```
Tools & Resources

    Fitbit Fitness Tracker Data

    Microsoft Excel

    SQL

           • R

    Tableau

        STEP 1. ASK
        Business Task:
              Analyze FitBit Fitness Tracker Data to gain insights into how consumers are using the FitBit app and discover trends and insights
              for Bellabeat marketing strategy.
         Business Objectives:
           1. What are the trends identified?
           2. How could these trends apply to Bellabeat customers?
           3. How could these trends help influence Bellabeat marketing strategy?
         Deliverables:
           1. A clear summary of the business task
           2. A description of all data sources used
           3. Documentation of any cleaning or manipulation of data
           4. A summary of analysis
           5. Supporting visualizations and key findings
           6. High-level content recommendations based on the analysis
         Key Stakeholders:
           1. Urška Sršen: Bellabeat's cofounder and Chief Creative Officer
           2. Sando Mur: Mathematician, Bellabeat's cofounder and key member of the Bellabeat executive team
           3. Bellabeat marketing analytics team: A team of data analysts guiding Bellabeat's marketing strategy.
         STEP 2. PREPARE
         Information on Data Source:
           1. The data is publicly available on Kaggle: FitBit Fitness Tracker Data and stored in 18 csv files.
           2. Generated by respondents from a distributed survey via Amazon Mechanical Turk between 12 March 2016 to 12 May 2016.
           3. 30 FitBit users who consented to the submission of personal tracker data.
           4. Data collected includes (1) physical activity recorded in minutes, (2) heart rate, (3) sleep monitoring, (4) daily activity and (5) steps.
         Limitations of Data Set:
           1. Data collected from year 2016. Users' daily activity, fitness and sleeping habits, diet and food consumption may have changed since then, hence data may not be timely
           2. Sample size is low and not indicitive of the entire target demograpic population.
           3. As data is collected in a survey, we are limited in our ability to ascertain the integrity or accuracy of data.
         Is Data ROCCC?
        A good data source is ROCCC which stands for Reliable, Original, Comprehensive, Current, and Cited.
           1. Reliable - LOW - Low sample size of 30 correspondants
           2. Original - LOW - Third party provider
           3. Comprehensive - MED - Parameters match most of Bellabeat's products' parameters
           4. Current - LOW - Data is 5 years old
           5. Cited - LOW - Data collected from third party, hence unknown
         Overall, the dataset is considered bad quality data and it is not recommended to produce business recommendations based on this data.
         Data Selection:
         The following file is selected and copied for analysis.
         dailyActivity_merged.csv
        STEP 3. Process and STEP 4. Analyze
        I will be using a cloud version of RStudio and BigQuery to process the dataset. ults? Key tasks
           1. Check the data for errors.
           Choose your tools.
           Transform the data so you can work with it effectively.
           4. Document the cleanin
           Perform calculations.
           6. Identify trends and relationships.tion of data
         Downloading and Uploading the Dataset:
         First want to upload dailyActivity_merged.csv into BigQuery with and create a dataset and table with an appropriate naming convestion and schema. We also want to
         make sure the necessary packages are installed and functioning on R.
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 [ ]: #Installing the required packages
              install.packages(c("tidyverse", "lubridate", "readr", "ggplot2"))
 [1]: #loading the required packages
              library(tidyverse)
              library(lubridate)
              library(readr)
              library(ggplot2)

    Attaching core tidyverse packages -

                                                                                                                                                  — tidyverse 2.0.0 —
         √ forcats 1.0.0
                                                        1.5.0
                                                         1.3.0
         √ purrr 1.0.2
         — Conflicts -
                                                                                                                                          — tidyverse_conflicts() —
        X dplyr::filter() masks stats::filter()
        X dplyr::lag() masks stats::lag()
        i Use the conflicted package (<a href="http://conflicted.r-lib.org/">http://conflicted.r-lib.org/</a>) to force all conflicts to become errors
        We can preview the data and make sure it uploaded correctly using the head() function
 [3]: dailyActivity_merged <- read.csv("C:...\\dailyActivity_merged.csv")
         head(dailyActivity_merged)
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         We can also run a quick null check for obvious missing data
[23]: # Obtain the number of missing data points per column
         missing_values_count <- colSums(is.na(dailyActivity_merged))</pre>
         total data points per column <- nrow(dailyActivity merged) # This should be the number of rows in the data frame
         missing_data_percentage <- missing_values_count / total_data_points_per_column * 100</pre>
         cat("Total Missing Data Points:", sum(missing_values_count), "\n")
         cat("Total Data Points:", nrow(dailyActivity_merged) * length(colnames(dailyActivity_merged)), "\n")
         cat("Total Missing Data Percentage:", round(mean(missing_data_percentage), 2), "%\n")
         for (i in 1:length(colnames(dailyActivity_merged))) {
           cat(colnames(dailyActivity_merged)[i], "\t", missing_values_count[i], "/", total_data_points_per_column, " (", round(missing_data_percentage[i], 2), "%
         Total Missing Data Points: 0
         Total Data Points: 14100
         Total Missing Data Percentage: 0 %
                    0 / 940 (0%)
         ActivityDate 0 / 940 (0%)
         TotalSteps 0 / 940 (0%)
         TotalDistance 0 / 940 (0%)
         TrackerDistance 0 / 940 (0%)
         LoggedActivitiesDistance
                                                     0 / 940 (0%)
         VeryActiveDistance 0 / 940 ( 0 %)
         ModeratelyActiveDistance
                                                    0 / 940 ( 0 %)
         LightActiveDistance 0 / 940 (0%)
         SedentaryActiveDistance
                                                   0 / 940 (0%)
         VeryActiveMinutes 0 / 940 (0%)
         FairlyActiveMinutes
                                          0 / 940 (0%)
         LightlyActiveMinutes 0 / 940 (0%)
         SedentaryMinutes
                                           0 / 940 (0%)
         Calories
                        0 / 940 ( 0 %)
        We will do the same for unique data and duplicates
[28]: # Get the unique values in column 1
         unique_values <- unique(dailyActivity_merged[, 1])</pre>
         cat("Number of unique values:", length(unique_values), "\n")
         cat("Unique values:", paste(unique_values, collapse = ", "), "\n")
         Number of duplicate rows: 907
         Number of unique values: 33
         Unique values: 1503960366, 1624580081, 1644430081, 1844505072, 1927972279, 2022484408, 2026352035, 2320127002, 2347167796, 2873212765, 3372868164, 397733
         3714, 4020332650, 4057192912, 4319703577, 4388161847, 4445114986, 4558609924, 4702921684, 5553957443, 5577150313, 6117666160, 6290855005, 6775888955, 696
         2181067, 7007744171, 7086361926, 8053475328, 8253242879, 8378563200, 8583815059, 8792009665, 8877689391
[42]: # Create a logical vector indicating duplicate groups
         grouped_duplicates <- duplicated(dailyActivity_merged, fromLast = TRUE)
         number_of_duplicate_groups <- sum(grouped_duplicates)</pre>
         unique_groups <- unique(dailyActivity_merged[grouped_duplicates, ], by.row = TRUE)</pre>
         cat("\nUnique groups of duplicate rows:\n")
         print(unique_groups)
         Unique groups of duplicate rows:
          [1] Id
                                                ActivityDate
                                                                                    TotalSteps
          [4] TotalDistance
                                              TrackerDistance
                                                                                   LoggedActivitiesDistance
          [7] VeryActiveDistance ModeratelyActiveDistance LightActiveDistance
         [10] SedentaryActiveDistance VeryActiveMinutes
                                                                                   FairlyActiveMinutes
         [13] LightlyActiveMinutes SedentaryMinutes
                                                                                    Calories
         <0 rows> (or 0-length row.names)
        Now that we've gotten some insignt on the data as well as confirming that there isnt any missing datapoints, our next step is to transform the data so its more user friendly
         for analysis. First I noticed the date column is in character format rather than a date format so we should convert that first for consistency before further analysis. BigQuery will
         sometimes do this automatically sometimes but ill save SQL for the analysis step and use coding to stay consistent for now.
[54]: # Load the dailyActivity_Merged data frame
         dailyActivity_Merged <- read.csv("C:\\Users\\dfsbe\\Documents\\JupyterLab\\Resources\\Fitabase Data 4.12.16-5.12.16\\dailyActivity_merged.csv")</pre>
         dailyActivity_Merged$ActivityDate <- as.POSIXct(dailyActivity_Merged$ActivityDate, format = "%m/%d/%Y", overwrite = TRUE)</pre>
         head(dailyActivity_Merged)
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        2 1503960366 2016-04-13
                                                   10735
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        3 1503960366 2016-04-14
                                                   10460
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         4 1503960366 2016-04-15
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         6 1503960366 2016-04-17
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                                                                        6.48
                                                                                                                                                                                                                 2.51
        We should also create a column to specify the day of the week for each date as well as total active minutes to for ease of analysis
[63]: # Load the dailyActivity_Merged data frame
         dailyActivity Merged <- read.csv("C:...\\dailyActivity_merged.csv")</pre>
         dailyActivity_Merged$ActivityDate <- as.POSIXct(dailyActivity_Merged$ActivityDate, format = "%m/%d/%Y", overwrite = TRUE)</pre>
         dailyActivity_Merged$DayOfWeek <- weekdays(dailyActivity_Merged$ActivityDate)</pre>
         head(dailyActivity_Merged)
                                                                                                                                                                                     A data.frame: 6 × 16
                        Id ActivityDate TotalSteps TotalDistance TrackerDistance LoggedActivitiesDistance VeryActiveDistance ModeratelyActiveDistance LightActiveDistance Sec
                   <dbl>
                                  <dttm>
                                                    <int>
                                                                     <dbl>
                                                                                          <dbl>
                                                                                                                          <dbl>
                                                                                                                                                   <dbl>
                                                                                                                                                                                    <dbl>
         1 1503960366
                              2016-04-12
                                                   13162
                                                                       8.50
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                                                    10735
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                                                    9705
                                                                        6.48
                                                                                            6.48
                                                                                                                                                     3.19
                                                                                                                                                                                       0.78
                                                                                                                                                                                                                 2.51
[64]: # Create a new column to store the total active minutes
         dailyActivity_Merged$TotalActiveMinutes <- dailyActivity_Merged$VeryActiveMinutes + dailyActivity_Merged$FairlyActiveMinutes + dailyActivity_Merged$Light
        head(dailyActivity_Merged)
                                                                                                                                                                                                 A data.frame: 6 × 17
                        Id ActivityDate TotalSteps TotalDistance TrackerDistance LoggedActivitiesDistance VeryActiveDistance ModeratelyActiveDistance LightActiveDistance Sec
                   <dbl>
                                  <dttm>
                                                    <int>
                                                                     <dbl>
                                                                                                                          <dbl>
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         1 1503960366
                              2016-04-12
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        2 1503960366
                              2016-04-13
                                                    10735
                                                                       6.97
                                                                                            6.97
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                                                                                                                                                                                                                 4.71
        3 1503960366 2016-04-14
                                                   10460
                                                                       6.74
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                                                                                            6.74
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         4 1503960366 2016-04-15
                                                    9762
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         5 1503960366 2016-04-16
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                                                    12669
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         6 1503960366 2016-04-17
                                                    9705
                                                                        6.48
                                                                                            6.48
                                                                                                                                                      3.19
                                                                                                                                                                                       0.78
                                                                                                                                                                                                                 2.51
        We'll now switch to SQL to do some basic analysis
        Using the statement SELECT DayOfWeek, AVG(Calories) AS Average_Calories, AVG(TotalSteps) AS Average_TotalSteps, AVG(TotalDistance) AS Average_TotalDist
        AVG(TotalActiveMinutes) AS Average_TotalActiveMinutesance dailyActivity_Merged_Transformederged GROUP BY DayOfWeek ORDER BY DayOfWeek;ed;ips.
          Results Messages
                 "DayOfWeek"
                                Average_Calories Average_TotalSteps Average_TotalDistance Average_TotalActiveMinutes
                                 2331.785714
                                                    7448.230158
                                                                          5.309920
                                                                                                  236.365079
                 "Friday"
                 "Monday"
                                 2324.208333
                                                    7780.866666
                                                                          5.552916
                                                                                                  229.166666
                 "Saturday"
                                 2354.967741
                                                    8152.975806
                                                                          5.854677
                                                                                                  244.266129
                                 2263.000000
                                                    6933.231404
                                                                          5.027190
                                                                                                  208.487603
                 "Sunday"
                                 2199.571428
                                                    7405.836734
                                                                          5.312244
                                                                                                  216.789115
                 "Thursday"
                             2356.013157
                                                                                                  234.631578
                  "Tuesday"
                "Wednesday" 2302.620000
        A quick look at the prompt shows the days DayOfWeek columns order is in alphabetical order rather than numeric, we should fix that quick with a case clause, something like,
[]: SELECT
           CASE
              WHEN DayOfWeek = 'Monday' THEN 1
              WHEN DayOfWeek = 'Tuesday' THEN 2
              WHEN DayOfWeek = 'Wednesday' THEN 3
              WHEN DayOfWeek = 'Thursday' THEN 4
              WHEN DayOfWeek = 'Friday' THEN 5
              WHEN DayOfWeek = 'Saturday' THEN 6
              ELSE 7
           END AS NumericDay,
           DayOfWeek,
           AVG(Calories) AS Average_Calories,
           STDEV(Calories) AS Standard_Deviation_Calories,
           AVG(TotalSteps) AS Average_TotalSteps,
           STDEV(TotalSteps) AS Standard_Deviation_TotalSteps,
           AVG(TotalDistance) AS Average_TotalDistance,
           STDEV(TotalDistance) AS Standard_Deviation_TotalDistance,
           AVG(TotalActiveMinutes) AS Average_TotalActiveMinutes,
           STDEV(TotalActiveMinutes) AS Standard_Deviation_TotalActiveMinutes
         FROM dailyActivity_Merged_Transformed
         ORDER BY NumericDay;
         GROUP BY DayOfWeek
          Ⅲ Results 🗐 Messages
               NumericDay "DayOfWeek" Average_Calories Standard_Deviation_Calories Average_TotalSteps Standard_Deviation_TotalSteps Average_TotalDistance Standard_Deviation_TotalDistance Standard_Deviation_TotalDi
            | Numeric Day | "DayOf Week" | Average_Calories | Standard_Deviation_Calories | Average_Total Steps | Standard_Deviation_Total Steps
                                                                                                                                                                                     116.407306748442
                                                                                                                                                                                      119.530354936028
          3 3
                                                                                                                                                                                      114.649431616656
                                                                                                                                                                                      127.77416031852
                                                                                                                                                                                      116.673603059105
          6 6
                                                                                                                                                                                      133.03340914643
                                                                                                                                                                                       123.111948763614
        This is a bit hard to read, partially because of the long decimals and low sample size for a more accurate and usable average and deviation. We can reformat the output by
         editing the clause as well as getting a percentile version of the standard deviation for better understanding with out limited sample size. something like,
 [ ]: SELECT
              WHEN DayOfWeek = 'Monday' THEN 1
              WHEN DayOfWeek = 'Tuesday' THEN 2
              WHEN DayOfWeek = 'Wednesday' THEN 3
              WHEN DayOfWeek = 'Thursday' THEN 4
              WHEN DayOfWeek = 'Friday' THEN 5
              WHEN DayOfWeek = 'Saturday' THEN 6
              ELSE 7
           END AS NumericDay,
           DayOfWeek,
           FORMAT(AVG(Calories), 'F2') AS Average_Calories,
           FORMAT(((STDEV(Calories) - AVG(Calories)) / AVG(Calories)) * 100, 'F2') AS Percentile_Difference_Calories,
           FORMAT(AVG(TotalSteps), 'F2') AS Average_TotalSteps,
           FORMAT(((STDEV(TotalSteps) - AVG(TotalSteps)) / AVG(TotalSteps)) * 100, 'F2') AS Percentile_Difference_TotalSteps,
           FORMAT(AVG(TotalDistance), 'F2') AS Average_TotalDistance,
           FORMAT(((STDEV(TotalDistance) - AVG(TotalDistance)) / AVG(TotalDistance)) * 100, 'F2') AS Percentile_Difference_TotalDistance,
           FORMAT(AVG(TotalActiveMinutes), 'F2') AS Average_TotalActiveMinutes,
           FORMAT(((STDEV(TotalActiveMinutes) - AVG(TotalActiveMinutes)) / AVG(TotalActiveMinutes)) * 100, 'F2') AS Percentile_Difference_TotalActiveMinutes
         FROM dailyActivity Merged Transformed
         GROUP BY DayOfWeek
         ORDER BY NumericDay;
          Results B Messages
              Numeric Day
                        "DayOfWeek"
                                    Average_Calories   Percentile_Difference_Calories   Average_Total Distance   Percentile_Difference_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance    Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance    Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance   Average_Total Distance    Average_Total Distance   Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_Total Distance    Average_T
                                                                                                                                 -37.07
                                                                                                                                                            229.17
                                    2324.21
                                                 -72.69
                                                                        7780.87
                                                                                        -39.37
                                                                                                               5.55
                                                                                                                                                                                 -49.20
                        "Monday"
                        "Tuesday"
                                    2356.01
                                                  -69.88
                                                                        8125.01
                                                                                        -40.51
                                                                                                                5.83
                                                                                                                                  -37.09
                                                                                                                                                            234.63
                                                                                                                                                                                  49.06
                                    2302.62
                                                  -70.92
                                                                        7559.37
                                                                                        -36.37
                                                                                                                                  -30.16
                                                                                                                                                            223.73
                                                                                                                                                                                 -48.76
                                                                                                                5.49
                        "Wednesday
                                    2199.57
                                                 -63.37
                                                                        7405.84
                                                                                        -32.38
                                                                                                               5.31
                                                                                                                                 -28.10
                                                                                                                                                            216.79
                                                                                                                                                                                 -41.06
                         "Friday"
                                    2331.79
                                                 -71.07
                                                                        7448.23
                                                                                                                5.31
                                                                                                                                  -32.86
                                                                                                                                                            236.37
                                                                                                                                                                                  -50.64
                        "Saturday"
                                    2354.97
                                                 -65.92
                                                                        8152.98
                                                                                        -27.09
                                                                                                                5.85
                                                                                                                                  -20.08
                                                                                                                                                            244.27
                                                                                                                                                                                  45.54
                                    2263.00
                                                  -68.77
                                                                        6933.23
                                                                                        -18.59
                                                                                                                                  -12.78
                                                                                                                                                            208.49
                                                                                                                                                                                  -40.95
         From a quick glance we can see that for just about every catagory besides calories, there is a noticble drop in deviation from the average on weekends as well as Thursday. We
        can make an inferece that due to the complexity of daily life, Individuals are more likely to have sporadic excercise routines during the week and it may be necessary to
         analyze by hour rather than by day for a more thurough analysis. On weekends we see less of a deviation from the averages which is likely due to sedentary activity as rest
        days for many people with the most significant drop on Sunday.
        However Thursday also seems to be a day during the week in which physical activity is both high as well as less of a deviation from average, that raises the question of
        whether its just a statistical anamoly from a low sample size or if individuals as a whole are generally more active on Thursdays. Although with the limitations of the data set of
        only 33 female FitBit users who may or may not be from the same region with the same schedule it is not representitive of the entire population or female population without
         further data. That brings us to our next step.
        STEP 5. Share
         Key tasks
           1. Determine the best way to share your findings.
           2. Create effective data visualizations.
           Present your findings.
           4. Ensure your work is accessible.
         We can save many of the outputs from calculations using R or SQL as individual datasets as well. I'll be uusing Tableau to generate some graphics insights for better
        understanding. Such as the result generated by the previous SQL query.
           Deviation By Day
                  -75
                        -72.69
                                                                     -71.07
                                               -70.92
                                    -69.88
                                                                                           -68.77
                  -65
                                                                                -65.92
                                                          -63.37
                  -60
                  -55
                  -50
                                                                     -50.64
                         -49.20
                                    -49.06
                                               -48.76
                                                                                                       Measure Names
                  -45
                                                                                -45.54
                                                                                                       Activity Deviation
                                                                                                       Caloric Deviation
            Value
                                                                                                       Distance Deviation
                                                                                           -40.95
                                    -40.51
                         -39.37
                                                                                                       Steps Deviation
                                                                     -37.60
                        -37.07
                                   -37.09
                                                                     -32.86
                                                          -32.38
                  -30
                                                          -28.10
                  -25
                                                                                -27.09
                  -20
                                                                                -20.08
                                                                                           -18.59
                  -15
                                                                                           -12.78
                  -10
        From this chart we can clearly see that the distance & steps for these individuals were relitevely similar in comparison to calories & activity which seems to vary significantly on
         an individual basis. Knowing that a value of 0 would mean no deviation from the average over all the days, We also can see that there are noticable drops in deviation on
        Saturday, Sunday and Thursday for all catagories with caloric deviation being affected the least. We can also presume from the low deviation in distance and step count, it is
        likely that individuals are not necessarily walking/running as a main source of activity and calorie burn as everyone seems to get relitively the same ammount of distance and
         steps logged daily.
              250
              200
          Very Active Minutes
              150
                50
                               500 1000 1500 2000 2500 3000 3500 4000 4500 5000
                                                               Calories
        By comparison of high activity minutes which FitBit uses heartrate data as a qualifier we can see a high level of correlation between highly active minutes and calories burned.
        From a day by day analysis with sleep minutes synchronized on the axis as well for comparison we can see that generally the entire sample pool stays within groupings. A day
        by day graphic also points out distinct indivduals that log a much higher than average level high activity day by day, with more joining in during the weekdays.
                                                                                                                2400
                                                                                                                       2600
                                                                                                                                      3000 3200 3400 3600 3800 4000 4200 4400 4600 4800 5000
                                                                                                                 Calories
        From a graphic made comparing distance to calories, we can confirm the lack of a correlation between distance logged and the ammount of calories burned, the maximum
         calories burned logged is also not the highest distance logged and the maximum distance logged is not the highest calories burned.
                                                    Very Active Minutes
                                                                              Fairly Active Minutes
                                                                                                            Lightly Active Minutes
                             Sedentary Minutes
                                                                                            Fairly Active Minutes
                                           Very Active Minutes
                                                                                       Lightly Active Minutes
        A pie chart of the average day including sleep and one without.
        Key Insights

    Users who have high very active minutes also expend more calories. High periods of activity does not neccessarily mean distance or step count but rather activities that

              increase heartrate.

    There is no correlation stating that people who sleep more walk more. Users sleep patterns have no effect on the total steps taken daily or distance traveled.

    Daily correlation increase during the weekends and deviate moreso during the working week.

           • The data provided for the heartrate_seconds_merged dataset was incomplete as only 14 users data was recorded. About 58% of the users in this dataset were not
              included.
         In Conclusion
```

The provided data is not suitable for making reliable conclusions due to its limited scope and outdated nature. The company's global reach contrasts with the small sample size of 30 users, which is inadequate for drawing meaningful insights. Additionally, the data's age, originating from a one-month period in 2016, raises concerns about its

Furthermore, the data's lack of information on user gender poses a risk of inaccurate analysis and recommendations. Given that the analysis aims to inform marketing strategies for a smart device company targeting women, understanding the gender distribution of the user base is crucial for effective targeting and avoiding misleading

relevance to current marketing strategies in 2022.

Collect a larger and more representative sample of user data

Explore alternative data sources prefrebly from within userbase

Leverage predictive insights to personalize marketingnd predict future user behavior

conclusions.

[]:

STEP 6. ACT

Reccomendations

Gather more current and relevant data

Include user gender information in data collection

⑥↑↓占甲ⅰ

Introduction

Scenario Background

your high-level recommendations for Bellabeat's marketing stragety.

This is a case study of the Bellabeat company that serves as the capstone project for the Google Data Analysis Career Certificate utilizizing the preffered 6 step data analysis

Bellabeat is a high-tech manufacturer of health-focused products for women. Bellabeat is a successful small company, but they have the potential to become a larger player in the global smart device market. Urška Sršen, cofounder and Chief Creative Officer of Bellabeat, believes that analyzing smart device fitness data could help unlock new growth opportunities for the company. You have been asked to focus on one of Bellabeat's products and analyze smart device data to gain insight into how consumers are using their smart devices. The insights you discover will then help guide marketing strategy for the company. You will present your analysis to the Bellabeat executive team along with

process: ask, prepare, process, analyze, and act, to fullfill and deliver the buisness tasks & objective.