

R Project Milestone 3

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```
## 'summarise()' has grouped output by 'county'. You can override using the  
## '.groups' argument.
```

Visualization 1:

Table

```
library(kableExtra)

##
## Attaching package: 'kableExtra'

## The following object is masked from 'package:dplyr':
##
##   group_rows

table_col_order <- c("county", "summed_total_cost", "pop12_sqmi",
                     "med_age", "renter_ratio",
                     "relative_chronic_dis_mort", "med_age_CAT",
                     "summed_total_cost_CAT", "pop12_sqmi_CAT",
                     "renter_ratio_CAT", "relative_chronic_dis_mort_CAT")
merged_data_for_table <- merged_data[, table_col_order]

table<-merged_data_for_table%>%
  rowwise() %>%
  mutate(number_highs= sum(c_across(7:11) == "High priority", na.rm = TRUE),
         number_mediums= sum(c_across(7:11) == "Medium priority", na.rm = TRUE),
         temp_rank=(number_highs*2)+number_mediums
        )%>%
  ungroup()%>%
  arrange(desc(temp_rank))%>%
  select(-c(number_highs, number_mediums))%>%
  slice(1:15)
table

## # A tibble: 15 x 12
##   county      summed_total_cost pop12_sqmi med_age renter_ratio relative_chronic~
##   <chr>          <dbl>         <dbl>   <dbl>      <dbl>         <dbl>
## 1 Amador      598970736.         63.3    48.2       0.253         0.102
## 2 Calaveras   131848234.         44.6    49.1       0.231         0.0875
## 3 Tuolumne    242129946          24.3    47.1       0.302         0.105
## 4 Inyo        169160700.          1.82    45.5       0.364         0.0737
## 5 Lake        1347450993.         49.1    45         0.342         0.102
## 6 Mariposa     17474756           12.6    49.2       0.321         0.0702
## 7 Nevada      6352716267.        103.     47.5       0.280         0.0984
## 8 Plumas       46955168            7.65    49.5       0.305         0.0750
## 9 Siskiyou    1558949981.          7.12    46.8       0.353         0.110
## 10 Tehama     610226591.          21.5    39.5       0.354         0.0896
## 11 Alpine      0                1.54    46.4       0.282         0
## 12 Del Norte   615640530.          28.3    39         0.383         0.0776
## 13 El Dorado   4239088028.        102.     43.5       0.268         0.0776
## 14 Humboldt    17981394511.         38.1    37.3       0.450         0.0929
## 15 Modoc       1703663257          2.33    46         0.314         0.0687
```

```
## # ... with 6 more variables: med_age_CAT <fct>, summed_total_cost_CAT <fct>,
## #   pop12_sqmi_CAT <fct>, renter_ratio_CAT <chr>,
## #   relative_chronic_dis_mort_CAT <fct>, temp_rank <dbl>
```

```
# kable(table,
#         col.names = c("County", "Chronic disease mortality burden",
#                         "Previous spending on projects",
#                         "Population density", "Median age of population",
#                         "% population that are renters"),
#         caption="Top 10 Counties ranked by need for oshpd projects.",
#         booktabs=TRUE,
#         align='lcccc')%>%
#   kable_styling(latex_options="scale_down")
```

```
table
```

```
## # A tibble: 15 x 12
##   county      summed_total_cost pop12_sqmi med_age renter_ratio relative_chronic~
##   <chr>          <dbl>          <dbl>   <dbl>      <dbl>          <dbl>
## 1 Amador      598970736.         63.3    48.2        0.253          0.102
## 2 Calaveras   131848234.         44.6    49.1        0.231          0.0875
## 3 Tuolumne    242129946          24.3    47.1        0.302          0.105
## 4 Inyo        169160700.         1.82    45.5        0.364          0.0737
## 5 Lake        1347450993.        49.1    45          0.342          0.102
## 6 Mariposa     17474756          12.6    49.2        0.321          0.0702
## 7 Nevada      6352716267.       103.     47.5        0.280          0.0984
## 8 Plumas       46955168           7.65    49.5        0.305          0.0750
## 9 Siskiyou    1558949981.        7.12    46.8        0.353          0.110
## 10 Tehama      610226591.        21.5    39.5        0.354          0.0896
## 11 Alpine       0                1.54    46.4        0.282          0
## 12 Del Norte   615640530.        28.3    39          0.383          0.0776
## 13 El Dorado   4239088028.       102.     43.5        0.268          0.0776
## 14 Humboldt    17981394511.       38.1    37.3        0.450          0.0929
## 15 Modoc       1703663257         2.33    46          0.314          0.0687
## # ... with 6 more variables: med_age_CAT <fct>, summed_total_cost_CAT <fct>,
## #   pop12_sqmi_CAT <fct>, renter_ratio_CAT <chr>,
## #   relative_chronic_dis_mort_CAT <fct>, temp_rank <dbl>
```

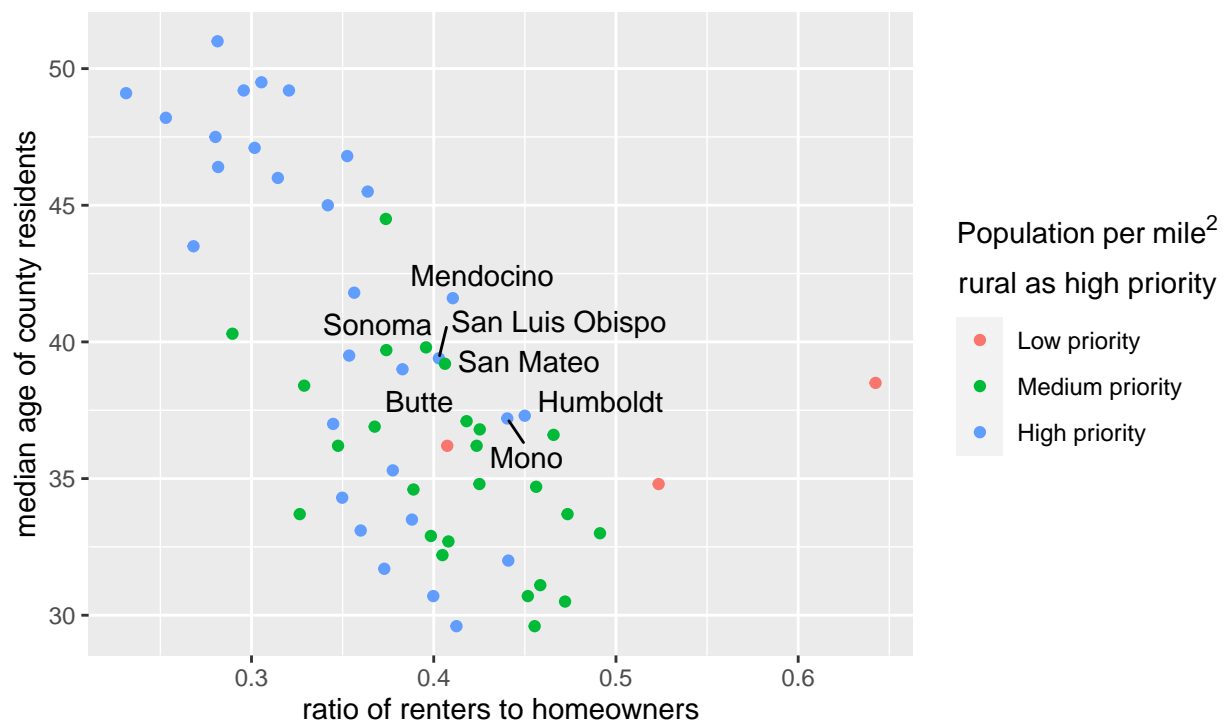
Visualization 2:

Using demographic data to rank counties

```
## renter ratio median = 39%
## median age median = 37.05
## population density 1st quantile (low cutoff) = 25.887
## population density 3rd quantile (high cutoff) = 333.485
ggplot(data = merged_data, aes(x = renter_ratio, y = med_age)) +
  geom_point(data = merged_data, aes(x = renter_ratio, y = med_age,
                                     color = pop12_sqmi_CAT)) +
  geom_text_repel(aes(label=ifelse((med_age > 37 & renter_ratio > 0.39
    & (pop12_sqmi_CAT=="High priority"| pop12_sqmi_CAT=="Medium priority")),
    county, ""))) +
  labs(title = "Demographic data with priority counties identified:",
    subtitle = "counties with high median age (>37yo), high ratio of renters (>39%),
    and low or medium population density (<333 people/sqmi)",
    x = "ratio of renters to homeowners",
    y = "median age of county residents",
    color =
      bquote(atop(Population~per~mile~{"2"}, "rural as high priority")))+
  theme(plot.title=element_text(hjust=0.5),
    plot.subtitle=element_text(hjust=0.5))
```

Demographic data with priority counties identified:

counties with high median age (>37yo), high ratio of renters (>39%),
and low or medium population density (<333 people/sqmi)



In plot (afterline 284): We are plotting population per square mile based upon higher renter to owner ratio

and higher median age. We are focused on those counties with a higher ranking based upon our table of “merged_data”.

Visualization 3:

Using mortality and investment data to rank counties

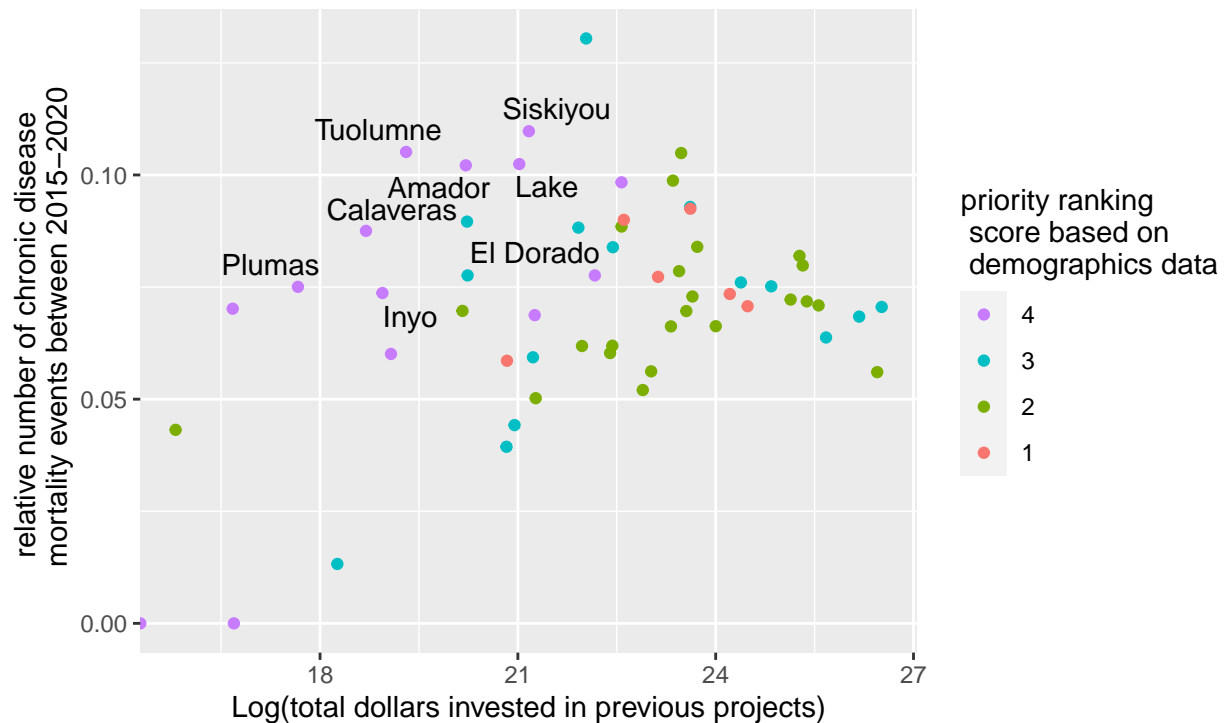
```
## make data set with continuous data and ranking factor for the demographic
## data in the first figure
second_fig_data_temp<-merged_data%>%
  select(c("county", "pop12_sqmi_CAT", "med_age_CAT", "renter_ratio_CAT"))%>%
  rowwise() %>%
  mutate(number_highs= sum(c_across(2:4) == "High priority", na.rm = TRUE),
         number_mediums= sum(c_across(2:4) == "Medium priority", na.rm = TRUE),
         demo_rank=(number_highs*2)+number_mediums
        )%>%
  ungroup()%>%
  select(c("county", "demo_rank"))

second_fig_data_final<-full_join(second_fig_data_temp, merged_data, by="county")
summary(second_fig_data_final$relative_chronic_dis_mort)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.00000 0.06187 0.07255 0.07213 0.08664 0.13044
```

```
## make the figure
## relative chronic disease mortality median = 0.07213
## log(relative chronic disease mortality median) = log(0.07213) = -2.629285
## summed total cost median = 5961782208
## log(summed total cost median) = log(5961782208) = 22.50864
ggplot(data = second_fig_data_final,
       aes(y = relative_chronic_dis_mort, x = log(summed_total_cost))) +
  geom_point(data = second_fig_data_final,
            aes(y = relative_chronic_dis_mort, x = log(summed_total_cost),
               color = as.factor(demo_rank))) +
  guides(color = guide_legend(reverse=TRUE))+
  geom_text_repel(aes(label=ifelse(
    (relative_chronic_dis_mort >= 0.07213 & summed_total_cost<=5961782208
    & demo_rank >3), county, "")), max.overlaps = Inf)+
  labs(title = "Additional data with priority counties identified:",
       subtitle = "counties with high chronic disease mortality,
low previous investment, and high priority based on demographics",
       x = "Log(total dollars invested in previous projects)",
       y =
"relative number of chronic disease \n mortality events between 2015-2020",
       color = "priority ranking \n score based on \n demographics data") +
  theme(plot.title=element_text(hjust=0.5),
        plot.subtitle=element_text(hjust=0.5))
```

Additional data with priority counties identified:
 counties with high chronic disease mortality,
 low previous investment, and high priority based on demographics



Based upon our plot 333: We merged the data from the prior plot and compared the total dollars invested in prior projects to mortality events associated with chronic diseases in a 5 year span (from 2015-2020) and by comparing these 5 variables we identified the counties that required greater funding.