Caregiver burden data preparation

Hans, Jenny, and Derek

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Overview

Our analyses focus on caregiver burden as the *outcome* from a variety of predictors, such as demographics, disorder type, cognitive function, and neuropsychogical profiles.

Load data and construct data set

The observations we work with require at least summary scores from Zarit's (caregiver) burden interview (ZBI; CITE). Conditional to the ZBI, we include participants who classify as:

- Dementia (community and institution),
- Alzheimer's,
- Parkinson's disease,
- Amyotrophic lateral sclerosis,
- Stroke,
- Epilepsy, and
- Multiple sclerosis.

Other conditions to consider (perhaps for later): Depression (depressn==1), Learning Disability (learning==1), Psychiatric Illness (psychiat==1), or Migraines (migraine==1).

The following lines of code will read in the data and include only the subjects outlined in the above conditions.

```
  ## data exist one directory above and in a separate folder
  ### (in part to avoid committing it to Github for now!)
CSHA.1991.full <- read.csv("../IPN2017_Case_Comp/Dataset.csv")

  ## Conditionals to extract specific participants
  ### start with primary outcome of interest: caregiver burden
CSHA.1991.zarit <- CSHA.1991.full[CSHA.1991.full$zarscore < 99,]
dim(CSHA.1991.zarit)
```

```
## [1] 1086 1724
```

```
  ### Now get all data for above conditions
  conditions.of.interest <- (
      CSHA.1991.zarit$cgcc==1 |     # Dementia: COMMUNITY CASE
      CSHA.1991.zarit$cgcc==3 |     # Dementia: INSTITUTION CASE
      CSHA.1991.zarit$adcc==1 |     # Alzheimer's: YES
      CSHA.1991.zarit$parkin==1 |   # Parkinson's: YES
      CSHA.1991.zarit$prstroke==1 | # Stroke: YES
      CSHA.1991.zarit$als==1 |      # ALS: YES
      CSHA.1991.zarit$epilepsy==1 | # Epilepsy: YES
      CSHA.1991.zarit$ms==1         # Multiple sclerosis: YES
    )
CSHA.1991.zarit_disorders <- CSHA.1991.zarit[conditions.of.interest,]
dim(CSHA.1991.zarit_disorders)
```

```
## [1]  861 1724
```

We now have a subset of observations we should make a pseudo-design matrix of the conditionals above. We want to denote which of the aforementioned categories each individual belongs to:

```
cols.for.design <- c("cgcc", "adcc", "parkin", "prstroke",
    "als", "epilepsy", "ms")
CSHA.1991.zarit_disorders_design <- CSHA.1991.zarit_disorders[,
    cols.for.design]

dim(CSHA.1991.zarit_disorders_design)
```

```
## [1] 861   7
```

```
head(CSHA.1991.zarit_disorders_design)
```

```
##    cgcc adcc parkin prstroke als epilepsy ms
## 1     3    1      2        8   2        2  2
## 2     3    0      2        1   2        2  2
## 4     1    0      2        2   2        2  2
## 11    3    0      2        2   2        2  2
## 26    3    0      8        8   2        2  2
## 35    3    0      1        9   9        9  9
```

We can recode some of the values in these columns to something more sensible with a design matrix. The code below is hidden from the output.

```
summary(as.factor(CSHA.1991.zarit_disorders_design$adcc))
```

```
##   0   1   2   9
## 473 314  10  64
```

```
  head(CSHA.1991.zarit_disorders_design)
```

```
##     DEMENTIA  ALZ  PD  STROKE     ALS     EPI      MS
## 1   INS.CASE CASE  NO     DNK      NO      NO      NO
## 2   INS.CASE  N/A  NO     YES      NO      NO      NO
## 4  COMM.CASE  N/A  NO      NO      NO      NO      NO
## 11  INS.CASE  N/A  NO      NO      NO      NO      NO
## 26  INS.CASE  N/A DNK     DNK      NO      NO      NO
## 35  INS.CASE  N/A YES MISSING MISSING MISSING MISSING
```

```
  head(CSHA.design)
```

```
##    DEMENTIA.INS.CASE DEMENTIA.COMM.CASE DEMENTIA.INS.CON ALZ.CASE ALZ.N/A
## 1                  1                  0                0        1       0
## 2                  1                  0                0        0       1
## 4                  0                  1                0        0       1
## 11                 1                  0                0        0       1
## 26                 1                  0                0        0       1
## 35                 1                  0                0        0       1
##    ALZ.MISSING ALZ.CON PD.NO PD.DNK PD.YES PD.MISSING STROKE.DNK
## 1            0       0     1      0      0          0          1
## 2            0       0     1      0      0          0          0
## 4            0       0     1      0      0          0          0
## 11           0       0     1      0      0          0          0
## 26           0       0     0      1      0          0          1
## 35           0       0     0      0      1          0          0
##    STROKE.YES STROKE.NO STROKE.MISSING ALS.NO ALS.MISSING ALS.DNK ALS.YES
```

```
## 1           0         0             0      1           0       0       0
## 2           1         0             0      1           0       0       0
## 4           0         1             0      1           0       0       0
## 11          0         1             0      1           0       0       0
## 26          0         0             0      1           0       0       0
## 35          0         0             1      0           1       0       0
##    EPI.NO EPI.MISSING EPI.DNK EPI.YES MS.NO MS.MISSING MS.DNK MS.YES
## 1       1           0       0       0     1          0      0      0
## 2       1           0       0       0     1          0      0      0
## 4       1           0       0       0     1          0      0      0
## 11      1           0       0       0     1          0      0      0
## 26      1           0       0       0     1          0      0      0
## 35      0           1       0       0     0          1      0      0
```

```
colSums(CSHA.design)
```

```
##  DEMENTIA.INS.CASE DEMENTIA.COMM.CASE   DEMENTIA.INS.CON
##                539                312                10
##          ALZ.CASE            ALZ.N/A        ALZ.MISSING
##                314                473                64
##           ALZ.CON              PD.NO             PD.DNK
##                10                620                27
##            PD.YES         PD.MISSING         STROKE.DNK
##                48                166                45
##         STROKE.YES          STROKE.NO     STROKE.MISSING
##                241                433                142
##            ALS.NO        ALS.MISSING            ALS.DNK
##                631                204                25
##           ALS.YES             EPI.NO        EPI.MISSING
##                 1                644                177
##           EPI.DNK            EPI.YES             MS.NO
##                20                 20                665
##         MS.MISSING             MS.DNK             MS.YES
##                176                 18                 2
```