poa_financial_security

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Contents

Summary of Findings

1. Nearly every time, sch level was negatively associated with stress, and speaking a language other than English at home or having children was positively associated with stress.
2. Black and Hispanic respondents frequently experienced more stress than white respondents.

Data Description

Data heavily skewed towards higher income brackets

```
categories <- attributes(wrangled$inc_after)$labels

wrangled %>%
  select(inc_before, inc_after) %>%
  mutate_if(is.labelled, labelled::to_character) %>%
  count(inc_before)
```

```
## # A tibble: 16 x 2
##    inc_before              n
##    <chr>               <int>
##  1 $10,000 - $19,999      79
##  2 $100,000 - $149,999   165
##  3 $150,000 - $199,999    88
##  4 $20,000 - $29,999      69
##  5 $200,000 - $299,999    76
##  6 $30,000 - $34,999      45
##  7 $300,000 or more      102
##  8 $35,000 - $39,999      24
```

```
##  9 $40,000 - $49,999      69
## 10 $50,000 - $59,999      65
## 11 $60,000 - $69,999      52
## 12 $70,000 - $79,999      61
## 13 $80,000 - $89,999      54
## 14 $90,000 - $99,999      59
## 15 less than $10,000      96
## 16 <NA>                    1
```

```
arranged <- tibble(range = names(categories)) %>%
  left_join(wrangled %>% mutate(range = labelled::to_character(inc_before)) %>%
            count(range, inc_before)) %>%
  mutate(range = str_replace_all(range, c("less than" = "$0 -", "or more" = "- $450,000+"))) %>%
  separate(col = range, into = c("min", "max"), sep = " - ", remove = FALSE) %>%
  mutate(across(min:max, ~as.double(str_replace_all(., "\\$|,|\\+", "")))) %>%

  na.omit()# come back to top bracket later
```

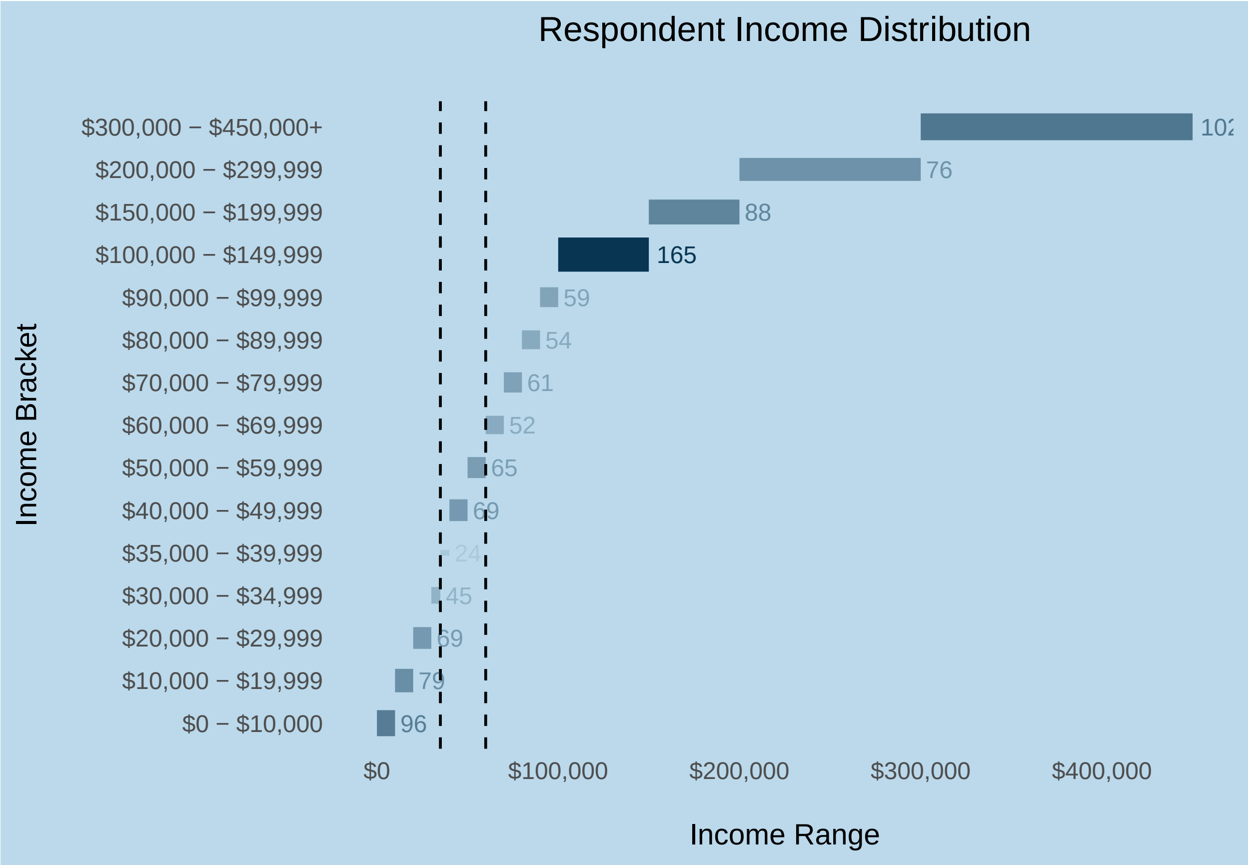
```
## Joining, by = "range"
```

```
inc_dist_plot <- arranged %>%

  ggplot(aes(y = reorder(range, max), alpha = n), show.legend = FALSE) +
  #geom_col(aes(x = max)) +
  geom_linerange(aes(xmin = min, xmax = max, size = n), color = project_pal[4], show.legend = FALSE) +
  geom_vline(xintercept = c(35000, 60000),
             labels = c("poverty line", "median income"), lty = "dashed") +
  geom_text(aes(x = max, label = n), hjust = -0.2, color = project_pal[4], size = 3, show.legend = FALSI
  scale_x_continuous(labels = scales::dollar) +
  #annotate("text", x = 0, y = c(poverty_line), label = c("Respondents\nBelow Poverty Line"))
  #geom_jitter(data = wrangled, aes(x = ))
  ylab("Income Bracket\n") + xlab("\nIncome Range") +
  ggtitle("Respondent Income Distribution\n")
```

```
## Warning: Ignoring unknown parameters: labels
```

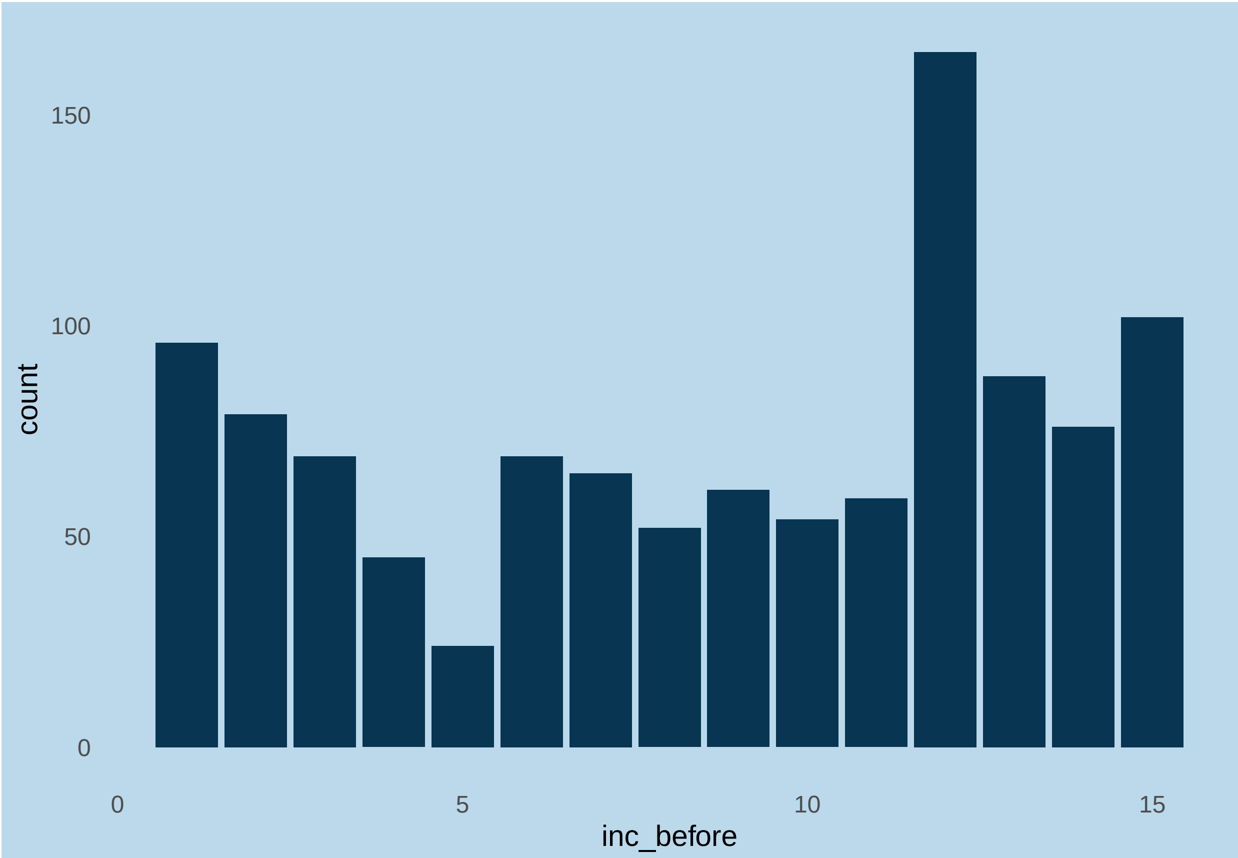
```
inc_dist_plot
```




```
ggplot(data = wrangled, aes(x = inc_before)) + geom_bar(fill = project_pal[4])
```

```
## Don't know how to automatically pick scale for object of type haven_labelled/vctrs_vctr/integer. Defa

## Warning: Removed 1 rows containing non-finite values (stat_count).
```



2.1)Households that saw a reduction in income between 2019 and 2021 [12 &13]

Compare predicted 2021 income with 2019 income to find positive or negative change Run distribution of negative changes over population Run distribution by sub-demographics (a-k) Compare and find gaps (test unequal proportions)

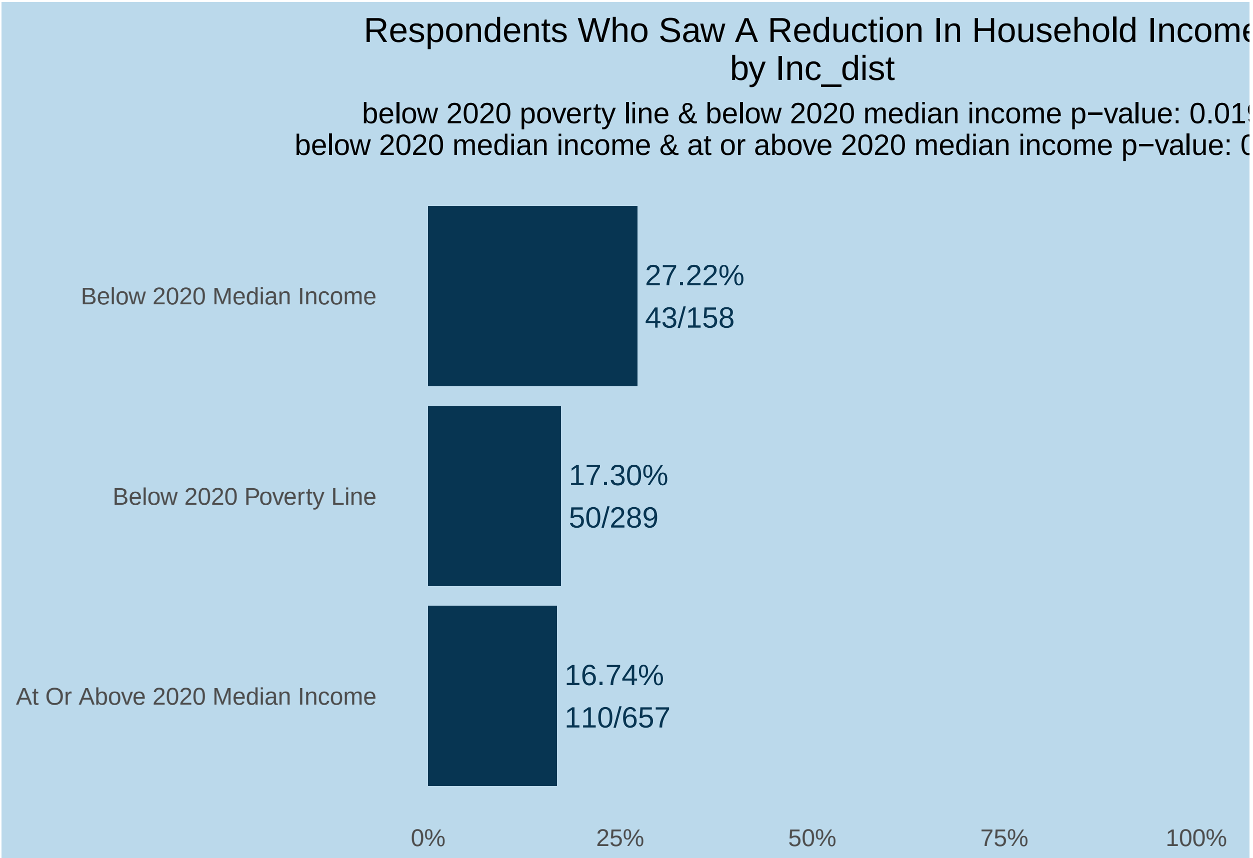
Findings (some statistically significant differences):

The greatest proportion of people to see a reduction in income throughout the pandemic by

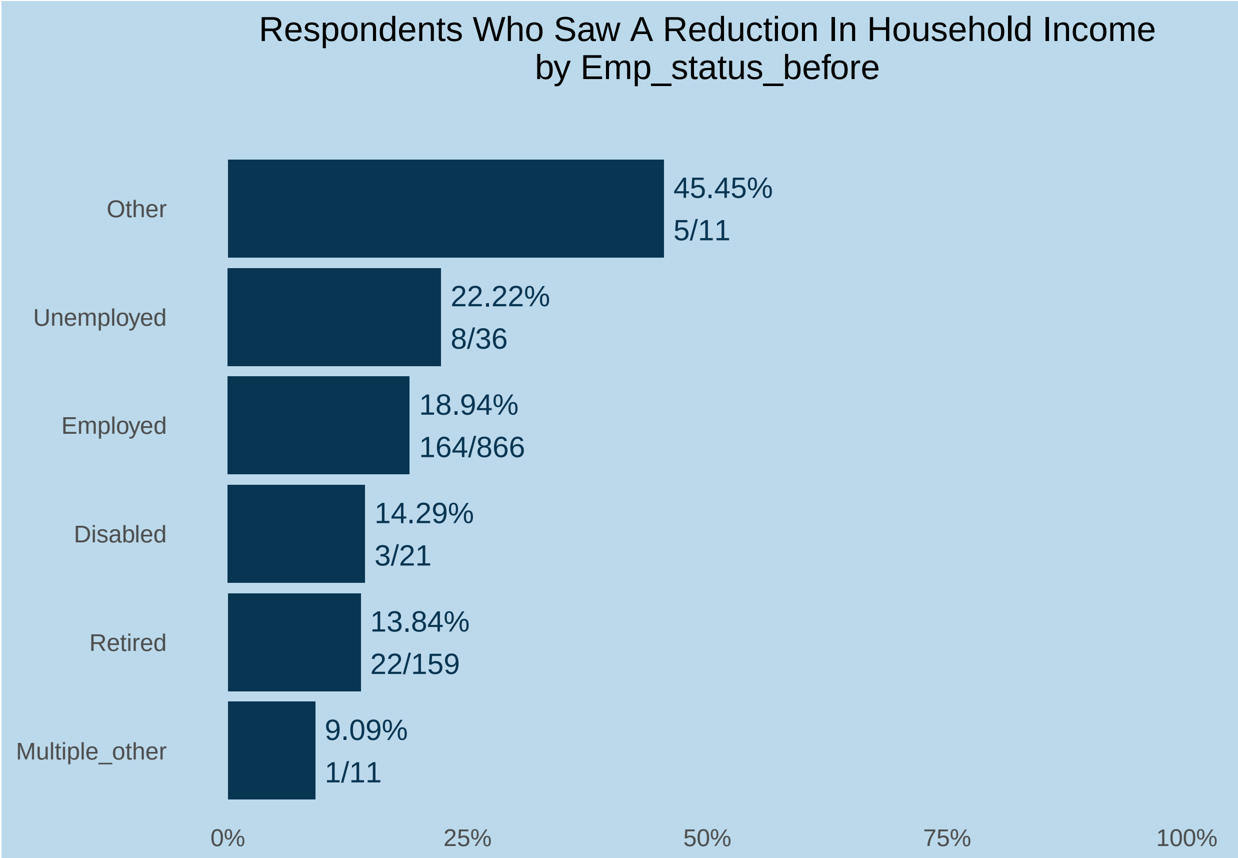
- **employment status** were unemployed after the pandemic
- **income distribution** were inbetween the poverty line and the median income level

```
plots2.1 <- make_plots(df = wrangled, by_vars = demographics, hyp_var = "inc_neg", min = 5,
           title = "Respondents who saw a reduction in household income", show = "yes")[c("inc_dist", "
plots2.1
```

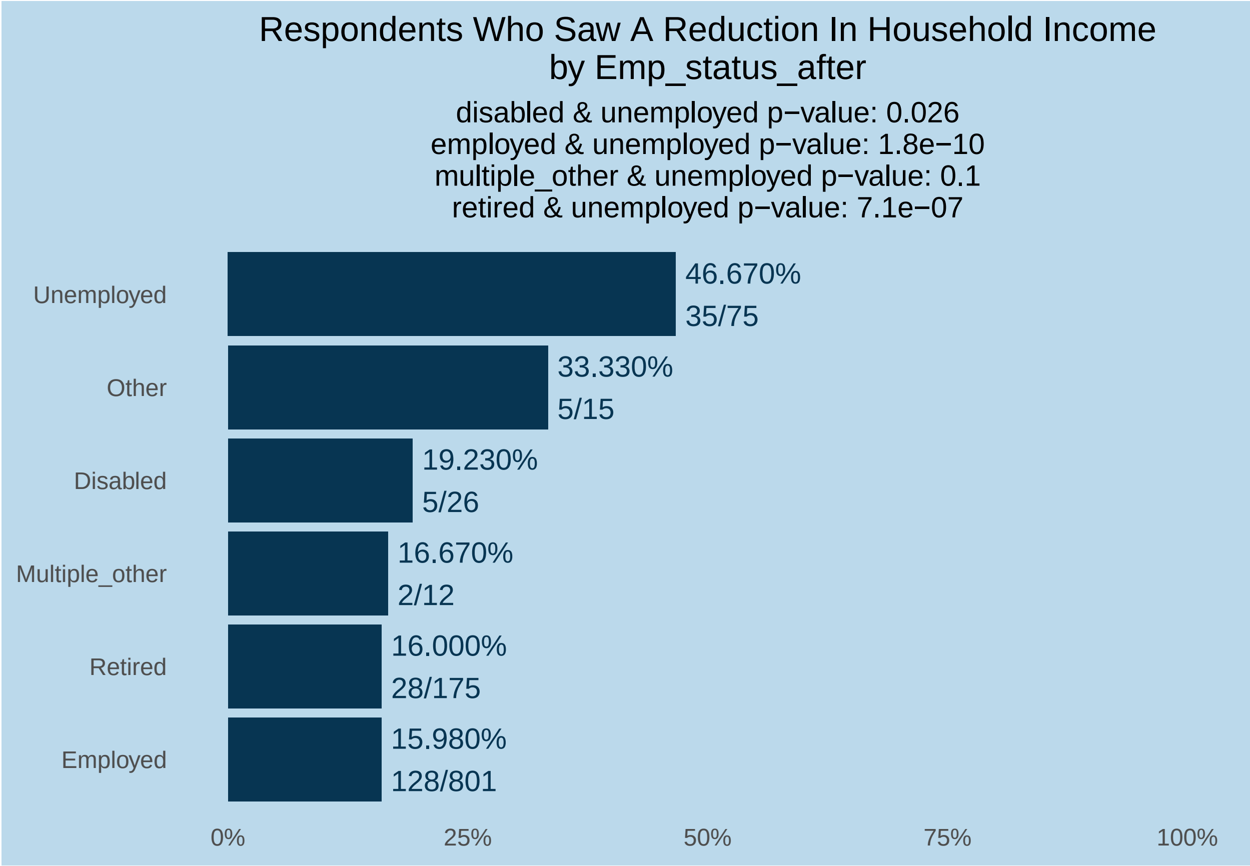
```
## $inc_dist
```




```
##
## $emp_status_before
```




```
##
## $emp_status_after
```



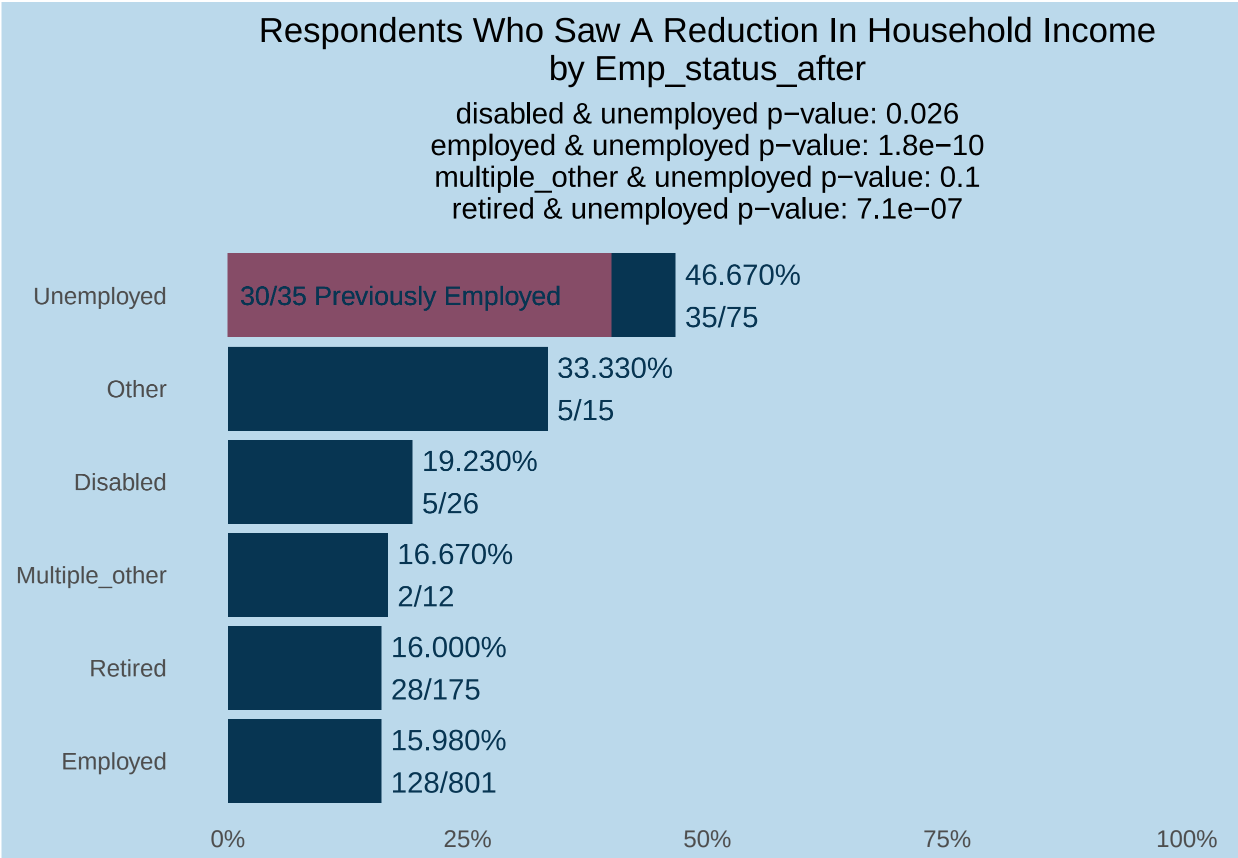
This two plots grouped by employment status before and after the start of the pandemic suggests that the majority of respondents who experienced a reduction in income, were originally employed. We can confirm this with the below graph.

```
(became_unemp <- wrangled %>% filter(str_detect(emp_status_after, "unemp")) %>%
  #group_by(emp_status_before) %>%
    #group_by(inc_neg == 1) %>%
  summarize(n = sum(!str_detect(emp_status_before, "unemp") & inc_neg == 1, na.rm = TRUE),
            n_n = sum(inc_neg == 1, na.rm = TRUE),
            denom = sum(!is.na(!str_detect(emp_status_before, "unemp"))),
            prop = n/denom))
```

```
## # A tibble: 1 x 4
##       n   n_n denom  prop
##   <int> <int> <int> <dbl>
## 1    30    35    75   0.4
```

```
plots2.1$emp_status_after +
  geom_col(data = tibble(emp_status_after = "Unemployed", prop = became_unemp$prop),
           fill = project_pal[3]) +
  geom_text(aes(x = .18, y = "Unemployed"), size = 3.5, label = glue::glue("{paste(became_unemp[c('n','r
                                   collapse = '/')} Previously Employed"),
             color = project_pal[4],
             fill = project_pal[3])
```

```
## Warning: Ignoring unknown parameters: fill
```



2.2)Households whose income dropped below the poverty line from 2019 to 2021 [12 & 13]

Run distribution over population Run distribution by sub-demographics (a-k) and type of previous employment [13] Compare and find gaps (test unequal proportions)

Findings (one statistically significant finding with caveat):

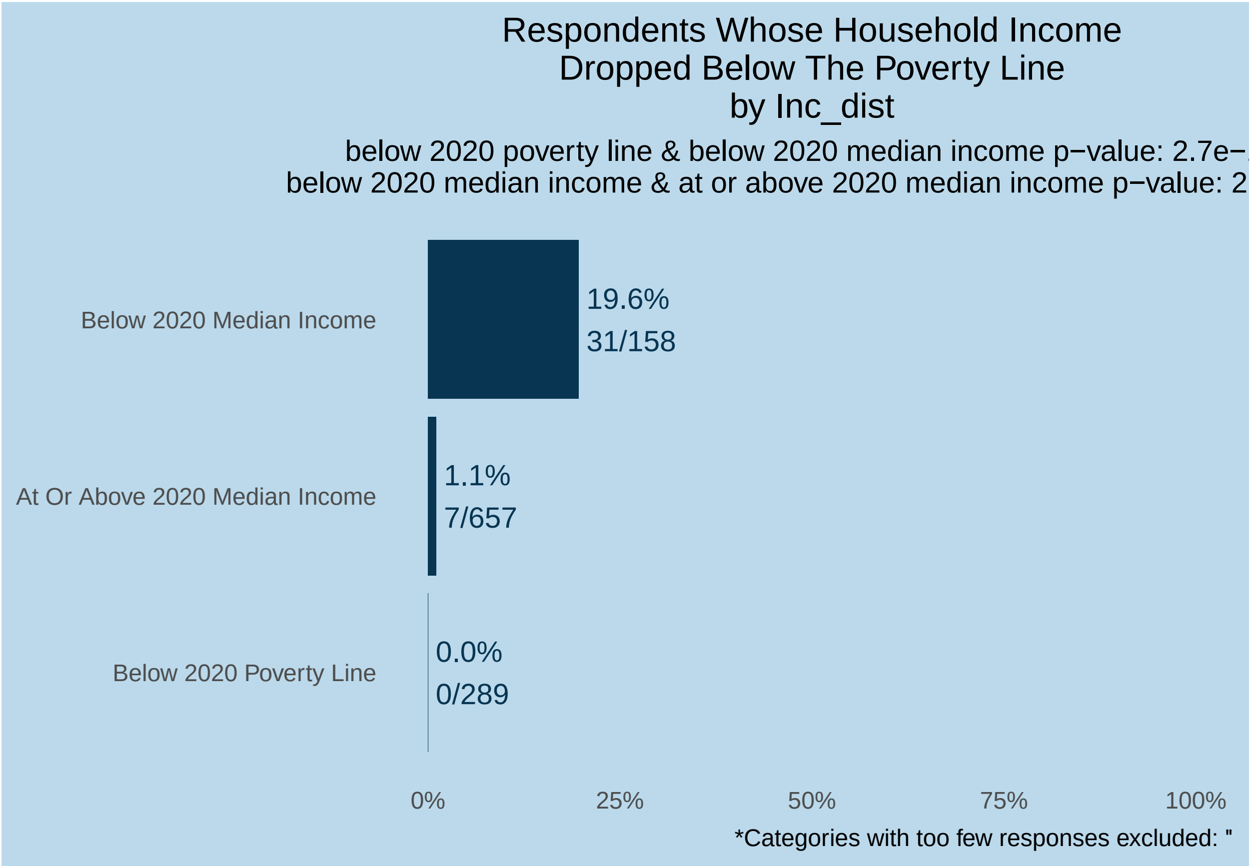
20% of respondents starting below the median income level but above the poverty line, ended up below the poverty line after the pandemic. This may result simply because this range is the smallest of the three, and because it is much closer to the poverty line. (See first plot).

```
wrangled %>% count(inc_drop_pov, inc_dist) %>%
  mutate_if(is.labelled, labelled::to_character) %>% na.omit
```

```
## # A tibble: 5 x 3
##   inc_drop_pov                          inc_dist                         n
##   <chr>                                 <chr>                        <int>
## 1 income did not drop below poverty line below 2020 poverty line         289
## 2 income did not drop below poverty line below 2020 median income        127
## 3 income did not drop below poverty line at or above 2020 median income   650
## 4 income dropped below poverty line      below 2020 median income         31
## 5 income dropped below poverty line      at or above 2020 median income    7
```

```r
make_plots(wrangled, by_vars = demographics, hyp_var = "inc_drop_pov",
           min = 7,
           title = "Respondents whose household income\ndropped below the poverty line", show = TRUE)["
```

```
## $inc_dist
```



Likely, the few respondents who dropped below the poverty line who started above the median income bracket were originally close to the median income level.

```r
arranged
```

```
## # A tibble: 15 x 5
##    range                     min   max                inc_before     n
##    <chr>                   <dbl> <dbl>                 <int+lbl> <int>
##  1 $0 - $10,000                0 10000  1 [less than $10,000]       96
##  2 $10,000 - $19,999       10000 19999  2 [$10,000 - $19,999]       79
##  3 $20,000 - $29,999       20000 29999  3 [$20,000 - $29,999]       69
##  4 $30,000 - $34,999       30000 34999  4 [$30,000 - $34,999]       45
##  5 $35,000 - $39,999       35000 39999  5 [$35,000 - $39,999]       24
##  6 $40,000 - $49,999       40000 49999  6 [$40,000 - $49,999]       69
##  7 $50,000 - $59,999       50000 59999  7 [$50,000 - $59,999]       65
##  8 $60,000 - $69,999       60000 69999  8 [$60,000 - $69,999]       52
##  9 $70,000 - $79,999       70000 79999  9 [$70,000 - $79,999]       61
## 10 $80,000 - $89,999       80000 89999 10 [$80,000 - $89,999]       54
```

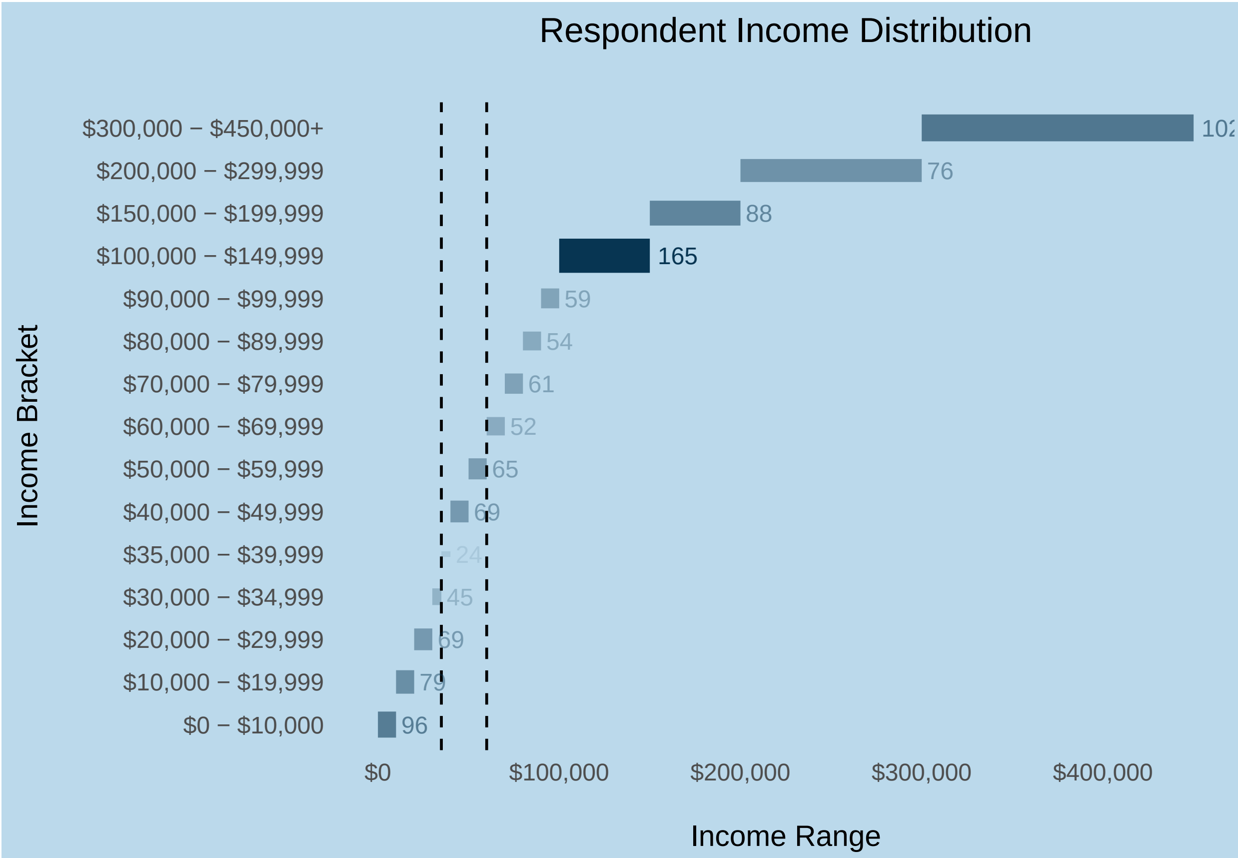
```
## 11 $90,000 - $99,999     90000  99999 11 [$90,000 - $99,999]      59
## 12 $100,000 - $149,999  100000 149999 12 [$100,000 - $149,999]   165
## 13 $150,000 - $199,999  150000 199999 13 [$150,000 - $199,999]    88
## 14 $200,000 - $299,999  200000 299999 14 [$200,000 - $299,999]    76
## 15 $300,000 - $450,000+ 300000 450000 15 [$300,000 or more]      102
```

```r
counted <-
  wrangled %>% filter(inc_dist == 3, inc_drop_pov == 1) %>% count(inc_before) %>% rename(dropped = n)

tibble(categories, names(categories))
```

```
## # A tibble: 15 x 2
##    categories `names(categories)`
##         <int> <chr>
##  1          1 less than $10,000
##  2          2 $10,000 - $19,999
##  3          3 $20,000 - $29,999
##  4          4 $30,000 - $34,999
##  5          5 $35,000 - $39,999
##  6          6 $40,000 - $49,999
##  7          7 $50,000 - $59,999
##  8          8 $60,000 - $69,999
##  9          9 $70,000 - $79,999
## 10         10 $80,000 - $89,999
## 11         11 $90,000 - $99,999
## 12         12 $100,000 - $149,999
## 13         13 $150,000 - $199,999
## 14         14 $200,000 - $299,999
## 15         15 $300,000 or more
```

```r
inc_dist_plot #+
```




```
#  geom_point(data = arranged %>% right_join(counted) %>% mutate(mean = mean(min, max, na.rm = TRUE)),
#             aes(x = mean), alpha = 1, pch = 21, color = "red")

wrangled %>% filter(emp_after_un == 1) %>%
  count(emp_after)
```

```
## # A tibble: 10 x 2
##    emp_after                                                     n
##    <chr>                                                     <int>
##  1 disabled;unemployed                                           2
##  2 disabled;unemployed;other                                     1
##  3 freelance or consultant;small business owner;unemployed       1
##  4 gig worker (uber, lyft, instacart, etc.);homemaker;unemployed 1
##  5 homemaker;disabled;unemployed                                 1
##  6 homemaker;unemployed                                          3
##  7 student;unemployed                                            1
##  8 unemployed                                                   63
##  9 work full-time;unemployed                                     1
## 10 work part-time;unemployed                                     1
```

Therefore, we can look for any parallel shifts in the top bracket of the variable **inc_dist** to below the median income level. However, this change is not paralleled by a similar percentage decrease in household income of respondents starting above the median income to below the median. Only 4% of respondents above the median income level dropped below it after the pandemic.

```
wrangled %>% filter(inc_dist == 3) %>%
  summarize(prop = signif(mean(inc_drop_med, na.rm = TRUE), 2),
            n = sum(inc_drop_med, na.rm = TRUE),
            denom = sum(!is.na(inc_drop_med), na.rm = TRUE))
```

```
## # A tibble: 1 x 3
##    prop     n denom
##   <dbl> <int> <int>
## 1 0.044    29   657
```

Still, 17% of the higher third of the income distribution variable did experience a negative change in income. In order to better understand this statistic, it would be necessary to identify how much their income levels dropped.

```
wrangled %>% filter(inc_dist == 3) %>%
  summarize(prop = signif(mean(inc_neg, na.rm = TRUE), 2),
            n = sum(inc_neg, na.rm = TRUE),
            denom = sum(!is.na(inc_neg), na.rm = TRUE))
```

```
## # A tibble: 1 x 3
##    prop     n denom
##   <dbl> <int> <int>
## 1  0.17   110   657
```

2.3)People who are currently receiving unemployment benefits were more likely to not face a reduced 2021 household income [16,12,13]

Find respondents who indicated they are currently receiving unemployment benefits [16] Find proportion of subset that have a higher or equivalent income in 2021 than they reported in 2019 [12 & 13]] Compare predicted 2021 income with 2019 income to find positive or negative change Find proportion not in subset that predicted a higher or equivalent income in 2021 than they reported in 2019 and compare (test unequal proportions)

Findings (sample size too small)

There were not enough respondents in this category to meaningfully analyze this hypothesis. We would have needed at least 5 sucesses.

```
## # 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
```

```
## # A tibble: 2 x 2
##                                inc_neg     n
##                              <int+lbl> <int>
## 1 0 [neutral or positive income change]     8
## 2 1 [negative income change]                2
```

2.4)People who were unemployed before March 2020 were more likely to have a reduced 2021 household income [14,12,13]

Find respondents who indicated were unemployed before March 2020 [14] Find proportion of subset that reported a higher or equivalent income in 2021 than they reported in 2019 [12 &13] Compare predicted 2021 income with 2019 income to find positive or negative change Find proportion not in subset that predicted a higher or equivalent income in 2021 than they reported in 2019 and compare (test unequal proportions)

Findings (no statistically significant finding)

There was no statistically significant finding. However, it is important to note that the sample size was quite small. Only 8 unemployed people recorded a negative income change throughout the pandemic.

```
sum(wrangled$emp_before_un)
```

```
## [1] 36
```

```
mean(wrangled$emp_before_un)
```

```
## [1] 0.03257919
```

```
wrangled %>% count(emp_before_un, inc_neg) %>% mutate_if(is.labelled, labelled::to_character) %>% na.omi
```

```
## # A tibble: 4 x 3
##   emp_before_un  inc_neg                               n
##   <chr>          <chr>                             <int>
## 1 not unemployed neutral or positive income change   873
## 2 not unemployed negative income change              195
## 3 unemployed     neutral or positive income change    28
## 4 unemployed     negative income change                8
```

```
make_plots(wrangled, by_vars = "emp_before_un", hyp_var = "inc_neg",
           title = "Proportion of Respondents to experience\nan Adverse Income Change")
```

```
## $emp_before_un
## NULL
```

2.5)People who worked non-full-time jobs were more likely to foresee a reduced 2021 income [14,12,13]

Find respondents who indicated they work a not full-time job in 2019, 2021 (run both) [14] Not full-time job == work part-time, freelance or consultant, gig worker, small business owner Find proportion of subset that stated a higher or equivalent income in 2021 than they reported in 2019 [12 &13] Compare 2021 income with 2019 income to find positive or negative change Find proportion of full-time workers that have a higher or equivalent income in 2021 than they reported in 2019 and compare (test unequal proportions

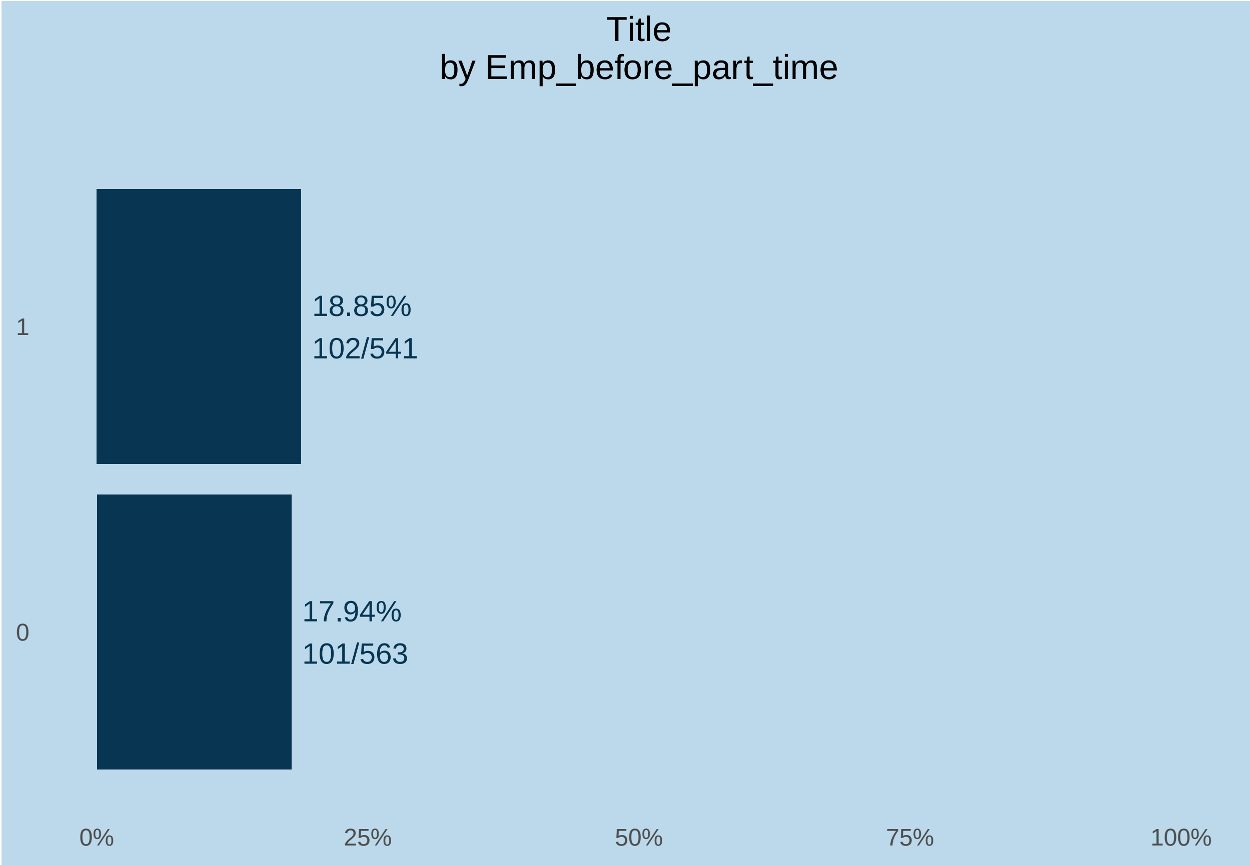
Findings (no statistically significant result)

```
wrangled %>% filter(emp_before_part_time == 1) %>% count(emp_before)
```

```
## # A tibble: 47 x 2
##    emp_before                                                    n
##    <chr>                                                     <int>
##  1 disabled                                                     21
##  2 disabled;other                                                1
##  3 disabled;unemployed                                           3
##  4 freelance or consultant                                      58
##  5 freelance or consultant;disabled                              1
##  6 freelance or consultant;gig worker (uber, lyft, instacart, etc.)      1
##  7 freelance or consultant;homemaker;retired                     1
##  8 freelance or consultant;other                                 2
##  9 freelance or consultant;retired                               4
## 10 freelance or consultant;small business owner                  7
## # ... with 37 more rows
```

```
make_plots(df = wrangled, by_vars = "emp_before_part_time", hyp_var = "inc_neg", show = "yes")
```

```
## $emp_before_part_time
```



2.6)People who had difficulty paying bills in the past year [20]

Run distribution over population Run distribution by sub-demographics (a-k) Compare and find gaps (test unequal proportions)

Findings (some statistically significant findings)

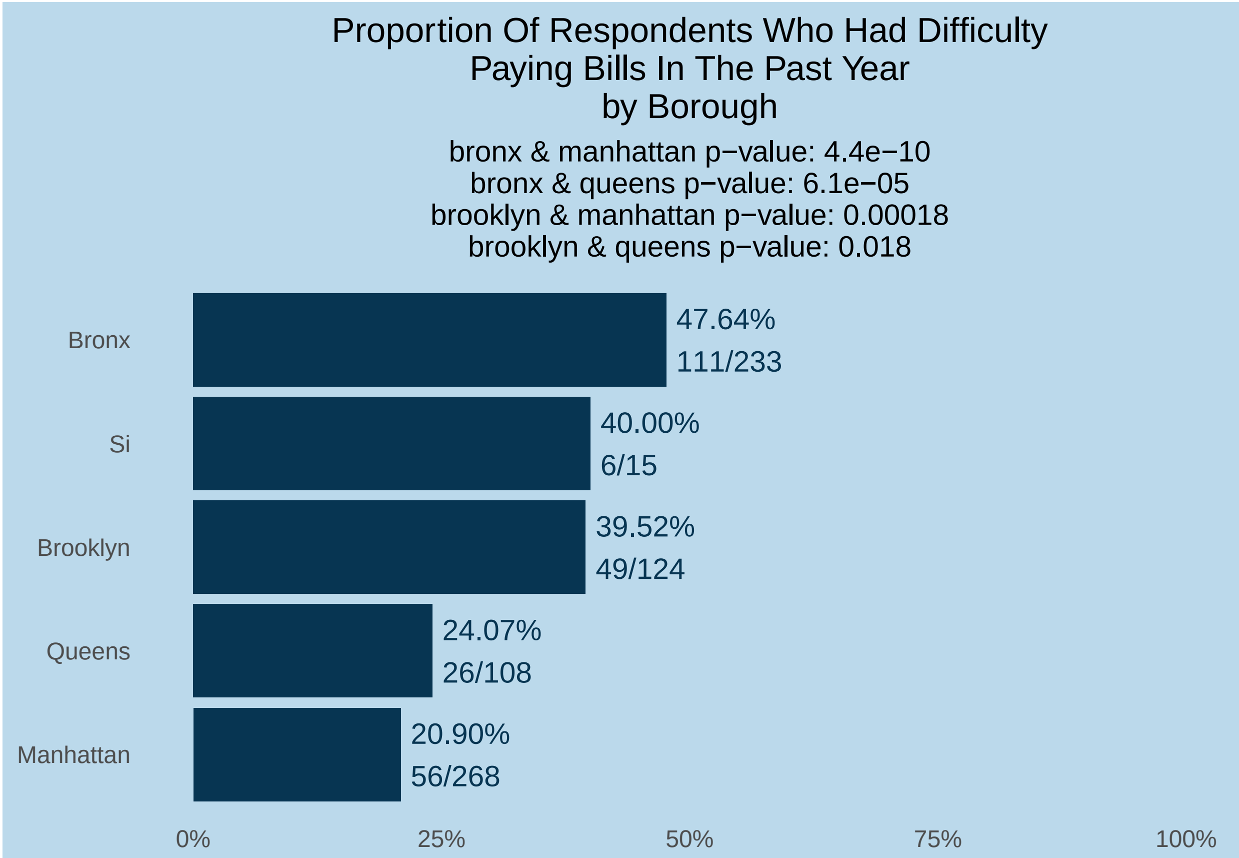
- there are many demographics that have statistically significant differences in proportions, which mostly conform to expectations (e.g. **race_census**, **not_eng**, **sch_level_cat**, **hh_ch_0_17_bi**, **emp_status** before and after)
- notably, households with seniors and elderly respondents appeared to have less difficulty paying their bills

```
mean(wrangled$diff_bill, na.rm = TRUE)
```

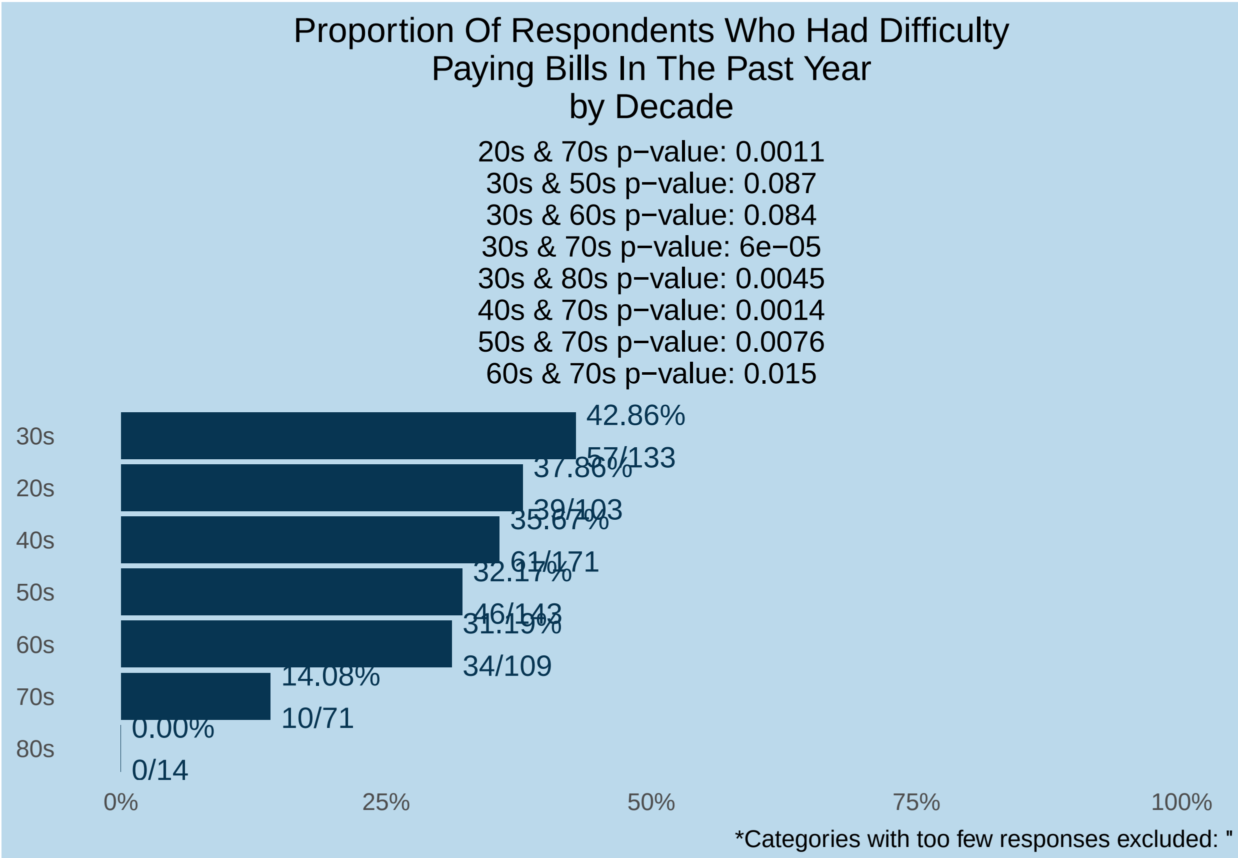
```
## [1] 0.3315508
```

```
make_plots(df = wrangled, demographics, "diff_bill", min = 10, title = "Proportion of Respondents who ha
```

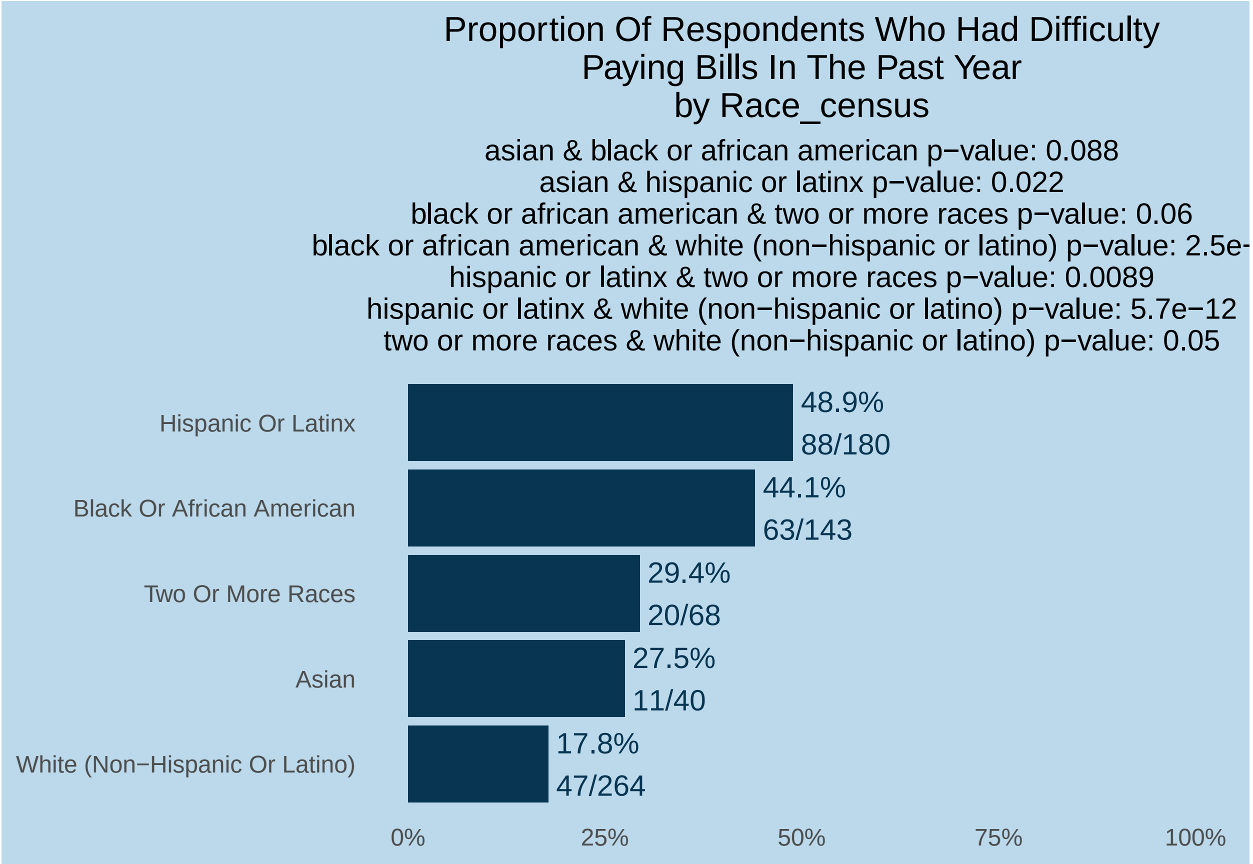
```
## $borough
```


Proportion Of Respondents Who Had Difficulty
Paying Bills In The Past Year
by Borough
bronx & manhattan p−value: 4.4e−10
bronx & queens p−value: 6.1e−05
brooklyn & manhattan p−value: 0.00018
brooklyn & queens p−value: 0.018
Bronx
47.64%
111/233
Si
40.00%
6/15
Brooklyn
39.52%
49/124
Queens
24.07%
26/108
Manhattan
20.90%
56/268
0%
25%
50%
75%
100%

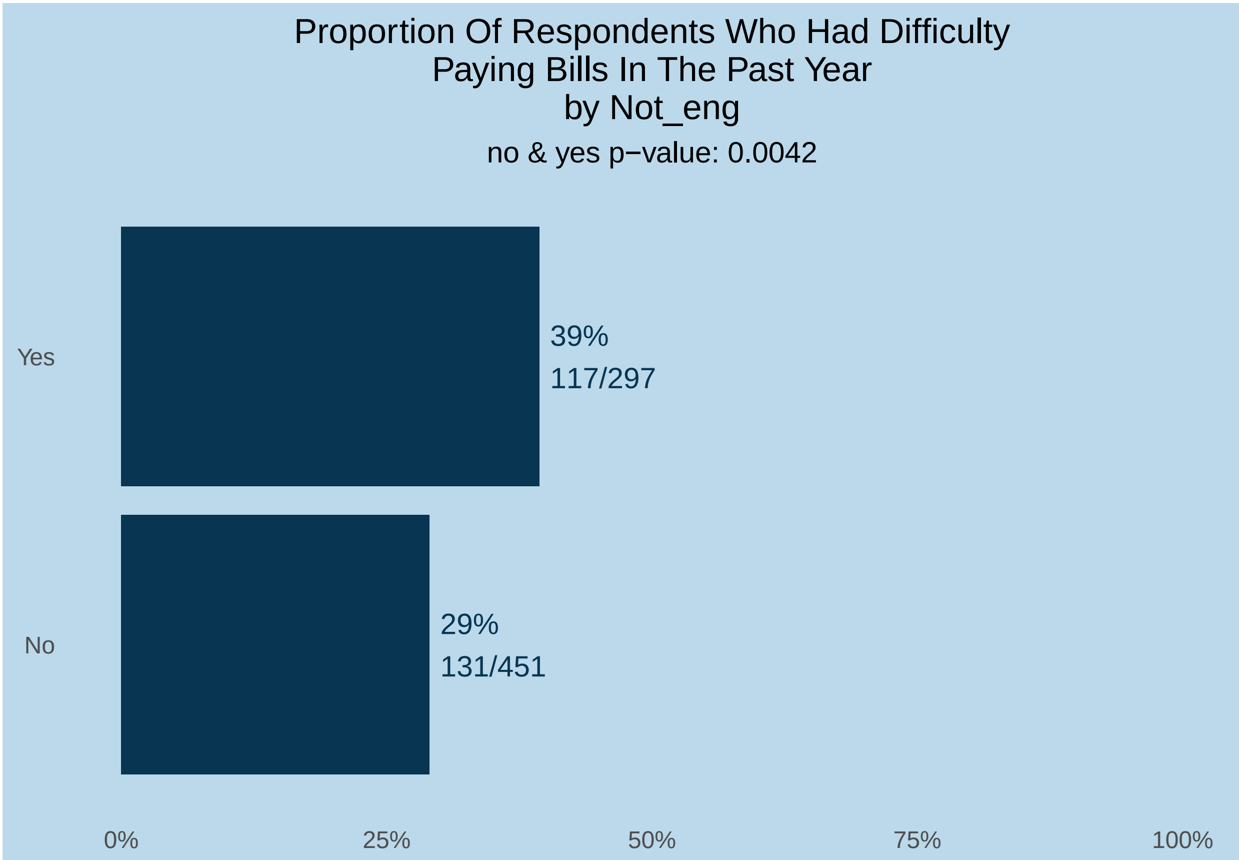
```
##
## $decade
```



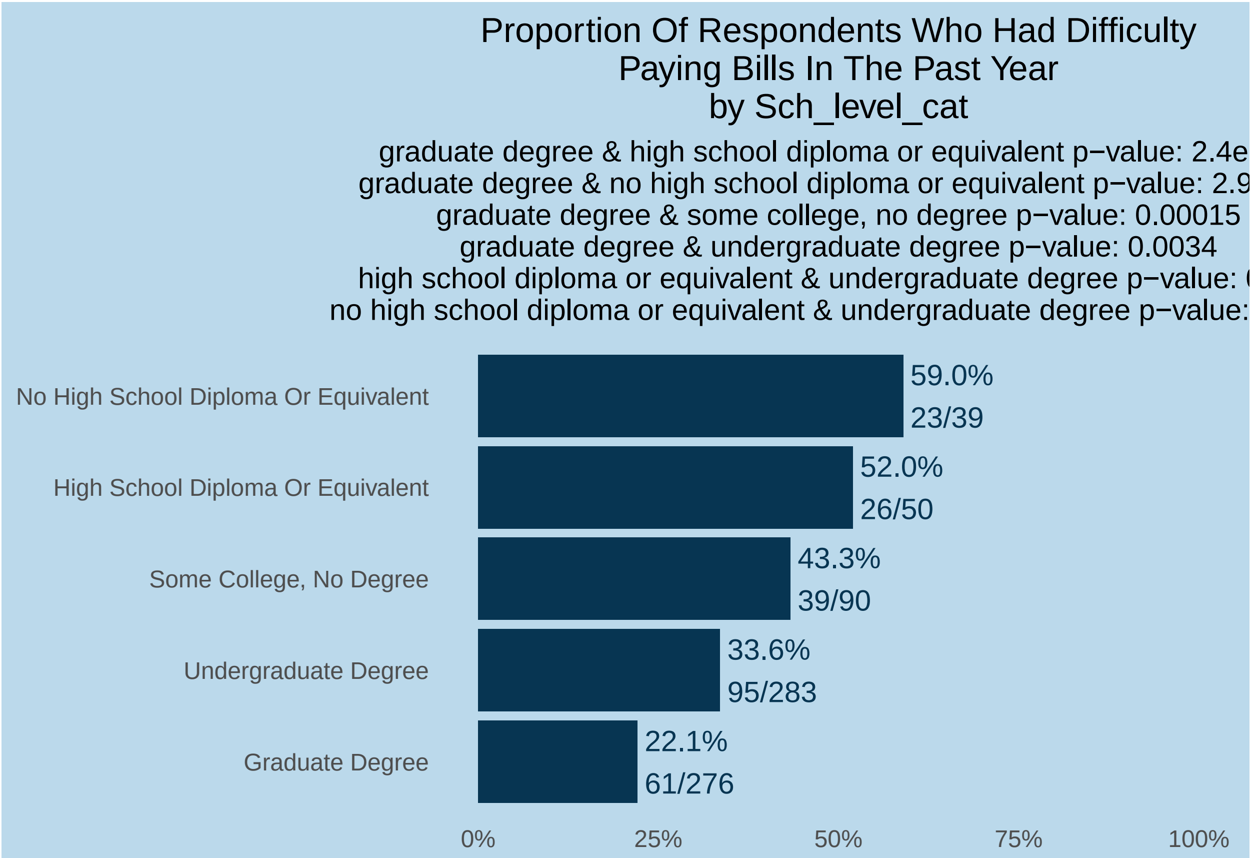

```
##
## $gen
## NULL
##
## $race_census
```


Proportion Of Respondents Who Had Difficulty
Paying Bills In The Past Year
by Race_census
asian & black or african american p−value: 0.088
asian & hispanic or latinx p−value: 0.022
black or african american & two or more races p−value: 0.06
black or african american & white (non−hispanic or latino) p−value: 2.5e-
hispanic or latinx & two or more races p−value: 0.0089
hispanic or latinx & white (non−hispanic or latino) p−value: 5.7e−12
two or more races & white (non−hispanic or latino) p−value: 0.05
Hispanic Or Latinx
48.9%
88/180
Black Or African American
44.1%
63/143
Two Or More Races
29.4%
20/68
Asian
27.5%
11/40
White (Non−Hispanic Or Latino)
17.8%
47/264
0%
25%
50%
75%
100%

```
##
## $not_eng
```

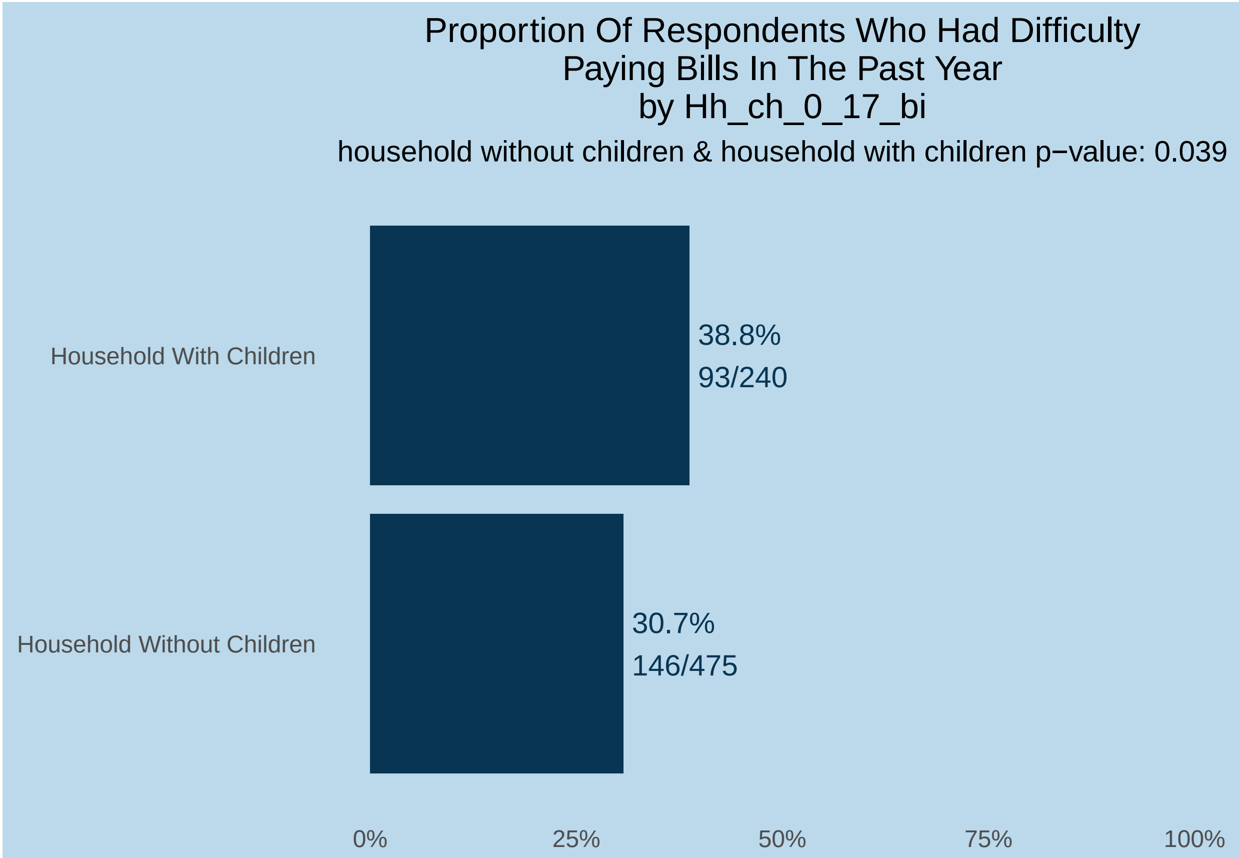



```
##
## $sch_level_cat
```

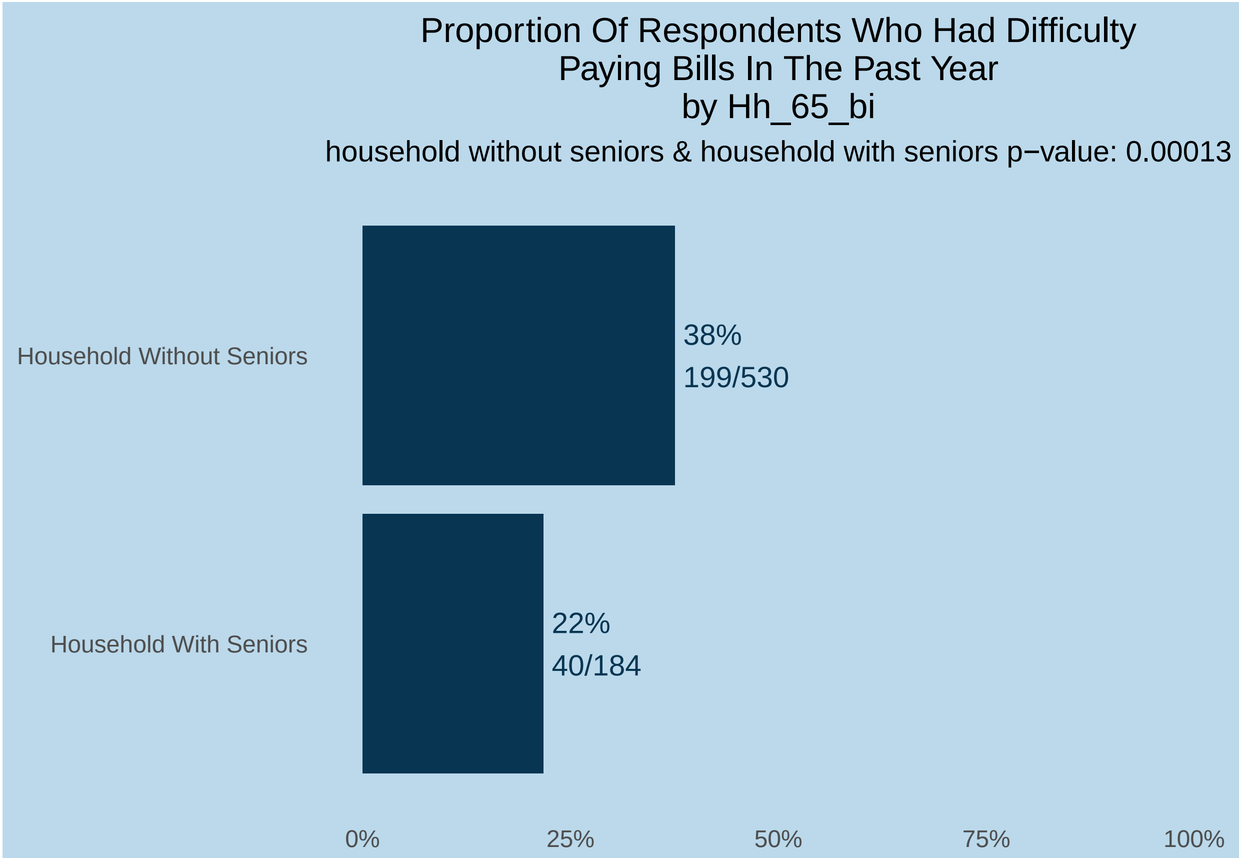


Proportion Of Respondents Who Had Difficulty
Paying Bills In The Past Year
by Sch_level_cat
graduate degree & high school diploma or equivalent p−value: 2.4e
graduate degree & no high school diploma or equivalent p−value: 2.9
graduate degree & some college, no degree p−value: 0.00015
graduate degree & undergraduate degree p−value: 0.0034
high school diploma or equivalent & undergraduate degree p−value:
no high school diploma or equivalent & undergraduate degree p−value:
No High School Diploma Or Equivalent
59.0%
23/39
High School Diploma Or Equivalent
52.0%
26/50
Some College, No Degree
43.3%
39/90
Undergraduate Degree
33.6%
95/283
Graduate Degree
22.1%
61/276
0%
25%
50%
75%
100%

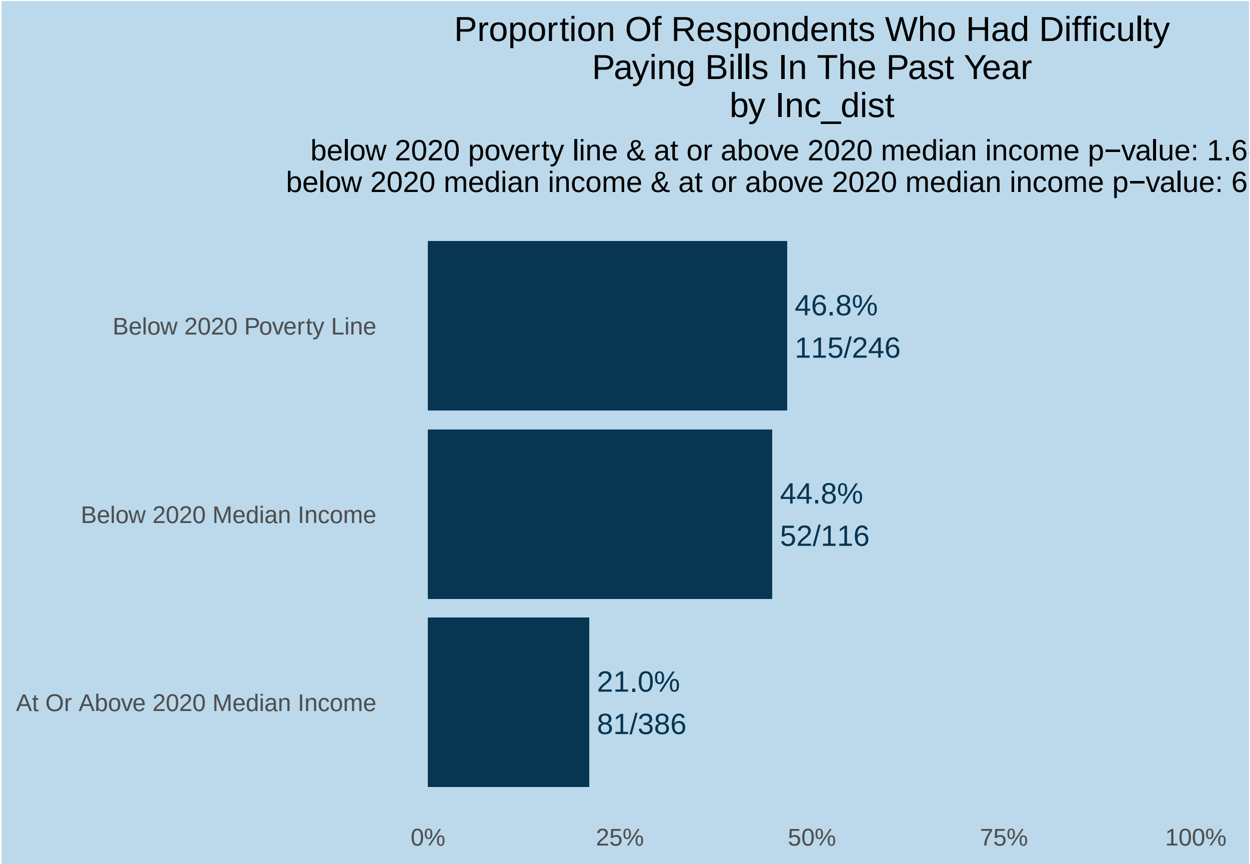

```
##
## $hh_ch_0_17_bi
```


Proportion Of Respondents Who Had Difficulty
Paying Bills In The Past Year
by Hh_ch_0_17_bi
household without children & household with children p−value: 0.039
Household With Children
38.8%
93/240
Household Without Children
30.7%
146/475
0%
25%
50%
75%
100%

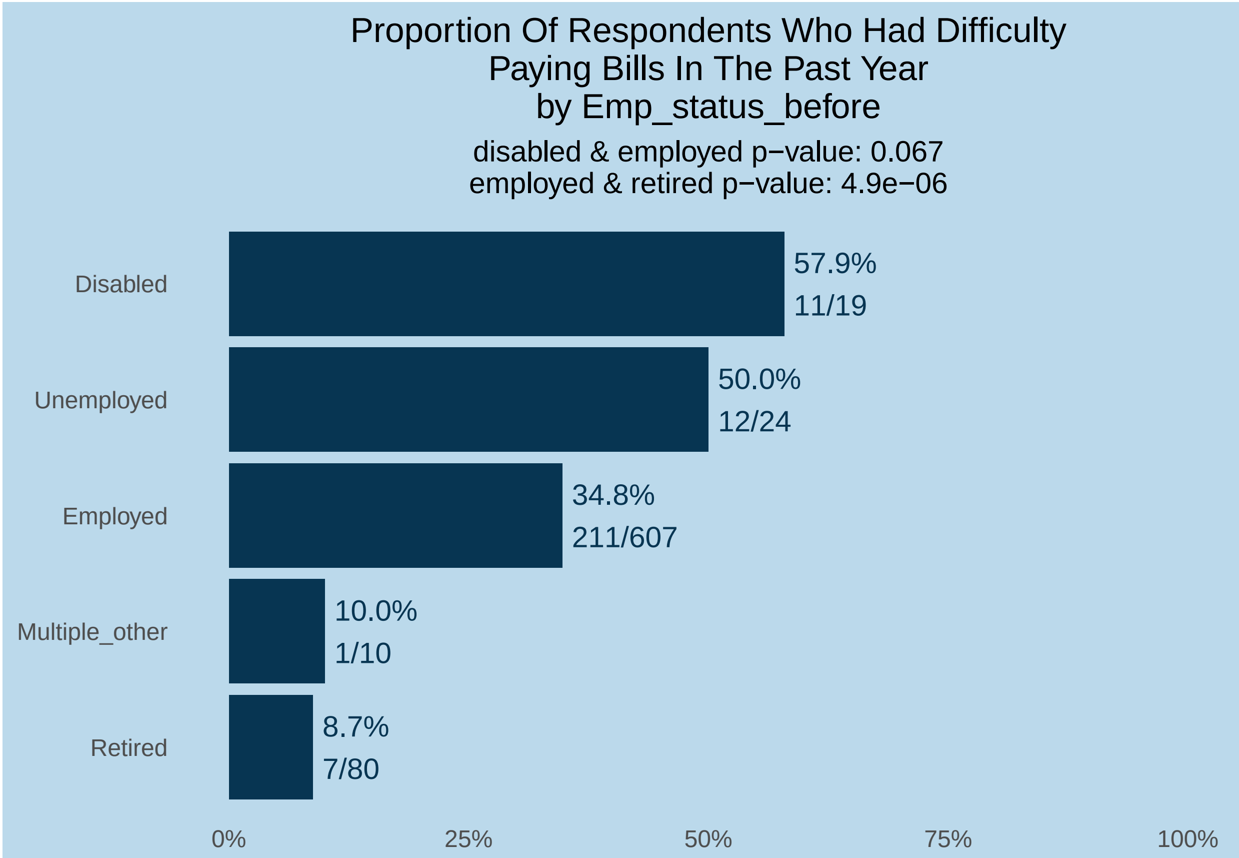
```
##
## $hh_65_bi
```


Proportion Of Respondents Who Had Difficulty
Paying Bills In The Past Year
by Hh_65_bi
household without seniors & household with seniors p−value: 0.00013
Household Without Seniors
38%
199/530
Household With Seniors
22%
40/184
0%
25%
50%
75%
100%

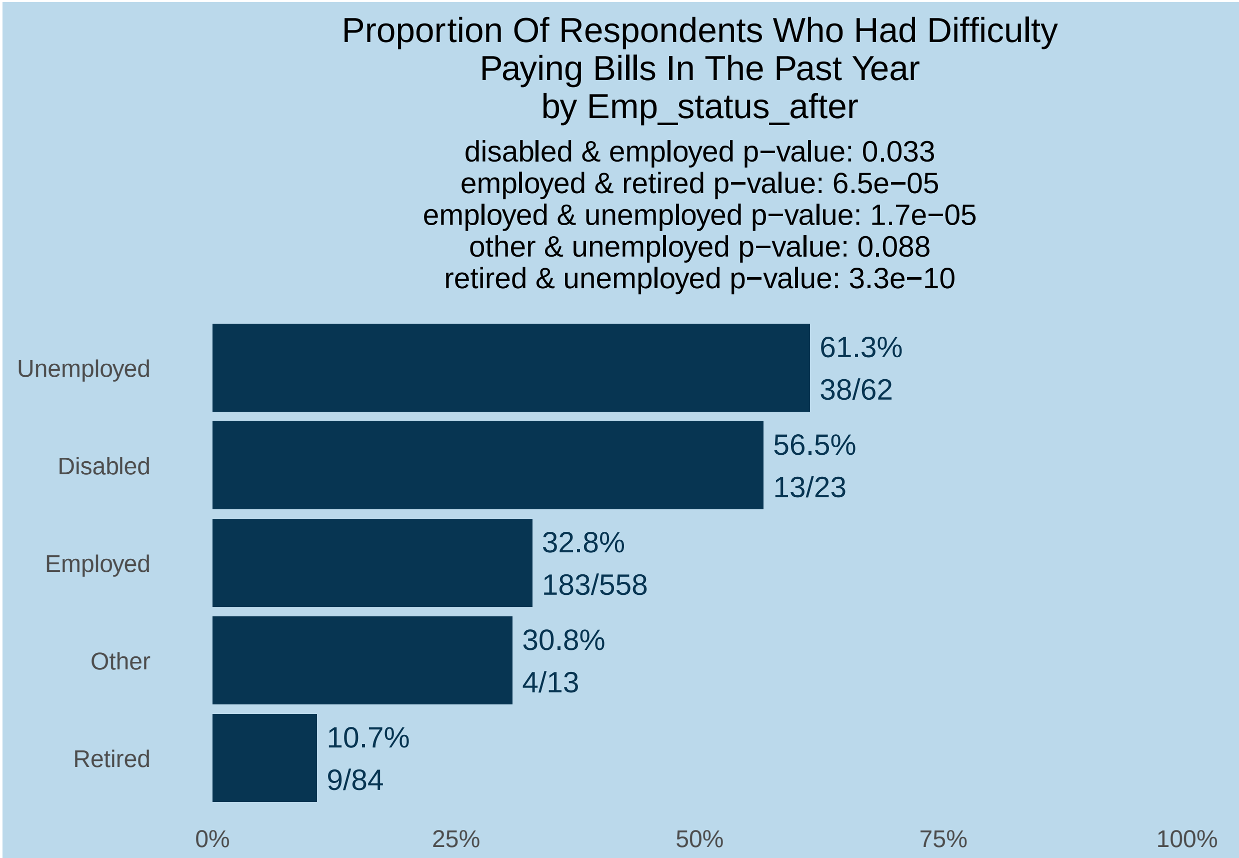
```
##
## $inc_dist
```



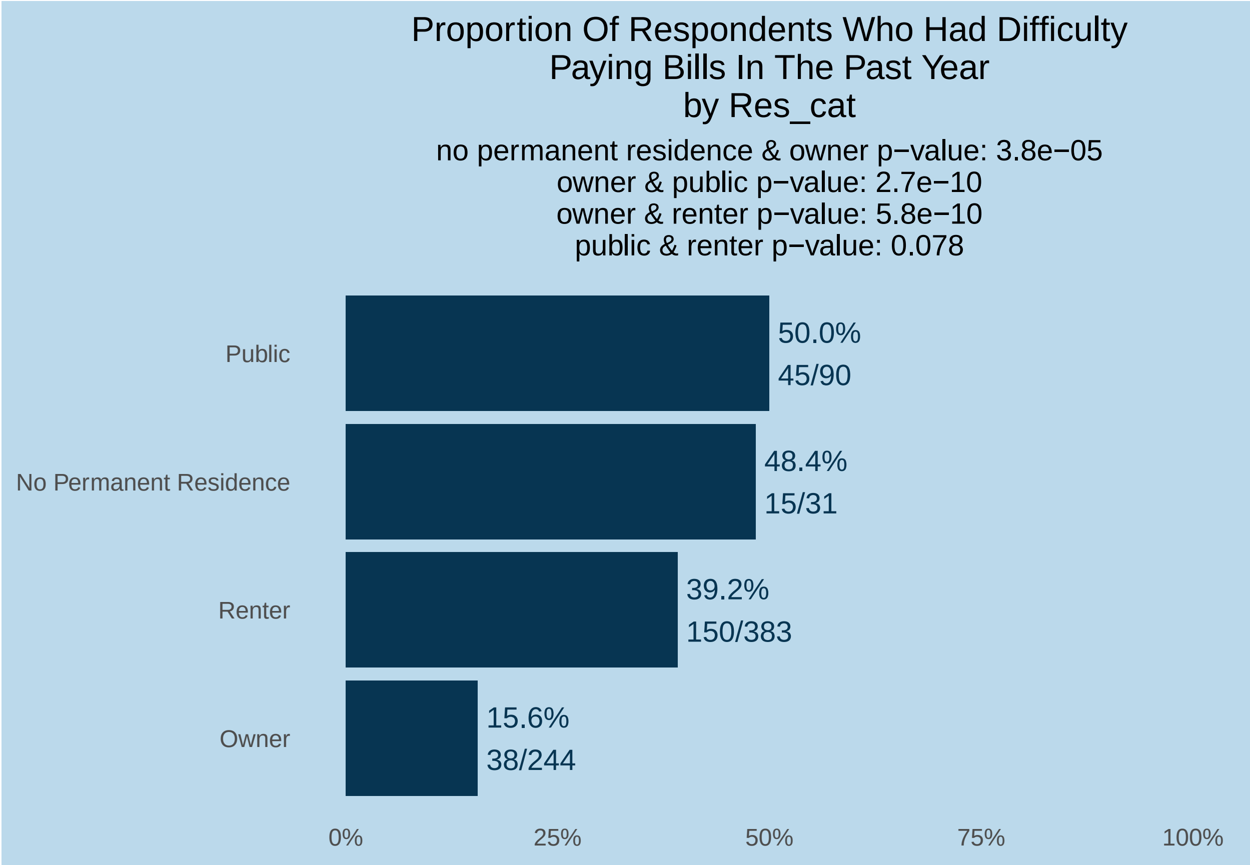

```
##
## $emp_status_before
```




```
##
## $emp_status_after
```


Proportion Of Respondents Who Had Difficulty
Paying Bills In The Past Year
by Emp_status_after
disabled & employed p−value: 0.033
employed & retired p−value: 6.5e−05
employed & unemployed p−value: 1.7e−05
other & unemployed p−value: 0.088
retired & unemployed p−value: 3.3e−10
Unemployed
61.3%
38/62
Disabled
56.5%
13/23
Employed
32.8%
183/558
Other
30.8%
4/13
Retired
10.7%
9/84
0%
25%
50%
75%
100%

```
##
## $res_cat
```



2.7)People who had difficulty paying rent in the past year [20]

Run distribution over population Run distribution by sub-demographics (a-k) Compare and find gaps (test unequal proportions)

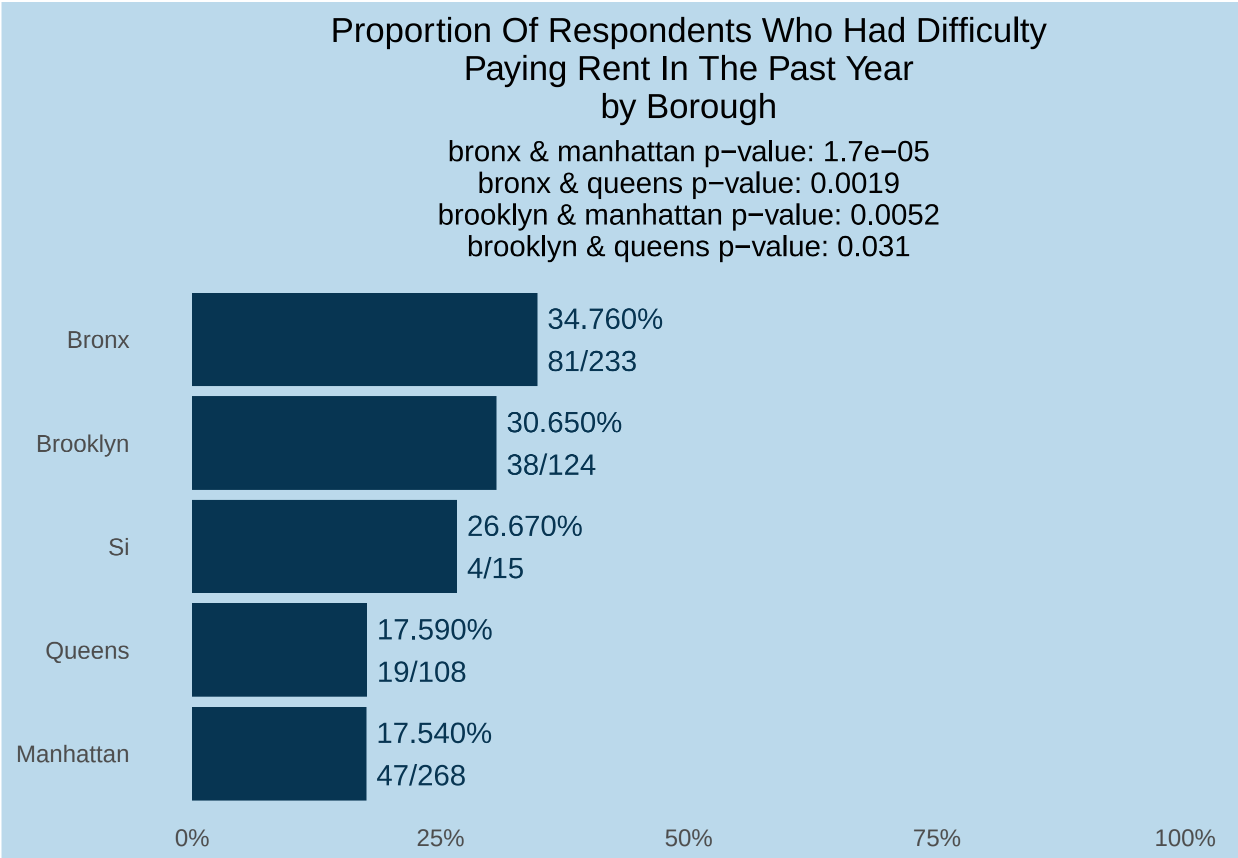
Findings (some statistically significant findings)

```
mean(wrangled$diff_rent, na.rm = TRUE)
```

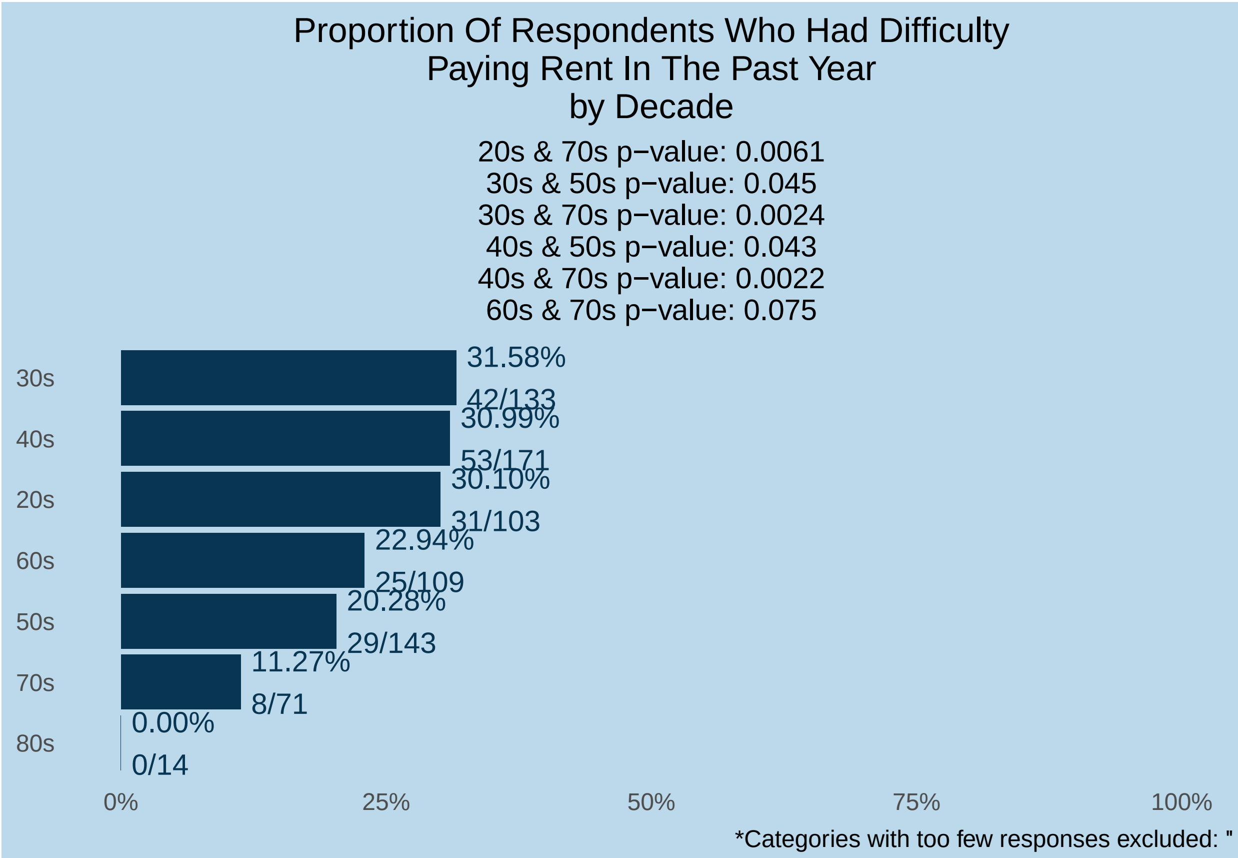
```
## [1] 0.2526738
```

```
make_plots(df = wrangled, demographics, "diff_rent", min = 10, title = "proportion of respondents who ha
```

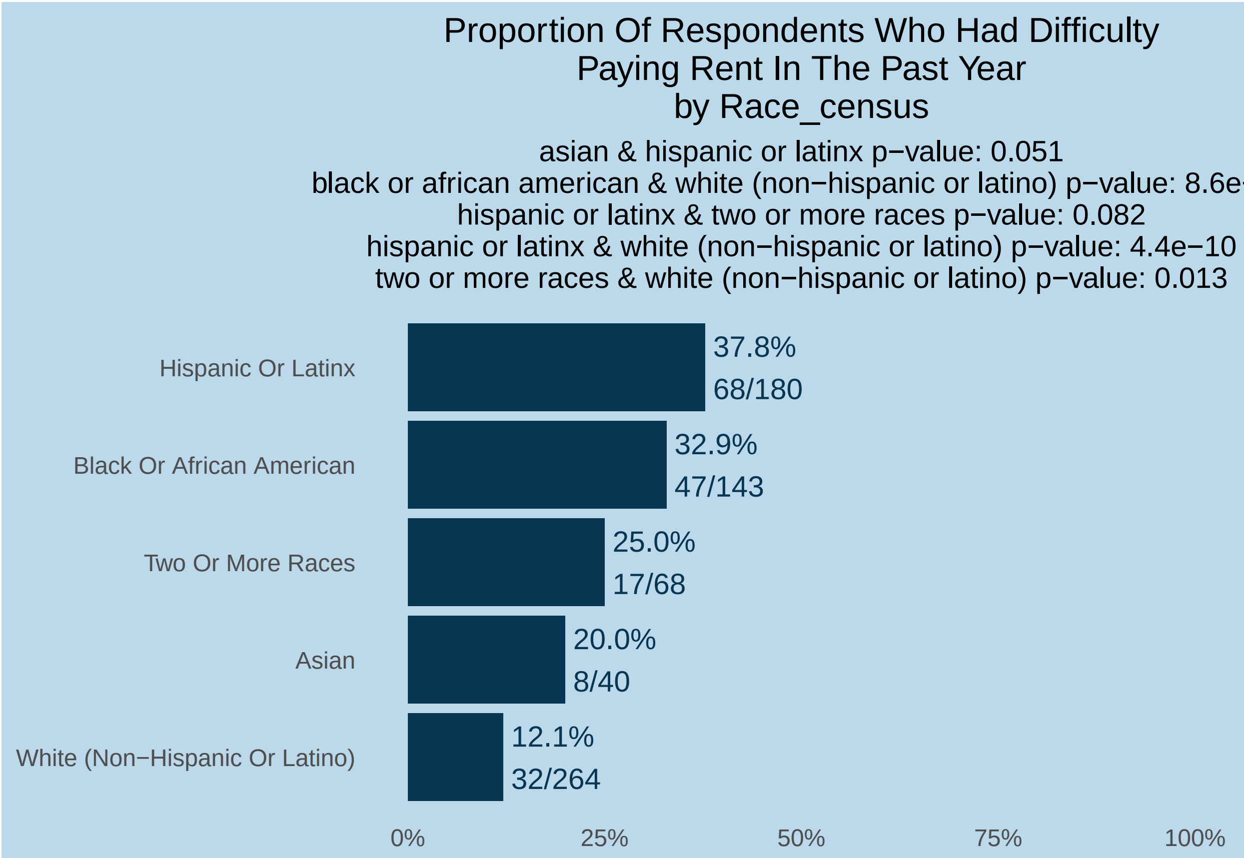
```
## $borough
```


Proportion Of Respondents Who Had Difficulty
Paying Rent In The Past Year
by Borough
bronx & manhattan p−value: 1.7e−05
bronx & queens p−value: 0.0019
brooklyn & manhattan p−value: 0.0052
brooklyn & queens p−value: 0.031
Bronx
34.760%
81/233
Brooklyn
30.650%
38/124
Si
26.670%
4/15
Queens
17.590%
19/108
Manhattan
17.540%
47/268
0%
25%
50%
75%
100%

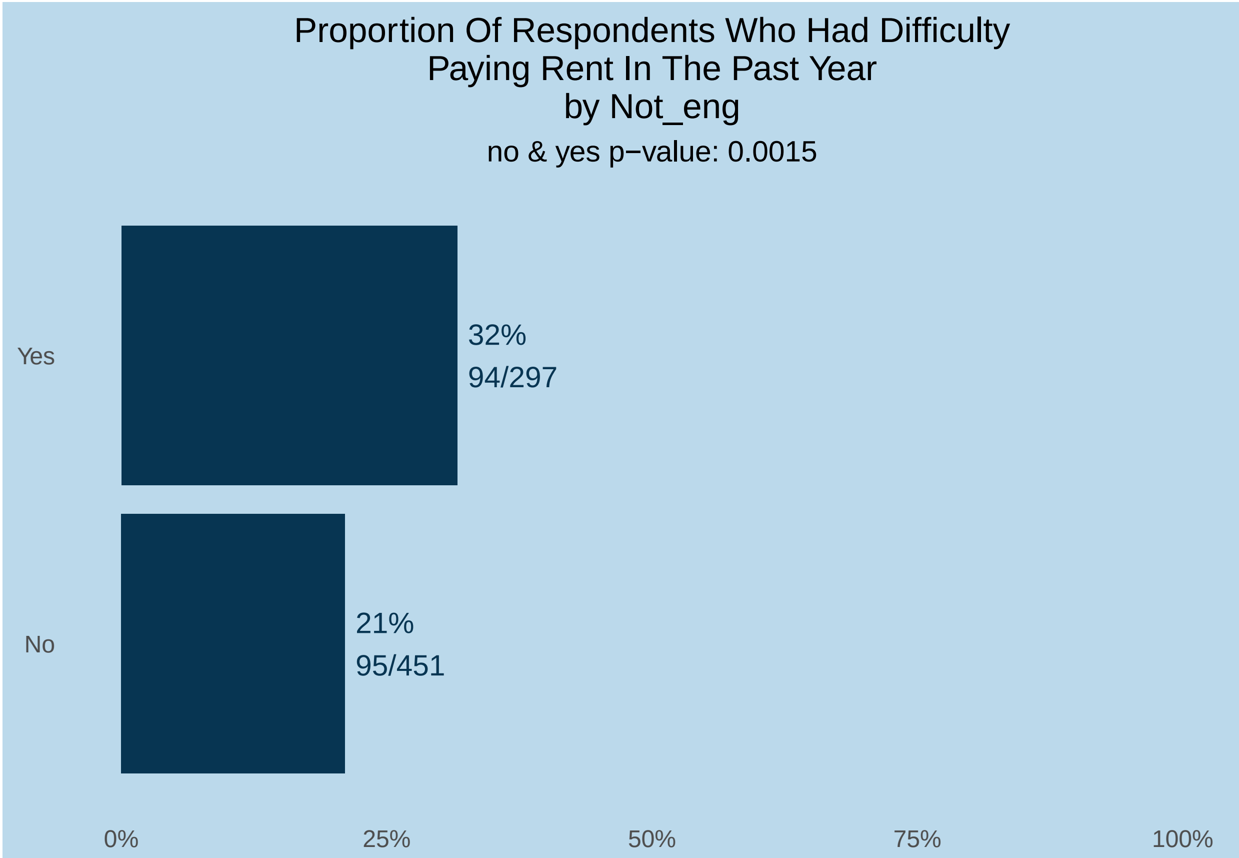
```
##
## $decade
```



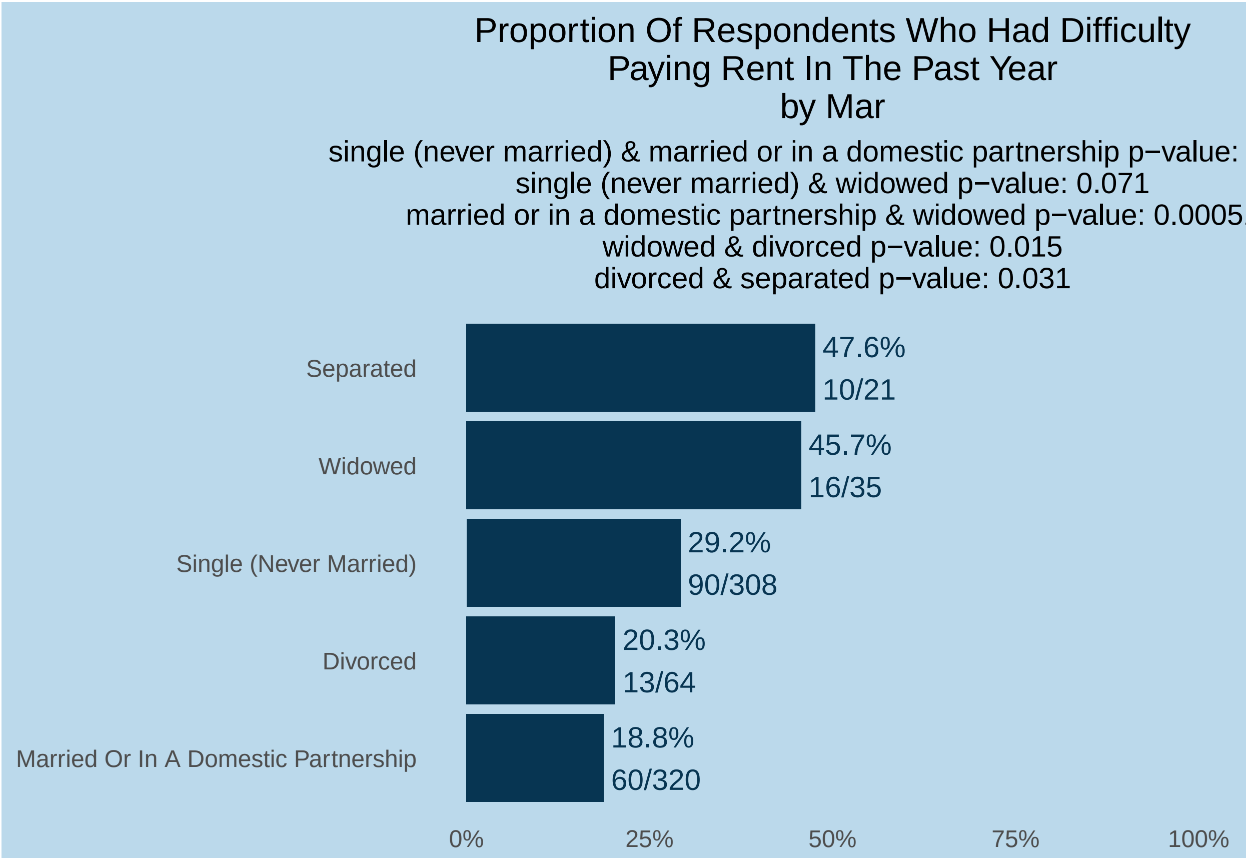

```
##
## $gen
## NULL
##
## $race_census
```


Proportion Of Respondents Who Had Difficulty
Paying Rent In The Past Year
by Race_census
asian & hispanic or latinx p−value: 0.051
black or african american & white (non−hispanic or latino) p−value: 8.6e-
hispanic or latinx & two or more races p−value: 0.082
hispanic or latinx & white (non−hispanic or latino) p−value: 4.4e−10
two or more races & white (non−hispanic or latino) p−value: 0.013
Hispanic Or Latinx
37.8%
68/180
Black Or African American
32.9%
47/143
Two Or More Races
25.0%
17/68
Asian
20.0%
8/40
White (Non−Hispanic Or Latino)
12.1%
32/264
0%
25%
50%
75%
100%

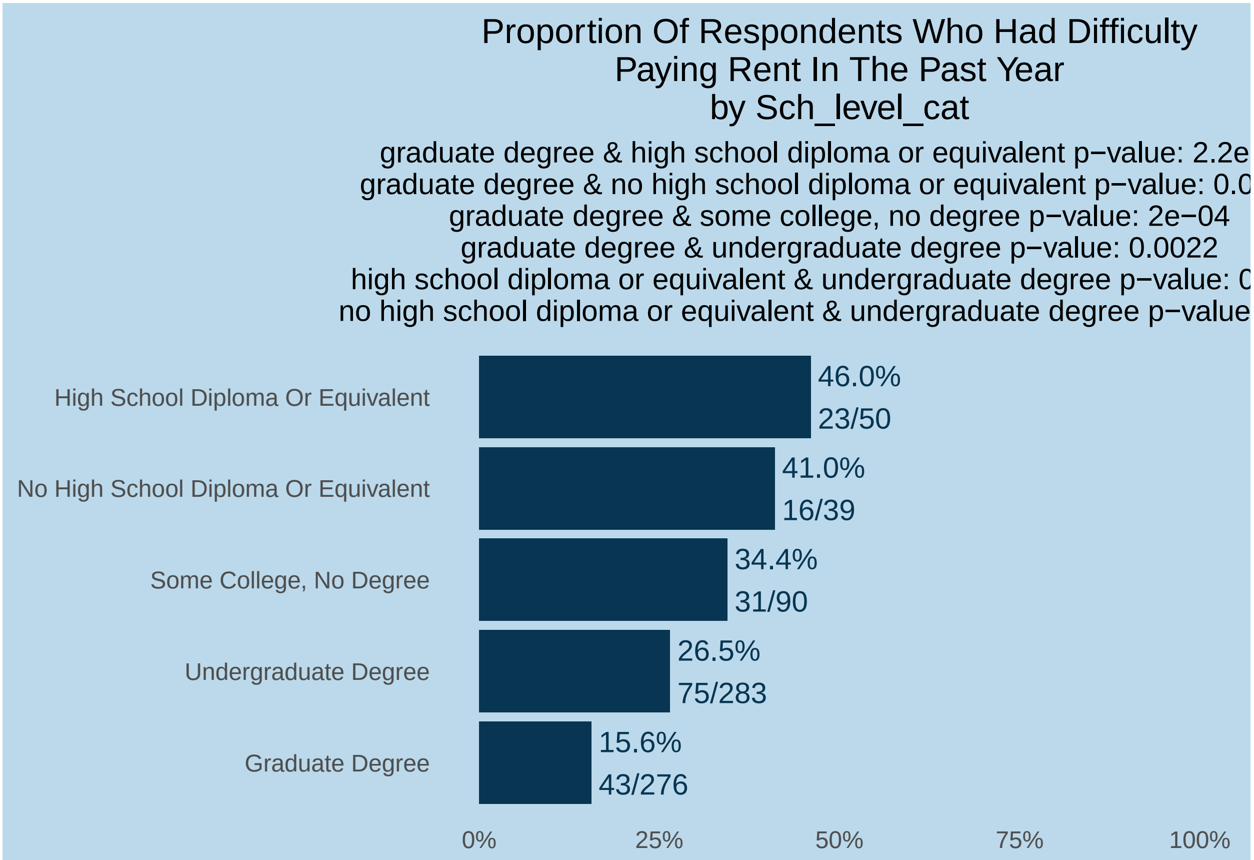
```
##
## $not_eng
```


Proportion Of Respondents Who Had Difficulty
Paying Rent In The Past Year
by Not_eng
no & yes p−value: 0.0015
Yes
32%
94/297
No
21%
95/451
0%
25%
50%
75%
100%

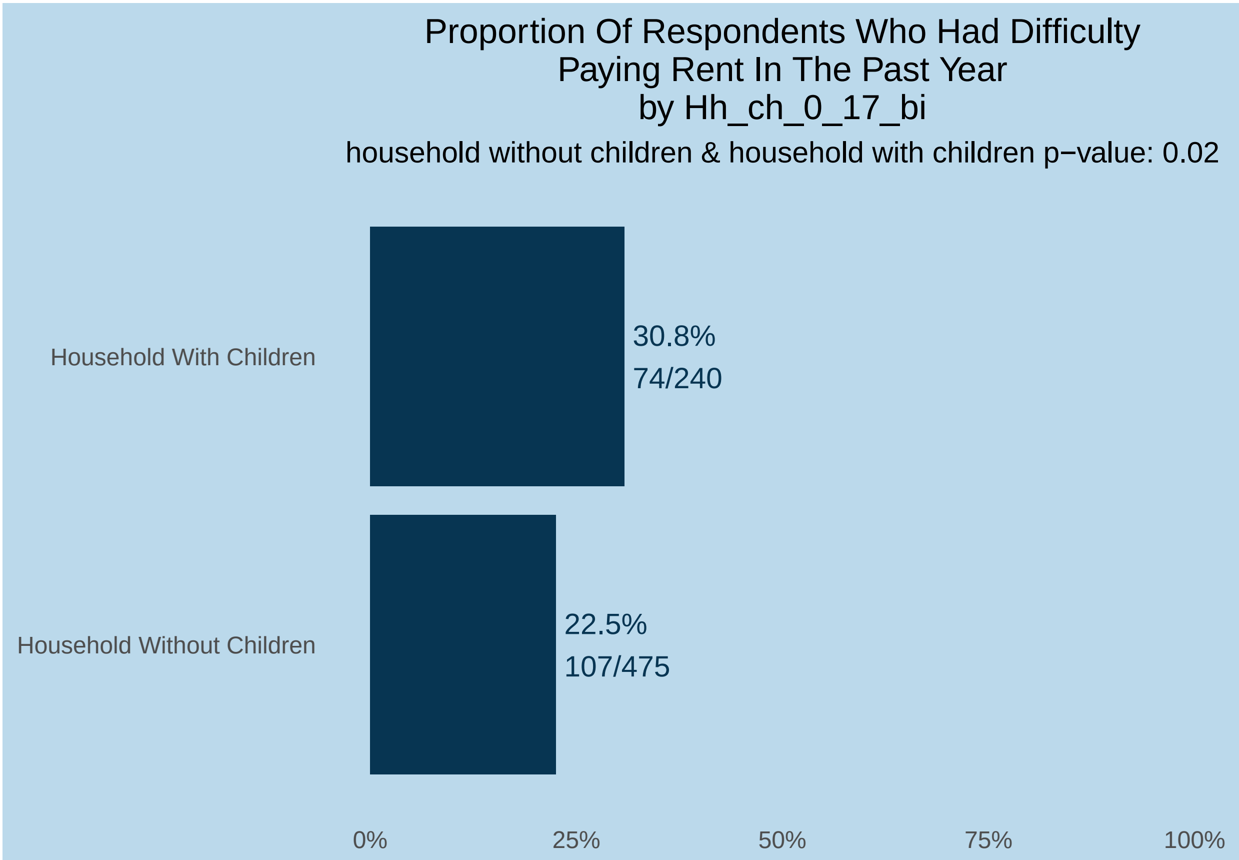
```
##
## $mar
```



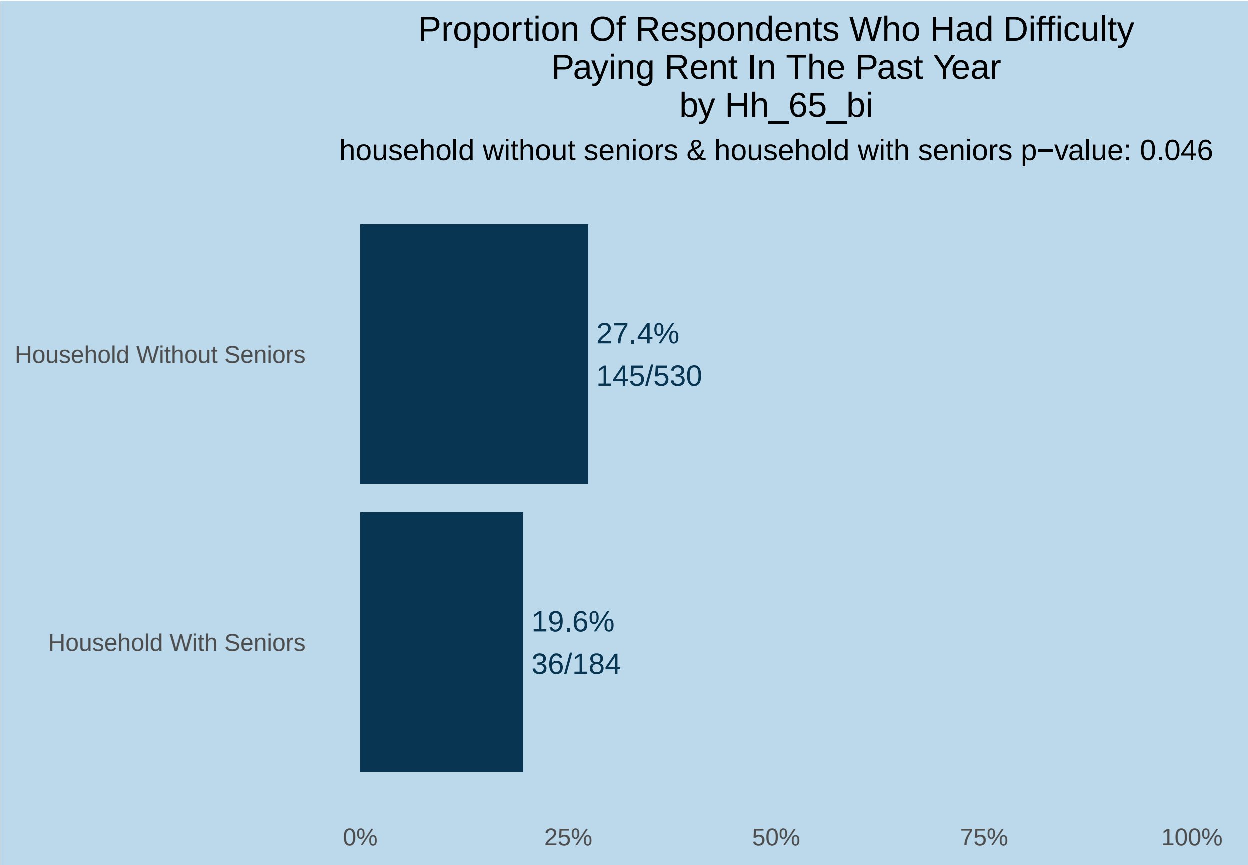

```
##
## $sch_level_cat
```


Proportion Of Respondents Who Had Difficulty
Paying Rent In The Past Year
by Sch_level_cat
graduate degree & high school diploma or equivalent p−value: 2.2e
graduate degree & no high school diploma or equivalent p−value: 0.0
graduate degree & some college, no degree p−value: 2e−04
graduate degree & undergraduate degree p−value: 0.0022
high school diploma or equivalent & undergraduate degree p−value: 0
no high school diploma or equivalent & undergraduate degree p−value
High School Diploma Or Equivalent
46.0%
23/50
No High School Diploma Or Equivalent
41.0%
16/39
Some College, No Degree
34.4%
31/90
Undergraduate Degree
26.5%
75/283
Graduate Degree
15.6%
43/276
0%
25%
50%
75%
100%

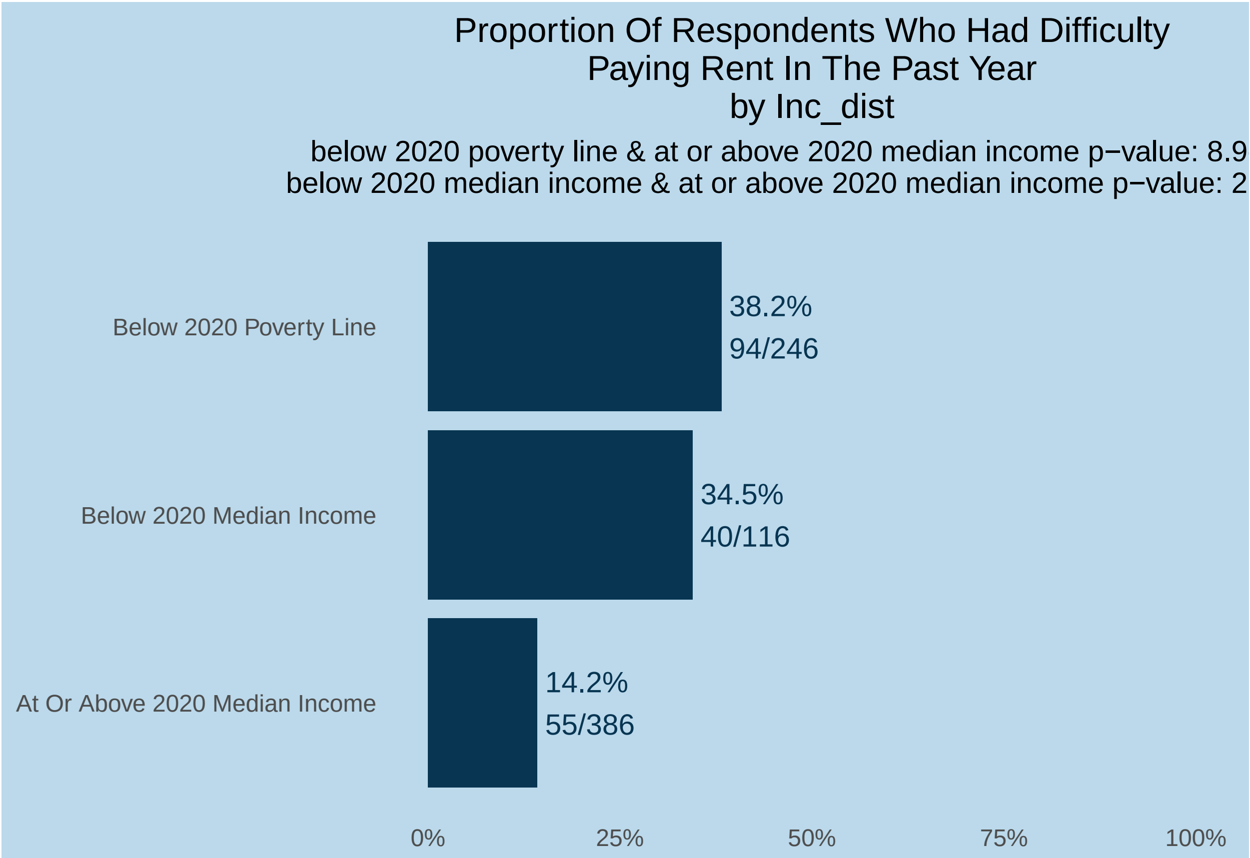
```
##
## $hh_ch_0_17_bi
```


Proportion Of Respondents Who Had Difficulty
Paying Rent In The Past Year
by Hh_ch_0_17_bi
household without children & household with children p−value: 0.02
Household With Children
30.8%
74/240
Household Without Children
22.5%
107/475
0%
25%
50%
75%
100%

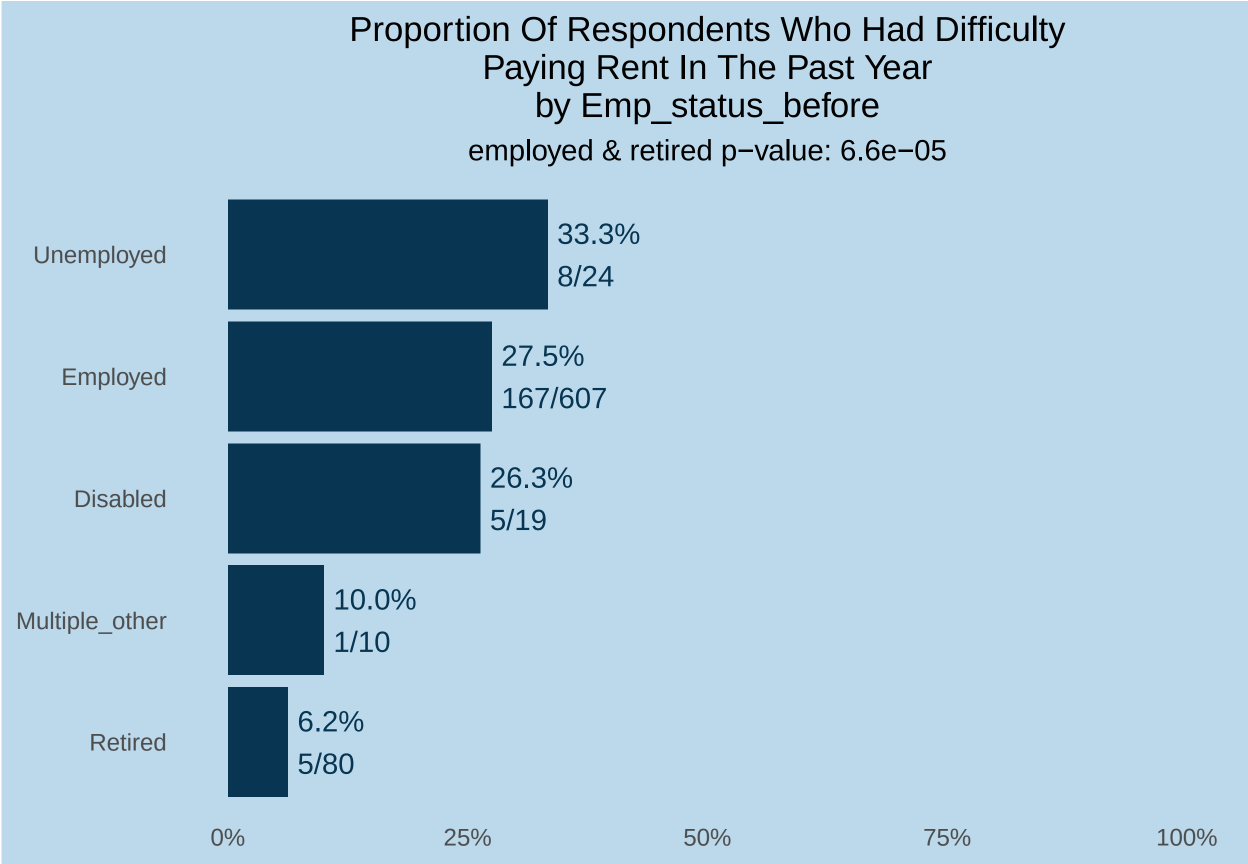
```
##
## $hh_65_bi
```


Proportion Of Respondents Who Had Difficulty
Paying Rent In The Past Year
by Hh_65_bi
household without seniors & household with seniors p−value: 0.046
Household Without Seniors
27.4%
145/530
Household With Seniors
19.6%
36/184
0%
25%
50%
75%
100%

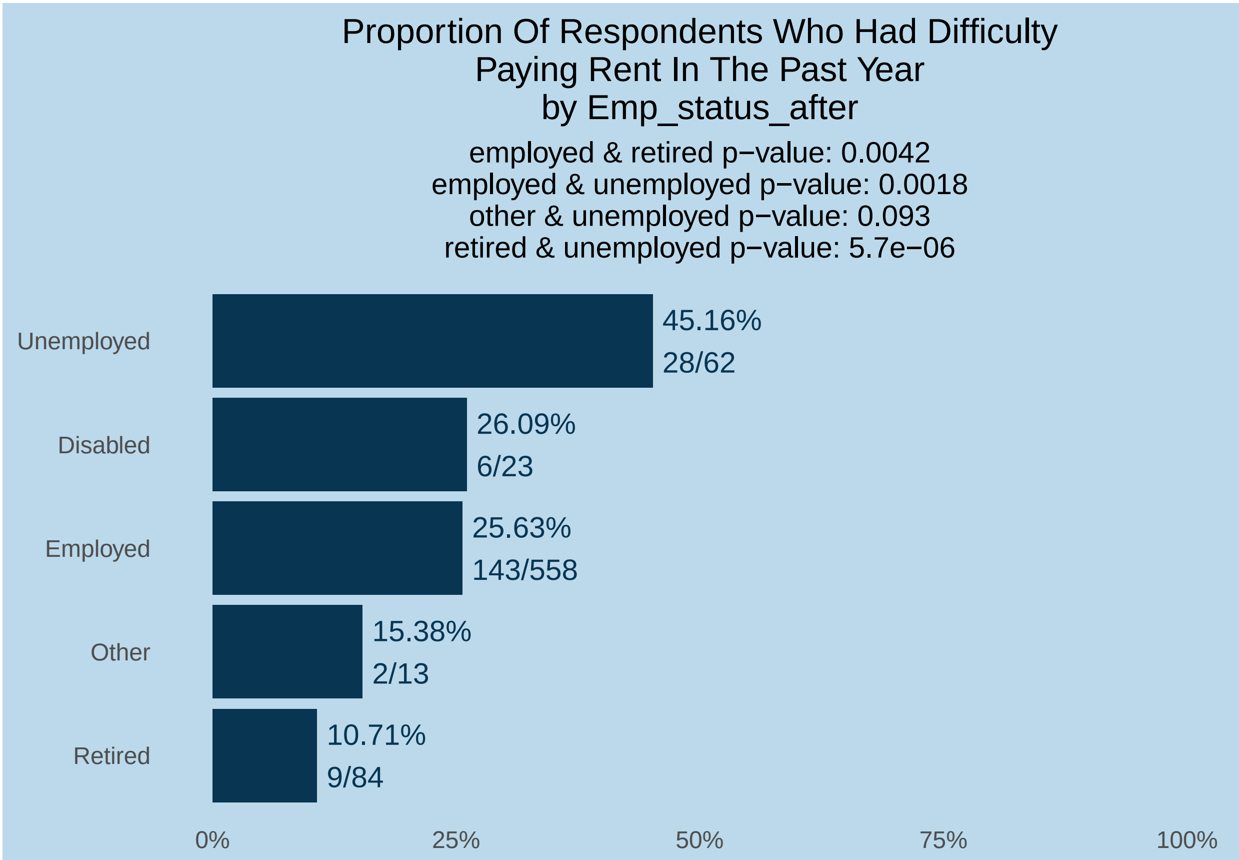
```
##
## $inc_dist
```



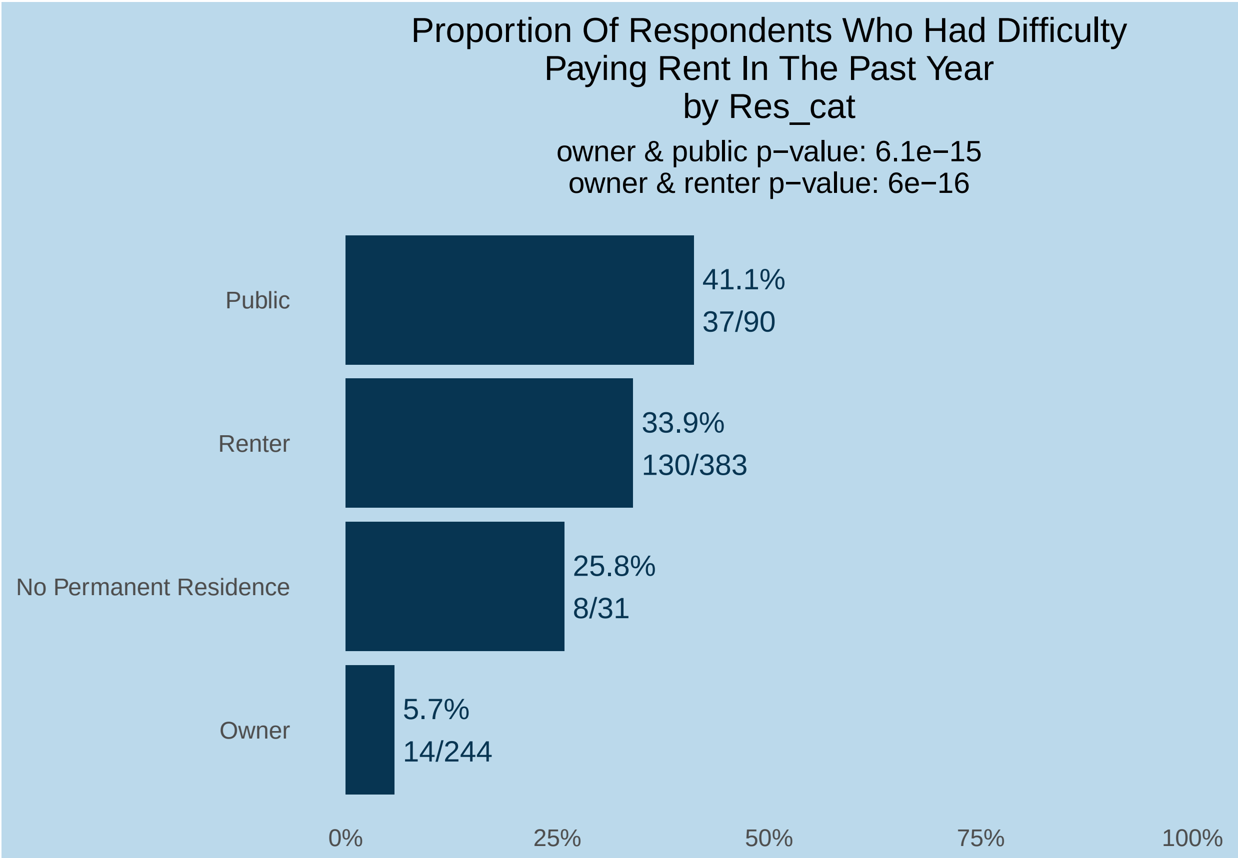

```
##
## $emp_status_before
```




```
##
## $emp_status_after
```


Proportion Of Respondents Who Had Difficulty
Paying Rent In The Past Year
by Emp_status_after
employed & retired p−value: 0.0042
employed & unemployed p−value: 0.0018
other & unemployed p−value: 0.093
retired & unemployed p−value: 5.7e−06
Unemployed
45.16%
28/62
Disabled
26.09%
6/23
Employed
25.63%
143/558
Other
15.38%
2/13
Retired
10.71%
9/84
0%
25%
50%
75%
100%

```
##
## $res_cat
```



2.8)Households that were financially unstable in the past year [20]

Run binary distribution over population Indicators: experienced food running out, difficulty paying bills, difficulty paying rent Yes =1+ indicators No = 0 indicators Run binary distribution by sub-demographics (a-k) and employed/unemployed/unemployed and currently receiving unemployment benefits Compare and find gaps (test unequal proportions) Run continuous distribution over population Indicators: experienced food running out, difficulty paying bills, difficulty paying rent Very financially unstable = 3 indicators **Somewhat financially unstable = 1-2 indicators** Not financially unstable = 0 indicators

Findings (some statistically significant findings)

- respondents who owned their residences had statistically significantly less financial insecurity
- again, respondents who spoke a language other than english at home experienced more financial insecurity
- again, elderly respondents and households with seniors had less financial insecurity
- on the other hand, households with children had more financial insecurity
- Black and Hispanic respondents had more financial insecurity than white respondents
- school level was positively associated with financial security (more school, more security)
- and obviously, unemployed respondents were more financially unstable than employed respondents

```
mean(wrangled$fin_unstable, na.rm = TRUE)
```

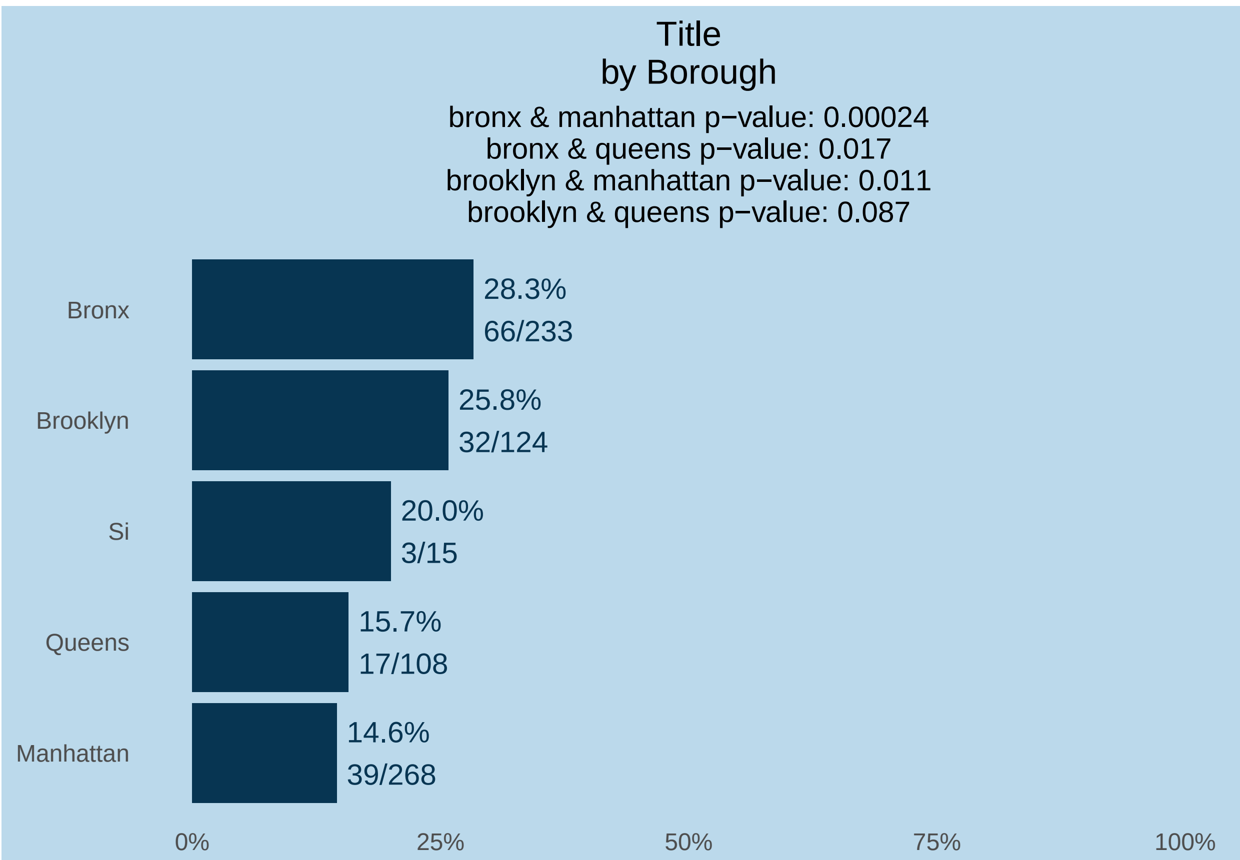
```
## [1] 0.209893
```

```r
wrangled %>% filter(is.na(diff_ran_out), !is.na(diff_bill))
```

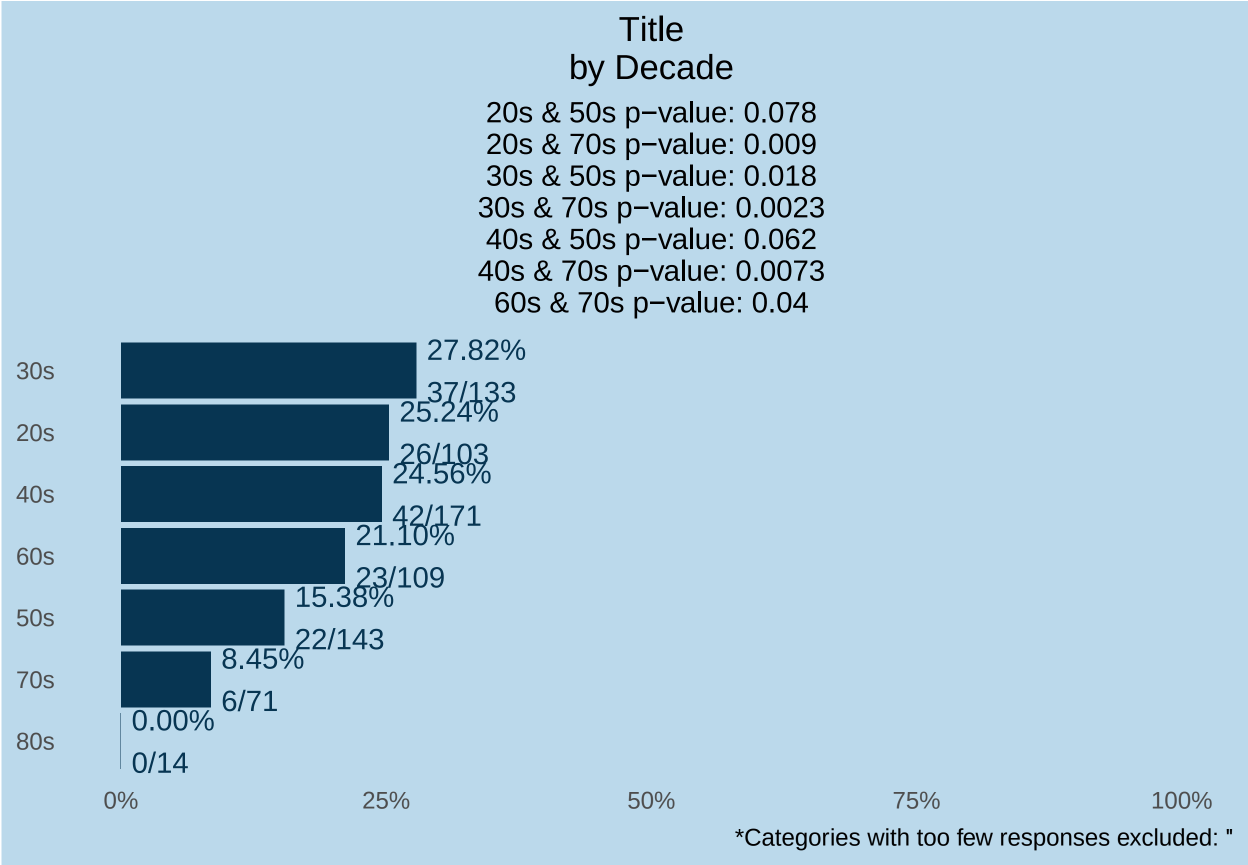
```
## # A tibble: 0 x 268
## # ... with 268 variables: responseid <chr>, recordeddate <dttm>, source <chr>,
## #   duration <int>, progress <int>, resi_ny <int+lbl>, zip <chr>,
## #   intersection <chr>, age <dbl>, gen <int+lbl>, gen_text <chr>, race <chr>,
## #   race_his_lat <int+lbl>, race_white <int+lbl>, race_black <int+lbl>,
## #   race_indian <int+lbl>, race_asian <int+lbl>, race_other <int+lbl>,
## #   race_pnta <int+lbl>, race_haw <int+lbl>, race_text <chr>, mar <int+lbl>,
## #   relig <int+lbl>, relig_text <chr>, sex_orient <int+lbl>, ...
```

```r
make_plots(wrangled, demographics, hyp_var = "fin_unstable", min = 10)
```

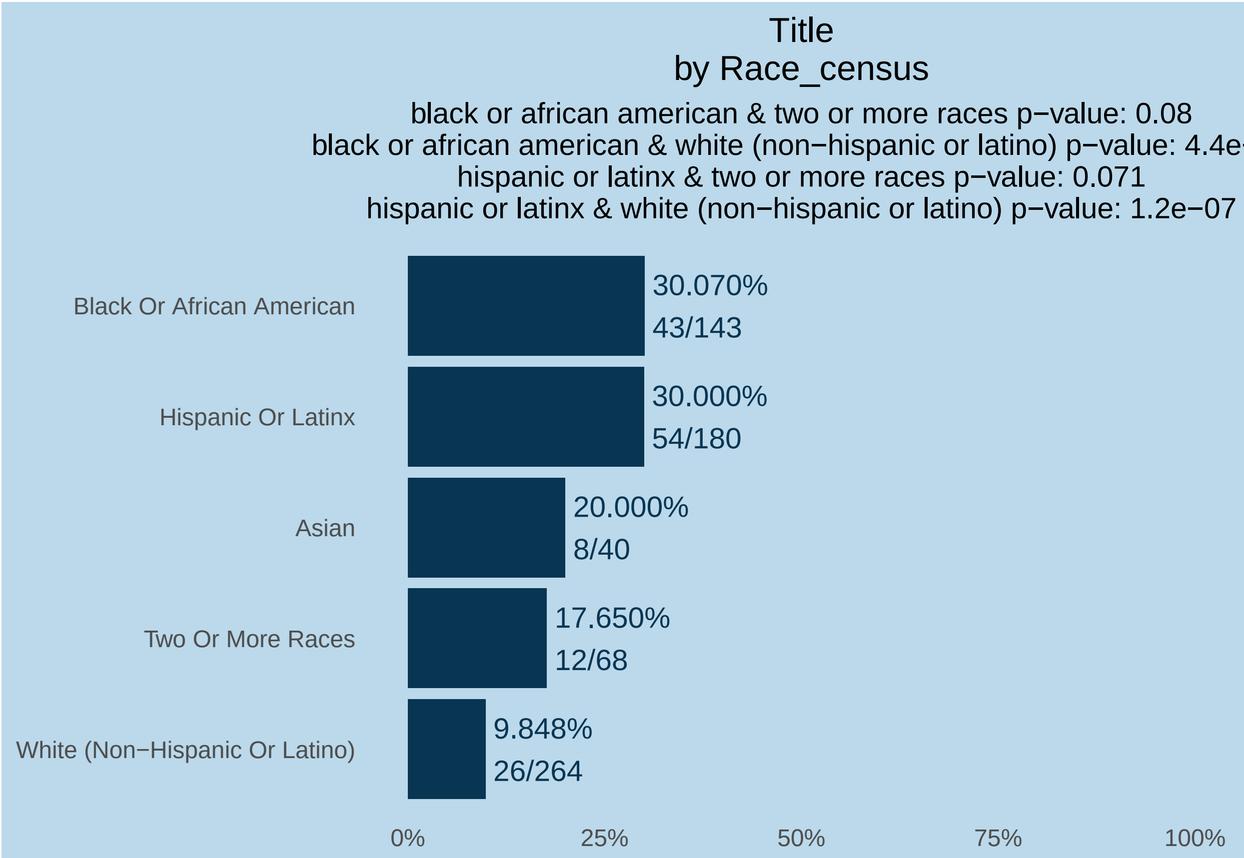
```
## $borough
```



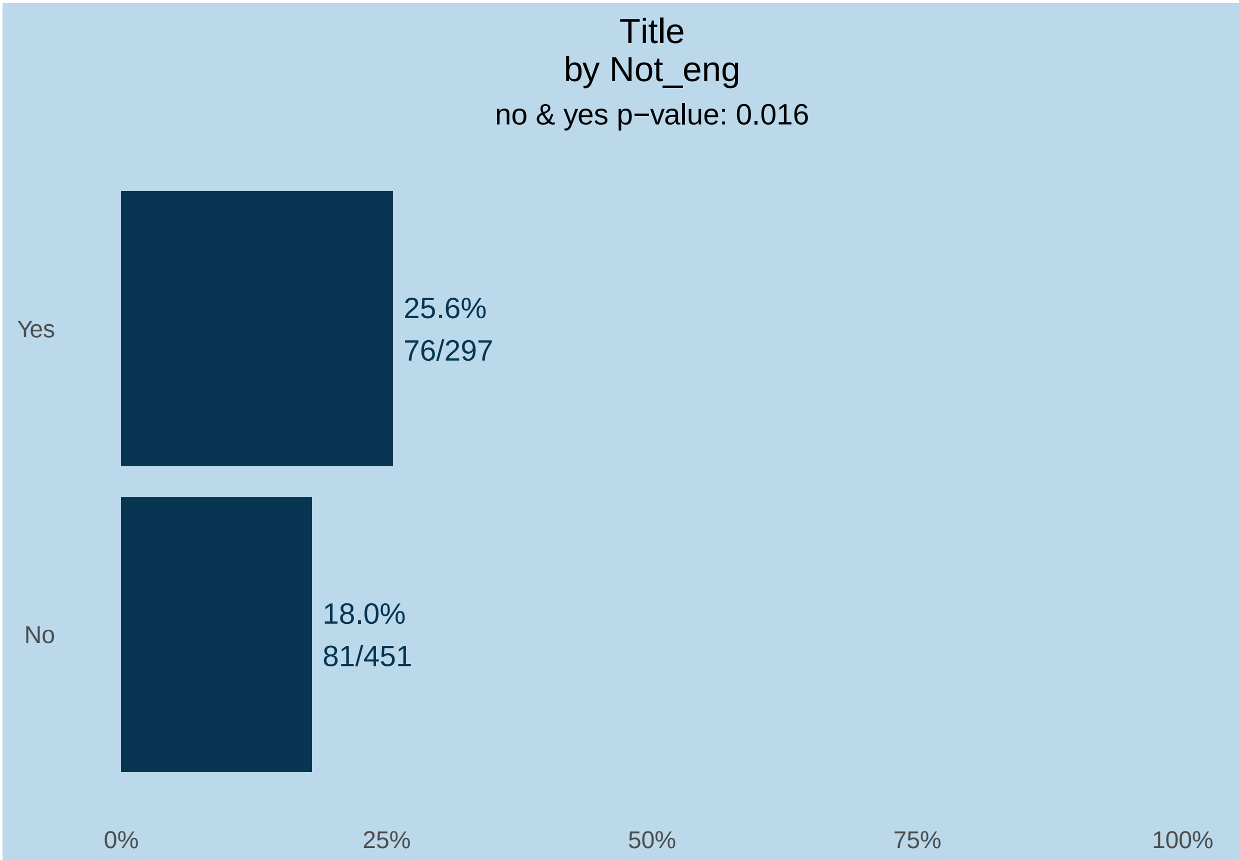

```
##
## $decade
```



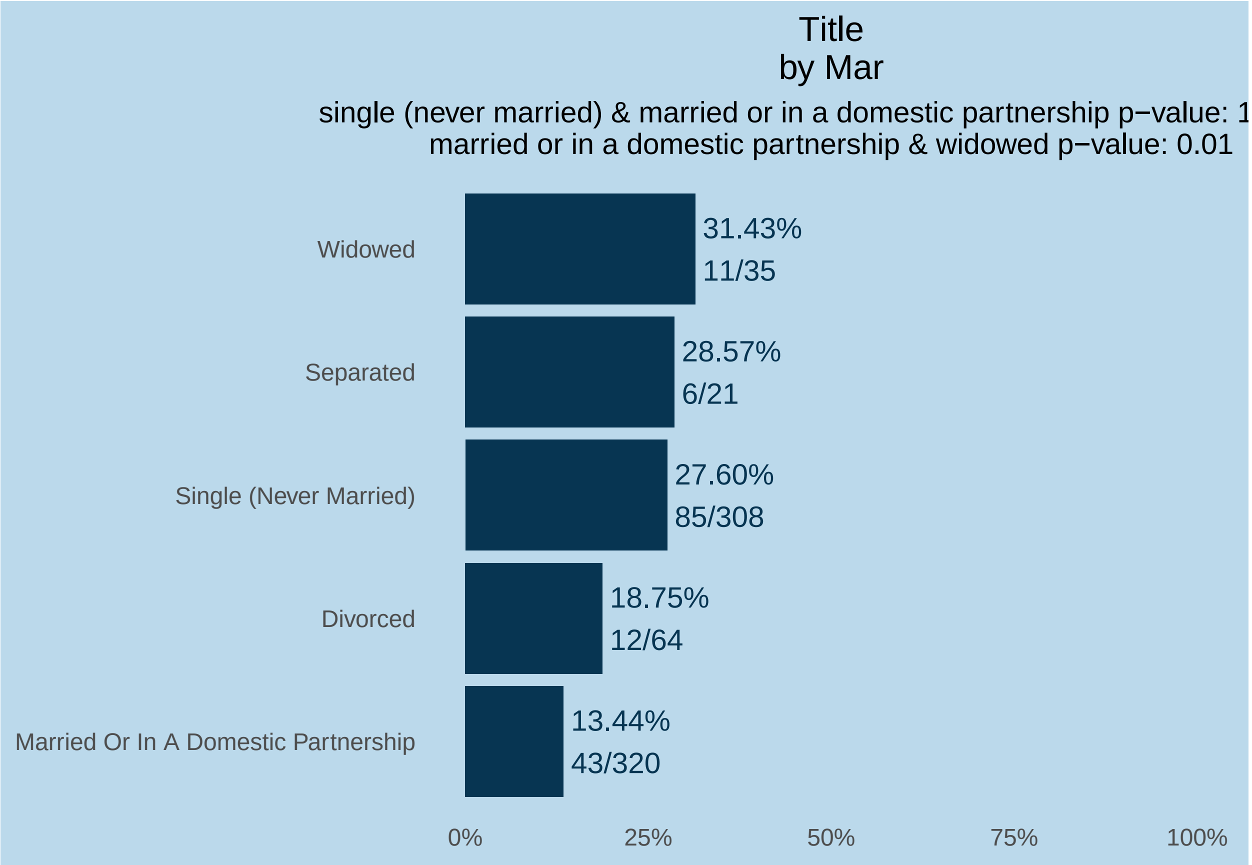

```
##
## $gen
## NULL
##
## $race_census
```


Title
by Race_census
black or african american & two or more races p−value: 0.08
black or african american & white (non−hispanic or latino) p−value: 4.4e-
hispanic or latinx & two or more races p−value: 0.071
hispanic or latinx & white (non−hispanic or latino) p−value: 1.2e−07
Black Or African American
30.070%
43/143
Hispanic Or Latinx
30.000%
54/180
Asian
20.000%
8/40
Two Or More Races
17.650%
12/68
White (Non−Hispanic Or Latino)
9.848%
26/264
0%
25%
50%
75%
100%

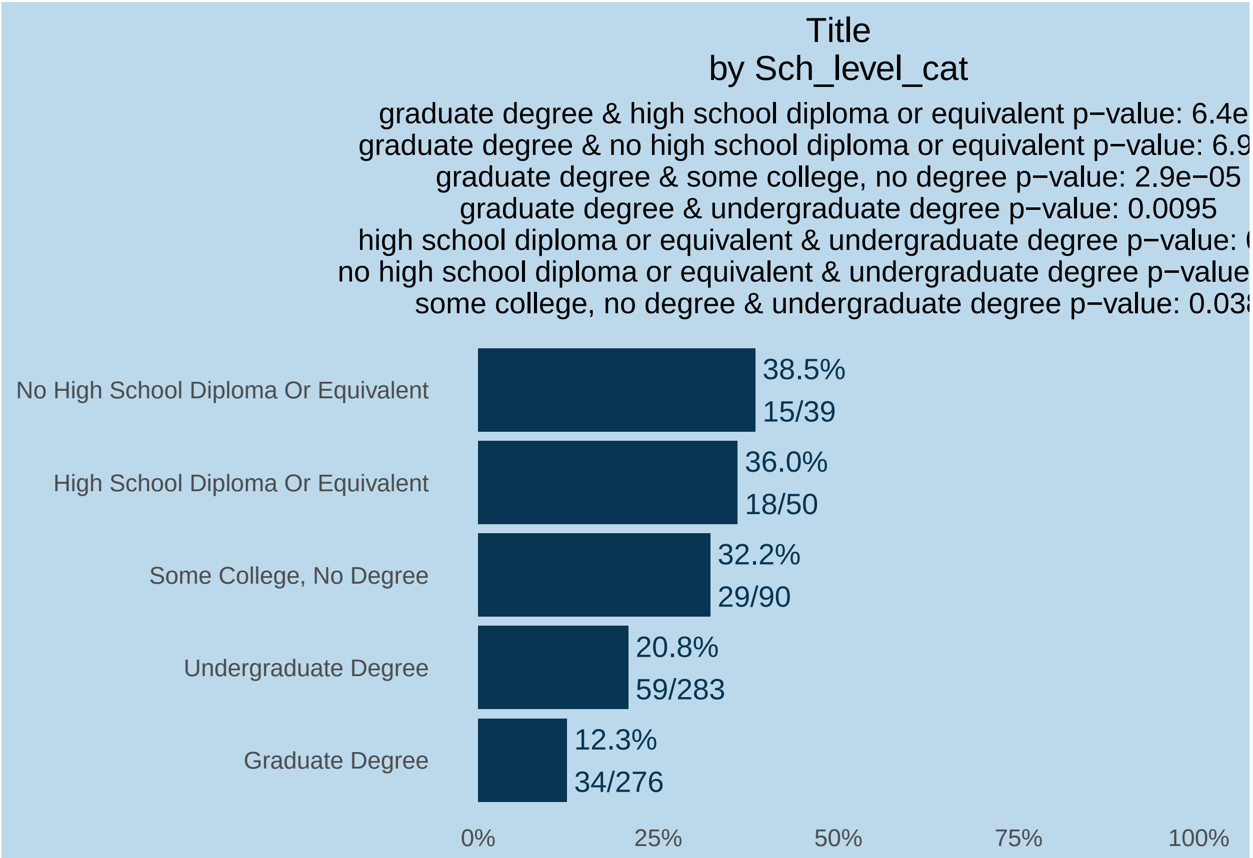
```
##
## $not_eng
```


Title
by Not_eng
no & yes p−value: 0.016
Yes
25.6%
76/297
No
18.0%
81/451
0%
25%
50%
75%
100%

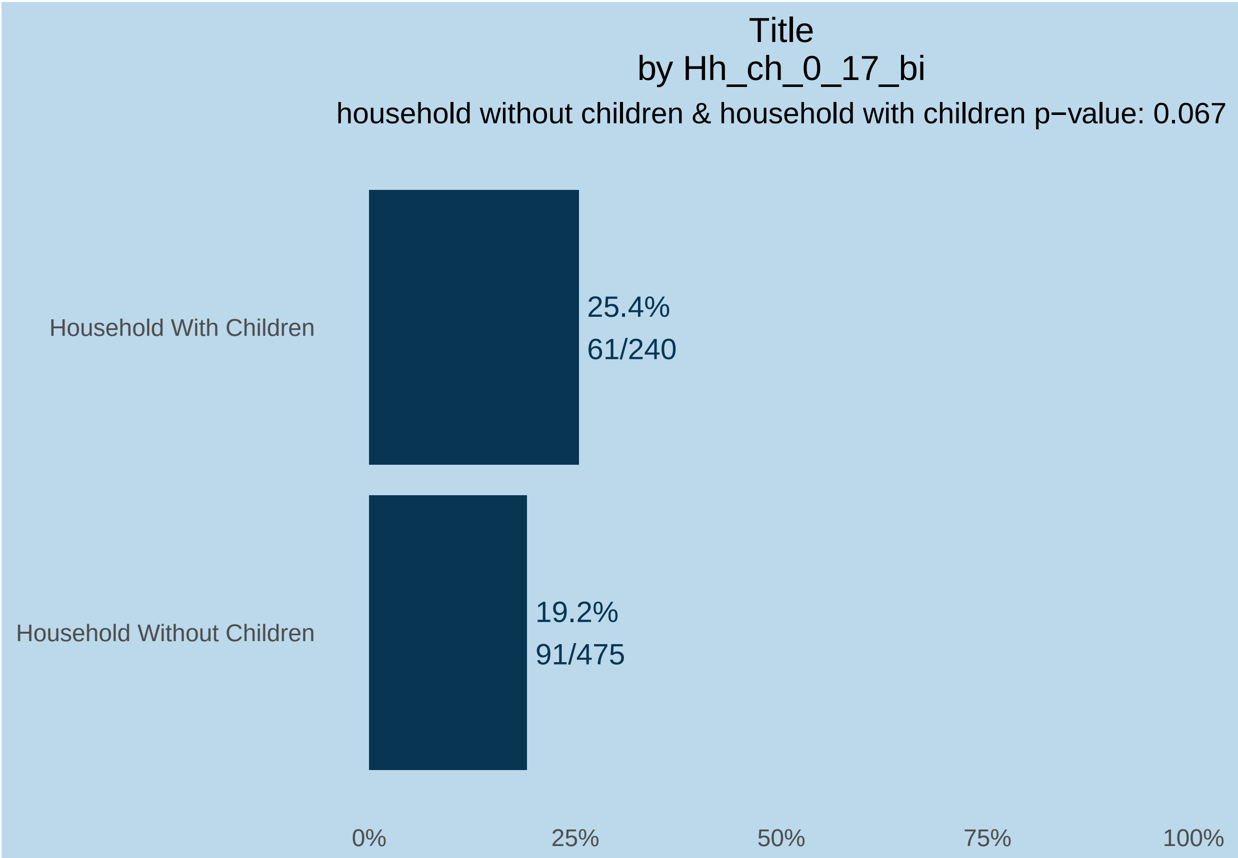
```
##
## $mar
```



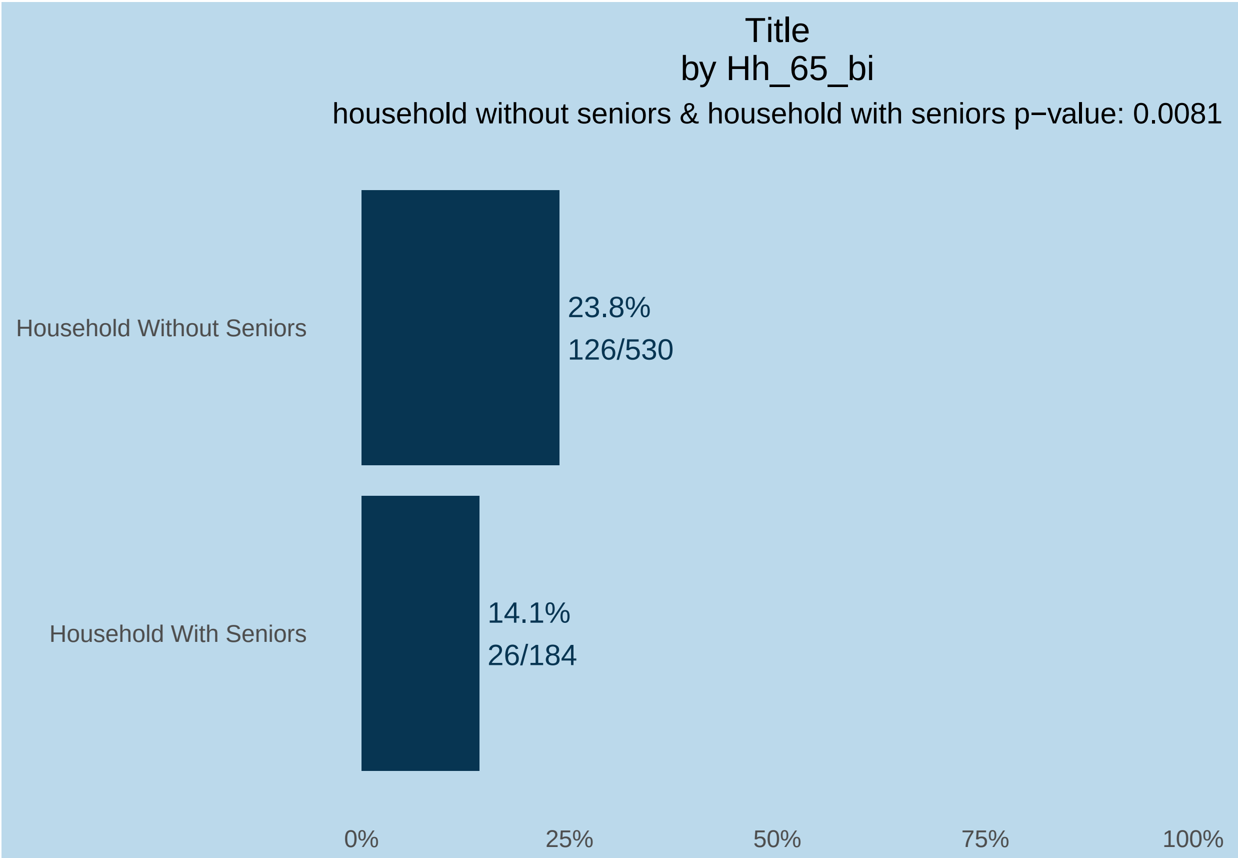

```
##
## $sch_level_cat
```


Title
by Sch_level_cat
graduate degree & high school diploma or equivalent p−value: 6.4e
graduate degree & no high school diploma or equivalent p−value: 6.9
graduate degree & some college, no degree p−value: 2.9e−05
graduate degree & undergraduate degree p−value: 0.0095
high school diploma or equivalent & undergraduate degree p−value:
no high school diploma or equivalent & undergraduate degree p−value
some college, no degree & undergraduate degree p−value: 0.03
No High School Diploma Or Equivalent
38.5%
15/39
High School Diploma Or Equivalent
36.0%
18/50
Some College, No Degree
32.2%
29/90
Undergraduate Degree
20.8%
59/283
Graduate Degree
12.3%
34/276
0%
25%
50%
75%
100%

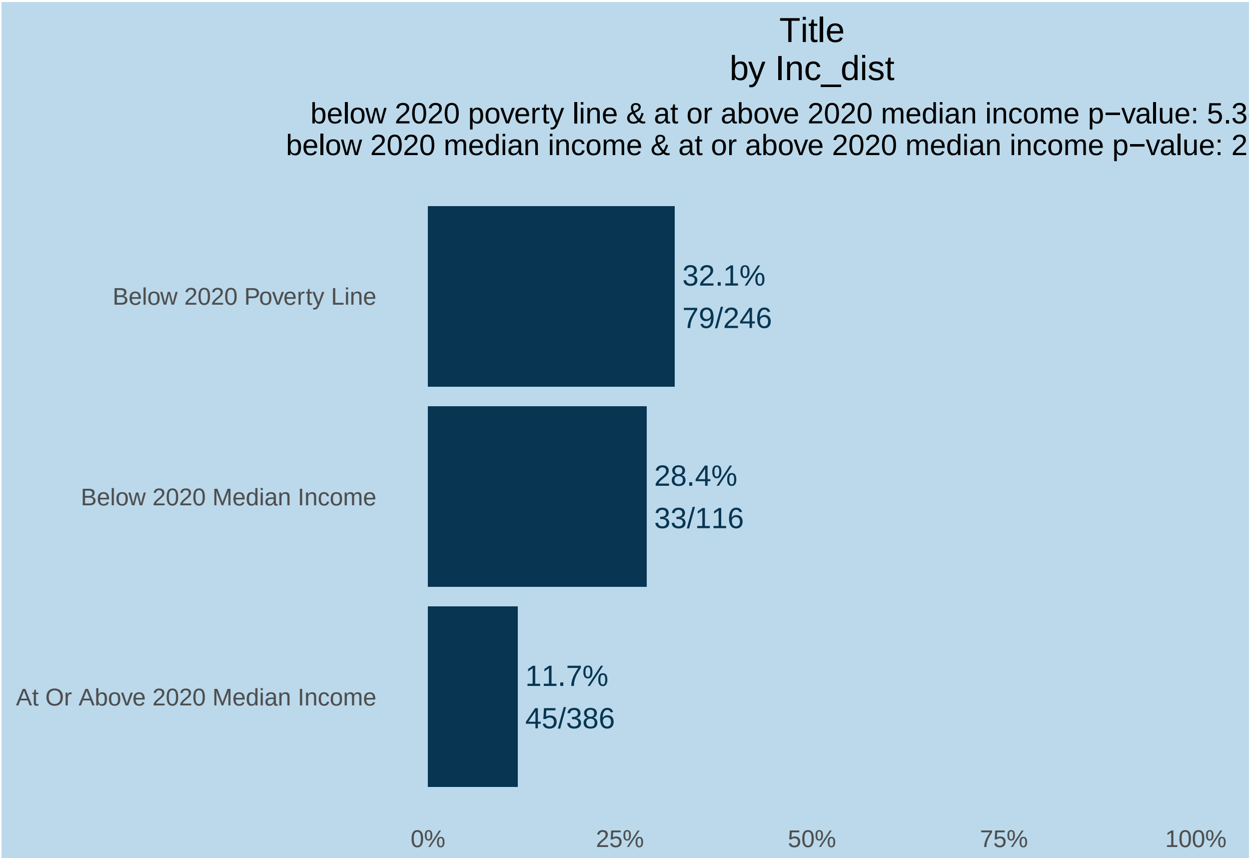
```
##
## $hh_ch_0_17_bi
```


Title
by Hh_ch_0_17_bi
household without children & household with children p−value: 0.067
Household With Children
25.4%
61/240
Household Without Children
19.2%
91/475
0%
25%
50%
75%
100%

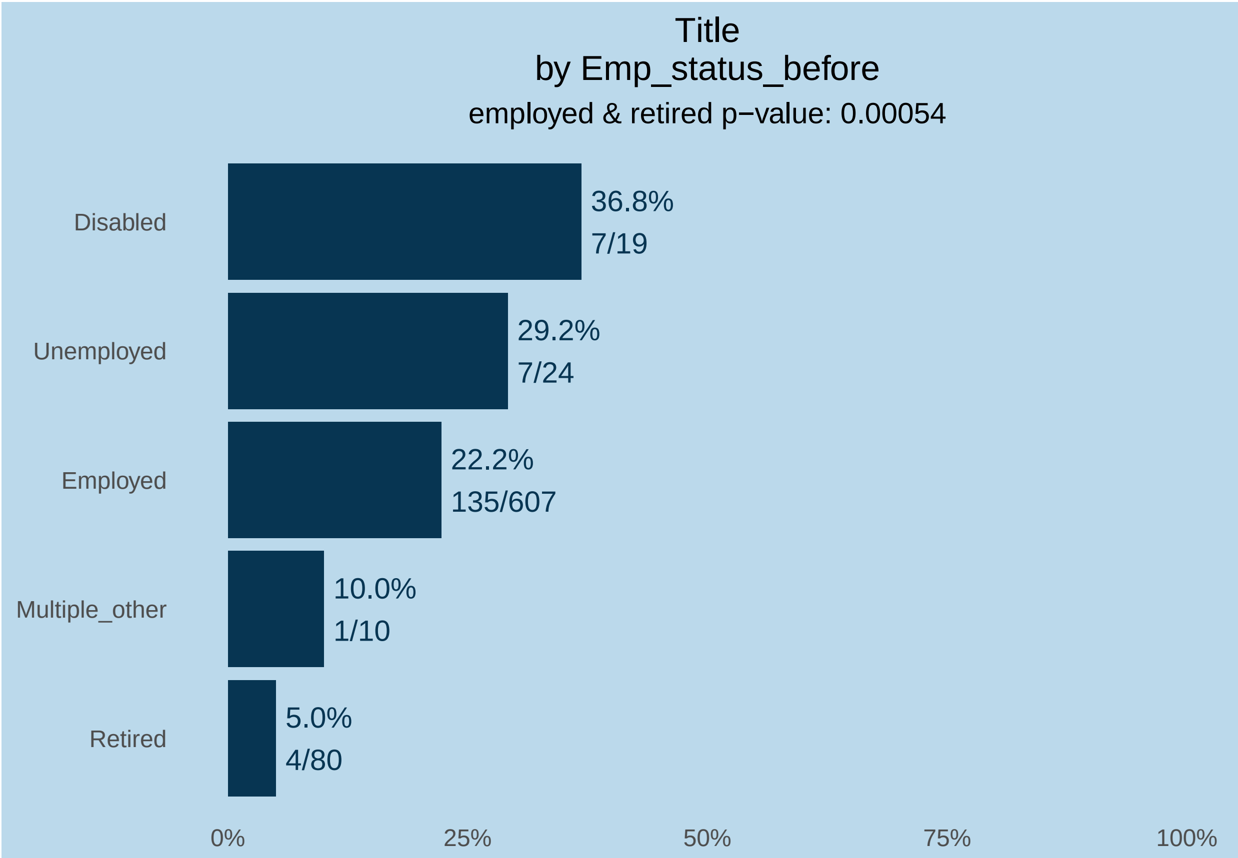
```
##
## $hh_65_bi
```


Title
by Hh_65_bi
household without seniors & household with seniors p−value: 0.0081
Household Without Seniors
23.8%
126/530
Household With Seniors
14.1%
26/184
0%
25%
50%
75%
100%

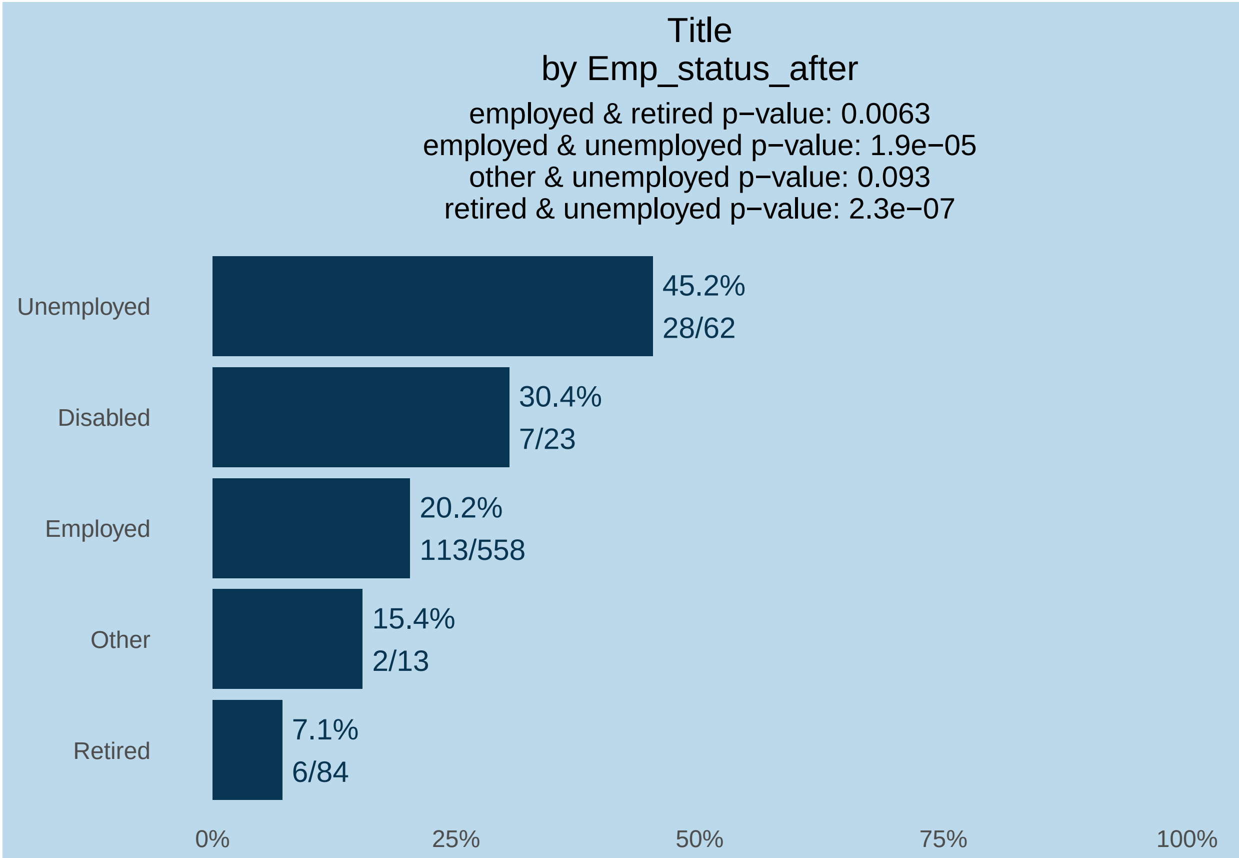
```
##
## $inc_dist
```



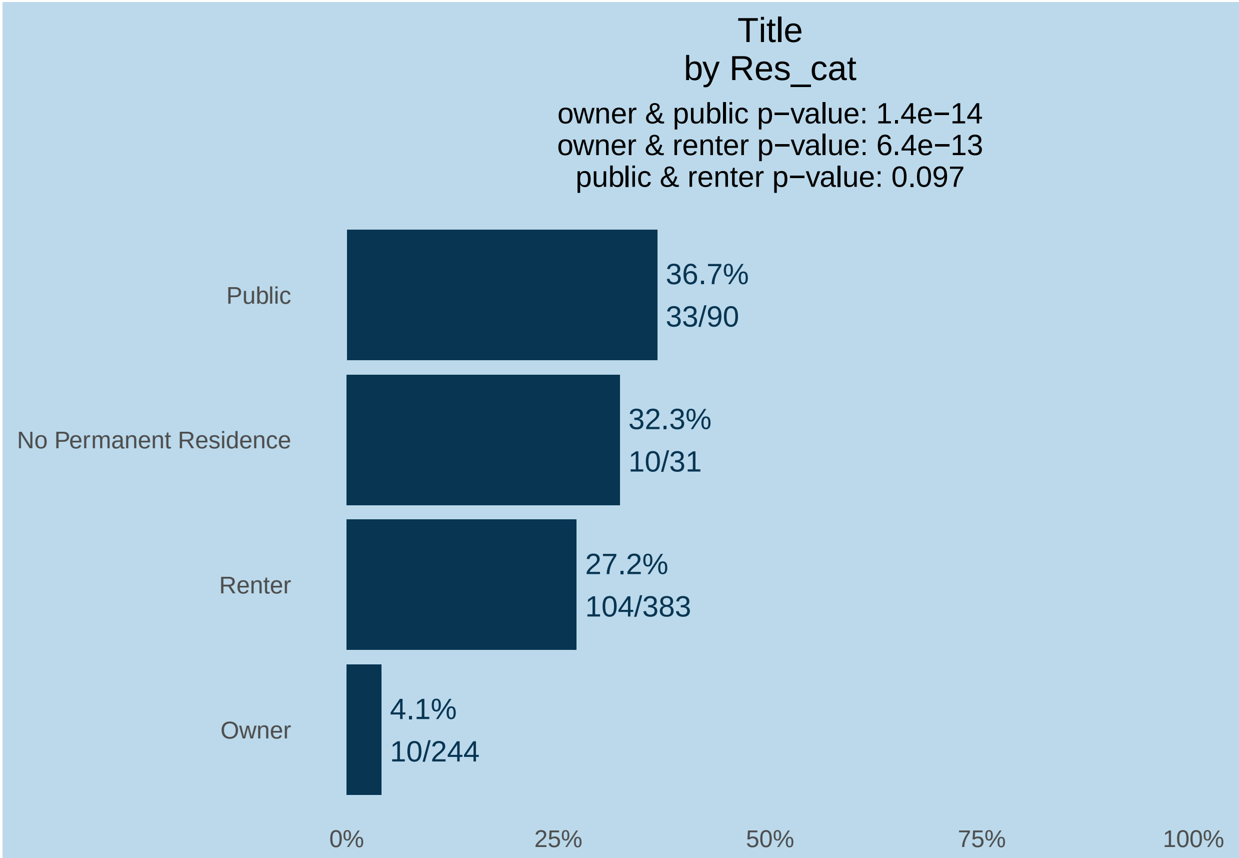

```
##
## $emp_status_before
```




```
##
## $emp_status_after
```


Title
by Emp_status_after
employed & retired p−value: 0.0063
employed & unemployed p−value: 1.9e−05
other & unemployed p−value: 0.093
retired & unemployed p−value: 2.3e−07
Unemployed
45.2%
28/62
Disabled
30.4%
7/23
Employed
20.2%
113/558
Other
15.4%
2/13
Retired
7.1%
6/84
0%
25%
50%
75%
100%

```
##
## $res_cat
```



2.9)Households that experienced food insecurity in the past year [20]

Run binary distribution over population Indicators: worried about food running out, ran out of food/ unable to afford food Yes = 1+ indicator No = 0 indicators Run continuous distribution over population Indicators: worried about food running out, ran out of food/ unable to afford food Very food insecure = 2 indicators Somewhat food insecure = worried about food not lasting (OR experienced food bought didn't last i.e. 1 indicator?) Not food insecure = 0 indicators

Findings (some statistically significant findings)

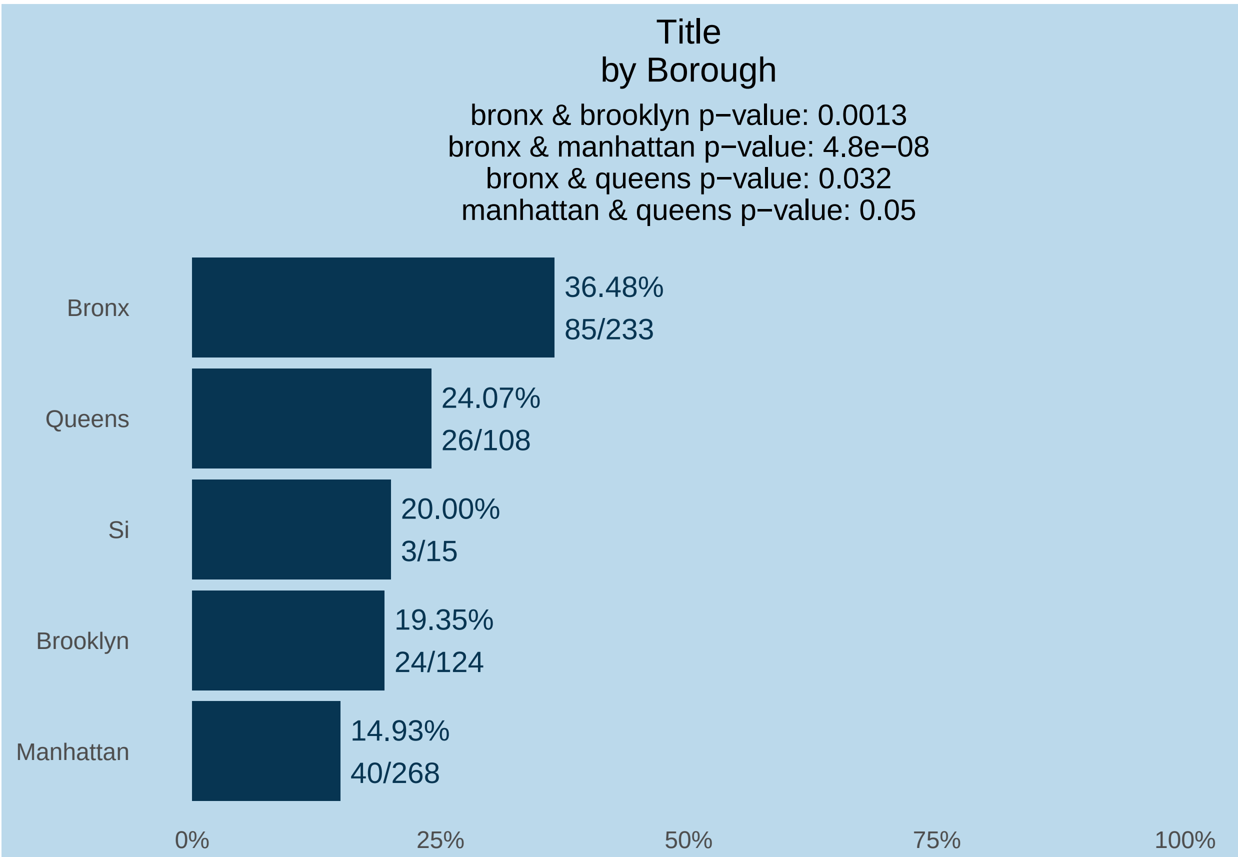
- respondents who owned their residences had statistically significantly less food insecurity (10%) compared to respondents without a permanent residence (50%)
- again, respondents who spoke a language other than english at home experienced more food insecurity
- again, elderly respondents, households with seniors, and retired respondents all experienced less food insecurity
- on the other hand, households with children had more food insecurity (responds to hyp 2.10)
- Black and Hispanic respondents had significantly more food insecurity than white respondents
- school level and income bracket was negatively associated with food insecurity (more school, more security)
- and obviously, unemployed respondents were more financially unstable than employed respondents

```
mean(wrangled$food_insec, na.rm = TRUE)
```

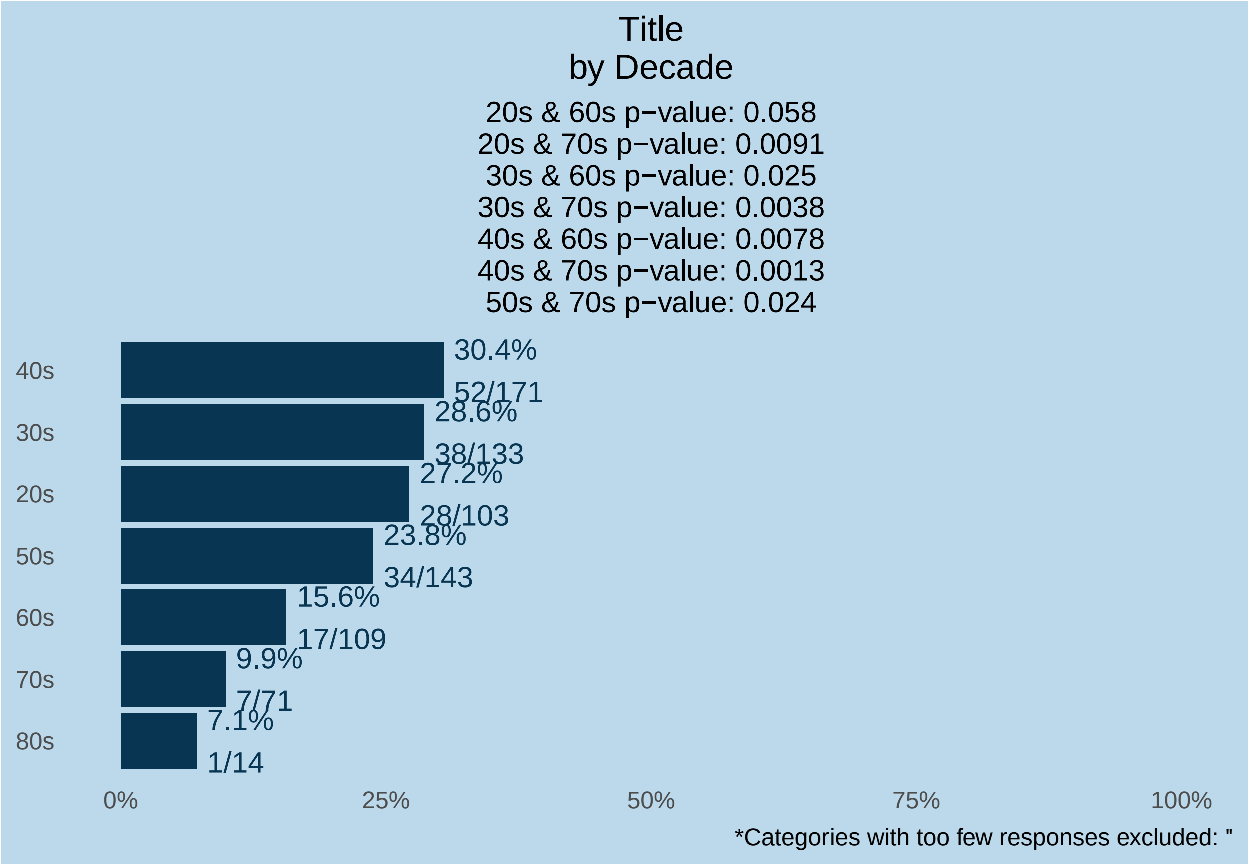
```
## [1] 0.2379679
```

```
make_plots(wrangled, demographics, "food_insec", min = 7)[-6]
```

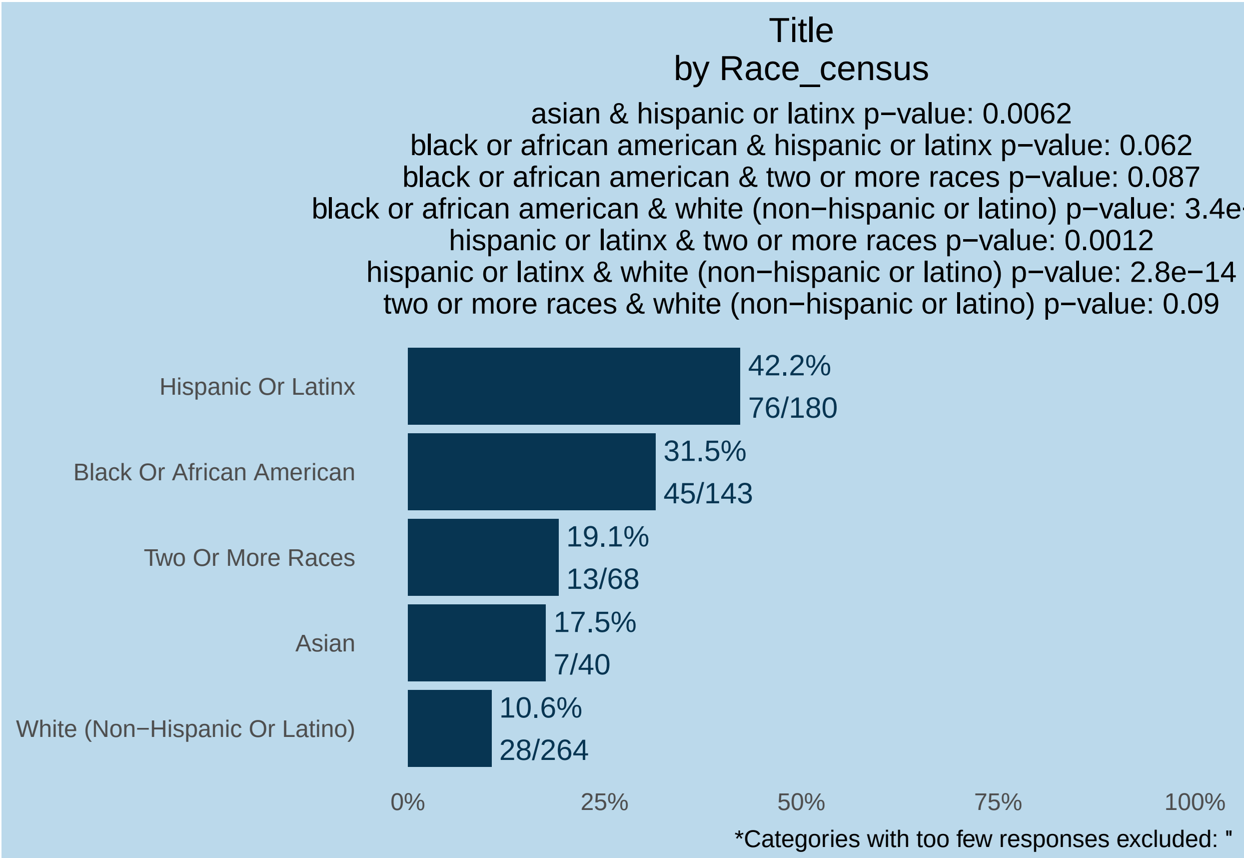
```
## $borough
```



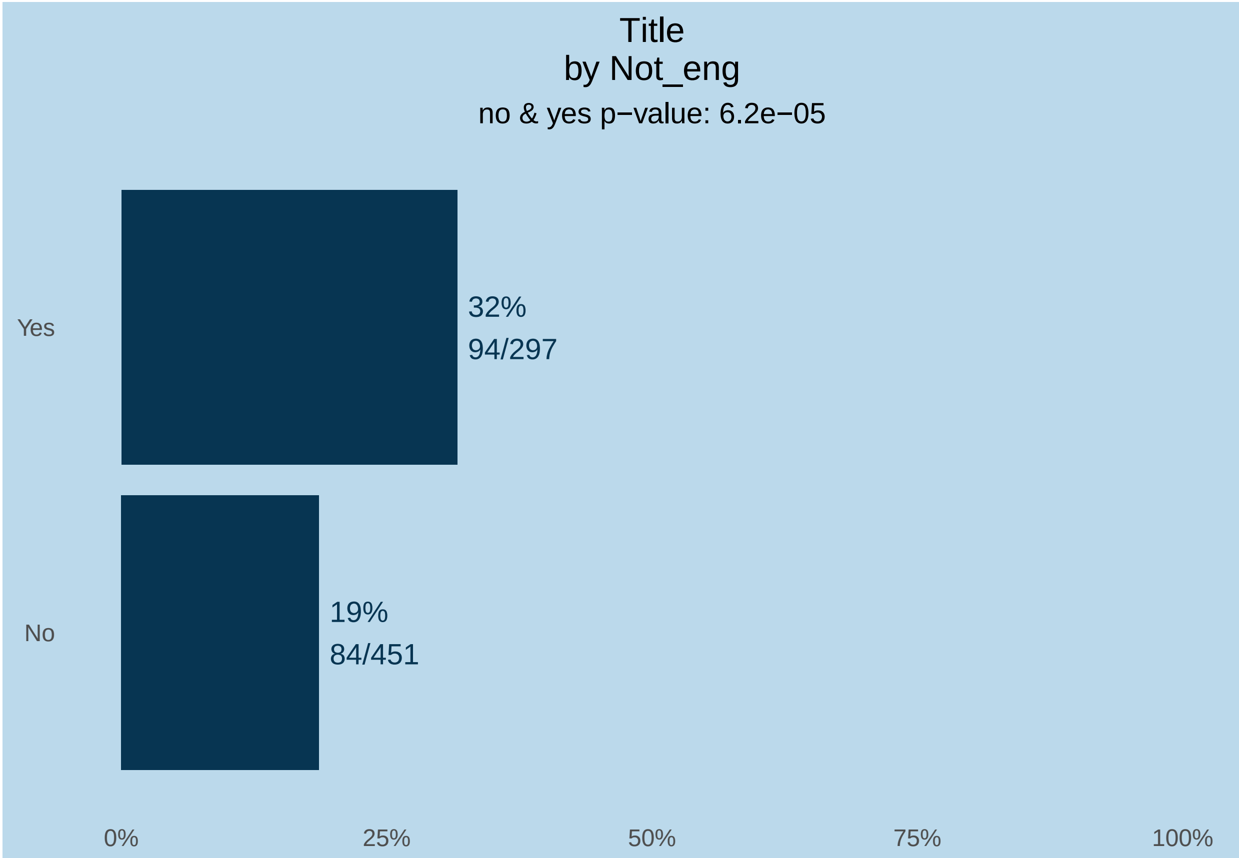

```
##
## $decade
```



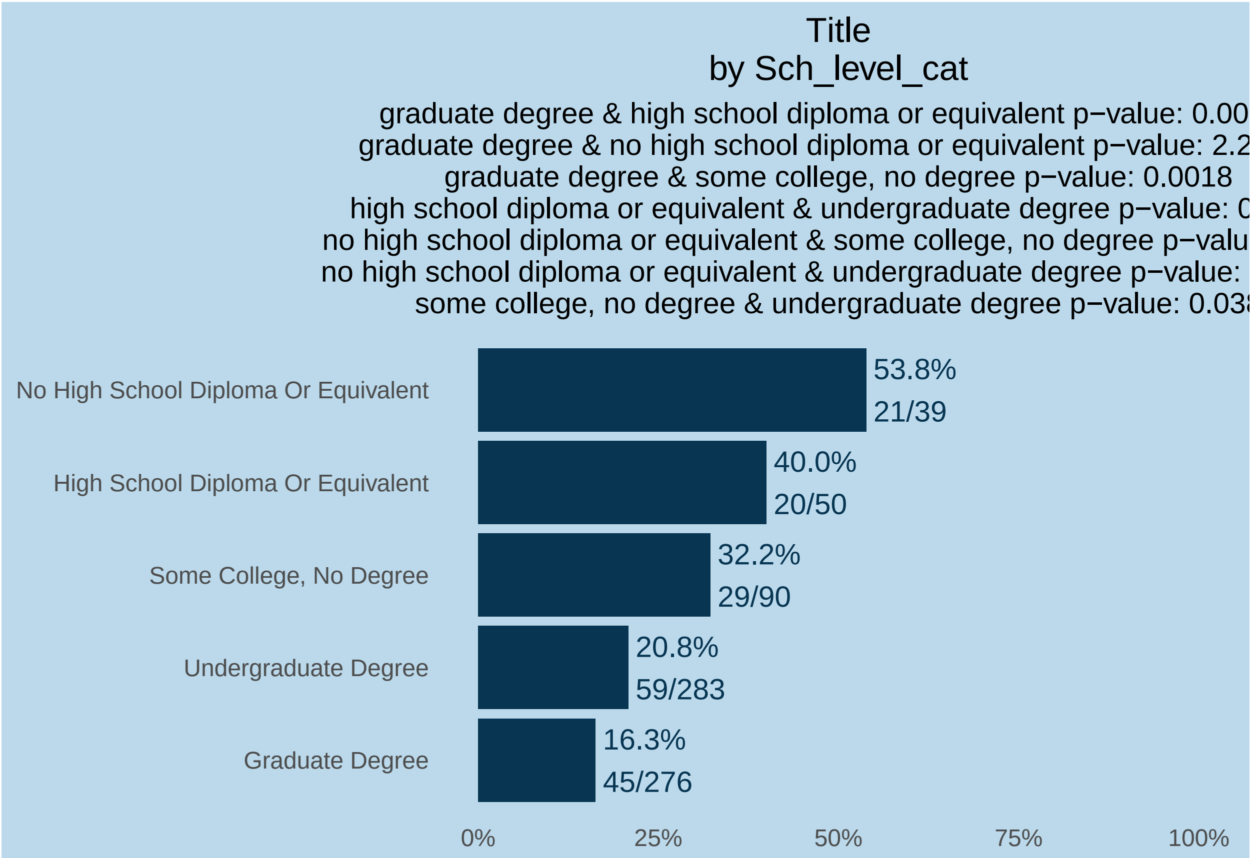

```
##
## $gen
## NULL
##
## $race_census
```


Title
by Race_census
asian & hispanic or latinx p−value: 0.0062
black or african american & hispanic or latinx p−value: 0.062
black or african american & two or more races p−value: 0.087
black or african american & white (non−hispanic or latino) p−value: 3.4e-
hispanic or latinx & two or more races p−value: 0.0012
hispanic or latinx & white (non−hispanic or latino) p−value: 2.8e−14
two or more races & white (non−hispanic or latino) p−value: 0.09
Hispanic Or Latinx
42.2%
76/180
Black Or African American
31.5%
45/143
Two Or More Races
19.1%
13/68
Asian
17.5%
7/40
White (Non−Hispanic Or Latino)
10.6%
28/264
0%
25%
50%
75%
100%
*Categories with too few responses excluded: "

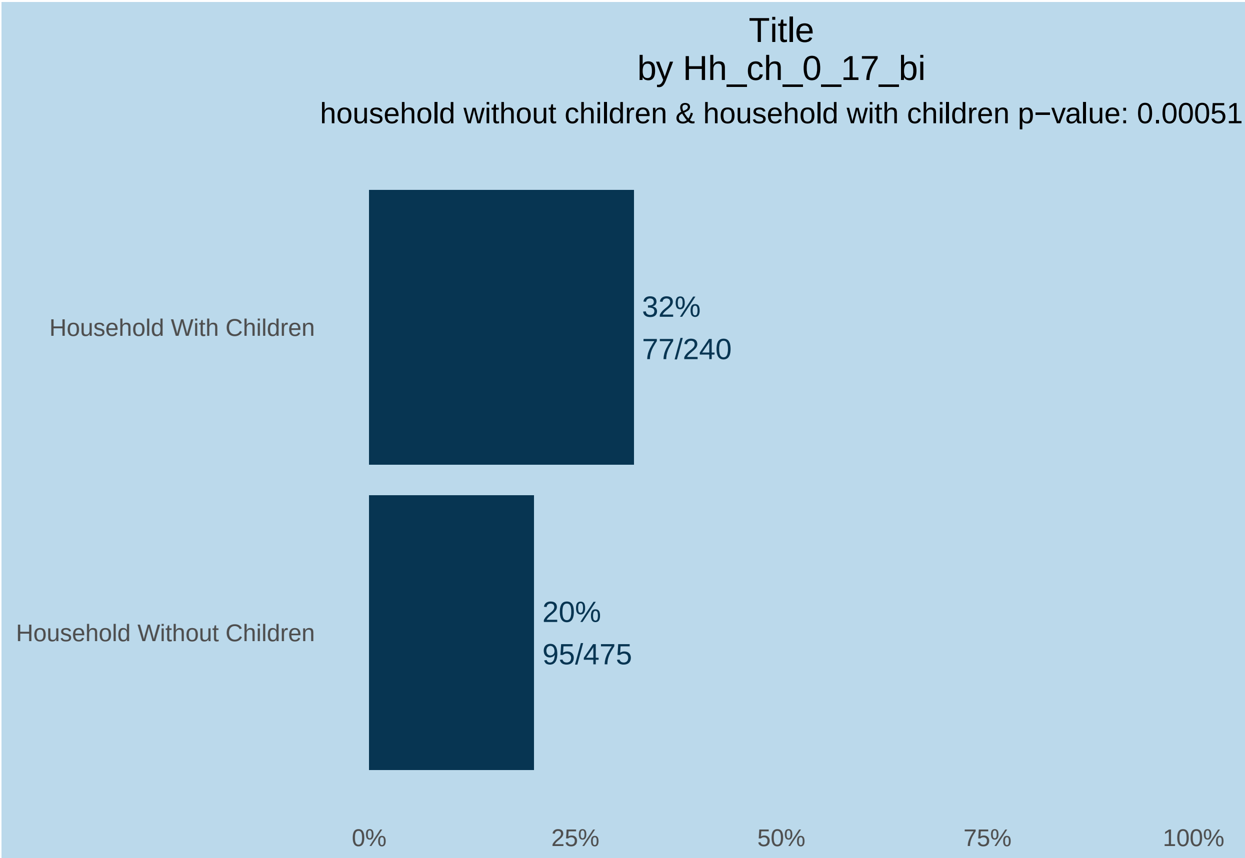
```
##
## $not_eng
```



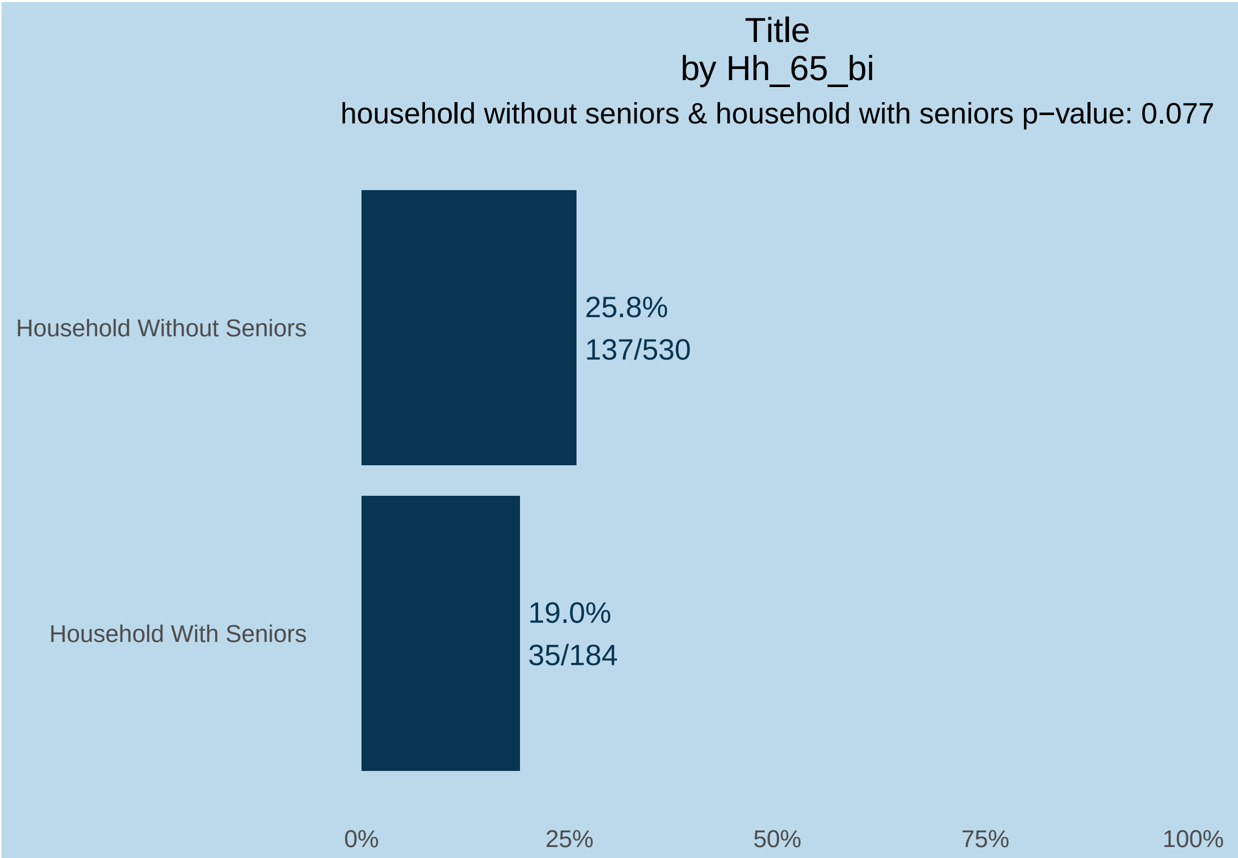

```
##
## $sch_level_cat
```


Title
by Sch_level_cat
graduate degree & high school diploma or equivalent p−value: 0.00
graduate degree & no high school diploma or equivalent p−value: 2.2
graduate degree & some college, no degree p−value: 0.0018
high school diploma or equivalent & undergraduate degree p−value: 0
no high school diploma or equivalent & some college, no degree p−valu
no high school diploma or equivalent & undergraduate degree p−value:
some college, no degree & undergraduate degree p−value: 0.03
No High School Diploma Or Equivalent
53.8%
21/39
High School Diploma Or Equivalent
40.0%
20/50
Some College, No Degree
32.2%
29/90
Undergraduate Degree
20.8%
59/283
Graduate Degree
16.3%
45/276
0%
25%
50%
75%
100%

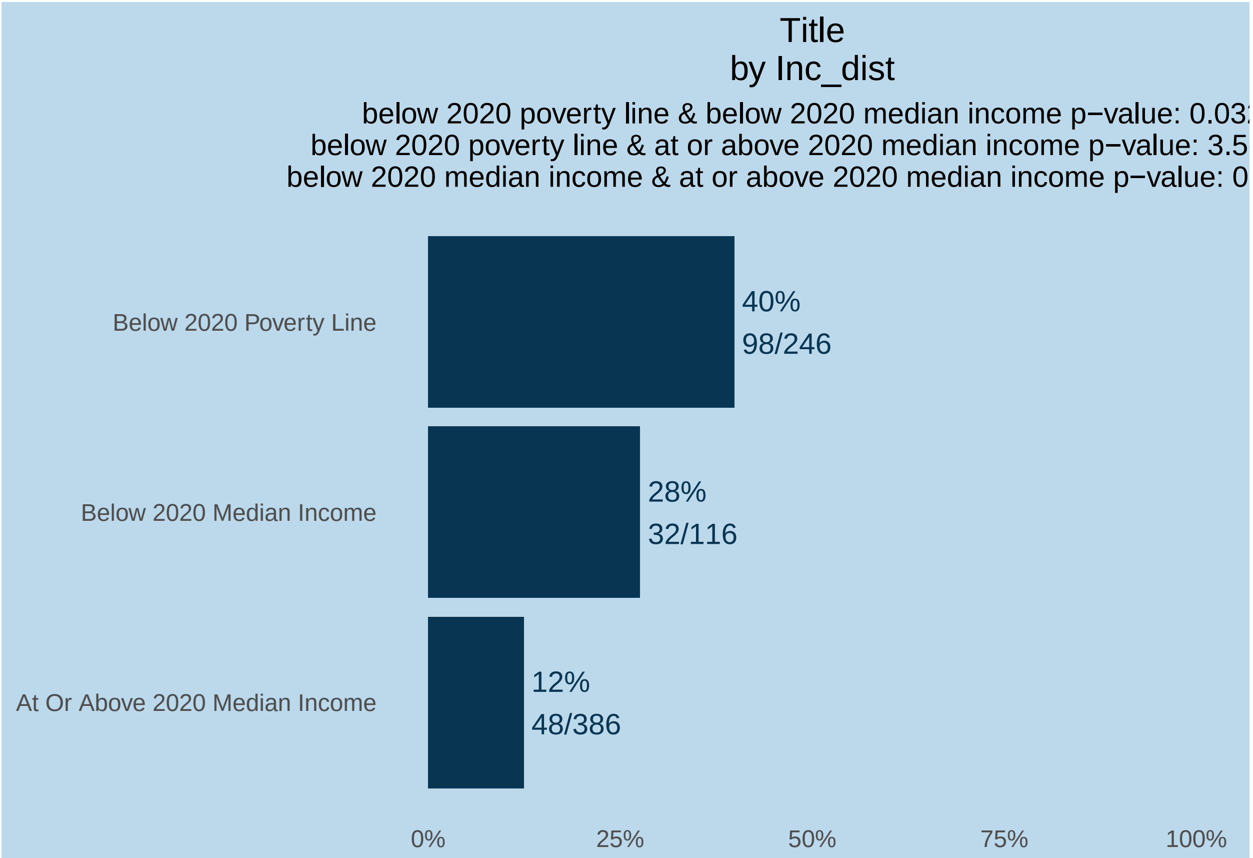
```
##
## $hh_ch_0_17_bi
```


Title
by Hh_ch_0_17_bi
household without children & household with children p−value: 0.00051
Household With Children
32%
77/240
Household Without Children
20%
95/475
0%
25%
50%
75%
100%

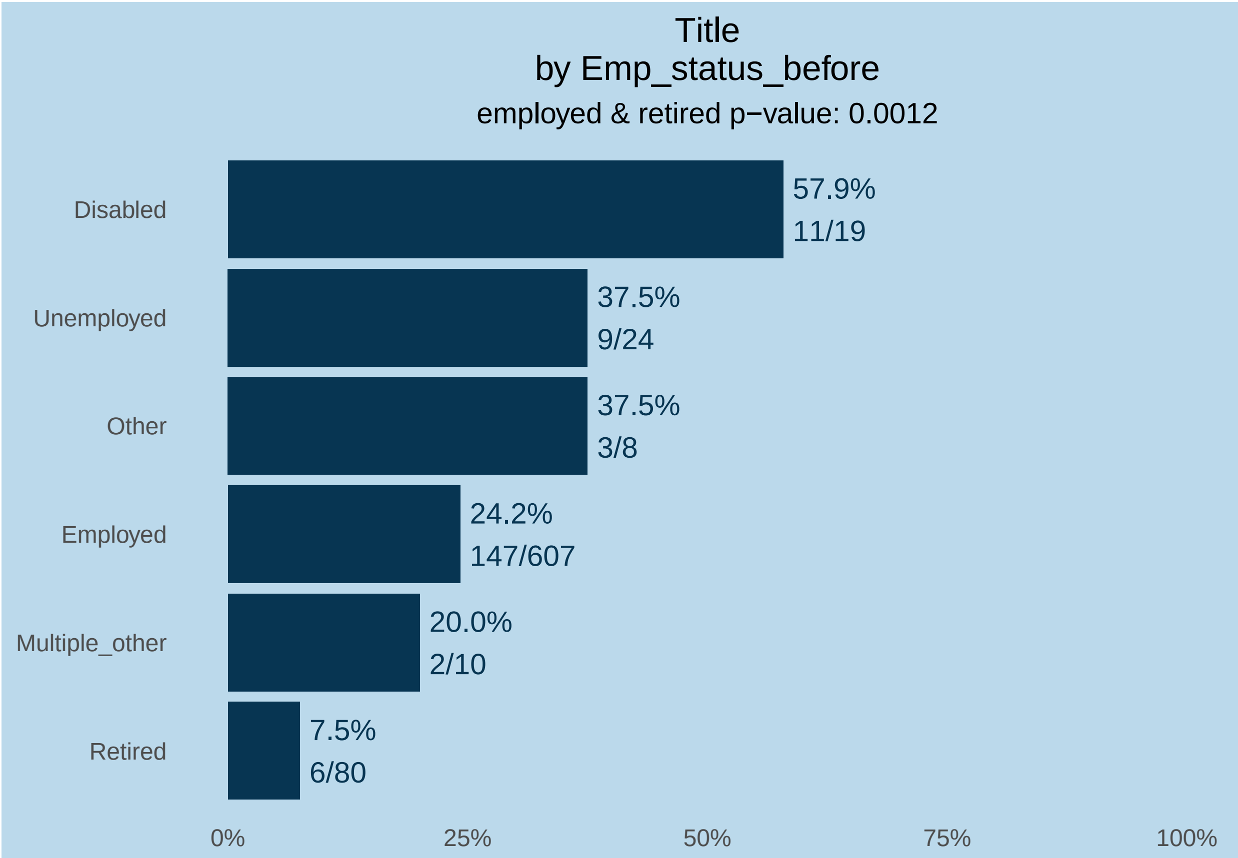
```
##
## $hh_65_bi
```


Title
by Hh_65_bi
household without seniors & household with seniors p−value: 0.077
Household Without Seniors
25.8%
137/530
Household With Seniors
19.0%
35/184
0%
25%
50%
75%
100%

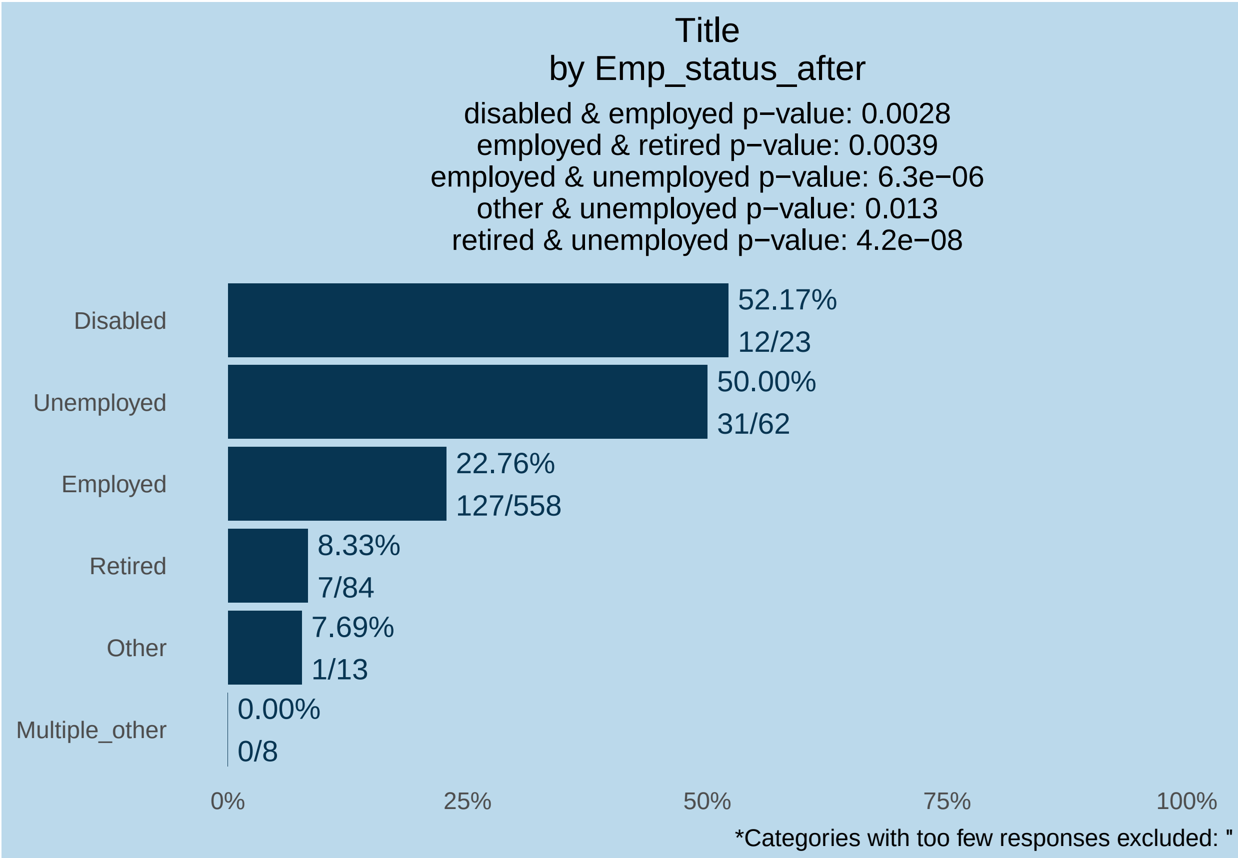
```
##
## $inc_dist
```



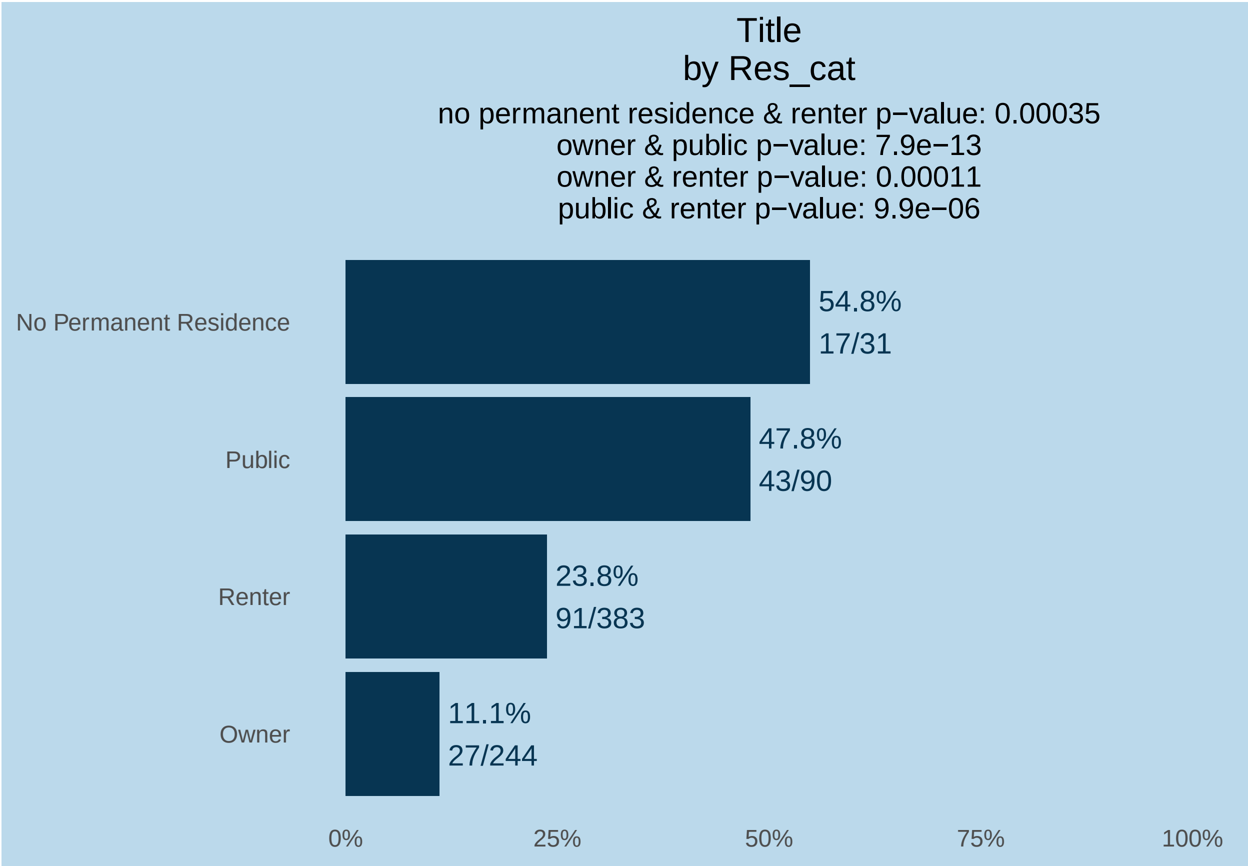

```
##
## $emp_status_before
```




```
##
## $emp_status_after
```


Title
by Emp_status_after
disabled & employed p−value: 0.0028
employed & retired p−value: 0.0039
employed & unemployed p−value: 6.3e−06
other & unemployed p−value: 0.013
retired & unemployed p−value: 4.2e−08
Disabled
52.17%
12/23
Unemployed
50.00%
31/62
Employed
22.76%
127/558
Retired
8.33%
7/84
Other
7.69%
1/13
Multiple_other
0.00%
0/8
0%
25%
50%
75%
100%
*Categories with too few responses excluded: "

```
##
## $res_cat
```



2.10)Households with children were more likely to experience food insecurity in the past year [24,20]

Find respondents who had at least one child (child under 4 or school-aged child) [24] Find proportion of subset who are considered food insecure [20] (use binary definition above) Find proportion not in subset who are considered food insecure and compare (test unequal proportions)

Findings (statistically significant finding)

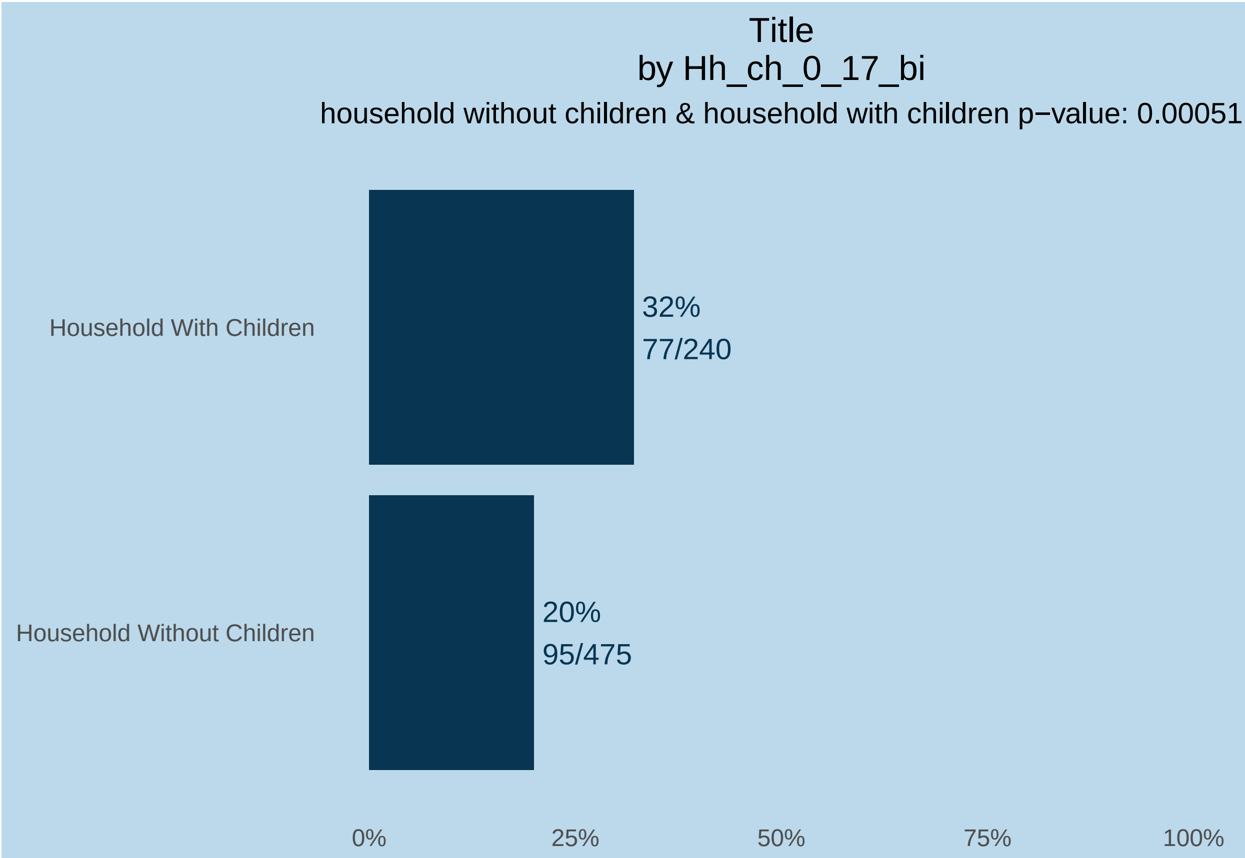
Reiterates findings in previous hypothesis. Families with children experienced more food insecurity than families without.

```
mean(wrangled$hh_ch_0_17_bi == 1 & wrangled$food_insec == 1, na.rm = TRUE)
```

```
## [1] 0.07468477
```

```
make_plots(wrangled, "hh_ch_0_17_bi", hyp_var = "food_insec")
```

```
## $hh_ch_0_17_bi
```



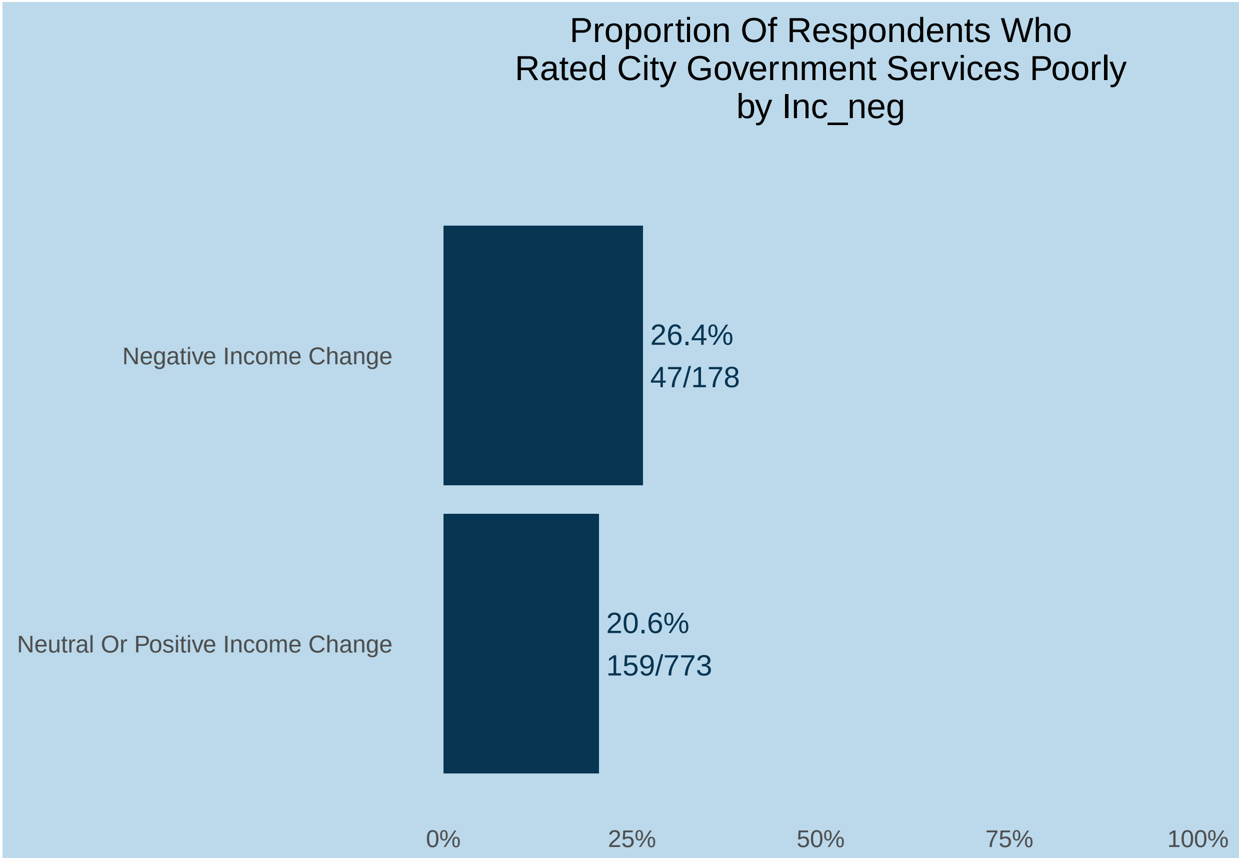
2.11)Respondents who experienced a reduced income were more likely to rate government response poorly [12 &13]

Run binary distribution over rating government response question Poor=Poor or Very Poor Not Poor=Good, Excellent, Average Find proportion which rated government services poorly [31] Poorly=Poor or Very Poor Find subset of population who witnessed a reduced income Compare with others who did not

Findings (No statistically significant result)

```
make_plots(wrangled,
           by_vars = "inc_neg", hyp_var = "rate_gov_cit_bad", show = "yes",
           title = "Proportion of respondents who\nrated city government services poorly")
```

```
## $inc_neg
```



2.12)Respondents who have a low income (below median income) are more likely to experience violence [12, 13, 34]

Find proportion who faced **discrimination** or violence [34] Find subset who are below median income[13] Compare and contrast with group who are above median income within the larger proportion

Findings (statistically significant difference on 90% confidence level)

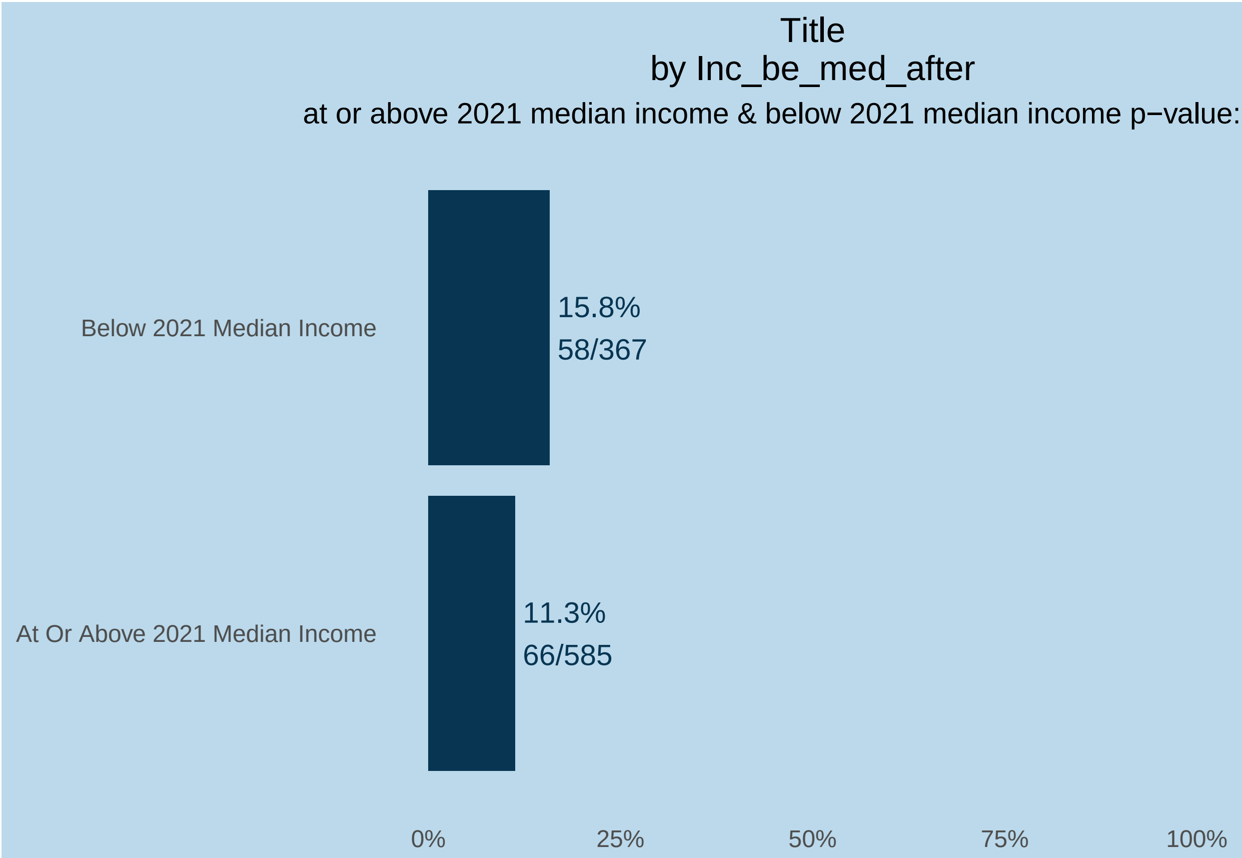
Respondents below median income were more likely to experience violence or abuse. The differing proportions are significant on the 90% confidence level.

```
mean(wrangled$exp_ab_or_vi, na.rm = TRUE)
```

```
## [1] 0.1302521
```

```
make_plots(wrangled, by_vars = "inc_be_med_after", hyp_var = "exp_ab_or_vi")
```

```
## $inc_be_med_after
```



2.13)Respondents who have a low income (below median income) are more likely to be worried about transport while their child attends in-person school

Find proportion who cite transport as one of their concerns when their child [27] Find subset below median income [13] Compare with respondents above median income

Findings (No statistically significant result)

```
make_plots(wrangled %>% filter(hh_ch_0_17_bi == 1), "inc_be_med_after", "con_trans")
```

```
## $inc_be_med_after
## NULL
```