Sleep hygiene Post-Survey 5/6/2021

library(ggplot2)  
library(dplyr)

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

library(tidyverse)

## ── Attaching packages ─────────────────────────────────────── tidyverse 1.3.0 ──

## ✓ tibble 3.1.0 ✓ purrr 0.3.4  
## ✓ tidyr 1.1.3 ✓ stringr 1.4.0  
## ✓ readr 1.4.0 ✓ forcats 0.5.1

## ── Conflicts ────────────────────────────────────────── tidyverse\_conflicts() ──  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag() masks stats::lag()

library(arsenal)  
library(data.table)

##   
## Attaching package: 'data.table'

## The following object is masked from 'package:purrr':  
##   
## transpose

## The following objects are masked from 'package:dplyr':  
##   
## between, first, last

library(expss)

##   
## Use 'expss\_output\_rnotebook()' to display tables inside R Notebooks.  
## To return to the console output, use 'expss\_output\_default()'.

##   
## Attaching package: 'expss'

## The following objects are masked from 'package:data.table':  
##   
## copy, like

## The following objects are masked from 'package:stringr':  
##   
## fixed, regex

## The following objects are masked from 'package:purrr':  
##   
## keep, modify, modify\_if, transpose, when

## The following objects are masked from 'package:tidyr':  
##   
## contains, nest

## The following objects are masked from 'package:dplyr':  
##   
## between, compute, contains, first, last, na\_if, recode, vars

## The following object is masked from 'package:ggplot2':  
##   
## vars

sleephygiene <- read\_csv("/Users/Ivanics/Desktop/SPH/4th term/HealthComm/Qualtrics post/Sleep Hygiene Post-Survey\_May 9, 2021\_19.51.csv")

##   
## ── Column specification ────────────────────────────────────────────────────────  
## cols(  
## .default = col\_character()  
## )  
## ℹ Use `spec()` for the full column specifications.

sleephygiene$StartDate <- lubridate::ymd\_hms(sleephygiene$StartDate)

## Warning: 2 failed to parse.

#Filter to include only responses beyond this time  
sleephygiene <- sleephygiene %>% filter(StartDate >= "2021-04-29 00:00:00")  
  
#Select out the variables we need  
sleephygiene <- sleephygiene %>% select(Progress, `Duration (in seconds)`, Finished, LocationLatitude, LocationLongitude, DistributionChannel, UserLanguage, Q1, Q2, Q3, Q2\_5\_TEXT, Q4, Q5, Q6, Q37, Q92, Q93, Q94, Q38, Q39, Q10\_2, Q10\_3, Q9, Q61, Q84, Q85, Q81, Q63, Q96\_1, Q96\_2, Q96\_3, Q96\_4, Q96\_5, Q96\_6, Q96\_7, Q96\_8, Q95, Q83, Q82, Q69, Q62, Q64, Q90, Q91, Q89\_1, Q67\_1, Q67\_2, Q67\_3, Q75\_1, Q75\_2, Q75\_3, Q68, Q70, Q70\_18\_TEXT, Q87, Q71, Q72, Q79, Q79\_5\_TEXT, Q74, Q73, Q73\_5\_TEXT, Q59\_1, Q59\_2, Q59\_3, Q59\_4, Q44\_1, Q44\_2, Q44\_3, Q44\_4, Q44\_5, Q44\_6, Q44\_7, Q44\_8, Q44\_9, Q52)  
  
sleephygiene <- rowid\_to\_column(sleephygiene, "ID")

#General factor recoding  
sleephygiene <- sleephygiene %>% mutate(  
 Q1\_consent = factor(Q1)) %>%  
 mutate(Q2\_program = factor(Q2)) %>%  
 mutate(Q3\_role = factor(Q3)) %>%  
 mutate(Q4\_gender = factor(Q4)) %>%  
 mutate(Q5\_age = factor(Q5)) %>%  
 mutate(Q6\_numberinhousehold = as.numeric(Q6)) %>%  
 mutate(Q37\_employed = factor(Q37)) %>%  
 mutate(Q92\_notSPHemployed = factor(Q92)) %>%  
 mutate(Q93\_worksetting = factor(Q93)) %>%  
 mutate(Q94\_dayornight = factor(Q94)) %>%  
 mutate(Q38\_worksetting = factor(Q38)) %>%  
 mutate(Q39\_dayornight = factor(Q39)) %>%  
 mutate(Q10\_hoursofsleeplast5workdays = as.numeric(Q10\_2)) %>%  
 mutate(Q10\_hoursofsleeppastweekend = as.numeric(Q10\_3)) %>%  
 mutate(Q9\_howoftensleepypastmonth = factor(Q9)) %>%  
 mutate(Q61\_howoftensleepypasttwoweeks = factor(Q61)) %>%  
 mutate(Q84\_awareofhowtoimprovesleepquality = factor(Q84)) %>%  
 mutate(Q81\_seenorheardfromGNbloombergcampaign = factor(Q81)) %>%  
 mutate(Q63\_recalltoolsfreetect = factor(Q63)) %>%  
 mutate(Q96\_picture1 = factor(Q96\_1)) %>%  
 mutate(Q96\_picture2 = factor(Q96\_2)) %>%  
 mutate(Q96\_picture3 = factor(Q96\_3)) %>%  
 mutate(Q96\_picture4 = factor(Q96\_4)) %>%  
 mutate(Q96\_picture5 = factor(Q96\_5)) %>%  
 mutate(Q96\_picture6 = factor(Q96\_6)) %>%  
 mutate(Q96\_picture7 = factor(Q96\_7)) %>%  
 mutate(Q96\_picture8 = factor(Q96\_8)) %>%  
 mutate(Q95\_talkedtoanyone = factor(Q95)) %>%  
 mutate(Q82\_knowanyonewhoengaged = factor(Q82)) %>%  
 mutate(Q69\_didyouengagewiththecampaign = factor(Q69)) %>%  
 mutate(Q90\_areyouhappywithyoursleepquality\_awareofcampaign = factor(Q90)) %>%  
 mutate(Q91\_areyouhappywithyoursleepquality\_notawareofcampaign = factor(Q91)) %>%  
 mutate(Q89\_ratesleepquality\_notawareofcampaign = factor(Q89\_1)) %>%  
 mutate(Q67\_move30minutes = as.numeric(Q67\_1)) %>%  
 mutate(Q67\_breathing = as.numeric(Q67\_2)) %>%  
 mutate(Q67\_powerdown = as.numeric(Q67\_2)) %>%  
 mutate(Q75\_moving = factor(Q75\_1)) %>%  
 mutate(Q75\_breathing = factor(Q75\_2)) %>%  
 mutate(Q75\_powerdown = factor(Q75\_3)) %>%  
 mutate(Q68\_timing = factor(Q68)) %>%  
 mutate(Q87\_idealtime = factor(Q87)) %>%  
 mutate(Q74\_rafflemotivating = factor(Q74)) %>%  
 mutate(Q75\_moving = factor(Q75\_1)) %>%  
 mutate(Q59\_canmaintainhealthysleephabits = factor(Q59\_1)) %>%  
 mutate(Q59\_cancutoutscreen = factor(Q59\_2)) %>%  
 mutate(Q59\_canexercise = factor(Q59\_3)) %>%  
 mutate(Q59\_canparticipateinbreathing = factor(Q59\_4)) %>%  
 mutate(Q44\_goodnightsleepisimportant = factor(Q44\_1)) %>%  
 mutate(Q44\_mentalclarity = factor(Q44\_2)) %>%  
 mutate(Q44\_feelpositive = factor(Q44\_3)) %>%  
 mutate(Q44\_cuttingoutscreenleadstobettersleep = factor(Q44\_4)) %>%  
 mutate(Q44\_exercisingleadstobettersleep = factor(Q44\_5)) %>%  
 mutate(Q44\_breathingexercisesleadstobettersleep = factor(Q44\_6)) %>%  
 mutate(Q44\_iwillstopscreens = factor(Q44\_7)) %>%  
 mutate(Q44\_iwillexercise = factor(Q44\_8)) %>%  
 mutate(Q44\_iwillbreathe = factor(Q44\_9)) %>%  
 mutate(Q52\_additionalcomments = factor(Q52))

#Q85  
resp.split\_85 <- strsplit(sleephygiene$Q85, ",")  
lev <- unique(unlist(resp.split\_85))  
sleephygiene<- with(sleephygiene, data.frame(sleephygiene, t(sapply(resp.split\_85, function(x) table(factor(x, levels=lev))))))  
  
sleephygiene <- sleephygiene %>%  
 mutate(Q85\_waystoimprovesleepquality = case\_when(  
 Not.drinking.caffeinated.beverages.late.in.the.day == 1 ~ "Not drinking caffeinated beverages late in the day",  
 Switching.off.electronics.one.hour.before.sleep == 1 ~ "Switching off electronics one hour before sleep",  
 Incorporating.moderate.exercise.as.part.of.your.day == 1 ~ "Incorporating moderate exercise as part of your day",  
 Increase.natural.bright.light.exposure.in.the.day == 1 ~ "Increase natural bright light exposure in the day",  
 Reduce.irregular.or.long.daytime.naps == 1 ~ "Reduce irregular or long daytime naps",  
 Try.to.sleep.and.wake.at.consistent.times == 1 ~ "Try to sleep and wake at consistent times",  
 Take.a.melatonin.supplement == 1 ~ "Take a melatonin supplement",  
 Decrease.alcohol.consumption == 1 ~ "Decrease alcohol consumption",  
 Deep.breathing.exercises == 1 ~ "Deep breathing exercises"))  
  
#Q83  
resp.split\_83 <- strsplit(sleephygiene$Q83, ",")  
lev <- unique(unlist(resp.split\_83))  
sleephygiene<- with(sleephygiene, data.frame(sleephygiene, t(sapply(resp.split\_83, function(x) table(factor(x, levels=lev))))))  
  
sleephygiene <- sleephygiene %>%  
 mutate(Q83\_talkedtowho = case\_when(  
 Friends == 1 ~ "Friends",  
 Spouse == 1 ~ "Spouse",  
 Relatives == 1 ~ "Relatives",  
 Colleague == 1 ~ "Colleague"))  
  
#Q62  
resp.split\_62 <- strsplit(sleephygiene$Q62, ",")  
lev <- unique(unlist(resp.split\_62))  
sleephygiene<- with(sleephygiene, data.frame(sleephygiene, t(sapply(resp.split\_62, function(x) table(factor(x, levels=lev))))))  
  
sleephygiene <- sleephygiene %>%  
 mutate(Q62\_howdidyouengage = case\_when(  
 Instagram.campaign == 1 ~ "Instagram campaign",  
 Text.message.campaign == 1 ~ "Text message campaign",  
 Word.of.mouth.discussion.with.others == 1 ~ "Word of mouth/discussion with others"))  
  
#64  
resp.split\_64 <- strsplit(sleephygiene$Q64, ",")  
lev <- unique(unlist(resp.split\_64))  
sleephygiene<- with(sleephygiene, data.frame(sleephygiene, t(sapply(resp.split\_64, function(x) table(factor(x, levels=lev))))))  
  
sleephygiene <- sleephygiene %>%  
 mutate(Q64\_whichtechniquedidyoutry = case\_when(  
 X.MoveMore == 1 ~ "Movemore",  
 X.Breathe== 1 ~ "Breathe",  
 X.PowerDown == 1 ~ "Powerdown",  
 None.of.the.above == 1 ~ "None of the above"))  
  
#70  
resp.split\_70 <- strsplit(sleephygiene$Q70, ",")  
lev <- unique(unlist(resp.split\_70))  
sleephygiene<- with(sleephygiene, data.frame(sleephygiene, t(sapply(resp.split\_70, function(x) table(factor(x, levels=lev))))))  
  
sleephygiene <- sleephygiene %>%  
 mutate(Q70\_timingoftextsinconvenient = case\_when(  
 #Messages.were.too.frequent == 1 ~ "Messages were too frequent",  
 Messages.were.too.infrequent== 1 ~ "Messages were too infrequent",  
 Received.message.too.early.in.the.day == 1 ~ "Received message too early in the day",  
 #Received.message.too.late.in.the.day == 1 ~ "Received message too late in the day",  
 Other..please.explain.below. == 1 ~ "Other (please explain below)"))  
  
#71  
resp.split\_71 <- strsplit(sleephygiene$Q71, ",")  
lev <- unique(unlist(resp.split\_71))  
sleephygiene<- with(sleephygiene, data.frame(sleephygiene, t(sapply(resp.split\_71, function(x) table(factor(x, levels=lev))))))  
  
sleephygiene <- sleephygiene %>%  
 mutate(Q71\_whichchannelmosteducational = case\_when(  
 Text == 1 ~ "Text",  
 Instagram == 1 ~ "Instagram"))  
 #Discussion.with.others.about.the.campaign == 1 ~ "Discussion with others about the campaign",  
 #None.of.the.above.1 == 1 ~ "None of the above"))  
  
#72 - look into  
  
  
#Q79  
resp.split\_79 <- strsplit(sleephygiene$Q79, ",")  
lev <- unique(unlist(resp.split\_79))  
sleephygiene<- with(sleephygiene, data.frame(sleephygiene, t(sapply(resp.split\_79, function(x) table(factor(x, levels=lev))))))  
  
sleephygiene <- sleephygiene %>%  
 mutate(Q79\_moresuccessfuloutcomsuggestions = case\_when(  
 There.was.an.in.person.on.campus.component.to.the.campaign == 1 ~ "There was an in-person/on-campus component to the campaign",  
 The.campaign.was.longer == 1 ~ "The campaign was longer",  
 I.had.more.flexibility.in.my.day == 1 ~ "I had more flexibility in my day",  
 There.were.subject.matter.experts.checking.in.with.me.one.on.one == 1 ~ "There were subject matter experts checking in with me one-on-one"))  
 #Other == 1 ~ "Reduce irregular or long daytime naps",  
  
#Q73  
resp.split\_73 <- strsplit(sleephygiene$Q73, ",")  
lev <- unique(unlist(resp.split\_73))  
sleephygiene<- with(sleephygiene, data.frame(sleephygiene, t(sapply(resp.split\_73, function(x) table(factor(x, levels=lev))))))  
  
sleephygiene <- sleephygiene %>%  
 mutate(Q73\_hearabouthow = case\_when(  
 Instagram.1 == 1 ~ "Instagram",  
 JHSPH.Activities.email == 1 ~ "JHSPH Activities email",  
 #Class.announcement == 1 ~ "Class announcement",  
 Word.of.mouth.discussion.with.others.1 == 1 ~ "Word of mouth/discussion with others"))  
 #Other == 1 ~ "Reduce irregular or long daytime naps",

**Plots for wakeup and sleep times**

library(plotly)

##   
## Attaching package: 'plotly'

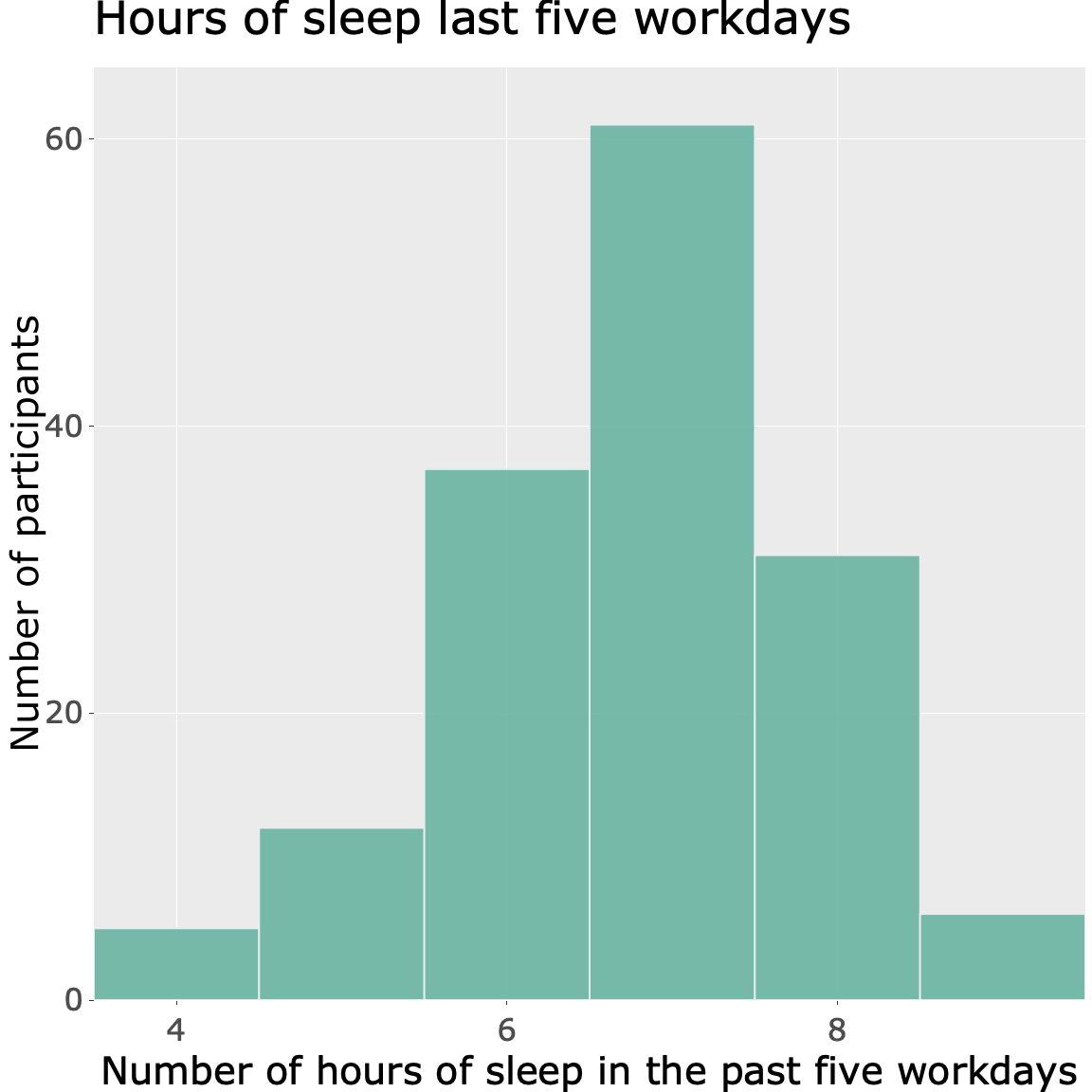
## The following object is masked from 'package:ggplot2':  
##   
## last\_plot

## The following object is masked from 'package:stats':  
##   
## filter

## The following object is masked from 'package:graphics':  
##   
## layout

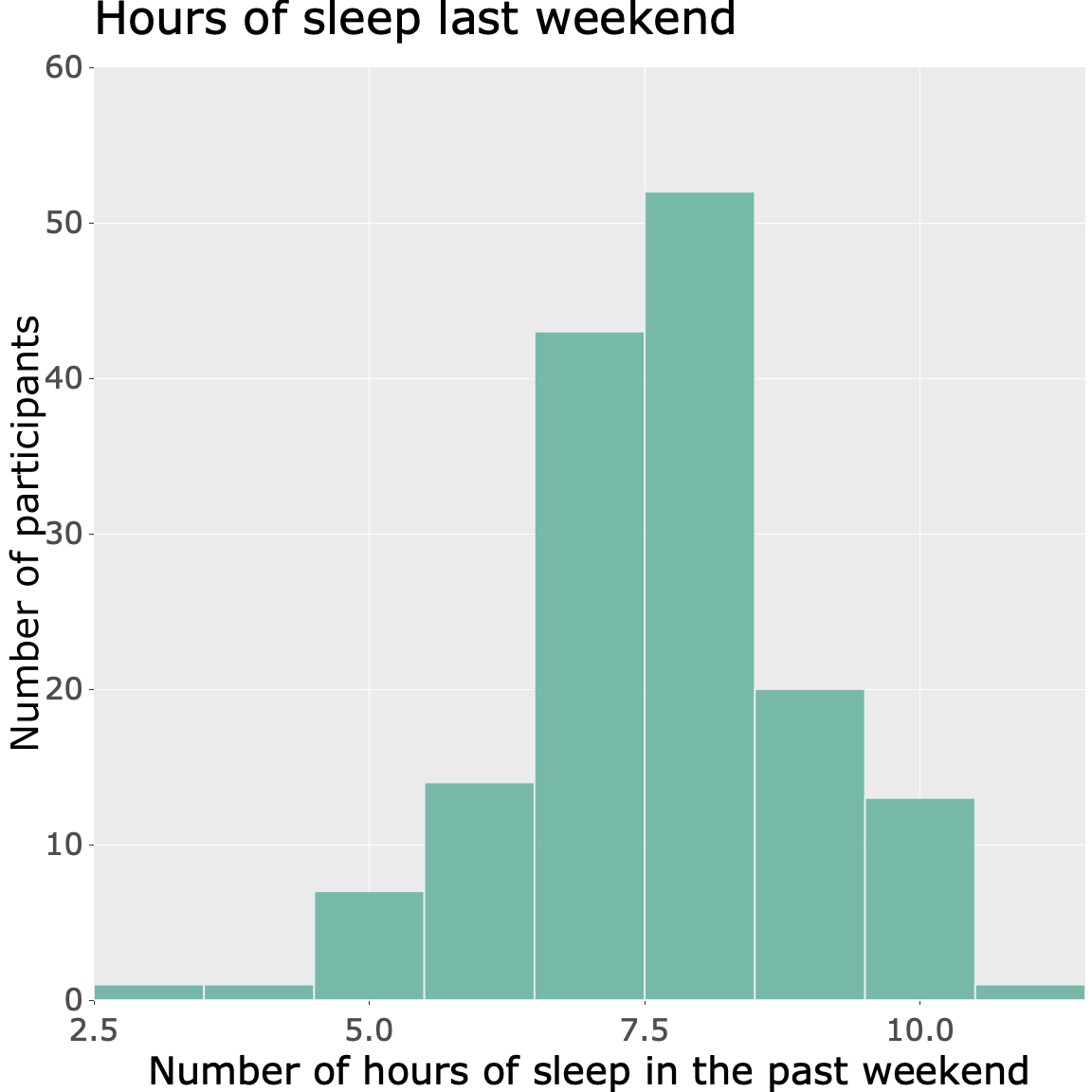
workdayssleep <- sleephygiene %>% ggplot( aes(x=Q10\_hoursofsleeplast5workdays)) +  
 geom\_histogram( binwidth=1, fill="#69b3a2", color="#e9ecef", alpha=0.9) +  
 ggtitle("Hours of sleep last five workdays") +  
 theme(  
 text = element\_text(size=30)  
 ) +  
 #theme\_test(text = element\_text(size=40)) +   
 labs(x="Number of hours of sleep in the past five workdays", y="Number of participants") +  
 scale\_x\_continuous(expand = c(0, 0)) + scale\_y\_continuous(expand = c(0, 0), limits = c(0,65))  
#workdayssleep  
ggplotly(workdayssleep)

## Warning: Removed 5 rows containing non-finite values (stat\_bin).



#Plot for weekend  
weekend <- sleephygiene %>% ggplot( aes(x=Q10\_hoursofsleeppastweekend)) +  
 geom\_histogram( binwidth=1, fill="#69b3a2", color="#e9ecef", alpha=0.9) +  
 ggtitle("Hours of sleep last weekend") +  
 theme(  
 text = element\_text(size=30)  
 ) +  
 labs(x="Number of hours of sleep in the past weekend", y="Number of participants") +  
 scale\_x\_continuous(expand = c(0, 0)) + scale\_y\_continuous(expand = c(0, 0), limits = c(0,60))  
#weekend  
ggplotly(weekend)

## Warning: Removed 5 rows containing non-finite values (stat\_bin).



#Tab 1  
sleephygiene$Q9\_howoftensleepypastmonth <- factor(sleephygiene$Q9\_howoftensleepypastmonth, levels = c("Never", "Rarely", "Sometimes", "Very often", "Always"))  
sleephygiene$Q61\_howoftensleepypasttwoweeks <- factor(sleephygiene$Q61\_howoftensleepypasttwoweeks, levels = c("Never", "Rarely", "Sometimes", "Very often", "Always"))  
sleephygiene$Q89\_ratesleepquality\_notawareofcampaign <- factor(sleephygiene$Q89\_ratesleepquality\_notawareofcampaign, levels = c("Poor", "Fair", "Good", "Excellent"))  
sleephygiene$Q75\_moving <- factor(sleephygiene$Q75\_moving, levels = c("Extremely unhelpful", "Somewhat unhelpful", "Neither helpful nor unhelpful", "Somewhat helpful", "Extremely helpful"))  
sleephygiene$Q75\_breathing <- factor(sleephygiene$Q75\_breathing, levels = c("Extremely unhelpful", "Somewhat unhelpful", "Neither helpful nor unhelpful", "Somewhat helpful", "Extremely helpful"))  
sleephygiene$Q75\_powerdown <- factor(sleephygiene$Q75\_powerdown, levels = c("Extremely unhelpful", "Somewhat unhelpful", "Neither helpful nor unhelpful", "Somewhat helpful", "Extremely helpful"))  
sleephygiene$Q87\_idealtime <- factor(sleephygiene$Q87\_idealtime, levels = c("Early morning (6:00 am - 9:00 am)", "Late morning (9:01 am - 12:00 pm)", "Early afternoon (12:01 pm - 3:00 pm)", "Late afternoon (3:01 pm - 6:00 pm)", "Early evening (6:01 pm - 9:00 pm)", "Late evening (9:01 pm - 12:00 am)", "Other (please specify)"))  
sleephygiene$Q59\_canmaintainhealthysleephabits <- factor(sleephygiene$Q59\_canmaintainhealthysleephabits, levels = c("Not at all confident", "Somewhat confident", "Extremely confident"))  
sleephygiene$Q59\_cancutoutscreen <- factor(sleephygiene$Q59\_cancutoutscreen, levels = c("Not at all confident", "Somewhat confident", "Extremely confident"))  
sleephygiene$Q59\_canexercise <- factor(sleephygiene$Q59\_canexercise, levels = c("Not at all confident", "Somewhat confident", "Extremely confident"))  
sleephygiene$Q59\_canparticipateinbreathing <- factor(sleephygiene$Q59\_canparticipateinbreathing, levels = c("Not at all confident", "Somewhat confident", "Extremely confident"))  
sleephygiene$Q44\_goodnightsleepisimportant <- factor(sleephygiene$Q44\_goodnightsleepisimportant, levels = c("Strongly disagree", "Somewhat disagree", "Neither agree nor disagree", "Somewhat agree", "Strongly agree"))  
sleephygiene$Q44\_mentalclarity <- factor(sleephygiene$Q44\_mentalclarity, levels = c("Strongly disagree", "Somewhat disagree", "Neither agree nor disagree", "Somewhat agree", "Strongly agree"))  
sleephygiene$Q44\_feelpositive <- factor(sleephygiene$Q44\_feelpositive, levels = c("Strongly disagree", "Somewhat disagree", "Neither agree nor disagree", "Somewhat agree", "Strongly agree"))  
sleephygiene$Q44\_cuttingoutscreenleadstobettersleep <- factor(sleephygiene$Q44\_cuttingoutscreenleadstobettersleep, levels = c("Strongly disagree", "Somewhat disagree", "Neither agree nor disagree", "Somewhat agree", "Strongly agree"))  
sleephygiene$Q44\_exercisingleadstobettersleep <- factor(sleephygiene$Q44\_exercisingleadstobettersleep, levels = c("Strongly disagree", "Somewhat disagree", "Neither agree nor disagree", "Somewhat agree", "Strongly agree"))  
sleephygiene$Q44\_breathingexercisesleadstobettersleep <- factor(sleephygiene$Q44\_breathingexercisesleadstobettersleep, levels = c("Strongly disagree", "Somewhat disagree", "Neither agree nor disagree", "Somewhat agree", "Strongly agree"))  
sleephygiene$Q44\_iwillstopscreens <- factor(sleephygiene$Q44\_iwillstopscreens, levels = c("Strongly disagree", "Somewhat disagree", "Neither agree nor disagree", "Somewhat agree", "Strongly agree"))  
sleephygiene$Q44\_iwillexercise <- factor(sleephygiene$Q44\_iwillexercise, levels = c("Strongly disagree", "Somewhat disagree", "Neither agree nor disagree", "Somewhat agree", "Strongly agree"))  
sleephygiene$Q44\_iwillbreathe <- factor(sleephygiene$Q44\_iwillbreathe, levels = c("Strongly disagree", "Somewhat disagree", "Neither agree nor disagree", "Somewhat agree", "Strongly agree"))  
  
library(expss)  
sleephygiene = apply\_labels(sleephygiene,  
 Q3\_role = "What is your role at Bloomberg",  
 Q4\_gender = "Which best describes your gender identity?",  
 Q2\_program = "What is your current program at Bloomberg?",  
 Q5\_age = "How old are you?",  
 Q6\_numberinhousehold = "How many people live in your household, including yourself?",  
 Q37\_employed = "If you are a student at Bloomberg, are you currently employed outside of your education program?",  
 Q92\_notSPHemployed = "Are you currently employed?",  
 Q93\_worksetting = "Which of the following best describes your current work setting?",  
 Q94\_dayornight = "Do you work day or night shifts?",  
 Q38\_worksetting = "Which of the following best describes your current work setting?",  
 Q39\_dayornight = "Do you work day or night shifts?",  
 Q10\_hoursofsleeplast5workdays = "On average, how many hours of sleep did you get per night during the following periods of time: during the last 5 workdays?",  
 Q10\_hoursofsleeppastweekend = "On average, how many hours of sleep did you get per night during the following periods of time: during the past weekend?",  
 Q9\_howoftensleepypastmonth = "How often did you feel sleepy during the day in the past month?",  
 Q61\_howoftensleepypasttwoweeks = "How often did you feel sleepy during the day during the past 2 weeks?",  
 Q84\_awareofhowtoimprovesleepquality = "Do you know any ways a person can improve their sleep quality?",  
 Q85\_waystoimprovesleepquality = "What are some of the ways to improve sleep quality that you know?",  
 Q81\_seenorheardfromGNbloombergcampaign = "In the last two-three weeks have you heard, seen, or received any information from the #GoodnightBloomberg campaign led by JHSPH students promoting better sleep?",  
 Q63\_recalltoolsfreetect = "Can you recall any specific tools, techniques, or resources from the campaign? Please describe below.",  
 Q96\_picture1 = "Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 1",  
 Q96\_picture2 = "Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 2",  
 Q96\_picture3 = "Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 3",  
 Q96\_picture4 = "Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 4",  
 Q96\_picture5 = "Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 5",  
 Q96\_picture6 = "Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 6",  
 Q96\_picture7 = "Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 7",  
 Q96\_picture8 = "Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 8",  
 Q95\_talkedtoanyone = "Have you talked to anyone about the #GoodnightBloomberg campaign?",  
 Q83\_talkedtowho = "Please indicate with whom you talked about #GoodnightBloomberg (check all that apply).",  
 Q82\_knowanyonewhoengaged = "Do you know anyone who engaged in any way with the #GoodnightBloomberg campaign about promoting better sleep?",  
 Q69\_didyouengagewiththecampaign = "Did you engage in any way with the #GoodnightBloomberg campaign led by JHSPH students during the past 2 weeks?",  
 Q62\_howdidyouengage = "Please select which of the following parts of the #GoodnightBloomberg campaign you engaged in:",  
 Q64\_whichtechniquedidyoutry = "Which of the following techniques did you try at least once in the last 2 weeks (choose all that apply)?",   
 Q90\_areyouhappywithyoursleepquality\_awareofcampaign = "Are you happy with your sleep quality overall currently?",   
 Q91\_areyouhappywithyoursleepquality\_notawareofcampaign = "Are you happy with your sleep quality overall currently?",   
 Q89\_ratesleepquality\_notawareofcampaign = "Please rate your sleep quality from the following options: In the last two weeks? (on average)",  
 Q67\_move30minutes = "In the last two weeks, how many days did you participate in the following techniques? Move 30 minutes total per day",  
 Q67\_breathing = "In the last two weeks, how many days did you participate in the following techniques? Use a breathing exercise",  
 Q67\_powerdown = "In the last two weeks, how many days did you participate in the following techniques? Power down your screens (i.e. cell phone, tablet, computer, TV) 1 hour before bed",  
 Q75\_moving = "How helpful did you find the following activities for getting better quality sleep in the past 2 weeks? Moving 30 minutes total per day",  
 Q75\_breathing = "How helpful did you find the following activities for getting better quality sleep in the past 2 weeks? Using a breathing exercise",  
 Q75\_powerdown = "How helpful did you find the following activities for getting better quality sleep in the past 2 weeks? Powering down your screens (i.e. cell phone, tablet, computer, TV) 1 hour before bed",  
 Q68\_timing = "Was the timing of the texts/posts convenient for you to adopt the recommended activity? ",  
 Q70\_timingoftextsinconvenient = "Please provide information below about why the timing of the texts/posts was inconvenient?",   
 Q87\_idealtime = "What would have been the ideal time to receive the message (EST/EDT)?",  
 Q71\_whichchannelmosteducational = "Which channel did you find the most educational?",  
 Q79\_moresuccessfuloutcomsuggestions = "I think I would have had a more successful outcome (e.g. better sleep quality) if (choose all that may apply):",  
 Q74\_rafflemotivating = "Did you find the raffles motivating for participation in the #GoodnightBloomberg campaign?",  
 Q73\_hearabouthow = "How did you hear about the #GoodnightBloomberg campaign?",  
 Q59\_canmaintainhealthysleephabits = "Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can maintain healthy sleep habits.",  
 Q59\_cancutoutscreen = "Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can cut out screen use 1 hour before bed.",  
 Q59\_canexercise = "Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can exercise for 30 minutes total each day.",   
 Q59\_canparticipateinbreathing = "Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can participate in a breathing exercise during the day or before bed.",   
 Q44\_goodnightsleepisimportant = "Please rate your agreement with the following statements: Getting a good night's sleep is important to me.",  
 Q44\_mentalclarity = "Please rate your agreement with the following statements: Having a regular sleep routine improves mental clarity/sharpness.",  
 Q44\_feelpositive = "Please rate your agreement with the following statements: I feel positive about the quality of my sleep.",  
 Q44\_cuttingoutscreenleadstobettersleep = "Please rate your agreement with the following statements: I think cutting out screen use 1 hour before bed leads to better sleep.",  
 Q44\_exercisingleadstobettersleep = "Please rate your agreement with the following statements: I think exercising regularly leads to better sleep.",  
 Q44\_breathingexercisesleadstobettersleep = "Please rate your agreement with the following statements: I think participating in breathing exercises during the day or before bed leads to better sleep.",  
 Q44\_iwillstopscreens = "Please rate your agreement with the following statements: In the next two weeks, I will stop using screens 1 hour before bed for better sleep.",  
 Q44\_iwillexercise = "Please rate your agreement with the following statements: In the next two weeks, I will exercise for at least 30 minutes total each day for better sleep.",  
 Q44\_iwillbreathe = "Please rate your agreement with the following statements: In the next two weeks, I will do a daily breathing exercise for better sleep.",  
 Q52\_additionalcomments = "Please share any additional comments or feedback you have about the #GoodnightBloomberg sleep campaign below."  
 )

attach(sleephygiene)  
tab1 <- tableby(~ Q3\_role +   
 Q4\_gender +  
 Q5\_age +  
 Q6\_numberinhousehold +  
 Q37\_employed +  
 Q10\_hoursofsleeplast5workdays +  
 Q10\_hoursofsleeppastweekend +  
 Q9\_howoftensleepypastmonth +  
 Q61\_howoftensleepypasttwoweeks +  
 Q84\_awareofhowtoimprovesleepquality +  
 Q81\_seenorheardfromGNbloombergcampaign +  
 #Q63\_recalltoolsfreetect +  
 Q96\_picture1 +  
 Q96\_picture2 +  
 Q96\_picture3 +  
 Q96\_picture4 +  
 Q96\_picture5 +  
 Q96\_picture6 +  
 Q96\_picture7 +  
 Q96\_picture8 +  
 Q95\_talkedtoanyone +  
 Q82\_knowanyonewhoengaged +  
 Q69\_didyouengagewiththecampaign +  
 Q67\_move30minutes +  
 Q67\_breathing +  
 Q67\_powerdown +  
 Q68\_timing +   
 Q79\_moresuccessfuloutcomsuggestions +  
 Q59\_canmaintainhealthysleephabits +  
 Q59\_cancutoutscreen +  
 Q59\_canexercise +  
 Q59\_canparticipateinbreathing +  
 Q44\_goodnightsleepisimportant +  
 Q44\_mentalclarity +  
 Q44\_feelpositive +  
 Q44\_cuttingoutscreenleadstobettersleep +  
 Q44\_exercisingleadstobettersleep +  
 Q44\_breathingexercisesleadstobettersleep +  
 Q44\_iwillstopscreens +  
 Q44\_iwillexercise +  
 Q44\_iwillbreathe,  
 data=sleephygiene, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab1, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=157) |
| **What is your role at Bloomberg** |  |
| N-Miss | 4 |
| Faculty/Staff Member | 10 (6.5%) |
| Full-time student | 86 (56.2%) |
| Not affiliated with Bloomberg School of Public Health | 2 (1.3%) |
| Part-time student | 55 (35.9%) |
| **Which best describes your gender identity?** |  |
| N-Miss | 4 |
| Female | 127 (83.0%) |
| Male | 25 (16.3%) |
| Non-binary / third gender | 1 (0.7%) |
| **How old are you?** |  |
| N-Miss | 4 |
| 18-25 | 45 (29.4%) |
| 26-34 | 67 (43.8%) |
| 35-44 | 26 (17.0%) |
| 45-54 | 13 (8.5%) |
| 55-64 | 1 (0.7%) |
| 64-75 | 1 (0.7%) |
| **How many people live in your household, including yourself?** |  |
| Median (Q1, Q3) | 2.00 (2.00, 3.00) |
| **If you are a student at Bloomberg, are you currently employed outside of your education program?** |  |
| N-Miss | 4 |
| N/A - I am not a student at Bloomberg | 11 (7.2%) |
| No | 67 (43.8%) |
| Yes | 75 (49.0%) |
| **On average, how many hours of sleep did you get per night during the following periods of time: during the last 5 workdays?** |  |
| Median (Q1, Q3) | 7.00 (6.00, 7.00) |
| **On average, how many hours of sleep did you get per night during the following periods of time: during the past weekend?** |  |
| Median (Q1, Q3) | 8.00 (7.00, 8.00) |
| **How often did you feel sleepy during the day in the past month?** |  |
| N-Miss | 60 |
| Never | 3 (3.1%) |
| Rarely | 16 (16.5%) |
| Sometimes | 67 (69.1%) |
| Very often | 0 (0.0%) |
| Always | 11 (11.3%) |
| **How often did you feel sleepy during the day during the past 2 weeks?** |  |
| N-Miss | 57 |
| Never | 2 (2.0%) |
| Rarely | 25 (25.0%) |
| Sometimes | 56 (56.0%) |
| Very often | 0 (0.0%) |
| Always | 17 (17.0%) |
| **Do you know any ways a person can improve their sleep quality?** |  |
| N-Miss | 12 |
| No | 7 (4.8%) |
| Yes | 138 (95.2%) |
| **In the last two-three weeks have you heard, seen, or received any information from the #GoodnightBloomberg campaign led by JHSPH students promoting better sleep?** |  |
| N-Miss | 12 |
| Don’t know | 33 (22.8%) |
| No | 57 (39.3%) |
| Yes | 55 (37.9%) |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 1** |  |
| N-Miss | 29 |
| No | 24 (18.8%) |
| Not sure | 98 (76.6%) |
| Yes | 6 (4.7%) |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 2** |  |
| N-Miss | 24 |
| No | 7 (5.3%) |
| Not sure | 76 (57.1%) |
| Yes | 50 (37.6%) |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 3** |  |
| N-Miss | 28 |
| No | 21 (16.3%) |
| Not sure | 101 (78.3%) |
| Yes | 7 (5.4%) |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 4** |  |
| N-Miss | 29 |
| No | 18 (14.1%) |
| Not sure | 98 (76.6%) |
| Yes | 12 (9.4%) |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 5** |  |
| N-Miss | 27 |
| No | 14 (10.8%) |
| Not sure | 97 (74.6%) |
| Yes | 19 (14.6%) |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 6** |  |
| N-Miss | 27 |
| No | 20 (15.4%) |
| Not sure | 106 (81.5%) |
| Yes | 4 (3.1%) |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 7** |  |
| N-Miss | 27 |
| No | 17 (13.1%) |
| Not sure | 100 (76.9%) |
| Yes | 13 (10.0%) |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 8** |  |
| N-Miss | 28 |
| No | 19 (14.7%) |
| Not sure | 104 (80.6%) |
| Yes | 6 (4.7%) |
| **Have you talked to anyone about the #GoodnightBloomberg campaign?** |  |
| N-Miss | 12 |
| No | 132 (91.0%) |
| Yes | 13 (9.0%) |
| **Do you know anyone who engaged in any way with the #GoodnightBloomberg campaign about promoting better sleep?** |  |
| N-Miss | 12 |
| No | 135 (93.1%) |
| Yes | 10 (6.9%) |
| **Did you engage in any way with the #GoodnightBloomberg campaign led by JHSPH students during the past 2 weeks?** |  |
| N-Miss | 12 |
| No | 120 (82.8%) |
| Yes | 25 (17.2%) |
| **In the last two weeks, how many days did you participate in the following techniques? Move 30 minutes total per day** |  |
| Median (Q1, Q3) | 8.50 (5.00, 12.00) |
| **In the last two weeks, how many days did you participate in the following techniques? Use a breathing exercise** |  |
| Median (Q1, Q3) | 2.00 (1.00, 6.00) |
| **In the last two weeks, how many days did you participate in the following techniques? Power down your screens (i.e. cell phone, tablet, computer, TV) 1 hour before bed** |  |
| Median (Q1, Q3) | 2.00 (1.00, 6.00) |
| **Was the timing of the texts/posts convenient for you to adopt the recommended activity?** |  |
| N-Miss | 41 |
| No | 54 (46.6%) |
| Yes | 62 (53.4%) |
| **I think I would have had a more successful outcome (e.g. better sleep quality) if (choose all that may apply):** |  |
| N-Miss | 55 |
| I had more flexibility in my day | 42 (41.2%) |
| The campaign was longer | 24 (23.5%) |
| There was an in-person/on-campus component to the campaign | 25 (24.5%) |
| There were subject matter experts checking in with me one-on-one | 11 (10.8%) |
| **Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can maintain healthy sleep habits.** |  |
| N-Miss | 14 |
| Not at all confident | 26 (18.2%) |
| Somewhat confident | 87 (60.8%) |
| Extremely confident | 30 (21.0%) |
| **Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can cut out screen use 1 hour before bed.** |  |
| N-Miss | 14 |
| Not at all confident | 70 (49.0%) |
| Somewhat confident | 54 (37.8%) |
| Extremely confident | 19 (13.3%) |
| **Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can exercise for 30 minutes total each day.** |  |
| N-Miss | 14 |
| Not at all confident | 18 (12.6%) |
| Somewhat confident | 62 (43.4%) |
| Extremely confident | 63 (44.1%) |
| **Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can participate in a breathing exercise during the day or before bed.** |  |
| N-Miss | 14 |
| Not at all confident | 17 (11.9%) |
| Somewhat confident | 76 (53.1%) |
| Extremely confident | 50 (35.0%) |
| **Please rate your agreement with the following statements: Getting a good night’s sleep is important to me.** |  |
| N-Miss | 14 |
| Strongly disagree | 0 (0.0%) |
| Somewhat disagree | 1 (0.7%) |
| Neither agree nor disagree | 1 (0.7%) |
| Somewhat agree | 25 (17.5%) |
| Strongly agree | 116 (81.1%) |
| **Please rate your agreement with the following statements: Having a regular sleep routine improves mental clarity/sharpness.** |  |
| N-Miss | 14 |
| Strongly disagree | 0 (0.0%) |
| Somewhat disagree | 1 (0.7%) |
| Neither agree nor disagree | 0 (0.0%) |
| Somewhat agree | 23 (16.1%) |
| Strongly agree | 119 (83.2%) |
| **Please rate your agreement with the following statements: I feel positive about the quality of my sleep.** |  |
| N-Miss | 14 |
| Strongly disagree | 11 (7.7%) |
| Somewhat disagree | 33 (23.1%) |
| Neither agree nor disagree | 24 (16.8%) |
| Somewhat agree | 52 (36.4%) |
| Strongly agree | 23 (16.1%) |
| **Please rate your agreement with the following statements: I think cutting out screen use 1 hour before bed leads to better sleep.** |  |
| N-Miss | 13 |
| Strongly disagree | 1 (0.7%) |
| Somewhat disagree | 5 (3.5%) |
| Neither agree nor disagree | 19 (13.2%) |
| Somewhat agree | 50 (34.7%) |
| Strongly agree | 69 (47.9%) |
| **Please rate your agreement with the following statements: I think exercising regularly leads to better sleep.** |  |
| N-Miss | 13 |
| Strongly disagree | 0 (0.0%) |
| Somewhat disagree | 2 (1.4%) |
| Neither agree nor disagree | 5 (3.5%) |
| Somewhat agree | 40 (27.8%) |
| Strongly agree | 97 (67.4%) |
| **Please rate your agreement with the following statements: I think participating in breathing exercises during the day or before bed leads to better sleep.** |  |
| N-Miss | 13 |
| Strongly disagree | 0 (0.0%) |
| Somewhat disagree | 5 (3.5%) |
| Neither agree nor disagree | 36 (25.0%) |
| Somewhat agree | 58 (40.3%) |
| Strongly agree | 45 (31.2%) |
| **Please rate your agreement with the following statements: In the next two weeks, I will stop using screens 1 hour before bed for better sleep.** |  |
| N-Miss | 15 |
| Strongly disagree | 27 (19.0%) |
| Somewhat disagree | 27 (19.0%) |
| Neither agree nor disagree | 28 (19.7%) |
| Somewhat agree | 41 (28.9%) |
| Strongly agree | 19 (13.4%) |
| **Please rate your agreement with the following statements: In the next two weeks, I will exercise for at least 30 minutes total each day for better sleep.** |  |
| N-Miss | 14 |
| Strongly disagree | 3 (2.1%) |
| Somewhat disagree | 8 (5.6%) |
| Neither agree nor disagree | 17 (11.9%) |
| Somewhat agree | 50 (35.0%) |
| Strongly agree | 65 (45.5%) |
| **Please rate your agreement with the following statements: In the next two weeks, I will do a daily breathing exercise for better sleep.** |  |
| N-Miss | 14 |
| Strongly disagree | 12 (8.4%) |
| Somewhat disagree | 21 (14.7%) |
| Neither agree nor disagree | 26 (18.2%) |
| Somewhat agree | 56 (39.2%) |
| Strongly agree | 28 (19.6%) |

#If student  
student <- sleephygiene %>% filter(Q3\_role %in% c("Part-time student", "Full-time student"))  
  
tab2 <- tableby(~ Q2\_program,  
 data=student, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab2, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=141) |
| **What is your current program at Bloomberg?** |  |
| Doctoral Student | 31 (22.0%) |
| Masters Student | 94 (66.7%) |
| Other | 6 (4.3%) |
| Post-doctoral student | 10 (7.1%) |

#If employed   
nonbloombergstudentemployed <- sleephygiene %>% filter(Q37\_employed == "N/A - I am not a student at Bloomberg")  
  
tab3 <- tableby(~ Q92\_notSPHemployed,  
 data=nonbloombergstudentemployed, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab3, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=11) |
| **Are you currently employed?** |  |
| No | 1 (9.1%) |
| Yes | 10 (90.9%) |

#If employed and not bloomberg  
employed <- nonbloombergstudentemployed %>% filter(Q92\_notSPHemployed == "Yes")  
  
tab4 <- tableby(~ Q93\_worksetting,  
 data=employed, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab4, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=10) |
| **Which of the following best describes your current work setting?** |  |
| I sometimes work at home and sometimes at another location | 3 (30.0%) |
| I work from home | 6 (60.0%) |
| I work in a location away from my home | 1 (10.0%) |

#wfh not bloomberg  
#wfhnotbloomberg <- nonbloombergstudentemployed %>% filter(Q93\_worksetting == "I work in a location away from my home")  
  
#tab5 <- tableby(~ Q94\_dayornight,  
# data=wfhnotbloomberg, test=TRUE, total=TRUE,   
# numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
#summary(tab5, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)  
  
#student at bloomberg  
studentemployed <- student %>% filter(Q37\_employed == "Yes")  
  
tab6 <- tableby(~ Q38\_worksetting,  
 data=studentemployed, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab6, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=75) |
| **Which of the following best describes your current work setting?** |  |
| N-Miss | 2 |
| I sometimes work at home and sometimes at another location | 18 (24.7%) |
| I work from home | 42 (57.5%) |
| I work in a location away from my home | 13 (17.8%) |

studentemployedlocation <- student %>% filter(Q39\_dayornight == "I work in a location away from my home")  
  
#tab7 <- tableby(~ Q39\_dayornight,  
# data=studentemployedlocation, test=TRUE, total=TRUE,   
# numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
#summary(tab7, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)  
  
  
#Aware of how to improve sleep quality  
awareofsleepqualityimprovements <- sleephygiene %>% filter(Q84\_awareofhowtoimprovesleepquality == "Yes")  
  
tab8 <- tableby(~ Q85\_waystoimprovesleepquality,  
 data=awareofsleepqualityimprovements, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab8, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=138) |
| **What are some of the ways to improve sleep quality that you know?** |  |
| N-Miss | 1 |
| Not drinking caffeinated beverages late in the day | 128 (93.4%) |
| Reduce irregular or long daytime naps | 1 (0.7%) |
| Switching off electronics one hour before sleep | 7 (5.1%) |
| Try to sleep and wake at consistent times | 1 (0.7%) |

#Talked to someone  
talkedtosomeone <- sleephygiene %>% filter(Q95\_talkedtoanyone == "Yes")  
  
tab9 <- tableby(~ Q83\_talkedtowho,  
 data=talkedtosomeone, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab9, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=13) |
| **Please indicate with whom you talked about #GoodnightBloomberg (check all that apply).** |  |
| N-Miss | 1 |
| Colleague | 1 (8.3%) |
| Friends | 9 (75.0%) |
| Spouse | 2 (16.7%) |

#engaged in any way  
engagedwiththecampaign <- sleephygiene %>% filter(Q69\_didyouengagewiththecampaign == "Yes")  
  
tab10 <- tableby(~ Q62\_howdidyouengage +  
 Q64\_whichtechniquedidyoutry +  
 Q90\_areyouhappywithyoursleepquality\_awareofcampaign +  
 Q75\_moving +  
 Q75\_breathing +  
 Q75\_powerdown,  
 data=engagedwiththecampaign, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab10, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=25) |
| **Please select which of the following parts of the #GoodnightBloomberg campaign you engaged in:** |  |
| N-Miss | 1 |
| Instagram campaign | 15 (62.5%) |
| Text message campaign | 8 (33.3%) |
| Word of mouth/discussion with others | 1 (4.2%) |
| **Which of the following techniques did you try at least once in the last 2 weeks (choose all that apply)?** |  |
| Breathe | 5 (20.0%) |
| Movemore | 15 (60.0%) |
| None of the above | 2 (8.0%) |
| Powerdown | 3 (12.0%) |
| **Are you happy with your sleep quality overall currently?** |  |
| N-Miss | 1 |
| No | 10 (41.7%) |
| Yes | 14 (58.3%) |
| **How helpful did you find the following activities for getting better quality sleep in the past 2 weeks? Moving 30 minutes total per day** |  |
| N-Miss | 8 |
| Extremely unhelpful | 0 (0.0%) |
| Somewhat unhelpful | 0 (0.0%) |
| Neither helpful nor unhelpful | 0 (0.0%) |
| Somewhat helpful | 13 (76.5%) |
| Extremely helpful | 4 (23.5%) |
| **How helpful did you find the following activities for getting better quality sleep in the past 2 weeks? Using a breathing exercise** |  |
| N-Miss | 12 |
| Extremely unhelpful | 0 (0.0%) |
| Somewhat unhelpful | 0 (0.0%) |
| Neither helpful nor unhelpful | 7 (53.8%) |
| Somewhat helpful | 4 (30.8%) |
| Extremely helpful | 2 (15.4%) |
| **How helpful did you find the following activities for getting better quality sleep in the past 2 weeks? Powering down your screens (i.e. cell phone, tablet, computer, TV) 1 hour before bed** |  |
| N-Miss | 16 |
| Extremely unhelpful | 0 (0.0%) |
| Somewhat unhelpful | 0 (0.0%) |
| Neither helpful nor unhelpful | 2 (22.2%) |
| Somewhat helpful | 5 (55.6%) |
| Extremely helpful | 2 (22.2%) |

#did not engagee in any way  
noengagementwiththecampagin <- sleephygiene %>% filter(Q69\_didyouengagewiththecampaign %in% c("No", "Don't know"))  
  
tab11 <- tableby(~ Q91\_areyouhappywithyoursleepquality\_notawareofcampaign +  
 Q89\_ratesleepquality\_notawareofcampaign,  
 data=noengagementwiththecampagin, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab11, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=120) |
| **Are you happy with your sleep quality overall currently?** |  |
| N-Miss | 33 |
| No | 52 (59.8%) |
| Yes | 35 (40.2%) |
| **Please rate your sleep quality from the following options: In the last two weeks? (on average)** |  |
| N-Miss | 31 |
| Poor | 9 (10.1%) |
| Fair | 38 (42.7%) |
| Good | 37 (41.6%) |
| Excellent | 5 (5.6%) |

#not convenient   
notconvenient <- sleephygiene %>% filter(Q68\_timing == "No")  
  
tab12 <- tableby(~ Q70\_timingoftextsinconvenient,  
 data=noengagementwiththecampagin, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab12, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=120) |
| **Please provide information below about why the timing of the texts/posts was inconvenient?** |  |
| N-Miss | 87 |
| Messages were too infrequent | 5 (15.2%) |
| Other (please explain below) | 27 (81.8%) |
| Received message too early in the day | 1 (3.0%) |

#tooearlyintheday  
tooearlyortoolate <- notconvenient %>% filter(Q70\_timingoftextsinconvenient %in% c("Received message too early in the day", "Received message too late in the day"))  
  
tab13 <- tableby(~ Q87\_idealtime,  
 data=tooearlyortoolate, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab13, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=3) |
| **What would have been the ideal time to receive the message (EST/EDT)?** |  |
| Early morning (6:00 am - 9:00 am) | 0 (0.0%) |
| Late morning (9:01 am - 12:00 pm) | 1 (33.3%) |
| Early afternoon (12:01 pm - 3:00 pm) | 0 (0.0%) |
| Late afternoon (3:01 pm - 6:00 pm) | 0 (0.0%) |
| Early evening (6:01 pm - 9:00 pm) | 2 (66.7%) |
| Late evening (9:01 pm - 12:00 am) | 0 (0.0%) |
| Other (please specify) | 0 (0.0%) |

#whichmosteducational  
instagramortext <- engagedwiththecampaign %>% filter(Q62\_howdidyouengage %in% c("Instagram", "Text message campaign"))  
  
#tab14 <- tableby(~ Q71\_whichchannelmosteducational +  
# Q72,  
# data=instagramortext, test=TRUE, total=TRUE,   
# numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
#summary(tab14, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)  
  
#instagram  
instagram <- engagedwiththecampaign %>% filter(Q62\_howdidyouengage == "Instagram campaign")  
  
tab15 <- tableby(~ Q74\_rafflemotivating,  
 data=instagram, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab15, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=15) |
| **Did you find the raffles motivating for participation in the #GoodnightBloomberg campaign?** |  |
| No | 4 (26.7%) |
| Yes | 11 (73.3%) |

#seenorheardofthecampiagn  
seenordheard <- sleephygiene %>% filter(Q81\_seenorheardfromGNbloombergcampaign == "Yes")  
  
tab16 <- tableby(~ Q81\_seenorheardfromGNbloombergcampaign,  
 data=seenordheard, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab16, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |
| --- | --- |
|  | Overall (N=55) |
| **In the last two-three weeks have you heard, seen, or received any information from the #GoodnightBloomberg campaign led by JHSPH students promoting better sleep?** |  |
| Don’t know | 0 (0.0%) |
| No | 0 (0.0%) |
| Yes | 55 (100.0%) |

sleephygiene <- sleephygiene %>% mutate(Engagementyesno = case\_when(  
 Q69\_didyouengagewiththecampaign == "Yes" ~ 1,  
 Q69\_didyouengagewiththecampaign == "No" ~ 0,  
 Q69\_didyouengagewiththecampaign == "Don't know" ~ 0,  
 is.na(Q69\_didyouengagewiththecampaign) ~ NA\_real\_)) %>%  
 mutate(Engagementyesno = factor(Engagementyesno))  
  
tab1 <- tableby(Engagementyesno ~ Q3\_role +   
 Q4\_gender +  
 Q5\_age +  
 Q6\_numberinhousehold +  
 Q37\_employed +  
 Q10\_hoursofsleeplast5workdays +  
 Q10\_hoursofsleeppastweekend +  
 Q9\_howoftensleepypastmonth +  
 Q61\_howoftensleepypasttwoweeks +  
 Q84\_awareofhowtoimprovesleepquality +  
 Q81\_seenorheardfromGNbloombergcampaign +  
 Q96\_picture1 +  
 Q96\_picture2 +  
 Q96\_picture3 +  
 Q96\_picture4 +  
 Q96\_picture5 +  
 Q96\_picture6 +  
 Q96\_picture7 +  
 Q96\_picture8 +  
 Q95\_talkedtoanyone +  
 Q82\_knowanyonewhoengaged +  
 Q69\_didyouengagewiththecampaign +  
 Q67\_move30minutes +  
 Q67\_breathing +  
 Q67\_powerdown +  
 Q68\_timing +   
 Q79\_moresuccessfuloutcomsuggestions +  
 Q59\_canmaintainhealthysleephabits +  
 Q59\_cancutoutscreen +  
 Q59\_canexercise +  
 Q59\_canparticipateinbreathing +  
 Q44\_goodnightsleepisimportant +  
 Q44\_mentalclarity +  
 Q44\_feelpositive +  
 Q44\_cuttingoutscreenleadstobettersleep +  
 Q44\_exercisingleadstobettersleep +  
 Q44\_breathingexercisesleadstobettersleep +  
 Q44\_iwillstopscreens +  
 Q44\_iwillexercise +  
 Q44\_iwillbreathe,  
 data=sleephygiene, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab1, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 0 (N=120) | 1 (N=25) | Total (N=145) | p value |
| **What is your role at Bloomberg** |  |  |  |  |
| N-Miss | 0 | 2 | 2 |  |
| Faculty/Staff Member | 9 (7.5%) | 0 (0.0%) | 9 (6.3%) |  |
| Full-time student | 66 (55.0%) | 16 (69.6%) | 82 (57.3%) |  |
| Not affiliated with Bloomberg School of Public Health | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Part-time student | 45 (37.5%) | 7 (30.4%) | 52 (36.4%) |  |
| **Which best describes your gender identity?** |  |  |  | 0.5581 |
| N-Miss | 0 | 2 | 2 |  |
| Female | 99 (82.5%) | 21 (91.3%) | 120 (83.9%) |  |
| Male | 20 (16.7%) | 2 (8.7%) | 22 (15.4%) |  |
| Non-binary / third gender | 1 (0.8%) | 0 (0.0%) | 1 (0.7%) |  |
| **How old are you?** |  |  |  | 0.9951 |
| N-Miss | 0 | 2 | 2 |  |
| 18-25 | 37 (30.8%) | 7 (30.4%) | 44 (30.8%) |  |
| 26-34 | 52 (43.3%) | 10 (43.5%) | 62 (43.4%) |  |
| 35-44 | 19 (15.8%) | 4 (17.4%) | 23 (16.1%) |  |
| 45-54 | 10 (8.3%) | 2 (8.7%) | 12 (8.4%) |  |
| 55-64 | 1 (0.8%) | 0 (0.0%) | 1 (0.7%) |  |
| 64-75 | 1 (0.8%) | 0 (0.0%) | 1 (0.7%) |  |
| **How many people live in your household, including yourself?** |  |  |  | 0.0112 |
| Median (Q1, Q3) | 2.00 (1.00, 3.00) | 3.00 (2.00, 4.00) | 2.00 (2.00, 3.00) |  |
| **If you are a student at Bloomberg, are you currently employed outside of your education program?** |  |  |  | 0.0261 |
| N-Miss | 0 | 2 | 2 |  |
| N/A - I am not a student at Bloomberg | 8 (6.7%) | 0 (0.0%) | 8 (5.6%) |  |
| No | 59 (49.2%) | 6 (26.1%) | 65 (45.5%) |  |
| Yes | 53 (44.2%) | 17 (73.9%) | 70 (49.0%) |  |
| **On average, how many hours of sleep did you get per night during the following periods of time: during the last 5 workdays?** |  |  |  | 0.7282 |
| Median (Q1, Q3) | 7.00 (6.00, 7.00) | 7.00 (6.00, 8.00) | 7.00 (6.00, 7.00) |  |
| **On average, how many hours of sleep did you get per night during the following periods of time: during the past weekend?** |  |  |  | 0.1742 |
| Median (Q1, Q3) | 8.00 (7.00, 8.00) | 8.00 (7.00, 9.00) | 8.00 (7.00, 8.00) |  |
| **How often did you feel sleepy during the day in the past month?** |  |  |  |  |
| N-Miss | 44 | 10 | 54 |  |
| Never | 3 (3.9%) | 0 (0.0%) | 3 (3.3%) |  |
| Rarely | 10 (13.2%) | 3 (20.0%) | 13 (14.3%) |  |
| Sometimes | 56 (73.7%) | 10 (66.7%) | 66 (72.5%) |  |
| Very often | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Always | 7 (9.2%) | 2 (13.3%) | 9 (9.9%) |  |
| **How often did you feel sleepy during the day during the past 2 weeks?** |  |  |  |  |
| N-Miss | 42 | 9 | 51 |  |
| Never | 2 (2.6%) | 0 (0.0%) | 2 (2.1%) |  |
| Rarely | 17 (21.8%) | 5 (31.2%) | 22 (23.4%) |  |
| Sometimes | 46 (59.0%) | 9 (56.2%) | 55 (58.5%) |  |
| Very often | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Always | 13 (16.7%) | 2 (12.5%) | 15 (16.0%) |  |
| **Do you know any ways a person can improve their sleep quality?** |  |  |  | 0.2161 |
| No | 7 (5.8%) | 0 (0.0%) | 7 (4.8%) |  |
| Yes | 113 (94.2%) | 25 (100.0%) | 138 (95.2%) |  |
| **In the last two-three weeks have you heard, seen, or received any information from the #GoodnightBloomberg campaign led by JHSPH students promoting better sleep?** |  |  |  | < 0.0011 |
| Don’t know | 32 (26.7%) | 1 (4.0%) | 33 (22.8%) |  |
| No | 57 (47.5%) | 0 (0.0%) | 57 (39.3%) |  |
| Yes | 31 (25.8%) | 24 (96.0%) | 55 (37.9%) |  |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 1** |  |  |  | < 0.0011 |
| N-Miss | 14 | 3 | 17 |  |
| No | 13 (12.3%) | 11 (50.0%) | 24 (18.8%) |  |
| Not sure | 89 (84.0%) | 9 (40.9%) | 98 (76.6%) |  |
| Yes | 4 (3.8%) | 2 (9.1%) | 6 (4.7%) |  |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 2** |  |  |  | < 0.0011 |
| N-Miss | 11 | 1 | 12 |  |
| No | 7 (6.4%) | 0 (0.0%) | 7 (5.3%) |  |
| Not sure | 74 (67.9%) | 2 (8.3%) | 76 (57.1%) |  |
| Yes | 28 (25.7%) | 22 (91.7%) | 50 (37.6%) |  |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 3** |  |  |  | < 0.0011 |
| N-Miss | 13 | 3 | 16 |  |
| No | 13 (12.1%) | 8 (36.4%) | 21 (16.3%) |  |
| Not sure | 92 (86.0%) | 9 (40.9%) | 101 (78.3%) |  |
| Yes | 2 (1.9%) | 5 (22.7%) | 7 (5.4%) |  |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 4** |  |  |  | < 0.0011 |
| N-Miss | 14 | 3 | 17 |  |
| No | 11 (10.4%) | 7 (31.8%) | 18 (14.1%) |  |
| Not sure | 88 (83.0%) | 10 (45.5%) | 98 (76.6%) |  |
| Yes | 7 (6.6%) | 5 (22.7%) | 12 (9.4%) |  |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 5** |  |  |  | < 0.0011 |
| N-Miss | 13 | 2 | 15 |  |
| No | 11 (10.3%) | 3 (13.0%) | 14 (10.8%) |  |
| Not sure | 90 (84.1%) | 7 (30.4%) | 97 (74.6%) |  |
| Yes | 6 (5.6%) | 13 (56.5%) | 19 (14.6%) |  |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 6** |  |  |  | 0.0371 |
| N-Miss | 12 | 3 | 15 |  |
| No | 14 (13.0%) | 6 (27.3%) | 20 (15.4%) |  |
| Not sure | 92 (85.2%) | 14 (63.6%) | 106 (81.5%) |  |
| Yes | 2 (1.9%) | 2 (9.1%) | 4 (3.1%) |  |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 7** |  |  |  | < 0.0011 |
| N-Miss | 13 | 2 | 15 |  |
| No | 14 (13.1%) | 3 (13.0%) | 17 (13.1%) |  |
| Not sure | 90 (84.1%) | 10 (43.5%) | 100 (76.9%) |  |
| Yes | 3 (2.8%) | 10 (43.5%) | 13 (10.0%) |  |
| **Were these materials were utilized in our #GoodnightBloomberg campaign? Picture 8** |  |  |  | 0.0011 |
| N-Miss | 13 | 3 | 16 |  |
| No | 14 (13.1%) | 5 (22.7%) | 19 (14.7%) |  |
| Not sure | 91 (85.0%) | 13 (59.1%) | 104 (80.6%) |  |
| Yes | 2 (1.9%) | 4 (18.2%) | 6 (4.7%) |  |
| **Have you talked to anyone about the #GoodnightBloomberg campaign?** |  |  |  | < 0.0011 |
| No | 118 (98.3%) | 14 (56.0%) | 132 (91.0%) |  |
| Yes | 2 (1.7%) | 11 (44.0%) | 13 (9.0%) |  |
| **Do you know anyone who engaged in any way with the #GoodnightBloomberg campaign about promoting better sleep?** |  |  |  | < 0.0011 |
| No | 116 (96.7%) | 19 (76.0%) | 135 (93.1%) |  |
| Yes | 4 (3.3%) | 6 (24.0%) | 10 (6.9%) |  |
| **Did you engage in any way with the #GoodnightBloomberg campaign led by JHSPH students during the past 2 weeks?** |  |  |  | < 0.0011 |
| No | 120 (100.0%) | 0 (0.0%) | 120 (82.8%) |  |
| Yes | 0 (0.0%) | 25 (100.0%) | 25 (17.2%) |  |
| **In the last two weeks, how many days did you participate in the following techniques? Move 30 minutes total per day** |  |  |  | 0.2902 |
| Median (Q1, Q3) | 9.00 (5.00, 12.00) | 8.00 (4.00, 10.00) | 8.50 (5.00, 12.00) |  |
| **In the last two weeks, how many days did you participate in the following techniques? Use a breathing exercise** |  |  |  | 0.4092 |
| Median (Q1, Q3) | 2.00 (1.00, 6.00) | 3.00 (2.00, 6.00) | 2.00 (1.00, 6.00) |  |
| **In the last two weeks, how many days did you participate in the following techniques? Power down your screens (i.e. cell phone, tablet, computer, TV) 1 hour before bed** |  |  |  | 0.4092 |
| Median (Q1, Q3) | 2.00 (1.00, 6.00) | 3.00 (2.00, 6.00) | 2.00 (1.00, 6.00) |  |
| **Was the timing of the texts/posts convenient for you to adopt the recommended activity?** |  |  |  | 0.0441 |
| N-Miss | 26 | 3 | 29 |  |
| No | 48 (51.1%) | 6 (27.3%) | 54 (46.6%) |  |
| Yes | 46 (48.9%) | 16 (72.7%) | 62 (53.4%) |  |
| **I think I would have had a more successful outcome (e.g. better sleep quality) if (choose all that may apply):** |  |  |  | 0.0471 |
| N-Miss | 42 | 1 | 43 |  |
| I had more flexibility in my day | 36 (46.2%) | 6 (25.0%) | 42 (41.2%) |  |
| The campaign was longer | 14 (17.9%) | 10 (41.7%) | 24 (23.5%) |  |
| There was an in-person/on-campus component to the campaign | 18 (23.1%) | 7 (29.2%) | 25 (24.5%) |  |
| There were subject matter experts checking in with me one-on-one | 10 (12.8%) | 1 (4.2%) | 11 (10.8%) |  |
| **Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can maintain healthy sleep habits.** |  |  |  | 0.3461 |
| N-Miss | 0 | 2 | 2 |  |
| Not at all confident | 21 (17.5%) | 5 (21.7%) | 26 (18.2%) |  |
| Somewhat confident | 76 (63.3%) | 11 (47.8%) | 87 (60.8%) |  |
| Extremely confident | 23 (19.2%) | 7 (30.4%) | 30 (21.0%) |  |
| **Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can cut out screen use 1 hour before bed.** |  |  |  | 0.4451 |
| N-Miss | 0 | 2 | 2 |  |
| Not at all confident | 56 (46.7%) | 14 (60.9%) | 70 (49.0%) |  |
| Somewhat confident | 47 (39.2%) | 7 (30.4%) | 54 (37.8%) |  |
| Extremely confident | 17 (14.2%) | 2 (8.7%) | 19 (13.3%) |  |
| **Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can exercise for 30 minutes total each day.** |  |  |  | 0.3741 |
| N-Miss | 0 | 2 | 2 |  |
| Not at all confident | 14 (11.7%) | 4 (17.4%) | 18 (12.6%) |  |
| Somewhat confident | 55 (45.8%) | 7 (30.4%) | 62 (43.4%) |  |
| Extremely confident | 51 (42.5%) | 12 (52.2%) | 63 (44.1%) |  |
| **Please tell us how confident you feel practicing the following behaviors in order to get better sleep: I can participate in a breathing exercise during the day or before bed.** |  |  |  | 0.8331 |
| N-Miss | 1 | 1 | 2 |  |
| Not at all confident | 15 (12.6%) | 2 (8.3%) | 17 (11.9%) |  |
| Somewhat confident | 63 (52.9%) | 13 (54.2%) | 76 (53.1%) |  |
| Extremely confident | 41 (34.5%) | 9 (37.5%) | 50 (35.0%) |  |
| **Please rate your agreement with the following statements: Getting a good night’s sleep is important to me.** |  |  |  |  |
| N-Miss | 0 | 2 | 2 |  |
| Strongly disagree | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Somewhat disagree | 1 (0.8%) | 0 (0.0%) | 1 (0.7%) |  |
| Neither agree nor disagree | 1 (0.8%) | 0 (0.0%) | 1 (0.7%) |  |
| Somewhat agree | 23 (19.2%) | 2 (8.7%) | 25 (17.5%) |  |
| Strongly agree | 95 (79.2%) | 21 (91.3%) | 116 (81.1%) |  |
| **Please rate your agreement with the following statements: Having a regular sleep routine improves mental clarity/sharpness.** |  |  |  |  |
| N-Miss | 1 | 1 | 2 |  |
| Strongly disagree | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Somewhat disagree | 1 (0.8%) | 0 (0.0%) | 1 (0.7%) |  |
| Neither agree nor disagree | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Somewhat agree | 18 (15.1%) | 5 (20.8%) | 23 (16.1%) |  |
| Strongly agree | 100 (84.0%) | 19 (79.2%) | 119 (83.2%) |  |
| **Please rate your agreement with the following statements: I feel positive about the quality of my sleep.** |  |  |  | 0.9351 |
| N-Miss | 0 | 2 | 2 |  |
| Strongly disagree | 9 (7.5%) | 2 (8.7%) | 11 (7.7%) |  |
| Somewhat disagree | 28 (23.3%) | 5 (21.7%) | 33 (23.1%) |  |
| Neither agree nor disagree | 21 (17.5%) | 3 (13.0%) | 24 (16.8%) |  |
| Somewhat agree | 42 (35.0%) | 10 (43.5%) | 52 (36.4%) |  |
| Strongly agree | 20 (16.7%) | 3 (13.0%) | 23 (16.1%) |  |
| **Please rate your agreement with the following statements: I think cutting out screen use 1 hour before bed leads to better sleep.** |  |  |  | 0.8021 |
| N-Miss | 0 | 1 | 1 |  |
| Strongly disagree | 1 (0.8%) | 0 (0.0%) | 1 (0.7%) |  |
| Somewhat disagree | 5 (4.2%) | 0 (0.0%) | 5 (3.5%) |  |
| Neither agree nor disagree | 16 (13.3%) | 3 (12.5%) | 19 (13.2%) |  |
| Somewhat agree | 40 (33.3%) | 10 (41.7%) | 50 (34.7%) |  |
| Strongly agree | 58 (48.3%) | 11 (45.8%) | 69 (47.9%) |  |
| **Please rate your agreement with the following statements: I think exercising regularly leads to better sleep.** |  |  |  |  |
| N-Miss | 0 | 1 | 1 |  |
| Strongly disagree | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Somewhat disagree | 2 (1.7%) | 0 (0.0%) | 2 (1.4%) |  |
| Neither agree nor disagree | 4 (3.3%) | 1 (4.2%) | 5 (3.5%) |  |
| Somewhat agree | 32 (26.7%) | 8 (33.3%) | 40 (27.8%) |  |
| Strongly agree | 82 (68.3%) | 15 (62.5%) | 97 (67.4%) |  |
| **Please rate your agreement with the following statements: I think participating in breathing exercises during the day or before bed leads to better sleep.** |  |  |  |  |
| N-Miss | 0 | 1 | 1 |  |
| Strongly disagree | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Somewhat disagree | 3 (2.5%) | 2 (8.3%) | 5 (3.5%) |  |
| Neither agree nor disagree | 29 (24.2%) | 7 (29.2%) | 36 (25.0%) |  |
| Somewhat agree | 49 (40.8%) | 9 (37.5%) | 58 (40.3%) |  |
| Strongly agree | 39 (32.5%) | 6 (25.0%) | 45 (31.2%) |  |
| **Please rate your agreement with the following statements: In the next two weeks, I will stop using screens 1 hour before bed for better sleep.** |  |  |  | 0.9021 |
| N-Miss | 1 | 2 | 3 |  |
| Strongly disagree | 22 (18.5%) | 5 (21.7%) | 27 (19.0%) |  |
| Somewhat disagree | 24 (20.2%) | 3 (13.0%) | 27 (19.0%) |  |
| Neither agree nor disagree | 24 (20.2%) | 4 (17.4%) | 28 (19.7%) |  |
| Somewhat agree | 34 (28.6%) | 7 (30.4%) | 41 (28.9%) |  |
| Strongly agree | 15 (12.6%) | 4 (17.4%) | 19 (13.4%) |  |
| **Please rate your agreement with the following statements: In the next two weeks, I will exercise for at least 30 minutes total each day for better sleep.** |  |  |  | 0.3261 |
| N-Miss | 0 | 2 | 2 |  |
| Strongly disagree | 3 (2.5%) | 0 (0.0%) | 3 (2.1%) |  |
| Somewhat disagree | 5 (4.2%) | 3 (13.0%) | 8 (5.6%) |  |
| Neither agree nor disagree | 16 (13.3%) | 1 (4.3%) | 17 (11.9%) |  |
| Somewhat agree | 42 (35.0%) | 8 (34.8%) | 50 (35.0%) |  |
| Strongly agree | 54 (45.0%) | 11 (47.8%) | 65 (45.5%) |  |
| **Please rate your agreement with the following statements: In the next two weeks, I will do a daily breathing exercise for better sleep.** |  |  |  | 0.9861 |
| N-Miss | 0 | 2 | 2 |  |
| Strongly disagree | 10 (8.3%) | 2 (8.7%) | 12 (8.4%) |  |
| Somewhat disagree | 17 (14.2%) | 4 (17.4%) | 21 (14.7%) |  |
| Neither agree nor disagree | 22 (18.3%) | 4 (17.4%) | 26 (18.2%) |  |
| Somewhat agree | 48 (40.0%) | 8 (34.8%) | 56 (39.2%) |  |
| Strongly agree | 23 (19.2%) | 5 (21.7%) | 28 (19.6%) |  |

1. Pearson’s Chi-squared test
2. Kruskal-Wallis rank sum test

sleephygienepre <- readRDS(file="foranalysis.rds")  
  
sleephygienepre <- sleephygienepre %>%   
 mutate(Q5\_age = case\_when(  
 Q5\_age >= 18 & Q5\_age <= 25 ~ "18-25",  
 Q5\_age >= 26 & Q5\_age <= 34 ~ "26-34",  
 Q5\_age >= 35 & Q5\_age <= 44 ~ "35-44",  
 Q5\_age >= 45 & Q5\_age <= 54 ~ "45-54",  
 Q5\_age >= 55 & Q5\_age < 64 ~ "55-64",  
 Q5\_age >= 64 & Q5\_age <= 75 ~ "64-75",  
 Q5\_age > 75 ~ "75+",  
 is.na(Q5\_age) ~ NA\_character\_  
 )) %>%   
 mutate(Q5\_age = factor(Q5\_age)) %>%  
 mutate(post = 0) %>%   
 mutate(  
 Q10\_hoursofsleeplast5workdays = Q10\_workdayhoursofsleep,  
 Q10\_hoursofsleeppastweekend = Q11\_weekendhoursofsleep,  
 Q61\_howoftensleepypasttwoweeks = Q9\_howoftensleepy  
 ) %>%  
 select(post, Q3\_role, Q2\_program, Q4\_gender, Q5\_age, Q6\_numberinhousehold, Q10\_hoursofsleeplast5workdays, Q10\_hoursofsleeppastweekend, Q61\_howoftensleepypasttwoweeks)   
   
sleephygienepost <- sleephygiene %>% mutate(post = 1) %>% select(post, Q3\_role, Q2\_program, Q4\_gender, Q5\_age, Q6\_numberinhousehold, Q10\_hoursofsleeplast5workdays, Q10\_hoursofsleeppastweekend, Q61\_howoftensleepypasttwoweeks)   
  
sleephygienepreandpost <- rbind(sleephygienepre, sleephygienepost)  
  
sleephygienepreandpost <- sleephygienepreandpost %>% mutate(Q61\_smaller = case\_when(  
 is.na(Q61\_howoftensleepypasttwoweeks) ~ NA\_character\_,  
 Q61\_howoftensleepypasttwoweeks == "Never" ~ "Never",  
 Q61\_howoftensleepypasttwoweeks == "Rarely" ~ "Rarely",  
 Q61\_howoftensleepypasttwoweeks == "Sometimes" ~ "Sometimes",  
 Q61\_howoftensleepypasttwoweeks == "Very often" | Q61\_howoftensleepypasttwoweeks == "Always" ~ "Very often or Always",  
)) %>%  
 mutate(Q61\_smaller = factor(Q61\_smaller)) %>%  
 mutate(Q2\_program = case\_when(  
 Q2\_program == "Post-doctoral student" ~ as.character("Post doctoral student"),  
 TRUE ~ as.character(Q2\_program)  
 )) %>%  
 mutate(Q2\_program = factor(Q2\_program))  
  
tab1 <- tableby(post ~ Q3\_role +  
 Q2\_program +   
 Q4\_gender +   
 Q5\_age +   
 Q6\_numberinhousehold +  
 Q10\_hoursofsleeplast5workdays +  
 Q10\_hoursofsleeppastweekend +  
 Q61\_smaller,  
 data=sleephygienepreandpost, test=TRUE, total=TRUE,   
 numeric.stats=c("medianq1q3"), numeric.test="kwt", cat.test="chisq")  
summary(tab1, title='Table 1. Baseline information', pfootnote=TRUE, digits = 2)

Table 1. Baseline information

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 0 (N=209) | 1 (N=157) | Total (N=366) | p value |
| **Q3\_role** |  |  |  | 0.0371 |
| N-Miss | 3 | 4 | 7 |  |
| Faculty/Staff Member | 6 (2.9%) | 10 (6.5%) | 16 (4.5%) |  |
| Full-time student | 140 (68.0%) | 86 (56.2%) | 226 (63.0%) |  |
| Part-time student | 60 (29.1%) | 55 (35.9%) | 115 (32.0%) |  |
| Not affiliated with Bloomberg School of Public Health | 0 (0.0%) | 2 (1.3%) | 2 (0.6%) |  |
| **Q2\_program** |  |  |  | 0.0141 |
| N-Miss | 9 | 16 | 25 |  |
| Doctoral Student | 54 (27.0%) | 31 (22.0%) | 85 (24.9%) |  |
| Masters Student | 140 (70.0%) | 94 (66.7%) | 234 (68.6%) |  |
| Other | 1 (0.5%) | 6 (4.3%) | 7 (2.1%) |  |
| Post doctoral student | 5 (2.5%) | 10 (7.1%) | 15 (4.4%) |  |
| **Q4\_gender** |  |  |  | 0.5991 |
| N-Miss | 3 | 4 | 7 |  |
| Female | 166 (80.6%) | 127 (83.0%) | 293 (81.6%) |  |
| Male | 35 (17.0%) | 25 (16.3%) | 60 (16.7%) |  |
| Non-binary / third gender | 4 (1.9%) | 1 (0.7%) | 5 (1.4%) |  |
| Prefer not to say | 1 (0.5%) | 0 (0.0%) | 1 (0.3%) |  |
| **Q5\_age** |  |  |  | 0.5091 |
| N-Miss | 5 | 4 | 9 |  |
| 18-25 | 64 (31.4%) | 45 (29.4%) | 109 (30.5%) |  |
| 26-34 | 98 (48.0%) | 67 (43.8%) | 165 (46.2%) |  |
| 35-44 | 32 (15.7%) | 26 (17.0%) | 58 (16.2%) |  |
| 45-54 | 9 (4.4%) | 13 (8.5%) | 22 (6.2%) |  |
| 55-64 | 1 (0.5%) | 1 (0.7%) | 2 (0.6%) |  |
| 64-75 | 0 (0.0%) | 1 (0.7%) | 1 (0.3%) |  |
| **How many people live in your household, including yourself?** |  |  |  | 0.2292 |
| Median (Q1, Q3) | 2.00 (2.00, 3.00) | 2.00 (2.00, 3.00) | 2.00 (2.00, 3.00) |  |
| **During the past 5 workdays, how many hours of sleep did you get per night on average?** |  |  |  | 0.6022 |
| Median (Q1, Q3) | 7.00 (6.00, 7.50) | 7.00 (6.00, 7.00) | 7.00 (6.00, 7.50) |  |
| **During the past weekend, how many hours of sleep did you get per night on average?** |  |  |  | 0.0792 |
| Median (Q1, Q3) | 8.00 (7.00, 9.00) | 8.00 (7.00, 8.00) | 8.00 (7.00, 9.00) |  |
| **Q61\_smaller** |  |  |  | 0.0711 |
| N-Miss | 69 | 57 | 126 |  |
| Never | 3 (2.1%) | 2 (2.0%) | 5 (2.1%) |  |
| Rarely | 27 (19.3%) | 25 (25.0%) | 52 (21.7%) |  |
| Sometimes | 99 (70.7%) | 56 (56.0%) | 155 (64.6%) |  |
| Very often or Always | 11 (7.9%) | 17 (17.0%) | 28 (11.7%) |  |

1. Pearson’s Chi-squared test
2. Kruskal-Wallis rank sum test

library(sjPlot)

## Install package "strengejacke" from GitHub (`devtools::install\_github("strengejacke/strengejacke")`) to load all sj-packages at once!

sleephygiene <- sleephygiene %>% mutate(Q69\_didyouengagewiththecampaignbinary = case\_when(  
 Q69\_didyouengagewiththecampaign == "No" ~ 0,  
 Q69\_didyouengagewiththecampaign == "Yes" ~ 1)) %>%  
 mutate(Q4\_gender\_binary = case\_when(  
 Q4\_gender == "Male" ~ 1,  
 Q4\_gender == "Female" ~ 0,  
 TRUE ~ NA\_real\_  
 )) %>%  
 mutate(Q4\_gender\_binary = factor(Q4\_gender\_binary, labels = c("Female", "Male"))) %>%  
 mutate(happywithsleepqualitycombined = case\_when(  
 Q90\_areyouhappywithyoursleepquality\_awareofcampaign == "Yes" ~ 1,  
 Q90\_areyouhappywithyoursleepquality\_awareofcampaign == "No" ~ 0,  
 Q91\_areyouhappywithyoursleepquality\_notawareofcampaign == "Yes" ~ 1,  
 Q91\_areyouhappywithyoursleepquality\_notawareofcampaign == "No" ~ 0,  
 Q89\_ratesleepquality\_notawareofcampaign == "Good" ~ 1,  
 Q89\_ratesleepquality\_notawareofcampaign == "Excellent" ~ 1,  
 Q89\_ratesleepquality\_notawareofcampaign == "Poor" ~ 0,  
 Q89\_ratesleepquality\_notawareofcampaign == "Fair" ~ 0,  
 )) %>%  
 mutate(happywithsleepqualitycombined = factor(happywithsleepqualitycombined)) %>%  
 mutate(Q67\_1 = case\_when(  
 is.na(Q67\_1) ~ 0,  
 TRUE ~ as.numeric(Q67\_1)  
 )) %>%  
 mutate(Q67\_2 = case\_when(  
 is.na(Q67\_2) ~ 0,  
 TRUE ~ as.numeric(Q67\_2)  
 )) %>%  
 mutate(Q67\_3 = case\_when(  
 is.na(Q67\_3) ~ 0,  
 TRUE ~ as.numeric(Q67\_3)  
 )) %>%  
 mutate(pointscombinedperdays = Q67\_1 + Q67\_2 + Q67\_3) %>%  
 mutate(ratesleepqualitycombined = case\_when(  
 Q89\_ratesleepquality\_notawareofcampaign == "Good" ~ 1,  
 Q89\_ratesleepquality\_notawareofcampaign == "Excellent" ~ 1,  
 Q89\_ratesleepquality\_notawareofcampaign == "Poor" ~ 0,  
 Q89\_ratesleepquality\_notawareofcampaign == "Fair" ~ 0,  
 )) %>%  
 mutate(POINTSFROMPICS1 = case\_when(  
 Q96\_picture2 == "Yes" ~ 1,  
 TRUE ~ 0  
 )) %>%  
 mutate(POINTSFROMPICS2 = case\_when(  
 Q96\_picture4 == "Yes" ~ 1,  
 TRUE ~ 0  
 )) %>% mutate(POINTSFROMPICS3 = case\_when(  
 Q96\_picture5 == "Yes" ~ 1,  
 TRUE ~ 0  
 )) %>% mutate(POINTSFROMPICS4 = case\_when(  
 Q96\_picture7 == "Yes" ~ 1,  
 TRUE ~ 0  
 )) %>% mutate(POINTFROMENGAGEMENT = case\_when(  
 Q69\_didyouengagewiththecampaign == "Yes" ~ 1,  
 TRUE ~ 0  
 )) %>% mutate(  
 POINTSFROMPARTICIPATION = X.MoveMore + X.PowerDown + X.Breathe  
 ) %>%  
 mutate(TOTALPOINTS = pointscombinedperdays + POINTSFROMPICS1 + POINTSFROMPICS2 + POINTSFROMPICS3 + POINTSFROMPICS4 + POINTFROMENGAGEMENT + POINTSFROMPARTICIPATION) %>% mutate(AGESMALLERCATEGORIES = case\_when(  
 Q5\_age == "18-25" ~ 0,  
 Q5\_age == "26-34" ~ 0,  
 Q5\_age == "35-44" ~ 0,  
 Q5\_age == "45-54" ~ 1,  
 Q5\_age == "55-64" ~ 1,  
 Q5\_age == "64-75" ~ 1  
 ))  
  
  
#Participating in the campaign  
mylogit <- glm(Q69\_didyouengagewiththecampaignbinary ~ Q4\_gender\_binary + Q10\_hoursofsleeplast5workdays + Q10\_hoursofsleeppastweekend, family = binomial(link = "logit"), data = sleephygiene)  
tab\_model(mylogit)

Q69\_didyouengagewiththecampaignbinary

Predictors

Odds Ratios

CI

p

(Intercept)

0.04

0.00 – 1.08

0.063

Q4\_gender\_binary: Male

0.54

0.08 – 2.10

0.434

On average, how manyhours of sleep did youget per night during thefollowing periods oftime: during the last 5workdays?

0.86

0.55 – 1.38

0.516

On average, how manyhours of sleep did youget per night during thefollowing periods oftime: during the pastweekend?

1.40

0.93 – 2.15

0.111

Observations

142

R2 Tjur

0.024

#Happy with sleep quality  
mylogit <- glm(happywithsleepqualitycombined ~ Q4\_gender\_binary + Q10\_hoursofsleeplast5workdays + Q10\_hoursofsleeppastweekend + Q69\_didyouengagewiththecampaignbinary, family = binomial(link = "logit"), data = sleephygiene)  
tab\_model(mylogit)

happywithsleepqualitycombined

Predictors

Odds Ratios

CI

p

(Intercept)

0.00

0.00 – 0.01

<0.001

Q4\_gender\_binary: Male

1.55

0.55 – 4.47

0.404

On average, how manyhours of sleep did youget per night during thefollowing periods oftime: during the last 5workdays?

2.85

1.79 – 4.84

<0.001

On average, how manyhours of sleep did youget per night during thefollowing periods oftime: during the pastweekend?

1.05

0.73 – 1.51

0.780

Q69\_didyouengagewiththecampaignbinary

1.48

0.52 – 4.31

0.461

Observations

142

R2 Tjur

0.212

mylogit <- glm(happywithsleepqualitycombined ~ Q10\_hoursofsleeppastweekend + Q4\_gender\_binary + pointscombinedperdays, family = binomial(link = "logit"), data = sleephygiene)  
tab\_model(mylogit)

happywithsleepqualitycombined

Predictors

Odds Ratios

CI

p

(Intercept)

0.01

0.00 – 0.09

<0.001

On average, how manyhours of sleep did youget per night during thefollowing periods oftime: during the pastweekend?

1.65

1.23 – 2.26

0.001

Q4\_gender\_binary: Male

1.61

0.60 – 4.43

0.344

pointscombinedperdays

1.06

1.01 – 1.11

0.023

Observations

142

R2 Tjur

0.107

attach(sleephygiene)

## The following objects are masked from sleephygiene (pos = 4):  
##   
## Class.announcement, Colleague, Decrease.alcohol.consumption,  
## Deep.breathing.exercises,  
## Discussion.with.others.about.the.campaign, DistributionChannel,  
## Duration..in.seconds., Finished, Friends,  
## I.had.more.flexibility.in.my.day, ID,  
## Incorporating.moderate.exercise.as.part.of.your.day,  
## Increase.natural.bright.light.exposure.in.the.day, Instagram,  
## Instagram.1, Instagram.campaign, JHSPH.Activities.email,  
## LocationLatitude, LocationLongitude, Messages.were.too.frequent,  
## Messages.were.too.infrequent, None.of.the.above,  
## Not.drinking.caffeinated.beverages.late.in.the.day, Other,  
## Other..please.explain., Other..please.explain.below., Progress, Q1,  
## Q1\_consent, Q10\_2, Q10\_3, Q10\_hoursofsleeplast5workdays,  
## Q10\_hoursofsleeppastweekend, Q2, Q2\_5\_TEXT, Q2\_program, Q3,  
## Q3\_role, Q37, Q37\_employed, Q38, Q38\_worksetting, Q39,  
## Q39\_dayornight, Q4, Q4\_gender, Q44\_1, Q44\_2, Q44\_3, Q44\_4, Q44\_5,  
## Q44\_6, Q44\_7, Q44\_8, Q44\_9,  
## Q44\_breathingexercisesleadstobettersleep,  
## Q44\_cuttingoutscreenleadstobettersleep,  
## Q44\_exercisingleadstobettersleep, Q44\_feelpositive,  
## Q44\_goodnightsleepisimportant, Q44\_iwillbreathe, Q44\_iwillexercise,  
## Q44\_iwillstopscreens, Q44\_mentalclarity, Q5, Q5\_age, Q52,  
## Q52\_additionalcomments, Q59\_1, Q59\_2, Q59\_3, Q59\_4,  
## Q59\_cancutoutscreen, Q59\_canexercise,  
## Q59\_canmaintainhealthysleephabits, Q59\_canparticipateinbreathing,  
## Q6, Q6\_numberinhousehold, Q61, Q61\_howoftensleepypasttwoweeks, Q62,  
## Q62\_howdidyouengage, Q63, Q63\_recalltoolsfreetect, Q64,  
## Q64\_whichtechniquedidyoutry, Q67\_1, Q67\_2, Q67\_3, Q67\_breathing,  
## Q67\_move30minutes, Q67\_powerdown, Q68, Q68\_timing, Q69,  
## Q69\_didyouengagewiththecampaign, Q70, Q70\_18\_TEXT,  
## Q70\_timingoftextsinconvenient, Q71,  
## Q71\_whichchannelmosteducational, Q72, Q73, Q73\_5\_TEXT,  
## Q73\_hearabouthow, Q74, Q74\_rafflemotivating, Q75\_1, Q75\_2, Q75\_3,  
## Q75\_breathing, Q75\_moving, Q75\_powerdown, Q79, Q79\_5\_TEXT,  
## Q79\_moresuccessfuloutcomsuggestions, Q81,  
## Q81\_seenorheardfromGNbloombergcampaign, Q82,  
## Q82\_knowanyonewhoengaged, Q83, Q83\_talkedtowho, Q84,  
## Q84\_awareofhowtoimprovesleepquality, Q85,  
## Q85\_waystoimprovesleepquality, Q87, Q87\_idealtime, Q89\_1,  
## Q89\_ratesleepquality\_notawareofcampaign, Q9,  
## Q9\_howoftensleepypastmonth, Q90,  
## Q90\_areyouhappywithyoursleepquality\_awareofcampaign, Q91,  
## Q91\_areyouhappywithyoursleepquality\_notawareofcampaign, Q92,  
## Q92\_notSPHemployed, Q93, Q93\_worksetting, Q94, Q94\_dayornight, Q95,  
## Q95\_talkedtoanyone, Q96\_1, Q96\_2, Q96\_3, Q96\_4, Q96\_5, Q96\_6,  
## Q96\_7, Q96\_8, Q96\_picture1, Q96\_picture2, Q96\_picture3,  
## Q96\_picture4, Q96\_picture5, Q96\_picture6, Q96\_picture7,  
## Q96\_picture8, Received.message.too.early.in.the.day,  
## Received.message.too.late.in.the.day,  
## Reduce.irregular.or.long.daytime.naps, Relatives, Spouse,  
## Switching.off.electronics.one.hour.before.sleep,  
## Take.a.melatonin.supplement, Text, Text.message.campaign,  
## The.campaign.was.longer,  
## There.was.an.in.person.on.campus.component.to.the.campaign,  
## There.were.subject.matter.experts.checking.in.with.me.one.on.one,  
## Try.to.sleep.and.wake.at.consistent.times, UserLanguage,  
## Word.of.mouth.discussion.with.others,  
## Word.of.mouth.discussion.with.others.1, X.Breathe, X.MoveMore,  
## X.PowerDown

mylogit <- glm(happywithsleepqualitycombined ~ TOTALPOINTS + Q10\_hoursofsleeplast5workdays + Q3\_role + Q4\_gender\_binary + AGESMALLERCATEGORIES, family = binomial(link = "logit"), data = sleephygiene)  
tab\_model(mylogit)

happywithsleepqualitycombined

Predictors

Odds Ratios

CI

p

(Intercept)

0.00

0.00 – 0.00

<0.001

TOTALPOINTS

1.07

1.02 – 1.13

0.011

On average, how manyhours of sleep did youget per night during thefollowing periods oftime: during the last 5workdays?

3.39

2.15 – 5.77

<0.001

What is your role atBloomberg: Full-timestudent

1.44

0.26 – 8.37

0.678

What is your role atBloomberg: Part-timestudent

1.01

0.17 – 6.04

0.992

Q4\_gender\_binary: Male

1.43

0.49 – 4.28

0.514

AGESMALLERCATEGORIES

1.66

0.37 – 7.32

0.500

Observations

142

R2 Tjur

0.251

#knowing campaign exists  
#ACTION IS THE OUTCOME  
#Can you recall images  
#texting campaign  
#composite outcome HIGH AND LOW EXPOSURE  
  
#HIGH VS LOW EXPOSURE  
#LOGISTIC REGRESSION -- BEHAVIOR  
#OR LINEAR REGRESSION  
#Causal criteria...