

# Identifying performance problems

INTERMEDIATE DATA MODELING IN POWER BI



**Sara Billen**

Curriculum Manager at DataCamp

# Resolving performance problems



# Performance problems



Where things can go wrong:

- Data import
- Querying the database with DirectQuery
- Displaying visuals
- Calculated versus computed columns
- Inefficient relationships
  - Many-to-many relationships
  - Bi-directional cross-filtering

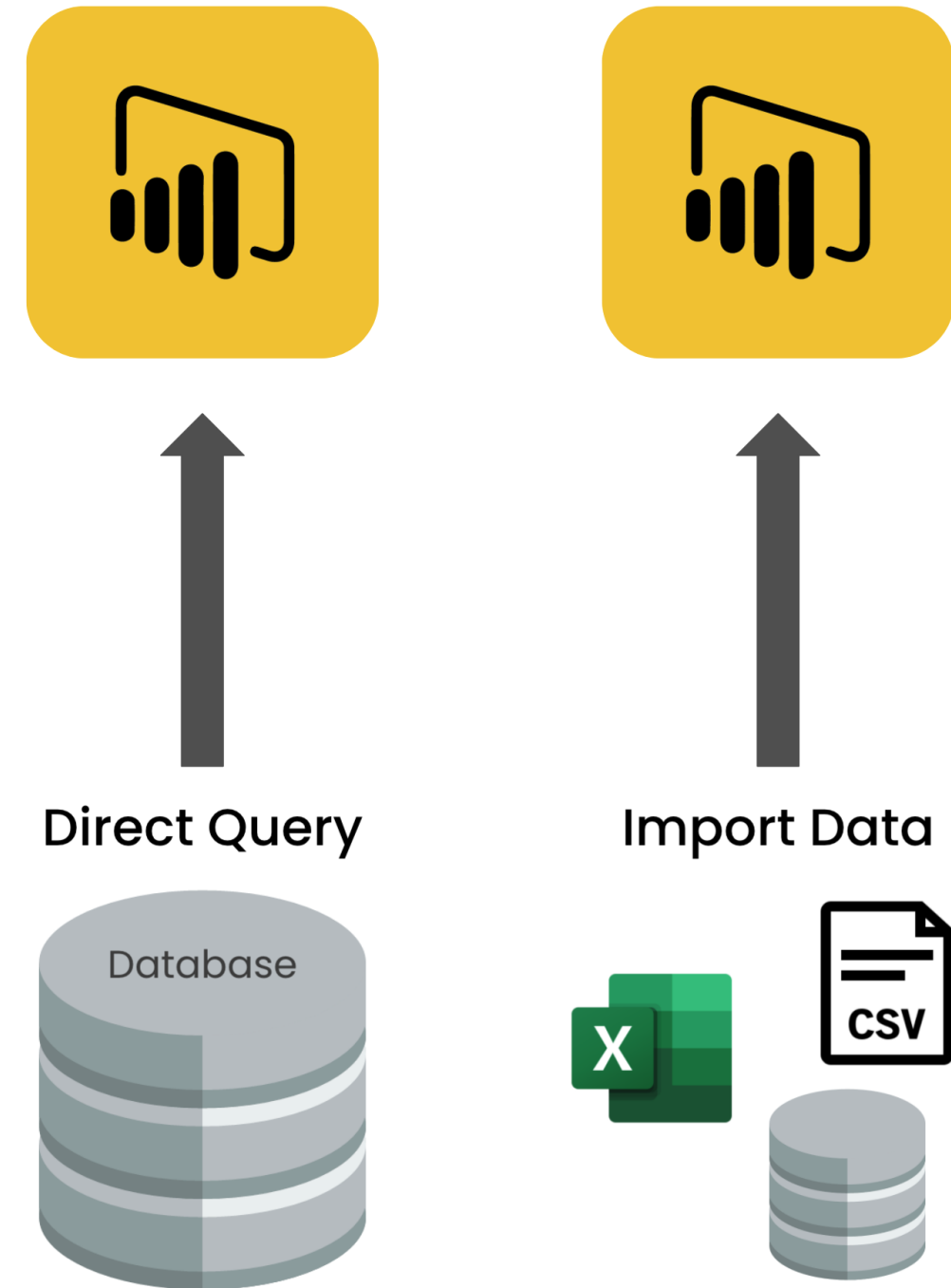
# Optimizing data import

- Remove unnecessary rows and columns
- Choose correct data types
  - Numeric data takes less space
  - Casting and aggregating data is slower
- Group and summarize data
  - Store less data on disk
  - Get to aggregate results faster



# Optimizing Direct Query

- Two ways to connect to data:
  - **Import model:** stores data in Power BI
  - **Direct Query:** directly queries the database
- Limit parallel queries
- Relational database advice
  - Write efficient SQL queries
  - Use appropriate indexes
  - Get the right columns and rows



# Calculated versus computed columns

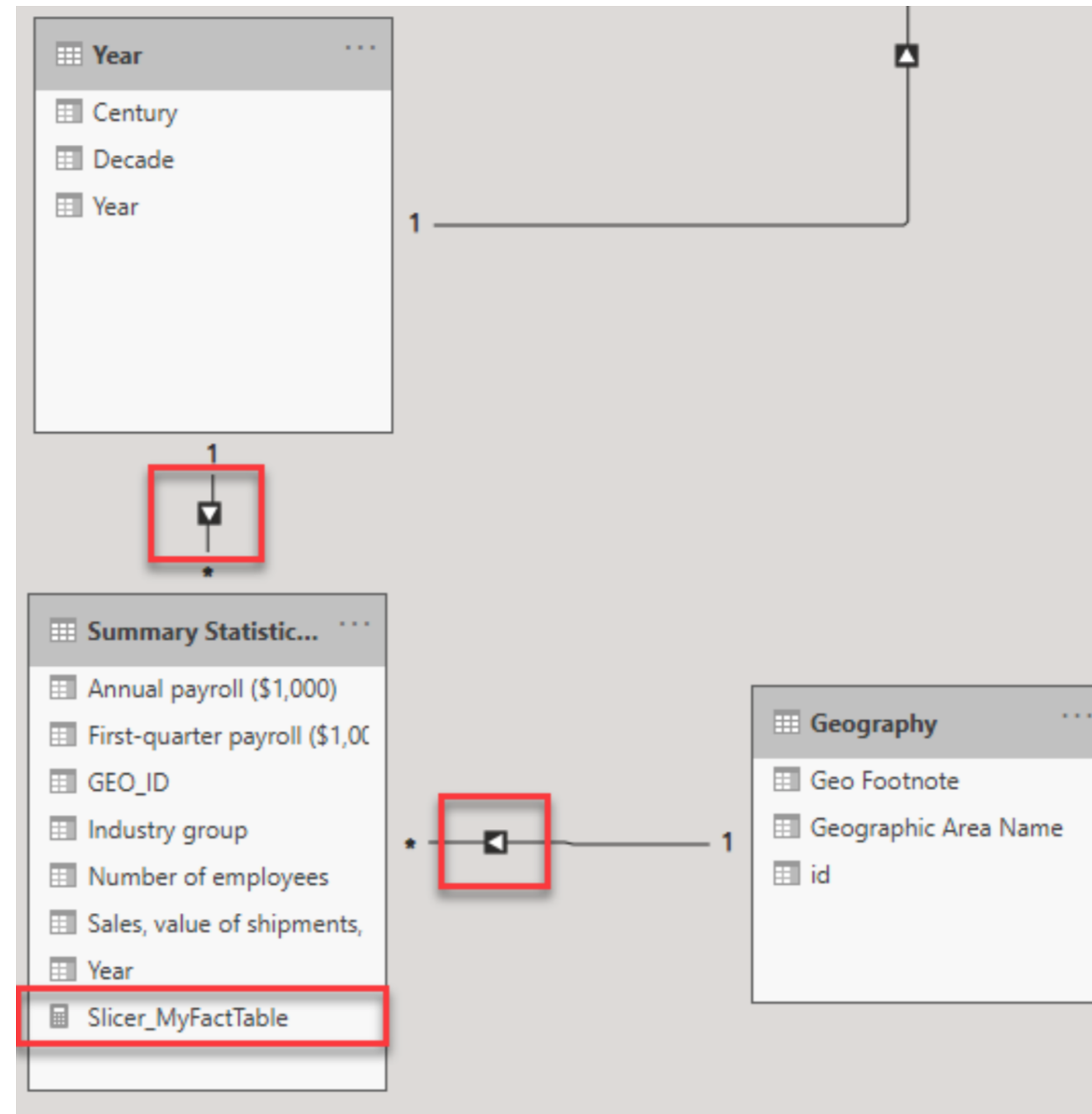
Build custom columns with:

Calculated columns	Computed columns
DAX	Power Query (M)
Fast for <i>simple</i> calculations	Fast for <i>simple</i> calculations
Slow for <i>complex</i> calculations	Fast for <i>complex</i> calculations
Generated per visual at runtime	Generated once at import time

# Removing bi-directional filtering using filter measures

- Use case for bi-directional filtering
  - Find relevant slicer entries between dimensions
- We can create filter measures to avoid bi-directional relationships for the third use case!

# Removing bi-directional filtering using filter measures





# Removing bi-directional filtering using filter measures

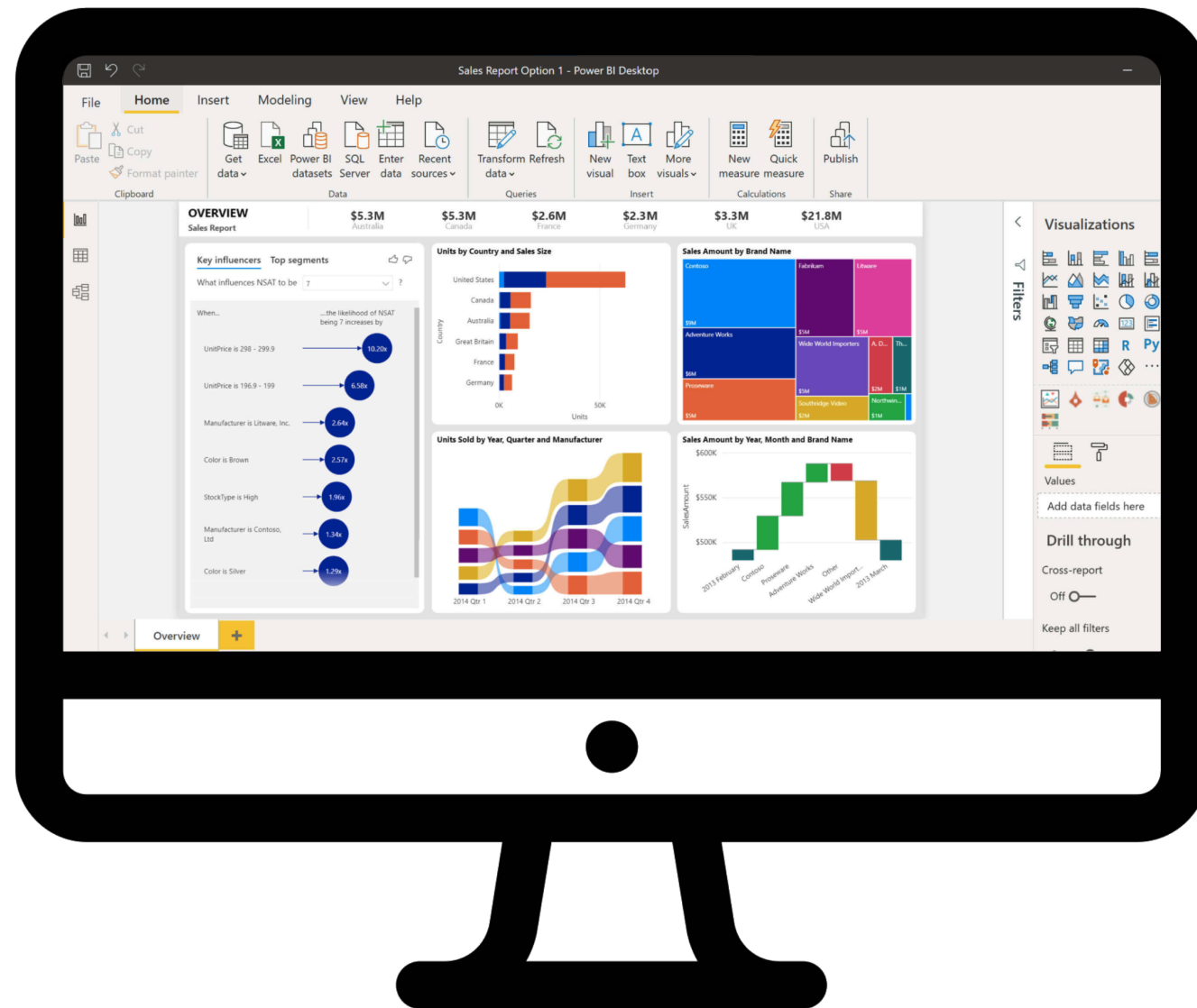
1) Create a filter measure in DAX:

```
Slicer_MyFactTable = INT(NOT ISEMPTY('My Fact Table'))
```

- Returns 1 if at least one value in the fact table
- Returns 0 if no values in the fact table

2) Add a visual filter to the slicer and set where `Slicer_MyFactTable = 1`

# Displaying visuals



- Use restrictive filters to minimize data
- Show as little data as possible on visuals
- Limit the number of visuals on report pages
- Use only fast custom visuals

# Let's practice!

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# Performance tips in Power BI

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# Let's practice!

INTERMEDIATE DATA MODELING IN POWER BI

# Congratulations!

INTERMEDIATE DATA MODELING IN POWER BI



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Congratulations!

# Intermediate Data Modeling

- Date dimensions and relationships
- Hierarchies and granularity
- Bi-directional cross filtering
- Role-playing dimensions
- Performance optimization

# Thank you!

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