Calibration adjustments to address bias in mortality analyses due to informative sampling - a census-linked survey analysis in Switzerland

André Moser
November 06, 2017

To ensure reproducibility of our main results, we provide an anonymised dataset (comma-separated file “SwissCensus2010.csv”) of the 2010 study population (STATPOP and SE). Because of privacy preservation of study participants we were not allowed to deliver exact age information - as in the original analysis -, but only rounded to one decimal digit. We highlight that rounding had no influence on the interpretation of our results (i.e., mortality rates changed at maximum at the first decimal place), compared to exact information. IP weights were constructed in Stata, as described in a separate code.

We provide data and analysis code for Tables 1 and 2, and Figure 1 and 2, in the main manuscript. Estimates for life expectancy (Figure 2) are shown as Stata output, using the same dataset (SwissCensus2010.csv).

Variables used:

- female: Gender (0: Male; 1 Female)
- agestart_rounded: Age at December 31, 2010, rounded to one decimal place
- ageend_rounded: Age at December 31, 2011, or death, rounded to one decimal place
- statpop_agecat5: 15 age categories (0: [15,20); 1: [20,25); ...), at December 31, 2010
- civil: Civil status (1: Single; 2: Married; 3: Widowed; 4: Other)
- nat: Nationality (1: Swiss; 2: EEA; 3: Other Europe; 4: Other World)
- canton: 29 regions
- inse2010: Binary indicator for “being sampled” in structural enquiry (SE) 2010 (0: Not sampled; 1: Sampled)
- fupt_rounded: Follow-up time (in years), rounded to two decimal places
- weight2010: Calibrated survey weights (CSW)
- ipw2010: Inverse probability weights (IPW)

```r
library(reporttools)
library(rms)
library(ggplot2)
data <- read.csv( paste(path, "SwissCensus2010.csv", sep=""))
# Ordering of columns
data <- data[, c("female", "agestart_rounded", "ageend_rounded",
                   "statpop_agecat5", "civil", "nat", "canton",
                   "died2011", "inse2010", "fupt_rounded",
                   "weight2010", "ipw2010")]
```
The dataset contains 12 variables,

```r
head(data[data$died2011==1 & data$inse2010==1, ], 3)
```

```r
## female agestart_rounded ageend_rounded statpop_agecat5 civil nat
## 1896 0 79.3 79.8 12 2 1
## 10821 1 96.4 97.1 14 3 1
## 12955 0 47.1 47.5 6 4 2
## canton died2011 inse2010 fupt_rounded weight2010 ipw2010
## 1896 23 1 1 0.5 32.89608 41.50185
## 10821 12 1 1 0.7 28.83645 62.33053
## 12955 21 1 1 0.4 18.05437 23.09814
```

with a total of 6,729,363 individuals (STATPOP 2010),

```r
nrow(data)
```

```r
## [1] 6729363
```

and 317,079 individuals sampled in the structural enquiry (SE2010).

```r
nrow(data[data$inse2010==1, ])
```

```r
## [1] 317079
```

### Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levels</th>
<th>(n_0)</th>
<th>(%_0)</th>
<th>(n_1)</th>
<th>(%_1)</th>
<th>(n_{all})</th>
<th>(%_{all})</th>
</tr>
</thead>
<tbody>
<tr>
<td>female</td>
<td>0</td>
<td>3270394</td>
<td>49.0</td>
<td>29804</td>
<td>48.4</td>
<td>3300198</td>
<td>49.0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3397430</td>
<td>51.0</td>
<td>31735</td>
<td>51.6</td>
<td>3429165</td>
<td>51.0</td>
</tr>
<tr>
<td></td>
<td>all</td>
<td>6667824</td>
<td>100.0</td>
<td>61539</td>
<td>100.0</td>
<td>6729363</td>
<td>100.0</td>
</tr>
<tr>
<td>statpop_agecat5</td>
<td>0</td>
<td>453418</td>
<td>6.8</td>
<td>125</td>
<td>0.2</td>
<td>453543</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>497932</td>
<td>7.5</td>
<td>195</td>
<td>0.3</td>
<td>498127</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>535327</td>
<td>8.0</td>
<td>179</td>
<td>0.3</td>
<td>535506</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>542177</td>
<td>8.1</td>
<td>250</td>
<td>0.4</td>
<td>542427</td>
<td>8.1</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>562531</td>
<td>8.4</td>
<td>330</td>
<td>0.5</td>
<td>562861</td>
<td>8.4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>636715</td>
<td>9.6</td>
<td>662</td>
<td>1.1</td>
<td>637377</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>651880</td>
<td>9.8</td>
<td>1087</td>
<td>1.6</td>
<td>652967</td>
<td>9.7</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>565305</td>
<td>8.5</td>
<td>1525</td>
<td>2.5</td>
<td>566830</td>
<td>8.4</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>484779</td>
<td>7.3</td>
<td>2048</td>
<td>3.3</td>
<td>486827</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>456872</td>
<td>6.8</td>
<td>3110</td>
<td>5.0</td>
<td>459982</td>
<td>6.8</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>393251</td>
<td>5.9</td>
<td>4259</td>
<td>6.9</td>
<td>397510</td>
<td>5.9</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>298540</td>
<td>4.5</td>
<td>5082</td>
<td>8.3</td>
<td>303622</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>248981</td>
<td>3.7</td>
<td>7565</td>
<td>12.3</td>
<td>256546</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>184460</td>
<td>2.8</td>
<td>10711</td>
<td>17.4</td>
<td>195171</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>155656</td>
<td>2.3</td>
<td>24411</td>
<td>39.7</td>
<td>180067</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>all</td>
<td>6667824</td>
<td>100.0</td>
<td>61539</td>
<td>100.0</td>
<td>6729363</td>
<td>100.0</td>
</tr>
<tr>
<td>civil</td>
<td>1</td>
<td>2224776</td>
<td>33.4</td>
<td>7455</td>
<td>12.1</td>
<td>2232231</td>
<td>33.2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3449816</td>
<td>51.7</td>
<td>24937</td>
<td>40.5</td>
<td>3474753</td>
<td>51.6</td>
</tr>
<tr>
<td>Variable</td>
<td>Levels</td>
<td>n1</td>
<td>%1</td>
<td>n0</td>
<td>%0</td>
<td>nall</td>
<td>%all</td>
</tr>
<tr>
<td>---------------</td>
<td>--------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>female</td>
<td>0</td>
<td>151684</td>
<td>48.1</td>
<td>1099</td>
<td>55.8</td>
<td>152783</td>
<td>48.2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>163424</td>
<td>51.9</td>
<td>872</td>
<td>44.2</td>
<td>164296</td>
<td>51.8</td>
</tr>
<tr>
<td></td>
<td>all</td>
<td>315108</td>
<td>100.0</td>
<td>1971</td>
<td>100.0</td>
<td>317079</td>
<td>100.0</td>
</tr>
<tr>
<td>statpop_agecat5</td>
<td>0</td>
<td>19896</td>
<td>6.3</td>
<td>6</td>
<td>0.3</td>
<td>19896</td>
<td>6.3</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>20477</td>
<td>6.5</td>
<td>10</td>
<td>0.5</td>
<td>20477</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>23938</td>
<td>7.5</td>
<td>3</td>
<td>0.1</td>
<td>23938</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>26453</td>
<td>8.3</td>
<td>8</td>
<td>0.4</td>
<td>26453</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>27467</td>
<td>8.7</td>
<td>11</td>
<td>0.6</td>
<td>27467</td>
<td>8.7</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>30303</td>
<td>9.6</td>
<td>21</td>
<td>1.1</td>
<td>30303</td>
<td>9.6</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>31214</td>
<td>9.8</td>
<td>42</td>
<td>2.1</td>
<td>31214</td>
<td>9.8</td>
</tr>
<tr>
<td></td>
<td>weight2010</td>
<td>8.5</td>
<td>52</td>
<td>2.6</td>
<td>26948</td>
<td>8.5</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>------------</td>
<td>-----</td>
<td>----</td>
<td>-----</td>
<td>-------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>23522</td>
<td>7.5</td>
<td>70</td>
<td>3.5</td>
<td>23592</td>
<td>7.4</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>22204</td>
<td>7.0</td>
<td>122</td>
<td>6.2</td>
<td>22326</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>19730</td>
<td>6.3</td>
<td>180</td>
<td>9.1</td>
<td>19910</td>
<td>6.3</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>15000</td>
<td>4.8</td>
<td>163</td>
<td>8.3</td>
<td>15163</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>12520</td>
<td>4.0</td>
<td>300</td>
<td>15.2</td>
<td>12820</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>9040</td>
<td>2.9</td>
<td>323</td>
<td>16.4</td>
<td>9363</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>6549</td>
<td>2.1</td>
<td>660</td>
<td>33.5</td>
<td>7209</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>all</td>
<td>315108</td>
<td>100.0</td>
<td>1971</td>
<td>100.0</td>
<td>317079</td>
<td>100.0</td>
</tr>
</tbody>
</table>

| civil |    |    |    |    |    |    |
| 1    | 101868 | 32.3 | 189| 9.6 | 102057 | 32.2 |
| 2    | 166452 | 52.8 | 999| 50.7| 167451 | 52.8 |
| 3    | 17942  | 5.7  | 592| 30.0| 18534  | 5.8  |
| 4    | 28846  | 9.2  | 191| 9.7 | 29037  | 9.2  |
|    | all    | 315108| 100.0 | 1971| 100.0 | 317079| 100.0 |

| nat  |    |    |    |    |    |    |
| 1    | 249184 | 79.1 | 1779| 90.3| 250963 | 79.2 |
| 2    | 45200  | 14.3 | 172 | 8.7 | 45372  | 14.3 |
| 3    | 12503  | 4.0  | 14  | 0.7 | 12517  | 4.0  |
| 4    | 8221   | 2.6  | 6   | 0.3 | 8227   | 2.6  |
|    | all    | 315108| 100.0 | 1971| 100.0 | 317079| 100.0 |

| canton |    |    |    |    |    |    |
| 1      | 24948 | 7.9  | 119 | 6.0 | 25067  | 7.9  |
| 2      | 21957 | 7.0  | 130 | 6.6 | 22087  | 7.0  |
| 3      | 19208 | 6.1  | 96  | 4.9 | 19304  | 6.1  |
| 4      | 976   | 0.3  | 5   | 0.2 | 981    | 0.3  |
| 5      | 3589  | 1.1  | 19  | 1.0 | 3608   | 1.1  |
| 6      | 828   | 0.3  | 4   | 0.2 | 832    | 0.3  |
| 7      | 1039  | 0.3  | 6   | 0.3 | 1045   | 0.3  |
| 8      | 914   | 0.3  | 7   | 0.4 | 921    | 0.3  |
| 9      | 5205  | 1.6  | 23  | 1.2 | 5228   | 1.6  |
| 10     | 6570  | 2.1  | 39  | 2.0 | 6609   | 2.1  |
| 11     | 6598  | 2.1  | 54  | 2.7 | 6652   | 2.1  |
| 12     | 5113  | 1.6  | 26  | 1.3 | 5139   | 1.6  |
| 13     | 7366  | 2.3  | 44  | 2.2 | 7410   | 2.3  |
| 14     | 2001  | 0.6  | 18  | 0.9 | 2019   | 0.6  |
| 15     | 1382  | 0.4  | 15  | 0.8 | 1397   | 0.4  |
| 16     | 381   | 0.1  | 2   | 0.1 | 383    | 0.1  |
| 17     | 12174 | 3.9  | 57  | 2.9 | 12231  | 3.9  |
| 18     | 5070  | 1.6  | 32  | 1.6 | 5102   | 1.6  |
| 19     | 30046 | 9.5  | 164 | 8.3 | 30210  | 9.5  |
| 20     | 12137 | 3.8  | 73  | 3.7 | 12210  | 3.8  |
| 21     | 17343 | 5.5  | 123 | 6.2 | 17466  | 5.5  |
| 22     | 34465 | 10.9 | 232 | 11.8| 34697  | 10.9 |
| 23     | 7112  | 2.3  | 49  | 2.5 | 7161   | 2.3  |
| 24     | 9295  | 3.0  | 73  | 3.7 | 9368   | 3.0  |
| 25     | 20510 | 6.5  | 112 | 5.7 | 20622  | 6.5  |
| 26     | 3723  | 1.2  | 30  | 1.5 | 3753   | 1.2  |
| 27     | 2899  | 0.9  | 22  | 1.1 | 2921   | 0.9  |
| 28     | 13139 | 4.2  | 111 | 5.6 | 13250  | 4.2  |
| 29     | 39120 | 12.4 | 286 | 14.5| 39406  | 12.4 |
|    | all    | 315108| 100.0 | 1971| 100.0 | 317079| 100.0 |

| inse2010 |    |    |    |    |    |    |
| 1 | 315108 | 100.0 | 1971| 100.0 | 317079 | 100.0 |
|    | all    | 315108| 100.0 | 1971| 100.0 | 317079| 100.0 |

Table 2: SE 2010: Categorical variables

```	ableContinuous(vars=data[,c("weight2010", "ipw2010")], group=data$died2011, cap="STATPOP 2010: Continuous variables")
```
<table>
<thead>
<tr>
<th>Variable</th>
<th>Levels</th>
<th>n</th>
<th>Min</th>
<th>q1</th>
<th>(\bar{x})</th>
<th>q3</th>
<th>Max</th>
<th>s</th>
<th>IQR</th>
<th>#NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>weight2010</td>
<td>0</td>
<td>315108</td>
<td>3.3</td>
<td>15.0</td>
<td>16.8</td>
<td>20.6</td>
<td>30.3</td>
<td>75.0</td>
<td>9.4</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1971</td>
<td>6.4</td>
<td>14.6</td>
<td>16.1</td>
<td>19.4</td>
<td>30.1</td>
<td>43.4</td>
<td>9.3</td>
<td>15.5</td>
</tr>
<tr>
<td></td>
<td>all</td>
<td>317079</td>
<td>3.3</td>
<td>15.0</td>
<td>16.8</td>
<td>20.6</td>
<td>30.3</td>
<td>75.0</td>
<td>9.4</td>
<td>15.3</td>
</tr>
<tr>
<td>ipw2010</td>
<td>0</td>
<td>315108</td>
<td>7.3</td>
<td>15.2</td>
<td>17.6</td>
<td>21.2</td>
<td>30.2</td>
<td>61.8</td>
<td>9.6</td>
<td>15.0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1971</td>
<td>5.8</td>
<td>17.0</td>
<td>26.0</td>
<td>30.2</td>
<td>39.3</td>
<td>113.4</td>
<td>17.3</td>
<td>22.3</td>
</tr>
<tr>
<td></td>
<td>all</td>
<td>317079</td>
<td>5.8</td>
<td>15.2</td>
<td>17.6</td>
<td>21.2</td>
<td>30.2</td>
<td>113.4</td>
<td>9.7</td>
<td>15.0</td>
</tr>
</tbody>
</table>

Table 3: STATPOP 2010: Continuous variables

Table 4: SE 2010: Continuous variables

```r
output <- c()
mod <- glm(inse2010 ~ factor(statpop_agecat5), data=data, family = binomial())
output <- rbind(output,
    data.frame(var=names(mod$coefficients[2:length(mod$coefficients)]),
    est=exp(mod$coefficients[2:length(mod$coefficients)]),
    lci=exp(confint.default(mod)[2:length(mod$coefficients),1]),
    uci=exp(confint.default(mod)[2:length(mod$coefficients),2])))
rm(mod)
mod <- glm(inse2010 ~ female, data=data, family = binomial())
output <- rbind(output,
    data.frame(var=names(mod$coefficients[2:length(mod$coefficients)]),
    est=exp(mod$coefficients[2:length(mod$coefficients)]),
    lci=exp(confint.default(mod)[2:length(mod$coefficients),1]),
    uci=exp(confint.default(mod)[2:length(mod$coefficients),2])))
rm(mod)
mod <- glm(inse2010 ~ factor(nat), data=data, family = binomial())
output <- rbind(output,
    data.frame(var=names(mod$coefficients[2:length(mod$coefficients)]),
    est=exp(mod$coefficients[2:length(mod$coefficients)]),
    lci=exp(confint.default(mod)[2:length(mod$coefficients),1]),
    uci=exp(confint.default(mod)[2:length(mod$coefficients),2])))
rm(mod)
```
```r
data.frame(var=names(mod$coefficients[2:length(mod$coefficients)]),
           est=exp(mod$coefficients[2:length(mod$coefficients)]),
           lci=exp(confint.default(mod)[2:length(mod$coefficients),1]),
           uci=exp(confint.default(mod)[2:length(mod$coefficients),2])))

rm(mod)

mod <- glm(inse2010 ~ factor(civil), data=data, family = binomial())

output <- rbind(output,
                 data.frame(var=names(mod$coefficients[2:length(mod$coefficients)]),
                            est=exp(mod$coefficients[2:length(mod$coefficients)]),
                            lci=exp(confint.default(mod)[2:length(mod$coefficients),1]),
                            uci=exp(confint.default(mod)[2:length(mod$coefficients),2])))

rm(mod)

mod <- glm(inse2010 ~ factor(canton), data=data, family = binomial())

output <- rbind(output,
                 data.frame(var=names(mod$coefficients[2:length(mod$coefficients)]),
                            est=exp(mod$coefficients[2:length(mod$coefficients)]),
                            lci=exp(confint.default(mod)[2:length(mod$coefficients),1]),
                            uci=exp(confint.default(mod)[2:length(mod$coefficients),2])))

rm(mod)

mod <- glm(inse2010 ~ died2011, data=data, family = binomial())

output <- rbind(output,
                 data.frame(var=names(mod$coefficients[2:length(mod$coefficients)]),
                            est=exp(mod$coefficients[2:length(mod$coefficients)]),
                            lci=exp(confint.default(mod)[2:length(mod$coefficients),1]),
                            uci=exp(confint.default(mod)[2:length(mod$coefficients),2])))

rm(mod)

dimnames(output)[[1]] <- 1:length(dimnames(output)[[1]])

output

## var   est  lci  uci
## 1  factor(statpop_agecat5)1 0.9343878 0.9159445 0.9532024
## 2  factor(statpop_agecat5)2 1.0198941 1.0004681 1.0396972
## 3  factor(statpop_agecat5)3 1.1174232 1.0965803 1.1386622
## 4  factor(statpop_agecat5)4 1.1181712 1.0974791 1.1392534
## 5  factor(statpop_agecat5)5 1.0879641 1.0682335 1.1085091
## 6  factor(statpop_agecat5)6 1.0942136 1.0744830 1.1143065
## 7  factor(statpop_agecat5)7 1.0879232 1.0677159 1.1085130
## 8  factor(statpop_agecat5)8 1.1100281 1.0887962 1.1316740
## 9  factor(statpop_agecat5)9 1.1118561 1.0903167 1.1338210
```
<table>
<thead>
<tr>
<th>Factor</th>
<th>Estimate 1</th>
<th>Estimate 2</th>
<th>Estimate 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>factor(statpop_agecat5)10</td>
<td>1.1492376</td>
<td>1.1263416</td>
<td>1.1725991</td>
</tr>
<tr>
<td>factor(statpop_agecat5)11</td>
<td>1.1457018</td>
<td>1.1211694</td>
<td>1.1707710</td>
</tr>
<tr>
<td>factor(statpop_agecat5)12</td>
<td>1.1464542</td>
<td>1.1206745</td>
<td>1.1728270</td>
</tr>
<tr>
<td>factor(statpop_agecat5)13</td>
<td>1.0983005</td>
<td>1.0710174</td>
<td>1.1262786</td>
</tr>
<tr>
<td>factor(statpop_agecat5)14</td>
<td>0.9089838</td>
<td>0.8843204</td>
<td>0.9343351</td>
</tr>
<tr>
<td>female</td>
<td>1.0366692</td>
<td>1.0292986</td>
<td>1.0440927</td>
</tr>
<tr>
<td>factor(nat)2</td>
<td>0.9441447</td>
<td>0.9345296</td>
<td>0.9538587</td>
</tr>
<tr>
<td>factor(nat)3</td>
<td>0.8092078</td>
<td>0.7945234</td>
<td>0.8241636</td>
</tr>
<tr>
<td>factor(nat)4</td>
<td>0.7877280</td>
<td>0.7702867</td>
<td>0.8056643</td>
</tr>
<tr>
<td>factor(civil)2</td>
<td>1.0567839</td>
<td>1.0483939</td>
<td>1.0652410</td>
</tr>
<tr>
<td>factor(civil)3</td>
<td>0.9870434</td>
<td>0.9713627</td>
<td>1.0029773</td>
</tr>
<tr>
<td>factor(civil)4</td>
<td>1.0397864</td>
<td>1.0259945</td>
<td>1.0537636</td>
</tr>
<tr>
<td>factor(canton)2</td>
<td>1.0696812</td>
<td>1.0502078</td>
<td>1.0895156</td>
</tr>
<tr>
<td>factor(canton)3</td>
<td>2.092211</td>
<td>2.0523785</td>
<td>2.1328372</td>
</tr>
<tr>
<td>factor(canton)4</td>
<td>1.1168060</td>
<td>1.0466629</td>
<td>1.1916499</td>
</tr>
<tr>
<td>factor(canton)5</td>
<td>0.9824343</td>
<td>0.9482447</td>
<td>1.0178567</td>
</tr>
<tr>
<td>factor(canton)6</td>
<td>0.9347093</td>
<td>0.8714731</td>
<td>1.0025340</td>
</tr>
<tr>
<td>factor(canton)7</td>
<td>1.0135957</td>
<td>0.9516682</td>
<td>1.0793261</td>
</tr>
<tr>
<td>factor(canton)8</td>
<td>0.940134</td>
<td>0.8737523</td>
<td>0.9904305</td>
</tr>
<tr>
<td>factor(canton)9</td>
<td>1.890976</td>
<td>1.8340432</td>
<td>1.9497207</td>
</tr>
<tr>
<td>factor(canton)10</td>
<td>0.9635439</td>
<td>0.9374064</td>
<td>0.9904102</td>
</tr>
<tr>
<td>factor(canton)11</td>
<td>1.0237648</td>
<td>0.9960445</td>
<td>1.0522566</td>
</tr>
<tr>
<td>factor(canton)12</td>
<td>1.0596927</td>
<td>1.0252226</td>
<td>1.0896855</td>
</tr>
<tr>
<td>factor(canton)13</td>
<td>1.0584307</td>
<td>1.0309285</td>
<td>1.0866666</td>
</tr>
<tr>
<td>factor(canton)14</td>
<td>1.0249405</td>
<td>0.9788160</td>
<td>1.0732386</td>
</tr>
<tr>
<td>factor(canton)15</td>
<td>1.0621506</td>
<td>1.0055655</td>
<td>1.1219198</td>
</tr>
<tr>
<td>factor(canton)16</td>
<td>1.0022202</td>
<td>0.9046300</td>
<td>1.1103382</td>
</tr>
<tr>
<td>factor(canton)17</td>
<td>1.0070443</td>
<td>0.9651831</td>
<td>1.0292907</td>
</tr>
<tr>
<td>factor(canton)18</td>
<td>0.9775217</td>
<td>0.9481088</td>
<td>1.0078472</td>
</tr>
<tr>
<td>factor(canton)19</td>
<td>2.0235285</td>
<td>1.9891880</td>
<td>2.0584619</td>
</tr>
<tr>
<td>factor(canton)20</td>
<td>2.0055278</td>
<td>1.9615391</td>
<td>2.0505030</td>
</tr>
<tr>
<td>factor(canton)21</td>
<td>2.1157632</td>
<td>2.0742793</td>
<td>2.1580767</td>
</tr>
<tr>
<td>factor(canton)22</td>
<td>1.9770581</td>
<td>1.9445223</td>
<td>2.0101383</td>
</tr>
<tr>
<td>factor(canton)23</td>
<td>0.8973728</td>
<td>0.8737921</td>
<td>0.9215899</td>
</tr>
<tr>
<td>factor(canton)24</td>
<td>2.2612001</td>
<td>2.2066489</td>
<td>2.3170998</td>
</tr>
<tr>
<td>factor(canton)25</td>
<td>1.9366322</td>
<td>1.9004721</td>
<td>1.9734803</td>
</tr>
<tr>
<td>factor(canton)26</td>
<td>2.2511091</td>
<td>2.1720492</td>
<td>2.3321876</td>
</tr>
<tr>
<td>factor(canton)27</td>
<td>2.3301389</td>
<td>2.397066</td>
<td>2.4242225</td>
</tr>
<tr>
<td>factor(canton)28</td>
<td>4.2435951</td>
<td>4.1511140</td>
<td>4.3381365</td>
</tr>
<tr>
<td>factor(canton)29</td>
<td>4.310922</td>
<td>4.2408682</td>
<td>4.3820927</td>
</tr>
<tr>
<td>died2011</td>
<td>0.6670748</td>
<td>0.6377049</td>
<td>0.6977759</td>
</tr>
</tbody>
</table>

rm(mod)
### Mortality rates of STATPOP population (type=1), by gender

```r
type <- 1

sex <- 1
mod <- glm(died2011 ~ factor(statpop_agecat5)-1, data=data, 
            offset=log(fupt_rounded), subset=female==sex, family=poisson())
output <- rbind(output, data.frame(agecat=as.numeric(mod$xlevels[[1]]), 
                                    female=sex, rate=exp(mod$coeff), type=type))

sex <- 0
mod <- glm(died2011 ~ factor(statpop_agecat5)-1, data=data, 
            offset=log(fupt_rounded), subset=female==sex, family=poisson())
output <- rbind(output, data.frame(agecat=as.numeric(mod$xlevels[[1]]), 
                                    female=sex, rate=exp(mod$coeff), type=type))
```

### Restrict to SE 2010 population

```r
data <- data[data$inse2010==1, ]
```

### Mortality rates of SE 2010 population using IPW weights (type=2), by gender

```r
type <- 2

sex <- 1
mod <- glm(died2011 ~ factor(statpop_agecat5)-1, data=data, offset=log(fupt_rounded), 
            subset=female==sex, family=poisson(), weights=ipw2010)
output <- rbind(output, data.frame(agecat=as.numeric(mod$xlevels[[1]]), 
                                    female=sex, rate=exp(mod$coeff), type=type))

sex <- 0
mod <- glm(died2011 ~ factor(statpop_agecat5)-1, data=data, offset=log(fupt_rounded), 
            subset=female==sex, family=poisson(), weights=ipw2010)
output <- rbind(output, data.frame(agecat=as.numeric(mod$xlevels[[1]]), 
                                    female=sex, rate=exp(mod$coeff), type=type))
```

### Mortality rates of SE 2010 population using CSW weights (type=3), by gender

```r
type <- 3

sex <- 1
mod <- glm(died2011 ~ factor(statpop_agecat5)-1, data=data, offset=log(fupt_rounded), 
            subset=female==sex, family=poisson(), weights=weight2010)
output <- rbind(output, data.frame(agecat=as.numeric(mod$xlevels[[1]]), 
                                    female=sex, rate=exp(mod$coeff), type=type))
```
female=sex, rate=exp(mod$coeff), type=type))

sex <- 0
mod <- glm(died2011 ~ factor(statpop_agecat5)-1, data=data, offset=log(fupt_rounded),
subset=female==sex, family=poisson(), weights=weight2010)
output <- rbind(output, data.frame(agecat=as.numeric(mod$xlevels[[1]])),
female=sex, rate=exp(mod$coeff), type=type))

### Mortality rates of SE 2010 population using no weights (type=4), by gender

type <- 4

sex <- 1
mod <- glm(died2011 ~ factor(statpop_agecat5)-1, data=data, offset=log(fupt_rounded),
subset=female==sex, family=poisson())
output <- rbind(output, data.frame(agecat=as.numeric(mod$xlevels[[1]])),
female=sex, rate=exp(mod$coeff), type=type))

sex <- 0
mod <- glm(died2011 ~ factor(statpop_agecat5)-1, data=data, offset=log(fupt_rounded),
subset=female==sex, family=poisson())
output <- rbind(output, data.frame(agecat=as.numeric(mod$xlevels[[1]])),
female=sex, rate=exp(mod$coeff), type=type))

output$agecat <- factor(output$agecat, levels=0:14,
labels=c("[15,20)", "[20,25)", "[25,30)", "[30,35)",
"[35,40)", "[40,45)", "[45,50)", "[50,55)",
"[55,60)", "[60,65)", "[65,70)", "[70,75)",
"[75,80)", "[80,85)", ">=85")
)
output$female <- factor(output$female, levels=0:1, labels=c("Men", "Women"))
output$type <- factor(output$type, levels=1:4, labels=c("STATPOP 2010",
"SE 2010 (IPW)", "SE 2010 (CSW)", "SE 2010 (unweighted)"))

factor <- 100000
output$rate <- output$rate*factor
dimnames(output)[[1]] <- 1:length(dimnames(output)[[1]])

### Show results
output

## agecat female rate type
## 1 [15,20) Women 15.377923 STATPOP 2010
## 2 [20,25) Women 23.696305 STATPOP 2010
## 3 [25,30) Women 21.996134 STATPOP 2010
## 4 [30,35) Women 35.067326 STATPOP 2010
<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gender</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>[35,40)</td>
<td>Women</td>
<td>41.586601</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[40,45)</td>
<td>Women</td>
<td>78.266849</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[45,50)</td>
<td>Women</td>
<td>130.144776</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[50,55)</td>
<td>Women</td>
<td>198.182110</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[55,60)</td>
<td>Women</td>
<td>310.278384</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[60,65)</td>
<td>Women</td>
<td>498.732925</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[65,70)</td>
<td>Women</td>
<td>784.287264</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[70,75)</td>
<td>Women</td>
<td>1251.000126</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[75,80)</td>
<td>Women</td>
<td>2286.724441</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[80,85)</td>
<td>Women</td>
<td>4644.773608</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>&gt;=85</td>
<td>Women</td>
<td>13657.925525</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[15,20)</td>
<td>Men</td>
<td>39.199816</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[20,25)</td>
<td>Men</td>
<td>54.180393</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[25,30)</td>
<td>Men</td>
<td>44.578863</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[30,35)</td>
<td>Men</td>
<td>56.975437</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[35,40)</td>
<td>Men</td>
<td>75.497232</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[40,45)</td>
<td>Men</td>
<td>129.308223</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[45,50)</td>
<td>Men</td>
<td>202.020019</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[50,55)</td>
<td>Men</td>
<td>338.941367</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[55,60)</td>
<td>Men</td>
<td>532.887068</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[60,65)</td>
<td>Men</td>
<td>864.189059</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[65,70)</td>
<td>Men</td>
<td>1392.530477</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[70,75)</td>
<td>Men</td>
<td>2209.014961</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[75,80)</td>
<td>Men</td>
<td>3934.881354</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[80,85)</td>
<td>Men</td>
<td>7271.082613</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>&gt;=85</td>
<td>Men</td>
<td>16579.584135</td>
<td>STATPOP 2010</td>
</tr>
<tr>
<td>[15,20)</td>
<td>Women</td>
<td>15.679440</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[20,25)</td>
<td>Women</td>
<td>27.720144</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[25,30)</td>
<td>Women</td>
<td>9.714367</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[30,35)</td>
<td>Women</td>
<td>27.847254</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[35,40)</td>
<td>Women</td>
<td>60.422426</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[40,45)</td>
<td>Women</td>
<td>81.052945</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[45,50)</td>
<td>Women</td>
<td>114.689100</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[50,55)</td>
<td>Women</td>
<td>179.922461</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[55,60)</td>
<td>Women</td>
<td>291.687019</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[60,65)</td>
<td>Women</td>
<td>438.695440</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[65,70)</td>
<td>Women</td>
<td>800.636296</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[70,75)</td>
<td>Women</td>
<td>1393.834663</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[75,80)</td>
<td>Women</td>
<td>2161.236569</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[80,85)</td>
<td>Women</td>
<td>4665.285213</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>&gt;=85</td>
<td>Women</td>
<td>12813.540168</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[15,20)</td>
<td>Men</td>
<td>38.200556</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[20,25)</td>
<td>Men</td>
<td>66.468834</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[25,30)</td>
<td>Men</td>
<td>56.942586</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[30,35)</td>
<td>Men</td>
<td>39.686788</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[35,40)</td>
<td>Men</td>
<td>73.910474</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[40,45)</td>
<td>Men</td>
<td>103.654033</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>[45,50)</td>
<td>Men</td>
<td>228.540248</td>
<td>SE 2010 (IPW)</td>
</tr>
<tr>
<td>Age Group</td>
<td>Gender</td>
<td>Value</td>
<td>Study Year</td>
</tr>
<tr>
<td>-----------</td>
<td>--------</td>
<td>----------------</td>
<td>------------</td>
</tr>
<tr>
<td>[20, 25)</td>
<td>Women</td>
<td>45.284756</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[25, 30)</td>
<td>Women</td>
<td>4.242638</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[30, 35)</td>
<td>Women</td>
<td>36.903647</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[35, 40)</td>
<td>Women</td>
<td>64.170143</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[40, 45)</td>
<td>Women</td>
<td>47.662749</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[45, 50)</td>
<td>Women</td>
<td>75.698020</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[50, 55)</td>
<td>Women</td>
<td>121.975222</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[50, 60)</td>
<td>Women</td>
<td>213.247322</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[60, 65)</td>
<td>Women</td>
<td>329.160980</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[65, 70)</td>
<td>Women</td>
<td>533.659322</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[70, 75)</td>
<td>Women</td>
<td>759.558373</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[75, 80)</td>
<td>Women</td>
<td>1573.501336</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[80, 85)</td>
<td>Women</td>
<td>2619.861638</td>
<td>SE 2010</td>
</tr>
<tr>
<td>&gt;=85</td>
<td>Women</td>
<td>7250.399009</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[15, 20)</td>
<td>Men</td>
<td>40.598662</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[20, 25)</td>
<td>Men</td>
<td>78.755315</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[25, 30)</td>
<td>Men</td>
<td>19.119003</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[35, 40)</td>
<td>Men</td>
<td>30.456613</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[40, 45)</td>
<td>Men</td>
<td>76.866091</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[45, 50)</td>
<td>Men</td>
<td>199.396834</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[50, 55)</td>
<td>Men</td>
<td>246.019683</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[50, 60)</td>
<td>Men</td>
<td>344.718246</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[60, 65)</td>
<td>Men</td>
<td>696.754791</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[65, 70)</td>
<td>Men</td>
<td>1299.106508</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[70, 75)</td>
<td>Men</td>
<td>1538.654401</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[75, 80)</td>
<td>Men</td>
<td>3302.448952</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[80, 85)</td>
<td>Men</td>
<td>5181.721530</td>
<td>SE 2010</td>
</tr>
<tr>
<td>&gt;=85</td>
<td>Men</td>
<td>13284.599004</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[15, 20)</td>
<td>Women</td>
<td>20.639409</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[25, 30)</td>
<td>Women</td>
<td>8.166107</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[30, 35)</td>
<td>Women</td>
<td>44.391832</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[35, 40)</td>
<td>Women</td>
<td>50.256307</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[40, 45)</td>
<td>Women</td>
<td>45.867352</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[45, 50)</td>
<td>Women</td>
<td>96.508950</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[50, 55)</td>
<td>Women</td>
<td>125.417752</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[55, 60)</td>
<td>Women</td>
<td>233.759945</td>
<td>SE 2010</td>
</tr>
<tr>
<td>[60, 65)</td>
<td>Women</td>
<td>369.350910</td>
<td>SE 2010</td>
</tr>
<tr>
<td></td>
<td>Age Range</td>
<td>Gender</td>
<td>Rate</td>
</tr>
<tr>
<td>---</td>
<td>-----------</td>
<td>--------</td>
<td>---------------</td>
</tr>
<tr>
<td>101</td>
<td>[65,70)</td>
<td>Women</td>
<td>534.364495</td>
</tr>
<tr>
<td>102</td>
<td>[70,75)</td>
<td>Women</td>
<td>718.236012</td>
</tr>
<tr>
<td>103</td>
<td>[75,80)</td>
<td>Women</td>
<td>1683.780501</td>
</tr>
<tr>
<td>104</td>
<td>[80,85)</td>
<td>Women</td>
<td>2647.884340</td>
</tr>
<tr>
<td>105</td>
<td>&gt;=85</td>
<td>Women</td>
<td>7640.140785</td>
</tr>
<tr>
<td>107</td>
<td>[20,25)</td>
<td>Men</td>
<td>60.179334</td>
</tr>
<tr>
<td>108</td>
<td>[25,30)</td>
<td>Men</td>
<td>17.125634</td>
</tr>
<tr>
<td>109</td>
<td>[30,35)</td>
<td>Men</td>
<td>15.489708</td>
</tr>
<tr>
<td>110</td>
<td>[35,40)</td>
<td>Men</td>
<td>29.587331</td>
</tr>
<tr>
<td>111</td>
<td>[40,45)</td>
<td>Men</td>
<td>93.277988</td>
</tr>
<tr>
<td>112</td>
<td>[45,50)</td>
<td>Men</td>
<td>172.683956</td>
</tr>
<tr>
<td>113</td>
<td>[50,55)</td>
<td>Men</td>
<td>262.191924</td>
</tr>
<tr>
<td>114</td>
<td>[55,60)</td>
<td>Men</td>
<td>362.957586</td>
</tr>
<tr>
<td>115</td>
<td>[60,65)</td>
<td>Men</td>
<td>735.294118</td>
</tr>
<tr>
<td>116</td>
<td>[65,70)</td>
<td>Men</td>
<td>1312.997626</td>
</tr>
<tr>
<td>117</td>
<td>[70,75)</td>
<td>Men</td>
<td>1532.783714</td>
</tr>
<tr>
<td>118</td>
<td>[75,80)</td>
<td>Men</td>
<td>3270.615905</td>
</tr>
<tr>
<td>119</td>
<td>[80,85)</td>
<td>Men</td>
<td>4885.625530</td>
</tr>
<tr>
<td>120</td>
<td>&gt;=85</td>
<td>Men</td>
<td>13489.527867</td>
</tr>
</tbody>
</table>

```r
p <- ggplot(data=output, aes(x=agecat, y=rate, color=type))
p1 <- p + geom_point(size=0.7) + geom_line(aes(group=type), size=0.3)
p1 <- p1 + scale_y_log10(breaks=c(5,10,20,100,1000,10000)) + facet_grid(female~.)
p1 <- p1 + ylab("Mortality rate (per 100,000 person-years") + xlab("Age categories")
p1 <- p1 + theme_bw()
p1 <- p1 + theme(strip.background = element_rect(fill="#F5F5F5"),
                 legend.key = element_blank(),
                 axis.text.x = element_text(angle=45, vjust=0.6))
p1 <- p1 + scale_color_brewer("", palette = "Set1")
p1
```
Mortality rate (per 100,000 person-years)

<table>
<thead>
<tr>
<th>Age categories</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55-60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75-80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;85</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

STATPOP 2010
SE 2010 (IPW)
SE 2010 (CSW)
SE 2010 (unweighted)
Life expectancy (Stata code)

Own written Stata command based on:


Stata code and command is available at https://github.com/MoserGitHub/censn.
import delimited using "F:\SNC\SurveyMortality\data\SwissCensus2010.csv", clear
(12 vars, 6,729,363 obs)

adopath + "F:\SNC\SurveyMortality\ado\"
[1] (BASE) "C:\Program Files (x86)\Stata14\ado\base/"
[2] (SITE) "C:\Program Files (x86)\Stata14\ado\site/"
[3]              
[4] (PERSONAL) "c:\ado\personal/"
[5] (PLUS) "c:\ado\plus/"
[6] (OLDPLACE) "c:\ado/"
[7]              "F:\SNC\SurveyMortality\ado/"

replace agestart_rounded=agestart_rounded-30
(6,729,363 real changes made)

replace ageend_rounded=ageend_rounded-30
(6,729,363 real changes made)

* Restrict to individuals aged 30 years or older
    drop if agestart_rounded<0
    (1,481,413 observations deleted)

* STATPOP 2010
    censn ageend_rounded if female==0, lefttrun(agestart_rounded)
        failure(died2011)
Fitting constant-only model:

| Coef. | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|-------|-----------|-------|------|----------------------|
| mu    | _cons     | 50.91508 | .0568905 | 894.97 | 0.000 | 50.80358 | 51.02659 |
| sigma | _cons     | 11.81383 | .0443428 | 266.42 | 0.000 | 11.72692 | 11.90074 |
| shape | _cons     | -4.936167 | .1105058 | -44.67 | 0.000 | -5.152754 | -4.719579 |

Skewness parameter in CP
LE_Nov2017.txt

Coef.: -.84768077
Std. Err.: .00029225
[95% CI]: -.84825357 , -.84710797

censn ageend_rounded if female==1, lefttrun(agestart_rounded)
failure(died2011)
Fitting constant-only model:

Iteration 0: log likelihood = -204947.75 (not concave)
Iteration 1: log likelihood = -197645.83 (not concave)
Iteration 2: log likelihood = -124982.25
Iteration 3: log likelihood = -121747.83
Iteration 4: log likelihood = -120931.22
Iteration 5: log likelihood = -120908.33
Iteration 6: log likelihood = -120908.13
Iteration 7: log likelihood = -120908.13

Number of obs = 2,701,837
Wald chi2(0) =
Prob > chi2 =

Log likelihood = -120908.13

|                   | Coef. | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|-------------------|-------|-----------|-------|-----|----------------------|
| mu _cons | 54.78439 | .0525072  | 1043.37 | 0.000 | 54.68148    | 54.8873          |
| sigma _cons | 10.93951 | .0401325  | 272.58  | 0.000 | 10.86085    | 11.01817         |
| shape _cons | -5.189691 | .1015395 | -51.11  | 0.000 | -5.388704   | -4.990677        |

Skewness parameter in CP
Coef.: -.86013039
Std. Err.: .00022696
[95% CI]: -.86057523 , -.85968556

* SE 2010
* Unweighted

censn ageend_rounded if female==0 & inse2010==1, lefttrun(agestart_rounded)
failure(died2011) difficult
Fitting constant-only model:

Iteration 0: log likelihood = -9159.9159 (not concave)
Iteration 1: log likelihood = -5627.0971 (not concave)
Iteration 2: log likelihood = -5606.496 (not concave)
Iteration 3: log likelihood = -5321.1561 (not concave)
Iteration 4: log likelihood = -5248.5118 (not concave)
Iteration 5: log likelihood = -4964.3642 (not concave)
Iteration 6: log likelihood = -4760.7278 (not concave)
Iteration 7: log likelihood = -4711.1978
Iteration 8: log likelihood = -4700.0464
Iteration 9: log likelihood = -4699.5688
Iteration 10: log likelihood = -4699.5669
Iteration 11: log likelihood = -4699.5669
Parameter estimates:

- **mu**: 53.32098 (Std. Err. 0.2829822), z = 188.43, P>|z| = 0.000
- **sigma**: 11.60652 (Std. Err. 0.2229127), z = 52.07, P>|z| = 0.000
- **shape**: -5.181367 (Std. Err. 0.7839979), z = -6.61, P>|z| = 0.000

**Skewness parameter in CP**
- Coef.: -0.85974592
- Std. Err.: 0.07764274
- [95% CI]: -1.0119229, -0.70756894

The model was fitted using the command:

```
cens n age end rounded if female==1 & inse2010==1, lefttrun(age start rounded) failure(>died2011) difficult
```

**Iteration History**:
- Iteration 0: log likelihood = -8933.3732 (not concave)
- Iteration 1: log likelihood = -4910.6544 (not concave)
- Iteration 2: log likelihood = -4737.8554 (not concave)
- Iteration 3: log likelihood = -4515.3801 (not concave)
- Iteration 4: log likelihood = -4455.4714 (not concave)
- Iteration 5: log likelihood = -4288.4417 (not concave)
- Iteration 6: log likelihood = -4246.4338 (not concave)
- Iteration 7: log likelihood = -4101.2046
- Iteration 8: log likelihood = -4054.2681
- Iteration 9: log likelihood = -4044.9889
- Iteration 10: log likelihood = -4044.8558
- Iteration 11: log likelihood = -4023.6899
- Iteration 12: log likelihood = -3975.368
- Iteration 13: log likelihood = -3973.2685
- Iteration 14: log likelihood = -3972.3757
- Iteration 15: log likelihood = -3972.2047
- Iteration 16: log likelihood = -3972.1824
- Iteration 17: log likelihood = -3972.1818
- Iteration 18: log likelihood = -3972.1818
- Iteration 19: log likelihood = -3972.1818

**Log likelihood**:
- Number of obs = 131,990
- Wald chi2(0) = 0.000
- Prob > chi2 = 0.000

Parameter estimates:

- **mu**: 58.86656 (Std. Err. 0.320969), z = 183.40, P>|z| = 0.000
- **sigma**: 11.50494 (Std. Err. 0.2489221), z = 46.22, P>|z| = 0.000
- **shape**: -10.89448 (Std. Err. 6.909487), z = -1.58, P>|z| = 0.115
Skewness parameter in CP
Coef.: -.96163395
Std. Err.: .91502505
[95% CI]: -2.7550501 , .83178219

* CS weighted
.censn ageend_rounded [pw=weight2010] if female==0 & inse2010==1,
lefttrun(agestart_rounded) failure(died2011) difficult
Fitting constant-only model:

| Iteration 0:   log pseudolikelihood = -185108.1 (not concave) |
| Iteration 1:   log pseudolikelihood = -117415.53 (not concave) |
| Iteration 2:   log pseudolikelihood = -113323.03 (not concave) |
| Iteration 4:   log pseudolikelihood = -105581.28 (not concave) |
| Iteration 5:   log pseudolikelihood = -103178.11 (not concave) |
| Iteration 6:   log pseudolikelihood = -100420.17 (not concave) |
| Iteration 7:   log pseudolikelihood = -96223.153 |
| Iteration 8:   log pseudolikelihood = -96040.641 (backed up) |
| Iteration 9:   log pseudolikelihood = -94241.685 |
| Iteration 10:  log pseudolikelihood = -94222.974 |
| Iteration 11:  log pseudolikelihood = -94210.911 |
| Iteration 12:  log pseudolikelihood = -94210.89 |
| Iteration 13:  log pseudolikelihood = -94210.89 |

Number of obs     =    121,021
Wald chi2(0)      =          .
Log pseudolikelihood =  -94210.89               Prob > chi2       =          .

<table>
<thead>
<tr>
<th>Robust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coef.   Std. Err.      z    P&gt;</td>
</tr>
</tbody>
</table>
mu   
_cons 53.35384   .3199026   166.78   0.000     52.72684    53.98084
sigma
_cons 11.58996   .2629378    44.08   0.000     11.07461    12.10531
shape
_cons  -4.435974   .4977457    -8.91   0.000    -5.411538    -3.46041

Skewness parameter in CP
Coef.: -.81784394
Std. Err.: .02362381
[95% CI]: - .86414576 , -.77154213

* CS weighted
.censn ageend_rounded [pw=weight2010] if female==1 & inse2010==1,
lefttrun(agestart_rounded) failure(died2011) difficult
Fitting constant-only model:

| Iteration 0:   log pseudolikelihood = -173967.84 (not concave) |
| Iteration 1:   log pseudolikelihood = -92477.105 (not concave) |
| Iteration 2:   log pseudolikelihood = -90265.987 (not concave) |
| Iteration 3:   log pseudo
### Iteration Log

<table>
<thead>
<tr>
<th>Iteration</th>
<th>Log Pseudolikelihood</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-84392.726</td>
<td>Not concave</td>
</tr>
<tr>
<td>4</td>
<td>-84378.809</td>
<td>Not concave</td>
</tr>
<tr>
<td>5</td>
<td>-81224.765</td>
<td>Not concave</td>
</tr>
<tr>
<td>6</td>
<td>-79049.605</td>
<td>Not concave</td>
</tr>
<tr>
<td>7</td>
<td>-76734.701</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>-76305.367</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>-76038.98</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>-76037.754</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>-76037.691</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>-76037.688</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>-76037.688</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>-75585.041</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>-74925.628</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>-74804.441</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>-74765.511</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>-74757.048</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>-74754.789</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>-74754.537</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>-74754.537</td>
<td></td>
</tr>
</tbody>
</table>

**Number of obs:** 131,990  
**Log Pseudolikelihood:** -74754.537

---

### Coefficient Table

|        | Robust Coef. | Std. Err. | z    | P>|z| | [95% Conf. Interval] |
|--------|--------------|-----------|------|------|----------------------|
| mu     | _cons        | 59.19851  | .3831018 | 154.52 | 58.44764 - 59.94937  |
| sigma  | _cons        | 11.49247  | .3472371 | 33.10  | 10.8119 - 12.17305   |
| shape  | _cons        | -8.634522 | 3.368181 | -2.56  | -15.23604 - 2.03309  |

**Skewness parameter in CP**

| Coef.:  | -.94260365  |
| Std. Err.: | .46572918  |
| [95% CI]: | -2.3509365 | .46572918 |

---

### Fitting Constant-only Model

```
* IP weighted
. censn ageend_rounded [pw=ipw2010] if female==0 & inse2010==1, lefttrun(agestart_rounded) failure(died2011) difficult
```

**Number of obs:** 121,021  
**Log Pseudolikelihood:** -118292.42

---

Page 5
|               Robust Coef. | Std. Err. | z     | P>|z|   |  [95% Conf. Interval] |
|--------------------------|-----------|-------|-------|-----------------|
| mu _cons                 | 50.92614  | 0.3478712 | 146.39 | 0.000           | 50.24433 - 51.60796 |
| sigma _cons              | 11.71864  | 0.3027535 | 38.71  | 0.000           | 11.12525 - 12.31202 |
| shape _cons              | -4.373761 | 0.445647  | -9.81  | 0.000           | -5.247213 - 3.500309 |

Skewness parameter in CP

Coef.: -0.81355052
Std. Err.: 0.01738051

[95% CI]: -0.84761569 , -0.77948535

\[ censn\ ageend\_rounded\ [pw=ipw2010] if female==1 & inse2010==1, \\
lefttrun(agestart\_rounded) > ded\] failure(died2011) difficult

Fitting constant-only model:

| Iteration 0: | log pseudolikelihood = -204835.01 (not concave) |
| Iteration 1: | log pseudolikelihood = -142195.92 (not concave) |
| Iteration 2: | log pseudolikelihood = -130641.31 (not concave) |
| Iteration 3: | log pseudolikelihood = -120798.93 (not concave) |
| Iteration 4: | log pseudolikelihood = -117473.54 (not concave) |
| Iteration 5: | log pseudolikelihood = -116953.74 |
| Iteration 6: | log pseudolikelihood = -116720.59 (not concave) |
| Iteration 7: | log pseudolikelihood = -116161.54 |
| Iteration 8: | log pseudolikelihood = -116139.6 |
| Iteration 9: | log pseudolikelihood = -116131.58 |
| Iteration 10: | log pseudolikelihood = -116131.56 |
| Iteration 11: | log pseudolikelihood = -116131.56 |

Number of obs = 131,990
Wald chi2(0) = .
Prob > chi2 = .

Log pseudolikelihood = -116131.56

|               Robust Coef. | Std. Err. | z     | P>|z|   |  [95% Conf. Interval] |
|--------------------------|-----------|-------|-------|-----------------|
| mu _cons                 | 54.80675  | 0.3479427 | 157.52 | 0.000           | 54.1248 - 55.48871 |
| sigma _cons              | 10.70856  | 0.2874598 | 37.25  | 0.000           | 10.14515 - 11.27197 |
| shape _cons              | -6.421754 | 0.7594985 | -8.46  | 0.000           | -7.910343 - 4.933164 |

Skewness parameter in CP

Coef.: -0.90335602
Std. Err.: 0.07179521

[95% CI]: -1.044072 , -0.76264
. replace agestart_rounded=agestart_rounded-35  
(5,247,950 real changes made)
. replace ageend_rounded=ageend_rounded-35  
(5,247,950 real changes made)

. * Restrict to individuals aged 65 years or older
. drop if agestart_rounded<0  
(3,910,542 observations deleted)

. * STATPOP 2010
. censn ageend_rounded if female==0, lefttrun(agestart_rounded)
   failure(died2011)
Fitting constant-only model:
Iteration 0:  log likelihood =  -102837.2  (not concave)
Iteration 1:  log likelihood = -98421.569  (not concave)
Iteration 2:  log likelihood = -94910.871  (not concave)
Iteration 3:  log likelihood = -93907.237  (not concave)
Iteration 4:  log likelihood = -91186.706  (not concave)
Iteration 5:  log likelihood = -84202.104  (not concave)
Iteration 6:  log likelihood = -83998.888
Iteration 7:  log likelihood = -83731.752
Iteration 8:  log likelihood = -83718.549
Iteration 9:  log likelihood = -83718.462
Iteration 10: log likelihood = -83718.462

Number of obs     =    575,143
Wald chi2(0)      =          .
------------------------------------------------------------------------------
|      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
mu           |
   _cons |   17.62199   .0851398   206.98   0.000     17.45512    17.78886
-------------+----------------------------------------------------------------
sigma        |
   _cons |   9.904003   .0824305   120.15   0.000     9.742442    10.06556
-------------+----------------------------------------------------------------
shape        |
   _cons |   -3.33546   .0985455   -33.85   0.000    -3.528606   -3.142315
------------------------------------------------------------------------------
Skewness parameter in CP
Coef.:    -.71442172
Std. Err.:  .00020754
[95% CI]:    -.71482849 ,    -.71401495

. censn ageend_rounded if female==1, lefttrun(agestart_rounded)
   failure(died2011)
Fitting constant-only model:
Iteration 0:  log likelihood =  -122946.3  (not concave)
Iteration 1:  log likelihood =  -100337.4  (not concave)
Iteration 2:  log likelihood =  -98131.809  (not concave)
Iteration 3:  log likelihood =  -97824.239
Iteration 4:  log likelihood =  -97492.706
Iteration 5:  log likelihood =  -97486.484
Iteration 6: log likelihood = -97486.482

Number of obs = 762,265
Wald chi2(0) =
Prob > chi2 =

Log likelihood = -97486.482

------------------------------------------------------------------------------
|      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
mu           |
  _cons |    21.6647   .0562523   385.13   0.000     21.55445    21.77496
-------------+----------------------------------------------------------------
sigma        |
  _cons |    8.82385   .0511099   172.64   0.000     8.723677    8.924024
-------------+----------------------------------------------------------------
shape        |
  _cons |  -3.321786   .0746158   -44.52   0.000    -3.46803    -3.175542
------------------------------------------------------------------------------

Skewness parameter in CP

Coef.:  -.71267205
Std. Err.: .00009029
[ 95% CI]:  -.71284902,  -.71249508

* SE 2010
* Unweighted
censn ageend_rounded if female==0 & inse2010==1, lefttrun(agestart_rounded)
failure(>died2011) difficult

Fitting constant-only model:

Iteration 0: log likelihood = -4710.5291 (not concave)
Iteration 1: log likelihood = -3605.2863 (not concave)
Iteration 2: log likelihood = -3568.683  (not concave)
Iteration 3: log likelihood = -3511.469  (not concave)
Iteration 4: log likelihood = -3409.5631
Iteration 5: log likelihood = -3385.0388
Iteration 6: log likelihood = -3384.4301
Iteration 7: log likelihood = -3384.3049
Iteration 8: log likelihood = -3384.3048

Number of obs = 27,987
Wald chi2(0) =
Prob > chi2 =

Log likelihood = -3384.3048

------------------------------------------------------------------------------
|      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
mu           |
  _cons |   19.31354    .394144    49.00   0.000     18.54103    20.08605
-------------+----------------------------------------------------------------
sigma        |
  _cons |   10.35302    .3984034   25.99   0.000     9.57216    11.13387
-------------+----------------------------------------------------------------
shape        |
  _cons |  -3.995615   .6438635   -6.21   0.000    -5.257564   -2.733665
------------------------------------------------------------------------------

Skewness parameter in CP

Coef.:  .78404767
censn ageend_rounded if female==1 & inse2010==1, lefttrun(agestart_rounded) failure(died2011) difficult

Fitting constant-only model:

<table>
<thead>
<tr>
<th>Iteration</th>
<th>Log likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-5247.3335</td>
</tr>
<tr>
<td>1</td>
<td>-3242.8946</td>
</tr>
<tr>
<td>2</td>
<td>-3165.9234</td>
</tr>
<tr>
<td>3</td>
<td>-3108.3634</td>
</tr>
<tr>
<td>4</td>
<td>-3089.9284</td>
</tr>
<tr>
<td>5</td>
<td>-3084.47</td>
</tr>
<tr>
<td>6</td>
<td>-3084.4142</td>
</tr>
<tr>
<td>7</td>
<td>-3084.4118</td>
</tr>
<tr>
<td>8</td>
<td>-3084.4117</td>
</tr>
<tr>
<td>9</td>
<td>-3074.3715</td>
</tr>
<tr>
<td>10</td>
<td>-3068.4501</td>
</tr>
<tr>
<td>11</td>
<td>-3059.6613</td>
</tr>
<tr>
<td>12</td>
<td>-3059.5725</td>
</tr>
<tr>
<td>13</td>
<td>-3059.572</td>
</tr>
<tr>
<td>14</td>
<td>-3059.572</td>
</tr>
</tbody>
</table>

Number of obs  =  36,669
Log likelihood =  -3059.572                     Prob > chi2       =          .

| Coef. | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|-------|-----------|-------|------|----------------------|
| mu    | _cons     | 25.17702 | 2873424 | 87.6200  | 0.000 | 24.61384 | 25.7402 |
| sigma | _cons     | 9.040391 | 2794137 | 32.3500  | 0.000 | 8.49275  | 9.588031 |
| shape | _cons     | -4.688725 | 1234264 | -3.8000  | 0.000 | -7.107838 | -2.269612 |

Skewness parameter in CP
Coef.: -83389166
Std. Err.: 21169414
[95% CI]: -1.2488045, -41897878

* CS weighted
  censn ageend_rounded [pw=weight2010] if female==0 & inse2010==1, lefttrun(agestart_rounded)
  > rounded) failure(died2011) difficult

Fitting constant-only model:

<table>
<thead>
<tr>
<th>Iteration</th>
<th>Log pseudolikelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-93569.748</td>
</tr>
<tr>
<td>1</td>
<td>-69745.151</td>
</tr>
<tr>
<td>2</td>
<td>-68316.215</td>
</tr>
<tr>
<td>3</td>
<td>-67773.325</td>
</tr>
<tr>
<td>4</td>
<td>-67684.126</td>
</tr>
<tr>
<td>5</td>
<td>-67675.956</td>
</tr>
<tr>
<td>6</td>
<td>-67675.945</td>
</tr>
<tr>
<td>7</td>
<td>-67675.945</td>
</tr>
</tbody>
</table>
Log pseudolikelihood = -67675.945

|        | Coef. | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|--------|-------|-----------|-------|-----|---------------------|
| mu     | _cons | 19.37432  | .4233577 | 45.76 | 0.000 | 18.54456 | 20.20409 |
| sigma  | _cons | 10.27155  | .4361618 | 23.55 | 0.000 | 9.41669 | 11.12641 |
| shape  | _cons | -3.334177 | .4582202 | -7.28 | 0.000 | -4.232273 | -2.436082 |

Skewness parameter in CP

Coef.: -0.71425818
Std. Err.: .01878486
[95% CI]: -0.75107582 , -0.67744054

censn ageend_rounded [pw=weight2010] if female==1 & inse2010==1, lefttrun(agestart_rounded) failure(died2011) difficult

Fitting constant-only model:

Iteration 0:  log pseudolikelihood = -100139.91  (not concave)
Iteration 1:  log pseudolikelihood = -60542.492  (not concave)
Iteration 2:  log pseudolikelihood = -59160.972  (not concave)
Iteration 3:  log pseudolikelihood = -58171.492
Iteration 4:  log pseudolikelihood = -58069.301  (not concave)
Iteration 5:  log pseudolikelihood = -57827.926
Iteration 6:  log pseudolikelihood = -57580.745
Iteration 7:  log pseudolikelihood = -57566.531
Iteration 8:  log pseudolikelihood = -57566.386
Iteration 9:  log pseudolikelihood = -57566.385

Number of obs = 36,669
Log pseudolikelihood = -57566.385
Wald chi2(0) = .
Prob > chi2 = .

|        | Coef. | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|--------|-------|-----------|-------|-----|---------------------|
| mu     | _cons | 25.30224  | .3263267 | 77.54 | 0.000 | 24.66265 | 25.94183 |
| sigma  | _cons | 9.074467  | .3335205 | 27.21 | 0.000 | 8.420779 | 9.728155 |
| shape  | _cons | -4.605421 | .8123849 | -5.67 | 0.000 | -6.197667 | -3.013176 |

Skewness parameter in CP

Coef.: -.82883757
Std. Err.: .08467034
[95% CI]: -.99478839 , -.66288674

Page 10
* IP weighted

censn ageend_rounded [pw=ipw2010] if female==0 & inse2010==1, lefttrun(agestart_rounded) > ded failure(died2011) difficult

Fitting constant-only model:

| Iteration 0: log pseudolikelihood = -103939.86 (not concave) |
| Iteration 1: log pseudolikelihood = -83973.915 (not concave) |
| Iteration 2: log pseudolikelihood = -83633.612 |
| Iteration 3: log pseudolikelihood = -83208.641 |
| Iteration 4: log pseudolikelihood = -83127.167 |
| Iteration 5: log pseudolikelihood = -83125.703 |
| Iteration 6: log pseudolikelihood = -83125.703 |

Number of obs = 27,987

Log pseudolikelihood = -83125.703

Wald chi2(0) = .
Prob > chi2 = .

<table>
<thead>
<tr>
<th>Robust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coef.</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>mu _cons</td>
</tr>
<tr>
<td>sigma _cons</td>
</tr>
<tr>
<td>shape _cons</td>
</tr>
</tbody>
</table>

Skewness parameter in CP

Coef.: -.66080965
Std. Err.: .0159538
[95% CI]: -.69207853, -.62954078

* IP weighted

censn ageend_rounded [pw=ipw2010] if female==1 & inse2010==1, lefttrun(agestart_rounded) > ded failure(died2011) difficult

Fitting constant-only model:

| Iteration 0: log pseudolikelihood = -126311.64 (not concave) |
| Iteration 1: log pseudolikelihood = -99049.304 (not concave) |
| Iteration 2: log pseudolikelihood = -95606.852 |
| Iteration 3: log pseudolikelihood = -95441.279 |
| Iteration 4: log pseudolikelihood = -95379.23 |
| Iteration 5: log pseudolikelihood = -95379.186 |
| Iteration 6: log pseudolikelihood = -94113.993 |
| Iteration 7: log pseudolikelihood = -93961.868 |
| Iteration 8: log pseudolikelihood = -93956.38 |
| Iteration 9: log pseudolikelihood = -93956.375 |

Number of obs = 36,669

Log pseudolikelihood = -93956.375

Wald chi2(0) = .
Prob > chi2 = .

<table>
<thead>
<tr>
<th>Robust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coef.</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>mu</td>
</tr>
<tr>
<td>sigma</td>
</tr>
<tr>
<td>shape</td>
</tr>
</tbody>
</table>

Skewness parameter in CP
Coef.: -.81129162
Std. Err.: .04091274
[95% CI]: -.89147911 , -.73110412

log close
name: <unnamed>
log: F:\SNC\SurveyMortality\LE_Nov2017.txt
log type: text
closed on: 4 Nov 2017, 18:27:00

---
Construction of inverse probability weights (Stata code)

Note that, because of privacy preserving issues, we were not allowed to provide the exact date of death (variable dod below). Thus, the Nelson-Aalen estimator for the anonymised dataset is slightly different, than from the one used in the analysis with exact date information.

Original code:
\[
\text{gen statpop\_enddate2011=d(31.12.2011)}
\]
\[
\text{replace statpop\_enddate2011=dod if dod<=d(31.12.2011)}
\]
\[
\text{stset statpop\_enddate2011, origin(statpop\_startdate) failure(died2011) scale(365.25)}
\]

Reproducible code:
\[
\text{stset endage\_rounded, origin(startageage\_rounded) failure(died2011)}
\]
Weights.txt

use "F:/SNC/SurveyMortality/data/SwissCensuses.csv", clear

### Note that, because of privacy preserving issues, we were not allowed to provide the exact date of death (variable dod below). Thus, the Nelson-Aalen estimator is not exactly the same as in the original analysis.

### Original code:

```stata
### gen statpop_enddate2011=d(31.12.2011)
### replace statpop_enddate2011=dod if dod<=d(31.12.2011)
### stset statpop_enddate2011, origin(statpop_startdate) failure(died2011) scale(365.25)
### Reproducible code:

stset endage_rounded, origin(startage_rounded), failure(died2011)

### Nelson-Aalen estimator
sts gen na2011=na
```

```stata
### Use only STATPOP/SE 2010
keep if statyear==2010
logistic inse2010 female##statpop_agecat5##i.died2011 na2011 /// i.r10_canton_se i.r10_nat i.r10_civil
predict prob
```

```stata
gen ipw2010=1/prob
drop prob1 na2011
```