Machine Learning in the Enterprise

Machine Learning in the Enterprise navigate_next Data in the Enterprise

Exploring and Creating an Ecommerce Analytics Pipeline with Cloud Dataprep v1.5

1 hour 30 minutes Free

Overview

Cloud Dataprep by Trifacta is an intelligent data service for visually exploring, cleaning, and preparing structured and unstructured data for analysis. In this lab we will explore the Cloud Dataprep UI to build an ecommerce transformation pipeline that will run at a scheduled interval and output results back into BigQuery.

The dataset we will be using is an ecommerce dataset that has millions of Google Analytics records for the Google Merchandise Store loaded into BigQuery. We've made a copy of that dataset for this lab and will be exploring the available fields and rows for insights.

Objectives

In this lab, you learn how to perform these tasks:

- Connect BigQuery datasets to Cloud Dataprep
- Explore dataset quality with Cloud Dataprep
- Create a data transformation pipeline with Cloud Dataprep
- Schedule transformation jobs outputs to BigQuery

What you'll need

- A Google Cloud Platform project
- The Google Chrome browser. Cloud Dataprep supports only the Chrome browser.

Setup and requirements

For each lab, you get a new Google Cloud project and set of resources for a fixed time at no cost.

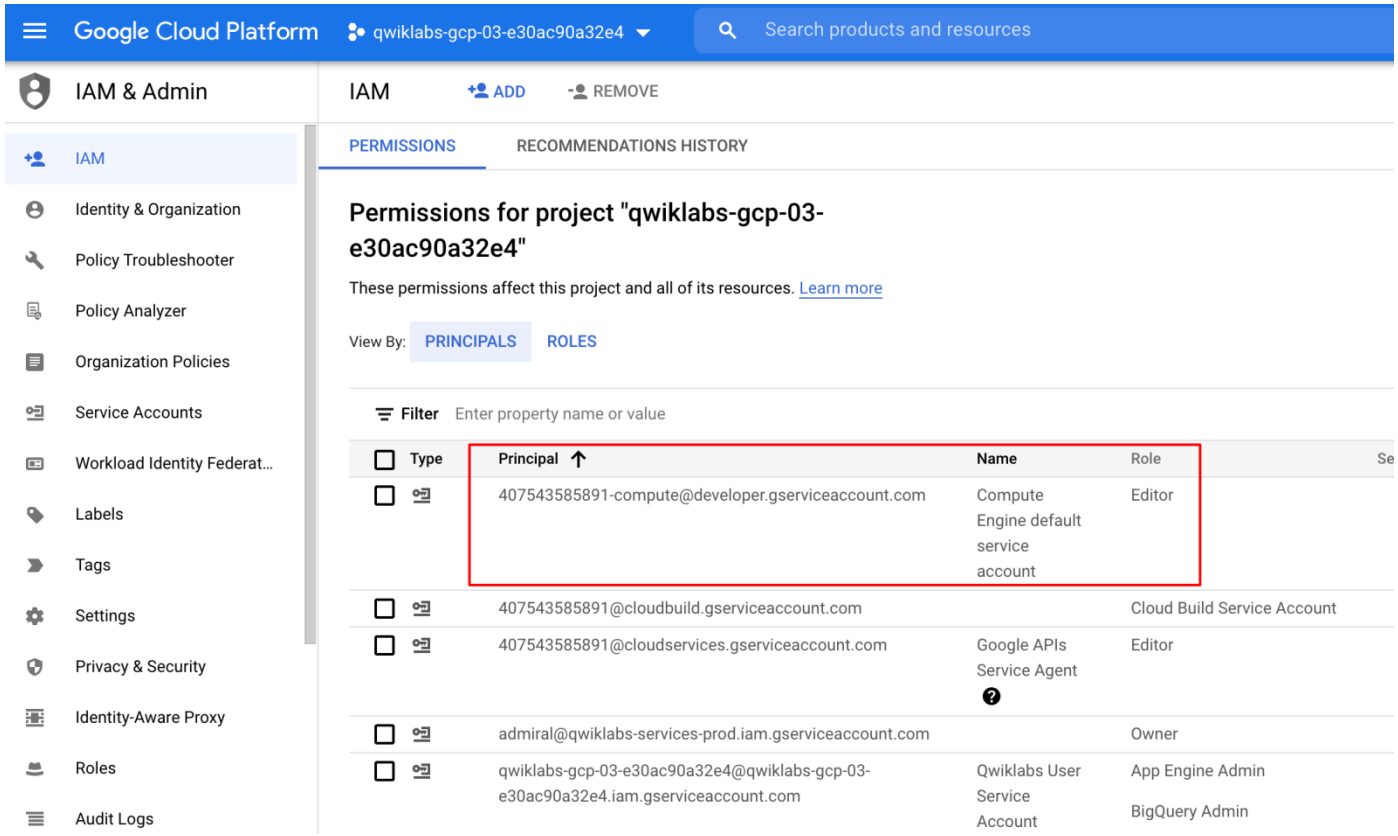
1. Sign in to Qwiklabs using an **incognito window**.
2. Note the lab's access time (for example, `1:15:00`), and make sure you can finish within that time.
   There is no pause feature. You can restart if needed, but you have to start at the beginning.
3. When ready, click **Start lab**.
4. Note your lab credentials (**Username** and **Password**). You will use them to sign in to the Google Cloud Console.
5. Click **Open Google Console**.
6. Click **Use another account** and copy/paste credentials for **this** lab into the prompts.
   If you use other credentials, you'll receive errors or **incur charges**.
7. Accept the terms and skip the recovery resource page.

Note: Do not click **End Lab** unless you have finished the lab or want to restart it. This clears your work and removes the project.

Check project permissions

Before you begin your work on Google Cloud, you need to ensure that your project has the correct permissions within Identity and Access Management (IAM).

1. In the Google Cloud console, on the **Navigation menu** (☰), select **IAM & Admin** > **IAM**.
2. Confirm that the default compute Service Account `{project-number}-compute@developer.gserviceaccount.com` is present and has the `editor` role assigned. The account prefix is the project number, which you can find on **Navigation menu** > **Home**.



Note: If the account is not present in IAM or does not have the `editor` role, follow the steps below to assign the required role.

1. In the Google Cloud console, on the **Navigation menu**, click **Home**.
2. Copy the project number (e.g. `729328892908`).
3. On the **Navigation menu**, select **IAM & Admin** > **IAM**.
4. At the top of the **IAM** page, click **Add**.
5. For **New principals**, type:

{project-number}-compute@developer.gserviceaccount.com

6. Replace `{project-number}` with your project number.
7. For **Role**, select **Project** (or Basic) > **Editor**.
8. Click **Save**.

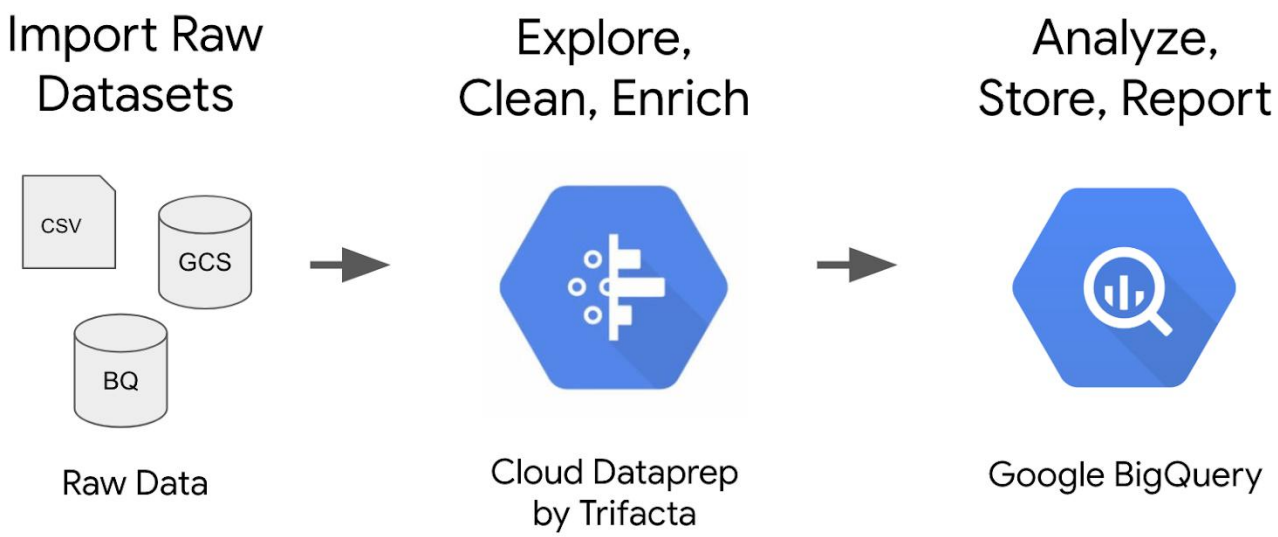
Open BigQuery Console

1. In the Google Cloud Console, select **Navigation menu** > **BigQuery**.

The **Welcome to BigQuery in the Cloud Console** message box opens. This message box provides a link to the quickstart guide and lists UI updates.

2. Click **Done**.

Although this lab is largely focused on Cloud Dataprep, you need BigQuery as an endpoint for dataset ingestion to the pipeline and as a destination for the output when the pipeline is completed.



Task 1. Create an empty BigQuery dataset

In this task, you create a new BigQuery dataset to receive the output table of your new pipeline.

1. In the left pane, click **View actions** (⋮) next to your project ID and select **Create dataset**.
2. In the **Create dataset** dialog:

- For **Dataset ID**, type **ecommerce**.
- Leave the other values at their defaults.

3. Click **Create dataset**.
4. Copy and paste this SQL query into the **Query editor** text field:

#standardSQL CREATE OR REPLACE TABLE ecommerce.all_sessions_raw_dataprep OPTIONS(description="Raw data from analyst team to ingest into Cloud Dataprep") AS SELECT * FROM `data-to-insights.ecommerce.all_sessions_raw` WHERE date = '20170801'; # limiting to one day of data 56k rows for this lab

5. Click **Run**.

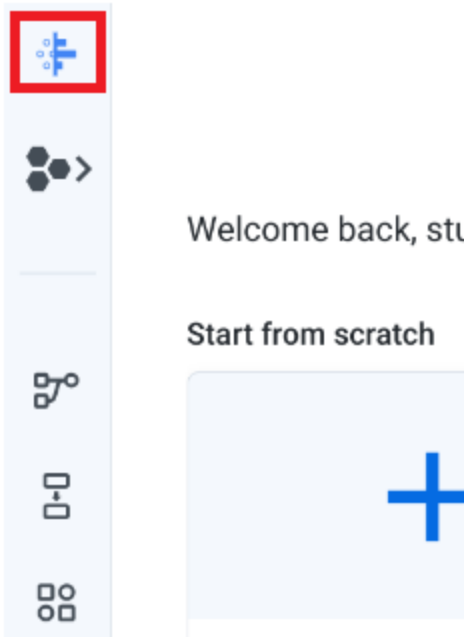
This query copies over a subset of the public raw ecommerce dataset to your own project dataset for you to explore and clean in Cloud Dataprep.

6. Confirm that the new raw data table exists in your project.

Task 2. Open Cloud Dataprep

In this task, you accept the terms of service for Google and Trifacta, and then you allow Trifacta to access your project data.

1. In the GCP console, make sure that your lab's project is selected.
2. In the **Navigation menu** (☰), click **Dataprep**.
3. Select the Terms of Service for Google and Trifacta, and then click **Accept**.
4. In the **Share account information with Trifacta** dialog, select the checkbox, and then click **Agree and Continue**.
5. To **allow Trifacta to access your project data**, click **Allow**. This authorization process might take a few minutes.
6. In the **Sign in with Google** window appears, select your Qwiklab account and then click **Allow**. Click **Accept** if required after checking the checkbox.
7. To use the default location for the storage bucket, click **Continue**.



The homepage of Cloud Dataprep opens. If required, click **Home**.

Task 3. Connect BigQuery data to Cloud Dataprep

In this task, you connect Cloud Dataprep to your BigQuery data source.

On the Cloud Dataprep page:

1. Click **Create a new flow**.
2. Click **Untitled Flow** on the top of the page.
3. In the Rename dialog, specify these details:

- For **Flow Name**, type **Ecommerce Analytics Pipeline**
- For **Flow Description**, type **Revenue reporting table for Apparel**

4. Click **Ok**.
5. Click **(+)** icon to add a dataset.
6. In the Add datasets to flow dialog, click **Import datasets** from bottom-left corner.

7. In the left pane, click **BigQuery**.
8. When your **ecommerce** dataset is loaded, click on it.
9. To create a dataset, click **Create dataset** (+).
10. Click **Import & Add to Flow**.

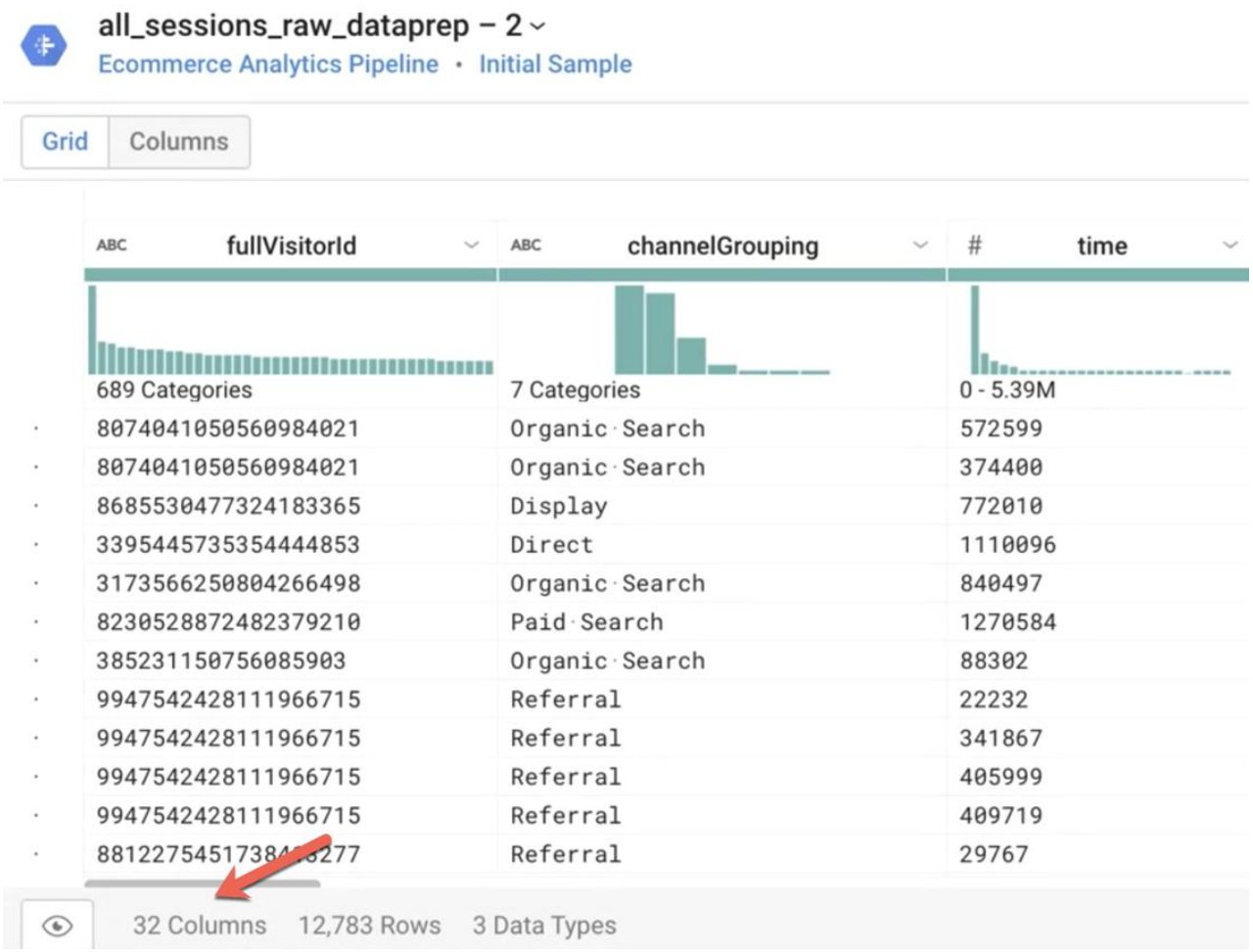
The data source automatically updates.

Task 4. Explore ecommerce data fields with a UI

In this task, you load and explore a sample of the dataset within Cloud Dataprep.

1. Click **Edit Recipe** in the right panel.
2. Click **Don't show me any helpers** in **The Transformer** dialog if required.

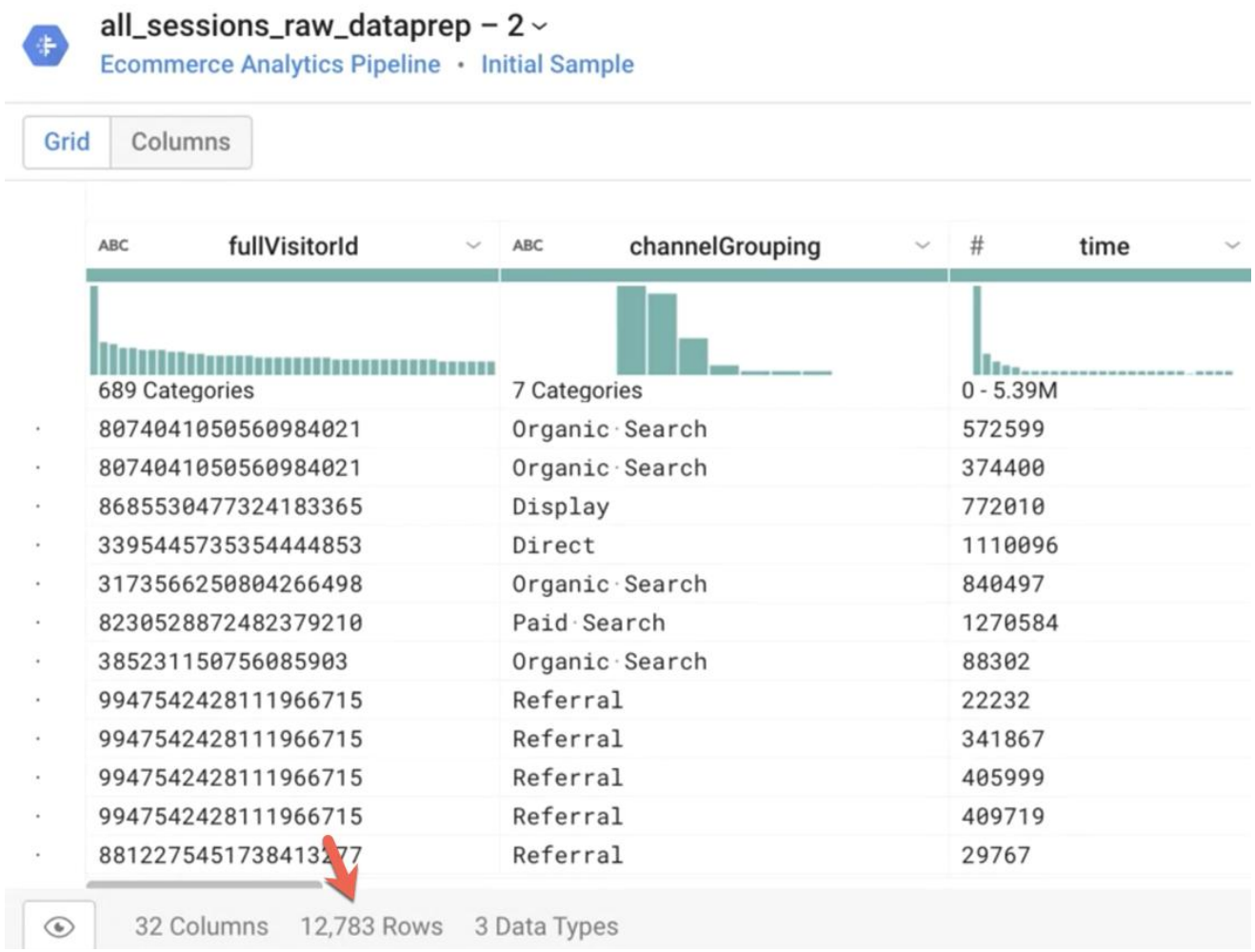
Cloud Dataprep loads a sample of your dataset into the Transformer view. This process might take a few minutes.



Answer the questions:

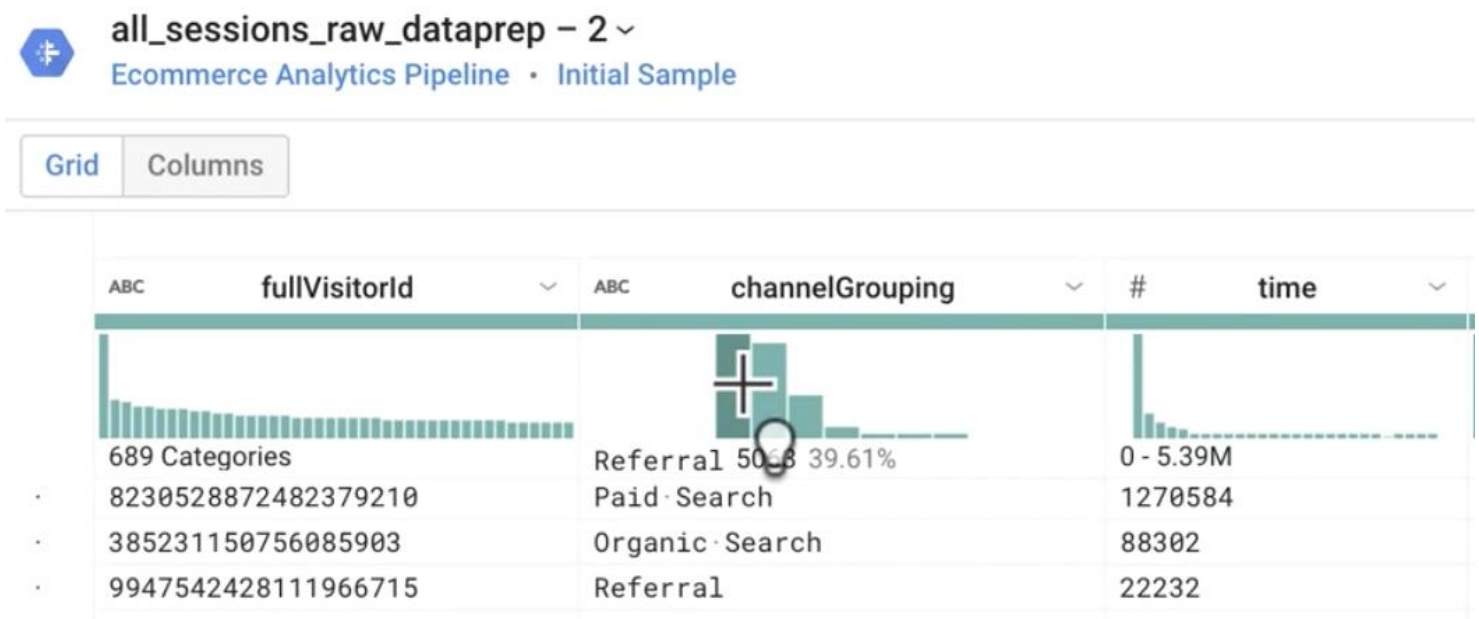
- Cloud Dataprep will load a sample of the source dataset for speed of exploration.

Note: When your pipeline is run, it will operate over the entire source dataset. How many rows does the sample contain?



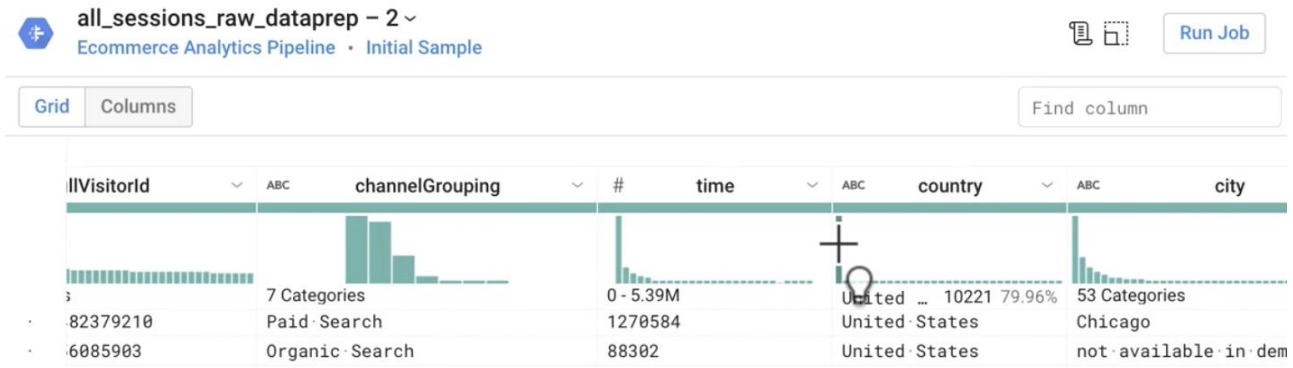
`Answer:` About 12 thousands rows

- What is the most common value in the **channelGrouping** column?



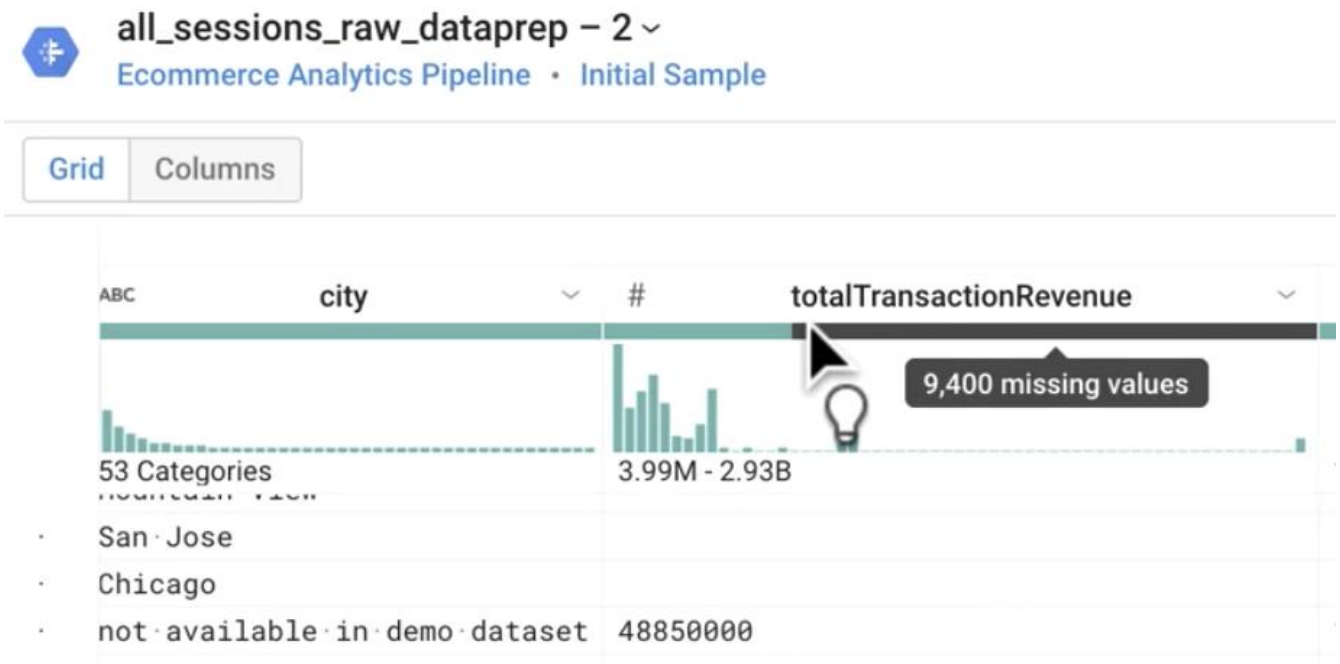
`Answer`: Referral

- What are the top three countries that sessions originate from?



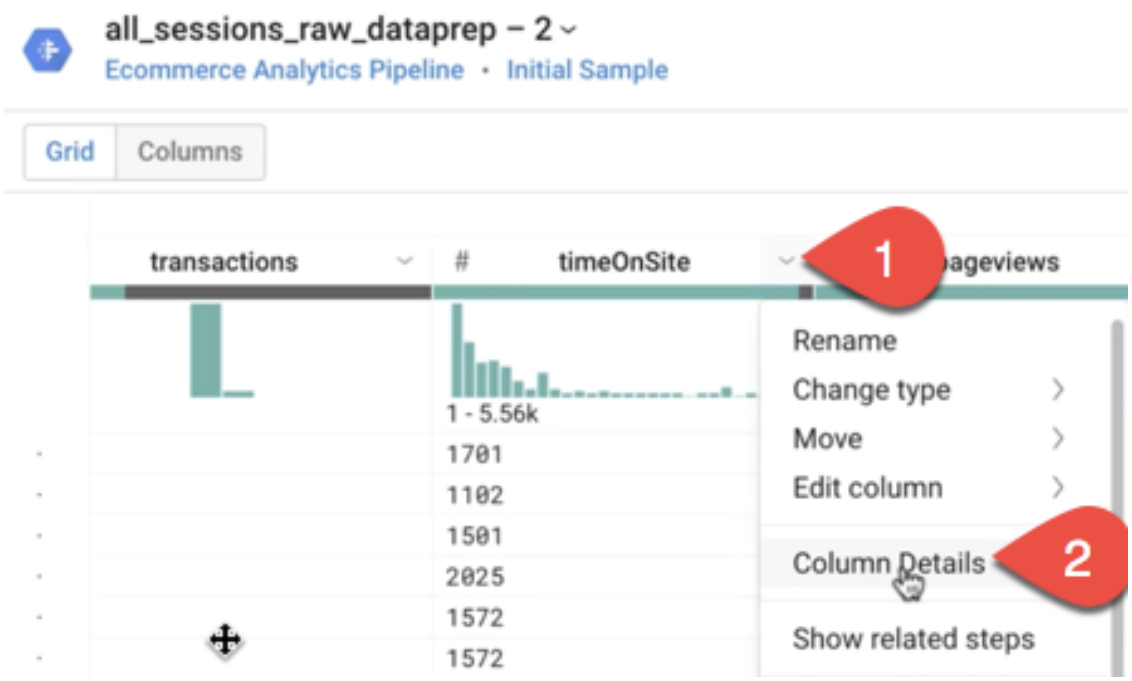
`Answer`: US, India, United Kingdom

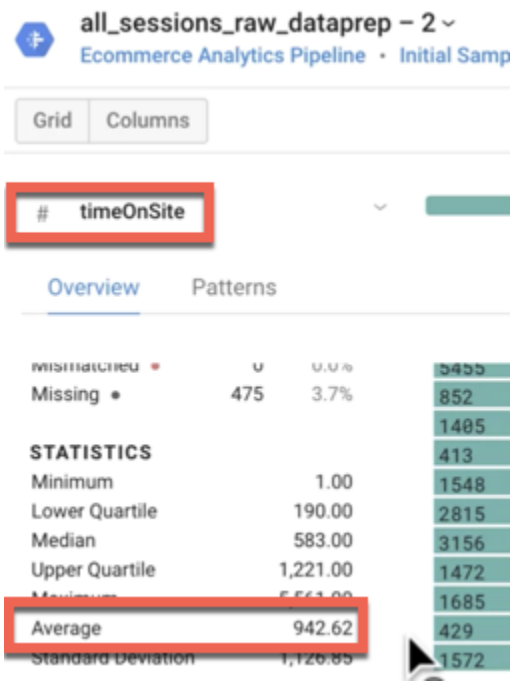
- What does the gray bar under totalTransactionRevenue represent?



`Answer:` Missing values

- What is the average **timeOnSite** in seconds, average **pageviews**, and average **sessionQualityDim** for the data sample? (Hint: Use **Column Details**.)


all_sessions_raw_dataprep – 2
Ecommerce Analytics Pipeline • Initial Sample
Grid
Columns
transactions
timeOnSite
1
ageviews
1 - 5.56k
1701
1102
1501
2025
1572
1572
Rename
Change type
Move
Edit column
Column Details
2
Show related steps


all_sessions_raw_dataprep – 2
Ecommerce Analytics Pipeline • Initial Samp
Grid
Columns
timeOnSite
Overview
Patterns
Missing • 475 3.7%
STATISTICS
Minimum 1.00
Lower Quartile 190.00
Median 583.00
Upper Quartile 1,221.00
Average 942.62
852
1405
413
1548
2815
3156
1472
1685
429
1572

`Answers:` **Average Time On Site:** 942 seconds (or 15.7 minutes)

Average Pageviews: 20.44 pages

Average Session Quality Dimension: 38.36

Note: Your answers may vary slightly due to the data sample used by Cloud Dataprep.

- Looking at the histogram for **sessionQualityDim**, are the data values evenly distributed?

`Answer:` No, they are skewed to lower values (low quality sessions), which is expected.

- What is the date range for the dataset sample?

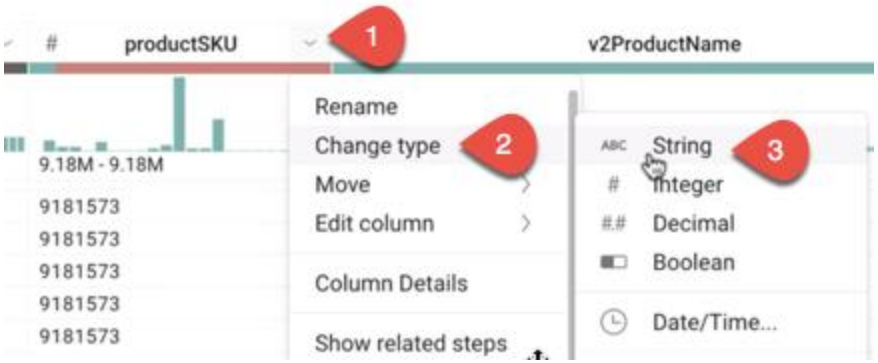
`Answer:` 8/1/2017 (one day of data)

- Why is there a red bar under the **productSKU** column?

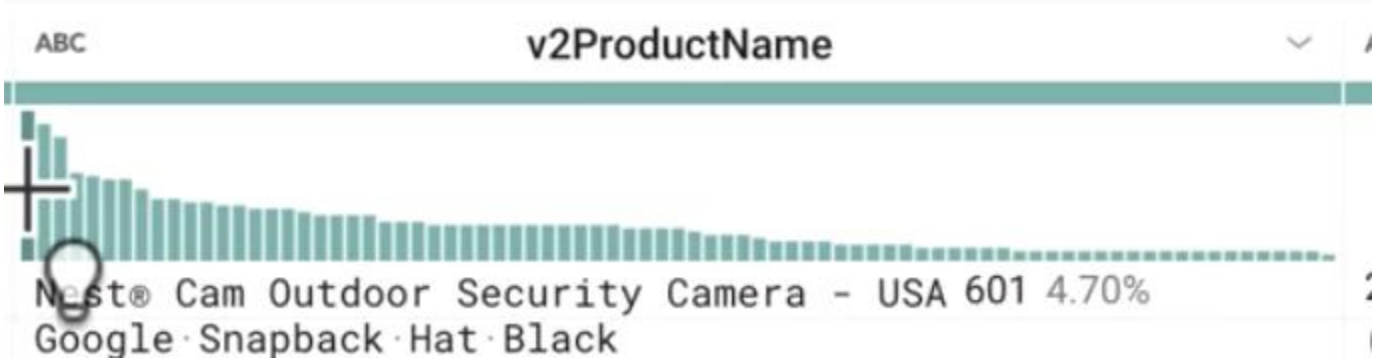
`Answer:` The red bar indicates mismatched values. Cloud Dataprep automatically identified the **productSKU** column type as an integer. Cloud Dataprep also detected some non-integer values and therefore flagged those as mismatched. In fact, the productSKU is not always an integer (for example, a correct value might be “GGOEGOCD078399”). So in this case, Cloud Dataprep incorrectly identified the column type: it should be a string, not an integer. You fix that in the next step.

Note: If the **productSKU** column already has a type `String` then you can't see the red bar.

- To convert the **productSKU** column type to a string data type, open the menu to the right of the **productSKU** column by clicking , then click **Change type > String**.

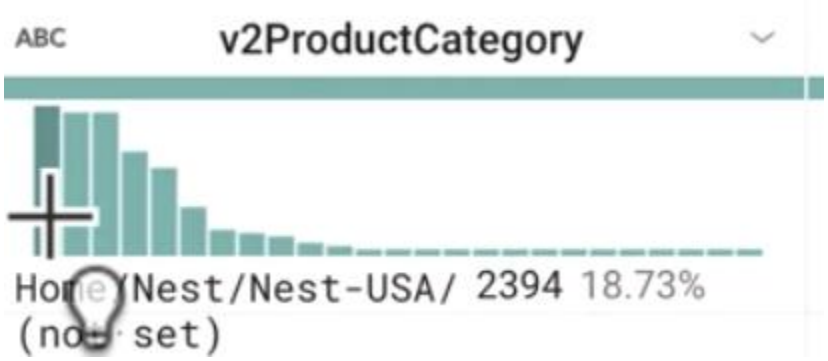


- Looking at **v2ProductName**, what are the most popular products?



`Answer:` Nest products

- Looking at **v2ProductCategory**, what are some of the most popular products? How many categories were sampled?



`Answer:` Nest, (not set), and Apparel are the most popular out of approximately 25 categories.

- True or False: The most common **productVariant** is COLOR.

`Answer:` False. It's (not set) because most products do not have variants (80%+)

- What are the two categories of type?

`Answer:` PAGE and EVENT

- What is the average **productQuantity**?

`Answer:` 3.45 (your answer may vary)

- How many distinct SKUs are in the dataset?

`Answer:` Over 600+

- What are some of the most popular product names by row count? The most popular categories?

`Answer:`

Cam Outdoor Security Camera - USA

Cam Indoor Security Camera - USA

Learning Thermostat 3rd Gen-USA - Stainless Steel

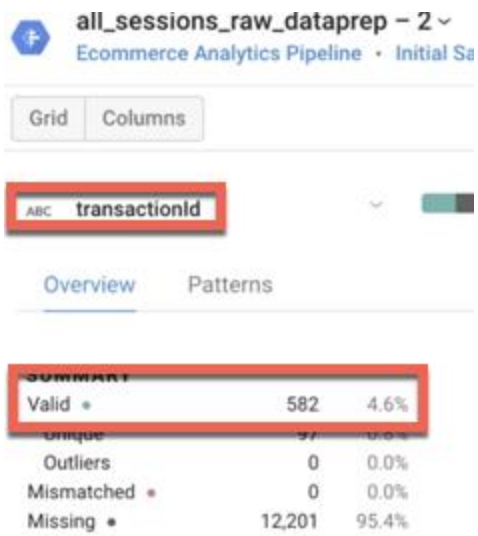
- What is the dominant currency code for transactions?

`Answer:` **USD** (United States Dollar)

- Are there valid values for **itemQuantity** or **itemRevenue**?

`Answer:` No, they are all NULL values.

- What percentage of transaction IDs have a valid value? What does this represent for our ecommerce dataset?



`Answer:` About 4.6% of transaction IDs have a valid value, which represents the average conversion rate of the website (4.6% of visitors transact).

- How many **eCommerceAction_type** are there, and what is the most popular **eCommerceAction_step**?

`Answers:`

Six types have data in our sample.

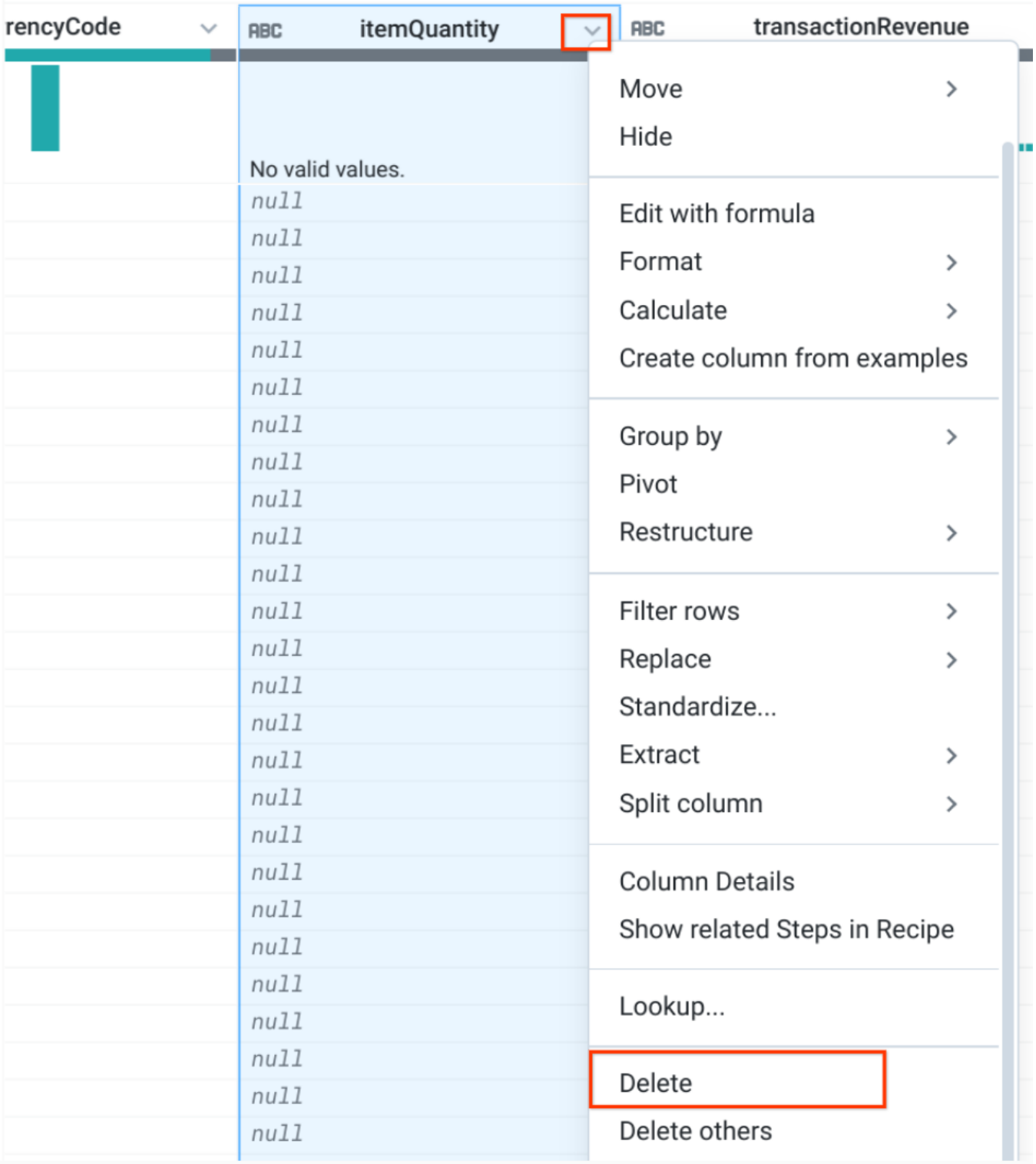
0 or NULL is the most popular.

Task 5. Clean the data

In this task, you clean the data by deleting unused columns, eliminating duplicates, creating calculated fields, and filtering the rows. Deleting columns is common for when fields are depreciated in the schema or have all NULL values.

Delete unused columns

- Select the unwanted column, and then click **Delete**. Do this for the following columns which have all NULL values:

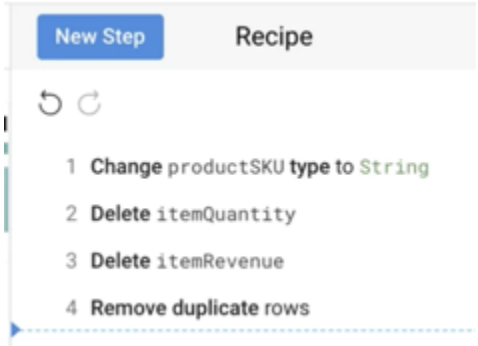

rencyCode
ABC itemQuantity
ABC transactionRevenue
No valid values.
null
Move
Hide
Edit with formula
Format
Calculate
Create column from examples
Group by
Pivot
Restructure
Filter rows
Replace
Standardize...
Extract
Split column
Column Details
Show related Steps in Recipe
Lookup...
Delete
Delete others

- itemRevenue
- itemQuantity

Deduplicate rows

Your team has informed you there may be duplicate session values included in the source dataset. Let's remove these with a new deduplicate step.

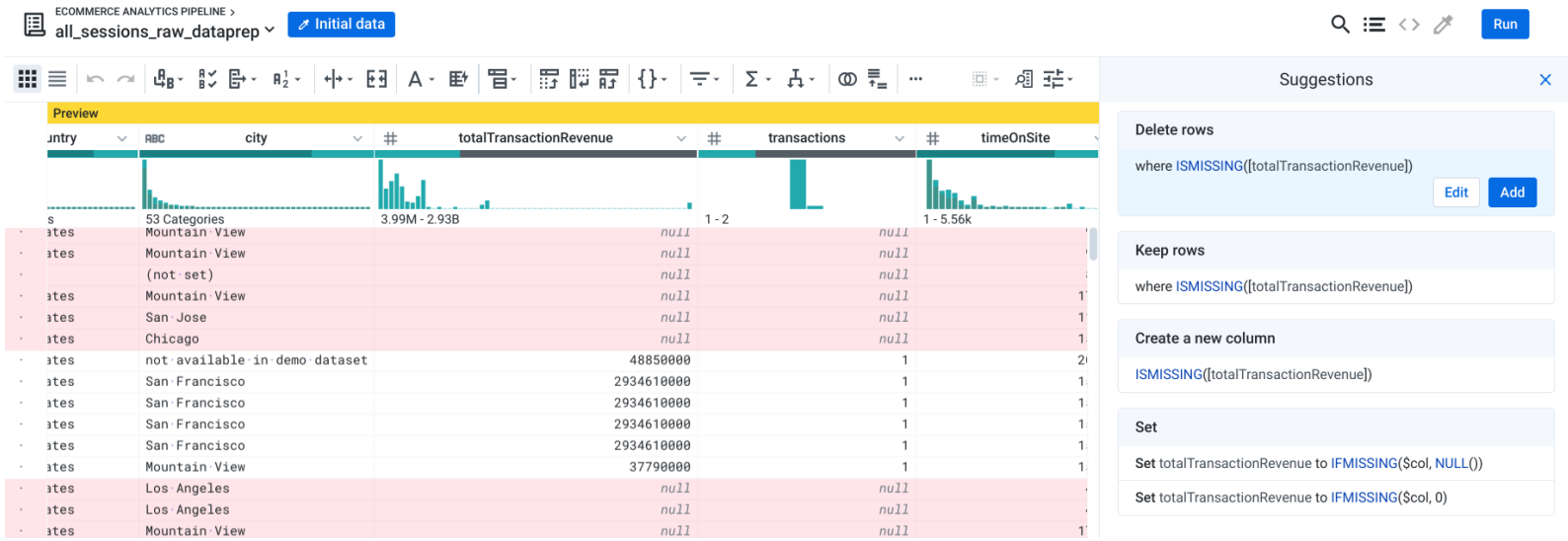
1. Click **Recipe** ( ) in the top right and select **New Step**.
2. In the Transformation search box, type **deduplicate** and select **Remove duplicate rows**.
3. Click **Add**.
4. Review the recipe created so far:



Filter out sessions without revenue

Your team has asked you to create a table of all user sessions that bought at least one item from the website. Filter out user sessions with NULL revenue.

1. Under the **totalTransactionRevenue** column, click the missing values bar.
2. In the **Suggestions** panel, click **Delete rows** with missing values, and then click **Add** (as shown).



This step filters your dataset to only include transactions with revenue (where **totalTransactionRevenue** is NULL).

Filter out sessions for just Type = 'PAGE'

The dataset contains both views of website Pages and triggered Events like "viewed product categories" or "added to cart". To avoid double counting session pageviews, add a filter to only include pageview-related events.

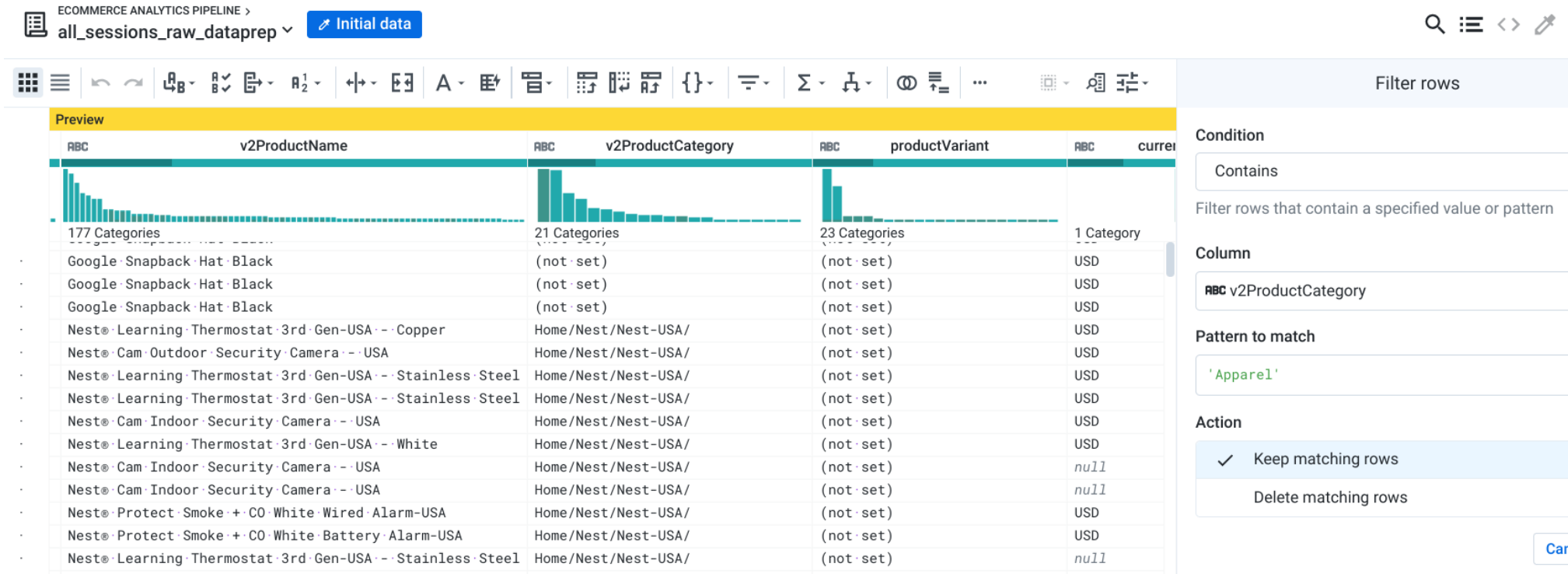
1. In the **type** column, click the bar for PAGE.
2. In the **Suggestions** panel, click Keep rows where type is PAGE, and then click **Add**.

Filter for apparel products

Your team has now asked you to further filter your output to only include transactions in the Apparel category (apparel includes items like T-Shirts and other clothing items)

1. Next to the **v2ProductCategory** column, click the drop down icon.
2. Select **Filter rows** > **On column values**.
3. Select **Contains**.
4. In **Pattern to match** type 'Apparel' (case sensitive) and then click **Add**.

Note: Products in the catalog can belong to more than one category ('Apparel' and 'Home/Apparel/') which is why we are matching any rows that have Apparel anywhere in the category name.



Task 6. Enrich the data

To learn about the schema used in this lab, refer to [UA] BigQuery Export schema. Search this article for **visitId** and read the description to determine if it is unique across all user sessions or just the user.

VisitId = An identifier for this session. This is part of the value usually stored as the _utmb cookie. This is only unique to the user. For a completely unique ID, you should use a combination of fullVisitorId and visitId.

visitId is not unique across all users.

In this task, you add a new concatenated column to create a unique session ID field. Then you will enrich your ecommerce label data with a case statement.

Create a new column for a unique session ID

As you discovered, the dataset has no single column for a unique visitor session. Create a unique ID for each session by concatenating the **fullVisitorID** and **visitId** fields.

1. Click on **New Step**.
2. For **Search transformation**, type **concat**, and then select **Merge columns**.
3. For **Columns**, select **fullVisitorId** and **visitId**.
4. For the **New column name**, type **unique_session_id**, and leave the other inputs as their default values and click **Add**.

Create a case statement for the ecommerce action type

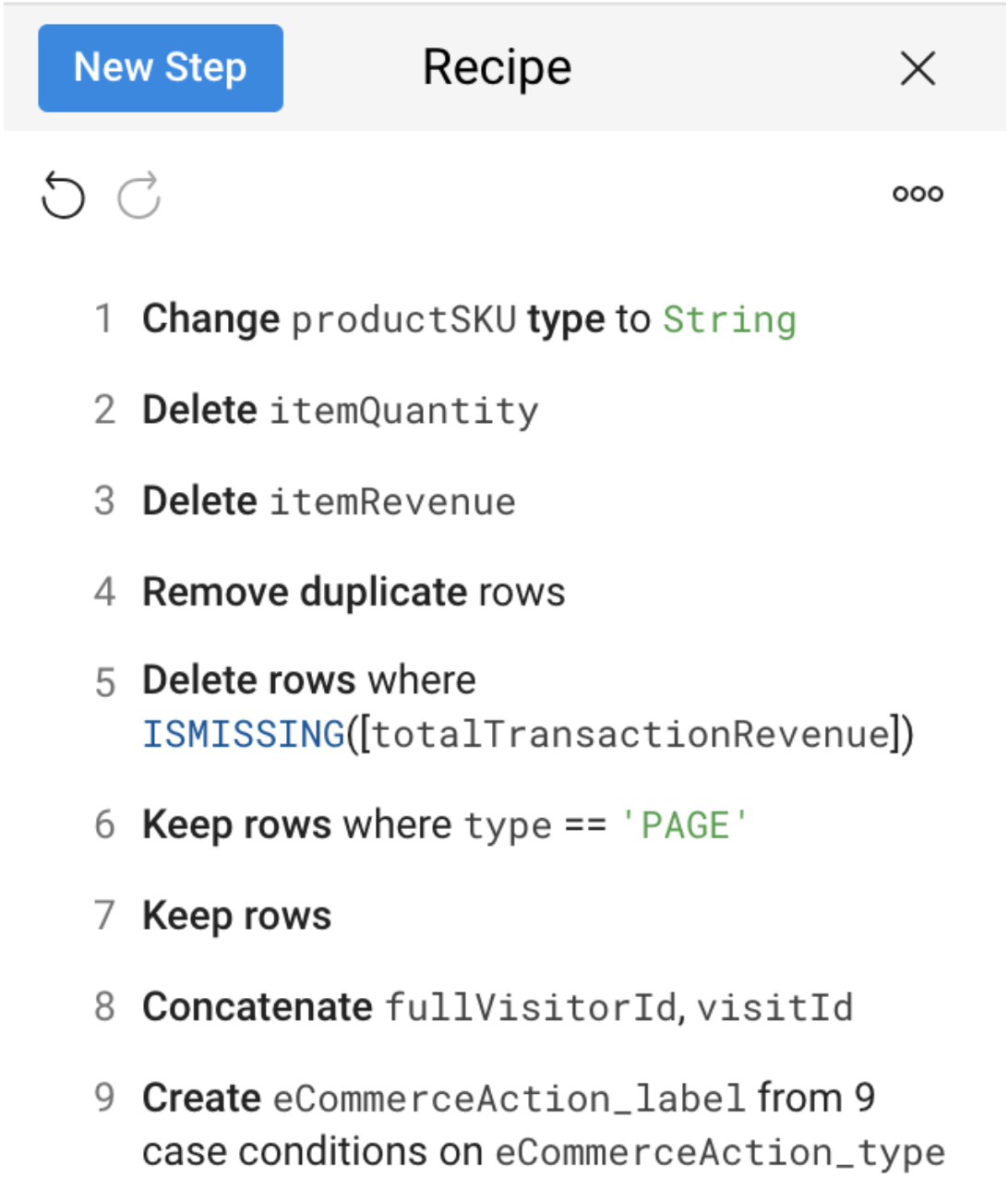
The **eCommerceAction_type** field is an integer that maps to actual ecommerce actions performed in that session like 3 = “Add to Cart” or 5 = “Check out.” Create a calculated column that maps to the integer value.

1. Click on **New Step**.
2. In the **Transformation** panel, type **case**, and then select **Conditional column**.
3. Select **Case on single column** from the drop-down.
4. For **Column to evaluate**, specify **eCommerceAction_type**.
5. Next to Cases (X), click **Add** 8 times for a total of 9 cases.
6. For each Case, specify the following mapping values (including the quotes):

Value to compare	New value
1	'Click through of product lists'
2	'Product detail views'
3	'Add product(s) to cart'
4	'Remove product(s) from cart'
5	'Check out'
6	'Completed purchase'
7	'Refund of purchase'
8	'Checkout options'
0	'Unknown'

Leave the other fields at their default values.

7. For **New column name**, type **eCommerceAction_label**, and then click **Add**.
8. Review the Recipe and compare it to this example:

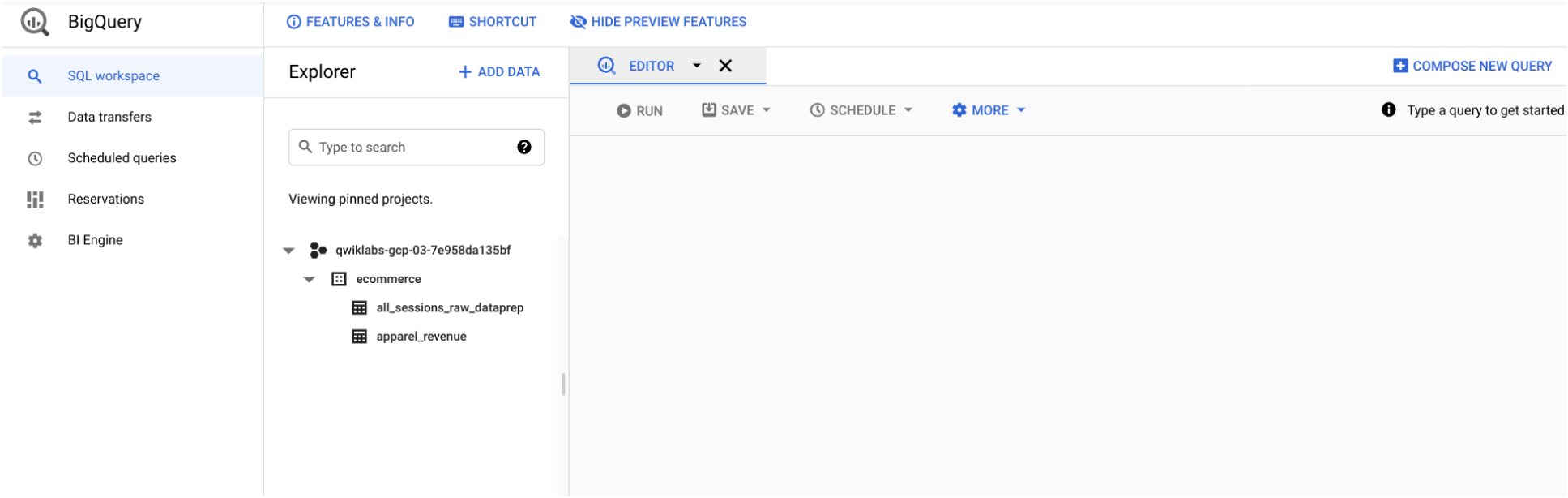


Task 7. Run Cloud Dataprep job to load BigQuery

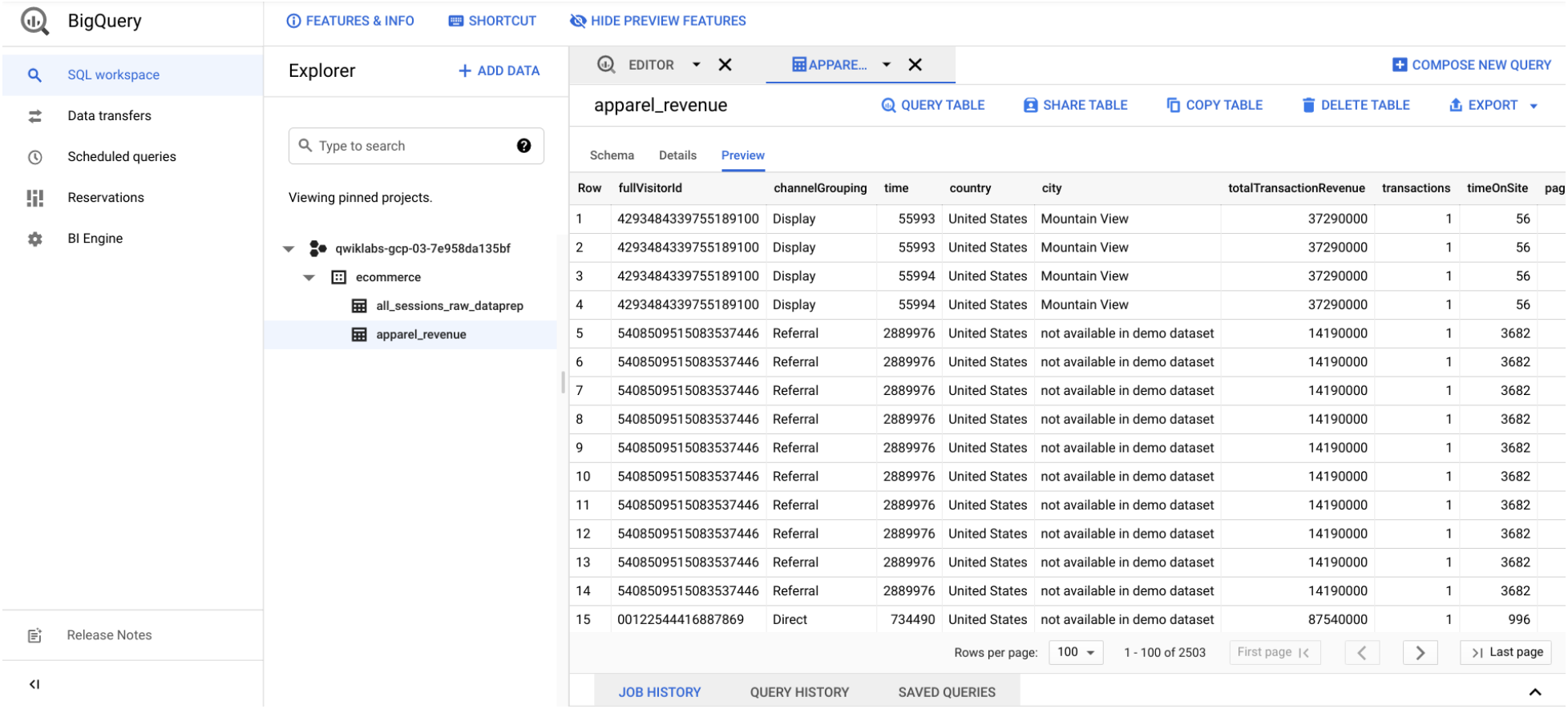
When you are satisfied with the flow, it's time to execute the transformation recipe against your source dataset. To do that, you execute and monitor a Cloud Dataprep job (which starts and runs a Cloud Dataflow job).

1. From the Transformer page, in the upper right, click **Run**.
2. In the Publishing Actions section, hover over on `Create-CSV` then click **Edit**.
3. Select **BigQuery** in the left panel and go into your ecommerce dataset, and then click **Create a new table**.
4. Name the output table **apparel_revenue** and select **Drop the table every run** in the right panel.
5. Click **Update**.
6. Click **Run**.
7. Click **Job history** in the left panel to monitor your Cloud Dataprep job.
8. Wait 1 - 2 minutes for your job to run

After your Cloud Dataprep job finishes, refresh your BigQuery page and confirm that the output table **apparel_revenue** exists.



Select **apparel_revenue** > **Preview** and ensure you have revenue transaction data for Apparel products.



Congratulations!

You've successfully explored your ecommerce dataset and created a recurring data transformation pipeline with Cloud Dataprep.

Already have a Google Analytics account and want to query your own datasets in BigQuery? Follow this Set up BigQuery Export guide.

End your lab

When you have completed your lab, click **End Lab**. Google Cloud Skills Boost removes the resources you've used and cleans the account for you.

You will be given an opportunity to rate the lab experience. Select the applicable number of stars, type a comment, and then click **Submit**.

The number of stars indicates the following:

- 1 star = Very dissatisfied
- 2 stars = Dissatisfied
- 3 stars = Neutral
- 4 stars = Satisfied
- 5 stars = Very satisfied

You can close the dialog box if you don't want to provide feedback.

For feedback, suggestions, or corrections, please use the **Support** tab.