

# Lab 3: Individual 1

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```
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.0 --
## v ggplot2 3.2.1    v purrr  0.3.3
## v tibble  2.1.3    v dplyr  0.8.3
## v tidyr   1.0.0    v stringr 1.4.0
## v readr   1.3.1    v forcats 0.4.0

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

library(ggtern)

## Registered S3 methods overwritten by 'ggtern':
##   method      from
##   +.gg         ggplot2
##   grid.draw.ggplot ggplot2
##   plot.ggplot   ggplot2
##   print.ggplot  ggplot2

## --
## Remember to cite, run citation(package = 'ggtern') for further info.
## --

##
## Attaching package: 'ggtern'

## The following objects are masked from 'package:ggplot2':
##
##   %+%, aes, annotate, calc_element, ggplot, ggplot_build,
##   ggplot_gtable, ggplotGrob, ggsave, layer_data, theme, theme_bw,
##   theme_classic, theme_dark, theme_gray, theme_light, theme_linedraw,
##   theme_minimal, theme_void

dat <- readxl::read_xls('GSS.xls')
```

## GSS Data Exploration

### Data Cleaning

```
indx <- sapply(dat, is.character)
dat[indx] <- lapply(dat[indx], function(x) as.factor(as.character(x)))
```

```

names(dat) <- c('year', 'happiness', 'party', 'residence', 'sex', 'education', 'children', 'marriage',
unique(dat$party)

## [1] Ind,near dem      Not str democrat  Independent      Strong democrat
## [5] Not str republican Ind,near rep      Strong republican Other party
## [9] No answer          Don't know
## 10 Levels: Don't know Ind,near dem Ind,near rep Independent ... Strong republican

dat <- droplevels(dat[dat$happiness != 'No answer' & dat$happiness != 'Don\'t know' & dat$happiness !=
dat <- droplevels(dat[dat$party != 'No answer', ])
dat$happiness <- factor(dat$happiness, c('Very happy', 'Pretty happy', 'Not too happy'))

rotatedAxisElementText = function(angle,position='x'){
  angle      = angle[1];
  position   = position[1]
  positions  = list(x=0,y=90,top=180,right=270)
  if(!position %in% names(positions))
    stop(sprintf("'position' must be one of [%s]",paste(names(positions),collapse=" ")),call.=FALSE)
  if(!is.numeric(angle))
    stop("'angle' must be numeric",call.=FALSE)
  rads      = (angle - positions[[ position ]])*pi/180
  hjust     = 0.5*(1 - sin(rads))
  vjust     = 0.5*(1 + cos(rads))
  element_text(angle=angle,vjust=vjust,hjust=hjust)
}

```

## Exploration

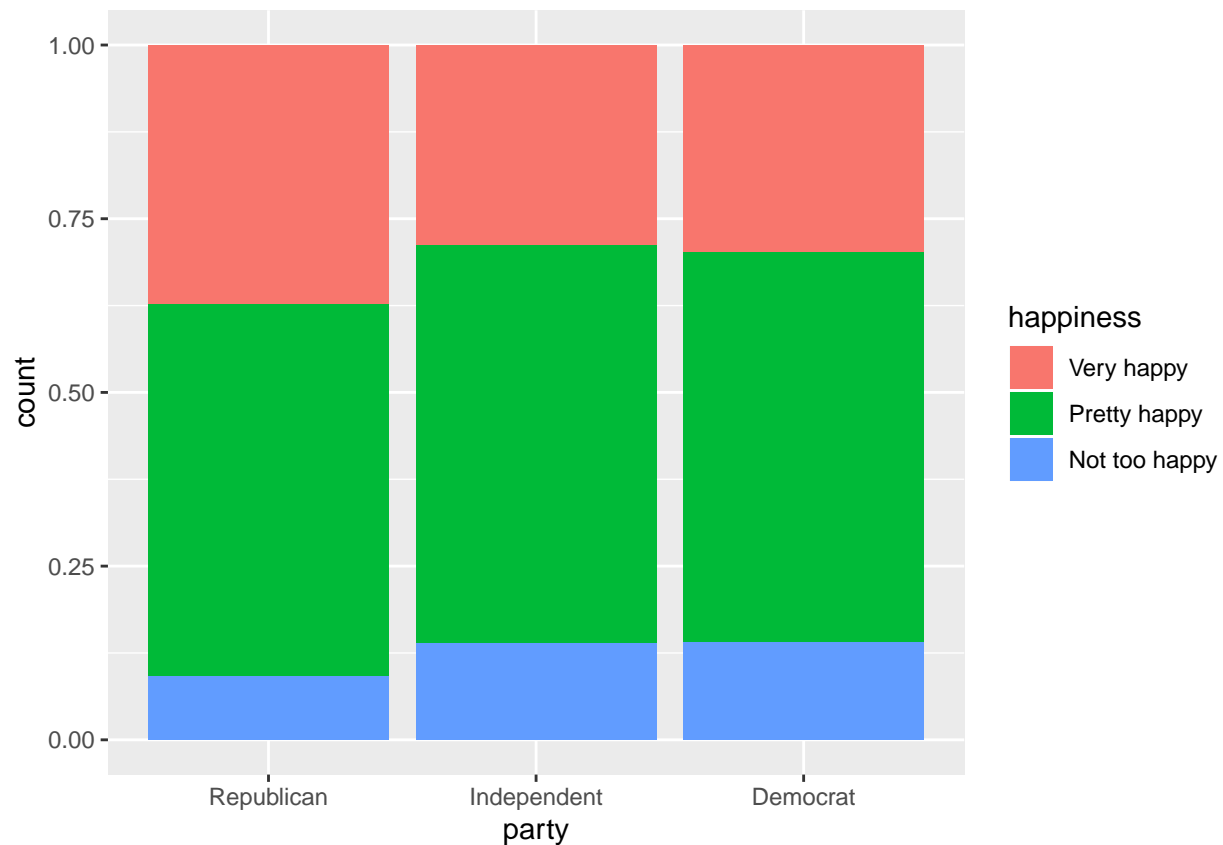
How does the happiness of a respondent relate to the political party affiliation?

```

dat2 <- dat

parties <- levels(dat2$party)
levels(dat2$party)[levels(dat2$party) == 'Not str democrat' | levels(dat2$party) == 'Strong democrat']
levels(dat2$party)[levels(dat2$party) == 'Not str republican' | levels(dat2$party) == 'Strong republican']
levels(dat2$party)[levels(dat2$party) == 'Don\'t know' | levels(dat2$party) == 'Other party'] <- 'Rep
levels(dat2$party)[levels(dat2$party) == 'Independent' | levels(dat2$party) == 'Ind,near dem' | levels
dat2 %>%
  ggplot(aes(x = party, fill = happiness)) + geom_bar(position = 'fill')

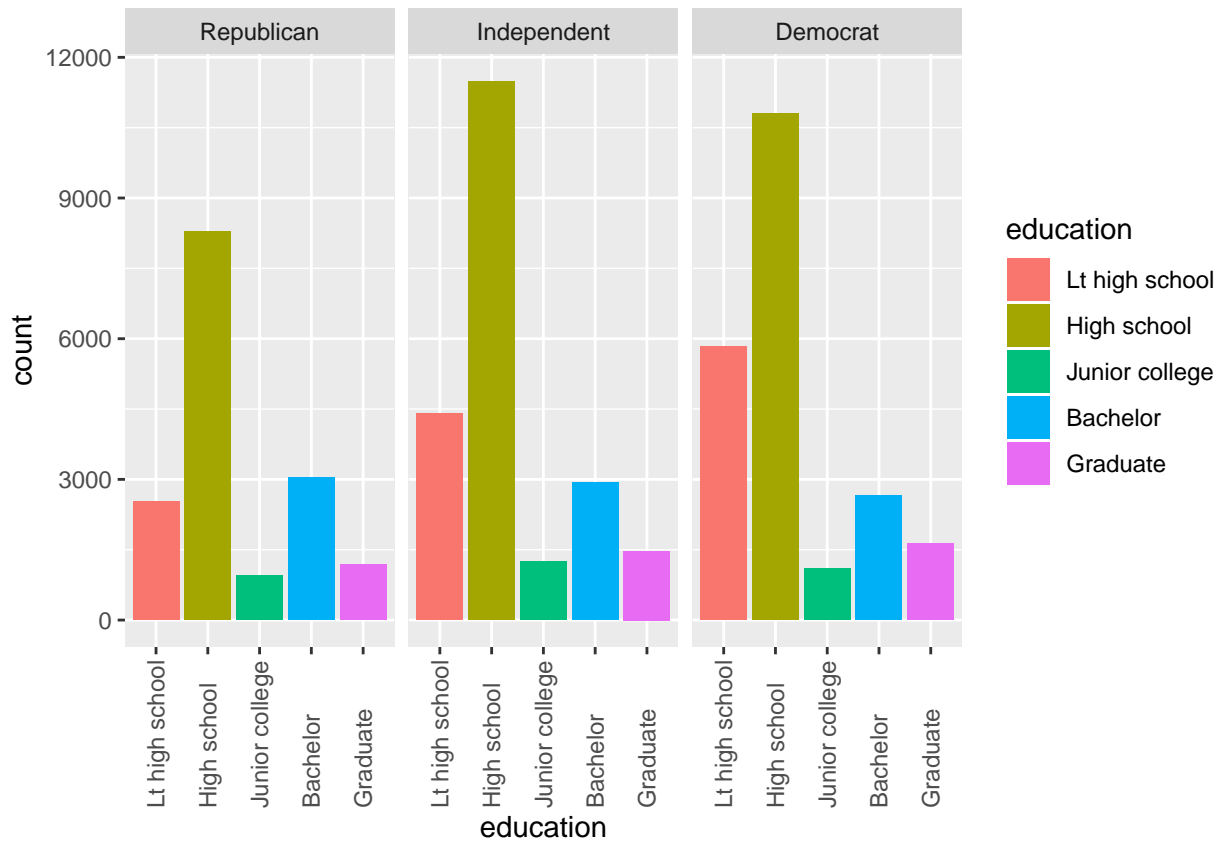
```



Based on the results, republicans appear to be much more happier than independent and democratic respondents by a well margin.

### Is political affiliation affected by education?

```
dat2$education <- factor(dat2$education, c('No answer', 'Don\'t know', 'Lt high school', 'High school')
filtered <- droplevels(dat2[dat2$education != 'No answer' & dat2$education != 'Don\'t know', ])
filtered %>%
  ggplot(aes(x = education, fill = education)) + geom_bar() + facet_wrap(~party) + theme(axis.text.x =
```



How does the political affiliation affect place of residence?

```

levels(dat2$residence)[levels(dat2$residence) == 'E. nor. central' | levels(dat2$residence) == 'W. no. central']
levels(dat2$residence)[levels(dat2$residence) == 'New england' | levels(dat2$residence) == 'Middle atlantic']
levels(dat2$residence)[levels(dat2$residence) == 'E. sou. central' | levels(dat2$residence) == 'W. south central']
levels(dat2$residence)[levels(dat2$residence) == 'Mountain' | levels(dat2$residence) == 'Pacific' | levels(dat2$residence) == 'Northwest']

dat2$residence <- factor(dat2$residence, c('North', 'East', 'South', 'West', 'Foreign'))

dat2 %>%
  ggplot(aes(x = residence, fill = party)) + geom_bar(position = 'fill', width = 1) + coord_polar()

```

