

# Working with relationships

INTERMEDIATE DATA MODELING IN POWER BI

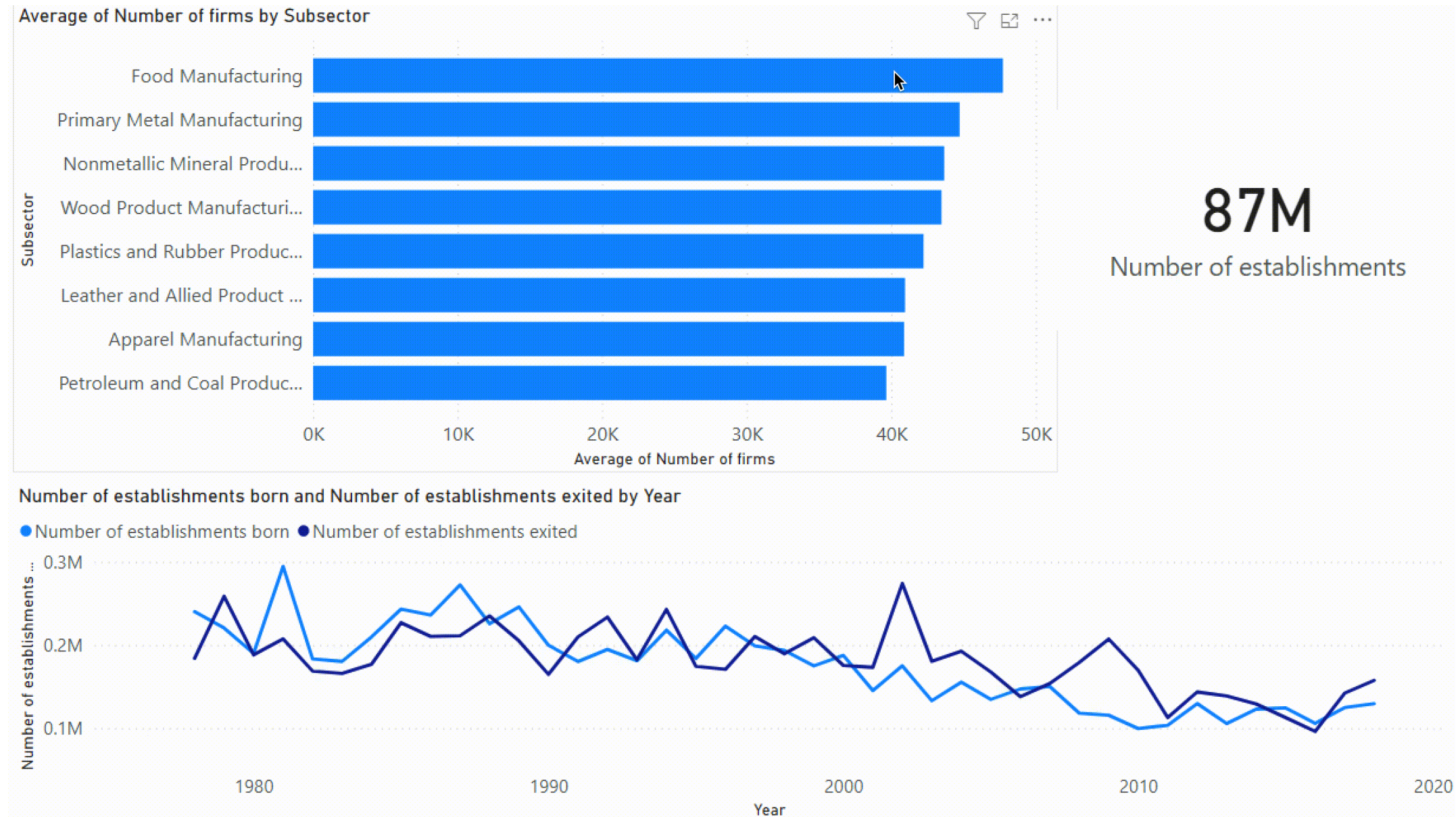


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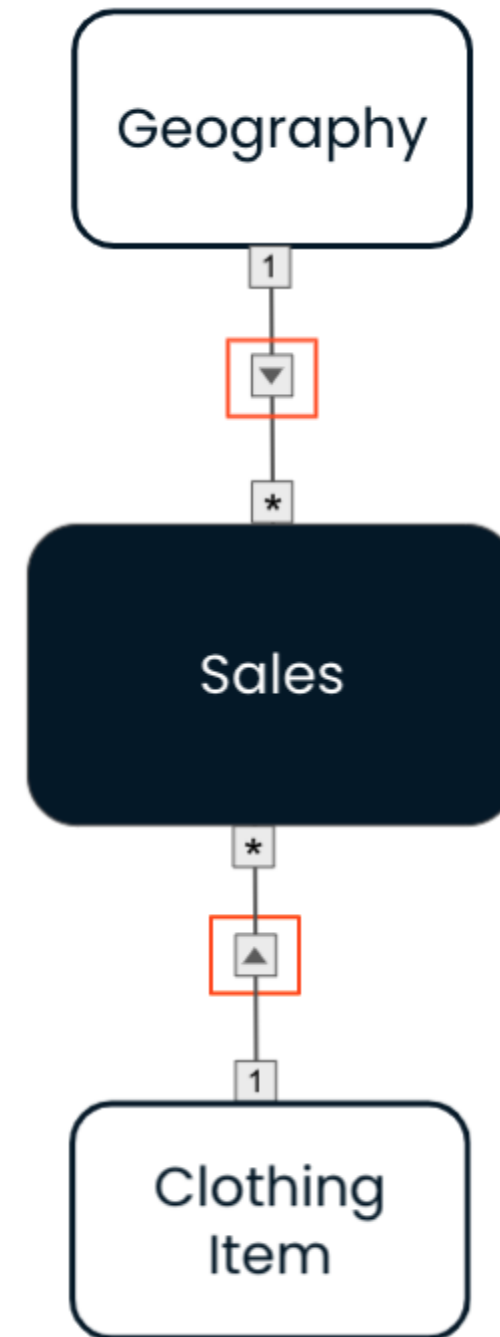
# Cross filtering

Cross-filtering: Selecting a value in one visual narrows down visible data in other visuals



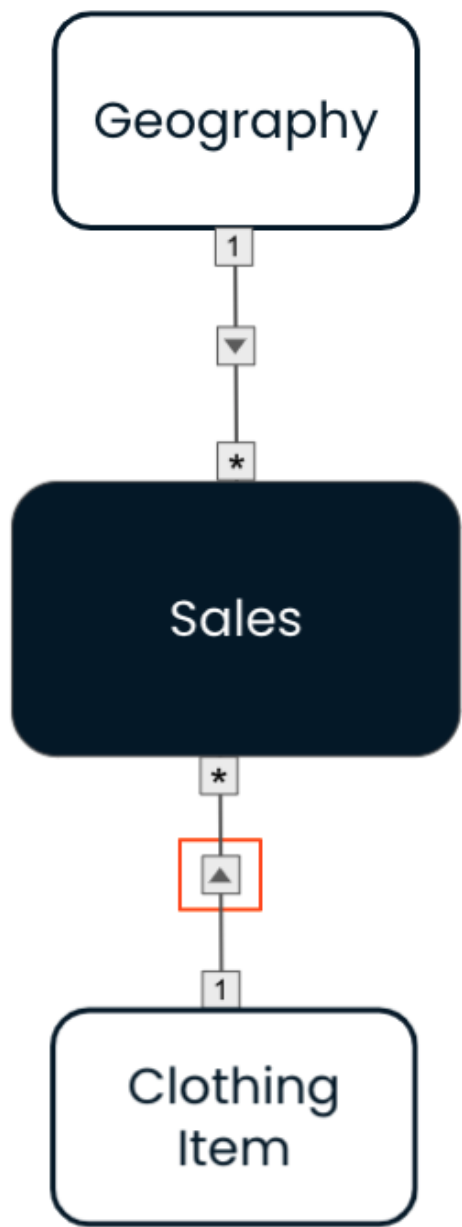
# Filter direction

- All relationships have a cross filter direction
- Determines the direction that filters will propagate
- Example:
  - Geography -> Sales
  - Clothing Item -> Sales
- From Dimension to Fact



# Filter direction

Data model:



Dimension – Clothing Item

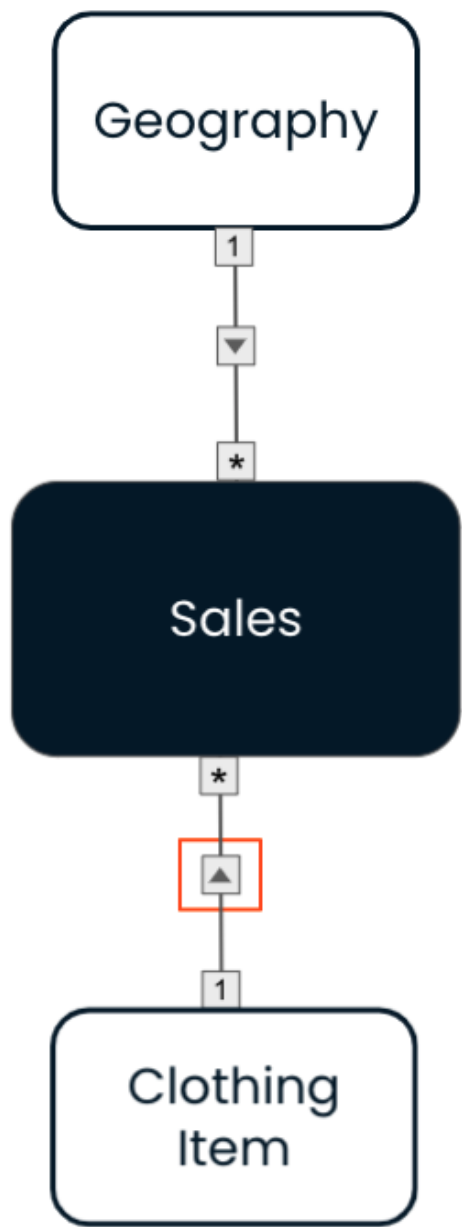
| Product Id | Product |
|------------|---------|
| C1         | T-shirt |
| C2         | Socks   |
| C3         | Sweater |

Fact – Sales

| Id  | Units | Amount | Product Id |
|-----|-------|--------|------------|
| 001 | 3     | 60     | C2         |
| 002 | 2     | 10     | C1         |
| 003 | 1     | 70     | C3         |
| 004 | 1     | 50     | C3         |
| 005 | 5     | 50     | C3         |

# Filter direction

Data model:



Dimension - Clothing Item

| Product Id | Product |
|------------|---------|
| C1         | T-shirt |
| C2         | Socks   |
| C3         | Sweater |



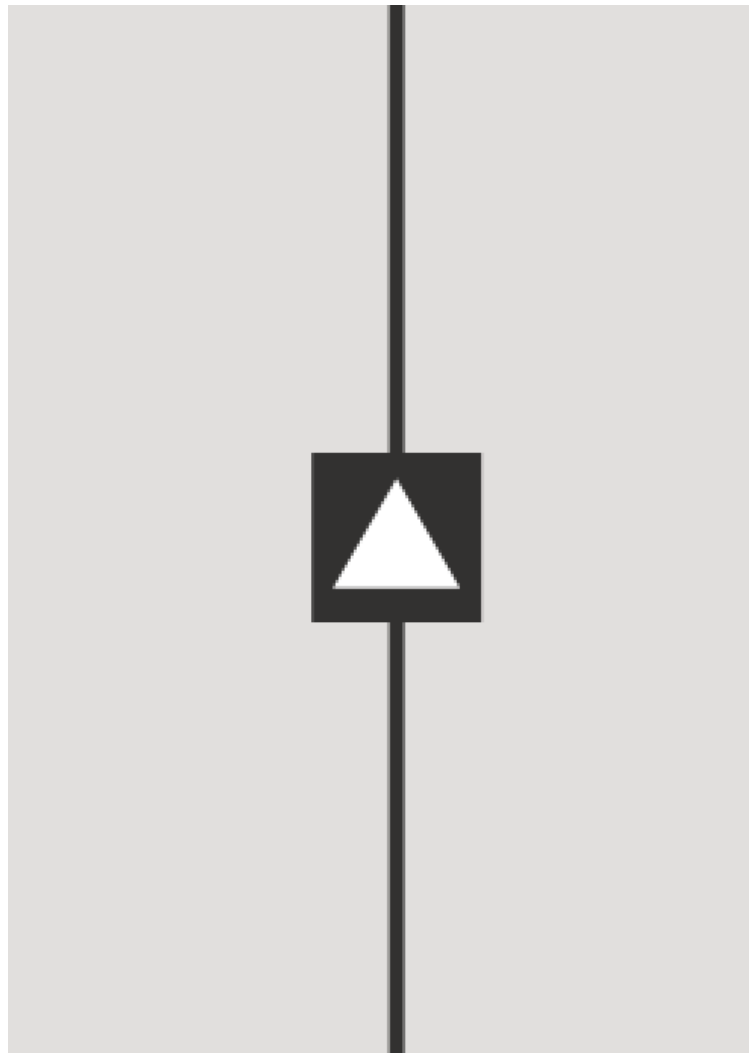
Fact - Sales

| Id  | Units | Amount | Product Id |
|-----|-------|--------|------------|
| 001 | 3     | 60     | C2         |
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| 003 | 1     | 70     | C3         |
| 004 | 1     | 50     | C3         |
| 005 | 5     | 50     | C3         |

# Filter direction options

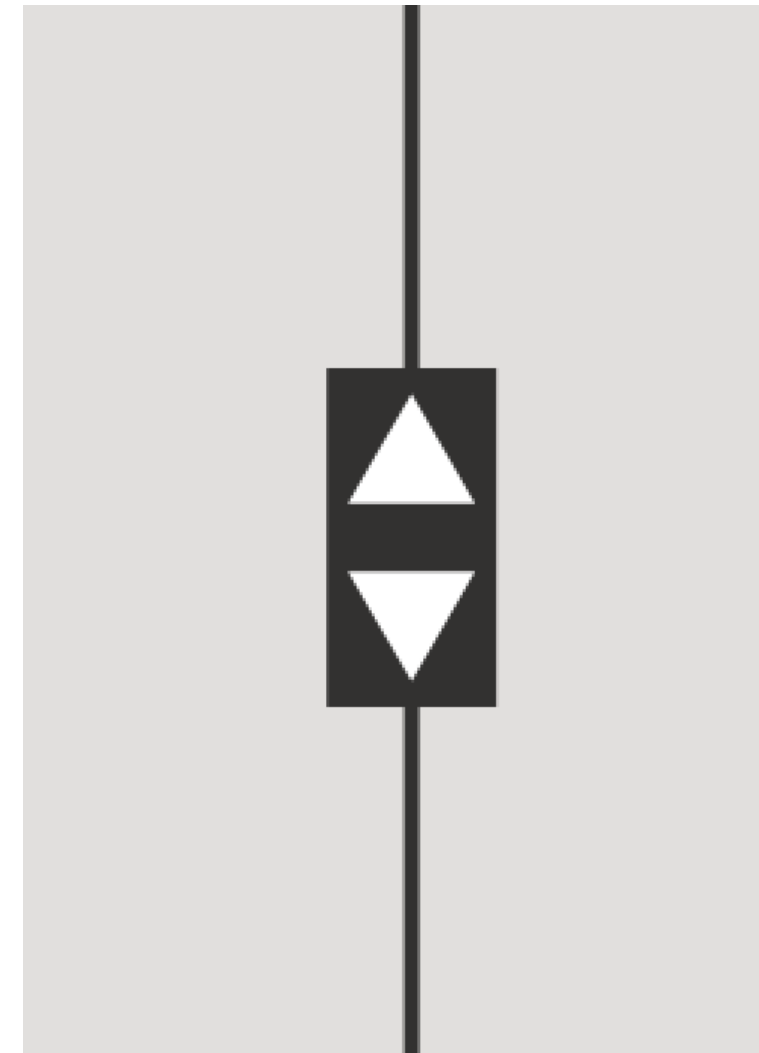
## Single direction

Filter in one direction



## Bi-directional

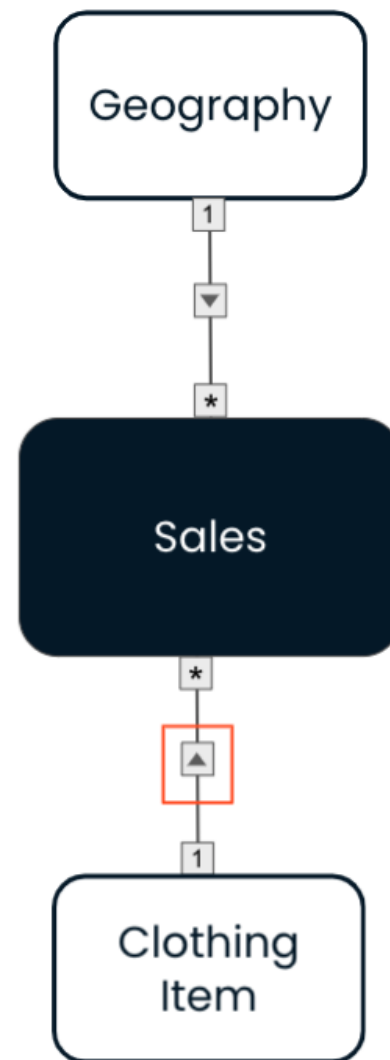
Filter in both directions



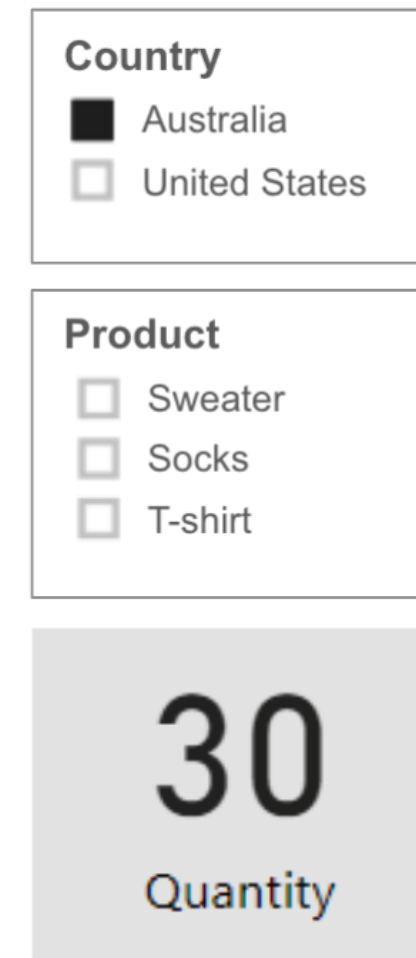
# Bi-directional filtering: use case

Show only relevant slicer entries

Data model:



Report view:



# Bi-directional filtering: use case

Only sweaters were sold in Australia

Fact – Sales

| <b>Id</b> | <b>Units</b> | <b>Amount</b> | <b>Product Id</b> | <b>Country Id</b> |
|-----------|--------------|---------------|-------------------|-------------------|
| 001       | 3            | 60            | C2                | US                |
| 002       | 2            | 10            | C1                | US                |
| 003       | 1            | 70            | C3                | AU                |
| 004       | 1            | 50            | C3                | AU                |
| 005       | 5            | 50            | C3                | AU                |

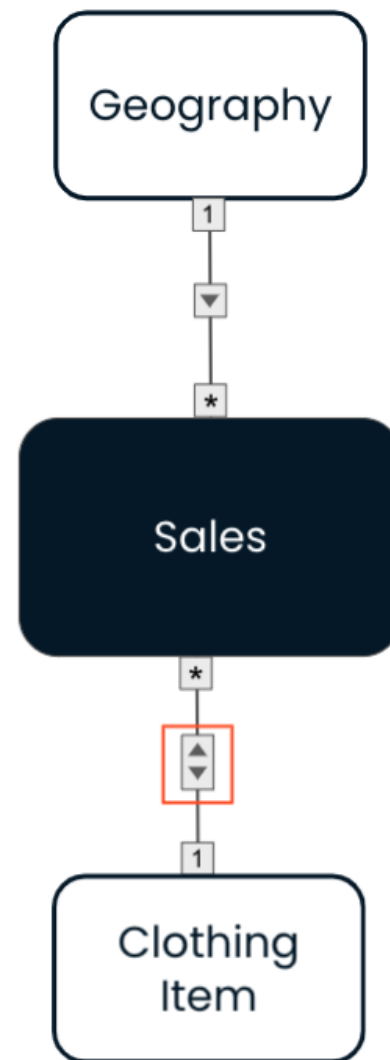
\*Product Id: C3 = Sweater, Country Id: AU = Australia



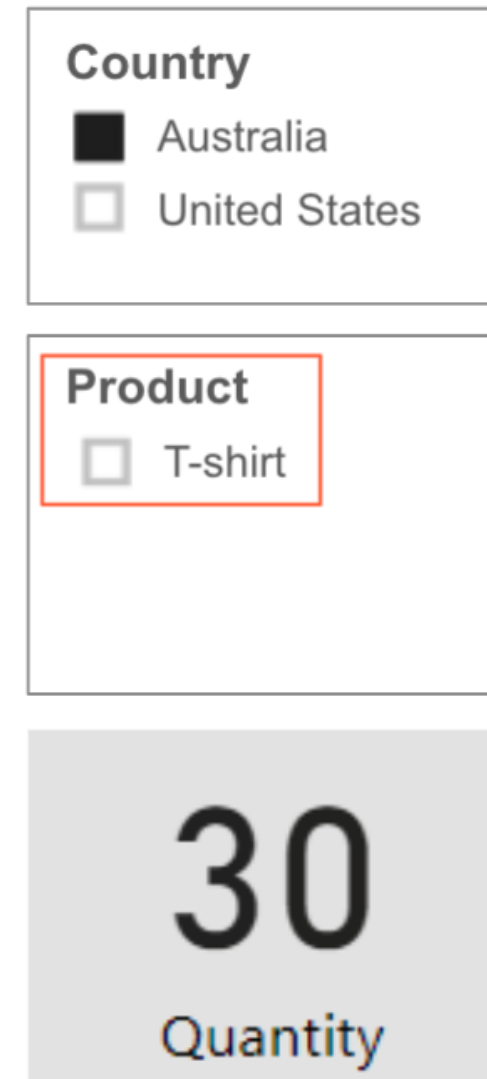
# Bi-directional filtering: use case

Show only relevant slicer entries

Data model:

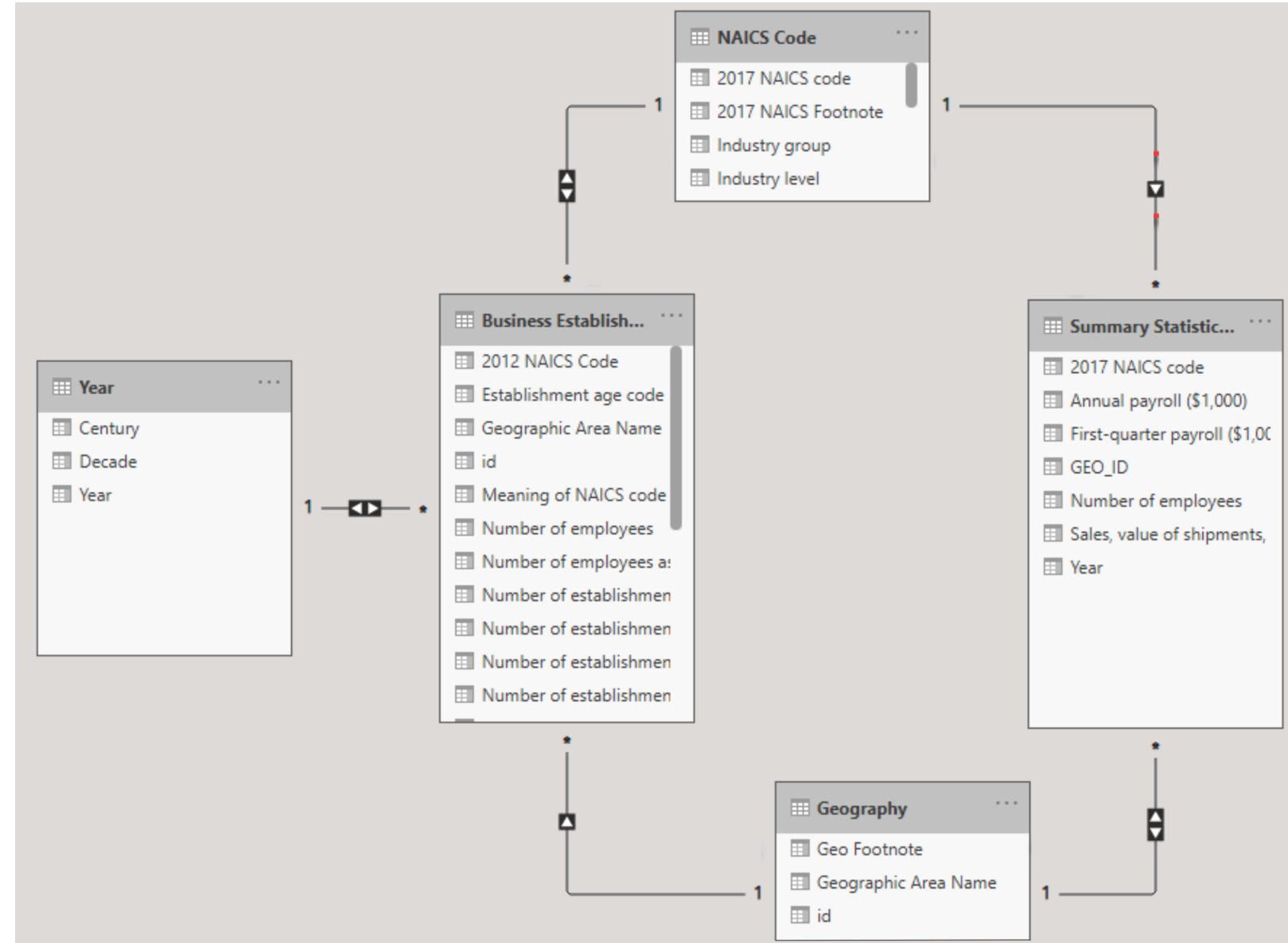


Report view:



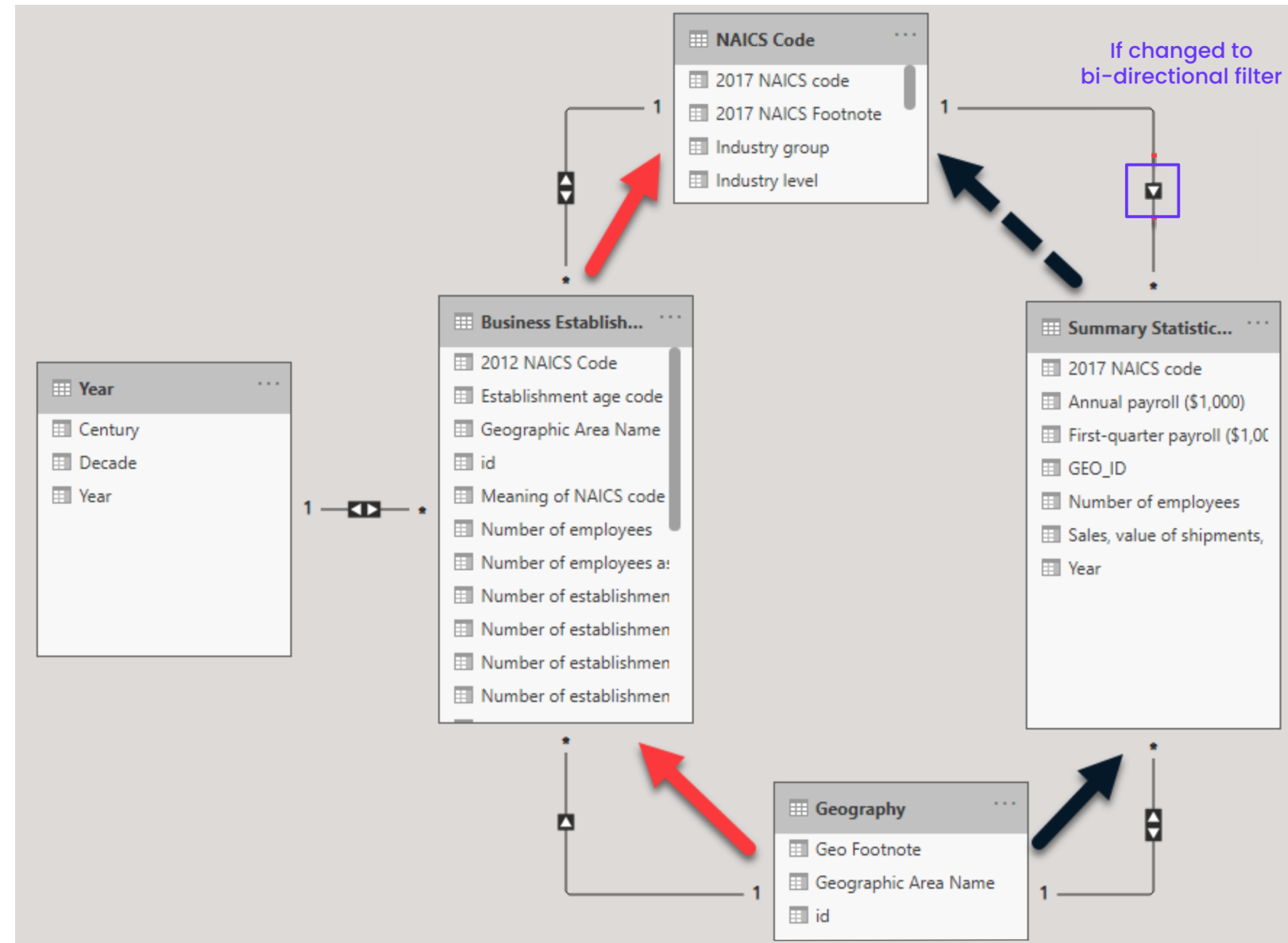
# Bi-directional filtering and paths

Bi-directional filters cannot allow for two separate paths between two tables



# Bi-directional filtering and paths

Bi-directional filters cannot allow for two separate paths between two tables



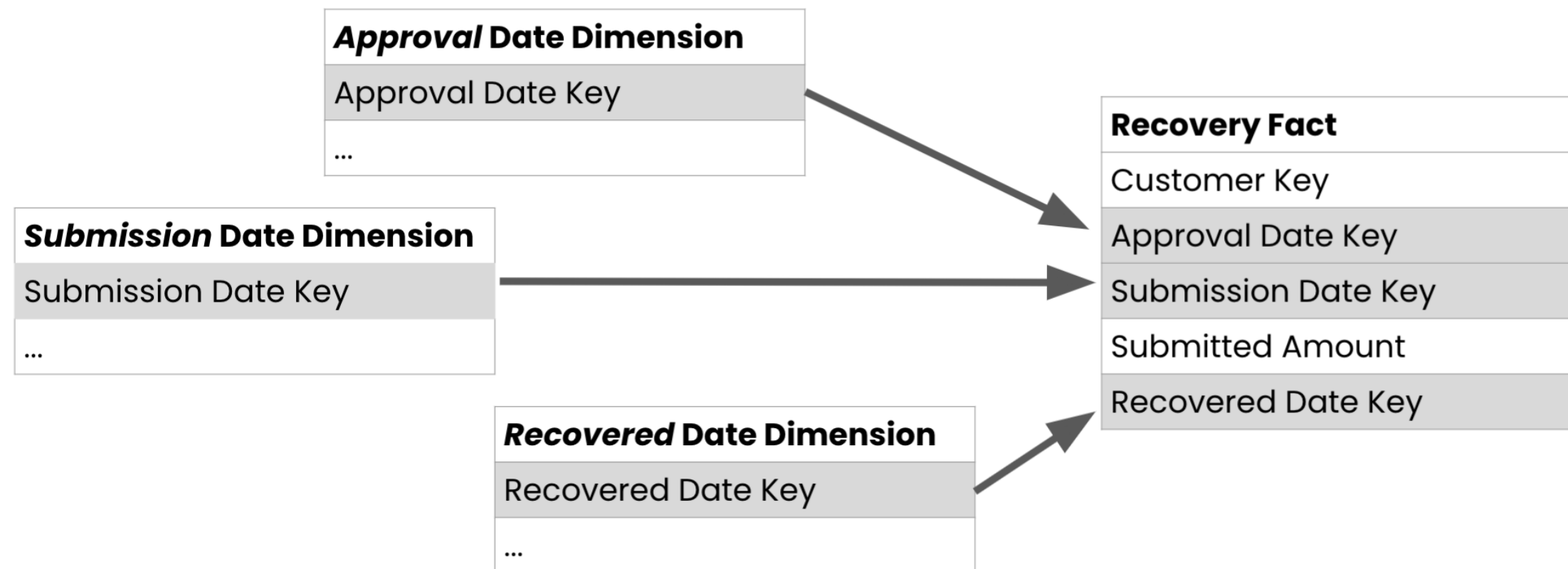
# Role-playing dimensions

- Sometimes we need to create multiple relationships between tables



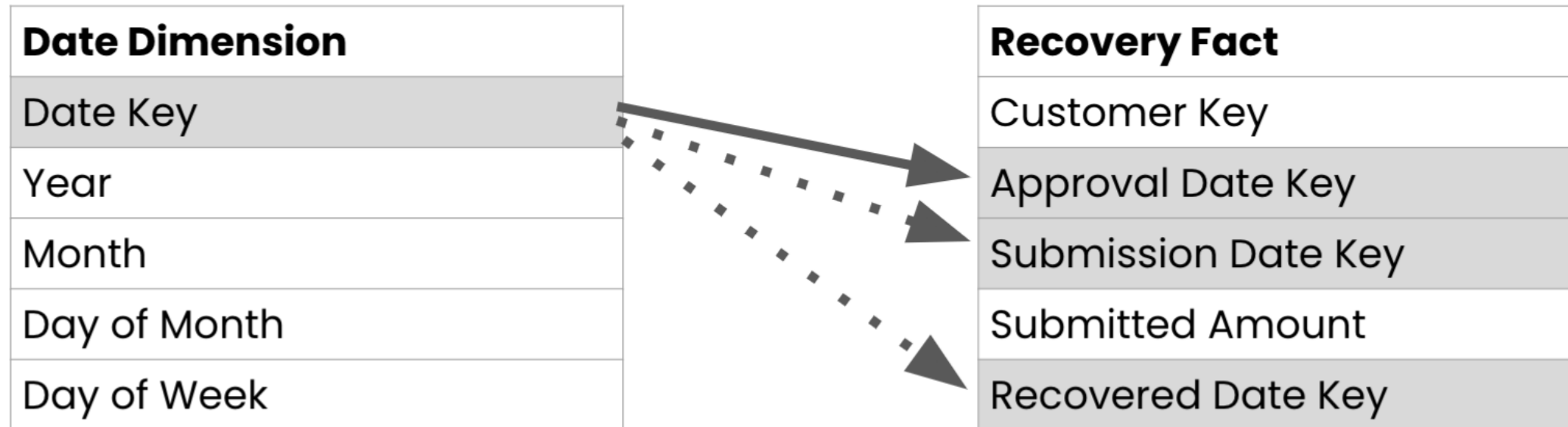
# Role-playing dimensions

- Kimball model
- **Role-playing dimension:**
  - Dimension that can filter related facts differently
- Typically implemented as views of the Date dimension



# Role-playing dimensions in Power BI

- Create multiple relationships on a dimension, but only one is active



- Use `USERELATIONSHIP()` in DAX to specify which relationship to use:

```
Measure Name = CALCULATE(<Measurement function>,  
                        USERELATIONSHIP(<Dimension Key Column>, <Fact Key Column>)
```

# Let's practice!

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# Cross-filtering and role-playing Dimensions

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# Let's practice!

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