# R code for small study effects analysis for Quillian et al. 2017 PNAS

# Open dmap\_update1024recoded\_3.dta and save to CSV format

# Import CSV dataset into R

fexp <- read.csv(file.choose(), header=TRUE)

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# Figure 1

par(mfrow=c(1,2))

par(mar=c(5,5,5,1))

# Subset for the Black/White Field Experiments 1989-2015

subset.black <- c()

subset.black <- ifelse((fexp$black==1 & fexp$effect\_level=="overall" & fexp$outcome2=="Callback/Interview" & fexp$rfieldwork\_year>1988), 1, 0)

subset.black

# Subset for the Hispanic/White Field Experiments 1989-2015

subset.hisp <- c()

subset.hisp <- ifelse((fexp$hisp==1 & fexp$effect\_level=="overall" & fexp$outcome2=="Callback/Interview" & fexp$rfieldwork\_year>1988), 1, 0)

subset.hisp

# Figure 1a: Funnel plot Black/White Field Experiments 1989-2015

plot(fexp$lrr\_best[subset.black==1], fexp$rr\_best\_lnse[subset.black==1], type="p", axes=T, main="Quillian et al. 2017 PNAS\nBlack / White Field Experiments 1989-2015", xlab="Log of the Response Ratio", ylab="Standard Error of the Log of the Response Ratio", pch=19, cex=1.25, xlim=c(-1.2,1.2), ylim=c(0.6,0), cex.lab=1, cex.axis=1, cex.main=1.25, xaxt="n", yaxs="i", xaxs="i")

rect(-1.2,0.6,1.2,0,col="lightsteelblue2")

points(fexp$lrr\_best[subset.black==1], fexp$rr\_best\_lnse[subset.black==1], pch=19, cex=1.25)

axis(1, at=c(-1.2,-0.8,-0.4,0,.4,.8,1.2))

abline(v=0, col="white")

text(-1.15,0.56, "Egger's test p-value = 0.003", cex=1, pos=4)

# Figure 1b: Funnel plot Hispanic/White Field Experiments 1989-2015

plot(fexp$lrr\_best[subset.hisp==1], fexp$rr\_best\_lnse[subset.hisp==1], type="p", axes=T, main="Quillian et al. 2017 PNAS\nHispanic / White Field Experiments 1989-2015", xlab="Log of the Response Ratio", ylab="Standard Error of the Log of the Response Ratio", pch=19, cex=1.25, xlim=c(-1.2,1.2), ylim=c(0.6,0), cex.lab=1, cex.axis=1, cex.main=1.25, xaxt="n", yaxs="i", xaxs="i")

rect(-1.2,0.6,1.2,0,col="navajowhite2")

points(fexp$lrr\_best[subset.hisp==1], fexp$rr\_best\_lnse[subset.hisp==1], pch=19, cex=1.25)

axis(1, at=c(-1.2,-0.8,-0.4,0,.4,.8,1.2))

abline(v=0, col="white")

text(-1.15,0.56, "Egger's test p-value = 0.413", cex=1, pos=4)

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# Figure 2

par(mfrow=c(1,2))

par(mar=c(5,5,5,1))

# Subset for the Black/White Field Experiments 1989-2008

subset.black08 <- c()

subset.black08 <- ifelse((fexp$black==1 & fexp$effect\_level=="overall" & fexp$outcome2=="Callback/Interview" & fexp$rfieldwork\_year>1988 & fexp$rfieldwork\_year<=2008), 1, 0)

subset.black08

# Subset for the Black/White Field Experiments 2009-2015

subset.black15 <- c()

subset.black15 <- ifelse((fexp$black==1 & fexp$effect\_level=="overall" & fexp$outcome2=="Callback/Interview" & fexp$rfieldwork\_year>2008 & fexp$rfieldwork\_year<=2015), 1, 0)

subset.black15

# Figure 2a: Funnel plot Black/White Field Experiments 1989-2008

plot(fexp$lrr\_best[subset.black08==1], fexp$rr\_best\_lnse[subset.black08==1], type="p", axes=T, main="Quillian et al. 2017 PNAS\nBlack / White Field Experiments 1989-2008", xlab="Log of the Response Ratio", ylab="Standard Error of the Log of the Response Ratio", pch=19, cex=1.25, xlim=c(-1.2,1.2), ylim=c(0.6,0), cex.lab=1, cex.axis=1, cex.main=1.25, xaxt="n", yaxs="i", xaxs="i")

rect(-1.2,0.6,1.2,0,col="lightsteelblue2")

points(fexp$lrr\_best[subset.black08==1], fexp$rr\_best\_lnse[subset.black08==1], pch=19, cex=1.25)

axis(1, at=c(-1.2,-0.8,-0.4,0,.4,.8,1.2))

abline(v=0, col="white")

text(-1.15,0.56, "Egger's test p-value = 0.023", cex=1, pos=4)

# Figure 2b: Funnel plot Black/White Field Experiments 2009-2015

plot(fexp$lrr\_best[subset.black15==1], fexp$rr\_best\_lnse[subset.black15==1], type="p", axes=T, main="Quillian et al. 2017 PNAS\nBlack / White Field Experiments 2009-2015", xlab="Log of the Response Ratio", ylab="Standard Error of the Log of the Response Ratio", pch=19, cex=1.25, xlim=c(-1.2,1.2), ylim=c(0.6,0), cex.lab=1, cex.axis=1, cex.main=1.25, xaxt="n", yaxs="i", xaxs="i")

rect(-1.2,0.6,1.2,0,col="lightsteelblue2")

points(fexp$lrr\_best[subset.black15==1], fexp$rr\_best\_lnse[subset.black15==1], pch=19, cex=1.25)

axis(1, at=c(-1.2,-0.8,-0.4,0,.4,.8,1.2))

abline(v=0, col="white")

text(-1.15,0.56, "Egger's test p-value = 0.434", cex=1, pos=4)

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# Figure 3

subset.blackCORR <- c()

subset.blackCORR <- ifelse((fexp$black==1 & fexp$effect\_level=="overall" & fexp$outcome2=="Callback/Interview" & fexp$rfieldwork\_year>1988 & fexp$study\_method=="Correspondence"), 1, 0)

subset.blackCORR

subset.blackINPA <- c()

subset.blackINPA <- ifelse((fexp$black==1 & fexp$effect\_level=="overall" & fexp$outcome2=="Callback/Interview" & fexp$rfieldwork\_year>1988 & fexp$study\_method=="In-person audit"), 1, 0)

subset.blackINPA

par(mfrow=c(1,2))

par(mar=c(5,6,5,1))

# Figure 3a: Funnel plot Black/White Field Experiments 1989-2015 [Correspondence]

plot(fexp$lrr\_best[subset.blackCORR==1], fexp$rr\_best\_lnse[subset.blackCORR==1], type="p", axes=T, main="Quillian et al. 2017 PNAS\nBlack / White Field Experiments 1989-2015 Correspondence", xlab="Log of the Response Ratio", ylab="Standard Error of the\nLog of the Response Ratio", pch=19, cex=1.25, xlim=c(-1.2,1.2), ylim=c(0.6,0), cex.lab=1, cex.axis=1, cex.main=1.25, xaxt="n", yaxs="i", xaxs="i")

rect(-1.2,0.6,1.2,0,col="lightsteelblue2")

points(fexp$lrr\_best[subset.blackCORR==1], fexp$rr\_best\_lnse[subset.blackCORR==1], pch=19, cex=1.25)

axis(1, at=c(-1.2,-0.8,-0.4,0,.4,.8,1.2))

abline(v=0, col="white")

text(-1.15,0.56, "Egger's test p-value = 0.647", cex=1, pos=4)

# Figure 3b: Funnel plot Black/White Field Experiments 1989-2015 [In-person Audit]

plot(fexp$lrr\_best[subset.blackINPA==1], fexp$rr\_best\_lnse[subset.blackINPA==1], type="p", axes=T, main="Quillian et al. 2017 PNAS\nBlack / White Field Experiments 1989-2015 In-person Audit", xlab="Log of the Response Ratio", ylab="Standard Error of the\nLog of the Response Ratio", pch=19, cex=1.25, xlim=c(-1.2,1.2), ylim=c(0.6,0), cex.lab=1, cex.axis=1, cex.main=1.25, xaxt="n", yaxs="i", xaxs="i")

rect(-1.2,0.6,1.2,0,col="lightsteelblue2")

points(fexp$lrr\_best[subset.blackINPA==1], fexp$rr\_best\_lnse[subset.blackINPA==1], pch=19, cex=1.25)

axis(1, at=c(-1.2,-0.8,-0.4,0,.4,.8,1.2))

abline(v=0, col="white")

text(-1.15,0.56, "Egger's test p-value = 0.043", cex=1, pos=4)

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# Figure 4

par(mfrow=c(2,1))

par(mar=c(5,6,5,2))

subset.blackCORR <- c()

subset.blackCORR <- ifelse((fexp$black==1 & fexp$effect\_level=="overall" & fexp$outcome2=="Callback/Interview" & fexp$rfieldwork\_year>1988 & fexp$study\_method=="Correspondence"), 1, 0)

subset.blackCORR

subset.blackINPA <- c()

subset.blackINPA <- ifelse((fexp$black==1 & fexp$effect\_level=="overall" & fexp$outcome2=="Callback/Interview" & fexp$rfieldwork\_year>1988 & fexp$study\_method=="In-person audit"), 1, 0)

subset.blackINPA

# Figure 4a: Over time Black/White Field Experiments 1989-2015 [Correspondence]

plot(fexp$rfieldwork\_year[subset.blackCORR==1], fexp$lrr\_best[subset.blackCORR==1], type="p", axes=T, main="Quillian et al. 2017 PNAS\nBlack / White Field Experiments 1989-2015 Correspondence", xlab="Fieldwork Year", ylab="Log of the Response Ratio", pch=19, cex=1.25, xlim=c(1988,2016), ylim=c(-1.2, 1.2), cex.lab=1, cex.axis=1, cex.main=1.25, xaxt="n", yaxt="n", yaxs="i", xaxs="i")

rect(1988,-1.2,2016,1.2,col="lightsteelblue2")

abline(h=0, col="white")

axis(1, at=c(1988, 1992, 1996, 2000, 2004, 2008, 2012, 2016))

axis(2, at=c(-1.2,-0.8,-0.4,0,.4,.8,1.2))

points(fexp$rfieldwork\_year[subset.blackCORR==1], fexp$lrr\_best[subset.blackCORR==1], pch=19, cex=1.25)

# Figure 4b: Over time Black/White Field Experiments 1989-2015 [In-person Audit]

plot(fexp$rfieldwork\_year[subset.blackINPA==1], fexp$lrr\_best[subset.blackINPA==1], type="p", axes=T, main="Quillian et al. 2017 PNAS\nBlack / White Field Experiments 1989-2015 In-person Audit", xlab="Fieldwork Year", ylab="Log of the Response Ratio", pch=19, cex=1.25, xlim=c(1988,2016), ylim=c(-1.2, 1.2), cex.lab=1, cex.axis=1, cex.main=1.25, xaxt="n", yaxt="n", yaxs="i", xaxs="i")

rect(1988,-1.2,2016,1.2,col="lightsteelblue2")

abline(h=0, col="white")

axis(1, at=c(1988, 1992, 1996, 2000, 2004, 2008, 2012, 2016))

axis(2, at=c(-1.2,-0.8,-0.4,0,.4,.8,1.2))

points(fexp$rfieldwork\_year[subset.blackINPA==1], fexp$lrr\_best[subset.blackINPA==1], pch=19, cex=1.25)

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# Regressions

fit <- lm(fexp$lrr\_best[subset.blackCORR==1] ~ fexp$rfieldwork\_year[subset.blackCORR==1])

summary(fit)

fit <- lm(fexp$lrr\_best[subset.blackINPA==1] ~ fexp$rfieldwork\_year[subset.blackINPA==1])

summary(fit)

fit <- lm(fexp$lrr\_best[subset.black==1 & fexp$rfieldwork\_year>1999] ~ fexp$rfieldwork\_year[subset.black==1& fexp$rfieldwork\_year>1999])

summary(fit)

fit <- lm(fexp$lrr\_best[subset.black==1 & fexp$rfieldwork\_year>1970] ~ fexp$rfieldwork\_year[subset.black==1& fexp$rfieldwork\_year>1970])

summary(fit)

fit <- lm(fexp$lrr\_best[subset.blackINPA==1 & fexp$rfieldwork\_year>1999] ~ fexp$rfieldwork\_year[subset.blackINPA==1 & fexp$rfieldwork\_year>1999])

summary(fit)

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# Figure 5

par(mfrow=c(1,1))

par(mar=c(5,5,5,2))

subset.black2000 <- c()

subset.black2000 <- ifelse((fexp$black==1 & fexp$effect\_level=="overall" & fexp$outcome2=="Callback/Interview" & fexp$rfieldwork\_year>2000), 1, 0)

subset.black2000

plot(fexp$rfieldwork\_year[subset.black2000==1], fexp$lrr\_best[subset.black2000==1], type="p", axes=T, main="Quillian et al. 2017 PNAS\nBlack / White Field Experiments 2001-2015", xlab="Fieldwork Year", ylab="Log of the Response Ratio", pch=19, cex=1.25, xlim=c(2000,2016), ylim=c(-1.2, 1.2), cex.lab=1, cex.axis=1, cex.main=1.25, xaxt="n", yaxt="n", yaxs="i", xaxs="i")

rect(1988,-1.2,2016,1.2,col="lightsteelblue2")

abline(h=0, col="white")

axis(1, at=c(2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016))

axis(2, at=c(-1.2,-0.8,-0.4,0,.4,.8,1.2))

points(fexp$rfieldwork\_year[subset.black2000==1], fexp$lrr\_best[subset.black2000==1], pch=19, cex=1.25)