Online Services: Google, Slack, Amazon, Microsoft

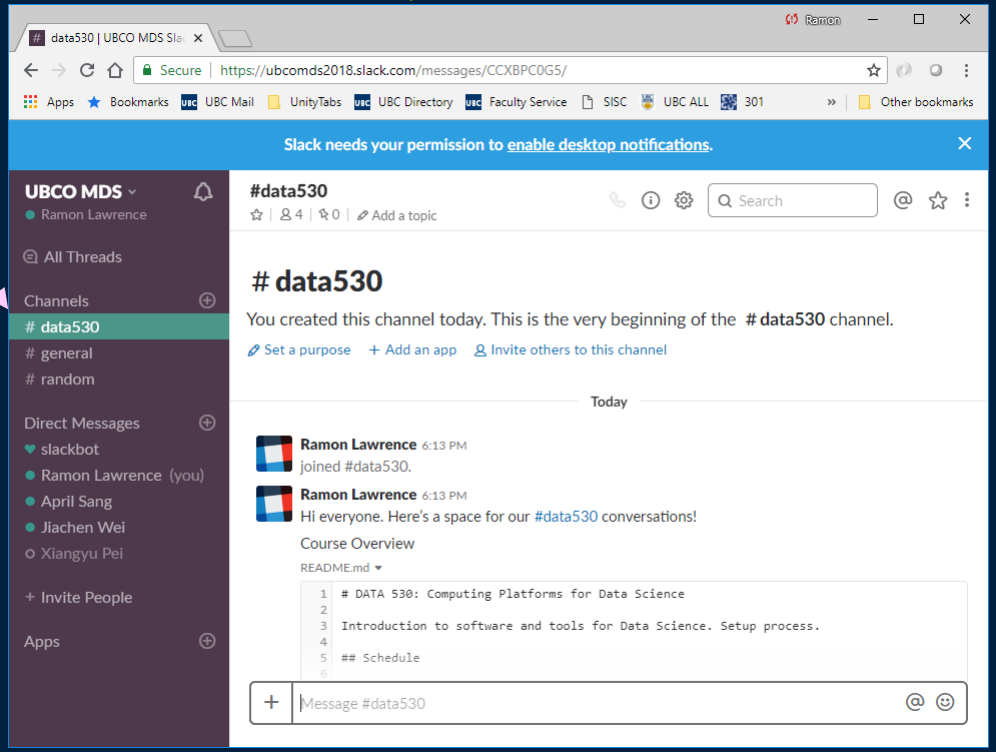
UBCO Master of Data Science – DATA 530

Slack

Slack is an online system for communication and collaboration.

- Popular with distributed development teams

Channels for different conversations



Try it: Slack

1) Accept the invite to UBCO MDS workspace and the #data530 channel.

2) Setup your profile: https://get.slack.help/hc/en-us/articles/204092246

3) Post some message to the #data530 channel.

4) Send a direct message (DM) to the instructor or another student.

5) To reference a user, use @username. Share a message that references another user.

6) Try the search feature to find messages.

Google

Google provides numerous software and services useful for a data analyst.

- Google docs – Online version similar to Microsoft Office tools
- Google API Services – program access to maps, search, and other Google services
- Google Analytics – analysis of web site traffic
- AdWords – marketing using keyword search on Google properties
- Google Cloud - web and compute hosting

Google Analytics

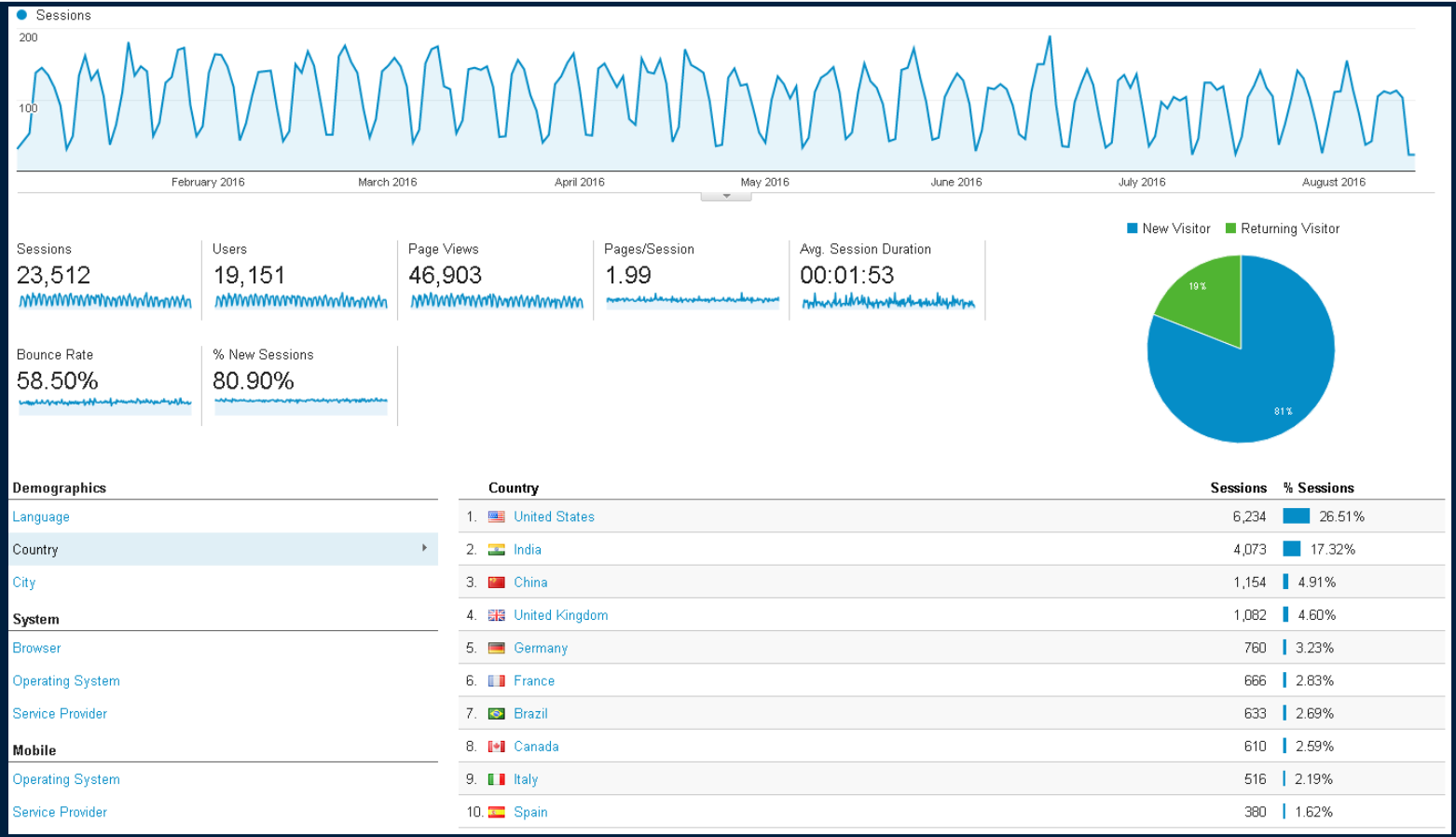
Google Analytics is an analysis service for tracking, optimizing, and understanding user interaction with a web site/service.

Using Google analytics is important for all business, but especially web companies, that rely on users interacting with their site to generate revenue and sales.

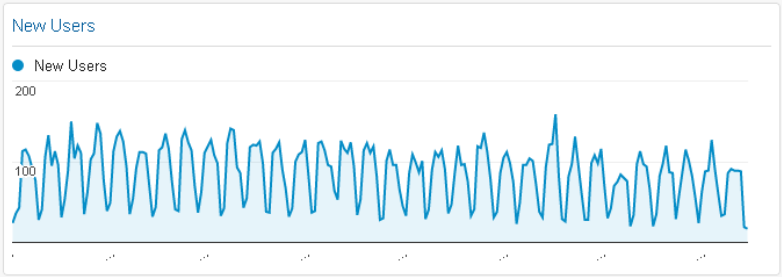
Google analytics helps identify and improve content to make it more accessible to potential customers.

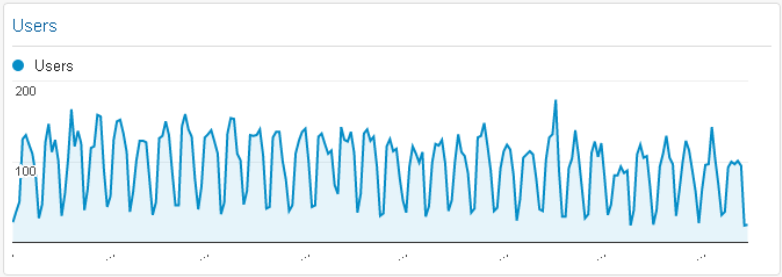
- Very important skill set for business owners and managers.

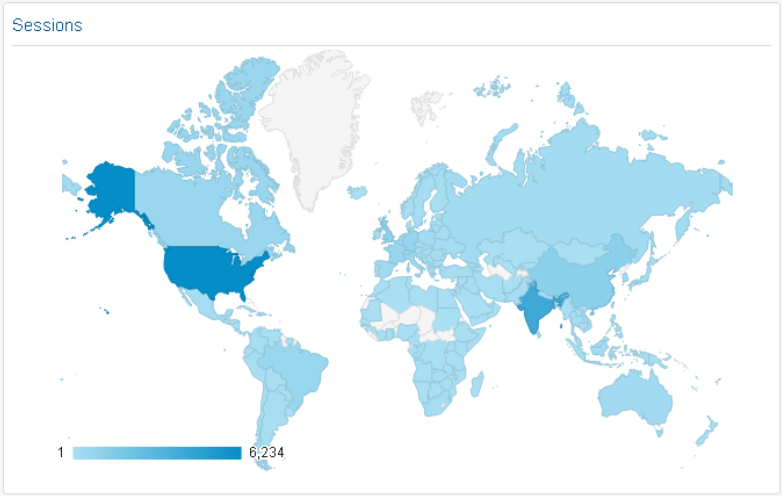
Google Analytics - Audience Overview

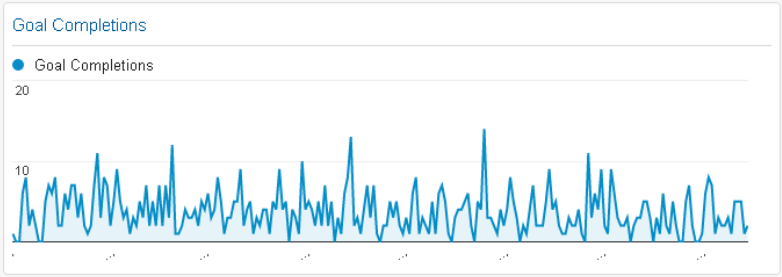


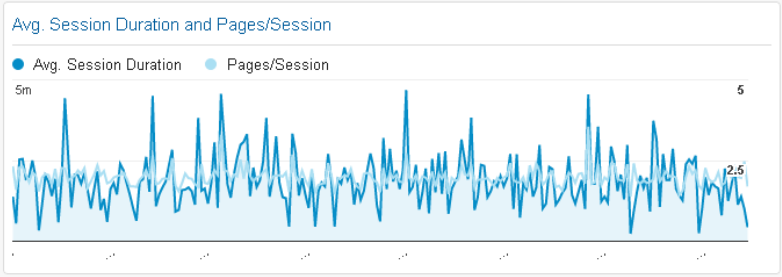
Google Analytics - Traffic Dashboard



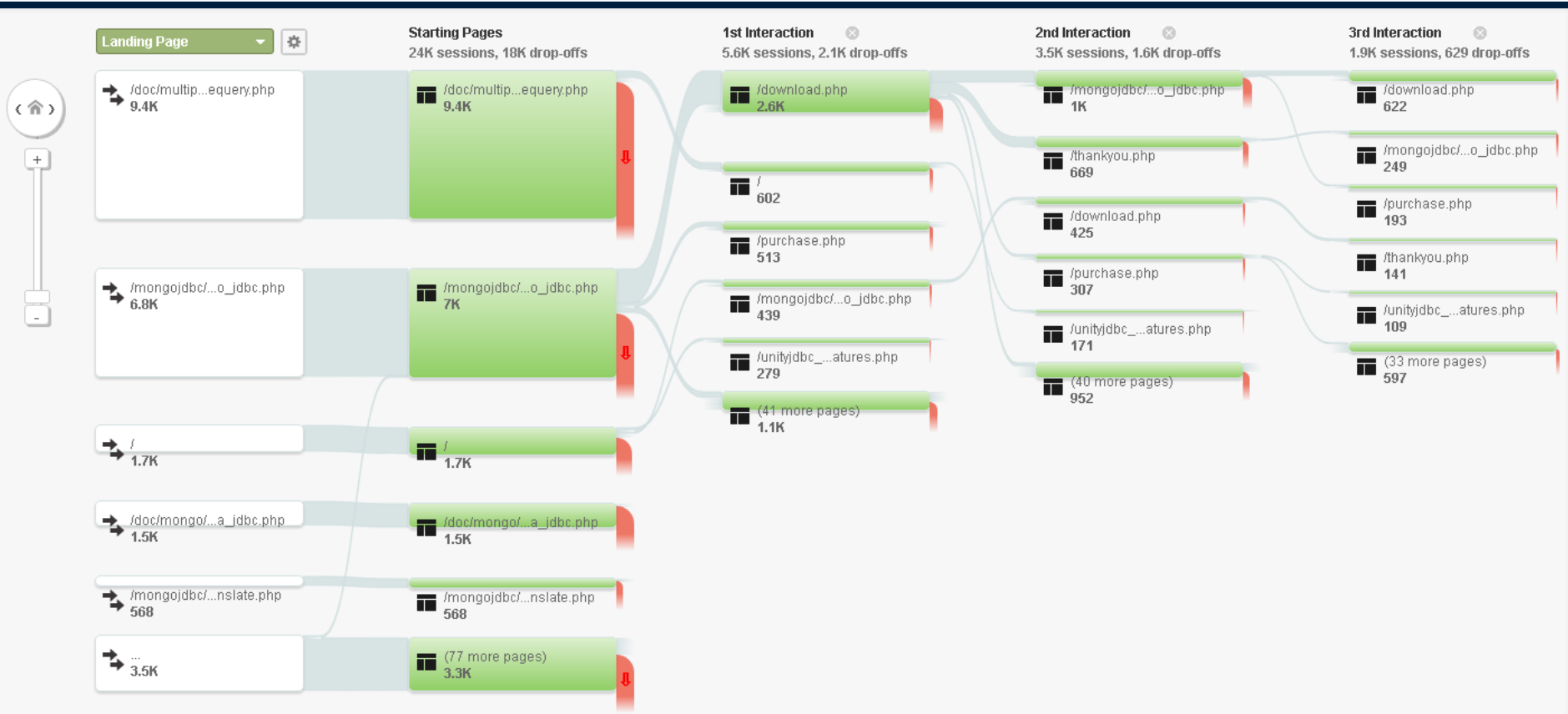








Google Analytics - Behaviour Flow



Google Adwords

Google AdWords is a service to provide advertisements during searches and as display advertisements on web sites and in apps.

- Primary source of revenue for Google. https://www.google.ca/adwords/
- Companies bid on *keywords* and display opportunities that are presented by Google and affiliated sites.

Terminology:

- *Ad Impression* - display of an advertisement. Pricing in cost-per-thousand impressions or cost per mille (CPM).
- *Click through* - user clicks on an advertisement (and directly to new location)
- *Click through rate* - fraction of impressions that are clicked on
- *Pay-per-click (PPC)* - companies are billed on each click of an advertisement. The pricing depends on the bid amount and the desirability of the ad location.

Try it: Google

1) Login to Google account.
2) Enter your name in the list for the "Shared DATA 530" document.
3) Create some other comment on the document.
4) Try create a spreadsheet and import your lab2.xlsx.
5) Discover something new. Tell the class!

Google Maps API with Python

The Google Maps API can be used with Python to access and manipulate geographical data using a Python program.

- https://developers.google.com/maps/web-services/client-library

Services and features:

- Geocoding and reverse geocoding
- Directions (walking, driving, transit)
- Distance calculations and routes
- Elevations
- Geolocation (based on WiFi and cell towers)
- Road information and speed limits
- Times zones and places (points of interest)

Google Maps API - Getting an API Key

The first step is to get an API key that allows access to the Google services. This API key should be kept private and not shared!

- To get a key you will need a Google account.
- No longer free access. Must provide credit card.
- Securing API keys: https://support.google.com/cloud/answer/6310037

Get an API key using Google Developer Console.

- https://developers.google.com/maps/documentation/directions/get-api-key

With directions API, test with:

- https://maps.googleapis.com/maps/api/directions/json?origin=Toronto&destination=Montreal&key=yourkey

Installing Google Maps API for Python

Command:

```
pip install -U googlemaps
```

Python Google Maps API Example

```
import googlemaps
from datetime import datetime

# TODO: Replace the API key below with a valid API key.
gmaps = googlemaps.Client(key='yourkey')

# Use Geocoding API to look up latitude, longitude
address = '3333 University Way, Kelowna, BC, Canada'
geocode_result = gmaps.geocode(address)

print("Geocoding address...")
print("Address:",address,
"Coordinates:",geocode_result[0]["geometry"]["location"])
```

Python Google Maps API Example (2)

```
# Look up an address with reverse geocoding (UBC Van)
lat = 49.2683043
lon = -123.2489377
reverse_geocode_result=gmaps.reverse_geocode((lat, lon))

print("\nReverse geocoding...")
print("Coordinates: ",lat,lon,"Address:",
reverse_geocode_result[0]["formatted_address"])
```

Python Google Maps API Example (3)

```
# Request driving directions between UBCO and UBCV
directions_result = gmaps.directions(address,
        reverse_geocode_result[0]["formatted_address"],
        mode="driving", departure_time=datetime.now())
print("\nDriving directions...")
leg = directions_result[0]['legs'][0]
print("Start address:",leg['start_address'],
      "\nDestination address:",leg['end_address'])
print("Distance:",leg['distance']['text'],
      "Time:",leg['duration']['text'])

for step in leg['steps']:
    print("Step:",step['duration']['text'],
          step['html_instructions'])
```

Amazon

Amazon is the largest cloud hosting provider. Services:

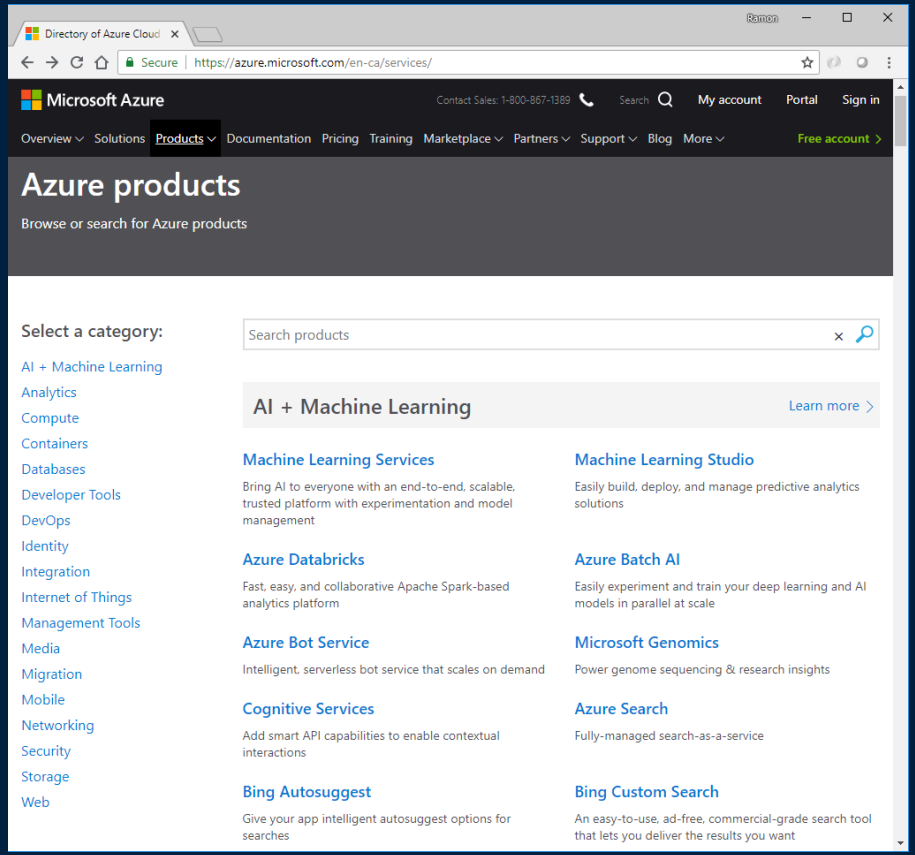
- https://aws.amazon.com/products/
- Compute and storage servers
- Database servers
- Machine learning services

Explore: Read about an Amazon service. Tell a partner and the class.

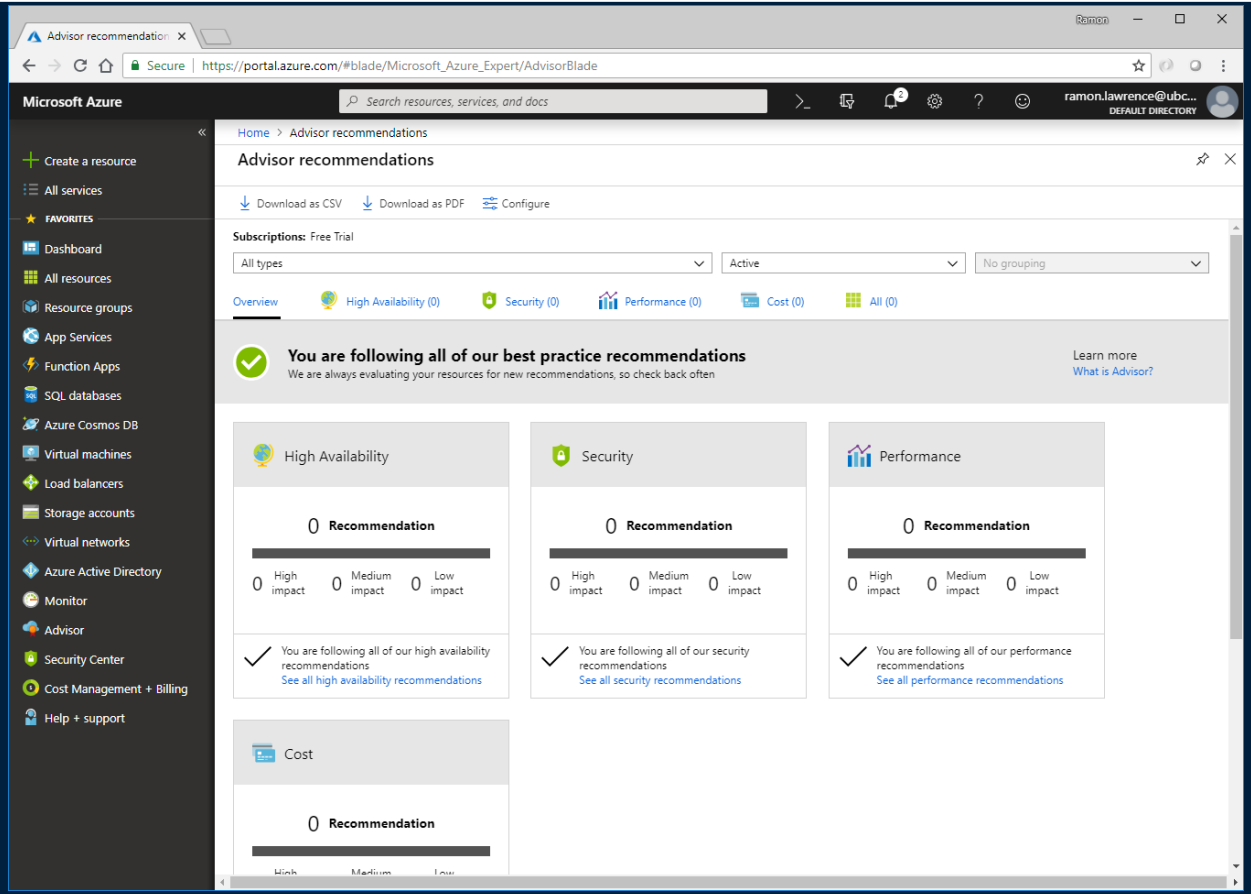
Microsoft

Microsoft is a diverse company with products in desktop, servers, and cloud. Branded as Microsoft Azure.

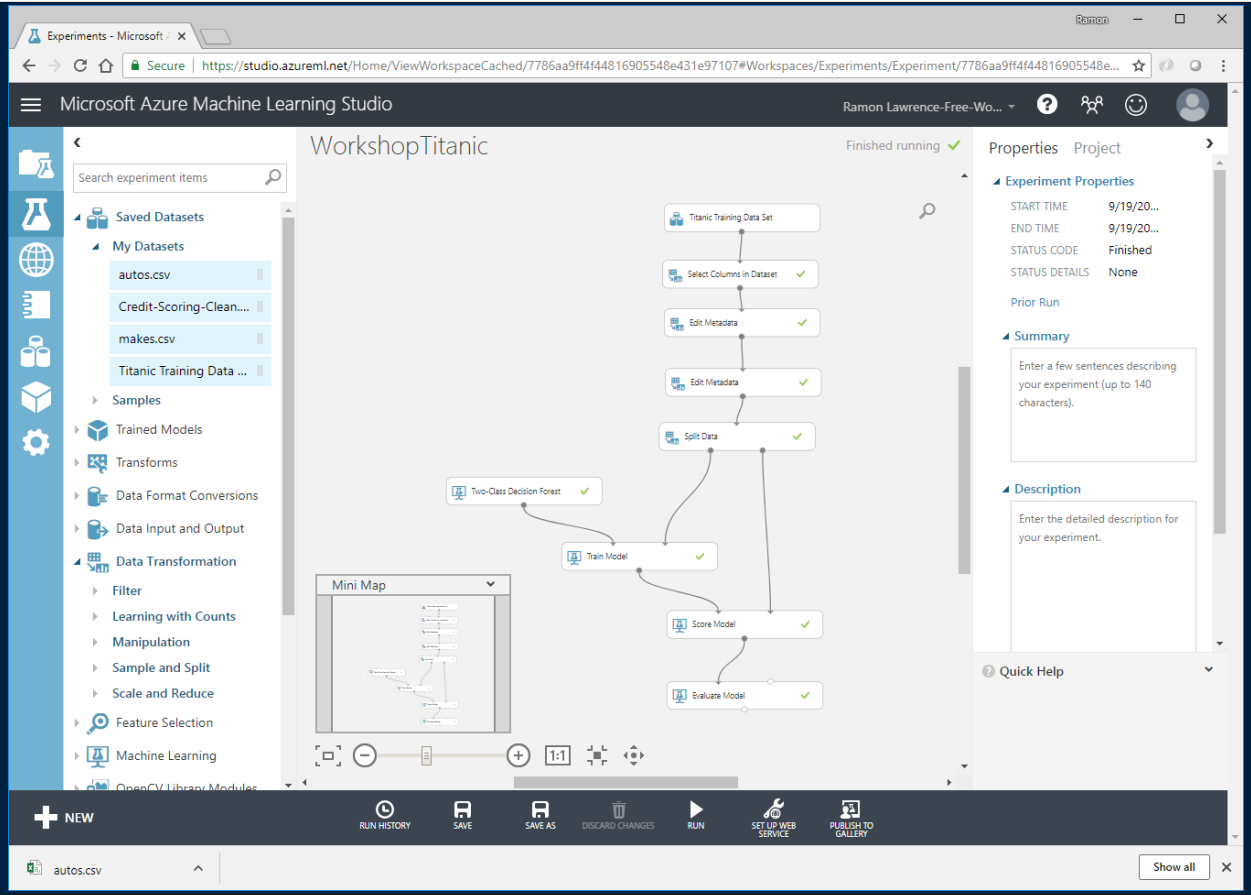
- https://azure.microsoft.com/en-ca/services/



Microsoft Azure Portal



Machine Learning Studio



Try it: Microsoft (Optional)

1) Create a free Microsoft Azure account. https://signup.azure.com
   - Note: Requires a credit card.
2) Click Create a Resource. Then search for machine learning studio.
3) Setup a new Machine Learning Studio instance.
4) Browse or experiment with ML Studio capabilities.

Conclusion

Cloud services are provided by numerous vendors which are useful for data analysts rather than implementing them directly.

- Slack, Google, Amazon, Microsoft

These services are deployed on the cloud for easy construction and use. Watch out for costs!

Services such as Google Maps API are accessible through programming languages.

Objectives

- Explain motivation for a data analyst to use cloud services for their work.
- List some of the cloud service companies and the services they provide.
- Use Slack for group communication.
- Use Google Apps for collaborative document editing.
- List some trade-offs of using cloud services versus building using in-house tools such as R and Python.
- Explain the role of Google Analytics and Google AdWords. Compare and contrast what these two services provide.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