

Data Description & Data Analysis I

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```
screen_data = read_xlsx("C:\\Users\\igomez\\Downloads\\620W22-Project2-Data (1).xlsx", sheet = 1)
baseline_data = read_xlsx("C:\\Users\\igomez\\Downloads\\620W22-Project2-Data (1).xlsx", sheet = 2)
```

BASELINE DATA

```
baseline_data = baseline_data %>% mutate(
  Workmate = as.factor(workmate),
  Academic = as.factor(academic),
  Non.Academic = as.factor(non.academic),
  Pets = as.factor(pets),
  Sex = as.factor(sex),
  Degree = as.factor(degree),
  Job = as.factor(job),
  Age = age,
  Course.Hours = course.hours,
  Siblings = siblings,
  Apps = apps,
  Devices = devices,
  Procrastination = procrastination
)

table1::table1(~ Workmate + Academic + Non.Academic + Pets + + Age + Course.Hours + Degree + Job + S
```

	Overall
	(N=32)
Workmate	
0	21 (65.6%)
1	9 (28.1%)
2	2 (6.3%)
Academic	
0	9 (28.1%)
1	9 (28.1%)
2	14 (43.8%)
Non.Academic	
0	11 (34.4%)
1	10 (31.3%)
2	11 (34.4%)
Pets	
0	29 (90.6%)
1	3 (9.4%)
Age	
Mean (SD)	23.4 (2.05)
Median [Min, Max]	23.0 [21.0, 30.0]
Course.Hours	
Mean (SD)	13.0 (1.72)
Median [Min, Max]	13.0 [9.00, 17.0]
Degree	
0	14 (43.8%)
1	18 (56.3%)
Job	
0	16 (50.0%)
1	16 (50.0%)
Siblings	
Mean (SD)	0.781 (1.01)
Median [Min, Max]	0 [0, 3.00]
Apps	
Mean (SD)	5.19 (5.37)
Median [Min, Max]	4.00 [1.00, 32.0]
Devices	
Mean (SD)	2.31 (0.965)
Median [Min, Max]	2.00 [1.00, 6.00]
Procrastination	
Mean (SD)	35.5 (13.0)
Median [Min, Max]	34.5 [12.0, 68.0]

STEP 1: Making first time pickup variable

```
screen_data$Pickup.1st = strptime(screen_data$Pickup.1st, format = "%H:%M")

screen_data = screen_data %>% mutate(Pickup.1st.minute=(hour(Pickup.1st)*60+minute(Pickup.1st)))

#NEED TO SHIFT WAKE-UP TIME, SO VARIABLE ARE ASSOCIATED WITH NEXT DAY.
```

```

screen_data$Pickup.1st.minute = c(screen_data$Pickup.1st.minute[-1],NA)

screen_data = screen_data%>% mutate(Pickup.1st.minute = ifelse(Time == 30,NA,Pickup.1st.minute))

screen_data_complete =
  screen_data %>% filter(is.na(Pickup.1st.minute) == FALSE) %>% select("ID","Time","Day","Tot.Scr.Time")

```

STEP 2: SANITY CHECK

```

screen_data_complete[as.numeric(screen_data_complete$Tot.Scr.Time) < as.numeric(screen_data_complete$Tot.Scr.Time)]

## Warning in `[.tbl_df`(screen_data_complete,
## as.numeric(screen_data_complete$Tot.Scr.Time) < : NAs introduced by coercion

## Warning in `[.tbl_df`(screen_data_complete,
## as.numeric(screen_data_complete$Tot.Scr.Time) < : NAs introduced by coercion

## # A tibble: 1 x 9
##       ID Time Day   Tot.Scr.Time Tot.Soc.Time Pickups Pickup.1st
##   <dbl> <dbl> <chr> <chr>         <chr>         <chr> <dtm>
## 1    NA   NA <NA>  <NA>         <NA>         <NA>  NA
## # ... with 2 more variables: Pickup.1st.minute <dbl>, Imputed <dbl>

table(screen_data_complete$Day)

```

```

##
##      Fri    Friday      Mon    Monday      Sat    Saturday      Sun    Sunday
##      8      118      8      118      8      119      8      119
##      Thu    Thursday    Tue    Tuesday    Wed    Wednesday
##      8      120      10    148      8      120

```

Day is written differently, need to update to make sure day is uniformed.

STEP 1: Figure out the dates for the ones written in number. There appears to be one user (ID # 10) who inputed numbers instead of the day. So wil need to insert the correct days. Given that all 34 users collected the data during the same dates, we can simply assume that users 10 data is also collected on the same dates (and hence days), as the other users. I manually fixed this on excel.

```

library(dplyr)
screen_data_complete = screen_data_complete %>%
  mutate(day = recode(Day,
    "Friday" = "Fri",
    "Monday" = "Mon",
    "Saturday" = "Sat",
    "Sunday" = "Sun",
    "Thursday" = "Thu",
    "Tuesday" = "Tue",
    "Wednesday" = "Wed"))
#Factor and relevel days
screen_data_complete$day = factor(screen_data_complete$day, levels=c("Sun", "Mon", "Tue", "Wed", "Thu", "Fri", "Sat"))

#Create binary weekend vs no weekend d
screen_data_complete = screen_data_complete %>%
  mutate(if_weekend = day %in% c("Sun", "Sat","Fri"))

```

MAKE NUMERIC VARIABLES, NUMERIC

```

screen_data_complete = screen_data_complete %>% mutate(
  Tot.Scr.Time = as.numeric(Tot.Scr.Time),
  Tot.Soc.Time = as.numeric(Tot.Soc.Time),
  Pickups = as.numeric(Pickups),
  ID = as.factor(ID)
)

## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
## Warning in mask$eval_all_mutate(quo): NAs introduced by coercion
table(screen_data_complete$day)

##
## Sun Mon Tue Wed Thu Fri Sat
## 127 126 158 128 128 126 127
#table(screen_data_complete$Pickup.1st)

table(screen_data_complete$Time)

##
## 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
## 32 32 32 32 32 32 32 32 32 32 31 32 32 32 32 32 32 32 32 32 32 32 32 31 31
## 27 28 29
## 31 30 30

MAKE WAKEUP TIME

# ggplot(screen_data_complete, aes(x = Time, y = Tot.Scr.Time,
#                                   color = if_weekend)) +
#   geom_line(aes(color = as.factor(screen_data_complete$ID))) +
#   geom_point() +
#   labs(x = "", y = "Total Screen Time (min)", caption = "(a) total screen time" ) +
#   # ylim(15,702) +
#   # scale_color_manual(labels = c("weekdays", "weekends"), values =
#   #   c("black","red")) +
#   theme_minimal() +
#   theme(axis.text.x = element_text(angle = 60, hjust = 1),
#         axis.title.y = element_text(size = 8, hjust = 1),
#         plot.caption = element_text(hjust=0.5,vjust = 0.1, size=9),
#         legend.title = element_blank())

# https://stackoverflow.com/questions/60436663/spaghetti-plot-using-ggplot-in-r
scr_time_plot = ggplot(screen_data_complete, aes(Time, Tot.Scr.Time, color = ID))+
  geom_line() +
  labs(x = "Day", y = "Total Screen Time (min)", caption = "(a) total screen time" ) +
  geom_line(data = screen_data_complete, aes(Time, y= Tot.Scr.Time), size = 0.5) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 60, hjust = 1),
        plot.caption = element_text(hjust=0.5,vjust = 0.1, size=9),
        legend.position = "none")

```

```

soc_time_plot = ggplot(screen_data_complete, aes(Time, Tot.Soc.Time, color = ID))+
  geom_line() +
  labs(x = "Day", y = "Total Social Time (min)", caption = "(b) total social time" ) +
  geom_line(data = screen_data_complete, aes(Time, y = Tot.Soc.Time), size = 0.5) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 60, hjust = 1),
        plot.caption = element_text(hjust=0.5, vjust = 0.1, size=9),
        legend.position = "none")

pickup_plot = ggplot(screen_data_complete, aes(Time, Pickups, color = ID))+
  geom_line() +
  labs(x = "Day", y = "Total Number of Pickups", caption = "(c) total pickups" ) +
  geom_line(data = screen_data_complete, aes(Time, y = Pickups), size = 0.5) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 60, hjust = 1),
        plot.caption = element_text(hjust=0.5, vjust = 0.1, size=9),
        legend.position = "none")

wakeup_plot = ggplot(screen_data_complete, aes(Time, Pickup.1st.minute, color = ID))+
  geom_line() +
  labs(x = "Day", y = "Wake-Up Time", caption = "(d) wake up time" ) +
  geom_line(data = screen_data_complete, aes(Time, y = Pickup.1st.minute), size = 0.5) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 60, hjust = 1),
        plot.caption = element_text(hjust=0.5, vjust = 0.1, size=9),
        legend.position = "none")

grid.arrange(scr_time_plot, soc_time_plot, pickup_plot, wakeup_plot, ncol = 2, nrow = 2)

```

Warning: Removed 1 row(s) containing missing values (geom_path).

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Warning: Removed 1 row(s) containing missing values (geom_path).

Lots of data, means harder to see patterns. May be useful to calculate mean.

```

screen_data_complete = screen_data_complete %>% group_by(Time) %>% mutate(
  Avg.Tot.Scr.Time = mean(Tot.Scr.Time),
  Avg.Tot.Soc.Time = mean(Tot.Soc.Time),
  Avg.Pickups = mean(Pickups),
  Avg.Pickup.1st.minute = mean(Pickup.1st.minute))

# ggplot(screen_data_complete, aes(x = Time, y = Tot.Scr.Time,
#                                   color = if_weekend)) +
#   geom_line(aes(color = as.factor(screen_data_complete$ID))) +
#   geom_point() +
#   labs(x = "", y = "Total Screen Time (min)", caption = "(a) total screen time" ) +
#   # ylim(15,702) +

```

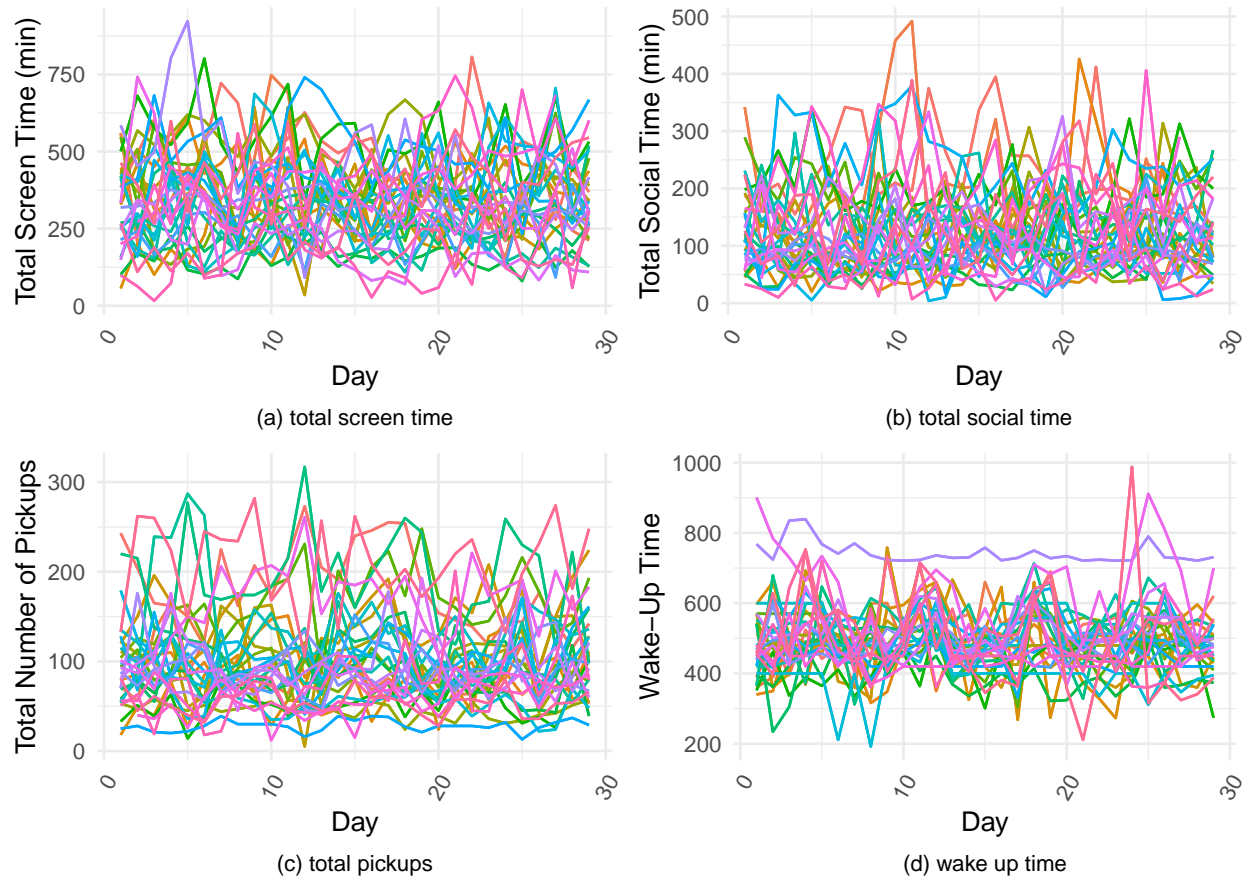


Figure 1: Spaghetti Plot (a) - (d) total screen time vs day, social screen time vs day, number of pickups vs day, wakeup time vs day

```

#       # scale_color_manual(labels = c("weekdays", "weekends"), values =
#       #                               c("black","red")) +
#       theme_minimal() +
#       theme(axis.text.x = element_text(angle = 60, hjust = 1),
#             axis.title.y = element_text(size = 8, hjust = 1),
#             plot.caption = element_text(hjust=0.5,vjust = 0.1, size=9),
#             legend.title = element_blank())

# https://stackoverflow.com/questions/60436663/spaghetti-plot-using-ggplot-in-r
avg_scr_time_plot = ggplot(screen_data_complete, aes(Time, Avg.Tot.Scr.Time))+
  geom_line() +
  labs(x = "Day",y = "Total Screen Time (min)", caption = "(a) total screen time" ) +
  geom_line(data = screen_data_complete, aes(Time, y= Avg.Tot.Scr.Time),size = 0.5) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 60, hjust = 1),
        plot.caption = element_text(hjust=0.5,vjust = 0.1, size=9))

avg_soc_time_plot = ggplot(screen_data_complete, aes(Time, Avg.Tot.Soc.Time))+
  geom_line() +
  labs(x = "Day",y = "Total Social Time (min)", caption = "(b) total social time" ) +
  geom_line(data = screen_data_complete, aes(Time, y= Avg.Tot.Soc.Time),size = 0.5) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 60, hjust = 1),
        plot.caption = element_text(hjust=0.5,vjust = 0.1, size=9))

avg_pickup_plot = ggplot(screen_data_complete, aes(Time, Avg.Pickups))+
  geom_line() +
  labs(x = "Day",y = "Total Number of Pickups", caption = "(c) total pickups" ) +
  geom_line(data = screen_data_complete, aes(Time, y= Avg.Pickups),size = 0.5) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 60, hjust = 1),
        plot.caption = element_text(hjust=0.5,vjust = 0.1, size=9))

avg_wakeup_plot = ggplot(screen_data_complete, aes(Time, Avg.Pickup.1st.minute))+
  geom_line() +
  labs(x = "Day",y = "Wake-Up Time", caption = "(d) wake up time" ) +
  geom_line(data = screen_data_complete, aes(Time, y= Avg.Pickup.1st.minute),size = 0.5) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 60, hjust = 1),
        plot.caption = element_text(hjust=0.5,vjust = 0.1, size=9))

grid.arrange(avg_scr_time_plot,avg_soc_time_plot,avg_pickup_plot,avg_wakeup_plot, ncol = 2, nrow = 2)

## Warning: Removed 32 row(s) containing missing values (geom_path).
## Warning: Removed 32 row(s) containing missing values (geom_path).
## Warning: Removed 32 row(s) containing missing values (geom_path).
## Warning: Removed 32 row(s) containing missing values (geom_path).
## Warning: Removed 32 row(s) containing missing values (geom_path).

```

```
## Warning: Removed 32 row(s) containing missing values (geom_path).
```

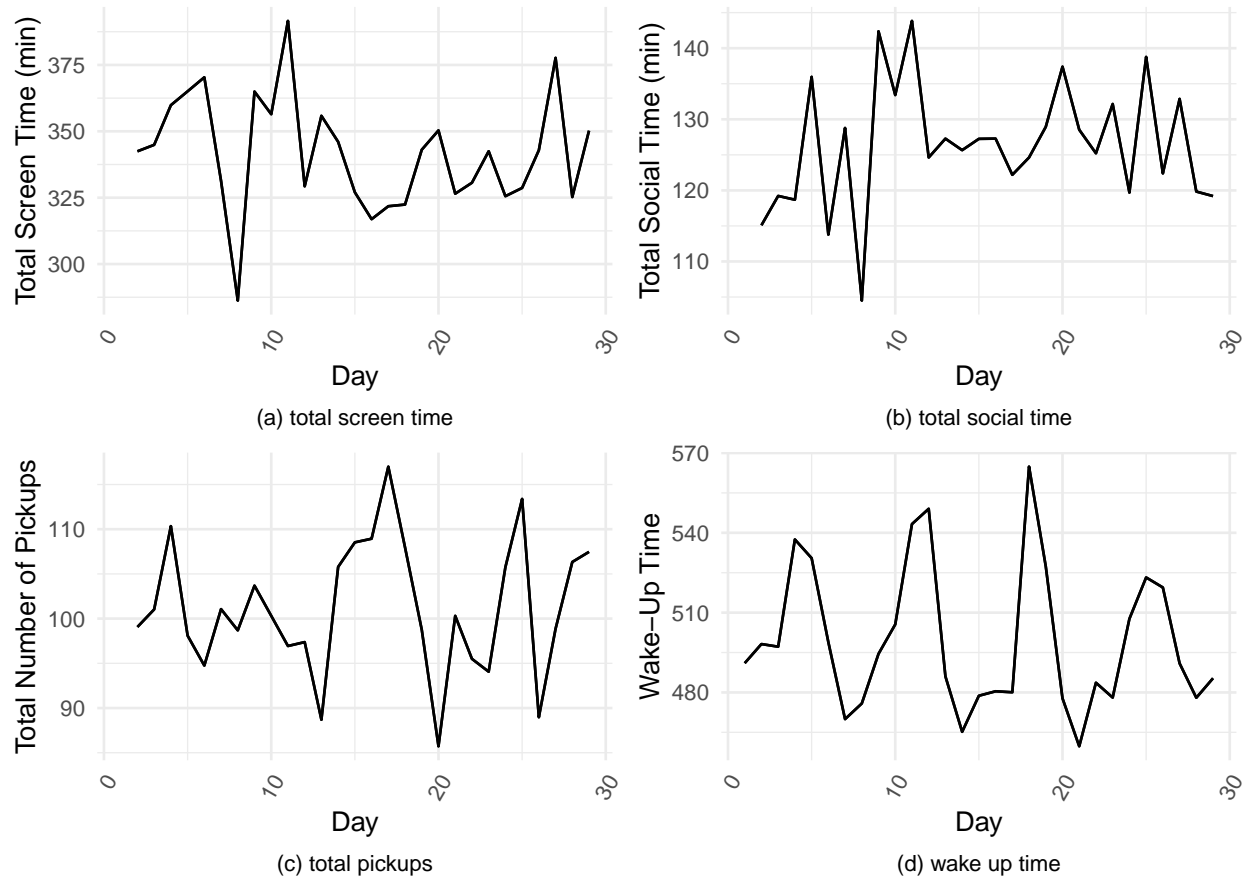


Figure 2: Spaghetti Plot (a) - (d) total screen time vs day, social screen time vs day, number of pickups vs day, wakeup time vs day

ATTEMPT AT ANALYSIS LLM

```
model1 = lm(Pickup.1st.minute ~ Tot.Scr.Time, screen_data_complete)
```

```
#BAR PLOTS OF EVERYTHING
```

```
# Overview of the variables
```

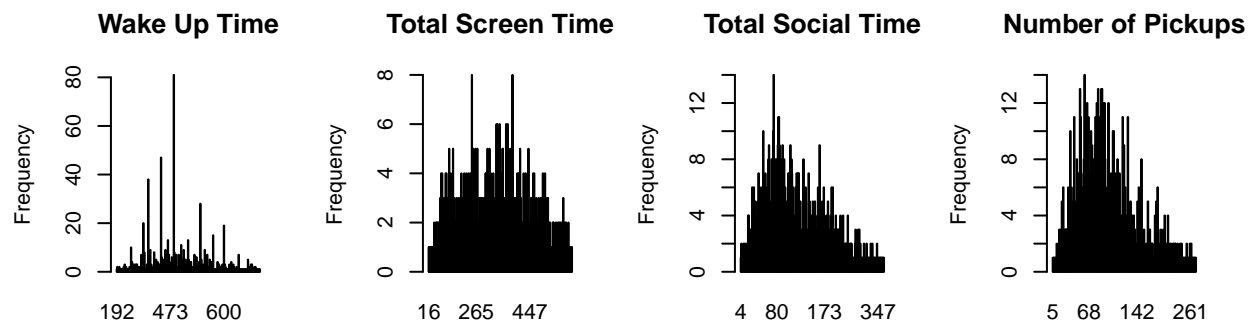
```
par(mfrow = c(2,4))
```

```
barplot(table(screen_data_complete$Pickup.1st.minute), ylab = "Frequency", main = "Wake Up Time")
```

```
barplot(table(screen_data_complete$Tot.Scr.Time), ylab = "Frequency", main = "Total Screen Time")
```

```
barplot(table(screen_data_complete$Tot.Soc.Time), ylab = "Frequency", main = "Total Social Time")
```

```
barplot(table(screen_data_complete$Pickups), ylab = "Frequency", main = "Number of Pickups")
```

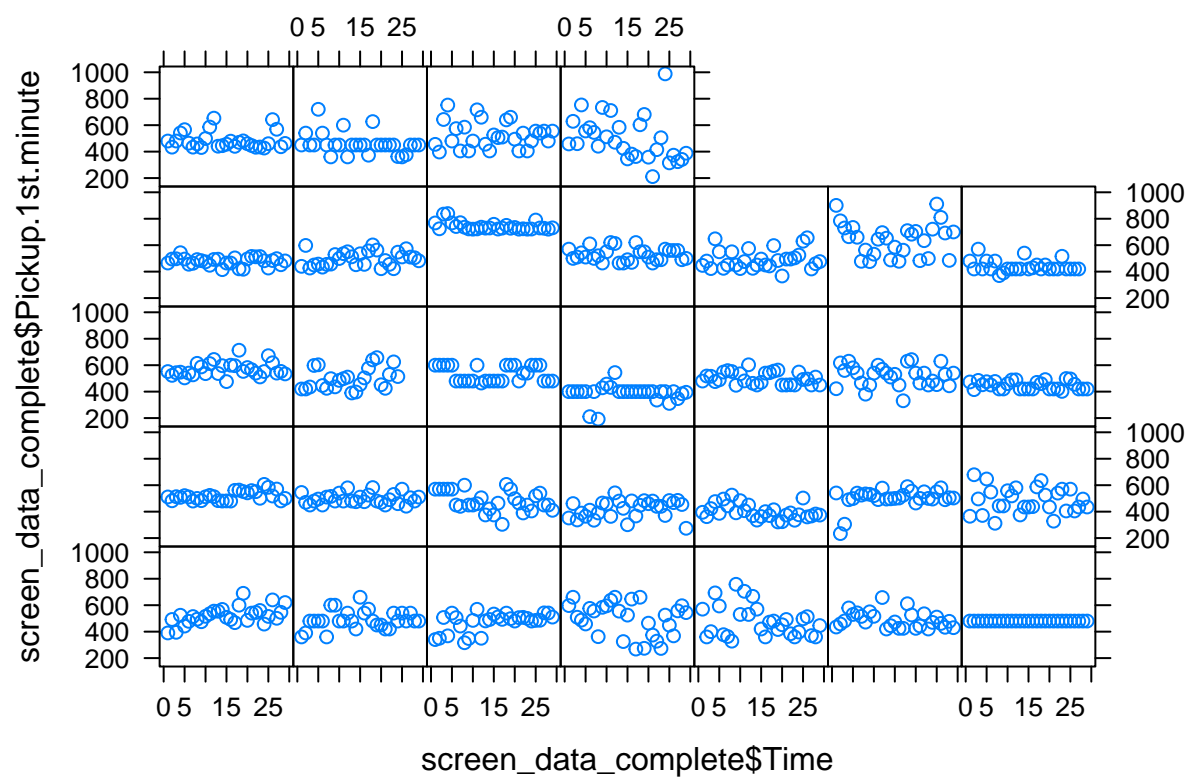



The visual below allows us to see the first pickup time over time by each individual

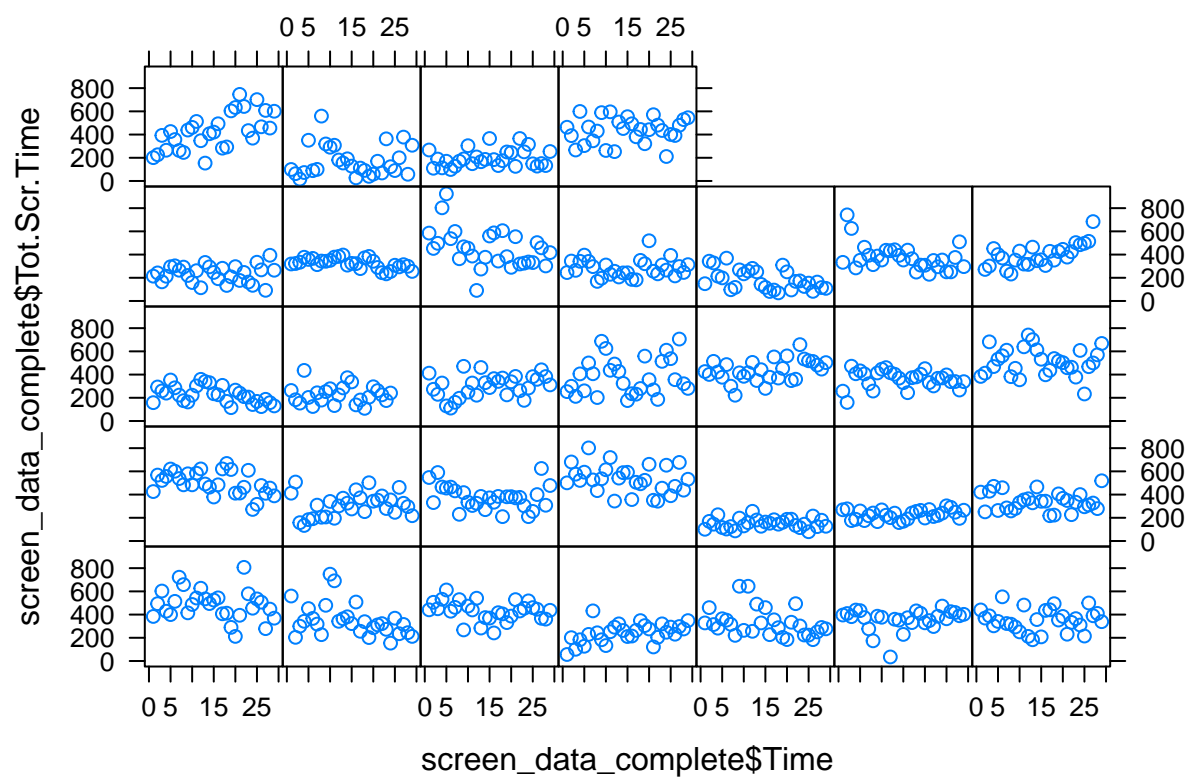
```
library(lattice)
```

```
## Warning: package 'lattice' was built under R version 4.0.5
```

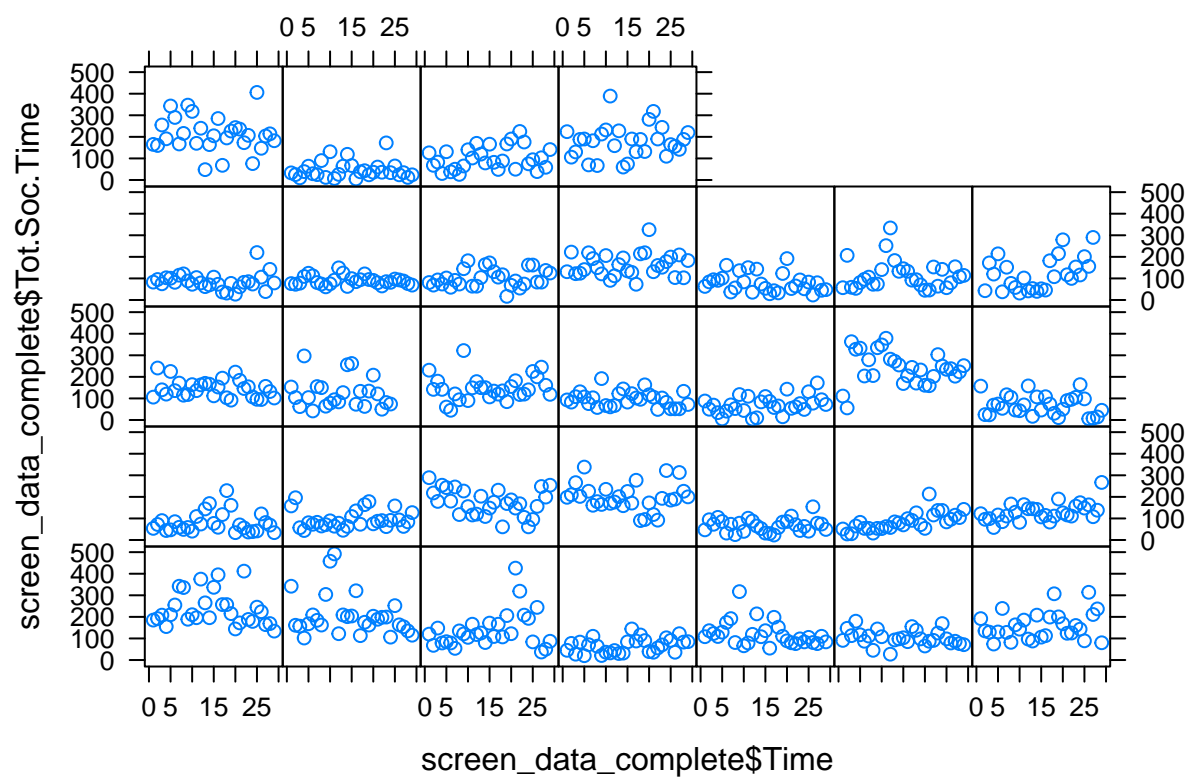
```
xyplot(screen_data_complete$Pickup.1st.minute ~ screen_data_complete$Time | screen_data_complete$ID, str
```



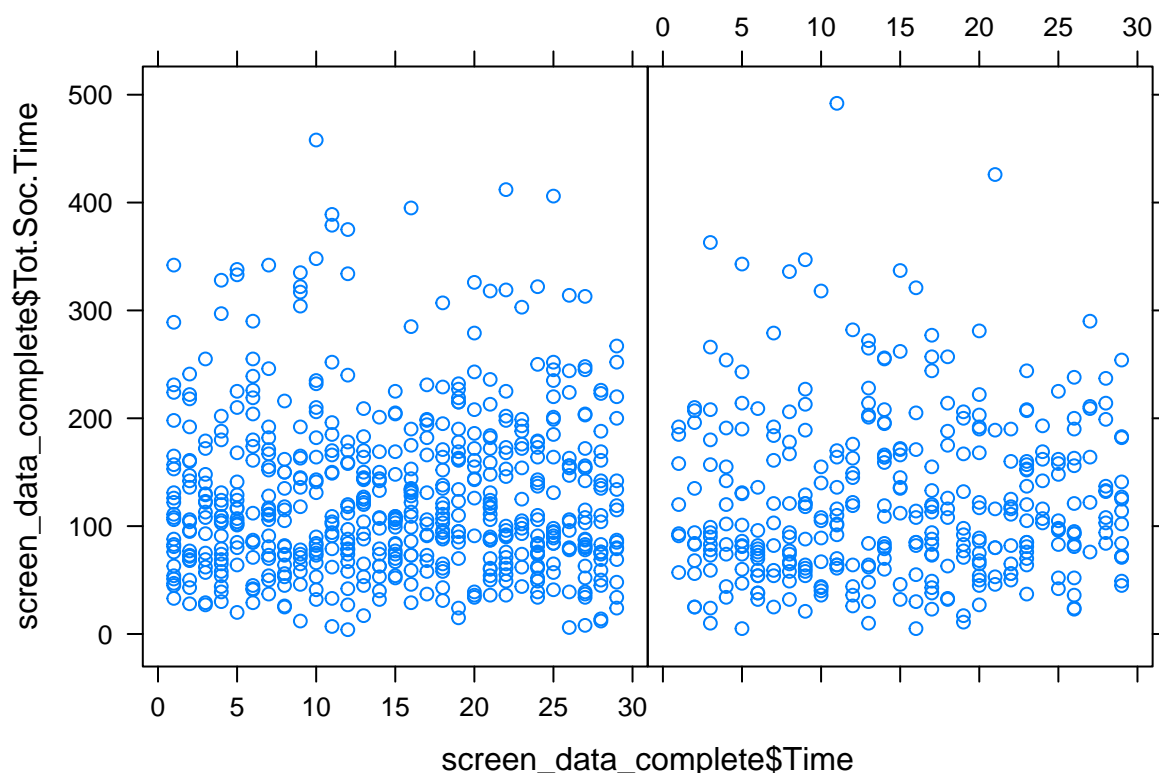
```
xyplot(screen_data_complete$Tot.Scr.Time ~ screen_data_complete$Time | screen_data_complete$ID, strip=FA)
```



```
xyplot(screen_data_complete$Tot.Scr.Time ~ screen_data_complete$Time | screen_data_complete$ID, strip=FALSE)
```



```
xyplot(screen_data_complete$Tot.Soc.Time ~ screen_data_complete$Time | baseline_data$sex, strip=FALSE)
```



```
mean(screen_data_complete$Pickup.1st.minute)
```

```
## [1] 499.2304
```

```
var(screen_data_complete$Pickup.1st.minute)
```

```
## [1] 9562.578
```

```
with(screen_data_complete, tapply(Pickup.1st.minute, list(subject = ID), mean))
```

```
## subject
```

##	1	2	3	4	5	6	7	8
##	520.6552	488.2759	472.6552	496.9655	478.0690	488.1071	480.0000	519.6552
##	9	10	11	12	13	14	15	16
##	497.5172	479.2069	421.0690	399.8966	503.1034	483.0690	567.8276	497.4583
##	17	18	19	20	21	22	23	24
##	533.2759	387.5172	501.2414	519.3448	447.4828	477.4138	497.2069	743.1724
##	25	26	27	28	29	30	31	32
##	528.1034	492.0345	643.4483	439.8148	483.0690	459.2759	526.3448	498.3103

```
with(screen_data_complete, tapply(Pickup.1st.minute, list(subject = ID), var))
```

```
## subject
```

##	1	2	3	4	5	6	7
##	4322.7340	4814.7783	5053.1626	15878.1773	14041.5665	3823.7288	0.0000
##	8	9	10	11	12	13	14
##	1259.8768	1489.3300	6004.9557	4195.9236	2975.1675	5199.3103	9305.7808
##	15	16	17	18	19	20	21
##	2650.2192	6509.6504	3496.9212	4122.2586	2054.6182	6235.8768	965.9015

```
##          22          23          24          25          26          27          28
##  975.3227 2907.1700  999.5764 2411.7389 5311.1773 15481.2562 1984.4644
##          29          30          31          32
## 3932.2808 6560.9926 9585.7340 27879.8645
```

```
library(lme4)
```

```
## Warning: package 'lme4' was built under R version 4.0.5
```

```
## Loading required package: Matrix
```

```
## Warning: package 'Matrix' was built under R version 4.0.4
```

```
mmmod <- lmer(Pickup.1st.minute ~ Tot.Scr.Time + (1|ID),screen_data_complete)
```

```
summary(mmmod)
```

```
## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Tot.Scr.Time + (1 | ID)
## Data: screen_data_complete
##
## REML criterion at convergence: 10652.4
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.7770 -0.5486 -0.0522  0.5066  6.4398
##
## Random effects:
## Groups Name Variance Std.Dev.
## ID      (Intercept) 3978     63.07
## Residual              5715     75.60
## Number of obs: 919, groups: ID, 32
##
## Fixed effects:
##              Estimate Std. Error t value
## (Intercept)  503.44918   14.06448   35.796
## Tot.Scr.Time  -0.01291    0.02404   -0.537
##
## Correlation of Fixed Effects:
##              (Intr)
## Tot.Scr.Tim -0.583
```

```
Overall:
```

```
soc_lmm <- lmer(Pickup.1st.minute ~ Tot.Soc.Time + (1|ID),screen_data_complete)
```

```
summary(soc_lmm)
```

```
## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Tot.Soc.Time + (1 | ID)
## Data: screen_data_complete
##
## REML criterion at convergence: 10651.3
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.8338 -0.5474 -0.0508  0.4972  6.4915
##
```

```

## Random effects:
##   Groups   Name      Variance Std.Dev.
##   ID       (Intercept) 3956     62.89
##   Residual          5717     75.61
## Number of obs: 919, groups: ID, 32
##
## Fixed effects:
##               Estimate Std. Error t value
## (Intercept)  496.80227   12.68237  39.173
## Tot.Soc.Time    0.01773    0.04404   0.403
##
## Correlation of Fixed Effects:
##              (Intr)
## Tot.Soc.Tim -0.439

pickups_lmm <- lmer(Pickup.1st.minute ~ Pickups + (1|ID),screen_data_complete)

summary(pickups_lmm)

## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Pickups + (1 | ID)
##   Data: screen_data_complete
##
## REML criterion at convergence: 10645.4
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.7767 -0.5620 -0.0331  0.4978  6.3446
##
## Random effects:
##   Groups   Name      Variance Std.Dev.
##   ID       (Intercept) 4284     65.45
##   Residual          5670     75.30
## Number of obs: 919, groups: ID, 32
##
## Fixed effects:
##               Estimate Std. Error t value
## (Intercept)  516.03637   14.01198  36.828
## Pickups      -0.16863    0.07444  -2.265
##
## Correlation of Fixed Effects:
##              (Intr)
## Pickups -0.535

lmm <- lmer(Pickup.1st.minute ~ Tot.Scr.Time + Tot.Soc.Time + Pickups + (1|ID),screen_data_complete)

summary(lmm)

## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Tot.Scr.Time + Tot.Soc.Time + Pickups + (1 |
##   ID)
##   Data: screen_data_complete
##
## REML criterion at convergence: 10654.1
##

```

```
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.8242 -0.5631 -0.0381  0.5072  6.3135
##
## Random effects:
##   Groups   Name            Variance Std.Dev.
##   ID       (Intercept) 4308      65.64
##   Residual                5675      75.33
## Number of obs: 919, groups: ID, 32
##
## Fixed effects:
##              Estimate Std. Error t value
## (Intercept)  518.13865   16.08946   32.204
## Tot.Scr.Time -0.02273    0.02734   -0.831
## Tot.Soc.Time  0.04908    0.05032    0.975
## Pickups      -0.17410    0.07496   -2.322
##
## Correlation of Fixed Effects:
##              (Intr) Tt.Scr.T Tt.Sc.Tm
## Tot.Scr.Tim -0.389
## Tot.Soc.Tim -0.074 -0.476
## Pickups     -0.429 -0.005  -0.097
```

School-Days:

```
weekday_data = screen_data_complete %>% filter(if_weekend == 0)
soc_weekday_lmm <- lmer(Pickup.1st.minute ~ Tot.Soc.Time + (1|ID),weekday_data)

summary(soc_weekday_lmm)
```

```
## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Tot.Soc.Time + (1 | ID)
##   Data: weekday_data
##
## REML criterion at convergence: 6217
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.8158 -0.4433 -0.0040  0.4601  7.0918
##
## Random effects:
##   Groups   Name            Variance Std.Dev.
##   ID       (Intercept) 3523      59.35
##   Residual                5196      72.08
## Number of obs: 539, groups: ID, 32
##
## Fixed effects:
##              Estimate Std. Error t value
## (Intercept)  478.34139   13.04665   36.66
## Tot.Soc.Time  0.04452    0.05707    0.78
##
## Correlation of Fixed Effects:
##              (Intr)
## Tot.Soc.Tim -0.545
```



```

mmod2 <- lmer(Pickup.1st.minute ~ Tot.Scr.Time + (1|ID),weekday_data)

summary(mmod2)

## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Tot.Scr.Time + (1 | ID)
## Data: weekday_data
##
## REML criterion at convergence: 6218.5
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.6872 -0.4455 -0.0062  0.4871  7.0055
##
## Random effects:
## Groups Name Variance Std.Dev.
## ID (Intercept) 3562 59.68
## Residual 5196 72.08
## Number of obs: 539, groups: ID, 32
##
## Fixed effects:
## Estimate Std. Error t value
## (Intercept) 489.66264 15.11421 32.397
## Tot.Scr.Time -0.01733 0.03110 -0.557
##
## Correlation of Fixed Effects:
## (Intr)
## Tot.Scr.Tim -0.686

weekday_pickups_lmm <- lmer(Pickup.1st.minute ~ Pickups + (1|ID), weekday_data)

summary(weekday_pickups_lmm)

## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Pickups + (1 | ID)
## Data: weekday_data
##
## REML criterion at convergence: 6203.5
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.7143 -0.4511 -0.0410  0.4863  6.8120
##
## Random effects:
## Groups Name Variance Std.Dev.
## ID (Intercept) 4247 65.17
## Residual 5018 70.84
## Number of obs: 539, groups: ID, 32
##
## Fixed effects:
## Estimate Std. Error t value
## (Intercept) 521.9787 15.7378 33.167
## Pickups -0.3714 0.1002 -3.707
##

```

```

## Correlation of Fixed Effects:
##      (Intr)
## Pickups -0.653
weekday_lmm <- lmer(Pickup.1st.minute ~ Tot.Scr.Time + Tot.Soc.Time + Pickups + (1|ID),weekday_data)

summary(weekday_lmm)

## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Tot.Scr.Time + Tot.Soc.Time + Pickups + (1 |
##      ID)
##      Data: weekday_data
##
## REML criterion at convergence: 6209.4
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.8295 -0.4655 -0.0529  0.4811  6.7527
##
## Random effects:
##  Groups   Name                Variance Std.Dev.
##  ID       (Intercept) 4352         65.97
##  Residual                    5003         70.73
## Number of obs: 539, groups: ID, 32
##
## Fixed effects:
##              Estimate Std. Error t value
## (Intercept)  525.38322   18.80722  27.935
## Tot.Scr.Time  -0.04422    0.03542  -1.249
## Tot.Soc.Time   0.10280    0.06515   1.578
## Pickups       -0.38566    0.10058  -3.834
##
## Correlation of Fixed Effects:
##              (Intr) Tt.Scr.T Tt.Sc.Tm
## Tot.Scr.Tim -0.427
## Tot.Soc.Tim -0.075 -0.495
## Pickups     -0.527  0.022  -0.083

Non-School Days:

weekend_data = screen_data_complete %>% filter(if_weekend == 1)
soc_weekend_lmm <- lmer(Pickup.1st.minute ~ Tot.Soc.Time + (1|ID),weekend_data)

summary(soc_weekend_lmm)

## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Tot.Soc.Time + (1 | ID)
##      Data: weekend_data
##
## REML criterion at convergence: 4421.2
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.2213 -0.5734 -0.0414  0.5996  3.1361
##
## Random effects:

```

```

## Groups   Name            Variance Std.Dev.
## ID       (Intercept) 4835      69.54
## Residual                5458      73.88
## Number of obs: 380, groups: ID, 32
##
## Fixed effects:
##              Estimate Std. Error t value
## (Intercept)  526.26886   15.25458  34.499
## Tot.Soc.Time -0.04219    0.06356  -0.664
##
## Correlation of Fixed Effects:
##              (Intr)
## Tot.Soc.Tim -0.537
mmod3 <- lmer(Pickup.1st.minute ~ Tot.Scr.Time + (1|ID),weekend_data)

summary(mmod3)

## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Tot.Scr.Time + (1 | ID)
## Data: weekend_data
##
## REML criterion at convergence: 4422.6
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.2229 -0.5685 -0.0506  0.6059  3.1611
##
## Random effects:
## Groups   Name            Variance Std.Dev.
## ID       (Intercept) 4796      69.26
## Residual                5465      73.93
## Number of obs: 380, groups: ID, 32
##
## Fixed effects:
##              Estimate Std. Error t value
## (Intercept)  526.70415   17.75467  29.666
## Tot.Scr.Time -0.01669    0.03489  -0.478
##
## Correlation of Fixed Effects:
##              (Intr)
## Tot.Scr.Tim -0.692
weekend_pickups_lmm <- lmer(Pickup.1st.minute ~ Pickups + (1|ID), weekend_data)

summary(weekend_pickups_lmm)

## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Pickups + (1 | ID)
## Data: weekend_data
##
## REML criterion at convergence: 4418.5
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max

```

```

## -3.2721 -0.5640 -0.0486  0.5934  3.1189
##
## Random effects:
##   Groups   Name              Variance Std.Dev.
##   ID       (Intercept) 4554        67.48
##   Residual                5459        73.88
## Number of obs: 380, groups:  ID, 32
##
## Fixed effects:
##               Estimate Std. Error t value
## (Intercept) 505.7923    16.1727  31.274
## Pickups      0.1531     0.1043   1.468
##
## Correlation of Fixed Effects:
##           (Intr)
## Pickups -0.633
weekend_lmm <- lmer(Pickup.1st.minute ~ Tot.Scr.Time + Tot.Soc.Time + Pickups + (1|ID),weekend_data)
summary(weekend_lmm)

## Linear mixed model fit by REML ['lmerMod']
## Formula: Pickup.1st.minute ~ Tot.Scr.Time + Tot.Soc.Time + Pickups + (1 |
##      ID)
##      Data: weekend_data
##
## REML criterion at convergence: 4425.9
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.2542 -0.5583 -0.0511  0.5855  3.1465
##
## Random effects:
##   Groups   Name              Variance Std.Dev.
##   ID       (Intercept) 4587        67.73
##   Residual                5473        73.98
## Number of obs: 380, groups:  ID, 32
##
## Fixed effects:
##               Estimate Std. Error t value
## (Intercept) 513.898015  19.887540  25.840
## Tot.Scr.Time -0.008723   0.039301  -0.222
## Tot.Soc.Time -0.051266   0.072368  -0.708
## Pickups      0.169185   0.105917   1.597
##
## Correlation of Fixed Effects:
##           (Intr) Tt.Scr.T Tt.Sc.Tm
## Tot.Scr.Tim -0.475
## Tot.Soc.Tim -0.079 -0.456
## Pickups     -0.447 -0.014  -0.141

```