Where the Hours Go

A 22-Day Time-Use Analysis Using R

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Project overview

How does a college student's schedule vary across academic assignments, paid work, and recreation? I tracked three types of activity over 22 consecutive calendar days (September 10–October 1, 2026) to examine two questions: How did my allocation of time vary by day? And what was the association between daily hours spent at my jobs and on homework?

The recreation category was time spent playing *Omega Strikers*, a competitive multiplayer video game. It served as one consistently defined leisure activity, not as a proxy for all discretionary time. My aim was to construct a reproducible workflow for converting personally recorded calendar events into useful summary statistics and visualizations using R. The underlying analysis code appears in the appendix.

Key findings

1. Homework and paid work accounted for about three-quarters of the time I tracked. I logged 60.1 hours of homework and 34.6 hours of paid work, compared with 29.7 hours of *Omega Strikers*. That is approximately **3.2 hours of recorded obligations per hour of gaming**. These shares apply only to the three measured categories; they exclude classes, exam review, and other activities.
2. Gaming was concentrated in a few long sessions rather than spread evenly across days. The nine gaming sessions averaged **3.3 hours**, compared with 1.3 hours across 45 homework sessions and 1.2 hours across 30 work sessions. The timing and length of individual sessions matter in addition to weekly totals. The daily chart shows no consistent pattern of lower recorded obligations on gaming days, but cannot establish whether gaming displaced untracked activities.
3. Hours spent at paid jobs explained little of the daily variation in homework time. The simple linear fit accounted for about **20%** of the variation ($R^2 = 0.20$). Working more hours was not a useful stand-alone indicator of how much homework I logged that day, although this is not evidence that work commitments have no effect on academic time.

Practical next step. To evaluate whether competing commitments actually displace academic work, I would also track exam preparation, assignment volume, and deadline proximity. Without those measures, the data are more useful for describing when and how activities occurred than for prescribing a change to my schedule.

Data and approach

Data collection

I used Google Calendar to record relevant activities from September 10 through 9 p.m. on October 1, 2026. Whenever I began a tracked activity, I created a calendar event with a standardized name and recorded its start and end times to the minute, without rounding. If I switched activities, I ended the first event and started another, so tracked sessions did not overlap. At the end of each day, I checked for omitted or accidentally unfinished entries.

Event titles used consistent activity codes: `hw_` for coursework, `work_` for paid employment, and `os` for *Omega Strikers*. I also recorded brief descriptions to distinguish particular assignments or tasks—for example, repeated sessions devoted to the same problem set. The descriptions were retained in the source data but were not used as predictors in this analysis.

Category definitions and exclusions

Category	Included activities
Homework	Assignment work for Data Science (`hw_data`), Financial Globalization (`hw_finance`), Advanced Macroeconomics (`hw_macro`), and Multivariable Calculus (`hw_multi`).
Paid work	Activities associated with my Greg Call research position (`work_gcall`), sustainability assessment role (`work_sus`), statistics grading (`work_grader`), and campus tour guiding (`work_tour`).
Omega Strikers	Recorded play sessions (`os`), treated as the recreation category.

These categories do not describe all uses of my time. I did not track class attendance, sleep, meals, socializing, clubs, chores, or other activities outside the research questions. Importantly, **midterm content review was not classified as homework** even though it was academic work; I shifted toward that activity in the final week of observation. Consequently, the recorded homework totals understate my broader academic effort, particularly late in the study. The final day also ended at 9 p.m. rather than midnight.

Data preparation and analytical design

I exported the calendar to an `.ics` file and imported it into R using `ical`. I converted timestamps to the Eastern time zone, calculated each event's elapsed duration in hours, and assigned the entire event to its start date. I excluded an empty 1969 placeholder from the calendar export and used `case_when()` to collapse the specific activity codes into the three categories above.

For the daily time-allocation chart, I summed session durations by start date and category. For the work-versus-homework scatterplot, I reshaped those daily totals into separate columns; when a category had no session on a date with other recorded activity, I entered zero hours for that category. The comparison dataset does not add wholly unrecorded dates as synthetic zeros. For the summary table, I aggregated all sessions over the 22-day calendar span to calculate total hours, session counts, average session duration, and average hours per calendar day and week. This approach describes recorded time rather than the full distribution of each day's 24 hours.

Findings

1. How did the allocation of time change from day to day?

Figure 1 stacks the hours recorded for homework, paid work, and *Omega Strikers* on each date. Each bar's height is the sum of these tracked activities, while its segments show how that total was divided among the categories. The chart makes it possible to compare both the amount of recorded activity and its composition from one day to the next.

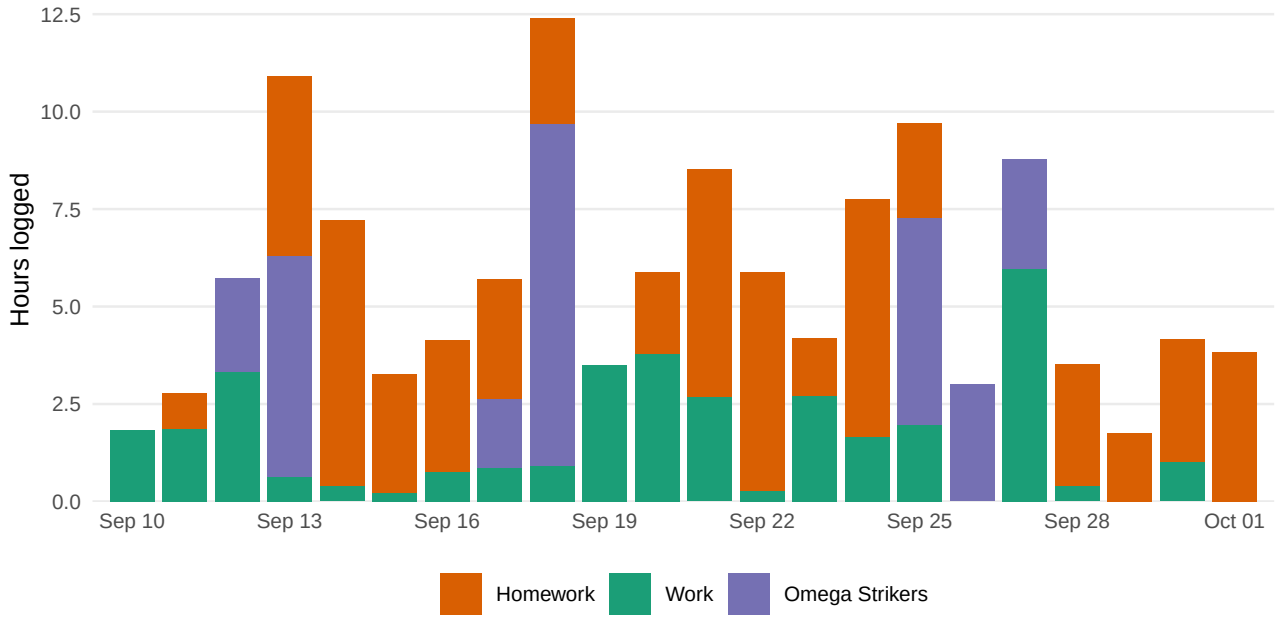


Figure 1: Hours logged per day by activity category, September 10–October 1, 2026.

Recorded time varied substantially across the 22 days. Homework occupied a large share of several days, while paid work and gaming appeared intermittently. There is no obvious visual pattern in which days with *Omega Strikers* sessions consistently have much less recorded work or homework than other days. For example, some gaming days also contained substantial academic or paid work.

September 26 is a notable exception: *Omega Strikers* was the only category I recorded that day. It was a Saturday, however, and I also had a comparatively short Macroeconomics assignment that week. Neither the figure nor the logging protocol can determine whether recreation displaced other activities on that date. Moreover, untracked classes, studying, and personal commitments prevent treating the stacked-bar totals as a complete account of daily time use.

Table 1 summarizes all recorded sessions across the observation period. The last two columns are averages over calendar time, including days without a session in a particular category; they are not averages conditional on completing that activity.

Table 1: Summary of recorded activity over the 22-day observation period.

Activity	Total hours	Sessions	Hours/session	Hours/day	Hours/week
Homework	60.1	45	1.3	2.7	19.1
Work	34.6	30	1.2	1.6	11.0
Omega Strikers	29.7	9	3.3	1.4	9.5

I logged 60.1 homework hours over 45 sessions, 34.6 work hours over 30 sessions, and 29.7 gaming hours over 9 sessions. Across the measured categories, I recorded a little more than three hours of combined homework and paid work for each hour of gaming. That ratio only compares activities included in the study; it is not a work–life balance measure.

Session duration adds information that the daily bars cannot show. The average gaming session lasted 3.3 hours, versus 1.3 hours for homework and 1.2 hours for paid work. Recreational time was therefore concentrated in relatively few, longer sessions, whereas obligations were recorded in more frequent, shorter blocks. This describes how the sessions were logged; it does not demonstrate whether one category reduced time spent in another.

2. How closely were paid-work and homework hours related?

Figure 2 compares daily paid-work hours (horizontal axis) with daily homework hours (vertical axis). Each point represents a date in the comparison data. The fitted line summarizes the *linear* association between the two variables; equal scaling on both axes means that one hour occupies the same physical distance in either direction.

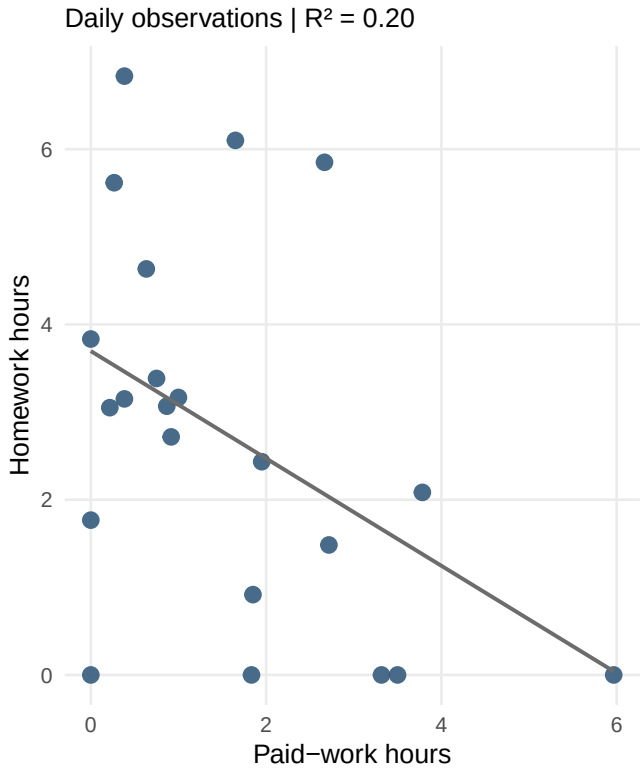


Figure 2: Daily paid-work hours versus homework hours. The line is an ordinary least-squares fit; R^2 is descriptive.

The linear fit is weak ($R^2 = 0.20$), meaning that the fitted line accounts for only about 20% of the observed variation in daily homework hours in this small sample. Several dates had around four hours of homework despite little or no paid work; other dates had comparable homework time alongside roughly two to three hours of paid work. There is considerable variation in homework time at similar levels of job hours, so scheduled employment on its own does not appear to be a strong *descriptive predictor* in this dataset.

This should not be read as evidence that paid work has no effect on academic time. Assignment volume, upcoming deadlines, weekday versus weekend schedules, and unmeasured exam preparation could all influence both variables. The clustering of observations near zero is also important: hours cannot fall below zero, and dates with no logged work or homework are not interchangeable with days when little work was assigned. With just 22 calendar days, the regression is illustrative rather than a basis for formal inference or causal conclusions.

Limitations and lessons

The principal measurement risk is manual event logging. Although I recorded times to the minute and reviewed the calendar each evening, a missed entry or judgment about when focused work began or ended could change the totals. The distinction between assignment work and exam review was particularly consequential in the final week. Events spanning midnight were assigned wholly to their start date, and the observation window ended before midnight on October 1.

The second limitation is scope. The analysis covers only three activity categories, and the fitted line cannot isolate the effect of working more hours from changes in coursework or other commitments. One possible extension would use assignment descriptions to approximate workload and track exam review consistently. A longer collection window with day-of-week indicators could support a better-controlled descriptive model, although more observations alone would not establish causality.

The project also reinforced the importance of presentation choices. I preserved a consistent color palette across categories and used `coord_equal()` in the scatterplot after noticing that unequal axes could exaggerate the visual impression of the fitted trend. The central deliverable is a traceable analytical process—from event recording and cleaning to aggregation, visualization, and appropriately qualified interpretation—rather than a strong behavioral claim.

Technical and source notes

Tools: R, `ical`, `lubridate`, `dplyr`, `tidyr`, `ggplot2`, Quarto.

Project context: This analysis originated as a statistics course project and was edited for portfolio presentation. The initial calendar-import workflow used course starter material. The report presents the findings before the appendix of R code. Its raw Google Calendar export is not published because it may contain personal scheduling information; reproducing the figures requires the source data or a de-identified equivalent.

References and assistance: R documentation; Quarto cross-references. ChatGPT was consulted for Quarto footer formatting, hyperlink formatting, and subsequent editorial revisions to the portfolio version.

Appendix: R code

The following code reproduces the R pipeline used to generate the results in this report. It is shown here for technical review rather than interspersed with the findings. These blocks are copies of the executable chunks earlier in the QMD; the raw calendar export is not published because it contains private scheduling information.

A1. Import, clean, and aggregate calendar records

```
knitr::opts_chunk$set(fig.align = "center")
options(scipen = 1, knitr.kable.NA = "")

library(ical)
library(tidyverse)
library(lubridate)

# A private Google Calendar export is used to build the analysis.
# Keep this file locally; do not publish the raw .ics calendar export.
calendar_path <- "data/dubois_calendar_10_1_2026.ics"

# Import calendar entries, calculate elapsed time, and classify activities.
calendar_events <- ical_parse_df(calendar_path) |>
  rename(activity = summary) |>
  mutate(
    across(c(start, end), ~ with_tz(.x, tzone = "America/New_York")),
    duration_hours = interval(start, end) / hours(1),
    date = as.Date(start),
    activity_type = case_when(
      activity %in% c("hw_data", "hw_finance", "hw_macro", "hw_multi") ~
        "Homework",
      activity %in% c("work_gcall", "work_sus", "work_grader", "work_tour") ~
        "Work",
      activity == "os" ~ "Omega Strikers",
      TRUE ~ NA_character_
    )
  ) |>
  # The Google Calendar export includes an empty placeholder event in 1969.
  filter(year(start) != 1969, !is.na(activity_type))

# Preserve the original event-start-date convention and observed calendar span.
observation_days <- as.numeric(max(calendar_events$date) -
                                 min(calendar_events$date)) + 1
```

```r
daily_activity_totals <- calendar_events |>
  group_by(date, activity_type) |>
  summarise(hours = sum(duration_hours), .groups = "drop")

# Zeroes denote days with no recorded sessions of a given category.
# As in the original analysis, dates with no recorded sessions of any
# category are not added to this comparison dataset.
daily_activity_wide <- daily_activity_totals |>
  pivot_wider(
    names_from = activity_type,
    values_from = hours,
    values_fill = 0
  )

activity_summary <- calendar_events |>
  group_by(activity_type) |>
  summarise(
    total_hours = sum(duration_hours),
    sessions = n(),
    mean_session_hours = total_hours / sessions,
    hours_per_day = total_hours / observation_days,
    hours_per_week = hours_per_day * 7,
    .groups = "drop"
  )

r_squared <- cor(daily_activity_wide$Work,
                 daily_activity_wide$Homework)^2
```

A2. Daily time-allocation chart

```r
activity_colors <- c(
  "Homework" = "#D95F02",
  "Omega Strikers" = "#7570B3",
  "Work" = "#1B9E77"
)

ggplot(daily_activity_totals,
       aes(x = date, y = hours, fill = activity_type)) +
  geom_col(width = 0.85) +
  scale_fill_manual(values = activity_colors,
                    breaks = c("Homework", "Work", "Omega Strikers")) +
  scale_x_date(date_breaks = "3 days", date_labels = "%b %d",
               expand = expansion(mult = c(0.015, 0.015))) +
```

```
  scale_y_continuous(expand = expansion(mult = c(0, 0.04))) +
  labs(x = NULL, y = "Hours logged", fill = NULL) +
  theme_minimal(base_size = 10) +
  theme(
    legend.position = "bottom",
    panel.grid.minor = element_blank(),
    panel.grid.major.x = element_blank(),
    plot.margin = margin(8, 8, 8, 8)
  )
```

A3. Activity summary table

```
activity_summary |>
  mutate(activity_type = factor(
    activity_type,
    levels = c("Homework", "Work", "Omega Strikers")
  )) |>
  arrange(activity_type) |>
  transmute(
    Activity = as.character(activity_type),
    `Total hours` = total_hours,
    Sessions = sessions,
    `Hours/session` = mean_session_hours,
    `Hours/day` = hours_per_day,
    `Hours/week` = hours_per_week
  ) |>
  knitr::kable(digits = 1, booktabs = TRUE,
               align = c("l", "r", "r", "r", "r", "r"))
```

A4. Work and homework scatterplot

```
ggplot(daily_activity_wide, aes(x = Work, y = Homework)) +
  geom_point(size = 2.5, color = "#355C7D", alpha = 0.9) +
  geom_smooth(method = "lm", formula = y ~ x,
              color = "#6C6C6C", linewidth = 0.7, se = FALSE) +
  coord_equal() +
  scale_x_continuous(breaks = seq(0, 10, by = 2)) +
  scale_y_continuous(breaks = seq(0, 10, by = 2)) +
  labs(x = "Paid-work hours", y = "Homework hours",
       subtitle = paste0("Daily observations | R² = ",
                         sprintf("%.2f", r_squared))) +
```

```
  theme_minimal(base_size = 10) +
  theme(panel.grid.minor = element_blank())
```