Supplemental Online Content

eFigure 1. Age Distribution of the Study Population Stratified by Residence Place

eFigure 2. Number of New Cases of COVID-19 per 10 000 People Reported During the Study Period, Stratified by Residence Place

eFigure 3. QQ-Plots of the 4 Studied Continuous Variables

eAppendix. Supplementary Methods

This supplemental material has been provided by the authors to give readers additional information about their work.

eFigure 1. Age Distribution of the Study Population Stratified by Residence Place
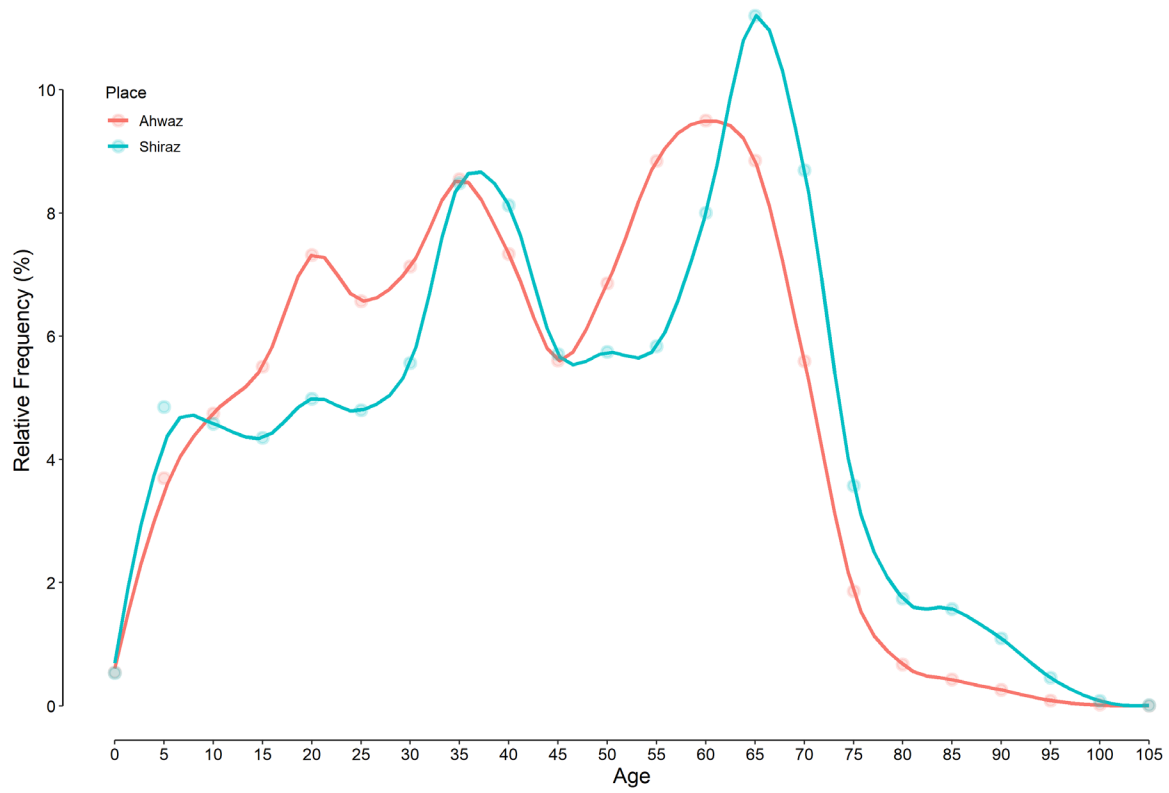
eFigure 2. Number of New Cases of COVID-19 per 10 000 People Reported During the Study Period, Stratified by Residence Place

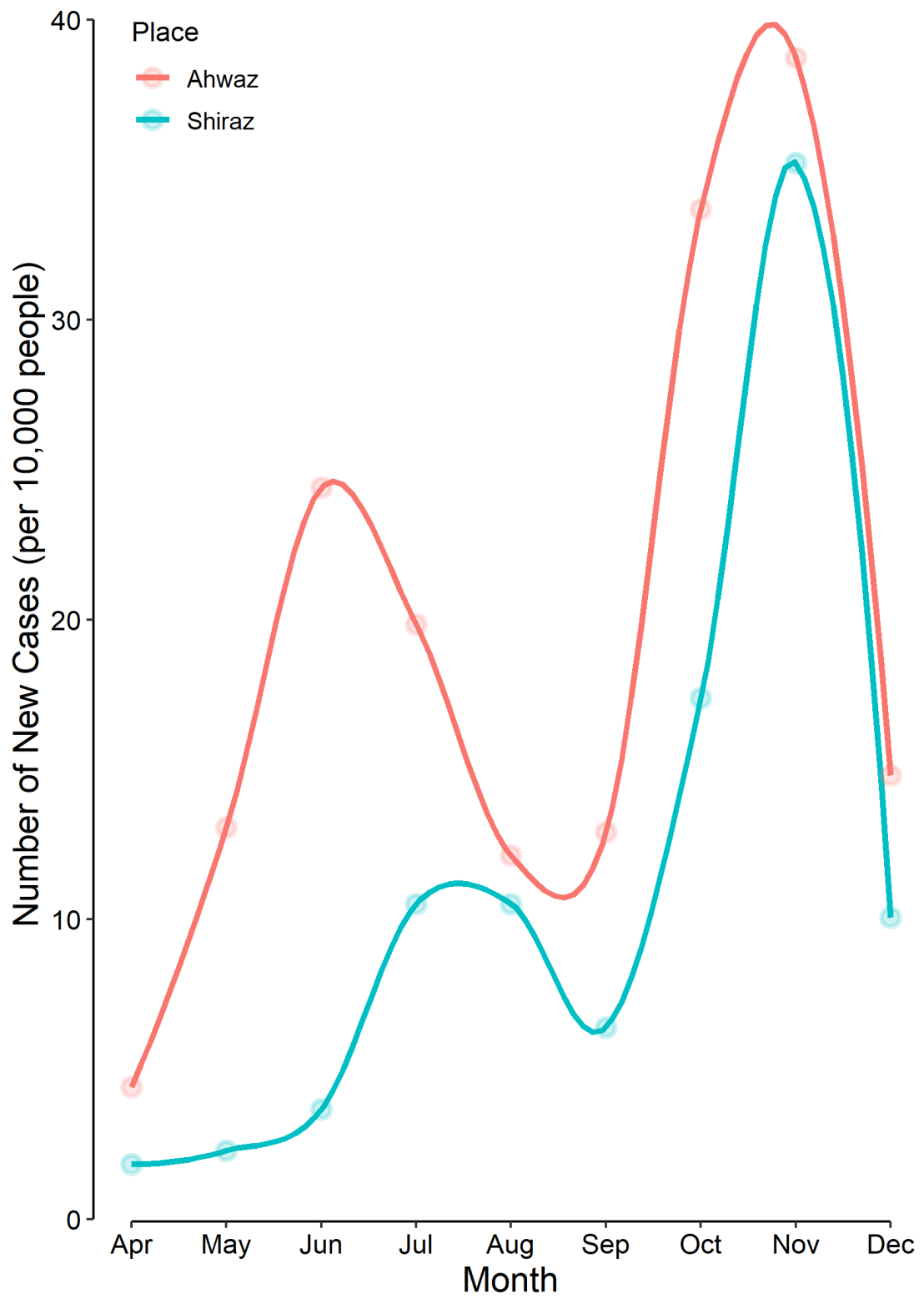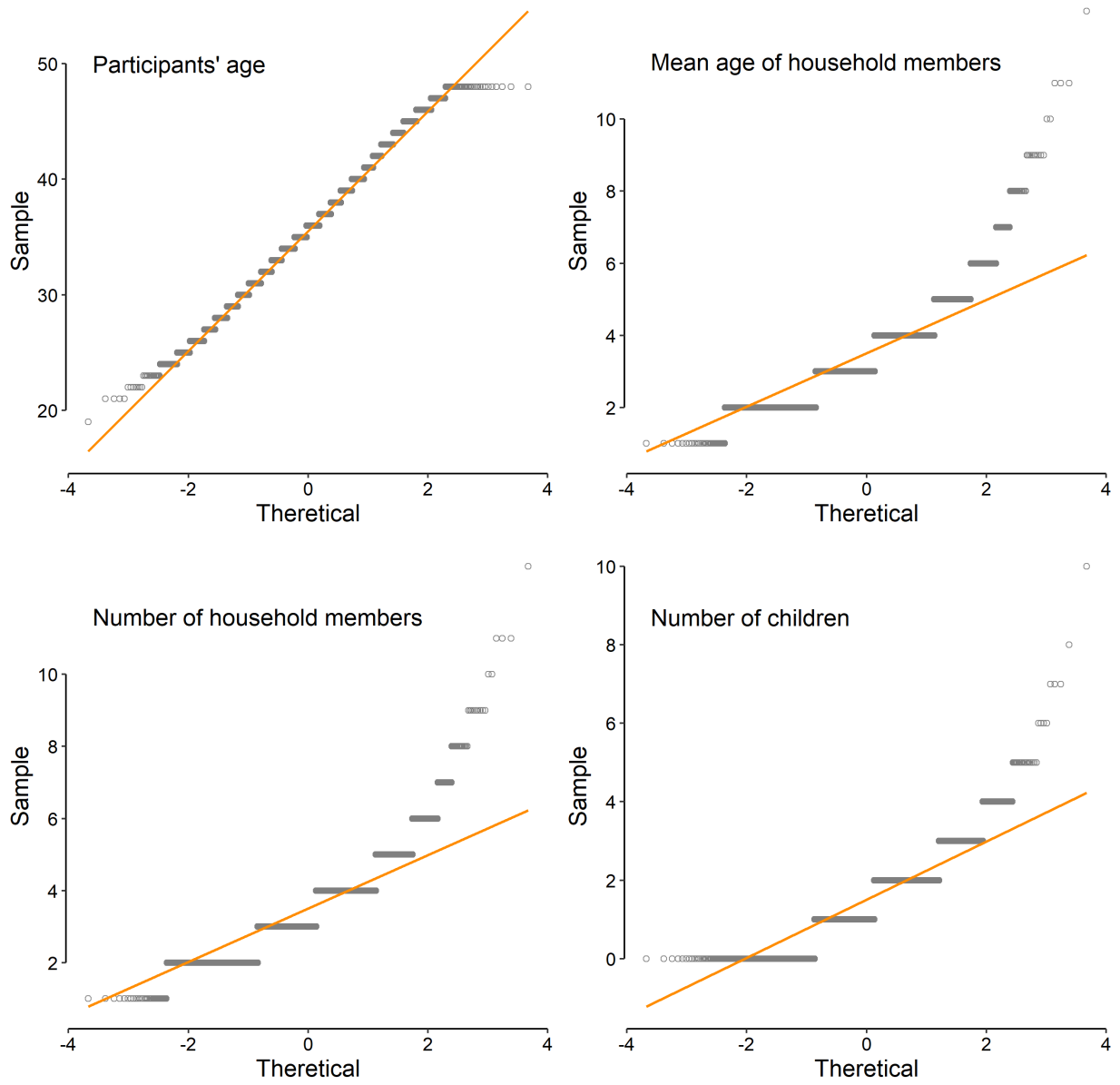**eFigure 3.** QQ-Plots of the 4 Studied Continuous Variables

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Data dictionary

Place	Residence city (Ahwaz or Shiraz)	Age	Participants' age (years)
Time	time-to-event (days)	meanAge	Mean age of the household members
COVID	Disease status	n	Number of the household members
Rx	Exposure status, exposed or unexposed	childNum	Number of children

Welch *t* test for independent groups

t.test(dd$Age ~ dd$Rx)   # comparing means of participants' age in exposed and unexposed groups

```
        Welch Two Sample t-test

data:  dd$Age by dd$Rx
t = 1.0275, df = 528.78, p-value = 0.3046
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.2401112  0.7667620
sample estimates:
mean in group Not exposed      mean in group Exposed
        35.71917                    35.45585
```

Matching

d %>%   # d contains the data for all study population
  filter(Place == "Ahwaz") -> d_Ahwaz
d %>%
  filter(Place == "Shiraz") -> d_Shiraz

ratio = 9
matchit(formula = as.logical(Rx) ~ Age + meanAge + childNum +
      n, data = d_Ahwaz, method = "nearest", replace = FALSE, ratio = ratio)

```
Summary of Balance for All Data:
        Means Treated Means Control Std. Mean Diff. Var. Ratio eCDF Mean
distance       0.0579        0.0356          0.3812     4.6736    0.1877
Age           35.9549       39.2508         -0.6635     0.6846    0.1156
meanAge       27.2583       31.0691         -0.6572     0.6669    0.1104
childNum       1.6270        1.5268          0.0870     1.2267    0.0165
n              3.7500        3.5551          0.1370     1.5462    0.0209
        eCDF Max
distance  0.3253
Age       0.2754
meanAge   0.3082
childNum  0.0478
n         0.0531


Summary of Balance for Matched Data:
        Means Treated Means Control Std. Mean Diff. Var. Ratio eCDF Mean
distance       0.0579        0.0541          0.0643     3.0685    0.0010
Age           35.9549       35.5364          0.0842     0.7781    0.0204
meanAge       27.2583       27.3047         -0.0080     1.0189    0.0130
childNum       1.6270        1.5168          0.0956     1.0807    0.0113
n              3.7500        3.5774          0.1213     1.3065    0.0145
        eCDF Max Std. Pair Dist.
distance  0.0137        0.0669
Age       0.0578        0.6786
meanAge   0.0606        0.5158
childNum  0.0524        0.8246
n         0.0533        0.7443


Percent Balance Improvement:
        Std. Mean Diff. Var. Ratio eCDF Mean eCDF Max
distance           83.1        27.3      99.4     95.8
Age                87.3        33.8      82.3     79.0
```

```
meanAge                 98.8        95.4        88.2        80.3
childNum                -9.9        62.0        31.1        -9.6
n                       11.4        38.7        30.5        -0.4

Sample Sizes:
          Control Treated
All          6460     244
Matched      2196     244
Unmatched    4264       0
Discarded       0       0

Percent Balance Improvement:
          Std. Mean Diff. Var. Ratio eCDF Mean eCDF Max
distance             83.1       27.3      99.4     95.8
Age                  87.3       33.8      82.3     79.0
meanAge              98.8       95.4      88.2     80.3
childNum             -9.9       62.0      31.1     -9.6
n                    11.4       38.7      30.5     -0.4

Sample Sizes:
          Control Treated
All          6460     244
Matched      2196     244
Unmatched    4264       0
Discarded       0       0
```

matchit(formula = as.logical(Rx) ~ Age + meanAge + childNum +
        n, data = d_Shiraz, method = "nearest", replace = FALSE, ratio = ratio)

```
Summary of Balance for All Data:
         Means Treated Means Control Std. Mean Diff. Var. Ratio eCDF Mean
distance        0.1104        0.0651          0.6788      1.6780    0.2078
Age            34.7600       38.6692         -0.8077      0.7181    0.1396
meanAge        26.8134       30.9354         -0.6606      0.7909    0.1196
childNum        1.2171        1.3739         -0.1657      1.1109    0.0297
n               3.1886        3.4203         -0.2225      0.9820    0.0274
         eCDF Max
distance   0.3457
Age        0.3046
meanAge    0.2708
childNum   0.1374
n          0.1530

Summary of Balance for Matched Data:
         Means Treated Means Control Std. Mean Diff. Var. Ratio eCDF Mean
distance        0.1104        0.0886          0.3263      1.8878    0.0530
Age            34.7600       35.9740         -0.2508      1.0692    0.0434
meanAge        26.8134       28.0075         -0.1914      1.4112    0.0404
childNum        1.2171        1.2362         -0.0201      1.2807    0.0220
n               3.1886        3.2254         -0.0354      1.2384    0.0188
         eCDF Max Std. Pair Dist.
distance   0.1879          0.3296
Age        0.1098          0.7168
meanAge    0.1479          0.7293
childNum   0.0698          0.8979
n          0.0717          0.8924

Percent Balance Improvement:
          Std. Mean Diff. Var. Ratio eCDF Mean eCDF Max
distance             51.9      -22.8      74.5     45.6
Age                  68.9       79.8      68.9     63.9
meanAge              71.0      -46.9      66.2     45.4
childNum             87.8     -135.2      26.1     49.2
n                    84.1    -1075.3      31.6     53.1

Sample Sizes:
          Control Treated
All          2391     175
Matched      1575     175
Unmatched     816       0
Discarded       0       0
```

Kaplan-Meier survival plot (Fig 2)

```
fit <- survfit(formula = Surv(Time, as.integer(COVID)) ~ Rx, data = dd, type = "kaplan-meier")
# dd containes the matched study participants
```

```
               Rx=Not exposed
 time n.risk n.event survival  std.err lower 95% CI upper 95% CI
   48   3771       1    1.000 0.000265        0.999        1.000
   66   3770       1    0.999 0.000375        0.999        1.000
   71   3769       1    0.999 0.000459        0.998        1.000
   99   3768       1    0.999 0.000530        0.998        1.000
  137   3767       1    0.999 0.000593        0.998        1.000
  160   3766       1    0.998 0.000649        0.997        1.000
  167   3765       1    0.998 0.000701        0.997        1.000
  187   3764       1    0.998 0.000749        0.996        0.999
  191   3763       1    0.998 0.000795        0.996        0.999
  195   3762       1    0.997 0.000837        0.996        0.999
  200   3761       1    0.997 0.000878        0.995        0.999
  205   3760       1    0.997 0.000917        0.995        0.999
  206   3759       1    0.997 0.000954        0.995        0.998
  209   3758       1    0.996 0.000990        0.994        0.998
  218   3757       1    0.996 0.001025        0.994        0.998
  229   3756       2    0.995 0.001091        0.993        0.998
  233   3754       1    0.995 0.001122        0.993        0.997
  235   3753       1    0.995 0.001153        0.993        0.997
  236   3752       2    0.994 0.001212        0.992        0.997
  240   3750       1    0.994 0.001240        0.992        0.997
  246   3749       1    0.994 0.001268        0.991        0.996
  250   3748       2    0.993 0.001322        0.991        0.996
  263   3746       1    0.993 0.001347        0.990        0.996
  271   3745       2    0.993 0.001398        0.990        0.995

              Rx=Exposed
    time n.risk n.event survival std.err lower 95% CI upper 95% CI
```

```
ds <- data.frame(time = fit$time, n.risk = fit$n.risk, n.event = fit$n.event,
                 n.censor = fit$n.censor, surv = fit$surv, upper = fit$upper, lower = fit$lower)
```

```
autoplot(fit, censor.shape = '', conf.int.alpha = 0.1) +
  scale_x_continuous(breaks=seq(0, duration, 30), labels = c("Mar", "Apr", "May", "Jun", "Jul",
                                                             "Aug", "Sep", "Oct", "Nov", "Dec")) +
  scale_y_continuous(breaks=seq(0.990, 1.00, 0.002)) +
  theme_classic() +
  labs(x = "Time", y = "Survival Probability") +
  theme(panel.grid.major.y = element_blank(), panel.grid.minor.y = element_blank(),
     panel.grid.major.x = element_blank(), panel.grid.minor.x = element_blank(),
     axis.text = element_text(size = rel(1), color = "black"),
     axis.title = element_text(size = rel(1.4)),
     legend.position = c(0.03, 0.05),
     legend.justification = c("left", "bottom"), aspect.ratio = 5/4,
     legend.text = element_text(size = rel(0.9))) +
  guides(x = "axis_truncated", y = "axis_truncated") +
  guides(color = guide_legend(title = "OPV"), fill = guide_legend(title = "OPV"))
```

Cox regression analysis

```
res.cox <- coxph(Surv(Time, as.integer(COVID)) ~ Rx + Age + Place + n + meanAge, data = dd)

  n= 4190, number of events= 28


                 coef  exp(coef)   se(coef)       z Pr(>|z|)
RxYes      -1.613e+01  9.920e-08  3.567e+03  -0.005    0.996
Age         2.844e-02  1.029e+00  4.609e-02   0.617    0.537
PlaceShiraz 3.087e-01  1.362e+00  3.865e-01   0.799    0.424
n          -3.363e-02  9.669e-01  2.195e-01  -0.153    0.878
meanAge     5.999e-03  1.006e+00  3.923e-02   0.153    0.878

            exp(coef) exp(-coef) lower .95 upper .95
```

```
RxYes        9.920e-08  1.008e+07   0.0000       Inf
Age          1.029e+00  9.720e-01   0.9400     1.126
PlaceShiraz 1.362e+00  7.344e-01   0.6384     2.904
n            9.669e-01  1.034e+00   0.6289     1.487
meanAge      1.006e+00  9.940e-01   0.9316     1.086

Concordance= 0.582  (se = 0.05 )
Likelihood ratio test= 2.88  on 5 df,   p=0.7
Wald test           = 1.38  on 5 df,   p=0.9
Score (logrank) test = 2.16  on 5 df,   p=0.8
```

Test of proportional hazards assumption

test.ph <- cox.zph(res.cox, transform="identity")

```
          chisq df    p
Rx      6.73e-08  1 1.00
Age     3.68e-01  1 0.54
Place   2.34e-01  1 0.63
n       2.36e-01  1 0.63
meanAge 1.42e-01  1 0.71
GLOBAL  1.64e+00  5 0.90
```