Visualization 3: Analysis Results

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January 26, 2020

Preparation

```
## Clean Up Space
rm(list=ls())

## Set Working Directory (Automatically) ##
require(rstudioapi); require(rprojroot)
if (rstudioapi::isAvailable()==TRUE) {
  setwd(dirname(rstudioapi::getActiveDocumentContext()$path));
}
projdir <- find_root(has_file("thisishome.txt"))
cat(paste("Working Directory Set to:\n",projdir))
```

```
## Working Directory Set to:
##  /home/gentok/GoogleDrive/Projects/Fan-Gento-Lab/ForeignerJapan
```

```
setwd(projdir)

## Directories for Main Effect Data
visdtdir <- paste0(projdir, "/out/visdt.rds")
visdtmdir <- paste0(projdir, "/out/visdtm.rds")
visdtalldir <- paste0(projdir, "/out/visdtall.rds")
visdtxdir <- paste0(projdir, "/out/visdtx.rds")
visdtxmdir <- paste0(projdir, "/out/visdtxm.rds")
visdtxalldir <- paste0(projdir, "/out/visdtxall.rds")

## Directories for Mediation Effect Data
coefdtdir0 <- paste0(projdir,"/out/medoutcoefdt_unmatched_v5.rds")
coefdtdir1 <- paste0(projdir,"/out/medoutcoefdt_matchednoL_v5.rds")
coefdtdir2 <- paste0(projdir,"/out/medoutcoefdt_matchedL50_v5.rds")
coefdtdir3 <- paste0(projdir,"/out/medoutcoefdt_matchedL100_v5.rds")
coefdtdir4 <- paste0(projdir,"/out/medoutcoefdt_matchedL200_v5.rds")
coefdtdir5 <- paste0(projdir,"/out/medoutcoefdt_matchedL350_v5.rds")

## Packages
require(ggplot2)
```

Main Effects

```
## Import Required Data
visdt <- readRDS(visdtdir)
```

```
visdtm <- readRDS(visdtmdir)
visdtall <- readRDS(visdtalldir)
```

OLS

```
require(ggplot2)
p <- ggplot(visdt, aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,alpha=pstar),
                position=position_dodge(width=-0.7), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,alpha=pstar),
                position=position_dodge(width=-0.7), size=1.5, width=0.0) +
  geom_point(aes(alpha=pstar),
             position=position_dodge(width=-0.7), size=3) +
  facet_grid(gender ~ data) +
  scale_y_continuous(breaks = c(-0.1,-0.05,0.00,0.05)) +
  scale_alpha_manual(name="Significance",values=c(1,0.5,0.2), drop=FALSE) +
  ylab("OLS Coefficient\n(Thin Line = 95% CI; Thick Line 90% CI)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). \nOutcome: Agreement with
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=9),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

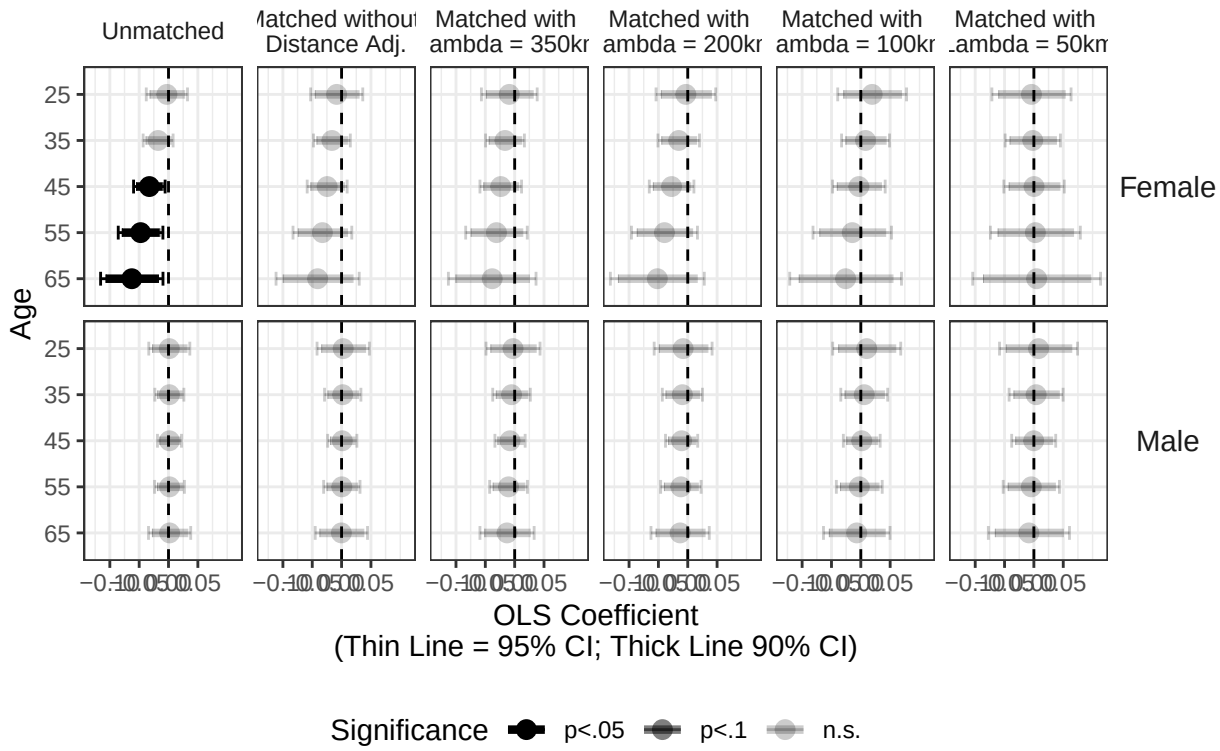

Treatment: University education (1:attained, 0:not attained).
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1).

```
ggsave(paste0(projdir,"/out/maineffectplot1.png"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

```
ggsave(paste0(projdir,"/out/maineffectplot1.pdf"),p,width=8,height=5)
```

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```

```
require(ggplot2)
p <- ggplot(visdt[which(visdt$data%in%c("Unmatched",
                                        "Matched without \nDistance Adj.",
                                        "Matched with \nLambda = 100km")),],
            aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,alpha=pstar),
                position=position_dodge(width=-0.7), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,alpha=pstar),
                position=position_dodge(width=-0.7), size=1.5, width=0.0) +
  geom_point(aes(alpha=pstar),
             position=position_dodge(width=-0.7), size=3) +
  facet_grid(gender ~ data) +
  scale_y_continuous(breaks = c(-0.1,-0.05,0.00,0.05)) +
  scale_alpha_manual(name="Significance",values=c(1,0.5,0.2), drop=FALSE) +
  ylab("OLS Coefficient\n(Thin Line = 95% CI; Thick Line 90% CI)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). \nOutcome: Agreement with
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=11),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

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```

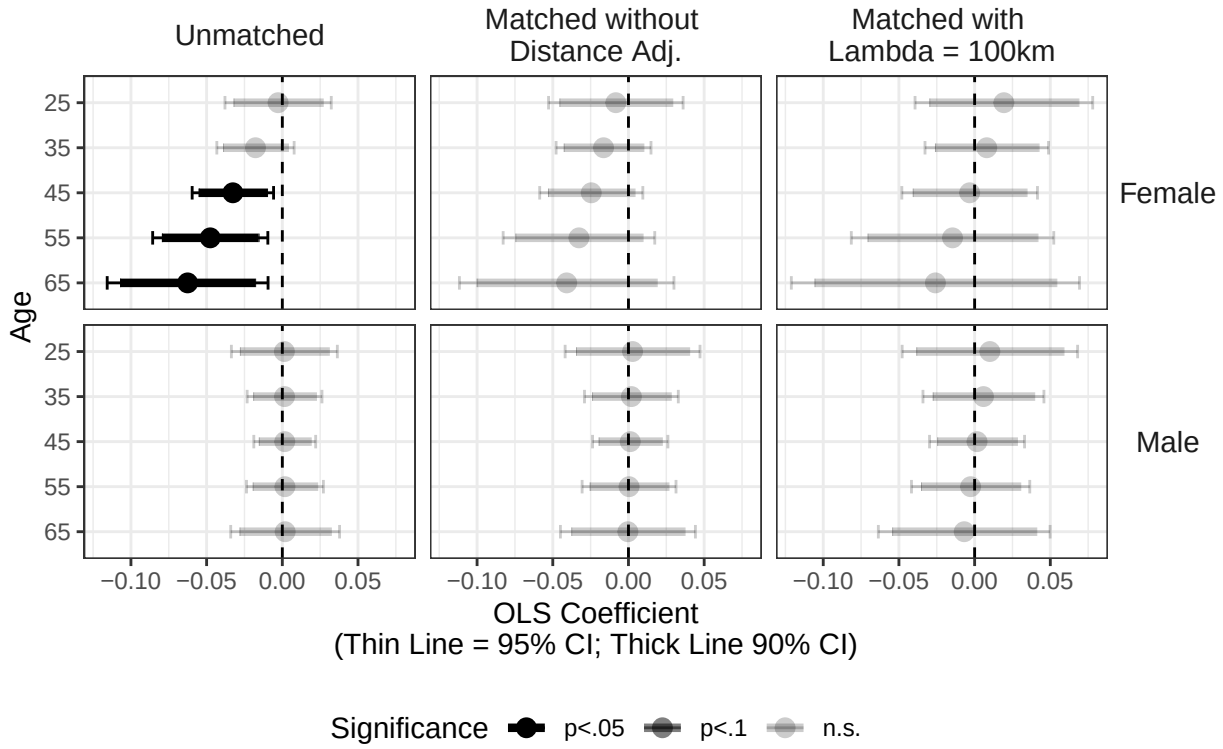

Treatment: University education (1:attained, 0:not attained).
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1).

```
ggsave(paste0(projdir,"/out/maineffectplot2.png"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

```
ggsave(paste0(projdir,"/out/maineffectplot2.pdf"),p,width=8,height=5)
```

```
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## Warning: position_dodge requires non-overlapping x intervals
```

Multinomial Logit (Disagree vs. Agree)

```
require(ggplot2)
p <- ggplot(visdtm, aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,alpha=pstar),
                position=position_dodge(width=-0.7), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,alpha=pstar),
                position=position_dodge(width=-0.7), size=1.5, width=0.0) +
  geom_point(aes(alpha=pstar),
             position=position_dodge(width=-0.7), size=3) +
  facet_grid(gender ~ data) +
  scale_alpha_manual(name="Significance",values=c(1,0.5,0.2), drop=FALSE) +
  ylab("Multinomial Logit Coefficient: Agree over Disagree\n(Thin Line = 95% CI; Thick Line 90% CI)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). \nOutcome: Agreement with
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=9),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
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```

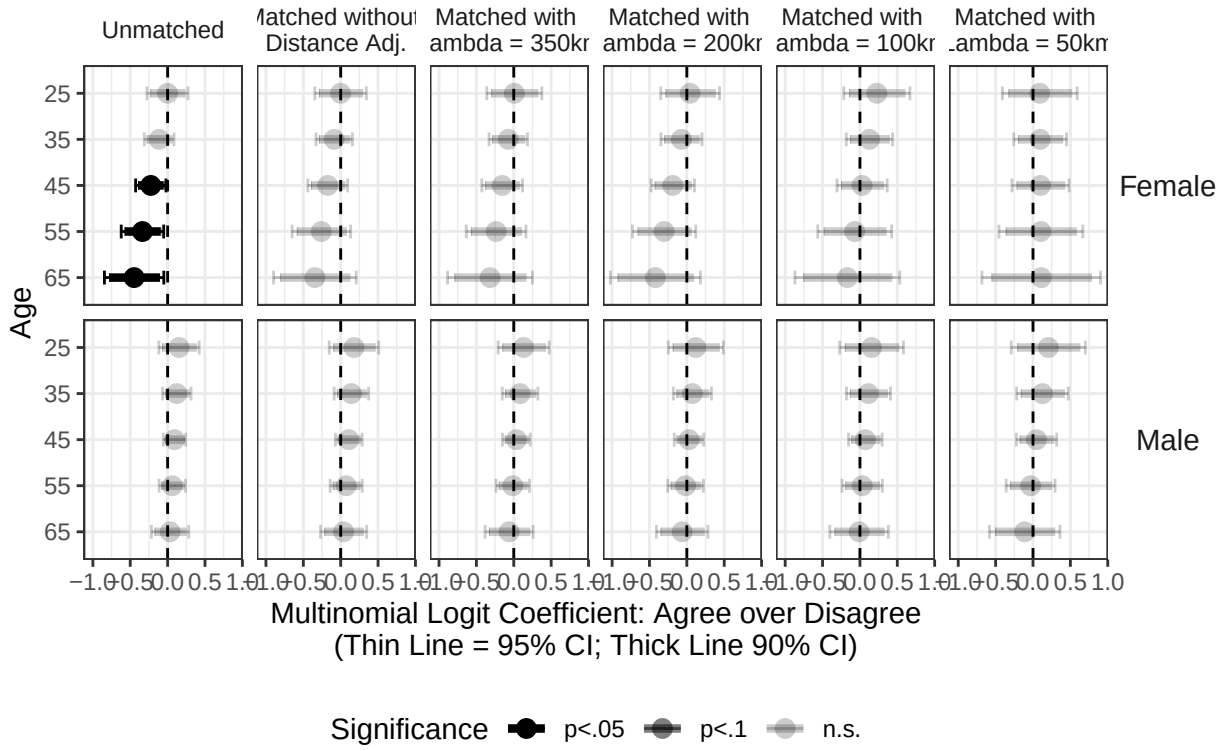

Treatment: University education (1:attained, 0:not attained).
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1).

```
ggsave(paste0(projdir,"/out/maineffectplot1m.png"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

```
## Warning: position_dodge requires non-overlapping x intervals
```

```
ggsave(paste0(projdir,"/out/maineffectplot1m.pdf"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

```
require(ggplot2)
p <- ggplot(visdtm[which(visdtm$data%in%c("Unmatched",
                                          "Matched without \nDistance Adj.",
                                          "Matched with \nLambda = 100km")),],
            aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,alpha=pstar),
                position=position_dodge(width=-0.7), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,alpha=pstar),
                position=position_dodge(width=-0.7), size=1.5, width=0.0) +
  geom_point(aes(alpha=pstar),
             position=position_dodge(width=-0.7), size=3) +
  facet_grid(gender ~ data) +
  scale_alpha_manual(name="Significance",values=c(1,0.5,0.2), drop=FALSE) +
  ylab("Multinomial Logit Coefficient: Agree over Disagree\n(Thin Line = 95% CI; Thick Line 90% CI)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). \nOutcome: Agreement with
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=11),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

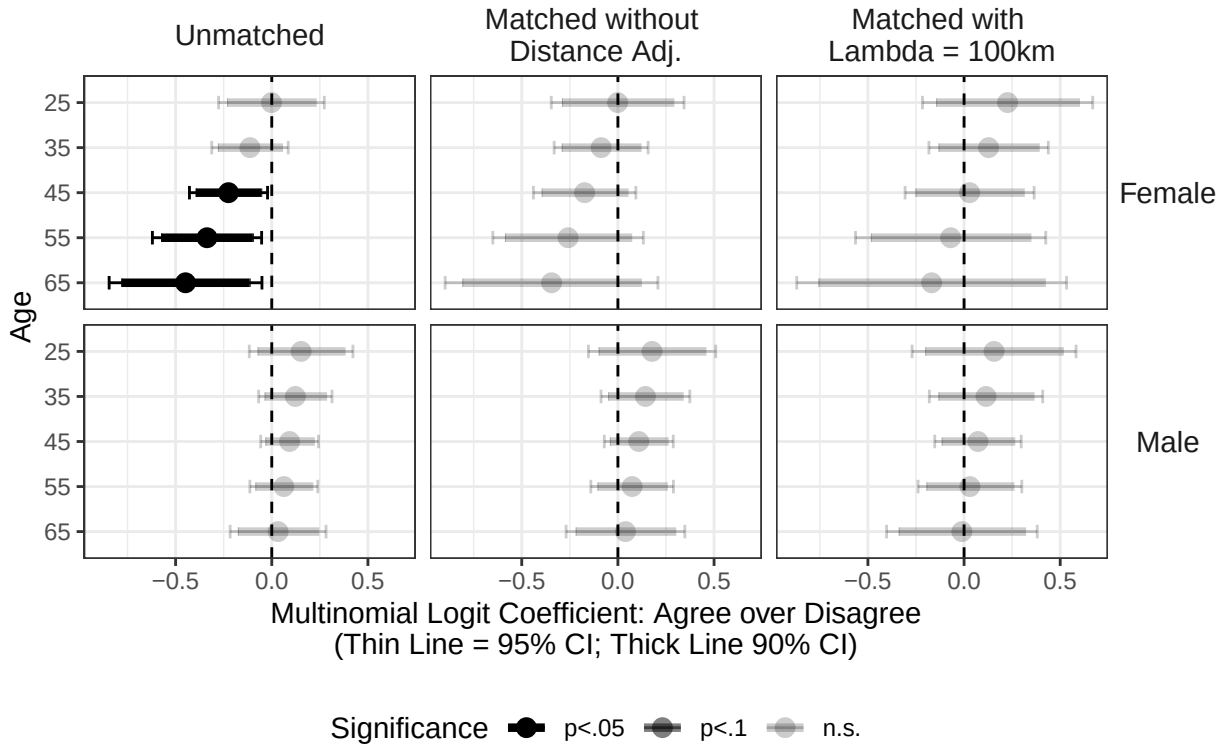

Treatment: University education (1:attained, 0:not attained).
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1).

```
ggsave(paste0(projdir,"/out/maineffectplot2m.png"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

```
ggsave(paste0(projdir,"/out/maineffectplot2m.pdf"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals
```

```
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```

Compare OLS and Multinomial Logit

```
visdtsub <- subset(visdtall, data=="Unmatched")

require(ggplot2)
p <- ggplot(visdtsub, aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,alpha=pstar),
                position=position_dodge(width=-0.7), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,alpha=pstar),
                position=position_dodge(width=-0.7), size=1.5, width=0.0) +
  geom_point(aes(alpha=pstar),
             position=position_dodge(width=-0.7), size=3) +
  facet_grid(gender ~ method, scales = "free_x") +
  scale_alpha_manual(name="Significance",values=c(1,0.5,0.2), drop = FALSE) +
  ylab("University Education (1:Attained, 0:Not Attained) Coefficient\n(Thin Line = 95% CI; Thick Line 9
  xlab("Age") +
  labs(caption="Outcome: Agreement with granting suffrage to permanent residents \n(OLS: Five categories
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=11),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
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## Warning: position_dodge requires non-overlapping x intervals
```

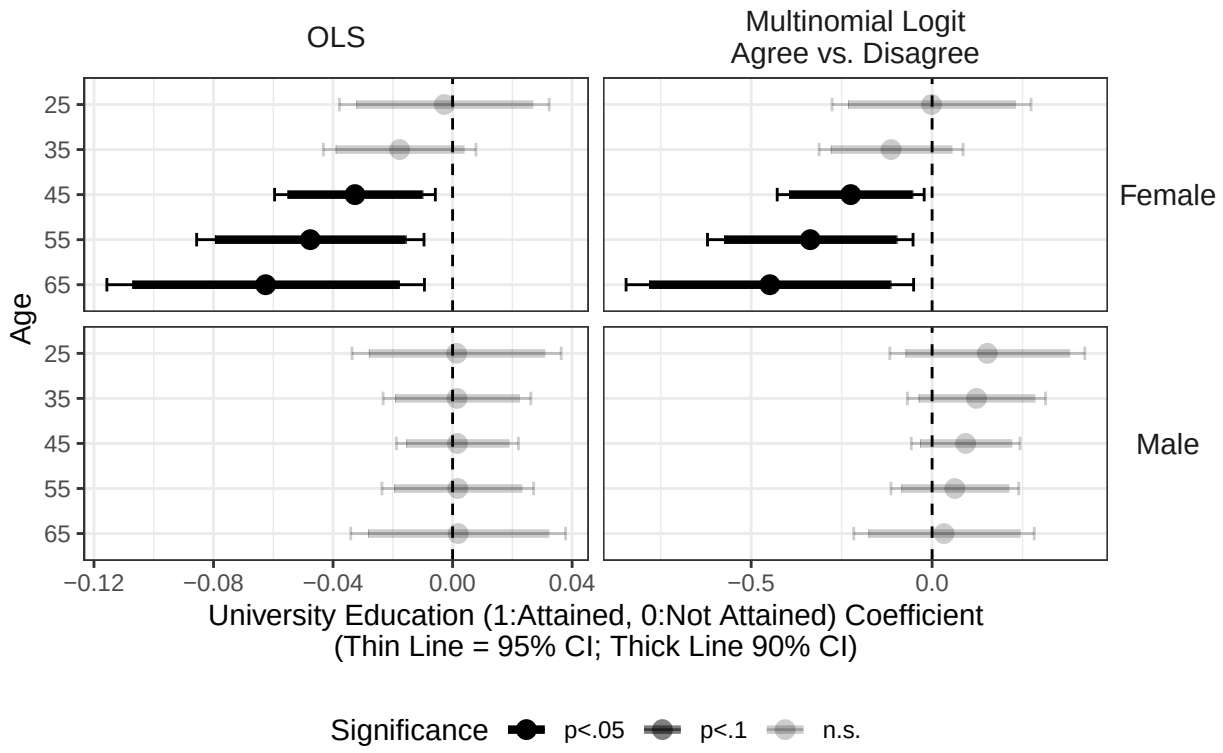

Outcome: Agreement with granting suffrage to permanent residents
(OLS: Five categories, rescaled to 0−1; Multinomial logit: Three categories, disagree, neigher, and agree).

```
ggsave(paste0(projdir,"/out/maineffectcompareolsmultinom.png"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

```
ggsave(paste0(projdir,"/out/maineffectcompareolsmultinom.pdf"),p,width=8,height=5)
```

```
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## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

For Robustness Check

```
visdtsub <- subset(visdtall, data%in%c("Matched without \nDistance Adj.",
                                       "Matched with \nLambda = 200km",
                                       "Mail-in"))

require(ggplot2)
p <- ggplot(visdtsub, aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
```

```
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,alpha=pstar, color=data),
                position=position_dodge(width=-0.9), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,alpha=pstar, color=data),
                position=position_dodge(width=-0.9), size=1.5, width=0.0) +
  geom_point(aes(alpha=pstar, shape=data, color=data),
             position=position_dodge(width=-0.9), size=3) +
  facet_grid(gender ~ method, scales = "free_x") +
  scale_color_manual(name="Data", values = rep("black", 3)) +
  scale_shape_discrete(name="Data") +
  scale_alpha_manual(name="Significance",values=c(1,0.5,0.2), drop = FALSE) +
  ylab("University Education (1:Attained, 0:Not Attained) Coefficient\n(Thin Line = 95% CI; Thick Line 
  xlab("Age") +
  labs(caption="Outcome: Agreement with granting suffrage to permanent residents \n(OLS: Five categorie
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=11),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
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## Warning: position_dodge requires non-overlapping x intervals
```

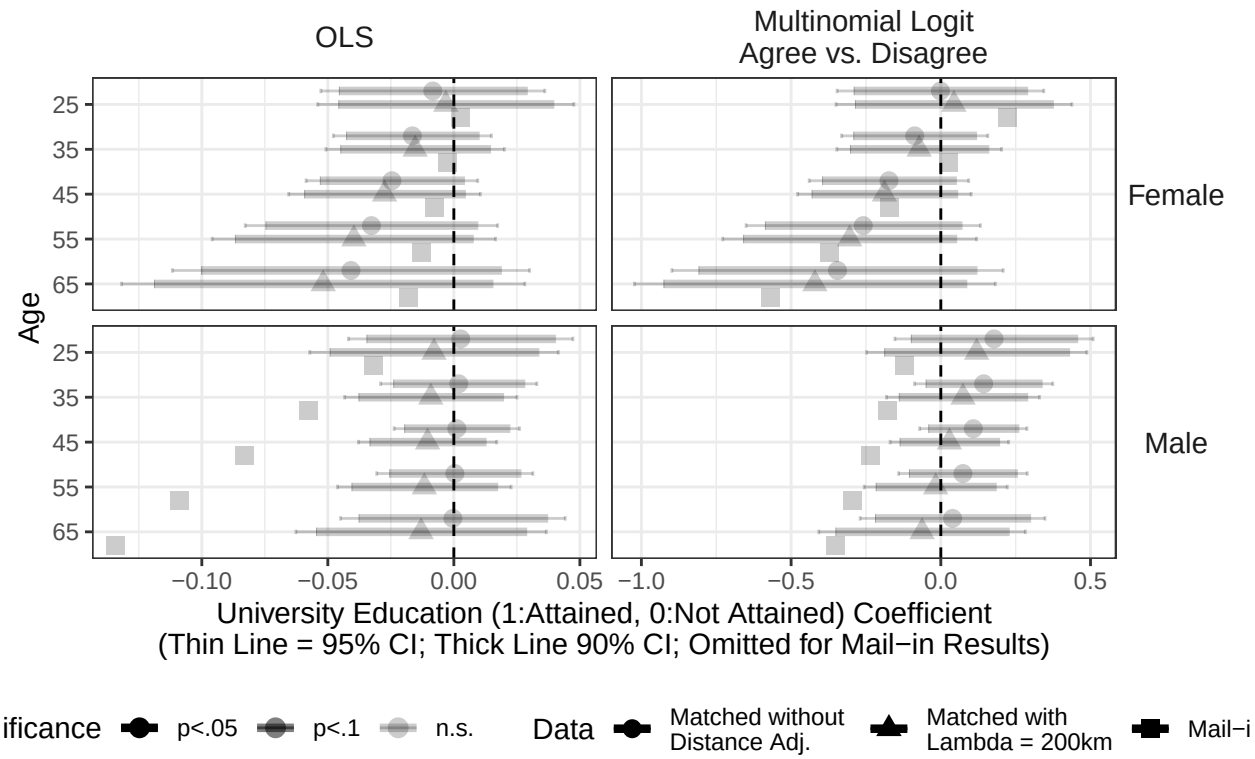

Outcome: Agreement with granting suffrage to permanent residents
(OLS: Five categories, rescaled to 0−1; Multinomial logit: Three categories, disagree, neigher, and agree).

```
ggsave(paste0(projdir,"/out/maineffectrobustnesscheck.png"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

```
ggsave(paste0(projdir,"/out/maineffectrobustnesscheck.pdf"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals
```
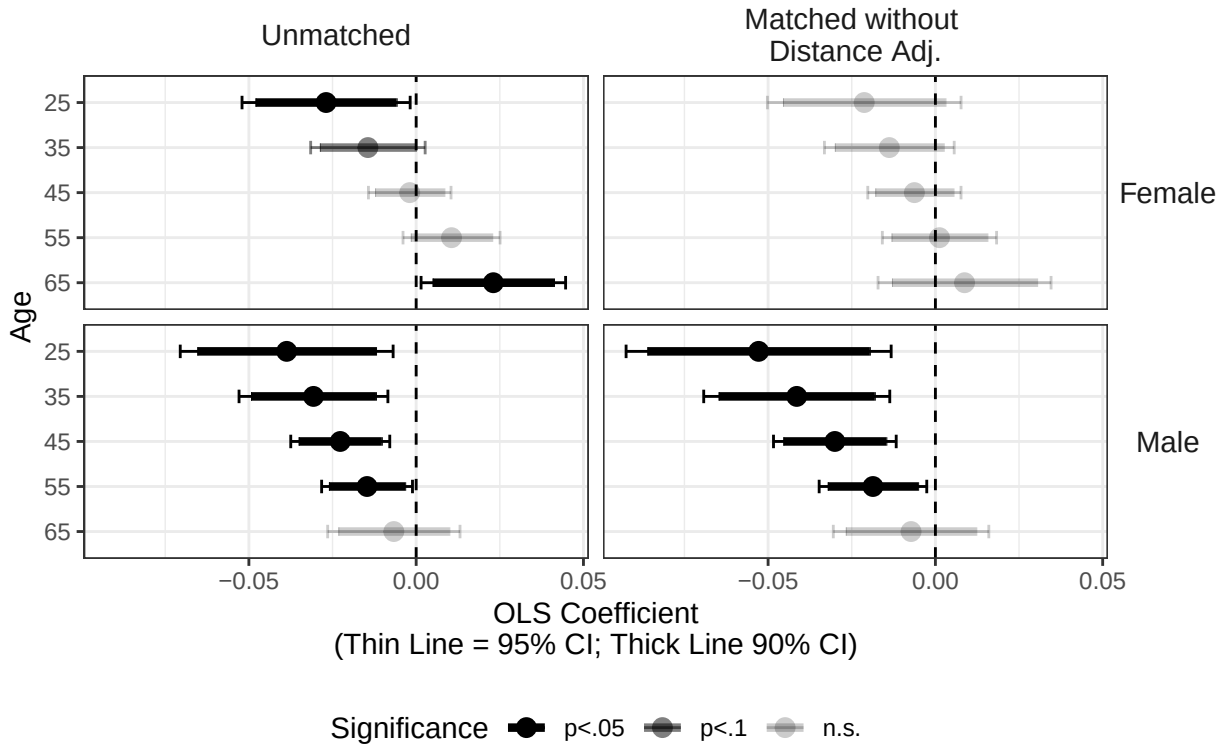

Main Effects (Movers)

```
## Import Required Data
visdtx <- readRDS(visdtxdir)
visdtxm <- readRDS(visdtxmdir)
visdtxall <- readRDS(visdtxalldir)
```

OLS

```
require(ggplot2)
p <- ggplot(visdtx, aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,alpha=pstar),
                position=position_dodge(width=-0.7), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,alpha=pstar),
                position=position_dodge(width=-0.7), size=1.5, width=0.0) +
  geom_point(aes(alpha=pstar),
             position=position_dodge(width=-0.7), size=3) +
  facet_grid(gender ~ data) +
  scale_y_continuous(breaks = c(-0.1,-0.05,0.00,0.05)) +
  scale_alpha_manual(name="Significance",values=c(1,0.5,0.2), drop=FALSE) +
  ylab("OLS Coefficient\n(Thin Line = 95% CI; Thick Line 90% CI)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). \nOutcome: Agreement with
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=11),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```



Treatment: University education (1:attained, 0:not attained).
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1).

```
ggsave(paste0(projdir,"/out/maineffectplotx.png"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

```
ggsave(paste0(projdir,"/out/maineffectplotx.pdf"),p,width=8,height=5)
```

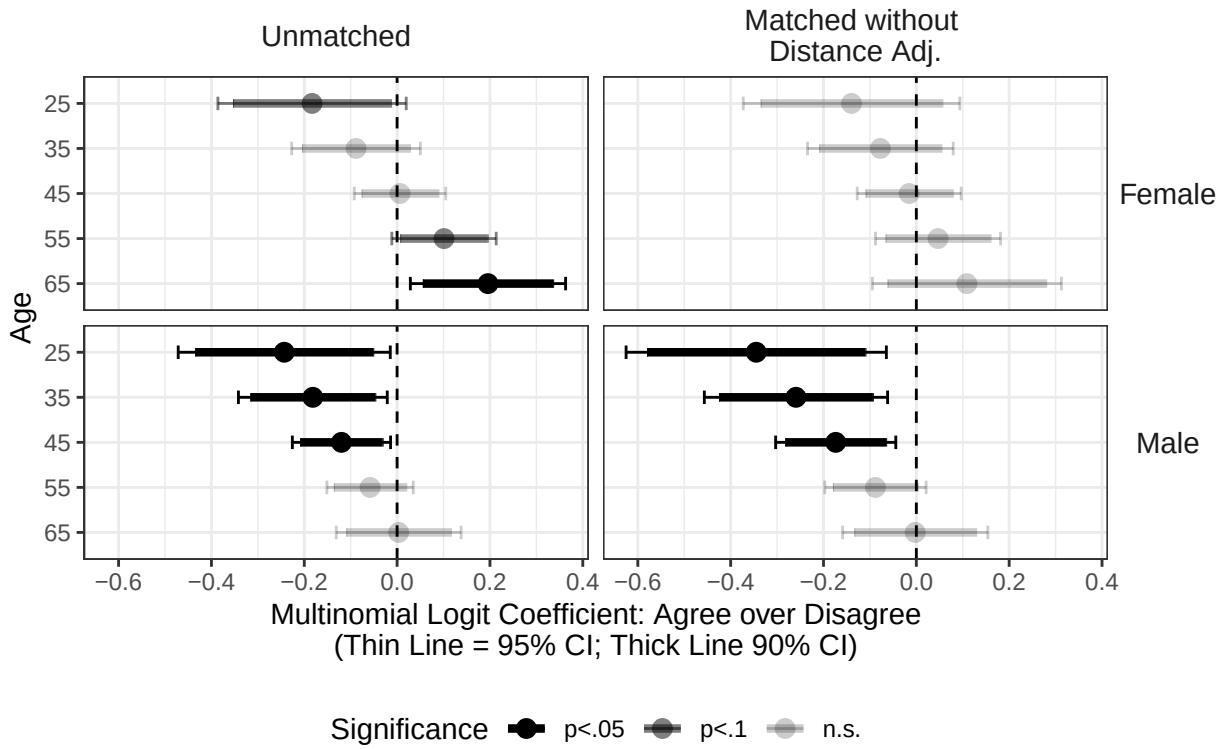
```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

Multinomial Logit (Disagree vs. Agree)

```
require(ggplot2)
p <- ggplot(visdtxm, aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,alpha=pstar),
                position=position_dodge(width=-0.7), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,alpha=pstar),
```

```
                position=position_dodge(width=-0.7), size=1.5, width=0.0) +
  geom_point(aes(alpha=pstar),
             position=position_dodge(width=-0.7), size=3) +
  facet_grid(gender ~ data) +
  scale_alpha_manual(name="Significance",values=c(1,0.5,0.2), drop=FALSE) +
  ylab("Multinomial Logit Coefficient: Agree over Disagree\n(Thin Line = 95% CI; Thick Line 90% CI)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). \nOutcome: Agreement with
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=11),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```



Treatment: University education (1:attained, 0:not attained).
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1).

```
ggsave(paste0(projdir,"/out/maineffectplotxm.png"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

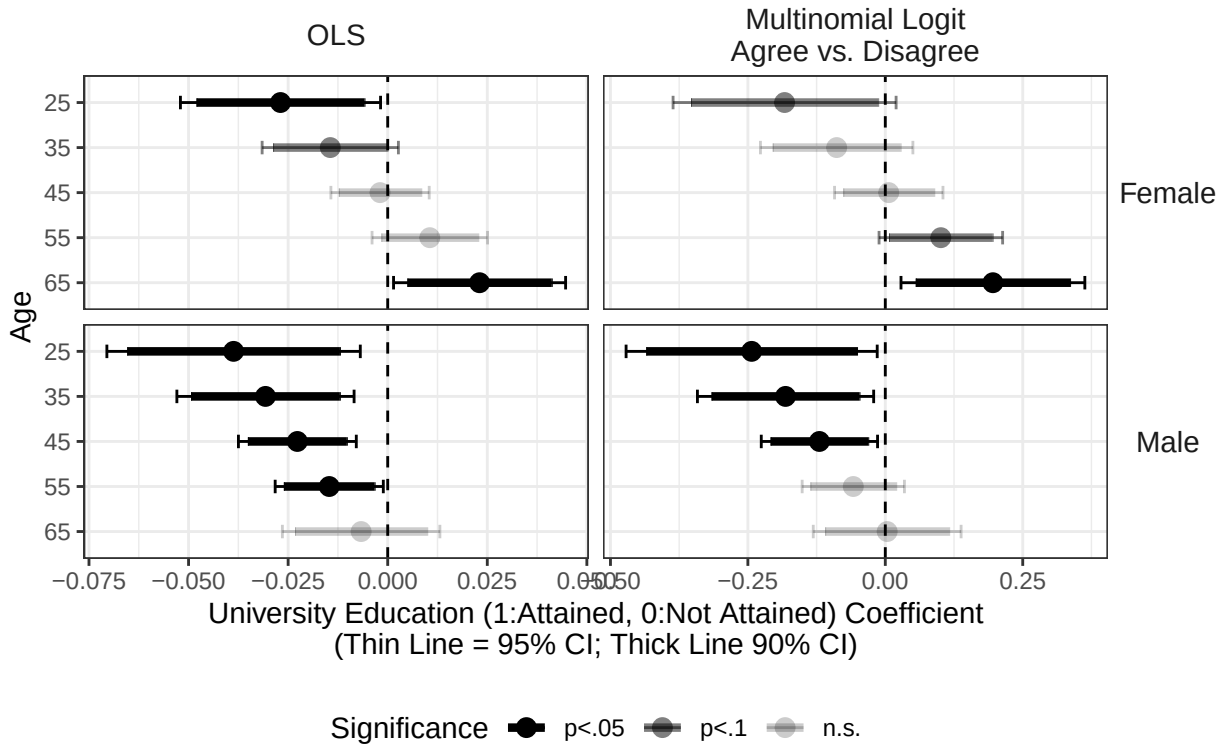
```
ggsave(paste0(projdir,"/out/maineffectplotxm.pdf"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

Compare OLS and Multinomial Logit

```
visdtxsub <- subset(visdtxall, data=="Unmatched")

require(ggplot2)
p <- ggplot(visdtxsub, aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,alpha=pstar),
                position=position_dodge(width=-0.7), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,alpha=pstar),
                position=position_dodge(width=-0.7), size=1.5, width=0.0) +
  geom_point(aes(alpha=pstar),
             position=position_dodge(width=-0.7), size=3) +
  facet_grid(gender ~ method, scales = "free_x") +
  scale_alpha_manual(name="Significance",values=c(1,0.5,0.2), drop = FALSE) +
  ylab("University Education (1:Attained, 0:Not Attained) Coefficient\n(Thin Line = 95% CI; Thick Line 
  xlab("Age") +
  labs(caption="Outcome: Agreement with granting suffrage to permanent residents \n(OLS: Five categorie
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=11),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```



Outcome: Agreement with granting suffrage to permanent residents
(OLS: Five categories, rescaled to 0−1; Multinomial logit: Three categories, disagree, neigher, and agree).

```
ggsave(paste0(projdir,"/out/maineffectcompareolsmultinomx.png"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

```
ggsave(paste0(projdir,"/out/maineffectcompareolsmultinomx.pdf"),p,width=8,height=5)
```

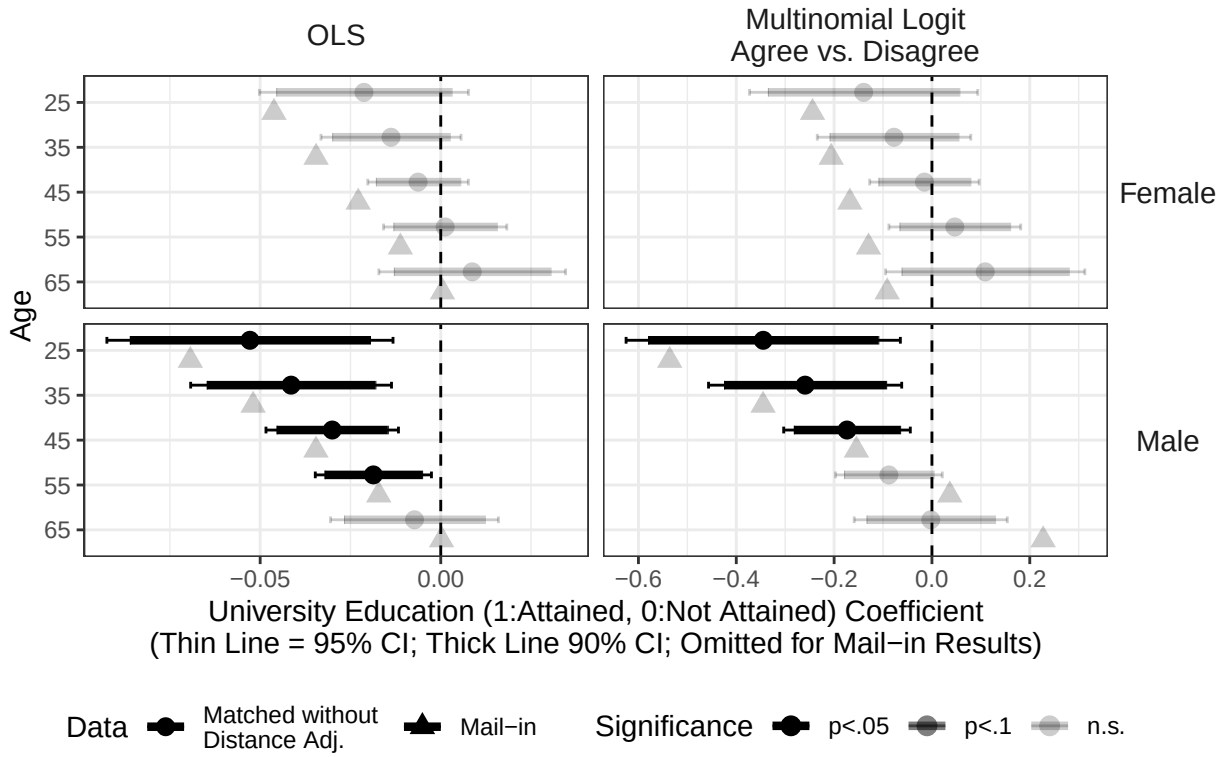
```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

For Robustness Check

```
visdtxsub <- subset(visdtxall, data%in%c("Matched without \nDistance Adj.",
                                         "Mail-in"))

require(ggplot2)
p <- ggplot(visdtxsub, aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
```

```
  geom_errorbar(aes(ymin=lci95,ymax=uci95,alpha=pstar, color=data),
                position=position_dodge(width=-0.9), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,alpha=pstar, color=data),
                position=position_dodge(width=-0.9), size=1.5, width=0.0) +
  geom_point(aes(alpha=pstar, shape=data, color=data),
             position=position_dodge(width=-0.9), size=3) +
  facet_grid(gender ~ method, scales = "free_x") +
  scale_color_manual(name="Data", values = rep("black", 3)) +
  scale_shape_discrete(name="Data") +
  scale_alpha_manual(name="Significance",values=c(1,0.5,0.2), drop = FALSE) +
  ylab("University Education (1:Attained, 0:Not Attained) Coefficient\n(Thin Line = 95% CI; Thick Line 9
  xlab("Age") +
  labs(caption="Outcome: Agreement with granting suffrage to permanent residents \n(OLS: Five categories
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=11),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```



Outcome: Agreement with granting suffrage to permanent residents
(OLS: Five categories, rescaled to 0−1; Multinomial logit: Three categories, disagree, neigher, and agree).

```
ggsave(paste0(projdir,"/out/maineffectrobustnesscheckx.png"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

```
ggsave(paste0(projdir,"/out/maineffectrobustnesscheckx.pdf"),p,width=8,height=5)
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

Mediation Effects

Function to Subset Data (Except for knowledge)

```
gencoefdts <- function(coefdt) {

  coefdt$med <- factor(coefdt$med, levels=c("income","knowledge","ideology","ldpdpjft",
```

```
                                          "familiarityFT_KOR","familiarityFT_CHN",
                                          "familiarityFT_USA"),
                       labels = c("Income\n(Percentile)",
                                  "Political\nKnowledge",
                                  "Political\nIdeology",
                                  "LDP - DPJ\nFeeling\nThermometer",
                                  "South Korea\nFeeling\nThermometer",
                                  "China\nFeeling\nThermometer",
                                  "United States\nFeeling\nThermometer"))


  coefdts <- subset(coefdt, med!="Political\nKnowledge" &
                      mod!="Treatment => Outcome\n(ADE)" &
                      age %in% c(25,45,65))

  return(coefdts)

}
```

Unmatched

```
coefdts <- gencoefdts(readRDS(coefdtdir0))

require(ggplot2)
p <- ggplot(coefdts,
            aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,color=gender,alpha=pstar), #linetype=pstar
                position=position_dodge(width=-0.9), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,color=gender,alpha=pstar),
                position=position_dodge(width=-0.9), size=1.5, width=0.0) +
  geom_point(aes(shape=gender,alpha=pstar),
             position=position_dodge(width=-0.9), size=3) +
  facet_grid(med ~ mod, scales = "free") +
  scale_alpha_manual(name="Significance (Transparency)",values=c(1,0.5,0.2), drop=FALSE) +
  scale_shape_discrete(name="Gender (Point Shape)") +
  scale_color_manual(name="Gender (Point Shape)", values = rep("black",2)) +
  ylab("Effect Size\n(Thin Line = 95% CI; Thick Line 90% CI; Omitted for Mail-in Results)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). Mediatiors: All rescaled
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=9),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

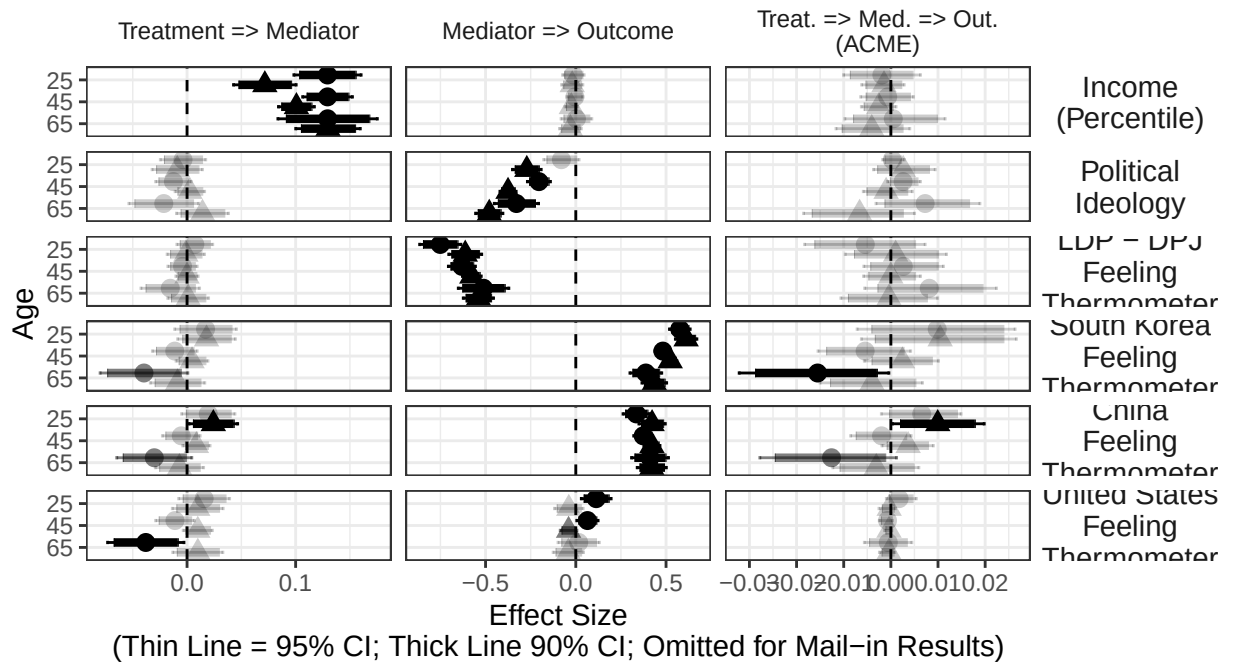

Treatment: University education (1:attained, 0:not attained). Mediators: All rescaled to 0=minimum and 1=ma
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1). All models are estimate

```
ggsave(paste0(projdir,"/out/mediationplot_all_unmatched_v5.png"),p,width=10,height=7)
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

```
ggsave(paste0(projdir,"/out/mediationplot_all_unmatched_v5.pdf"),p,width=10,height=7)
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

Matched without Distance Adjustment

```
coefdts <- gencoefdts(readRDS(coefdtdir1))

require(ggplot2)
p <- ggplot(coefdts,
```

```r
            aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,color=gender,alpha=pstar), #linetype=pstar
                position=position_dodge(width=-0.9), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,color=gender,alpha=pstar),
                position=position_dodge(width=-0.9), size=1.5, width=0.0) +
  geom_point(aes(shape=gender,alpha=pstar),
             position=position_dodge(width=-0.9), size=3) +
  facet_grid(med ~ mod, scales = "free") +
  scale_alpha_manual(name="Significance (Transparency)",values=c(1,0.5,0.2), drop=FALSE) +
  scale_shape_discrete(name="Gender (Point Shape)") +
  scale_color_manual(name="Gender (Point Shape)", values = rep("black",2)) +
  ylab("Effect Size\n(Thin Line = 95% CI; Thick Line 90% CI; Omitted for Mail-in Results)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). Mediatiors: All rescaled
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=9),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```
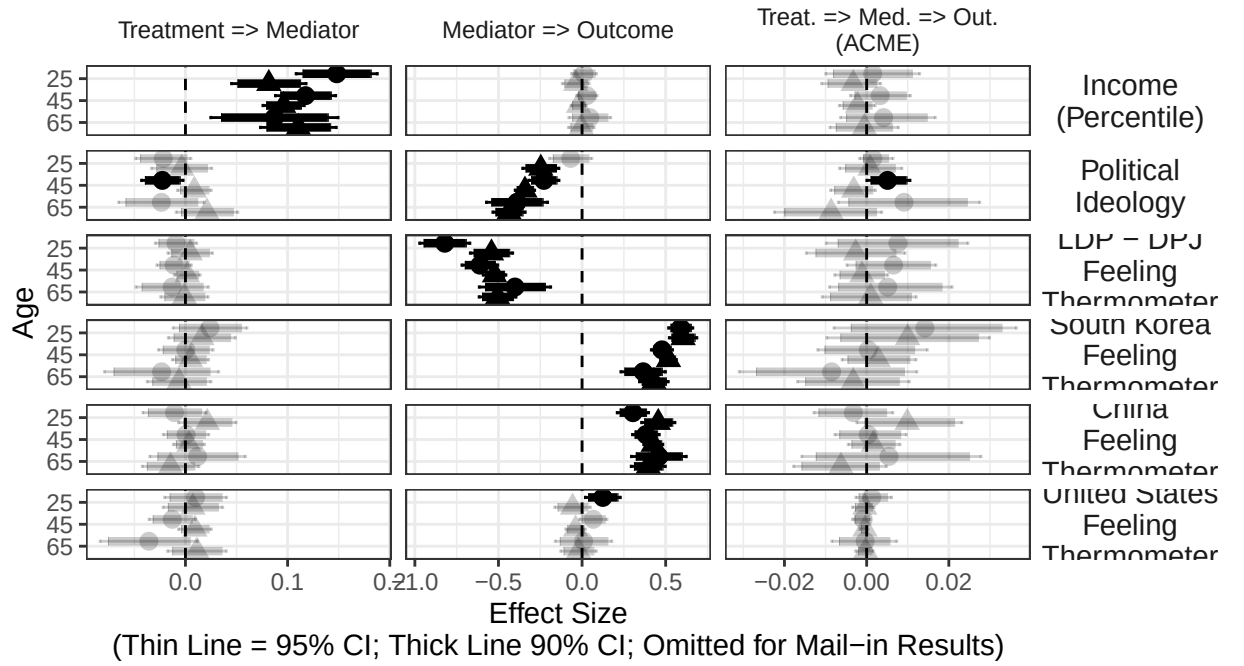

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```



ıce (Transparency) p<.05 p<.1 n.s. Gender (Point Shape) Female Male

Treatment: University education (1:attained, 0:not attained). Mediators: All rescaled to 0=minimum and 1=ma
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1). All models are estimate

```
ggsave(paste0(projdir,"/out/mediationplot_all_matchednoL_v5.png"),p,width=10,height=7)
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

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```

```
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## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

```
ggsave(paste0(projdir,"/out/mediationplot_all_matchednoL_v5.pdf"),p,width=10,height=7)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

Matched with Lambda = 50km

```
coefdts <- gencoefdts(readRDS(coefdtdir2))

require(ggplot2)
p <- ggplot(coefdts,
            aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,color=gender,alpha=pstar), #linetype=pstar
                position=position_dodge(width=-0.9), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,color=gender,alpha=pstar),
                position=position_dodge(width=-0.9), size=1.5, width=0.0) +
  geom_point(aes(shape=gender,alpha=pstar),
             position=position_dodge(width=-0.9), size=3) +
  facet_grid(med ~ mod, scales = "free") +
  scale_alpha_manual(name="Significance (Transparency)",values=c(1,0.5,0.2), drop=FALSE) +
  scale_shape_discrete(name="Gender (Point Shape)") +
  scale_color_manual(name="Gender (Point Shape)", values = rep("black",2)) +
  ylab("Effect Size\n(Thin Line = 95% CI; Thick Line 90% CI; Omitted for Mail-in Results)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). Mediatiors: All rescaled t
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=9),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals

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```

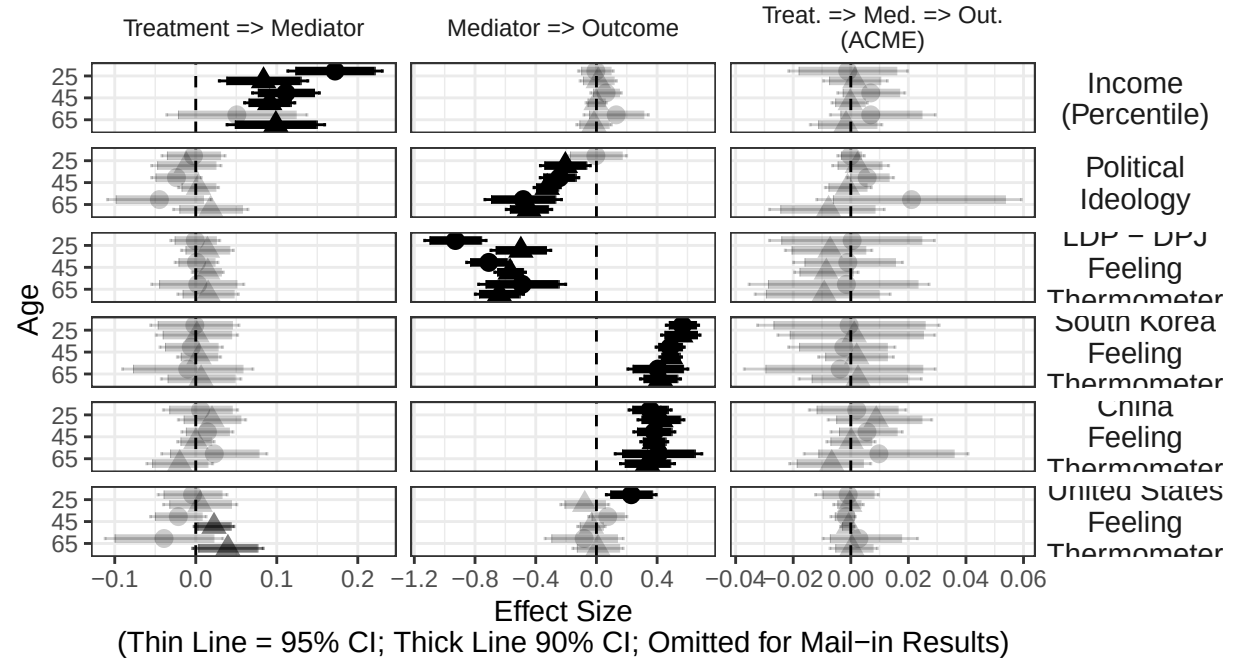

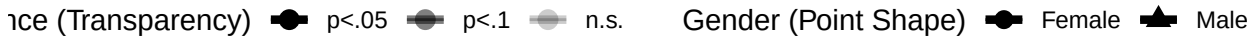

Treatment: University education (1:attained, 0:not attained). Mediators: All rescaled to 0=minimum and 1=ma
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1). All models are estimate

```
ggsave(paste0(projdir,"/out/mediationplot_all_matchedL50_v5.png"),p,width=10,height=7)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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ggsave(paste0(projdir,"/out/mediationplot_all_matchedL50_v5.pdf"),p,width=10,height=7)

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```

```
## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

Matched with Lambda = 100km

```
coefdts <- gencoefdts(readRDS(coefdtdir3))

require(ggplot2)
p <- ggplot(coefdts,
            aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,color=gender,alpha=pstar), #linetype=pstar
                position=position_dodge(width=-0.9), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,color=gender,alpha=pstar),
                position=position_dodge(width=-0.9), size=1.5, width=0.0) +
  geom_point(aes(shape=gender,alpha=pstar),
             position=position_dodge(width=-0.9), size=3) +
  facet_grid(med ~ mod, scales = "free") +
  scale_alpha_manual(name="Significance (Transparency)",values=c(1,0.5,0.2), drop=FALSE) +
  scale_shape_discrete(name="Gender (Point Shape)") +
  scale_color_manual(name="Gender (Point Shape)", values = rep("black",2)) +
  ylab("Effect Size\n(Thin Line = 95% CI; Thick Line 90% CI; Omitted for Mail-in Results)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). Mediatiors: All rescaled
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=9),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals

## Warning: position_dodge requires non-overlapping x intervals
```

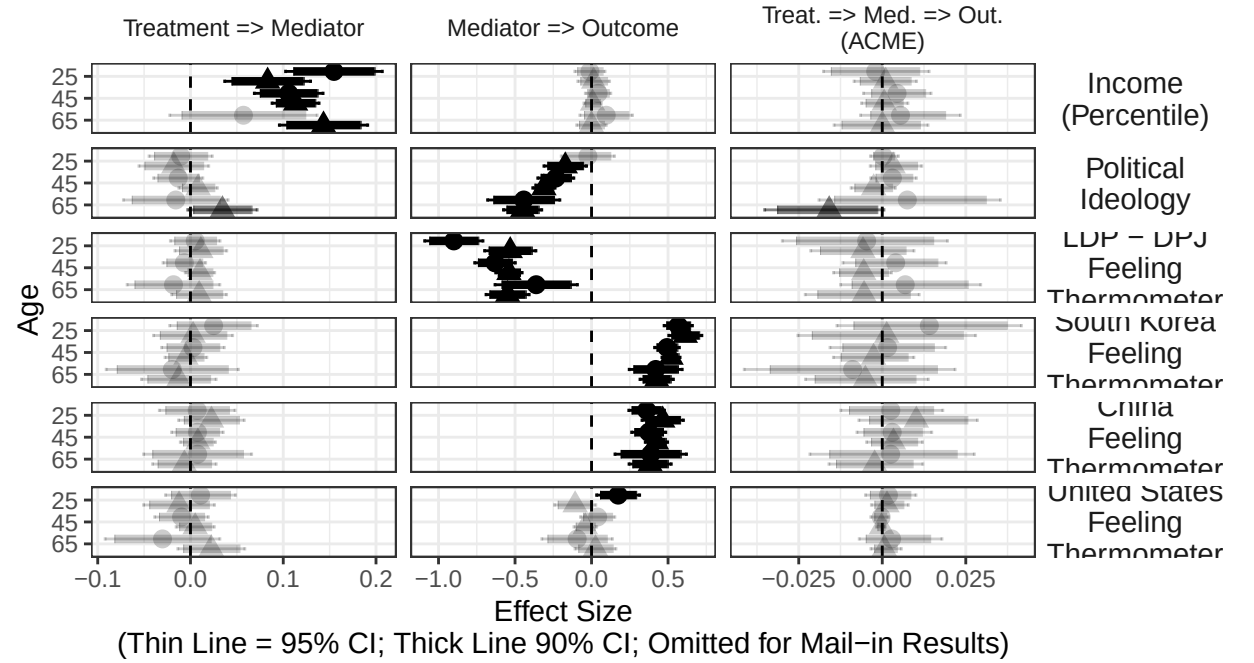

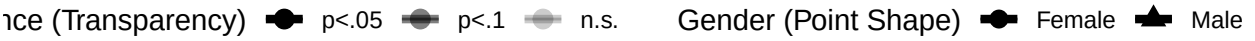

Treatment: University education (1:attained, 0:not attained). Mediators: All rescaled to 0=minimum and 1=ma
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1). All models are estimate

```
ggsave(paste0(projdir,"/out/mediationplot_all_matchedL100_v5.png"),p,width=10,height=7)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals
ggsave(paste0(projdir,"/out/mediationplot_all_matchedL100_v5.pdf"),p,width=10,height=7)

## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals
```

Matched with Lambda = 200km

```
coefdts <- gencoefdts(readRDS(coefdtdir4))

require(ggplot2)
p <- ggplot(coefdts,
            aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,color=gender,alpha=pstar), #linetype=pstar
                position=position_dodge(width=-0.9), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,color=gender,alpha=pstar),
                position=position_dodge(width=-0.9), size=1.5, width=0.0) +
  geom_point(aes(shape=gender,alpha=pstar),
             position=position_dodge(width=-0.9), size=3) +
  facet_grid(med ~ mod, scales = "free") +
  scale_alpha_manual(name="Significance (Transparency)",values=c(1,0.5,0.2), drop=FALSE) +
  scale_shape_discrete(name="Gender (Point Shape)") +
  scale_color_manual(name="Gender (Point Shape)", values = rep("black",2)) +
  ylab("Effect Size\n(Thin Line = 95% CI; Thick Line 90% CI; Omitted for Mail-in Results)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). Mediatiors: All rescaled
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=9),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

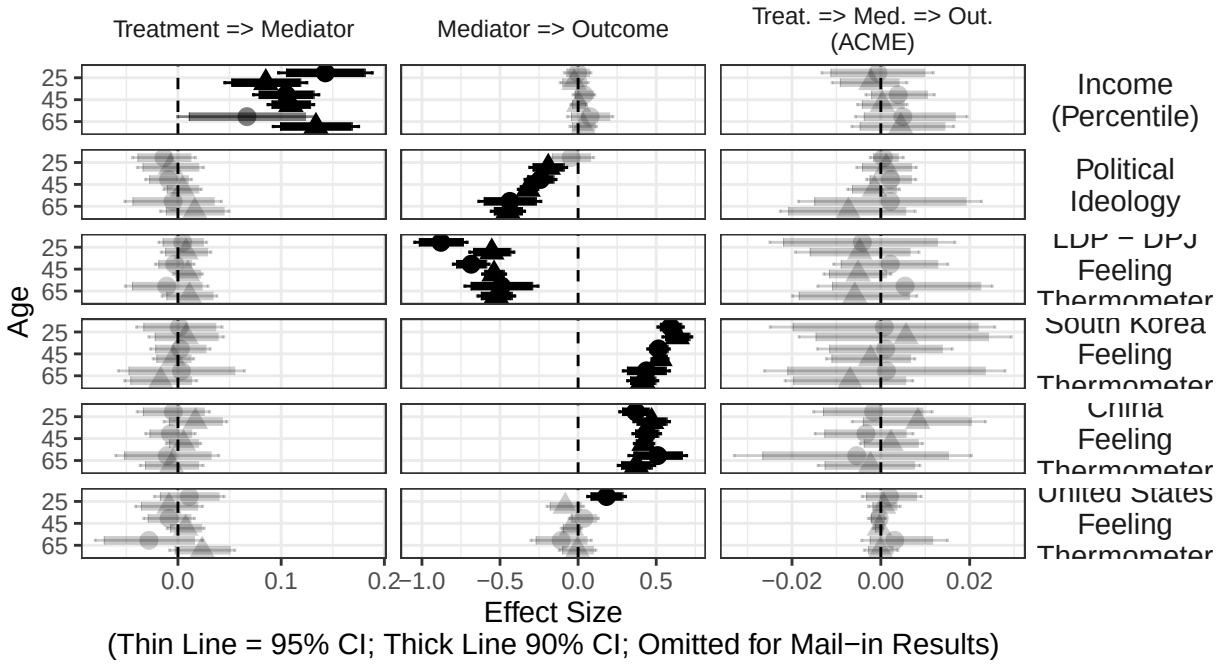

ıce (Transparency) p<.05 p<.1 n.s. Gender (Point Shape) Female Male

Treatment: University education (1:attained, 0:not attained). Mediators: All rescaled to 0=minimum and 1=ma
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1). All models are estimate

```
ggsave(paste0(projdir,"/out/mediationplot_all_matchedL200_v5.png"),p,width=10,height=7)
```

```
## Warning: position_dodge requires non-overlapping x intervals

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## Warning: position_dodge requires non-overlapping x intervals
```

Matched with Lambda = 100km

```
coefdts <- gencoefdts(readRDS(coefdtdir5))

require(ggplot2)
p <- ggplot(coefdts,
            aes(x=factor(age, levels=rev(names(table(age)))), y=est)) +
  geom_hline(aes(yintercept=0), linetype=2) +
  geom_errorbar(aes(ymin=lci95,ymax=uci95,color=gender,alpha=pstar), #linetype=pstar
                position=position_dodge(width=-0.9), size=0.5, width=0.3) +
  geom_errorbar(aes(ymin=lci90,ymax=uci90,color=gender,alpha=pstar),
                position=position_dodge(width=-0.9), size=1.5, width=0.0) +
  geom_point(aes(shape=gender,alpha=pstar),
             position=position_dodge(width=-0.9), size=3) +
  facet_grid(med ~ mod, scales = "free") +
  scale_alpha_manual(name="Significance (Transparency)",values=c(1,0.5,0.2), drop=FALSE) +
  scale_shape_discrete(name="Gender (Point Shape)") +
  scale_color_manual(name="Gender (Point Shape)", values = rep("black",2)) +
  ylab("Effect Size\n(Thin Line = 95% CI; Thick Line 90% CI; Omitted for Mail-in Results)") +
  xlab("Age") +
  labs(caption="Treatment: University education (1:attained, 0:not attained). Mediatiors: All rescaled
  coord_flip() + theme_bw() +
  theme(legend.position = "bottom",
        strip.text.x = element_text(size=9),
        strip.text.y = element_text(angle=0,size=11),
        strip.background = element_rect(fill=NA,color=NA),
        plot.caption = element_text(hjust=0),
        plot.subtitle = element_text(hjust=0.5))
p
```

```
## Warning: position_dodge requires non-overlapping x intervals

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```

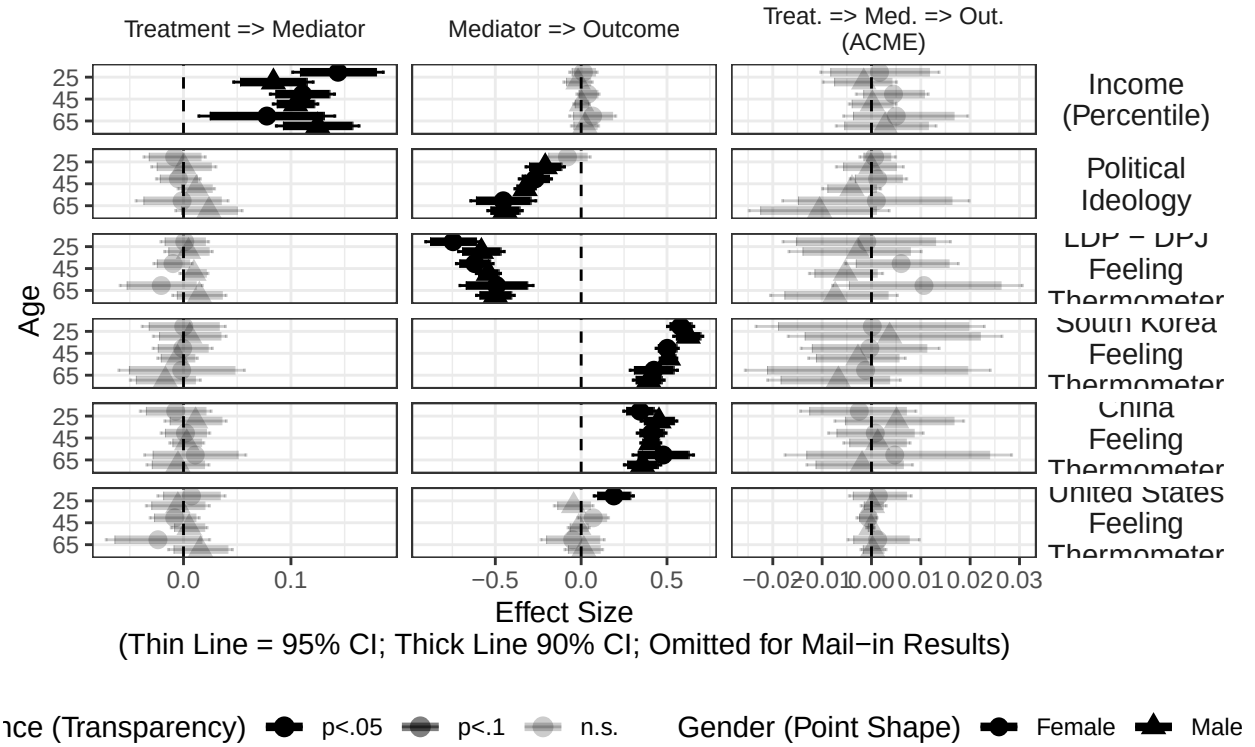

Treatment: University education (1:attained, 0:not attained). Mediators: All rescaled to 0=minimum and 1=ma
Outcome: Agreement with granting suffrage to permanent residents (rescaled to 0−1). All models are estimate

```
ggsave(paste0(projdir,"/out/mediationplot_all_matchedL350_v5.png"),p,width=10,height=7)
```

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## Warning: position_dodge requires non-overlapping x intervals
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## Warning: position_dodge requires non-overlapping x intervals
```

```
ggsave(paste0(projdir,"/out/mediationplot_all_matchedL350_v5.pdf"),p,width=10,height=7)
```

```
## Warning: position_dodge requires non-overlapping x intervals
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