Data Science and Statistics

Lesson: US Jobs Dataset **Unit 4: Methods**

Teacher: Laks **Periods: 3**

Aim: How do we write and use table methods and functions in order to analyze data about US jobs? SWBAT: define variables, write table methods and display data in charts.	NYS Standards: 9-12.IC.3 Debate issues of ethics related to real world computing technologies. 9-12.CT.2 Collect and evaluate data from multiple sources for use in a computational artifact. 9-12.CT.3 Refine and visualize complex data sets to tell different stories with the same data set. CCSS.MATH.PRACTICE.MP6 Attend to precision; MP5 Use appropriate tools strategically.	
Materials: Peardeck, Computer, Internet, Pyret starter files	Vocabulary: Function, Domain, Range, Contract, Row, Column, Number, String, Image, Boolean, Method, Definitions Area, Design Recipe, Purpose Statement	Grouping: Driver-Navigator Model or Pairs. Students having difficulty or absent from previous class targeted in small groups during the onset of class.
Misconceptions: Students may not remember how to write the code. Instruct them to look at their contracts.	Co-Teaching Model: Alternative Teaching: One teacher works with the larger class while the co-teacher works with a smaller group	

5 min	Do Now: Click on the link for the Spreadsheet. Write two statements for each of the following: **I wonder....** **I notice....** Call on students to share their responses or read them from the peardeck	Teacher Notes: Instruct students to click on the link for peardeck and sign in with google. US Jobs Dataset: https://docs.google.com/spreadsheets/d/1fAzyoVgtSMl9ja-JMpou_Y5RRyoTOPh2umR_mkJYQyU/edit#gid=893005943
5 min	Mini-Lesson: Review of Table Methods: <Table>.row-n(index) <Table>.order-by("Column", Boolean) <Table>.filter(Boolean function) <Table>.build-column("Column", function) Review of Data Displays: pie-chart(Table, "column") bar-chart(Table, "column") histogram(Table, "column", bin width) scatter-plot(Table, "label", "column 1", "column 2")	This is a multi-day lesson. It can be used for extra credit for students who have completed all of their work or it can be used for students who need extra work to raise their grades. Note: Some students will be working on older assignments.

30 min	Activity: Go to code.pyret.org and log in. Then click on the link for the “US Jobs” file. Save a copy of the file and add your name to the file name. Run the file. Enter the code for occupation-table in the interactions area. What do you see? Then submit your code. Part 1: The method **<table>.row-n(index)** consumes the index of the row and produces the information about that row. Look at the dataset "US Jobs 2019." Choose 3 occupations and define them below. Part 2: The method **<table>.order-by("column", Boolean)** consumes a column and a Boolean and produces a table sorted in ascending or descending order according to the Boolean. Define the table and sort the dataset according to the given column and conditions. Part 3: Define a function called "need-bachelors" that consumes a row and checks if the occupation in the row requires a Bachelor's degree. Part 4: The method **<table>.filter(function)** consumes a function and produces a table that only shows rows where the function is true. Define the table and filter the dataset by the appropriate functions from Part 3. Part 5: Samples of datasets can be used to make inferences about the whole dataset. The function "random-rows" takes in a table and a number of rows and creates a sample of random rows from the table. Define a table called "tiny-sample" that contains 10 random rows. Part 6: Create at least two different data displays, i.e. pie chart, bar chart, scatterplot, or histogram, using appropriate data for the type of chart. Write the code below. Extension: Demonstrate anything else we've done in this class. For example, you can define other tables or show different displays. Explain what your code does.	Pyret Code: https://code.pyret.org/editor#share=1qlL0ea9NaYxrUtTyeuTat9_EkRPaattE&v=1904b2c Students will submit the link to their code immediately after saving a copy. US Jobs Pyret Submission Form: https://docs.google.com/forms/d/e/1FAIpQLSekz5Fg-3NrSL2g5ShbxHPb6H4EOmrQD0Jhu3gybeXCpCyqpA/viewform?usp=sf_link As students work, one teacher will circulate around the room and answer clarifying questions.
5 Min	Summary: What thoughts do you have about the US Jobs dataset? ***Remember to save your code and submit your link.**	

Checks for Understanding: Look at students’ responses on presentation and Pyret. Circulate during living instruction (Provide immediate feedback).	Homework: Remind students to bring their computers in everyday. Finish any missing assignments.