

Google Looker Studio Assessment Report

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Executive Summary

This report provides a comprehensive analysis on the practical application of Google Looker Studio. A review of the benefits and limitations, user interface, and key features of Looker Studio will be examined along with a walk-through on how the tool was utilized for the analysis. The report will conclude with a comparison to Microsoft's business intelligence tool, Power BI and the final verdict on who the intended target audience is for Google Looker Studio.

Using housing price data from Statista and labour characteristics data from Statistics Canada, Looker Studio was used to explore potential correlations between these two datasets across different Canadian provinces for the year 2023. The following insights were obtained:

1. Which provinces in Canada have the highest housing prices?

Insights: British Columbia, Ontario, and Quebec all were observed to have the highest housing prices in Canada during 2023. The average house price in all of Canada was \$678,282.

2. How might the labour force play a role in average housing prices in Canadian provinces?

Insights: While comparing the provinces with high housing prices to their respective labour force, no direct correlation was seen. Similarly, there was no correlation seen between provinces with a low labour force and their respective housing prices.

3. How might the job vacancy rate affect the average housing prices in Canadian provinces?

Insights: Most provinces were clustered around the median average housing price, all while having similar job vacancy rates. The provinces Ontario, British Columbia, Saskatchewan, and Newfoundland and Labrador stood out as outliers.

The analysis involved creating various data visualizations including a treemap, clustered-column chart, scatter plot, and multiple tables. A key feature from Looker Studio that was utilized for the creation of these data visualizations was 'data blend'. This feature allows for visuals to be created using values from two different data sets.

The benefits of this tool include the ease of use for custom filtering, the user-friendly interface, and effective formatting options. The limitations are the limited availability for custom visuals, row limit, and connectivity issues when uploading and editing data sets.

When comparing this tool to Power BI it can be observed that Power BI offers advanced data modelling, machine learning, and extensive integrations, making it ideal for complex analyses and collaborative sharing. Meanwhile, Looker Studio excels at quick, user-friendly visualizations for smaller datasets.

Despite Looker Studio's limitations for certain use cases, it works well for the sole purpose of creating visualizations. The target audience for Google Looker Studio would be students learning and getting started with business intelligence and visualizations. Professionals who are working with small data sets and would like to benefit from advanced sharing options should also consider using Google Looker Studio.

Introduction

In today's data-driven world, making informed business decisions increasingly relies on the effective use of business intelligence tools. With a wide range of options available, selecting a tool that meets a business's needs while simplifying the process of analyzing and visualizing data, is crucial. Google Looker Studio, a cloud-based data business intelligence tool, provides a user-friendly interface and enables users to create insightful visualizations. This report explores the practical application of Looker Studio, through an analysis done on the correlation between housing prices and labour characteristics for Canadian provinces for the year 2023.

The following research questions were explored for this analysis:

1. Which provinces in Canada have the highest housing prices?
2. How might the labour force play a role in average housing prices in Canadian provinces?
3. How might the job vacancy rate affect the average housing prices in Canadian provinces?

The primary objective of this report is to explore Google Looker Studio, and its ability to produce insightful data visualizations. This report will begin with the analysis done for the research questions, followed by an overview of Looker Studio's features, benefits, and limitations. The procedure taken for the analysis will then be explored, along with a comparison between Power BI. Lastly, the report concludes with identifying the target audience for Looker Studio.

Analysis

The first research question was on analyzing and uncovering which Canadian provinces have the highest average housing prices in the year 2023. A small dashboard consisting of a treemap, a table, and a card was created to answer this question (**Figure 1**). The table lists each province and its respective average housing price, to help understand the exact housing prices of each Canadian province. Lastly, a card was used to visualize the average housing price for all of Canada, which gives a relative point of comparison per province. Based on this analysis, British Columbia, Ontario, and Quebec were seen with the highest housing prices. Meanwhile, Saskatchewan, New Brunswick, and Newfoundland and Labrador were observed with the lowest housing prices. The average house price in Canada in 2023 was \$678,282.

The second research question involved the comparison between average house prices and the labour force per province. Two clustered-column charts, along with a table outlining the labour force preset in each province were created for this analysis (**Figure 2**). The first clustered-column chart provided a comparison of the three provinces with the highest

housing prices to their respective labour force. It was observed that despite British Columbia having the highest housing prices, its labour force was not the highest. It is significantly lower than the highest labour force which was found in Ontario. The second clustered-column chart compared the provinces with the lowest labour force to their respective average housing price. Prince Edward Island was seen with the lowest labour force, but despite this, the average housing price in Prince Edward Island was closer to the median.

The third research question involved the comparison between average housing prices and the job vacancy rate per province. For this analysis a scatter plot was created, to uncover any patterns seen between these two factors (**Figure 3**). The scatter plot represented the job vacancy rate on the x-axis and the average house price on the y-axis. Each of the plots represented a Canadian province. Most provinces were situated in the middle with similar housing prices and job vacancy rates. However, the provinces Ontario, British Columbia, Saskatchewan, and Newfoundland and Labrador stood out as outliers. The job vacancy rates of the two provinces with the highest housing prices, Ontario and British Columbia were seen with a massive difference in Job vacancy rate. Despite the close similarity in the housing prices, the job vacancy rate differed significantly. Similarly, Newfoundland and Labrador, and Saskatchewan had similar housing prices but a great difference in job vacancy rates.

To conclude the analysis, it is evident that no real correlation was observed between these two labour characteristics and average housing prices per Canadian province. Although these labour characteristics do play a role in shaping these housing prices, other factors must be considered such as availability of land and resources, provincial laws and regulations, and so forth.

Overview of Google Looker Studio

Google Looker Studio, formerly known as Google Data Studio, is a business intelligence tool used to create dashboards and other data visualizations. It is known for its ease of use in connecting to multiple data sets, and collaboration. A free and pro version is available,

while the pro version requires a paid subscription. Various visualizations can be utilized to create reports and dashboards, along with interactive features such as data slicers and filters. Various options for data sources are available for users to connect to, such as databases, Google products, flat files, and social media platforms (Looker Studio Help, 2024). Its integration within Google Workspace products allows for ease of sharing reports within the Google ecosystem.

Benefits and Limitations

One of the main benefits observed with Google Looker Studio was the user-friendly interface. It uses the generic UI that can be found with other Google Workspace products. This is ideal for new users to get around the tool. Another benefit of this tool is the ease of creating customizable filters. As with other business intelligence tools, Looker Studio presents the option to create custom filters which can be reused throughout other visualizations. However, the creation of these filters can be done through a very simple setup which allows for the user to better understand the logic of the filtering being done. As shown in (**Figure 7**), the layout of creating filters follows a block-based form with the option to combine multiple conditions through 'AND' along with 'OR' operators. The layout of the filter builder is very user-friendly and allows users to better understand the filters they would like to create. The options available for formatting visuals can be observed as a third benefit of this tool. All the formatting options are laid out in a single tab which can easily be referenced when creating visuals. Many options are available for formatting visuals on Looker Studio, ranging from colour, size, and alignment.

Limitations of Looker Studio include the lack of custom visualizations, low maximum number of accepted rows, and connectivity issues. Despite having the option to create custom visuals through its 'community visualizations' feature, the tool is limited when it comes to developing custom visualizations. These limitations include the restrictions of data controls, and external image resources (Looker Studio, 2024). The row limit in Looker Studio is a major drawback when querying large sets of data, as it limits the usability of certain datasets with large row numbers. Lastly, network connectivity issues were evident

when updating data sets and working with visualizations. Despite the datasets used for the analysis being relatively small, connectivity issues did persist when connecting to the datasets.

The Procedure of Analysis on Looker Studio

Data Preparation: Cleaning Up Datasets

Three datasets were used for this analysis:

1. **Housing Prices:** Average housing prices for each Canadian province in 2023 (Statista).
2. **Labour Force:** Labour force data per Canadian province in 2023 (Statistics Canada).
3. **Job Vacancy Rates:** Job vacancy rates per Canadian province in 2023 (Statistics Canada).

After retrieving the datasets, they were loaded into Google Sheets for cleaning:

- The housing price dataset from Statista required no cleanup as it was already structured appropriately.
- The Statistics Canada datasets contained headers, footers, and other labour characteristics, which were removed to ensure the data was relevant for this analysis.

Uploading the Datasets and Looker Studio's UI

Upon opening a blank report on Looker Studio, the user will first be prompted to upload a dataset (**Figure 4**). Many options are available to load a dataset from. For this analysis, Google Sheets was selected as that is where the datasets were stored. From there, a new window will open where the user can select either a recent Google Sheets file from the list or connect to Google Drive to select a specific dataset. The datasets used for this analysis

were stored in a folder on Google Drive, hence the ‘open from Google Drive’ option was selected to load the datasets.

From the Looker Studio UI (**Figure 5**):

- **Top Menu Bar:** Includes options similar to other Google Workspace tools (e.g., save, undo).
- **Data Panel (Right Sidebar):** Displays uploaded datasets. Users can adjust dataset settings such as value aggregation and renaming.
- **Visualization Options:** The “Add data” button allows additional datasets to be uploaded, while “Add a chart” enables users to insert various visualization types.

Creating Visualizations

After selecting a visualization type, the user is presented with the visualization editor (**Figure 6**). Which consists of two tabs:

1. **Setup Tab:** Used to assign dimensions (categories) and metrics (values), sort data, and apply filters.
2. **Style Tab:** Provides customization options for formatting visualizations, including colours, fonts, and layouts.

Creating Filters

When the user selects the option to create a new filter, a new window will open (**Figure 7**). From here the user can assign a name for the filter and select the fields to be filtered. The filtering is customizable in the sense that it allows for multiple types of conditions to be set. The ‘AND’ along with ‘OR’ operators allow for multiple fields to be filtered with a given condition. These filters will then be saved and can be reused for other visualizations using the filter picker.

Mixing Datasets for Visualizations: Data Blend Feature

The analysis required the average housing price field to be used across multiple visualizations alongside labour force and job vacancy rate data. As each dataset existed

independently, the data blend feature in Looker Studio was used to combine data from different sources.

To create a data blend (Figure 8):

1. **Data Sources:** Select a dataset for each table in the data blend configuration panel. Assign a descriptive name to each data source.
2. **Dimensions Field:** Add a shared dimension that links the datasets.
3. **Metrics Field:** Select unique fields from each dataset to include in the blended dataset.
4. **Configuration:** Set the join operator to define how the datasets are combined, and the join condition which defines how the two data sets are related (Figure 9).

The data blend feature in Looker Studio allowed for effective integration between the two data sets, enabling visualizations to be made using the average housing price dataset and labour characteristics datasets.

Comparison Between Looker Studio and Power BI

Both Looker Studio and Power BI excel in creating insightful data visualization. It all comes down to the specific use cases with these business intelligence tools. Power BI works well with advanced features such as machine learning integration and working with large data sets. It is capable of handling large amounts of data at once, without running into connectivity issues. The pro license for Power BI allows for seamless sharing and collaboration. Power BI also offers a premium version as well, which is not limited to cumulative memory, and enhanced paginated reports (Microsoft Learn, 2024). Looker Studio integrates well with Google Workspace products such as Google Sheets, making it ideal for lightweight and collaborative projects. The pro version of Looker Studio adds additional fields such as scheduled report delivery, custom branding, and enhanced options for sharing.

When it comes to formatting, both tools offer a variety of options, however, Power BI does feature more advanced options for specific formatting of visuals. Meanwhile, Looker Studio takes a simpler and user-friendly approach to formatting visuals with all the options laid out in a single panel. Within Power BI there are desktop and cloud versions, with the cloud version offering limited availability of options. In Looker Studio, there is only a single cloud-based version. Data transformation is available in both tools. Looker Studio has the data blend feature allowing the integration of two data sets. Meanwhile, Power BI can handle more advanced data transformations through DAX, which allows for complex calculations to be performed (Nevalainen & Huynh, 2024).

Both Looker Studio offers free and paid versions with their respective features and limitations. For users looking to benefit from a user-friendly interface, and ease of sharing along with working with smaller datasets, Looker Studio is the ideal option. For users with a more technical background looking to leverage advanced data analytics and modelling, Power BI would be the ideal option.

Final Verdict on the Target Audience for Google Looker Studio

Google Looker Studio is an effective tool for creating meaningful data visualizations. It offers many essential features for creating visualizations, without having to pay extra for the pro version. Its user-friendly interface ensures ease of use, allowing beginners to familiarize themselves with the available functionalities. Despite its limitations for certain use cases, it works well for the sole purpose of creating and sharing visualizations.

This tool is particularly well-suited for:

1. **Students and Beginners:** Those looking to learn and get started with business intelligence and visualizations, will find Looker Studio an efficient option.
2. **Professionals with Small Datasets:** Users working on lightweight projects who value straightforward tools for collaboration and sharing reports will benefit greatly from Looker Studio.

In summary, Google Looker Studio is a versatile tool with great simplicity and functionality, making it a practical choice for education, and small-scale business projects.

Appendix

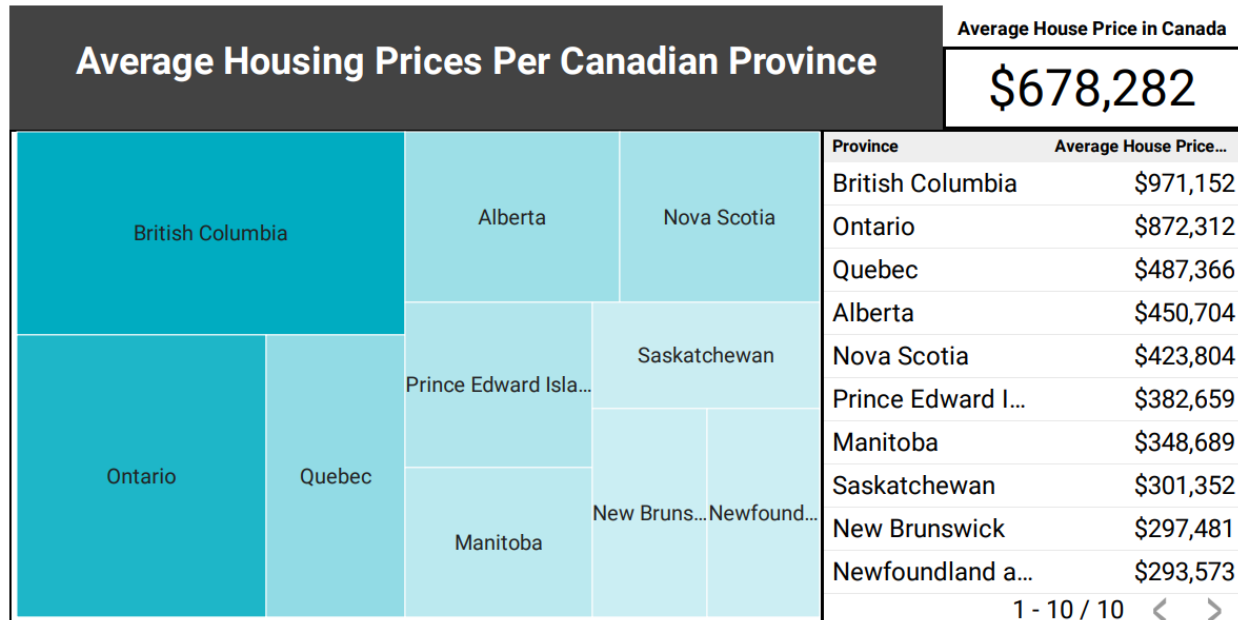


Figure 1: Average Housing Prices Per Canadian Province (Research Question 1)

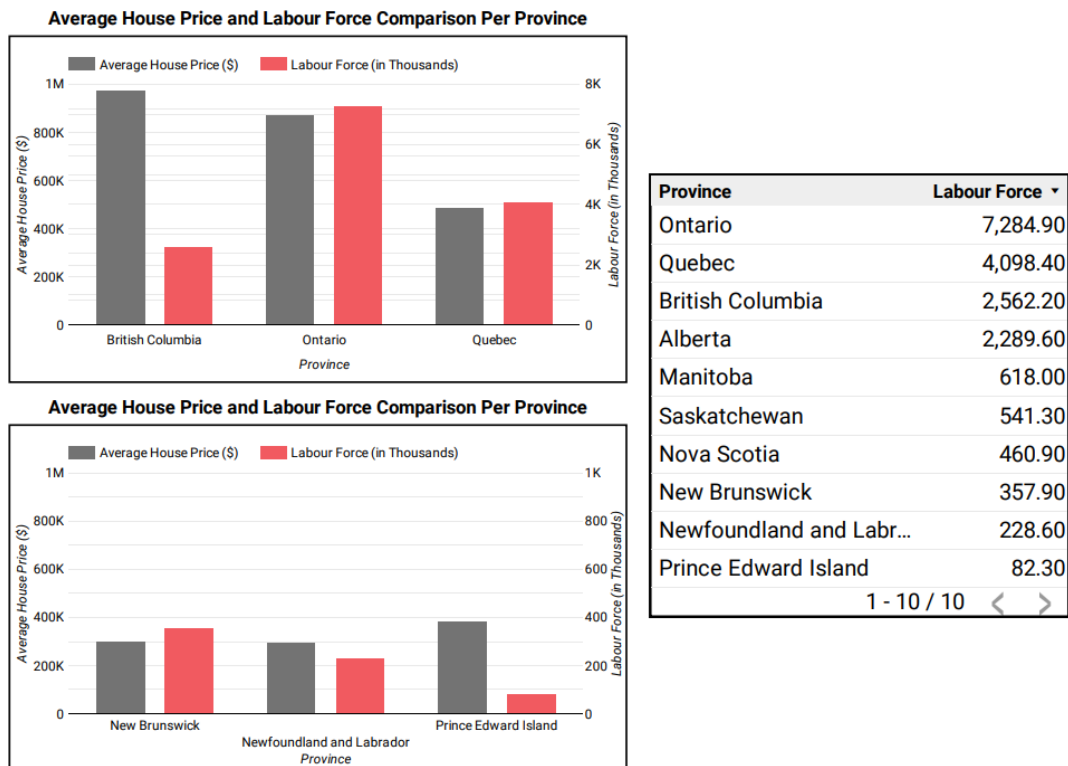


Figure 2: Average House Price vs Labour Force (Research Question 2)

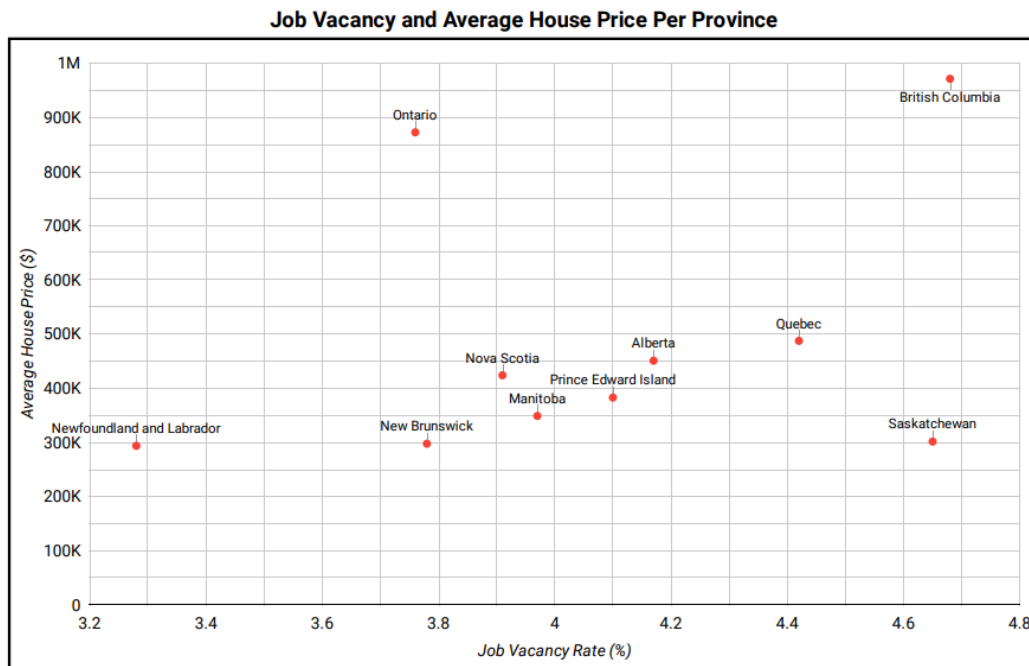


Figure 3: Job Vacancy Rate vs Average Housing Price (Research Question 3)

Uploading Data Sets

The screenshot shows the Looker Studio interface for 'Analysis on Housing Prices in Canada'. The 'Add data to report' dialog is open, showing the 'Connect to data' tab. Under 'Google Connectors (24)', the 'Google Sheets' connector is highlighted. An arrow points to the 'Add data to report' dialog, which shows the 'Google Sheets' connector selected and a list of spreadsheets to choose from. The 'OPEN FROM GOOGLE DRIVE' option is highlighted in the list.

Figure 4: Uploading Data Sets onto Looker Studio

Looker Studio UI

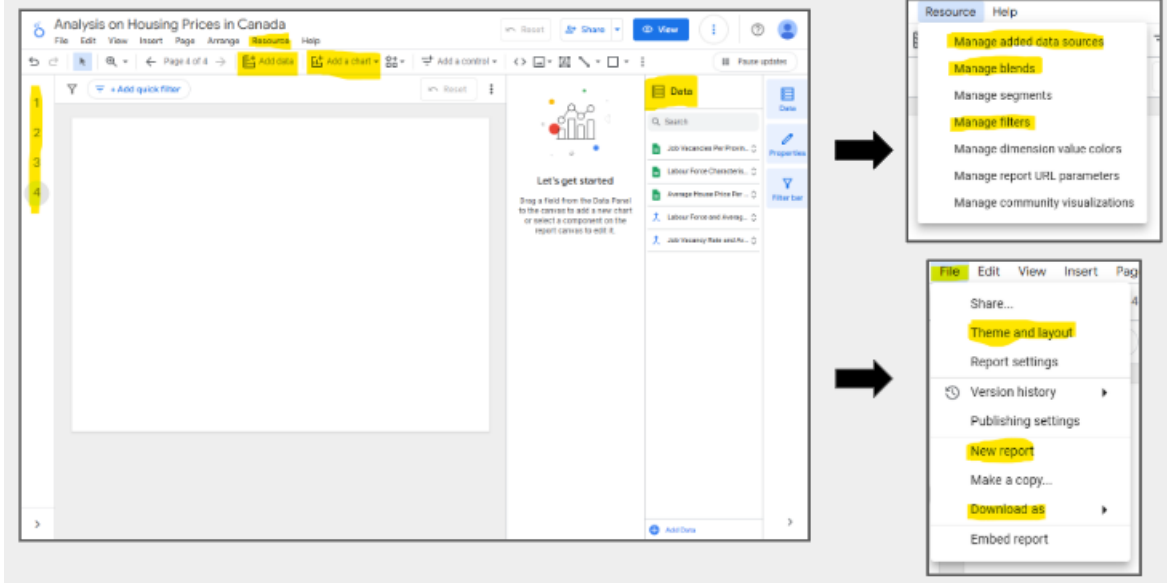


Figure 5: Looker Studio UI

Creating Visualizations

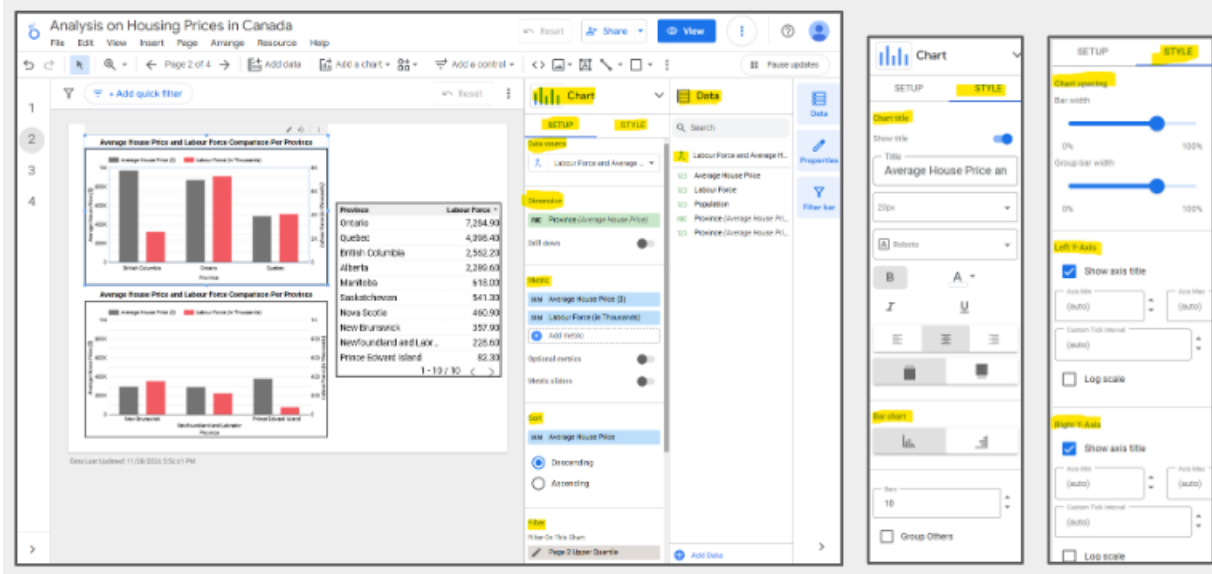


Figure 6: Creating Visualizations on Looker Studio

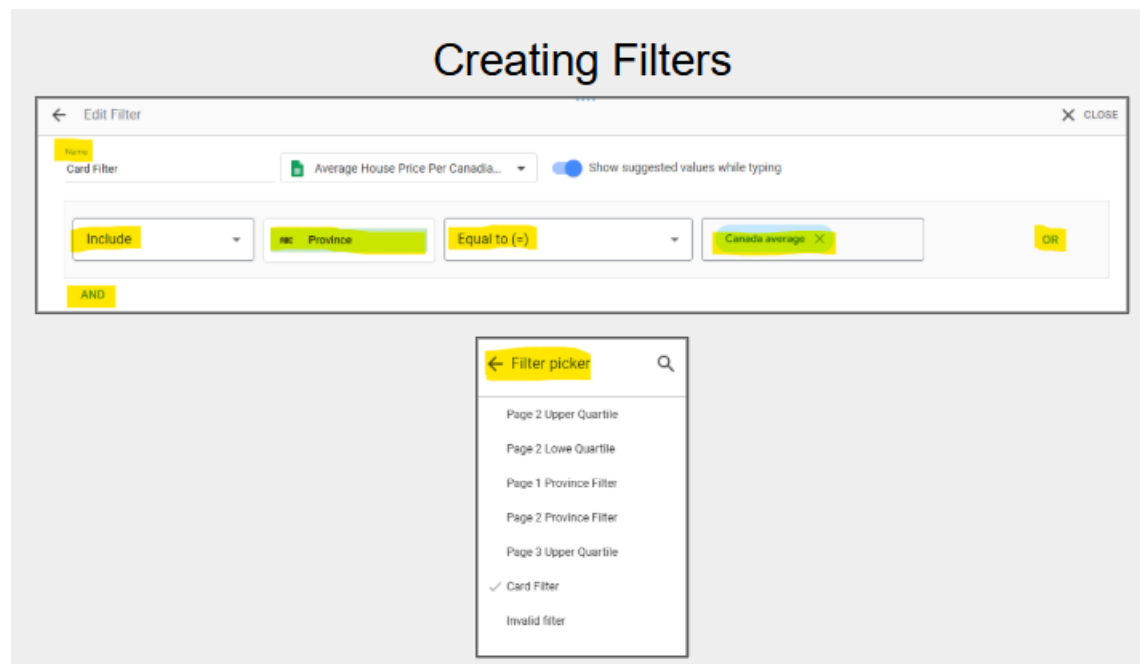


Figure 7: Creating Filters on Looker Studio

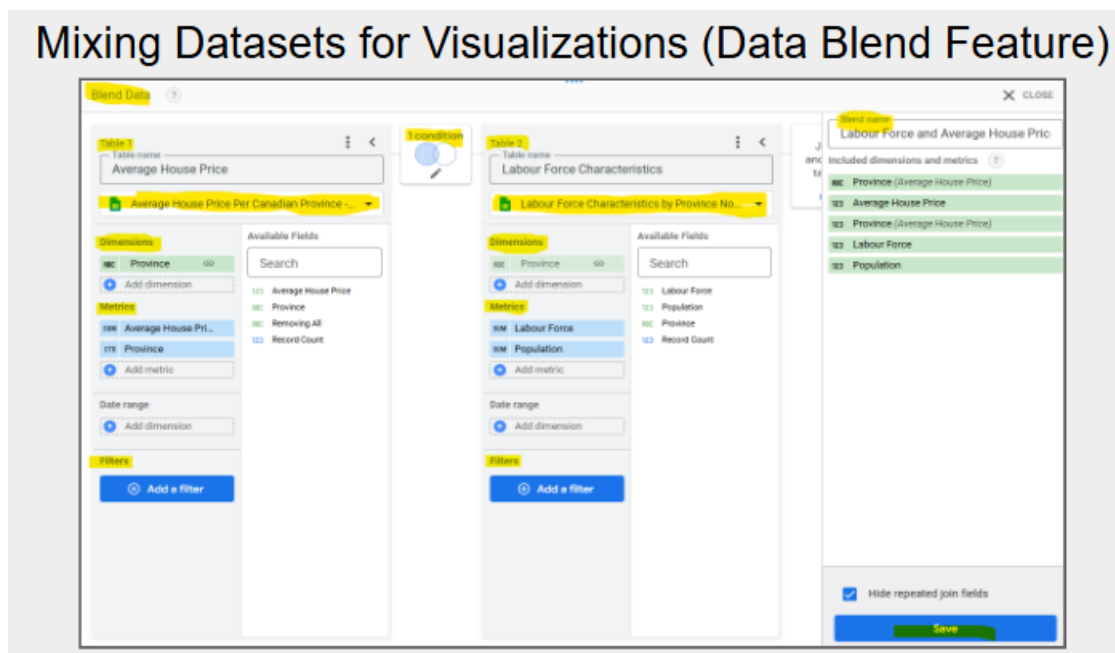


Figure 8: Mixing Datasets for Visualizations (Data Blend Feature)

Mixing Datasets for Visualizations (Data Blend Feature)

The image shows two panels from the Looker Studio interface. The left panel is titled 'Join configuration' and contains two sections: 'Join operator' and 'Join conditions'. The 'Join operator' section shows five Venn diagrams: 'Left outer' (selected with a checkmark), 'Right outer', 'Inner', 'Full outer', and 'Cross'. Below the diagrams is the text: 'Returns matching rows from the right table, plus non-matching rows from the left tables'. The 'Join conditions' section has the text: 'Tell us how these tables are related. Add one or more fields from the tables to the left that match the fields in the table to the right.' It shows two tables: 'Province (Average House Price)' and 'Province (Labour Force Characteristics)'. Each table has an 'Add field' button. The right panel is titled 'Blended data' and shows a search bar, a list of 'Added data sources' (Job Vacancies Per Province 2023 - She..., Labour Force Characteristics by Provinc..., Average House Price Per Canadian Pro...), and a list of 'Available data sources' ([Sample] World Population Data 2005 - ..., [Sample] Google Analytics Data). At the bottom of the right panel are 'Add data' and 'Manage data' buttons.

Join configuration

Join operator

Tell us how rows from all the tables on the left and the table to the right are combined.

Left outer Right outer Inner Full outer Cross

Returns matching rows from the right table, plus non-matching rows from the left tables

Join conditions

Tell us how these tables are related. Add one or more fields from the tables to the left that match the fields in the table to the right.

Province (Average House Price) Province (Labour Force Characteristics)

Add field Add field

Cancel Save

Blended data

Search

Added data sources

- Job Vacancies Per Province 2023 - She...
- Labour Force Characteristics by Provinc...
- Average House Price Per Canadian Pro...

Blended data

- Labour Force and Average House Price
- Job Vacancy Rate and Average Housin...

Available data sources

- [Sample] World Population Data 2005 - ...
- [Sample] Google Analytics Data

Add data Manage data

Figure 9: Configuration of Data Blend on Looker Studio

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