

**Hands-On Lab: Generative AI for Data Visualization**

Estimated time needed: 40 minutes

**Overview**

In this lab, you will learn how to use generative AI to generate various visualizations from the dataset. You will use the [Columns AI](#) and [Akkio](#) platforms to create multiple charts and graphs automatically using simple steps.

**Learning Objectives**

After completing this lab, you will be able to:

- Sign in to [Columns AI](#) and [Akkio](#)
- Generate visualizations
- Generate themes in the chart
- Generate various charts

**Prerequisites**

- Columns AI and Akkio account
- Basic understanding of exploratory data analysis (EDA)

**About Columns AI**

With Columns AI's Natural Language Visualization feature, you can generate charts using descriptions written in plain language. This simplifies and enhances accessibility to data visualization.

Using a natural language interface, users can inquire about their data and receive textual summaries, code snippets, or visual charts as outputs. Leveraging advanced AI models, Columns AI interprets user queries to discern intent and deliver appropriate responses.

Note: Akkio free trial version is limited to a duration of 15 days

**Dataset**

In this lab, you will work with two datasets: the Retail Sales dataset available on the Akkio platform and the Student Alcohol Consumption dataset student-alc.csv by UCI Machine Learning, which can be obtained from [Kaggle](#) for Columns AI.

The Student Alcohol Consumption dataset is based on data collected from two secondary schools in Portugal, with students enrolled in mathematics and Portuguese courses. The dataset we are using is for the mathematics course. The number of mathematics students involved in the collection was 395. The data collected in locations such as Gabriel Peres and Monizinho da Silveira includes several pertinent values. Examples of such data are records of demographic information, grades, and alcohol consumption.

**Columns AI**

Akkio empowers users to harness the power of AI to automate repetitive tasks, including data analysis and visualization. With Akkio's intuitive platform, users can streamline their workflows and generate insights from their data effortlessly.

Using Akkio AI-driven capabilities, users can interact with their data through natural language queries, generating visualizations and actionable insights with ease. By automating these processes, Akkio enables users to focus on strategic decision-making and innovation.

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**Student Alcohol Consumption Dataset**

Variables (columns) and their descriptions:

Variable	Description
id	ID for the student record
sex	M/F for gender
age	15-22 for the student's age
addr	1=urban, 2=rural, 3=semi-urban
famsize	Largest family size less than or greater than three family members
traveltime	Travel time (in minutes) to get to school: 1=less than 1 hr, 2=1-1.5 hrs, 3=1.5-2 hrs, 4=more than 2 hrs
studytime	Study time (in hours) per week: 1=less than 1 hr, 2=1-1.5 hrs, 3=1.5-2 hrs, 4=more than 2 hrs
failures	Number of times has the student failed in the past grade
absences	Total number of absences from school
G1	1=0 to 20 for the first period grade
G2	1=0 to 20 for the second-period grade
G3	1=0 to 20 for the final grade

The Retail Sales dataset contains information on retail sales, including various attributes such as Store ID, Employee Number, Area, Date, Sales, Marketing Spend, Electronics Sales, Home Sales, and Clothes Sales. This dataset appears to represent retail sales data, possibly from multiple stores in the same geographic area, over a period of time. Each entry in the dataset corresponds to a single sales transaction, including information about the store, employee, sales amount, and product categories.

**Columns AI****Documentation**

Store ID Identifier for the store where the sales were made.

Employee Number Identifier for the employee involved in the sales transaction.

Date Date of the sales transaction.

Sales Total sales amount for the transaction.

Marketing Spend Sales amount specifically related to marketing spending.

Electronics Sales Sales amount specifically related to electronics products.

Home Sales Sales amount specifically related to home products.

Clothes Sales Sales amount specifically related to clothing products.

**Task 1: Sign up and create an account on Columns AI**

1. Sign up for Columns AI.

2. Open the link [Columns AI](#) and then click the 'Log in' button at the top right corner.

The screenshot shows the Columns AI homepage with a dark background. At the top, there is a navigation bar with links for Home, Gallery, Pricing, and Integrations. Below the navigation, a large heading reads "Beautify data for sharing" with the subtitle "data storytelling made easy". There are three main sections: "Data" (with a data icon), "Insights" (with an insights icon), and "Design" (with a design icon). Each section has a brief description: "Data Integration: connect Google Spreadsheet, Notion, Airtable, Http API, SQL DB, CSV files, and more", "Data Transformation: harnesses AI to effortlessly transforms your data into compelling visual narratives.", and "Professional Storytelling: eff content with Canva-like tools". At the bottom left, there is a note about signing up with Google or Slack. The bottom right features a "Product Experience" button.

1. You will see the "Sign in" or "Sign up" page. You may continue with an existing Google or Slack account or create a new one by signing up.



4. After creating your account you may launch to the main page.

The screenshot shows a dashboard with several cards:

- Gdp-billions by Country: May 6, 2024, versions: 1, instant data. Includes a world map chart.
- State-wise Representation: May 6, 2024, versions: 1, Columns Example Data. Includes a sunburst chart.
- Total area by each State: May 6, 2024, versions: 1, Columns Example Data. Includes a gauge chart.
- Average Land and Water ...: May 6, 2024, versions: 1, Columns Example Data. Includes a bar chart.
- Population Distribution b...: May 6, 2024, versions: 1, Columns Example Data. Includes a world map chart.
- Population Distribution W...: May 6, 2024, versions: 1, Columns Example Data. Includes a world map chart.

Task L1: Connecting to the dataset

1. Click the 'Story' that is shown in the top right corner. A pop-up window will appear as 'How do you provide data'.

The pop-up window contains the following steps:

- Select the 'Saved Data' option from the pop-up window. A pop-up window as 'Load a Dataset' will appear.
- How do you provide data?
  - Saved Data
    - Load previously saved data connections
  - Live Source
    - Connect a new live source (Google Sheets, Notion, Airtable, HTTP etc.)
  - Edit Data
    - copy/paste and edit data in a sheet
  - Parse Text
    - Extract data from a text paragraph
  - Ask AI
    - Ask AI to extract data for a given question



3. Select the 'Connect new data' option from the pop-up window.



4. Select the 'Upload a file (csv)' from the 'Connect your data window'. Choose the 'student-stat.csv' file from your computer.

Downloads > archive

Name	Date modified	Type	Size
student-mat	15-05-2024 17:26	Microsoft Excel C...	41 KB
student-por	15-05-2024 17:26	Microsoft Excel C...	67 KB

File name: student-mat

5 Once the CSV is edited, click 'Upload' from the 'Connect your data' window.

6 Once you have uploaded, you can view the data. Then, click on 'Save'.

### Connect data - student\_mat\_csv

preview meta info of the data

Name	Description
student_mat_csv	

school	sex	# age	address	famsize	pstatus
GP	F	18	U	GT3	A
GP	F	17	U	GT3	T
GP	F	15	U	LE3	T
GP	F	15	U	GT3	T
GP	F	16	U	GT3	T
GP	M	16	U	LE3	T
GP	M	16	U	LE3	T

Advanced options for CSV upload

Delimiter: Comma

Exclude the second row (the second row has only meta data)

1 Once the data is uploaded, you can explore the data by clicking the 'Explore' option from the Data & Query section.

**Data & Query** Load data and generate query tour

**student\_mat\_csv**

**Explore** Wizard Ideas

**Metrics** values to display + add no metrics selected

**Keys** segmented by + add no keys selected + Transform Key

**Conditions** query conditions + add no conditions selected

Select the 'Column Histogram' drop-down and choose any of the columns to view the visualization of autogenerated charts and statistics from the data.

question like "total sales by product for each month" ... place for a graph...

**Data Source**

**student\_mat\_csv** (no description) **Columns** source type **2024-05-15 06:51:53** last updated

**Edit Schema**

school	sex	address	famsize	pstatus	mjob
GP	F	U	GT3	A	at_home
GP	F	U	GT3	T	at_home
GP	F	U	LE3	T	at_home
GP	F	U	GT3	T	health
GP	F	U	GT3	T	other
GP	M	U	LE3	T	service
GP	M	U	LE3	T	other
GP	F	U	GT3	A	other

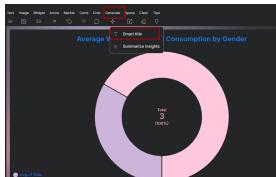
**Task 1.2: Generating Visuals using Columns A1**

1. To find the total number of male and female students in the dataset. Type "total number of male and female students in the dataset" in the 'Question' prompt and click the 'Search' button. A bar chart will appear with the search results. You can click 'Apply' to view and use it for the dataset.

2. You can use the 'Wizard' option from the 'Data & Query' section to generate a chart. You can generate a pie chart representing the average weekly alcohol consumption, identified by the 'Walc' value for each gender. Click 'Wizard'.

The screenshot shows the 'Chart Wizard' interface. At the top, there are tabs for Bar, Line, Pie, Table, Map, Scatter, Tree, and Radar. The 'Pie' tab is highlighted with a red border. Below the tabs, there's a large chart area with a single slice. The Y-axis has ticks at 0, 100, and 200. The slice is labeled 'count of Rows'. In the top left of the chart area, there's a placeholder text: 'Choose values...' followed by 'Walc' with a delete button. Below the chart, there's another section labeled 'Segmented by...' with 'sex' listed. At the bottom right of the main panel is a red-bordered 'Make' button.

Click 'Generate' and then select 'Smart Title', a title is generated for the chart.



Annotation Delete

Text Image Widget Arrow Marker Cond Chat Generate Space Clear Tips

This pie chart represents the average weekend alcohol consumption (walc.AVG) of students based on their gender. The chart shows that female students have an average weekend alcohol consumption of 1, while male students have an average of 2. This indicates that male students tend to consume more alcohol on weekends compared to female students. The data suggests a gender disparity in weekend alcohol consumption among students.

Enter ↵ for next line...

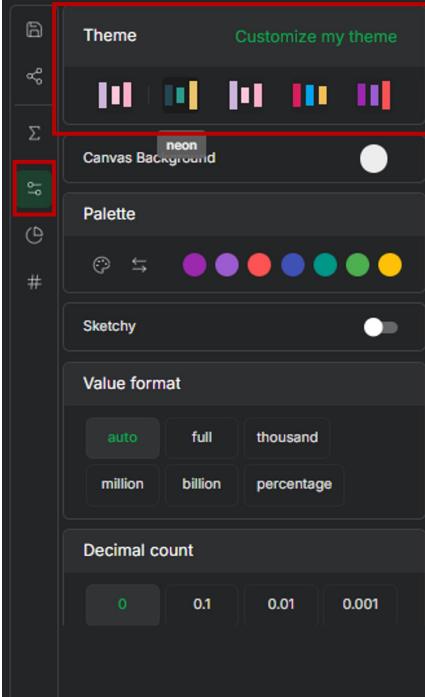
Add link  Add image



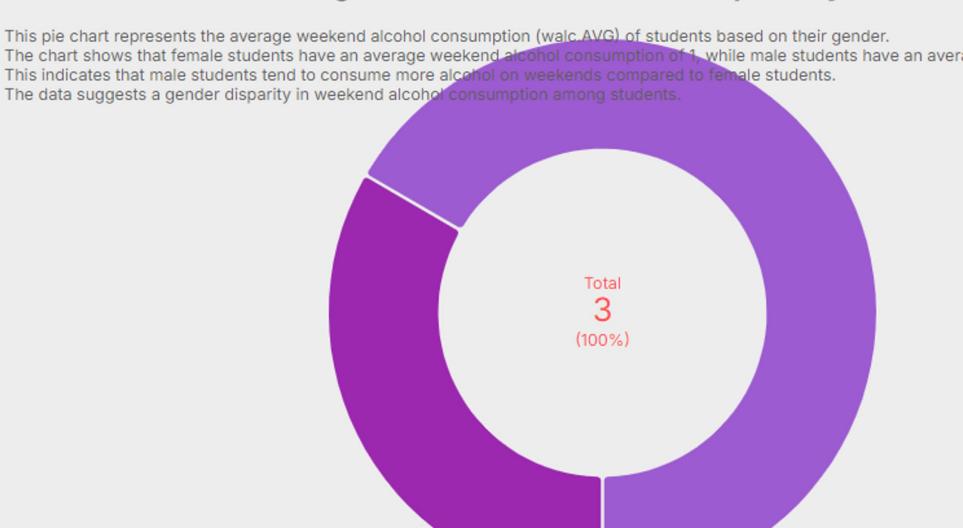
5. You can also change the chart appearance by clicking the 'Visual Setting' icon and choosing any 'Theme'.

Theme Customize my theme

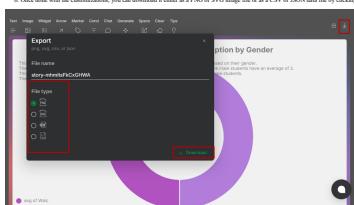
Text Image Widget Arrow Marker Cond Chat Generate Space Clear Tips



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6. Once done with the customization, you can download it either as a PNG or SVG image file or as a CSV or JSON data file by clicking the download icon at the top right corner, choosing the required file type from the list, and selecting the Download option.



Task 2: Sign up and create an account on Akkiio.

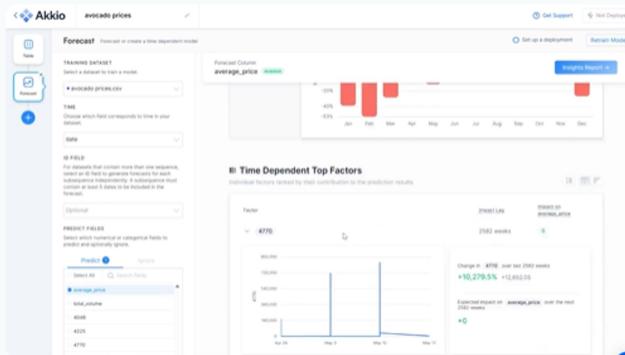
1. Sign up for Akkiio.
2. Open the link [Akkiio](#) and then click the 'Try for free' button at the top right corner.

[akkio.com](https://akkio.com)

3. You will use the Sign up page. You may continue with an existing Google account or create a new one.

## Akkio Generative BI for Agencies

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or

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Last Name

Email

Password

Re-enter Password

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 Akkio

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This will help us optimize your onboarding experience

With my downstream customers  
(build on top with API or Whitelabel)

Internally to my company

For personal use / as a student

[Continue →](#)

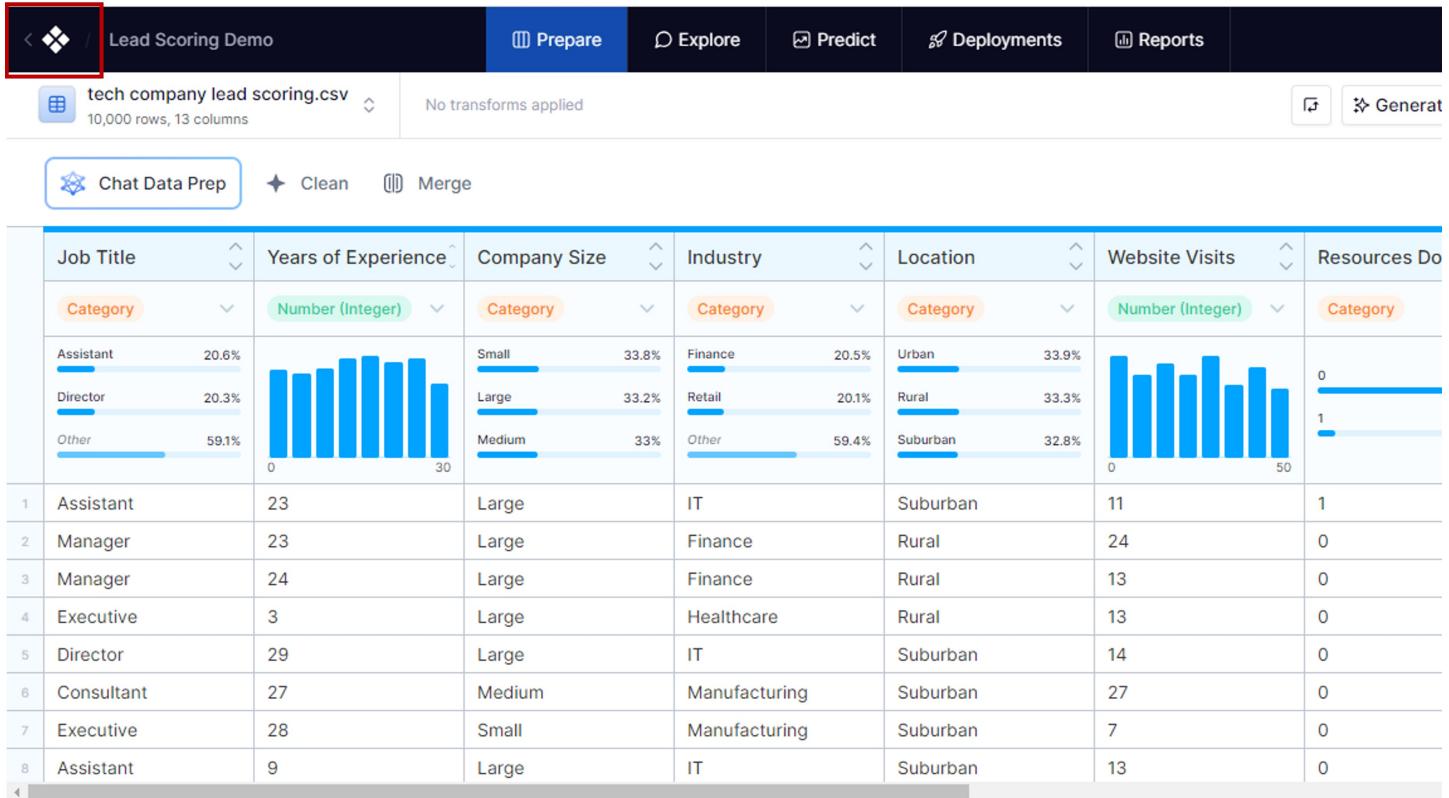
 Akkio

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5. The Launching page will occur; you have to select the 'Home' button from the left top corner. It will launch on the home page.



## Task 2.1: Connecting to the dataset

1. From the home page, click 'Create New Project' to create a new project from the existing dataset, the *retail sales data* dataset, one of the sample datasets provided by Akkio.

Akkio

Sathyas Team

Projects 7

Development Production Archive

Create New Project

Job Title	Years of Ex...	Department	Salary Range
Assistant	25	Sales	High
Consultant	29	Customer S...	Medium
Executive	6	Sales	High
Consultant	3	Marketing	Medium
<input checked="" type="radio"/> Not deployed			...

customerID	gender	SeniorCitizen	Partner
7590-VHVE...	Female	0	Yes
5575-GNV...	Male	0	No
3668-QPY...	Male	0	No
7795-CFO...	Male	0	No
<input checked="" type="radio"/> Not deployed			...

Employee Attrition Demo  
14 minutes ago

Sentiment Model  
14 minutes ago

2. From the Prepare tab, select the 'Upload File' option, which will redirect to the page to choose the dataset. Select the *Retail sales data.csv* dataset.

Sathy's Project (1) / **Prepare** Prepare Explore Predict Deployments Reports

Pick a data source to start



**CSV EXCEL JSON**

Upload File



Beta  
Not Connected

Google Ads



Not Connected

Google Sheets



Not Connected

Google BigQuery



Not Connected

Google BigQuery Service Account (import only)



Not Connected

Snowflake

Sathy's Project (1) / **Prepare** Select a dataset Explore Predict Deployments Reports

[Back](#)

Select a dataset

Search for datasets...

+

Upload Dataset

Job Title	Years of Exp...	Department	Salary Range
Assistant	25	Sales	High
Consultant	29	Customer S...	Medium
Executive	6	Sales	High
Consultant	3	Marketing	Medium

● employee\_attrition\_demo\_data.... Today at 11:40 AM

Sentiment	Text
Negative	@switchfoot http://twitpic.co...
Negative	is upset that he can't update ...
Negative	@Kenichan I dived many time...
Negative	my whole body feels itchy an...

● Sentiment Data.csv Today at 11:40 AM

customerID	gend
7590-VHVEG	Female
5575-GNVDE	Male
3668-QPYBK	Male
7795-CFOC...	Male

● Telco-Customer-C...

Transaction ID	Transaction Type	Transaction Date	Transaction Amount
7271	US	AUD	1
861	US	AUD	8
5391	US	CAD	12
5192	US	USD	5

● Credit\_Card\_Fraud.csv Today at 11:40 AM

Review Text	Review
Wow... Loved this place.	Positive
Crust is not good.	Negative
Not tasty and the texture was...	Negative
Stopped by during the late M...	Positive

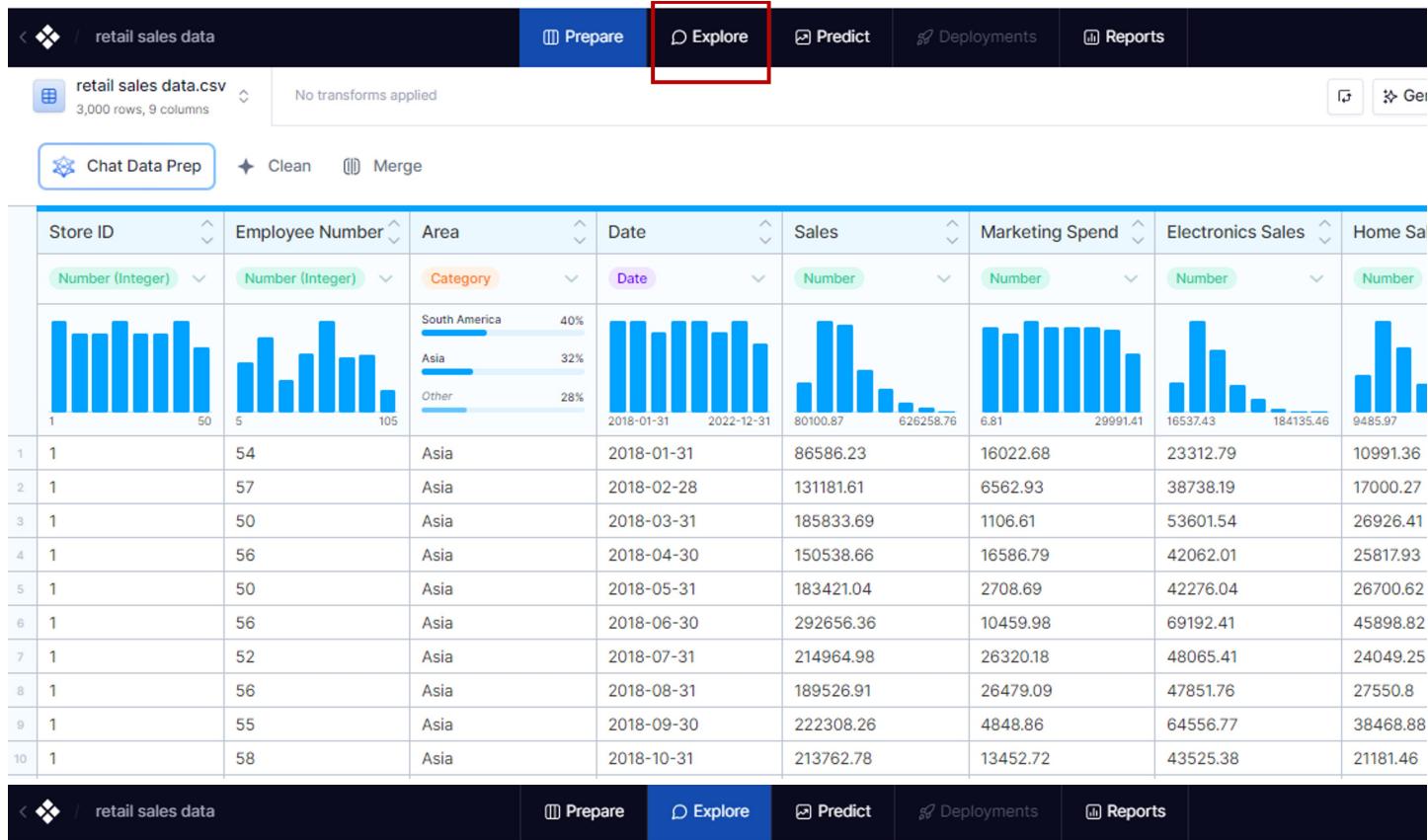
● Restaurant\_Reviews.csv Today at 11:40 AM

Store ID	Employee N...	Area	Date
1	54	Asia	2018-01-31
1	57	Asia	2018-02-28
1	50	Asia	2018-03-31
1	56	Asia	2018-04-30

● retail sales data.csv Today at 11:40 AM

**Task 2.2: Generating visuals using Akkio**

1. The selected dataset will appear on the page. Select the 'Explore' tab to get an exploratory insight into the relationship between marketing spend and sales by generating a scatter plot. To do so, type 'Make a scatter plot of Marketing spend vs. sales' in the 'Ask a question about your data' prompt and click the 'Execute' icon.



The screenshot shows the DataRobot AI Platform interface. At the top, there are tabs: 'Prepare' (blue), 'Explore' (red box), 'Predict', 'Deployments', and 'Reports'. Below the tabs, it says 'No transforms applied'. A 'Connect Slack Account (Beta)' button is visible. The main area shows a data preview for 'retail sales data.csv' with 3,000 rows and 9 columns. The columns include Store ID, Employee Number, Area, Date, Sales, Marketing Spend, Electronics Sales, and Home Sales. There are also dropdowns for filtering these columns. Below the preview are several bar charts and a pie chart.

**No chat history**

There are no saved chats in this project. Start one by asking a question.

**Chat Explore**

Explore your data

↳ What is the average sales by area?

↳ Show me a scatterplot of sales vs. marketing spend

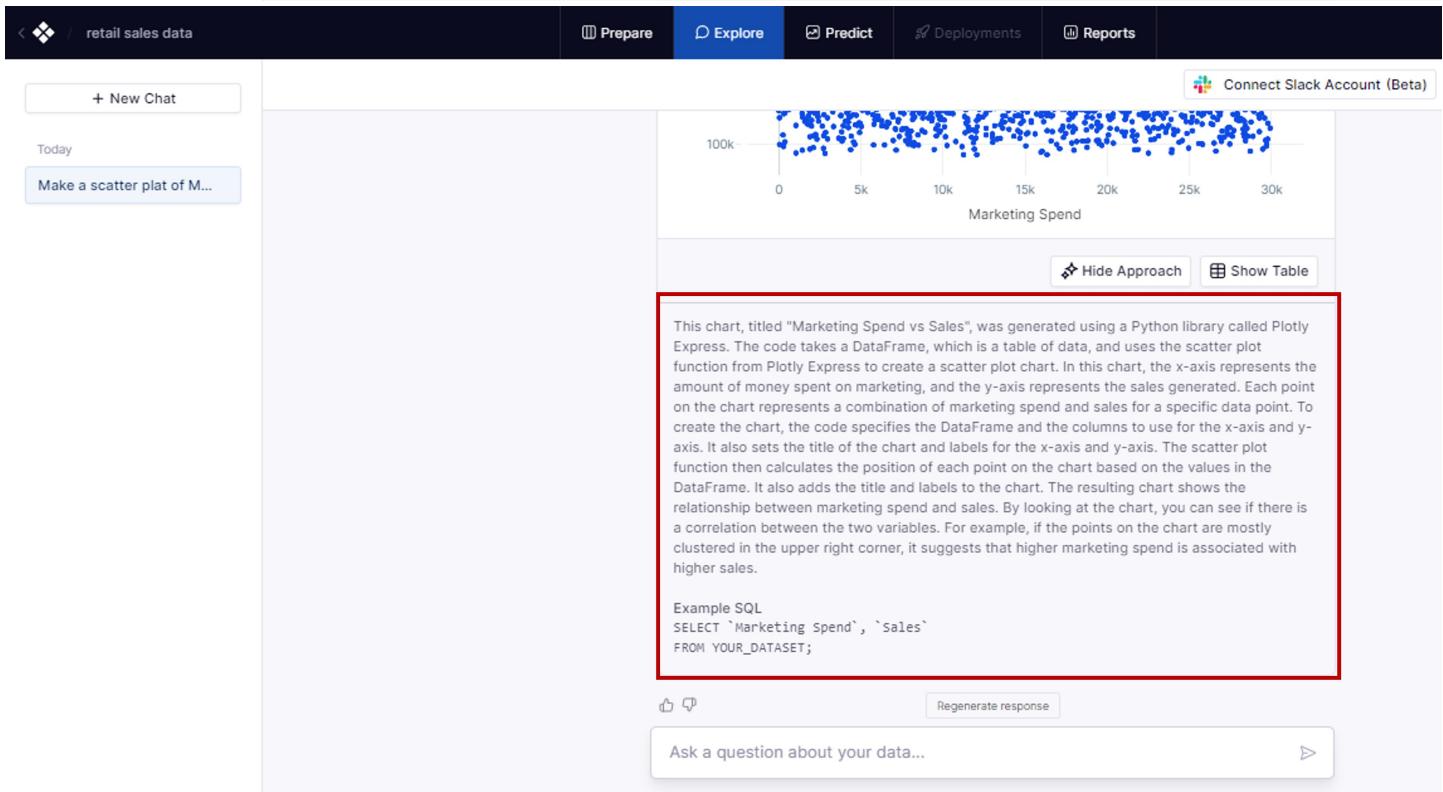
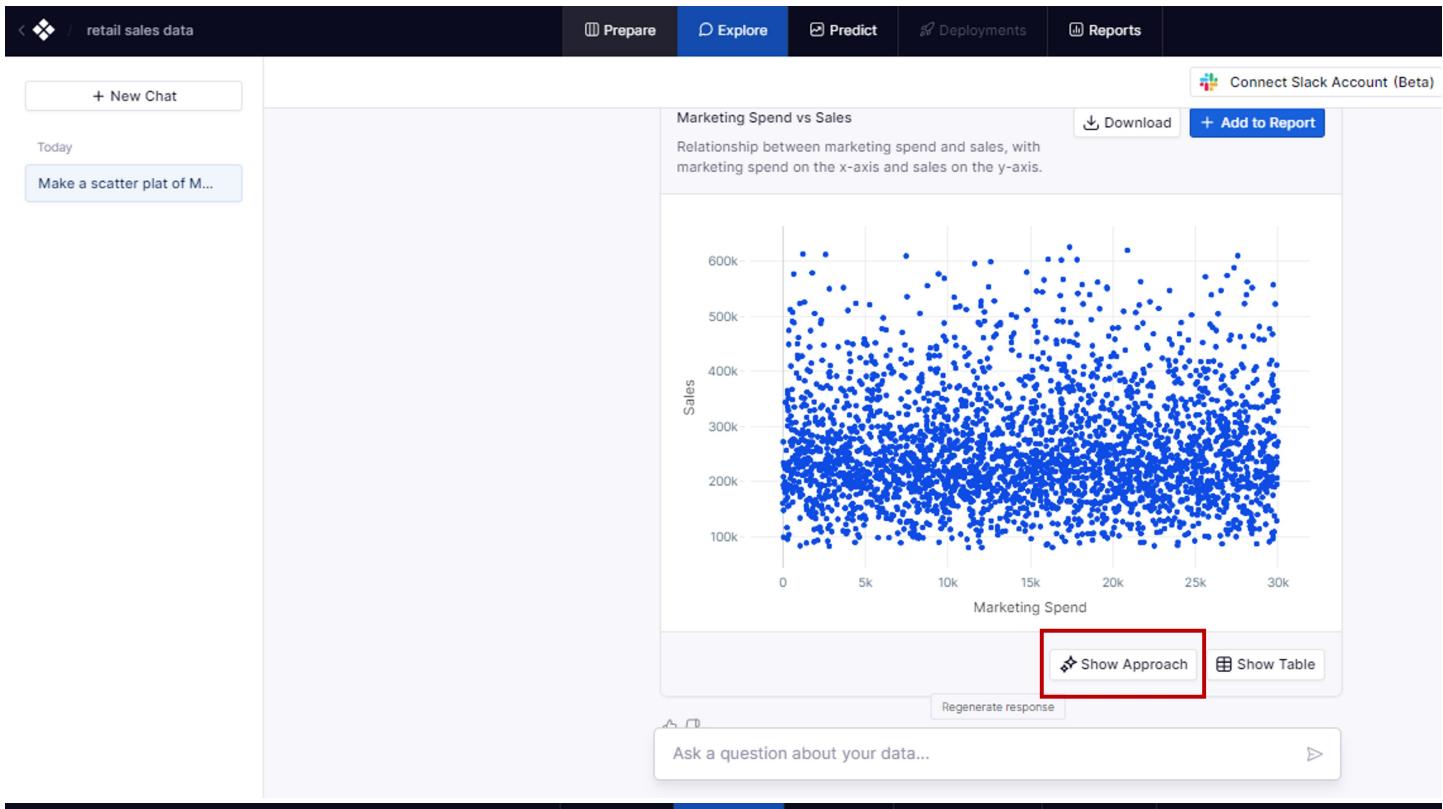
↳ Make a histogram of employee numbers

↳ What is the total sales by date?

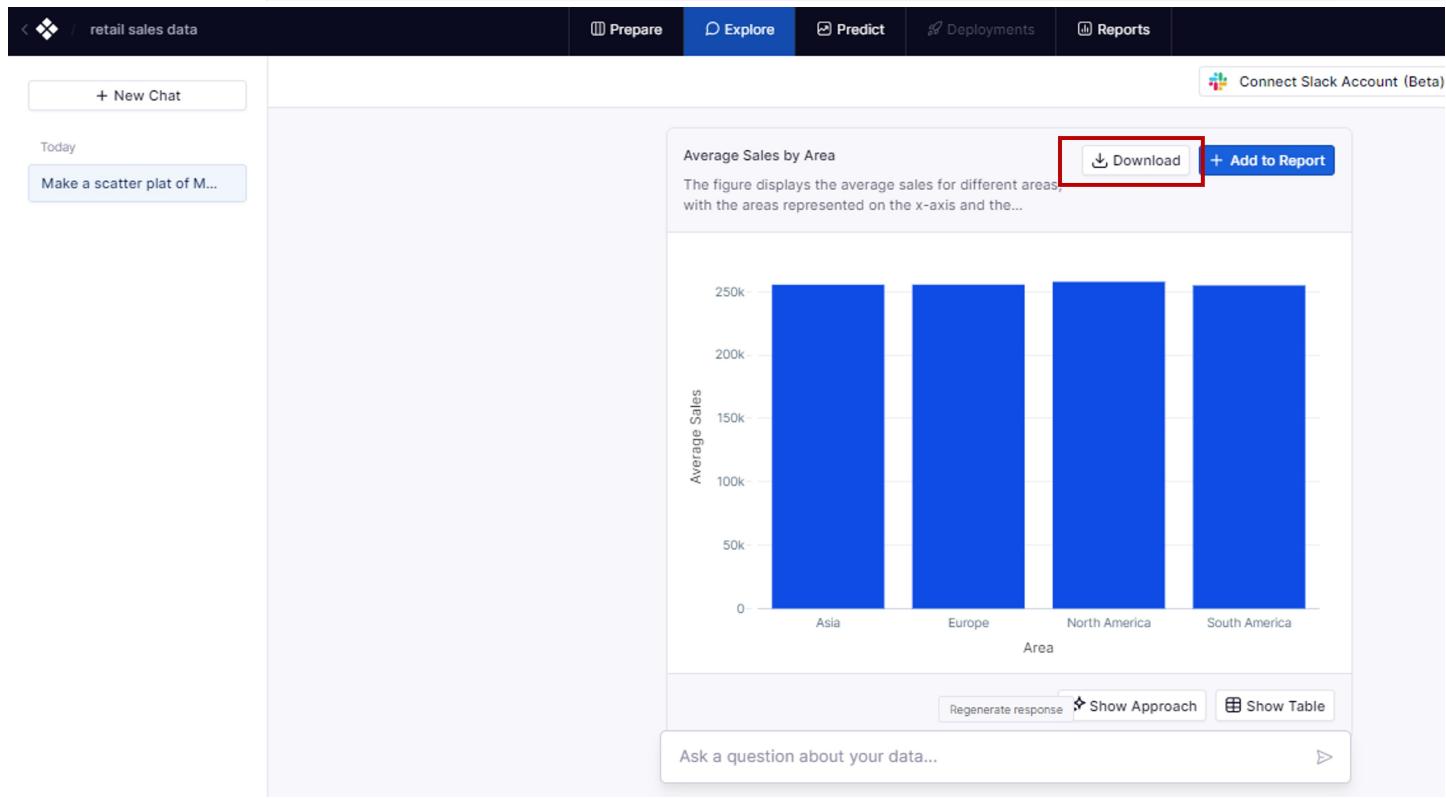
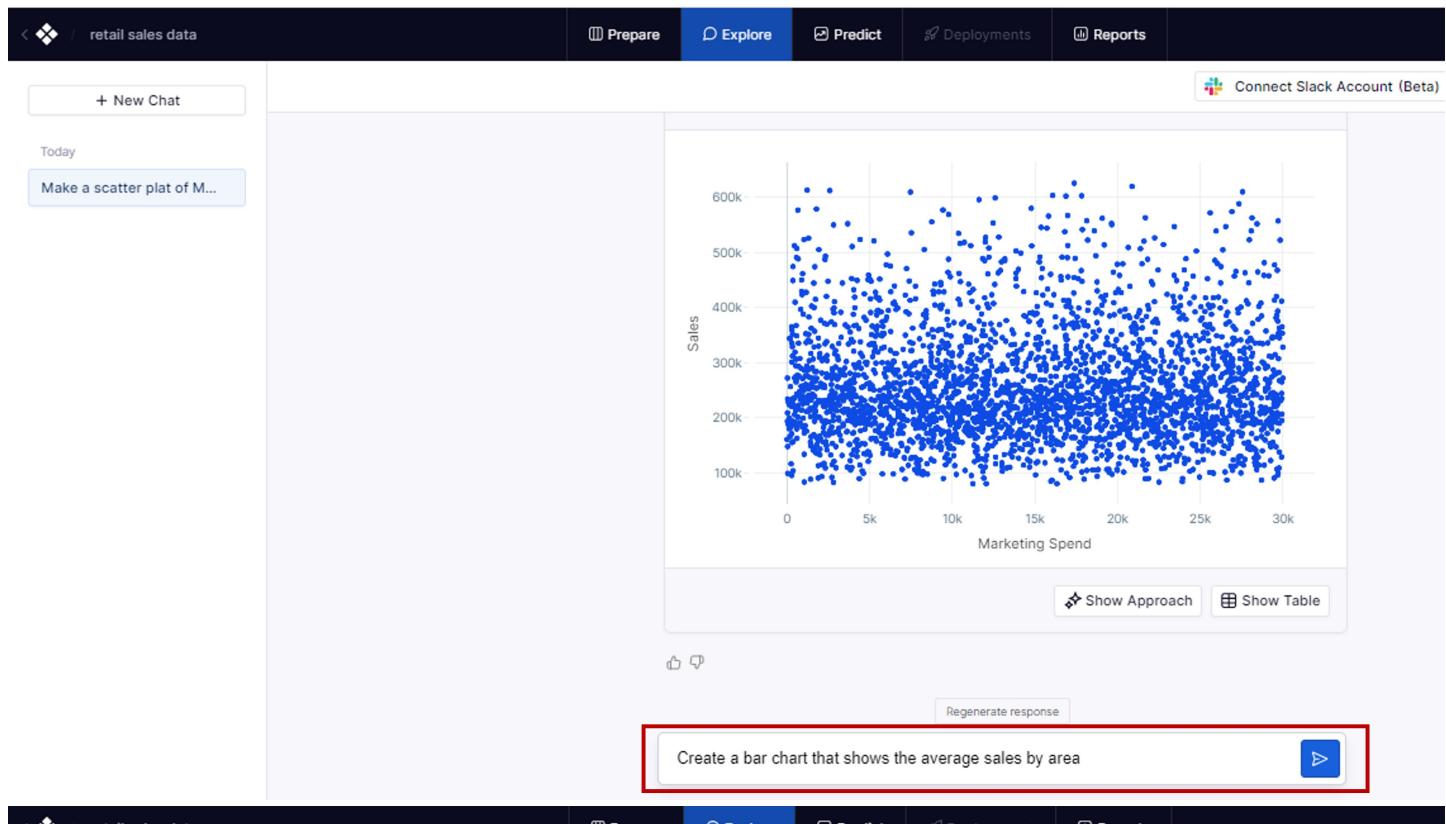
ⓘ For best results, ask one question at a time. Start a new chat when you switch topics.

Make a scatter plot of Marketing spend vs sales >

2. The scatter plot will be generated. You can get the details on the approach used to create this chart by clicking the 'Show Approach'.



1. To generate a bar chart that shows the average sales by area, type 'Create a bar chart that shows the average sales by area' in the 'Ask a question about your data' prompt and click 'Execute' icon. You can also download the charts by clicking the 'Download' button.



4. To generate the correlation matrix on the data attributes as a heat map to understand their correlation, type 'Generate the Correlation matrix on the data attributes as heatmap' in the 'Ask a question about your data' prompt and click the 'Execute' icon.

retail sales data

Prepare Explore Predict Deployments Reports Connect Slack Account (Beta)

+ New Chat Today Make a scatter plot of M...

Average Sales

Area

Asia Europe North America South America

Show Approach Show Table

Generate the Correlation matrix on the data attributes as heatmap

Regenerate response

Generate Box Plot of Sales

Box Plot of Sales

Home Sales

Generate Histogram of Home Sales

Home Sales

Conclusion

In this lab, you learned how to use the Alakkai AI and Alakkai platforms to generate various visualizations from datasets. You connected to datasets, generated visualizations using natural language prompts, modified chart themes, and created different types of charts to analyze the data effectively. By leveraging these generative AI tools, you can streamline your data analysis process and gain insights quickly and efficiently.

Author: Skills Network