Findings

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This file contains the anecdotal findings that appear in our story TK and methodology TK.

Intro

```
num_bg_df <- bg_ranked_pop_bounds_bg_race %>% group_by(department) %>% summarise(num_bg = n())
```

The 38 jurisdictions contained a varying number of block groups. The smallest was composed of 13 block groups and the largest was composed of 2515 block groups.

```
pc <- bg_ranked_pop_bounds_bg_race %>%
  group_by(department) %>%
  summarise(
    mean = mean(pred_count)
  )
```

For the 38 jurisdictions we analyzed,the average number of predictions on a block group varied from 261.2424242 predictions to 7967.1538462.

Disparate Impact Findings

```
iqr_df <- bg_ranked_pop_bounds_bg_race %>%
  select(department, county, tract, block_group, pred_count, gt_iqr_upper, lt_iqr_lower) %>%
  group_by(department) %>%
  summarise(
    total = n(),
    num_gt_iqr = sum(if_else(gt_iqr_upper == TRUE, 1, 0)),
    num_lt_iqr = sum(if_else(lt_iqr_lower == TRUE, 1, 0)),
  ) %>%
  mutate(
    pct_gt_iqr = num_gt_iqr / total,
    pct_lt_iqr = num_lt_iqr / total
  )
```

Using the IQR method, the average percentage of jurisdictions' block groups in the most-targeted group would have been 0.0687417 percent, whereas in the least-targeted group would have been 0.717672 percent, this was due to the fact that for some jurisdictions there were quite a few block groups with no predictions.

Race

```
sal <- bg_ranked_pop_bounds_bg_race %>% filter(department == "salisbury")
sal_black_max_mean <- get_demo_proportions(sal, "bg", "black", "lb", "in_max_tb", "race")$black_lb__in_
sal_black_med_mean <- get_demo_proportions(sal, "bg", "black", "lb", "in_med_tb", "race")$black_lb__in_
```

In Salisbury, Md., at least 0.2634609 percent of residents in the jurisdiction's median block group are Black, according to the Census Bureau. However, when we look at the block groups most targeted by PredPol, on average at least 0.5179487‘ percent of residents there were Black.

```
birm <- bg_ranked_pop_bounds_bg_race %>% filter(department == "birminghampd")
birm_black_max_mean <- get_demo_proportions(birm, "bg", "latino", "lb", "in_max_tb", "race")$latino_lb_
birm_black_med_mean <- get_demo_proportions(birm, "bg", "latino", "lb", "in_med_tb", "race")$latino_lb_
birm_times <- birm_black_max_mean / birm_black_med_mean
```

In Birmingham, Al., the percentage of Latino residents in PredPol's most targeted block groups on average was at least 1.268557 times as high as the median targeted block groups in the city.

```
port <- bg_ranked_pop_bounds_bg_race %>% filter(department == "portagemipd")
port_black_max_mean <- get_demo_proportions(port, "bg", "black", "lb", "in_max_tb", "race")$black_lb__i
port_black_med_mean <- get_demo_proportions(port, "bg", "black", "lb", "in_med_tb", "race")$black_lb__i
port_times <- port_black_max_mean / port_black_med_mean
```

For Black residents in Portage, Mich., the most targeted block groups contained at least 9.1205209 times as many Black residents as the city overall.

```
jxbg <- bg_ranked_pop_bounds_bg_race %>% filter(department == "jacksonvilletx", tract == 950500, block_g
jx_start <- as.Date("2018-02-24")
jx_end <- as.Date("2019-10-30")
jx_time <- as.numeric(jx_end - jx_start)
```

In one block group in Jacksonville, Tex. (block group 1 of the 950500 census tract) PredPol predicted that either an assault or a vehicle burglary would occur at multiple locations in that block group 1.2187×10^4 times over nearly two years. That's 19.8809135 predictions each and every day. This block group's population is at least 0.6218825 of Black and Latino. The remaining is between 0.1520515 to 0.212958 was white.

```
jx_total <- bg_ranked_pop_bounds_bg_race %>% filter(department == "jacksonvilletx")
jxbg2 <- bg_ranked_pop_bounds_bg_race %>% filter(department == "jacksonvilletx" & pred_count > 7500)

jx_total_black <- sum(jx_total$black_lb)
jxbg2_black <- sum(jxbg2$black_lb) / jx_total_black

jx_total_white <- sum(jx_total$white_lb)
jxbg2_white <- sum(jxbg2$white_lb) / jx_total_white
```

In fact, at least 0.8309764 percent of Jacksonville's Black population lived in block groups that were targeted more than 7,500 times in two years. Only 0.2365139 of Jacksonville's White population lived in those block groups.

Race Block Level Analysis

```
disprop_boi <- boi_2010 %>% filter(mtb_black_pop > bg_median_black_pop | mtb_latino_pop > bg_median_lati

num_bg_stable <- boi_2010 %>% nrow()
num_bg_total <- bg_ranked_pop_bounds_bg_race %>% nrow()
num_disprop_poc <- disprop_boi %>% nrow()
```

In the resulting 135 reasonably stable block groups (0.0232438 percent of the block groups in our data), we found that 89 (0.6592593) of the targeted blocks within them had even higher concentrations of Black and Latino residents than the overall block group. (See more in the Limitations section.)

```
northridge <- disprop_boi %>% filter(client == "la" & tract == 115401)
northridge_mtb_pct <- northridge$mtb_pred_count/northridge$preds_in_bg

elgin <- disprop_boi %>% filter(client == "elgin" & tract == 851000)
elgin_mtb_pct <- elgin$mtb_pred_count/elgin$preds_in_bg
elgin_white_median <- elgin$bg_median_white_pop
elgin_black_median <- elgin$bg_median_black_pop
elgin_mtb_black <- elgin$mtb_black_pop
```

In some cases, zooming in on blocks showed that predictions that appeared to target majority White block groups had in fact targeted the blocks within them where people of color lived. For example, every single prediction in a majority White block-group in Los Angeles' Northridge neighborhood (block group 2 of the 1.15401×10^5 census tract) occurred on a block whose residents were almost all Latino.

- 1 percent of predictions occurred on the most targeted block
- The median white population in the blocks is 0.5585106 percent white.
- The most targeted block is, 0.0487078 percent White and 0.9075547 percent Latino.

The most-targeted block in a majority White block-group in Elgin, Ill. (block group 1 of the 851000 census tract) had 6.9895833 times more Black residents than the rest of the block-group.

- 0.4158965 percent of predictions occurred on the most targeted block
- The median block is 0.6567164 percent white.
- The median block is, 0.0227273 percent black.
- The most targeted block is, 0.1588542 percent black.

```
maj_white_bg <- boi_2010 %>% filter(bg_median_white_pop > .50) %>% drop_na()%>% nrow()
disp_maj_white_bg <- disprop_boi %>% filter(bg_median_white_pop > .50) %>% drop_na() %>% nrow()
maj_white_block_groups_with_maj_bh_pop_in_mtb <- boi_2010 %>% filter(bg_median_white_pop > .50) %>% fil
#
maj_bh_bg <- boi_2010 %>% filter(bg_median_black_pop + bg_median_latino_pop > 0.50) %>% nrow()
disp_white <- boi_2010 %>% filter(bg_median_black_pop + bg_median_latino_pop > 0.50) %>% filter(mtb_whi
```

For 36 (0.7826087) of the 46 stable, majority-White block groups, predictions most frequently targeted the blocks inside of them that had higher percentages of Black or Latino residents. In only 18 (0.36 percent) of the 50 stable, majority-Black and -Hispanic block groups, did the most targeted blocks have higher percentages of White people than the block group overall.

```r
```

```
northridge <- disprop_boi %>% filter(client == "la" & tract == 115401)
northridge_mtb_pct <- northridge$mtb_pred_count/northridge$preds_in_bg
northridge_white_median <- northridge$bg_median_white_pop
northridge_mtb_latino <- northridge$mtb_latino_pop
```

```
elgin <- disprop_boi %>% filter(client == "elgin" & tract == 851000)
elgin_mtb_pct <- elgin$mtb_pred_count/elgin$preds_in_bg
elgin_white_median <- elgin$bg_median_white_pop
elgin_black_median <- elgin$bg_median_black_pop
elgin_mtb_black <- elgin$mtb_black_pop
```

Income

```
hvrhil <- bg_ranked_pop_bounds_bg_race %>% filter(department == "haverhill")
hvrhil_max <- bg_ranked_pop_bounds_bg_race %>% filter(department == "haverhill" & in_max_tb == TRUE)
lt45_total <- sum(hvrhil$lt.45k_lb)
lt45_max_tb <- sum(hvrhil_max$lt.45k_lb)
```

In the most targeted block groups, the disparity was even more dramatic. In Haverhill, Mass., for instance, 0.2196314 percent of the jurisdiction's 4503 low-income households were located in the most extremely targeted block groups.

```
decatur_total <- bg_ranked_pop_bounds_bg_race %>% filter(department == "decaturga")
decatur_high_pred <- bg_ranked_pop_bounds_bg_race %>% filter(department == "decaturga" & pred_count > 1
```

In Decatur, Ga., at least one in four (0.3405951 percent) of the jurisdiction's low income households lived on a single block group that Predpol targeted constantly—11,561 predictions over two years.

For a majority of the jurisdictions in our data, census blocks groups where PredPol never predicted crimes were composed of more households that earned at or above $200,000 a year than the rest of the agency's patrol area.

```
merced_total <- bg_ranked_pop_bounds_bg_race %>% filter(department == "merced")
merced_min_tb <- merced_total %>% filter(in_min_tb == TRUE)
merced_med_tb <- merced_total %>% filter(in_med_tb == TRUE)

merced_median <- merced_total %>% filter(pred_pop_rank == 25)

merced_min_tb_45k_mean <- mean(merced_min_tb$lt.45k_lb)
merced_min_tb_200k_mean <- mean(merced_min_tb$gt.200k_lb)

merced_med_tb_45k_mean <- mean(merced_med_tb$lt.45k_lb)
merced_med_tb_200k_mean <- mean(merced_med_tb$gt.200k_lb)
```

In Merced, Calif., for instance, the least targeted block groups had at least 9.6666667 wealthier households on average, the median targeted block groups in the jurisdiction had 0.

```
bham_200k_min_tb_mean <- bg_ranked_pop_bounds_bg_race %>%
  filter(department == "birminghampd" & pred_count == 0) %>%
  summarise(mean_200 = mean(gt.200k_lb))
```

And in Birmingham, Ala., the median block group didn't have a single wealthy household. But block groups where PredPol never made predictions had at least 34.4615384615385 wealthier households on average

Arrests and Use of Force Analysis

```
salisbury_mtb <- filter(arrests_per_capita, client == "salisbury")$arrest_max_tb_pc
salisbury_jt <- filter(arrests_per_capita, client == "salisbury")$arrest_jur_total
sal_prop <- salisbury_mtb / salisbury_jt

sal <- filter(bg_ranked_pop_bounds_bg_race, department == "salisbury")
mtb <- filter(sal, in_max_tb == TRUE)
black_pop_mtb <- sum(mtb$black_lb) / sum(mtb$total_race_lb)
black_pop_jur <- sum(sal$black_lb) / sum(sal$total_race_lb)
latino_pop_mtb <- sum(mtb$latino_lb) / sum(mtb$total_race_lb)
latino_pop_jur <- sum(sal$latino_lb) / sum(sal$total_race_lb)


latino_prop <- latino_pop_mtb / latino_pop_jur
black_prop <- black_pop_mtb / black_pop_jur
# latino_prop
```

For example, data provided by Salisbury, Ga., from 2018 until 2020 shows per capita arrests on the most targeted block groups, those in the top 5% for predictions, were more than 6.7318819 times the jurisdiction as a whole. The proportion of Black residents living in these targeted block groups is 2.3355301 that of the jurisdiction as a whole, according to Census figures., and the Latino population there is 2.0446763 times as high.

```
niles_uof <- filter(uof_per_capita, client == "nilespolice")$uof_max_tb_pc / filter(uof_per_capita, clie

plainfield_uof <- filter(uof_per_capita, client == "plainfieldpdnj")$uof_max_tb_pc / filter(uof_per_capi

piscataway_uof <- filter(uof_per_capita, client == "piscataway")$uof_max_tb_pc / filter(uof_per_capita,
```

In Plainfield N.J., per capita use-of-force rates in the jurisdiction's most extremely targeted block groups were 3.9694105 times the rate of the entire jurisdiction. In Niles, Ill. per capita use-of-force it was 4.6355709 times the rate of the jurisdiction. In Piscataway it was more than 15.503558‘ times.

Public Housing

```
targeted_housing <- housing_block_map %>% filter(housing_count > 0 & percentage > 0.95) %>% select(clie
```

For 11 different jurisdictions, blocks with public housing communities were targeted by PredPol nearly every single day that the agency used the software

Policing Patterns

```
pp <- policing_patterns %>% filter(race == "black" & times > 1) %>% select(client) %>% unique() %>% nro

pp_total <- policing_patterns %>% select(client) %>% unique() %>% nrow()
```

We found that per-capita arrest rates were higher for Black people than White people in 26 (0.8965517 percent) of the jurisdictions with usable statistics in our dataset. Officers in more than a third of these departments arrested Black people at more than three times the rate of White people. Officers in Decatur, Ga., for example, arrested Black people at a rate nine times the rate of White people.