

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 tibble  3.1.4    v purrr   0.3.4
## v tidyr   1.1.3    v stringr 1.4.0
## v readr   2.0.1    v forcats 0.5.1
## -- 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

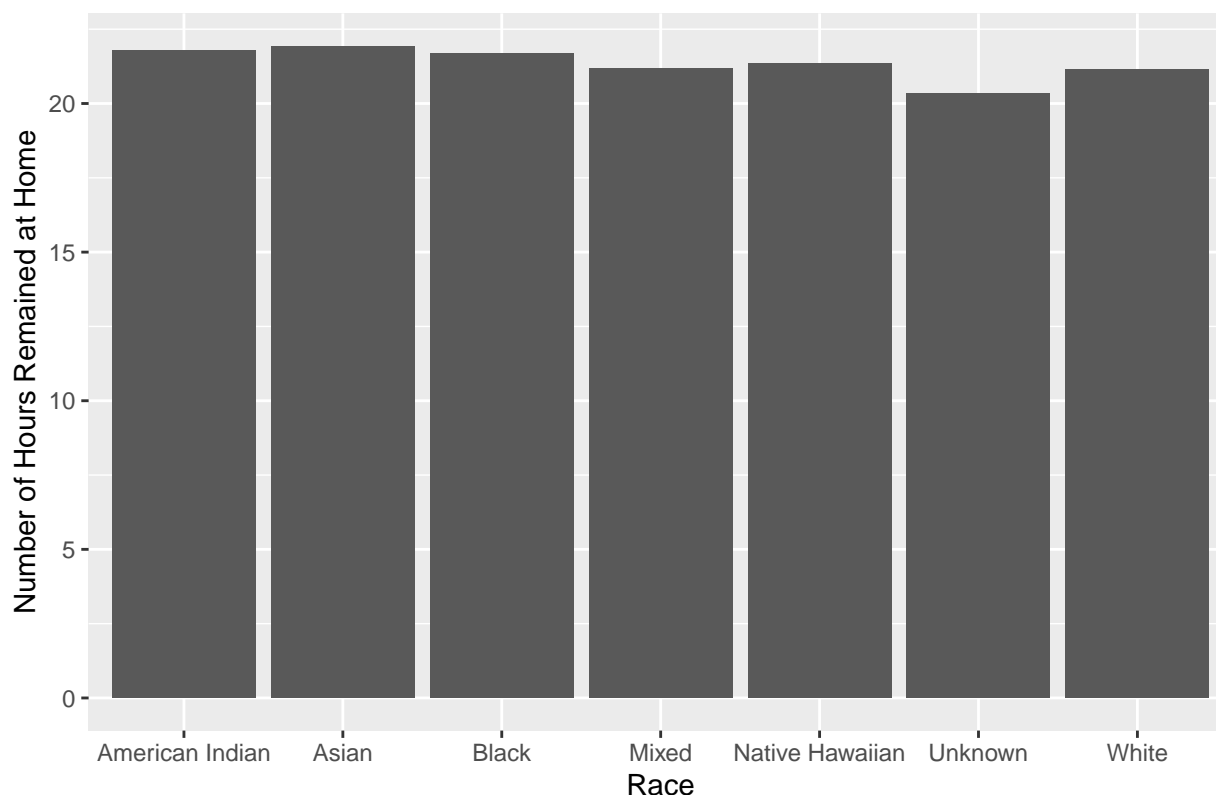
library(viridis)

## 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   <fct> Urban, Urban, Suburban, Rural, Urban, Rural, Urb~
## $ 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, ~
## $ 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, ~
## $ race             <int> 5, 4, 4, 5, 1, 4, 5, 4, 4, 4, 4, 4, 1, 6, 4, ~
## $ sex              <int> 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, ~
## $ covidtest        <int> 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, NA, ~
## $ covidsick        <int> 2, 2, 2, 2, 2, 2, 3, 2, 2, 2, 2, 2, 2, 2, 2, ~
## $ covidsickoutcome <int> NA, NA, NA, NA, NA, NA, 1, NA, NA, NA, NA, NA, NA, N~
## $ hhcovidsick      <int> 2, 2, 2, 2, 2, 2, 3, 2, 2, 2, 2, 2, 2, 2, 2, ~
## $ hhcovidsickoutcome <int> NA, NA, NA, NA, NA, NA, 2, NA, 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, 1, ~
## $ dis_mobility     <int> NA, NA, NA, NA, NA, 2, NA, NA, NA, NA, NA, NA, NA, N~
## $ dis_alone        <int> NA, NA, NA, NA, NA, 2, NA, 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, ~
## $ comorbid_heartattack <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comorbid_chd     <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
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## $ comorbid_stroke      <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comorbid_asthma      <int> NA, 1, NA, NA, NA, 1, 0, 0, 0, NA, NA, NA, NA, 1~
## $ comorbid_skincancer  <int> NA, 0, NA, NA, NA, 0, 0, 1, 0, NA, NA, NA, NA, 0~
## $ comorbid_othcancer   <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comorbid_copd        <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comorbid_arthritis   <int> NA, 0, NA, NA, NA, 1, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comorbid_depression  <int> NA, 1, NA, NA, NA, 1, 1, 1, 1, NA, NA, NA, NA, 0~
## $ comorbid_kidneydis   <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comorbid_diabetes     <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comorbid_obesity     <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comorbid_parkinsons  <int> NA, 0, NA, NA, NA, 0, 0, 0, 0, NA, NA, NA, NA, 0~
## $ comorbid_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, ~
## $ localsipweeks        <fct> "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, 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, ~
## $ 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    <fct> "", "", "", "", "", "", "", "", "", "", "", "", "", ~
## $ 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 <fct> "", "", "", "", "", "Going for a drive", "", "", ~
## $ essntlsrvcs          <fct> "1", NA, NA, "1", NA, NA, NA, NA, "1", NA, NA, NA, ~
## $ essntlsrvctype       <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, NA, ~
## $ X.1                  <int> NA, 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, ~
## $ 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, ~
## $ 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, 0, 1, 1, 1, 1, ~

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## $ 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,~
## $ 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,~
## $ 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, 1,~
## $ 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,~
## $ 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,~
## $ hhcovidsick <int> 2, 2, 2, 2, 2, 2, 3, 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,~
## $ Classification <fct> Urban, Urban, Suburban, Rural, Urban, Rural, Urban,~
## $ covidtest <int> 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,~
## $ 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
## covidssick hhcovidssick ffcovidssick Classification
## Min. :1.000 Min. :1.000 Min. :1.000 Rural :539
## 1st Qu.:2.000 1st Qu.:2.000 1st Qu.:2.000 Suburban:694
## Median :2.000 Median :2.000 Median :2.000 Urban :895
## Mean :2.113 Mean :2.065 Mean :2.221 NA's :313
## 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

```