Web Exercise 08: Insights for ArcGIS and Jupyter Notebook-with-Python

DUE Date: December 01 (Tuesday), 5:30pm (on Blackboard).

Grade: 20 points (Two weeks – including Thanksgiving week)

Part 1: Insight for ArcGIS

In the previous exercise, you have learned about ArcGIS online, which is a Cloud computing GIS framework developed by ESRI. Using your ArcGIS online account, you can access the **Insights for ArcGIS,** which is web-based data analytics made for advanced location intelligence. Similar to Tableau, Insight for ArcGIS can answer questions you didn't know how to ask, analyze data completely, and tell powerful data stories.

1. Go to https://sdsugeo.maps.arcgis.com

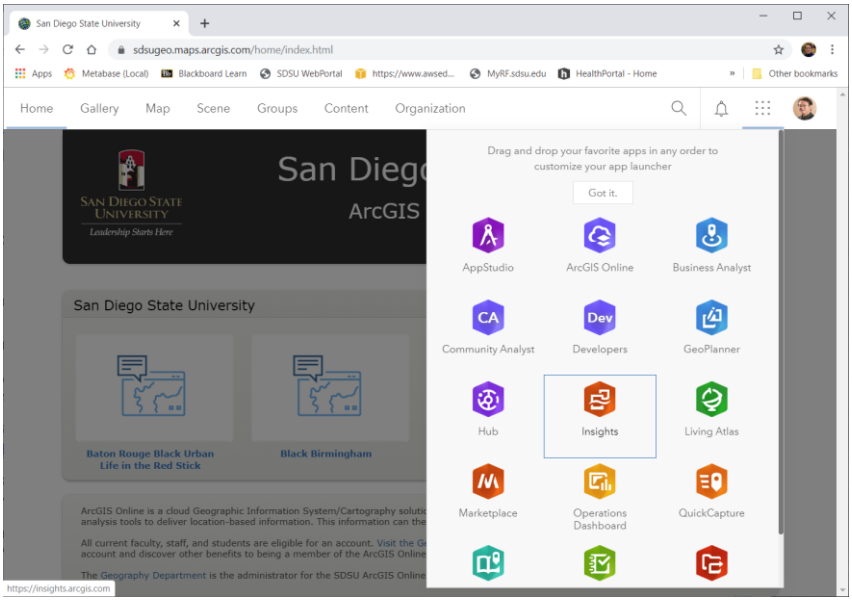
2. Click the "Sign In" dropdown in the upper right

3. Select the blue "San Diego State University" button - this take you to the SDSU ID login window

4. Use your SDSU ID username and password.

5. When you login, click on the nine dots icon next to your user profile picture.

6. Select the "Insights" from the list. If you can not find "Insights" icon, you will need to email the instructor (mtsou@sdsu.edu) about this problem.



7. After opening the "Insights for ArcGIS", Read the brief introduction at the beginning of the website.

8. Open another web browser window and access this tutorial page: Solve a spatial problem: https://learn.arcgis.com/en/projects/analyze-return-on-investment-at-united-states-colleges/

9. Continue the next tutorial: **Share your analysis**: (in the Lesson Plan, under the "Solve a spatial problem"). Copy the **URL of your shared page** and save the URL for the LAB question 1.

10. On the top ArcGIS Insight document menu, select "Analyze", and review the analysis capabilities provided by the Insights (https://doc.arcgis.com/en/insights/analyze/analysis-capabilities.htm). Answer the LAB question 2.

11. Go to this page: https://doc.arcgis.com/en/insights/create/kpi-chart.htm and learn more about the KPI card.

Part 2: Learning Pythons with Jupyter Notebook

1. Learning the basic of Jupyter Notebook.

- **Watch the following video about the basic editing functions in Jupyter Notebook. This video is a part of "Machine Learning in Python" course developed by Professor Xuebin Wei at James Madison University. (10 mins)**
  https://www.youtube.com/watch?v=zv70jBjDNI4&t=394s

- **Read the following Quick Start Guide (Finish the three chapters: 1. What is the Jupyter Notebook, 2. Installation, 3. Running the Jupyter Notebook (one hour)**
  https://jupyter-notebook-beginner-guide.readthedocs.io/en/latest/what_is_jupyter.html

  Note: You can install Anaconda (Python 3.7 version, requiring 3GB) (recommended) or Miniconda (https://conda.io/miniconda.html) if you do not have enough disk space.

  Miniconda will only require 260MB disk space. But you will need to install Jupyter into the Miniconda. Open the Command Mode in Windows. Go to the miniconda3 install folder (such as "**cd C:\ProgramData\Miniconda3**").
  Then go to the \Scripts folder(**cd scripts**). Type "conda install jupyter".

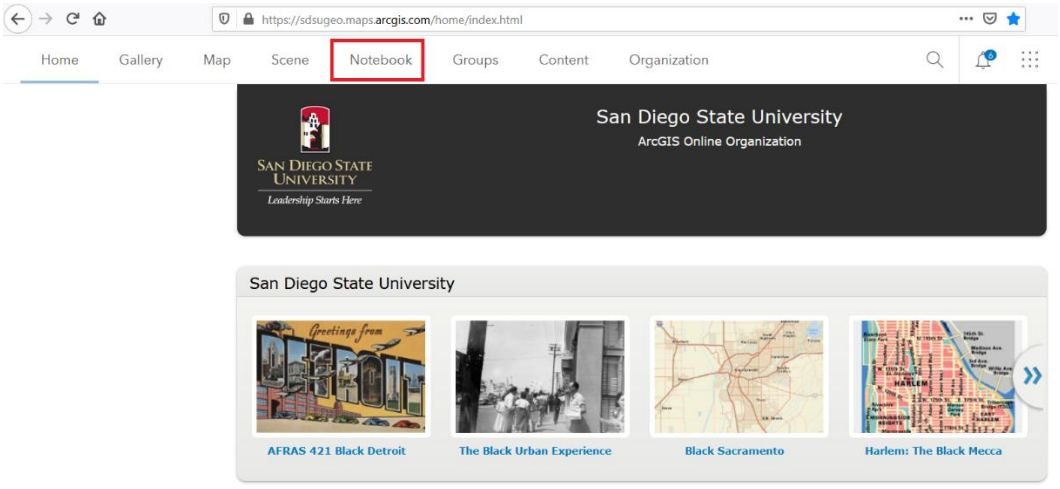
Note: Jupyter Notebook is a nice tool for learning basic programming skills and visualization. However, it is not designed for professional programming environment (such as IDE, Integrated Development Environment).

2. Learning ArcGIS for Python package (with ArcGIS Pro).

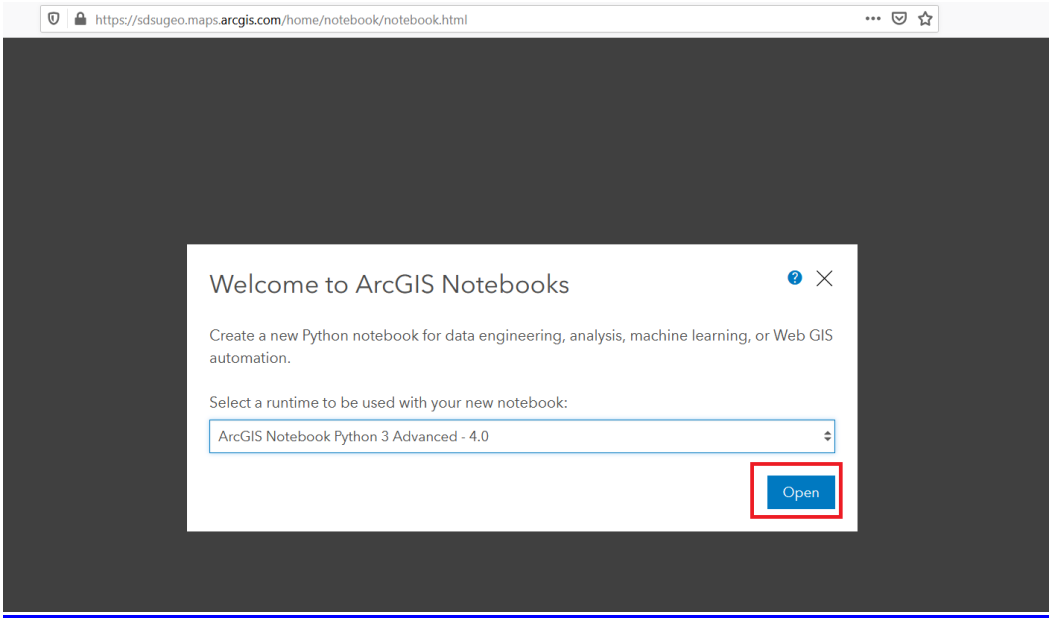
- **You will need to install ArcGIS Pro in your local machine first, and use your SDSU-ID to activate the ArcGIS Pro. Download the ArcGIS PRO Here: https://geography.sdsu.edu/Research/esridownloads.html**
- **Follow the installation procedure here: http://pro.arcgis.com/en/pro-app/get-started/install-and-sign-in-to-arcgis-pro.htm**
- **After the installation of ArcGIS Pro and Jupyter. You can install ArGIS for Python package to learn more about Python languages. Follow the step here: https://developers.arcgis.com/python/guide/install-and-set-up/#Using-the-API**

- **If you didn't install ArcGIS for Python package on your local machine, you can still finish this exercise by accessing the cloud-based Jupyter Notebook HERE: https://sdsugeo.maps.arcgis.com/home/notebook/notebook.html**

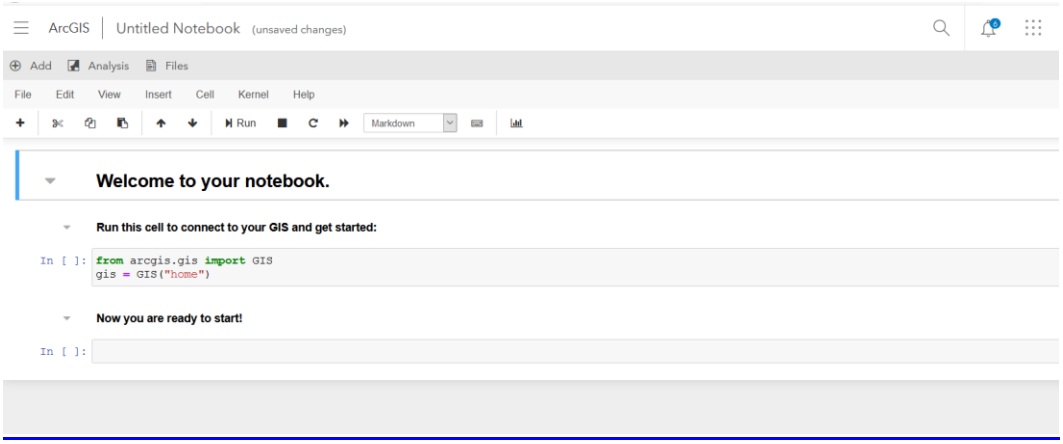
After signing in, click on the "Notebook" on the Home page.



You can use the default item and click on “open.”



Then you can see the interface of the Jupyter Notebook.



- **There is a good introduction of Jupyter Notebook with ArcGIS for Python.** https://developers.arcgis.com/python/sample-notebooks/your-first-notebook/

Please use the cloud-based Jupyter Notebook or your local Jupyter Notebook to finish the first exercise (Your first notebook). Some of the results might be different from the website exercise. Can you explain why?

After finishing this Web Course, Please use your own words to answer the following questions (next page): (DO NOT COPY any web resources or Wikipedia texts. We will check your answers with Blackboard tools to verify that your responses are uniquely yours.) By submitting your answers (paper) to Blackboard, you agree: (1) that you are submitting your paper to be used and stored as part of the SafeAssign™ services in accordance with the Blackboard Privacy Policy; (2) that your institution may use your paper in accordance with your institution's policies; and (3) that your use of SafeAssign will be without recourse against Blackboard Inc. and its affiliates.

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LAB-8 Questions:

1. **What is the URL of your shared page in Insights for ArcGIS? (2 point).**
2. **In the Insights Analysis Capability web page, select two examples of Map types and two examples of Chart types and explain their functions and give one example for each type. (8 points: 2 points for each type and the example).**
3. **In the Insights for ArcGIS document website: https://doc.arcgis.com/en/insights/create/kpi-chart.htm. Please find out what is a KPI card and explain the method with one example. (2 point).**
4. **What are the major differences between Tableau and Insights for ArcGIS? (2 points).**
5. **What is ArcGIS Pro? (provide a brief overview with 100 words) (2 points)**
6. **What is ArcGIS API for Python? (provide a brief overview with 100 words) (2 points)**
7. **Can you explain why some results from the ArcGIS for Python exercise might be different from the tutorial website? (2 points)**

Please submit your LAB-8 Answers (in a MS Word or a PDF file format only) to the Blackboard System BEFORE the DUE DATE/TIME.