NYC-Squirrels Cencus

October 29, 2019

```
rm(list=ls())
```

```
library(ggplot2)
library(tidyverse)
```

```
## -- Attaching packages ------------------------------------------------------------------------ ti
```

```
## v tibble  2.1.3     v purrr   0.3.2
## v tidyr   0.8.3     v dplyr   0.8.1
## v readr   1.3.1     v stringr 1.4.0
## v tibble  2.1.3     v forcats 0.4.0
```

```
## -- Conflicts --------------------------------------------------------------------------------- tidyvers
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(circlize)
```

```
## ========================================
## circlize version 0.4.8
## CRAN page: https://cran.r-project.org/package=circlize
## Github page: https://github.com/jokergoo/circlize
## Documentation: http://jokergoo.github.io/circlize_book/book/
##
## If you use it in published research, please cite:
## Gu, Z. circlize implements and enhances circular visualization
##   in R. Bioinformatics 2014.
## ========================================
```

```
library(viridis)
```

```
## Loading required package: viridisLite
```

```
library(chorddiag)
```

```
nyc_squirrels <- readr::read_csv("https://raw.githubusercontent.com/rfordatascience/tidytuesday/master/
```

```
## Parsed with column specification:
## cols(
##   .default = col_character(),
##   long = col_double(),
##   lat = col_double(),
##   date = col_double(),
##   hectare_squirrel_number = col_double(),
##   running = col_logical(),
##   chasing = col_logical(),
##   climbing = col_logical(),
##   eating = col_logical(),
##   foraging = col_logical(),
##   kuks = col_logical(),
##   quaas = col_logical(),
##   moans = col_logical(),
##   tail_flags = col_logical(),
```

```
##   tail_twitches = col_logical(),
##   approaches = col_logical(),
##   indifferent = col_logical(),
##   runs_from = col_logical(),
##   zip_codes = col_double(),
##   community_districts = col_double(),
##   borough_boundaries = col_double()
##   # ... with 2 more columns
## )
```

```
## See spec(...) for full column specifications.
```

```
head(nyc_squirrels)
```

```
## # A tibble: 6 x 36
##    long   lat unique_squirrel~ hectare shift   date hectare_squirre~ age
##   <dbl> <dbl> <chr>            <chr>   <chr>  <dbl>            <dbl> <chr>
## 1 -74.0  40.8 37F-PM-1014-03   37F     PM    1.01e7                3 <NA>
## 2 -74.0  40.8 37E-PM-1006-03   37E     PM    1.01e7                3 Adult
## 3 -74.0  40.8 2E-AM-1010-03    02E     AM    1.01e7                3 Adult
## 4 -74.0  40.8 5D-PM-1018-05    05D     PM    1.02e7                5 Juve~
## 5 -74.0  40.8 39B-AM-1018-01   39B     AM    1.02e7                1 <NA>
## 6 -74.0  40.8 33H-AM-1019-02   33H     AM    1.02e7                2 Juve~
## # ... with 28 more variables: primary_fur_color <chr>,
## #   highlight_fur_color <chr>,
## #   combination_of_primary_and_highlight_color <chr>, color_notes <chr>,
## #   location <chr>, above_ground_sighter_measurement <chr>,
## #   specific_location <chr>, running <lgl>, chasing <lgl>, climbing <lgl>,
## #   eating <lgl>, foraging <lgl>, other_activities <chr>, kuks <lgl>,
## #   quaas <lgl>, moans <lgl>, tail_flags <lgl>, tail_twitches <lgl>,
## #   approaches <lgl>, indifferent <lgl>, runs_from <lgl>,
## #   other_interactions <chr>, lat_long <chr>, zip_codes <dbl>,
## #   community_districts <dbl>, borough_boundaries <dbl>,
## #   city_council_districts <dbl>, police_precincts <dbl>
```

```
dim(nyc_squirrels)
```

```
## [1] 3023   36
```

create data table of behaviors by hector and shift

```
behavior<-nyc_squirrels %>% group_by(shift) %>%
  summarize(Running=sum(running, na.rm=T),Eating=sum(eating, na.rm=T),Chasing=sum(chasing, na.rm=T), Cl
behavior.long<-gather(data=behavior, key='behavior', value='count',gather_cols=c(Running, Eating, Chasi

behavior.long$count<-as.numeric(behavior.long$count)
```

Chord diagram

```
# parameters
#pdf('squirrel_behavoir.pdf',height=5, width=5)
circos.clear()
circos.par(start.degree = 90, gap.degree = 1, track.margin = c(-0.2, 0.2), points.overflow.warning = FA
par(mar = rep(1, 4))

# color palette
mycolor <- viridis(20, alpha = 1, begin = 0, end = 1, option = "D")
mycolor <- mycolor[c(18,3,5,9,11,13,15)]
```

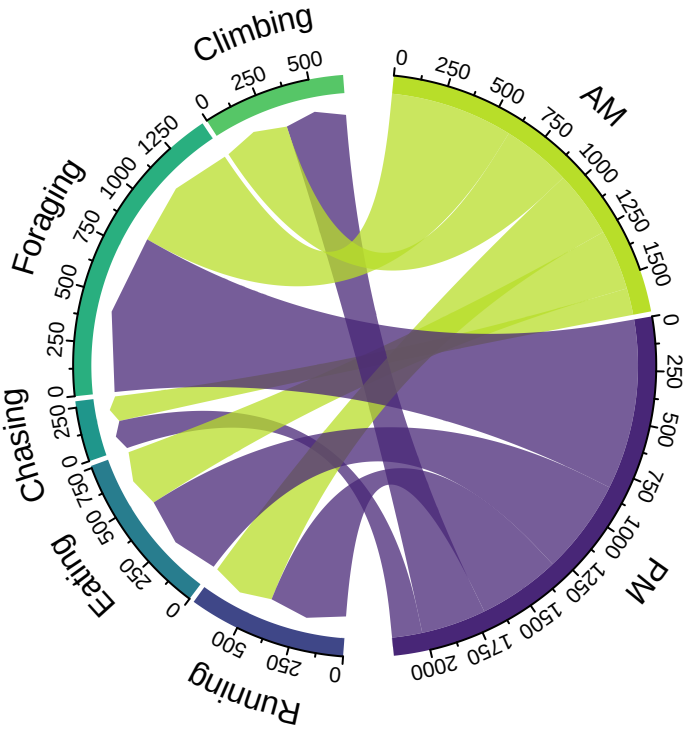
```r
#base plot
chordDiagram(x=behavior.long,
             grid.col = mycolor,
             transparency = 0.25,
             directional = 1,
             direction.type = c("arrows", "diffHeight"),
  diffHeight  = -0.04,
  annotationTrack = "grid",
  annotationTrackHeight = c(0.05, 0.1),
  link.arr.type = "big.arrow",
  link.sort = TRUE,
  link.largest.ontop = TRUE)

# Add text and axis
circos.trackPlotRegion(
  track.index = 1,
  bg.border = NA,
  panel.fun = function(x, y) {

    xlim = get.cell.meta.data("xlim")
    sector.index = get.cell.meta.data("sector.index")

    # Add names to the sector.
    circos.text(
      x = mean(xlim),
      y = 4.5,
      labels = sector.index,
      facing = "bending",
      cex = 1
    )
      # Add graduation on axis
    circos.axis(
      h = "top",
      major.at = seq(from = 0, to = xlim[2], by = 250),
      minor.ticks = 1,
      major.tick.percentage = 0.5,labels.cex = 0.7,
      labels.niceFacing = FALSE)
  }
)
title(main='The behavior of squirrels in central park')
```

The behavior of squirrels in central park




```
#dev.off()
```