

# Glucose Trends

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr      1.1.2      v readr      2.1.4
## v forcats    1.0.0      v stringr   1.5.0
## v ggplot2    3.4.2      v tibble    3.2.1
## v lubridate  1.9.2      v tidyr     1.3.0
## v purrr      1.0.1
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(lubridate)
```

```
glu <- tribble(
  ~group, ~time, ~reltime, ~act, ~qty, ~glu,
  1, "2/27/23 18:43", -5, "juice", 80, 84,
  1, "2/27/23 19:12", NA, "juice", 80, 109,
  1, "2/27/23 19:29", NA, "juice", 80, 116,
  1, "2/27/23 19:55", NA, "juice", 80, 87,
  1, "2/27/23 20:22", NA, "juice", 80, 86,
  2, "2/28/23 20:52", NA, "null", 0, 98,
  2, "2/28/23 21:23", 0, "null", 0, 83,
  2, "2/28/23 21:52", NA, "null", 0, 85,
  2, "2/28/23 22:22", NA, "null", 0, 83,
  2, "2/28/23 23:07", NA, "null", 0, 82,
  3, "3/01/23 18:42", NA, "exercise", 30, 87,
  3, "3/01/23 19:28", 3, "exercise", 30, 115,
  3, "3/01/23 19:38", NA, "exercise", 30, 100,
  3, "3/01/23 19:56", NA, "exercise", 30, 88,
  3, "3/01/23 20:19", NA, "exercise", 30, 84,
  3, "3/01/23 20:59", NA, "exercise", 30, 88,
  4, "3/03/23 21:37", NA, "sugar-free drink", 200, 83,
  4, "3/03/23 21:52", 5, "sugar-free drink", 200, 78,
  4, "3/03/23 22:12", NA, "sugar-free drink", 200, 76,
  4, "3/03/23 22:44", NA, "sugar-free drink", 200, 78,
  4, "3/03/23 23:25", NA, "sugar-free drink", 200, 74,
  5, "3/04/23 13:48", NA, "double-double", 1, 71,
  5, "3/04/23 14:50", 12, "double-double", 1, 174,
  5, "3/04/23 15:03", NA, "double-double", 1, 174,
  5, "3/04/23 15:20", NA, "double-double", 1, 208,
  5, "3/04/23 15:44", NA, "double-double", 1, 202,
  5, "3/04/23 16:14", NA, "double-double", 1, 162,
  5, "3/04/23 16:44", NA, "double-double", 1, 140,
  6, "3/13/23 19:50", NA, "1/4 cup rice", 1, 81,
  6, "3/13/23 20:09", 9, "1/4 cup rice", 1, 102,
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6, "3/13/23 20:20", NA, "1/4 cup rice", 1, 137,
6, "3/13/23 20:36", NA, "1/4 cup rice", 1, 130,
6, "3/13/23 20:51", NA, "1/4 cup rice", 1, 131,
6, "3/13/23 21:12", NA, "1/4 cup rice", 1, 116,
6, "3/13/23 22:03", NA, "1/4 cup rice", 1, 133,
6, "3/13/23 22:49", NA, "1/4 cup rice", 1, 113,
6, "3/13/23 22:28", NA, "1/4 cup rice", 1, 118,
6, "3/14/23 00:09", NA, "1/4 cup rice", 1, 99,
7, "3/19/23 23:42", -3, "1 bundle noodles", 1, 87,
7, "3/19/23 23:59", NA, "1 bundle noodles", 1, 90,
7, "3/20/23 00:18", NA, "1 bundle noodles", 1, 117,
7, "3/20/23 00:46", NA, "1 bundle noodles", 1, 130,
7, "3/20/23 01:11", NA, "1 bundle noodles", 1, 116,
7, "3/20/23 01:31", NA, "1 bundle noodles", 1, 111,
8, "3/24/23 22:24", -10, "Nut Snack", 1, 91,
8, "3/24/23 22:45", NA, "Nut Snack", 1, 112,
8, "3/24/23 23:00", NA, "Nut Snack", 1, 125,
8, "3/24/23 23:28", NA, "Nut Snack", 1, 96,
8, "3/24/23 23:48", NA, "Nut Snack", 1, 94,
9, "4/15/23 13:42", NA, "1/4 cup rice", 1, 78,
9, "4/15/23 13:56", 2, "1/4 cup rice", 1, 112,
9, "4/15/23 14:09", NA, "1/4 cup rice", 1, 145,
9, "4/15/23 14:21", NA, "1/4 cup rice", 1, 127,
9, "4/15/23 14:37", NA, "1/4 cup rice", 1, 114,
9, "4/15/23 14:58", NA, "1/4 cup rice", 1, 128,
9, "4/15/23 15:22", NA, "1/4 cup rice", 1, 141,
9, "4/15/23 15:49", NA, "1/4 cup rice", 1, 120,
9, "4/15/23 16:13", NA, "1/4 cup rice", 1, 122,
9, "4/15/23 16:46", NA, "1/4 cup rice", 1, 113,
10, "5/8/23 10:09", NA, "6 fl oz ice", 1, 98,
10, "5/8/23 10:21", 1, "6 fl oz ice", 1, 96,
10, "5/8/23 10:32", NA, "6 fl oz ice", 1, 107,
10, "5/8/23 10:48", NA, "6 fl oz ice", 1, 123,
10, "5/8/23 11:08", NA, "6 fl oz ice", 1, 105,
11, "5/26/23 21:48", NA, "2x muffins", 1, 84,
11, "5/26/23 21:59", 2, "2x muffins", 1, 84,
11, "5/26/23 22:10", NA, "2x muffins", 1, 88,
11, "5/26/23 22:20", NA, "2x muffins", 1, 108,
11, "5/26/23 22:34", NA, "2x muffins", 1, 112,
11, "5/26/23 22:47", NA, "2x muffins", 1, 118,
11, "5/26/23 22:59", NA, "2x muffins", 1, 116,
11, "5/26/23 23:17", NA, "2x muffins", 1, 122,
11, "5/26/23 23:31", NA, "2x muffins", 1, 111,
11, "5/26/23 23:47", NA, "2x muffins", 1, 114,
11, "5/27/23 00:03", NA, "2x muffins", 1, 116,
11, "5/27/23 00:29", NA, "2x muffins", 1, 133,
11, "5/27/23 00:46", NA, "2x muffins", 1, 108,
) %>%
  mutate(time = mdy_hm(time))
glu %>%
  write_csv("data/glu.csv")

calc.reltime <- function(time, reltime) {
  ref.idx <- which(!is.na(reltime))

```

```

ref.time <- time[ref.idx]
ref.reftime <- reltime[ref.idx]
(time - ref.time) / dminutes() + ref.reftime
}
glu <- glu %>%
  group_by(group) %>%
  mutate(reltime = calc.reftime(time, reltime))
glimpse(glu)

```

```

## Rows: 77
## Columns: 6
## Groups: group [11]
## $ group   <dbl> 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 3, 3, 3, 3, 3, 3, 4, 4, 4, 4, 4, ~
## $ time    <dtm> 2023-02-27 18:43:00, 2023-02-27 19:12:00, 2023-02-27 19:29:00~
## $ reltime <dbl> -5, 24, 41, 67, 94, -31, 0, 29, 59, 104, -43, 3, 13, 31, 54, 9~
## $ act      <chr> "juice", "juice", "juice", "juice", "juice", "null", "null", "~
## $ qty      <dbl> 80, 80, 80, 80, 80, 0, 0, 0, 0, 0, 30, 30, 30, 30, 30, 30, 200~
## $ glu      <dbl> 84, 109, 116, 87, 86, 98, 83, 85, 83, 82, 87, 115, 100, 88, 84~

```

```

glu %>%
  ggplot(aes(reltime, glu, group = group, color = act)) +
  geom_point() +
  geom_line() +
  labs(x = "Relative time (min)", y = "Glucose (mg/dL)", color = "Activity")

```

