

Introduction to Watson Knowledge Catalog

Introduction

This lab will introduce Watson Knowledge Catalog. Watson Knowledge Catalog is a secure enterprise catalog to discover, catalog and govern your data/models with greater efficiency. The catalog is underpinned by a central repository of metadata describing all the information managed by the platform. Users will be able to securely share data with their colleagues more easily, regardless of what the data is, where it is stored, or how they intend to use it. In this way, the intelligent asset catalog will unlock the value held within that data across user groups helping organizations use this key asset to its full potential.

End-to-End Data Science

The general flow of the End to End Data Science PoT will be guided by the activities shown in Figure 1- End to End Flow. This lab will focus on the Find Governed Data activity.

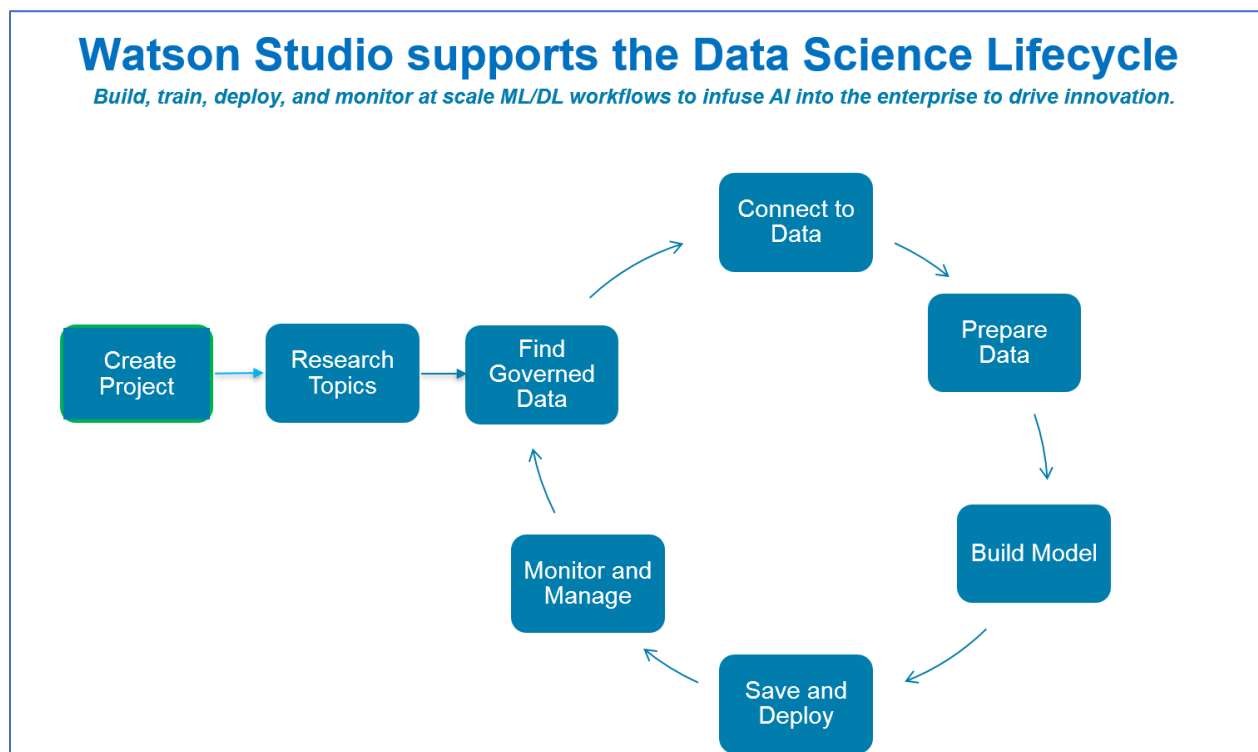


Figure 1- End to End Flow

Objectives

The goal of the lab is for the users to gain familiarity with the features of the Watson Knowledge Catalog. We will perform the following catalog tasks:

1. Create a governed catalog
2. Add a member to the catalog
3. Add Data Assets to the catalog
4. Search the catalog
5. Edit/Review/Profile a structured Data Asset
6. Demonstrate access control features
7. Demonstrate policy creation and enforcement
8. Push the Data Assets to the project set up in Lab-1

Download Files

Step 1: Download the [trafficking_data.zip](#) from the github repository


1. Click on [trafficking_data.zip](#), to download the zipped file.
2. Extract the file contents. You should have two files extracted, (1) Categories.csv, and (2) Occupation.csv.

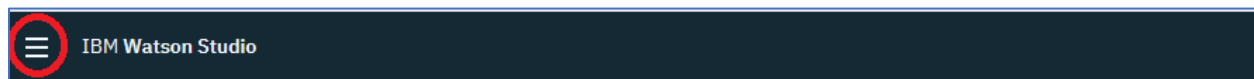
Perform Catalog Tasks

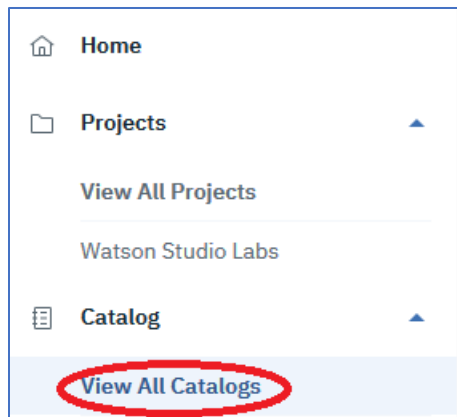
Step 1 – Create a Governed Catalog

1. Click on the browser tab to return to Watson Studio.
2. Click on Watson Studio to go to the home screen.

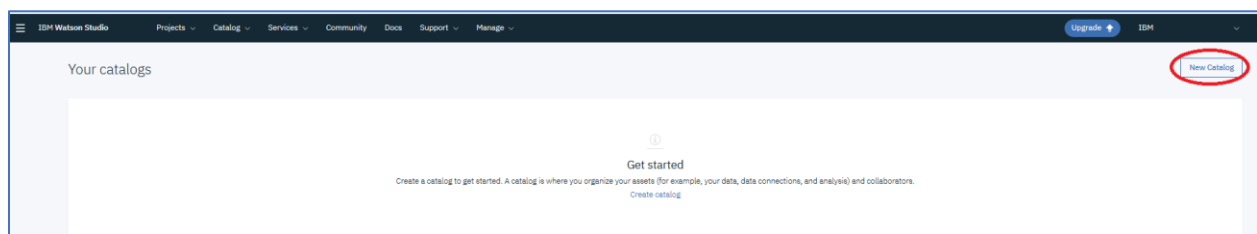


3. Click on  icon and then **View All Catalogs**.

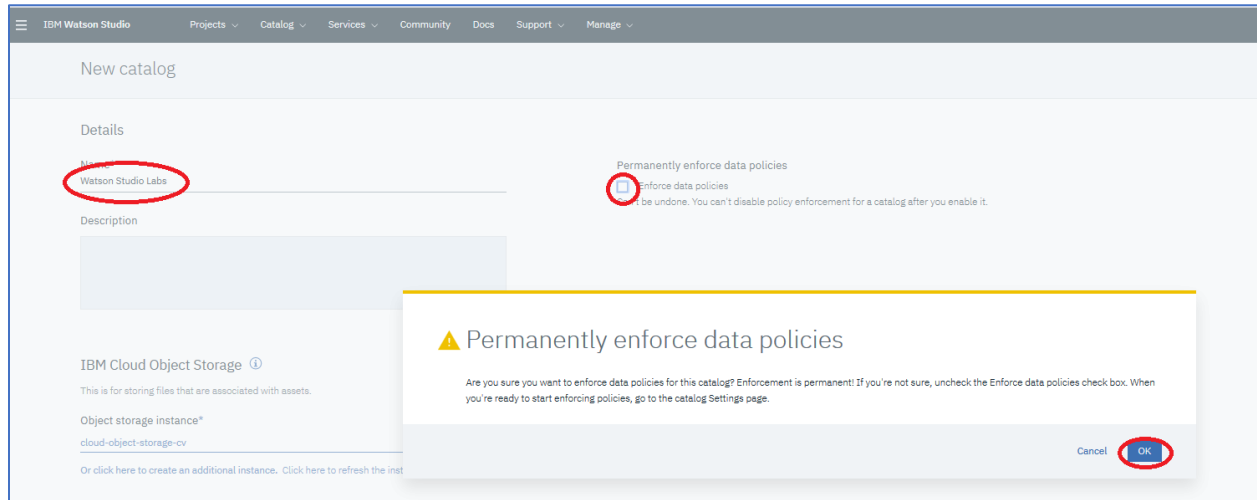




4. Click on **New Catalog**.



5. Enter **Watson Studio Labs** for the **Catalog** name. Click on **Permanently enforce data policies**. You will get a pop-up as shown below. Click on **OK**.



Note: By default, access to data assets in a catalog are only restricted by the privacy settings of the data assets. Privacy settings and policy rules can limit which members of the catalog can view and use the assets. You can implement data policies to restrict access to data based on the contents of the data. Data policies help you control data access and ensure that the right people can access the right data. Selecting the option to **enforce data policies** enables the enforcement of data policy rules to allow or deny access to a data asset or mask, anonymize and redact data at the data asset field level.

Setting this option for a catalog is a good best practice. Once it is enabled it cannot be undone, but it does not restrict or impede any functionality, it provides additional security measures to protect data assets.

6. Click **Create** to create the catalog.

New catalog

Details

Name*
Watson Studio Labs

Description
1000

IBM Cloud Object Storage ⓘ
This is for storing files that are associated with assets.

Object storage instance*
cloud-object-storage-cv
Or click here to create an additional instance. Click here to refresh the instances.

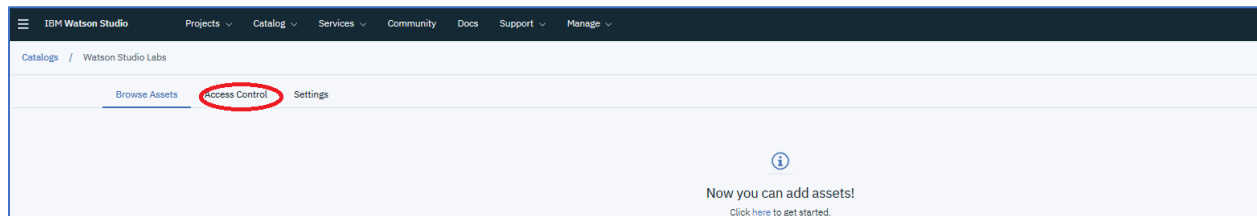
Permanently enforce data policies
☒ Enforce data policies
Can't be undone. You can't disable policy enforcement for a catalog after you enable it.

Cancel Create

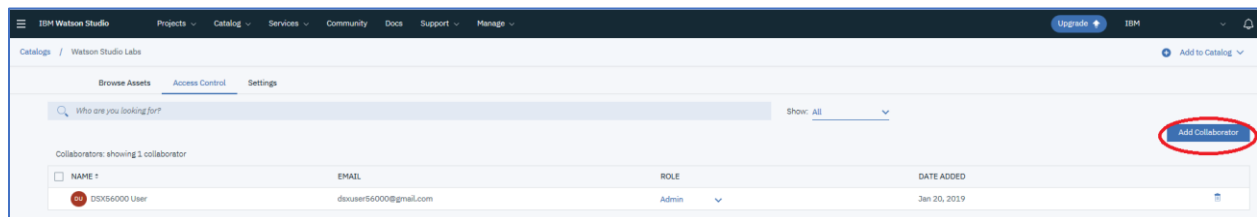
Step 2: Add a Member to the Catalog

To demonstrate the Catalog access control capability, we will add the **CATALOG COLLABORATOR**, which was provided by the lab instructor on an index card, as a member of the catalog. For illustrative purposes, we are using wsuserblb@gmail.com in this document. Note that the name of this user is “John Doe”.

1. Click on **Access Control**.



2. Click on **Add Collaborator**.



3. Enter the first name of the CATALOG COLLABORATOR from the index card. The list should populate with the full name of the CATALOG COLLABORATOR and the CATALOG COLLABORATOR's e-mail address. For illustrative purposes we are showing John Doe with e-mail address wsuserblb@gmail.com. You may have been provided with a different name, and password. Click on the **John Doe** entry in the list box.

Add Collaborators as Viewers

Collaborators (0)

John

John Doe	wsuserblb@gmail.com
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Having trouble adding collaborators? ⓘ

Cancel Add

4. Leave the Viewer as the **Role** and click on **Add**.

Add Collaborators as Viewers

Collaborators (1)

John Doe X

Role: Viewer ▼

Having trouble adding collaborators? ⓘ

Cancel Add

5. "John Doe" is added as a member of the catalog.

Collaborators: showing 2 collaborators

<input type="checkbox"/>	NAME	EMAIL	ROLE	DATE ADDED
<input checked="" type="checkbox"/>	<div><div>DU</div><div>DSX59000 User</div></div>	dsxuser59000@gmail.com	Admin	Jan 30, 2019
<input checked="" type="checkbox"/>	<div><div>JD</div><div>John Doe</div></div>	wsuserbb@gmail.com	Viewer	Feb 5, 2019

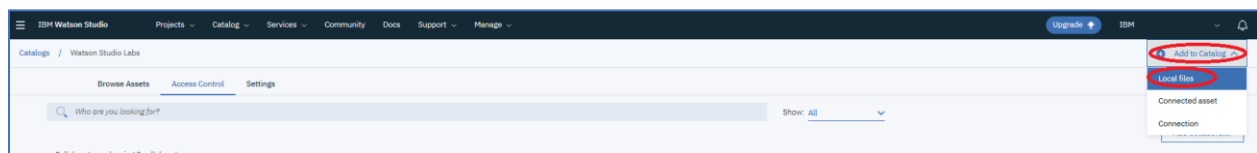
Step 3: Add Data Assets to the Catalog

In this step, we will add two local files, a connection, and a connected data asset. The local files we will add are the “Occupation.csv” file, and the “Categories.csv” file. We will set up a connection to a DB2 Warehouse service. We will add a connected data asset that will point to the FEMALE_HUMAN_TRAFFICKING table in the DB2 Warehouse service instance.

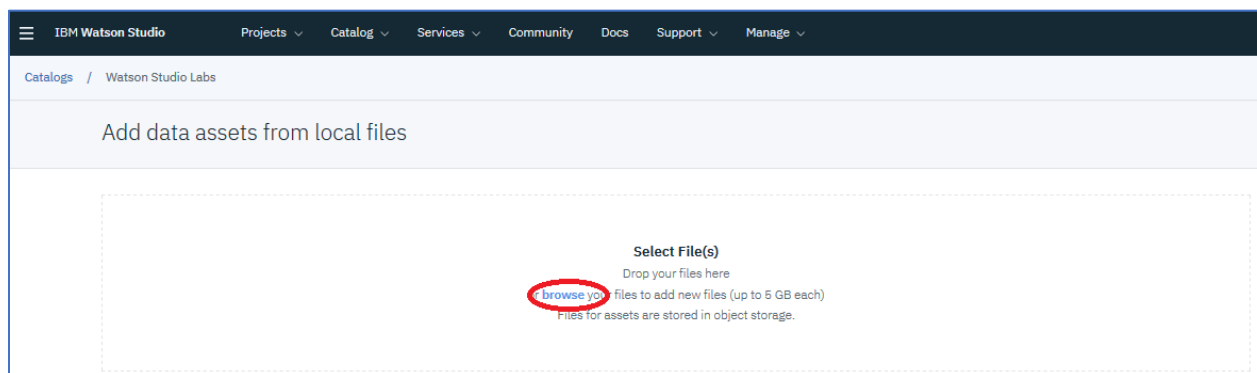
This step will introduce you to the three methods available to discover and catalog data assets; **Local files**, **Connected asset** and **Connection**. You will use these methods to catalog data assets into the newly created Knowledge Catalog and then tag them for users to easily find them, understand their content and make them available throughout IBM Watson Studio, for use during data preparation and within models, dashboards and notebooks as we will see in our lab exercises.

Add Local Files

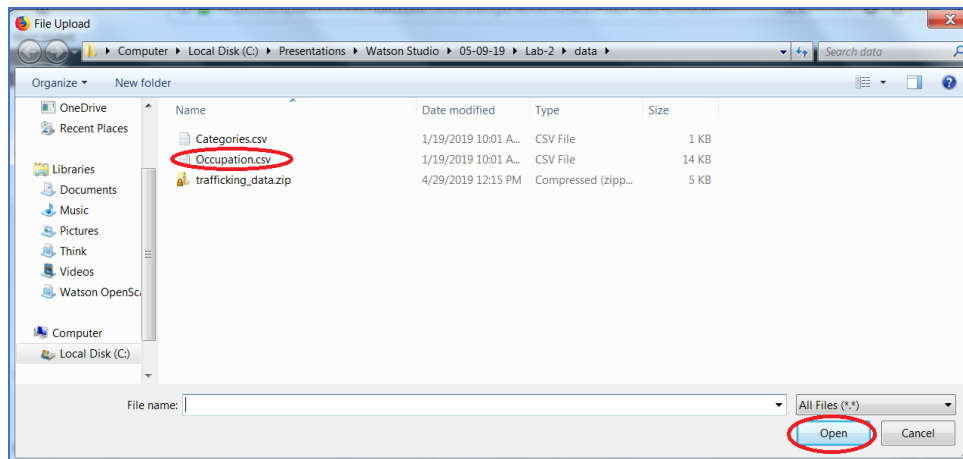
1. Click on **Add to Catalog** and click on **Local Files**.



2. Click on **browse** to navigate to the folder where the “Occupation.csv” file is stored.



3. Click on **Occupation.csv** and then click **Open**.



4. We can add tags to the newly added data asset to more easily search for it. Add two tags, enter “occupations”, click on the + icon, and enter “jobs” and click on the + icon. Click on **Private** for the **Privacy**. Click on **Add**.

Add data assets from local files

Selected Files (1)* [Edit name and format](#)

Continue adding files in the drop zone below or [browse](#) to select files

Asset Name	Format
Occupation.csv	Microsoft Excel

Target

Watson Studio Labs - Watson Studio Labs_DataCatalog

Description

Business Terms

Search Business Terms

Tags

Start typing to add values

occupations X jobs X

Privacy

☐ Public ☒ Private

Only the asset owner and asset members can find or use the asset.

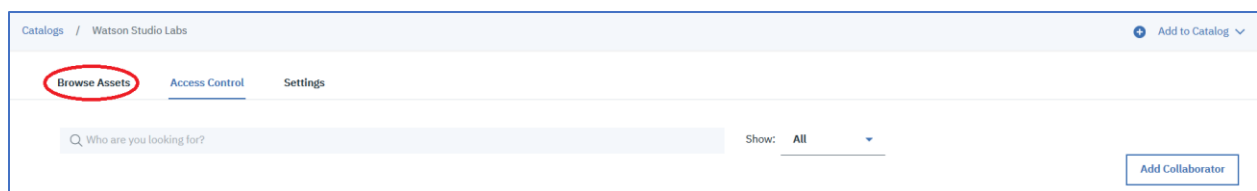
Members

[Add members](#)

Stay in the catalog until loading is complete! If you leave the catalog, the incomplete asset will be deleted.

[Cancel](#) [Add](#)

5. Click on **Browse Assets**.



6. The Occupation.csv asset metadata is displayed. Note a number of features on the panel. The top part of the page contains the search area. This consists of an entry field to type search text and two filters, one by data type, and a second by tags (shown in red below). Note the business term filter is disabled since we have not defined any business terms. Underneath the search area, are 3 tabs: **Watson Recommended**, **Highly Rated**, and

Recently added The square below contains assets that are displayed when one of these tabs are selected (shown in blue below). Note this area can be collapsed. At the bottom is the list of assets (shown in green).

The screenshot shows the IBM Watson Studio interface. The top navigation bar includes 'IBM Watson Studio', an 'Upgrade' button, a notification bell, and the user's account 'Andrew Doe's Account'. The main header shows 'Catalogs / Watson Studio Labs'. Below this is a search bar with the placeholder 'What assets are you looking for?' and filter options: 'Filter', 'Any type', 'Any business term', 'Any tag', and 'Clear all'. The main content area has three tabs: 'Watson Recommends', 'Highly Rated', and 'Recently Added' (which is selected and highlighted in blue). A 'Collapse' button is on the right. A card for the 'Data Asset' 'Occupation.csv' is displayed, showing the owner 'Andrew Doe', the date added 'Apr 30, 2019 8:36 PM', tags 'occupations' and 'jobs', and a rating of 0 reviews. At the bottom, a table shows 'Showing 1 of 1 item' with columns: Name, Owner, Tags, Business Terms, Type, and Date Added. The table contains one row for 'Occupation.csv' owned by 'Andrew Doe' with tags 'occupations' and 'jobs', of type 'Data Asset', added on 'Apr 30, 2019'.

- Follow the same procedure (1-4) above to add the local file “Categories.csv” file to the catalog. For step 4, enter the tag “job types” and then click on the “+” icon, enter the tag “job categories” and then click on the “+” icon, leave the **Privacy** as Public, and then click on **Add**.

The screenshot shows the 'Add data assets from local files' form. The 'Selected Files (1)*' section shows 'Categories.csv' with format 'Microsoft Excel'. The 'Target' is 'Watson Studio Labs - Watson Studio Labs_DataCatalog'. The 'Description' field is empty. The 'Business Terms' section has a search bar. The 'Tags' section has a search bar and two tags entered: 'job types' and 'job categories'. The 'Privacy' section has 'Public' selected. The 'Members' section has an 'Add members' button. At the bottom right, there are 'Cancel' and 'Add' buttons, with the 'Add' button highlighted in red.

- The Categories.csv asset is displayed

What assets are you looking for?

Filter Any type Any business term Any tag Clear all

Watson Recommends Highly Rated Recently Added Collapse

Data Asset Categories.csv

Owner: Andrew Doe
Added: Apr 30, 2019 9:03 PM
Tags: job ty... job ca...
0 reviews

Data Asset Occupation.csv

Owner: Andrew Doe
Added: Apr 30, 2019 8:36 PM
Tags: occup... jobs
0 reviews

Showing 2 of 2 items

<input type="checkbox"/>	Name	Owner	Tags	Business Terms	Type	Date Added
<input type="checkbox"/>	Categories.csv	AD Andrew Doe	job types job categor...		Data Asset	Apr 30, 2019
<input type="checkbox"/>	Occupation.csv	AD Andrew Doe	occupations jobs		Data Asset	Apr 30, 2019

9. Change the name of the Occupation.csv asset to be just Occupation by clicking on the **Occupation.csv** asset.

Available Assets

Showing 2 of 2 assets

<input type="checkbox"/>	NAME	OWNER	TAGS	TYPE	DATE ADDED
<input type="checkbox"/>	Categories.csv	DSX59000 User	job types job categories	Data Asset	Jan 30, 2019
<input type="checkbox"/>	Occupation.csv	DSX59000 User	occupations jobs	Data Asset	Jan 30, 2019

10. Hover the mouse on the **Occupation.csv**. Click the “pencil” icon when it appears.

Catalogs / Watson Studio Labs / Occupation.csv

Overview Access Review Profile Lineage

Data Asset Occupation.csv

Remove Download Add to Project

Description

There is no description available for this asset.

Added: Jan 31, 2019 12:00 AM
Format: Microsoft Excel
Size: 30 KB

Tags

occupations jobs

Reviews

0 reviews

Connection

Source: Watson Studio Labs_DataCatalog
Source type: Cloud Object Storage

Classification

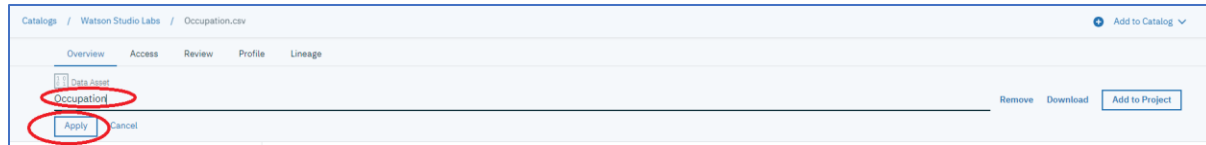
None

Schema: 2 Columns | 492 Rows

Preview: 492 rows | Last refresh: right now | Refresh

OCCUPATION	Code
Text	Code
Chiropractist	6
Engineer, structural	2
Engineer, land	2
Careers adviser	15
Geneticist, molecular	7
Electronics engineer	2
Editor, commissioning	4
Writer	4
Recruitment consultant	15
Theatre manager	8
Statistician	2
Merchant navy officer	15
Advertising account executive	9
Administrator, local government	6

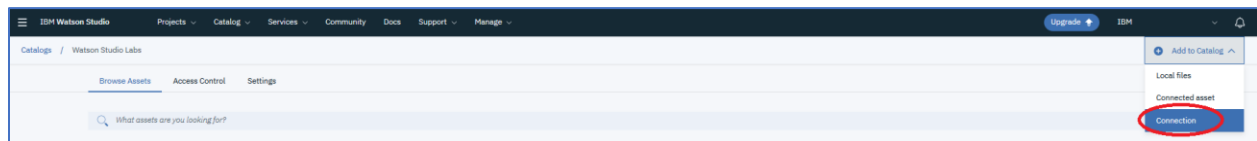
11. Change the name to Occupation and click **Apply**.



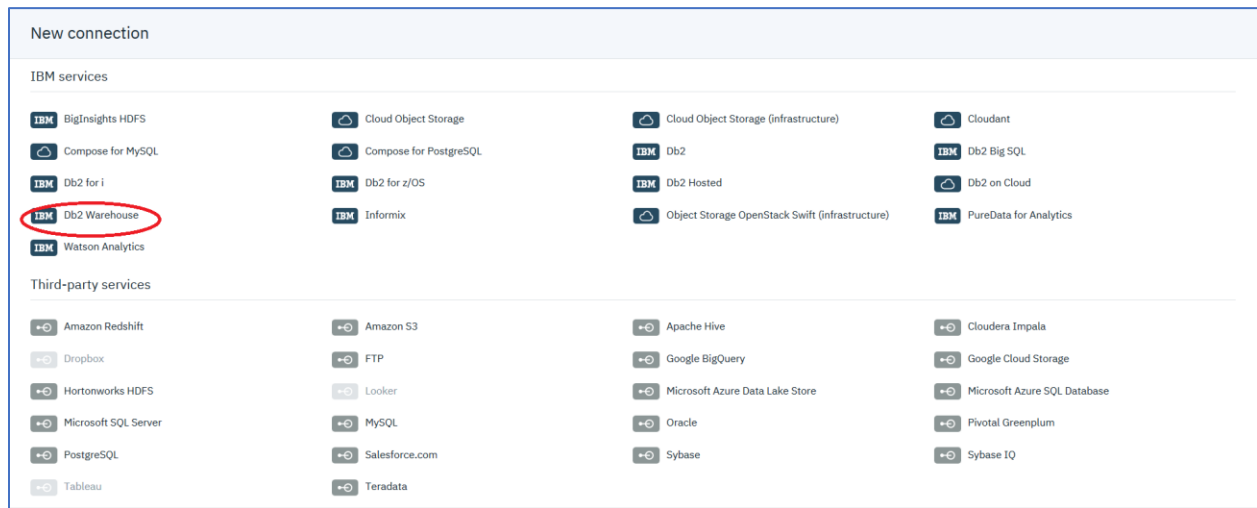
12. Click on **Watson Studio Labs** to return to the catalog display.
13. Follow steps 8-11 to change the Categories.csv asset name to be Categories.

Add Connection

1. Click on **Add to Catalog**, and then click on **Connection**.



2. The Connection page is displayed with the various connectivity options. Click on **DB2 Warehouse**.



3. Enter "trafficking" for the **Name** of the connection. Click on [Access DB2 Credentials](#) to obtain the DB2 Credentials. You should have an index card that provides your assigned database. If not, ask your instructor. Locate the credentials that match your assigned database. Cut and paste the values for username, hostname, password, and database into the corresponding entry areas on the screen. Click on **Create**.

Connection overview

Name
trafficking

Description
IBM Db2 fully-managed cloud SQL database

Connection Details

Username *
xxd96032

Hostname or IP Address *
01b3b-txn-sbox-yp-dal09-03.services.dal.bluemix.net

Secure Gateway
☐ Use a secure gateway

Password *

Database *
BLUDB

Connection discovery
☐ Discover data assets

Enter information for the selected data source

Cancel Create

4. The connection asset is displayed.

What assets are you looking for?

Filter Any type Any business term Any tag Clear all

Watson Recommends Highly Rated Recently Added Collapse

Data Asset Categories

Owner: Andrew Doe

Added: Apr 30, 2019 9:03 PM

Tags: job ty... job ca...

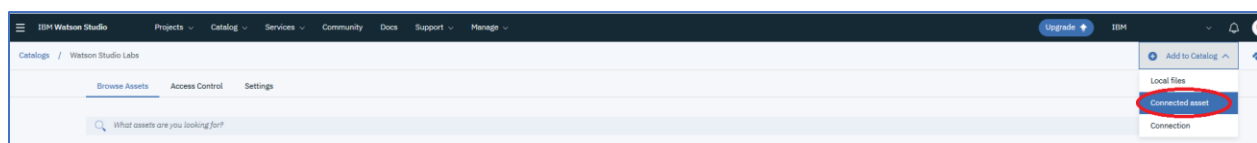
☆☆☆☆☆ 0 reviews

Showing 3 of 3 items

<input type="checkbox"/> Name	Owner	Tags	Business Terms	Type	Date Added
<input type="checkbox"/> Categories	AD Andrew Doe	job types job categor...		Data Asset	Apr 30, 2019
<input type="checkbox"/> Occupation	AD Andrew Doe	occupations jobs		Data Asset	Apr 30, 2019
<input type="checkbox"/> trafficking	AD Andrew Doe			Connection	Apr 30, 2019

Add Connected Data

- We have added a connection to the DB2 Warehouse service. We will now add a Connected Data Asset to point to the FEMALE_HUMAN_TRAFFICKING table in the warehouse. Click on **Add to Catalog** and click on **Connected asset**.



- Click on **Select Source**.

Catalogs / Watson Studio Labs

Add asset from connection

Source*
Select Source

Name*
Asset name

Description

Tags
Start typing to add values

Classification*
None

Privacy
Public Private

Members
Add members

- Click on the **trafficking** connection, click on the **Schema name** (should be DASHnnnnn where “nnnnn” is a number), click on FEMALE_HUMAN_TRAFFICKING, and then click **Select**.

Catalogs / Watson Studio Labs

Connections	trafficking	DASH14512
Connections (1)	Schemas (14)	Tables (15)
trafficking	AUDIT	CLAIMS
	DASH14512	DRUG_FEEDBACK_1
	DB2INST1	FEEDBACK
	ERRORSCHEMA	FEEDBACK_BLB
	GOSALES	FEMALE_HUMAN_TRAFFICKING
	GOSALESDW	FEMALE_HUMAN_TRAFFICKING_ML...
	GOSALESHR	ITEMS
	GOSALESMR	MDB_PROVIDERS
	GOSALESRT	MDB_REQUESTS
	IBM_RTMON_DATA	NEEDS
	NULLIDR1	NEW_FEEDBACK
	NULLIDRA	PATIENTS
	SAMPLES	PROVIDERS
	ST_INFORMTN_SCHEMA	RESOURCES
		SERVICES

Cancel Select

- Enter female_human_trafficking for **Name**, enter “trafficking” for **Tags** , click the “+” icon, enter “female human trafficking for **Tags**, click the “+” icon. Click on **Private**, for Privacy, and click on **Add members**. The privacy setting of “Private” specifies that only catalog members on the access control list for this data asset will have access to the data asset.

Add asset from connection

Source Db2 Warehouse [Change source](#)

trafficking : /DASH14512/FEMALE_HUMAN_TRAFFICKING

Name*
female_human_trafficking

Description

Business Terms
Search Business Terms

Tags
Start typing to add values
trafficking X female human traffi... X

Privacy
☐ Public ☒ Private
Only the asset owner and asset members can find or use the asset.

Members
[Add members](#)

[Cancel](#) [Add](#)

5. Enter John in the **Members** field. The list of matching users is displayed in the member list. Click on **John Doe**.

Add Members

Members (0)

John

John Doe	wsuserblb@gmail.com
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[Cancel](#) [Add](#)

6. Click on **Add** to add John Doe to the access control list for the female_human_trafficking asset.

Add Members

Members (1)

John Doe X

You can only add people who are in the catalog.

Cancel **Add**

7. Click on **Add**.

Add asset from connection

Source Db2 Warehouse [Change source](#)

trafficking : /DASH14512/FEMALE_HUMAN_TRAFFICKING

Name*

female_human_trafficking

Description

Business Terms

Search Business Terms

Tags

Start typing to add values

trafficking X female human traffi... X

Privacy

☐ Public ☒ Private

Only the asset owner and asset members can find or use the asset.

Members [Add members](#)

Name
John Doe

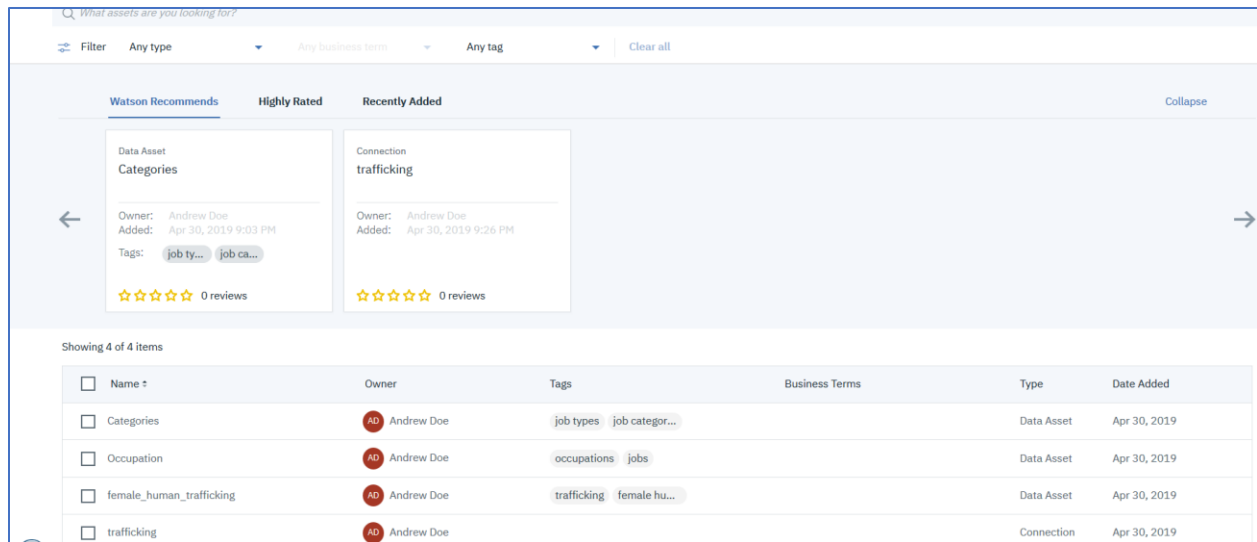
Cancel **Add**

8. Click on **Watson Studio Labs**.

Catalogs / **Watson Studio Labs**

Add asset from connection

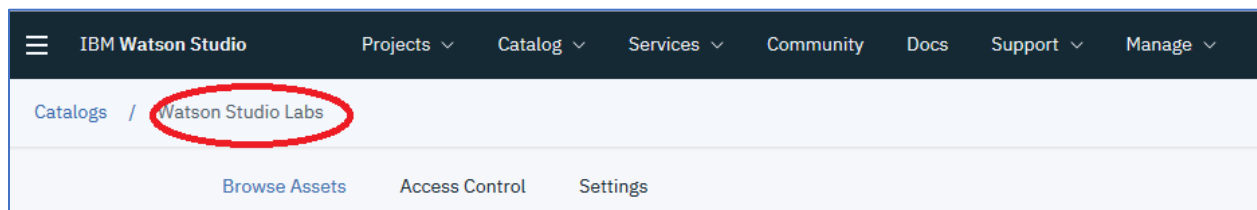
9. All of the assets have now been added to the catalog. The catalog display should appear as below.



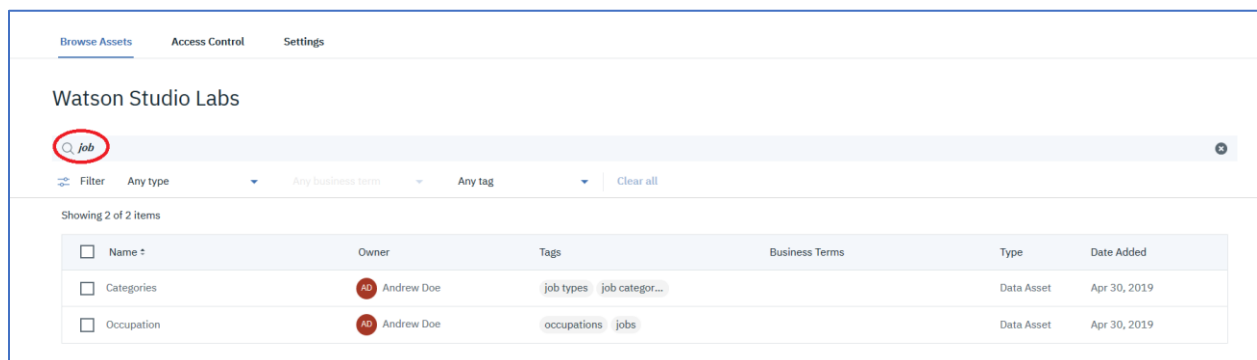
Step 4: Search the Catalog

Several options exist for searching the assets in the catalog. We can enter text in the search input text field and the system will match against asset names and tags. We can then further filter the search results by selecting the Asset Type, and/or the Tags. Or we can directly select the Asset Type or Tags without entering anything in the search text field.

1. Click on **Watson Studio Labs** to return to the Catalog home screen.





2. Enter "job" in the **search text field**. Data assets are displayed that contain the word or letters **job** in their Name, Description, or tags.



3. Clear the **search text field**. Click on the down arrow next to **Any Type**.




Q What assets are you looking for?



Filter Any type  Any business term Any tag  Clear all




- Click on the check box next to **Data Asset**. The search results list the 3 Data Assets. The 1 Connected asset, and the 2 uploaded files. Note: Other asset types that can be cataloged include, Connections, Models, Notebooks, and Dashboards.

Watson Studio Labs

Q What assets are you looking for?




Filter  Type  Any business term Any tag  Clear all

Showing 3  

<input type="checkbox"/>	Name	Owner	Tags	Business Terms	Type	Date Added
<input type="checkbox"/>	Categories	 Andrew Doe	job types job categor...		Data Asset	Apr 30, 2019
<input type="checkbox"/>	Occupation	 Andrew Doe	occupations jobs		Data Asset	Apr 30, 2019
<input type="checkbox"/>	female_human_trafficking	 Andrew Doe	trafficking female hu...		Data Asset	Apr 30, 2019

- Click on the down arrow next to **Any Tag**.





Q What assets are you looking for?

Filter  Type  Any business term Any tag  Clear all


- Click on the check box next to **job types**. The Categories Data Asset is listed.

Watson Studio Labs

job types X Q

Filter  Type  Any business term  Tag  Clear all

Showing 1 of 1 item

<input type="checkbox"/>	Name	Owner	Tags	Business Terms	Type	Date Added
<input type="checkbox"/>	Categories	 Andrew Doe	<input checked="" type="checkbox"/> job types <input type="checkbox"/> female human... <input type="checkbox"/> job categories <input type="checkbox"/> jobs <input type="checkbox"/> occupations <input type="checkbox"/> trafficking		Data Asset	Apr 30, 2019

Step 5: Edit/Review/Profile Data Asset

In this step, we will drill down on the female_human_trafficking data asset to show how to edit the metadata describing the asset, to provide a rating and review of the asset, and to profile the asset.

- Click on **Clear all**.

Watson Studio Labs

job types X Q

Filter 1x Type Any business term 1x Tag Clear all

Showing 1 of 1 item

Name	Owner	Tags	Business Terms	Type	Date Added
Categories	40 Andrew Doe	job types job categor...		Data Asset	Apr 30, 2019

2. Click on the female_human_trafficking asset.

Available Assets

Showing 4 of 4 assets

NAME	OWNER	TAGS	TYPE	DATE ADDED
Categories	DSX56000 User	categories job types job categories	Data Asset	Jan 21, 2019
Occupations	DSX56000 User	occupations jobs	Data Asset	Jan 21, 2019
Occupations	DSX56000 User		Connection	Jan 21, 2019
female_human_trafficking	DSX56000 User	trafficking female human trafficking	Data Asset	Jan 21, 2019

female_human_trafficking

3. The metadata and data contents of the asset are displayed as shown below. Toward the top of the screen, are 5 tabs, circled in red below. The panel shown below corresponds to the **Overview** tab. The **Access** tab allows the user to edit the access control list for this asset. The **Review** tab enables the user to provide a rating and descriptive review of the asset. These social features aid in searching for relevant and useful assets. The **Profile** tab invokes an auto-profiling capability where the columns of the data asset are classified based on machine learning scoring into one of many classifiers that are built into the platform. This capability will be shown below. Finally, the **Lineage** tab tracks the changes made to the data asset over its lifecycle. This capability is not available in the lite catalog offering so will not be exercised in this lab.

Catalogs / Watson Studio Labs / female_human_trafficking

Overview Access Review Profile Lineage

DATA ASSET

female_human_trafficking

Remove Download Add to Project

Description

There is no description available for this asset.

Added: Apr 30, 2019 9:43 PM
Format: application/octet-stream
Size: 324 KB

Business Terms

There are no terms available for this asset.

Tags

trafficking | female human trafficking

Reviews

★★★★★ 0 reviews

Connection

Source: trafficking
Source type: Db2 Warehouse

Schema: 26 Columns | 1085 Rows

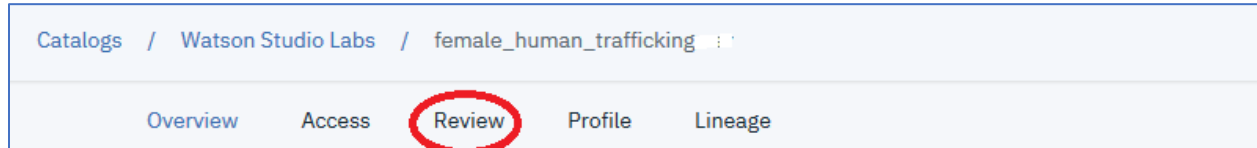
Preview: 1000 rows Last refresh: just now Refresh

INTERNAL...	VETTING_L...	DESCRIPT...	NAME	GENDER	BIRTH_D...	BIRTH_COUN...	BIRTH_COUNTRY_C...	OCCUPATI...	ADDRESS
Type: Smallint	Type: Smallint	Type: String	Type: String	Type: String	Type: Date	Type: String	Type: String	Type: String	Type: String
Identifier	Code	Country C...	Person Na...	Gender	Date of Bi...	Country Name	Country Code	Text	Text
785	20	NA	Sara Nunez	F	1978-12-28	Ghana	GH	Industrial/produ	7369 Kevin H
786	100	NA	Sara Schultz	F	1983-08-10	Ghana	GH	Ranger/warden	1064 Jorge M
787	100	NA	Mackenzie Emi C	F	2000-11-13	Ghana	GH	Food technologis	2296 Anthon
788	100	NA	Rea Ray	F	1996-01-13	Ghana	GH	TEFL teacher	7285 David M
789	100	NA	Becky Anthony	F	1996-01-23	Ghana	GH	Lighting technici	96566 Nancy
790	100	NA	Emily McBride	F	1996-11-27	Ghana	GH	Education officer	11227 Hood
791	100	NA	Allison Stanley	F	1994-12-04	Ghana	GH	Psychotherapist,	91579 Miche
792	100	NA	Elle King	F	1971-03-29	Ghana	GH	Photographer	6283 Cindy P

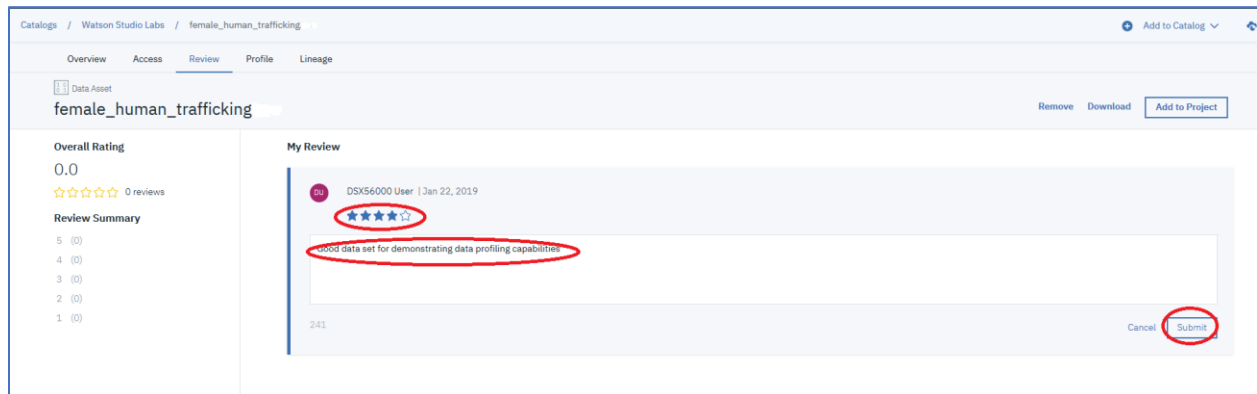
The actions circled in blue will **Remove** the asset from the catalog, **Download** the asset to the local file system, or add the asset to a catalog enabled project (**Add to Project**).

Hovering over the **Name** of the data asset, the **Description**, the **Business Terms**, or the **Tags** will popup an Edit icon that allows the user to edit these entities.

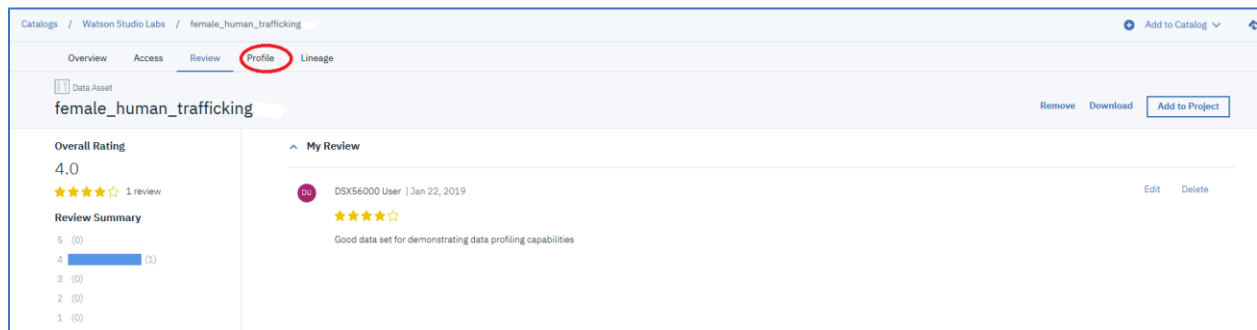
4. Click on the **Review** tab.



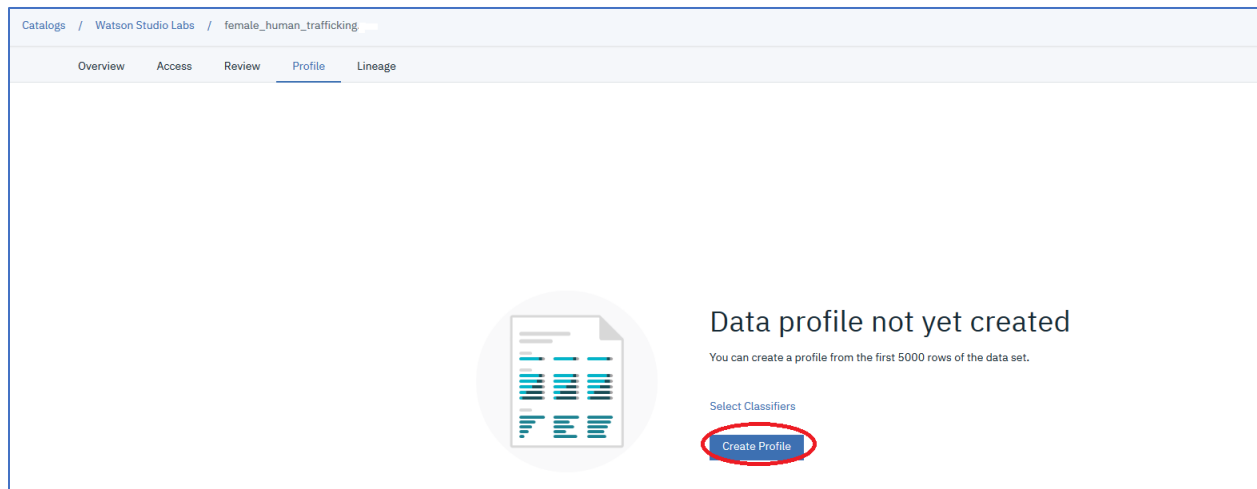
5. Click on the fourth star to rate this asset. Enter “Good data set for demonstrating data profiling capabilities” in the **My Review** text field. Click on the **Submit** button.



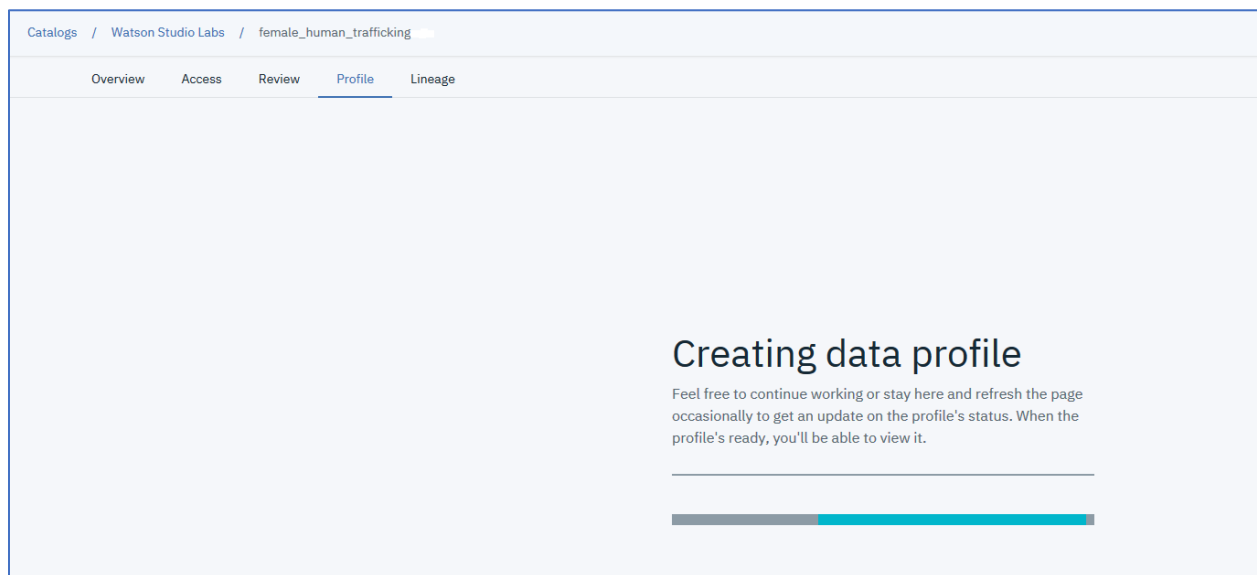
6. The review of the asset is displayed. Click on the Profile tab.



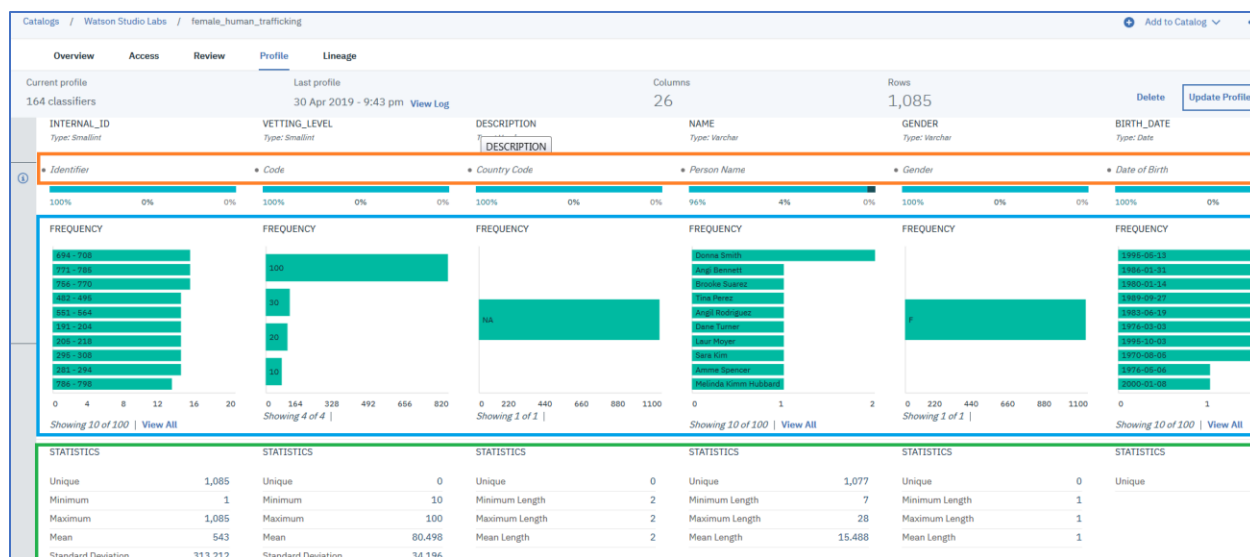
7. Click on **Create Profile**. If a profile was already created, it would be displayed instead of this prompt screen.



8. Wait a minute or so, and then click on browser refresh.

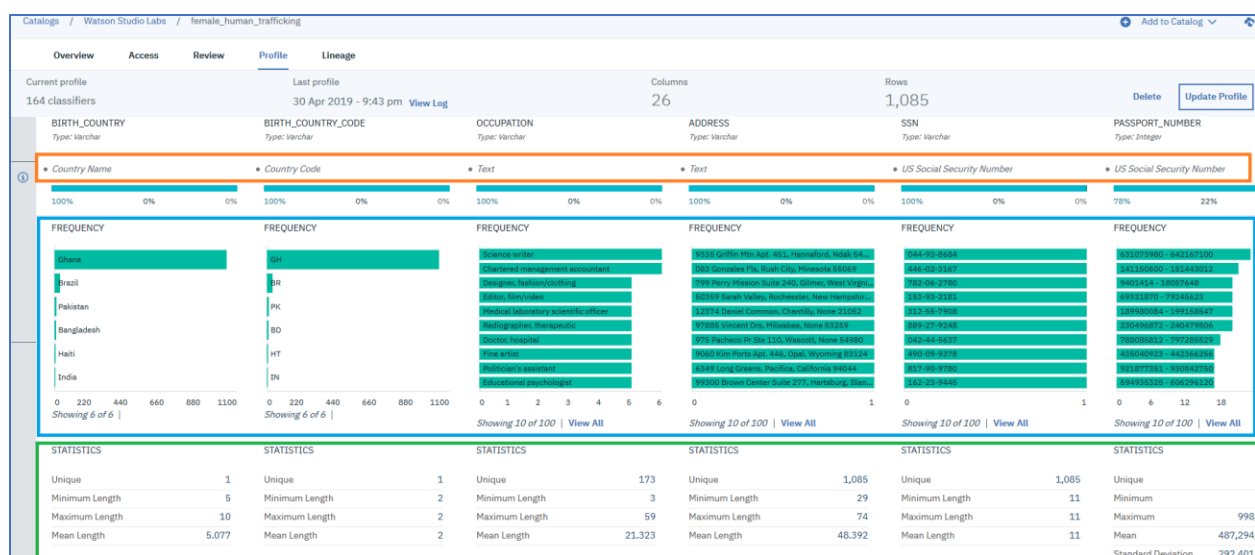


9. The profile information is displayed below using several screenshots, based on horizontal scrolling, to display many of the columns of the data asset. The highlighted red box contains the inferred column classifications. The highlighted blue box contains counts of the number of occurrences of each value (for discrete fields), and a histogram for continuous fields. The green box contains statistics calculated from the contents of the columns.



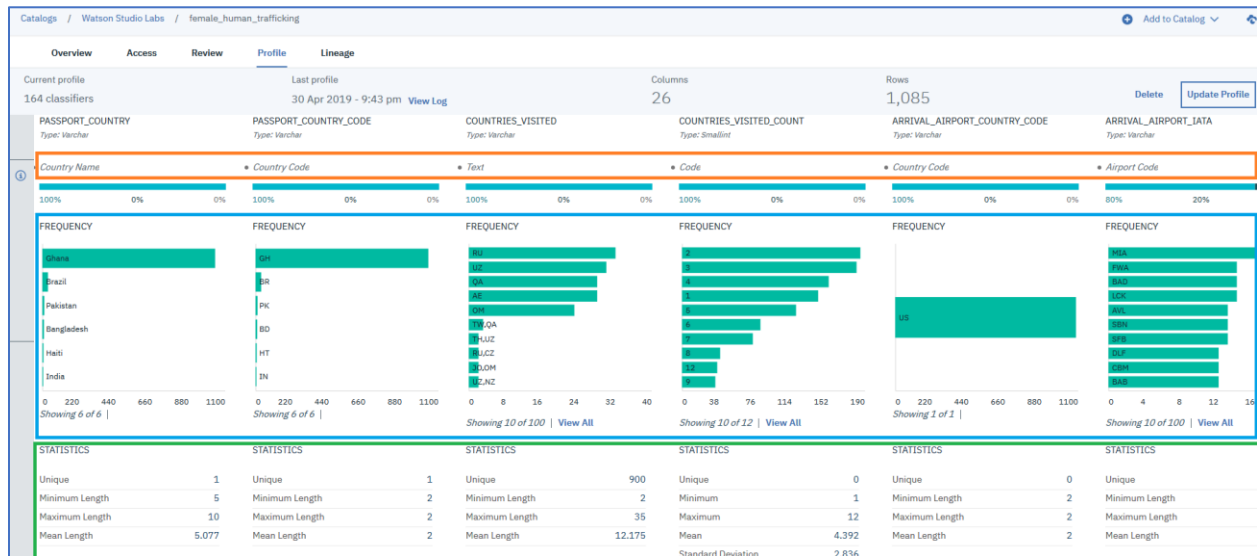
The classifications of the columns are listed below:

- INTERNAL_ID – Identifier
- VETTING_LEVEL – Code
- DESCRIPTION – Country Code – this is an error due to the description input as NA. We can correct this misclassification.
- NAME: PersonName – the classification accurately determines that this field is the name of a person.
- GENDER: Gender
- BIRTH_DATE: Date of Birth – the classification accurately determines that this field represents a date of birth.



- BIRTH_COUNTRY: Country Name- correctly classified as a country
- BIRTH_COUNTRY_CODE – Country Code - correctly classified

- OCCUPATION – Text – there is not a classifier for occupation, so it determines that this is a text string.
- ADDRESS: Text
- SSN – US Social Security Number – correctly classifies the column as a social security number.
- PASSPORT_NUMBER – incorrectly classifies as a social security number. This can be corrected as we will see below.



- PASSPORT_COUNTRY - Country Name- correctly classified as a country
- PASSPORT_COUNTRY_CODE: Country Code - correctly classified
- COUNTRIES_VISITED – Text
- COUNTRIES_VISITED_COUNT – Code – this is an error. It's not a code. This can be re-classified if necessary.
- ARRIVAL_AIRPORT_COUNTRY_CODE – Country Code – correctly classified.
- ARRIVAL_AIRPORT_IATA: Airport Code – the classification accurately determines that this field represents an Airport Code.

There are more columns in the data set but this gives a representative sample of the profiling capability. The classification of the columns becomes important when we create and enforce security policies.

10. Let's fix the classification for passport. Hover the mouse over the US Social Security Number in the **PASSPORT NUMBER** Column and click on the  icon.

PASSPORT_NUMBER
Type: Integer

- US Social Security Number 

Classifier: US Social Security Number

Inferred


Description: In the United States, a Social Security number (SSN) is a unique nine-digit number issued to U.S. citizens, permanent residents, and temporary (working) residents.

Example: 123-45-6789

0%

11. Click on **View All**.

PASSPORT_NUMBER
Type: Integer

- US Social Security Number 

- ✓ US Social Security ... 78% matches
- Not classified 21% matches
- Canadian Social In... 7% matches
- Routing Transit Nu... 3% matches

View All

12. Type “Pass” in the **Search** field.

Classifier distribution

US Social Security Number

• Inferred 78% 22% 0%

Pass

Passport Number

Close

STATISTICS

13. Hover over Passport Number and click on **Use**.

Classifier distribution

US Social Security Number

● Inferred 78% 22% 0%

Pass

Passport Number **Use**

Classifier: Passport Number

Description: Passport number is the unique ID assigned to a travel document, usually issued by the government of a nation, that certifies the identity and nationality of its holder for the purpose of international travel.

Example:
L898902C<3UTO6908061F9406236ZE184226B<<

Close

14. Click **Close**.

Classifier distribution

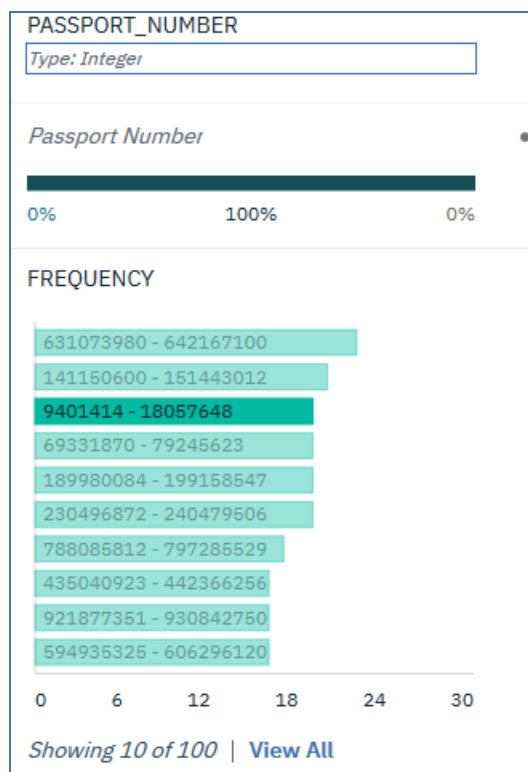
Passport Number

Selected 0% 100% 0%

Pass

Close

15. The column classification has been changed.



Step 6: Access Control

All Catalog members can access assets with a privacy setting of Public. Assets that have a privacy setting of Private are secured based on the asset access control list. A summary of the access control settings for our Watson Studio Labs catalog and the contained Data Assets is shown below.

Watson Studio Lab Catalog members:

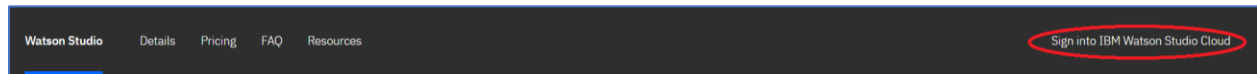
1. Catalog owner (logged on user)
2. E-mail of user provided by lab instructor (used here for illustrative purposes - wsuserblb@gmail.com.)

Data Asset Privacy:

1. female_human_trafficking (Private) ACL Members:
 - a. asset owner (logged on user)
 - b. e-mail of user provided by lab instructor (used here for illustrative purposes - wsuserblb@gmail.com)
2. Occupations (Private) ACL Members:
 - a. asset owner (logged on user)
3. Categories (Public)
4. trafficking (Connection) (Public)

We would expect that if we log in as wsuserblb@gmail.com, that only 3 Data Assets would appear. The two public Data Assets, and the Private Data Asset where wsuserblb@gmail is on the access control list. This user would not have access to the Occupations asset, since it is a Private asset, and the user is NOT on the access control list for this asset. To verify complete the following steps.

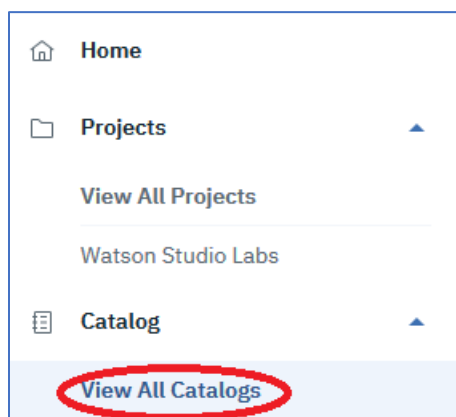
1. Open a different browser (if you are using FireFox, then open Chrome or vice versa).
2. Type in datascience.ibm.com for the URL to navigate to.
3. Click on **Sign into IBM Watson Studio Cloud**



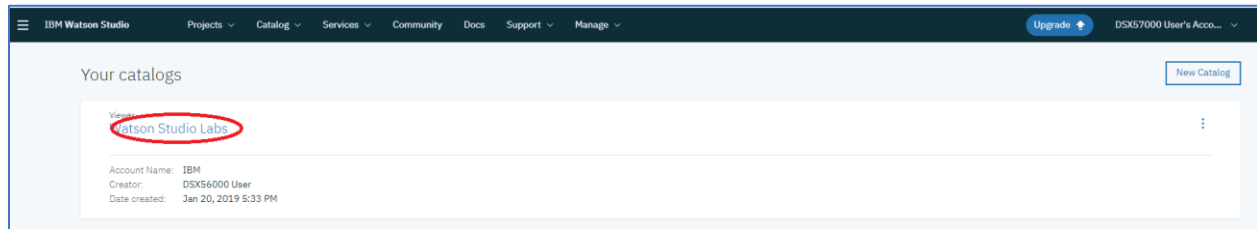
4. Login using wsuserblb@gmail.com for the user name and wsPassw0rd for the password.

A white login page with the heading 'Log in to IBM'. On the left, there are links: 'Don't have an IBMid? Create an account', 'Log in with your company credentials (SSO)', and 'Need help? Contact the IBMid Helpdesk'. On the right, there are input fields for 'IBMId' (containing 'wsuserblb@gmail.com') and 'Password' (containing '.....'). There are links 'Forgot IBMid?' and 'Forgot password?'. At the bottom right, there is a 'Remember me' checkbox and a blue 'Log in' button. The username, password field, and 'Log in' button are circled in red.

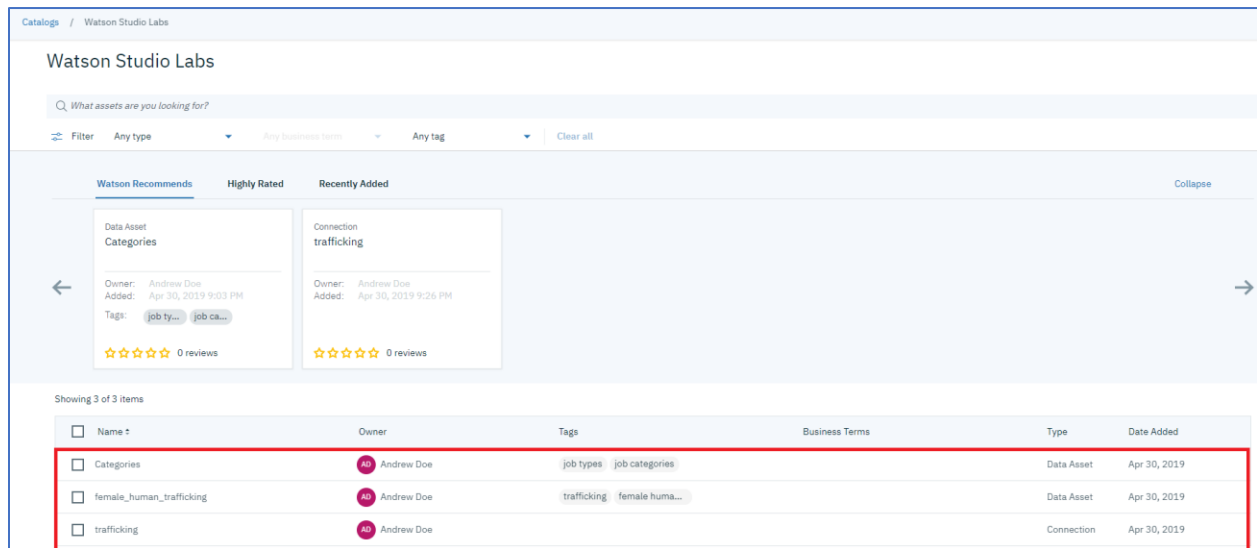
5. Click on  icon. Click on **Catalog** and then **View All Catalogs**



- Click on the **Watson Studio Labs** catalog that corresponds to your username. Note that there will be 1 catalog per lab participant.




- The Watson Studio Labs catalog is displayed. Three Data Assets are listed as expected.



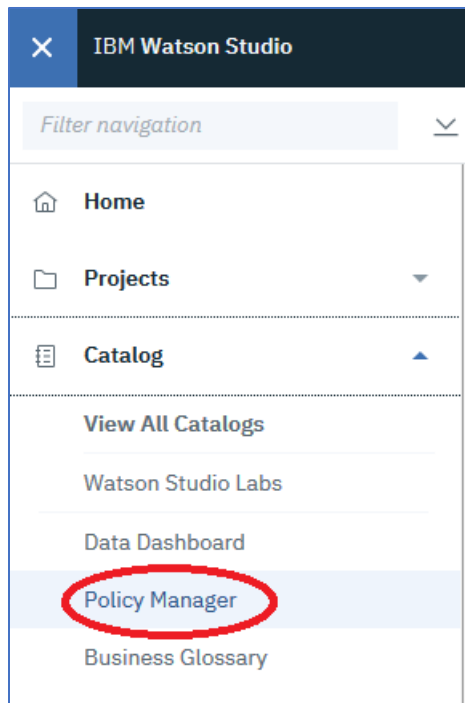
- Leave this browser at this screen for Step 7.

Step 7: Create and Enforce Policy

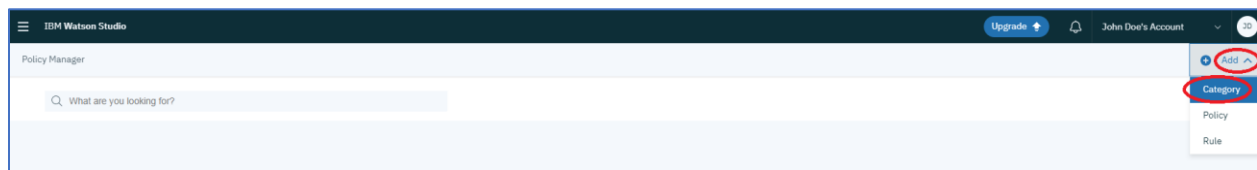
In this step, we will create a policy that will anonymize the SSN and Passport fields when user wsuserblb@gmail.com tries to access the female_human_trafficking data asset.

- Return to the browser where your Watson Studio id is logged in.
- Click on the  icon. Click on **Catalog** and then **Policy Manager**.





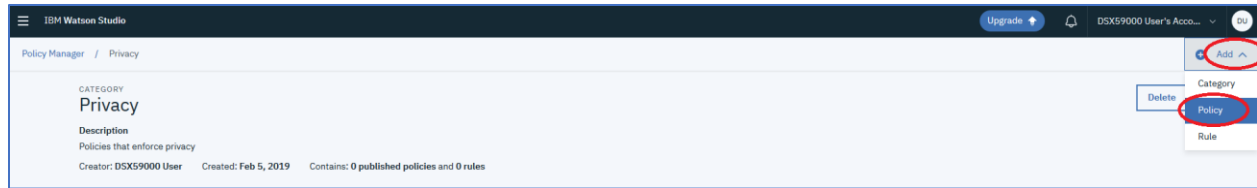
3. Click on **Add** and then **Category**.



4. Type in the Privacy for the **Name** of the Category, and optionally a **Description**, and click on **Create**.

The image shows the 'New category' form in IBM Watson Studio. The form has a 'Details' section with two fields: 'Name*' and 'Description'. The 'Name*' field is labeled 'Privacy' and is highlighted with a red circle. The 'Description' field contains the text 'Policies that enforce privacy' and is also highlighted with a red circle. At the bottom right of the form, there are two buttons: 'Cancel' and 'Create'. The 'Create' button is highlighted with a red circle.

5. Click on **Add** and then **Policy** to add a policy to the Privacy Category.



6. Type in PII for the Policy **Name**, type in “Limit access to PII data” for the Policy **Description**, click on **create a new rule**.

7. Enter “Redact Government ID” for the rule **Name**, enter “Redact a Government ID” for the rule **Description**, for the rule select the following:

If **Data Class** contains any
Government Identities

And

If **User Name** contains any
John Doe

then **anonymize data** where **in columns containing**
Government Identities

Details

Name *
Redact Government ID

Type *
Access

Business definition *
Redact a Government ID

Rule builder

Criteria *
CONDITION 1

If Data class Government Identities contains any

And

User Name John Doe contains any

Add condition

Action *

then anonymize data in columns containing Government Identities

8. Select how to anonymize data: **Substitute**, and then click **Create**.

Action *

then anonymize data in columns containing

Government Identities X

Select how to anonymize data:

Redact	Substitute	Mask
BEFORE 452-821-1120	BEFORE 452-821-1120	BEFORE 452-821-1120
Replace data with Xs.	Replace data with values that don't match the original format.	Replace data with similarly formatted values.

[Visit the documentation](#) to learn more about data anonymization.

Cancel Create

9. Click on **Publish**.

New policy

Details

Name*

PII

Type*

Access

Category*

Privacy

Description

Limit access to PII Data

Rules 1

Redact Government ID

Redact a Government ID

Cancel Save as draft **Publish**

10. Click on **Publish**.

Attention!

Are you sure you want to publish this policy?

Cancel **Publish**

11. The PII policy has been added.

Policy Manager / Privacy

CATEGORY

Privacy

Description

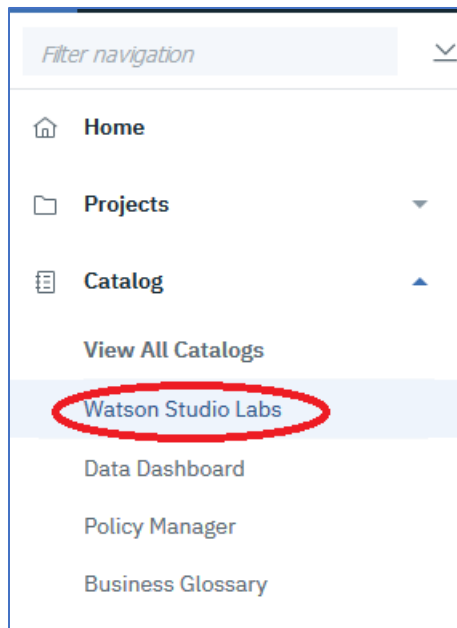
Policies that enforce privacy

Creator: DSX59000 User Created: Feb 5, 2019 Contains: 1 published policies and 1 rules

Q What are you looking for?

NAME	TYPE	STATUS	CONTAINS	LAST MODIFIED
> PII	Policy	Published	1 Item	Feb 5, 2019

12. Click on the  icon, then click on **Catalog** and then **Watson Studio Labs**.



13. Switch back to the browser with the wsuserblb@gmail.com logged in. Click on the **female_human_trafficking** asset.

Available Assets

Showing 3 of 3 assets

<input type="checkbox"/>	NAME +	OWNER	TAGS	TYPE	DATE ADDED	
	Categories.csv	DSX59000 User		Data Asset	Jan 31, 2019	⋮
	female_human_trafficking	DSX59000 User	trafficking female human trafficking	Data Asset	Jan 31, 2019	⋮
	trafficking	DSX59000 User		Connection	Jan 31, 2019	⋮

14. The female_human_trafficking asset is displayed. Wait for the anonymization to complete. Note that 2 columns are anonymized.

Data Asset

female_human_trafficking

Description

There is no description available for this asset.

Added:

Jan 31, 2019 10:02 AM

Format:

application/octet-stream

Size:

347 KB

Tags

trafficking female human trafficking

Reviews

☆☆☆☆☆

0 reviews

Connection

Source:

Watson Studio Labs_DataCatalog

Source type:

Cloud Object Storage

Classification

Personally Identifiable Information

Personally identifiable information (PII) is defined as any data that could potentially identify a specific individual. Any information that can be used to distinguish one person from another can be considered PII.

Schema: 26 Columns | 1085 Rows | 2 Columns anonymized ⓘ

Preview: 1000 rows

Last refresh: 22 seconds ago

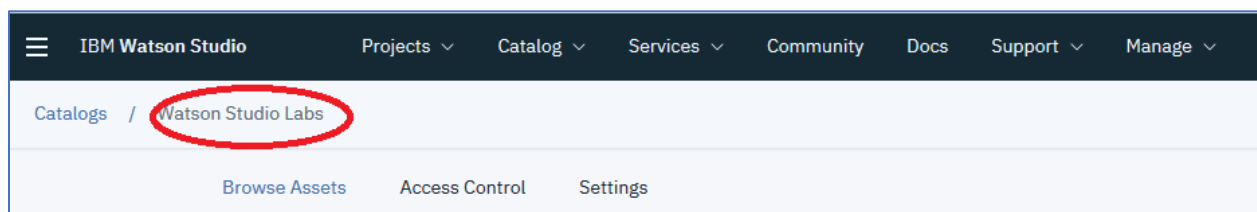
Refresh

DATE	BIRTH_COUNT...	BIRTH_COUNTRY_CODE	OCCUPATION	ADDRESS	SSN	PASSPORT_NUMBER ⓘ
Type: String	Type: String	Type: String	Type: String	Type: String	Type: String	Type: String
th	Country Name	Country Code	Text	Text	US Social ...	Passport Number
15	Ghana	GH	Engineer, land	824 Kristin Grv, F	afe55d1d355c3:	1c9da91e1e20863dd850
19	Ghana	GH	Editor, commissi	1148 Wang Fall :	77a0daa42ec7d	12d38855ed107e7cc5dd
16	Ghana	GH	Merchant navy ol	9486 Pratt Wall,	669061087d6d1	c43ed0283a3def7031d8:
17	Ghana	GH	Paramedic	0890 Johnson Tr	997b59e501b2e	179abee5ba608418154d
18	Ghana	GH	Surveyor, buildin	2315 Brittany Cr	70329b83b40c:	84524ccc3c5c6590600e:
24	Ghana	GH	Waste managem	88811 Donald Pt	d2f2236f52407:	a730ae13f5ed96f71e904
23	Ghana	GH	Doctor, general p	9150 Donald Rpx	d2c2d41163d8f:	ced1617be1d70e44421c
02	Ghana	GH	Forest/woodland	1355 Lopez Villa	62007942c2b0c:	8c8debd4a01b6b6d954b
12	Ghana	GH	Land/geomatics :	86792 Amy Vlg,	08f8dd9f9ba89:	a43f1d6c9cacdfa82a1a1
10	Ghana	GH	Oncologist	108 Erin Via, Nev	f8b871f6e058e:	f289be62078ebbe457c6:
07	Ghana	GH	Veterinary surger	79572 Schmidt E	f2006c1d30df3:	624a9605774a0cfd98aa

Step 8: Push the data assets to the project

This step will add the cataloged data assets to our Watson Studio project to be used in subsequent labs. Return to your Watson Studio account.

1. Click on **Watson Studio Labs** to go to the Catalog home screen.



2. Hover the cursor to the left of each data asset and then click on the checkbox. Click on **Add to Project**.

Add to Project ⓘ Remove ⓘ		4 of 4 items selected				Cancel
<input checked="" type="checkbox"/>	Name ?	Owner	Tags	Business Terms	Type	Date Added
<input checked="" type="checkbox"/>	Categories	Andrew Doe	job types job categories		Data Asset	Apr 30, 2019
<input checked="" type="checkbox"/>	Occupation	Andrew Doe	occupations jobs		Data Asset	Apr 30, 2019
<input checked="" type="checkbox"/>	female_human_trafficking	Andrew Doe	trafficking female huma...		Data Asset	Apr 30, 2019
<input checked="" type="checkbox"/>	trafficking	Andrew Doe			Connection	Apr 30, 2019

3. Select the Watson Studio Labs as the **Target**. Click on **Add**.

Catalogs / Watson Studio Labs

Add to Project

Target*

Watson Studio Labs

Connections to be added (1)

The following connections will be added to the project to successfully add the assets.

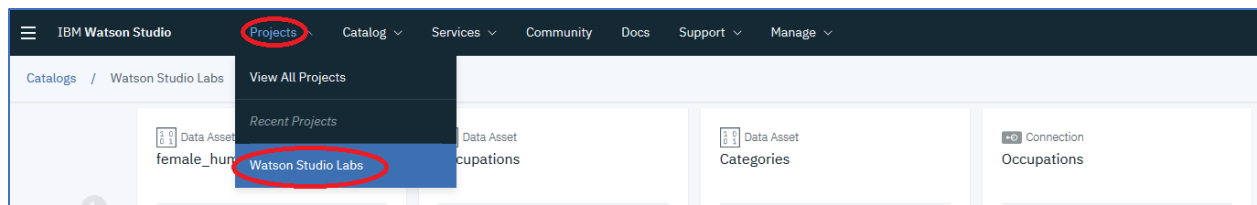
Occupations
IBM Db2 fully-managed cloud SQL database

Selected assets (4)

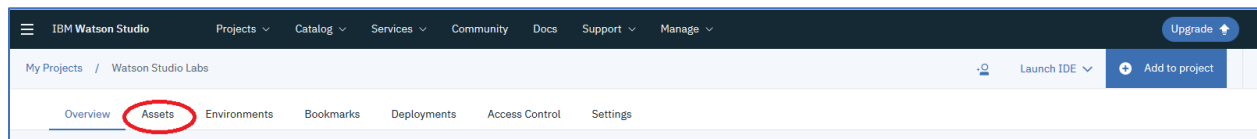
ASSET NAME	CONNECTION
Categories	Occupations
Occupations	Occupations
Occupations	Occupations
female_human_trafficking	Watson Studio Labs_DataCatalog

Cancel Add

- Click on **Projects** and then **Watson Studio Labs**. Wait for the message that 4 assets have been added to the project.



- Click on the **Assets** tab.



- The Data assets are now incorporated in the project.

