

## **MODULE #6: Data Journalism**

### **Notes & Considerations:**

- Feel free to adapt the timeline and materials to your individual course and student needs.
  - You may edit all of the instruction sheets, activity sheets and project rubrics for your individual course and student needs.
  - Ideas for extensions are listed under applicable activities.
  - Email Lee Cristofano [cristofano.lee@bphawks.org](mailto:cristofano.lee@bphawks.org) or Emily Smoller [smoller.emily@bphawks.org](mailto:smoller.emily@bphawks.org) with any questions.
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### **Need to Know Information for Teachers (in order to complete the module):**

- Data Journalism is often subjective
  - How to create a methodology and metrics to rank items
  - How to enter and calculate formulas in spreadsheets
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**Module Objective:** To investigate how data is used to create stories and a narrative.

### **Student Objectives:**

- To understand the discipline of data journalism
  - To create metrics to produce an overall ranking based on data
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### **PA Standards:**

#### **PA Standard Area: 2.4 Measurement, Data & Probability**

- CC.2.4.HS.B.5 - Make inferences and justify conclusions based on sample surveys, experiments and observational studies.

#### **PA Standard Area: Computer Science - 3A.DA Data Analysis**

- 3A.DA.09 - Translate between different bit representations of real-world phenomena, such as characters, numbers, and images.
- 3A.DA.12 - Create computational models that represent the relationships among different elements of data collected from a phenomenon or process.

#### **PA Standard Area: Computer Science - 3B.DA Data Analysis**

- 3B.DA.06 - Select data collection tools and techniques to generate data sets that support a claim or communicate information.
- 3B.DA.07 - Evaluate the ability of models and simulations to test and support the refinement of hypotheses.

#### **PA Standard Area: 15.3 Communication**

- 15.3.12.C - Create a research project based upon defined parameters.
- 15.3.12.G - Employ appropriate presentation skills to lead discussions and team activities.
- 15.3.12.W - Collaborate via electronic communication with peers, educators, and/or professionals to meet organizational goals.

#### **PA Standard Area: English Language Arts**

- CC.1.2.11-12.B - Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences and conclusions based on and related to an author's implicit and explicit assumptions and beliefs.

- CC.1.2.11-12.G - Integrate and evaluate multiple sources of information presented in different media or formats (e.g. visually, quantitatively) as well as in words in order to address a question or solve a problem.
- CC.1.2.11-12.L - Read and comprehend literary nonfiction and informational text on grade level, reading independently and proficiently.
- CC.1.4.11-12.D - Organize ideas, concepts, and information to make important connections and distinctions; use appropriate and varied transitions to link the major sections of the text; include formatting when useful to aid comprehension; provide a concluding statement or section.
- CC.1.4.11-12.F - Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
- CC.1.4.11-12.G - Write arguments to support claims in an analysis of substantive topics.
- CC.1.4.11-12.J - Create organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence; Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims; provide a concluding statement or section that follows from and supports the argument presented.
- CC.1.4.11-12.U - Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
- CC.1.4.11-12.V - Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- CC.1.4.11-12.W - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
- CC.1.5.11-12.A - Initiate and participate effectively in a range of collaborative discussions on grades level topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
- CC.1.5.11-12.D - Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning; ensure that the presentation is appropriate to purpose, audience, and task.
- CC.1.5.11-12.F - Make strategic use of digital media in presentations to add interest and enhance understanding of findings, reasoning, and evidence.
- CC.1.5.11-12.G - Demonstrate command of the conventions of standard English when speaking based on grade 9-10 level and content.

**Materials:**

- Example Activity #2 Project Spreadsheet: [Module #6: Data Journalism Example Spreadsheet for an example.](#)
- Project Rubrics:
  - With points - [Project Rubric](#)
  - Without points - [Project Rubric w/o points](#)
- Examples of Data Journalism
  - Pittsburgh Business Times

- [Top School Districts in Western PA](#)
  - [Local College Scorecard](#)
- Pittsburgh Magazine - [Best Neighborhoods in Pittsburgh](#)
- Business Insider - [The 50 Best Places to Live in America](#)
- USA Today - [Most Livable Cities](#)
- Other sites that develop rankings based on metrics
  - [Niche](#)
  - [The Princeton Review](#)
  - [US News Best Colleges](#)

### **Prerequisites:**

- Research other Data Journalism examples of interest - there are always new examples in the news!
- Creating spreadsheets

### **Activity 1: Review Examples of Data Journalism**

- Review examples of Data Journalism: see list above in materials to help you get started and research current examples!
- Does the author identify their methodology?
- Do you agree or disagree with the author's methodology and criteria?
- Select a topic to investigate as a class.

### **Activity 2: Create Your Own Methodology and Spreadsheet; Conduct Research**

- Once you have selected a topic, students can work individually, as a group, or as a class to determine their own methodology!
- Create your own spreadsheet (if working in a group - collaborate on Google Sheets)
- **Develop your own methodology** (we will use the top suburbs in Pittsburgh example to help explain the next steps). Please reference the [Module #6: Data Journalism Example Spreadsheet for an example](#).
  - Identify the **entities** which you will be comparing. For example, this would be your suburbs (Bethel Park, Wexford, Baldwin, etc.). In other examples it could be states, schools, teams, bands, restaurants - anything of interest!
  - Determine your own factors, metrics and weighting system
    - **Factors/Metric:** For our example, what factors will be your metrics.  
*In this example, what factors make a suburb "the best." This can be crime level, education, retail, social, transportation, home value, etc.*
    - **Rating:** Now you must determine a rating scale for each factor. This provides a numerical value that rates each entities' performance on each factor. It will be used as a comparison among each factor and also utilized to tally a total score for each entity.  
*For this example, looking at the number of crimes per 100,000 residents - less than 10 crimes may be rated a 5, 11-50 crimes may be rated a 4.*

- **Weighting System**: You can opt to weigh the different factors for an extension of the activity.

*For example, if you believe the crime factor is the most important, you may multiply this metric rating by 5. If you believe that retail/social is not as important, you may multiply this factor by 1 or 2.*

- Your entities will be your row headers and your factors, metrics and weights will go in the columns.
- Research and enter data into your spreadsheet. You can do this individually, as a group or as an entire class.
- You will likely need to utilize the addition and multiplication formulas in Google Sheets or Excel to add up rating points and to multiply by your weights (if applicable).
  - Addition =cell1+cell2
  - Multiplication =cell1\*cell2
- Calculate a total score for each item you are ranking.
- Create a presentation (this is optional). You may wish to have the students present their spreadsheet and go over their methodology. Then reveal their top 10-rankings.

### **Activity 3: Present Findings**

- Have students present their findings to the class
- Compare and contrast methodologies and results
  
- **Extension**: Have students write an article or blog outlining their study, methodology and findings.

### **Evaluation**

Rubrics:

- With points - [Project Rubric](#)
- Without points - [Project Rubric w/o points](#)

### **Possible Timeline:**

Day 1: Activity 1

Days 2-6: Activity 2

Day 7: Activity 3