Flood Risk PC Coeff Results

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```
library(here)
```

```
## Warning in readLines(f, n): line 1 appears to contain an embedded nul
```

```
## Warning in readLines(f, n): incomplete final line found on
## '/Volumes/ALVINDRIVE2/flood-risk-health-effects2/._flood-risk-health-effects2.Rproj'
```

```
## here() starts at /Volumes/ALVINDRIVE2/flood-risk-health-effects2
```

```
library(tidyverse)
```

```
## Warning: package 'tidyr' was built under R version 4.3.2
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.1
## v ggplot2   3.4.4     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr     1.3.1
## v purrr     1.0.2
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

For each health outcome, read in the results for the six strata, extract the flood risk PC coefficients, and stack them

Helper Functions

```
# first, process the beta_inference matrix in a form ggplot can understand
beta_inf2data_frame <- function(beta_inference) {

  beta_inference_df <- as.data.frame(beta_inference)
  beta_inference_df <- rename(beta_inference_df,
                              post_median = `50%`,
                              post_2.5 = `2.5%`,
                              post_97.5 = `97.5%`)
  beta_inference_df$strat <- factor(c(rep("Low SV", (nrow(beta_inference_df)/2)),
                                      rep("High SV", (nrow(beta_inference_df)/2))),
                                    levels = c("Low SV", "High SV"))

  return(beta_inference_df)

}
```

```r
# extract the flood risk PC coefficients and stack them
# pc_idx is the vector of indices of the flood risk PC coefficients, after splitting data frame by stra
beta_data_frames_stack <- function(beta_df_list, pc_idx) {

  beta_pcs_strat0_list <- list()

  beta_pcs_strat1_list <- list()

  for (i in 1:length(beta_df_list)) {

    beta_inference_df <- beta_df_list[[i]]

    beta_inference_df_strat0 <- beta_inference_df[1:(nrow(beta_inference_df)/2),]

    beta_inference_df_strat1 <- beta_inference_df[(nrow(beta_inference_df)/2 + 1):nrow(beta_inference_d

    beta_pcs_strat0_list[[i]] <- beta_inference_df_strat0[pc_idx, ]

    beta_pcs_strat1_list[[i]] <- beta_inference_df_strat1[pc_idx, ]

  }

  beta_pcs_strat0 <- do.call("rbind", beta_pcs_strat0_list)
  beta_pcs_strat1 <- do.call("rbind", beta_pcs_strat1_list)

  beta_pcs_strat0 <- mutate(beta_pcs_strat0, var_idx = factor(1:nrow(beta_pcs_strat0)))
  beta_pcs_strat1 <- mutate(beta_pcs_strat1, var_idx = factor(1:nrow(beta_pcs_strat1)))

  return(list(beta_pcs_strat0 = beta_pcs_strat0, beta_pcs_strat1 = beta_pcs_strat1))

}
```

CHD

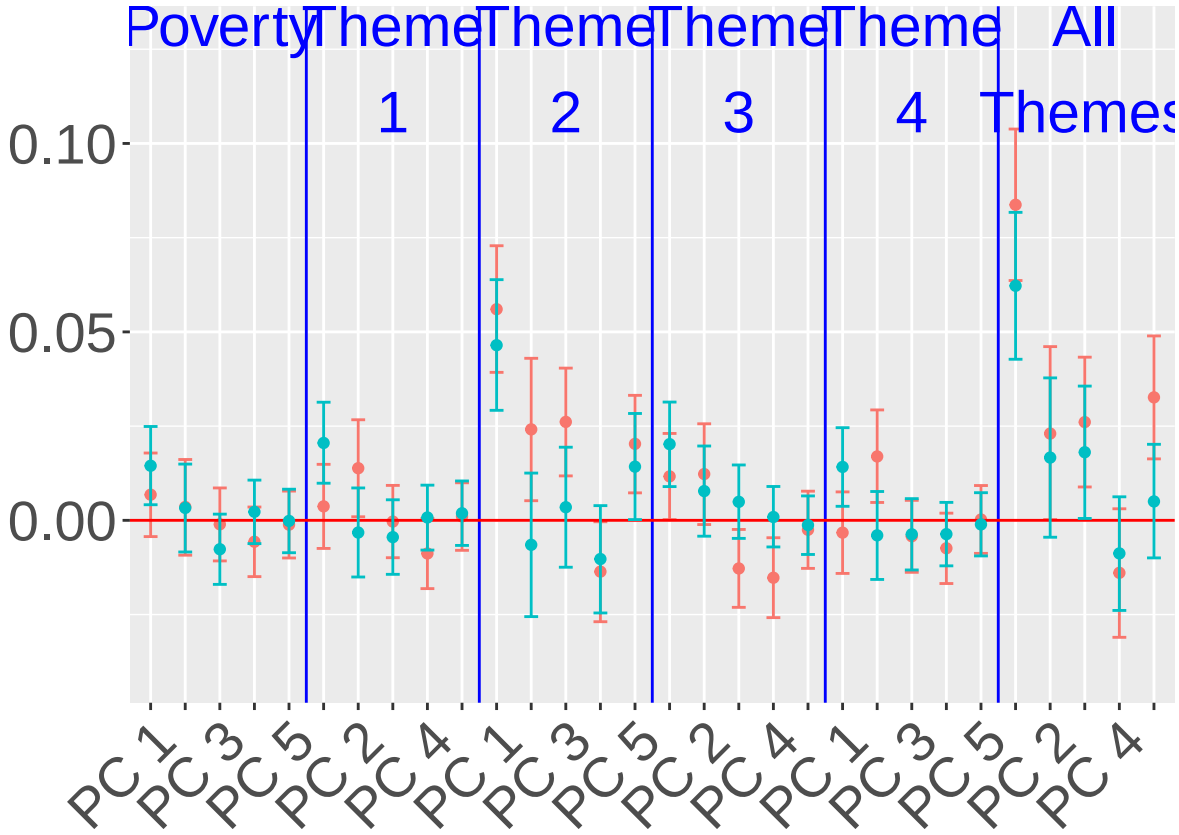
```r
beta_inf_poverty <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CHD_poverty.r

beta_inf_rpl1 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CHD_rpl1.rds"))

beta_inf_rpl2 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CHD_rpl2.rds"))

beta_inf_rpl3 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CHD_rpl3.rds"))

beta_inf_rpl4 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CHD_rpl4.rds"))

beta_inf_rpls <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CHD_rpls.rds"))
```

```r
beta_inf_poverty_df <- beta_inf2data_frame(beta_inf_poverty)

beta_inf_rpl1_df <- beta_inf2data_frame(beta_inf_rpl1)

beta_inf_rpl2_df <- beta_inf2data_frame(beta_inf_rpl2)
```

```r
beta_inf_rpl3_df <- beta_inf2data_frame(beta_inf_rpl3)

beta_inf_rpl4_df <- beta_inf2data_frame(beta_inf_rpl4)

beta_inf_rpls_df <- beta_inf2data_frame(beta_inf_rpls)



beta_df_list <- list(beta_inf_poverty_df, beta_inf_rpl1_df, beta_inf_rpl2_df,
                     beta_inf_rpl3_df, beta_inf_rpl4_df, beta_inf_rpls_df)
```

```r
pc_idx <- 2:6

beta_CHD_pcs <- beta_data_frames_stack(beta_df_list, pc_idx)
```

```r
p <- ggplot(beta_CHD_pcs$beta_pcs_strat0, aes(x = var_idx, y = post_median, color = strat)) +
  geom_point() +
  ylim(c(-0.04, 0.128)) +
  theme(axis.text.x = element_text(angle = 45, vjust = 1, hjust=1), axis.title.x = element_blank(), axis
        axis.text=element_text(size=21),
        plot.margin = margin(5.5, 5.5, 5.5, 25)) +
  geom_errorbar(aes(ymin = post_2.5, ymax = post_97.5, width = 0.4), col = "#F8766D") +
  geom_vline(xintercept = 5 * c(1:5) + 0.5, col = "blue") +
  geom_hline(yintercept = 0, col = "red") +
  annotate(geom = "text", x = 3, y = 0.12, label = "Poverty\n",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 8, y = 0.12, label = "Theme\n1",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 13, y = 0.12, label = "Theme\n2",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 18, y = 0.12, label = "Theme\n3",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 23, y = 0.12, label = "Theme\n4",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 28, y = 0.12, label = "All\nThemes",
           col = "blue", size = 7.9) +
  scale_x_discrete(labels = rep(c("PC 1", "", "PC 3", "", "PC 5",
                                  "", "PC 2", "", "PC 4", ""), 3)) +
  geom_point(data = beta_CHD_pcs$beta_pcs_strat1, col = "#00BFC4") + # strat 1
  geom_errorbar(data = beta_CHD_pcs$beta_pcs_strat1, aes(ymin = post_2.5, ymax = post_97.5, width = 0.4)
  scale_color_manual(name = "Strata",
                     values = c("#F8766D", "#00BFC4"),
                     drop = FALSE) + theme(legend.position = "none")
p
```




```
ggsave(here("figures/final_figures/stratified_analysis_fr_only/CHD_fr_only.pdf"),
       plot = p, device = "pdf",
       width = 8, height = 6, units = "in")
```

2/15/24 technical review work

```
# Drawing a blank placeholder plot
blank_plot <- ggplot() + theme_void()

ggsave(here("figures/final_figures/blank_plot.pdf"),
       plot = blank_plot, device = "pdf",
       width = 8, height = 6, units = "in")
```

```
# Retrieving the legend
library(grid)
library(gridExtra)
```

```
##
## Attaching package: 'gridExtra'
```

```
## The following object is masked from 'package:dplyr':
##
##     combine
```

```
# Using the cowplot package
legend <- cowplot::get_legend(p)

pdf(file = here("figures/final_figures/ci_fig_legend.pdf"), width = 1, height = 0.9)
grid.newpage()
grid.draw(legend)
```

```
dev.off()
```

```
## pdf
##   2
```

Make a summary of significant coefficients and their signs, for each strata

```
signif_summ <- matrix(NA, nrow = 2, ncol = 5 * 6)

row.names(signif_summ) <- c("Low SV", "High SV")
colnames(signif_summ) <- paste(rep(c("Poverty Strata PC", "Theme 1 Strata PC", "Theme 2 Strata PC",
                                     "Theme 3 Strata PC", "Theme 4 Strata PC", "All Theme Strata PC"),
                                   rep(1:5, times = 6))
```

```
for (j in 1:ncol(signif_summ)) {

  if(beta_CHD_pcs$beta_pcs_strat0$post_2.5[j] < 0 &
     beta_CHD_pcs$beta_pcs_strat0$post_97.5[j] < 0) {
    signif_summ[1, j] <- "-"
  } else if (beta_CHD_pcs$beta_pcs_strat0$post_2.5[j] > 0 &
     beta_CHD_pcs$beta_pcs_strat0$post_97.5[j] > 0) {
    signif_summ[1, j] <- "+"
  }

  if(beta_CHD_pcs$beta_pcs_strat1$post_2.5[j] < 0 &
     beta_CHD_pcs$beta_pcs_strat1$post_97.5[j] < 0) {
    signif_summ[2, j] <- "-"
  } else if (beta_CHD_pcs$beta_pcs_strat1$post_2.5[j] > 0 &
     beta_CHD_pcs$beta_pcs_strat1$post_97.5[j] > 0) {
    signif_summ[2, j] <- "+"
  }

}
```

```
t(signif_summ)
```

```
##                       Low SV High SV
## Poverty Strata PC 1   NA     "+"
## Poverty Strata PC 2   NA     NA
## Poverty Strata PC 3   NA     NA
## Poverty Strata PC 4   NA     NA
## Poverty Strata PC 5   NA     NA
## Theme 1 Strata PC 1   NA     "+"
## Theme 1 Strata PC 2   "+"    NA
## Theme 1 Strata PC 3   NA     NA
## Theme 1 Strata PC 4   NA     NA
## Theme 1 Strata PC 5   NA     NA
## Theme 2 Strata PC 1   "+"    "+"
## Theme 2 Strata PC 2   "+"    NA
## Theme 2 Strata PC 3   "+"    NA
## Theme 2 Strata PC 4   "-"    NA
## Theme 2 Strata PC 5   "+"    "+"
## Theme 3 Strata PC 1   "+"    "+"
## Theme 3 Strata PC 2   NA     NA
## Theme 3 Strata PC 3   "-"    NA
## Theme 3 Strata PC 4   "-"    NA
```

```
## Theme 3 Strata PC 5   NA     NA
## Theme 4 Strata PC 1   NA     "+"
## Theme 4 Strata PC 2   "+"    NA
## Theme 4 Strata PC 3   NA     NA
## Theme 4 Strata PC 4   NA     NA
## Theme 4 Strata PC 5   NA     NA
## All Theme Strata PC 1 "+"    "+"
## All Theme Strata PC 2 "+"    NA
## All Theme Strata PC 3 "+"    "+"
## All Theme Strata PC 4 NA     NA
## All Theme Strata PC 5 "+"    NA
```

BPHIGH

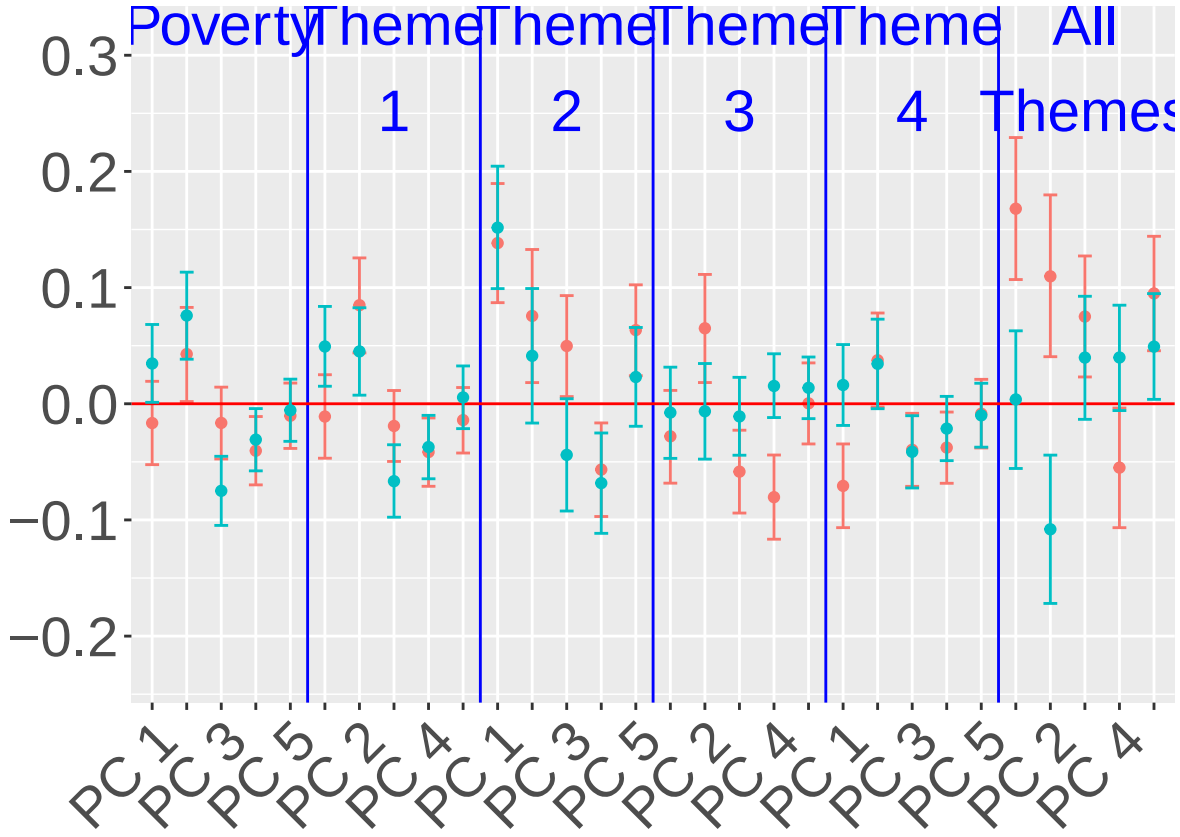
```
beta_inf_poverty <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/BPHIGH_poverty

beta_inf_rpl1 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/BPHIGH_rpl1.rds")

beta_inf_rpl2 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/BPHIGH_rpl2.rds")

beta_inf_rpl3 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/BPHIGH_rpl3.rds")

beta_inf_rpl4 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/BPHIGH_rpl4.rds")

beta_inf_rpls <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/BPHIGH_rpls.rds")
```

```
beta_inf_poverty_df <- beta_inf2data_frame(beta_inf_poverty)

beta_inf_rpl1_df <- beta_inf2data_frame(beta_inf_rpl1)

beta_inf_rpl2_df <- beta_inf2data_frame(beta_inf_rpl2)

beta_inf_rpl3_df <- beta_inf2data_frame(beta_inf_rpl3)

beta_inf_rpl4_df <- beta_inf2data_frame(beta_inf_rpl4)

beta_inf_rpls_df <- beta_inf2data_frame(beta_inf_rpls)



beta_df_list <- list(beta_inf_poverty_df, beta_inf_rpl1_df, beta_inf_rpl2_df,
                     beta_inf_rpl3_df, beta_inf_rpl4_df, beta_inf_rpls_df)
```

```
pc_idx <- 2:6

beta_BPHIGH_pcs <- beta_data_frames_stack(beta_df_list, pc_idx)
```

```
p <- ggplot(beta_BPHIGH_pcs$beta_pcs_strat0, aes(x = var_idx, y = post_median, color = strat)) +
  geom_point() +
  ylim(c(-0.23, 0.315)) +
  theme(axis.text.x = element_text(angle = 45, vjust = 1, hjust=1), axis.title.x = element_blank(), axis
        axis.text=element_text(size=21),
        plot.margin = margin(5.5, 5.5, 5.5, 25)) +
```

```
  geom_errorbar(aes(ymin = post_2.5, ymax = post_97.5, width = 0.4), col = "#F8766D") +
  geom_vline(xintercept = 5 * c(1:5) + 0.5, col = "blue") +
  geom_hline(yintercept = 0, col = "red") +
  annotate(geom = "text", x = 3, y = 0.29, label = "Poverty\n",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 8, y = 0.29, label = "Theme\n1",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 13, y = 0.29, label = "Theme\n2",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 18, y = 0.29, label = "Theme\n3",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 23, y = 0.29, label = "Theme\n4",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 28, y = 0.29, label = "All\nThemes",
           col = "blue", size = 7.9) +
  scale_x_discrete(labels = rep(c("PC 1", "", "PC 3", "", "PC 5",
                                  "", "PC 2", "", "PC 4", ""), 3)) +
  geom_point(data = beta_BPHIGH_pcs$beta_pcs_strat1, col = "#00BFC4") + # strat 1
  geom_errorbar(data = beta_BPHIGH_pcs$beta_pcs_strat1, aes(ymin = post_2.5, ymax = post_97.5, width = 
  scale_color_manual(name = "Strata",
                     values = c("#F8766D", "#00BFC4"),
                     drop = FALSE) + theme(legend.position = "none")
p
```




```
ggsave(here("figures/final_figures/stratified_analysis_fr_only/BPHIGH_fr_only.pdf"),
       plot = p, device = "pdf",
       width = 8, height = 6, units = "in")
```

Make a summary of significant coefficients and their signs, for each strata

```
signif_summ <- matrix(NA, nrow = 2, ncol = 5 * 6)

row.names(signif_summ) <- c("Low SV", "High SV")
colnames(signif_summ) <- paste(rep(c("Poverty Strata PC", "Theme 1 Strata PC", "Theme 2 Strata PC",
                                     "Theme 3 Strata PC", "Theme 4 Strata PC", "All Theme Strata PC"),
                                   rep(1:5, times = 6))
```

```
for (j in 1:ncol(signif_summ)) {

  if(beta_BPHIGH_pcs$beta_pcs_strat0$post_2.5[j] < 0 &
     beta_BPHIGH_pcs$beta_pcs_strat0$post_97.5[j] < 0) {
    signif_summ[1, j] <- "-"
  } else if (beta_BPHIGH_pcs$beta_pcs_strat0$post_2.5[j] > 0 &
     beta_BPHIGH_pcs$beta_pcs_strat0$post_97.5[j] > 0) {
    signif_summ[1, j] <- "+"
  }

  if(beta_BPHIGH_pcs$beta_pcs_strat1$post_2.5[j] < 0 &
     beta_BPHIGH_pcs$beta_pcs_strat1$post_97.5[j] < 0) {
    signif_summ[2, j] <- "-"
  } else if (beta_BPHIGH_pcs$beta_pcs_strat1$post_2.5[j] > 0 &
     beta_BPHIGH_pcs$beta_pcs_strat1$post_97.5[j] > 0) {
    signif_summ[2, j] <- "+"
  }

}
```

```
t(signif_summ)
```

```
##                       Low SV High SV
## Poverty Strata PC 1   NA     "+"
## Poverty Strata PC 2   "+"    "+"
## Poverty Strata PC 3   NA     "-"
## Poverty Strata PC 4   "-"    "-"
## Poverty Strata PC 5   NA     NA
## Theme 1 Strata PC 1   NA     "+"
## Theme 1 Strata PC 2   "+"    "+"
## Theme 1 Strata PC 3   NA     "-"
## Theme 1 Strata PC 4   "-"    "-"
## Theme 1 Strata PC 5   NA     NA
## Theme 2 Strata PC 1   "+"    "+"
## Theme 2 Strata PC 2   "+"    NA
## Theme 2 Strata PC 3   "+"    NA
## Theme 2 Strata PC 4   "-"    "-"
## Theme 2 Strata PC 5   "+"    NA
## Theme 3 Strata PC 1   NA     NA
## Theme 3 Strata PC 2   "+"    NA
## Theme 3 Strata PC 3   "-"    NA
## Theme 3 Strata PC 4   "-"    NA
## Theme 3 Strata PC 5   NA     NA
## Theme 4 Strata PC 1   "-"    NA
## Theme 4 Strata PC 2   NA     NA
## Theme 4 Strata PC 3   "-"    "-"
```

```
## Theme 4 Strata PC 4   "-"    NA
## Theme 4 Strata PC 5   NA     NA
## All Theme Strata PC 1 "+"    NA
## All Theme Strata PC 2 "+"    "-"
## All Theme Strata PC 3 "+"    NA
## All Theme Strata PC 4 "-"    NA
## All Theme Strata PC 5 "+"    "+"
```

CASTHMA

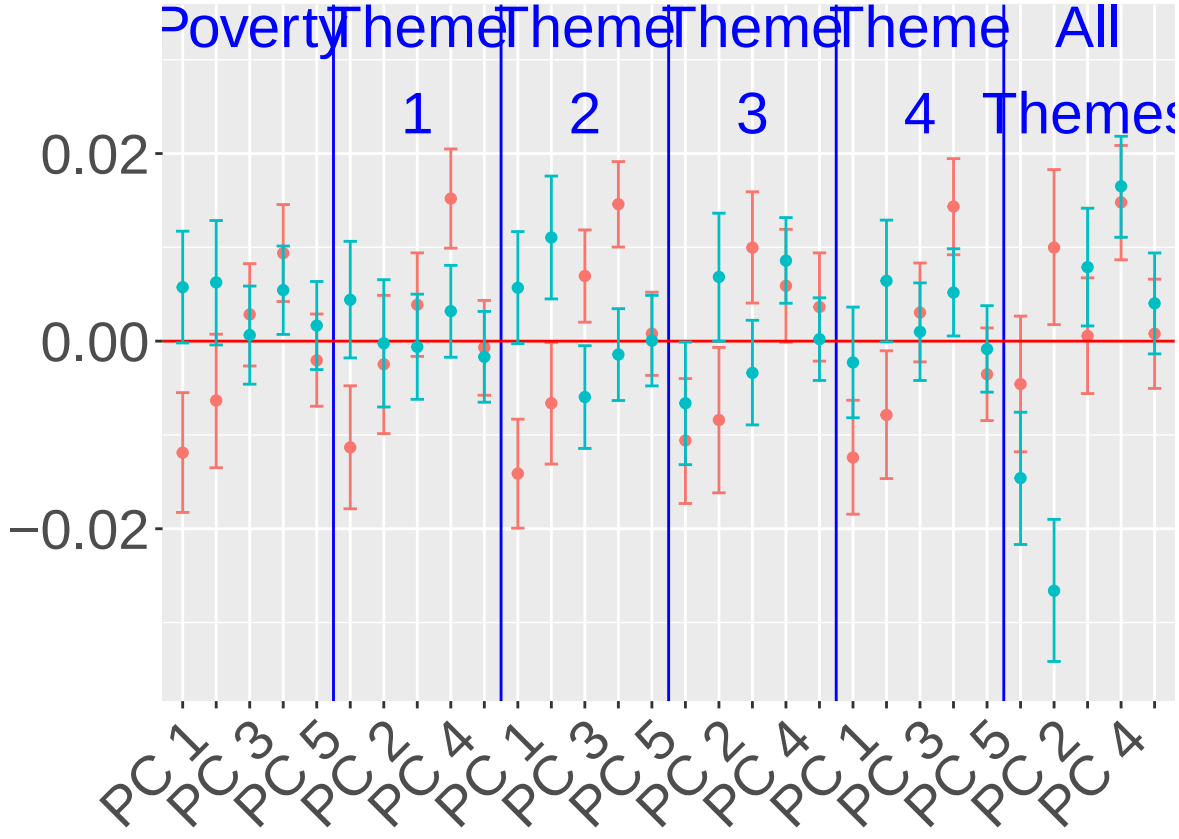
```
beta_inf_poverty <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CASTHMA_poverty

beta_inf_rpl1 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CASTHMA_rpl1.rds

beta_inf_rpl2 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CASTHMA_rpl2.rds

beta_inf_rpl3 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CASTHMA_rpl3.rds

beta_inf_rpl4 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CASTHMA_rpl4.rds

beta_inf_rpls <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/CASTHMA_rpls.rds
```

```
beta_inf_poverty_df <- beta_inf2data_frame(beta_inf_poverty)

beta_inf_rpl1_df <- beta_inf2data_frame(beta_inf_rpl1)

beta_inf_rpl2_df <- beta_inf2data_frame(beta_inf_rpl2)

beta_inf_rpl3_df <- beta_inf2data_frame(beta_inf_rpl3)

beta_inf_rpl4_df <- beta_inf2data_frame(beta_inf_rpl4)

beta_inf_rpls_df <- beta_inf2data_frame(beta_inf_rpls)



beta_df_list <- list(beta_inf_poverty_df, beta_inf_rpl1_df, beta_inf_rpl2_df,
                     beta_inf_rpl3_df, beta_inf_rpl4_df, beta_inf_rpls_df)
```

```
pc_idx <- 2:6

beta_CASTHMA_pcs <- beta_data_frames_stack(beta_df_list, pc_idx)
```

```
p <- ggplot(beta_CASTHMA_pcs$beta_pcs_strat0, aes(x = var_idx, y = post_median, color = strat)) +
  geom_point() +
  ylim(c(-0.035, 0.0325)) +
  theme(axis.text.x = element_text(angle = 45, vjust = 1, hjust=1), axis.title.x = element_blank(), axis
        axis.text=element_text(size=21),
        plot.margin = margin(5.5, 5.5, 5.5, 25)) +
  geom_errorbar(aes(ymin = post_2.5, ymax = post_97.5, width = 0.4), col = "#F8766D") +
  geom_vline(xintercept = 5 * c(1:5) + 0.5, col = "blue") +
  geom_hline(yintercept = 0, col = "red") +
  annotate(geom = "text", x = 3, y = 0.029, label = "Poverty\n",
```

```
          col = "blue", size = 7.9) +
  annotate(geom = "text", x = 8, y = 0.029, label = "Theme\n1",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 13, y = 0.029, label = "Theme\n2",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 18, y = 0.029, label = "Theme\n3",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 23, y = 0.029, label = "Theme\n4",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 28, y = 0.029, label = "All\nThemes",
           col = "blue", size = 7.9) +
  scale_x_discrete(labels = rep(c("PC 1", "", "PC 3", "", "PC 5",
                                  "", "PC 2", "", "PC 4", ""), 3)) +
  geom_point(data = beta_CASTHMA_pcs$beta_pcs_strat1, col = "#00BFC4") + # strat 1
  geom_errorbar(data = beta_CASTHMA_pcs$beta_pcs_strat1, aes(ymin = post_2.5, ymax = post_97.5, width =
  scale_color_manual(name = "Strata",
                     values = c("#F8766D", "#00BFC4"),
                     drop = FALSE) + theme(legend.position = "none")
p
```




```
ggsave(here("figures/final_figures/stratified_analysis_fr_only/CASTHMA_fr_only.pdf"),
       plot = p, device = "pdf",
       width = 8, height = 6, units = "in")
```

Make a summary of significant coefficients and their signs, for each strata

```
signif_summ <- matrix(NA, nrow = 2, ncol = 5 * 6)
```

```
row.names(signif_summ) <- c("Low SV", "High SV")
colnames(signif_summ) <- paste(rep(c("Poverty Strata PC", "Theme 1 Strata PC", "Theme 2 Strata PC",
                                     "Theme 3 Strata PC", "Theme 4 Strata PC", "All Theme Strata PC"),
                                   rep(1:5, times = 6))
```

```
for (j in 1:ncol(signif_summ)) {

  if(beta_CASTHMA_pcs$beta_pcs_strat0$post_2.5[j] < 0 &
     beta_CASTHMA_pcs$beta_pcs_strat0$post_97.5[j] < 0) {
    signif_summ[1, j] <- "-"
  } else if (beta_CASTHMA_pcs$beta_pcs_strat0$post_2.5[j] > 0 &
     beta_CASTHMA_pcs$beta_pcs_strat0$post_97.5[j] > 0) {
    signif_summ[1, j] <- "+"
  }

  if(beta_CASTHMA_pcs$beta_pcs_strat1$post_2.5[j] < 0 &
     beta_CASTHMA_pcs$beta_pcs_strat1$post_97.5[j] < 0) {
    signif_summ[2, j] <- "-"
  } else if (beta_CASTHMA_pcs$beta_pcs_strat1$post_2.5[j] > 0 &
     beta_CASTHMA_pcs$beta_pcs_strat1$post_97.5[j] > 0) {
    signif_summ[2, j] <- "+"
  }

}
```

```
t(signif_summ)
```

```
##                       Low SV High SV
## Poverty Strata PC 1   "-"    NA
## Poverty Strata PC 2   NA     NA
## Poverty Strata PC 3   NA     NA
## Poverty Strata PC 4   "+"    "+"
## Poverty Strata PC 5   NA     NA
## Theme 1 Strata PC 1   "-"    NA
## Theme 1 Strata PC 2   NA     NA
## Theme 1 Strata PC 3   NA     NA
## Theme 1 Strata PC 4   "+"    NA
## Theme 1 Strata PC 5   NA     NA
## Theme 2 Strata PC 1   "-"    NA
## Theme 2 Strata PC 2   "-"    "+"
## Theme 2 Strata PC 3   "+"    "-"
## Theme 2 Strata PC 4   "+"    NA
## Theme 2 Strata PC 5   NA     NA
## Theme 3 Strata PC 1   "-"    "-"
## Theme 3 Strata PC 2   "-"    NA
## Theme 3 Strata PC 3   "+"    NA
## Theme 3 Strata PC 4   NA     "+"
## Theme 3 Strata PC 5   NA     NA
## Theme 4 Strata PC 1   "-"    NA
## Theme 4 Strata PC 2   "-"    NA
## Theme 4 Strata PC 3   NA     NA
## Theme 4 Strata PC 4   "+"    "+"
## Theme 4 Strata PC 5   NA     NA
## All Theme Strata PC 1 NA     "-"
```

```
## All Theme Strata PC 2 "+"    "-"
## All Theme Strata PC 3 NA     "+"
## All Theme Strata PC 4 "+"    "+"
## All Theme Strata PC 5 NA     NA
```

MHLTH

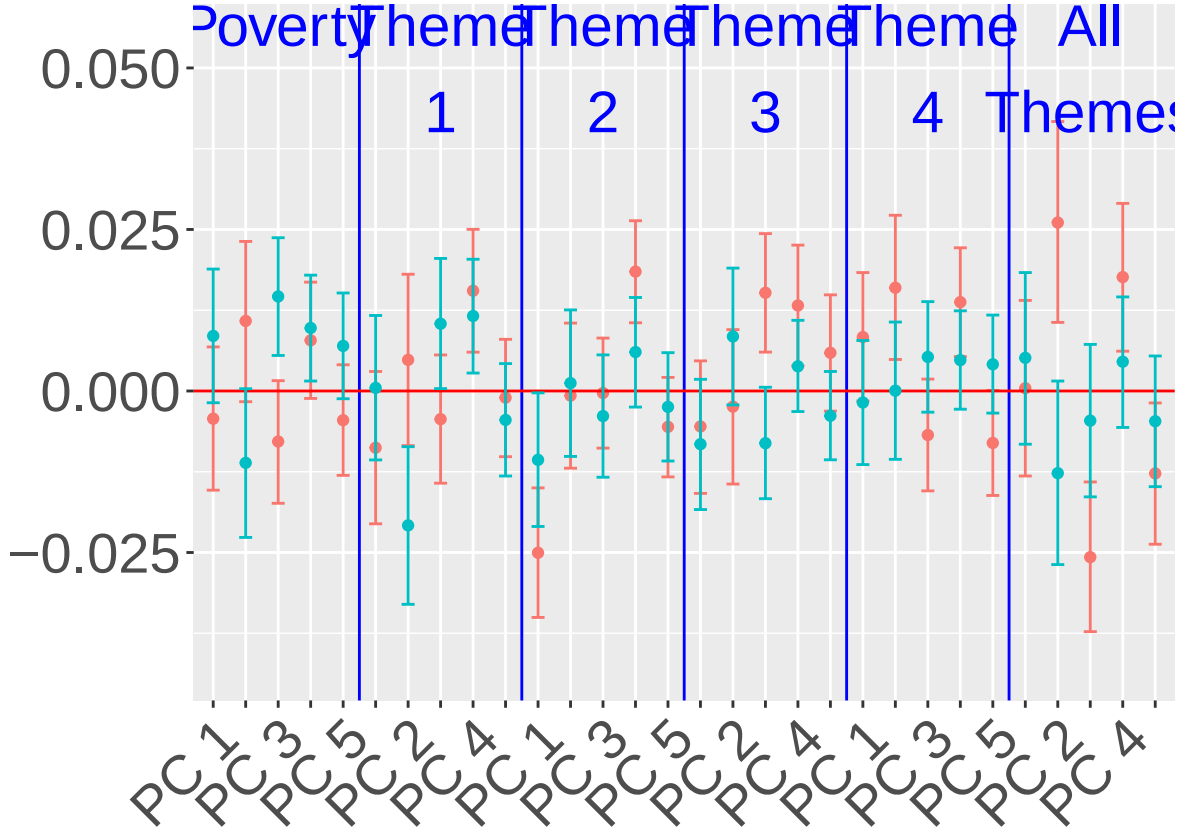
```
beta_inf_poverty <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/MHLTH_poverty

beta_inf_rpl1 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/MHLTH_rpl1.rds"))

beta_inf_rpl2 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/MHLTH_rpl2.rds"))

beta_inf_rpl3 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/MHLTH_rpl3.rds"))

beta_inf_rpl4 <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/MHLTH_rpl4.rds"))

beta_inf_rpls <- readRDS(here("modeling_files/stratified_analysis/beta_inference_files/MHLTH_rpls.rds"))
```

```
beta_inf_poverty_df <- beta_inf2data_frame(beta_inf_poverty)

beta_inf_rpl1_df <- beta_inf2data_frame(beta_inf_rpl1)

beta_inf_rpl2_df <- beta_inf2data_frame(beta_inf_rpl2)

beta_inf_rpl3_df <- beta_inf2data_frame(beta_inf_rpl3)

beta_inf_rpl4_df <- beta_inf2data_frame(beta_inf_rpl4)

beta_inf_rpls_df <- beta_inf2data_frame(beta_inf_rpls)



beta_df_list <- list(beta_inf_poverty_df, beta_inf_rpl1_df, beta_inf_rpl2_df,
                     beta_inf_rpl3_df, beta_inf_rpl4_df, beta_inf_rpls_df)
```

```
pc_idx <- 2:6

beta_MHLTH_pcs <- beta_data_frames_stack(beta_df_list, pc_idx)
```

```
p <- ggplot(beta_MHLTH_pcs$beta_pcs_strat0, aes(x = var_idx, y = post_median, color = strat)) +
  geom_point() +
  ylim(c(-0.043, 0.055)) +
  theme(axis.text.x = element_text(angle = 45, vjust = 1, hjust=1), axis.title.x = element_blank(), axis
        axis.text=element_text(size=21),
        plot.margin = margin(5.5, 5.5, 5.5, 25)) +
  geom_errorbar(aes(ymin = post_2.5, ymax = post_97.5, width = 0.4), col = "#F8766D") +
  geom_vline(xintercept = 5 * c(1:5) + 0.5, col = "blue") +
  geom_hline(yintercept = 0, col = "red") +
  annotate(geom = "text", x = 3, y = 0.05, label = "Poverty\n",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 8, y = 0.05, label = "Theme\n1",
           col = "blue", size = 7.9) +
```

```
  annotate(geom = "text", x = 13, y = 0.05, label = "Theme\n2",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 18, y = 0.05, label = "Theme\n3",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 23, y = 0.05, label = "Theme\n4",
           col = "blue", size = 7.9) +
  annotate(geom = "text", x = 28, y = 0.05, label = "All\nThemes",
           col = "blue", size = 7.9) +
  scale_x_discrete(labels = rep(c("PC 1", "", "PC 3", "", "PC 5",
                                  "", "PC 2", "", "PC 4", ""), 3)) +
  geom_point(data = beta_MHLTH_pcs$beta_pcs_strat1, col = "#00BFC4") + # strat 1
  geom_errorbar(data = beta_MHLTH_pcs$beta_pcs_strat1, aes(ymin = post_2.5, ymax = post_97.5, width = 0
  scale_color_manual(name = "Strata",
                     values = c("#F8766D", "#00BFC4"),
                     drop = FALSE) + theme(legend.position = "none")
p
```




```
ggsave(here("figures/final_figures/stratified_analysis_fr_only/MHLTH_fr_only.pdf"),
       plot = p, device = "pdf",
       width = 8, height = 6, units = "in")
```

Make a summary of significant coefficients and their signs, for each strata

```
signif_summ <- matrix(NA, nrow = 2, ncol = 5 * 6)

row.names(signif_summ) <- c("Low SV", "High SV")
colnames(signif_summ) <- paste(rep(c("Poverty Strata PC", "Theme 1 Strata PC", "Theme 2 Strata PC",
                                     "Theme 3 Strata PC", "Theme 4 Strata PC", "All Theme Strata PC"),
```

```
                                rep(1:5, times = 6))
```

```
for (j in 1:ncol(signif_summ)) {

  if(beta_MHLTH_pcs$beta_pcs_strat0$post_2.5[j] < 0 &
     beta_MHLTH_pcs$beta_pcs_strat0$post_97.5[j] < 0) {
    signif_summ[1, j] <- "-"
  } else if (beta_MHLTH_pcs$beta_pcs_strat0$post_2.5[j] > 0 &
     beta_MHLTH_pcs$beta_pcs_strat0$post_97.5[j] > 0) {
    signif_summ[1, j] <- "+"
  }

  if(beta_MHLTH_pcs$beta_pcs_strat1$post_2.5[j] < 0 &
     beta_MHLTH_pcs$beta_pcs_strat1$post_97.5[j] < 0) {
    signif_summ[2, j] <- "-"
  } else if (beta_MHLTH_pcs$beta_pcs_strat1$post_2.5[j] > 0 &
     beta_MHLTH_pcs$beta_pcs_strat1$post_97.5[j] > 0) {
    signif_summ[2, j] <- "+"
  }

}
```

```
t(signif_summ)
```

```
##                         Low SV High SV
## Poverty Strata PC 1     NA     NA
## Poverty Strata PC 2     NA     NA
## Poverty Strata PC 3     NA     "+"
## Poverty Strata PC 4     NA     "+"
## Poverty Strata PC 5     NA     NA
## Theme 1 Strata PC 1     NA     NA
## Theme 1 Strata PC 2     NA     "-"
## Theme 1 Strata PC 3     NA     "+"
## Theme 1 Strata PC 4     "+"    "+"
## Theme 1 Strata PC 5     NA     NA
## Theme 2 Strata PC 1     "-"    "-"
## Theme 2 Strata PC 2     NA     NA
## Theme 2 Strata PC 3     NA     NA
## Theme 2 Strata PC 4     "+"    NA
## Theme 2 Strata PC 5     NA     NA
## Theme 3 Strata PC 1     NA     NA
## Theme 3 Strata PC 2     NA     NA
## Theme 3 Strata PC 3     "+"    NA
## Theme 3 Strata PC 4     "+"    NA
## Theme 3 Strata PC 5     NA     NA
## Theme 4 Strata PC 1     NA     NA
## Theme 4 Strata PC 2     "+"    NA
## Theme 4 Strata PC 3     NA     NA
## Theme 4 Strata PC 4     "+"    NA
## Theme 4 Strata PC 5     NA     NA
## All Theme Strata PC 1 NA     NA
## All Theme Strata PC 2 "+"    NA
## All Theme Strata PC 3 "-"    NA
## All Theme Strata PC 4 "+"    NA
```

```
## All Theme Strata PC 5 "-"    NA
```