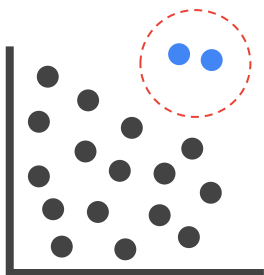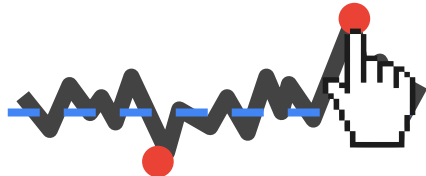# Module 8

Data Visualization

In this module we will:

- **Overview of Data Visualization principles**
- Exploratory vs Explanatory analysis approaches
- Demo: Google Data Studio UI
- Connect Google Data Studio to Google BigQuery

Google Cloud

Use visualization to clearly and concisely present insights

Visualizing a dataset allows you to spot hidden trends

Interacting with a dataset visually is often faster than writing SQL

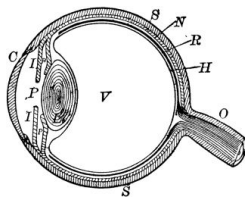Deliver powerful insights to your audience through reports

Get scalable performance as your dataset grows with BigQuery-backed visualization tools

Google Cloud

Visualization Theory: Perception

Stimulus   **Eye**   **Brain**

Preattentive processing
Attentive processing

Sensation
Physical process

Perception
Cognitive process

Visualization Theory: Count the Fives

69750429347493732418605783578
58728294746544878186764532142
44396846342335298673219038756
58788937453909329756593917321
47259201893744765647221756523

Visualization Theory: Count the **Fives**

6975042934749373241860578357
858728294974654487818676453214
24439684634233529867321903875
65878893745390932975659391732
14725920189374476564722175652

Google Cloud

Visualization Theory: Count the **Fives**

6975042934749373241860578357 8
58728294746448781867643214
24439684634233529867321903875
65878893743909329765939173 2
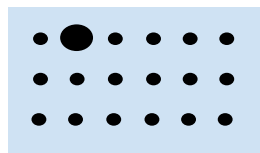14729201893744765647221765 2

Google Cloud
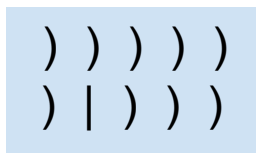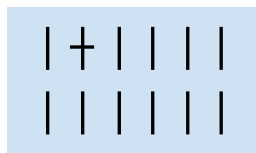
Visualization Theory: Preattentive Attributes
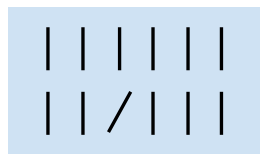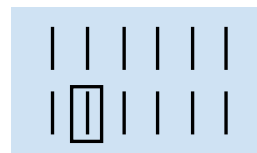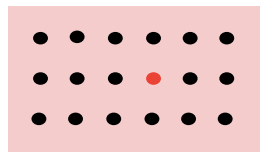

Orientation
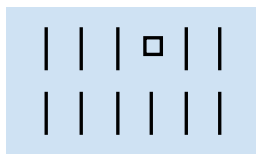
Shape

Line Length

Line Width

Size

Curvature
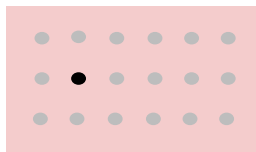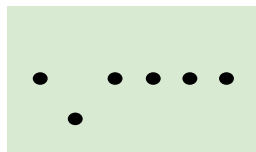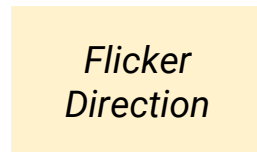
Added Marks

Enclosure

Hue

Intensity

2-D Position

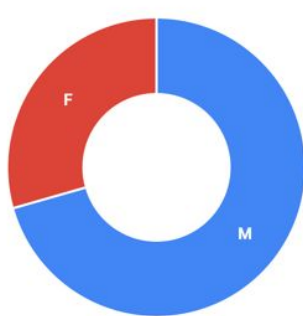Motion

Form

Color

Spacial Position

Motion
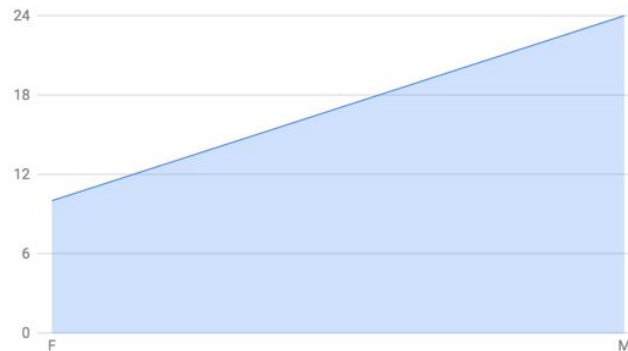
You Choose: Effective or Ineffective (or Wrong) Visuals

OR

You Choose: Effective or Ineffective Visuals

OR
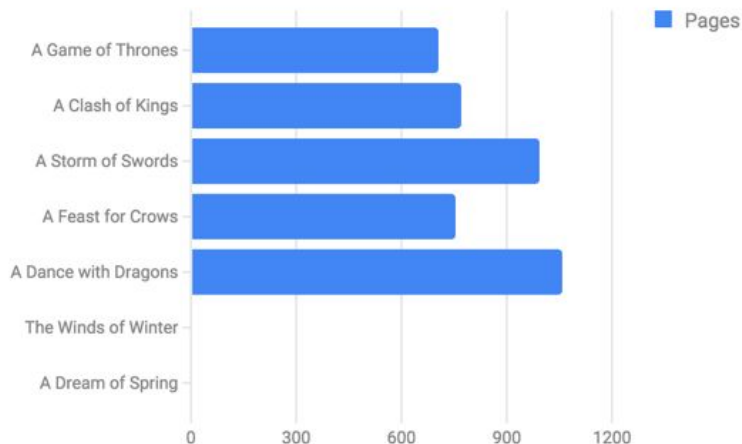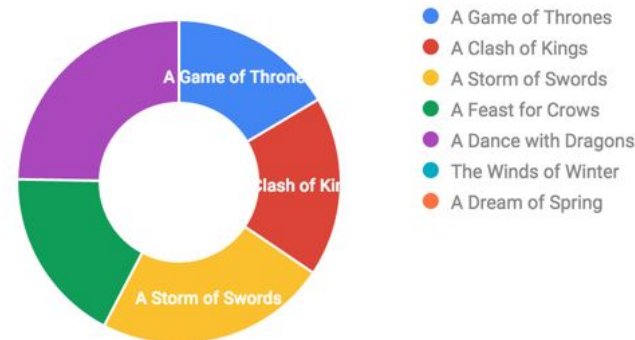
The 80/20 Rule

What you spend your time on:

80% Getting **data**, analyzing it, saving it, downloading it	**20% The Output** (Visualization)

What your audience actually cares about:

All that stuff you did before	**99% The Output** (Visualization)

Google Cloud

Visualization Core Concept: Dimensions and Measures

|	Description	Examples
1 Dimensions	A field that can be considered an independent variable. Usually contains qualitative, categorical information	• Name • Location • Part Number # • Job Title
2 Measures	A field that is a dependent variable; that is, its value is a function of one or more dimensions. e.g. any field containing numeric (quantitative) information	• Revenue • Salary • Expenses • Count of Errors

Google Cloud

Class Question

Which of the below are measures?

1. Phone Number
2. Employee ID
3. Age
4. Date of Birth
5. Tenure at Work (in years)
6. Job Title

Remember, measures are usually quantitative fields

Google Cloud

Reports transform data into information
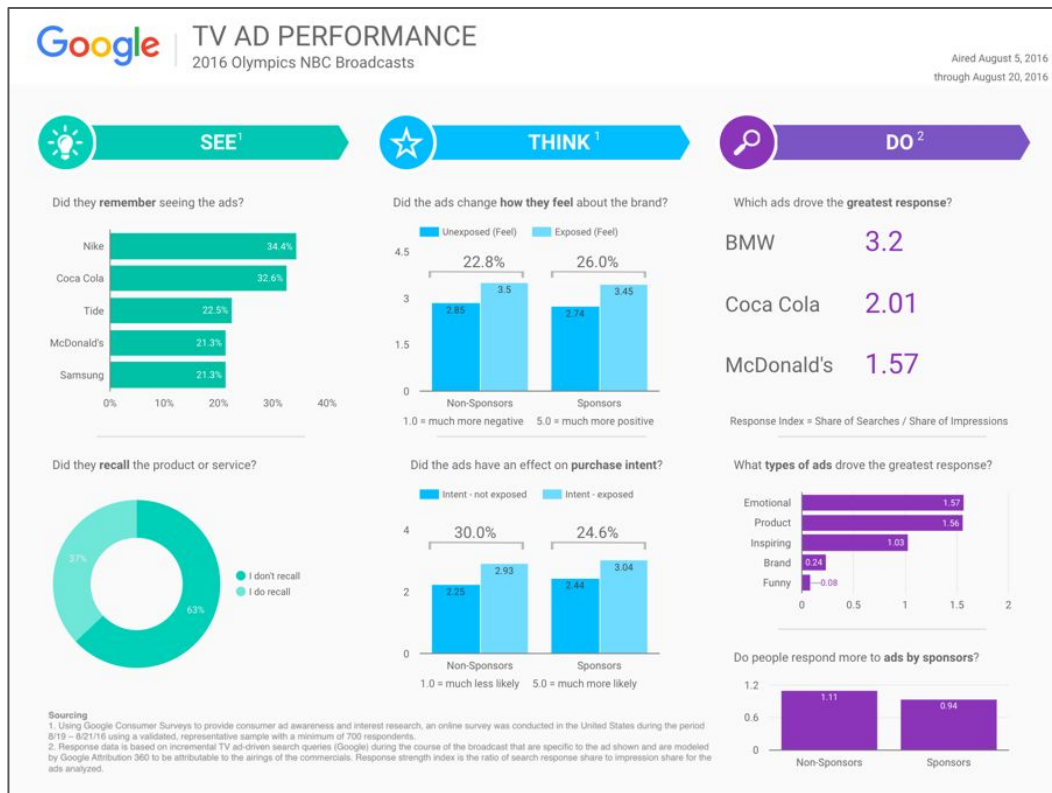
Tell a clear story with your data

Share and collaborate on reports with others

Module 8

Data Visualization

In this module we will:

- Overview of Data Visualization principles
- Exploratory vs Explanatory analysis approaches
- **Demo: Google Data Studio UI**
- **Connect Google Data Studio to Google BigQuery**

Google Cloud

Create new reports in the Data Studio UI

Select data sources to build your visualizations

Connect to multiple different types of data sources

Google Sheets

Google Cloud Platform

Google BigQuery

SQL

File upload

Data Studio

Google Analytics 360

Google Analytics

Google Attribution 360

Google AdWords

DoubleClick
by Google

Google Cloud
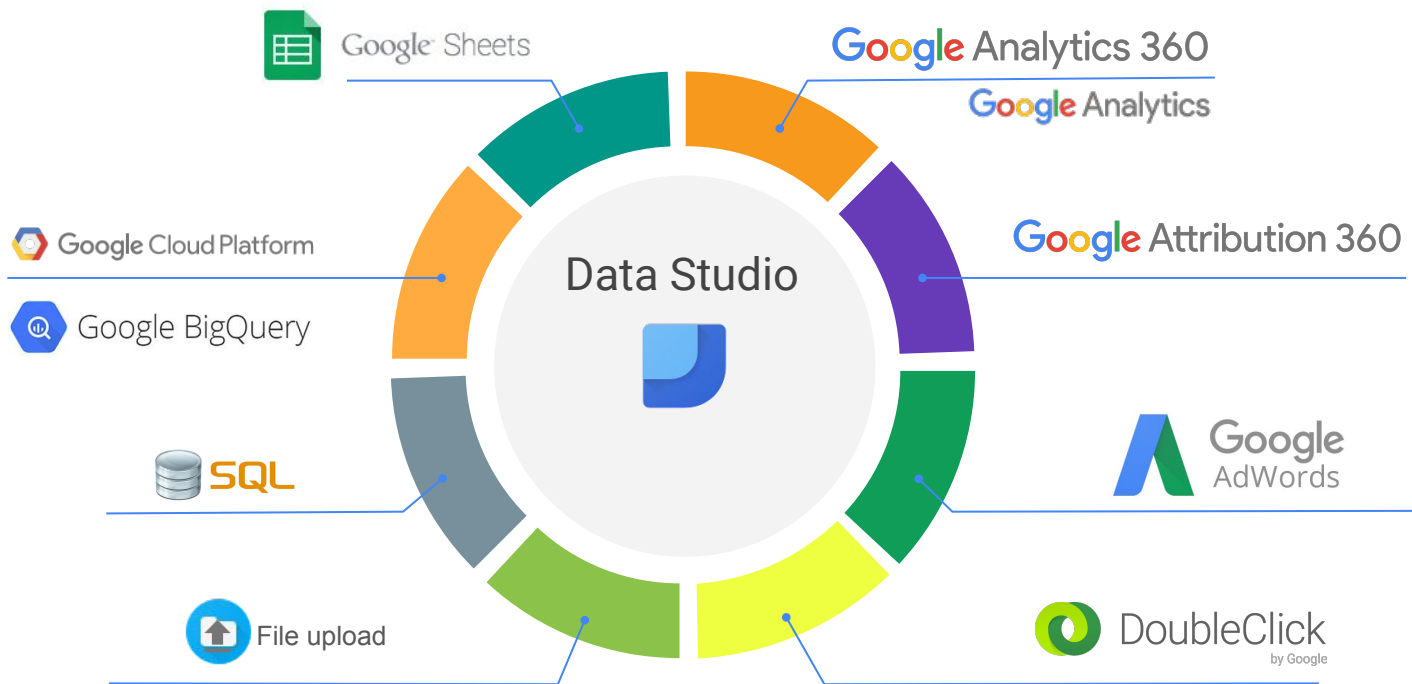
Add the data source to your report
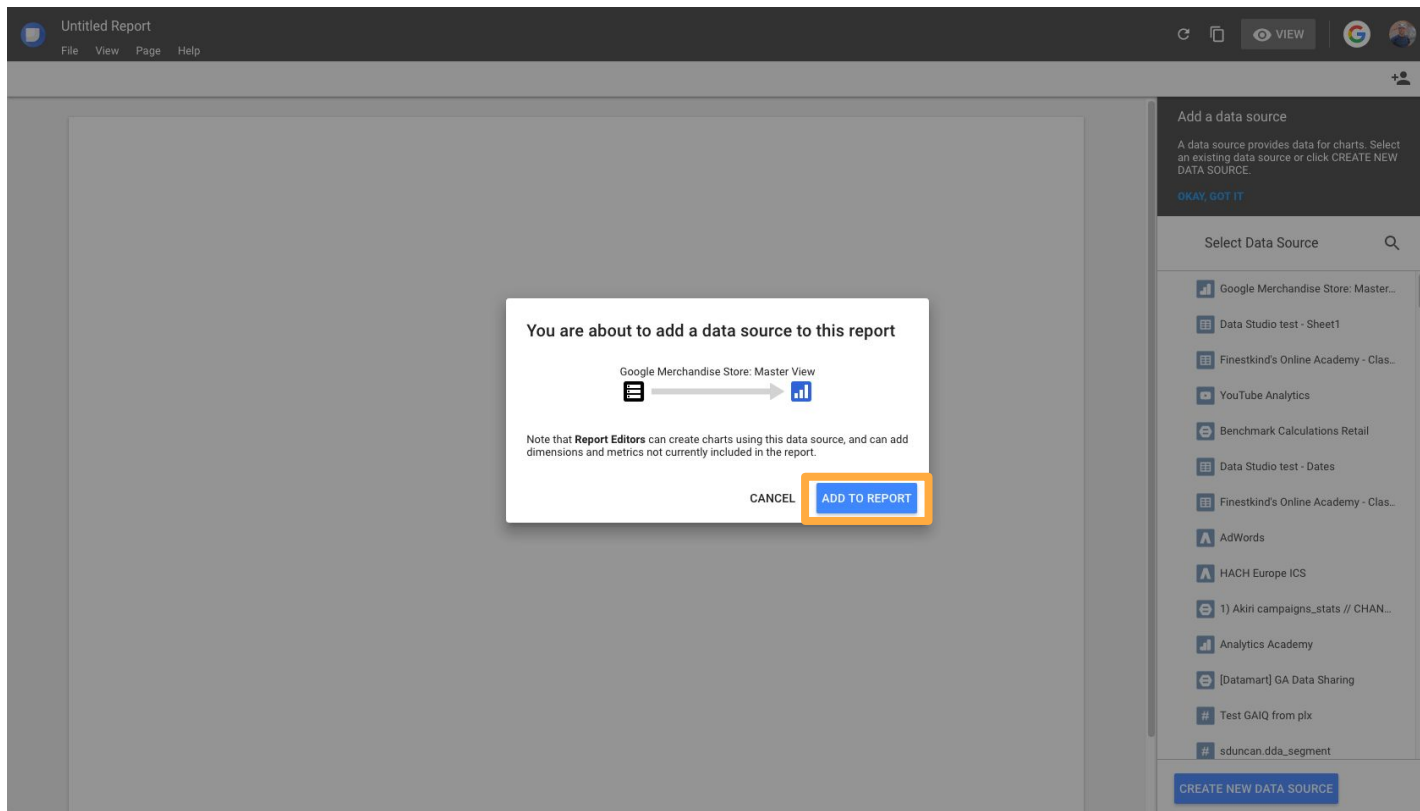
Create charts to visualize data relationships
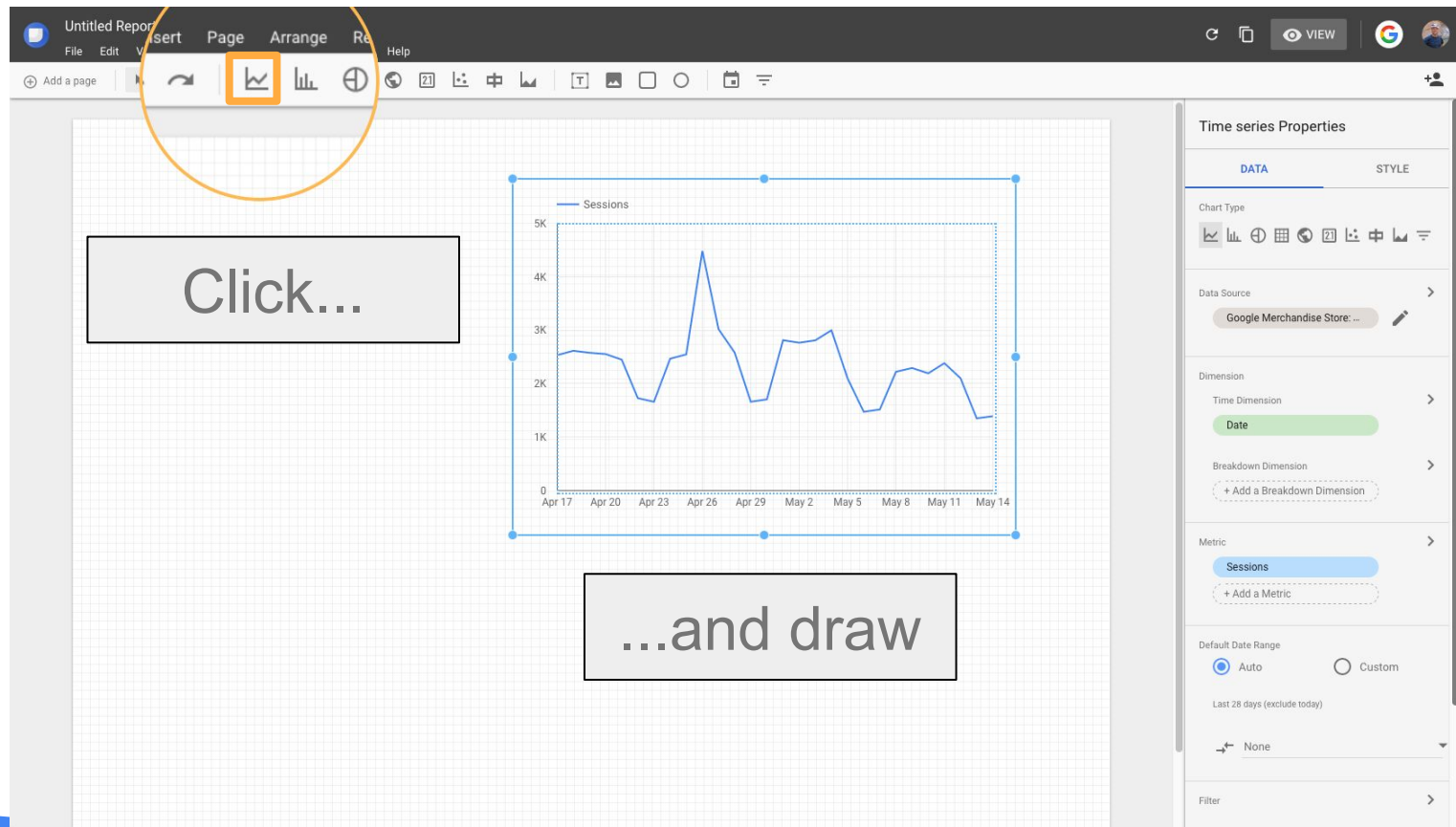
Add a descriptive name to your report

Untitled Report

File   Edit   View   Insert   Page   Arrange   Resource   He

VIEW

Page 3 of 3

Click to rename
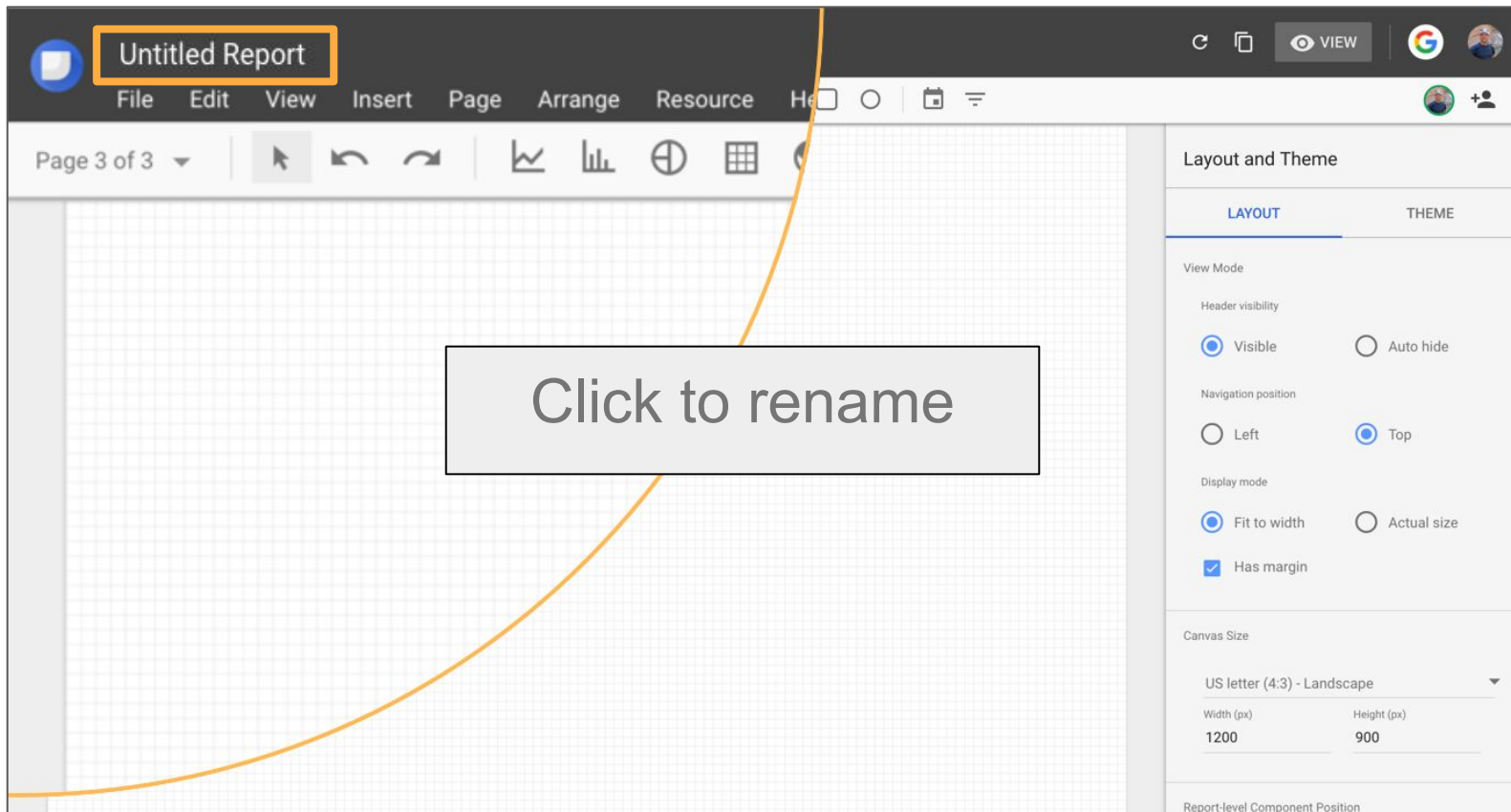
Layout and Theme

LAYOUT   THEME

View Mode

Header visibility

◉ Visible   ○ Auto hide

Navigation position

○ Left   ◉ Top

Display mode

◉ Fit to width   ○ Actual size

☑ Has margin

Canvas Size

US letter (4:3) - Landscape

Width (px)   Height (px)
1200   900

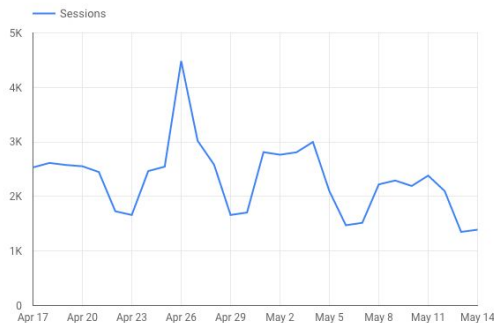Report-level Component Position

Google Cloud

View the end-user version of the report
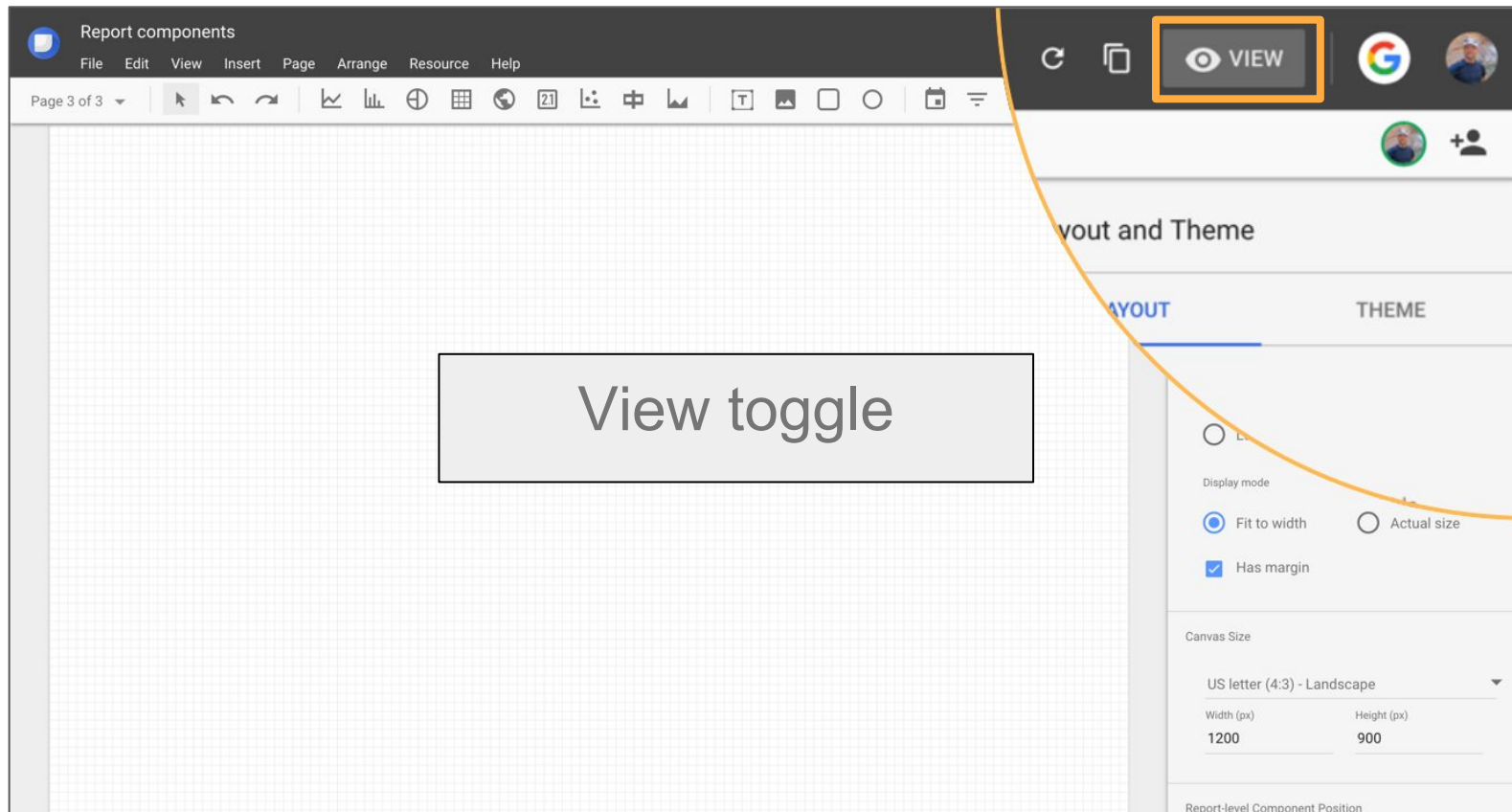
View your report as an end-user

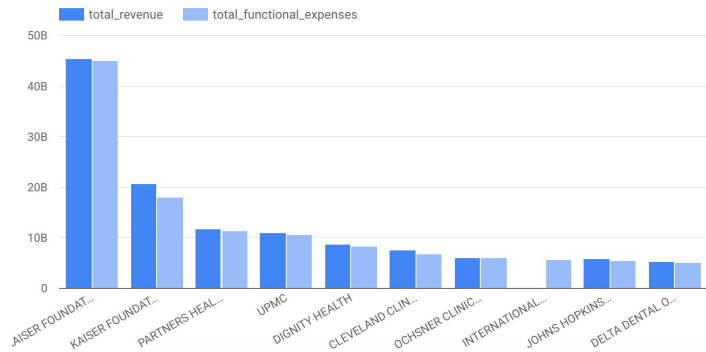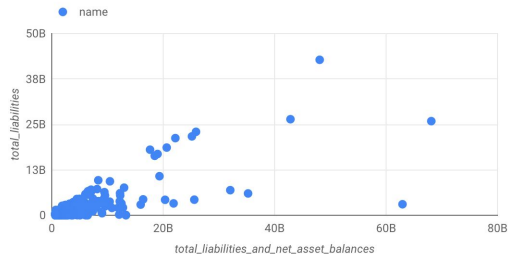users cannot edit your reports
unless you give them permission

Ta da!

Demo: Google Data Studio Walkthrough

U.S. Non-Profit Data 2015
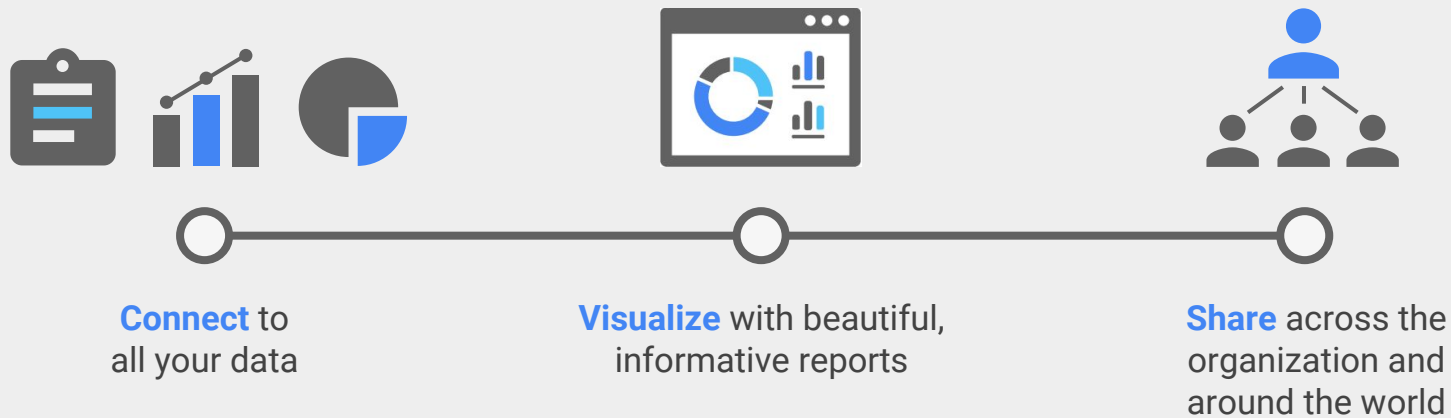
Ecommerce Dashboard

Google Cloud

Use Data Studio to explore and share your data insights

Connect to
all your data

Visualize with beautiful,
informative reports

Share across the
organization and
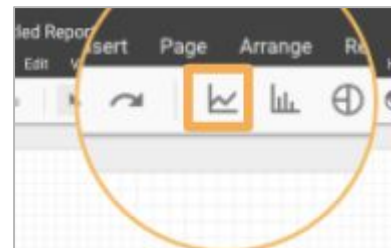around the world

Google Cloud

Summary: Explore and present your insights visually
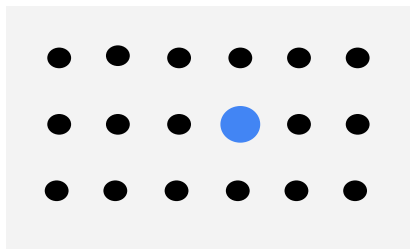
Guide the eye of your user with preattentive attributes

Use the right visual to convey the right message

Click-and-drag new report charts inside Data Studio

Google Cloud

Lab 7
Exploring a Dataset in Google Data Studio

Google Cloud

Exploring a Dataset in Google Data Studio

In this lab, you will visually explore Google BigQuery data tables inside of Google Data Studio. You will look for relationships and insights between fields in your dataset.

Google Cloud