### **Data Analysis - Spreadsheets and Visualization**

### **Duration: 1 Week**

### **Summary**

This lesson addresses the analysis of data using spreadsheets and visualizations. It uses Google Sheets as the teaching tool and follows excellent tutorials from code.org. The students download large data sets, open them in Google Sheets, and learn to create bar, line, and scatter charts, as well as use these charts to do analysis. The module assumes that the students know how to use spreadsheet applications (e.g. Excel or Google Sheets); it includes a video and tutorial on spreadsheets for beginners that can be used for students who don't have any background with spreadsheets.

### **Learning Objectives**

* Generate charts and graphs to visualize data using spreadsheets.
* Create a spreadsheet as a computational artifact to support analysis.
* Analyze the correctness, usability, functionality, suitability of computational artifacts (charts and tables). [AP CSP P4, LO 1.2.5]
* Develop an abstraction when creating a visualization computational artifact such as a chart. [AP CSP P2, 2.2.1]
* Use computers to process information, find patterns, and test hypotheses about digitally processed information to gain insight and knowledge. [AP CSP P4, LO 3.1.1]
* Explain the insight and knowledge gained from digitally processed data by using appropriate visualizations, notions, and precise language. [AP CSP P5, LO 3.1.2]

### **Optional Pre-Work: Introduction to Spreadsheets**

* Watch (optional): [Introduction to Spreadsheets](https://www.youtube.com/watch?v=LvP5UxqkN1w&feature=youtu.be) [29:41]
* Do (optional): [Tutorial on spreadsheets with Google Sheets](http://students.cs.uri.edu/~forensics/courses/CSC101/tutorials/google_spreadsheets/)

### **Course Material**

* Watch: [Google Spreadsheets](https://www.youtube.com/watch?v=32tHhXrNt8E) [9:46]
* Read: [Data Visualization 101 - How To Design Charts and Graphs](http://content.visage.co/hs-fs/hub/424038/file-2094950163-pdf)

### **Assessments**

* Conceptual Quiz:
  + [Spreadsheets and Visualizations](https://docs.google.com/document/d/1iqegRN_mpHiEU3e7j8yiYXDqVDw-U7SXLBfvSxAtZPg/edit?usp=sharing) (requires access)
* Practical Assignment:
  + [Spreadsheets and Visualization](https://drive.google.com/open?id=1hTNOA3A2FzVWGI9Lo8PEn_yeZloLxB113ZdCHq33kPU) | [Grading Rubric](https://drive.google.com/open?id=11TLtMTIz2RLkv82lr6nJlmqc41UghlAGXgjDYdb-AzI) | [Answer Key](https://docs.google.com/document/d/1MvhqQOXqOE87hN9dn6OFAhs7Zz4-4E64i1uBUBsN-uk/edit?usp=sharing)