```
# These calculations (originally in `ipums.R`) were used...
   # ...to validate that the weighted calculations are correct)
 2
 3
   # Compute mean wages by year
4
   # Perfect match for results computed with Hmisc (see below)
5
   ipums.means <- ipums %>%
7
     group_by(year) %>%
8
     summarise(
9
       pop = sum(PERWT),
10
       mean.wages = sum(INCWAGE * PERWT) / pop,
       v = (sum(PERWT * (INCWAGE - mean.wages)^2)) / (pop - 1),
11
12
       sd = sqrt(v),
13
       se = sd / sqrt(pop)
     )
14
15
16
   # Test by comparing to results of Hmisc module
17
   library(Hmisc)
18
   ipums.hmisc.means <- ipums %>%
19
20
     group_by(year) %>%
21
     summarise(
22
        pop = sum(PERWT),
23
       mean.wages = wtd.mean(INCWAGE, PERWT),
       v = wtd.var(INCWAGE, PERWT),
24
25
       sd = sqrt(v),
26
        se = sd / sqrt(pop)
27
     )
28
29
   all.equal(ipums.means, ipums.hmisc.means)
```