The lesson plans included here were developed by teachers who piloted the investigations presented in the *Statistics and Data Science for Teachers* (Bargagliotti & Franklin, 2021) book. These lesson plans were not created by the authors of the book. These lesson plan worksheets are meant to provide examples of how to guide the investigations within a classroom.

| Lesson Plans Unit 2-A |
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| Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_ **Statistical Investigation: My Week of Happiness** **Dear Data**  In 2016, Georgia Lupi and Stefanie Posavec published the book *Dear Data*, which chronicles a remarkable project in data visualization. Every week for a year, the two women would choose a topic and collect data on that topic. At the end of the week, they would send each other a postcard that included a graphical display of the data they collected and a key to interpreting the display. There is more to data visualization than bar graphs and histograms, and *Dear Data* illustrates the value of nonstandard graphical displays. For example, one week the two women collected data on the doors that they passed through. Georgia’s display (on the left) represents each door with a small rectangle and different characteristics of the doors are represented in each rectangle. Stefanie’s display (on the right) uses different types of lines to represent different types of doors, and each row represents a specific day of the week.  **Reflect**   1. What do you think are the benefits of each type of display? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **What Makes Us Happy?**  Just like the authors of *Dear Data*, you will undertake a week-long investigation into a particular topic and then create with a graphical display for the data that you collect. Your topic will be “What makes us happy?”  ***Step 1: Collect Data***  You will need to keep a 3x5 card with you and be ready to record each instance of happiness during the week. You should record these three things:   * What made you happy? * What time of day were you happy? * Why were you happy?   ***Step 2: Display the Data***  After you collect a week’s worth of data, use a separate sheet of paper to display your data in a creative way. Choose a display that will communicate what you think is most important. Don’t forget to include a key to help readers interpret your display.    To get you thinking about how to display the data, here is an example of how Sienna, a second grade student, chose to display her data for this investigation:  Sienna used rays coming from the sun/moon in the middle of the paper to represent the 24 hours in the day. The days of the week are represented by little lines along each hour. Different shapes are used to represent different instances of happiness, and the key on the bottom of the page explains how the symbols are used.  **Reflect**   1. Explain why you have chosen your particular graphical display for the data you collected.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. Identify three things that you have learned about your own happiness from completing this project. It may be helpful to look for patterns in your data display.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
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| Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_ **Statistical Investigation: Data Cards** **The Task**  On Day 1 of this project, each student in your class is going to create a data card about themselves. On Day 2, after all data cards have been collected, you will choose an investigative question to explore and create a data display to answer your question.  **Day 1: Create a Data Card**  Create a 3 by 3 inch square on a blank piece of paper and cut it out. This will be your data card. The data card should contain your answers to the following questions:   * What do you typically eat for breakfast? * What month were you born in? * How old are you? * How many skips using a jump rope can you complete in 30 seconds? * How do you get to school every day? * What is your eye color? * What is your height? * What is the length of your right foot? * What grade are you in?   The basic format of the data card is shown below.    Here is an example of a student data card that follows this format:    **Day 2: Create a Data Display**  Your teacher will provide you with the data cards for your class. Asking an investigative question and creating a data display will take several steps, which are listed below.  ***Step 1: Choose an investigative question***  First, you must choose a question that you want to explore using the data cards. Some questions might involve only one **variable**, while more complex questions could include multiple variables. You can circle one of the investigative questions from the list below, or write in your own investigative question (this requires the approval of your teacher).   * *How do students typically get to school?* * *What eye color do students typically have?* * *What is a typical number of skips a student can do in 30 seconds?* * *Does what you eat for breakfast influence how you get to school?* * *Can students with larger shoe sizes skip more than those with smaller shoe sizes?* * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   ***Step 2: Arrange the data cards***  In order to create a data display, you must first decide on how to organize the data. For example, do you categorize different breakfasts by the size of the breakfast or simply by the type of food that students eat? Move the data cards around! You should physically arrange or group the data cards in a way that helps you answer the investigative question.  ***Step 3: Create a data display***  Now that you have arranged the data cards in a particular way, how can you communicate what you notice to others with a data display? On a separate sheet of paper, create a data display that helps answer your investigative question.  **Reflect**   1. How did you organize your data in the data display? Explain your choices.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. Using your data display, how would you answer your investigative question? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
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| Lesson Plans Unit 2-B |
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| **Let’s Get Outside**  An Investigation into Pictures as Data  **Introduction**  *What is* ***DATA SCIENCE****? Why is it one of the fastest growing fields today?*  *Does data play a significant role in your daily life?*  Watch the video, [**Women in Data Science Education Outreach, Stanford University**](https://www.yout-ube.com/watch?v=KYvhoH5AzHA), to better inform your responses to each of the questions posed above.  **The Problem**  Honors Precalculus students in Ms. Dueck’s class were given the task one weekend to get outside to get some fresh air and enjoy some movement away from their computer screens. To document those trips outside and gain a few extra credit homework points, they were asked to take pictures that showed glimpses of their surroundings where they had been able to get out and be active.  **Statistical Investigative Question**  *What are the typical features of where you go to be active outside?*  **Data Collection**  Students that participated in the assignment added their photos to a shared Google drive folder, from which the pictures were copied and numbered from 1-63. The entire class was then asked to complete the following:  Look through your pictures submitted [HERE](https://drive.google.com/drive/folders/1tXX9m7H1nljlMxMCD07tZM7QQ1fv1SUl?usp=sharing) and identify at least 3 features that were shared in multiple pictures. (*Note: Some similar, repeated, or off-topic photos were cleaned to allow for a more concise data set*.)  Consider the table given below and the data for Picture 1 that has been given. Label each of the columns 2-8 as representing either quantitative (Q) or categorical (C) variables. Then, choose 4 pictures to analyze on your own, following the sample provided and asking questions for clarification, if necessary. When asked for % of a picture, use the tool available [HERE](https://docs.google.com/presentation/d/1FYExX2yaaLfrJuC2aByQOuCESFQwVPZ0NmoZwLCHDQQ/edit?usp=sharing) to calculate.   | **Picture Number** | **# of People Visible** | **Water Present (Y/N)** | **Dog in Pic (Y/N)** | **Location (Residential, Town, Nature)** | **Sporting Equipment Present (Y/N)** | **% Manmade** | **% Nature**  **(excluding sky)** | | --- | --- | --- | --- | --- | --- | --- | --- | | *1* | *2* | *Y* | *N* | *R* | *N* | *36* | *42* | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |   Compare the data you gathered above to the completed data table available [HERE](https://docs.google.com/spreadsheets/d/1Q67d8bfvNpovCut3bhE5Fes82LVfH5fw1FSdcbuVEa4/edit?usp=sharing)\*. How did you do? Do you have any questions regarding how the data was identified?  *\*Use the completed table linked above imported into CODAP (*[*https://codap.concord.org/*](https://codap.concord.org/)*, following directions given in* [*this video*](https://drive.google.com/file/d/125ZUnOUOp9jbPNNTnqQ2hrJ7J4jI53ze/view?usp=sharing)*) to answer the following analysis questions and then justify with sentences and/or graphs.*  **Analyze the Data - Single Variable Analysis**  If you were to choose a picture at random, would you expect it to be located in town, a residential area, or out in nature? (Justify using the percent of pictures within each and the percent differences between each category).  What is the mean, median and range of the number of people visible?  **Mean:**  **Median:**  **Range:**    What is the mean, median and range of the percentage of manmade features present?  **Mean:**  **Median:**  **Range:**  What is the mean, median and range of the percentage of nature present?  **Mean:**  **Median:**  **Range:**    Does your class tend to be near water when they are active outside? How do you know?  How often were dogs included in your pictures?  How likely would it be for a picture chosen at random to include sporting equipment?  **Analyze the Data - Two Variable Analysis**  Does water present seem to impact whether or not a dog was present?    Does the environment (Residential/Town/Nature) seem to impact the percentage of manmade features that were present?  **Interpret the Data**  Based on what you see in the data above, answer the INVESTIGATIVE QUESTION of this study:  *What are the typical features of where you go to be active outside?*  ***BONUS:***  *Make up another question you’d be interested in exploring in our data. Write it in the form of a question below, then answer it.* |
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| Lesson Plans Unit 2-C |
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| **Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Trash Campaign Accompanying Worksheet**  Read the following article: <https://www.cnn.com/2012/04/26/us/la-trash-puente-landfill/index.html#:~:text=It's%20as%20tall%20as%20some,designated%20dumping%20site%20in%201957>.  Brainstorm 5-10 ideas for how cities and people could reduce the landfill burden.   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   **Landfill Readiness Questions**  **Answer the questions below and discuss your responses with your team members.**   1. What types of items belong in a landfill? Give three examples of things you throw away that belong there. 2. The article implies that by recycling more we can decrease the use of landfills. Why is this? 3. What types of items are recyclable? Give three examples of recyclable items that you use everyday. 4. How does an item that you throw away at school get to either the landfill or the recycling center? Why might items sometimes go to the wrong place?   **Landfill Activity**  ***Background:***  The Los Angeles County Sanitation District (LACSD) would like to reduce their burden on the regional landfills, such as the Puente Hills landfill mentioned in the article. You can learn more about the LACSD by visiting [www.lacsd.org](http://www.lacsd.org) and clicking on the “Solid Waste & Recycling” tab.  LACSD would like your class to examining data from a city-wide participatory sensing campaign, titles the “Trash Campaign,” that was conducted at a number of high schools in the Los Angeles Unified School District (LAUSD).  ***The task:***  The LACSD is planning a public awareness campaign and wants to ask the public to take specific steps that will help reduce the landfill burden. Based on the data collected, they would like you to make one to two recommendations that would reduce the use of the regional landfills.  Specifically, they have asked your team to compose a letter in which you answer the following questions:   1. What is/are the specific recommendations you are proposing for the public awareness campaign? 2. Why do you think this will work? What evidence do you have to support this? Include any necessary plots and analyses. |
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| **Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Gapminder Accompanying Worksheet**  **Investigative Question:**  **Using Statistics to Explain Our World**    **U.N. Millennium Development Goals**      Many national and international private and public entities donate money to other nations in need to encourage development. In 2012, for example, US AID gave over 48 billion dollars in economic and military aid to other nations in the world.    A private company has hired you to consult with them about where they should focus their aids efforts. What country would you recommend for aid and what issues would you focus on funding within that country?    **Use the following questions to guide your team’s answers.**    1. Using the U.N. Millennium Development Goals to choose which larger issues you would like to focus on. What is the US government’s current policy on this issue? Summarize the position and back up your research with facts and figures. You should use at least three outside sources to support your answer.    2. Brainstorm ten or more questions related your goal that you would like to explore using data.    3. Using Gapminder, explore at minimum 5 variables to investigate what regions/countries in the world are in most need with regard to your chosen issue. Which countries are in the most need? What regions of the world are they in?    4. Use GapMinder to find answers to these questions.    Turn in four slides that summarize your work. Create a voice over recording that presented your findings. Answer the questions and present a pitch that provides your recommendation. |
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| **Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Global Terrorism Accompanying Worksheet**  **Investigative Question:**    **Are there patterns in terrorism across the world throughout the past several decades?**    You have access to “Global Terrorism Cleaned” data set. The data source is the University of Maryland Global Terrorism Database:<https://www.start.umd.edu/gtd/contact/>    The data set contains information about all terrorist attacks around the world from 1970-2013. The variable are:   | Variable Name | Description | | --- | --- | | iyear | Year of attack | | country | Numeric code for the name of the country where attack took place | | country\_txt | Name of the country where attack took place | | region\_txt | Region where attack took place | | attacktype1\_txt | Type of attack | | weaptype1\_txt | Type of weapon used in the attack | | nkill | Number of people killed in the attack |       Using these data, **answer 4 of the 7 questions below and write up your answers.** Each question answer will be a short answer.    You have 1.5 pages for these four questions.    Make sure you answer the questions using graphical displays and any other appropriate analyses you have learned to support your answers.    1. What is the typical amount of people that die in a terrorist attack? Please discuss also discuss the variability and the shape of the distributions    2. What is the typical type of attack that are being carried out? Please discuss the variability as well.      3. What types of weapons are typically used to carry out the attacks? Please discuss the variability as well.    4. Are there specific years that have witnessed the most people dying from terrorist attacks?      5. Are there any attacks that appear to be outliers in the number of lives they have claimed? Do you recognize any of these?      6. Are there specific regions of the world where terrorism has claimed more lives? \*Hint: look at the distribution of nkill **by** region      7. What countries in the world have had the most people killed by terrorist attacks? \*Hint: look at the summary statistics for nkill **by** country        Next, look at the following article in the New York Times The Upshot:    <https://www.nytimes.com/2016/08/16/upshot/is-terrorism-getting-worse-in-the-west-yes-in-the-world-no.html>    In this article, you will see three graphical displays. Explain what those graphical displays are telling you. Relate the displays to your answers above. Are the graphical displays further evidence of your answers above? Are they connected in some way or do the graphs present different evidence.    Write up your answer in one paragraph. |
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| Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_ **Statistical Investigation: Data Cards** **The Task**  On Day 1 of this project, each student in your class is going to create a data card about themselves. On Day 2, after all data cards have been collected, you will choose an investigative question to explore and create a data display to answer your question.  **Day 1: Create a Data Card**  Create a 3 by 3 inch square on a blank piece of paper and cut it out. This will be your data card. The data card should contain your answers to the following questions:   * What do you typically eat for breakfast? * What month were you born in? * How old are you? * How many skips using a jump rope can you complete in 30 seconds? * How do you get to school every day? * What is your eye color? * What is your height? * What is the length of your right foot? * What grade are you in?   The basic format of the data card is shown below.    Here is an example of a student data card that follows this format:    **Day 2: Create a Data Display**  Your teacher will provide you with the data cards for your class. Asking an investigative question and creating a data display will take several steps, which are listed below.  ***Step 1: Choose an investigative question***  First, you must choose a question that you want to explore using the data cards. Some questions might involve only one **variable**, while more complex questions could include multiple variables. You can circle one of the investigative questions from the list below, or write in your own investigative question (this requires the approval of your teacher).   * *How do students typically get to school?* * *What eye color do students typically have?* * *What is a typical number of skips a student can do in 30 seconds?* * *Does what you eat for breakfast influence how you get to school?* * *Can students with larger shoe sizes skip more than those with smaller shoe sizes?* * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   ***Step 2: Arrange the data cards***  In order to create a data display, you must first decide on how to organize the data. For example, do you categorize different breakfasts by the size of the breakfast or simply by the type of food that students eat? Move the data cards around! You should physically arrange or group the data cards in a way that helps you answer the investigative question.  ***Step 3: Create a data display***  Now that you have arranged the data cards in a particular way, how can you communicate what you notice to others with a data display? On a separate sheet of paper, create a data display that helps answer your investigative question.  **Reflect**   1. How did you organize your data in the data display? Explain your choices.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. Using your data display, how would you answer your investigative question? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
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| Lesson Plans Unit 3-C |
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