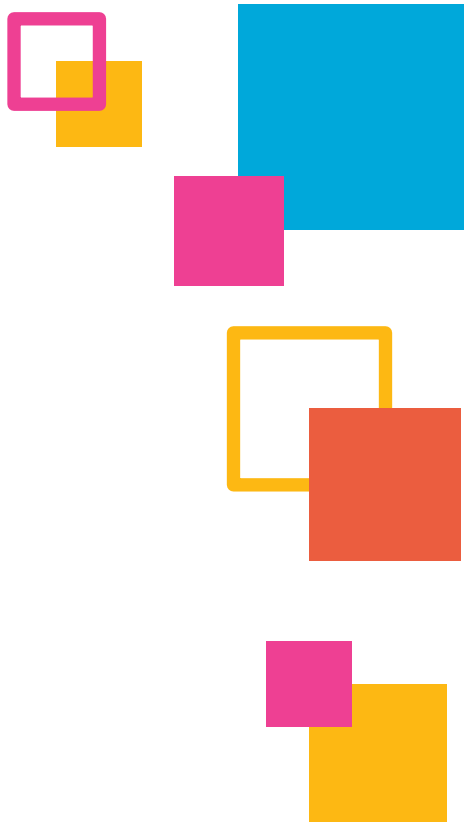
#JOINdata
@lookerdata



Hands-on Lab: Level Up: Advanced Table Calculations

looker

Emma Ware
Knowledge

#JOINdata
@lookerdata

looker.com/hol

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

© 2019 Looker. All rights reserved. Confidential.

Emma Ware

Training Content Developer

© 2019 Looker. All rights reserved. Confidential.

Agenda

What can I do with table calculations?

Hands-on exercises

How can I learn more?

© 2019 Looker. All rights reserved. Confidential.

What can I do with table calculations?

Pretty on-the-fly for a calculation guy

© 2019 Looker. All rights reserved. Confidential.

looker

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!

© 2019 Looker. All rights reserved. Confidential.

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.

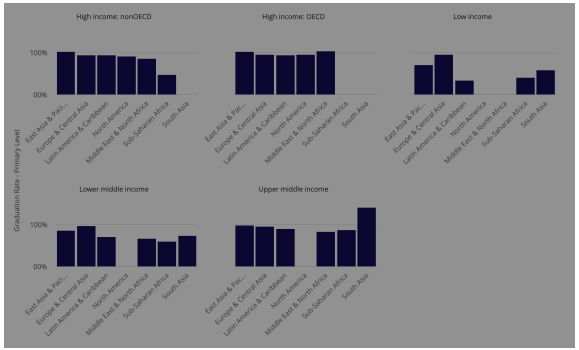
Our tools: Year-over-year metrics, running totals, and percent changes show us where the data is headed.

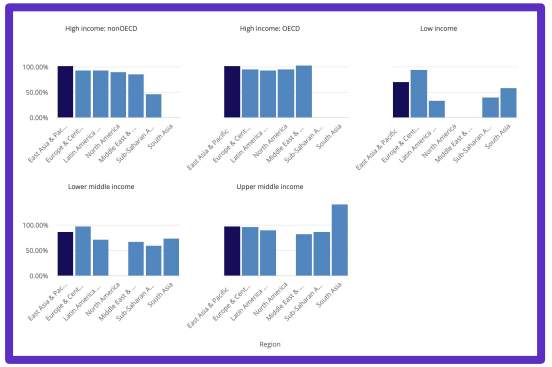
© 2019 Looker. All rights reserved. Confidential.

looker

Alter visualizations

Picture this...





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

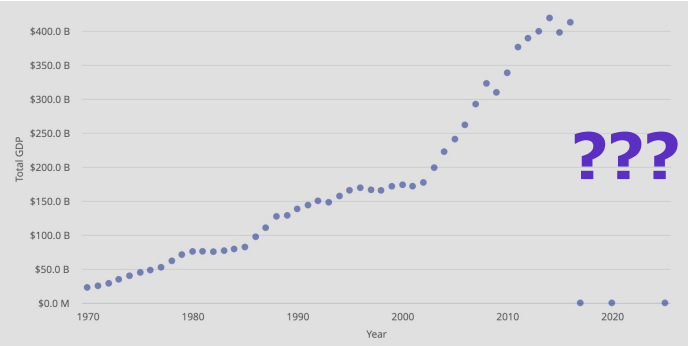
Our tools: Selectively highlight values using conditional logic to draw attention to our most relevant data.

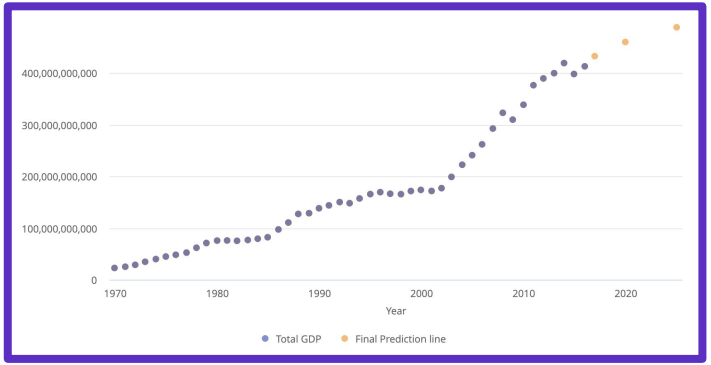
© 2019 Looker. All rights reserved. Confidential.

looker

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.

© 2019 Looker. All rights reserved. Confidential.

looker

Exercises

Let’s get our hands in there!

© 2019 Looker. All rights reserved. Confidential.

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.

© 2019 Looker. All rights reserved. Confidential.

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}))`

© 2019 Looker. All rights reserved. Confidential.

looker

Alter visualizations

Picture this...

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

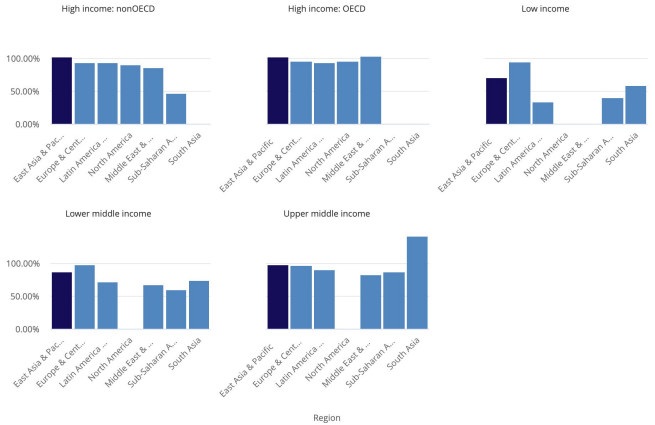
1. Add **Region** and **Graduation Rate**, and pivot by income group.
2. `if(case, yes, no)`
3. Highlight the values we want:

```
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%.



© 2019 Looker. All rights reserved. Confidential.

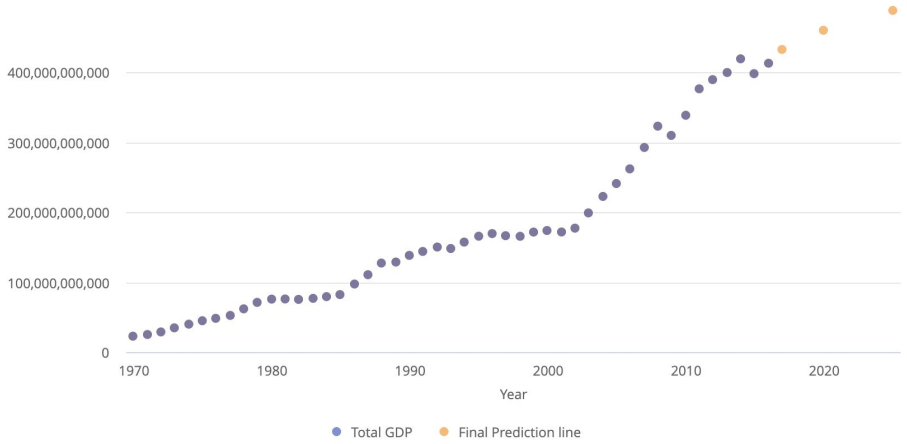
looker

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



© 2019 Looker. All rights reserved. Confidential.

looker

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})`

© 2019 Looker. All rights reserved. Confidential.

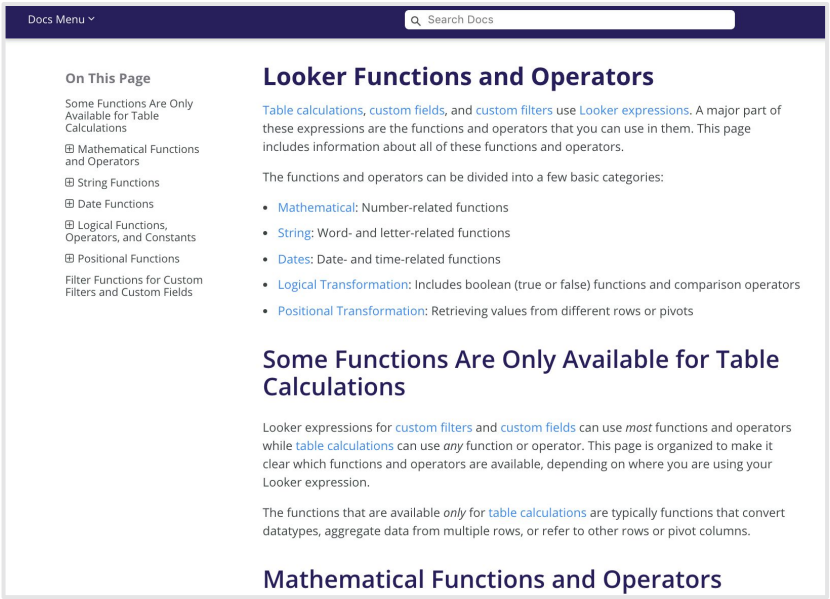
looker

How can I learn more?

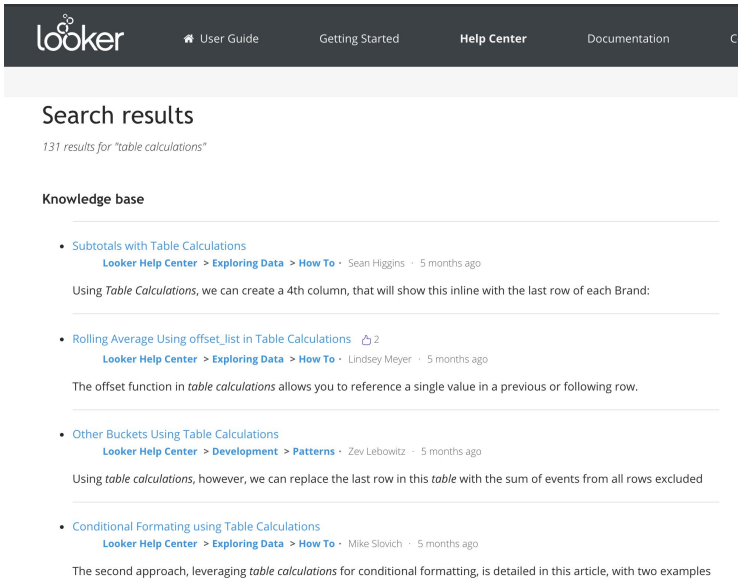
Sky's the limit

© 2019 Looker. All rights reserved. Confidential.

Resources for more table calculations!



Looker Functions and Operators documentation

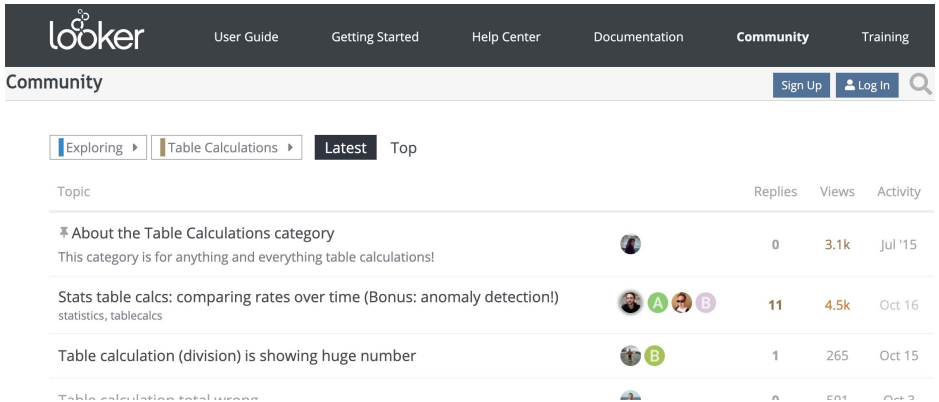


help.looker.com

© 2019 Looker. All rights reserved. Confidential.

looker

Resources for more table calculations!



Looker Community

© 2019 Looker. All rights reserved. Confidential.

looker

Questions?

© 2019 Looker. All rights reserved. Confidential.

looker

Thank you

Rate this session in
the JOIN mobile app

#JOINdata
@lookerdata