

## Supplemental Online Content

Johansson MA, Quandelacy TM, Kada S, et al. SARS-CoV-2 transmission from people without COVID-19 symptoms. *JAMA Netw Open*. 2021;4(1):e2035057.  
doi:10.1001/jamanetworkopen.2020.35057

### **eAppendix.** Code for Analysis

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

## eAppendix. Code for Analysis

The analyses were run in R (r-project.org) using the following code.

```
# incubation period
p_symp_onset <- function(t, logmu_inc=1.63, logsd_inc=0.5) {
  plnorm(t, logmu_inc, logsd_inc)
}

# relative infectiousness over time
infectiousness_daily <- function(t, t_peak_inf, days_inf) {
  optim_duration <- function(scale) {
    shape <- t_peak_inf / scale + 1
    abs(diff(qgamma(c(0.01, 0.99), shape=shape, scale=scale)) - days_inf)
  }
  scale <- optimize(optim_duration, c(0.1, 10))$minimum
  shape <- t_peak_inf / scale + 1
  dgamma(t, shape=shape, scale=scale)
}

# proportion of transmission from never symptomatic
trans_never_symp <- function(prop_never_symp, rel_inf_never_symp) {
  (prop_never_symp * rel_inf_never_symp) /
  (prop_never_symp * rel_inf_never_symp + (1 - prop_never_symp))
}

#### Example calculations
times <- 0:100
trans_never_symp_baseline <-
  trans_never_symp(prop_never_symp=0.3, rel_inf_never_symp=0.75)
t_peak_inf <- 5
days_inf <- 10

trans_symptomatic <- (1 - trans_never_symp_baseline) *
  sum(p_symp_onset(times) * infectiousness_daily(times, t_peak_inf=t_peak_inf, days_inf=days_inf))

# Never symptomatic
trans_never_symp_baseline

# Symptomatic
trans_symptomatic

# Pre-symptomatic
1 - trans_never_symp_baseline - trans_symptomatic
```