



Adobe Analytics Data Visualization Playbook.

The Art and Science of Data Visualization.

The two objectives of data visualization, analysis and storytelling, are essential skills for an analyst.

- **Data analysis** is the science of exploring data in an attempt to derive useful information.
- **Data storytelling** is the art of effectively conveying that information to an outside audience.

Getting good at data visualization is both an art and a science. There are a variety of factors to consider when making visualization decisions. This playbook walks through use cases of when you should pick one visualization over another. It provides a list of common visualization objectives along with examples.

These are guidelines, not rules. And for many of these rules, you'll probably be able to think of counterexamples. That's fine. Just be thoughtful about your visualizations. Play around with them, and try a couple options to see what works best.

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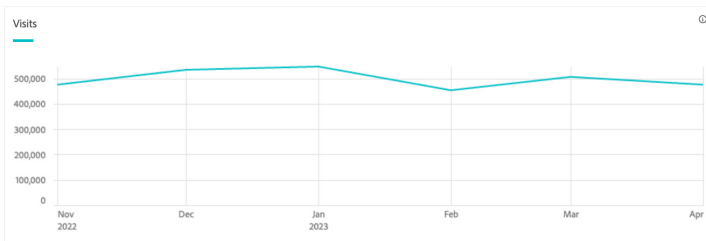
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I want to show how a metric changes over time.

Continuous datasets (or time-series data) is best represented with a line or area chart. If you are able to group that data into meaningful categories (e.g., month), then you could also use a bar chart.

Example: Site visits trended monthly over the last six months.

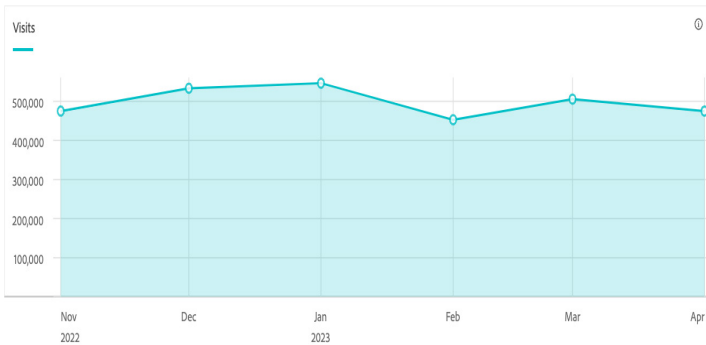
• Line



Line chart

This is the default way to display time series data in Analysis Workspace. It can handle the most complexity of any time series visualization.

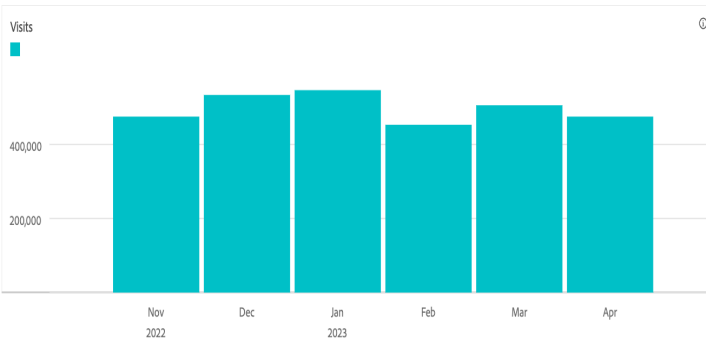
• Area



Area chart

This is a line chart with the space below shaded in. Under certain conditions, an area chart might be easier to read than a line chart.

• Bar



Bar chart

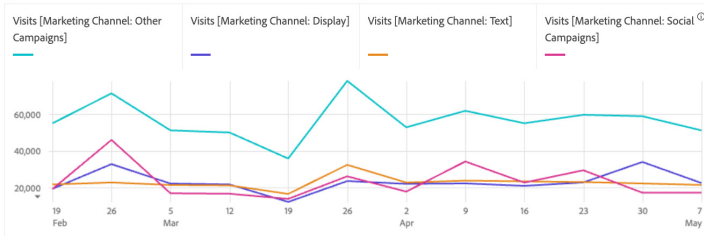
Instead of a continuous line, a bar chart calls out each data point distinctly. Use this when you want to call out your data points.

I want to show how a metric changes over time. ...with 4 or more metrics.

Maybe you need to show how a lot of metrics are trending over time. This can easily lead to an overcrowded visualization. There's not a common "best" option for displaying this type of data, though a standard line chart will usually get the job done. If possible, spend a little extra time making your visualization as readable as possible.

Example: Weekly visits by marketing channel.

• Line

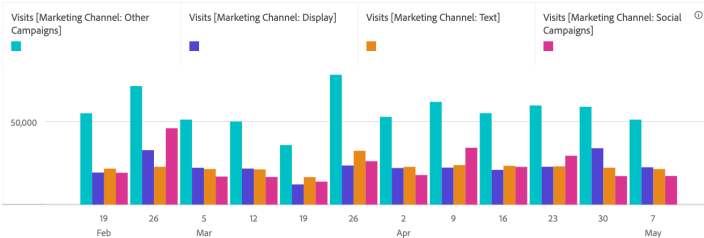


Good

Line chart

The basic line chart is almost always going to be your best option when displaying four or more different trendlines.

• Bar

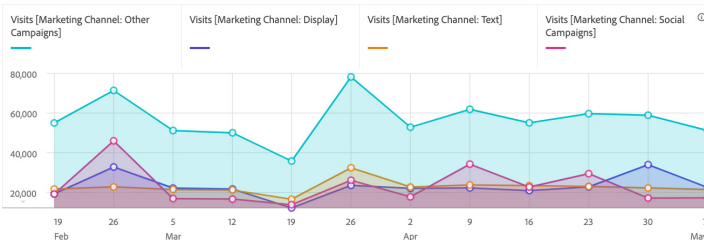


Bad

Bar chart

My rule of thumb with trended bar charts is no more than two metrics. But sometimes rules are meant to be broken.

• Area



Unappealing

Area chart

In some cases, four or more metrics in an area chart might be ok. But if it's hard to read, use another option. Make sure to indicate this is not stacked, since with area charts there is no clear difference between standard and stacked.

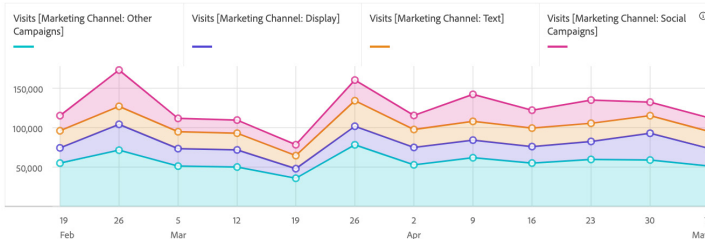
I want to show how a metric changes over time.

...where dimension values should add up to a total.

Sometimes your metrics should add up to a total at the top. For this, you'll use the stacked version of area and bar charts. Note that these charts make it easy to see changes in the total but make it more difficult to tell changes in an individual dimension value.

Example: Weekly visits by marketing channel.

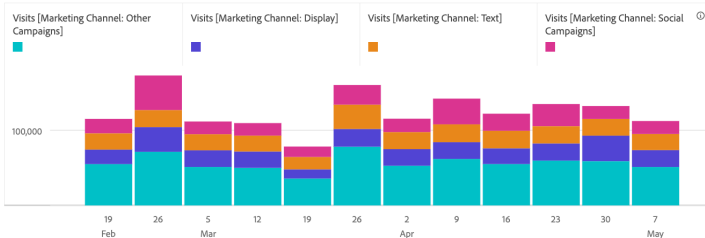
Area stacked



Stacked area chart

The stacked area chart looks cleaner than the stacked bar chart, especially as you increase the number of data points along the x-axis.

Bar stacked



Stacked bar chart

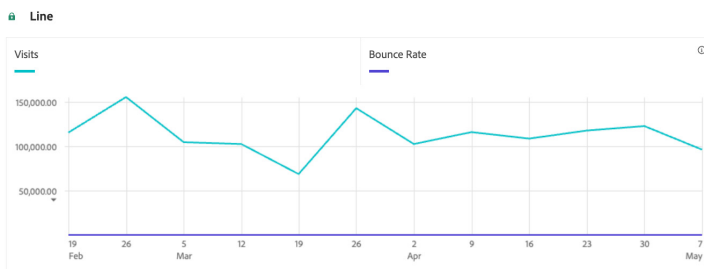
The stacked bar makes it a little easier to see changes in individual dimension items than the stacked area. If that's important, consider this chart.

I want to show how a metric changes over time. ...with metrics of a different scale.

What if the metrics you want to trend are on completely different scales?
A common example is when you want to display a whole number metric, like page views, alongside a "rate" metric like Bounce Rate.

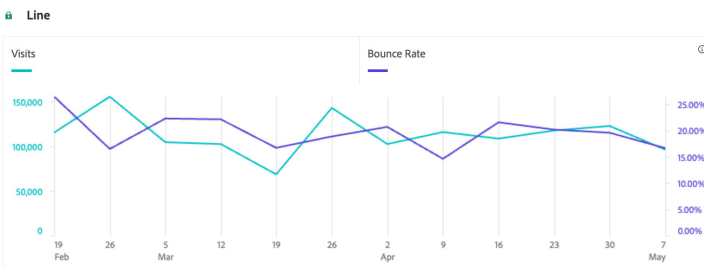
Analysis Workspace makes this possible with a few different visualizations.
However, you are limited to two total metrics in the chart.

Example: Page views and bounce rate trended weekly over the last 12 full weeks.



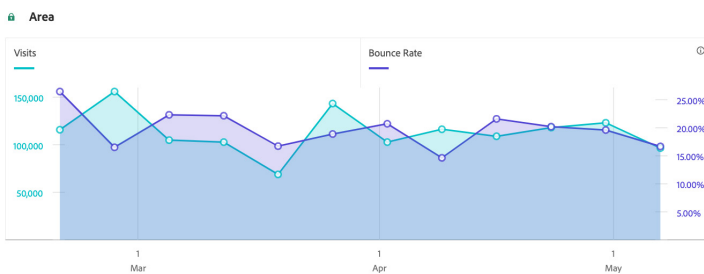
Wrong
Single axis line chart

This example shows page views and bounce rate with a single axis. The bounce rate line is impossible to read.



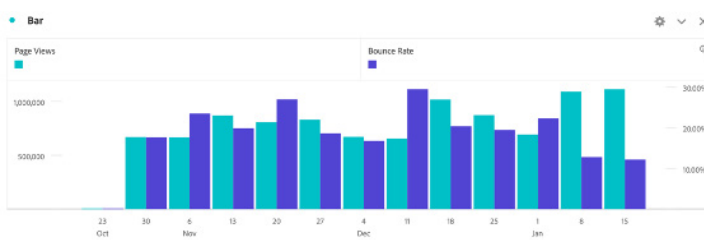
Good
Dual axis line chart

This shows the dual axis option. Now both trend lines are clearly visible. The y-axis labels and line color match for additional clarity.



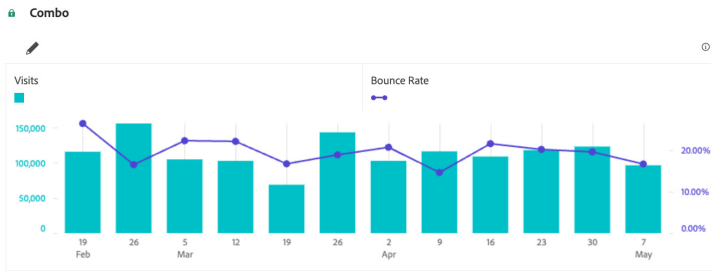
Good
Dual axis line chart

The area chart again is very similar to the line chart. It gives a little more weight to the trendline.



Bad
Dual axis bar chart

While you can create a dual axis bar chart, you shouldn't use it for time series data. It's too difficult to read. Instead, use a dual axis bar chart to compare dimension values (see below).



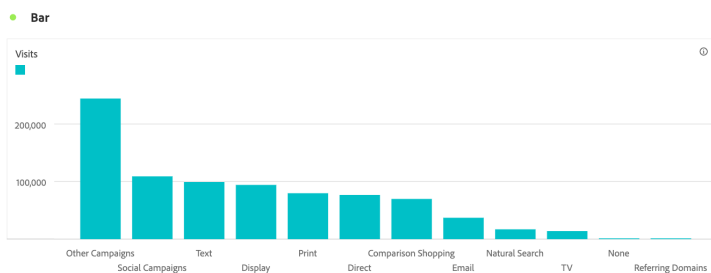
Advanced Combo chart

This may be the best dual axis visualization option. Combining two chart types — line and bar — further differentiates the metrics, making it clear they are not the same thing.

I want to compare values within a dimension.

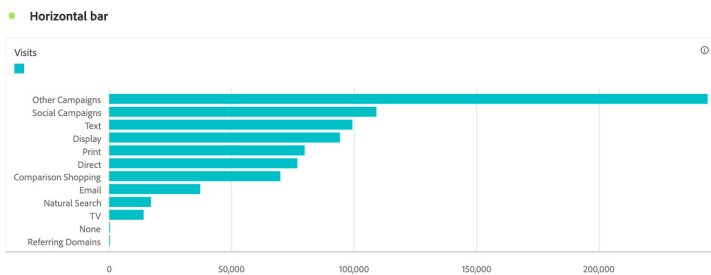
Another common visualization goal is to compare dimension values for a given metric. This gives us more visualization options since we now have control over what goes into the x-axis.

Example: Visits by marketing channel.



Bar chart

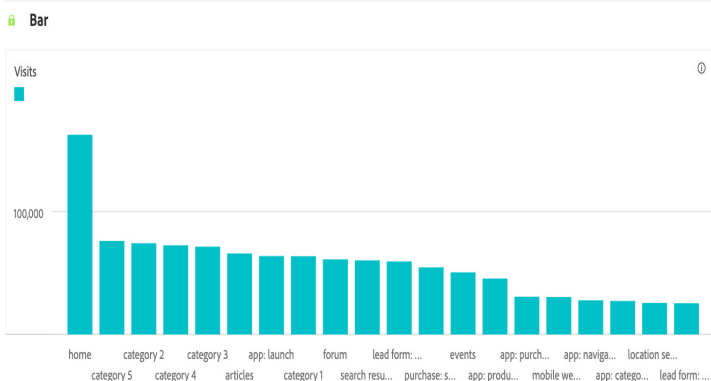
The standard bar is the most common way to compare dimension values. It's likely the one your stakeholders are most comfortable with.



Horizontal bar chart

The horizontal bar charts are great because of their efficient use of space. Notice how the value titles on the y-axis fit neater than in the bar chart above.

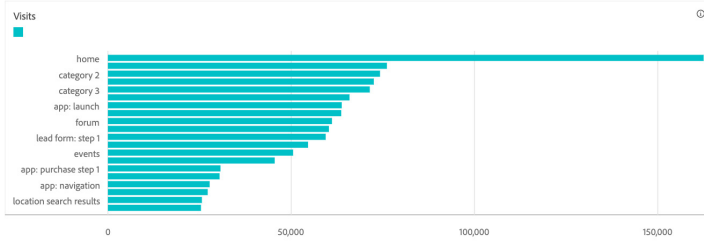
Example: Top 20 pages.



Bad Bar chart

When you have this many dimension values to compare, it's best to use a freeform table.

Horizontal bar

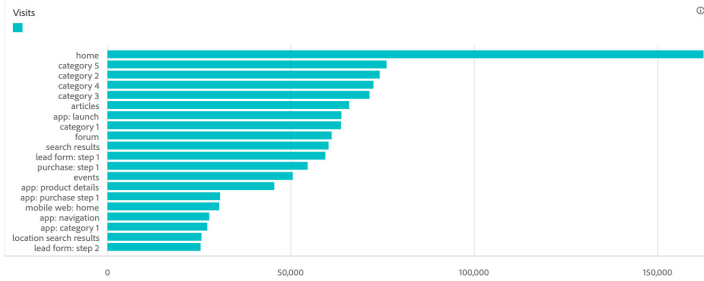


Beware

Horizontal bar chart

It's hard to tell, but this chart has 20 bars and only 10 page names. Since the text won't fit on the chart, every other page name label is dropped. You can fix this by increasing the height of your visualization. (See next example.)

Horizontal bar



Not Bad

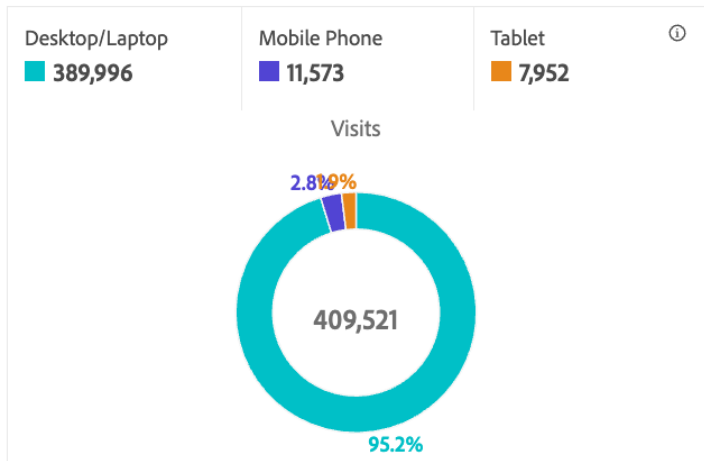
Horizontal bar chart

Manually increase the visualization height to make sure all the values are displayed.

I want to compare values within a dimension.
...where values add up to 100%.

Example: Visits by mobile device type.

Donut



Good

Donut chart

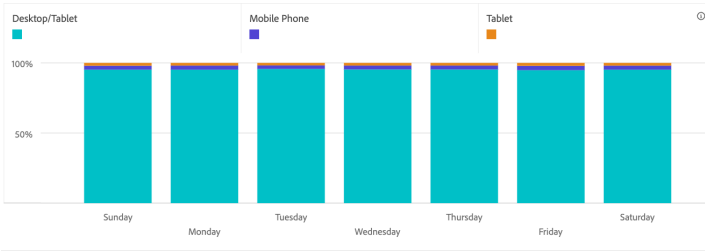
Pie charts and donut charts get a lot of grief. However, when you're looking at four or fewer values, they can be an easy way to show how given values make up the total pie (or donut).

Tip: When looking at mobile device type in a visualization, update the default "Other" to be "Desktop/Laptop."

Example: Visits by mobile device type by day of the week.

Note: Make sure to check the "100% Stacked" box in the gear option menu.

• Bar stacked

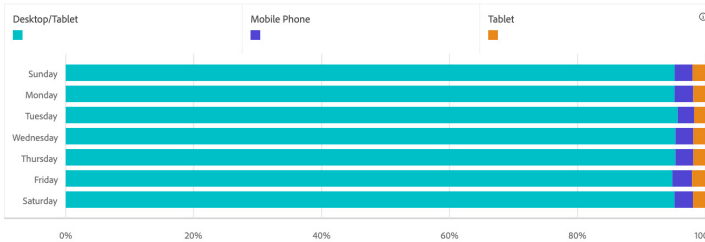


Good

100% stacked bar chart

This looks better when you have more equity across your dimension values.

• Horizontal bar stacked



Good

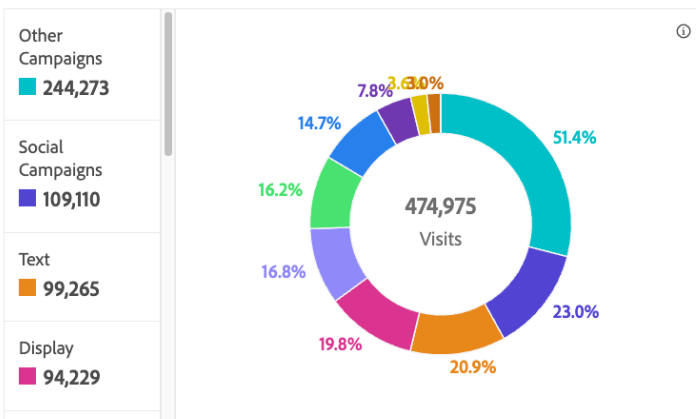
100% horizontal stacked bar chart

In this example, tablet and mobile phone visits are much easier to read with a horizontal bar chart.

Example: Visits by marketing channel.

Note: In this case, we have 12 dimension values (i.e., marketing channels). Treemap is the only good visualization that shows how that many dimension values add up to a total.

• Donut

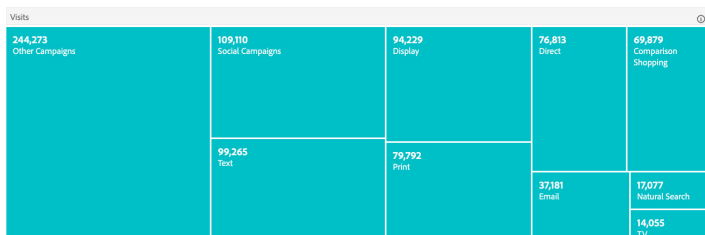


Bad

Donut chart

Do not use a donut chart when you have more than four dimension values. There are better ways of visualizing this data.

• Treemap



Advanced

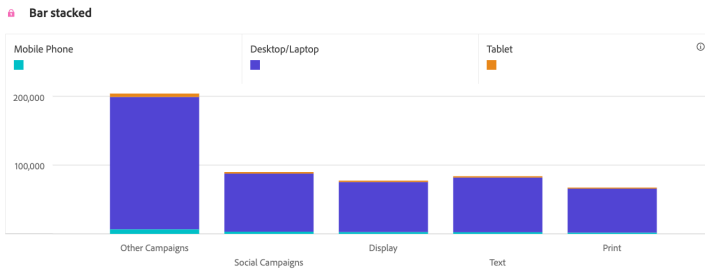
Treemap

An underutilized "donut chart" equivalent that does allow for the inclusion of many dimension values is treemap.

I want to compare values within a dimension. ...where values add up to a total.

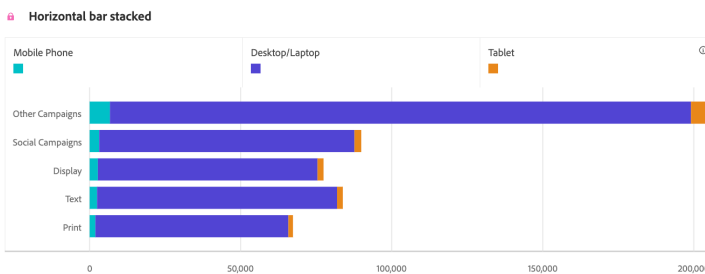
This is similar to the previous use case (where values add up to 100%), but here we are more interested in the aggregated total than we are in the makeup of the total.

Example: Top 5 marketing channels by mobile device type.



Good Stacked bar chart

The most important comparison here is between the marketing channels. "Other campaigns" is driving the most traffic. Within that, we can see what devices people are on when coming to the site from these marketing channels.

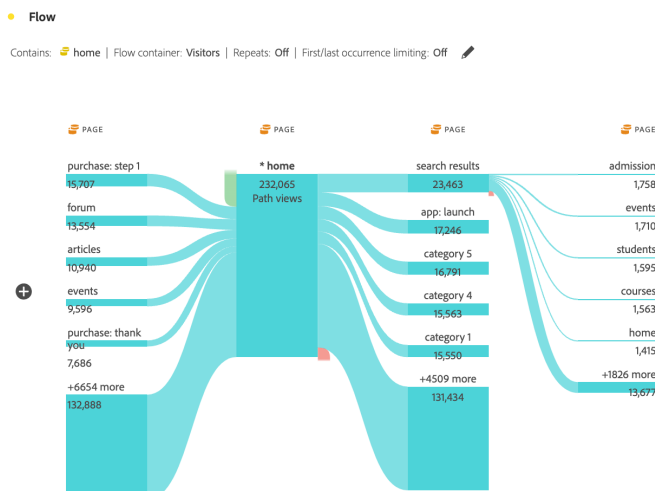


Good Horizontal stacked bar chart

It's easier to see how mobile phone and tablet are contributing thanks to there being more horizontal space.

I want to explore how users are navigating through my site.

Example: How are people navigating to and from the home page?



Good Flow

While flow visualizations can get out of control quickly, they can also be useful for discovering how visitors are navigating through your site.

Tip: For more relevant results, add constraints to your flow analysis.

I want to evaluate the performance of a conversion funnel.

Example: Evaluate visitors going from a product view to a cart addition to a checkout.

Fallout

All visitors
330,425



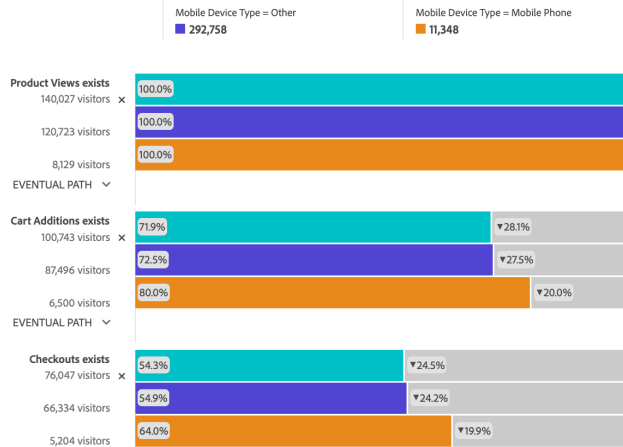
Good

Fallout

When you have a defined “happy path” (e.g., shopping cart or conversion funnel), you can use a fallout visualization to assess the path’s performance and see where visitors tend to drop off.

Fallout

All visitors
330,425



Even Better

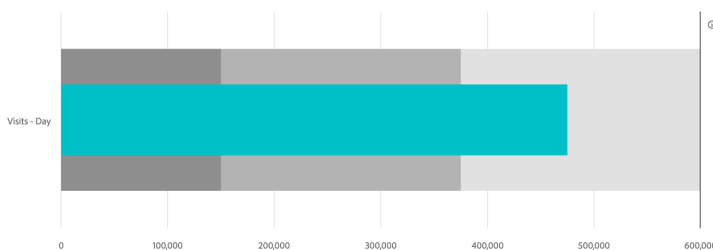
Fallout comparison

Add segments to compare fallouts from different types of users.

I want to monitor progress toward a goal.

Example: Site visit goal.

Bullet



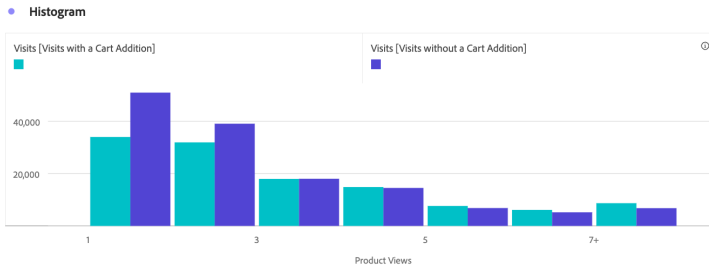
Bullet

If you have predefined goals for a given metric, a bullet chart is a great way to visualize progress to that goal. The x-axis can display as either a total number or percentage.

I want to show the distribution of a variable.

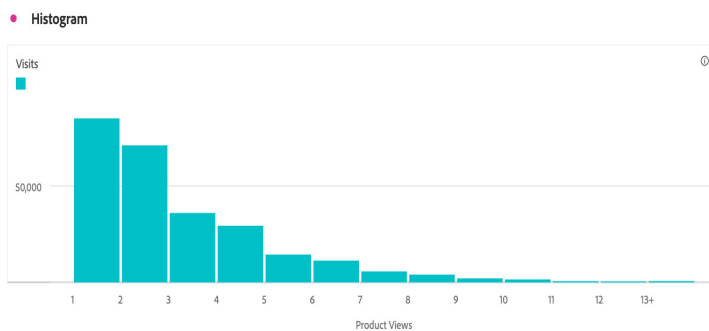
When a mean or median doesn't provide enough information (or is potentially misleading), showing the distribution of a metric can be helpful.

Example: How many product views do visits with a cart addition have compared to visits without a cart addition.



Advanced Histogram

You can use the "View Data" option to add two columns to the underlying freeform table.



Good Histogram

This shows the distribution of product views across visits.

I want to highlight a single metric value or change in value.

Example: Show visits and month-over-month change in visits.

Summary number

474,975

Visits : Apr 2023

Summary number

Use this when you want to call out an important number. Make sure to lock selection.

🔒 **Summary change**

▼ 6.1%

Visits : Mar 2023

Summary change

Use this to show a percent change. Select the comparison number first and then the new number. Make sure to lock selection.

● **Key metric summary**



▼ 3.4%

474,975



Visits: — Last month

— Month before (Mar 1, 2023 - Mar 31, 2023)

Advanced

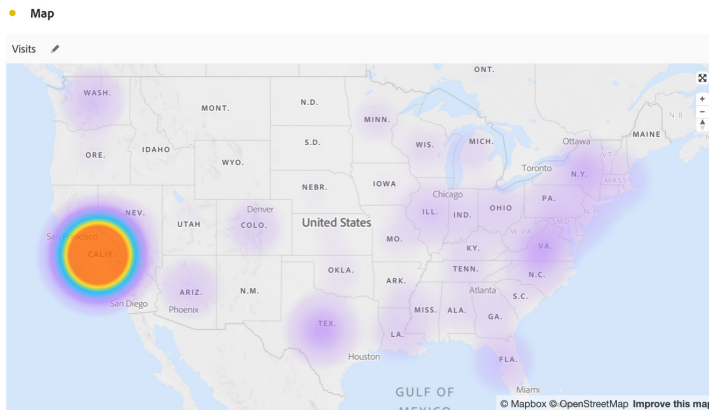
Key metric summary

Use this to show both a summary change, summary number, and trendline all in one visualization. Play around with the options until it looks how you want.



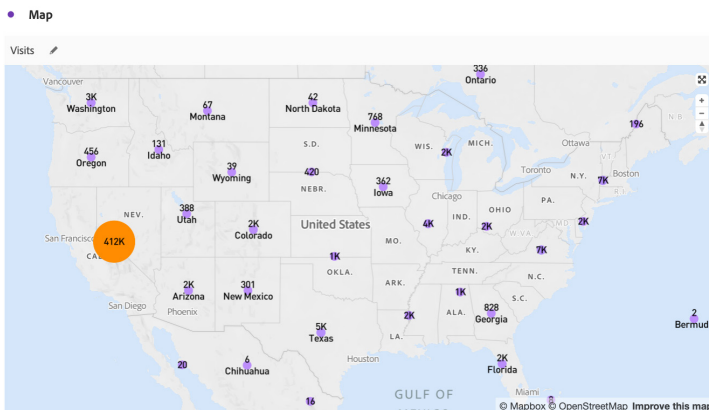
I want to show where visitor traffic is coming from geographically.

Example: How many visits are we getting from across the United States?



Map (heatmap)

Use the heatmap version of the map visualization to get a quick idea of where your visits are coming from geographically.

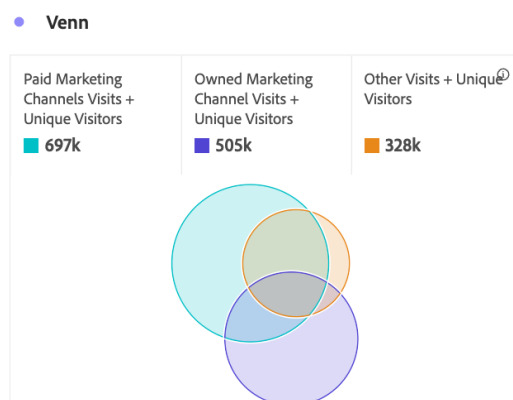


Map (bubbles)

Use the bubbles version of the map visualization to see the actual number of visits coming from different locations.

I want to explore how visits or visitors overlap.

Example: Show the overlapping marketing channel mix of visitors to our website.



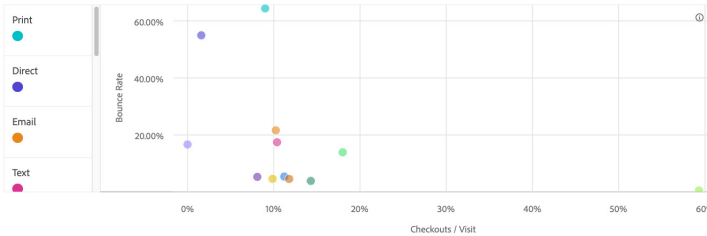
Good Venn diagram

This shows how the same visitors come to the site through different marketing channels.

I want to show how two metrics are correlated based on different dimension values.

Example: How do marketing channels compare based on two metrics: bounce rate and checkouts per visit?

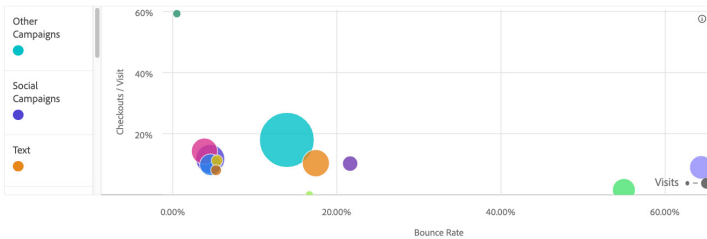
Scatter



Good Scatterplot

This is a great way to show how different marketing channels perform based on two unrelated metrics.

Scatter



Advanced Scatterplot

Add a third metric to turn this into a bubble chart.

I want to see how different groups of visitors return to the site over time.

Example: How many weeks after a visit does a checkout occur?

Cohort table

Retention

Inclusion: Visits >= 1 Return: Checkouts >= 1

Cohort	Included	+1 Weeks	+2 Weeks	+3 Weeks	+4 Weeks
Average retention	108,266	743 0.7%	687 0.6%	599 0.6%	547 0.6%
Jan 22 - Jan 28	95,739	632 0.7%	630 0.7%	609 0.6%	547 0.6%
Jan 29 - Feb 4	114,865	788 0.7%	704 0.6%	589 0.5%	
Feb 5 - Feb 11	111,788	823 0.7%	726 0.6%		
Feb 12 - Feb 18	104,577	729 0.7%			
Feb 19 - Feb 25	114,361				

Advanced Cohort table

The conditional formatting helps us quickly identify which cohorts are most effective at driving checkouts after a visit.

Example: What desktop browser is driving the highest rate of return visits?

Cohort table

Retention: Dimension column (Browser)

Inclusion: Visits >= 1 Return: Visits >= 1

Cohort	Included (Jan 22, 2023)	Jan 29, 2023	Feb 5, 2023	Feb 12, 2023	Feb 19, 2023
Average retention	3,416	244 6.7%	249 6.8%	240 6.8%	210 5.9%
Google Chrome 80.0	14,082	959 6.8%	988 7.0%	952 6.8%	764 5.4%
Google Chrome 83.0	7,862	578 7.4%	577 7.3%	541 6.9%	490 6.2%
Google Chrome 57.0	4,246	296 7.0%	310 7.3%	311 7.3%	279 6.6%
Microsoft Internet Explorer 11	4,240	344 8.1%	315 7.4%	268 6.3%	285 6.7%
Google Chrome 73.0	3,483	268 7.7%	270 7.8%	238 6.8%	235 6.7%
Microsoft Edge 18	2,655	172 6.5%	195 7.3%	173 6.5%	164 6.2%
Java (unknown version)	2,227	168 7.5%	175 7.9%	194 8.7%	145 6.5%
Other	1,823	133 7.3%	150 8.2%	124 6.8%	106 5.8%
Mozilla Firefox 77.0	1,821	117 6.4%	131 7.2%	148 8.1%	128 7.0%
Safari (unknown version)	1,679	128 7.6%	125 7.4%	122 7.3%	103 6.1%
Tizen Browser	1,380	86 6.2%	96 7.0%	99 7.2%	93 6.7%
Google Chrome 78.0	1,212	91 7.5%	85 7.0%	93 7.7%	82 6.8%
Google Chrome 81.0	1,107	81 7.3%	72 6.5%	95 8.6%	67 6.1%
None	0	0	0	0	0

Advanced Cohort table

Try using a dimension-based cohort to compare return visits from the various dimension values.

Example: When did visitors visit before and after a cart addition?

Cohort table

Retention: Latency table

Inclusion: Cart Additions >= 1 Return: Visits >= 1

Cohort	-2 Weeks	-1 Weeks	Included 0 Weeks	+1 Weeks	+2 Weeks
Average retention	580 2.2%	822 3.1%	25,122	1,022 4.1%	986 4.1%
Jan 22 - Jan 28	0	0	20,796	889 4.3%	861 4.1%
Jan 29 - Feb 4	0	861 3.5%	24,520	1,117 4.6%	1,062 4.3%
Feb 5 - Feb 11	898 3.3%	1,102 4.0%	27,493	1,107 4.0%	1,034 3.8%
Feb 12 - Feb 18	1,008 3.7%	1,135 4.2%	27,005	973 3.6%	
Feb 19 - Feb 25	993 3.8%	1,013 3.9%	25,798		

Advanced Cohort table

Use a latency table to show how many visits occurred leading up to and then after the inclusion event.

Author

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