How I Spend My Time

SAT 231: Calendar Query

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Data Wrangling

```
# Data import and preliminary wrangling
calendar_data <- "ktdata3.ics" %>%
  # Use ical package to import into R
  ical_parse_df() %>%
  # Convert to "tibble" data frame format
  as_tibble() %>%
  mutate(
    # Use lubricate package to wrangle dates and times
    start_datetime = with_tz(start, tzone = "America/New_York"),
    end_datetime = with_tz(end, tzone = "America/New_York"),
    duration_min = difftime(end_datetime, start_datetime, units = "mins"),
    duration_hours = duration_min/60,
    # duration_min = end_datetime - start_datetime,
    date = floor_date(start_datetime, unit = "day"),
    # Convert calendar entry to all lowercase and rename
    activity = tolower(summary),
    overall = fct_collapse(factor(summary), #new overall variables for work/class
                           class = c("ASLC_class", "ASLC_study",
                                     "ENST_class", "ENST_OH", "ENST_study",
                                     "NS_class", "NS_study", "STAT_class",
                                     "STAT_OH", "STAT_SDS", "STAT_study"),
                           work = c("work_divtern", "work_meeting", "work_NISA")
                           ),
    #making duration into a numeric
    time = as.numeric(duration_min),
    time_hrs = as.numeric(duration_hours))



  #data wrangling for visualization 1
  class_data <- calendar_data %>%
     #filter our overall variable by class only
    filter(overall == "class") %>%
    #separating class and activity
    separate(summary, c("class", "activity"), "_", remove = FALSE) %>%
```

```
    group_by(class, activity) %>%
    summarize(overall_time = sum(time_hrs))


# Compute total duration of time for each day & activity
activities <- calendar_data %>%
  group_by(date, overall) %>%
  summarize(duration_min = sum(duration_min))
```

Questions and Design

Questions of Interest:

Question 1: *How much time do I spend on each course?*

I wanted to explore how much time I was spending on each class. Within this question, I had two aspects of interest. Looking solely at the class data in my calendar, I wanted to see how much total time was devote to each course and compare that data with the other classes. Secondly, I wanted to see the breakdown of each individual class. Within any given class, I wanted to know how much time I devoted to studying, actually attending the class, visiting office hours, and if applicable, how much time was spent attending SDS hours.

Question 2: *How do my times spent on each activity during those two weeks compare to one another?*

For my second question, I wanted to look at the time devoted to all major activities during my day. I wanted to explore any interesting trends over the two weeks of data collection. I was curious how much of my day I was devoting to school, exercise, self care, leisure, sleep, and paid work.

Data Collection & Variables:

Going into the project, I already had an idea for my visualizations and table. I inputted all of my data into one Google calendar. I knew that I wanted to see both the breakdown within my courses, as well as the overall course data. I decided to stay consistent with my naming of each activity, paying particular attention to the capitalization or format of the letters. For each of my four classes, I abbreviated the department in all capital letters (ex. Data Science → STAT). I took it one step further for the specific activity. The capitalized abbreviation would then be followed by an underscore and then the activity in all lowercase (ex. studying for Data Science → STAT_study). When I began coding my visualizations, I realized that I only had one variable. Since my class and work inputs were highly specified, I had to first create a new variable `overall` and collapse my class and work data into `class` and `work` to address my second question. In order to create my stacked bar chart, segmented by activities, I had to then create an `activity` variable by separating `class` by the underscore. Here is a short breakdown of my variables and the data within each variable:

Visualization 1

`ASLC` : Media History of Anime Seminar

`STAT` : Data Science

`NS` : Culture and Mental Health

`ENST` : Environmental Studies Senior Seminar

`study` : Total time spent reading, completing problem sets, and writing papers

`OH` : Office hours

`SDS` : SDS Fellows office hours

Visualization 2

`class` : Aggregate time spent attending all classes, office hours, and studying

`gym` : Time spent at the gym

`rugby` : Time spent attending rugby practice

`sleep` : When I fall asleep until when I wake up

`work` : Total time on paid work, attending club meetings, and any other meeting or work not related to academics

#Results

Visualization 1: Breakdown of Total Time (Min) Per Class

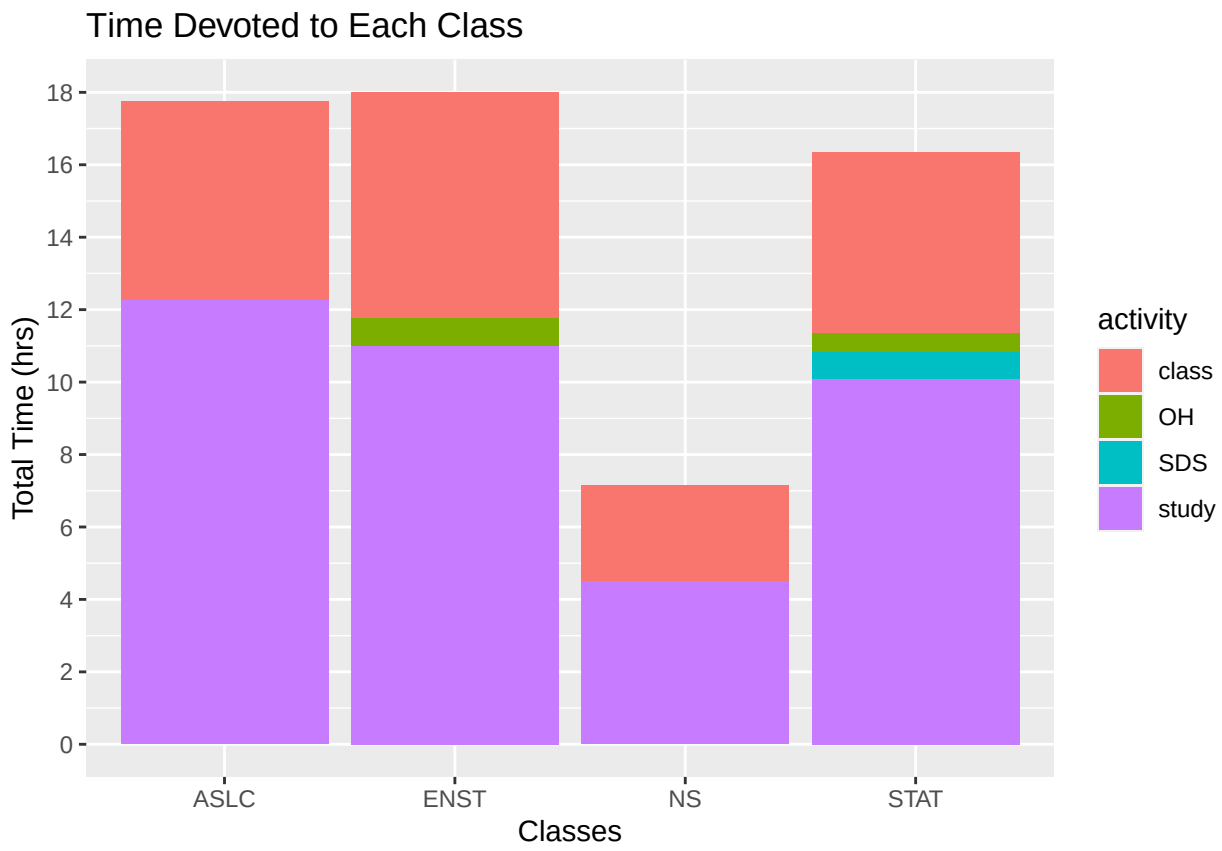
Discussion:

The most noticeable thing about this visualization is just how little time was spent on my Culture and Mental Health class compared to the other three. This Hampshire College course is scheduled to meet on Tuesday and Thursday for an hour and twenty minutes each day. By absolute coincidence during these two weeks of data collection, both September 16th and September 23rd were cancelled for Yom Kippur and Hampshire Advising Day, respectively. The distributions for my other three courses were similar and what I would have expected to observe. `ASLC` and `ENST` are both roughly three-hour seminars that meet once a week, so that class time should be greater than `STAT`. Additionally, this data shows me that I could, and should, be utilizing office hours more to reduce the overall time I spend studying. During those 16 days (384 hours), I only attended office and SDS hours a total of about two hours across those three classes. Contrary to the matter, I spent between 10 and 12 hours per class studying. Instead of struggling through problem sets, readings, and papers on my own, I would like to attend more office hours in the future.

Code

```
#creating plot from data in data frame class_data, segment the class by activity

ggplot(data = class_data, aes(fill = activity, y = overall_time, x = class)) +
  #create a stacked segmented bar chart
  geom_bar(position = "stack", stat = "identity") +
  #clean up the lables, add title
  labs(title = "Time Devoted to Each Class",
       x = "Classes",
       y = "Total Time (hrs)"
       ) +
  scale_y_continuous(breaks = scales::pretty_breaks(n = 10))
```



Visualization 2: Time (Min) Devoted to Each Activity Per Day

```
#create a time series separated by each overall activity
ggplot(calendar_data, aes(x = date, y = time_hrs,
                          color = overall)) +
  geom_line() +
  #make the labels look like and convey accurate information
  labs(title = "Time Series Graph Over 2 Weeks",
       subtitle = "Amount of Time Devote to Each Task Each Day",
       y = "Total Time (Hrs)",
       x = "Date (YYYY-MM-DD)",
       color = "Overall", lty = "Overall") +
  #Change date breaks on x axis so I can see every day over the two weeks
  scale_x_datetime(date_breaks = "1 days") +
  #Increase y labels (add 10 breaks)
  scale_y_continuous(breaks = scales::pretty_breaks(n = 10)) +
  #Rotates x axis labels 90 degrees for readability
  theme(axis.text.x = element_text(angle = 90, hjust = 1, size = rel(1)))
```

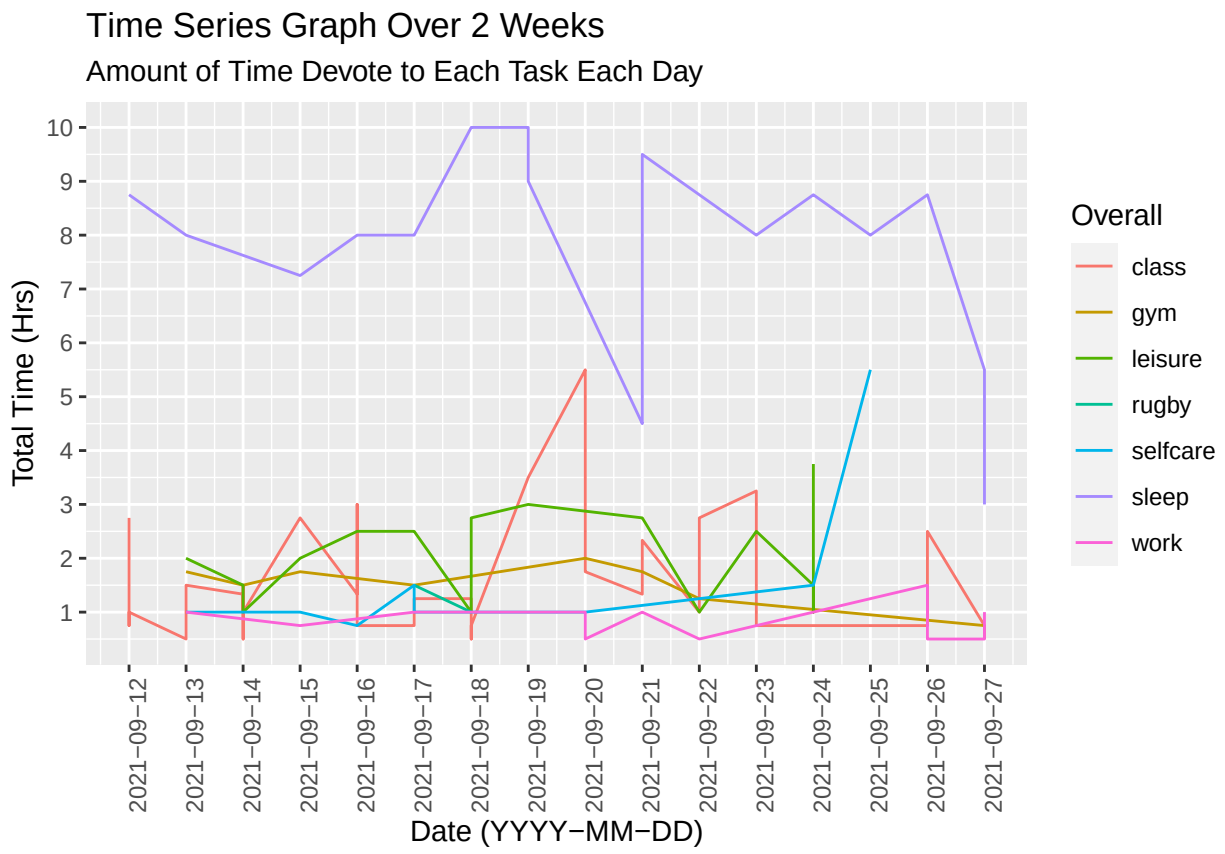


Table 1: Overall Summary of Each Activity (Hrs)

```
# Create new dataframe from dataframe calendar_data
table <- calendar_data %>%
  # I am interested just in the overall data
  group_by(overall) %>%
  #Renaming variable overall
  rename(Category = overall) %>%
  summarize(
    N = n(),
    Average = mean(time_hrs),
    Min = min(time_hrs),
    Max = max(time_hrs),
    Total = sum(time_hrs)
    ) %>%
  #arrange in descending order
  arrange(desc(Average)) %>%
  #make aesthetically pleasing and change number of digits following decimal.
  kable(booktabs = TRUE, digits = 1) %>%
  #center
  kable_styling()

table
```

Category	N	Average	Min	Max	Total
sleep	16	7.8	3.0	10.0	125.0
leisure	16	2.0	1.0	3.8	32.2
class	37	1.6	0.5	5.5	59.2
selfcare	9	1.6	0.8	5.5	14.2
gym	8	1.5	0.8	2.0	12.2
rugby	2	1.2	1.0	1.5	2.5
work	12	0.8	0.5	1.5	10.0

YOUR REFLECTION HEADING