# SHUTi CARE Descriptives

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3/19/23

##Environment set-up

```
setwd("Z:/Research/Psychiatry and NB Sciences/PSYCH_eHealth/Kelly's Data/00. NCATS/Data & Analyses/Quant
getwd()

#install.packages('tidyverse')
#install.packages('Hmisc')
#install.packages('car')
#install.packages('ltm')

library(Hmisc)
library(car)
library(ltm)
library(tidyverse)
```

##Data import & management Baseline

```
#Import data for continuous variables
baseline.number<-read.csv("SHUTi-CARE_Baseline_Final numeric_2023 01 18_deid.csv")
baseline.number<-as.data.frame(baseline.number)

#Rename continuous variables
baseline.number<-baseline.number %>%
rename('QDuration (in seconds)' = 'Duration..in.seconds.',
QRecordedDate=RecordedDate,
QResponseId=ResponseId,
age=Q1.1,
total_CR=Q160,
CR_age=Q191,
care_duration_y=Q1.14_1,
care_duration_m=Q1.14_2,
overload1=Q3.1_1,
overload2=Q3.1_2,
overload3=Q3.1_3,
overload4=Q3.1_4,
cgefficacy1=Q3.2_1,
cgefficacy2=Q3.2_2,
cgefficacy3=Q3.3_1,
cgefficacy4=Q3.3_2,
guilt_selfcare1=Q164_1,
guilt_dowrong1=Q164_2,
```

```
guilt_notrise1=Q164_3,
guilt_notrise2=Q164_4,
guilt_selfcare2=Q164_5,
guilt_dowrong2=Q164_6,
guilt_notrise3=Q164_7,
guilt_dowrong3=Q164_8,
guilt_dowrong4=Q164_9,
guilt_dowrong5=Q164_10,
guilt_notrise4=Q164_11,
guilt_dowrong6=Q164_12,
guilt_selfcare3=Q164_13,
guilt_selfcare4=Q164_14,
guilt_dowrong7=Q164_15,
guilt_notrise5=Q164_16,
guilt_notrise6=Q164_17,
adl_bowels=Q175,
adl_bladder=Q176,
adl_grooming=Q177,
adl_toilet=Q178,
adl_feeding=Q179,
adl_transfer=Q180,
adl_mobility=Q181,
adl_dressing=Q182.1,
adl_stairs=Q183,
adl_bathing=Q184.2,
pss_cognitive1=Q166_1,
pss_cognitive2=Q166_2,
pss_cognitive3=Q166_3,
pss_cognitive4=Q166_4,
pss_cognitive5=Q166_5,
pss_cognitive6=Q166_6,
pss_cognitive7=Q166_7,
pss_cognitive8=Q166_8,
pss_behavior1=Q167_1,
pss_behavior2=Q167_2,
pss_behavior3=Q167_3,
pss_behavior4=Q167_4,
pss_behavior5=Q167_5,
pss_behavior6=Q167_6,
pss_behavior7=Q167_7,
pss_behavior8=Q167_8,
pss_behavior9=Q167_9,
pss_behavior10=Q167_10,
pss_behavior11=Q167_11,
pss_behavior12=Q167_12,
pss_behavior13=Q167_13,
pss_behavior14=Q167_14,
adl_tasks=Q170,
iadl_tasks=Q172,
med_nursing_tasks=Q174,
isi_2=Q5.6,
isi_3=Q5.7,
dbas_1=Q5.11,
```

```
dbas_2=Q5.12,
dbas_3=Q5.13,
dbas_4=Q5.14,
dbas_5=Q5.15,
dbas_6=Q5.16,
dbas_7=Q5.17,
dbas_8=Q5.18,
dbas_9=Q5.19,
dbas_10=Q5.20,
dbas_11=Q5.21,
dbas_12=Q5.22,
dbas_13=Q5.23,
dbas_14=Q5.24,
dbas_15=Q5.25,
dbas_16=Q5.26,
sloc1=Q5.29_1,
sloc2=Q5.29_2,
sloc3=Q5.29_3,
sloc4=Q5.29_4,
sloc5=Q5.29_5,
sloc6=Q5.29_6,
sloc7=Q5.29_7,
sloc8=Q5.29_8,
sleep_diff_precg=Q193,
sleep_diff_bc_cg=Q194,
promis_physhealth1=Q185,
promis_physhealth2=Q186,
phq4_1=Q189_1,
phq4_2=Q189_2,
phq4_3=Q189_3,
phq4_4=Q189_4,
complete=Q195)

##Import data for ordinal variables
baseline.ordinal<-read.csv("SHUTi-CARE_Baseline_Final text_2023 01 18_deid.csv")
baseline.ordinal<-as.data.frame(baseline.ordinal)

##Rename ordinal variables
baseline.ordinal<-baseline.ordinal %>%
rename(gender=Q1.2,
gender_other=Q1.2_3_TEXT,
sex=Q190,
race=Q182,
race_other=Q182_6_TEXT,
ethnicity=Q184,
work=Q1.4,
work_other=Q1.4_9_TEXT,
income=Q1.5,
education=Q184.1,
income_perceived=Q1.6,
health_literacy=Q1.8,
CR_relationship=Q1.10,
CR_relationship_other=Q1.10_14_TEXT,
```

```
CR_live=Q1.11,
CR_same_room=Q1.12,
CR_other_live=Q163,
CR_other_live_other=Q163_9_TEXT,
CR_condition=Q1.13,
Quuid=uuid)

#Merge datasets
baseline.number<-baseline.number %>%
  dplyr::select(-starts_with("Q"))
baseline.ordinal<-baseline.ordinal %>%
  dplyr::select(-starts_with("Q"))

baseline<- merge(baseline.ordinal, baseline.number, by.x = "PID", by.y = "PID", all = TRUE)
rm(baseline.number, baseline.ordinal)
```

Post-A User

```
#Import data for continuous variables
postuser.number<-read.csv("SHUTi-CARE_Post (User)_Final numeric_2023 03 08_deid.csv")
postuser.number<-as.data.frame(postuser.number)

#Rename continuous variables
postuser.number<-postuser.number %>%
  rename('QDuration (in seconds)'='Duration..in.seconds.',
QRecordedDate=RecordedDate,
QResponseId=ResponseId,
isi1=Q5.6,
isi2=Q5.7,
dbas1=Q5.11,
dbas2=Q5.12,
dbas3=Q5.13,
dbas4=Q5.14,
dbas5=Q5.15,
dbas6=Q5.16,
dbas7=Q5.17,
dbas8=Q5.18,
dbas9=Q5.19,
dbas10=Q5.20,
dbas11=Q5.21,
dbas12=Q5.22,
dbas13=Q5.23,
dbas14=Q5.24,
dbas15=Q5.25,
dbas16=Q5.26,
sloc1=Q5.29_1,
sloc2=Q5.29_2,
sloc3=Q5.29_3,
sloc4=Q5.29_4,
sloc5=Q5.29_5,
sloc6=Q5.29_6,
sloc7=Q5.29_7,
sloc8=Q5.29_8,
```

```
overload1=Q3.1_1,
overload2=Q3.1_2,
overload3=Q3.1_3,
overload4=Q3.1_4,
promis.ph1=Q296,
promis.ph2=Q297,
phq1=Q299_1,
phq2=Q299_2,
phq3=Q299_3,
phq4=Q299_4)

##Import data for ordinal variables
postuser.ordinal<-read.csv("SHUTi-CARE_Post (User)_Final text_2023 03 08_deid.csv")
postuser.ordinal<-as.data.frame(postuser.ordinal)

##Rename ordinal variables
postuser.ordinal<-postuser.ordinal %>%
  rename(eval.needs=QID187,
eval.needs.how=Q191,
eval.needs.different=Q193,
eval.recommend=Q195,
eval.recommend.different=Q197,
eval.recommend.why=Q199,
eval.satisfiedCSQ=Q201,
eval.satisfied.why=Q203,
eval.satisfied.different=Q205,
eval.again=Q207,
eval.again.different=Q209,
eval.again.why=Q211,
eval.cg_responsibilities=Q215,
eval.cg_help=Q217,
eval.cg_format=Q219,
eval.cg_changes=Q221,
eval.tailor=Q223,
eval.convenience=Q229,
eval.satisfiedIIUQ=QID212,
eval.accept=QID213,
eval.useful=QID214,
eval.helpful=QID223,
eval.website_work_you=QID225,
eval.follow=QID231,
eval.improve_sleep=Q301,
eval.improve_cg=Q317,
adherence.forgot=Q331,
adherence.preferred_not=Q333,
adherence.no_time=Q335,
adherence.cg_issues=Q347,
adherence.too_much=Q361,
adherence.too_long=Q363,
adherence.website_wont_help=Q365,
adherence.rules=Q369,
adherence.spouse=Q371,
adherence.cr=Q293,
```

```
adherence.sleep_restrict=Q373,
adherence.hw_amount=Q377,
adherence.hw_difficult=Q379,
adherence.personal_email=Q383,
adherence.phone=Q385,
adherence.supportcall=Q387,
adherence.forum=Q318,
cg_changes=Q294,
cg_changes1=Q295,
wearables=Q319,
wearables1=Q320,
futurecontact=Q304,
Qurl=url,
Quuid=uuid)

#Merge datasets
postuser.number<-postuser.number %>%
  dplyr::select(-starts_with("Q"))
postuser.ordinal<-postuser.ordinal %>%
  dplyr::select(-starts_with("Q"))

postuser<- merge(postuser.ordinal, postuser.number, by.x = "PID", by.y = "PID", all = TRUE)
rm(postuser.number, postuser.ordinal)
```

Post-A Non-user

```
#Import data for continuous variables
postnonuser.number<-read.csv("SHUTi-CARE_Post (No SHUTi)_Final numeric_2023 03 08_deid.csv")
postnonuser.number<-as.data.frame(postnonuser.number)

#Rename continuous variables
postnonuser.number<- postnonuser.number %>%
  rename('QDuration (in seconds)'='Duration..in.seconds.',
QRecordedDate=RecordedDate,
QResponseId=ResponseId,
isi1=Q9,
isi2=Q10,
overload1=Q66_1,
overload2=Q66_2,
overload3=Q66_3,
overload4=Q66_4,
promis.ph1=Q61,
promis.ph2=Q62,
phq1=Q64_1,
phq2=Q64_2,
phq3=Q64_3,
phq4=Q64_4)

##Import data for ordinal variables
postnonuser.ordinal<-read.csv("SHUTi-CARE_Post (No SHUTi)_Final text_2023 03 08_deid.csv")
postnonuser.ordinal<-as.data.frame(postnonuser.ordinal)

##Rename ordinal variables
```

```
postnonuser.ordinal<- postnonuser.ordinal %>%
  rename(barriers=Q18,
barriers.other=Q18_8_TEXT,
barriers.relevant=Q20,
barriers.lifestyle=Q21,
barriers.interest=Q22,
barriers.complicated=Q23,
barriers.time=Q24,
barriers.unhelpful=Q25,
barriers.no_need=Q26,
cg_changes=Q67,
cg_changes1=Q68,
wearables=Q69,
wearables1=Q72,
futurecontact=Q65,
Quuid=uuid)

#Merge datasets
postnonuser.number<-postnonuser.number %>%
  dplyr::select(-starts_with("Q"))
postnonuser.ordinal<-postnonuser.ordinal %>%
  dplyr::select(-starts_with("Q"))

postnonuser<- merge(postnonuser.ordinal, postnonuser.number, by.x = "PID", by.y = "PID", all = TRUE)
rm(postnonuser.number, postnonuser.ordinal)
```

Core completion and engagement data

```
#Compute number of Cores completed within 9-week Intervention period
uniqueIDs <- unique(baseline$PID)
dat_rawEvents <- read.csv("Z:/Research/Psychiatry and NB Sciences/PSYCH_eHealth/Kelly's Data/00. NCATS/
dat_rawEvents <- dat_rawEvents[which(dat_rawEvents$PID %in% uniqueIDs), ]
rawDat<- dat_rawEvents

intdat <- uniqueIDs
intdat <- as.data.frame(intdat)
names(intdat) <- "PID"

day0Marker <-"Event::Day0"
dat_rawEvents$day0data <- ifelse(str_detect(dat_rawEvents$Event.Type, day0Marker),1,0)
day0data <- dat_rawEvents[which(dat_rawEvents$day0data==1),]
day0data <- day0data[c(4,9)]
names(day0data) <- c("PID", "Day0Date")

rawDat <- left_join(rawDat, day0data, by = "PID")

PostMarker <-"Post Questionnaire transitioned to Available"
dat_rawEvents$postdaydata <- ifelse(str_detect(dat_rawEvents$Description, PostMarker),1,0)
postdaydata <- dat_rawEvents[which(dat_rawEvents$postdaydata==1),]
postdaydata <- postdaydata[c(4,9)]
names(postdaydata) <- c("PID", "PostAvailDate")

rawDat <- left_join(rawDat, postdaydata, by = "PID")
```

```
rawDat$PostIntended<- as_datetime(rawDat$Day0Date) + days(63)
rawDat$PostIntended<- ymd_hms(rawDat$PostIntended, tz = "UTC")

rawDat$utctime.created<-str_replace(rawDat$Created.At, "UTC", "")
rawDat$utctime.created<-ymd_hms(rawDat$utctime.created, tz = "UTC")

rawDat$utctime.day0<-str_replace(rawDat$Day0Date, "UTC", "")
rawDat$utctime.day0<-ymd_hms(rawDat$utctime.day0, tz = "UTC")

rawDat$postDay0<- ifelse(rawDat$utctime.created > rawDat$utctime.day0, "Yes", "No")

rawDat$utctime.postday<-str_replace(rawDat$PostAvailDate, "UTC", "")
rawDat$utctime.postday<-ymd_hms(rawDat$utctime.postday, tz = "UTC")


rawDat$prePostAvail<- ifelse(rawDat$utctime.created < rawDat$utctime.postday, "Yes", "No")
rawDat$prePostIntend<- ifelse(rawDat$utctime.created < rawDat$PostIntended, "Yes", "No")
rawDat$prePost<- coalesce(rawDat$prePostAvail, rawDat$prePostIntend)



rawDat$inWindow <- ifelse(rawDat$postDay0 == "Yes" & rawDat$prePost == "Yes",
                          "Retain", "Remove")
rawDat_reduced <- rawDat[which(rawDat$inWindow=="Retain"),]

completed <- "transitioned to Completed"
rawDat_reduced$CoresComp <- ifelse(str_detect(rawDat_reduced$Description, completed),
                                   "Yes", "No")
rawDat_reduced <- rawDat_reduced[which(rawDat_reduced$CoresComp=="Yes"),]

core <- "Activity: Core"
rawDat_reduced$Core <- ifelse(str_detect(rawDat_reduced$Description, core),
                                   "Yes", "No")
rawDat_reduced <- rawDat_reduced[which(rawDat_reduced$Core=="Yes"),]


rawDat_corecomp<- aggregate(data = rawDat_reduced,
                      Description ~ PID,
                      function(Description) length(unique(Description)))

names(rawDat_corecomp) <- c("PID", "int_cores_comp")


#Compute total cores complete
rawDat$inWindowTot <- ifelse(rawDat$postDay0 == "Yes",
                          "Retain", "Remove")
rawDat_reduced <- rawDat[which(rawDat$inWindowTot=="Retain"),]

completed <- "transitioned to Completed"
rawDat_reduced$CoresComp <- ifelse(str_detect(rawDat_reduced$Description, completed),
                                   "Yes", "No")
rawDat_reduced <- rawDat_reduced[which(rawDat_reduced$CoresComp=="Yes"),]
```

```
core <- "Activity: Core"
rawDat_reduced$Core <- ifelse(str_detect(rawDat_reduced$Description, core),
                                        "Yes", "No")
rawDat_reduced <- rawDat_reduced[which(rawDat_reduced$Core=="Yes"),]


rawDat_totcorecomp<- aggregate(data = rawDat_reduced,
                       Description ~ PID,
                       function(Description) length(unique(Description)))

names(rawDat_totcorecomp) <- c("PID", "tot_cores_comp")
coreDat<-merge(rawDat_corecomp, rawDat_totcorecomp, by = "PID", all = TRUE)

uniqueIDs<-as.data.frame(uniqueIDs)
names(uniqueIDs)<-"PID"
coreDat<- merge(x=uniqueIDs, y=coreDat, by.x = "PID", by.y = "PID", all.x = TRUE)
coreDat$int_cores_comp <- replace_na(coreDat$int_cores_comp, 0)
coreDat$tot_cores_comp <- replace_na(coreDat$tot_cores_comp, 0)

#Compute User variable
coreDat$user<- ifelse(coreDat$int_cores_comp > 0, "User", "Non-user")
coreDat$engagement<- ifelse(coreDat$user == "Non-user", "Non-user", ifelse(coreDat$int_cores_comp >= 4,

#Remove dropped participant
coreDat<- coreDat %>%
  filter(PID != 202)

#write.csv(coreDat, "Z:/Research/Psychiatry and NB Sciences/PSYCH_eHealth/Kelly's Data/00. NCATS/Data &

rm(rawDat, dat_rawEvents, day0data, intdat, uniqueIDs, postdaydata, rawDat_corecomp, rawDat_reduced, ra
```

Interest form data

```
#Import data for continuous variables
interest<-read.csv("Z:/Research/Psychiatry and NB Sciences/PSYCH_eHealth/Kelly's Data/00. NCATS/Data & A
interest<-as.data.frame(interest)
```

Create full long dataset for cleaning

```
baselinern<-baseline
names(baselinern)<- paste(names(baselinern), "T1", sep=".")

postuserrn<-postuser
names(postuserrn)<- paste(names(postuserrn), "T2u", sep=".")

data<- merge(baselinern, postuserrn, by.x = "PID.T1", by.y = "PID.T2u", all = TRUE)


postnonuserrn<-postnonuser
names(postnonuserrn)<- paste(names(postnonuserrn), "T2n", sep=".")

data<- merge(data, postnonuserrn, by.x = "PID.T1", by.y = "PID.T2n", all = TRUE)
```

```
data<- merge(data, coreDat, by.x = "PID.T1", by.y = "PID", all = TRUE)

data<- merge(data, interest, by.x = "PID.T1",  by.y = "PID", all.x = TRUE)

#Remove participant who dropped out after completing baseline questionnaire (i.e., never received acces
data<-data %>%
  filter(PID.T1 != 202)

#Remove participant who withdrew during the intervention period (i.e., did not have full 9-week interve
data<-data %>%
  filter(PID.T1 != 607)

rm(baseline, baselinern, coreDat, postnonuser, postnonuserrn, postuser, postuserrn, interest)
```

##Data cleaning Demographics

```
#Age
data$age.T1<-car::recode(data$age.T1,'4 = 18;
5 = 19;
6 = 20;
7 = 21;
8 = 22;
9 = 23;
10 = 24;
11 = 25;
12 = 26;
13 = 27;
14 = 28;
15 = 29;
16 = 30;
17 = 31;
18 = 32;
19 = 33;
20 = 34;
21 = 35;
22 = 36;
23 = 37;
24 = 38;
25 = 39;
26 = 40;
27 = 41;
28 = 42;
29 = 43;
30 = 44;
31 = 45;
32 = 46;
33 = 47;
34 = 48;
35 = 49;
36 = 50;
37 = 51;
38 = 52;
39 = 53;
```

```
40 = 54;
41 = 55;
42 = 56;
43 = 57;
44 = 58;
45 = 59;
46 = 60;
47 = 61;
48 = 62;
49 = 63;
50 = 64;
51 = 65;
52 = 66;
53 = 67;
54 = 68;
55 = 69;
56 = 70;
57 = 71;
58 = 72;
59 = 73;
60 = 74;
61 = 75;
62 = 76;
63 = 77;
64 = 78;
65 = 79;
66 = 80;
67 = 81;
68 = 82;
69 = 83;
70 = 84;
71 = 85;
72 = 86;
73 = 87;
74 = 88;
75 = 89;
76 = 90')
describe(data$age.T1)

#Gender
data<- data %>%
  mutate(gender_r = ifelse((gender.T1 == "Female") & (sex.T1 == "Female"), "Woman", "other"))
data<- data %>%
  mutate(gender_r = ifelse((gender.T1 == "Female") & (sex.T1 == "Male"), "Transgender woman", gender_r))
data<- data %>%
  mutate(gender_r = ifelse((gender.T1 == "Male") & (sex.T1 == "Male"), "Man", gender_r))
data<- data %>%
  mutate(gender_r = ifelse((gender.T1 == "Male") & (sex.T1 == "Female"), "Transgender man", gender_r))
data<- data %>%
  mutate(gender_r = ifelse((gender.T1 == "Genderqueer"), "Genderqueer / Non-binary", gender_r))
table(data$gender_r)

#Race
```

```
table(data$race.T1)
data<-data %>%
  mutate(race_r = ifelse((race.T1 == "Native Hawaiian or Other Pacific Islander") | (race.T1 == "Other"

#Ethnicity
table(data$ethnicity.T1)

#Income
table(data$income.T1)

#Education
table(data$education.T1)

#Health Literacy
table(data$health_literacy.T1)

#Years Providing Care
table(data$care_duration_y.T1)
data$care_dur_yr = car::recode(data$care_duration_y.T1, '1 = 0; 2 = 1; 3 = 2; 4 = 3; 5 = 4; 6 = 5; 7 = 
data$care_dur_yr<-as.numeric(data$care_dur_yr)
data$care_duration_y.T1<- car::recode(data$care_duration_y.T1, '1 = "0"; 2 = "1"; 3 = "2"; 4 = "3"; 5 =


table(data$care_duration_m.T1)
data$care_dur_mo = car::recode(data$care_duration_m.T1, '1 = 0; 2 = 1; 3 = 2; 4 = 3; 5 = 4; 6 = 5; 7 = 
data$care_dur_mo<-as.numeric(data$care_dur_mo)
data$care_duration_m.T1<- car::recode(data$care_duration_m.T1, '1 = "0"; 2 = "1"; 3 = "2"; 4 = "3"; 5 =


data<-data %>%
  mutate(care_dur = ((care_dur_yr*12) + care_dur_mo))

describe(data$care_dur)


#Caregiving intensity
table(data$intensity.class)
describe(data$intensity.points)


#Primary care recipient age
table(data$CR_age.T1)
data$CR_age_r<-car::recode(data$CR_age.T1, '4 = 0;
92 = 1;
93 = 2;
94 = 3;
95 = 4;
96 = 5;
97 = 6;
98 = 7;
5 = 8;
99 = 9;
100 = 10;
```

```
101 = 11;
102 = 12;
103 = 13;
104 = 14;
105 = 15;
106 = 16;
107 = 17;
108 = 18;
109 = 19;
110 = 20;
111 = 21;
112 = 22;
113 = 23;
114 = 24;
115 = 25;
116 = 26;
117 = 27;
118 = 28;
119 = 29;
120 = 30;
121 = 31;
122 = 32;
123 = 33;
124 = 34;
125 = 35;
126 = 36;
127 = 37;
128 = 38;
129 = 39;
130 = 40;
131 = 41;
132 = 42;
133 = 43;
134 = 44;
135 = 45;
136 = 46;
137 = 47;
138 = 48;
139 = 49;
140 = 50;
141 = 51;
142 = 52;
143 = 53;
144 = 54;
145 = 55;
146 = 56;
147 = 57;
148 = 58;
149 = 59;
150 = 60;
151 = 61;
152 = 62;
153 = 63;
```

```
154 = 64;
155 = 65;
156 = 66;
157 = 67;
158 = 68;
159 = 69;
160 = 70;
161 = 71;
162 = 72;
163 = 73;
164 = 74;
165 = 75;
166 = 76;
167 = 77;
168 = 78;
169 = 79;
170 = 80;
171 = 81;
172 = 82;
173 = 83;
174 = 84;
175 = 85;
176 = 86;
177 = 87;
178 = 88;
179 = 89;
180 = 90')

data$CR_age.T1<-car::recode(data$CR_age.T1, '4 = "Less than 1 year old";
92 = "1";
93 = "2";
94 = "3";
95 = "4";
96 = "5";
97 = "6";
98 = "7";
5 = "8";
99 = "9";
100 = "10";
101 = "11";
102 = "12";
103 = "13";
104 = "14";
105 = "15";
106 = "16";
107 = "17";
108 = "18";
109 = "19";
110 = "20";
111 = "21";
112 = "22";
113 = "23";
114 = "24";
```

```
115 = "25";
116 = "26";
117 = "27";
118 = "28";
119 = "29";
120 = "30";
121 = "31";
122 = "32";
123 = "33";
124 = "34";
125 = "35";
126 = "36";
127 = "37";
128 = "38";
129 = "39";
130 = "40";
131 = "41";
132 = "42";
133 = "43";
134 = "44";
135 = "45";
136 = "46";
137 = "47";
138 = "48";
139 = "49";
140 = "50";
141 = "51";
142 = "52";
143 = "53";
144 = "54";
145 = "55";
146 = "56";
147 = "57";
148 = "58";
149 = "59";
150 = "60";
151 = "61";
152 = "62";
153 = "63";
154 = "64";
155 = "65";
156 = "66";
157 = "67";
158 = "68";
159 = "69";
160 = "70";
161 = "71";
162 = "72";
163 = "73";
164 = "74";
165 = "75";
166 = "76";
167 = "77";
```

```
168 = "78";
169 = "79";
170 = "80";
171 = "81";
172 = "82";
173 = "83";
174 = "84";
175 = "85";
176 = "86";
177 = "87";
178 = "88";
179 = "89";
180 = "90 or older"')


#Caregiver Relationship to Patient
table(data$CR_relationship.T1)


#Primary care recipient primary condition
table(data$CR_condition.T1)
```

Caregiving-related User Characteristics

```
#Pearlin Stress Scale (PSS) - Overload Subscale
##4 items, All positively scored
##No recoding necessary
##Run descriptives
describe(data$overload1.T1)
describe(data$overload2.T1)
describe(data$overload3.T1)
describe(data$overload4.T1)

describe(data$overload1.T2u)
describe(data$overload2.T2u)
describe(data$overload3.T2u)
describe(data$overload4.T2u)

describe(data$overload1.T2n)
describe(data$overload2.T2n)
describe(data$overload3.T2n)
describe(data$overload4.T2n)

##Calculate cronbach alpha
overload.T1<- data %>%
  dplyr::select(overload1.T1, overload2.T1, overload3.T1, overload4.T1)
ltm::cronbach.alpha(overload.T1, na.rm=TRUE)

overload.T2u<- data %>%
  dplyr::select(overload1.T2u, overload2.T2u, overload3.T2u, overload4.T2u)
ltm::cronbach.alpha(overload.T2u, na.rm=TRUE)

overload.T2n<- data %>%
```

```
  dplyr::select(overload1.T2n, overload2.T2n, overload3.T2n, overload4.T2n)
ltm::cronbach.alpha(overload.T2n, na.rm=TRUE)

rm(overload.T1, overload.T2u, overload.T2n)

##Compute subscale score
data %>%
  dplyr::select(PID.T1, overload1.T1, overload2.T1, overload3.T1, overload4.T1) %>%
  mutate(overload.T1 = overload1.T1 + overload2.T1 + overload3.T1 + overload4.T1) %>%
  view()

data<-data %>%
  mutate(overload.T1 = overload1.T1 + overload2.T1 + overload3.T1 + overload4.T1)


data %>%
  dplyr::select(PID.T1, overload1.T2u, overload2.T2u, overload3.T2u, overload4.T2u) %>%
  mutate(overload.T2u = overload1.T2u + overload2.T2u + overload3.T2u + overload4.T2u) %>%
  view()

data<-data %>%
  mutate(overload.T2u = overload1.T2u + overload2.T2u + overload3.T2u + overload4.T2u)


data %>%
  dplyr::select(PID.T1, overload1.T2n, overload2.T2n, overload3.T2n, overload4.T2n) %>%
  mutate(overload.T2n = overload1.T2n + overload2.T2n + overload3.T2n + overload4.T2n) %>%
  view()

data<-data %>%
  mutate(overload.T2n = overload1.T2n + overload2.T2n + overload3.T2n + overload4.T2n)
#End PSS - Overload Subscale


#Pearlin Stress Scale (PSS) - Caregiving Competence Subscale
##4 items
##No recoding necessary
##Run descriptives
describe(data$cgefficacy1.T1)
describe(data$cgefficacy2.T1)
describe(data$cgefficacy3.T1)
describe(data$cgefficacy4.T1)

##Calculate cronbach alpha for subscale
cgefficacy<- data %>%
  dplyr::select(cgefficacy1.T1:cgefficacy4.T1)
ltm::cronbach.alpha(cgefficacy, na.rm=TRUE)

rm(cgefficacy)

##Compute subscale score
data %>%
  dplyr::select(PID.T1, cgefficacy1.T1, cgefficacy2.T1, cgefficacy3.T1, cgefficacy4.T1) %>%
```

```
  mutate(cgefficacy.T1 = cgefficacy1.T1 + cgefficacy2.T1 + cgefficacy3.T1 + cgefficacy4.T1) %>%
  view()

data<-data %>%
  mutate(cgefficacy.T1 = cgefficacy1.T1 + cgefficacy2.T1 + cgefficacy3.T1 + cgefficacy4.T1)
#End PSS - Caregiving Competence Subscale



#Caregiver Guilt Questionnaire
##Only used 3 of 5 subscales in SHUTi CARE Study.
##Begin Guilt about Doing Wrong by the Care Recipient Subscale (of Caregiver Guilt Questionnaire)
###7 items
###All positively scored
###Original items #2, 8, 10, 11, 12, 14, 20; baseline questionnaire items #2, 6, 8, 9, 10, 12, 15.
describe(data$guilt_dowrong1.T1)
describe(data$guilt_dowrong2.T1)
describe(data$guilt_dowrong3.T1)
describe(data$guilt_dowrong4.T1)
describe(data$guilt_dowrong5.T1)
describe(data$guilt_dowrong6.T1)
describe(data$guilt_dowrong7.T1)

###RECODE: all items in original manuscript were scored on a scale of 0 (never) to 4 (always or almost
data$guilt_dowrong1.T1 <-car::recode(data$guilt_dowrong1.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_dowrong2.T1 <-car::recode(data$guilt_dowrong2.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_dowrong3.T1 <-car::recode(data$guilt_dowrong3.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_dowrong4.T1 <-car::recode(data$guilt_dowrong4.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_dowrong5.T1 <-car::recode(data$guilt_dowrong5.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_dowrong6.T1 <-car::recode(data$guilt_dowrong6.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_dowrong7.T1 <-car::recode(data$guilt_dowrong7.T1,'1=0; 2=1; 3=2; 4=3; 5=4')

###Repeat descriptives after recoding.
describe(data$guilt_dowrong1.T1)
describe(data$guilt_dowrong2.T1)
describe(data$guilt_dowrong3.T1)
describe(data$guilt_dowrong4.T1)
describe(data$guilt_dowrong5.T1)
describe(data$guilt_dowrong6.T1)
describe(data$guilt_dowrong7.T1)

###Compute subscale score and calculate cronbach alpha for subscale.
cgguilt_wrong.T1 <-data %>%
  dplyr::select(guilt_dowrong1.T1, guilt_dowrong2.T1, guilt_dowrong3.T1, guilt_dowrong4.T1, guilt_dowro
ltm::cronbach.alpha(cgguilt_wrong.T1)

rm(cgguilt_wrong.T1)


data %>%
  dplyr::select(PID.T1, guilt_dowrong1.T1, guilt_dowrong2.T1, guilt_dowrong3.T1, guilt_dowrong4.T1, gui
  mutate(cgguilt_wrong.T1 = guilt_dowrong1.T1 + guilt_dowrong2.T1 + guilt_dowrong3.T1 + guilt_dowrong4.
  View()
```

```
data <- data %>%
  mutate(cgguilt_wrong.T1 = guilt_dowrong1.T1 + guilt_dowrong2.T1 + guilt_dowrong3.T1 + guilt_dowrong4.T
##End Guilt about Doing Wrong by the Care Recipient Subscale (of Caregiver Guilt Questionnaire)


##Begin Guilt about Failing to Meet the Challenges of Caregiver Subscale (of Caregiver Guilt Questionna
###6 items
###5 positively scored, manuscript item 6/baseline question 4 inversely scored
###Original items #5, 6, 9, 13, 21, 22; baseline questionnaire items #3, 4, 7, 11, 16, 17.
describe(data$guilt_notrise1.T1)
describe(data$guilt_notrise2.T1)
describe(data$guilt_notrise3.T1)
describe(data$guilt_notrise4.T1)
describe(data$guilt_notrise5.T1)
describe(data$guilt_notrise6.T1)

###RECODE: all items in original manuscript were scored on a scale of 0 (never) to 4 (always or almost
###Item guilt_notrise2.T1 should be reverse scored.
data$guilt_notrise1.T1<- car::recode(data$guilt_notrise1.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_notrise2.T1<- car::recode(data$guilt_notrise2.T1,'1=4; 2=3; 3=2; 4=1; 5=0')
data$guilt_notrise3.T1<- car::recode(data$guilt_notrise3.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_notrise4.T1<- car::recode(data$guilt_notrise4.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_notrise5.T1<- car::recode(data$guilt_notrise5.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_notrise6.T1<- car::recode(data$guilt_notrise6.T1,'1=0; 2=1; 3=2; 4=3; 5=4')

###Repeat descriptives after recoding.
describe(data$guilt_notrise1.T1)
describe(data$guilt_notrise2.T1)
describe(data$guilt_notrise3.T1)
describe(data$guilt_notrise4.T1)
describe(data$guilt_notrise5.T1)
describe(data$guilt_notrise6.T1)

###Compute subscale score and calculate cronbach alpha for subscale.
cgguilt_fail.T1 <-data %>%
  dplyr::select(guilt_notrise1.T1, guilt_notrise2.T1, guilt_notrise3.T1, guilt_notrise4.T1, guilt_notris
ltm::cronbach.alpha(cgguilt_fail.T1)

rm(cgguilt_fail.T1)


data %>%
  dplyr::select(PID.T1, guilt_notrise1.T1, guilt_notrise2.T1, guilt_notrise3.T1, guilt_notrise4.T1, gui
  mutate(cgguilt_fail.T1 = guilt_notrise1.T1 + guilt_notrise2.T1 + guilt_notrise3.T1 + guilt_notrise4.T
  View()

data <- data %>%
  mutate(cgguilt_fail.T1 = guilt_notrise1.T1 + guilt_notrise2.T1 + guilt_notrise3.T1 + guilt_notrise4.T
##End Guilt about Failing to Meet the Challenges of Caregiver Subscale (of Caregiver Guilt Questionnair


##Begin Guilt about SelfCare Subscale (of Caregiver Guilt Questionnaire)
###4 items
```

```
###All positively scored
###Original items #1, 7, 15, 16; baseline questionnaire items #1, 5, 13, 14.
describe(data$guilt_selfcare1.T1)
describe(data$guilt_selfcare2.T1)
describe(data$guilt_selfcare3.T1)
describe(data$guilt_selfcare4.T1)

###RECODE: all items in original manuscript were scored on a scale of 0 (never) to 4 (always or almost
data$guilt_selfcare1.T1 <-car::recode(data$guilt_selfcare1.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_selfcare2.T1 <-car::recode(data$guilt_selfcare2.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_selfcare3.T1 <-car::recode(data$guilt_selfcare3.T1,'1=0; 2=1; 3=2; 4=3; 5=4')
data$guilt_selfcare4.T1 <-car::recode(data$guilt_selfcare4.T1,'1=0; 2=1; 3=2; 4=3; 5=4')

###Repeat descriptives after recoding.
describe(data$guilt_selfcare1.T1)
describe(data$guilt_selfcare2.T1)
describe(data$guilt_selfcare3.T1)
describe(data$guilt_selfcare4.T1)

###Compute subscale score and calculate cronbach alpha for subscale.
cgguilt_selfcare.T1 <-data %>%
  dplyr::select(guilt_selfcare1.T1, guilt_selfcare2.T1, guilt_selfcare3.T1, guilt_selfcare4.T1)
ltm::cronbach.alpha(cgguilt_selfcare.T1)

rm(cgguilt_selfcare.T1)


data %>%
  dplyr::select(PID.T1, guilt_selfcare1.T1, guilt_selfcare2.T1, guilt_selfcare3.T1, guilt_selfcare4.T1)
  mutate(cgguilt_selfcare.T1 = guilt_selfcare1.T1 + guilt_selfcare2.T1 + guilt_selfcare3.T1 + guilt_sel
  View()

data <- data %>%
  mutate(cgguilt_selfcare.T1 = guilt_selfcare1.T1 + guilt_selfcare2.T1 + guilt_selfcare3.T1 + guilt_sel
##End Guilt about SelfCare Subscale (of Caregiver Guilt Questionnaire)
#End Caregiver Guilt Questionnaire
```

Caregiving-related Environmental Characteristics

```
#Proximity
table(data$CR_live.T1)
data<- data %>%
  mutate(cr_proximity.T1 = ifelse(CR_same_room.T1 == "Yes", "Bedpartner", "Live together"))
data<- data %>%
  mutate(cr_proximity.T1 = ifelse(CR_live.T1 != "In your household", "Other Living Sit", cr_proximity.T
table(data$cr_proximity.T1)


#Modified Barthel Activities of Daily Living [ADL] Index
##10 items
##Items scored in original manuscript with 0 as unable/greatest dependency (through up to 3 pts, depend
#Run descriptives on original items
describe(data$adl_bowels.T1)
```

```
describe(data$adl_bladder.T1)
describe(data$adl_grooming.T1)
describe(data$adl_toilet.T1)
describe(data$adl_feeding.T1)
describe(data$adl_transfer.T1)
describe(data$adl_mobility.T1)
describe(data$adl_dressing.T1)
describe(data$adl_stairs.T1)
describe(data$adl_bathing.T1)

##Recode items to match original manuscript scoring of 0-3 (or less)
data$adl_bowels.T1<-car::recode(data$adl_bowels.T1, '1=0; 2=1; 3=2')
data$adl_bladder.T1<-car::recode(data$adl_bladder.T1, '1=0; 2=1; 3=2')
data$adl_grooming.T1<-car::recode(data$adl_grooming.T1, '1=0; 3=1')
data$adl_toilet.T1<-car::recode(data$adl_toilet.T1, '1=0; 3=1; 4=2')
data$adl_feeding.T1<-car::recode(data$adl_feeding.T1, '1=0; 2=1; 3=2')
data$adl_transfer.T1<-car::recode(data$adl_transfer.T1, '1=0; 2=1; 3=2; 4=3')
data$adl_mobility.T1<-car::recode(data$adl_mobility.T1, '1=0; 2=1; 3=2; 4=3')
data$adl_dressing.T1<-car::recode(data$adl_dressing.T1, '1=0; 2=1; 4=2')
data$adl_stairs.T1<-car::recode(data$adl_stairs.T1, '1=0; 2=1; 3=2')
data$adl_bathing.T1<-car::recode(data$adl_bathing.T1, '1=0; 2=1')

#Repeat descriptives on recoded items
describe(data$adl_bowels.T1)
describe(data$adl_bladder.T1)
describe(data$adl_grooming.T1)
describe(data$adl_toilet.T1)
describe(data$adl_feeding.T1)
describe(data$adl_transfer.T1)
describe(data$adl_mobility.T1)
describe(data$adl_dressing.T1)
describe(data$adl_stairs.T1)
describe(data$adl_bathing.T1)

##Compute score between 0-20 points by summing total points from items
###QUESTION: LEADS TO SCORES GREATER THAN 20 POINTS - NEED TO BE RESCALED FURTHER? RESCORING CORRECT?
data %>%
  dplyr::select(PID.T1, adl_bowels.T1, adl_bladder.T1, adl_grooming.T1, adl_toilet.T1, adl_feeding.T1, a
  mutate(barthel.T1 = adl_bowels.T1 + adl_bladder.T1 + adl_grooming.T1 + adl_toilet.T1 + adl_feeding.T1
  view()

data <- data %>%
   mutate(barthel.T1 = adl_bowels.T1 + adl_bladder.T1 + adl_grooming.T1 + adl_toilet.T1 + adl_feeding.T
#End Barthel ADL Index


#Pearlin Stress Scale (PSS) - Cognitive Status Subscale
##8 items
##All scored positively, with higher scores reflecting more significant cognitive difficulties
##Run descriptives on all items
describe(data$pss_cognitive1.T1)
describe(data$pss_cognitive2.T1)
describe(data$pss_cognitive3.T1)
```

```
describe(data$pss_cognitive4.T1)
describe(data$pss_cognitive5.T1)
describe(data$pss_cognitive6.T1)
describe(data$pss_cognitive7.T1)
describe(data$pss_cognitive8.T1)

##RECODE: Original manuscript scored 0/Not at all difficult - 4/Can't do at all; Qualtrics scored 1/Can
data$pss_cognitive1.T1<-car::recode(data$pss_cognitive1.T1,'1=4; 2=3; 3=2; 4=1; 5=0')
data$pss_cognitive2.T1<-car::recode(data$pss_cognitive2.T1,'1=4; 2=3; 3=2; 4=1; 5=0')
data$pss_cognitive3.T1<-car::recode(data$pss_cognitive3.T1,'1=4; 2=3; 3=2; 4=1; 5=0')
data$pss_cognitive4.T1<-car::recode(data$pss_cognitive4.T1,'1=4; 2=3; 3=2; 4=1; 5=0')
data$pss_cognitive5.T1<-car::recode(data$pss_cognitive5.T1,'1=4; 2=3; 3=2; 4=1; 5=0')
data$pss_cognitive6.T1<-car::recode(data$pss_cognitive6.T1,'1=4; 2=3; 3=2; 4=1; 5=0')
data$pss_cognitive7.T1<-car::recode(data$pss_cognitive7.T1,'1=4; 2=3; 3=2; 4=1; 5=0')
data$pss_cognitive8.T1<-car::recode(data$pss_cognitive8.T1,'1=4; 2=3; 3=2; 4=1; 5=0')

##Rerun descriptives with rescored items
describe(data$pss_cognitive1.T1)
describe(data$pss_cognitive2.T1)
describe(data$pss_cognitive3.T1)
describe(data$pss_cognitive4.T1)
describe(data$pss_cognitive5.T1)
describe(data$pss_cognitive6.T1)
describe(data$pss_cognitive7.T1)
describe(data$pss_cognitive8.T1)

##Calculate Cronbach alpha and compute scale
pss_cognitive.T1<-data %>%
  dplyr::select(pss_cognitive1.T1, pss_cognitive2.T1, pss_cognitive3.T1, pss_cognitive4.T1, pss_cogniti
ltm::cronbach.alpha(pss_cognitive.T1)

rm(pss_cognitive.T1)


data %>%
  dplyr::select(PID.T1, pss_cognitive1.T1, pss_cognitive2.T1, pss_cognitive3.T1, pss_cognitive4.T1, pss
  mutate(pss_cognitive.T1 = pss_cognitive1.T1 + pss_cognitive2.T1 + pss_cognitive3.T1 + pss_cognitive4.
  View()

data<-data %>%
  mutate(pss_cognitive.T1 = pss_cognitive1.T1 + pss_cognitive2.T1 + pss_cognitive3.T1 + pss_cognitive4.
#End PSS - Cognitive Status Subscale


#Pearlin Stress Scale (PSS) - Problematic Behavior Subscale
##14 items
##All positively scored
##Run descriptives on original items
describe(data$pss_behavior1.T1)
describe(data$pss_behavior2.T1)
describe(data$pss_behavior3.T1)
describe(data$pss_behavior4.T1)
describe(data$pss_behavior5.T1)
```

```
describe(data$pss_behavior6.T1)
describe(data$pss_behavior7.T1)
describe(data$pss_behavior8.T1)
describe(data$pss_behavior9.T1)
describe(data$pss_behavior10.T1)
describe(data$pss_behavior11.T1)
describe(data$pss_behavior12.T1)
describe(data$pss_behavior13.T1)
describe(data$pss_behavior14.T1)

##RECODE: all items in original manuscript were scored on a scale of 1 (No days) to 4 (5 or more days),
data$pss_behavior1.T1<-car::recode(data$pss_behavior1.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior2.T1<-car::recode(data$pss_behavior2.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior3.T1<-car::recode(data$pss_behavior3.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior4.T1<-car::recode(data$pss_behavior4.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior5.T1<-car::recode(data$pss_behavior5.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior6.T1<-car::recode(data$pss_behavior6.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior7.T1<-car::recode(data$pss_behavior7.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior8.T1<-car::recode(data$pss_behavior8.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior9.T1<-car::recode(data$pss_behavior9.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior10.T1<-car::recode(data$pss_behavior10.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior11.T1<-car::recode(data$pss_behavior11.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior12.T1<-car::recode(data$pss_behavior12.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior13.T1<-car::recode(data$pss_behavior13.T1,'1=4; 2=3; 3=2; 4=1')
data$pss_behavior14.T1<-car::recode(data$pss_behavior14.T1,'1=4; 2=3; 3=2; 4=1')

##Repeat descriptives after recoding.
describe(data$pss_behavior1.T1)
describe(data$pss_behavior2.T1)
describe(data$pss_behavior3.T1)
describe(data$pss_behavior4.T1)
describe(data$pss_behavior5.T1)
describe(data$pss_behavior6.T1)
describe(data$pss_behavior7.T1)
describe(data$pss_behavior8.T1)
describe(data$pss_behavior9.T1)
describe(data$pss_behavior10.T1)
describe(data$pss_behavior11.T1)
describe(data$pss_behavior12.T1)
describe(data$pss_behavior13.T1)
describe(data$pss_behavior14.T1)

###Compute subscale score and calculate cronbach alpha for subscale.
pss_probbehav.T1<-data %>%
  dplyr::select(pss_behavior1.T1, pss_behavior2.T1, pss_behavior3.T1, pss_behavior4.T1, pss_behavior5.T
ltm::cronbach.alpha(pss_probbehav.T1)

rm(pss_probbehav.T1)


data %>%
  dplyr::select(PID.T1, pss_behavior1.T1, pss_behavior2.T1, pss_behavior3.T1, pss_behavior4.T1, pss_beha
  mutate(pss.probbehav = pss_behavior1.T1 + pss_behavior2.T1 + pss_behavior3.T1 + pss_behavior4.T1 + pss
```

```
  View()

data<-data %>%
  mutate(pss_probbehav.T1 = pss_behavior1.T1 + pss_behavior2.T1 + pss_behavior3.T1 + pss_behavior4.T1 +
#End PSS - Problematic Behavior Subscale


#Begin National Caregiving Association Caregiving Index
#describe each variable first

##start with ADLs
data<- data %>%
  mutate(adl.bedchair.T1 = ifelse(grepl(1, adl_tasks.T1), 1, 0))
data<- data %>%
  mutate(adl.dress.T1 = ifelse(grepl(2, adl_tasks.T1), 1, 0))
data<- data %>%
  mutate(adl.toilet.T1 = ifelse(grepl(3, adl_tasks.T1), 1, 0))
data<- data %>%
  mutate(adl.bath.T1 = ifelse(grepl(4, adl_tasks.T1), 1, 0))
data<- data %>%
  mutate(adl.incontinence.T1 = ifelse(grepl(5, adl_tasks.T1), 1, 0))
data<- data %>%
  mutate(adl.feed.T1 = ifelse(grepl(6, adl_tasks.T1), 1, 0))

table(data$adl.bedchair.T1)
table(data$adl.dress.T1)
table(data$adl.toilet.T1)
table(data$adl.bath.T1)
table(data$adl.incontinence.T1)
table(data$adl.feed.T1)

##next do IADLs
data<- data %>%
  mutate(iadl.medicine.T1 = ifelse(grepl(1, iadl_tasks.T1), 1, 0))
data<- data %>%
  mutate(iadl.finances.T1 = ifelse(grepl(2, iadl_tasks.T1), 1, 0))
data<- data %>%
  mutate(iadl.shop.T1 = ifelse(grepl(3, iadl_tasks.T1), 1, 0))
data<- data %>%
  mutate(iadl.housework.T1 = ifelse(grepl(4, iadl_tasks.T1), 1, 0))
data<- data %>%
  mutate(iadl.cook.T1 = ifelse(grepl(5, iadl_tasks.T1), 1, 0))
data<- data %>%
  mutate(iadl.transportation.T1 = ifelse(grepl(6, iadl_tasks.T1), 1, 0))
data<- data %>%
  mutate(iadl.services.T1 = ifelse(grepl(7, iadl_tasks.T1), 1, 0))
data<- data %>%
  mutate(iadl.advocate.T1 = ifelse(grepl(8, iadl_tasks.T1), 1, 0))
data<- data %>%
  mutate(iadl.monitor.T1 = ifelse(grepl(9, iadl_tasks.T1), 1, 0))
data<- data %>%
  mutate(iadl.communicate.T1 = ifelse(grepl(10, iadl_tasks.T1), 1, 0))
```

```
table(data$iadl.medicine.T1)
table(data$iadl.finances.T1)
table(data$iadl.shop.T1)
table(data$iadl.housework.T1)
table(data$iadl.cook.T1)
table(data$iadl.transportation.T1)
table(data$iadl.services.T1)
table(data$iadl.advocate.T1)
table(data$iadl.monitor.T1)
table(data$iadl.communicate.T1)

##Conditionally score ADLs depending on the age of the primary care recipient
data<-data %>%
  mutate(adl.bedchair.r.T1 = ifelse(CR_age_r < 3, NA, adl.bedchair.T1))
data<-data %>%
  mutate(adl.dress.r.T1 = ifelse(CR_age_r < 4, NA, adl.dress.T1))
data<-data %>%
  mutate(adl.toilet.r.T1 = ifelse(CR_age_r < 4, NA, adl.toilet.T1))
data<-data %>%
  mutate(adl.bath.r.T1 = ifelse(CR_age_r < 6, NA, adl.bath.T1))
data<-data %>%
  mutate(adl.incontinence.r.T1 = ifelse(CR_age_r < 4, NA, adl.incontinence.T1))
data<-data %>%
  mutate(adl.feed.r.T1 = ifelse(CR_age_r < 3, NA, adl.feed.T1))


##Conditionally score IADLs depending on the age of the primary care recipient
###No age condition for medicine
###No age condition for finances
data<-data %>%
  mutate(iadl.shop.r.T1 = ifelse(CR_age_r < 18, NA, iadl.shop.T1))
data<-data %>%
  mutate(iadl.housework.r.T1 = ifelse(CR_age_r < 18, NA, iadl.housework.T1))
data<-data %>%
  mutate(iadl.cook.r.T1 = ifelse(CR_age_r < 18, NA, iadl.cook.T1))
data<-data %>%
  mutate(iadl.transportation.r.T1 = ifelse(CR_age_r < 18, NA, iadl.transportation.T1))
###No age condition for services
###No age condition for advocate
###No age condition for monitor
###No age condition for communication


#Calculate number of ADLs for primary care recipient
data %>%
  dplyr::select(PID.T1, adl.bedchair.r.T1, adl.dress.r.T1, adl.toilet.r.T1, adl.bath.r.T1, adl.incontin
  rowwise() %>%
  mutate(adl.T1 = sum(adl.bedchair.r.T1, adl.dress.r.T1, adl.toilet.r.T1, adl.bath.r.T1, adl.incontinen
  view()

data <- data %>%
   rowwise() %>%
  mutate(adl.T1 = sum(adl.bedchair.r.T1, adl.dress.r.T1, adl.toilet.r.T1, adl.bath.r.T1, adl.incontinen
```

```
#Calculate number of IADLs for primary care recipient
data %>%
  dplyr::select(PID.T1, iadl.medicine.T1, iadl.finances.T1, iadl.shop.r.T1, iadl.housework.r.T1, iadl.co
  rowwise() %>%
  mutate(iadl.T1 = sum(iadl.medicine.T1, iadl.finances.T1, iadl.shop.r.T1, iadl.housework.r.T1, iadl.coo
  view()

data <- data %>%
   rowwise() %>%
  mutate(iadl.T1 = sum(iadl.medicine.T1, iadl.finances.T1, iadl.shop.r.T1, iadl.housework.r.T1, iadl.coo

#Medical tasks
data$med_nursing_tasks.T1 <- car::recode(data$med_nursing_tasks.T1, '1 = "Yes"; 2 = "No"')
#End National Caregiving Alliance ADL/IADL
```

Cognitive mechanisms

```
#Dysfunctional Beliefs and Attitudes about Sleep (DBAS) Scale
##16 items
##All positively scored
##Run descriptives on items
describe(data$dbas_1.T1)
describe(data$dbas_2.T1)
describe(data$dbas_3.T1)
describe(data$dbas_4.T1)
describe(data$dbas_5.T1)
describe(data$dbas_6.T1)
describe(data$dbas_7.T1)
describe(data$dbas_8.T1)
describe(data$dbas_9.T1)
describe(data$dbas_10.T1)
describe(data$dbas_11.T1)
describe(data$dbas_12.T1)
describe(data$dbas_13.T1)
describe(data$dbas_14.T1)
describe(data$dbas_15.T1)
describe(data$dbas_16.T1)

describe(data$dbas1.T2u)
describe(data$dbas2.T2u)
describe(data$dbas3.T2u)
describe(data$dbas4.T2u)
describe(data$dbas5.T2u)
describe(data$dbas6.T2u)
describe(data$dbas7.T2u)
describe(data$dbas8.T2u)
describe(data$dbas9.T2u)
describe(data$dbas10.T2u)
describe(data$dbas11.T2u)
describe(data$dbas12.T2u)
describe(data$dbas13.T2u)
describe(data$dbas14.T2u)
describe(data$dbas15.T2u)
```

```
describe(data$dbas16.T2u)

##RECODE: Original manuscript scored 0-10, Qualtrics scoring is 1-11 (text options say 0-10)
data$dbas_1.T1<- car::recode(data$dbas_1.T1, '1 = 0; 3 = 1; 4 = 2; 5 = 3; 6 = 4; 7 = 5; 8 = 6; 12 = 7;
data<-data %>%
  mutate(dbas_2.T1 = dbas_2.T1-1,
            dbas_3.T1 = dbas_3.T1-1,
            dbas_4.T1 = dbas_4.T1-1,
            dbas_5.T1 = dbas_5.T1-1,
            dbas_6.T1 = dbas_6.T1-1,
            dbas_7.T1 = dbas_7.T1-1,
            dbas_8.T1 = dbas_8.T1-1,
            dbas_9.T1 = dbas_9.T1-1,
            dbas_10.T1 = dbas_10.T1-1,
            dbas_11.T1 = dbas_11.T1-1,
            dbas_12.T1 = dbas_12.T1-1,
            dbas_13.T1 = dbas_13.T1-1,
            dbas_14.T1 = dbas_14.T1-1,
            dbas_15.T1 = dbas_15.T1-1,
            dbas_16.T1 = dbas_16.T1-1)

data$dbas_1.T2u<- car::recode(data$dbas1.T2u, '1 = 0; 3 = 1; 4 = 2; 5 = 3; 6 = 4; 7 = 5; 8 = 6; 12 = 7;
data<-data %>%
  mutate(dbas_2.T2u = dbas2.T2u-1,
            dbas_3.T2u = dbas3.T2u-1,
            dbas_4.T2u = dbas4.T2u-1,
            dbas_5.T2u = dbas5.T2u-1,
            dbas_6.T2u = dbas6.T2u-1,
            dbas_7.T2u = dbas7.T2u-1,
            dbas_8.T2u = dbas8.T2u-1,
            dbas_9.T2u = dbas9.T2u-1,
            dbas_10.T2u = dbas10.T2u-1,
            dbas_11.T2u = dbas11.T2u-1,
            dbas_12.T2u = dbas12.T2u-1,
            dbas_13.T2u = dbas13.T2u-1,
            dbas_14.T2u = dbas14.T2u-1,
            dbas_15.T2u = dbas15.T2u-1,
            dbas_16.T2u = dbas16.T2u-1)

##Rerun descriptives on recoded items
describe(data$dbas_1.T1)
describe(data$dbas_2.T1)
describe(data$dbas_3.T1)
describe(data$dbas_4.T1)
describe(data$dbas_5.T1)
describe(data$dbas_6.T1)
describe(data$dbas_7.T1)
describe(data$dbas_8.T1)
describe(data$dbas_9.T1)
describe(data$dbas_10.T1)
describe(data$dbas_11.T1)
describe(data$dbas_12.T1)
describe(data$dbas_13.T1)
```

```
describe(data$dbas_14.T1)
describe(data$dbas_15.T1)
describe(data$dbas_16.T1)

describe(data$dbas_1.T2u)
describe(data$dbas_2.T2u)
describe(data$dbas_3.T2u)
describe(data$dbas_4.T2u)
describe(data$dbas_5.T2u)
describe(data$dbas_6.T2u)
describe(data$dbas_7.T2u)
describe(data$dbas_8.T2u)
describe(data$dbas_9.T2u)
describe(data$dbas_10.T2u)
describe(data$dbas_11.T2u)
describe(data$dbas_12.T2u)
describe(data$dbas_13.T2u)
describe(data$dbas_14.T2u)
describe(data$dbas_15.T2u)
describe(data$dbas_16.T2u)

##Calculate Cronbach alpha and compute scale
####Scale score calculated by totaling points
DBAS.T1<- data %>%
  dplyr::select(dbas_1.T1:dbas_16.T1)
ltm::cronbach.alpha(DBAS.T1)

DBAS.T2u<- data %>%
  dplyr::select(dbas_1.T2u:dbas_16.T2u)
ltm::cronbach.alpha(DBAS.T2u, na.rm = TRUE)

rm(DBAS.T1, DBAS.T2u)


data %>%
  dplyr::select(PID.T1, dbas_1.T1:dbas_16.T1) %>%
  mutate(dbas.T1 = dbas_1.T1 + dbas_2.T1 + dbas_3.T1 + dbas_4.T1 + dbas_5.T1 + dbas_6.T1 + dbas_7.T1 + d
  view()

data<- data %>%
  mutate(dbas.T1 = dbas_1.T1 + dbas_2.T1 + dbas_3.T1 + dbas_4.T1 + dbas_5.T1 + dbas_6.T1 + dbas_7.T1 + d


data %>%
  dplyr::select(PID.T1, dbas_1.T2u:dbas_16.T2u) %>%
  mutate(dbas.T2u = dbas_1.T2u + dbas_2.T2u + dbas_3.T2u + dbas_4.T2u + dbas_5.T2u + dbas_6.T2u + dbas_
  view()

data<- data %>%
  mutate(dbas.T2u = dbas_1.T2u + dbas_2.T2u + dbas_3.T2u + dbas_4.T2u + dbas_5.T2u + dbas_6.T2u + dbas_
#End DBAS
```

```r
#Sleep Locus of Control Scale
##8 items to create 2 subscales - internal locus and external/chance locus
##All positively scored
##Begin Internal Locus of Sleep Control Subscale
###5 items - Qualtrics and manuscript items #1, 2, 5, 7, 8
###Run descriptives on items
describe(data$sloc1.T1)
describe(data$sloc2.T1)
describe(data$sloc5.T1)
describe(data$sloc7.T1)
describe(data$sloc8.T1)

describe(data$sloc1.T2u)
describe(data$sloc2.T2u)
describe(data$sloc5.T2u)
describe(data$sloc7.T2u)
describe(data$sloc8.T2u)

###No recoding necessary - manuscript and Qualtrics scoring match
###Calculate Cronbach alpha and compute subscale
####Scale score calculated by totaling point, per original manuscript.
sloc_int.T1 <-data %>%
  dplyr::select(sloc1.T1, sloc2.T1, sloc5.T1, sloc7.T1, sloc8.T1)
ltm::cronbach.alpha(sloc_int.T1)

sloc_int.T2u <-data %>%
  dplyr::select(sloc1.T2u, sloc2.T2u, sloc5.T2u, sloc7.T2u, sloc8.T2u)
ltm::cronbach.alpha(sloc_int.T2u, na.rm = TRUE)

rm(sloc_int.T1, sloc_int.T2u)


data %>%
  dplyr::select(PID.T1, sloc1.T1, sloc2.T1, sloc5.T1, sloc7.T1, sloc8.T1) %>%
  mutate(sloc_int.T1 = sloc1.T1 + sloc2.T1 + sloc5.T1 + sloc7.T1 + sloc8.T1) %>%
  View()

data <- data %>%
  mutate(sloc_int.T1 = sloc1.T1 + sloc2.T1 + sloc5.T1 + sloc7.T1 + sloc8.T1)


data %>%
  dplyr::select(PID.T1, sloc1.T2u, sloc2.T2u, sloc5.T2u, sloc7.T2u, sloc8.T2u) %>%
  mutate(sloc_int.T2u = sloc1.T2u + sloc2.T2u + sloc5.T2u + sloc7.T2u + sloc8.T2u) %>%
  View()

data <- data %>%
  mutate(sloc_int.T2u = sloc1.T2u + sloc2.T2u + sloc5.T2u + sloc7.T2u + sloc8.T2u)
##End Internal SLOC Subscale

##Begin External/Chance SLOC Subscale
###3 items - manuscript and Qualtrics items #3, 4, 6
###Run descriptives on items
```

```
describe(data$sloc3.T1)
describe(data$sloc4.T1)
describe(data$sloc6.T1)

describe(data$sloc3.T2u)
describe(data$sloc4.T2u)
describe(data$sloc6.T2u)

###No recoding necessary - manuscript and Qualtrics scoring match
###Calculate Cronbach alpha and compute subscale
####Scale score calculated by totaling point, per original manuscript. BeSSI Syntax averaged, not sure
sloc_ext.T1 <-data %>%
  dplyr::select(sloc3.T1, sloc4.T1, sloc6.T1)
ltm::cronbach.alpha(sloc_ext.T1, na.rm = TRUE)

sloc_ext.T2u <-data %>%
  dplyr::select(sloc3.T2u, sloc4.T2u, sloc6.T2u)
ltm::cronbach.alpha(sloc_ext.T2u, na.rm = TRUE)
#poor reliability: alpha = .55

rm(sloc_ext.T1, sloc_ext.T2u)


data %>%
  dplyr::select(PID.T1, sloc3.T1, sloc4.T1, sloc6.T1) %>%
  mutate(sloc_ext.T1 = sloc3.T1 + sloc4.T1 + sloc6.T1) %>%
  View()

data <- data %>%
  mutate(sloc_ext.T1 = sloc3.T1 + sloc4.T1 + sloc6.T1)
#1 NA SLOC_EXT.T1 - missing 1 item


data %>%
  dplyr::select(PID.T1, sloc3.T2u, sloc4.T2u, sloc6.T2u) %>%
  mutate(sloc_ext.T2u = sloc3.T2u + sloc4.T2u + sloc6.T2u) %>%
  View()

data <- data %>%
  mutate(sloc_ext.T2u = sloc3.T2u + sloc4.T2u + sloc6.T2u)
#1 NA SLOC_EXT.T2u - missing 1 item
##End External/Chance SLOC Subscale
#End SLOC Scale
```

Other preliminary efficacy measures

```
#ISI- Insomnia Severity Index - 2
##2 items
##All positively scored
##Run descriptives on items
describe(data$isi_2.T1)
describe(data$isi_3.T1)

describe(data$isi1.T2u)
```

```
describe(data$isi2.T2u)

describe(data$isi1.T2n)
describe(data$isi2.T2n)

##No recoding necessary - scoring in Qualtrics matches original manuscript
##Calculate cronbach alpha
ISI.T1<- data %>%
  dplyr::select(isi_2.T1, isi_3.T1)
ltm::cronbach.alpha(ISI.T1)
#low reliability - alpha = .50

ISI.T2u<- data %>%
  dplyr::select(isi1.T2u, isi2.T2u)
ltm::cronbach.alpha(ISI.T2u, na.rm = TRUE)
#low reliability - alpha = .42

ISI.T2n<- data %>%
  dplyr::select(isi1.T2n, isi2.T2n)
ltm::cronbach.alpha(ISI.T2n, na.rm = TRUE)

rm(ISI.T1, ISI.T2u, ISI.T2n)


##Compute scale
data %>%
  dplyr::select(PID.T1, isi_2.T1, isi_3.T1) %>%
  mutate(isi.T1 = isi_2.T1 + isi_3.T1) %>%
  view()

data<- data %>%
  mutate(isi.T1 = isi_2.T1 + isi_3.T1)


data %>%
  dplyr::select(PID.T1, isi1.T2u, isi2.T2u) %>%
  mutate(isi.T2u = isi1.T2u + isi2.T2u) %>%
  view()

data<- data %>%
  mutate(isi.T2u = isi1.T2u + isi2.T2u)


data %>%
  dplyr::select(PID.T1, isi1.T2n, isi2.T2n) %>%
  mutate(isi.T2n = isi1.T2n + isi2.T2n) %>%
  view()

data<- data %>%
  mutate(isi.T2n = isi1.T2n + isi2.T2n)
#End ISI-2 Scale
```

```
#Sleep Diary Metrics
##SEE SLEEP DIARY SYNTAX FOR COMPUTATION OF SOL, WASO, NO. AWAKENINGS, SLEEP QUALITY, AND TST
#End Sleep Diary Metrics


#PROMIS Global Physical Health 2a
#Internal reliability

promis_ph.T1<- data %>%
  dplyr::select(promis_physhealth1.T1, promis_physhealth2.T1)
ltm::cronbach.alpha(promis_ph.T1)

promis_ph.T2u<- data %>%
  dplyr::select(promis.ph1.T2u, promis.ph2.T2u)
ltm::cronbach.alpha(promis_ph.T2u, na.rm=TRUE)

promis_ph.T2n<- data %>%
  dplyr::select(promis.ph1.T2n, promis.ph2.T2n)
ltm::cronbach.alpha(promis_ph.T2n, na.rm=TRUE)

rm(promis_ph.T1, promis_ph.T2n, promis_ph.T2u)

##2 items, sent to HealthMeasures.net scoring service for scoring - no included syntax
promis_ph.T1<- read.csv("PROMIS Global Physical 2a Scores_T1.csv")
data<- merge(data, promis_ph.T1, by.x = "PID.T1", by.y = "PID.T1", all.x = TRUE)

promis_ph.T2u<- read.csv("PROMIS Global Physical 2a Scores_T2u.csv")
data<- merge(data, promis_ph.T2u, by.x = "PID.T1", by.y = "PID.T1", all.x = TRUE)

promis_ph.T2n<- read.csv("PROMIS Global Physical 2a Scores_T2n.csv")
data<- merge(data, promis_ph.T2n, by.x = "PID.T1", by.y = "PID.T1", all.x = TRUE)

rm(promis_ph.T1, promis_ph.T2u, promis_ph.T2n)
#End PROMIS


#Patient Health Questionnaire (PHQ) - 4 item
##Used 8-item PHQ in BeSSI
##4 items
##All positively scored
## For scores >=3, items 1-2 can suggest anxiety, items 3-4 can suggest depression
##Run descriptives on original items
describe(data$phq4_1.T1)
describe(data$phq4_2.T1)
describe(data$phq4_3.T1)
describe(data$phq4_4.T1)

describe(data$phq1.T2u)
describe(data$phq2.T2u)
describe(data$phq3.T2u)
describe(data$phq4.T2u)

describe(data$phq1.T2n)
```

```
describe(data$phq2.T2n)
describe(data$phq3.T2n)
describe(data$phq4.T2n)

##RECODE: Original manuscript scored items 0-3, Qualtrics scored 1-4
data$phq1.T1<-car::recode(data$phq4_1.T1,'1=0; 2=1; 3=2; 4=3')
data$phq2.T1<-car::recode(data$phq4_2.T1,'1=0; 2=1; 3=2; 4=3')
data$phq3.T1<-car::recode(data$phq4_3.T1,'1=0; 2=1; 3=2; 4=3')
data$phq4.T1<-car::recode(data$phq4_4.T1,'1=0; 2=1; 3=2; 4=3')

data$phq1.T2u<-car::recode(data$phq1.T2u,'1=0; 2=1; 3=2; 4=3')
data$phq2.T2u<-car::recode(data$phq2.T2u,'1=0; 2=1; 3=2; 4=3')
data$phq3.T2u<-car::recode(data$phq3.T2u,'1=0; 2=1; 3=2; 4=3')
data$phq4.T2u<-car::recode(data$phq4.T2u,'1=0; 2=1; 3=2; 4=3')

data$phq1.T2n<-car::recode(data$phq1.T2n,'1=0; 2=1; 3=2; 4=3')
data$phq2.T2n<-car::recode(data$phq2.T2n,'1=0; 2=1; 3=2; 4=3')
data$phq3.T2n<-car::recode(data$phq3.T2n,'1=0; 2=1; 3=2; 4=3')
data$phq4.T2n<-car::recode(data$phq4.T2n,'1=0; 2=1; 3=2; 4=3')

##Rerun descriptives on recoded items
describe(data$phq1.T1)
describe(data$phq2.T1)
describe(data$phq3.T1)
describe(data$phq4.T1)

describe(data$phq1.T2u)
describe(data$phq2.T2u)
describe(data$phq3.T2u)
describe(data$phq4.T2u)

describe(data$phq1.T2n)
describe(data$phq2.T2n)
describe(data$phq3.T2n)
describe(data$phq4.T2n)

##Calculate Cronbach alpha
phq_4.T1 <-data %>%
  dplyr::select(phq1.T1, phq2.T1, phq3.T1, phq4.T1)
ltm::cronbach.alpha(phq_4.T1)

phq_4.T2u <-data %>%
  dplyr::select(phq1.T2u, phq2.T2u, phq3.T2u, phq4.T2u)
ltm::cronbach.alpha(phq_4.T2u, na.rm = TRUE)

phq_4.T2n <-data %>%
  dplyr::select(phq1.T2n, phq2.T2n, phq3.T2n, phq4.T2n)
ltm::cronbach.alpha(phq_4.T2n, na.rm = TRUE)

rm(phq_4.T1, phq_4.T2u, phq_4.T2n)


##Compute PHQ-4 scale and subscales for depression/anxiety
```

```
###Total scale
data %>%
  dplyr::select(PID.T1, phq1.T1, phq2.T1, phq3.T1, phq4.T1) %>%
  mutate(phq_4.T1 = phq1.T1 + phq2.T1 + phq3.T1 + phq4.T1) %>%
  View()

data <- data %>%
  mutate(phq_4.T1 = phq1.T1 + phq2.T1 + phq3.T1 + phq4.T1)


data %>%
  dplyr::select(PID.T1, phq1.T2u, phq2.T2u, phq3.T2u, phq4.T2u) %>%
  mutate(phq_4.T2u = phq1.T2u + phq2.T2u + phq3.T2u + phq4.T2u) %>%
  View()

data <- data %>%
  mutate(phq_4.T2u = phq1.T2u + phq2.T2u + phq3.T2u + phq4.T2u)


data %>%
  dplyr::select(PID.T1, phq1.T2n, phq2.T2n, phq3.T2n, phq4.T2n) %>%
  mutate(phq_4.T2n = phq1.T2n + phq2.T2n + phq3.T2n + phq4.T2n) %>%
  View()

data <- data %>%
  mutate(phq_4.T2n = phq1.T2n + phq2.T2n + phq3.T2n + phq4.T2n)


###Anxiety items
phq.anx.T1 <-data %>%
  dplyr::select(phq1.T1, phq2.T1)
ltm::cronbach.alpha(phq.anx.T1)

phq.anx.T2u <-data %>%
  dplyr::select(phq1.T2u, phq2.T2u)
ltm::cronbach.alpha(phq.anx.T2u, na.rm = TRUE)

phq.anx.T2n <-data %>%
  dplyr::select(phq1.T2n, phq2.T2n)
ltm::cronbach.alpha(phq.anx.T2n, na.rm = TRUE)

rm(phq.anx.T1, phq.anx.T2u, phq.anx.T2n)


data %>%
  dplyr::select(PID.T1, phq1.T1, phq2.T1) %>%
  mutate(phq.anx.T1 = phq1.T1 + phq2.T1) %>%
  View()

data <- data %>%
  mutate(phq.anx.T1 = phq1.T1 + phq2.T1)
```

```
data %>%
  dplyr::select(PID.T1, phq1.T2u, phq2.T2u) %>%
  mutate(phq.anx.T2u = phq1.T2u + phq2.T2u) %>%
  View()

data <- data %>%
  mutate(phq.anx.T2u = phq1.T2u + phq2.T2u)


data %>%
  dplyr::select(PID.T1, phq1.T2n, phq2.T2n) %>%
  mutate(phq.anx.T2n = phq1.T2n + phq2.T2n) %>%
  View()

data <- data %>%
  mutate(phq.anx.T2n = phq1.T2n + phq2.T2n)


###Depression items
phq.dep.T1 <-data %>%
  dplyr::select(phq3.T1, phq4.T1)
ltm::cronbach.alpha(phq.dep.T1)

phq.dep.T2u <-data %>%
  dplyr::select(phq3.T2u, phq4.T2u)
ltm::cronbach.alpha(phq.dep.T2u, na.rm = TRUE)

phq.dep.T2n <-data %>%
  dplyr::select(phq3.T2n, phq4.T2n)
ltm::cronbach.alpha(phq.dep.T2n, na.rm = TRUE)

rm(phq.dep.T1, phq.dep.T2u, phq.dep.T2n)


data %>%
  dplyr::select(PID.T1, phq3.T1, phq4.T1) %>%
  mutate(phq.dep.T1 = phq3.T1 + phq4.T1) %>%
  View()

data <- data %>%
  mutate(phq.dep.T1 = phq3.T1 + phq4.T1)


data %>%
  dplyr::select(PID.T1, phq3.T2u, phq4.T2u) %>%
  mutate(phq.dep.T2u = phq3.T2u + phq4.T2u) %>%
  View()

data <- data %>%
  mutate(phq.dep.T2u = phq3.T2u + phq4.T2u)


data %>%
```

```
  dplyr::select(PID.T1, phq3.T2n, phq4.T2n) %>%
  mutate(phq.dep.T2n = phq3.T2n + phq4.T2n) %>%
  View()

data <- data %>%
  mutate(phq.dep.T2n = phq3.T2n + phq4.T2n)
#End PHQ-4 Scale
```

##Add Sleep Diary Outcomes

```
diaryfinal_wide<-read.csv("Z:/Research/Psychiatry and NB Sciences/PSYCH_eHealth/Kelly's Data/00. NCATS/

data_all<- merge(data, diaryfinal_wide, by.x = "PID.T1", by.y = "PID", all = TRUE)
```

##Save data

```
#write.csv(data_all, "Z:/Research/Psychiatry and NB Sciences/PSYCH_eHealth/Kelly's Data/00. NCATS/Data
```