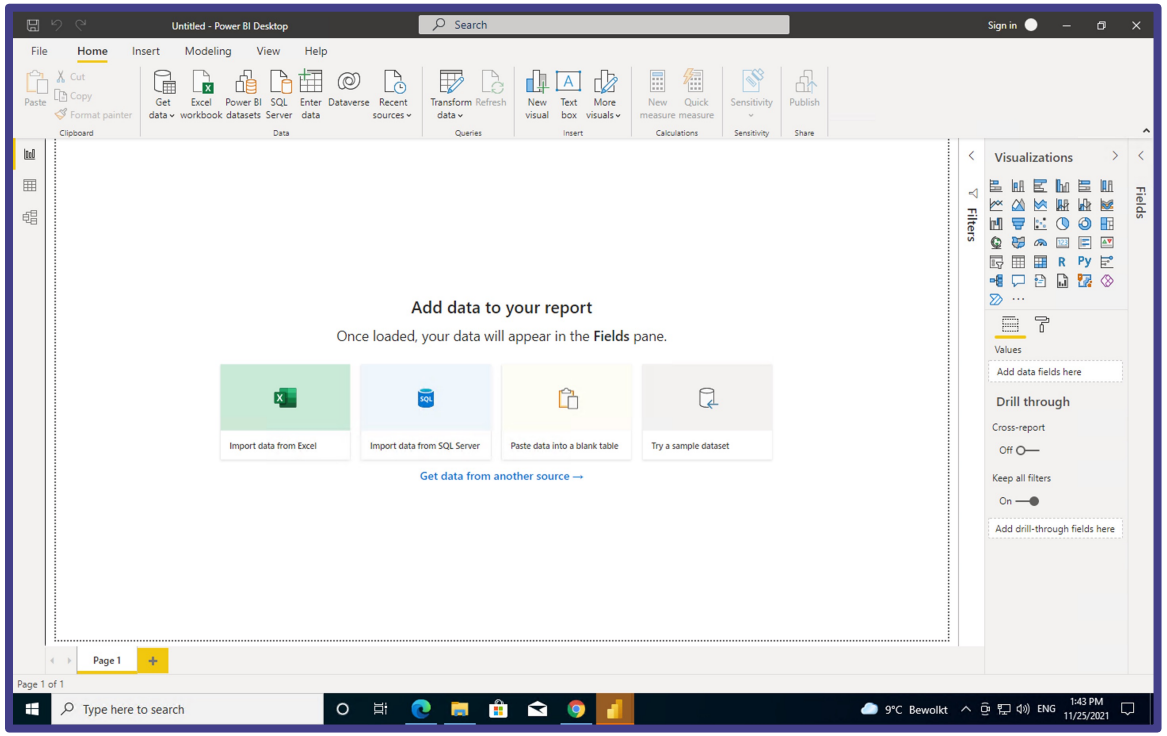
Introduction

What is Power BI?

- Visualisation tool (Windows stack)
- Can connect with multiple data sources:
- Advised: (semi-)structured
- Databases, mostly relational (SQL)
- Files & sheets



"Excel on steroids"

- Capabilities to transform data
- Link data sets
- Manage relationships
- Visuals, filters & slicers
- Further embedding (not covered today)
- Visuals in Python & Power Apps
- Embedded dashboards in (mobile) apps

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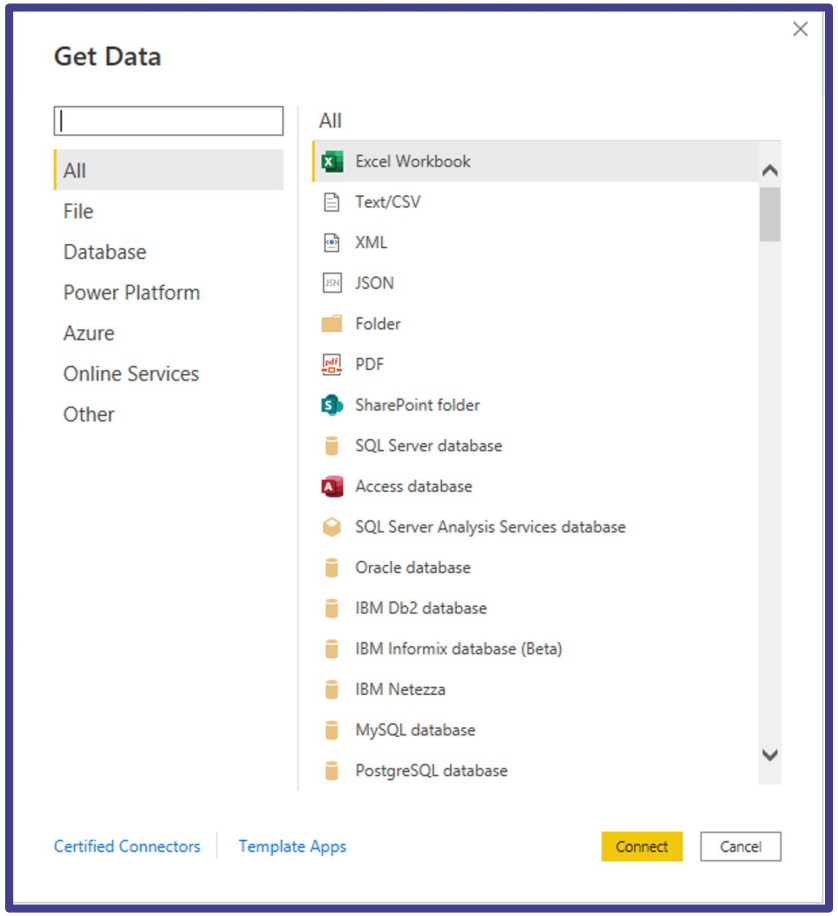
Data Sources

Whole variety of supported data connections

1. **Structured data aka. databases**
   - ✓ SQL Server: on-prem & in Azure (tables & views)
   - ✓ Snowflake
   - ✓ Postgres DB (multiple hosting options supported)
   - ✓ Other: MySQL, Oracle, Teradata, IBM…

2. **Semi-structure data aka. files**
   - ✓ Excel/CSV/Parquet
   - ✓ XML/JSON

3. **Other**
   - ✓ SSAS / Azure Analysis Services
   - ✓ Other Power BI data sets
   - ✓ External systems: Salesforce, Google Analytics, etc.



Data Sources

For today's training:

1. **Azure SQL DB**
   - ✓ *Tables & Views*
   - **Host**: at-training-sql-server.database.windows.net
   - **Database**: at-training-dwh
   - **User**: different per person
   - **Password**: <first two letters of user>@SQLS3rv3r!

2. **CSV**
   - **github:** https://www.github.com/atheys/Training
   - **folder:** data/csv/

3. **Parquet**
   - **github:** https://www.github.com/atheys/Training
   - **folder:** data/parquet/

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default	***duser***

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Your first Power BI connections

1. **Open Power BI Desktop**
   - Open “first_connections.pbix” from the reports folder on git

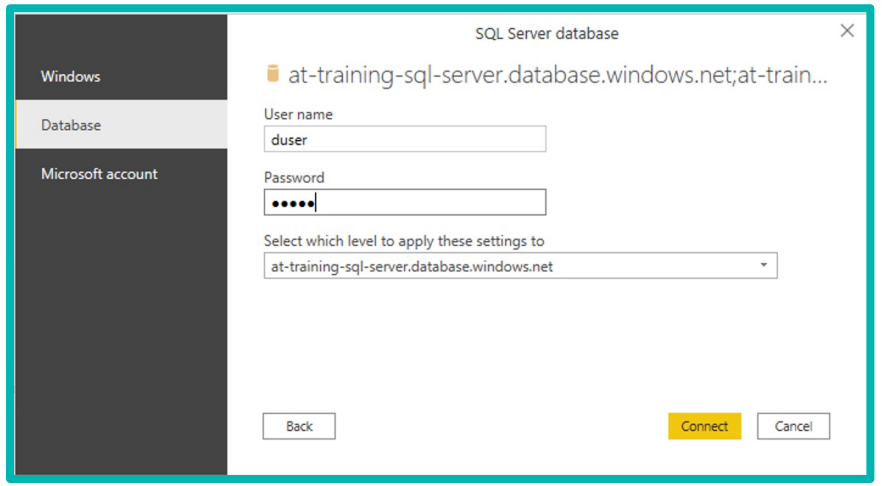
2. **Make connection with the SQL Server**
   - Via SQL Authentication
   - Load tables/views: jay_z, titanic & vw_spotify

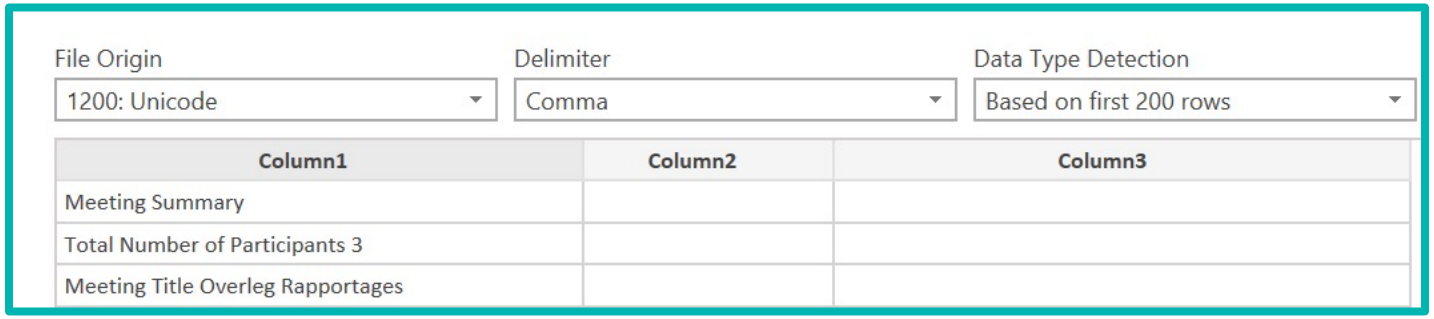
3. **Add CSV file “titanic_passengers.csv” from the git repository**
   - Use correct separator (;)
   - Check data types (in data section)

4. **Add parquet file “calendar.parquet” from the storage account**
   - URL: https://attrainingstorage.blob.core.windows.net/training/calendar.parquet?sp=r&st=2021-11-26T07:32:32Z&se=2021-11-26T15:32:32Z&spr=https&sv=2020-08-04&sr=b&sig=vJ4ocIFx%2BxwCV7txcDOdhH5hKOC1H2HwKzIU5RrzYwE%3D

Your first Power BI connections

Tips & Tricks





Break 1

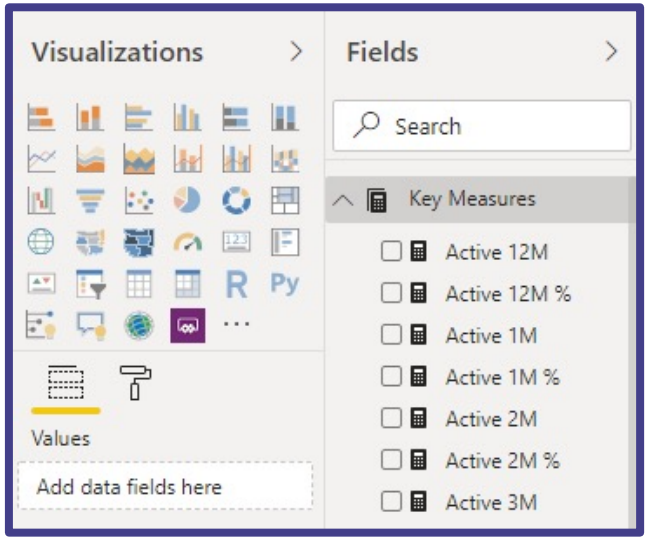
Starting back @ 15:30
***Timer**: https://kukuklok.com/*

DAX

- Data Analysis Expressions
- Exists in Power BI / SSAS
  - ➢ Back-end Power BI is SSAS service
- Expression used to define measures/KPI
  - ➢ Dynamic content
- Reactive to filters/slicers
- Very intuitive syntax
  - ➢ Similarities with Excel functions

```
1   --  SAMPLE returns a given number of rows from a table expression.
2   --
3   --  The rows are evenly chosen following the order provided
4   --  in the third and fourth arguments
5   DEFINE
6       TABLE SampleData = { 2, 4, 4, 4, 5, 5, 7, 9 }
7   EVALUATE
8   SAMPLE ( 3, SampleData, [Value], ASC )
9
10  EVALUATE
11  SAMPLE ( 3, SampleData, [Value], DESC )
12
13  -- Because SampleData has 8 elements, the elements considered are in position 1, 5, 8
14  -- The second query returns 5 instead of 4 because the sort order is descending
15  -- SAMPLE is deterministic when used over the same table with the same argument
```

▷ TRY IT COPY #1 DAX.do



References

- Documentations: https://bit.ly/3HSxVFa
- DAX Studio: https://bit.ly/3cNoXur
- Measures table in Power BI: https://bit.ly/3HVjeRu
- DAX Tutorial: https://bit.ly/3oZAQDb

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Your first DAX expressions

Who could have shared the raft?

Consult the titanic data set (*dax_expressions.pbix*)

1. Calculate the average age of the passengers
2. Calculate the average ticket fare
3. Create measures to distinguish men & women
4. Create measures to distinguish embarking
5. (!) Calculate the BMI of the passengers

Slice & Dice:

1. Class
2. Gender
3. Age (if applicable)
4. Embarking location
5. Whatever else you can think of

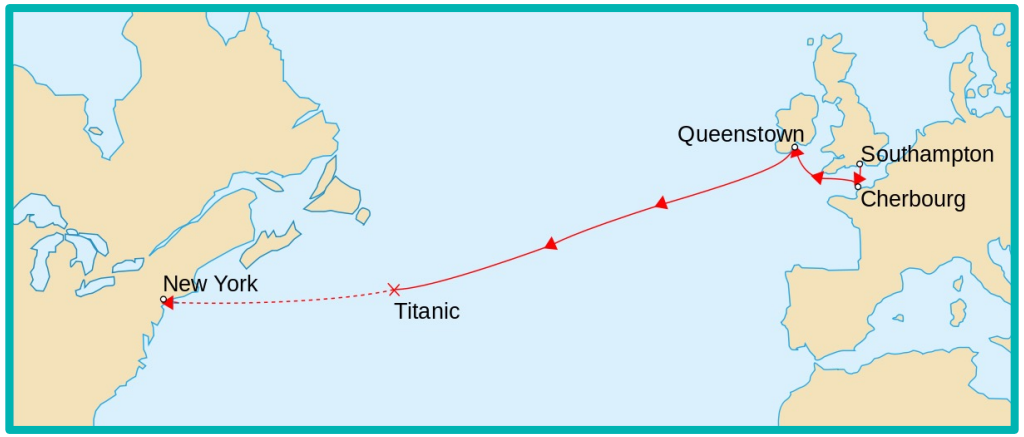
Your first DAX expressions

CHEAT SHEET

- The internet is your friend: https://bit.ly/3xkY0I2
- **Hint**: *overweight passengers (BMI > 25) cannot share a raft*

Functions

- IFERROR(… , BLANK())
- AVERAGE(…)
- CALCULATE(…, gender="M")
- FILTERCONTEXT(…)



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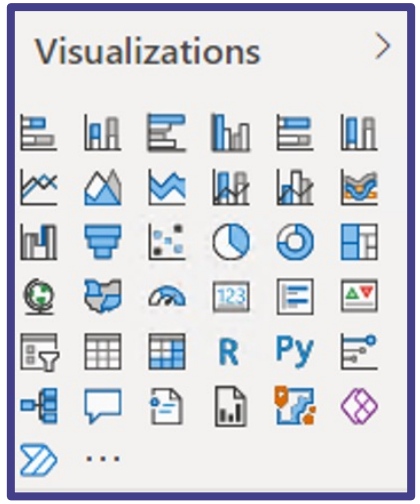
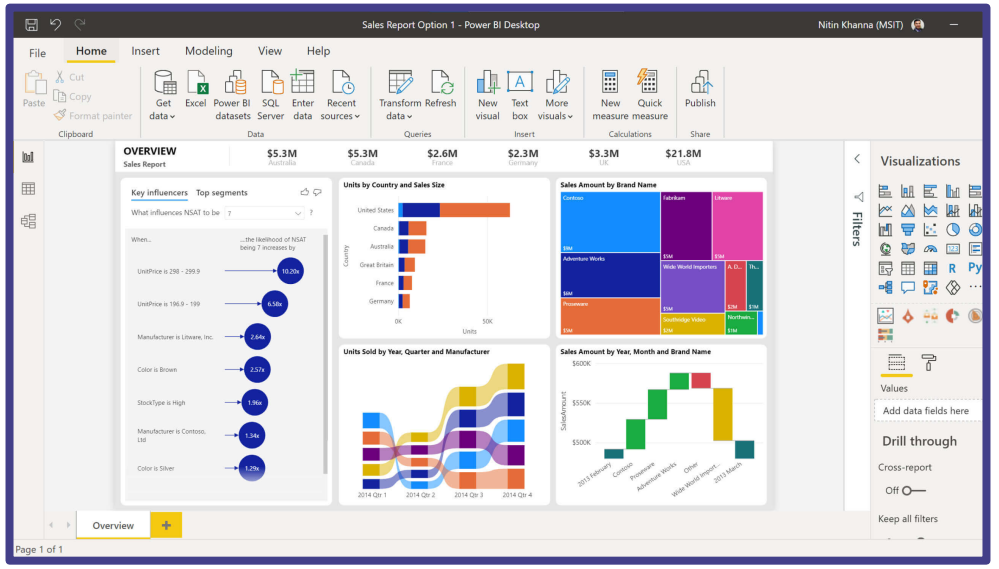
Visuals

- A lot of visuals native
- Bar/pie charts, scatters, trendlines, KPIs etc.
- More advanced visuals: https://bit.ly/3l7Rlfq

How to use & configure?

1. *Select your fields*
   - ➢ Columns, rows, values
   - ➢ Legend, details, etc.
   - ➢ Drilldowns
2. *Use filters on visuals (see also next slide)*
   - ➢ Timelines
   - ➢ Other slices & dices
3. *Work on lay-out*
   - ➢ Font types, colors, sizes,
   - ➢ Background, border, etc.



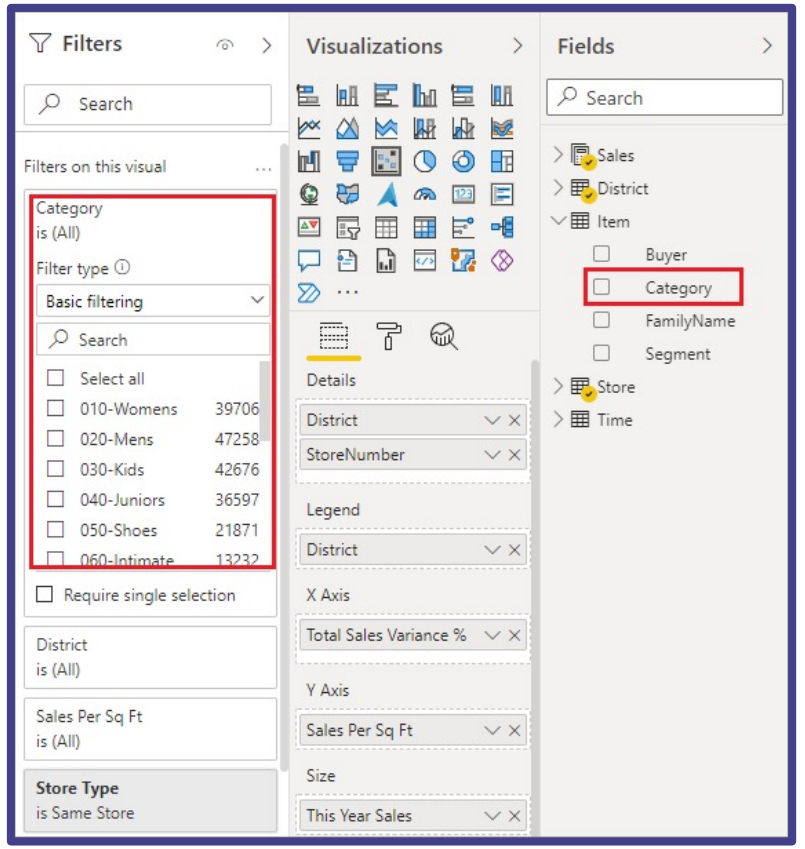


Slicers & Filters

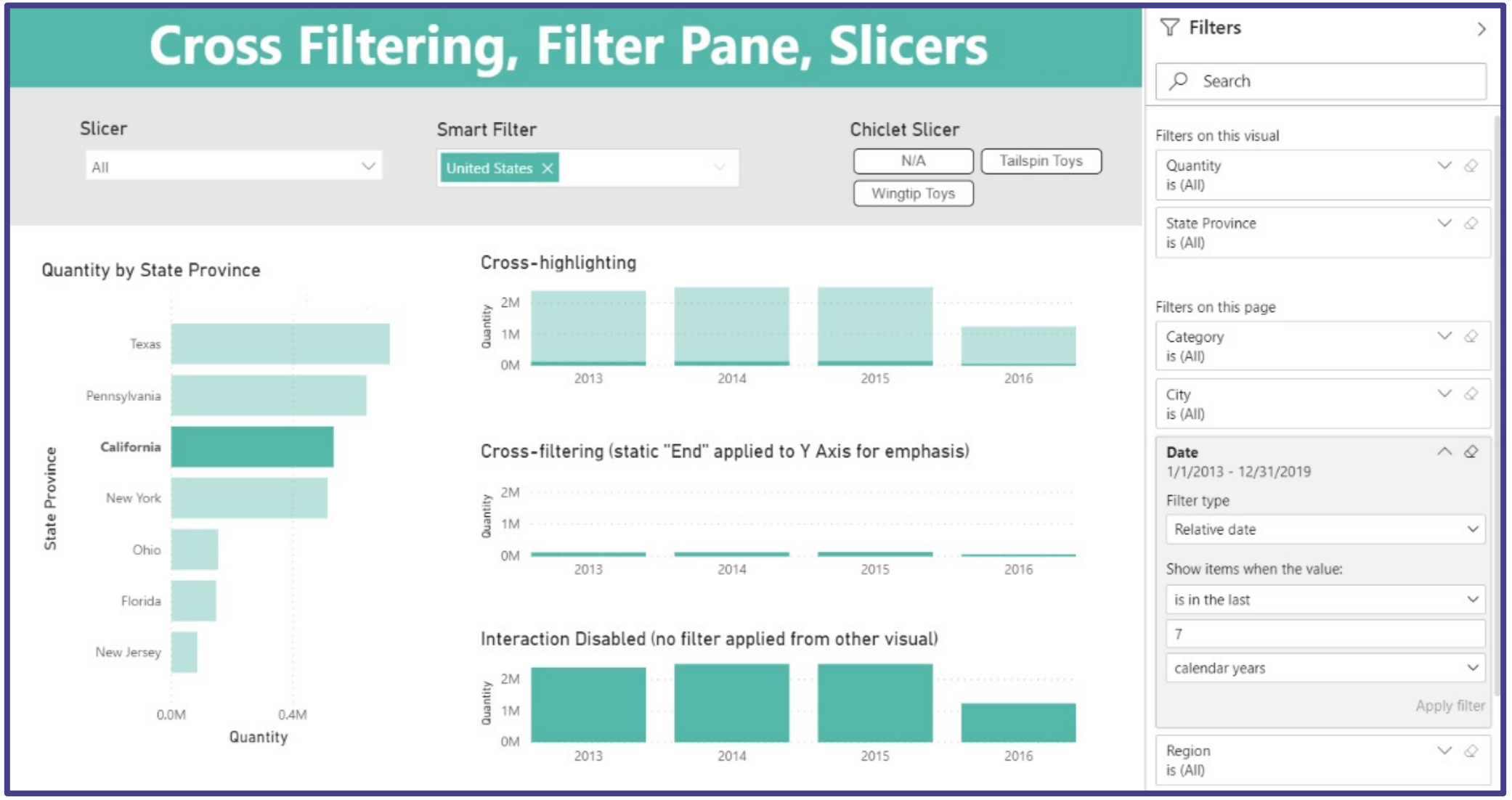
- Slicing & dicing (detailed insights)
  - ➢ Use multiple filters
- Slicers are on the dashboard
- Considered a visual like any other
  - ➢ Lay-out features
- Filters in a separate pane
  - ➢ You can also hide filters

Configuration

- ✓ You can synchronise your slicers over dashboard tabs
- ✓ Filters on different levels:
  - For every visual
  - For every page/tab
  - For the whole report



Slicers & Filters



Break 2

Starting back @ 17:00
***Timer**: https://kukuklok.com/*

Develop your dashboard

Developer & create your own insights!

TO DO

- ❖ Team up if you want to
- ✓ Develop your own measures
- ✓ Create your own visuals & KPIs on the dashboard
- ✓ Present your conclusions

Example questions:

1. Which albums are most successful?
2. Which collabs generate the most streams?
3. Does the order on the album determine anything?

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Questions?

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Appendix A: Windows RDP

Install Remote Desktop Application

- Windows: search for “Remote
- Mac OS: https://apple.co/3HR0mDe

RDP Environment

IP: 52.149.120.153

User: *training* (only one simultaneous session)

Password: *P0w3rB1Tr41n1ng!*

Appendix B: Power BI Products

Power BI [Free]

- Download Desktop for free
- Publish to your own workspace in the work domain
- More information: https://bit.ly/3CLvccI

Power BI Pro [9.99$/month/user]

- Publish & share content on your domain
- Create new workspaces
- 8x refreshes/day per data set
- More information: https://bit.ly/3cLufqe

Power BI Premium(-per-user)

- Share content with externals
- 48x refreshes/day per data set
- Premium per user (PPU): https://bit.ly/3HQncuJ
- Premium: https://bit.ly/3DUE5lt

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Appendix C: References Data Sets

- Data set **Jay Z**: https://bit.ly/3ro6dub
- Data set **Titanic**: https://bit.ly/3E3Z9Gc
- Code files: https://bit.ly/3103k7j

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