

Filtering and sorting

INTRODUCTION TO TABLEAU



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Filtering

What data should be kept and excluded from the view?

For example, filter by...

- **Category** - *sales data for electronic products only*
- **Date range** - *sensor measurements from the past week*
- **Location** - *subscriptions bought in Asia*
- **Min/max value** - *departments that have met performance threshold*
- **Top N values** - *top ten performing store locations*

Types of filters in Tableau

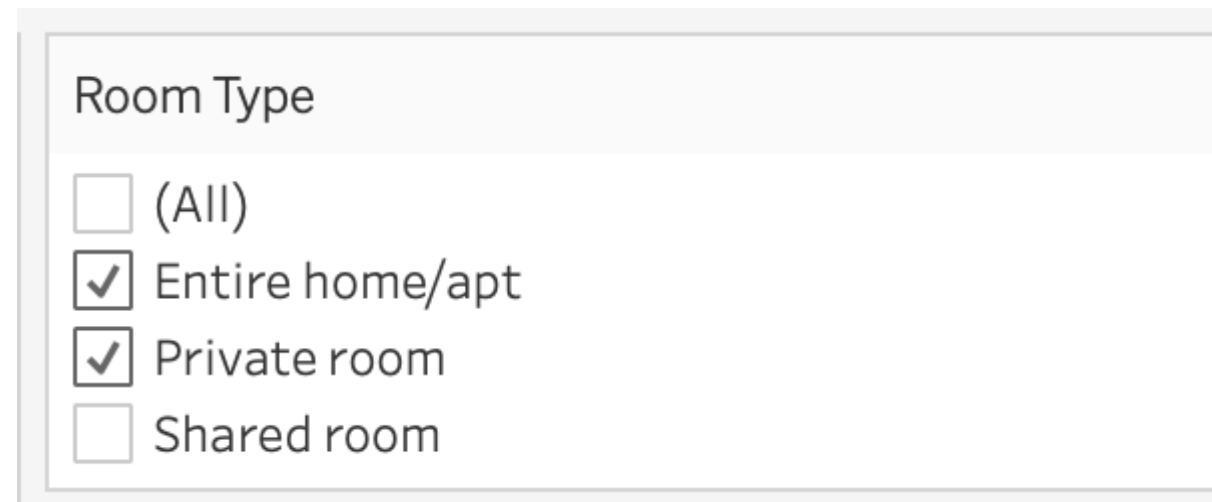
Order of operation:

1. Extract filters
2. Data source filters
3. Context filters
4. **Dimension filters**
5. **Measure filters**

Dimension filters (in blue)

Categorical/discrete data

- Selecting values



A screenshot of a Tableau dimension filter for the field 'Room Type'. The filter is displayed as a light gray box with a title bar. Inside, there are four options, each with a checkbox: '(All)', 'Entire home/apt', 'Private room', and 'Shared room'. The checkboxes for 'Entire home/apt' and 'Private room' are checked, while '(All)' and 'Shared room' are unchecked.

Room Type	
<input type="checkbox"/>	(All)
<input checked="" type="checkbox"/>	Entire home/apt
<input checked="" type="checkbox"/>	Private room
<input type="checkbox"/>	Shared room

- Define a pattern with a **wildcard** (*e.g., neighborhoods that start with "T"*)
- **Conditions** (*e.g., neighborhoods that have at least 20 listings*)
- **Top/Bottom** records (*e.g., top 5 neighborhoods with highest average price*)

Measure filters (in green)

Quantitative data

- Range of values



- At least, at most, or equals
- Null or non- null values

Sorting

Tableau defaults on alphabetical sorting on dimension

Alternative:

- Sort by metric ascending or descending (*e.g., show highest grossing products at the top*)

Dataset

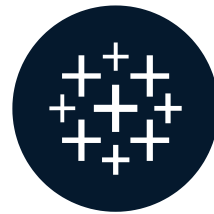
# Year #	communication_infrastructure.csv Country	# communication_infrastructure.csv Broadband Subscribers per 100 ppl	# communication_infrastructure.csv Cell Phones per 100 People
2011	Congo, Rep.	0.0290	86.100
2011	Congo, Dem. Rep.	<i>null</i>	23.500
2011	Comoros	0.0566	30.600
2011	Colombia	7.2100	99.600
2011	China	11.4000	72.100
2011	Chile	11.7000	130.000
2011	Chad	0.1290	29.800
2011	Central African Repu...	0.0181	22.200
2011	Cape Verde	4.2000	78.000
2011	Canada	32.7000	77.700
2011	Cameroon	0.0522	51.100

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Sorting and filtering through selection

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Filtering through the filter shelf

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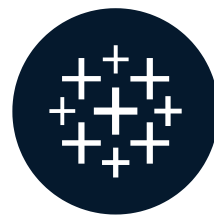
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Aggregation

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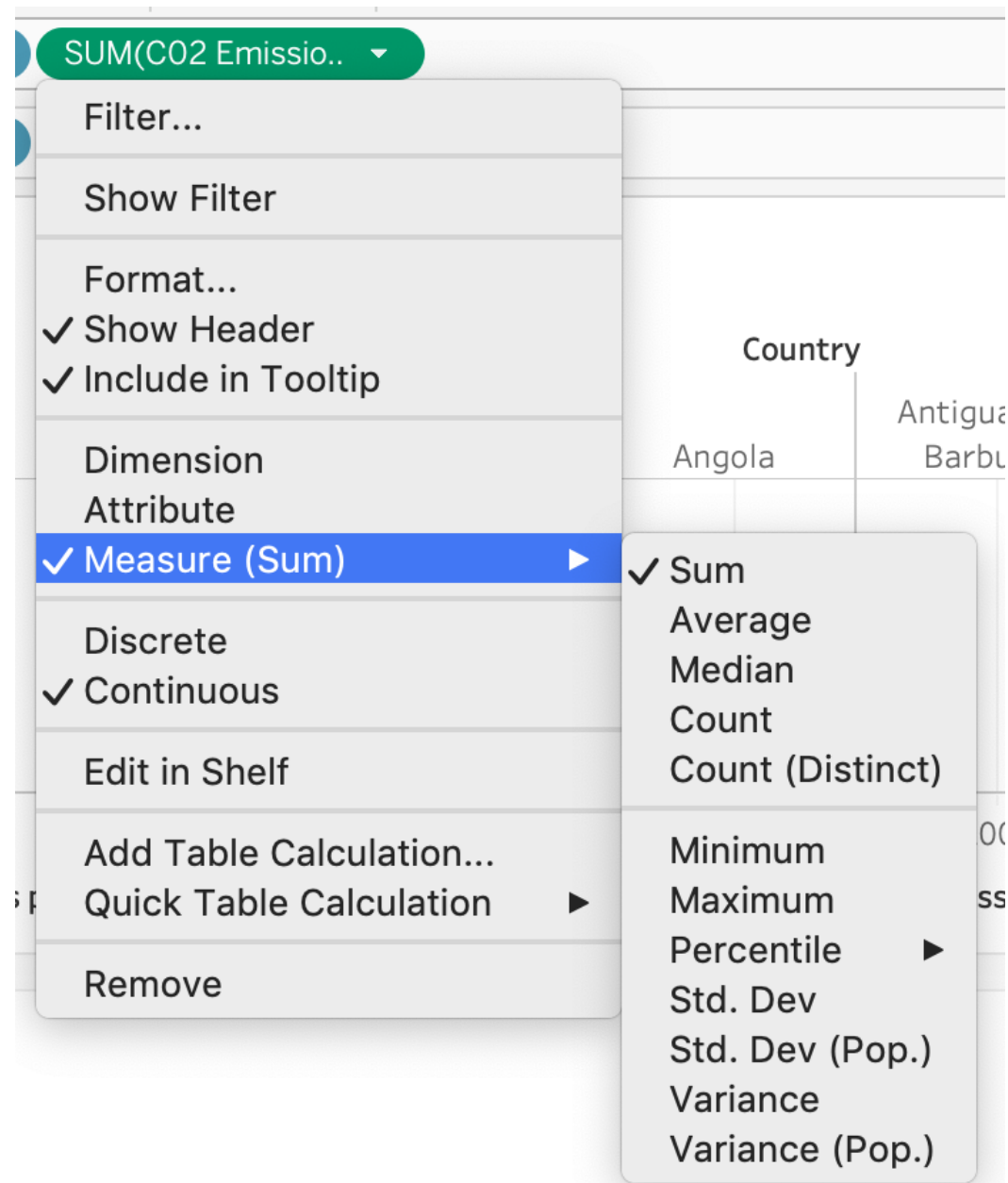
What is aggregation?

Gathering and summarizing data points for analytics

For example:

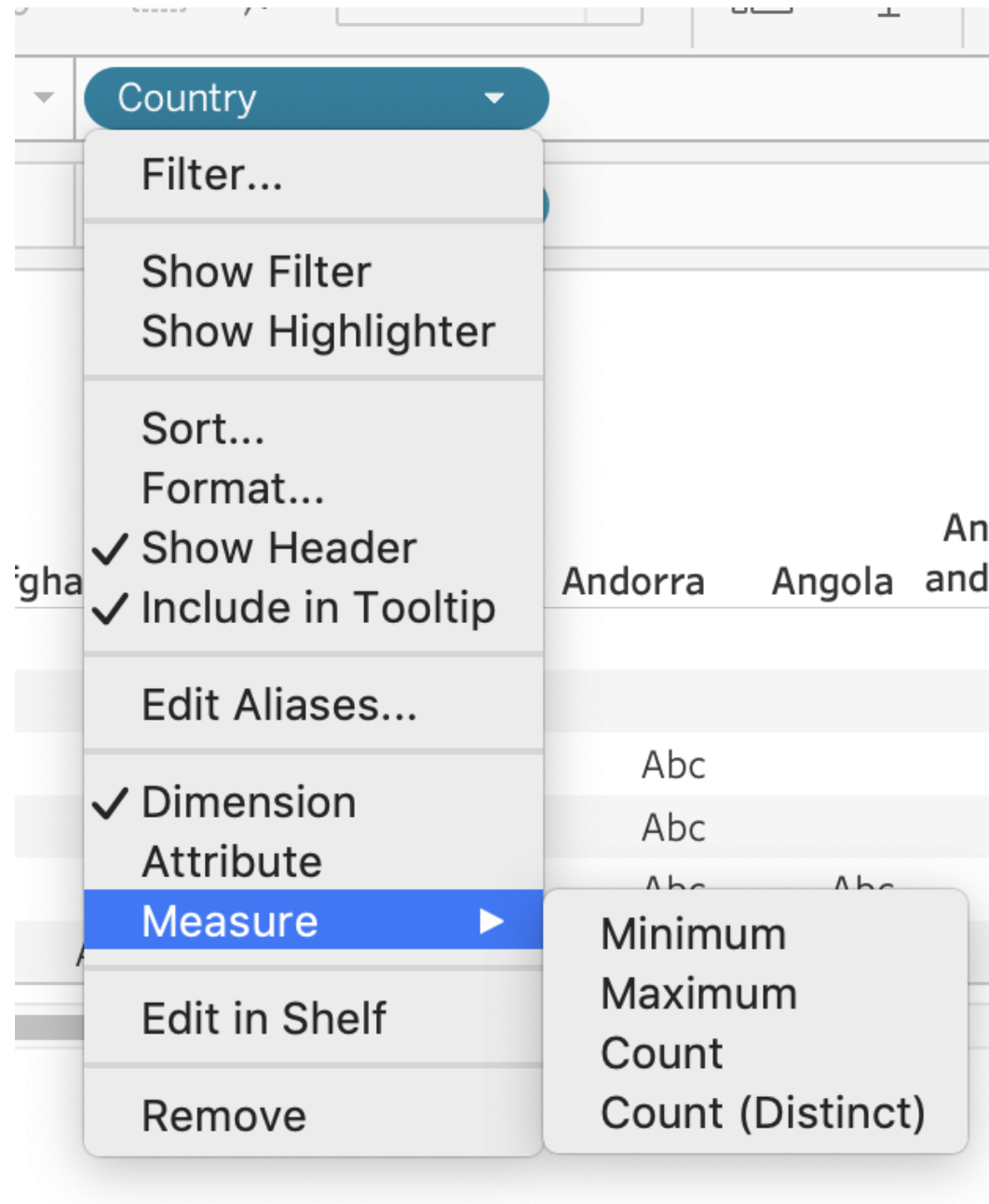
- *Summing up all sales transactions to get the quarter's total sales amount*
- *Calculating the average age of a user*
- *Counting the distinct customers from all the transactions*
- *Finding the product with the maximum sales*

Aggregating measures



- Sum is the default aggregation on measure

Aggregating dimensions



- Aggregating a dimension creates a temporary measure:

CNT(Country)

Dataset

development_indicators.csv Sub Region	development_indicators.csv Country	development_indicators.csv Continent	development_indicators.csv Year	development_indicators.csv Child Mortality Rate ...	development_indicators.csv GDP per Capita	development_indicators.csv C02 Emissions per Person ...	development_indicators.csv Life Expectancy
Southern Asia	Afghanistan	Asia	1960	364.000	1,210	0.0461	38.6000
Southern Eur...	Albania	Europe	1960	188.000	2,790	1.2400	62.7000
Northern Afri...	Algeria	Africa	1960	245.000	6,520	0.5540	52.0000

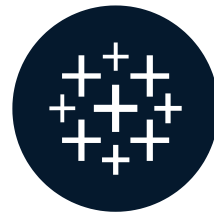
development_indicators.csv Life Expectancy (Grouped)	Calculation GDP per Capita (Grouped)
0-40	<5000
>60	<5000
>=50 and <= 60	>= 5000 and <20000

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Scatter plots and aggregations

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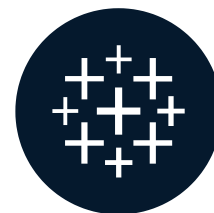
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Calculated fields

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What are calculated fields?

Calculated fields allow you to create new data from data that already exists in your data source.¹

¹ https://help.tableau.com/current/pro/desktop/en-us/calculations_calculatedfields_create.htm

Examples of calculated fields

- With `sales_amount_usd`
 - Calculated field `sales_amount_euro` = `sales_amount_usd * 0.90`
- With `gas_prices`
 - Calculated field `gas_prices_rounded_up` = `CEILING(gas_prices)`
- With `emails`
 - Calculated field `gmail_emails` = `ENDSWITH(emails, "@gmail.com")`

Examples of calculated fields

- With `date`
 - Calculated field `year` = `YEAR(date)`
- With `price` and `earnings`
 - Calculated field `price_earnings_ratio` = `prices / earnings`
- And much more...

What are calculated fields?

Calculated fields allow you to create new data from data that already exists in your data source.¹

- Creates a new column
- Underlying data is unaffected

¹ https://help.tableau.com/current/pro/desktop/en-us/calculations_calculatedfields_create.htm

Functions

Examples: `CEILING()` , `ENDSWITH()` , `DIV()`

1. Number functions
 2. String functions
 3. Date functions
 4. Type conversions
 5. Logical functions
- ... and more!¹

¹ <https://help.tableau.com/current/pro/desktop/en-us/functions.htm>

Dataset

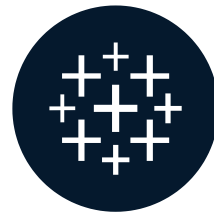
<div><div><div><div><div></div><div>mean_years_school.csv</div></div><div><div><div>Country</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>	<div><div><div><div><div></div><div>mean_yea...</div></div><div><div><div>Years</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>	<div><div><div><div><div></div><div>mean_years_school.csv</div></div><div><div><div>Men 25-34</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>	<div><div><div><div><div></div><div>mean_years_school...</div></div><div><div><div>Men 35-44</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>	<div><div><div><div><div></div><div>mean_years_school...</div></div><div><div><div>Men 45-54</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>	<div><div><div><div><div></div><div>mean_years_school...</div></div><div><div><div>Men 55-64</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>	<div><div><div><div><div></div><div>mean_years_sch...</div></div><div><div><div>Men 64+</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>	<div><div><div><div><div></div><div>mean_years_school.csv</div></div><div><div><div>Women 25-34</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>	<div><div><div><div><div></div><div>mean_years_school.csv</div></div><div><div><div>Women 35-44</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>	<div><div><div><div><div></div><div>mean_years_school.csv</div></div><div><div><div>Women 45-54</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>	<div><div><div><div><div></div><div>mean_years_school.csv</div></div><div><div><div>Women 55-64</div><div></div></div></div></div><div><div><div></div><div></div></div></div></div></div>
Honduras	1970	2.8800	2.4700	2.2300	1.8100	1.46000	2.6500	2.0600	1.6600	1.3700
Hungary	1970	8.2500	7.8600	7.1300	6.5000	5.83000	7.8600	7.2100	6.3400	5.6500
Iceland	1970	7.9400	8.5600	8.3900	8.0900	7.33000	7.6800	7.7200	6.9400	6.0800
India	1970	3.1900	2.5900	2.1400	1.6900	1.24000	1.3000	0.9100	0.5800	0.3900
Indonesia	1970	4.3900	3.5800	2.8900	2.1700	1.49000	2.8900	2.0900	1.5000	0.9700
Iran	1970	3.3000	2.4300	1.5200	0.8300	0.46000	1.6700	0.9900	0.4400	0.1800

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Creating calculated fields

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