Dynamics 365 Customer Insights

Lab 2: Data Ingestion, Unification, Relationships & Measures

Contents

About the Hands-on Lab

Unlike traditional approaches for building a 360-degree view of the customer with a large amount of coding involved, Dynamics 365 Customer Insights (CI) is a finished SaaS solution which allows you to adopt an agile project management approach and deliver value in a matter of days/weeks.

In these labs, you will learn step-by-step how to set up, configure and use Dynamics 365 Customer Insights. You'll be looking at a typical customer analytics project for our example company, Contoso Coffee.

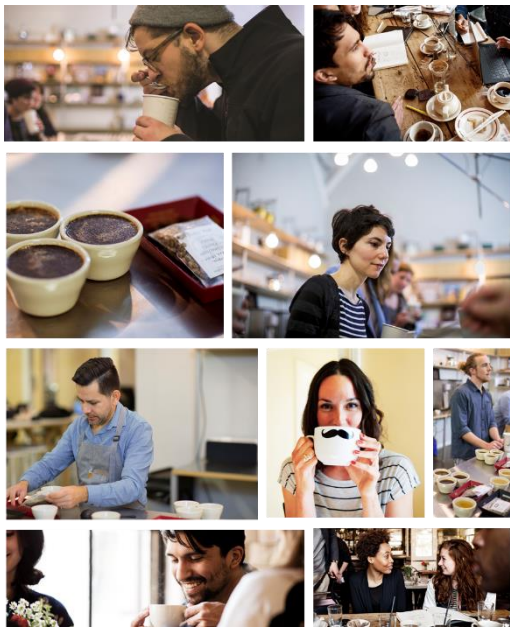
The labs highlight business pain points, goals and high-priority use cases that Contoso has identified around their customer data initiative. You will create a working prototype solution to meet their goals and eliminate the pain points.

Lab Scenario: Contoso Coffee

Contoso Coffee produces high-quality coffee and coffee machines, which they retail through several channels including Contoso Retail Stores in premium locations, premium food resellers and the Contoso Coffee Web Site.

Contoso plans to further expand their offerings with Contoso Cafés and a new Connected Coffee Machine which can automatically trigger refill orders and alert the Contoso service department with any issues.

This new offering will help them to build direct relationship with their customers and learn more about how customers consume their products.



Business Objective

Contoso wants to own and build a meaningful, direct relationship with all consumers to deliver an exceptional, personalised customer experience through relevant communications, personalised recommendations, and services.

Increase customer attraction and retention by making customers feel valued through experiences that customers love.

Challenges

Transactional Relationship

Their existing business model means that they lack a direct relationship with their customers.

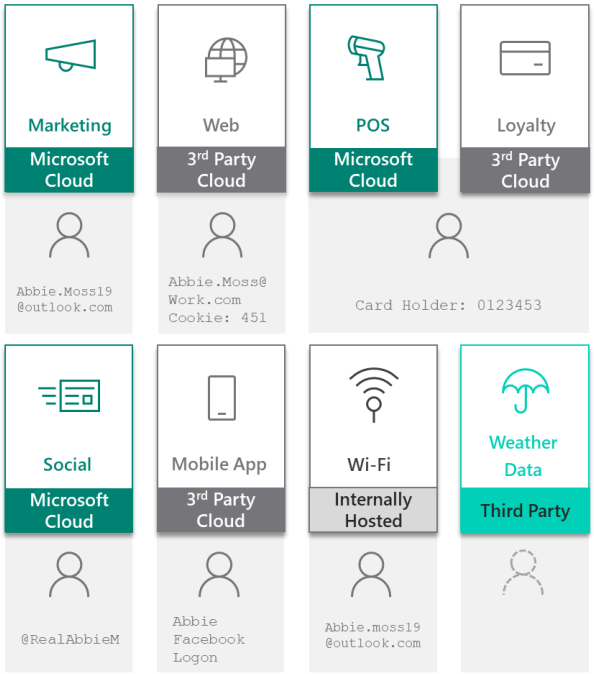
Data Silos

They are unable to deliver personalised customer experiences.

Existing Data Landscape

Fractured Customer Data

With multiple systems, Contoso has multiple records for the same person. This causes a disjointed experience to the customer who expects to be treated as one person regardless of the channel they are transacting upon.



Multiple Platforms

The architecture at Contoso has evolved through acquisition and legacy systems meaning that data can reside in not only different systems, but different platforms across multiple clouds and on premises.

Non-Customer Data

Contoso is drawing correlations between non-customer data and the impact it has on customer experiences, including data from third parties such as weather data.

Contoso Coffee Customer Insights Project Requirements

Contoso management is tasking IT and Line of Business teams with the following:

- Establish a customer data hub combining all customer related data from siloed sources.
- Create a unified Contoso Customer profile.
- Provide a 360-degree view of the customer for service agents (embedded into D365 for Service) as well as store managers (via Power BI).
- Deliver a Contoso Coffee Greeter App (via PowerApps), to enable in-store retail staff to deliver personalised service and recommendations.
- Automate various business processes like email alerts when customers churn rate surges (via Power Automate).

Contoso Coffee Customer Insights Project

You have been selected as the project manager for the implementation of Dynamics 365 Customer Insights at Contoso Coffee. As an experienced project manager, you create the following plan:

1. Create a Customer Insights environment

2. Ingest data from highest priority data sources from within the business
    a. Point-of-Sale (POS)
    b. Loyalty Data
    c. Ecommerce Customers and Web Purchases
    d. Subscription data (optional and will happen in the intelligence module lab)
    e. Dynamics 365 CRM (Will be done in the Dynamics module labs)
    f. Contoso Hotel data (Optional and will be done in the Advanced module lab)

3. Configure and create a unified customer profile from ingested data

4. Configure business and customer measures to identify customers with higher than average in-store and online spend

5. Build customer segments for Marketers to deliver personalised and targeted marketing communications

6. Configure contact cards and embed them into Dynamics 365 to empower Contoso Customer Service Advisors

7. Create a Power BI dashboard for Store Managers

8. Create Greeter App with PowerApps for Contoso Coffee retail staff, empowering them to deliver personalised service

9. Use Microsoft Power Automate to capture Customer check ins at Contoso retail stores and deliver personalised recommendations to Contoso Retail staff

10. Demo Customer Insights prototype to group of pilot users and gather feedback

Module Introduction

Lab pre-requisites:

Before you can start this exercise, you must have completed Lab 1 to setup your environment.

Data Ingestion & Unification

As Project Manager for Contoso Retail, you will create a unified customer profile by ingesting key sources of customer data using the Unify (Map, Match and Merge) process.

Creating Relationships

You will create relationships to join the different datasets. This will help support other areas of Customer Insights which use these relationships to traverse the data sets.

Measure Calculation

You will calculate previously unobtainable key Business and Customer KPIs including Lifetime Spend, Rewards Points Balance, Average In-Store and Average Online Purchase values.

Objectives

- Ingest siloed data sources
- Unify (Map, Match and Merge) data to create a Unified Profile
- Create the required Relationships between data sets
- Create Measures (KPIs) identified

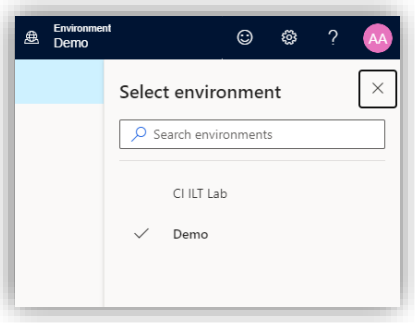
Approximate Time to Complete – 90mins

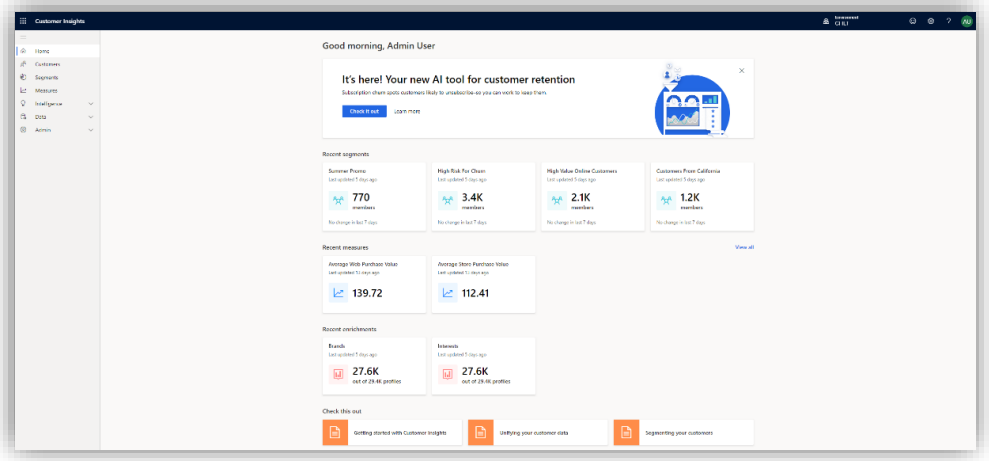
Familiarize yourself with Customer Insights

In this task, you will explore the pre-configured **Demo** environment to familiarize yourself with Customer Insights Hub.

1. Sign-into Customer Insights at https://home.ci.ai.dynamics.com

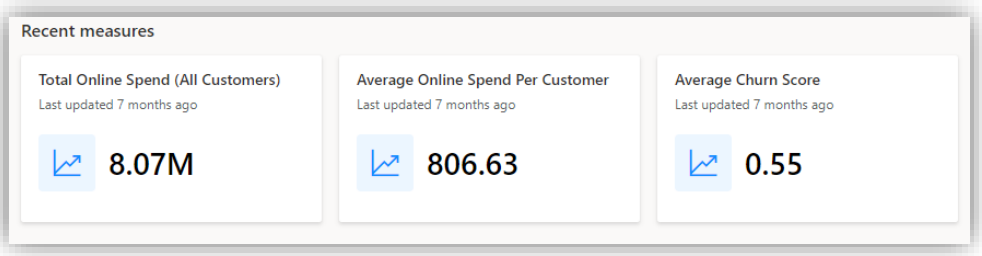
2. In the *Environment* selector in the top right-hand corner, select the **Demo** Environment



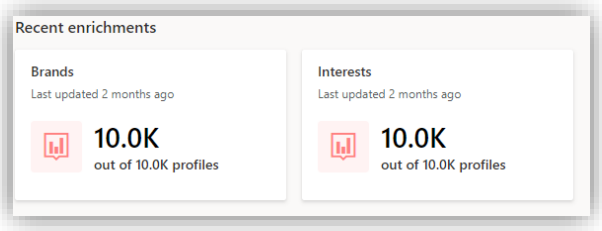


3. On the Home Page, note how the key **Insights** are highlighted:

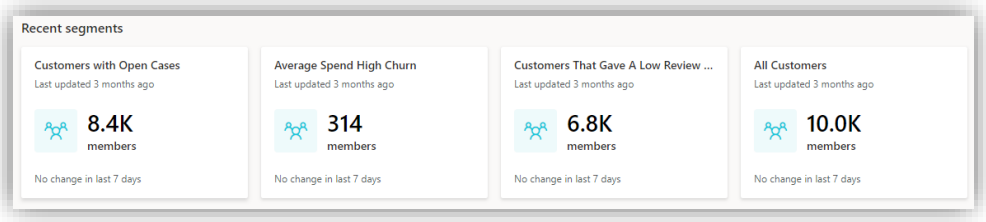
   - **KPIs** (Business Measures), including Average Online Spend Per Customer and Average Churn Score.



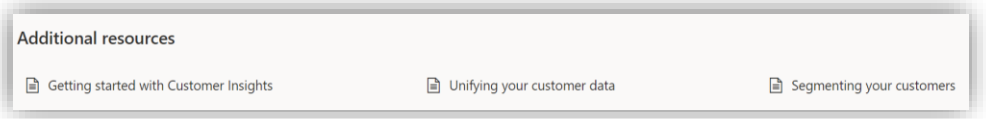
Audience Enrichment pulled in from Microsoft proprietary data (including Microsoft Bing). Enrich Customer Profiles and Audience segments to unlock affinities for brands and interest categories that may be like your customers.



Segments: Customers grouped into cohorts based on demographic, transactional, or behavioural customer attributes. Using segmentation, you can target promotional campaigns, sales activities, and customer support actions to achieve your business goals.



Addition resources: Links to Customer Insights documentation and help on core topics such as data ingestion, unifying data and segmentation



4. Explore the left-hand menu options to familiarise yourself with the navigation.

Home: Home Page

Customers: View cards for unified Customer Profiles

Segments: Cohorts of Customers based on similar demographic, transactional or behavioural attributes. Use these for targeted marketing, utilising previously siloed data.

Measures: Key Business and Customer KPIs, such as Customer Lifetime Value, Average Purchase Value and Frequency, CSAT and identify high-value customers.

Intelligence: Predictions are Out of the Box (OOB) models and **Custom models** are custom Azure machine learning models to make predictions with your unified customer data

Data: Ingest siloed demographic, transactional of behavioural data. Unify (Map, match and merge) data into a Unified Customer Profile. View your entities and define activity types and their relationships to your customers. Enrichment allows you to go beyond your unified profile and enrich customer profiles with Microsoft Proprietary Data from the Microsoft Graph and to unlock data on affinities for hundreds of brands and dozens of interest-categories. These affinities are extracted from profiles that might be like your customers.

Admin: Administer Roles, Permissions, APIs and Export Destinations for Customer Segments.

Exercise 1 - Data Ingestion

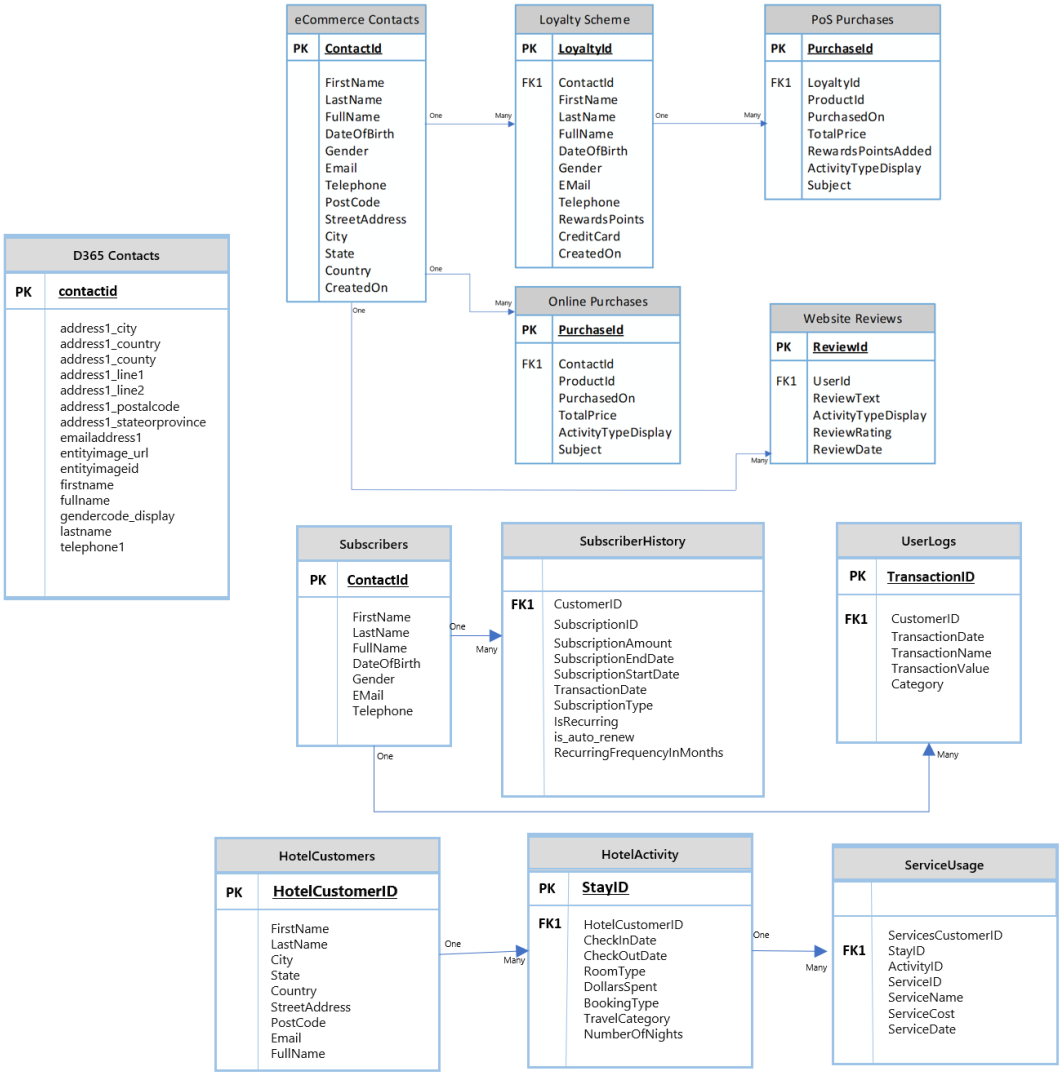
In this lab you will become familiar with ingesting data from multiple sources. As Project Manager for Contoso Retail, you have already identified that key sources of data include eCommerce Customers, Retail Loyalty Program, Online Purchases, in-store Point of Sales Purchases and Website Review data.

Although Customer Insights has connectors to 45+ data sources and applications (including Dynamics 365 & Dataverse), for this lab you will be using the 'Text/CSV' connector.

Data Sources

Entity	Description	Connection
eCommerceContacts	Extract of Customers who have made an online purchase	https://aka.ms/CI-ILT/Contacts
LoyaltyScheme	Extract of Customers Retail Loyalty Card Program	https://aka.ms/CI-ILT/LoyaltySchemeCustomers
OnlinePurchases	Extract of purchases made via the Contoso Retail website	https://aka.ms/CI-ILT/OnlinePurchases
POSPurchases	Extract of in-store purchase	https://aka.ms/CI-ILT/POSPurchases
WebsiteReviews	Extract of reviews for the Contoso website	https://aka.ms/CI-ILT/WebReviews

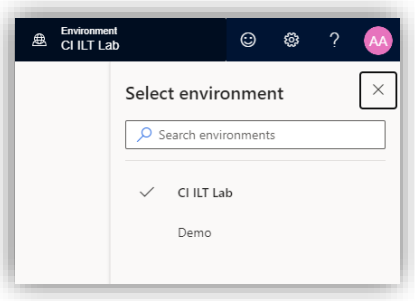
Data Source Model



Note: Some of this data will be ingested in later labs

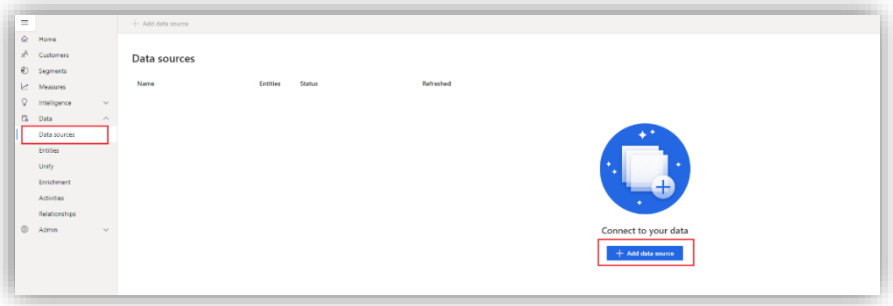
Task 1 – Ingest Customer Data from eCommerce Platform

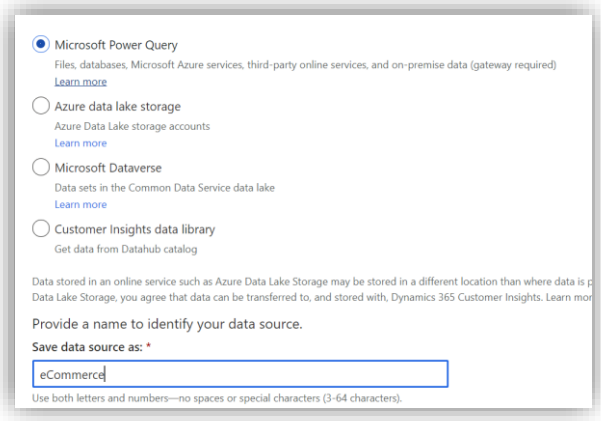
1. Sign-in to Customer Insights (http://home.ci.ai.dynamics.com) and select your Environment from the drop-down in the top right-hand corner.



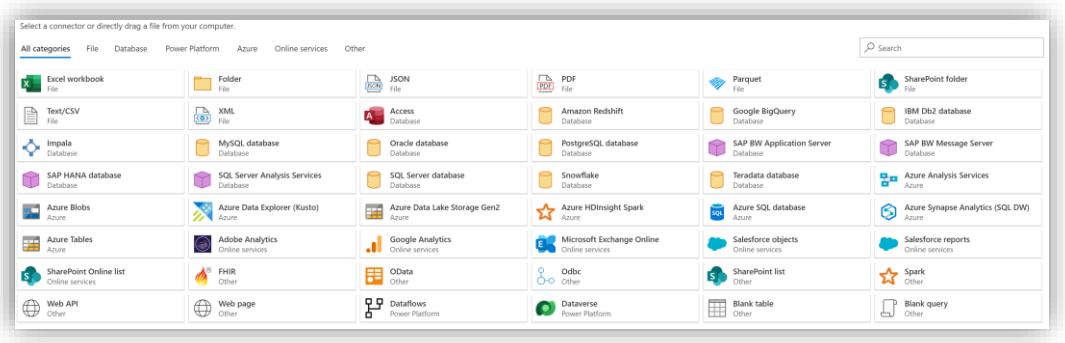
2. Expand **Data** on the left menu and click **Data sources**

3. Click **Add data source**, then choose from the available methods of ingesting data. You can import data via different options: Using one of the many Microsoft Power Query connectors, connecting to Azure Data Lake Storage or connecting to a Microsoft Dataverse (you might see an option to get data from Customer Insights Library. This is to pull in sample data for trial environments if desired). For this lab, choose **Microsoft Power Query** and name the source **eCommerce** then click **Next button**

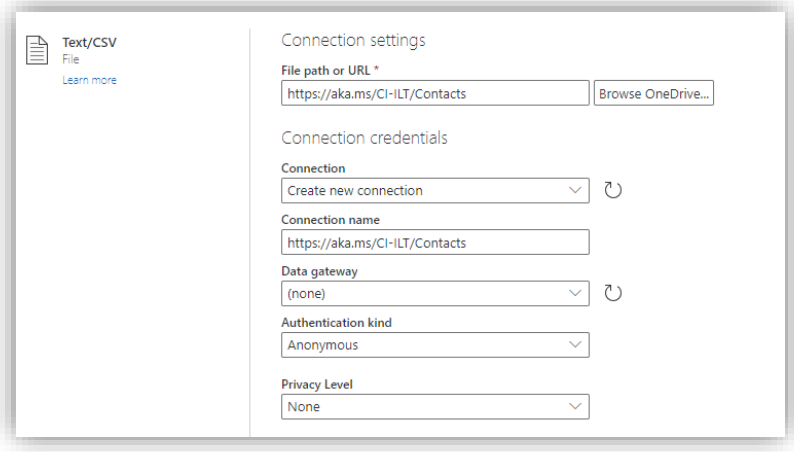




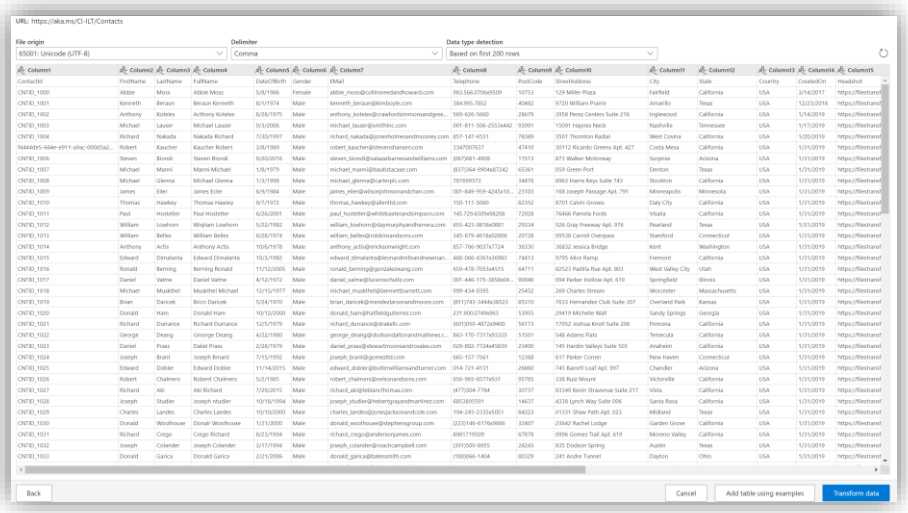
4. You will be presented with a view of data source connectors that Customer Insights is able to ingest. Select the **Text/CSV** Connector.



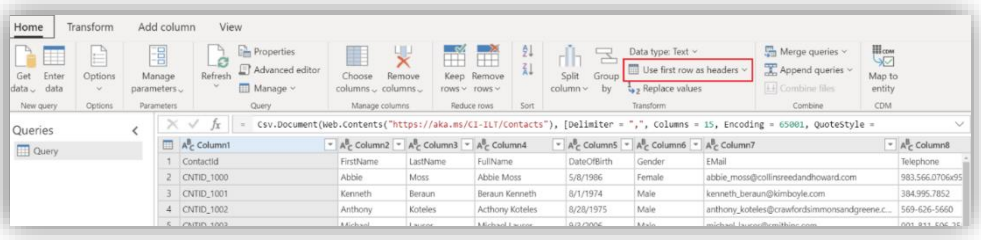
5. Enter the URL for eCommerce Contacts data set, **https://aka.ms/CI-ILT/Contacts**, and click **Next**.



6. You should now see a preview of the file data. Click **Transform data** to configure the datatypes and formats for the data you ingest.

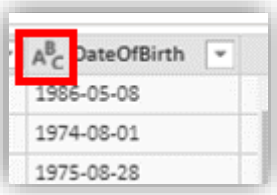


7. You will notice that the column heading has appeared in the first row of the data. To correct this, in the **Transform** section of the ribbon, click **Use first row as headers.**



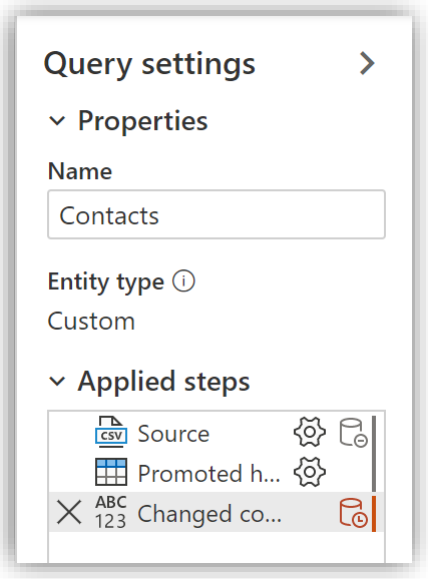
8. Because the ingested data is from a Text/CSV source, all columns have been defaulted to a 'Text' Data Type. To successfully ingest and model the data, the datatype can be set for non-text columns.

   To change the datatype, click the **ABC** icon within the column heading. Update the datatype for the columns listed below.



Column Heading	New Data Type
DateOfBirth	Date/Time
CreatedOn	Date/Time
Income	Currency

9. In the 'Name' field on the right-hand pane, name your data source **Contacts** and hit **Next.** Click **Save**.



Congratulations! - You have now successfully created your first data source with a data set!

Note: Column names can only contain letters, numbers, and underscores. They cannot contain a space and must begin with a letter. If you have data where column name(s) have a space or do not begin with a letter you will want to fix that either within Power Query or before the data is brought into Customer Insights.

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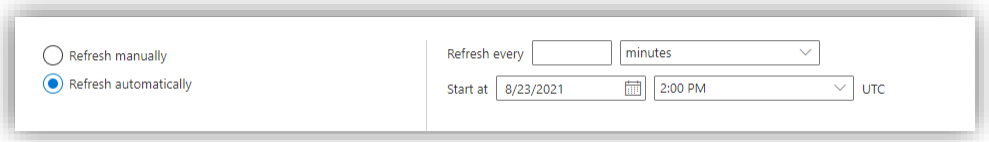
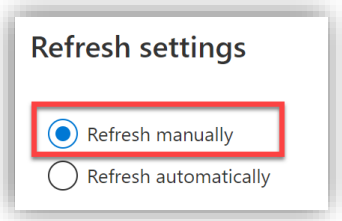
10. There are options to setup an automatic refresh schedule for your data source (see image below) or refresh it manually. For these labs, select **Refresh manually**. Click **Save** to continue.

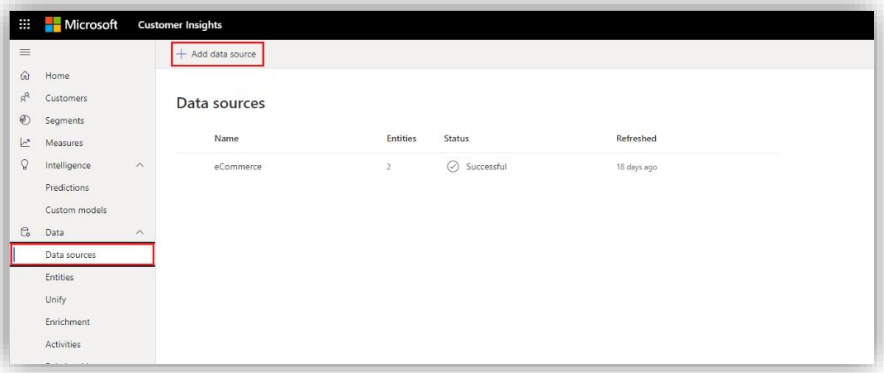


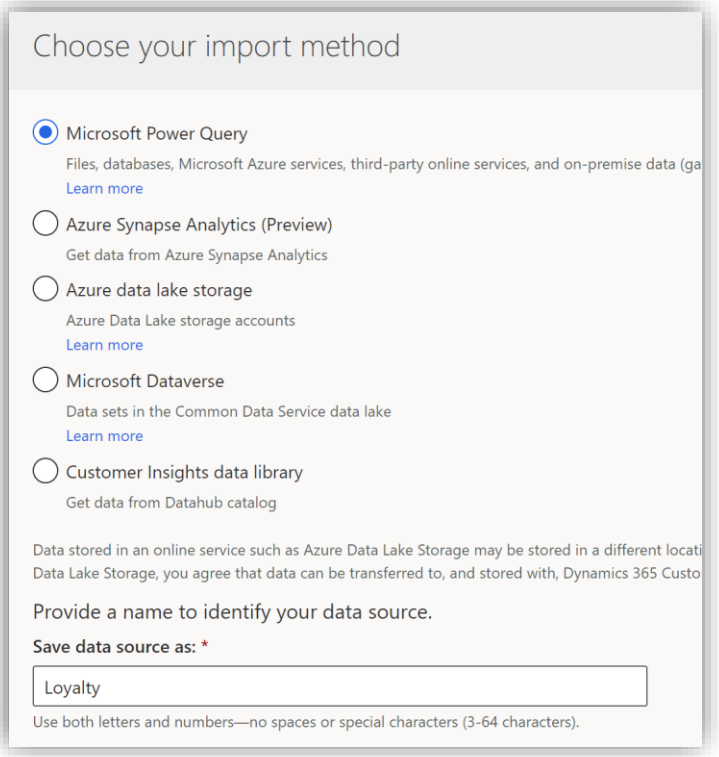


Task 2 – Ingest Customer Data from Loyalty Scheme

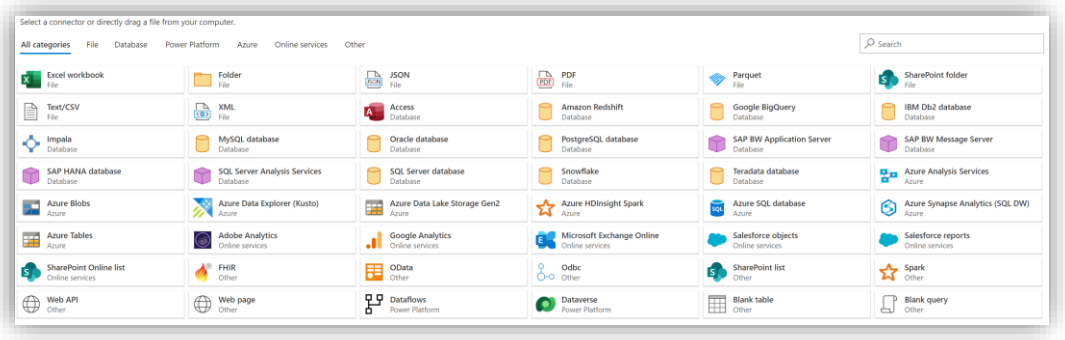
1. Expand **Data** on the left menu and click **Data sources**

2. Click **Add data source**, then choose **Microsoft Power Query,** name the source **Loyalty**, then click **Next.**

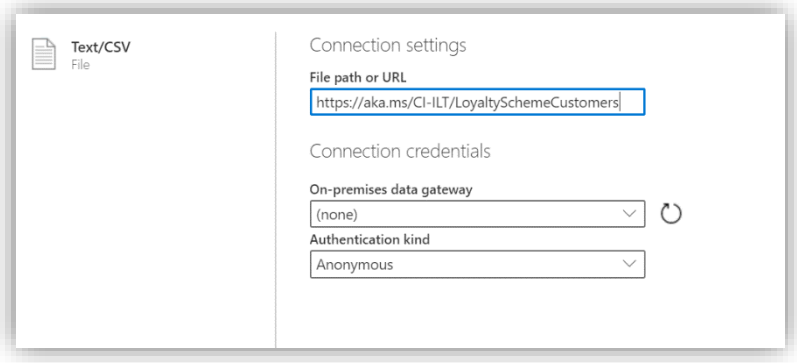




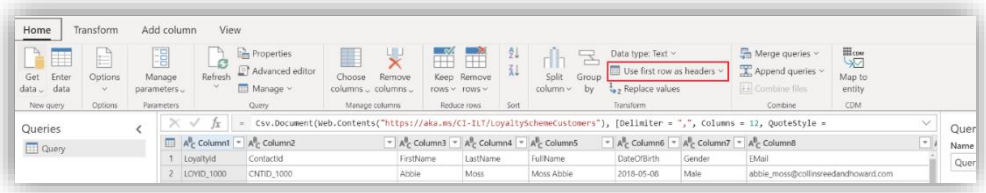
3. Select the **Text/CSV** Connector.



4. Enter the URL for the Loyalty Customer data, **https://aka.ms/CI-ILT/LoyaltySchemeCustomers** and click **Next** and click **Transform data**.

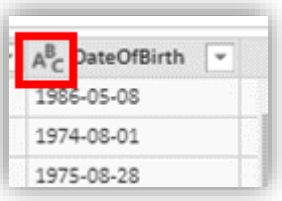


5. You will notice that the column heading has appeared in the first row of the data. To correct this, click **Transform** and then **Use First Row as Headers** or click it directly from the **Home** tab**.**

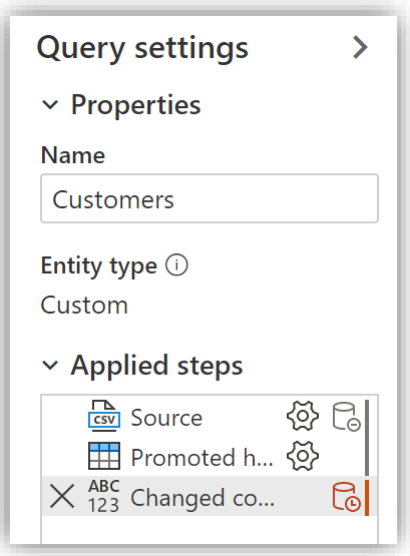


6. Update the datatype for the columns listed below. To change the datatype, click the **ABC** icon within the column heading.

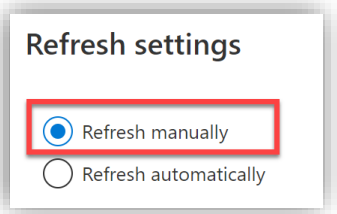
Column Heading	New Data Type
DateOfBirth	Date/Time
RewardPoints	Whole Number
CreatedOn	Date/Time



7. In the 'Name' field on the right-hand pane, rename your data source from **Query** to **Customers** and click **Next.**



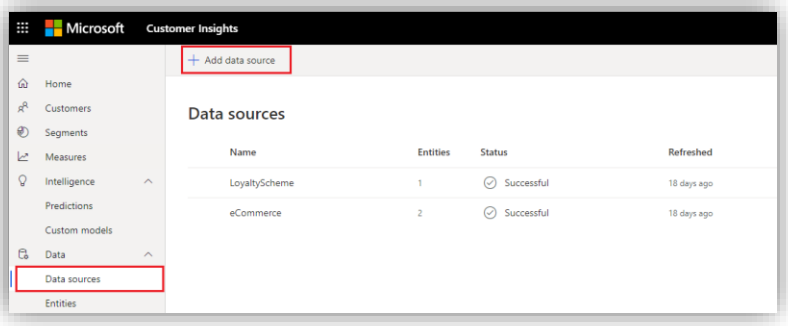
8. Select **Refresh manually** and click **Save** to continue.

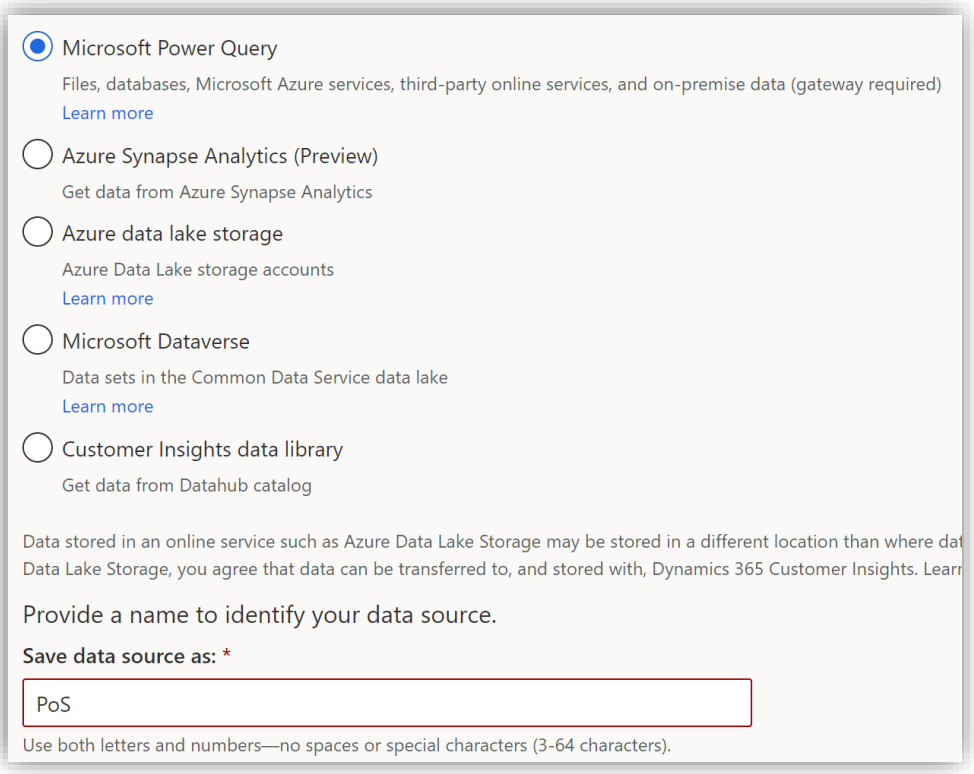


Task 3 – Ingest Customer Data from Point of Sale Purchases

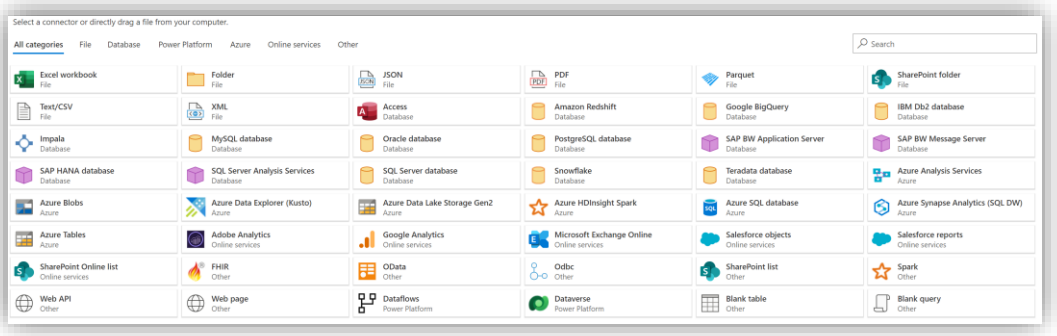
1. Expand **Data** on the left menu and click **Data sources**

   Click **Add data source**, choose **Microsoft Power Query** and name the source **PoS**, then click **Next**

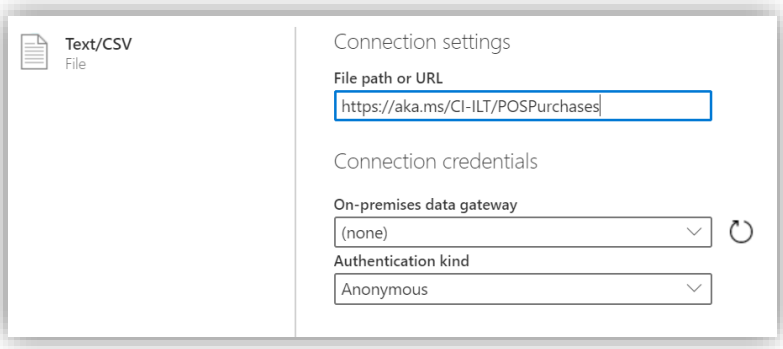




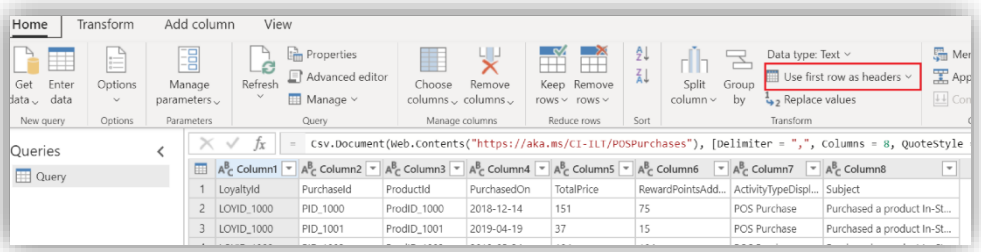
2. Select the **Text/CSV** Connector.



3. Enter the URL for the Point of Sale Purchases, **https://aka.ms/CI-ILT/POSPurchases**, click **Next** and click **Transform data**

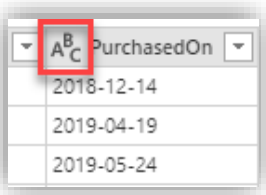


4. C click **Use First Row as Headers** from **Home** or click **Transform** and then **Use First Row as Headers.**

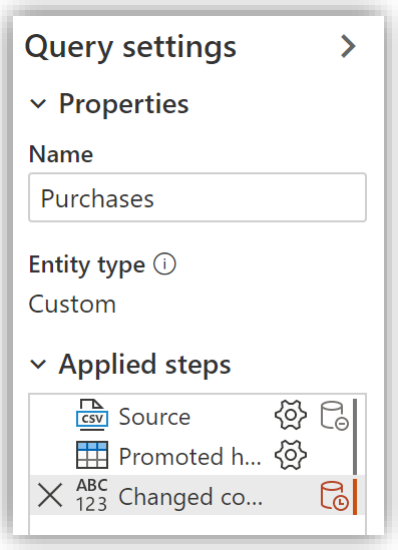


5. Update the datatype for the columns as listed below. To change the datatype, click the **ABC** icon within the column heading.

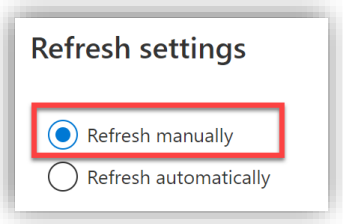
Column Heading	New Data Type
PurchasedOn	Date/Time
TotalPrice	Currency
RewardPointsAdded	WholeNumber



6. In the Name field on the right-hand pane, rename your data source to **Purchases** and click **Next.**



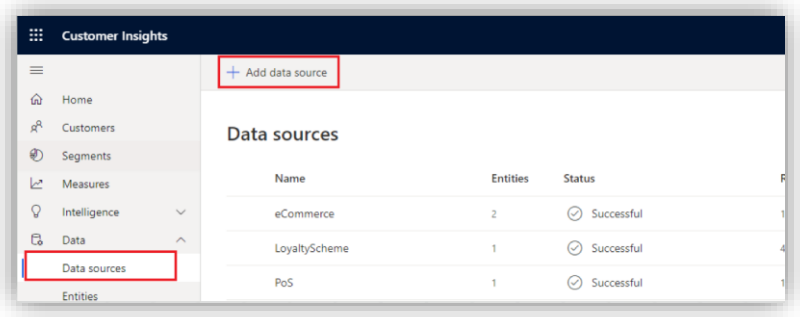
7. Select **Refresh manually** and click **Save** to continue.

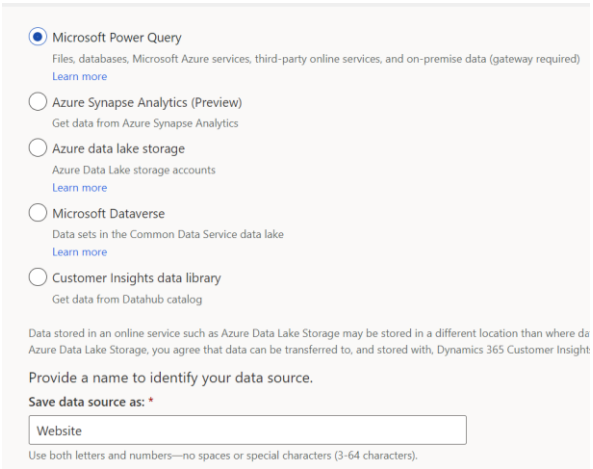


Task 4 – Ingest Customer Data from Website Reviews

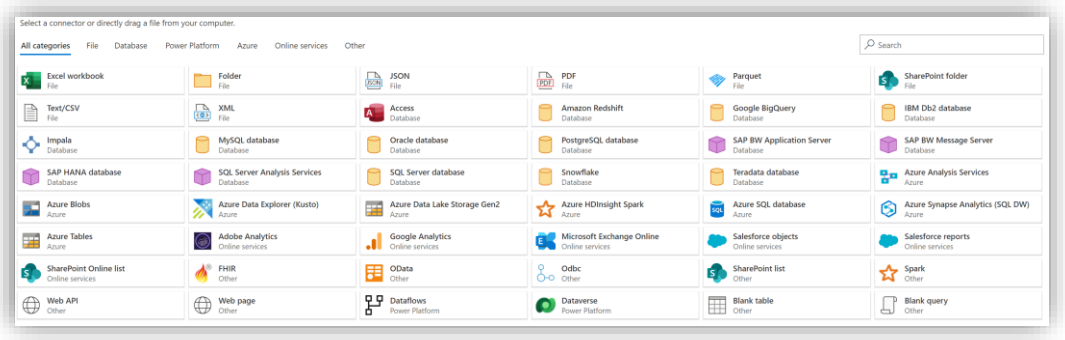
1. Expand **Data** on the left menu and click **Data sources**

2. Click **Add data source**, choose **Microsoft Power Query** and name the source **Website**, then click **Next.**

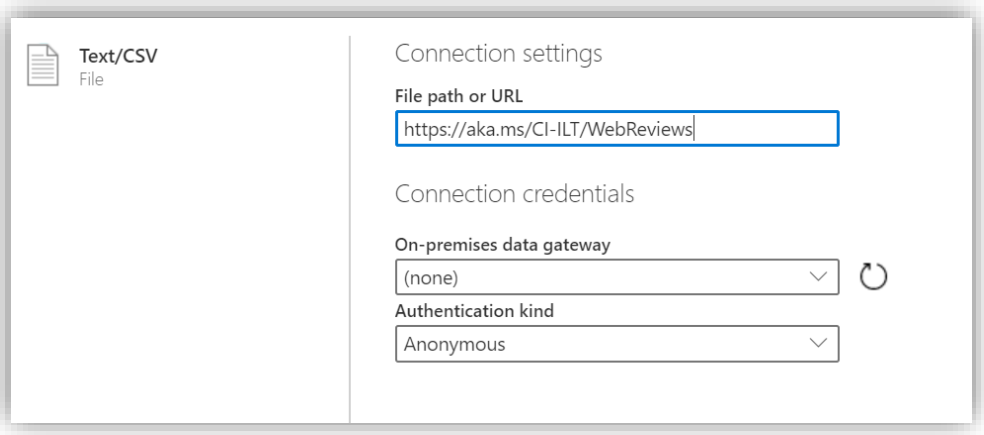




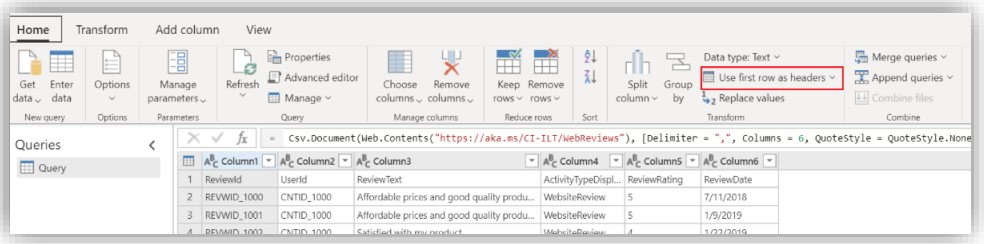
3. Select the **Text/CSV** Connector.



4. Enter the URL for the Website Reviews, **https://aka.ms/CI-ILT/WebReviews**, click **Next** and then click **Transform data**.

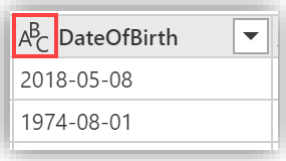


5. Click **Use First Row as Headers** from **Home** or click **Transform** and then **Use First Row as Headers.**

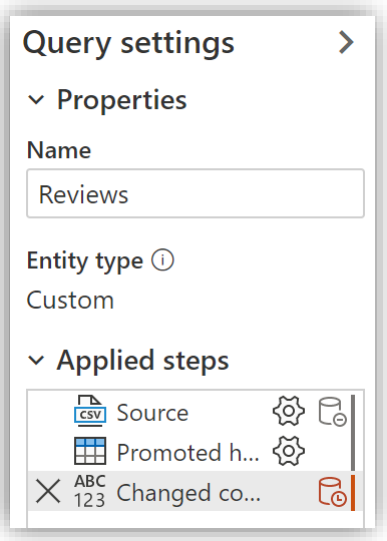


6. Update the datatype for the columns listed below. Change the datatypes by clicking the **ABC** icon within the column heading.

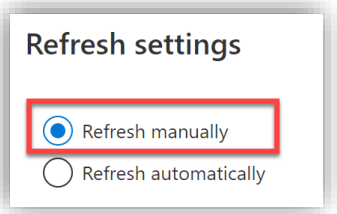
Column Heading	New Data Type
ReviewRating	Whole Number
ReviewDate	Date/Time



7. In the **Name** field on the right-hand pane, rename your data source to **Reviews** and click **Next.**



8. Select **Refresh manually** and click **Save** to continue.



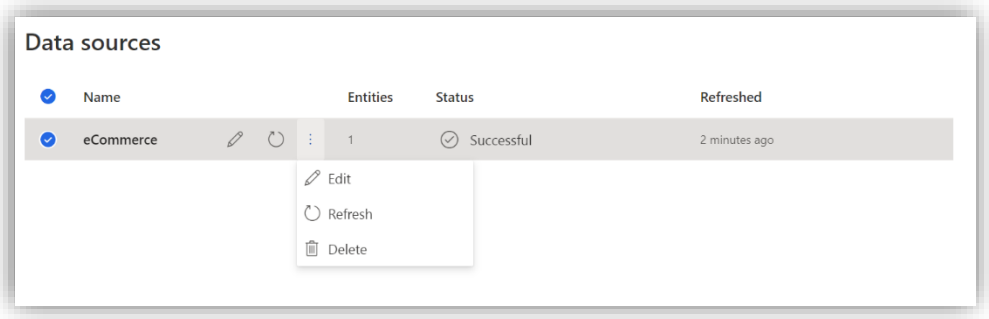
Task 5 – Ingest Customer Data from Online Purchases

In this task Online Purchase data, which contains purchases made via the Contoso Coffee website, will be ingested.

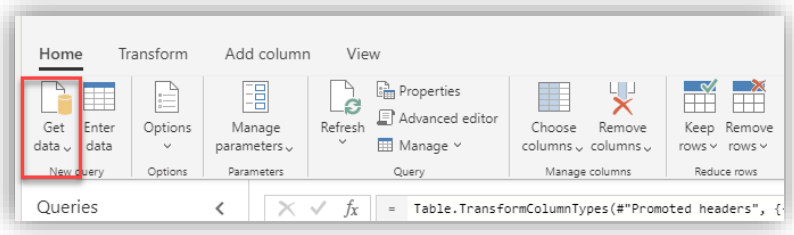
A data source can contain more than one data sets to group data sets that have relationships. In this case because there are two data sets from the eCommerce site, they will be grouped into the same data source.

1. Expand **Data** on the left menu and click **Data sources**

2. You should see your **eCommerce** data source. Select it and click either the three vertical dots and choose **Edit** or click directly on the pen icon**.** (If the data from task 1 hasn't completed loading, you will need to wait to edit and complete this task)



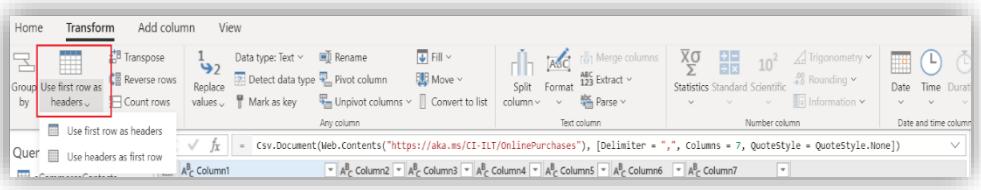
3. You should be presented with the view of the eCommerce Contacts data that you ingested in Task 1. Click **Get Data** to add a data source.



4. Select the **Text/CSV** Connector.

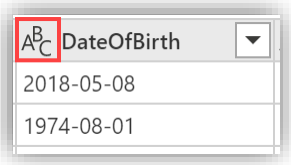
5. Enter the URL for the **Online Purchases** data, **https://aka.ms/CI-ILT/OnlinePurchases**, and click **Next** and then **Create.**

6. Click **Use First Row as Headers** from **Home** or click **Transform** and then **Use First Row as Headers.**

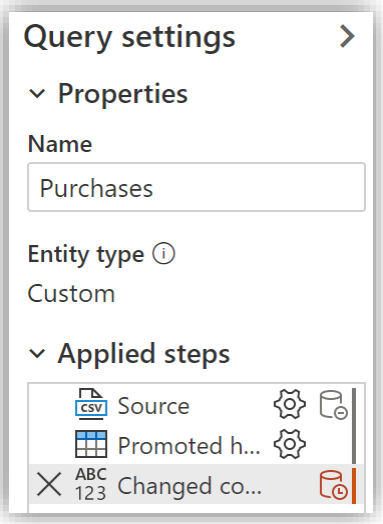


7. Update the datatype for the columns as listed below. To change the datatype, click the **ABC** icon within the column heading

Column Heading	New Data Type
PurchasedOn	Date/Time
TotalPrice	Currency



8. Name your query **Purchases** and click **Save.**



Exercise 2 - Data Unification

Having ingested the raw data from your data sources into entities you will now begin to **Unify** the data using **Map, Match, Merge** process to create a single **Unified Customer Profile** by merging data from each data source.

To do this you will first map your ingested entities against a standard model and select the Primary Key for each of your profiled entities. You will then create your **Match Rules** that will be used to match contacts from all customer entities.

Finally, the **Merge** process will create a single set of unique **Customers** having matched profiles from all customer entities using your match rules.

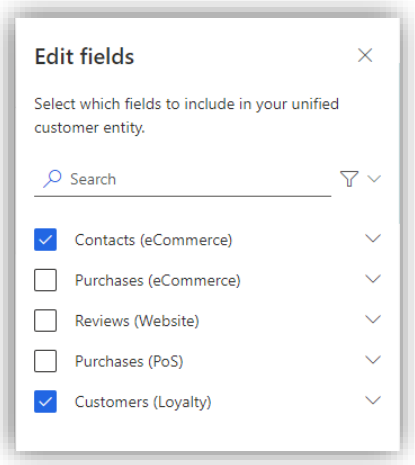
Your objective is to find out how many unique customer profiles Contoso Retail has across various data sources.

Task 1 – Map contacts to common data types

1. Map contacts from eCommerce and Loyalty data to common data types.
   In the left menu click **Unify -> Map -> Select Entities**

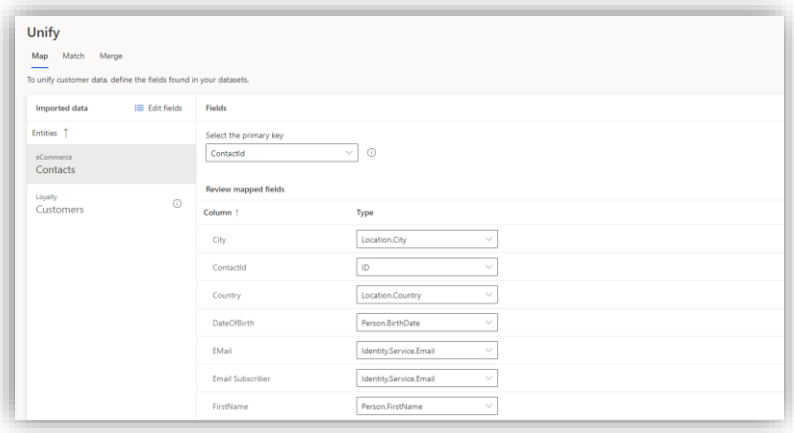
   Note: If data is still importing, you'll see a message at the top of the page stating you'll be able to map your data once it is done. You'll have to wait for that to complete before you see the **Select Entities** button.

   Select the entities that represent the customer profile – **Contacts (eCommerce)**, **Customers (Loyalty)** then click **Apply**

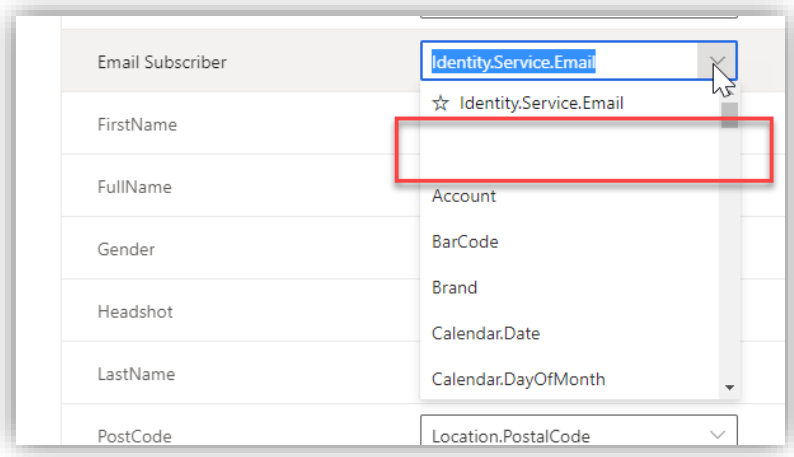


2. You will now be presented with the mappings of your source entity against standard model types. You can review the types in the table.

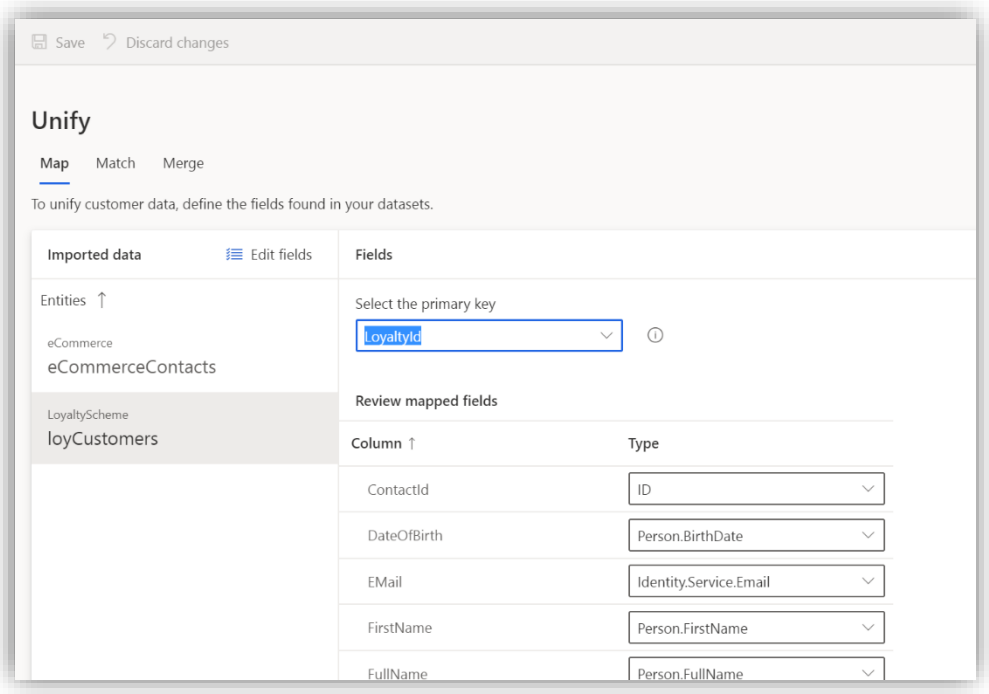
   You must choose a 'Primary Key' for each entity you have ingested. The primary key must be a unique reference. Select **eCommerce Contacts** under **Entities** and select **ContactId** as the Primary Key.



3. **eCommerce Contacts** data contains a column named **Email Subscriber** which will be mapped to an incorrect type, *Identity.Service.Email* because of its name. Open the dropdown for this field and select the empty option (nothing/blank). If this is not done, then the system defaults to merging this field with the Email fields, which is incorrect. Do the same for **Income** (change to nothing/blank) if it is mapped incorrectly to *Identity.Service.Phone*



4. Select **Loyalty Customers** under **Entities** and set **LoyaltyID** as the Primary Key.



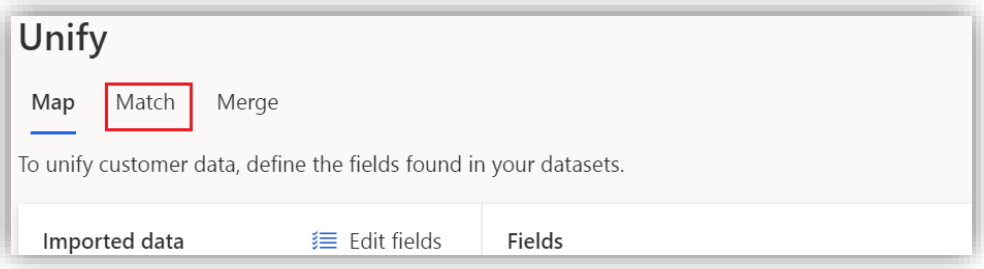
5. **Loyalty** data contains a column named **RewardPoints** which will be mapped to an incorrect type, *Measurement.Duration* because of the name/type. Open the dropdown for this field and select the empty option (nothing/blank).

6. Then click **Save** in the top left-hand corner.

Task 2 – Specify Match Order

For the next stage, you need to set the order in which to merge the profiles. You will be able to merge attributes to ensure that the unified profiles are complete as well as the priority of which sources to use for those attributes.

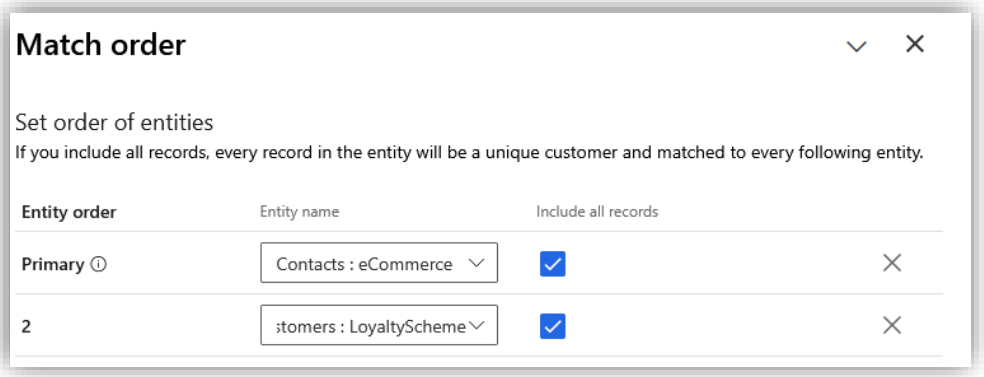
1. Click **Match** in the top menu on the page.



2. You should select the most complete or accurate profile source as the Primary. Click **Match → Set Order**

3. In the **Primary** drop-down list select **Contacts : eCommerce** as the primary Source and choose to **Include all records**

4. In the **Entity 2** drop-down list select **Customers : Loyalty** and choose to **include all records**.



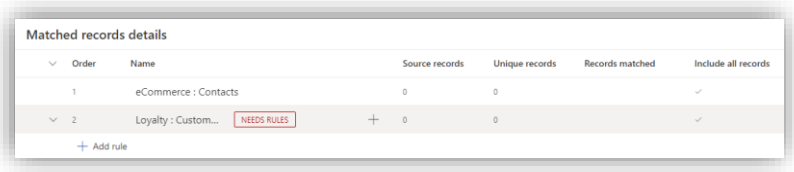
5. Click **Done**

Task 3 – Create a Match Rule

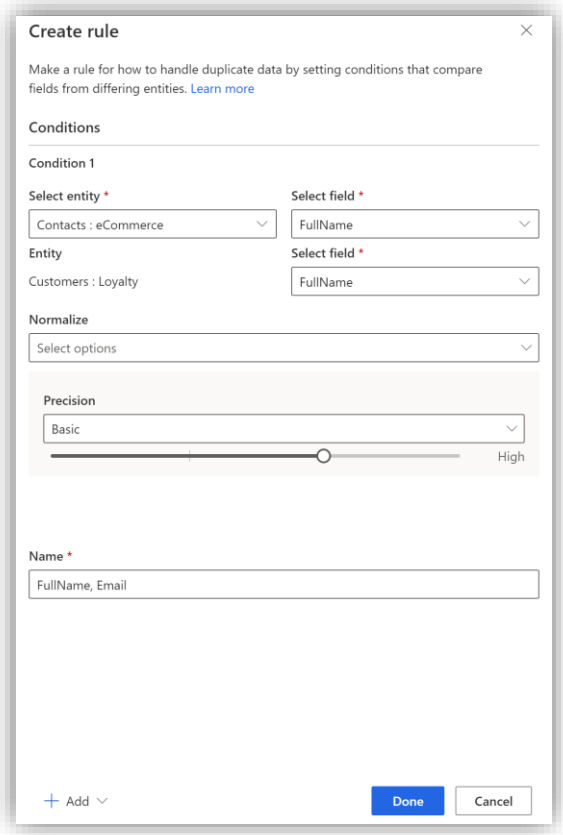
In this step, you will create a rule used to match records together. Rules can consist of single (e.g. based on ID) or multiple conditions (e.g. Full Name, Postcode, Date of Birth).

For further details on Match Rules, please see Customer Insights documentation.

1. Click **Add rule** or click the **+** button to the right of the 'needs rule' indicator.



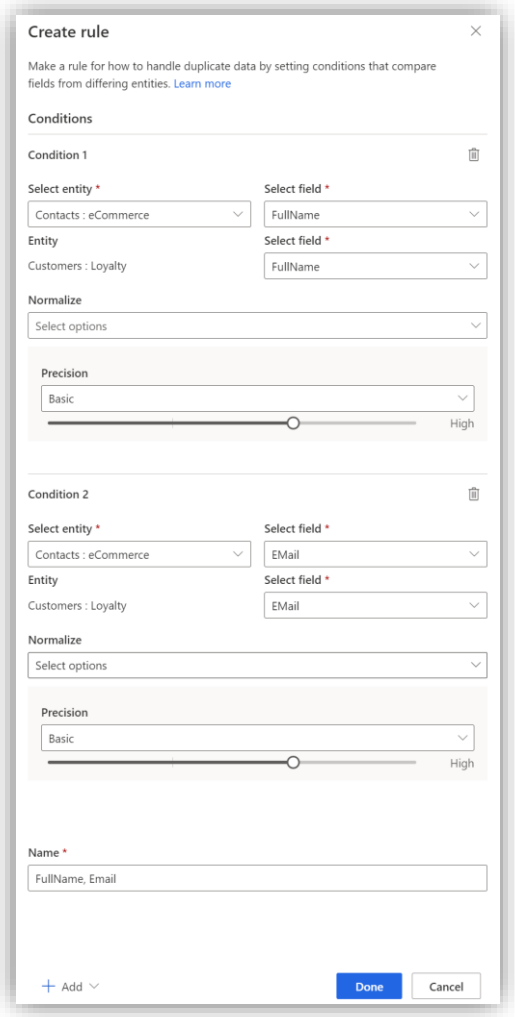
2. Add your first condition using FullName
   - For entity **Contacts : eCommerce** select **FullName**
   - For entity **Customers : Loyalty** select **FullName**
   - Leave the **Normalize** blank.
   - Set Precision Level to **Basic** and Precision value (slider) to **High**



3. Enter the name **FullName, Email** for the new rule. (don't click Done yet)

4. Add a second condition for email address by clicking **Add -> Add condition**
   - For entity **Contacts : eCommerce** select **Email**
   - For entity **Customers : Loyalty** select **Email**
   - Leave the **Normalize** blank.
   - Set Precision Level to **Basic** and Precision value (slider) to **High**

   Your match rule should now appear like the below. Click **Done.**



5. In the top left-hand corner click **Save** and then **Run.**

   Customer Insights is now matching customer data from your sources of customer information to identify how many unique customer profiles you would have based on your rules

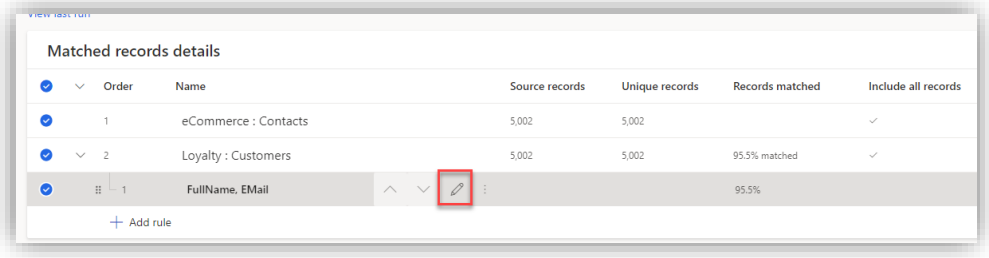
   How Many Unique Customers do you have when combining your datasets?

Task 4 – Precision

In Task 3, **High Precision** was used in the match-rule against Full Name. In this task, you will adjust the precision level, to create a higher number of matches, by including matches of a lower confidence (resulting in lower number of unique profiles).

Notes on Precision - Exact, on the right-side of the scale, will match records where your condition has an exact match. Select one of the other levels to match records that are not 100% identical. **High** fits cases where precision is more important than reach, such as a financial service to a specific customer. **Low** fits cases where the opposite is true, such as a marketing campaign. The Medium level serves as a middle-ground option.

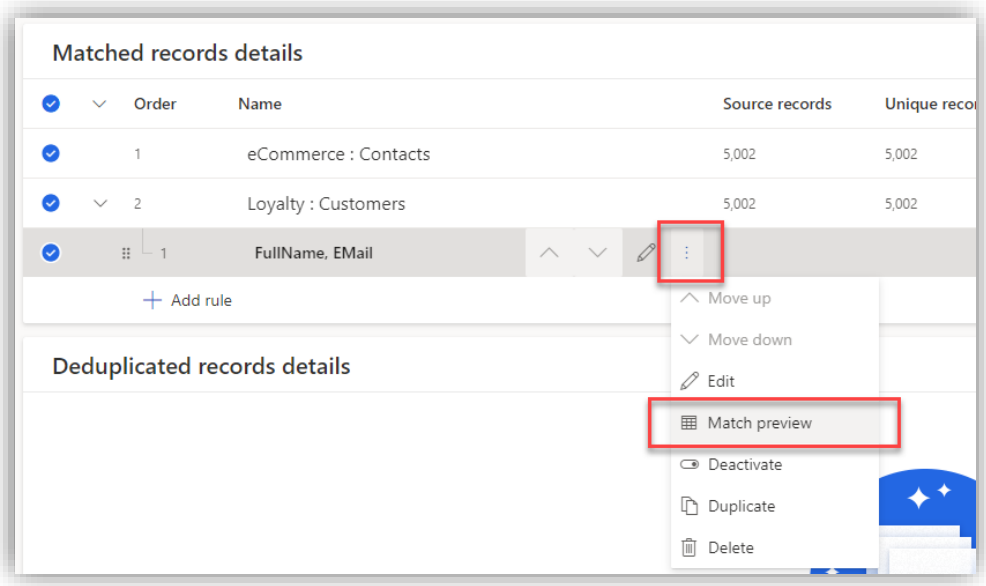
1. Expand your rule and click the  to edit the 'Match' Rule.

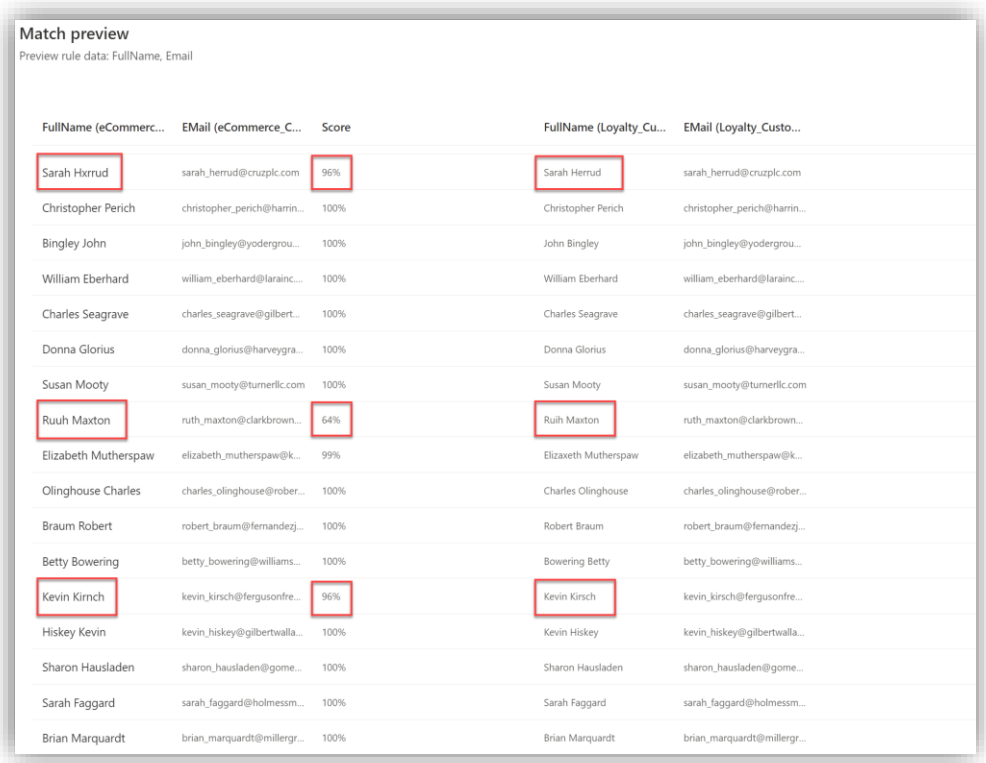


2. Move the Precision slider for your **FullName** match from **High** to **Low.** Then click **Done.**

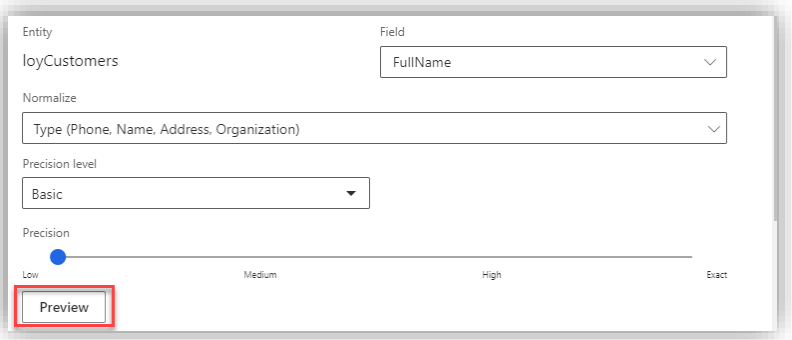
3. Click **Save** and then **Run.**

4. Once the match process has completed, open the **Match Preview** to see the match results and the **Confidence Score.** This shows how Customer Insights matched the data tables based on the rules you have defined. – You will notice that some profiles have been created with a low confidence of matching.



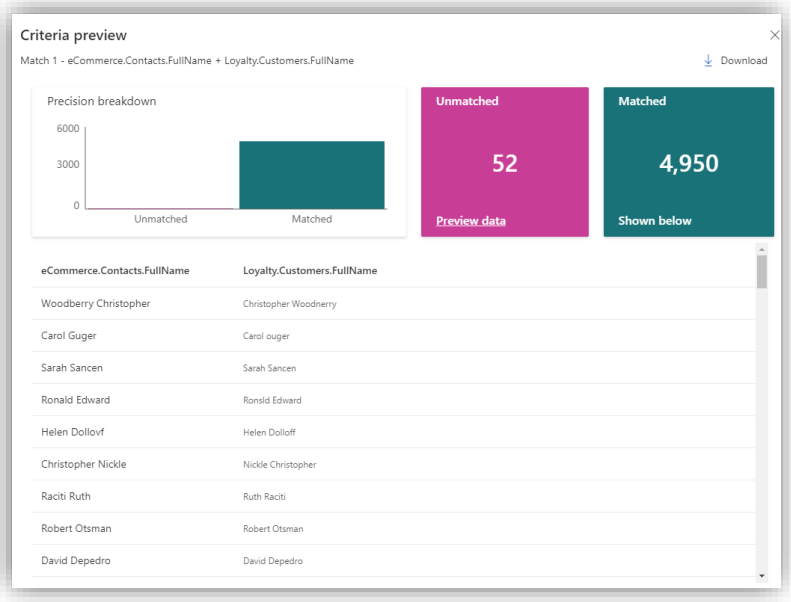


5. Close the preview and click the  to edit the match rule. Click the **Preview** button below the FullName rule.



6. Here you can preview the number of Unmatched and Matched for your full name criteria. This screenshot shows that there were 52 Unmatched and 4950 Matched. ***Note:*** *Your number may be slightly different if the underlying data sources have changed since the docs were created or the matching algorithm has changed.*

   Click **Preview Data** under **Unmatched** or **Matched** to preview the matches. Notice how High Confidence uses exact spelling but can match even if the name format (First Name, Last Name / Last Name, First Name) is different. With Low confidence, notice how matches are made even when names are not spelled identically.



7. Close the Criteria Preview page. And click **Cancel**.

   How many Unique Customer Profiles do you have now?

Task 5 – Merge

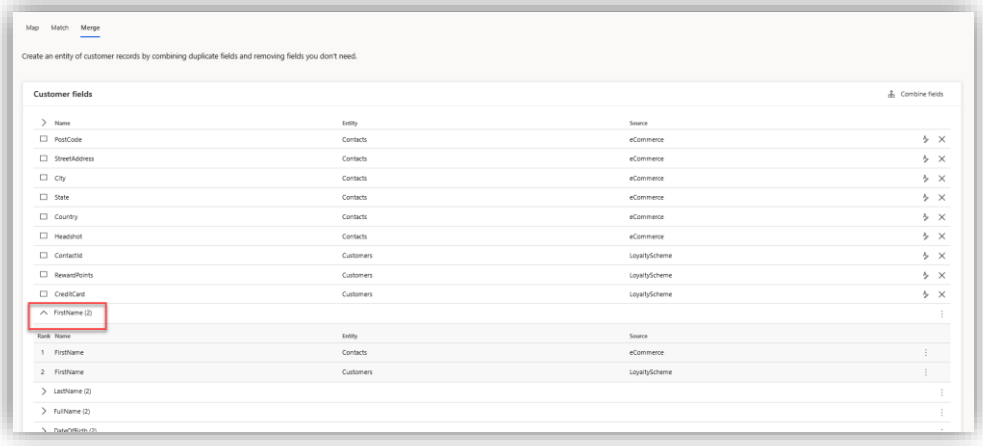
The merge phase is the last phase in the data unification process. Its purpose is to reconcile conflicting data and to define the attributes that will be used in your unified customer profile.

A Merged attribute is an attribute that exists in more than one data source and represents the same piece of data. For example, 'Email Address' may be in both eCommerce Customers and Loyalty Customer data sources.

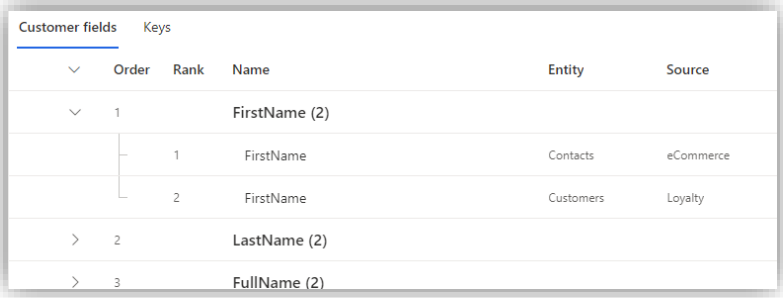
Customer Insights will attempt to identify attributes to be merged using their mapping to the standard data types selected in the **Map** stage.

1. Click **Merge.**

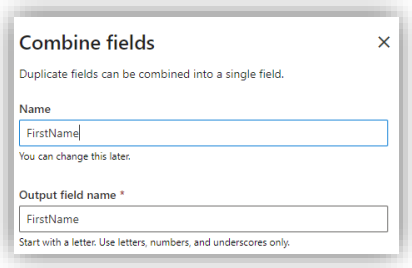
   You will be presented with the **Merge** screen. Note that attributes from different sources that are of the same type (e.g. First Name) have been 'Merged'.

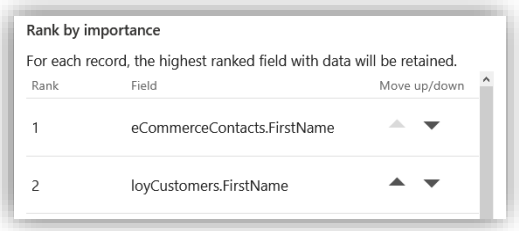


2. Click the ⟩ chevron on the **FirstName** merged attribute. You should see that the **FirstName** attribute in **eCommerce : Contacts** is ranked number 1. This denotes that where you have a matching customer profile in LoyaltyScheme and eCommerce, the **FirstName** taken from **eCommerce : Contacts** will be the primary.



3. Click the ⋮ button on the row for the **FirstName(2)** merged attribute and click **Edit** or you can click the **Edit** icon**.**
   Note that you're able to change the display name and **importance rank** for the merged attribute. The **Name** is the name that will be used in the Merged Profile.

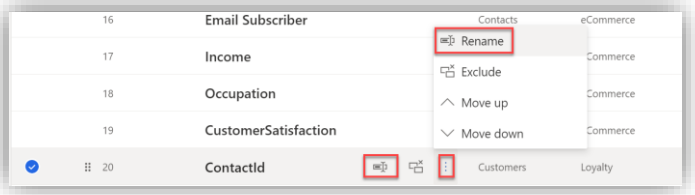


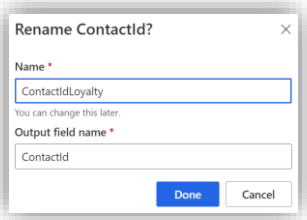


4. Click **Cancel.**

5. Note that the Primary Keys from the original sources cannot be merged. For example, **ContactId** is the primary key for **eCommerce : Contacts** and **LoyaltyId** is the primary key for **Loyalty : Customers**. In fact, these records are being merged not on their primary keys, but on FullName & Email.

6. On the **ContactId** for the **Loyalty : Customers** Entity, click the rename button ✎ or ⋮ → rename and change the **Name** to **ContactIdLoyalty** to differentiate the item from the other IDs ingested and help avoid any confusion later.





7. Click **Save** and **Run -> Run Merge and downstream processes** to start the Merge Process.

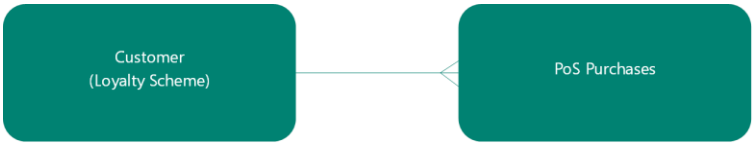
   Congratulations! You have successfully Ingested and Unified the data from multiple sources within Customer Insights to create a Unified Customer Profile that can be used to gain insights into your whole customer base!

Exercise 3 – Creating Relationships and Measures

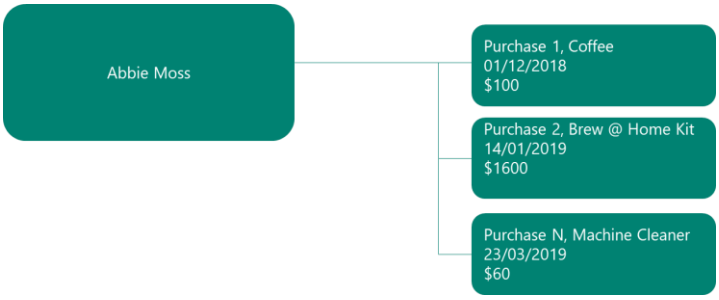
Overview of Relationships & Measures

Before creating a measure, an understanding of the purchases made by a customer both online and in-store is needed. Creating a relationship between Purchases (made online and in-store) and the Unified Customer Profile links the purchases to each customer.

Relationships help connect entities and generate a graph of your data. Relationships are used when entities share a common identifier (foreign key) that can be referenced from one entity to another. Connected entities enable you to define segments and measures based on multiple data sources.



For example, a customer has a one-to-many relationship with PoS Purchases. (One loyalty scheme customer may make multiple purchases). This is an example of that relationship:



Measures

Measures enable you to define all the key performance indicators (KPIs) that best reflect your specific business performance and health. Measures can either be customer related measures such as Lifetime Value or business measures such as Monthly Active Users.

Customer Insights provides an intuitive experience to build different types of measures, with a query-builder wizard that doesn't require the user to manually code or validate the query.

Measures are calculated on a series of interactions that a company has with a customer, gathered from multiple data sources. Interactions are any customer touch point – these could include purchases, customer service cases, emails, phone calls, branch visits. In other scenarios

interactions could also be data gathered from connected devices, withdrawals, or deposits in banking, entry/exit of a premises or area etc.

Contoso Coffee is looking to uncover 8 **Measures** based on the data ingested, that will help them to identify high-value customers and their preferred purchase method (Online or In-store)

Business Measures:

- **Average Store Purchase (All Customers)**
- **Average Web Purchase (All Customers)**

Customer Attribute:

- **Lifetime Spend ($)**
- **Total Rewards Points**
- **Average Store Purchase ($)**
- **Average Web Purchase ($)**

Customer Measure:

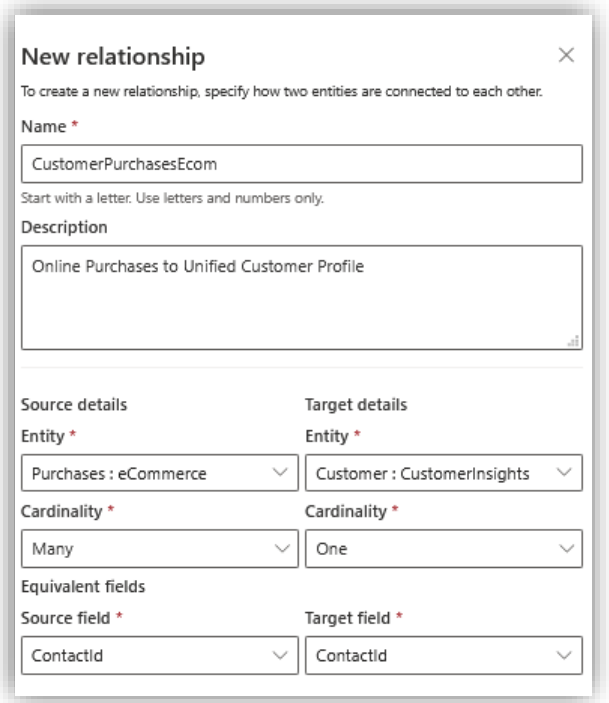
- **Total Online Spend**
- **Total In Store Spend**

What are the three types of measures and how to use them.
You can create measures on the level of individual customers (**customer attribute, customer measure**) or on the level of the business/organization (**business measure**). Customer attribute and customer measure are two types that enable you to track performance per customer. For example, the total spend by each customer. Business measures enable you to track performance per business. For example, the total revenue by the company.
A **Customer Attribute** is a single field attribute on every specific customer. This can be something like the *Average Web Purchases* they've done or the accumulated *Total Rewards Point* they have earned. Only Customer Attributes are visible on Custom er Cards.
Customer Measures can be used when set KPIs to your customers where you need to add more dimensions or variables. For example you may want to create a measure that counts the number of *Reviews* by their *ReviewRating*. In this case, you need 2 dimensions in the same measure: *CustomerId* and *ReviewRating*, which are counted aggregated. Customer Measures can't be shown on Customer Cards, but can be used to build other measures.
Business Measures are calculations across all of the data. This means with a Business Measure you don't want consider the dimension *CustomerId* and need a KPI for the whole company. Business Measure are shown in the Home Page.

Task 1 – Define the Relationship Between Unified Profiles and Web Purchases

Define the relationship for **CustomerPurchasesEcom**

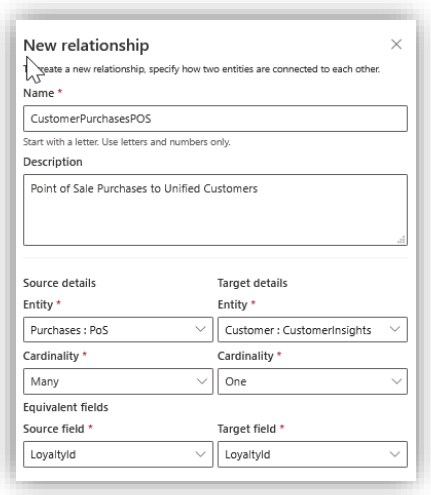
1. Under **Data** within the left-hand menu, click **Relationships** in the left-navigation menu
2. Click **New Relationship**
3. Name the relationship **CustomerPurchasesEcom**
4. In **Description** add **Online Purchases to Unified Customer Profile**
5. Set **Source** details entity to **Purchases: eCommerce** and **Cardinality** to **Many**
6. Set Target details entity to **Customer: CustomerInsights** and Cardinality to **One**
7. Set equivalent fields to **ContactId** for both the **Source field** and **Target field**
8. Click **Save**



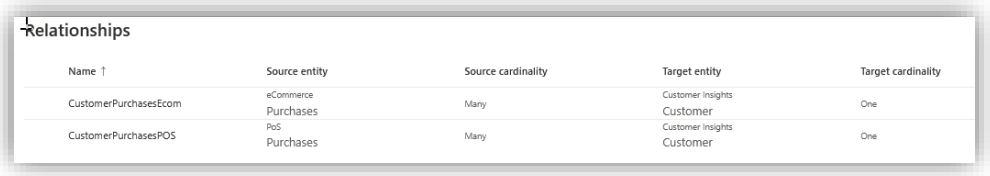
Task 2 – Define the Relationship between Unified Profiles and Store Purchases

Define the relationship for **CustomerPurchasesPOS**

1. Under **Data** within the left-hand menu, click **Relationships** in the left-navigation menu
2. Click **New Relationship**
3. Name the relationship **CustomerPurchasesPOS**
4. In **Description** add **Point of Sale Purchases to Unified Customers**
5. Set **Source** details entity to **Purchases: PoS** and **Cardinality** to **Many**
6. Set Target details entity to **Customer: CustomerInsights** and Cardinality to **One**
7. Set equivalent fields to **LoyaltyId** for both **Source field** and **Target field**
8. Click **Save**



9. You should now have the following relationships defined



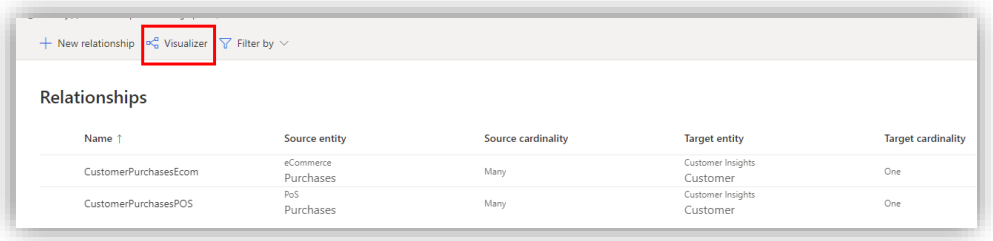
Task 3 – Visualize Your Relationships

You can visualize the relationships you have created at any time within Customer Insights. This is a very easy way to see visually how the entities you have a related to one another via the relationships you have created, or that the system has created for you when completing certain tasks.

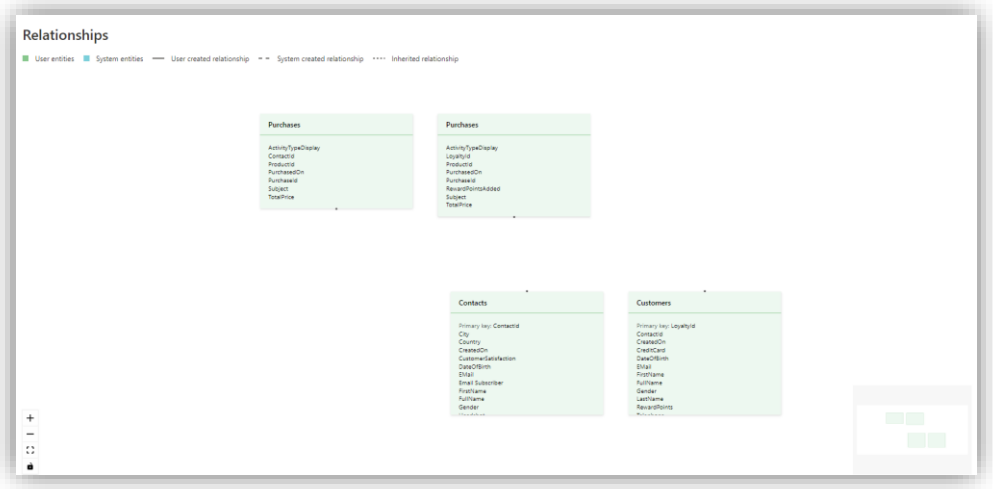
1. Click **Data** in the left-hand menu

2. Click **Relationships**

3. Click **Visualizer** in the top menu bar



4. You will now see a nice visual rendering of the entities you have and the relationships between them.



In the bottom left there are tools to zoom the display and on the bottom right there is a mini view to easily move around the visual when it is very large. You can also click on the **Export as image** in the top menu to easily save a copy if needed.

Task 4 – Define Two Business Measures

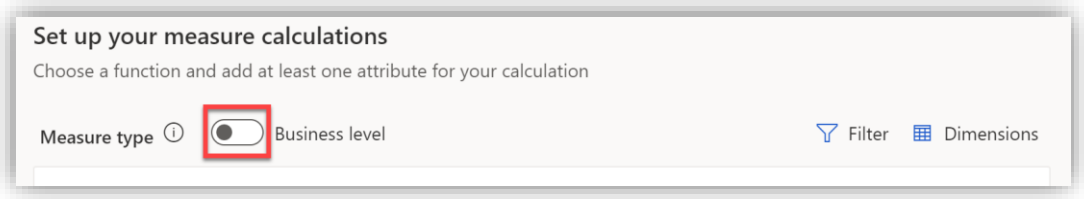
Business Measures helps you track your business performance and health.
Examples: **Average Sales per Customer** and **Monthly Active Users (MAU).**

Here you'll create business measures to get the **Average Store Purchase** and the **Average Web Purchase** across all customers.

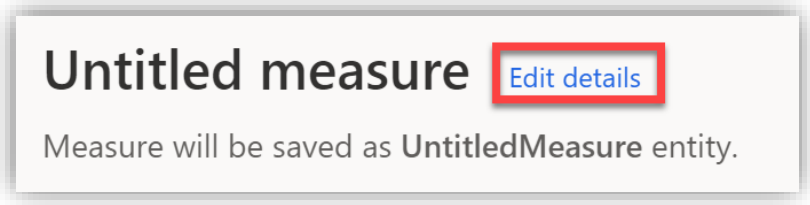
Average Store Purchase Value (Business Measure)

Average value of all in-store purchases made at Contoso Coffee

1. Click **Measures** on the left-hand menu.
2. Click the **New** button in the top left-hand corner, then **Build your own**.
3. Change **Measure type** to **Business level** by clicking the slider

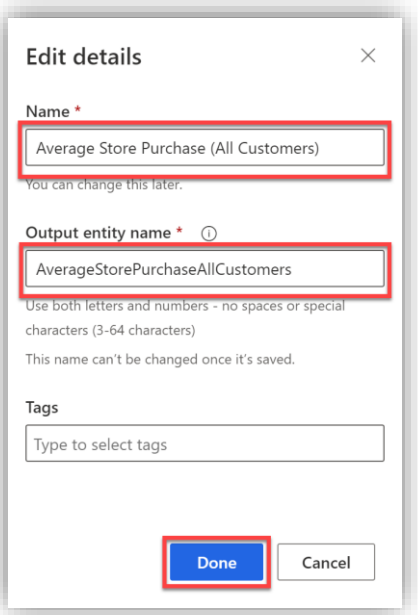


4. Next to the **Untitled measure** text, select **Edit details.**



5. Set the name to **Average Store Purchase (All Customers)**

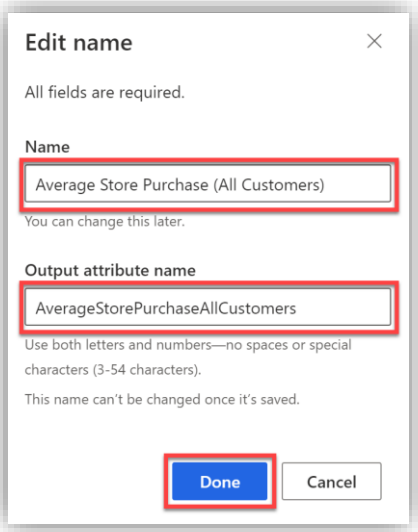
6. Set Output entity name to **AverageStorePurchaseAllCustomers** and click **Done**



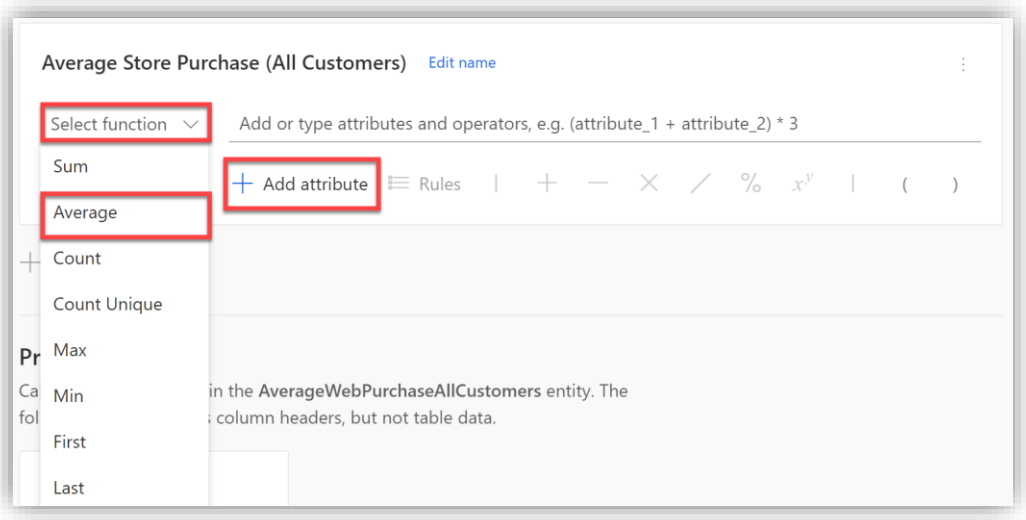
7. Next to **Calculation 1**, click **Edit name**

8. Set the **Name** to **Average Store Purchase (All Customers)**

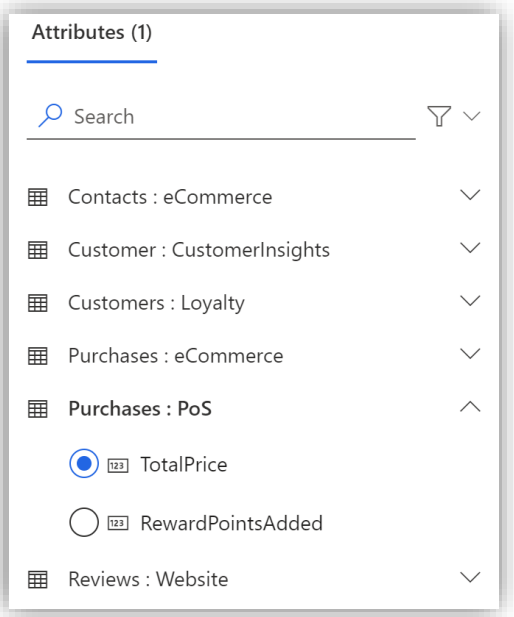
9. Verify the Attribute name is set to **AverageStorePurchaseAllCustomers** and click **Done**



10. Under the **Average Store Purchase (All Customers)** calculation, click **Select Function** and choose **Average**.



11. Select **Add attribute**, expand **Purchases : PoS**, and select **TotalPrice**.



12. Select **Add**.

13. Select **Run.**

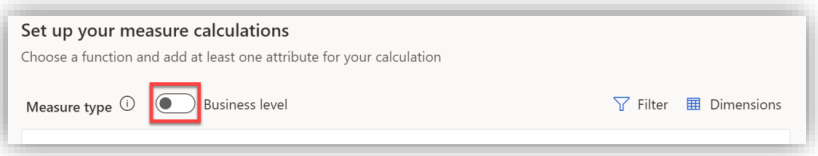
Average Web Purchase Value (Business Measure)

Average value of all web purchases made at Contoso Coffee

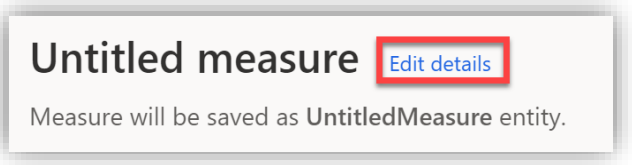
1. Click **Measures** on the left-hand menu.

2. Click the **New** button in the top left-hand corner, then **Build your own**.

3. Change **Measure type** to **Business level.**

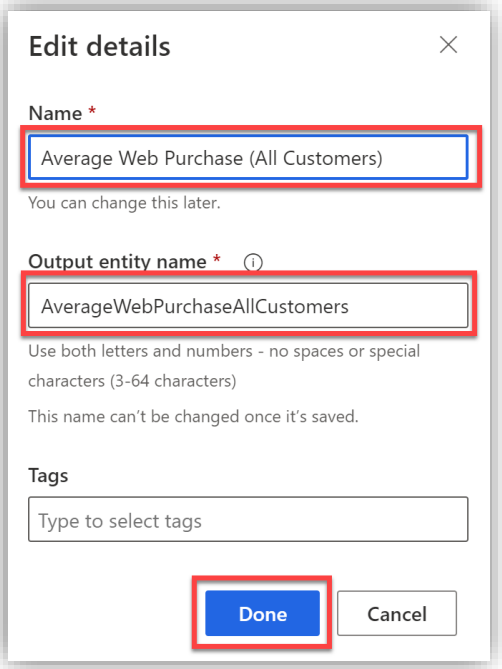


4. Next to the **Untitled measure** text, select **Edit details.**



5. Set the name to **Average Web Purchase (All Customers)**

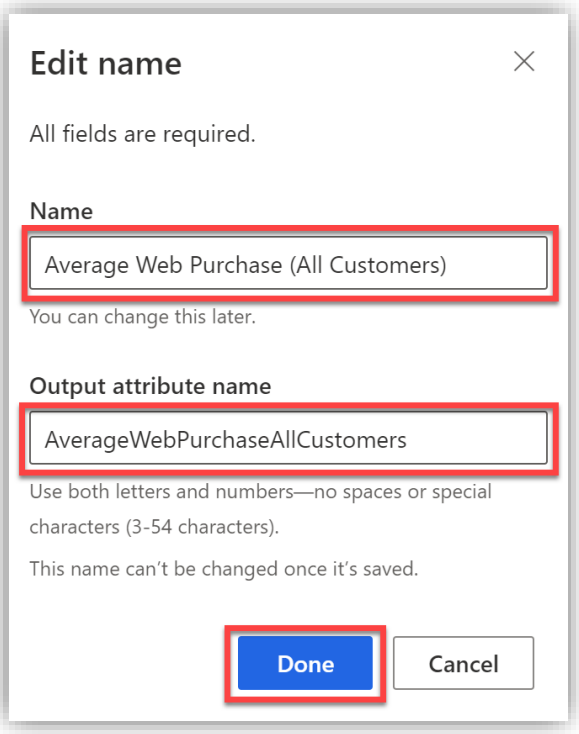
6. Set the Output entity name to **AverageWebPurchasesAllCustomers** and select **Done.**



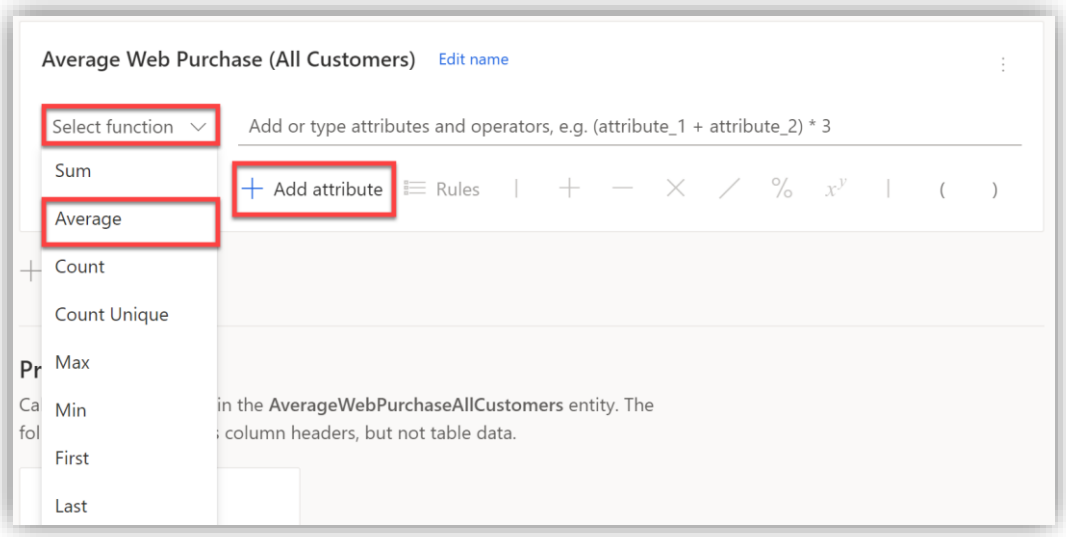
7. Next to **Calculation 1**, click **Edit name**

8. Set the **Name** to **Average Web Purchase (All Customers)**

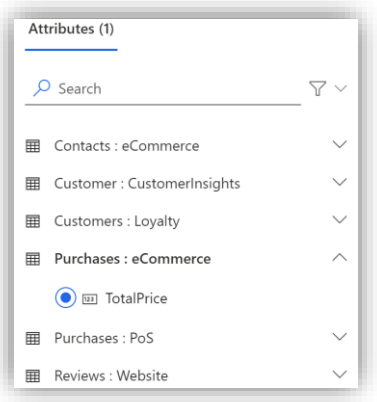
9. Verify the Attribute name is set to **AverageWebPurchaseAllCustomers** and click **Done**



10. Under the **Average Web Purchase (All Customers)** calculation, click **Select Function** and choose **Average**.



11. Select **Add attribute**, expand **Purchases : eCommerce**, and select **TotalPrice**.



12. Select **Add**.

13. Select **Run.**

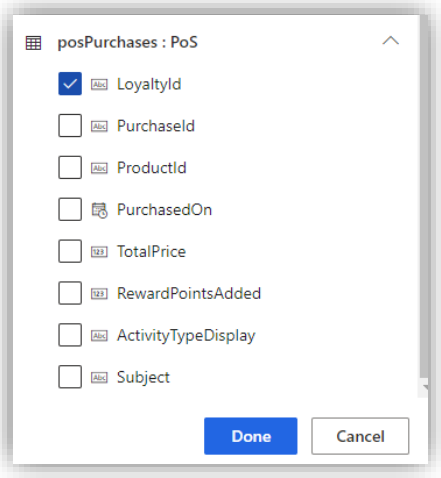
Task 5 – Define Customer Measures

One of the requirements is to create a customer attribute called **Lifetime Spend**. To calculate **Lifetime Spend**, you need to create two customer measures that will be added together: **Total In Store Spend** and **Total Online Spend.**

Total In Store Spend (Customer Measure)

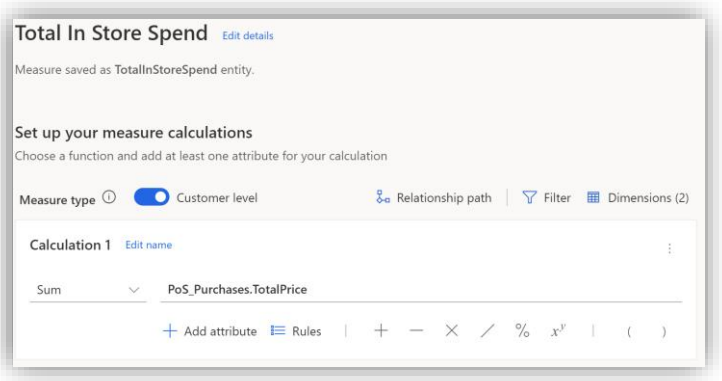
Total of all purchases made in-store

1. If necessary, click **Measures** on the left-hand menu.
2. Click the **New** button in the top left-hand corner, then **Build your own**.
3. Next to the **Untitled measure** text, select **Edit details.**
4. Set the name to **Total In Store Spend**, select **Done.**
5. Under the **Total In Store Spend** calculation, click **Select Function** and choose **Sum**.
6. Select **Add attribute**, expand **Purchases : POS**, select **TotalPrice**, and click **Add.**
7. Under **Set up your measure calculations**, select **Dimensions (1).**
8. Select **Edit Dimensions.**
9. Expand **Purchases: PoS**, select **LoyaltyID**, and click **Done**.



10. Click **Apply.**

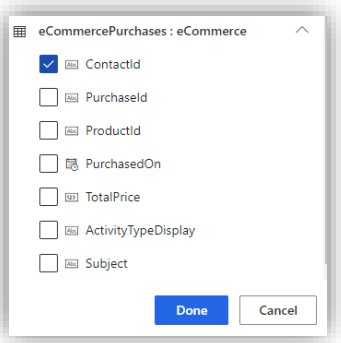
11. Select **Run.**



Total Online Spend (Customer Measure)

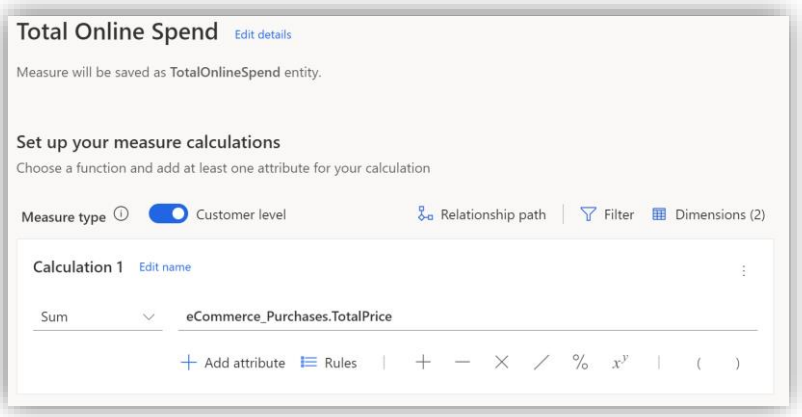
Total of all purchases made online

1. If Necessary, click **Measures** on the left-hand menu.
2. Click the **New** button in the top left-hand corner, then **Build your own**.
3. Next to the **Untitled measure** text, select **Edit details.**
4. Set the name to **Total Online Spend**, select **Done.**
5. Under the **Total Online Spend** calculation, click **Select Function** and choose **Sum**.
6. Select **Add attribute**, expand **Purchases: eCommerce**, select **TotalPrice** and click **Add.**
7. Under **Set up your measure calculations**, select **Dimensions (1).**
8. Select **Edit dimensions.**
9. Expand **Purchases: eCommerce**, select **ContactId**, and click **Done**.



10. Click **Apply.**

11. Select **Run.**



Task 6 – Define Customer Attributes

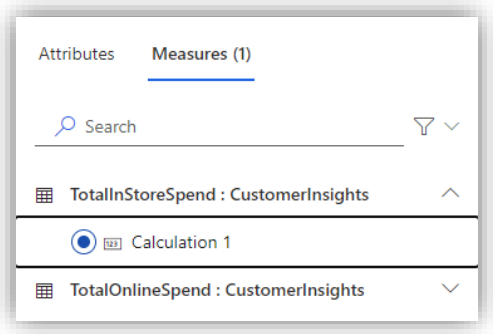
Customer Attributes are a single field per customer that reflects a score, value, or state for each customer. *Note: you will need to wait for your previously created measures to complete*

In this task you will create measures to calculate the **Lifetime Spend ($), Total Rewards Points, Average Web Purchase ($)** and **Average Store Purchase ($)** of each customer. By calculating value for the business and customers, Contoso Coffee can identify customers with a higher than average spend on each channel.

Lifetime Spend (Customer Attribute)

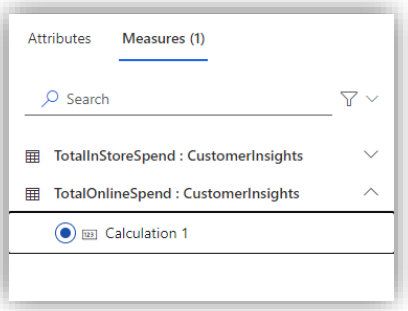
Total value of all purchases made for each customer

1. If necessary, click **Measures** on the left-hand menu.
2. Click the **New** button in the top left-hand corner, then **Build your own**.
3. Next to the **Untitled measure** text, select **Edit details.**
4. Set the name to **Lifetime Spend ($)**, select **Done.**
5. Under the **Lifetime Spend ($)** calculation, click **Select Function** and choose **Sum**.
6. Select **Add attribute**.
7. Select **Measures**, *(measures would not appear if previous measures have not completed yet)* expand **TotalInStoreSpend : CustomerInsights**, select **Calculation 1,** and select **Add**.

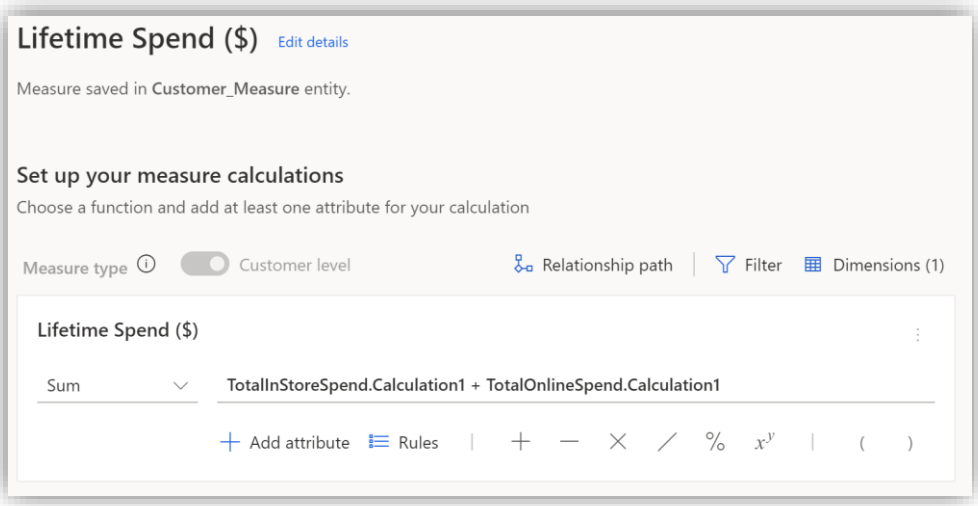


8. Select the **Plus Sign** operator icon
9. Select **Add attribute**.

10. Select **Measures**, expand **TotalOnlineSpend : CustomerInsights**, select **Calculation 1,** and select **Add**.



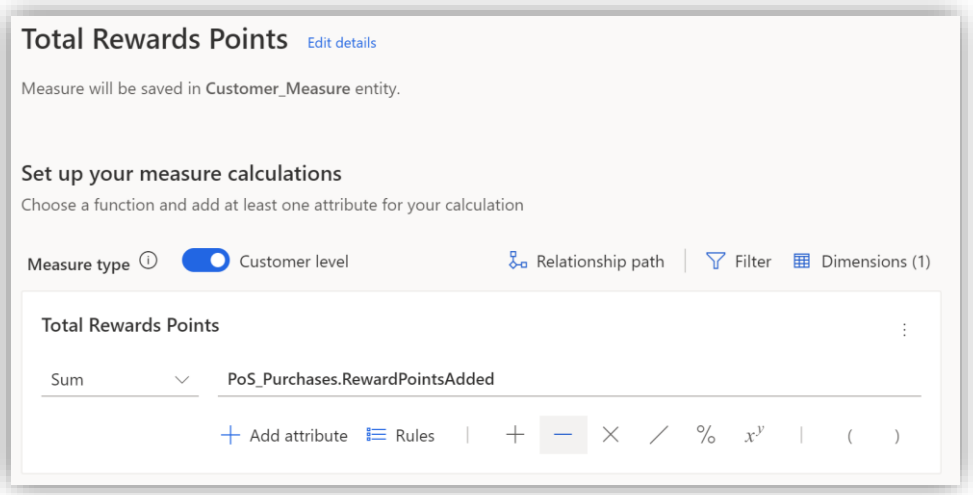
11. Select **Run**



Total Rewards Points (Customer Attribute)

Total Loyalty Points earned by each customer

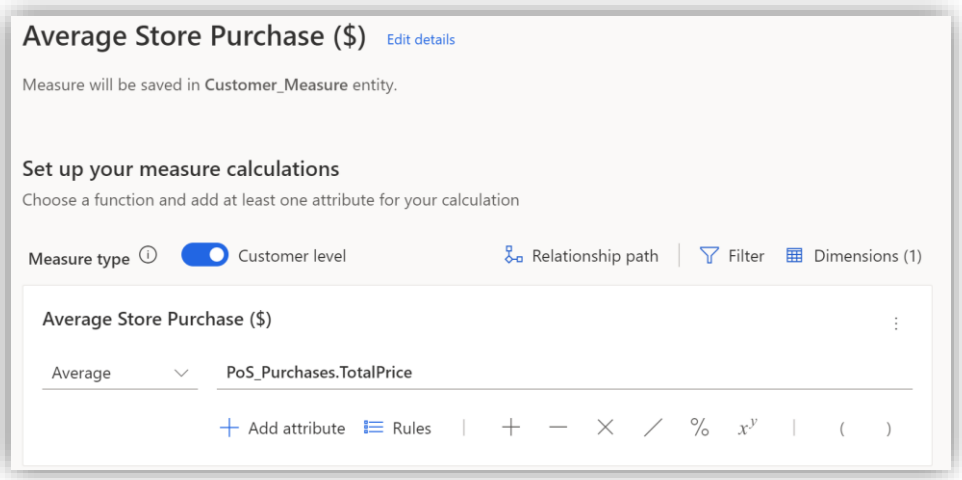
1. If necessary, click **Measures** on the left-hand menu.
2. Click the **New** button in the top left-hand corner, then **Build your own**.
3. Next to the **Untitled measure** text, select **Edit details.**
4. Set the name to **Total Rewards Points**, select **Done.**
5. Under the **Total Rewards Points** calculation, click **Select Function** and choose **Sum**.
6. Select **Add attribute**, expand **Purchases : POS,** select **RewardPointsAdded** and click **Add**.
7. Select **Run.**



Average Store Purchase (Customer Attribute)

Average value of all store purchases made for each customer

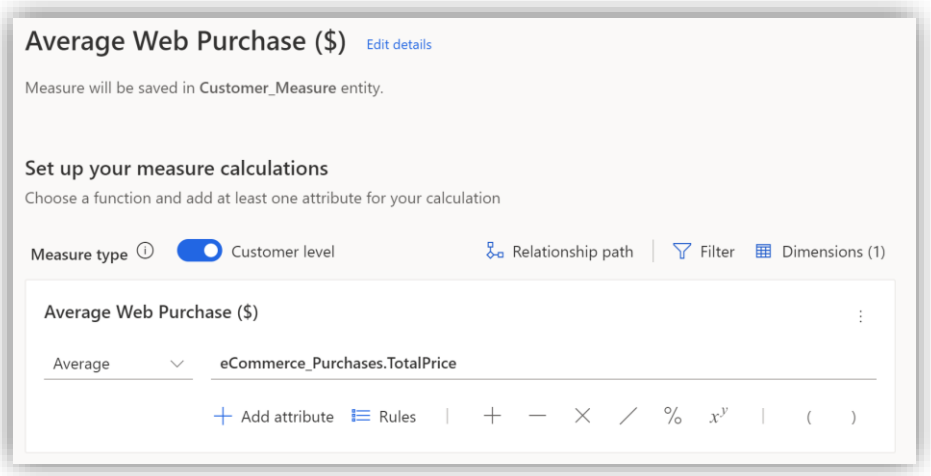
1. If necessary, click **Measures** on the left-hand menu.
2. Click the **New** button in the top left-hand corner, then **Build your own**.
3. Next to the **Untitled measure** text, select **Edit details.**
4. Set the name to **Average Store Purchase ($)**, select **Done.**
5. Under the **Average Store Purchase ($)** calculation, click **Select Function** and choose **Average**.
6. Select **Add attribute**, expand **Purchases : PoS** select **Total Price,** and click **Add**.
7. Select **Run**.



Average Web Purchase (Customer Attribute)

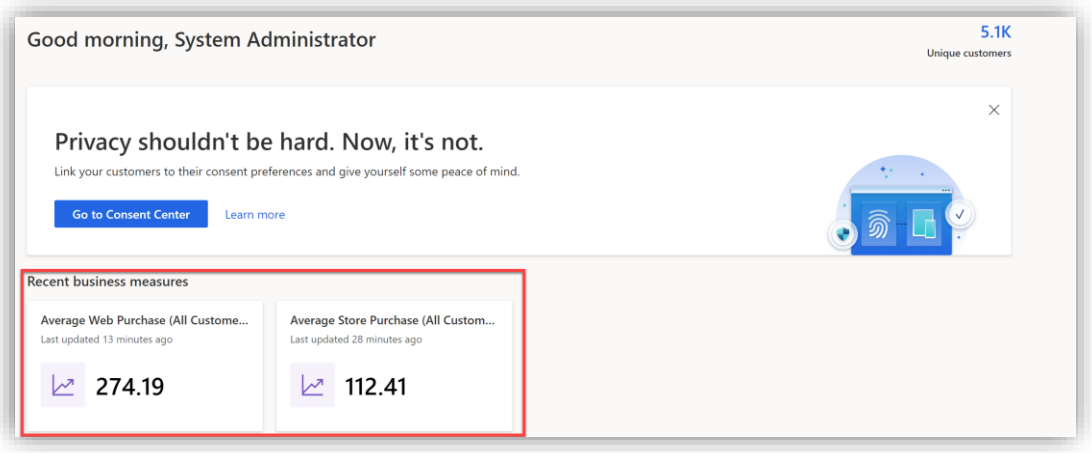
Average value of all web purchases made for each customer

1. If necessary, click **Measures** on the left-hand menu.
2. Click the **New** button in the top left-hand corner.
3. Next to the **Untitled measure** text, select **Edit details.**
4. Set the name to **Average Web Purchase ($)**, select **Done.**
5. Under the **Average Web Purchase ($)** calculation, click **Select Function** and choose **Average**.
6. Select **Add attribute**, expand **Purchases : eCommerce**, select **Total Price** and click **Add**.
7. Select **Run.**



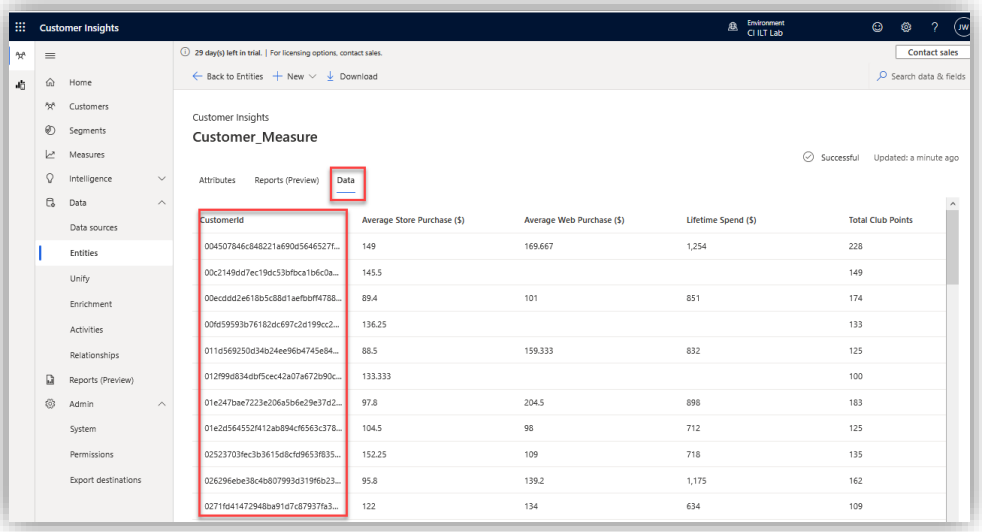
Task 7 – Review the Measures

1. Make sure all your measures have successfully refreshed, then navigate to the Customer Insights Home Page. You should notice that your Business Measures are visible on the home page.

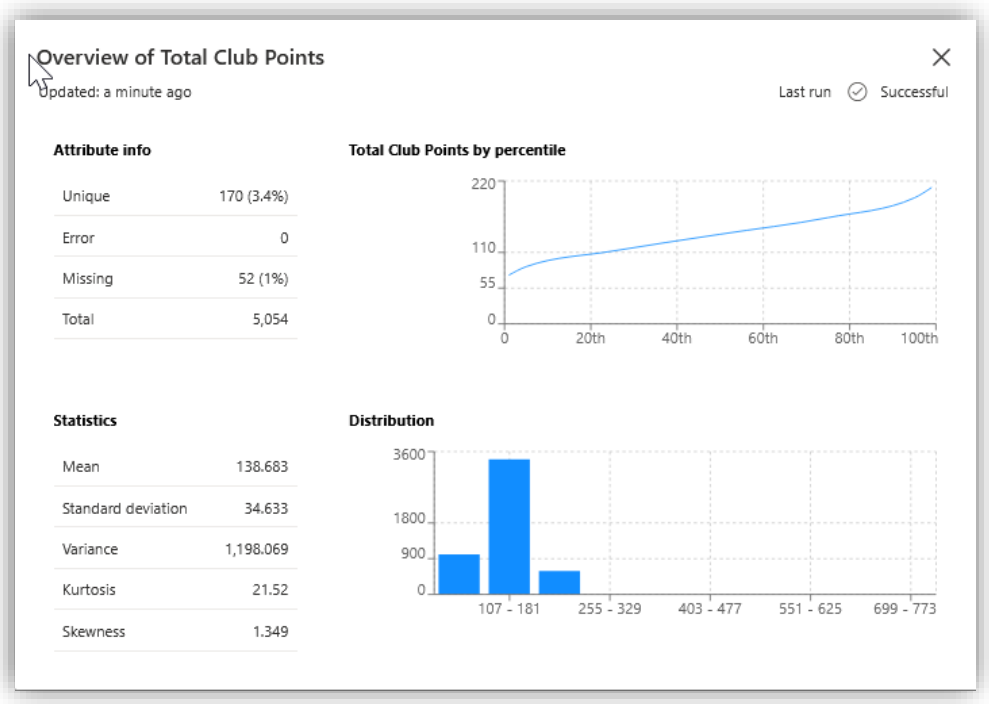


2. Navigate to the **Data -> Entities** menu area and open the **Customer_Measure** entity under **Measures**.

3. Click on the **Data** tab to see a preview of the Customer Attributes you created for the Unified Profile Customer ID



4. Click on the **Attributes** tab just below the page heading, then click on the Summary chart icon for **Total Rewards Points**. You should get a pop-up like this with some useful stats about the measure.



You are now able to consume these measures to drive action such as **Marketing Segments**.