



join



Hands-on Lab: Level Up: Advanced Table Calculations



Emma Ware

Knowledge



The background features a series of thin, light green lines radiating from a central point, creating a sunburst effect. There are also several small, stylized decorative elements: a small square near the center, a rectangular grid of dots in the upper right, and a series of vertical bars of varying heights in the lower right.

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Select the **Level Up: Advanced Table Calculations** lab in the drop-down



Emma Ware

Training Content Developer



Agenda

What can I do with table calculations?

Hands-on exercises

How can I learn more?

What can I do with table calculations?

Pretty on-the-fly for a calculation guy

||||| | ||

Table calcs are...

- Similar to Excel functions, they perform transformations on **data in the data table**.
- Only able to reference fields included in the report.
- Based on Looker expressions (Lexp).
- An easy way for everyone to create their own calculations on the fly without the help of an analyst!

Move around the table

Here, there, everywhere!

Year ▾		Enrollment Rate
1	2017	⊘
2	2016	82%
3	2015	84%
4	2014	84%
5	2013	83%
6	2012	80%
7	2011	78%

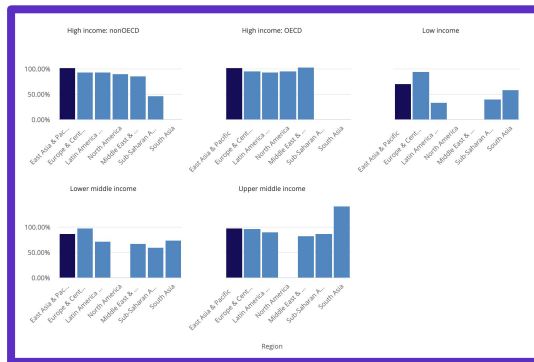
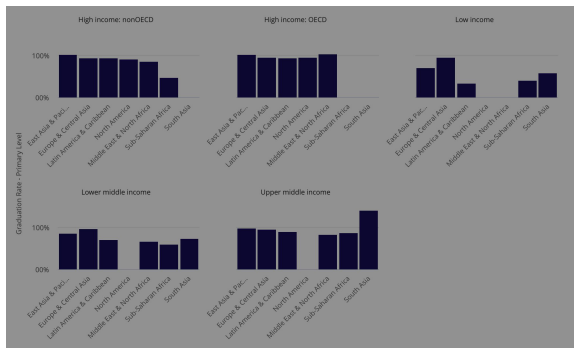
Year ▾		Enrollment Rate	YoY change	YoY percent change running total
1	2017	⊘	⊘	58.56%
2	2016	82%	-2.06%	58.56%
3	2015	84%	-0.24%	60.62%
4	2014	84%	1.23%	60.86%
5	2013	83%	3.51%	59.63%
6	2012	80%	2.57%	56.12%
7	2011	78%	-0.72%	53.55%

The problem: Basic aggregate measures can lack depth and don't show us the bigger picture of trends.

Our tools: Year-over-year metrics, running totals, and percent changes show us where the data is headed.

Alter visualizations

Picture this...

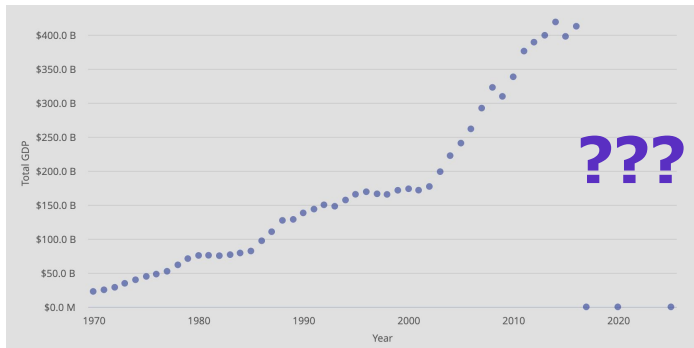


The problem: In detailed visualizations, it can be difficult to pick out values we are particularly interested in.

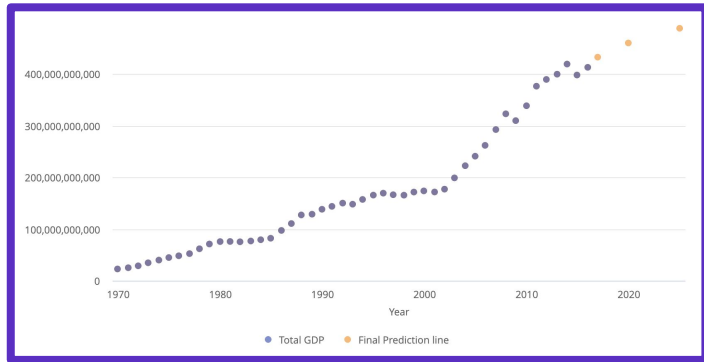
Our tools: Selectively highlight values using conditional logic to draw attention to our most relevant data.

Make predictions

Extrapolate! Innovate! Celebrate!



The problem: Sometimes data is missing! Or we want to get a sense of where things are headed.



Our tools: Use previous values to create predictions, or fill in gaps in the data.

Exercises

Let's get our hands in there!

Move around the table

Here, there, everywhere!

I have a single aggregate measure for each year. How can I add more meaningful analysis to get a sense of how the data is changing?

1. Use the `offset()` function to get year-over-year percent changes.
2. Use `offset_list()`, `row()` and `sum()` functions to create running totals that give a clear picture of trends.

Move around the table

Here, there, everywhere!

I have a single aggregate measure for each year. How can I add more meaningful analysis to get a sense of how the data is changing?

1. Add the **Year** and **Enrollment Rate** fields to an Explore, and change the filter to show years <2017.
2. Previous year: `offset(${education_international_education.percent_gross_enroll_rate},1)`
3. YoY change: New-Old/Old (`(${education_international_education.percent_gross_enroll_rate} - offset(${education_international_education.percent_gross_enroll_rate},1))/(offset(${education_international_education.percent_gross_enroll_rate},1)`)
4. Running total: `running_total(${yoy_change})`
5. Number of rows: `max(row())`
6. Reverse list of numbers: `offset_list(${yoy_change},0,${total_number_of_rows})`
7. Reverse running total: `sum(offset_list(${yoy_change},0,${total_number_of_rows}))`

Alter visualizations

Picture this...

We often have a visualization with multiple graphs/values, and one particular value it would be helpful to highlight.

1. Add **Region** and **Graduation Rate**, and pivot by income group.

2. `if(case, yes, no)`

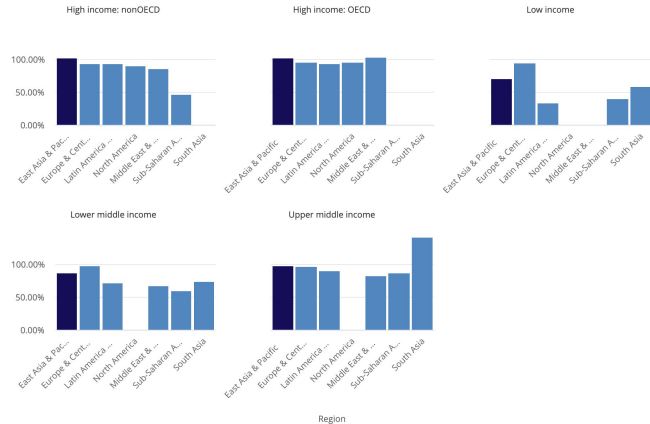
3. Highlight the values we want:

```
if(${education_country_summary.region}="East Asia & Pacific",  
  ${education_international_education.percent_gross_primary_grad}  
  , null)
```

4. Highlight the values we don't want:

```
if(${education_country_summary.region}!="East Asia & Pacific",  
  ${education_international_education.percent_gross_primary_grad}  
  , null)
```

5. Bonus: Change the highlight conditions to any enrollment rate below 50%.

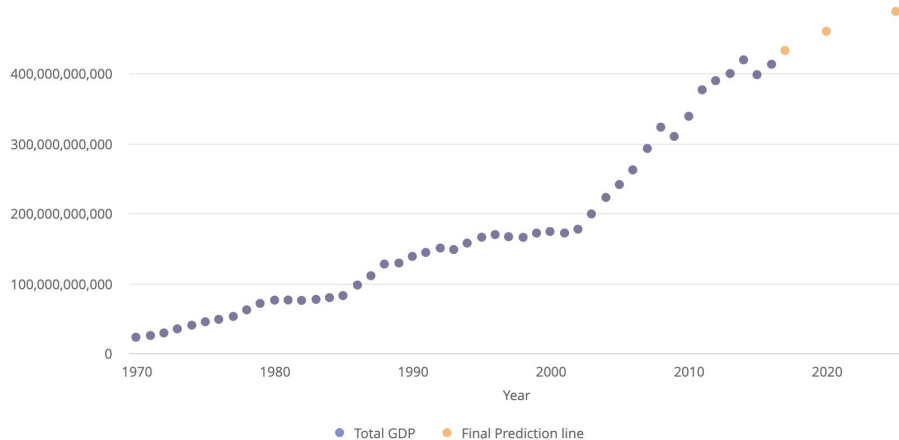


Forecasting

Extrapolate! Innovate! Celebrate!

We have null values for future GDP, but want to get a sense of where the global economy is headed.

- ✓ Create a prediction line using the previous values.
 - This example will use a simple linear extrapolation, but more complex fits can be applied as well
 - Use recent values (from the `offset()` function) to get a sense of yearly changes



Forecasting

Extrapolate! Innovate! Celebrate!

1. The goal is to recreate a linear line with $y = mx + b$.
2. To get the slope, we need the change in years, and the change in GDP. The change in years is:
`{education_international_education.year} - offset({education_international_education.year},1)` and the change in GDP is: `({education_international_education.total_GDP} - offset({education_international_education.total_GDP}, 1))` so slope:
`({education_international_education.total_GDP} - offset({education_international_education.total_GDP}, 1)) / (change in x)`
3. We want the slope from the past 10 years, where the growth has been relatively linear: `mean(offset_list({slope},3,10))`
4. The “intercept” (or latest value) can be grabbed a variety of ways ...
5. Finally, we put it all together to get `{latest_slope}*{year_difference_x}+412797031872`
6. Ideally we only want our prediction for the latest year, so we can throw in an additional if statement to get
`if({education_international_education.year}>=2017, {prediction_line}, {education_international_education.total_GDP})`

How can I learn more?

Sky's the limit

Resources for more table calculations!

Docs Menu ▾

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On This Page

Some Functions Are Only Available for Table Calculations

Mathematical Functions and Operators

String Functions

Date Functions

Logical Functions, Operators, and Constants

Positional Functions

Filter Functions for Custom Filters and Custom Fields

Looker Functions and Operators

Table calculations, custom fields, and custom filters use Looker expressions. A major part of these expressions are the functions and operators that you can use in them. This page includes information about all of these functions and operators.

The functions and operators can be divided into a few basic categories:

- Mathematical: Number-related functions
- String: Word- and letter-related functions
- Dates: Date- and time-related functions
- Logical Transformation: Includes boolean (true or false) functions and comparison operators
- Positional Transformation: Retrieving values from different rows or pivots

Some Functions Are Only Available for Table Calculations

Looker expressions for custom filters and custom fields can use most functions and operators while table calculations can use any function or operator. This page is organized to make it clear which functions and operators are available, depending on where you are using your Looker expression.

The functions that are available only for table calculations are typically functions that convert datatypes, aggregate data from multiple rows, or refer to other rows or pivot columns.

Mathematical Functions and Operators

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User Guide

Getting Started

Help Center

Documentation

Search results

131 results for "table calculations"

Knowledge base

Subtotals with Table Calculations

Looker Help Center > Exploring Data > How To · Sean Higgins · 5 months ago

Using Table Calculations, we can create a 4th column, that will show this inline with the last row of each Brand:

Rolling Average Using offset_list in Table Calculations

Looker Help Center > Exploring Data > How To · Lindsey Meyer · 5 months ago

The offset function in table calculations allows you to reference a single value in a previous or following row.

Other Buckets Using Table Calculations

Looker Help Center > Development > Patterns · Zev Lebowitz · 5 months ago

Using table calculations, however, we can replace the last row in this table with the sum of events from all rows excluded

Conditional Formatting using Table Calculations


Looker Help Center > Exploring Data > How To · Mike Slovich · 5 months ago


The second approach, leveraging table calculations for conditional formatting, is detailed in this article, with two examples

Looker Functions and Operators
documentation









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Resources for more table calculations!

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Topic		Replies	Views	Activity
⚡ About the Table Calculations category This category is for anything and everything table calculations!		0	3.1k	Jul '15
Stats table calcs: comparing rates over time (Bonus: anomaly detection!) statistics, tablecalcs	   	11	4.5k	Oct 16
Table calculation (division) is showing huge number	 	1	265	Oct 15
Table calculation total wrong		0	501	Oct 3



Looker Community

Questions?

The background is a solid purple color. A central point has numerous thin, light-purple lines radiating outwards across the entire frame. There are three distinct clusters of small white shapes: a vertical stack of horizontal bars on the left, a rectangular grid of dots in the upper right, and a horizontal row of vertical bars in the lower right.



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Thank you

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