

Bayesian mortality estimation with SVD models

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1 Overview

```
library(rstan)
library(tidyverse)
library(tidybayes)
library(janitor)
```

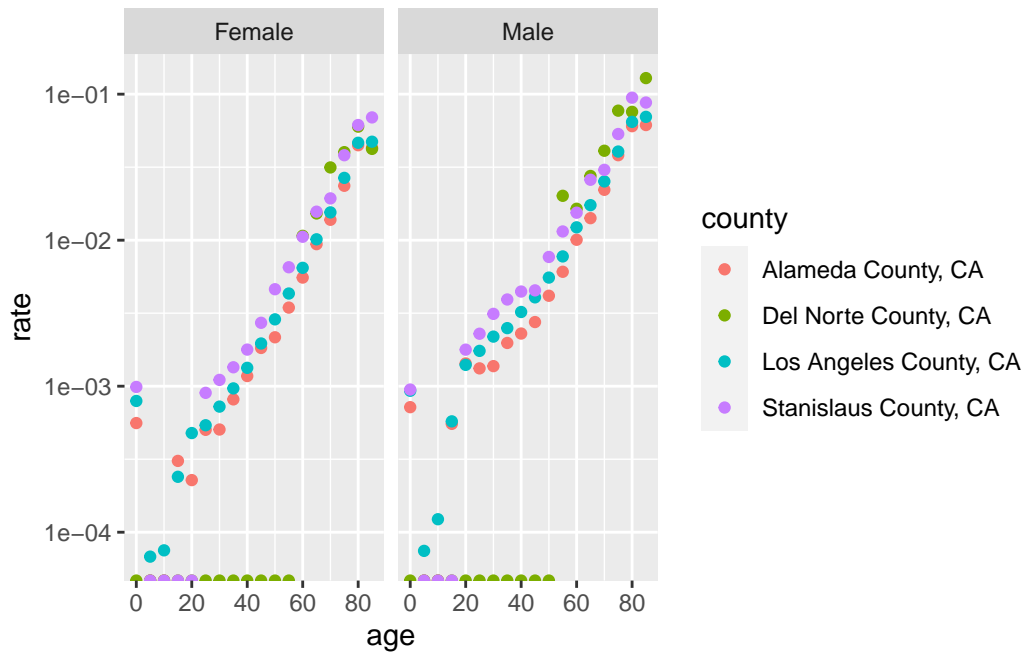
2 Read in data

```
d_ca <- read_csv("../data/CA_mortality.csv")
unique(d_ca$county)
```

```
[1] "Alameda County, CA"      "Alpine County, CA"
[3] "Amador County, CA"       "Butte County, CA"
[5] "Calaveras County, CA"    "Colusa County, CA"
```

[7] "Contra Costa County, CA"	"Del Norte County, CA"
[9] "El Dorado County, CA"	"Fresno County, CA"
[11] "Glenn County, CA"	"Humboldt County, CA"
[13] "Imperial County, CA"	"Inyo County, CA"
[15] "Kern County, CA"	"Kings County, CA"
[17] "Lake County, CA"	"Lassen County, CA"
[19] "Los Angeles County, CA"	"Madera County, CA"
[21] "Marin County, CA"	"Mariposa County, CA"
[23] "Mendocino County, CA"	"Merced County, CA"
[25] "Modoc County, CA"	"Mono County, CA"
[27] "Monterey County, CA"	"Napa County, CA"
[29] "Nevada County, CA"	"Orange County, CA"
[31] "Placer County, CA"	"Plumas County, CA"
[33] "Riverside County, CA"	"Sacramento County, CA"
[35] "San Benito County, CA"	"San Bernardino County, CA"
[37] "San Diego County, CA"	"San Francisco County, CA"
[39] "San Joaquin County, CA"	"San Luis Obispo County, CA"
[41] "San Mateo County, CA"	"Santa Barbara County, CA"
[43] "Santa Clara County, CA"	"Santa Cruz County, CA"
[45] "Shasta County, CA"	"Sierra County, CA"
[47] "Siskiyou County, CA"	"Solano County, CA"
[49] "Sonoma County, CA"	"Stanislaus County, CA"
[51] "Sutter County, CA"	"Tehama County, CA"
[53] "Trinity County, CA"	"Tulare County, CA"
[55] "Tuolumne County, CA"	"Ventura County, CA"
[57] "Yolo County, CA"	"Yuba County, CA"

```
d_ca |>
  mutate(rate = deaths/pop) |>
  filter(county %in% c("Alameda County, CA", "Los Angeles County, CA",
                      "Stanislaus County, CA", "Del Norte County, CA")) |>
  ggplot(aes(age, rate, color = county)) +
  geom_point()+
  scale_y_log10()+
  facet_wrap(~gender)
```



2.1 National data for SVD

```
lt <- read_csv("../data/lt.csv")
```

2.2 SVD

```
lt_male <- lt |>
  filter(gender=="Male")
```