Final Report

due November 16, 2021 by 11:59 PM

Your names and team name here

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(tidyverse)
```

```
## Warning in system("timedatectl", intern = TRUE): running command 'timedatectl'
## had status 1

## -- Attaching packages -------------------------------------- tidyverse 1.3.1 --

## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.5     v stringr 1.4.0
## v tidyr   1.1.4     v forcats 0.5.1
## v readr   2.0.2

## -- Conflicts ----------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(sf)
```

```
## Linking to GEOS 3.8.0, GDAL 3.0.4, PROJ 6.3.1
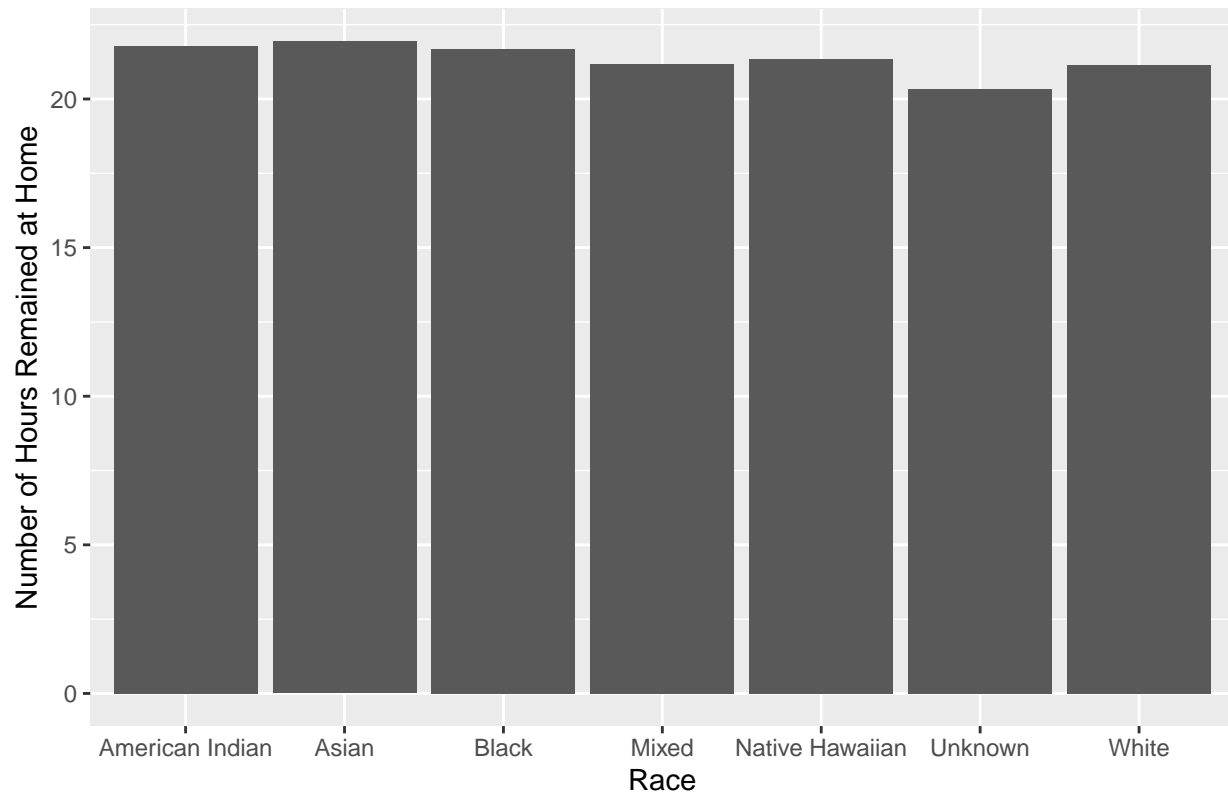```

```
library(viridis)
```

```
## Loading required package: viridisLite
```

```
library(ggspatial) #for scale annotation
```

```
## # A tibble: 7 x 2
##   race  hours
##   <chr> <dbl>
## 1 0      21.8
## 2 1      21.9
## 3 2      21.3
## 4 3      21.7
## 5 4      21.2
## 6 5      21.2
```

```
## 7 6       20.3
```

Number of Hours Remained at Home by Race


```
## Rows: 2,441
## Columns: 66
## $ Key_ID              <int> 916, 1377, 1372, 40, 1005, 1632, 629, 1764, 236,~
## $ Participant_ID      <int> 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, ~
## $ zip                 <int> 75233, 75001, 75002, 97702, 75204, 27517, 77025,~
## $ Classification      <chr> "Urban", "Urban", "Suburban", "Rural", "Urban", ~
## $ age                 <int> 27, 26, 27, 23, 24, 40, 36, 35, 28, 36, 31, 31, ~
## $ usres               <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ state               <int> 44, 44, 44, 38, 44, 34, 44, 7, 44, 26, 48, 44, 4~
## $ ethnicity           <int> 2, 1, 2, 2, 2, 2, 1, 2, 2, 1, 2, 2, 2, 2, 2, 2, ~
## $ race                <int> 5, 4, 4, 5, 1, 4, 5, 4, 4, 4, 4, 4, 4, 1, 6, 4, ~
## $ sex                 <int> 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 1, 2, ~
## $ hhchildren          <int> 0, 0, 1, 0, 0, 0, 1, 1, 0, 0, 0, 1, 0, 0, 0, 0, ~
## $ covidtest           <int> 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, ~
## $ covidtestresult     <int> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ covidsick           <int> 2, 2, 2, 2, 2, 2, 3, 2, 2, 2, 2, 2, 2, 2, 2, 2, ~
## $ covidsickoutcome    <int> NA, NA, NA, NA, NA, NA, 1, NA, NA, NA, NA, NA, N~
## $ hhcovidsick         <int> 2, 2, 2, 2, 2, 2, 3, 2, 2, 2, 2, 2, 2, 2, 2, 2, ~
## $ hhcovidsickoutcome  <int> NA, NA, NA, NA, NA, NA, 2, NA, NA, NA, NA, NA, N~
## $ ffcovidsick         <int> 2, 3, 1, 2, 3, 1, 1, 4, 3, 4, 2, 2, 4, 1, 4, 2, ~
## $ hhcovidsickoutcome_2 <int> NA, 1, 2, NA, 1, 2, 1, NA, 1, NA, NA, NA, NA, 2,~
## $ dis_any             <int> 2, 2, 2, 2, 2, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 1, ~
## $ dis_mobility        <int> NA, NA, NA, NA, NA, 2, NA, NA, NA, NA, NA, NA, N~
## $ dis_alone           <int> NA, NA, NA, NA, NA, 2, NA, NA, NA, NA, NA, NA, N~
## $ comorbid            <int> 2, 1, 2, 2, 2, 1, 1, 1, 1, 2, 2, 2, 2, 1, 2, 2, ~
```

```
## $ comborbid_heartattack <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comborbid_chd         <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comborbid_stroke      <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comborbid_asthma      <int> NA, 1, NA, NA, NA, 1, 0, 0, 0, NA, NA, NA, NA, 1~
## $ comborbid_skincancer  <int> NA, 0, NA, NA, NA, 0, 0, 1, 0, NA, NA, NA, NA, 0~
## $ comborbid_othcancer   <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comborbid_copd        <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comborbid_arthritis   <int> NA, 0, NA, NA, NA, 1, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comborbid_depression  <int> NA, 1, NA, NA, NA, 1, 1, 1, 1, NA, NA, NA, NA, 0~
## $ comborbid_kidneydis   <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comborbid_diabetes    <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comborbid_obesity     <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comborbid_parkinsons  <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comborbid_alzheimers  <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ educ                  <int> 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 4, 6, 6, 6, ~
## $ hhincome              <int> 12, 11, 11, 5, 3, 7, 3, 6, 12, 12, 12, 12, 12, 1~
## $ employ1               <int> 1, 1, 1, 6, 1, 1, 1, 1, 1, 1, 1, 1, 1, 6, 2, 1, ~
## $ localsip              <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ localsipweeks         <chr> "5", "3", "4", "I don't know", "2", "5", "2", "i~
## $ localsip2             <int> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ localsip3             <int> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ leavehomeact___1      <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1, 1, ~
## $ leavehomeact___2      <int> 0, 1, 1, 0, 1, 1, 1, 0, 1, 1, 0, 1, 1, 0, 0, 1, ~
## $ leavehomeact___3      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, ~
## $ leavehomeact___4      <int> 1, 1, 1, 0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 1, 1, 1, ~
## $ leavehomeact___5      <int> 1, 1, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, ~
## $ leavehomeact___6      <int> 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1, 0, ~
## $ leavehomeact___7      <int> 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, ~
## $ leavehomeactother     <chr> "", "", "", "", "", "", "", "", "", "", "", "", ~
## $ leavehomereason___1   <int> 1, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1, 1, 1, 0, ~
## $ leavehomereason___2   <int> 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, ~
## $ leavehomereason___3   <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1, 0, 1, 0, ~
## $ leavehomereason___4   <int> 0, 1, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, ~
## $ leavehomereason___5   <int> 0, 0, 0, 1, 0, 1, 1, 0, 1, 0, 0, 1, 0, 0, 0, 1, ~
## $ leavehomereason___6   <int> 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0, ~
## $ leavehomereason___7   <int> 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 1, 0, 0, 0, 0, 1, ~
## $ leavehomereasonother  <chr> "", "", "", "", "", "Going for a drive", "", "",~
## $ essntlsrvcs           <chr> "1", NA, NA, "1", NA, NA, NA, NA, "1", NA, NA, N~
## $ essntlsrvcstype       <int> 1, NA, NA, 1, NA, NA, NA, NA, 1, NA, NA, NA, NA,~
## $ localsiphours         <int> 14, 23, 24, 14, 24, 24, 23, 24, 24, 22, 24, 20, ~
## $ phq_sum               <int> 4, 18, 12, 2, 6, 16, 12, 18, 16, 8, 0, 6, 23, 0,~
## $ X                     <int> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ X.1                   <int> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ~

## Rows: 2,441
## Columns: 31
## $ Participant_ID   <int> 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16~
## $ age              <int> 27, 26, 27, 23, 24, 40, 36, 35, 28, 36, 31, 31, 55~
## $ usres            <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,~
## $ state            <int> 44, 44, 44, 38, 44, 34, 44, 7, 44, 26, 48, 44, 44,~
## $ race             <chr> "5", "4", "4", "5", "1", "4", "5", "4", "4", "4", ~
## $ sex              <int> 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 1, 2, 1,~
## $ localsip         <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,~
## $ localsip2        <int> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA~
```

```
## $ localsip3          <int> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA~
## $ leavehomeact___1    <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1, 1, 1,~
## $ leavehomeact___2    <int> 0, 1, 1, 0, 1, 1, 1, 0, 1, 1, 0, 1, 1, 0, 0, 1, 0,~
## $ leavehomeact___3    <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ leavehomeact___4    <int> 1, 1, 1, 0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 1, 1, 1, 1,~
## $ leavehomeact___5    <int> 1, 1, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0,~
## $ leavehomeact___6    <int> 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1, 0, 1,~
## $ leavehomeact___7    <int> 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ leavehomereason___1 <int> 1, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1, 1, 1, 0, 0,~
## $ leavehomereason___2 <int> 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0,~
## $ leavehomereason___3 <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1, 0, 1, 0, 1,~
## $ leavehomereason___4 <int> 0, 1, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1,~
## $ leavehomereason___5 <int> 0, 0, 0, 1, 0, 1, 1, 0, 1, 0, 0, 1, 0, 0, 0, 1, 0,~
## $ leavehomereason___6 <int> 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0, 1,~
## $ leavehomereason___7 <int> 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0,~
## $ localsiphours       <int> 14, 23, 24, 14, 24, 24, 23, 24, 24, 22, 24, 20, 22~
## $ covidsick           <int> 2, 2, 2, 2, 2, 2, 3, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,~
## $ hhcovidsick         <int> 2, 2, 2, 2, 2, 2, 3, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,~
## $ ffcovidsick         <int> 2, 3, 1, 2, 3, 1, 1, 4, 3, 4, 2, 2, 4, 1, 4, 2, 2,~
## $ Classification      <chr> "Urban", "Urban", "Suburban", "Rural", "Urban", "R~
## $ covidtest           <int> 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,~
## $ educ                <int> 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 4, 6, 6, 6, 6,~
## $ hhincome            <int> 12, 11, 11, 5, 3, 7, 3, 6, 12, 12, 12, 12, 12, 12,~

##  Participant_ID       age           usres         state          race
##  Min.   :   1   Min.   :18.00   Min.   :1    Min.   : 1.00   Length:2441
##  1st Qu.: 673   1st Qu.:32.00   1st Qu.:1    1st Qu.:37.00   Class :character
##  Median :1371   Median :40.00   Median :1    Median :44.00   Mode  :character
##  Mean   :1377   Mean   :41.91   Mean   :1    Mean   :36.97
##  3rd Qu.:2082   3rd Qu.:51.00   3rd Qu.:1    3rd Qu.:44.00
##  Max.   :2789   Max.   :86.00   Max.   :1    Max.   :51.00
##                                              NA's   :266
##       sex          localsip        localsip2        localsip3
##  Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000
##  1st Qu.:1.000   1st Qu.:1.000   1st Qu.:1.000   1st Qu.:1.000
##  Median :2.000   Median :1.000   Median :1.000   Median :1.000
##  Mean   :1.674   Mean   :1.117   Mean   :1.063   Mean   :1.042
##  3rd Qu.:2.000   3rd Qu.:1.000   3rd Qu.:1.000   3rd Qu.:1.000
##  Max.   :2.000   Max.   :7.000   Max.   :2.000   Max.   :2.000
##  NA's   :248     NA's   :478     NA's   :2362    NA's   :2417
##  leavehomeact___1 leavehomeact___2 leavehomeact___3 leavehomeact___4
##  Min.   :0.0000   Min.   :0.0000   Min.   :0.000    Min.   :0.0000
##  1st Qu.:1.0000   1st Qu.:0.0000   1st Qu.:0.000    1st Qu.:0.0000
##  Median :1.0000   Median :1.0000   Median :0.000    Median :1.0000
##  Mean   :0.7841   Mean   :0.5449   Mean   :0.186    Mean   :0.6436
##  3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:0.000    3rd Qu.:1.0000
##  Max.   :1.0000   Max.   :1.0000   Max.   :1.000    Max.   :1.0000
##
##  leavehomeact___5 leavehomeact___6 leavehomeact___7 leavehomereason___1
##  Min.   :0.0000   Min.   :0.0000   Min.   :0.0000   Min.   :0.0000
##  1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.:0.0000
##  Median :0.0000   Median :1.0000   Median :0.0000   Median :0.0000
##  Mean   :0.4441   Mean   :0.7395   Mean   :0.1266   Mean   :0.2962
##  3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:0.0000   3rd Qu.:1.0000
```

```
##   Max.    :1.0000    Max.    :1.0000    Max.    :1.0000    Max.    :1.0000
##                                                            NA's    :608
##   leavehomereason___2 leavehomereason___3 leavehomereason___4
##   Min.   :0.00000     Min.   :0.0000      Min.   :0.0000
##   1st Qu.:0.00000     1st Qu.:0.0000      1st Qu.:0.0000
##   Median :0.00000     Median :1.0000      Median :0.0000
##   Mean   :0.08808     Mean   :0.6731      Mean   :0.3322
##   3rd Qu.:0.00000     3rd Qu.:1.0000      3rd Qu.:1.0000
##   Max.   :1.00000     Max.   :1.0000      Max.   :1.0000
##
##   leavehomereason___5 leavehomereason___6 leavehomereason___7 localsiphours
##   Min.   :0.0000      Min.   :0.0000      Min.   :0.0000      Min.   :  0.00
##   1st Qu.:0.0000      1st Qu.:0.0000      1st Qu.:0.0000      1st Qu.: 21.00
##   Median :1.0000      Median :0.0000      Median :0.0000      Median : 23.00
##   Mean   :0.5268      Mean   :0.3437      Mean   :0.1053      Mean   : 21.19
##   3rd Qu.:1.0000      3rd Qu.:1.0000      3rd Qu.:0.0000      3rd Qu.: 23.00
##   Max.   :1.0000      Max.   :1.0000      Max.   :1.0000      Max.   :528.00
##                                                              NA's   :563
##    covidsick        hhcovidsick       ffcovidsick      Classification
##   Min.   :1.000    Min.   :1.000    Min.   :1.000     Length:2441
##   1st Qu.:2.000    1st Qu.:2.000    1st Qu.:2.000     Class :character
##   Median :2.000    Median :2.000    Median :2.000     Mode  :character
##   Mean   :2.113    Mean   :2.065    Mean   :2.221
##   3rd Qu.:2.000    3rd Qu.:2.000    3rd Qu.:2.000
##   Max.   :3.000    Max.   :3.000    Max.   :4.000
##   NA's   :244      NA's   :247      NA's   :247
##    covidtest          educ            hhincome
##   Min.   :1.000    Min.   :3.000    Min.   : 1.000
##   1st Qu.:2.000    1st Qu.:6.000    1st Qu.: 8.000
##   Median :2.000    Median :6.000    Median :11.000
##   Mean   :1.982    Mean   :5.812    Mean   : 9.848
##   3rd Qu.:2.000    3rd Qu.:6.000    3rd Qu.:12.000
##   Max.   :2.000    Max.   :7.000    Max.   :12.000
##   NA's   :250      NA's   :246      NA's   :281
```