Google Cloud Study Jam

Looker Studio Lab Documentation

Overview

Looker Studio is a free, modern business intelligence (BI) product by Google that enables users to create dynamic and visually compelling reports and dashboards. It allows seamless integration with multiple data sources such as Google BigQuery, Google Sheets, and CSV files.

With Looker Studio, users can:

- Connect to a wide range of data sources.
- Visualize and analyze data using interactive and customizable charts.
- Share and collaborate with others easily through Google Drive integration.

This lab provided a hands-on experience in creating a Looker Studio report using a public dataset from BigQuery. The goal was to visualize San Francisco bikeshare trip data and apply basic styling to create an understandable and aesthetically pleasing dashboard.

Lab Objective

The primary objective of this lab was to create an “Analytics Test” report in Looker Studio by:

1. Connecting to a public BigQuery dataset.
2. Creating and styling a time series chart.
3. Adding a banner and a title to enhance report readability and presentation.

Setup and Requirements

- Use a standard internet browser (Google Chrome recommended).
- Run the lab in an **Incognito or Private Window** to avoid conflicts with personal accounts.
- Use only the **temporary student credentials** provided by the lab to access Google Cloud resources.
- Access Looker Studio through https://lookerstudio.google.com.

Note: Using a personal Google Cloud account during the lab may result in unwanted charges.

Step 1: Starting the Lab

1. Click **Start Lab** to receive temporary credentials.
2. Open the **Google Cloud Console** using the provided button.
3. Log in using the temporary **Username** and **Password**.
4. Accept the terms and conditions.
5. Avoid setting recovery options or enabling two-factor authentication since the account is temporary.
6. Do not start a free trial with personal billing information.

Once logged in, navigate to Looker Studio in a new browser tab. If prompted, log in using the same temporary credentials.

Step 2: Create a New Blank Report

1. On the Looker Studio home page, click the **+ (Plus)** button to create a new report.
2. Complete the **Account Setup** by entering the required details (Country and Company Name).
3. Accept the **Terms of Service** and continue.

4. Click **Blank Report** to create a new report.
5. Close the “Add data to report” window that appears automatically.
6. Rename the report from “Untitled Report” to **Analytics Test**.

Step 3: Create a New Connection and Add Data Source

1. Click **Add Data** from the toolbar.
2. From the available Google Connectors, select **BigQuery**.
3. Authorize Looker Studio to access your BigQuery data.
4. Navigate to the dataset:

   ```
   Public Datasets → Your Project ID → san_francisco → bikeshare_trips
   ```

5. Click **Add**, then confirm by selecting **Add to report**.

The dataset is now successfully connected to your Looker Studio report.

Step 4: Add a Time Series Chart

1. From the toolbar, select **Add a Chart → Time Series Chart**.
2. Position and resize the chart on your report canvas as desired.
3. The chart will visualize the number of bikeshare trips in San Francisco over time.

Observation:

The data visualization shows that bikeshare usage tends to decrease during the winter months, suggesting seasonal usage trends.

Step 5: Style the Report

1. Click on a blank area of the canvas (not the chart).
2. Select **Theme and Layout** from the toolbar.
3. Click **Customize** to modify report elements.
4. Scroll down to the **Component Background and Border** section and choose a preferred background color.

This step enhances the report’s readability and visual appeal.

Step 6: Add a Banner

1. From the top toolbar, select **Shape → Rectangle Tool**.
2. Draw a rectangular banner across the top section of the report.
3. Open the **Rectangle Properties Panel** and choose a background color for the banner.

This creates a structured header area for your dashboard.

Step 7: Add a Title

1. Select the **Text Tool** from the toolbar and draw a textbox inside the banner.
2. Type the title:

   ```
   Google Analytics Demo Dashboard
   ```

3. Adjust the font style, size, and color to create a professional header appearance.

Insights and Observations

- The chart effectively illustrates temporal patterns in bikeshare usage within San Francisco.
- Users can identify seasonal variations, such as reduced activity during colder months.
- This exercise demonstrates how **Looker Studio** can integrate with **BigQuery** to produce meaningful visual analytics.

Tools and Technologies Used

- **Google Cloud Console** – for accessing cloud resources.
- **BigQuery** – for retrieving public datasets.
- **Looker Studio** – for visualizing and styling the data.

Result

The final report titled **"Analytics Test"** successfully displayed a **time series visualization** of the San Francisco bikeshare dataset. The dashboard included styling elements such as a custom background, banner, and title, demonstrating the foundational steps of data visualization and dashboard design using Looker Studio.

Conclusion

This lab introduced the essential workflow of connecting BigQuery datasets to Looker Studio and building a visually appealing data dashboard.

By completing this exercise, users gained hands-on experience in:

- Creating and managing Looker Studio reports.
- Integrating datasets from Google BigQuery.
- Designing charts and applying aesthetic enhancements.

This foundational knowledge serves as a stepping stone toward more advanced analytics and data storytelling projects using Google Cloud's data visualization tools.

Looker Lab — Measures, Dimensions, and Dashboard Visualization

Overview

This lab provides hands-on experience with **Looker**, a modern data exploration and visualization platform that enables users to analyze and visualize business data efficiently. In this exercise, you learned how to visualize data using **Measures** and **Dimensions** in Looker Explore, create different types of charts, and save them to dashboards.

The lab focuses on data from the **Federal Aviation Administration (FAA)** — specifically the **Airports Explore** dataset — to calculate and visualize average elevation levels and facility type statistics.

Lab Objectives

By the end of this lab, you learned to:

1. Visualize a **Measure** in Looker using a single-value visualization.
2. Combine **Dimensions** and **Measures** to create a bar chart visualization.
3. Save and organize your visualizations in an interactive **Looker Dashboard**.

Concepts Covered

- **Dimensions:** Unique descriptive attributes of the data (e.g., airport name, facility type, city).

- **Measures:** Aggregated or calculated values derived from dimensions (e.g., average elevation, count).
- **Dashboards:** Collections of visualizations that allow interactive analysis and presentation of KPIs.

Task 1: Visualize Your First Measure

Objective

Calculate and visualize the **average elevation** of all airport facilities as a **single-value chart**.

Steps

1. In the **Looker navigation menu**, click **Explore**.
2. Under **FAA**, select **Airports**.
3. In the **Data panel**, locate the **Measures** section under **Airports**.
4. Click **Average elevation** to select it.
5. Click **Run** to execute the query.
6. Expand the **Visualization** window by clicking the arrow next to it.
7. Hover over the icons to identify visualization types and click the **Single Value** icon.

   This displays the average elevation value as a single large numeric visualization.
8. Click the **Settings (gear) icon** for Visualization.
9. Select **Edit → Style**.
10. Under the **Style** tab:
    - Choose a preferred **Value color**.
    - Enable **Show title**.
    - Provide a title in the **Title override** box (for example, *Average Elevation of Airports*).
11. Close the settings panel.
12. Click the **Settings (gear) icon** next to the **Run** button.
13. Choose **Save → To an existing dashboard**.
14. Enter the visualization title: **Average Elevation**.
15. Click **New Dashboard**.
16. Provide the new dashboard title: **Airports/Flights**.
17. Click **OK**, then select **Save to Dashboard**.

✅ **Result:**

A single-value visualization showing the **average elevation** of all airports was created and saved to the **Airports/Flights** dashboard.

Task 2: Visualize Dimensions and Measures

Objective

Identify and visualize the **top 5 facility types** with the highest average elevation, along with the **total number of airport facilities**, using a bar chart.

Steps

1. From the **Looker navigation menu**, click **Explore**.
2. Under **FAA**, click **Airports**.

3. In the **Data panel**, locate:
    - Under **Dimensions**, select **Facility Type**.
    - Under **Measures**, select both **Average Elevation** and **Count**.
4. In the **Data tab**, set the **Row Limit** to **5** to display only the top 5 results.
5. Click **Run** to execute the query.
6. Expand the **Visualization** window and select the **Bar Chart** icon.

    This generates a horizontal bar chart that combines the selected dimension (Facility Type) and measures (Average Elevation and Count).
7. Click the **Settings (gear) icon** for Visualization.
8. Under **Values**, enable **Value Labels** to display numerical data on bars.
9. Under **Y**, drag **Airports** beneath **Top Axes**.
    - **Average Elevation** remains under **Bottom Axes**.
10. Under **Configure Axes → Bottom 1**, rename the axis to **Count**.
11. Close the settings panel.
12. Click the **Settings (gear) icon** next to the **Run** button.
13. Choose **Save → To an existing dashboard**.
14. Enter the visualization title: **Average Elevation by Facility Type**.
15. Choose the existing dashboard: **Airports/Flights**.
16. Click **Save to Dashboard**.

✅ **Result:**

A bar chart was successfully created showing the **top 5 facility types** ranked by **average elevation** and **count of airport facilities**, and added to the existing **Airports/Flights** dashboard.

Insights and Observations

- The **Single Value visualization** provides a clear snapshot of a key KPI — average elevation across all airports.
- The **Bar Chart visualization** allows comparison between different facility types, helping identify which categories have higher average elevation and frequency.
- Using both **Dimensions** and **Measures** offers multi-dimensional insight into data patterns.

Tools and Technologies Used

- **Google Looker (Explore Interface)**
- **Looker Visualization Panel**
- **Looker Dashboards**

Results Summary

Task	Visualization Type	Metric/Dimension	Dashboard Added To
Task 1	Single Value	Average Elevation	Airports/Flights
Task 2	Bar Chart	Facility Type, Average Elevation, Count	Airports/Flights

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Conclusion

This lab demonstrated how to use **Looker Explore** to analyze datasets through **Measures** and **Dimensions**, visualize KPIs using charts, and organize insights within a dashboard.

By completing this lab, you gained practical skills in:

- Building single-value and bar visualizations.
- Customizing styles and visualization settings.
- Saving and managing dashboards in Looker.

These are fundamental concepts for developing **data-driven dashboards and performance monitoring systems** using Looker on the Google Cloud Platform.