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

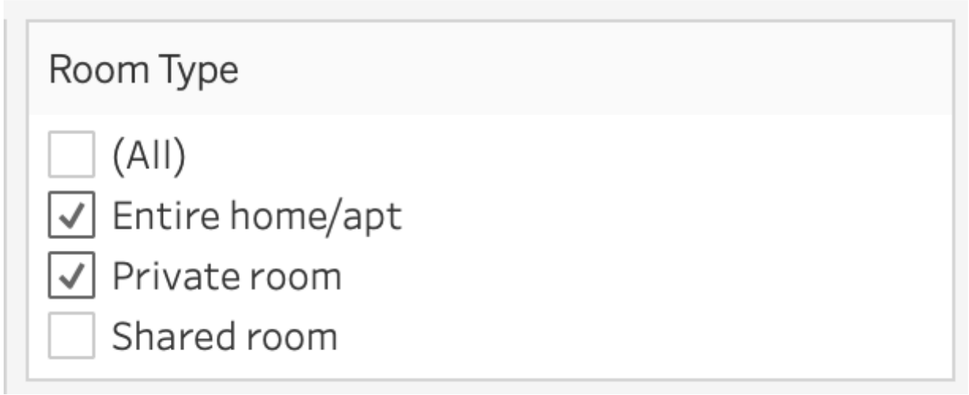
Order of operation:

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

Dimension filters (in blue)

Discrete categorical data

- **Selecting** values

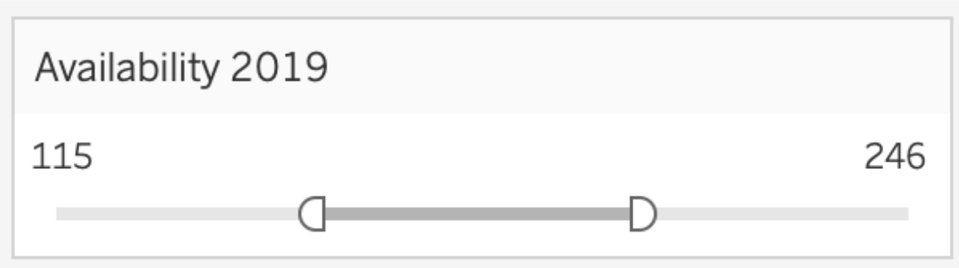


- Define a pattern with a **wildcard** *(e.g., neighborhoods that start with "T")*
- **Conditions** *(e.g., neighborhoods that have at least 20 listings)*
- **Top/Bottom** records *(e.g., top 5 neighborhoods with highest average price)*

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

communica... Year	communication_infrastructure.... 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.	*null*	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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Aggregation

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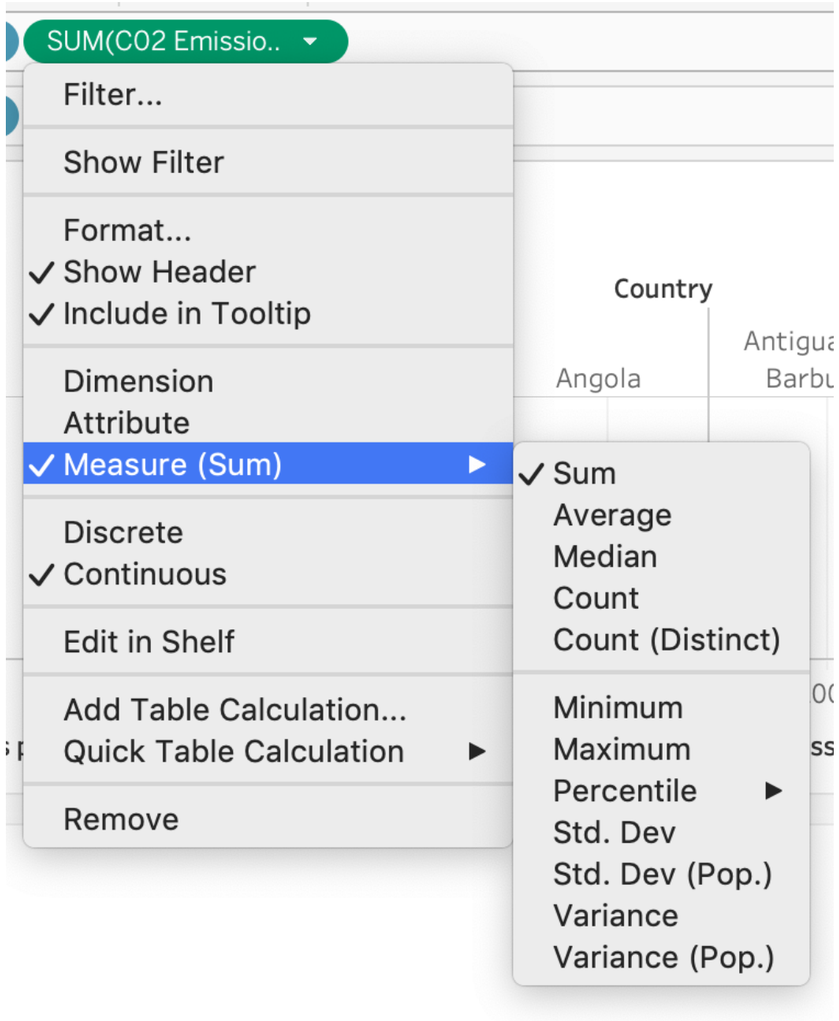
What is aggregation?

Gathering and summarizing data points for analytics

For example:

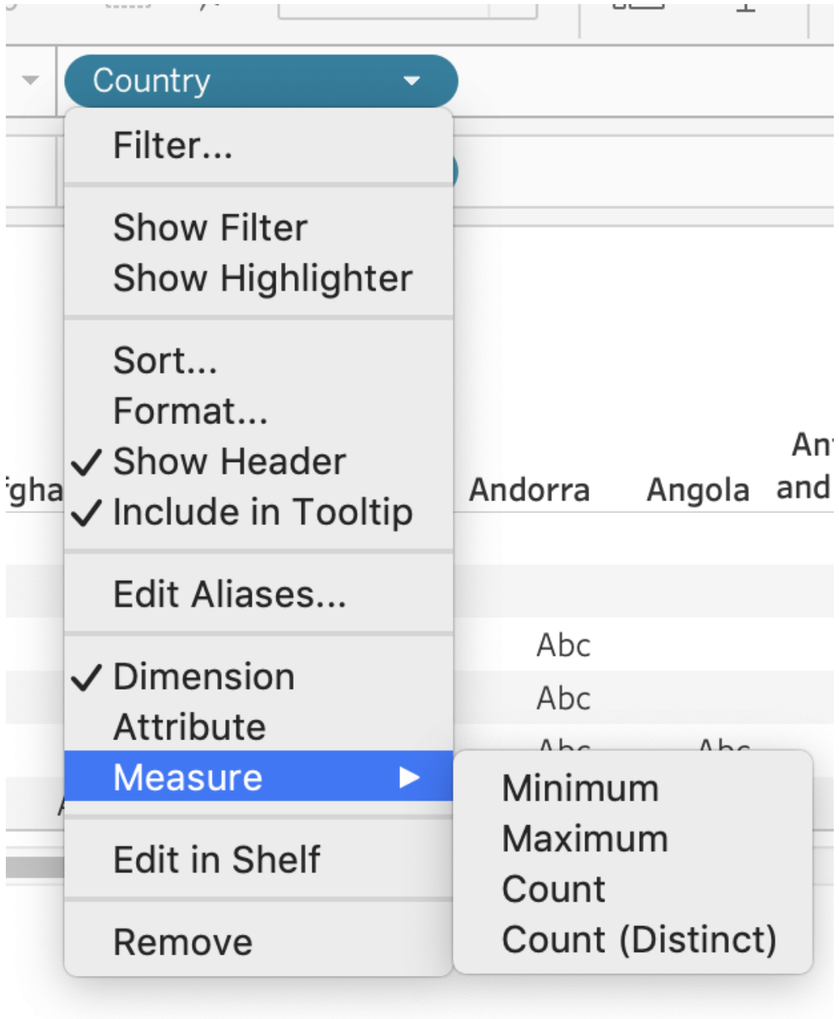
- *Summing up all sales transactions to get the quarter's total sales amount*
- *Calculating the average age of a user*
- *Counting the distinct customers from all the transactions*
- *Find the product with the maximum sales*

Aggregating measures

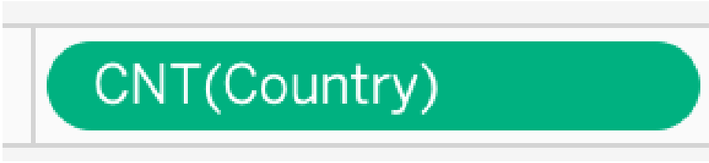


- Sum is the default aggregation on measure

Aggregating dimensions



- Aggregating a dimension creates a temporary measure:



Dataset

Abc development_indica... Sub Region	development_in... Country	Abc development_indic... Continent	# developm... Year	# development_indicators.csv Child Mortality Rate ...	# development_indicators.c... 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

Abc development_indicators.csv Life Expectancy (Grouped)	=Abc 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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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.

Source: **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.

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

- Creates a new column
- Underlying data is unaffected

Functions

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

1. **Number functions**
2. String functions
3. Date functions
4. Type conversion
5. Logical functions

... and more!

See: **https://help.tableau.com/current/pro/desktop/en-us/functions.htm**

Dataset

mean_years_school.csv Country	mean_yea... Years	mean_years_school.csv Men 25-34	mean_years_school.... Men 35-44	mean_years_school.... Men 45-54	mean_years_school.... Men 55-64	mean_years_sch... Men 64+	mean_years_school.csv Women 25-34	mean_years_school.csv Women 35-44	mean_years_school.csv Women 45-54	mean_years_school.csv Women 55-64
Honduras	1970	2.8800	2.4700	2.2300	1.8100	1.46000	2.6500	2.0600	1.6600	1.370(
Hungary	1970	8.2500	7.8600	7.1300	6.5000	5.83000	7.8600	7.2100	6.3400	5.650(
Iceland	1970	7.9400	8.5600	8.3900	8.0900	7.33000	7.6800	7.7200	6.9400	6.080(
India	1970	3.1900	2.5900	2.1400	1.6900	1.24000	1.3000	0.9100	0.5800	0.390(
Indonesia	1970	4.3900	3.5800	2.8900	2.1700	1.49000	2.8900	2.0900	1.5000	0.970(
Iran	1970	3.3000	2.4300	1.5200	0.8300	0.46000	1.6700	0.9900	0.4400	0.180(

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Creating calculated fields

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