Case Study 1

**Case Study: How Does a Bike-Share Navigate Speedy Success?**

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| **Case Study Roadmap - Ask** |
| **Guiding questions**   * What is the problem you are trying to solve? * How can your insights drive business decisions? |
| **Key tasks**   1. Identify the business task 2. Consider key stakeholders |
| **Deliverable**  How to maximize the Cyclist Annual Membership by determining the difference of use of bikes by casual and annual members, by using Digital Media and by describing benefits of Annual Memberships? |

# Prepare

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| **Case Study Roadmap - Prepare** |
| **Guiding questions**   * Where is your data located? * How is the data organized? * Are there issues with bias or credibility in this data? [Does your data ROCCC?](https://www.coursera.org/learn/data-preparation/lecture/lHirM/what-is-bad-data) * How are you addressing licensing, privacy, security, and accessibility? * How did you verify the data’s integrity? * How does it help you answer your question? * Are there any problems with the data? |
| **Key tasks**   1. Download data and store it appropriately. 2. Identify how it’s organized. 3. Sort and ﬁlter the data. |



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| 4. Determine the credibility of the data. |
| **Deliverable**  Data is credible and unbiased as it’s a fictional as well as internal data. It describes the bike id, type of bike used, time where it starts and ends, station where it starts and ends, membership of the user, longitude and latitude of where it starts and ends |

# Process

Then, process your data for analysis using the following Case Study Roadmap as a guide:

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| **Case Study Roadmap - Process** |
| **Guiding questions**   * What tools are you choosing and why? * Have you ensured your data’s integrity? * What steps have you taken to ensure that your data is clean? * How can you verify that your data is clean and ready to analyze? * Have you documented your cleaning process so you can review and share those results? |
| **Key tasks**   1. Check the data for errors. 2. Choose your tools. 3. Transform the data so you can work with it eﬀectively. 4. Document the cleaning process. |
| **Deliverable**  Fewer errors found. No duplicates and whitespaces. Also there are no NULL values. |

## Follow these steps:

1. [Download the previous 12 months of Cyclistic trip data](https://divvy-tripdata.s3.amazonaws.com/index.html).
2. Unzip the ﬁles.
3. Create a folder on your desktop or Drive to house the ﬁles. Use appropriate ﬁle-naming conventions.
4. Create subfolders for the .CSV ﬁle and the .XLS or Sheets ﬁle so that you have a copy of the original data. Move the downloaded ﬁles to the appropriate subfolder.
5. Follow these instructions for either Excel (a) or Google Sheets (b):
   1. Launch Excel, open each ﬁle, and choose to Save As an Excel Workbook ﬁle. Put it in the subfolder you created for .XLS ﬁles.
   2. Open each .CSV ﬁle in Google Sheets and save it to the appropriate subfolder.
6. Open your spreadsheet and create a column called “ride\_length.” Calculate the length of each ride by subtracting the column “started\_at” from the column “ended\_at” (for example, =D2-C2) and format as HH:MM:SS using Format > Cells > Time > 37:30:55.
7. Create a column called “day\_of\_week,” and calculate the day of the week that each ride started using the “WEEKDAY” command (for example, =WEEKDAY(C2,1)) in each ﬁle. Format as General or as a number with no decimals, noting that 1 = Sunday and 7 = Saturday.
8. Proceed to the analyze step.

If you like, continue working with the data to better familiarize yourself and perhaps even identify new approaches to answering the business questions.

# Analyze

Now that your data is stored appropriately and has been prepared for analysis, start putting it to work. Use the following Case Study Roadmap as a guide:

**Case Study Roadmap - Analyze**

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| **Guiding questions**   * How should you organize your data to perform analysis on it? * Has your data been properly formatted? * What surprises did you discover in the data? * What trends or relationships did you ﬁnd in the data? * How will these insights help answer your business questions? |
| **Key tasks**   1. Aggregate your data so it’s useful and accessible. 2. Organize and format your data. 3. Perform calculations. 4. Identify trends and relationships. |
| **Deliverable**  Analysis like number of bikes used on weekends are more as compared to other days, number of annual members are more than casual members, most common day for riding bikes is Monday and average duration the biker rides is 36 minutes. |

## Follow these steps for using spreadsheets

Open your spreadsheet application, then complete the following steps:

1. Where relevant, make columns consistent and combine them into a single worksheet.
2. Clean and transform your data to prepare for analysis.
3. Conduct descriptive analysis.
4. Run a few calculations in one ﬁle to get a better sense of the data layout. Options:
   * Calculate the mean of ride\_length
   * Calculate the max ride\_length
   * [Calculate the mode of day\_of\_week](https://support.google.com/docs/answer/3094029?hl=en)
5. Create a pivot table to quickly calculate and visualize the data. Options:
   * Calculate the average ride\_length for members and casual riders. Try rows = member\_casual; Values = Average

of ride\_length.

* + Calculate the average ride\_length for users by day\_of\_week. Try columns = day\_of\_week; Rows = member\_casual; Values = Average of ride\_length.
  + Calculate the number of rides for users by day\_of\_week by adding Count of trip\_id to Values.

1. Open another ﬁle and perform the same descriptive analysis steps. Explore diﬀerent seasons to make some initial observations.
2. Once you have spent some time working with the individual spreadsheets, merge them into a full-year view. Do this with the tool you have chosen to use to perform your ﬁnal analysis, either a spreadsheet, a database and SQL, or R Studio.
3. Export a summary ﬁle for further analysis.

## Follow these steps for using SQL

Open your SQL tool of choice, then complete the following steps:

1. Import your data.
2. Explore your data, perhaps looking at the total number of rows, distinct values, maximum, minimum, or mean values.
3. Where relevant, use JOIN statements to combine your relevant data into one table.
4. Create summary statistics.
5. Investigate interesting trends and save that information to a table.

## Follow these steps for using R

Open R Studio and [use this script](https://docs.google.com/document/d/1TTj5KNKf4BWvEORGm10oNbpwTRk1hamsWJGj6qRWpuI/edit) to complete the following steps:

1. Import your data.
2. Make columns consistent and merge them into a single dataframe.
3. Clean up and add data to prepare for analysis.
4. Conduct descriptive analysis.
5. Export a summary ﬁle for further analysis.

# Share

Now that you have performed your analysis and gained some insights into your data, create visualizations to share your ﬁndings. Moreno has reminded you that they should be sophisticated and polished in order to eﬀectively communicate to the executive team. Use the following Case Study Roadmap as a guide:

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| **Case Study Roadmap - Share** |
| **Guiding questions**   * Were you able to answer the question of how annual members and casual riders use Cyclistic bikes diﬀerently? * What story does your data tell? * How do your ﬁndings relate to your original question? * Who is your audience? What is the best way to communicate with them? * Can data visualization help you share your ﬁndings? * Is your presentation accessible to your audience? |
| **Key tasks**   1. Determine the best way to share your ﬁndings. 2. Create eﬀective data visualizations. 3. Present your ﬁndings. 4. Ensure your work is accessible. |
| **Deliverable**  Visualization tells that the Casual members use bike longer than annual members, so if they buy the memberships, it’d be more beneficial for them. Also Annual members used bikes more than Casual members. |

## Follow these steps:

1. Take out a piece of paper and a pen and sketch some ideas for how you will visualize the data.
2. Once you choose a visual form, open your tool of choice to create your visualization. Use a presentation software, such

as PowerPoint or Google Slides; your spreadsheet program; Tableau; or R.

1. Create your data visualization, remembering that contrast should be used to draw your audience’s attention to the most important insights. Use artistic principles including size, color, and shape.
2. Ensure clear meaning through the proper use of common elements, such as headlines, subtitles, and labels.
3. Reﬁne your data visualization by applying deep attention to detail.

# Act

Now that you have ﬁnished creating your visualizations, act on your ﬁndings. Prepare the deliverables Morena asked you to create, including the three top recommendations based on your analysis. Use the following Case Study Roadmap as a guide:

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| **Case Study Roadmap - Act** |
| **Guiding questions**   * What is your ﬁnal conclusion based on your analysis? * How could your team and business apply your insights? * What next steps would you or your stakeholders take based on your ﬁndings? * Is there additional data you could use to expand on your ﬁndings? |
| **Key tasks**   1. Create your portfolio. 2. Add your case study. 3. Practice presenting your case study to a friend or family member. |
| **Deliverable**  Casual members will be more in benefit if they bought the membership  Casual members use bikes for longer, so if they will be introduced to some schemes cyclistics will profit more  Most of the bike users are annual members so annual members can also help in making profit |

## Follow these steps:

1. If you do not have one already, create an online portfolio. (Use [Creating an Interactive Portfolio with Google Sites](https://sites.google.com/site/eportfolioapps/online-tutorials-sites/sites-how-to) or [Build a Portfolio with Google Sites](https://applieddigitalskills.withgoogle.com/c/middle-and-high-school/en/build-a-portfolio-with-google-sites/build-a-portfolio-with-google-sites/introduction-to-build-a-portfolio-with-google-sites.html).)
2. Consider how you want to feature your case study in your portfolio.
3. Upload or link your case study ﬁndings to your portfolio.
4. Write a brief paragraph describing the case study, your process, and your discoveries.
5. Add the paragraph to introduce your case study in your portfolio.

# Wrap-up

Congratulations on ﬁnishing the Cyclistic bike-share case study! If you like, complete one of the other case studies to continue growing your portfolio. Or, use the steps from the **ask**, **prepare**, **process**, **analyze**, **share**, and **act** Case Study Roadmap to create a new project all your own. Best of luck on your job search!