Google Cloud

Conversational Analytics in BigQuery: An AI-Powered Approach to Data Analysis

In today's data-driven world, organizations generate massive amounts of data from applications, customers, transactions, operations, and business processes. However, collecting data is only the first step. The real challenge is turning that data into meaningful insights quickly enough to support business decisions.

Consider a business manager who wants to understand why sales decreased last quarter. Traditionally, the manager may need to depend on a data analyst who understands the organization's data warehouse, tables, and SQL. The analyst would write queries, analyze the results, create visualizations, and share the findings with the business team. If the manager has additional questions, the process may need to be repeated with new queries and analysis.

As organizations increasingly demand faster and more accessible data insights, natural-language interaction with data is becoming increasingly important. Instead of requiring every business user to understand SQL or the underlying data structure, AI can help users explore their data by asking questions in everyday language.

This is where **Conversational Analytics in BigQuery** comes into the picture. It enables users to interact with their data using natural-language questions and perform multi-step analysis. Users can ask follow-up questions, explore trends, and generate insights through a conversational experience.

What is Conversational Analytics in BigQuery?

Conversational Analytics in BigQuery is an AI-powered capability that enables users to interact with and analyze data using natural-language questions instead of manually writing SQL for every analysis. It helps users perform multi-step analysis, ask follow-up questions, explore trends, and generate insights through a conversational experience.

Conversational Analytics is powered by Gemini for Google Cloud and can work with supported BigQuery data sources. It can generate analysis and present results in forms such as text, tables, and charts, helping users explore data more naturally.

"*Conversational Analytics in BigQuery was introduced in Preview in January 2026 and reached General Availability in June 2026.***"**



How Conversational Analytics Works?

1. **Ask a question in natural languages**
   Users can ask questions about their data using everyday language instead of manually writing SQL.
   Example: "Which region generated the highest revenue this year?"
2. **Understand the question and data context**
   Conversational Analytics interprets the user's question and uses the selected data source and its available context to determine what information is required for the analysis.
3. **Perform the analysis**
   Conversational Analytics determines the steps required to answer the question and can generate and execute the necessary queries to analyze the data.
4. **Generate and present the result**
   The results can be presented in forms such as text, tables, and charts, helping users understand the information more easily.
5. **Continue with follow-up questions**
   Users can ask follow-up questions based on the previous analysis. This allows them to explore additional details, compare results, identify trends, and perform multi-step analysis within the same conversation.

Benefits of Conversational Analytics

- Natural-language interaction
- Faster data analysis
- Accessibility for non-technical users
- Interactive and conversational analysis
- Data visualization
- Supports data-driven decision-making

Before and After Conversational Analytics:

Before:

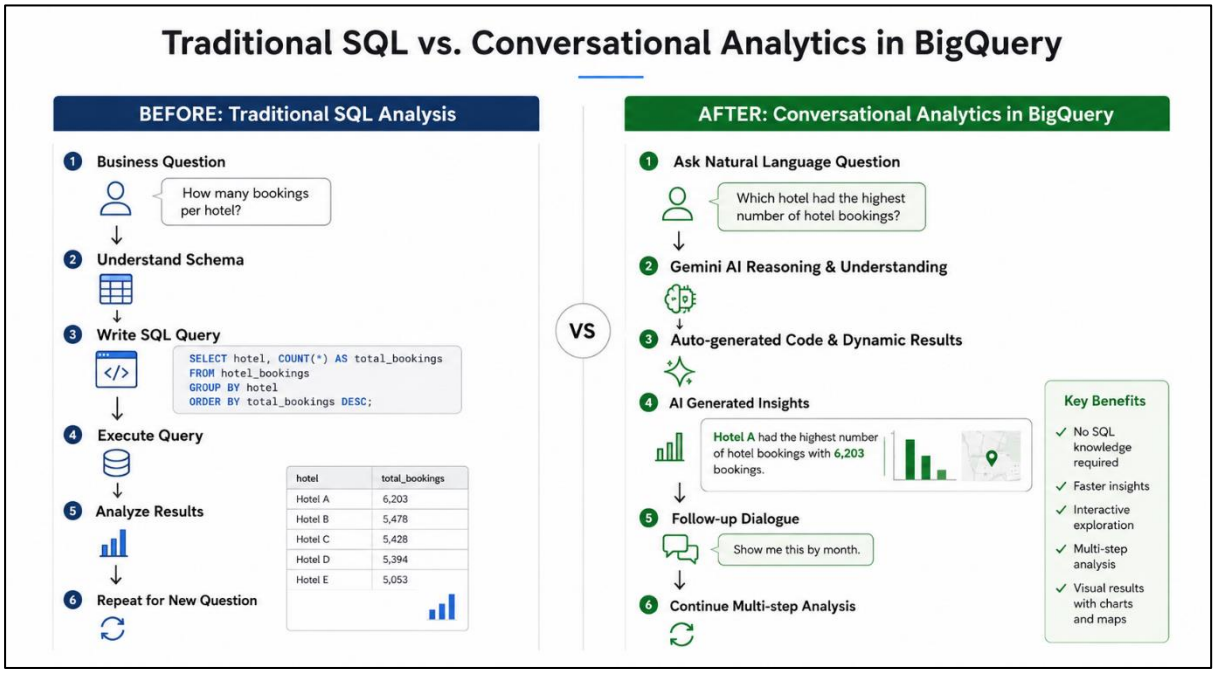
Traditionally, analyzing data in BigQuery required users to understand the data structure and write SQL queries to answer business questions. A typical workflow looked like:

Business Question → Understand Data & Schema → Write SQL → Run Query → Analyze Results → Create Report/Chart → New Question → Repeat

After:

With Conversational Analytics in BigQuery, users can interact with their data using natural-language questions and continue the analysis through a conversation.

Business Question → Ask in Natural Language → AI-Assisted Analysis → Insights / Results / Visualization → Follow-up Question → Multi-Step Analysis

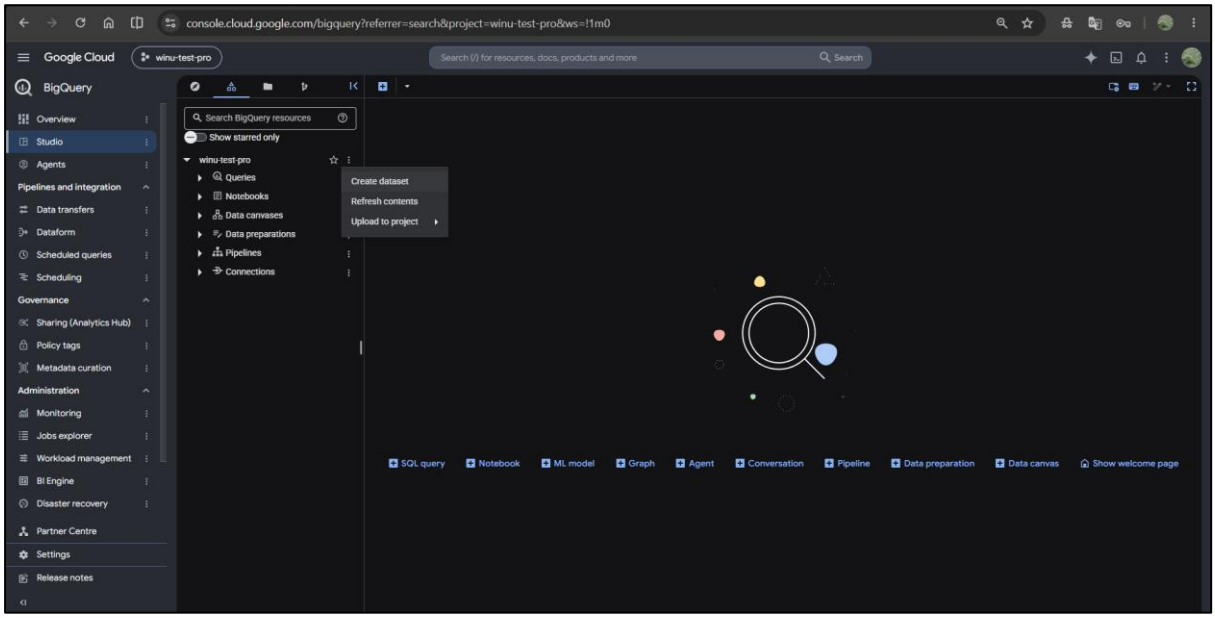


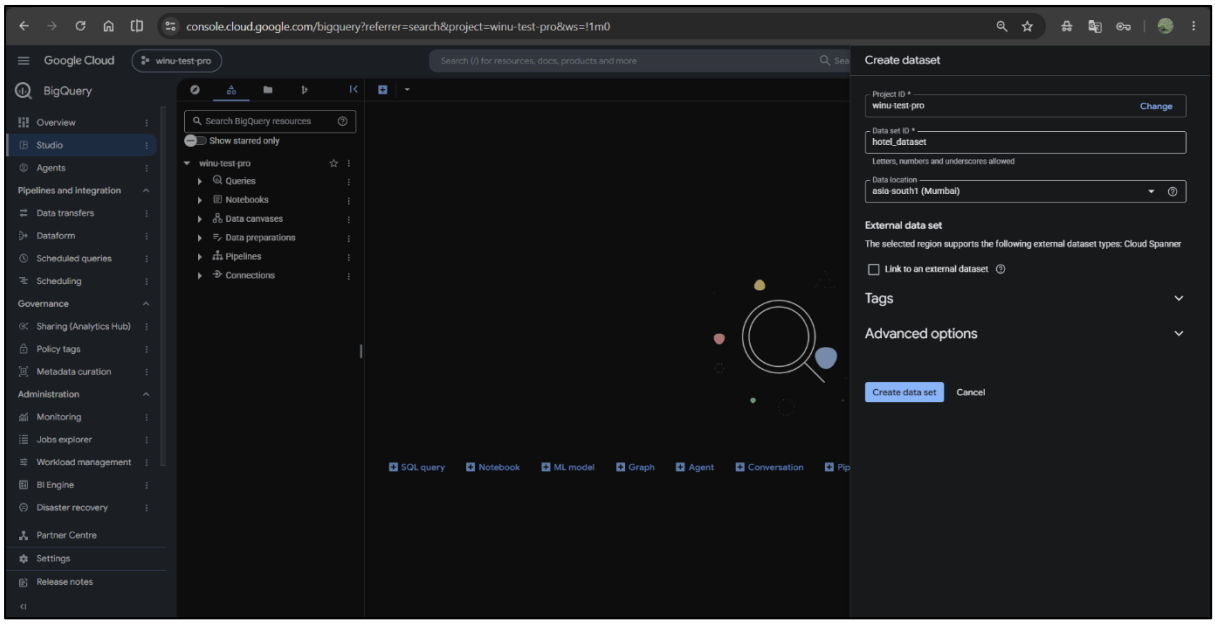
Real-World Example:

To demonstrate the difference between traditional SQL-based analysis and Conversational Analytics, a hotel booking dataset was loaded into BigQuery. A dataset named hotel_dataset was created, and the hotel booking data was stored in a table named hotel_bookings. The same business questions can then be analyzed using both SQL and Conversational Analytics.

Console Steps:

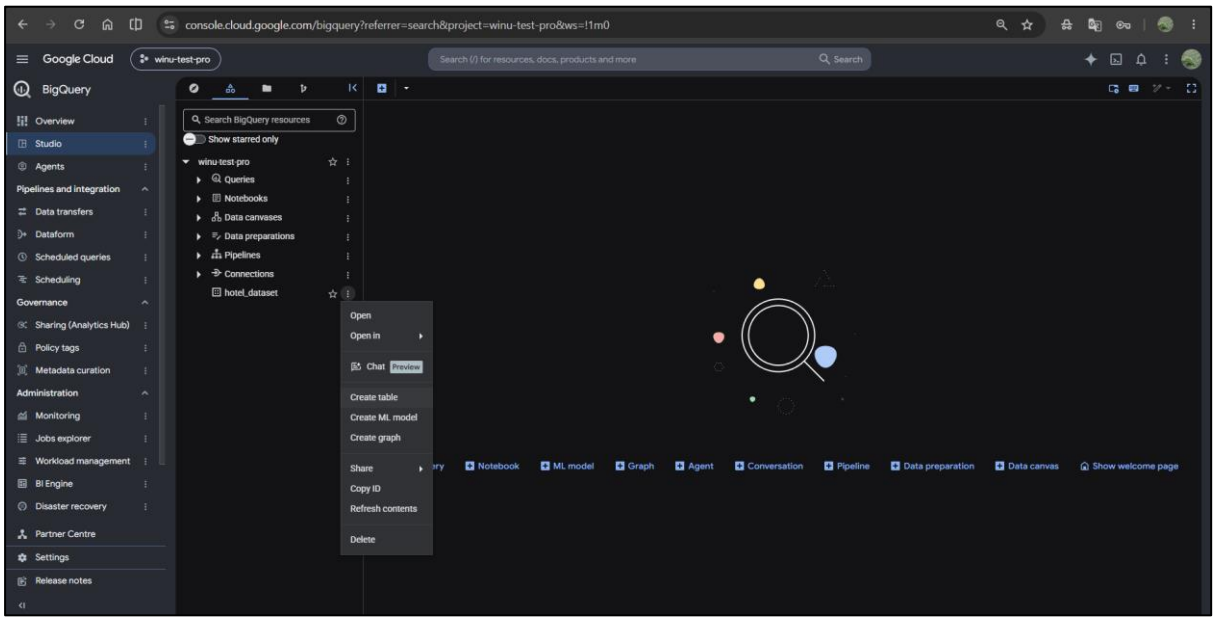
- Open the Google Cloud Console and navigate to the Google Cloud project where you want to perform the analysis.
- Open the BigQuery service in the selected project. Navigate to BigQuery Studio and, under the selected project, create a new dataset by clicking the three dot menu next to the project name.

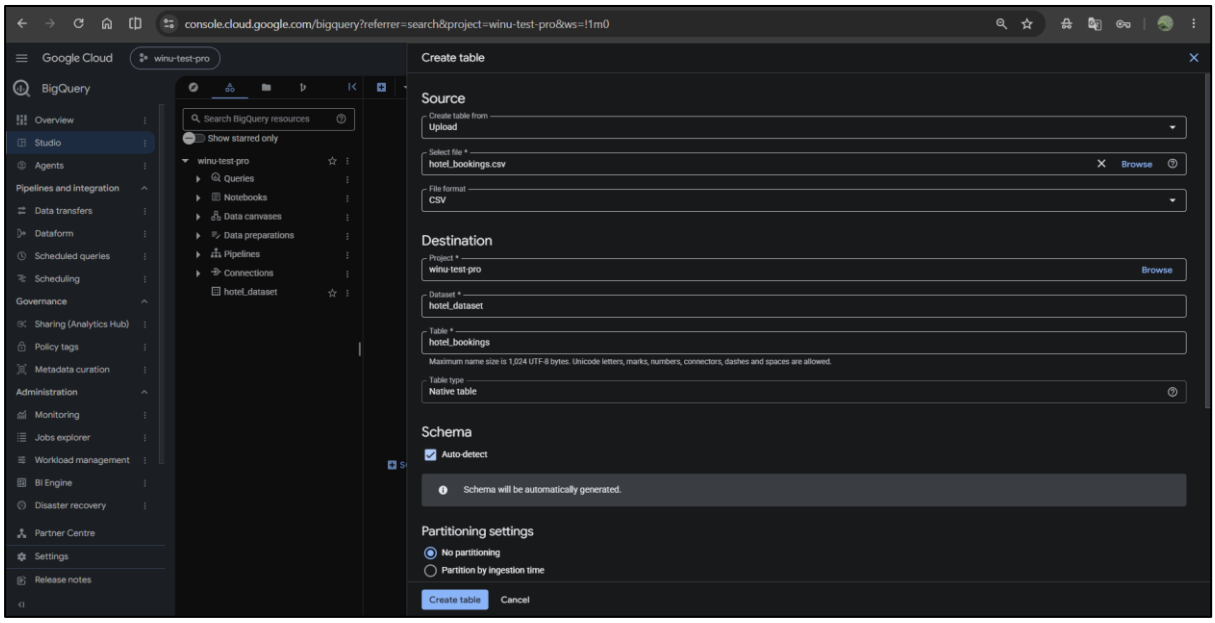




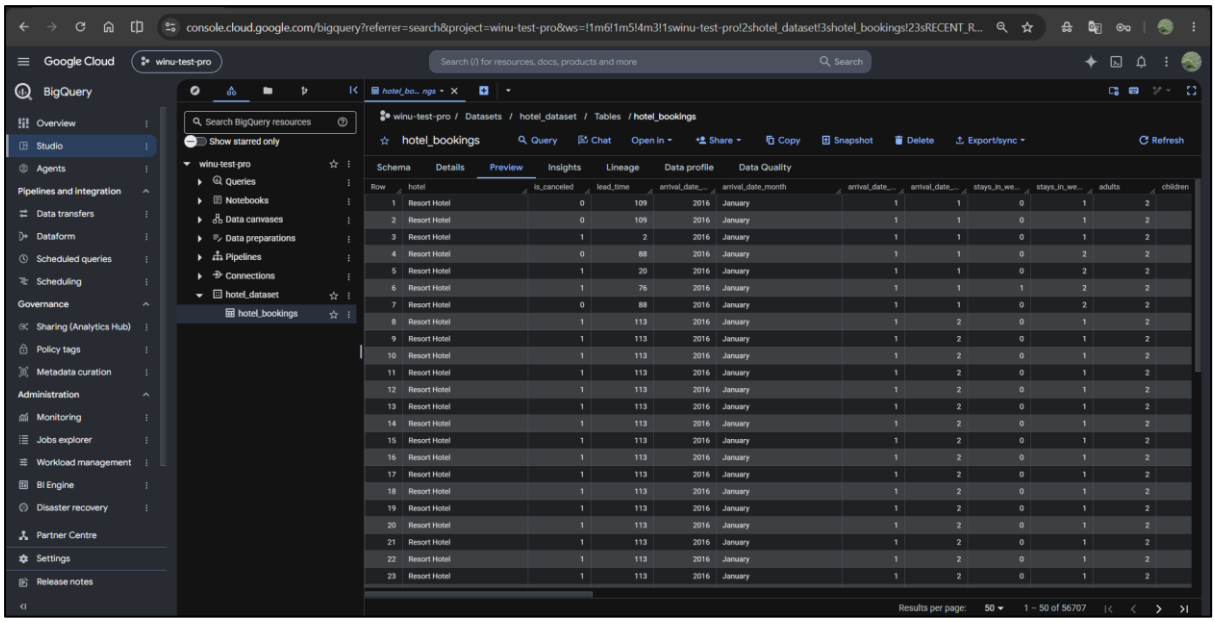
Create a dataset by providing the required details, and then click Create dataset.

- *After the dataset is created, it will appear in the left-side Explorer panel.*
- *To create a table, click the three-dot menu next to the newly created dataset and select Create table.*





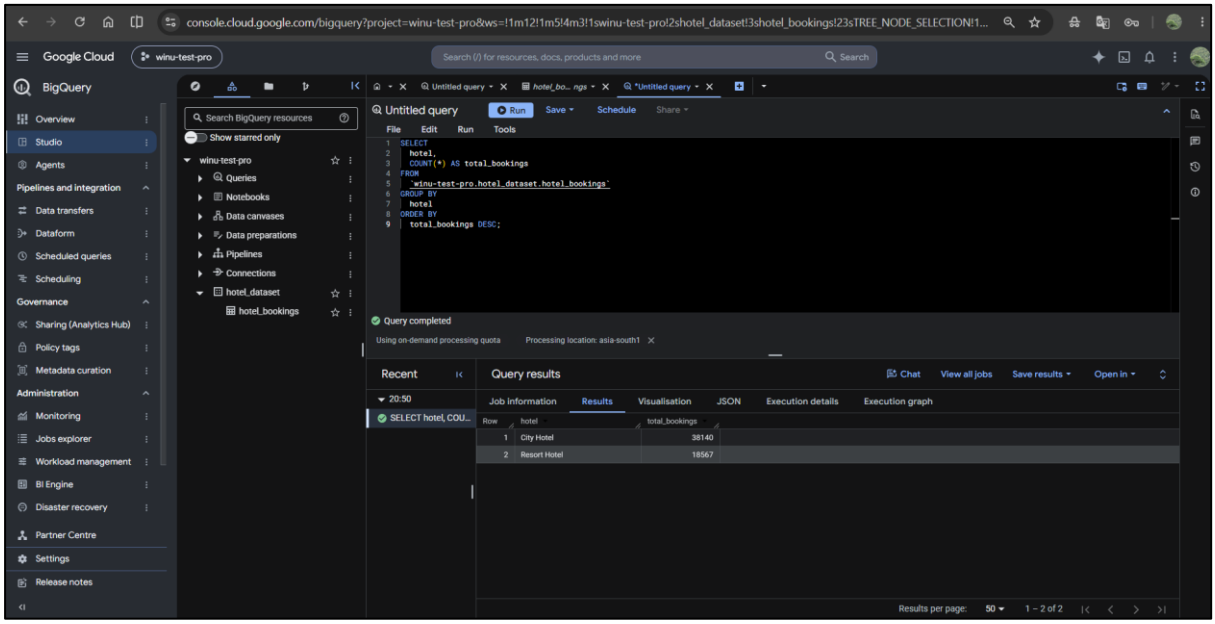
Provide the required details, including the source from which you are uploading the data, such as a local file or Google Cloud Storage.

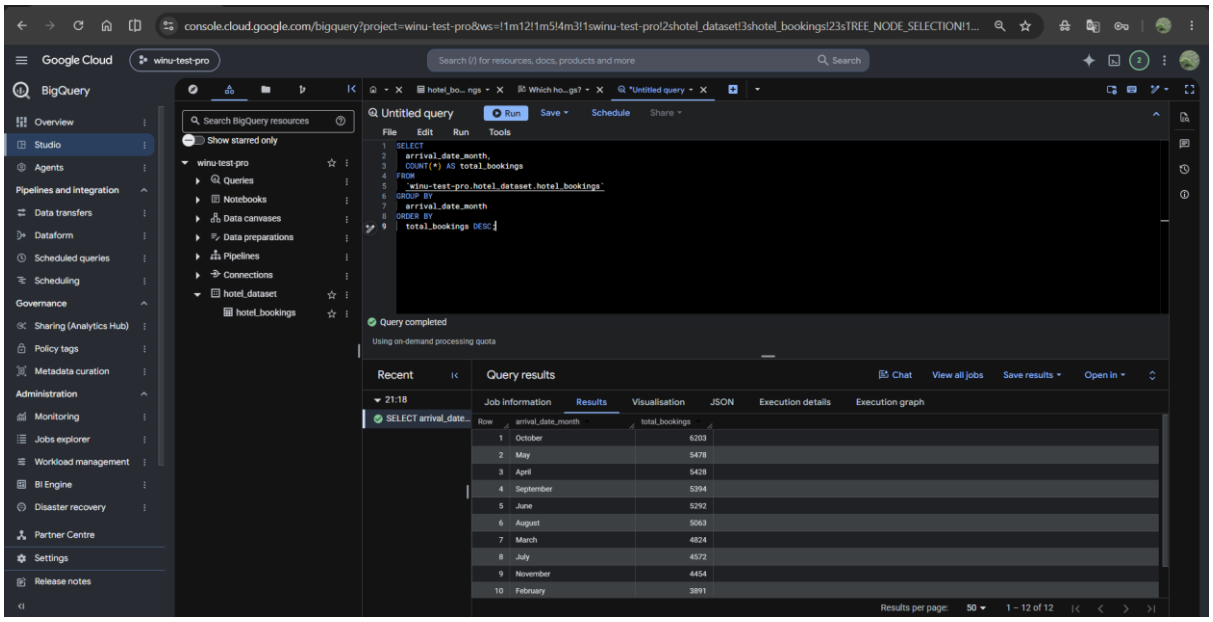


The following shows a preview of the rows and columns in the table.

Traditional Method:

- The traditional approach uses SQL queries to retrieve the required information from the data.
- For this analysis, a SQL query was used to calculate and filter the total number of bookings.

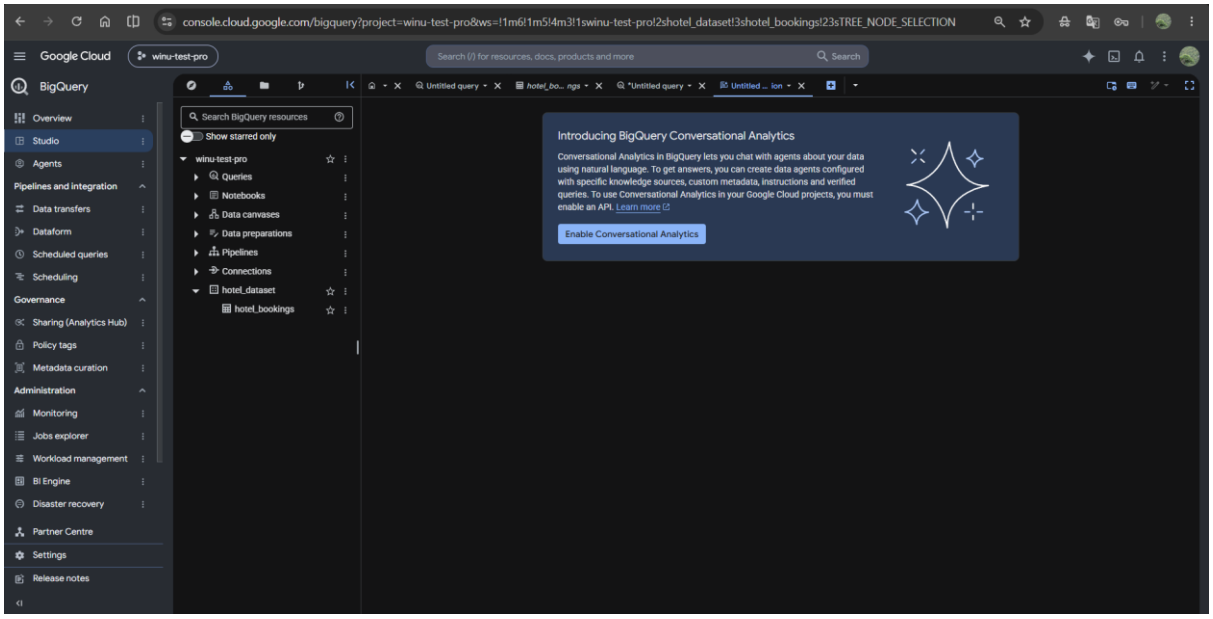




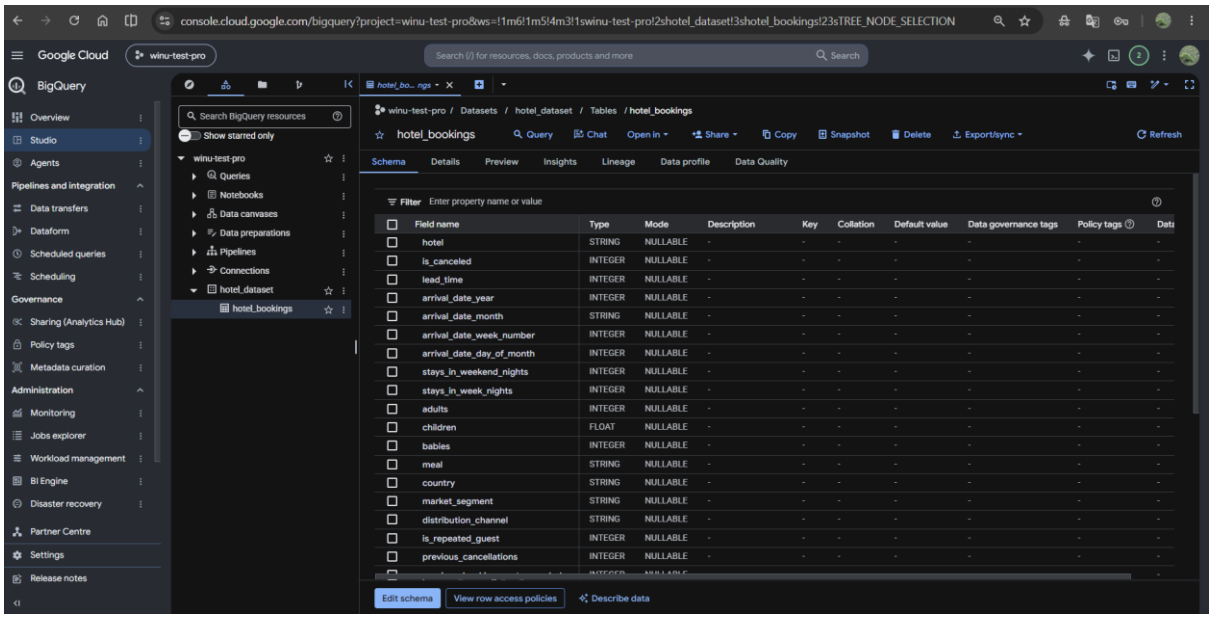
Now, The SQL query was then modified and executed to identify the month with the highest number of bookings.

Conversational Analytics

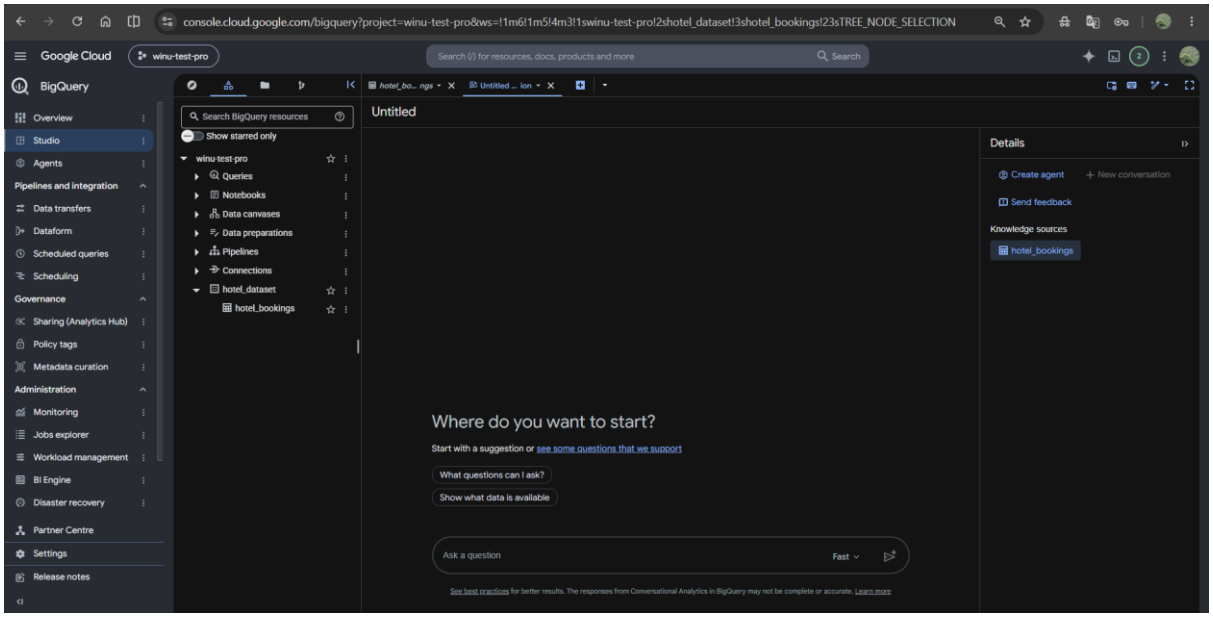
- Enable the required API to use conversational analytics



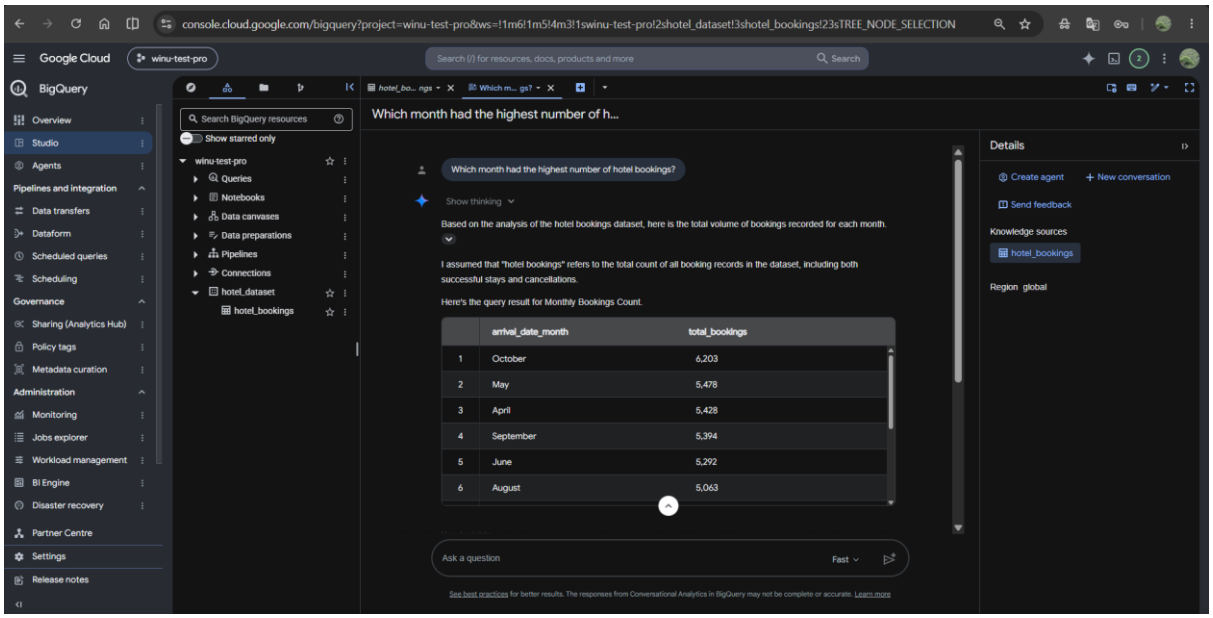
- Select the required table and click the Chat icon in the top menu, next to the Query option, to open Conversational Analytics.



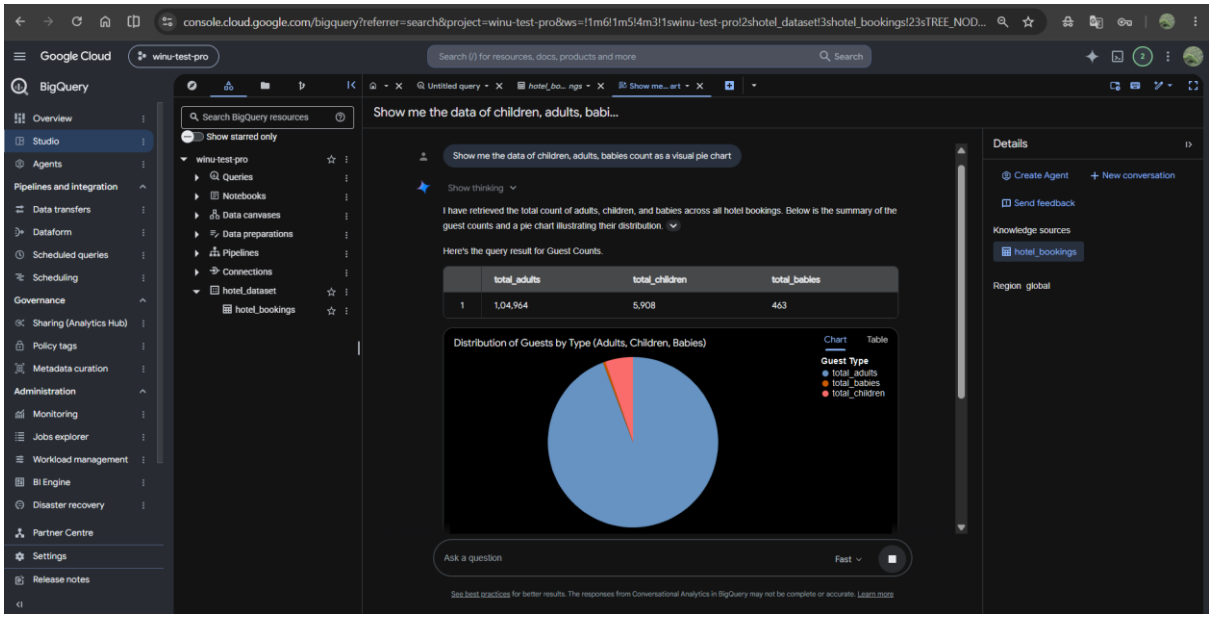
- After that, the Conversational Analytics interface will appear, as shown in the image.
- Users can then ask questions about their data using natural language, allowing to explore and analyze the data quickly without manually writing SQL queries.



- The same question used in the traditional SQL method was asked again using natural language in Conversational Analytics to analyze the table.
- Conversational Analytics then returned the corresponding result based on the data in the table, as shown in the image below.



- The following image provides a visual representation of the data filtered from the table.



Conclusion

Conversational Analytics in BigQuery provides a simple and efficient way to analyze large volumes of real-world data using natural language. Instead of manually writing SQL queries for every analysis, users can ask questions, perform follow-up analysis, and generate visual insights through conversation. This makes it easier to explore massive datasets, quickly identify useful patterns and trends, and support faster data-driven decision-making.