plan_of_analysis

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1.2) People who are currently unemployed who were not unemployed in before the pandemic (March 2020) [14&15]

The following plots indicate different demographics whose proportions of individuals who lost there jobs during the pandemic. Categories with fewer than rmin_exclude responses were excluded from the calculation. The p-values are provided on the plots.

```
plots <- lapply(setNames(dems_employment, dems_employment), function(item) {
    min_exclude <- 5
#for(item in dems_employment) {
    sym_item <- sym(item)

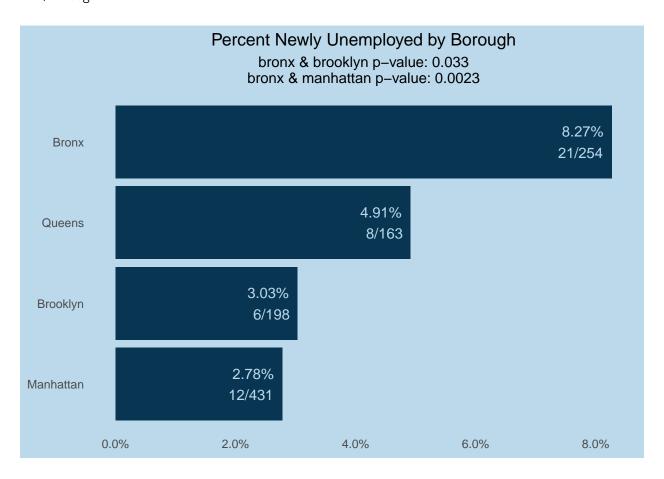
    reshaped <- poa %>% filter(!str_detect(emp_b, "unemp")) %>%
        count(!!sym_item, unemployed = emp_status_a == "unemployed") %>%
        group_by(!!sym_item) %>% mutate(prop = round(n/sum(n), digits = 4), denom = sum(n)) %>%
```

```
# for this particular instance, successes will always be smaller than failers
 filter(unemployed, !str_detect(!!sym_item, "prefer|;")) %>%
  # get rid of 10s
  #filter_at(item, ~!str_detect(., "10s")) %>%
 ungroup %>% mutate(width = denom/sum(denom))
filtered <- reshaped %>% filter(n >= min_exclude) %>%
      select(-unemployed, -width)
p.values <- c()
for(cat in filtered[[item]]) {
 for(cat2 in filtered[[item]]) {
    if(cat == cat2) {
      next.
    } else {
      temp <- filtered[filtered[[item]] == cat,][c("n", "denom")] %>%
        rbind(filtered[filtered[[item]] == cat2,][c("n", "denom")])
      p.value <- prop.test(temp$n, temp$denom)$p.value</pre>
      names(p.value) <- glue::glue("{cat} & {cat2} p-value:")</pre>
      if(p.value <= 0.1 & !glue::glue("{cat2} & {cat} p-value:") %in% names(p.values)) {</pre>
        p.values <- c(p.values, p.value)</pre>
      } else {
        next
      }
   }
 }
}
if(is.null(p.values)) {
 return(NULL)
} else {
plot <- reshaped %>%
 filter(n >= min_exclude) %>%
  ggplot(aes(x = prop, y = #stringr::str_to_title(labelled::to_character(!!sym_item))
               reorder(stringr::str_to_title(labelled::to_character(!!sym_item)), prop)#,
                                 #width = width, alpha = n
    geom_col(fill = project_pal[4]) +
    scale_x_continuous(labels = scales::percent) +
    xlab(NULL) + ylab(NULL) + scale_color_discrete(guide = "legend", name = item) + ggtitle(item) +
  ggtitle(glue::glue("Percent Newly Unemployed by {stringr::str_to_title(item)}")) +
 project_theme + labs(subtitle = paste(names(p.values), signif(p.values, 2),
                                         collapse = "\n")) +
  geom_text(aes(label = glue::glue("{scales::percent(prop)}\n{n}/{denom}")),
            color = project_pal[1], hjust = 1.2)
if(min(reshaped$n) < min_exclude) {</pre>
 pulled <- reshaped %>% filter(n < min_exclude) %>%
   mutate_if(labelled::is.labelled, labelled::to_character) %>%
    pull(!!sym_item)
  cats <- glue::glue("'{pulled}'") %>%
   paste(collapse = ", ")
```

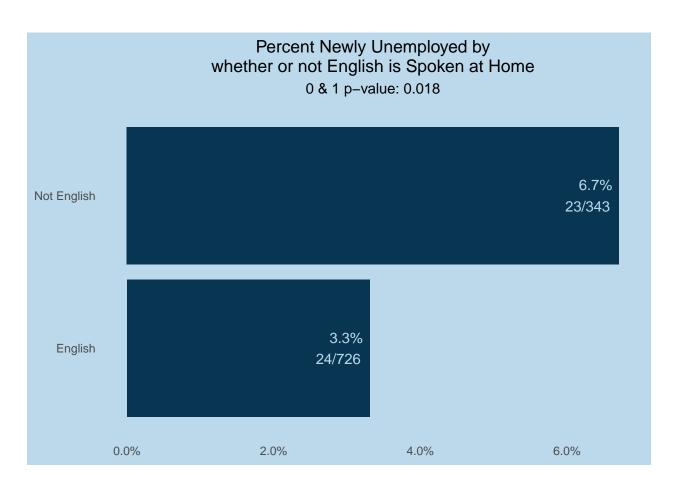
```
plot <- plot +
      labs(caption = glue::glue("*Categories with fewer than {min_exclude} responses excluded: '{cats}'
 return(plot)
  }
#print(plot)
#}
})
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
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## incorrect
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
## Warning in prop.test(temp$n, temp$denom): Chi-squared approximation may be
## incorrect
plots$not eng <- plots$not eng +</pre>
 ggtitle("Percent Newly Unemployed by\nwhether or not English is Spoken at Home") +
```

```
scale_y_discrete(labels = c("English", "Not English"))
plots$hh_ch_0_17_bi <- plots$hh_ch_0_17_bi +
    ggtitle("Percent Newly Unemployed by Presence of Children at Home")
plots$inc_dist <- plots$inc_dist +
    ggtitle("Percent Newly Unemployed by Income Category")
#plots$res_cat <- plots$res_cat + ggtitle("Percent Newly Unemployed by Residence Category")
#plots$race_weight <- plots$race_weight + ggtitle("Percent Newly Unemployed by Race")
plots</pre>
```

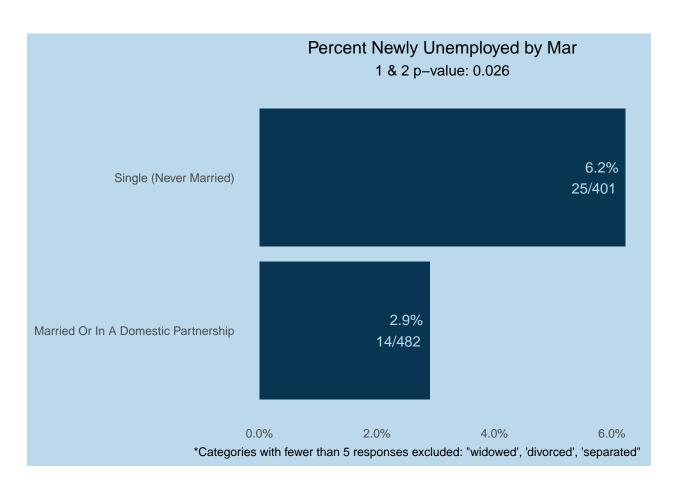
\$borough



```
##
## $decade
## NULL
##
## $gen
## NULL
##
## $not_eng
```



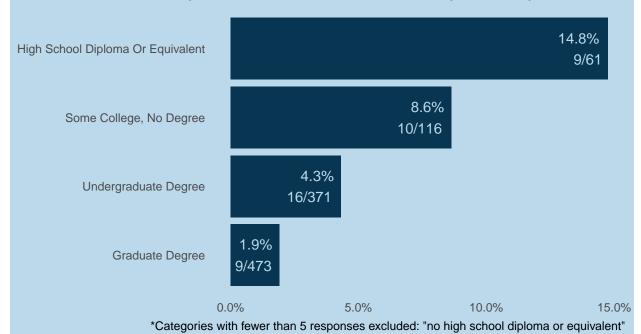
\$mar



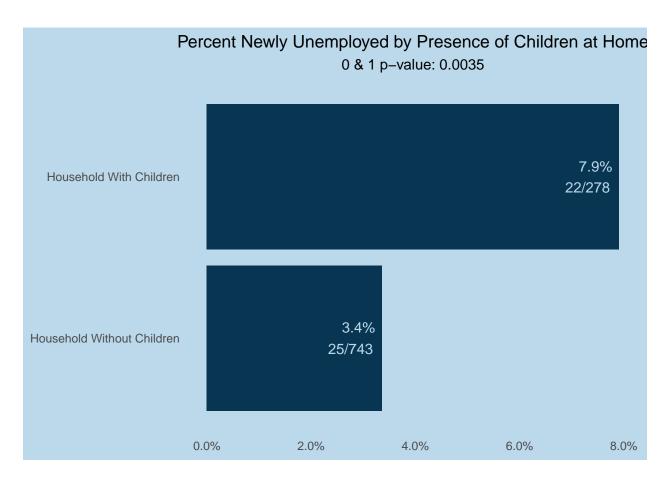
##
\$sch_level_cat

Percent Newly Unemployed by Sch_level_cat

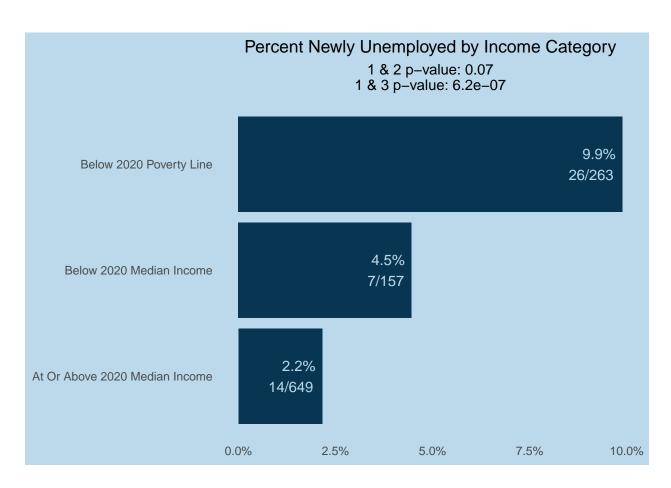
graduate degree & high school diploma or equivalent p-value: 1.2e-graduate degree & some college, no degree p-value: 0.00073 graduate degree & undergraduate degree p-value: 0.065 high school diploma or equivalent & undergraduate degree p-value: 0.0



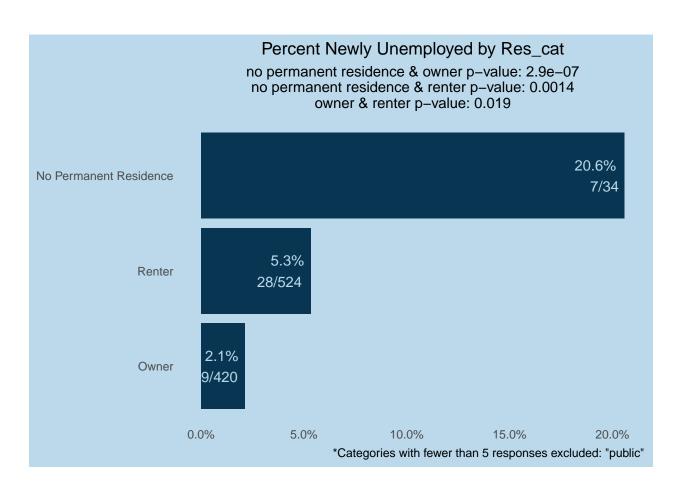
```
##
## $hh_64_bi
## NULL
##
## $hh_ch_0_17_bi
```



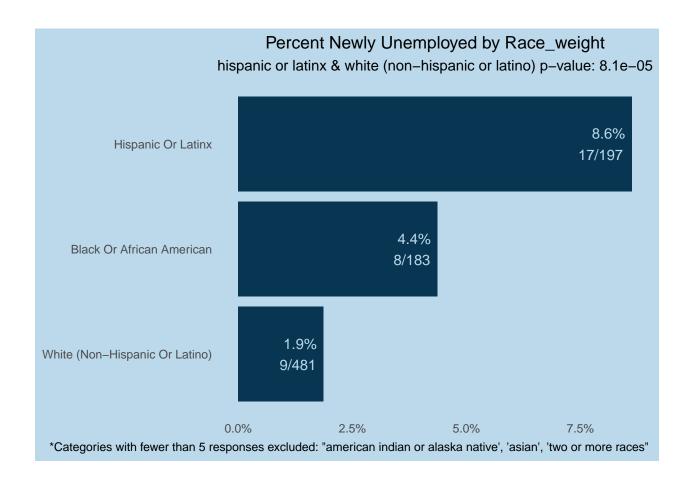
\$inc_dist



\$res_cat

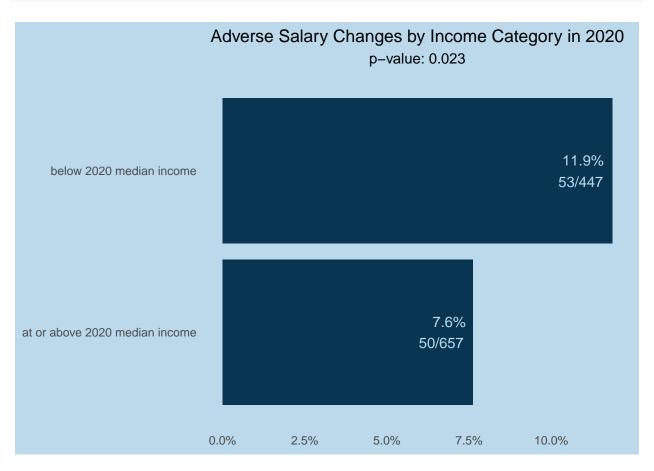


\$race_weight



1.3) Higher income employees were less likely to face adverse job status changes during the pandemic

```
mean(poa$emp_change)
## [1] 0.280543
adverse <- poa %>%
  count(inc_be_med_b, emp_change, inc_neg) %>%
  group_by(inc_be_med_b) %>% mutate(denom = sum(n), prop = n/denom) %>%
  ungroup %>% mutate(width = denom/sum(n)) %>%
  filter(emp_change) %>% na.omit() %>%
  mutate_if(labelled::is.labelled, labelled::to_factor) %>%
  mutate(label = ifelse(str_detect(inc_neg, "neg"), "adverse", "neutral or positive")) %>%
  filter(label == "adverse")
adverse %>% ggplot(aes(x = prop, y = inc_be_med_b#, fill = label
             #width = width
             )) + geom_col(fill = project_pal[4]) +
  ggtitle("Adverse Salary Changes by Income Category in 2020") +
  scale fill manual(values = project pal[c(4)]) +
  scale_x_continuous(label = scales::percent) +
```



1.5 - 1.6

1.5) People with at least a Bachelor's degree were more/less likely to face job status changes during the pandemic [11, 14,15] 1.6) People who had insurance (any form) were less likely to face changes in job status [21,14,15]

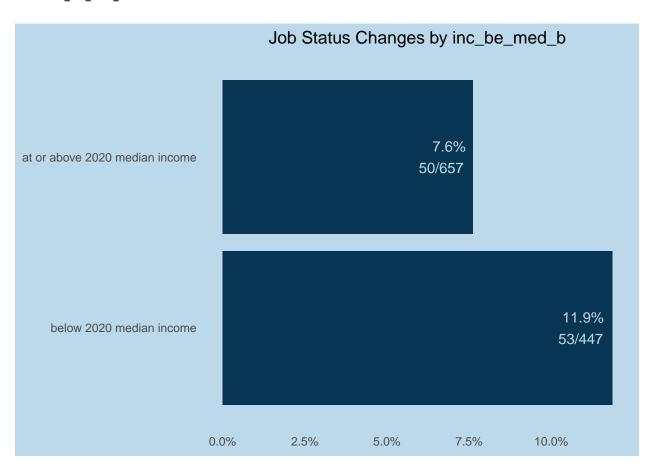
```
#table(poa$ins[str_detect(poa$ins, ";")])
new_variables <- c("inc_be_med_b", "sch_bach", "ins_has", "ins_prvt")
new_variables <- setNames(new_variables, new_variables)

#item <- new_variables[[2]]

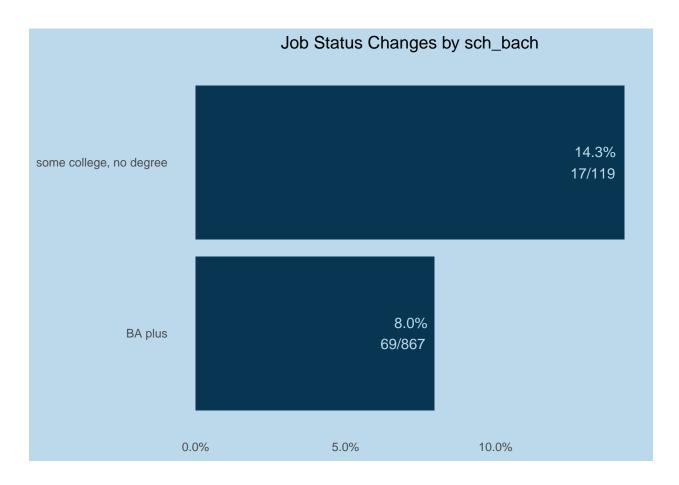
lapply(new_variables, function(item) {
    mean_val <- pasteO(round(mean(str_detect(poa[[item]], "BA|has")), digits = 4)*100, "%")
    sym_item <- sym(item)

    reshaped <- poa %>% count(!!sym_item, emp_change, inc_neg) %>% group_by(!!sym_item) %>%
```

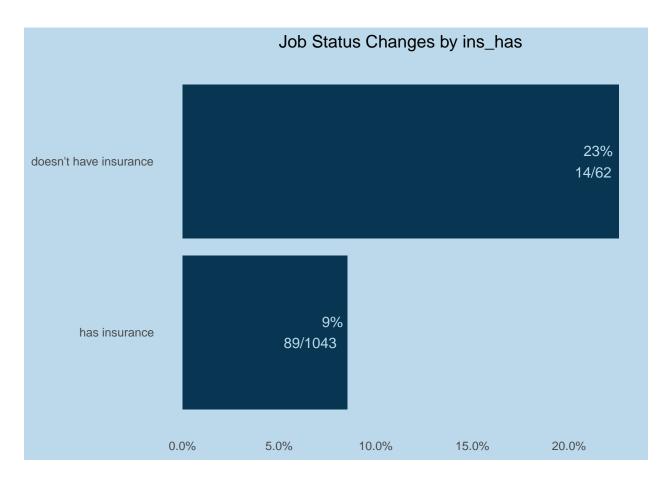
\$inc_be_med_b



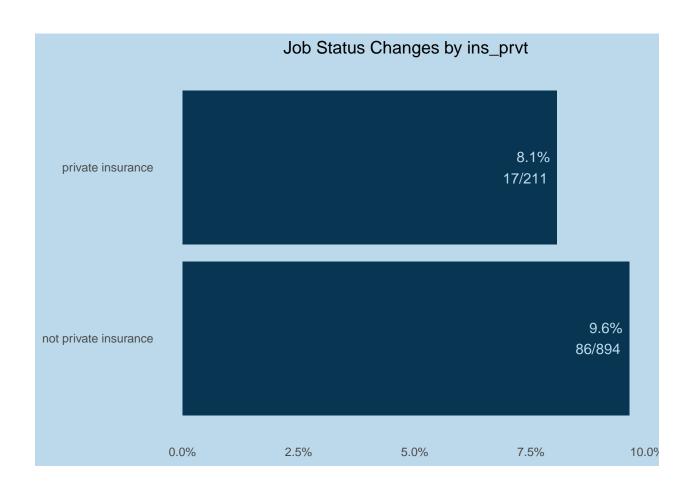
\$sch_bach



\$ins_has



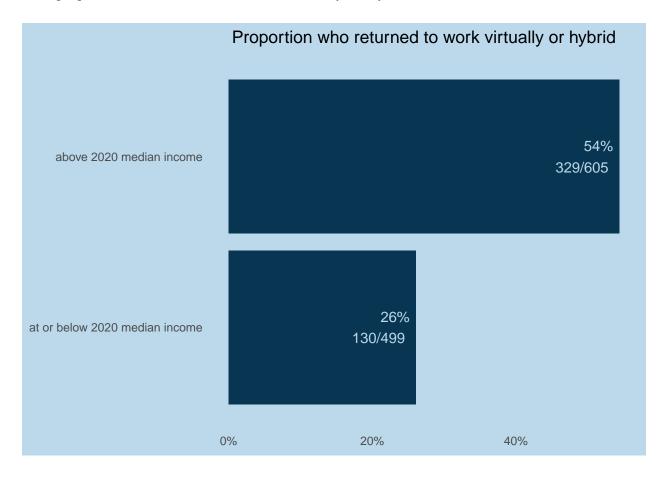
\$ins_prvt



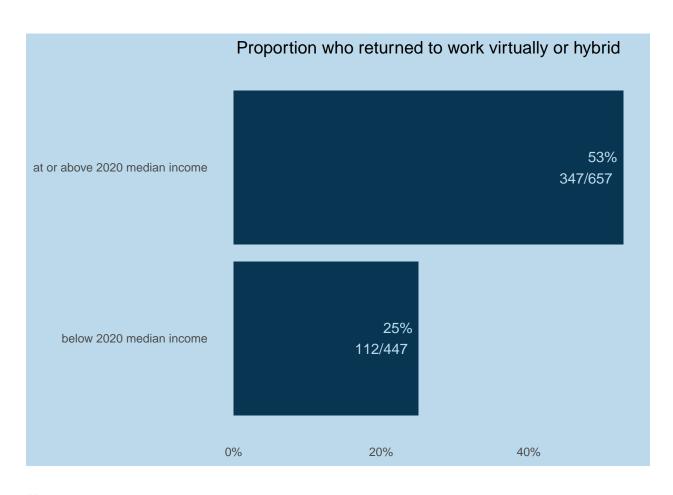
1.8, 1.13

1.08) Higher paid employees (above median income) were less likely to return to working in-person [12,13,18] 1.13) Individuals with children were more likely to participate in hybrid work rather than full-time physical work

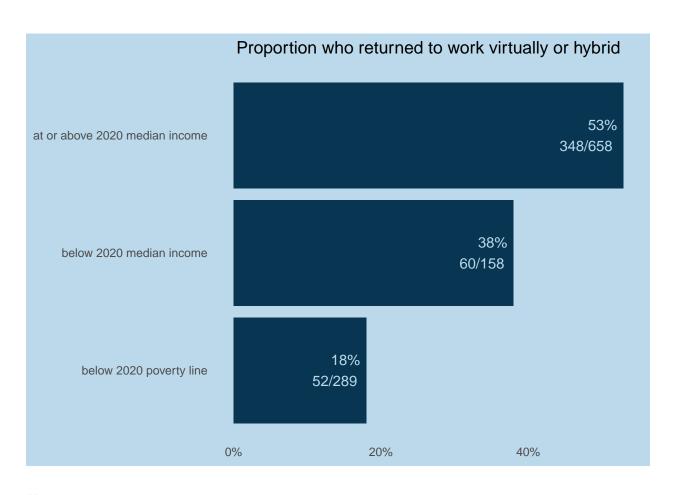
\$'proportion who returned to work virtually or hybrid inc_ab_med_b'



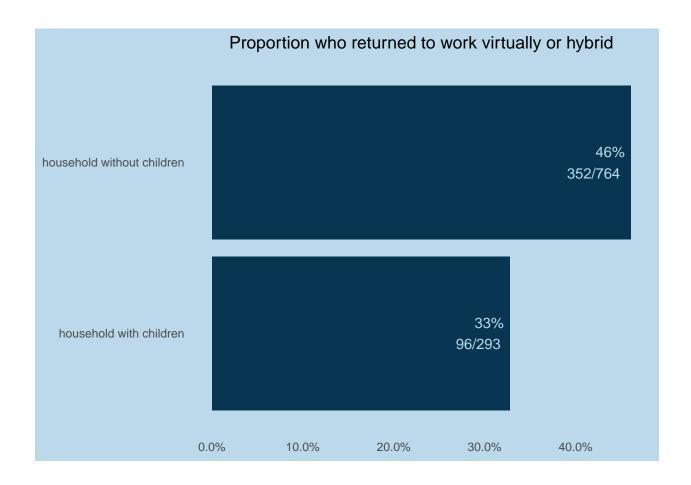
##
\$'proportion who returned to work virtually or hybrid inc_be_med_b'



##
\$'proportion who returned to work virtually or hybrid inc_dist'



##
\$'proportion who returned to work virtually or hybrid hh_ch_0_17_bi'



1.9 - 1.11

- 1.09) People who are currently receiving unemployment benefits [16] only rsum(poa\$unemp_ben == 1, na.rm = TRUE) people who are currently receiving unemployment benefits
- 1.10) People who are unemployed and are not receiving unemployment benefits because they expired [15 &16]

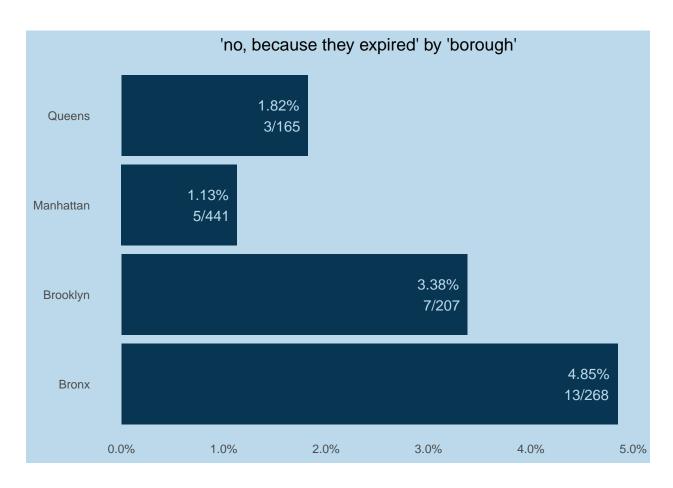
poa %>% count(unemp_ben) %>% mutate_if(labelled::is.labelled, labelled::to_character)

```
## # A tibble: 5 x 2
##
     unemp_ben
                                                       n
     <chr>
##
                                                   <int>
## 1 yes
                                                      10
## 2 no, because they expired
                                                      28
## 3 no, but i tried to apply for benefits
                                                      11
## 4 no, but i did not try to apply for benefits
                                                      48
## 5 <NA>
                                                    1008
poa %>% count(emp_a_un, unemp_expired = unemp_ben == 2)
```

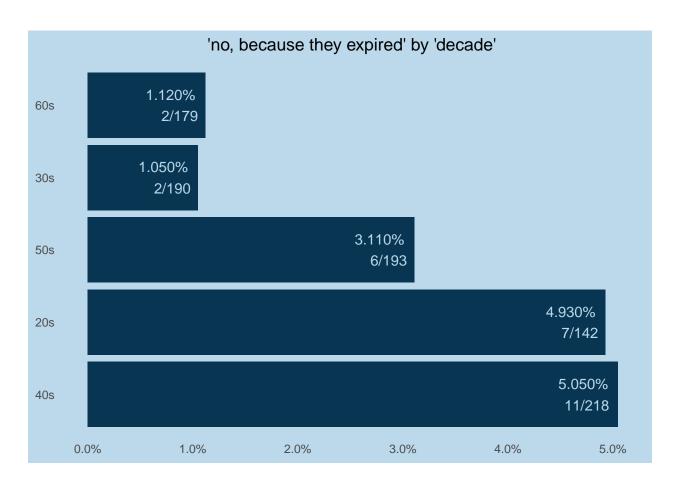
```
## # A tibble: 5 x 3
## emp_a_un unemp_expired n
```

```
<dbl+lbl> <lgl>
                                       <int>
## 1 0 [not unemployed] FALSE
                                          20
## 2 0 [not unemployed] TRUE
                                           2
## 3 0 [not unemployed] NA
                                        1008
## 4 1 [unemployed]
                        FALSE
                                          49
## 5 1 [unemployed]
                        TRUE
                                          26
dems_unemp <- str_subset(demographics, "un|emp", negate = TRUE)</pre>
dems_unemp <- setNames(dems_unemp, dems_unemp)</pre>
poa %>% count(unemp_ben) %>% mutate(label = labelled::to_factor(unemp_ben))
## # A tibble: 5 x 3
##
                                             unemp_ben
                                                           n label
##
                                             <dbl+lbl> <int> <fct>
## 1 1 [yes]
                                                          10 yes
## 2 2 [no, because they expired]
                                                          28 no, because they expir~
## 3 3 [no, but i tried to apply for benefits]
                                                          11 no, but i tried to app~
## 4 4 [no, but i did not try to apply for benefits]
                                                          48 no, but i did not try ~
## 5 NA
                                                        1008 <NA>
# chose just those categories that have over 20 respondents
lapply(c(2,4), function(item) {
  item_name <- names(attributes(poa$unemp_ben)$labels[item])</pre>
  mutated <- poa %>% mutate(unemp = unemp_ben == item)
  lapply(dems_unemp, function(dem) {
    sym dem <- sym(dem)</pre>
   reshaped <- mutated %>%
      count(!!sym_dem, unemp) %>%
      group_by(!!sym_dem) %% mutate(prop = round(n/sum(n), digits = 4), denom = sum(n)) %>%
      filter(unemp, !str_detect(!!sym_dem, "prefer|;")) %>% ungroup %>% mutate(width = denom/sum(denom)
    plot <- reshaped %>% ggplot(aes(x = prop,
                                   y = reorder(stringr::str_to_title(labelled::to_character(!!sym_dem)),
                                   )) +
      geom_col(fill = project_pal[4]) +
      scale_x_continuous(labels = scales::percent) +
      xlab(NULL) + ylab(NULL) + scale_color_discrete(guide = "legend", name = dem) +
      ggtitle(glue::glue("'{item name}' by '{dem}'")) +
      project_theme +
      geom_text(aes(label = glue::glue("{scales::percent(prop)}\n{n}/{denom}")),
              color = project_pal[1], hjust = 1.2)
  return(plot)
 })
})
## [[1]]
```

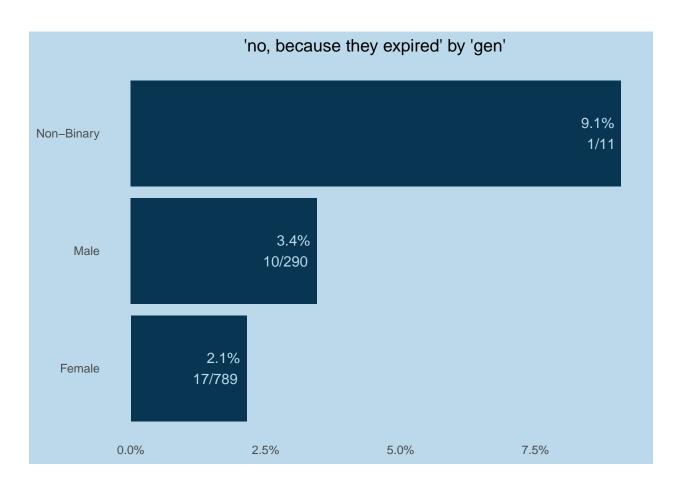
[[1]]\$borough



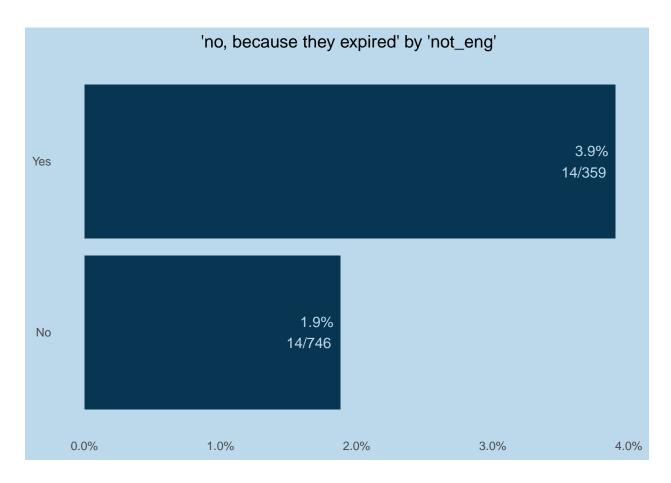
[[1]]\$decade



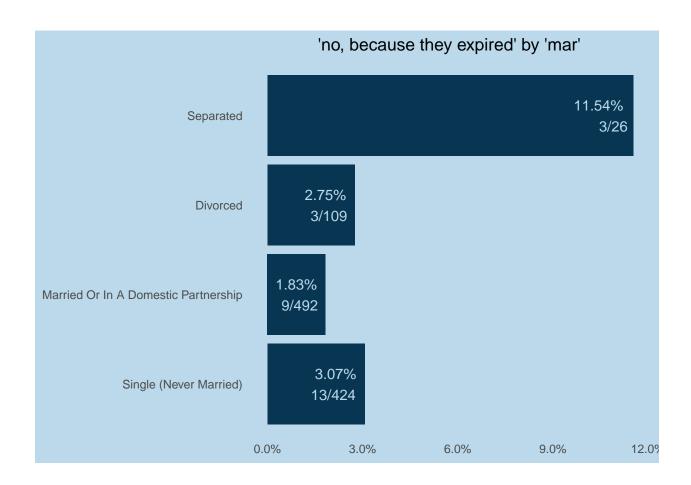
[[1]]\$gen



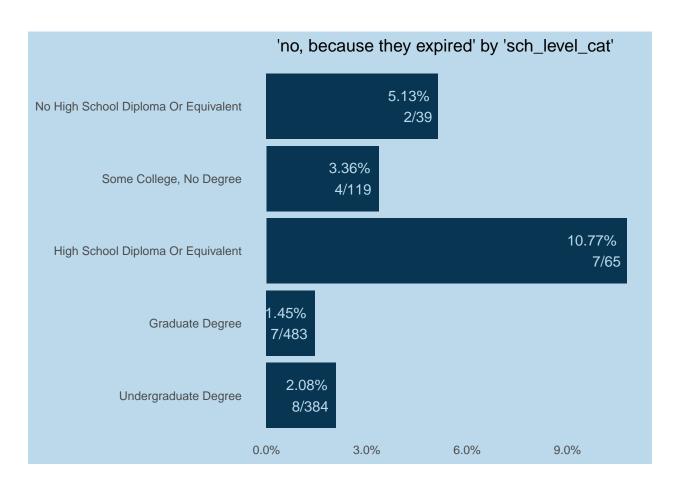
[[1]]\$not_eng



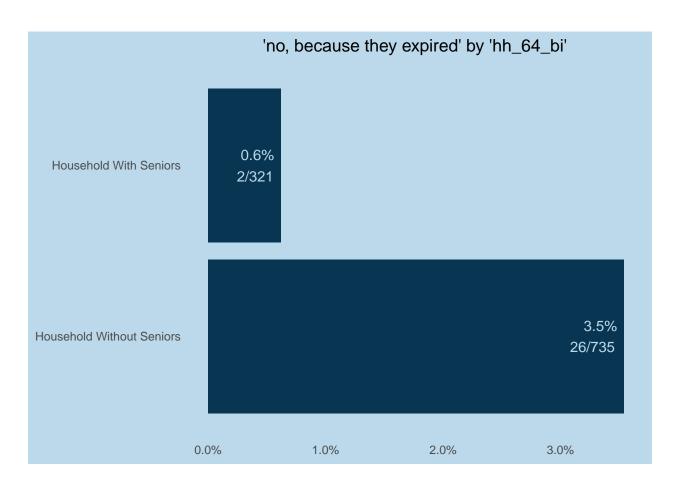
[[1]]\$mar



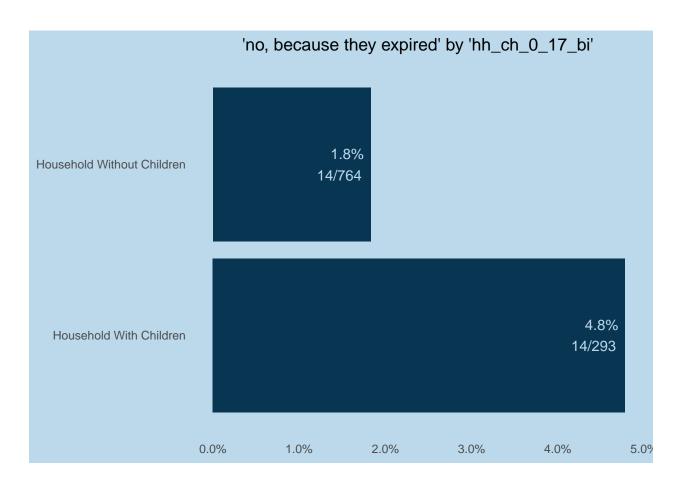
[[1]]\$sch_level_cat



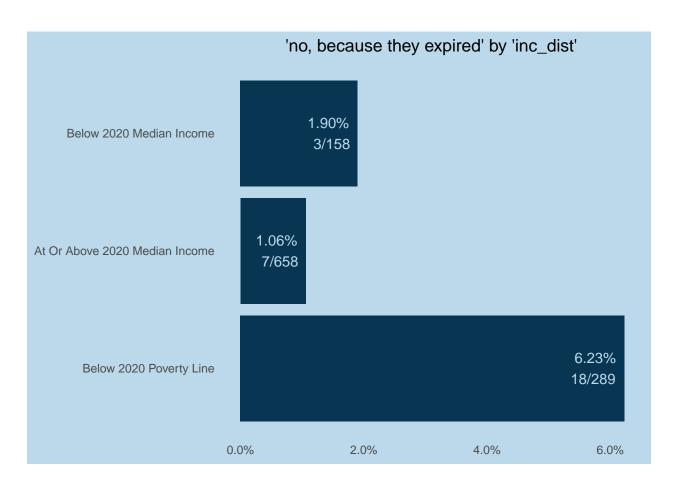
[[1]]\$hh_64_bi



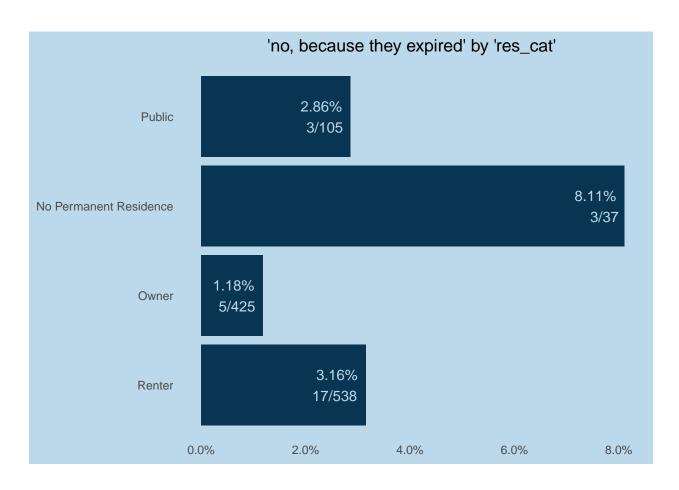
[[1]]\$hh_ch_0_17_bi



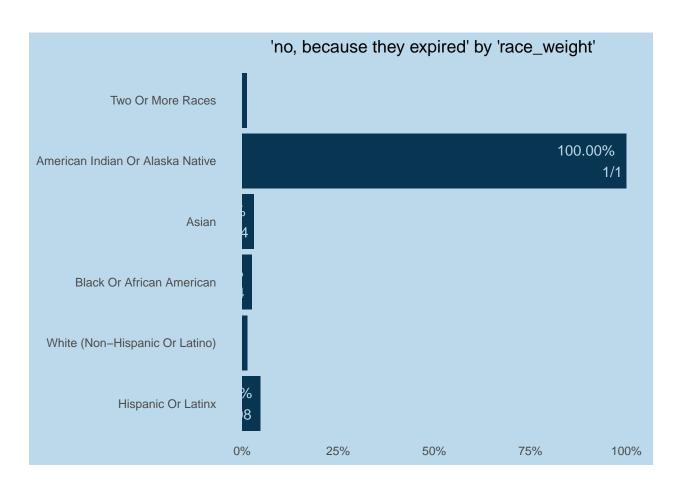
[[1]]\$inc_dist



[[1]]\$res_cat



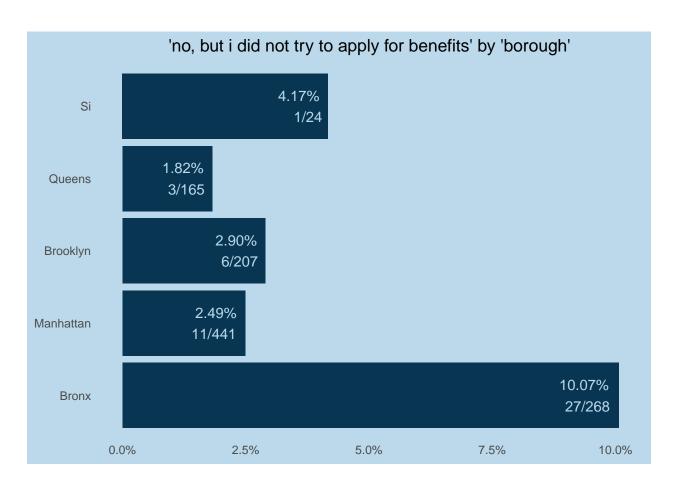
[[1]]\$race_weight



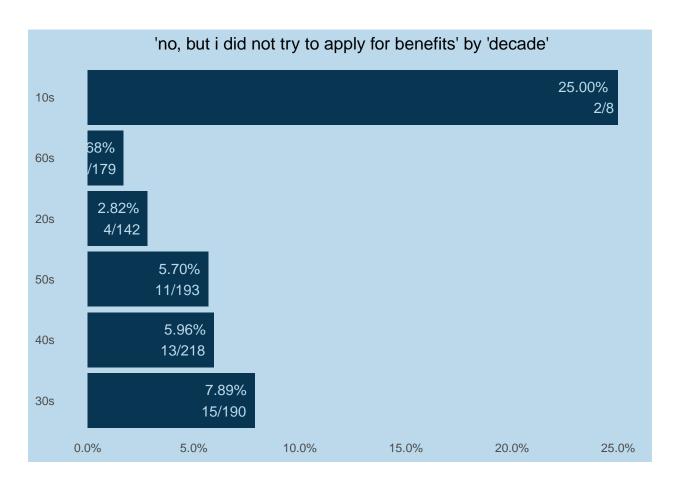
##

[[2]]

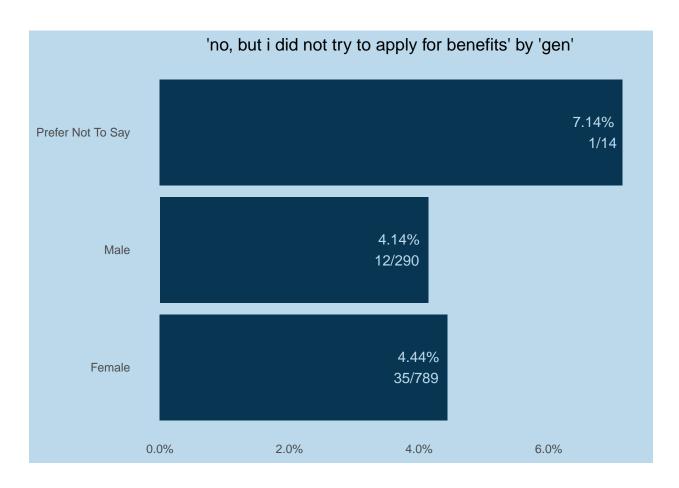
[[2]]\$borough



[[2]]\$decade

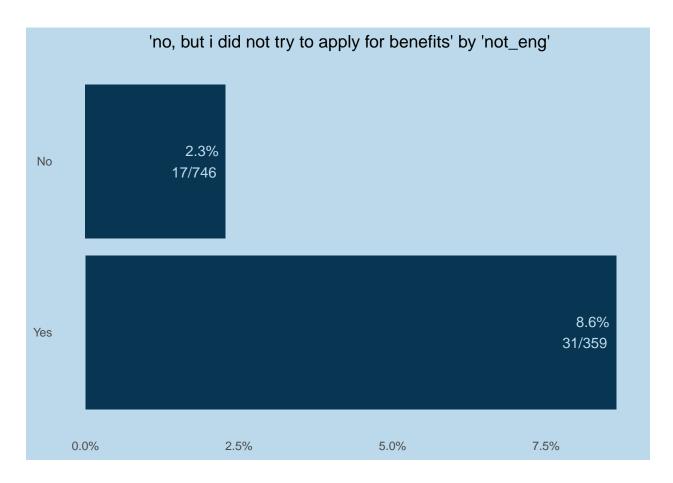


[[2]]\$gen

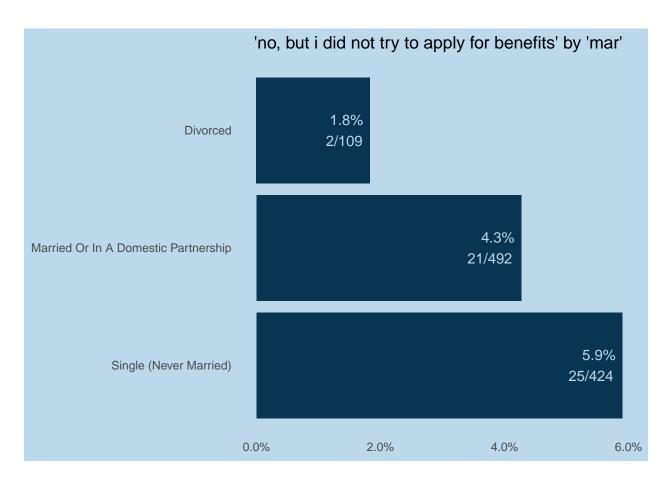


.... 552

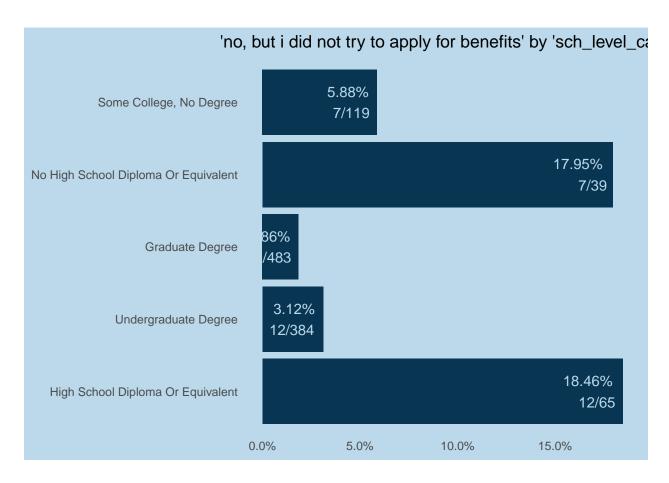
[[2]]\$not_eng



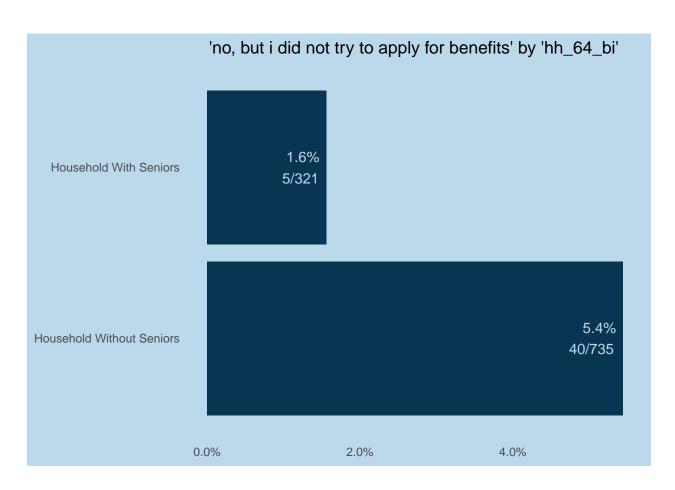
[[2]]\$mar



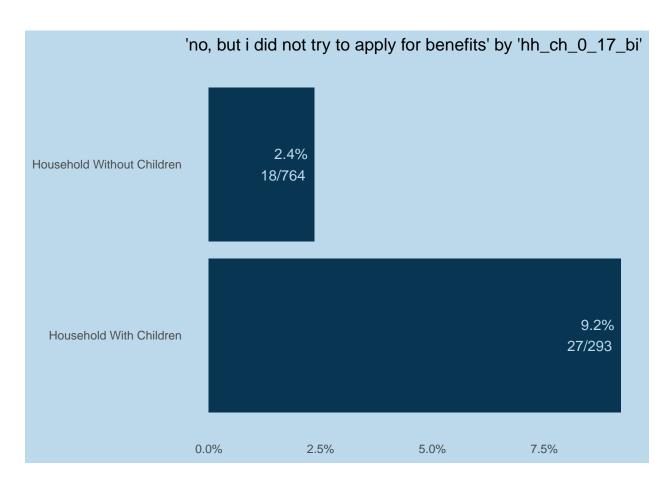
[[2]]\$sch_level_cat



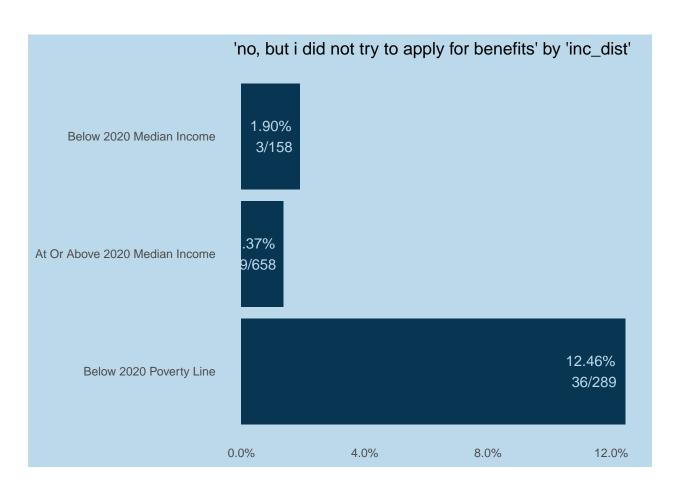
[[2]]\$hh_64_bi



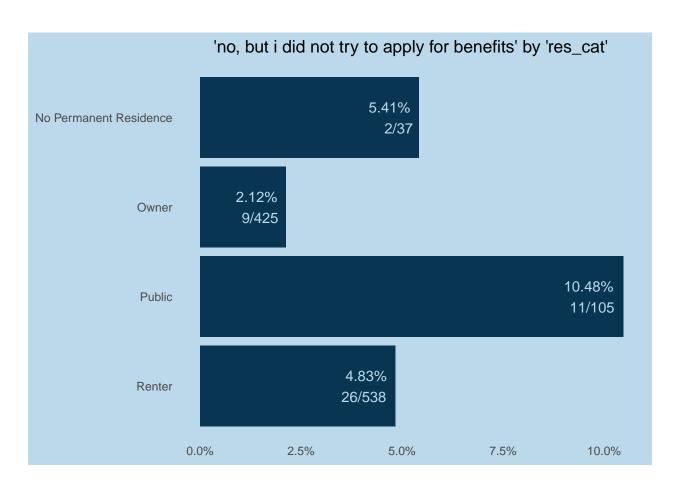
[[2]]\$hh_ch_0_17_bi



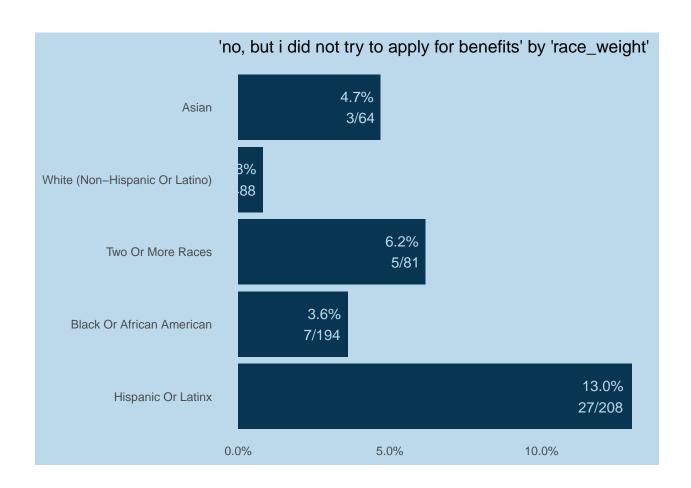
[[2]]\$inc_dist



[[2]]\$res_cat

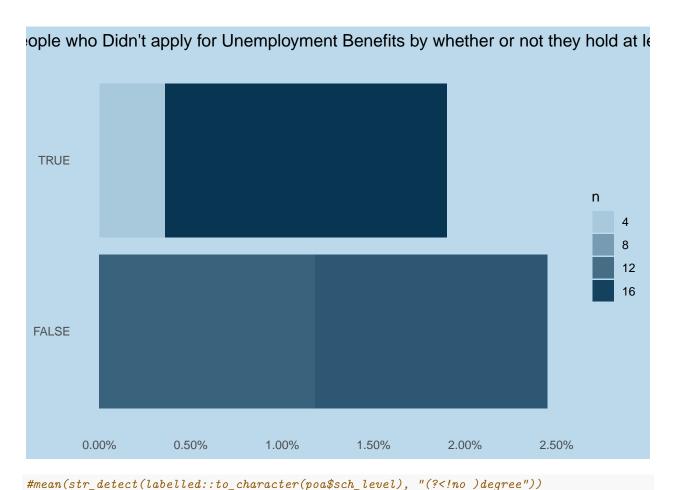


[[2]]\$race_weight



1.12) Unemployed people who have less than a bachelors degree are more or less likely to apply for unemployment benefits even if they qualify [11, 15,16]

```
poa %>% count(emp_a_un, unemp_con = unemp_ben == 4, sch_bach = sch_bach == "BA plus") %>%
  mutate(prop = round(n/sum(n), digits = 4)) %>%
  na.omit %>% filter(unemp_con) %>% mutate_if(labelled::is.labelled, labelled::to_character) %>%
  ggplot(aes(x = prop, y = reorder(sch_bach, -n), alpha = n)) +
    geom_col(fill = project_pal[4]) +
    scale_x_continuous(labels = scales::percent) +
    xlab(NULL) + ylab(NULL) + ggtitle("Percent of People who Didn't apply for Unemployment Benefits by
```



#mean(!str_detect(poa\$ins, "do"))

validation

```
poa %>% filter(str_detect(emp_a, "unemployed;|;unemployed")) %>%
 select(responseid, source, wrk, emp_a, emp_b) %% mutate_if(labelled::is.labelled, labelled::to_chara
## # A tibble: 12 x 5
##
     responseid
                       source
                                       wrk
                                                                     emp_a emp_b
##
     <chr>>
                       <chr>
                                       <chr>
                                                                     <chr> <chr>
## 1 r_3oma9r4nbxuvccv spanish
                                      i am not working
                                                                     gig ~ unem~
## 2 r_3rlqujhnrppj20i spanish
                                                                     home~ work~
                                      i am not working
## 3 r_3esdkq4tdvbl8k7 spanish
                                      i am not working
                                                                    home~ gig ~
## 4 r_3hnsazw9xctkobp english
                                                                    home~ work~
                                      i am not working
## 5 r_3dharhpy3206m0b english
                                      i am not working
                                                                    stud~ work~
## 6 r_3kyd1w7umjt9vit english
                                                                    disa~ disa~
                                      i am not working
## 7 r_vkequavdh1zhfx3 english
                                      i am not working
                                                                    home~ smal~
## 8 r_3kv9rwjmkmepyqy english - pots i am not working
                                                                    disa~ disa~
## 9 r_xteiepkommurq5x spanish - sbu i am not working
                                                                     work~ work~
## 10 r_3dza7ogeb6a7trt english - abny
                                       i am not working
                                                                     disa~ disa~
## 11 r_rryax5dhoivrbef ny urban english no, i am fully virtual (i am ~ work~ work~
```

12 r_xaaonfutabld8ph ny urban english yes, but only in a hybrid mod~ free~ free~

```
poa %>% count(wrk, emp_a) %>%
  filter(wrk == 4) %>%
  mutate_if(labelled::is.labelled, labelled::to_character)
## # A tibble: 29 x 3
##
      wrk
                       emp_a
                                                                                   n
##
      <chr>
                       <chr>>
                                                                               <int>
## 1 i am not working disabled
                                                                                  24
## 2 i am not working disabled; other
                                                                                   1
## 3 i am not working disabled;unemployed
                                                                                   2
## 4 i am not working disabled;unemployed;other
                                                                                   1
## 5 i am not working freelance or consultant
                                                                                   5
## 6 i am not working freelance or consultant; homemaker
                                                                                   1
## 7 i am not working gig worker (uber, lyft, instacart, etc.)
                                                                                   1
## 8 i am not working gig worker (uber, lyft, instacart, etc.);homemaker;un~
                                                                                   1
## 9 i am not working homemaker
                                                                                  27
## 10 i am not working homemaker; disabled; unemployed
                                                                                   1
## # ... with 19 more rows
filter(poa, wrk == 4, str_detect(emp_a, "full|part")) %>% select(responseid, source, wrk, emp_a, emp_b)
  mutate_if(labelled::is.labelled, labelled::to_character)
## # A tibble: 16 x 5
##
      responseid
                        source
                                          wrk
                                                            emp_a
                                                                               emp_b
##
      <chr>
                        <chr>>
                                          <chr>
                                                           <chr>>
                                                                               <chr>>
## 1 r_24wvnvk3ks5ewqd spanish
                                          i am not working work part-time
                                                                               work~
## 2 r_6du1aerkz9rz9rv spanish
                                          i am not working work part-time
                                                                               home~
## 3 r_p6lvngskalj0fir prolific
                                          i am not working work part-time
                                                                               gig ~
## 4 r_2ewlcpq9igqlust prolific
                                          i am not working work part-time
                                                                               free~
## 5 r_1e5ivk5ozq2vo5i english - helpnyc i am not working work part-time
                                                                               work~
## 6 r_2slf16fqxsf4qit english - helpnyc i am not working work part-time;re~ reti~
## 7 r_1latxotyidndysp english
                                          i am not working work full-time; re~ reti~
## 8 r_2paw5v29tjb2eca english
                                          i am not working work part-time
                                                                               reti~
## 9 r_2uvy38usdgcj520 english
                                          i am not working work part-time
                                                                               work~
## 10 r_3hg5kew0qqkcq28 english - pots
                                          i am not working work full-time
                                                                               reti~
## 11 r_rjjuz0xca59pj5n spanish - pots
                                          i am not working work full-time
                                                                               work~
## 12 r_2tocregwqqxw1lk spanish - pots
                                          i am not working work full-time; ho~ work~
## 13 r_1hoxlofhvkplzl1 spanish - pots
                                          i am not working work full-time
                                                                               work~
## 14 r 2zei9gsu9yvgggn spanish - sbu
                                          i am not working work part-time
## 15 r_xteiepkommurq5x spanish - sbu
                                          i am not working work full-time;un~ work~
## 16 r_b16vjrrxuuzau6l spanish - sbu
                                          i am not working work part-time; ho~ work~
filter(poa, wrk == 3, str_detect(emp_a, "unemp|dis")) %>% select(responseid, source, wrk, emp_a, emp_b)
  mutate_if(labelled::is.labelled, labelled::to_character)
## # A tibble: 5 x 5
##
     responseid
                                         wrk
                       source
                                                                         emp_a emp_b
                                                                         <chr> <chr>
## 1 r_2wmm2lvbmh1orpx english - helpnyc no, i am fully virtual (i am ~ free~ work~
## 2 r_3r_4goxczw5ro english - helpnyc no, i am fully virtual (i am ~ work~ work~
## 3 r_6gsxxnpapffz1u1 english - helpnyc no, i am fully virtual (i am ~ reti~ reti~
## 4 r 24x9cl8p5xzhxvc english
                                         no, i am fully virtual (i am ~ disa~ disa~
## 5 r_rryax5dhoivrbef ny urban english no, i am fully virtual (i am ~ work~ work~
```

```
# everybody who started unemployed was still unemployed
poa %>% filter(!str_detect(emp_a, "un"), str_detect(emp_b, "un"), !is.na(unemp_ben)) %>% select(respons
mutate_if(labelled::is.labelled, labelled::to_character)
## # A tibble: 2 x 4
##
     responseid
                        emp_b
                                                   unemp_ben
                                    emp_a
##
     <chr>>
                        <chr>
                                    <chr>
                                                    <chr>
## 1 r_1fb7apzw9cht1ni unemployed work part-time yes
## 2 r_anfcbuoqmi8abp7 unemployed work part-time yes
# people who lost their jobs and did not get new ones
poa %>% filter(str_detect(emp_a, "un"), !str_detect(emp_b, "un"), !is.na(unemp_ben)) %>% select(respons
  mutate_if(labelled::is.labelled, labelled::to_character)
## # A tibble: 54 x 4
      responseid
##
                         emp_b
                                                                        emp_a unemp_ben
##
      <chr>
                         <chr>>
                                                                        <chr> <chr>
## 1 r_3rlqujhnrppj20i work part-time;homemaker
                                                                        home~ no, but ~
## 2 r_3esdkq4tdvb18k7 gig worker (uber, lyft, instacart, etc.);h~ home~ no, but ~
## 3 r_2qfz9dvdmkt4gc6 work full-time
                                                                        unem~ no, beca~
## 4 r_3eqqbmfwu7p09bq work full-time
                                                                        unem~ no, but ~
## 5 r_1rj0io90whj0qkm work part-time; freelance or consultant
                                                                        unem~ no, beca~
## 6 r_aai4buravc7jrkn student
                                                                        unem~ no, but ~
## 7 r_2e5liylqfvqy0uy student
                                                                        unem~ no, but ~
## 8 r_1lcvbxp6zf7wbbh work full-time
                                                                        unem~ yes
## 9 r_3rmc8wkilnq14ri work part-time
                                                                        unem~ no, beca~
## 10 r_2vyon33pxp0m2ds work full-time
                                                                        unem~ no, but ~
## # ... with 44 more rows
```

1.1

drive_upload(media = "plan_of_analysis.html", path = paste0("Communities Speak/Subteams/Data Subteam/Da