

# SubnationalCRVS Demo

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## setting up

load SubnationalCRVS package (includes example data)

```
library(SubnationalCRVS)
```

additional settings for the demo

```
knitr::opts_chunk$set(echo = TRUE)
library(dplyr)
library(knitr)
my_plots_dir <- "Plots/"
```

## Conduct DDQA

### sex ratio

```
s <- PlotSexRatios(data=example_data_ecuador,
                    name.disaggregations="province_name",
                    name.males="m",
                    name.females="f",
                    name.age="age",
                    name.sex="sex",
                    name.date1="date1",
                    name.date2="date2",
                    name.population.year1="pop1",
                    name.population.year2="pop2",
                    line.size.overall=0.6,
                    print.disaggregated=FALSE,
                    print.overall=FALSE,
                    plots.dir="Plots/")
```

### view sex ratios in table

```
s %>% select(province_name, age, pop1, pop2, sex_ratio_1, sex_ratio_2) %>%
  head()
```

##	province_name	age	pop1	pop2	sex_ratio_1	sex_ratio_2
## 1	Azuay	0	33491	33876	101.82138	102.98146
## 2	Azuay	10	34975	37366	99.91708	102.03126
## 3	Azuay	15	34181	37215	94.75147	101.06409
## 4	Azuay	20	31000	35753	82.69032	94.15993
## 5	Azuay	25	23844	32054	78.03221	88.52561
## 6	Azuay	30	21317	26520	75.96285	83.05430

view sex ratios in plot

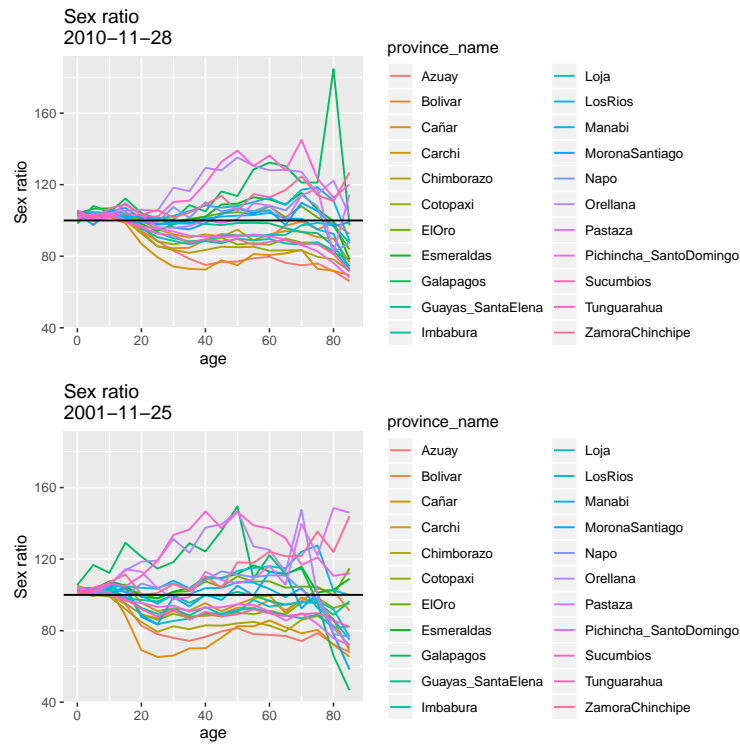


Figure 1: A caption

age ratios

```
a <- PlotAgeRatios(data=example_data_ecuador,
  name.disaggregations="province_name",
  name.males="m",
  name.females="f",
  name.age="age",
  name.sex="sex",
  name.date1="date1",
  name.date2="date2",
  name.population.year1="pop1",
  name.population.year2="pop2",
  line.size.overall=0.6,
  print.disaggregated=FALSE,
  print.overall=FALSE,
  plots.dir="Plots/")
```

view age ratios in table

```
a %>% select(province_name, age, pop1, pop2, age_ratio_1, age_ratio_2) %>%
  head()
```

##	province_name	age	pop1	pop2	age_ratio_1	age_ratio_2
## 1	Azuay	0	33491	33876	NA	NA
## 2	Azuay	5	33817	35701	98.78480	100.2246
## 3	Azuay	10	34975	37366	102.87067	102.4905
## 4	Azuay	15	34181	37215	103.61804	101.7930
## 5	Azuay	20	31000	35753	106.85050	103.2294
## 6	Azuay	25	23844	32054	91.15202	102.9467

view age ratios in plot

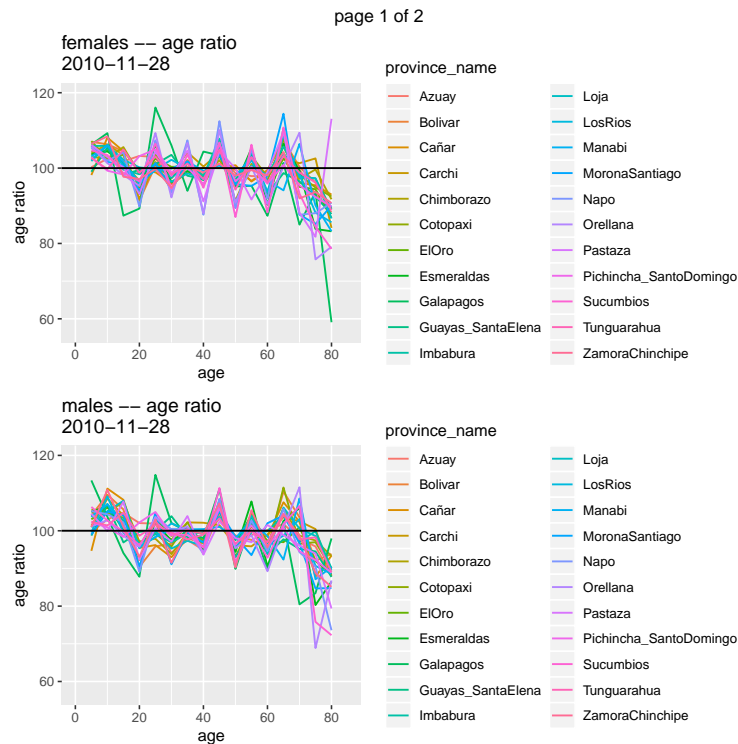


Figure 2: A caption

potential age heaping

```
PlotPotentialAgeHeaping(data=ecuador_age_tabulation,
  name.disaggregations="province_name",
  name.males="m",
  name.females="f",
  name.age="age",
  name.sex="sex",
  name.date1="date1",
  name.date2="date2",
  name.population.year1="pop1",
  name.population.year2="pop2",
  print.disaggregated=FALSE,
  print.overall=FALSE,
  plots.dir="Plots/")
```

```
## [1] "need to add a way to check for single-year ages"
```

```
## NULL
```

## age heaping scores

```
ageheaping <- PlotAgeHeapingScores(data=ecuador_age_tabulation,  
                                   name.disaggregations="province_name_short",  
                                   name.males="m",  
                                   name.females="f",  
                                   name.age="age",  
                                   name.sex="sex",  
                                   name.date1="date1",  
                                   name.date2="date2",  
                                   name.population.year1="pop1",  
                                   name.population.year2="pop2",  
                                   plots.dir="Plots/")
```

```
## [1] "need to add a way to check for single-year ages"
```

```
head(ageheaping)
```

```
##           date sex province_name_short roughness sawtooth Whipple  Myers  
## 1 2001-11-25  f           Azu 0.4147020 1.088489 1.175319 4.208178  
## 2 2001-11-25  f           Bol 0.9084333 1.088353 1.367128 7.385046  
## 3 2001-11-25  f           Cañ 0.6851925 1.114108 1.218101 4.890340  
## 4 2001-11-25  f           Car 0.3808346 1.006139 1.177630 3.749306  
## 5 2001-11-25  f           Chi 0.3446924 1.033020 1.249514 5.440711  
## 6 2001-11-25  f           Cot 0.3409448 1.040521 1.274695 5.991138  
##  Numbissí  
## 1 1.179950  
## 2 1.348939  
## 3 1.220498  
## 4 1.153915  
## 5 1.228173  
## 6 1.246202
```

## DDM estimation

### computing DDM estimates

```
ddm_results <- EstimateDDM(data=example_data_ecuador,  
                            name.disaggregations="province_name",  
                            name.age="age",  
                            name.sex="sex",  
                            name.males="m",  
                            name.females="f",
```

```

name.date1="date1",
name.date2="date2",
name.population.year1="pop1",
name.population.year2="pop2",
name.deaths="deaths",
deaths.summed=TRUE,
min.age.in.search=15,
max.age.in.search=75,
min.number.of.ages=8)

```

```
## [1] "performing DDM estimation within each of 21 possible age ranges..."
```

```
head(ddm_results$ddm_estimates)
```

```
##      cod      sex   ggbseg      ggb      seg lower_age_range upper_age_range
## 1  Azuay  Females 0.6690215 0.9869457 0.8062717          15          50
## 2  Azuay   Males 0.7268026 1.0688804 0.9169165          15          50
## 3 Bolivar Females 0.7128565 0.9876368 0.7200723          20          60
## 4 Bolivar   Males 0.7427068 0.9553584 0.7963881          25          60
## 5  Cañar  Females 0.6188313 0.9981219 0.5754533          20          55
## 6  Cañar   Males 0.7085910 0.9534686 0.7923367          15          50
```

```
head(ddm_results$sensitivity_ddm_estimates)
```

```
##      cod      sex   ggbseg      ggb      seg lower_age_range upper_age_range
## 1 Azuay  Females 0.6104842 0.9869457 0.8112473          15          50
## 2 Azuay  Females 0.6387823 0.8742469 0.8089535          15          55
## 3 Azuay  Females 0.6293945 0.8566154 0.8057450          20          55
## 4 Azuay  Females 0.6690215 0.8292898 0.8062717          15          60
## 5 Azuay  Females 0.6607905 0.8151276 0.8031217          20          60
## 6 Azuay  Females 0.6505367 0.7836742 0.8012668          25          60
```

## plotting DDM estimates

```

PlotDDM(ddm_results=ddm_results,
        size.text.sensitivity=8,
        plots.dir="Plots/")

```