```r
# birthday challenge: reproduce this plot using the following code:
remotes::install_github("itsleeds/pct")
library(tidyverse)
library(tmap)
# get official od data
od = pct::get_od()
od[1:9] # 2 million rows!
```

```
## # A tibble: 2,402,201 x 9
##    geo_code1 geo_code2   all from_home light_rail train   bus  taxi
##    <chr>     <chr>     <dbl>     <dbl>      <dbl> <dbl> <dbl> <dbl>
##  1 E02000001 E02000001  1506         0         73    41    32     9
##  2 E02000001 E02000014     2         0          2     0     0     0
##  3 E02000001 E02000016     3         0          1     0     2     0
##  4 E02000001 E02000025     1         0          0     1     0     0
##  5 E02000001 E02000028     1         0          0     0     0     0
##  6 E02000001 E02000051     1         0          1     0     0     0
##  7 E02000001 E02000053     2         0          2     0     0     0
##  8 E02000001 E02000057     1         0          1     0     0     0
##  9 E02000001 E02000058     1         0          0     0     0     0
## 10 E02000001 E02000059     1         0          0     0     0     1
## # ... with 2,402,191 more rows, and 1 more variable: motorbike <dbl>
```

```r
od = od %>%
  mutate(Active =( bicycle + foot) / all * 100)

# get centroids in yorkshire and subset od
ce = pct::get_pct_centroids(region = "west-yorkshire")
od_yorkshire = od %>%
  filter(geo_code1 %in% ce$geo_code) %>%
  filter(geo_code2 %in% ce$geo_code)

# find the top 10000 desire lines by car_driver
od_car = od_yorkshire %>%
  top_n(n = 3000, wt = car_driver)

# convert to desire lines
desire_lines = stplanr::od2line(flow = od_car, ce)
# plot(l$geometry)
tm_shape(desire_lines) +
  tm_lines(palette = "plasma", breaks = c(0, 5, 10, 20, 40, 100),
    lwd = "all",
    scale = 9,
    title.lwd = "Number of trips",
    alpha = 0.6,
    col = "Active",
    title = "Active travel (%)"
  ) +
  tm_scale_bar() +
  tm_style(style = "cobalt", title = "Happy Birthday Milena, from Robin and Katy!")
```

Happy Birthday Milena, from Robin and Katy!

Active travel (%)
- 0 to 5
- 5 to 10
- 10 to 20
- 20 to 40
- 40 to 100

Number of trips

200   400   600   800   1,000   1,400   1,800

0   5   10   15 km