



Deploy Models



Contents

Goals and Requirements	3
Deploy Models	4
Prepare the Experiment for web service	5
Creating Predictive Webservice	7
Using the Webservice	13

Goals and Requirements

Estimated time to complete lab is 40-45 minutes

Goals

1. Approach of Deploying the Model as Web Service .
2. Usage of Webservice in Excel and New Test Service.

Requirements:

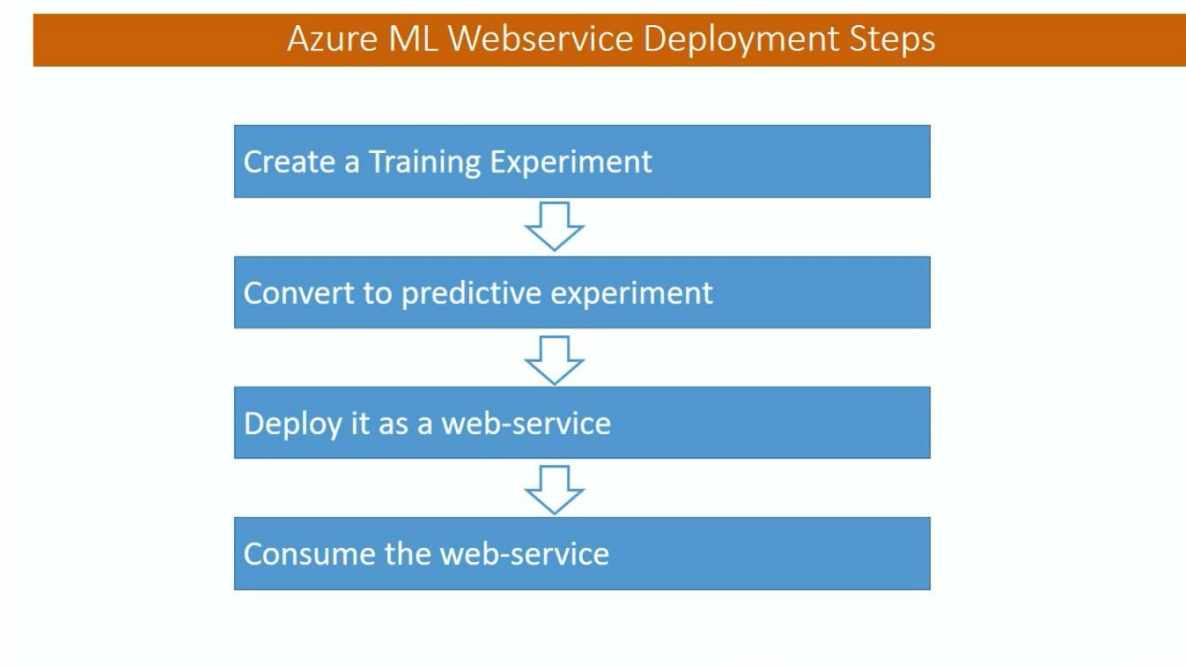
1. Access to an Azure Machine Learning Studio
2. Excel Add on for Azure Machine Learning

Deploy Models

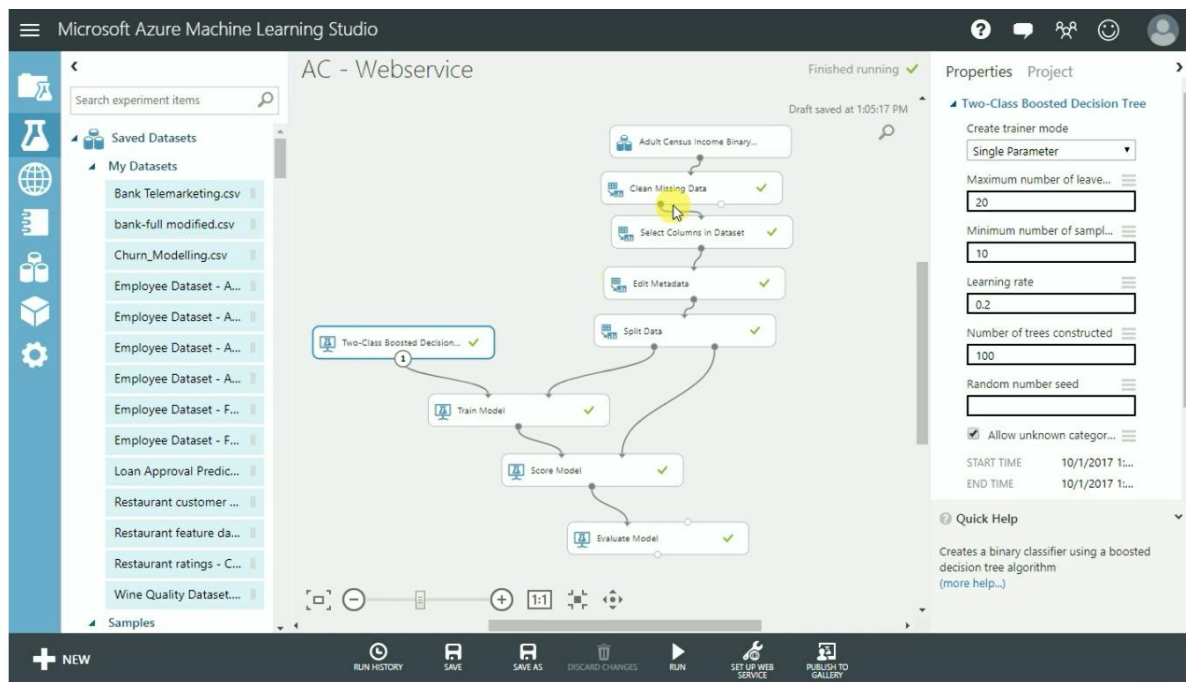
I have a Model. Now What?

- Develop but how to deploy?
- Model language is not supported
- Difficult to deploy in the current architecture
- Tedious Environment set-up
- Many more...

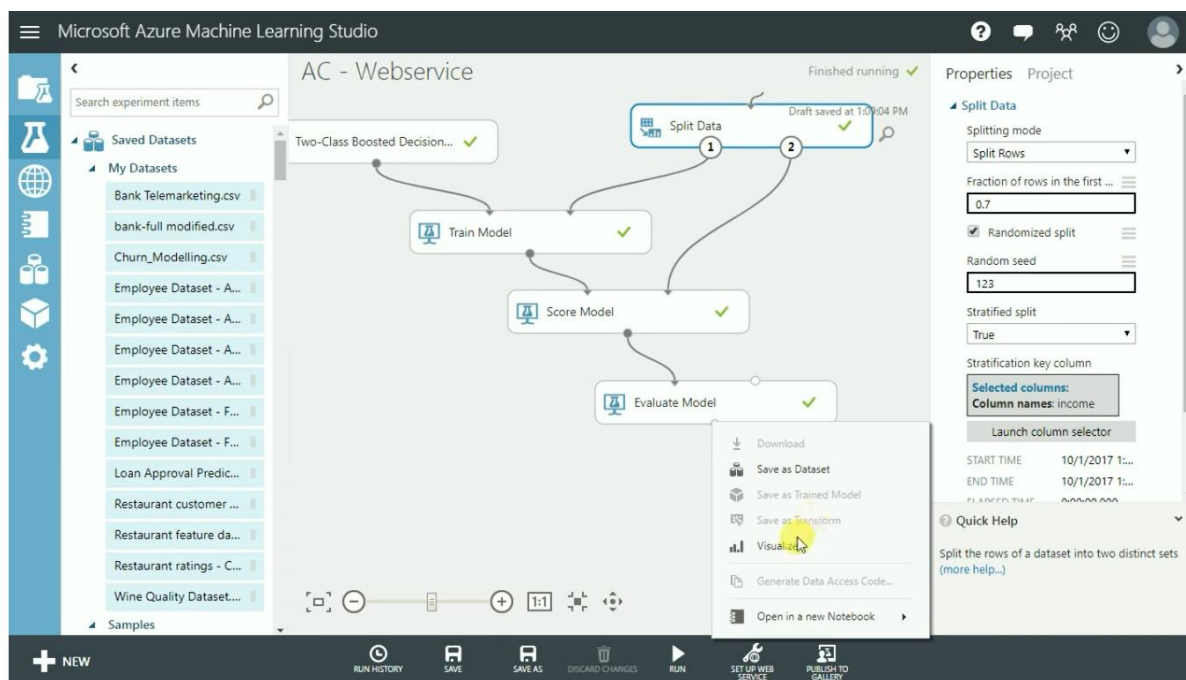
Prepare the Experiment for web service



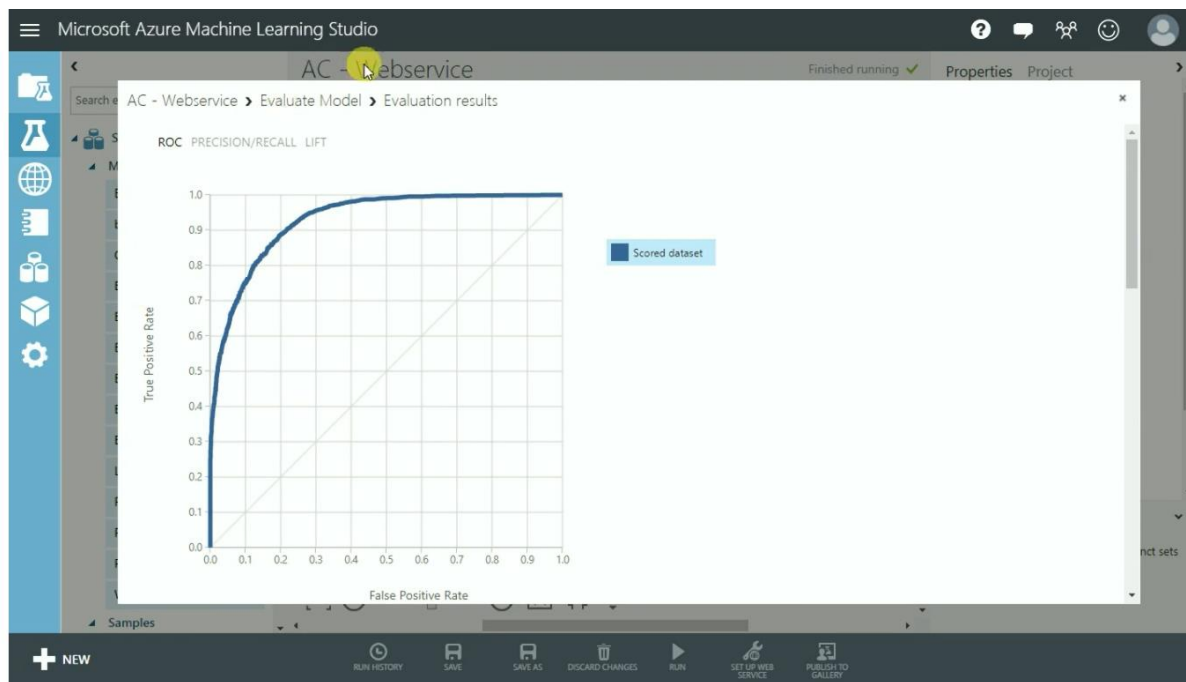
Let us take adult census income prediction model done earlier



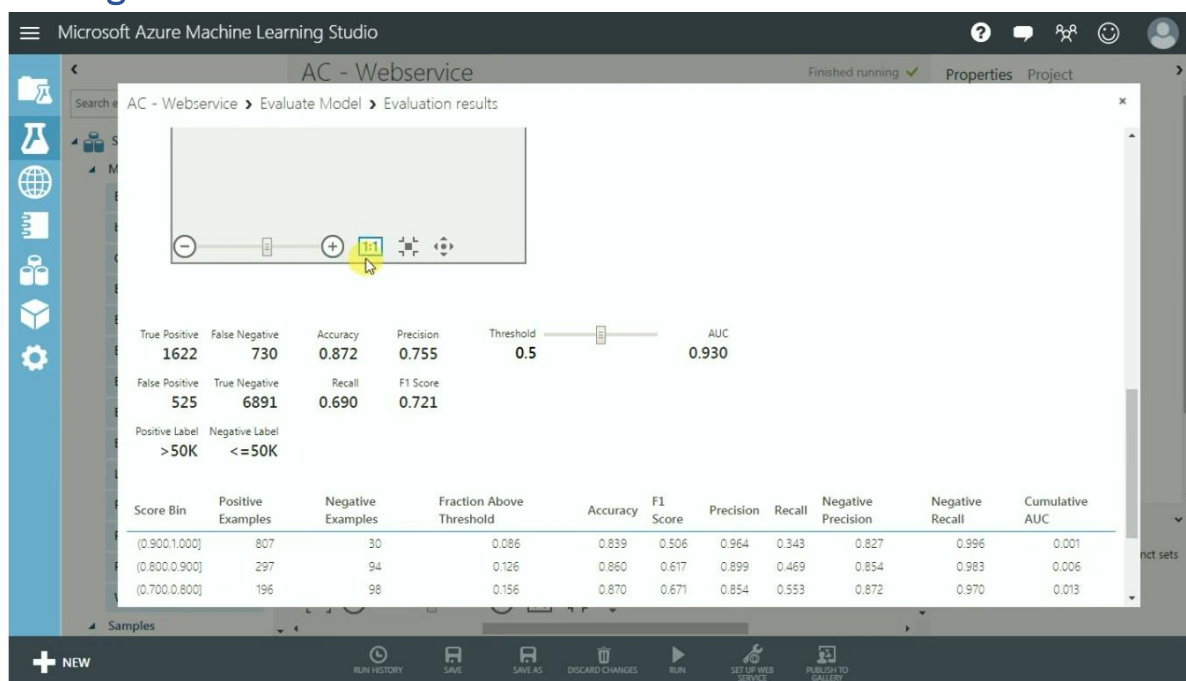
Visualize the result



Result

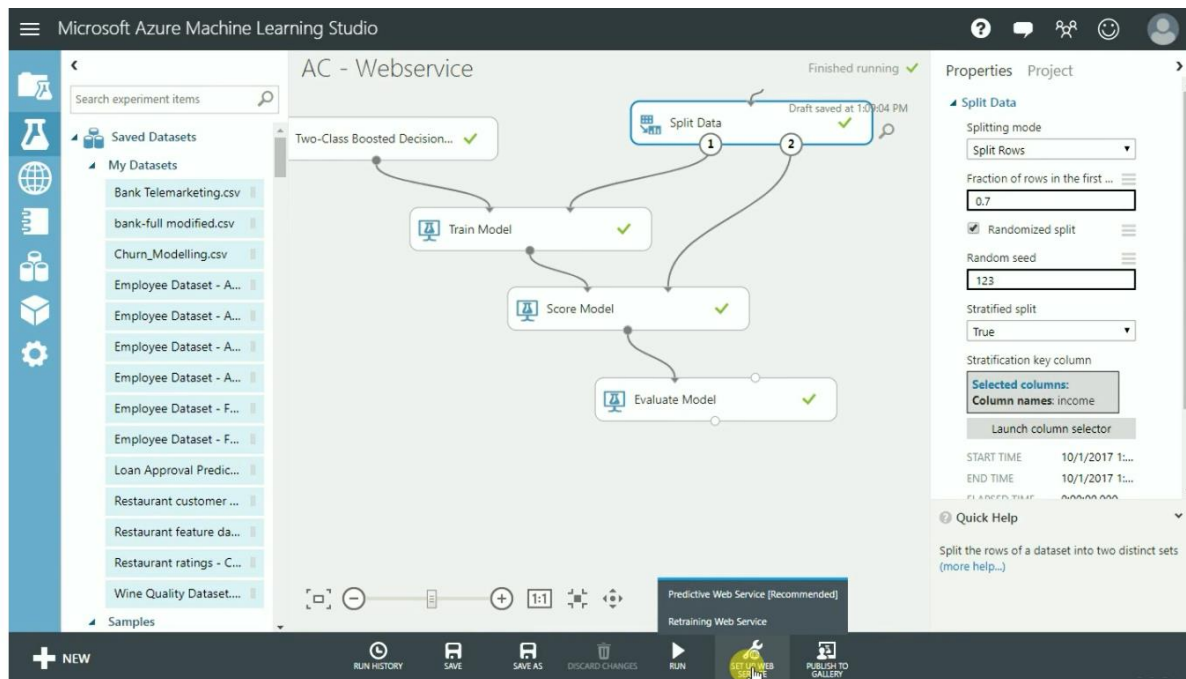


Creating Predictive Webservice

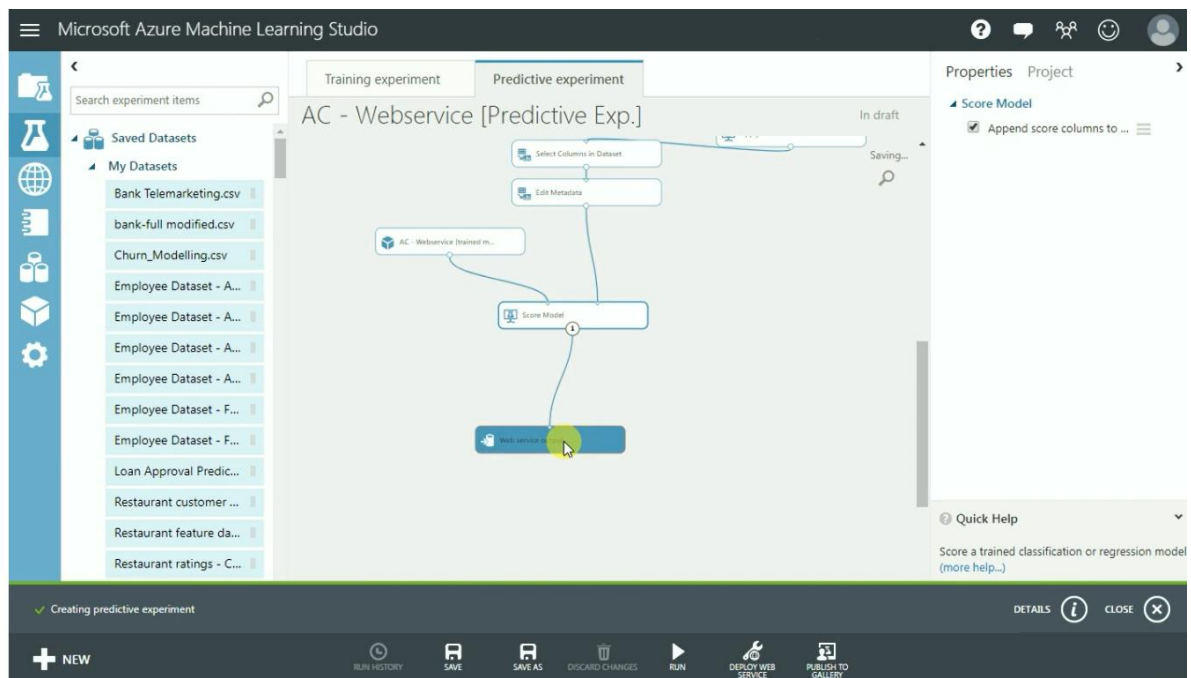


Next step is to setup the web service

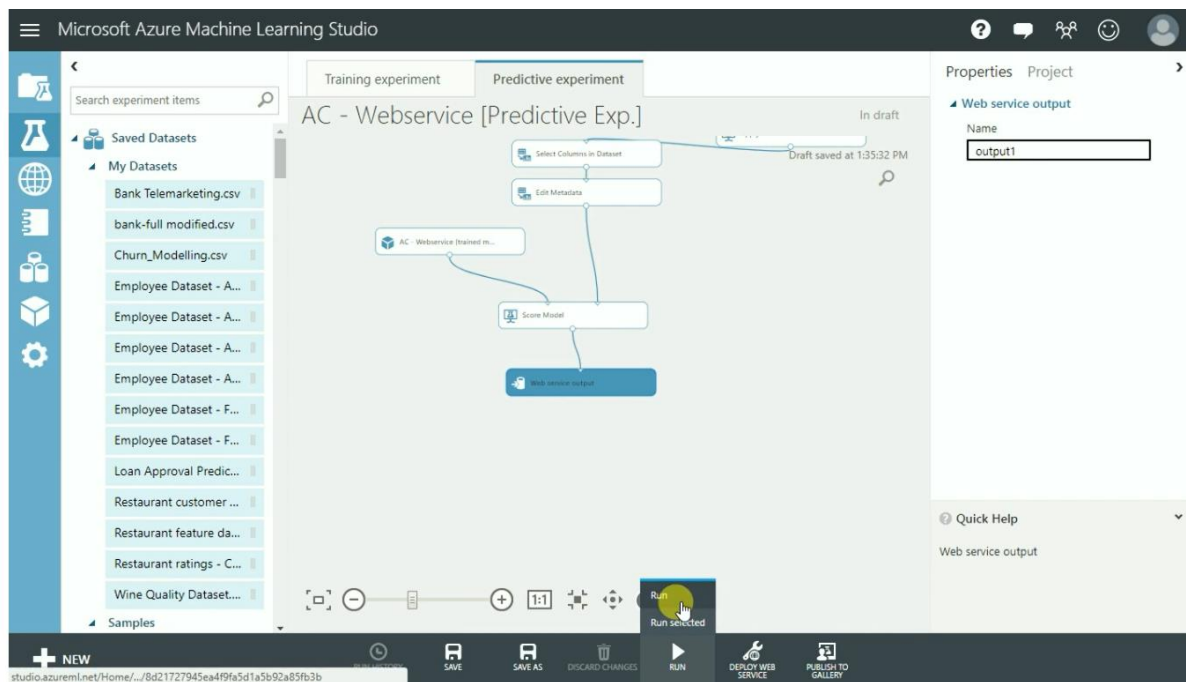
Click on predictive web service



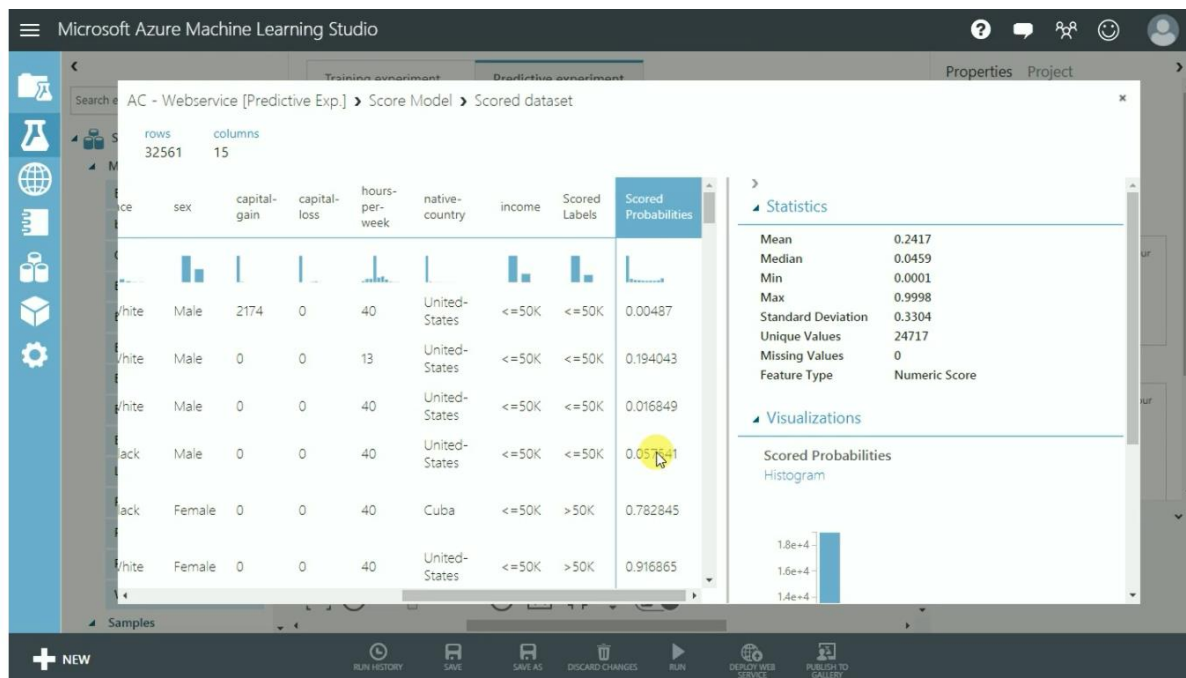
Created predictive environment



Run the predictive model

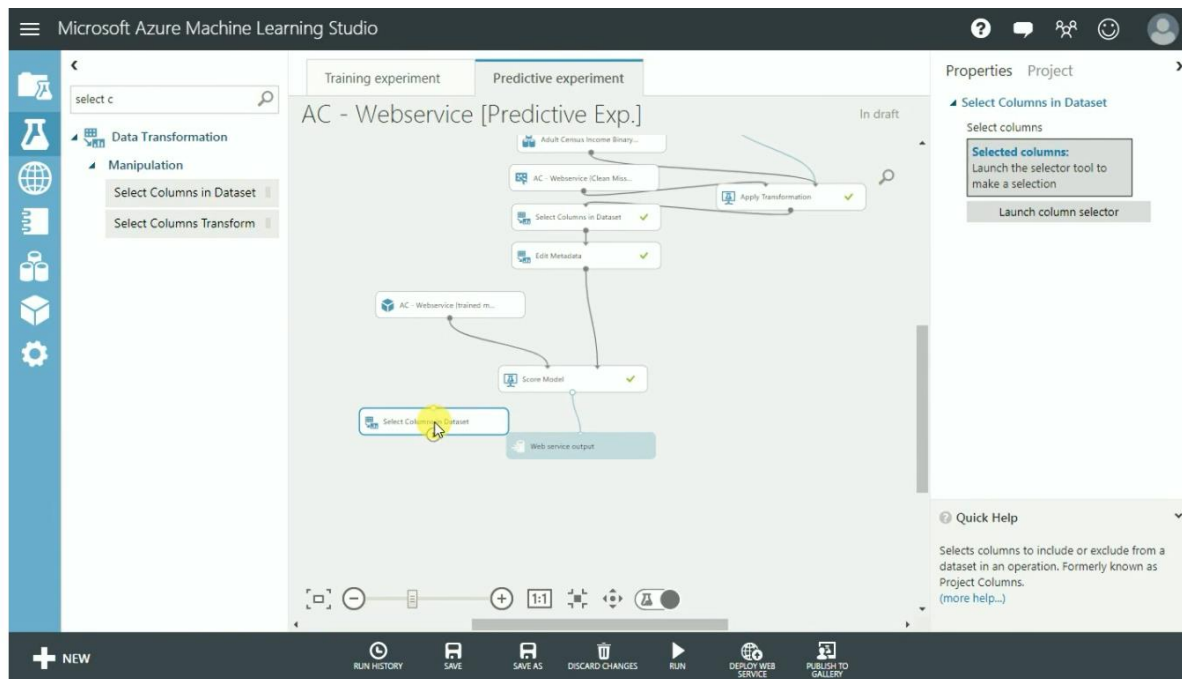


Visualize the result



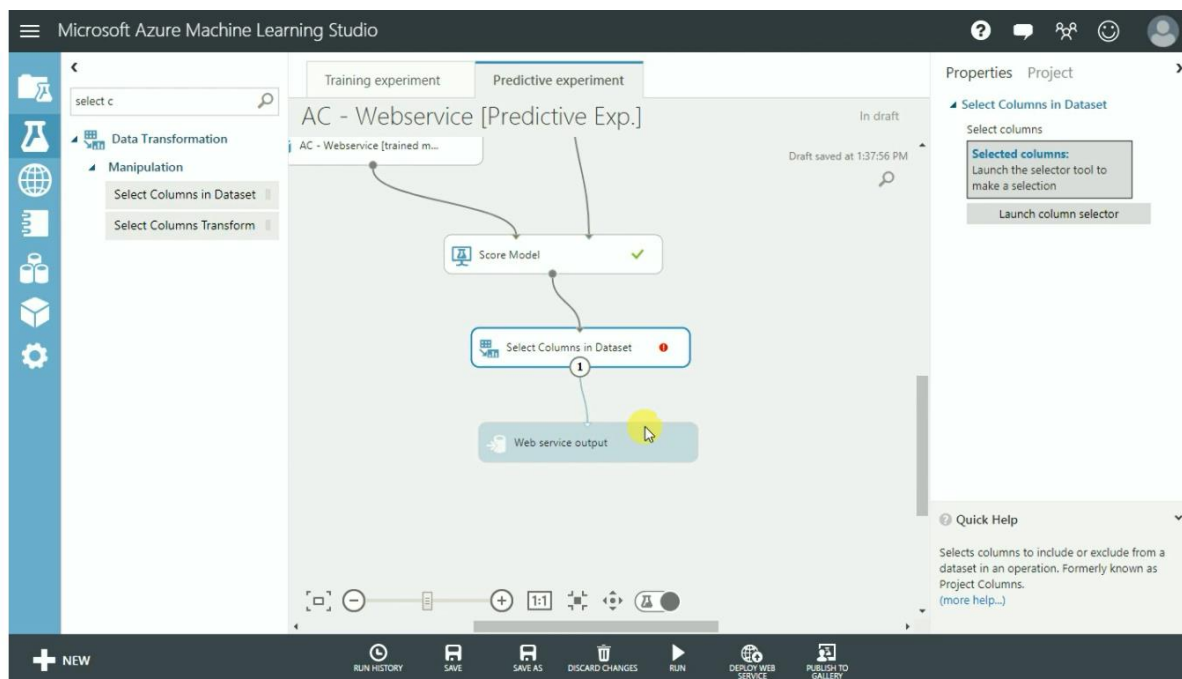
In order to separate only the required files

Add select column in dataset in canvas



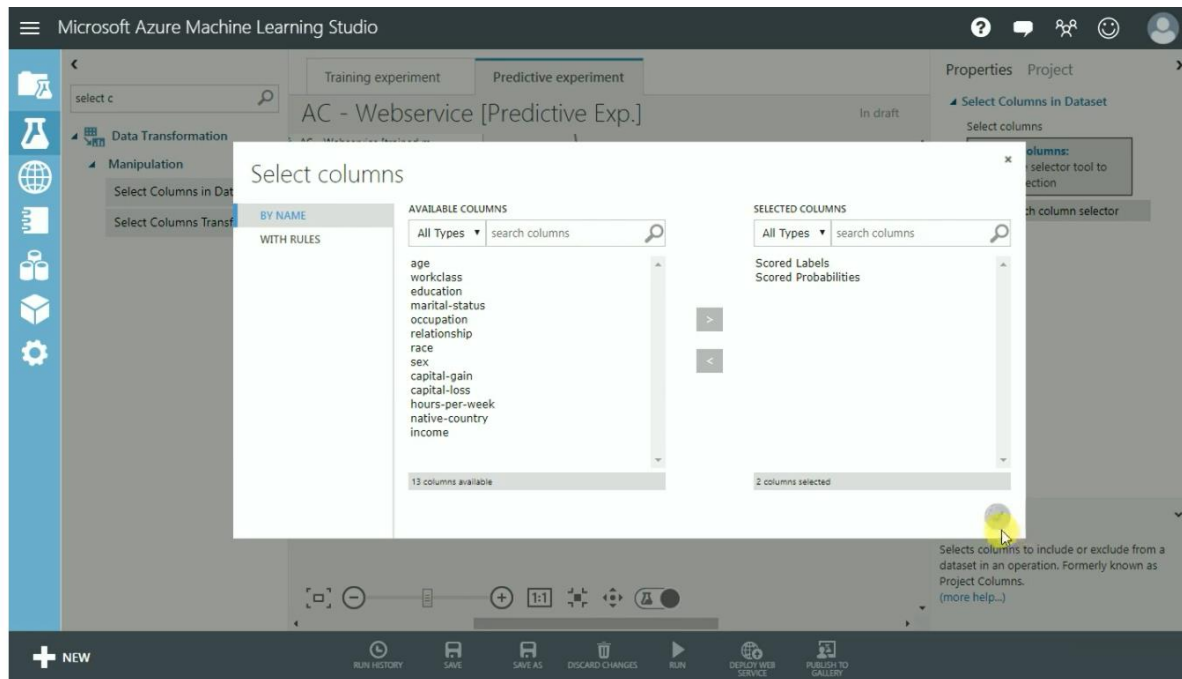
Disconnect nodes between score model and web service

Now make connections linking the select columns in dataset

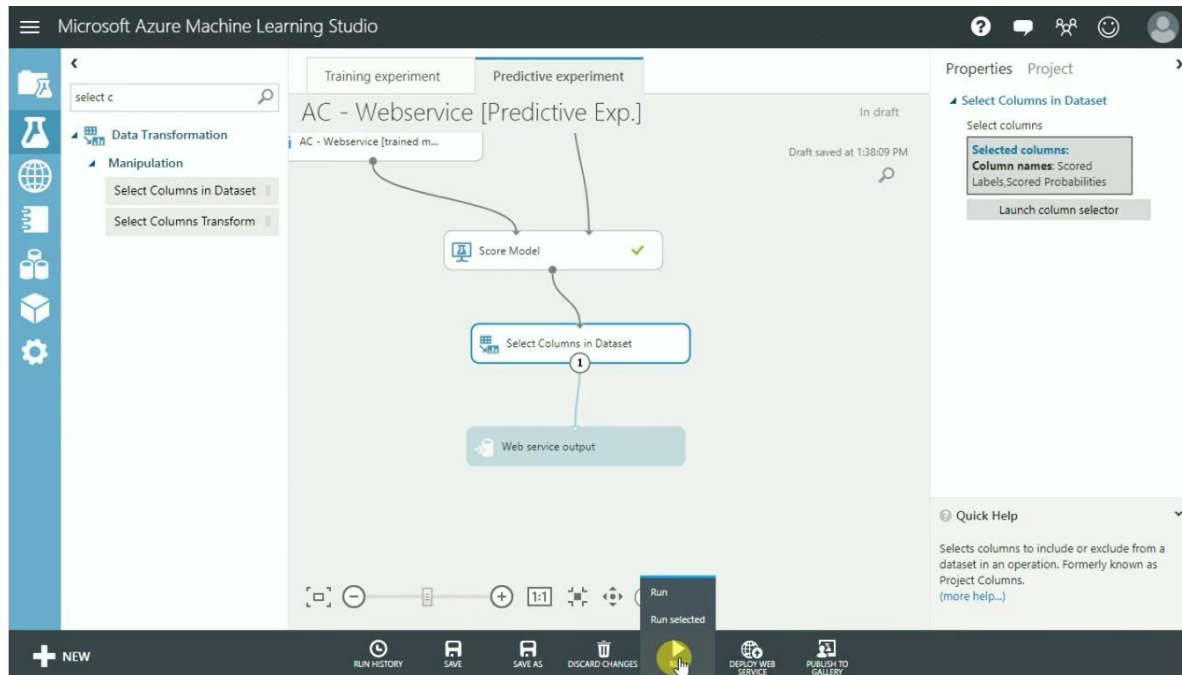


From select column dataset, click launch column selector and select only the required columns

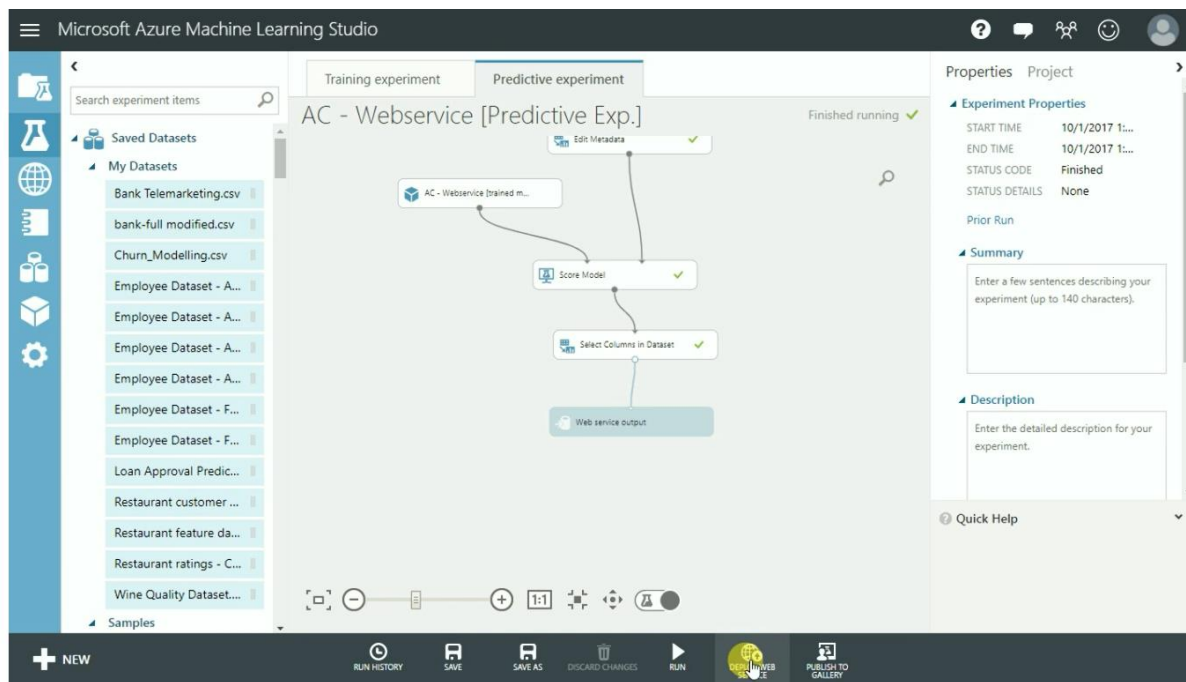
And click ok



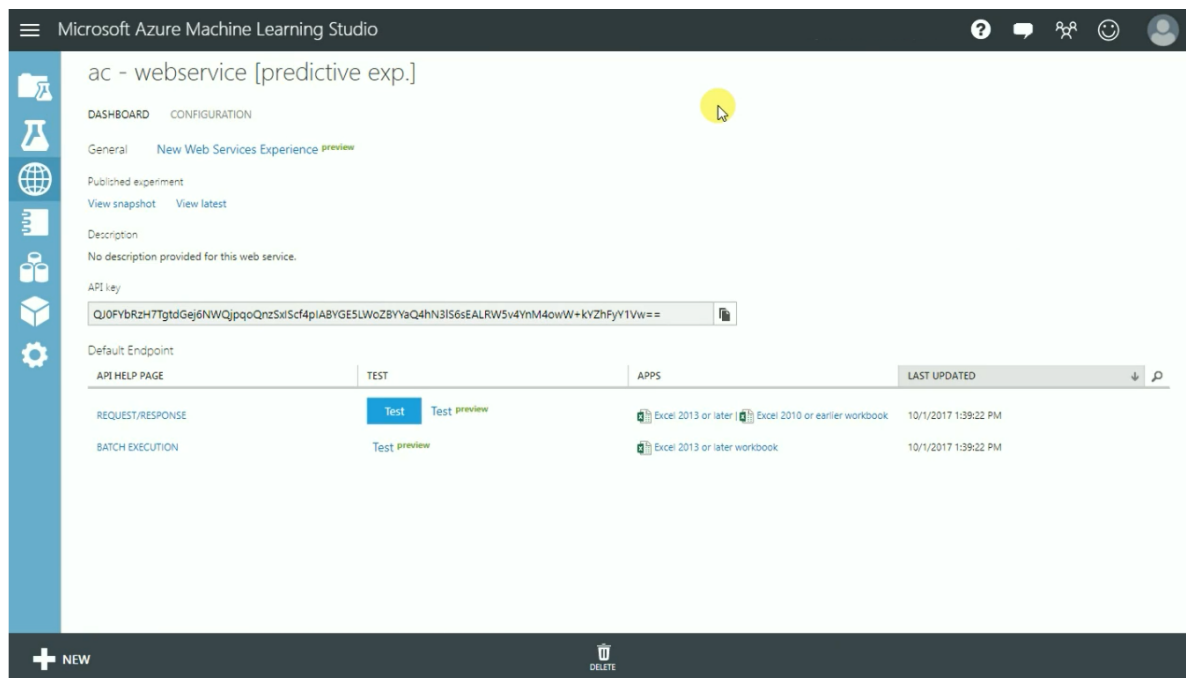
Now run the module to changes keep effect



Now click deploy web services



Result



Using the Webservice

From the output of adult census income predictions

Microsoft Azure Machine Learning Studio

ac - webservice [predictive exp.]

DASHBOARD CONFIGURATION

General [New Web Services Experience](#) preview

Published experiment
[View snapshot](#) [View latest](#)

Description
No description provided for this web service.

API key

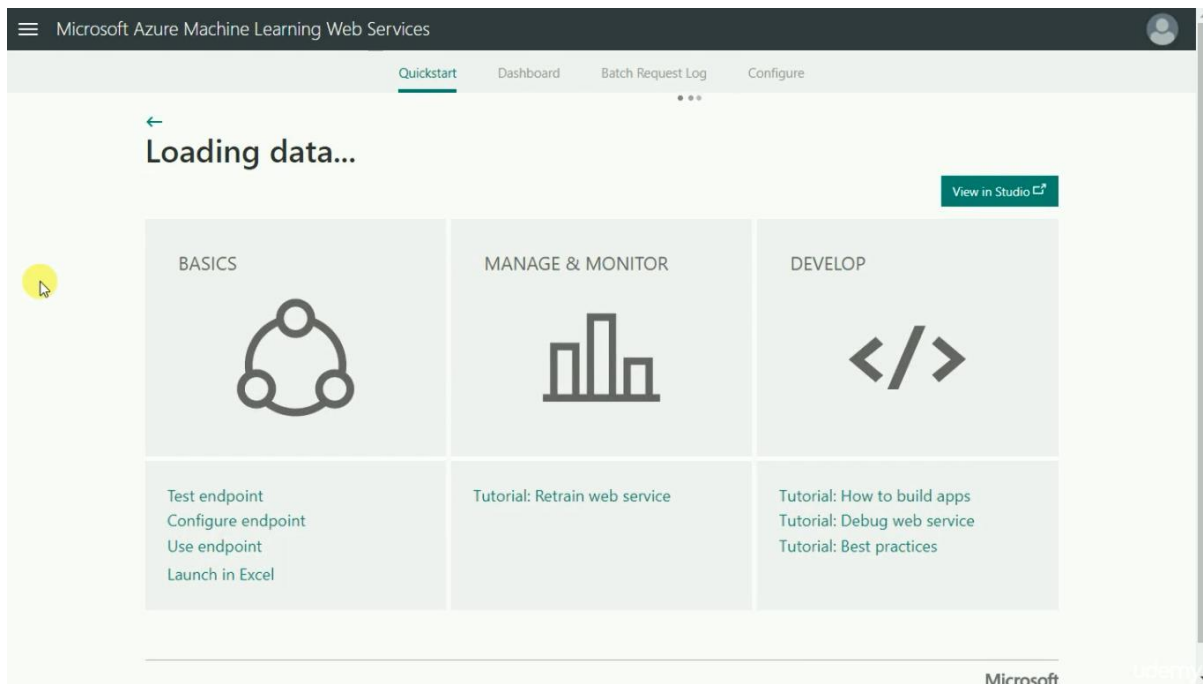
Default Endpoint

API HELP PAGE	TEST	APPS	LAST UPDATED
REQUEST/RESPONSE	Test Test preview	Excel 2013 or later Excel 2010 or earlier workbook	10/1/2017 1:39:22 PM
BATCH EXECUTION	Test preview	Excel 2013 or later workbook	10/1/2017 1:39:22 PM

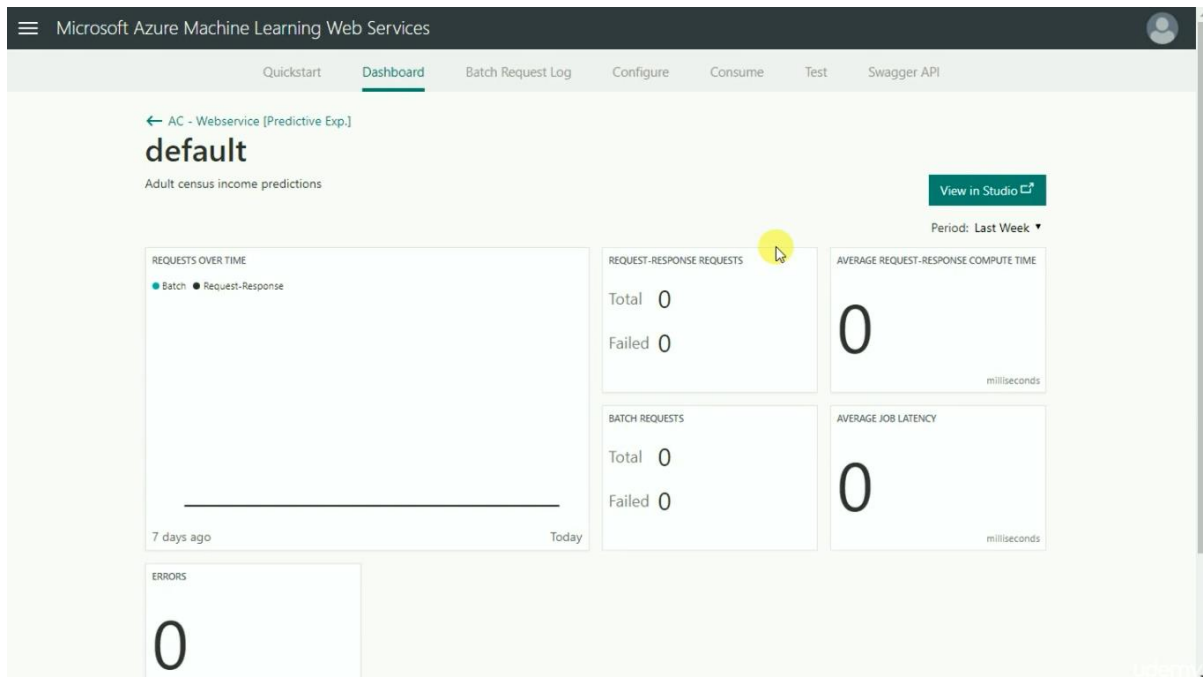
+ NEW

DELETE

The new experience link in the result take you to quick start



Dashboard shows how many requests have been made, Average compute time , batch request etc



In configure you can change description and what kind of login you have

And can check the end points in sample data enabled

The screenshot shows the 'Configure' page for a web service named 'default' (Adult census income predictions). The page has a dark header with the Microsoft Azure Machine Learning Web Services logo and a user profile icon. Below the header is a navigation bar with links: Quickstart, Dashboard, Batch Request Log, Configure (active), Consume, Test, and Swagger API. The main content area shows the service name 'default' and its description 'Adult census income predictions'. There is a 'View in Studio' button. Below this is a 'Description' text box containing 'Adult census income predictions'. There are 'Logging' buttons: 'None', 'Error', and 'All', along with a 'Logging Help' link. A 'Sample Data Enabled?' section has 'Yes' and 'No' radio buttons, with 'Yes' selected. A 'Save' button is at the bottom. The footer contains the Microsoft logo and links for FAQ, Privacy and Cookies, Terms of Use, and © Microsoft.

Can perform excel operations and provide other information and sample code

The screenshot shows the 'Consume' page for the same web service 'default'. The navigation bar is the same, but the 'Consume' link is now active. The main content area shows 'Web service consumption options' with three icons: 'Excel 2013 or later', 'Excel 2010 or earlier', and 'Request-Response Web App Template'. Below this is 'Basic consumption info' with a link to a tutorial. There are four sections for keys and endpoints: 'Primary Key' (QJ0FYbRzH7TgtGej6NWQjpqoQnz5xIscf4pIABYGE5LWoZBYyaQ4hN3IS6sEALRW5v4YnM4owW+kYZhFyY1Vw==), 'Secondary Key' (Cg8kiEsvQnESTPoLY4AAvSpsqWeQZoU3kkzydgSImddSqrCLDwKheAAeSfayleKXV9+vyU2LcaQcgHwXyN84g==), 'Request-Response' (https://ussouthcentral.services.azureml.net/workspaces/8d21727945ea4f9fa5d1a5b92a85fb3b/services/958a028977ad4d0a9a5c5ade4721127d/execute?api-version=2.0&format=swagger), and 'Batch Requests' (https://ussouthcentral.services.azureml.net/workspaces/8d21727945ea4f9fa5d1a5b92a85fb3b/services/958a028977ad4d0a9a5c5ade4721127d/jobs?api-version=2.0). Each key and endpoint has a copy icon.

Microsoft Azure Machine Learning Web Services

Quickstart Dashboard Batch Request Log Configure **Consume** Test Swagger API

Basic consumption info

Want to see how to consume this information? Check out this [easy tutorial](#).

Primary Key QJ0FYbRzH7TgtdGej6NWQjpqoQnzSxvScf4pIABYGE5LWoZ8YYaQ4hN3IS6sEALRW5v4YnM4owW+kYZhFyY1Vw==

Secondary Key Cg8kiEsvQnESTPoLY4AAvSpsqWeQZoU3kkzydg5IMddSqrCLDwKheAAe5fayleKXV9+vyU2LcaQcgHwXyN84g==

Request-Response <https://ussouthcentral.services.azureml.net/workspaces/8d21727945ea4f9fa5d1a5b92a85fb3b/services/958a028977ad4d0a9a5c5ade4721127d/execute?api-version=2.0&format=swagger>

API Help Documentation

Batch Requests <https://ussouthcentral.services.azureml.net/workspaces/8d21727945ea4f9fa5d1a5b92a85fb3b/services/958a028977ad4d0a9a5c5ade4721127d/jobs?api-version=2.0>

API Help Documentation

Sample Code

Request-Response Batch

C# Python Python 3+ R

```
// This code requires the Nuget package Microsoft.AspNet.WebApi.Client to be installed.
// Instructions for doing this in Visual Studio:
// Tools -> Nuget Package Manager -> Package Manager Console
// Install-Package Microsoft.AspNet.WebApi.Client
```

You can test the webservice by test tab

Microsoft Azure Machine Learning Web Services

Quickstart Dashboard Batch Request Log Configure Consume **Test** Swagger API

← AC - Webservice [Predictive Exp.]

default

Adult census income predictions [View in Studio](#)

Request-Response Batch

Sample Data

Sample Data is a feature for your web service users to get started with using your web service. Sample data will make a small sample from your training data set available, so we can populate this test dialog. Do you want to enable it?

[Enable](#)

input1

age 1

workclass

fnlwgt 1

education

education-num 1

output1

Your prediction results will display here.

Enable sample data to reduce typing work

Microsoft Azure Machine Learning Web Services

Quickstart Dashboard Batch Request Log Configure Consume **Test** Swagger API

← AC - Webservice [Predictive Exp.]

default

Adult census income predictions

[View in Studio](#)

Request-Response Batch

Sample Data

Sample Data is a feature for your web service users to get started with using your web service. Sample data will make a small sample from your training data set available, so we can populate this test dialog. Do you want to enable it?

Enable

input1

age 1

workclass

fnlwgt 1

education

education-num 1

output1

Your prediction results will display here.

Can view the data populated once sample data enabled

Microsoft Azure Machine Learning Web Services

Quickstart Dashboard Batch Request Log Configure Consume **Test** Swagger API

marital-status Never-married

occupation Adm-clerical

relationship Not-in-family

race White

sex Male

capital-gain 2174

capital-loss 0

hours-per-week 40

native-country United-States

income <=50K

Test Request-Response

Microsoft

Click on test request response

Microsoft Azure Machine Learning Web Services

Quickstart Dashboard Batch Request Log Configure Consume **Test** Swagger API

education-num 12

marital-status Never-married

occupation Adm-clerical

relationship Not-in-family

race White

sex Male

capital-gain 2174

capital-loss 0

hours-per-week 40

native-country United-States

income

Test Request Response

Microsoft

As a Result

Microsoft Azure Machine Learning Web Services

Quickstart Dashboard Batch Request Log Configure Consume **Test** Swagger API

Adult census income predictions [View in Studio](#)

Request-Response Batch

input1 output1

age 39

workclass State-gov

fnlwgt 77516

education Bachelors

education-num 13

marital-status Never-married

occupation Adm-clerical

relationship Not-in-family

race White

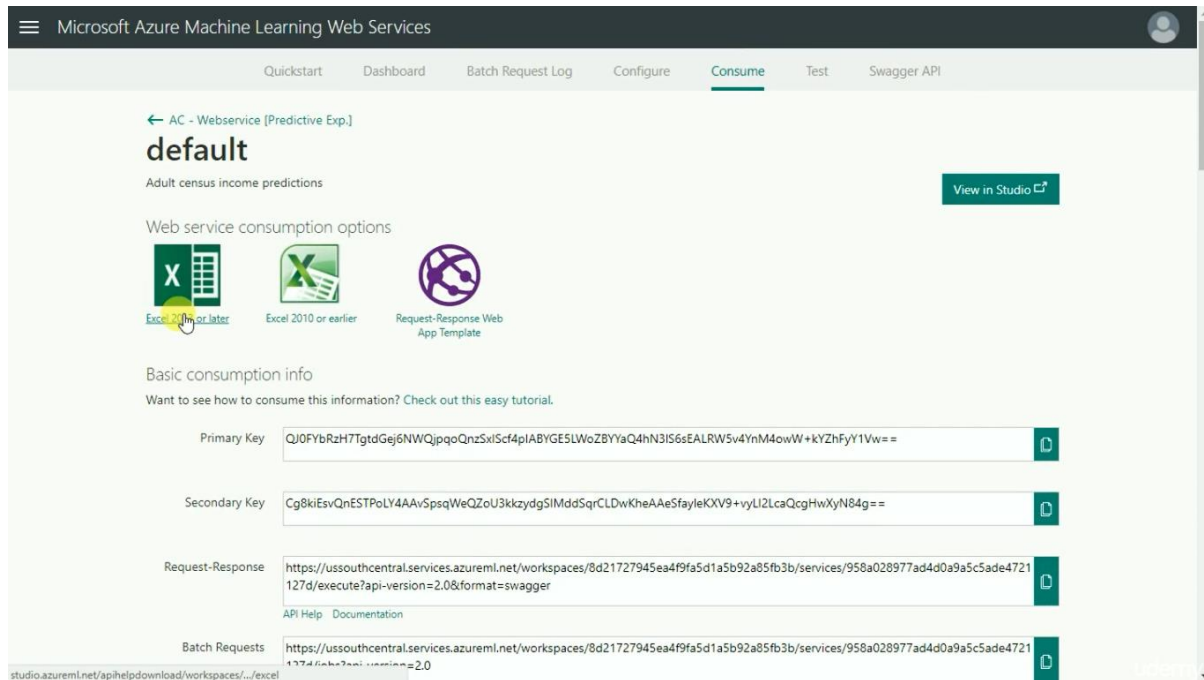
sex Male

Scored Labels <=50K

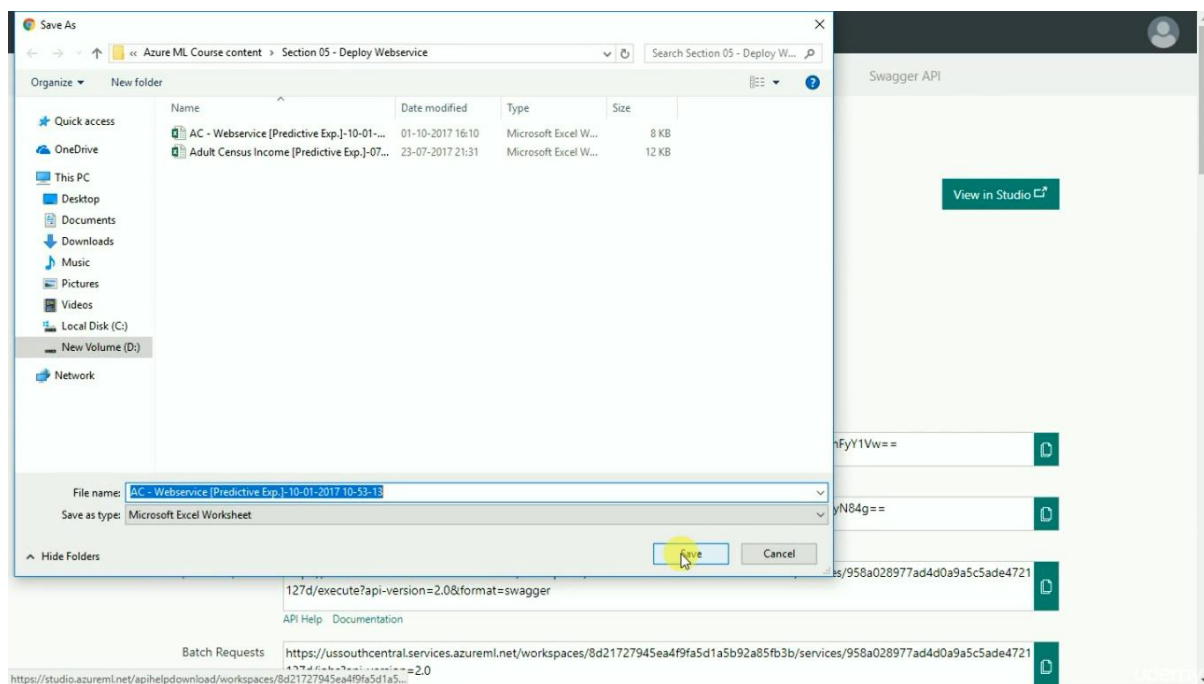
Scored Probabilities 0.00486961985006928

Microsoft

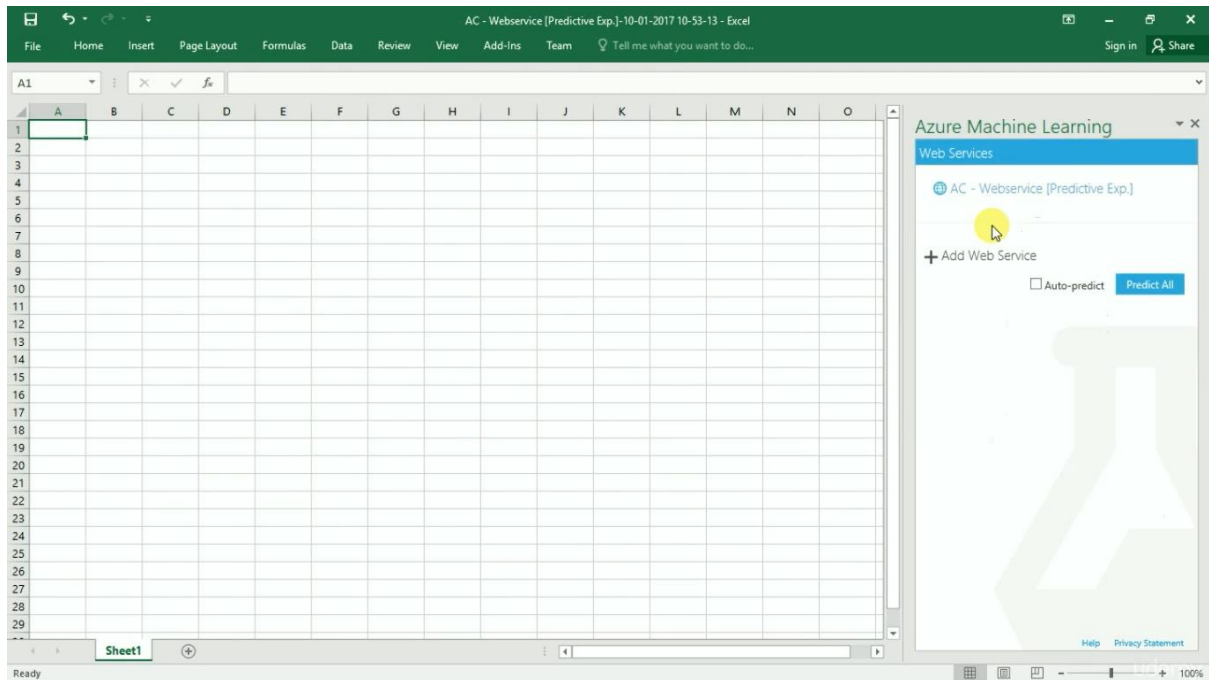
If the same to be needed in excel go to consume tab and click excel



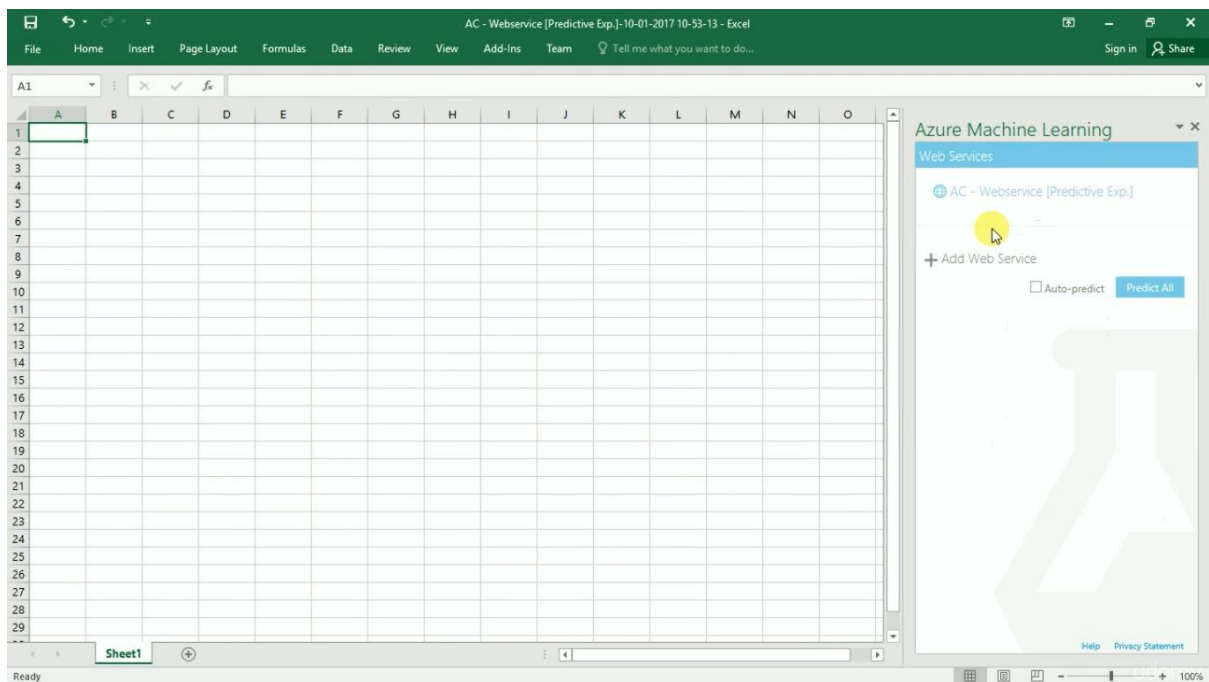
So that we can download the excel template consume the webservice



Save and enable editing



Select our webservice from the dashboard



Click sample data

The screenshot shows the Azure Machine Learning interface within an Excel application. The main window is titled 'AC - Webservice [Predictive Exp.] - 10-01-2017 10-53-13 - Excel'. The right-hand pane is titled 'Azure Machine Learning' and contains a 'Predict' button. A yellow circle highlights the 'Use sample data' button in the 'Input: input1' section. The 'Output: output1' section is also visible, showing a text box and a 'Predict' button. The Excel spreadsheet is empty, with the 'Sheet1' tab selected at the bottom.

Data generated from dataset

The screenshot shows the Azure Machine Learning interface within an Excel application, displaying data generated from a dataset. The main window is titled 'AC - Webservice [Predictive Exp.] - 10-01-2017 10-53-13 - Excel'. The right-hand pane is titled 'Azure Machine Learning' and contains a 'Predict' button. The 'Output: output1' section is visible, showing a text box and a 'Predict' button. The Excel spreadsheet shows a table with columns: age, workclass, fnlwgt, education, marital-status, occupation, relations, race, sex, capital-gain, capital-loss, and hours-per-week. The 'marital-status' column is highlighted. The data is as follows:

age	workclass	fnlwgt	education	education-num	marital-status	occupation	relations	race	sex	capital-gain	capital-loss	hours-per-week
39	State-gov	77516	Bachelors	13	Never-married	Adm-clerical	Not-in-family	White	Male	2174	0	0
50	Self-emp-not-inc	83311	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband	White	Male	0	0	0
38	Private	215646	HS-grad	9	Divorced	Handlers-cleaners	Not-in-family	White	Male	0	0	0
53	Private	234721	11th	7	Married-civ-spouse	Handlers-cleaners	Husband	Black	Male	0	0	0
28	Private	338409	Bachelors	13	Married-civ-spouse	Prof-specialty	Wife	Black	Female	0	0	0

As only one row required in web service delete all data except header and single row

The screenshot shows an Excel spreadsheet with a table of data. The columns are: education, marital-s, occupational, relations, race, sex, capital-gai, capital-los, and hours-per. The data rows are: 13 Never-marri Adm-clerica Not-in-fami White Male 2174 0, 13 Married-civ-Exec-manag Husband White Male 0 0, 13 Divorced Handlers-clc Not-in-fami White Male 0 0, 13 Married-civ-Handlers-clc Husband Black Male 0 0, and 13 Married-civ-Prof-special Wife Black Female 0 0. A context menu is open over the data, with 'Delete' highlighted. The Azure Machine Learning interface is visible on the right, showing the 'AC - Webservice [Predictive Exp.]' page with the 'PREDICT' tab selected. The 'Input: input1' section has 'My data has headers' checked. The 'Output: output1' section has 'Include headers' checked. The 'Predict' button is highlighted.

After deleting select the rows and click ok input parameter

The screenshot shows the same Excel spreadsheet, but now only one row is selected (row 2). The Azure Machine Learning interface is visible on the right, showing the 'AC - Webservice [Predictive Exp.]' page with the 'PREDICT' tab selected. The 'Input: input1' section has 'My data has headers' checked. The 'Output: output1' section has 'Include headers' checked. The 'Predict' button is highlighted.

Keep my data header checked since we have header

The screenshot shows an Excel spreadsheet with a table of data. The table has columns: age, workclass, fnlwgt, education, marital-s, occupatio, relations, race, sex, capital-gai, capital-los, and hoi. The first row of data is: 39, State-gov, 77516, Bachelors, 13, Never-married, Adm-clerical, Not-in-family, White, Male, 2174, 0. The Azure Machine Learning interface is open on the right, showing the 'AC - Webservice [Predictive Exp.]' page. The 'Input' section is set to 'input1' with the range 'Sheet1!A1:O2'. The 'Output' section is set to 'output1' with the range 'Enter output cell (e.g. A20)'. The 'Include headers' checkbox is checked. The 'Predict' button is highlighted.

age	workclass	fnlwgt	education	education	marital-s	occupatio	relations	race	sex	capital-gai	capital-los	hoi
39	State-gov	77516	Bachelors		13	Never-married	Adm-clerical	Not-in-family	White	Male	2174	0

Select the out area and input the same in output parameter

The screenshot shows the same Excel spreadsheet and Azure Machine Learning interface. The 'Output' section is now set to 'output1' with the range 'B4'. The 'Include headers' checkbox is still checked. The 'Predict' button is highlighted.

age	workclass	fnlwgt	education	education	marital-s	occupatio	relations	race	sex	capital-gai	capital-los	hoi
39	State-gov	77516	Bachelors		13	Never-married	Adm-clerical	Not-in-family	White	Male	2174	0

Click on predict

The screenshot shows an Excel spreadsheet with the following data in row 2:

age	workclass	fnlwgt	education	education	marital-s	occupatio	relations	race	sex	capital-gai	capital-los	ho
39	State-gov	77516	Bachelors		13	Never-mar	Adm-clerica	Not-in-fami	White	Male	2174	0

The Azure Machine Learning interface on the right shows the 'Predict' button highlighted. The 'Input' section is set to 'Sheet1!A1:O2' and 'My data has headers' is checked. The 'Output' section is set to 'Sheet1!B4' and 'Include headers' is checked. A warning message states: 'Predicting will override existing values. This can't be undone.' The 'Predict' button is highlighted with a yellow circle.

Can view the output now

The screenshot shows the same Excel spreadsheet, but now the output is visible in cell B4. The 'Predict' button in the Azure Machine Learning interface is no longer highlighted. The output in cell B4 is:

Scored Labels	Scored Probabilities
<=50K	0.00486962

The status bar at the bottom of the Excel window shows: 'Average: 0.00486962 Count: 4 Sum: 0.00486962'.

