CombinedDataset <- readxl::read\_excel("~/Desktop/Desktop - AmandaMac/School/Masters in Data Analytics/MIS581 - Capstone Business Intelligence and Data Analytics/CombinedDataset.xlsx", sheet = "CombinedData", skip = 4)

names(CombinedDataset)[1] <- "Categories"

names(CombinedDataset)[2] <- "TotalBothInsuredUninsured"

names(CombinedDataset)[2] <- "TotalBothInsuredUninsured2017"

names(CombinedDataset)[3] <- "TotalBothInsuredUninsured2018"

names(CombinedDataset)[4] <- "TotalBothInsuredUninsured2019"

names(CombinedDataset)[5] <- "TotalBothInsuredUninsured2020"

names(CombinedDataset)[6] <- "AnyHealthInsurance2017"

names(CombinedDataset)[7] <- "AnyHealthInsurance2018"

names(CombinedDataset)[8] <- "AnyHealthInsurance2019"

names(CombinedDataset)[9] <- "AnyHealthInsurance2020"

names(CombinedDataset)[10] <- "AnyHealthInsurancePercent2017"

names(CombinedDataset)[11] <- "AnyHealthInsurancePercent2018"

names(CombinedDataset)[12] <- "AnyHealthInsurancePercent2019"

names(CombinedDataset)[13] <- "AnyHealthInsurancePercent2020"

names(CombinedDataset)[14] <- "PrivateInsurance2017"

names(CombinedDataset)[15] <- "PrivateInsurance2018"

names(CombinedDataset)[16] <- "PrivateInsurance2019"

names(CombinedDataset)[17] <- "PrivateInsurance2020"

names(CombinedDataset)[18] <- "PrivateInsurancePercent2017"

names(CombinedDataset)[19] <- "PrivateInsurancePercent2018"

names(CombinedDataset)[20] <- "PrivateInsurancePercent2019"

names(CombinedDataset)[21] <- "PrivateInsurancePercent2020"

names(CombinedDataset)[22] <- "EmploymentBasedInsurance2017"

names(CombinedDataset)[23] <- "EmploymentBasedInsurance2018"

names(CombinedDataset)[24] <- "EmploymentBasedInsurance2019"

names(CombinedDataset)[25] <- "EmploymentBasedInsurance2020"

names(CombinedDataset)[26] <- "EmploymentBasedInsurancePercent2017"

names(CombinedDataset)[27] <- "EmploymentBasedInsurancePercent2018"

names(CombinedDataset)[28] <- "EmploymentBasedInsurancePercent2019"

names(CombinedDataset)[29] <- "EmploymentBasedInsurancePercent2020"

names(CombinedDataset)[30] <- "DirectPurchaseInsurance2017"

names(CombinedDataset)[31] <- "DirectPurchaseInsurance2018"

names(CombinedDataset)[32] <- "DirectPurchaseInsurance2019"

names(CombinedDataset)[33] <- "DirectPurchaseInsurance2020"

names(CombinedDataset)[34] <- "DirectPurchaseInsurancePercent2017"

names(CombinedDataset)[35] <- "DirectPurchaseInsurancePercent2018"

names(CombinedDataset)[36] <- "DirectPurchaseInsurancePercent2019"

names(CombinedDataset)[37] <- "DirectPurchaseInsurancePercent2020"

names(CombinedDataset)[38] <- "TRICAREInsurance2017"

names(CombinedDataset)[39] <- "TRICAREInsurance2018"

names(CombinedDataset)[40] <- "TRICAREInsurance2019"

names(CombinedDataset)[41] <- "TRICAREInsurance2020"

names(CombinedDataset)[42] <- "TRICAREInsurancePercent2017"

names(CombinedDataset)[43] <- "TRICAREInsurancePercent2018"

names(CombinedDataset)[44] <- "TRICAREInsurancePercent2019"

names(CombinedDataset)[45] <- "TRICAREInsurancePercent2020"

names(CombinedDataset)[46] <- "PublicInsurance2017"

names(CombinedDataset)[47] <- "PublicInsurance2018"

names(CombinedDataset)[48] <- "PublicInsurance2019"

names(CombinedDataset)[49] <- "PublicInsurance2020"

names(CombinedDataset)[50] <- "PublicInsurancePercent2017"

names(CombinedDataset)[51] <- "PublicInsurancePercent2018"

names(CombinedDataset)[52] <- "PublicInsurancePercent2019"

names(CombinedDataset)[53] <- "PublicInsurancePercent2020"

names(CombinedDataset)[54] <- "MedicareInsurance2017"

names(CombinedDataset)[55] <- "MedicareInsurance2018"

names(CombinedDataset)[56] <- "MedicareInsurance2019"

names(CombinedDataset)[57] <- "MedicareInsurance2020"

names(CombinedDataset)[58] <- "MedicareInsurancePercent2017"

names(CombinedDataset)[59] <- "MedicareInsurancePercent2018"

names(CombinedDataset)[60] <- "MedicareInsurancePercent2019"

names(CombinedDataset)[61] <- "MedicareInsurancePercent2020"

names(CombinedDataset)[62] <- "MedicaidInsurance2017"

names(CombinedDataset)[63] <- "MedicaidInsurance2018"

names(CombinedDataset)[64] <- "MedicaidInsurance2019"

names(CombinedDataset)[65] <- "MedicaidInsurance2020"

names(CombinedDataset)[66] <- "MedicaidInsurancePercent2017"

names(CombinedDataset)[67] <- "MedicaidInsurancePercent2018"

names(CombinedDataset)[68] <- "MedicaidInsurancePercent2019"

names(CombinedDataset)[69] <- "MedicaidInsurancePercent2020"

names(CombinedDataset)[70] <- "VAInsurance2017"

names(CombinedDataset)[71] <- "VAInsurance2018"

names(CombinedDataset)[72] <- "VAInsurance2019"

names(CombinedDataset)[73] <- "VAInsurance2020"

names(CombinedDataset)[74] <- "VAInsurancePercent2017"

names(CombinedDataset)[75] <- "VAInsurancePercent2018"

names(CombinedDataset)[76] <- "VAInsurancePercent2019"

names(CombinedDataset)[77] <- "VAInsurancePercent2020"

names(CombinedDataset)[78] <- "Uninsured2017"

names(CombinedDataset)[79] <- "Uninsured2018"

names(CombinedDataset)[80] <- "Uninsured2019"

names(CombinedDataset)[81] <- "Uninsured2020"

names(CombinedDataset)[82] <- "UninsuredPercent2017"

names(CombinedDataset)[83] <- "UninsuredPercent2018"

names(CombinedDataset)[84] <- "UninsuredPercent2019"

names(CombinedDataset)[85] <- "UninsuredPercent2020"

CombinedDataset[is.na(CombinedDataset)] <- 0

CombinedDataset <- CombinedDataset[-c(1, 3, 11, 19), ]

rowNamesArray <- unlist(CombinedDataset[,1])

CombinedDataset <- CombinedDataset[, -c(1)]

CombinedDataset <- sapply(CombinedDataset, as.numeric)

rowNamesArray[2:8] <- paste0('HouseholdIncome\_', rowNamesArray[2:8])

rowNamesArray[9:15] <- paste0('Education\_', rowNamesArray[9:15])

rowNamesArray[16:21] <- paste0('MaritalStatus\_', rowNamesArray[16:21])

row.names(CombinedDataset) <- rowNamesArray

dsTotalInsuredUninsured2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("TotalBothInsuredUninsured2017"))

dsTotalInsuredUninsured2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("TotalBothInsuredUninsured2018"))

dsTotalInsuredUninsured2019 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("TotalBothInsuredUninsured2019"))

dsTotalInsuredUninsured2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("TotalBothInsuredUninsured2020"))

dsTotalInsuredAny2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("AnyHealthInsurance2017"))

dsTotalInsuredAny2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("AnyHealthInsurance2018"))

dsTotalInsuredAny2019<- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("AnyHealthInsurance2019"))

dsTotalInsuredAny2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("AnyHealthInsurance2020"))

dsTotalInsuredPrivate2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("PrivateInsurance2017"))

dsTotalInsuredPrivate2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("PrivateInsurance2018"))

dsTotalInsuredPrivate2019<- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("PrivateInsurance2019"))

dsTotalInsuredPrivate2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("PrivateInsurance2020"))

dsTotalInsuredEmploymentBased2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("EmploymentBasedInsurance2017"))

dsTotalInsuredEmploymentBased2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("EmploymentBasedInsurance2018"))

dsTotalInsuredEmploymentBased2019<- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("EmploymentBasedInsurance2019"))

dsTotalInsuredEmploymentBased2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("EmploymentBasedInsurance2020"))

dsTotalInsuredDirectPurchase2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("DirectPurchaseInsurance2017"))

dsTotalInsuredDirectPurchase2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("DirectPurchaseInsurance2018"))

dsTotalInsuredDirectPurchase2019<- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("DirectPurchaseInsurance2019"))

dsTotalInsuredDirectPurchase2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("DirectPurchaseInsurance2020"))

dsTotalInsuredTRICARE2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("TRICAREInsurance2017"))

dsTotalInsuredTRICARE2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("TRICAREInsurance2018"))

dsTotalInsuredTRICARE2019<- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("TRICAREInsurance2019"))

dsTotalInsuredTRICARE2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("TRICAREInsurance2020"))

dsTotalInsuredPublicInsurance2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("PublicInsurance2017"))

dsTotalInsuredPublicInsurance2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("PublicInsurance2018"))

dsTotalInsuredPublicInsurance2019<- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("PublicInsurance2019"))

dsTotalInsuredPublicInsurance2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("PublicInsurance2020"))

dsTotalInsuredMedicareInsurance2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("MedicareInsurance2017"))

dsTotalInsuredMedicareInsurance2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("MedicareInsurance2018"))

dsTotalInsuredMedicareInsurance2019<- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("MedicareInsurance2019"))

dsTotalInsuredMedicareInsurance2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("MedicareInsurance2020"))

dsTotalInsuredMedicaidInsurance2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("MedicaidInsurance2017"))

dsTotalInsuredMedicaidInsurance2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("MedicaidInsurance2018"))

dsTotalInsuredMedicaidInsurance2019<- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("MedicaidInsurance2019"))

dsTotalInsuredMedicaidInsurance2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("MedicaidInsurance2020"))

dsTotalInsuredVAInsurance2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("VAInsurance2017"))

dsTotalInsuredVAInsurance2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("VAInsurance2018"))

dsTotalInsuredVAInsurance2019<- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("VAInsurance2019"))

dsTotalInsuredVAInsurance2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("VAInsurance2020"))

dsTotalUninsured2017 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("Uninsured2017"))

dsTotalUninsured2018 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("Uninsured2018"))

dsTotalUninsured2019<- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("Uninsured2019"))

dsTotalUninsured2020 <- subset(CombinedDataset, row.names(CombinedDataset) == "Total", select = c("Uninsured2020"))

dsHouseholdIncomeTotals2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2017"))

dsHouseholdIncomeTotals2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2018"))

dsHouseholdIncomeTotals2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2019"))

dsHouseholdIncomeTotals2020 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2020"))

dsHouseholdIncomeAny2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017"))

dsHouseholdIncomeAny2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2018"))

dsHouseholdIncomeAny2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2019"))

dsHouseholdIncomeAny2020<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2020"))

dsHouseholdIncomePrivate2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("PrivateInsurance2017"))

dsHouseholdIncomePrivate2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("PrivateInsurance2018"))

dsHouseholdIncomePrivate2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("PrivateInsurance2019"))

dsHouseholdIncomePrivate2020<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("PrivateInsurance2020"))

dsHouseholdIncomeEmploymentBased2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2017"))

dsHouseholdIncomeEmploymentBased2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2018"))

dsHouseholdIncomeEmploymentBased2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2019"))

dsHouseholdIncomeEmploymentBased2020<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2020"))

dsHouseholdIncomeDirectPurchase2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2017"))

dsHouseholdIncomeDirectPurchase2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2018"))

dsHouseholdIncomeDirectPurchase2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2019"))

dsHouseholdIncomeDirectPurchase2020<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2020"))

dsHouseholdIncomeTRICARE2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2017"))

dsHouseholdIncomeTRICARE2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2018"))

dsHouseholdIncomeTRICARE2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2019"))

dsHouseholdIncomeTRICARE2020<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2020"))

dsHouseholdIncomePublic2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("PublicInsurance2017"))

dsHouseholdIncomePublic2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("PublicInsurance2018"))

dsHouseholdIncomePublic2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("PublicInsurance2019"))

dsHouseholdIncomePublic2020<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("PublicInsurance2020"))

dsHouseholdIncomeMedicare2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("MedicareInsurance2017"))

dsHouseholdIncomeMedicare2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("MedicareInsurance2018"))

dsHouseholdIncomeMedicare2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("MedicareInsurance2019"))

dsHouseholdIncomeMedicare2020<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("MedicareInsurance2020"))

dsHouseholdIncomeMedicaid2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2017"))

dsHouseholdIncomeMedicaid2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2018"))

dsHouseholdIncomeMedicaid2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2019"))

dsHouseholdIncomeMedicaid2020<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2020"))

dsHouseholdIncomeVA2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("VAInsurance2017"))

dsHouseholdIncomeVA2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("VAInsurance2018"))

dsHouseholdIncomeVA2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("VAInsurance2019"))

dsHouseholdIncomeVA2020<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("VAInsurance2020"))

dsHouseholdIncomeUninsured2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("Uninsured2017"))

dsHouseholdIncomeUninsured2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("Uninsured2018"))

dsHouseholdIncomeUninsured2019<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("Uninsured2019"))

dsHouseholdIncomeUninsured2020<- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("Uninsured2020"))

dsHouseholdIncomeAnyAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017","AnyHealthInsurance2018","AnyHealthInsurance2019","AnyHealthInsurance2020"))

dsHouseholdIncomePrivateAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("PrivateInsurance2017","PrivateInsurance2018","PrivateInsurance2019","PrivateInsurance2020"))

dsHouseholdIncomeEmploymentBasedAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2017","EmploymentBasedInsurance2018","EmploymentBasedInsurance2019","EmploymentBasedInsurance2020"))

dsHouseholdIncomeDirectPurchaseAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2017","DirectPurchaseInsurance2018","DirectPurchaseInsurance2019","DirectPurchaseInsurance2020"))

dsHouseholdIncomeTRICAREAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2017","TRICAREInsurance2018","TRICAREInsurance2019","TRICAREInsurance2020"))

dsHouseholdIncomePublicAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("PublicInsurance2017","PublicInsurance2018","PublicInsurance2019","PublicInsurance2020"))

dsHouseholdIncomeMedicareAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("MedicareInsurance2017","MedicareInsurance2018","MedicareInsurance2019","MedicareInsurance2020"))

dsHouseholdIncomeMedicaidAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2017","MedicaidInsurance2018","MedicaidInsurance2019","MedicaidInsurance2020"))

dsHouseholdIncomeVAAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("VAInsurance2017","VAInsurance2018","VAInsurance2019","VAInsurance2020"))

dsHouseholdIncomeUninsuredAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("Uninsured2017","Uninsured2018","Uninsured2019","Uninsured2020"))

dsEducationTotals2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2017"))

dsEducationTotals2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2018"))

dsEducationTotals2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2019"))

dsEducationTotals2020 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2020"))

dsEducationAny2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017"))

dsEducationAny2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2018"))

dsEducationAny2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2019"))

dsEducationAny2020<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2020"))

dsEducationPrivate2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("PrivateInsurance2017"))

dsEducationPrivate2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("PrivateInsurance2018"))

dsEducationPrivate2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("PrivateInsurance2019"))

dsEducationPrivate2020<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("PrivateInsurance2020"))

dsEducationEmploymentBased2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2017"))

dsEducationEmploymentBased2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2018"))

dsEducationEmploymentBased2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2019"))

dsEducationEmploymentBased2020<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2020"))

dsEducationDirectPurchase2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2017"))

dsEducationDirectPurchase2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2018"))

dsEducationDirectPurchase2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2019"))

dsEducationDirectPurchase2020<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2020"))

dsEducationTRICARE2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2017"))

dsEducationTRICARE2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2018"))

dsEducationTRICARE2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2019"))

dsEducationTRICARE2020<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2020"))

dsEducationPublic2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("PublicInsurance2017"))

dsEducationPublic2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("PublicInsurance2018"))

dsEducationPublic2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("PublicInsurance2019"))

dsEducationPublic2020<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("PublicInsurance2020"))

dsEducationMedicare2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("MedicareInsurance2017"))

dsEducationMedicare2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("MedicareInsurance2018"))

dsEducationMedicare2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("MedicareInsurance2019"))

dsEducationMedicare2020<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("MedicareInsurance2020"))

dsEducationMedicaid2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2017"))

dsEducationMedicaid2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2018"))

dsEducationMedicaid2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2019"))

dsEducationMedicaid2020<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2020"))

dsEducationVA2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("VAInsurance2017"))

dsEducationVA2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("VAInsurance2018"))

dsEducationVA2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("VAInsurance2019"))

dsEducationVA2020<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("VAInsurance2020"))

dsEducationUninsured2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("Uninsured2017"))

dsEducationUninsured2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("Uninsured2018"))

dsEducationUninsured2019<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("Uninsured2019"))

dsEducationUninsured2020<- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("Uninsured2020"))

dsEducationAnyAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017","AnyHealthInsurance2018","AnyHealthInsurance2019","AnyHealthInsurance2020"))

dsEducationPrivateAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("PrivateInsurance2017","PrivateInsurance2018","PrivateInsurance2019","PrivateInsurance2020"))

dsEducationEmploymentBasedAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2017","EmploymentBasedInsurance2018","EmploymentBasedInsurance2019","EmploymentBasedInsurance2020"))

dsEducationDirectPurchaseAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2017","DirectPurchaseInsurance2018","DirectPurchaseInsurance2019","DirectPurchaseInsurance2020"))

dsEducationTRICAREAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2017","TRICAREInsurance2018","TRICAREInsurance2019","TRICAREInsurance2020"))

dsEducationPublicAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("PublicInsurance2017","PublicInsurance2018","PublicInsurance2019","PublicInsurance2020"))

dsEducationMedicareAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("MedicareInsurance2017","MedicareInsurance2018","MedicareInsurance2019","MedicareInsurance2020"))

dsEducationMedicaidAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2017","MedicaidInsurance2018","MedicaidInsurance2019","MedicaidInsurance2020"))

dsEducationVAAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("VAInsurance2017","VAInsurance2018","VAInsurance2019","VAInsurance2020"))

dsEducationUninsuredAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("Uninsured2017","Uninsured2018","Uninsured2019","Uninsured2020"))

dsMaritalStatusTotals2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2017"))

dsMaritalStatusTotals2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2018"))

dsMaritalStatusTotals2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2019"))

dsMaritalStatusTotals2020 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("TotalBothInsuredUninsured2020"))

dsMaritalStatusAny2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017"))

dsMaritalStatusAny2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2018"))

dsMaritalStatusAny2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2019"))

dsMaritalStatusAny2020<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2020"))

dsMaritalStatusPrivate2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("PrivateInsurance2017"))

dsMaritalStatusPrivate2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("PrivateInsurance2018"))

dsMaritalStatusPrivate2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("PrivateInsurance2019"))

dsMaritalStatusPrivate2020<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("PrivateInsurance2020"))

dsMaritalStatusEmploymentBased2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2017"))

dsMaritalStatusEmploymentBased2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2018"))

dsMaritalStatusEmploymentBased2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2019"))

dsMaritalStatusEmploymentBased2020<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2020"))

dsMaritalStatusDirectPurchase2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2017"))

dsMaritalStatusDirectPurchase2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2018"))

dsMaritalStatusDirectPurchase2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2019"))

dsMaritalStatusDirectPurchase2020<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2020"))

dsMaritalStatusTRICARE2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2017"))

dsMaritalStatusTRICARE2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2018"))

dsMaritalStatusTRICARE2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2019"))

dsMaritalStatusTRICARE2020<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2020"))

dsMaritalStatusPublic2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("PublicInsurance2017"))

dsMaritalStatusPublic2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("PublicInsurance2018"))

dsMaritalStatusPublic2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("PublicInsurance2019"))

dsMaritalStatusPublic2020<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("PublicInsurance2020"))

dsMaritalStatusMedicare2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("MedicareInsurance2017"))

dsMaritalStatusMedicare2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("MedicareInsurance2018"))

dsMaritalStatusMedicare2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("MedicareInsurance2019"))

dsMaritalStatusMedicare2020<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("MedicareInsurance2020"))

dsMaritalStatusMedicaid2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2017"))

dsMaritalStatusMedicaid2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2018"))

dsMaritalStatusMedicaid2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2019"))

dsMaritalStatusMedicaid2020<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2020"))

dsMaritalStatusVA2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("VAInsurance2017"))

dsMaritalStatusVA2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("VAInsurance2018"))

dsMaritalStatusVA2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("VAInsurance2019"))

dsMaritalStatusVA2020<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("VAInsurance2020"))

dsMaritalStatusUninsured2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("Uninsured2017"))

dsMaritalStatusUninsured2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("Uninsured2018"))

dsMaritalStatusUninsured2019<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("Uninsured2019"))

dsMaritalStatusUninsured2020<- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("Uninsured2020"))

dsMaritalStatusAnyAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017","AnyHealthInsurance2018","AnyHealthInsurance2019","AnyHealthInsurance2020"))

dsMaritalStatusPrivateAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("PrivateInsurance2017","PrivateInsurance2018","PrivateInsurance2019","PrivateInsurance2020"))

dsMaritalStatusEmploymentBasedAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("EmploymentBasedInsurance2017","EmploymentBasedInsurance2018","EmploymentBasedInsurance2019","EmploymentBasedInsurance2020"))

dsMaritalStatusDirectPurchaseAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("DirectPurchaseInsurance2017","DirectPurchaseInsurance2018","DirectPurchaseInsurance2019","DirectPurchaseInsurance2020"))

dsMaritalStatusTRICAREAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("TRICAREInsurance2017","TRICAREInsurance2018","TRICAREInsurance2019","TRICAREInsurance2020"))

dsMaritalStatusPublicAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("PublicInsurance2017","PublicInsurance2018","PublicInsurance2019","PublicInsurance2020"))

dsMaritalStatusMedicareAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("MedicareInsurance2017","MedicareInsurance2018","MedicareInsurance2019","MedicareInsurance2020"))

dsMaritalStatusMedicaidAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("MedicaidInsurance2017","MedicaidInsurance2018","MedicaidInsurance2019","MedicaidInsurance2020"))

dsMaritalStatusVAAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("VAInsurance2017","VAInsurance2018","VAInsurance2019","VAInsurance2020"))

dsMaritalStatusUninsuredAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("Uninsured2017","Uninsured2018","Uninsured2019","Uninsured2020"))

dsHouseholdIncomeInsuredUninsuredAllYears <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017", "Uninsured2017", "AnyHealthInsurance2018","Uninsured2018", "AnyHealthInsurance2019","Uninsured2019", "AnyHealthInsurance2020", "Uninsured2020"))

dsEducationInsuredUninsuredAllYears <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017", "Uninsured2017", "AnyHealthInsurance2018","Uninsured2018", "AnyHealthInsurance2019","Uninsured2019", "AnyHealthInsurance2020", "Uninsured2020"))

dsMaritalStatusInsuredUninsuredAllYears <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017", "Uninsured2017", "AnyHealthInsurance2018","Uninsured2018", "AnyHealthInsurance2019","Uninsured2019", "AnyHealthInsurance2020", "Uninsured2020"))

dsHouseholdIncomeInsuredUninsured2017 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017", "Uninsured2017"))

dsHouseholdIncomeInsuredUninsured2018 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2018", "Uninsured2018"))

dsHouseholdIncomeInsuredUninsured2019 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2019", "Uninsured2019"))

dsHouseholdIncomeInsuredUninsured2020 <- subset(CombinedDataset, grepl("HouseholdIncome\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2020", "Uninsured2020"))

dsEducationInsuredUninsured2017 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017", "Uninsured2017"))

dsEducationInsuredUninsured2018 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2018", "Uninsured2018"))

dsEducationInsuredUninsured2019 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2019", "Uninsured2019"))

dsEducationInsuredUninsured2020 <- subset(CombinedDataset, grepl("Education\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2020", "Uninsured2020"))

dsMaritalStatusInsuredUninsured2017 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2017", "Uninsured2017"))

dsMaritalStatusInsuredUninsured2018 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2018", "Uninsured2018"))

dsMaritalStatusInsuredUninsured2019 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2019", "Uninsured2019"))

dsMaritalStatusInsuredUninsured2020 <- subset(CombinedDataset, grepl("MaritalStatus\_",rownames(CombinedDataset)), select = c("AnyHealthInsurance2020", "Uninsured2020"))

dsHouseholdIncomeAllYearsAllCategories <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)), drop = FALSE]

dsEducationAllYearsAllCategories <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)), drop = FALSE]

dsMaritalStatusAllYearsAllCategories <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)), drop = FALSE]

dsHouseholdIncome2017AllCategories <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2017",colnames(CombinedDataset)), drop = FALSE]

dsHouseholdIncome2018AllCategories <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2018",colnames(CombinedDataset)), drop = FALSE]

dsHouseholdIncome2019AllCategories <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2019",colnames(CombinedDataset)), drop = FALSE]

dsHouseholdIncome2020AllCategories <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2020",colnames(CombinedDataset)), drop = FALSE]

dsEducation2017AllCategories <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2017",colnames(CombinedDataset)), drop = FALSE]

dsEducation2018AllCategories <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2018",colnames(CombinedDataset)), drop = FALSE]

dsEducation2019AllCategories <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2019",colnames(CombinedDataset)), drop = FALSE]

dsEducation2020AllCategories <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2020",colnames(CombinedDataset)), drop = FALSE]

dsMaritalStatus2017AllCategories <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2017",colnames(CombinedDataset)), drop = FALSE]

dsMaritalStatus2018AllCategories <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2018",colnames(CombinedDataset)), drop = FALSE]

dsMaritalStatus2019AllCategories <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2019",colnames(CombinedDataset)), drop = FALSE]

dsMaritalStatus2020AllCategories <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2020",colnames(CombinedDataset)), drop = FALSE]

dsHouseholdIncomeAllYearsAllCategories <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsEducationAllYearsAllCategories <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsMaritalStatusAllYearsAllCategories <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsHouseholdIncome2017AllCategories <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2017",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsHouseholdIncome2018AllCategories <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2018",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsHouseholdIncome2019AllCategories <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2019",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsHouseholdIncome2020AllCategories <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), (grepl("Private",colnames(CombinedDataset)) | grepl("Public",colnames(CombinedDataset))) & grepl("2020",colnames(CombinedDataset)) & !grepl("Percent",colnames(CombinedDataset)), drop = FALSE]

dsHouseholdIncome2017InsuredUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2017",colnames(CombinedDataset)) | grepl("Uninsured2017",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2018InsuredUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2018",colnames(CombinedDataset)) | grepl("Uninsured2018",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2019InsuredUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2019",colnames(CombinedDataset)) | grepl("Uninsured2019",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2020InsuredUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2020",colnames(CombinedDataset)) | grepl("Uninsured2020",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2017PrivatePublicUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("PrivateInsurance2017",colnames(CombinedDataset)) | grepl("PublicInsurance2017",colnames(CombinedDataset)) | grepl("Uninsured2017",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2018PrivatePublicUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("PrivateInsurance2018",colnames(CombinedDataset)) | grepl("PublicInsurance2018",colnames(CombinedDataset)) | grepl("Uninsured2018",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2019PrivatePublicUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("PrivateInsurance2019",colnames(CombinedDataset)) | grepl("PublicInsurance2019",colnames(CombinedDataset)) | grepl("Uninsured2019",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2020PrivatePublicUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("PrivateInsurance2020",colnames(CombinedDataset)) | grepl("PublicInsurance2020",colnames(CombinedDataset)) | grepl("Uninsured2020",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsEducation2017AllCategories <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2017",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsEducation2018AllCategories <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2018",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsEducation2019AllCategories <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2019",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsEducation2020AllCategories <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), (grepl("Private",colnames(CombinedDataset)) | grepl("Public",colnames(CombinedDataset))) & grepl("2020",colnames(CombinedDataset)) & !grepl("Percent",colnames(CombinedDataset)), drop = FALSE]

dsEducation2017InsuredUninsured <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2017",colnames(CombinedDataset)) | grepl("Uninsured2017",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsEducation2018InsuredUninsured <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2018",colnames(CombinedDataset)) | grepl("Uninsured2018",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsEducation2019InsuredUninsured <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2019",colnames(CombinedDataset)) | grepl("Uninsured2019",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsEducation2020InsuredUninsured <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2020",colnames(CombinedDataset)) | grepl("Uninsured2020",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsMaritalStatus2017AllCategories <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2017",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsMaritalStatus2018AllCategories <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2018",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsMaritalStatus2019AllCategories <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), !grepl("Percent",colnames(CombinedDataset)) & !grepl("Both",colnames(CombinedDataset)) & grepl("2019",colnames(CombinedDataset)) & !grepl("Any",colnames(CombinedDataset)) & !grepl("Uninsured",colnames(CombinedDataset)), drop = FALSE]

dsMaritalStatus2020AllCategories <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), (grepl("Private",colnames(CombinedDataset)) | grepl("Public",colnames(CombinedDataset))) & grepl("2020",colnames(CombinedDataset)) & !grepl("Percent",colnames(CombinedDataset)), drop = FALSE]

dsMaritalStatus2017InsuredUninsured <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2017",colnames(CombinedDataset)) | grepl("Uninsured2017",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsMaritalStatus2018InsuredUninsured <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2018",colnames(CombinedDataset)) | grepl("Uninsured2018",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsMaritalStatus2019InsuredUninsured <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2019",colnames(CombinedDataset)) | grepl("Uninsured2019",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsMaritalStatus2020InsuredUninsured <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)), grepl("AnyHealthInsurance2020",colnames(CombinedDataset)) | grepl("Uninsured2020",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2017PrivatePublicUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("PrivateInsurance2017",colnames(CombinedDataset)) | grepl("PublicInsurance2017",colnames(CombinedDataset)) | grepl("Uninsured2017",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2018PrivatePublicUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("PrivateInsurance2018",colnames(CombinedDataset)) | grepl("PublicInsurance2018",colnames(CombinedDataset)) | grepl("Uninsured2018",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2019PrivatePublicUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("PrivateInsurance2019",colnames(CombinedDataset)) | grepl("PublicInsurance2019",colnames(CombinedDataset)) | grepl("Uninsured2019",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsHouseholdIncome2020PrivatePublicUninsured <- CombinedDataset[grepl("HouseholdIncome\_",rownames(CombinedDataset)), grepl("PrivateInsurance2020",colnames(CombinedDataset)) | grepl("PublicInsurance2020",colnames(CombinedDataset)) | grepl("Uninsured2020",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

rownames(dsHouseholdIncome2017PrivatePublicUninsured) <- sub("HouseholdIncome\_", "", rownames(dsHouseholdIncome2017PrivatePublicUninsured))

rownames(dsHouseholdIncome2017PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsHouseholdIncome2017PrivatePublicUninsured))

rownames(dsHouseholdIncome2017PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsHouseholdIncome2017PrivatePublicUninsured))

rownames(dsHouseholdIncome2017PrivatePublicUninsured) <- sub(",000", "K", rownames(dsHouseholdIncome2017PrivatePublicUninsured))

rownames(dsHouseholdIncome2017PrivatePublicUninsured) <- sub(",000", "K", rownames(dsHouseholdIncome2017PrivatePublicUninsured))

rownames(dsHouseholdIncome2017PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsHouseholdIncome2017PrivatePublicUninsured))

colnames(dsHouseholdIncome2017PrivatePublicUninsured) <- sub("2017", "", colnames(dsHouseholdIncome2017PrivatePublicUninsured))

colnames(dsHouseholdIncome2017PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsHouseholdIncome2017PrivatePublicUninsured))

rownames(dsHouseholdIncome2018PrivatePublicUninsured) <- sub("HouseholdIncome\_", "", rownames(dsHouseholdIncome2018PrivatePublicUninsured))

rownames(dsHouseholdIncome2018PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsHouseholdIncome2018PrivatePublicUninsured))

rownames(dsHouseholdIncome2018PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsHouseholdIncome2018PrivatePublicUninsured))

rownames(dsHouseholdIncome2018PrivatePublicUninsured) <- sub(",000", "K", rownames(dsHouseholdIncome2018PrivatePublicUninsured))

rownames(dsHouseholdIncome2018PrivatePublicUninsured) <- sub(",000", "K", rownames(dsHouseholdIncome2018PrivatePublicUninsured))

rownames(dsHouseholdIncome2018PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsHouseholdIncome2018PrivatePublicUninsured))

colnames(dsHouseholdIncome2018PrivatePublicUninsured) <- sub("2018", "", colnames(dsHouseholdIncome2018PrivatePublicUninsured))

colnames(dsHouseholdIncome2018PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsHouseholdIncome2018PrivatePublicUninsured))

rownames(dsHouseholdIncome2019PrivatePublicUninsured) <- sub("HouseholdIncome\_", "", rownames(dsHouseholdIncome2019PrivatePublicUninsured))

rownames(dsHouseholdIncome2019PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsHouseholdIncome2019PrivatePublicUninsured))

rownames(dsHouseholdIncome2019PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsHouseholdIncome2019PrivatePublicUninsured))

rownames(dsHouseholdIncome2019PrivatePublicUninsured) <- sub(",000", "K", rownames(dsHouseholdIncome2019PrivatePublicUninsured))

rownames(dsHouseholdIncome2019PrivatePublicUninsured) <- sub(",000", "K", rownames(dsHouseholdIncome2019PrivatePublicUninsured))

rownames(dsHouseholdIncome2019PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsHouseholdIncome2019PrivatePublicUninsured))

colnames(dsHouseholdIncome2019PrivatePublicUninsured) <- sub("2019", "", colnames(dsHouseholdIncome2019PrivatePublicUninsured))

colnames(dsHouseholdIncome2019PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsHouseholdIncome2019PrivatePublicUninsured))

rownames(dsHouseholdIncome2020PrivatePublicUninsured) <- sub("HouseholdIncome\_", "", rownames(dsHouseholdIncome2020PrivatePublicUninsured))

rownames(dsHouseholdIncome2020PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsHouseholdIncome2020PrivatePublicUninsured))

rownames(dsHouseholdIncome2020PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsHouseholdIncome2020PrivatePublicUninsured))

rownames(dsHouseholdIncome2020PrivatePublicUninsured) <- sub(",000", "K", rownames(dsHouseholdIncome2020PrivatePublicUninsured))

rownames(dsHouseholdIncome2020PrivatePublicUninsured) <- sub(",000", "K", rownames(dsHouseholdIncome2020PrivatePublicUninsured))

rownames(dsHouseholdIncome2020PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsHouseholdIncome2020PrivatePublicUninsured))

colnames(dsHouseholdIncome2020PrivatePublicUninsured) <- sub("2020", "", colnames(dsHouseholdIncome2020PrivatePublicUninsured))

colnames(dsHouseholdIncome2020PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsHouseholdIncome2020PrivatePublicUninsured))

chisq\_dsHouseholdIncome2017PrivatePublicUninsured <- chisq.test(dsHouseholdIncome2017PrivatePublicUninsured)

chisq\_dsHouseholdIncome2018PrivatePublicUninsured <- chisq.test(dsHouseholdIncome2018PrivatePublicUninsured)

chisq\_dsHouseholdIncome2019PrivatePublicUninsured <- chisq.test(dsHouseholdIncome2019PrivatePublicUninsured)

chisq\_dsHouseholdIncome2020PrivatePublicUninsured <- chisq.test(dsHouseholdIncome2020PrivatePublicUninsured)

corrplot(chisq\_dsHouseholdIncome2017PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

corrplot(chisq\_dsHouseholdIncome2018PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

corrplot(chisq\_dsHouseholdIncome2019PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

corrplot(chisq\_dsHouseholdIncome2020PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

dsEducation2017PrivatePublicUninsured <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)) & !grepl("Total",rownames(CombinedDataset)), grepl("PrivateInsurance2017",colnames(CombinedDataset)) | grepl("PublicInsurance2017",colnames(CombinedDataset)) | grepl("Uninsured2017",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)), drop = FALSE]

dsEducation2018PrivatePublicUninsured <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)) & !grepl("Total",rownames(CombinedDataset)), grepl("PrivateInsurance2018",colnames(CombinedDataset)) | grepl("PublicInsurance2018",colnames(CombinedDataset)) | grepl("Uninsured2018",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsEducation2019PrivatePublicUninsured <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)) & !grepl("Total",rownames(CombinedDataset)), grepl("PrivateInsurance2019",colnames(CombinedDataset)) | grepl("PublicInsurance2019",colnames(CombinedDataset)) | grepl("Uninsured2019",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsEducation2020PrivatePublicUninsured <- CombinedDataset[grepl("Education\_",rownames(CombinedDataset)) & !grepl("Total",rownames(CombinedDataset)), grepl("PrivateInsurance2020",colnames(CombinedDataset)) | grepl("PublicInsurance2020",colnames(CombinedDataset)) | grepl("Uninsured2020",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

rownames(dsEducation2017PrivatePublicUninsured) <- sub("Education\_", "", rownames(dsEducation2017PrivatePublicUninsured))

rownames(dsEducation2017PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsEducation2017PrivatePublicUninsured))

rownames(dsEducation2017PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsEducation2017PrivatePublicUninsured))

rownames(dsEducation2017PrivatePublicUninsured) <- sub(",000", "K", rownames(dsEducation2017PrivatePublicUninsured))

rownames(dsEducation2017PrivatePublicUninsured) <- sub(",000", "K", rownames(dsEducation2017PrivatePublicUninsured))

rownames(dsEducation2017PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsEducation2017PrivatePublicUninsured))

colnames(dsEducation2017PrivatePublicUninsured) <- sub("2017", "", colnames(dsEducation2017PrivatePublicUninsured))

colnames(dsEducation2017PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsEducation2017PrivatePublicUninsured))

rownames(dsEducation2018PrivatePublicUninsured) <- sub("Education\_", "", rownames(dsEducation2018PrivatePublicUninsured))

rownames(dsEducation2018PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsEducation2018PrivatePublicUninsured))

rownames(dsEducation2018PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsEducation2018PrivatePublicUninsured))

rownames(dsEducation2018PrivatePublicUninsured) <- sub(",000", "K", rownames(dsEducation2018PrivatePublicUninsured))

rownames(dsEducation2018PrivatePublicUninsured) <- sub(",000", "K", rownames(dsEducation2018PrivatePublicUninsured))

rownames(dsEducation2018PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsEducation2018PrivatePublicUninsured))

colnames(dsEducation2018PrivatePublicUninsured) <- sub("2018", "", colnames(dsEducation2018PrivatePublicUninsured))

colnames(dsEducation2018PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsEducation2018PrivatePublicUninsured))

rownames(dsEducation2019PrivatePublicUninsured) <- sub("Education\_", "", rownames(dsEducation2019PrivatePublicUninsured))

rownames(dsEducation2019PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsEducation2019PrivatePublicUninsured))

rownames(dsEducation2019PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsEducation2019PrivatePublicUninsured))

rownames(dsEducation2019PrivatePublicUninsured) <- sub(",000", "K", rownames(dsEducation2019PrivatePublicUninsured))

rownames(dsEducation2019PrivatePublicUninsured) <- sub(",000", "K", rownames(dsEducation2019PrivatePublicUninsured))

rownames(dsEducation2019PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsEducation2019PrivatePublicUninsured))

colnames(dsEducation2019PrivatePublicUninsured) <- sub("2019", "", colnames(dsEducation2019PrivatePublicUninsured))

colnames(dsEducation2019PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsEducation2019PrivatePublicUninsured))

rownames(dsEducation2020PrivatePublicUninsured) <- sub("Education\_", "", rownames(dsEducation2020PrivatePublicUninsured))

rownames(dsEducation2020PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsEducation2020PrivatePublicUninsured))

rownames(dsEducation2020PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsEducation2020PrivatePublicUninsured))

rownames(dsEducation2020PrivatePublicUninsured) <- sub(",000", "K", rownames(dsEducation2020PrivatePublicUninsured))

rownames(dsEducation2020PrivatePublicUninsured) <- sub(",000", "K", rownames(dsEducation2020PrivatePublicUninsured))

rownames(dsEducation2020PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsEducation2020PrivatePublicUninsured))

colnames(dsEducation2020PrivatePublicUninsured) <- sub("2020", "", colnames(dsEducation2020PrivatePublicUninsured))

colnames(dsEducation2020PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsEducation2020PrivatePublicUninsured))

chisq\_dsEducation2017PrivatePublicUninsured <- chisq.test(dsEducation2017PrivatePublicUninsured)

chisq\_dsEducation2018PrivatePublicUninsured <- chisq.test(dsEducation2018PrivatePublicUninsured)

chisq\_dsEducation2019PrivatePublicUninsured <- chisq.test(dsEducation2019PrivatePublicUninsured)

chisq\_dsEducation2020PrivatePublicUninsured <- chisq.test(dsEducation2020PrivatePublicUninsured)

corrplot(chisq\_dsEducation2017PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

corrplot(chisq\_dsEducation2018PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

corrplot(chisq\_dsEducation2019PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

corrplot(chisq\_dsEducation2020PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

dsMaritalStatus2017PrivatePublicUninsured <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)) & !grepl("Total",rownames(CombinedDataset)), grepl("PrivateInsurance2017",colnames(CombinedDataset)) | grepl("PublicInsurance2017",colnames(CombinedDataset)) | grepl("Uninsured2017",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsMaritalStatus2018PrivatePublicUninsured <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)) & !grepl("Total",rownames(CombinedDataset)), grepl("PrivateInsurance2018",colnames(CombinedDataset)) | grepl("PublicInsurance2018",colnames(CombinedDataset)) | grepl("Uninsured2018",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsMaritalStatus2019PrivatePublicUninsured <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)) & !grepl("Total",rownames(CombinedDataset)), grepl("PrivateInsurance2019",colnames(CombinedDataset)) | grepl("PublicInsurance2019",colnames(CombinedDataset)) | grepl("Uninsured2019",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

dsMaritalStatus2020PrivatePublicUninsured <- CombinedDataset[grepl("MaritalStatus\_",rownames(CombinedDataset)) & !grepl("Total",rownames(CombinedDataset)), grepl("PrivateInsurance2020",colnames(CombinedDataset)) | grepl("PublicInsurance2020",colnames(CombinedDataset)) | grepl("Uninsured2020",colnames(CombinedDataset)) & !grepl("Total",colnames(CombinedDataset)) , drop = FALSE]

rownames(dsMaritalStatus2017PrivatePublicUninsured) <- sub("MaritalStatus\_", "", rownames(dsMaritalStatus2017PrivatePublicUninsured))

rownames(dsMaritalStatus2017PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsMaritalStatus2017PrivatePublicUninsured))

rownames(dsMaritalStatus2017PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsMaritalStatus2017PrivatePublicUninsured))

rownames(dsMaritalStatus2017PrivatePublicUninsured) <- sub(",000", "K", rownames(dsMaritalStatus2017PrivatePublicUninsured))

rownames(dsMaritalStatus2017PrivatePublicUninsured) <- sub(",000", "K", rownames(dsMaritalStatus2017PrivatePublicUninsured))

rownames(dsMaritalStatus2017PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsMaritalStatus2017PrivatePublicUninsured))

colnames(dsMaritalStatus2017PrivatePublicUninsured) <- sub("2017", "", colnames(dsMaritalStatus2017PrivatePublicUninsured))

colnames(dsMaritalStatus2017PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsMaritalStatus2017PrivatePublicUninsured))

rownames(dsMaritalStatus2018PrivatePublicUninsured) <- sub("MaritalStatus\_", "", rownames(dsMaritalStatus2018PrivatePublicUninsured))

rownames(dsMaritalStatus2018PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsMaritalStatus2018PrivatePublicUninsured))

rownames(dsMaritalStatus2018PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsMaritalStatus2018PrivatePublicUninsured))

rownames(dsMaritalStatus2018PrivatePublicUninsured) <- sub(",000", "K", rownames(dsMaritalStatus2018PrivatePublicUninsured))

rownames(dsMaritalStatus2018PrivatePublicUninsured) <- sub(",000", "K", rownames(dsMaritalStatus2018PrivatePublicUninsured))

rownames(dsMaritalStatus2018PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsMaritalStatus2018PrivatePublicUninsured))

colnames(dsMaritalStatus2018PrivatePublicUninsured) <- sub("2018", "", colnames(dsMaritalStatus2018PrivatePublicUninsured))

colnames(dsMaritalStatus2018PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsMaritalStatus2018PrivatePublicUninsured))

rownames(dsMaritalStatus2019PrivatePublicUninsured) <- sub("MaritalStatus\_", "", rownames(dsMaritalStatus2019PrivatePublicUninsured))

rownames(dsMaritalStatus2019PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsMaritalStatus2019PrivatePublicUninsured))

rownames(dsMaritalStatus2019PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsMaritalStatus2019PrivatePublicUninsured))

rownames(dsMaritalStatus2019PrivatePublicUninsured) <- sub(",000", "K", rownames(dsMaritalStatus2019PrivatePublicUninsured))

rownames(dsMaritalStatus2019PrivatePublicUninsured) <- sub(",000", "K", rownames(dsMaritalStatus2019PrivatePublicUninsured))

rownames(dsMaritalStatus2019PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsMaritalStatus2019PrivatePublicUninsured))

colnames(dsMaritalStatus2019PrivatePublicUninsured) <- sub("2019", "", colnames(dsMaritalStatus2019PrivatePublicUninsured))

colnames(dsMaritalStatus2019PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsMaritalStatus2019PrivatePublicUninsured))

rownames(dsMaritalStatus2020PrivatePublicUninsured) <- sub("MaritalStatus\_", "", rownames(dsMaritalStatus2020PrivatePublicUninsured))

rownames(dsMaritalStatus2020PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsMaritalStatus2020PrivatePublicUninsured))

rownames(dsMaritalStatus2020PrivatePublicUninsured) <- sub("[\\$]", "", rownames(dsMaritalStatus2020PrivatePublicUninsured))

rownames(dsMaritalStatus2020PrivatePublicUninsured) <- sub(",000", "K", rownames(dsMaritalStatus2020PrivatePublicUninsured))

rownames(dsMaritalStatus2020PrivatePublicUninsured) <- sub(",000", "K", rownames(dsMaritalStatus2020PrivatePublicUninsured))

rownames(dsMaritalStatus2020PrivatePublicUninsured) <- sub("to less than", "To", rownames(dsMaritalStatus2020PrivatePublicUninsured))

colnames(dsMaritalStatus2020PrivatePublicUninsured) <- sub("2020", "", colnames(dsMaritalStatus2020PrivatePublicUninsured))

colnames(dsMaritalStatus2020PrivatePublicUninsured) <- sub("Insurance", "", colnames(dsMaritalStatus2020PrivatePublicUninsured))

chisq\_dsMaritalStatus2017PrivatePublicUninsured <- chisq.test(dsMaritalStatus2017PrivatePublicUninsured)

chisq\_dsMaritalStatus2018PrivatePublicUninsured <- chisq.test(dsMaritalStatus2018PrivatePublicUninsured)

chisq\_dsMaritalStatus2019PrivatePublicUninsured <- chisq.test(dsMaritalStatus2019PrivatePublicUninsured)

chisq\_dsMaritalStatus2020PrivatePublicUninsured <- chisq.test(dsMaritalStatus2020PrivatePublicUninsured)

corrplot(chisq\_dsMaritalStatus2017PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

corrplot(chisq\_dsMaritalStatus2018PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

corrplot(chisq\_dsMaritalStatus2019PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

corrplot(chisq\_dsMaritalStatus2020PrivatePublicUninsured$residuals, is.cor = FALSE, method = "shade", sig.level = 0.05, outline = T, number.digits = 2, addCoef.col = "white", na.label = "N/A", tl.col = "black", tl.srt = 45)

#stacked barplots

IncomeLevelFactorsRegular <- c("Less than 25K", "25K To 50K", "50K To 75K", "75K To 100K", "100K To 125K", "125K To 150K", "150K or more")

IncomeLevelFactorsSplit <- c("Less\nthan\n25K", "25K\nTo\n50K", "50K\nTo\n75K", "75K\nTo\n100K", "100K\nTo\n125K", "125K\nTo\n150K", "150K\nor\nmore")

dfGraph\_HouseholdIncome2017PrivatePublicUninsured <- as.data.frame(dsHouseholdIncome2017PrivatePublicUninsured)

dfGraph\_HouseholdIncome2017PrivatePublicUninsured["IncomeLevel"] <- rownames(dfGraph\_HouseholdIncome2017PrivatePublicUninsured)

df.HouseholdIncome2017PrivatePublicUninsured <- melt(dfGraph\_HouseholdIncome2017PrivatePublicUninsured, id.vars="IncomeLevel", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.HouseholdIncome2017PrivatePublicUninsured\_Reordered <- df.HouseholdIncome2017PrivatePublicUninsured

df.HouseholdIncome2017PrivatePublicUninsured\_Reordered$IncomeLevel <- factor(df.HouseholdIncome2017PrivatePublicUninsured\_Reordered$IncomeLevel, levels = IncomeLevelFactorsRegular)

df.HouseholdIncome2017PrivatePublicUninsured\_Reordered

df.HouseholdIncome2017PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(IncomeLevelFactorsRegular, width = 5)

df.HouseholdIncome2017PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.HouseholdIncome2017PrivatePublicUninsured\_Reordered$new\_x\_label, levels = IncomeLevelFactorsSplit)

df.HouseholdIncome2017PrivatePublicUninsured\_Reordered

graph\_HouseholdIncome2017 <- ggplot(df.HouseholdIncome2017PrivatePublicUninsured\_Reordered, aes(x = IncomeLevel, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Household Income to Insurance Type - 2017") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "white") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Income Level", y="Counts")

graph\_HouseholdIncome2017

dfGraph\_HouseholdIncome2018PrivatePublicUninsured <- as.data.frame(dsHouseholdIncome2018PrivatePublicUninsured)

dfGraph\_HouseholdIncome2018PrivatePublicUninsured["IncomeLevel"] <- rownames(dfGraph\_HouseholdIncome2018PrivatePublicUninsured)

df.HouseholdIncome2018PrivatePublicUninsured <- melt(dfGraph\_HouseholdIncome2018PrivatePublicUninsured, id.vars="IncomeLevel", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.HouseholdIncome2018PrivatePublicUninsured\_Reordered <- df.HouseholdIncome2018PrivatePublicUninsured

df.HouseholdIncome2018PrivatePublicUninsured\_Reordered$IncomeLevel <- factor(df.HouseholdIncome2018PrivatePublicUninsured\_Reordered$IncomeLevel, levels = IncomeLevelFactorsRegular)

df.HouseholdIncome2018PrivatePublicUninsured\_Reordered

df.HouseholdIncome2018PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(IncomeLevelFactorsRegular, width = 5)

df.HouseholdIncome2018PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.HouseholdIncome2018PrivatePublicUninsured\_Reordered$new\_x\_label, levels = IncomeLevelFactorsSplit)

df.HouseholdIncome2018PrivatePublicUninsured\_Reordered

graph\_HouseholdIncome2018 <- ggplot(df.HouseholdIncome2018PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Household Income to Insurance Type - 2018") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "white") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Income Level", y="Counts")

graph\_HouseholdIncome2018

dfGraph\_HouseholdIncome2019PrivatePublicUninsured <- as.data.frame(dsHouseholdIncome2019PrivatePublicUninsured)

dfGraph\_HouseholdIncome2019PrivatePublicUninsured["IncomeLevel"] <- rownames(dfGraph\_HouseholdIncome2019PrivatePublicUninsured)

df.HouseholdIncome2019PrivatePublicUninsured <- melt(dfGraph\_HouseholdIncome2019PrivatePublicUninsured, id.vars="IncomeLevel", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.HouseholdIncome2019PrivatePublicUninsured\_Reordered <- df.HouseholdIncome2019PrivatePublicUninsured

df.HouseholdIncome2019PrivatePublicUninsured\_Reordered$IncomeLevel <- factor(df.HouseholdIncome2019PrivatePublicUninsured\_Reordered$IncomeLevel, levels = IncomeLevelFactorsRegular)

df.HouseholdIncome2019PrivatePublicUninsured\_Reordered

df.HouseholdIncome2019PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(IncomeLevelFactorsRegular, width = 5)

df.HouseholdIncome2019PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.HouseholdIncome2019PrivatePublicUninsured\_Reordered$new\_x\_label, levels = IncomeLevelFactorsSplit)

df.HouseholdIncome2019PrivatePublicUninsured\_Reordered

graph\_HouseholdIncome2019 <- ggplot(df.HouseholdIncome2019PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Household Income to Insurance Type - 2019") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "white") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Income Level", y="Counts")

graph\_HouseholdIncome2019

dfGraph\_HouseholdIncome2020PrivatePublicUninsured <- as.data.frame(dsHouseholdIncome2020PrivatePublicUninsured)

dfGraph\_HouseholdIncome2020PrivatePublicUninsured["IncomeLevel"] <- rownames(dfGraph\_HouseholdIncome2020PrivatePublicUninsured)

df.HouseholdIncome2020PrivatePublicUninsured <- melt(dfGraph\_HouseholdIncome2020PrivatePublicUninsured, id.vars="IncomeLevel", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.HouseholdIncome2020PrivatePublicUninsured\_Reordered <- df.HouseholdIncome2020PrivatePublicUninsured

df.HouseholdIncome2020PrivatePublicUninsured\_Reordered$IncomeLevel <- factor(df.HouseholdIncome2020PrivatePublicUninsured\_Reordered$IncomeLevel, levels = IncomeLevelFactorsRegular)

df.HouseholdIncome2020PrivatePublicUninsured\_Reordered

df.HouseholdIncome2020PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(IncomeLevelFactorsRegular, width = 5)

df.HouseholdIncome2020PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.HouseholdIncome2020PrivatePublicUninsured\_Reordered$new\_x\_label, levels = IncomeLevelFactorsSplit)

df.HouseholdIncome2020PrivatePublicUninsured\_Reordered

graph\_HouseholdIncome2020 <- ggplot(df.HouseholdIncome2020PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Household Income to Insurance Type - 2020") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "white") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Income Level", y="Counts")

graph\_HouseholdIncome2020

graph\_HouseholdIncome2017 <- ggplot(df.HouseholdIncome2017PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Household Income to Insurance Type - 2017") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Income Level", y="Counts")

graph\_HouseholdIncome2017

graph\_HouseholdIncome2018 <- ggplot(df.HouseholdIncome2018PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Household Income to Insurance Type - 2018") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Income Level", y="Counts")

graph\_HouseholdIncome2018

graph\_HouseholdIncome2019 <- ggplot(df.HouseholdIncome2019PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Household Income to Insurance Type - 2019") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Income Level", y="Counts")

graph\_HouseholdIncome2019

graph\_HouseholdIncome2020 <- ggplot(df.HouseholdIncome2020PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Household Income to Insurance Type - 2020") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Income Level", y="Counts")

graph\_HouseholdIncome2020

plot\_grid(graph\_HouseholdIncome2017, graph\_HouseholdIncome2018, graph\_HouseholdIncome2019, graph\_HouseholdIncome2020)

EducationLevelFactorsRegular <- c("No high school diploma", "High school graduate includes equivalency", "Some college, no degree", "Associates degree", "Bachelors degree", "Graduate degree or higher")

EducationLevelFactorsSplit <- c("No high\nschool\ndiploma", "High\nschool\ngraduate\nincludes\nequivalency", "Some\ncollege,\nno degree", "Associates\ndegree", "Bachelors\ndegree", "Graduate\ndegree or\nhigher")

dfGraph\_Education2017PrivatePublicUninsured <- as.data.frame(dsEducation2017PrivatePublicUninsured)   
  
dfGraph\_Education2017PrivatePublicUninsured

rownames(dfGraph\_Education2017PrivatePublicUninsured) <- sub("'", "", rownames(dfGraph\_Education2017PrivatePublicUninsured))

rownames(dfGraph\_Education2017PrivatePublicUninsured) <- sub("[(]", "", rownames(dfGraph\_Education2017PrivatePublicUninsured))

rownames(dfGraph\_Education2017PrivatePublicUninsured) <- sub("[)]", "", rownames(dfGraph\_Education2017PrivatePublicUninsured))  
  
dfGraph\_Education2017PrivatePublicUninsured["EducationLevel"] <- rownames(dfGraph\_Education2017PrivatePublicUninsured)

df.Education2017PrivatePublicUninsured <- melt(dfGraph\_Education2017PrivatePublicUninsured, id.vars="EducationLevel", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.Education2017PrivatePublicUninsured\_Reordered <- df.Education2017PrivatePublicUninsured

df.Education2017PrivatePublicUninsured\_Reordered$EducationLevel <- factor(df.Education2017PrivatePublicUninsured\_Reordered$EducationLevel, levels = EducationLevelFactorsRegular)

df.Education2017PrivatePublicUninsured\_Reordered

df.Education2017PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(EducationLevelFactorsRegular, width = 10)

df.Education2017PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.Education2017PrivatePublicUninsured\_Reordered$new\_x\_label, levels = EducationLevelFactorsSplit)

df.Education2017PrivatePublicUninsured\_Reordered

graph\_Education2017 <- ggplot(df.Education2017PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Education Level to Insurance Type - 2017") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "black") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Education Level", y="Counts")

graph\_Education2017

dfGraph\_Education2018PrivatePublicUninsured <- as.data.frame(dsEducation2018PrivatePublicUninsured)   
  
dfGraph\_Education2018PrivatePublicUninsured

rownames(dfGraph\_Education2018PrivatePublicUninsured) <- sub("'", "", rownames(dfGraph\_Education2018PrivatePublicUninsured))

rownames(dfGraph\_Education2018PrivatePublicUninsured) <- sub("[(]", "", rownames(dfGraph\_Education2018PrivatePublicUninsured))

rownames(dfGraph\_Education2018PrivatePublicUninsured) <- sub("[)]", "", rownames(dfGraph\_Education2018PrivatePublicUninsured))  
  
dfGraph\_Education2018PrivatePublicUninsured["EducationLevel"] <- rownames(dfGraph\_Education2018PrivatePublicUninsured)

df.Education2018PrivatePublicUninsured <- melt(dfGraph\_Education2018PrivatePublicUninsured, id.vars="EducationLevel", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.Education2018PrivatePublicUninsured\_Reordered <- df.Education2018PrivatePublicUninsured

df.Education2018PrivatePublicUninsured\_Reordered$EducationLevel <- factor(df.Education2018PrivatePublicUninsured\_Reordered$EducationLevel, levels = EducationLevelFactorsRegular)

df.Education2018PrivatePublicUninsured\_Reordered

df.Education2018PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(EducationLevelFactorsRegular, width = 10)

df.Education2018PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.Education2018PrivatePublicUninsured\_Reordered$new\_x\_label, levels = EducationLevelFactorsSplit)

df.Education2018PrivatePublicUninsured\_Reordered

graph\_Education2018 <- ggplot(df.Education2018PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Education Level to Insurance Type - 2018") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "black") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Education Level", y="Counts")

graph\_Education2018

dfGraph\_Education2019PrivatePublicUninsured <- as.data.frame(dsEducation2019PrivatePublicUninsured)   
  
dfGraph\_Education2019PrivatePublicUninsured

rownames(dfGraph\_Education2019PrivatePublicUninsured) <- sub("'", "", rownames(dfGraph\_Education2019PrivatePublicUninsured))

rownames(dfGraph\_Education2019PrivatePublicUninsured) <- sub("[(]", "", rownames(dfGraph\_Education2019PrivatePublicUninsured))

rownames(dfGraph\_Education2019PrivatePublicUninsured) <- sub("[)]", "", rownames(dfGraph\_Education2019PrivatePublicUninsured))  
  
dfGraph\_Education2019PrivatePublicUninsured["EducationLevel"] <- rownames(dfGraph\_Education2019PrivatePublicUninsured)

df.Education2019PrivatePublicUninsured <- melt(dfGraph\_Education2019PrivatePublicUninsured, id.vars="EducationLevel", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.Education2019PrivatePublicUninsured\_Reordered <- df.Education2019PrivatePublicUninsured

df.Education2019PrivatePublicUninsured\_Reordered$EducationLevel <- factor(df.Education2019PrivatePublicUninsured\_Reordered$EducationLevel, levels = EducationLevelFactorsRegular)

df.Education2019PrivatePublicUninsured\_Reordered

df.Education2019PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(EducationLevelFactorsRegular, width = 10)

df.Education2019PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.Education2019PrivatePublicUninsured\_Reordered$new\_x\_label, levels = EducationLevelFactorsSplit)

df.Education2019PrivatePublicUninsured\_Reordered

graph\_Education2019 <- ggplot(df.Education2019PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Education Level to Insurance Type - 2019") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "black") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Education Level", y="Counts")

graph\_Education2019

dfGraph\_Education2020PrivatePublicUninsured <- as.data.frame(dsEducation2020PrivatePublicUninsured)   
  
dfGraph\_Education2020PrivatePublicUninsured

rownames(dfGraph\_Education2020PrivatePublicUninsured) <- sub("'", "", rownames(dfGraph\_Education2020PrivatePublicUninsured))

rownames(dfGraph\_Education2020PrivatePublicUninsured) <- sub("[(]", "", rownames(dfGraph\_Education2020PrivatePublicUninsured))

rownames(dfGraph\_Education2020PrivatePublicUninsured) <- sub("[)]", "", rownames(dfGraph\_Education2020PrivatePublicUninsured))  
  
dfGraph\_Education2020PrivatePublicUninsured["EducationLevel"] <- rownames(dfGraph\_Education2020PrivatePublicUninsured)

df.Education2020PrivatePublicUninsured <- melt(dfGraph\_Education2020PrivatePublicUninsured, id.vars="EducationLevel", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.Education2020PrivatePublicUninsured\_Reordered <- df.Education2020PrivatePublicUninsured

df.Education2020PrivatePublicUninsured\_Reordered$EducationLevel <- factor(df.Education2020PrivatePublicUninsured\_Reordered$EducationLevel, levels = EducationLevelFactorsRegular)

df.Education2020PrivatePublicUninsured\_Reordered

df.Education2020PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(EducationLevelFactorsRegular, width = 10)

df.Education2020PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.Education2020PrivatePublicUninsured\_Reordered$new\_x\_label, levels = EducationLevelFactorsSplit)

df.Education2020PrivatePublicUninsured\_Reordered

graph\_Education2020 <- ggplot(df.Education2020PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Education Level to Insurance Type - 2020") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "black") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Education Level", y="Counts")

graph\_Education2020

plot\_grid(graph\_Education2017, graph\_Education2018, graph\_Education2019, graph\_Education2020)

graph\_Education2017 <- ggplot(df.Education2017PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Education Level to Insurance Type - 2017") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Education Level", y="Counts")

graph\_Education2017

graph\_Education2018 <- ggplot(df.Education2018PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Education Level to Insurance Type - 2018") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x=" Education Level", y="Counts")

graph\_Education2018

graph\_Education2019 <- ggplot(df.Education2019PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Education Level to Insurance Type - 2019") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x=" Education Level", y="Counts")

graph\_Education2019

graph\_Education2020 <- ggplot(df.Education2020PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Education Level to Insurance Type - 2020") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x=" Education Level", y="Counts")

graph\_Education2020

plot\_grid(graph\_Education2017, graph\_Education2018, graph\_Education2019, graph\_Education2020)

MaritalStatusFactorsRegular <- c("Married", "Widowed", "Divorced", "Separated", "Never Married")

MaritalStatusFactorsSplit <- c("Married", "Widowed", "Divorced", "Separated", "Never\nMarried")

dfGraph\_MaritalStatus2017PrivatePublicUninsured <- as.data.frame(dsMaritalStatus2017PrivatePublicUninsured)

dfGraph\_MaritalStatus2017PrivatePublicUninsured

rownames(dfGraph\_MaritalStatus2017PrivatePublicUninsured) <- sub("'", "", rownames(dfGraph\_MaritalStatus2017PrivatePublicUninsured))

rownames(dfGraph\_MaritalStatus2017PrivatePublicUninsured) <- sub("[(]", "", rownames(dfGraph\_MaritalStatus2017PrivatePublicUninsured))

rownames(dfGraph\_MaritalStatus2017PrivatePublicUninsured) <- sub("[)]", "", rownames(dfGraph\_MaritalStatus2017PrivatePublicUninsured))

dfGraph\_MaritalStatus2017PrivatePublicUninsured["MaritalStatus"] <- rownames(dfGraph\_MaritalStatus2017PrivatePublicUninsured)

df.MaritalStatus2017PrivatePublicUninsured <- melt(dfGraph\_MaritalStatus2017PrivatePublicUninsured, id.vars="MaritalStatus", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.MaritalStatus2017PrivatePublicUninsured\_Reordered <- df.MaritalStatus2017PrivatePublicUninsured

df.MaritalStatus2017PrivatePublicUninsured\_Reordered$MaritalStatus <- factor(df.MaritalStatus2017PrivatePublicUninsured\_Reordered$MaritalStatus, levels = MaritalStatusFactorsRegular)

df.MaritalStatus2017PrivatePublicUninsured\_Reordered

df.MaritalStatus2017PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(MaritalStatusFactorsRegular, width = 10)

df.MaritalStatus2017PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.MaritalStatus2017PrivatePublicUninsured\_Reordered$new\_x\_label, levels = MaritalStatusFactorsSplit)

df.MaritalStatus2017PrivatePublicUninsured\_Reordered

graph\_MaritalStatus2017 <- ggplot(df.MaritalStatus2017PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Marital Status to Insurance Type - 2017") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "black") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Marital Status", y="Counts")

graph\_MaritalStatus2017

dfGraph\_MaritalStatus2018PrivatePublicUninsured <- as.data.frame(dsMaritalStatus2018PrivatePublicUninsured)

dfGraph\_MaritalStatus2018PrivatePublicUninsured

rownames(dfGraph\_MaritalStatus2018PrivatePublicUninsured) <- sub("'", "", rownames(dfGraph\_MaritalStatus2018PrivatePublicUninsured))

rownames(dfGraph\_MaritalStatus2018PrivatePublicUninsured) <- sub("[(]", "", rownames(dfGraph\_MaritalStatus2018PrivatePublicUninsured))

rownames(dfGraph\_MaritalStatus2018PrivatePublicUninsured) <- sub("[)]", "", rownames(dfGraph\_MaritalStatus2018PrivatePublicUninsured))

dfGraph\_MaritalStatus2018PrivatePublicUninsured["MaritalStatus"] <- rownames(dfGraph\_MaritalStatus2018PrivatePublicUninsured)

df.MaritalStatus2018PrivatePublicUninsured <- melt(dfGraph\_MaritalStatus2018PrivatePublicUninsured, id.vars="MaritalStatus", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.MaritalStatus2018PrivatePublicUninsured\_Reordered <- df.MaritalStatus2018PrivatePublicUninsured

df.MaritalStatus2018PrivatePublicUninsured\_Reordered$MaritalStatus <- factor(df.MaritalStatus2018PrivatePublicUninsured\_Reordered$MaritalStatus, levels = MaritalStatusFactorsRegular)

df.MaritalStatus2018PrivatePublicUninsured\_Reordered

df.MaritalStatus2018PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(MaritalStatusFactorsRegular, width = 10)

df.MaritalStatus2018PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.MaritalStatus2018PrivatePublicUninsured\_Reordered$new\_x\_label, levels = MaritalStatusFactorsSplit)

df.MaritalStatus2018PrivatePublicUninsured\_Reordered

graph\_MaritalStatus2018 <- ggplot(df.MaritalStatus2018PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Marital Status to Insurance Type - 2018") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "black") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Marital Status", y="Counts")

graph\_MaritalStatus2018

dfGraph\_MaritalStatus2019PrivatePublicUninsured <- as.data.frame(dsMaritalStatus2019PrivatePublicUninsured)

dfGraph\_MaritalStatus2019PrivatePublicUninsured

rownames(dfGraph\_MaritalStatus2019PrivatePublicUninsured) <- sub("'", "", rownames(dfGraph\_MaritalStatus2019PrivatePublicUninsured))

rownames(dfGraph\_MaritalStatus2019PrivatePublicUninsured) <- sub("[(]", "", rownames(dfGraph\_MaritalStatus2019PrivatePublicUninsured))

rownames(dfGraph\_MaritalStatus2019PrivatePublicUninsured) <- sub("[)]", "", rownames(dfGraph\_MaritalStatus2019PrivatePublicUninsured))

dfGraph\_MaritalStatus2019PrivatePublicUninsured["MaritalStatus"] <- rownames(dfGraph\_MaritalStatus2019PrivatePublicUninsured)

df.MaritalStatus2019PrivatePublicUninsured <- melt(dfGraph\_MaritalStatus2019PrivatePublicUninsured, id.vars="MaritalStatus", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.MaritalStatus2019PrivatePublicUninsured\_Reordered <- df.MaritalStatus2019PrivatePublicUninsured

df.MaritalStatus2019PrivatePublicUninsured\_Reordered$MaritalStatus <- factor(df.MaritalStatus2019PrivatePublicUninsured\_Reordered$MaritalStatus, levels = MaritalStatusFactorsRegular)

df.MaritalStatus2019PrivatePublicUninsured\_Reordered

df.MaritalStatus2019PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(MaritalStatusFactorsRegular, width = 10)

df.MaritalStatus2019PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.MaritalStatus2019PrivatePublicUninsured\_Reordered$new\_x\_label, levels = MaritalStatusFactorsSplit)

df.MaritalStatus2019PrivatePublicUninsured\_Reordered

graph\_MaritalStatus2019 <- ggplot(df.MaritalStatus2019PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Marital Status to Insurance Type - 2019") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "black") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Marital Status", y="Counts")

graph\_MaritalStatus2019

dfGraph\_MaritalStatus2020PrivatePublicUninsured <- as.data.frame(dsMaritalStatus2020PrivatePublicUninsured)

dfGraph\_MaritalStatus2020PrivatePublicUninsured

rownames(dfGraph\_MaritalStatus2020PrivatePublicUninsured) <- sub("'", "", rownames(dfGraph\_MaritalStatus2020PrivatePublicUninsured))

rownames(dfGraph\_MaritalStatus2020PrivatePublicUninsured) <- sub("[(]", "", rownames(dfGraph\_MaritalStatus2020PrivatePublicUninsured))

rownames(dfGraph\_MaritalStatus2020PrivatePublicUninsured) <- sub("[)]", "", rownames(dfGraph\_MaritalStatus2020PrivatePublicUninsured))

dfGraph\_MaritalStatus2020PrivatePublicUninsured["MaritalStatus"] <- rownames(dfGraph\_MaritalStatus2020PrivatePublicUninsured)

df.MaritalStatus2020PrivatePublicUninsured <- melt(dfGraph\_MaritalStatus2020PrivatePublicUninsured, id.vars="MaritalStatus", value.name=c("Private", "Public", "Uninsured"), variable.name="InsuranceType")

df.MaritalStatus2020PrivatePublicUninsured\_Reordered <- df.MaritalStatus2020PrivatePublicUninsured

df.MaritalStatus2020PrivatePublicUninsured\_Reordered$MaritalStatus <- factor(df.MaritalStatus2020PrivatePublicUninsured\_Reordered$MaritalStatus, levels = MaritalStatusFactorsRegular)

df.MaritalStatus2020PrivatePublicUninsured\_Reordered

df.MaritalStatus2020PrivatePublicUninsured\_Reordered$new\_x\_label = str\_wrap(MaritalStatusFactorsRegular, width = 10)

df.MaritalStatus2020PrivatePublicUninsured\_Reordered$new\_x\_label <- factor(df.MaritalStatus2020PrivatePublicUninsured\_Reordered$new\_x\_label, levels = MaritalStatusFactorsSplit)

df.MaritalStatus2020PrivatePublicUninsured\_Reordered

graph\_MaritalStatus2020 <- ggplot(df.MaritalStatus2020PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "stack", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Marital Status to Insurance Type - 2020") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

geom\_text(aes(label = value, group = variable), color = "black") +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Marital Status", y="Counts")

graph\_MaritalStatus2020

plot\_grid(graph\_MaritalStatus2017, graph\_MaritalStatus2018, graph\_MaritalStatus2019, graph\_MaritalStatus2017)

graph\_MaritalStatus2017 <- ggplot(df.MaritalStatus2017PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Marital Status to Insurance Type - 2017") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x="Marital Status", y="Counts")

graph\_MaritalStatus2017

graph\_MaritalStatus2018 <- ggplot(df.MaritalStatus2018PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Marital Status to Insurance Type - 2018") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x=" Marital Status", y="Counts")

graph\_MaritalStatus2018

graph\_MaritalStatus2019 <- ggplot(df.MaritalStatus2019PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Marital Status to Insurance Type - 2019") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x=" Marital Status", y="Counts")

graph\_MaritalStatus2019

graph\_MaritalStatus2020 <- ggplot(df.MaritalStatus2020PrivatePublicUninsured\_Reordered, aes(x = new\_x\_label, y = value, color = variable, fill = variable)) +

geom\_bar(position = "dodge", stat = "identity") +

scale\_fill\_brewer(palette="Dark2") +

ggtitle("Marital Status to Insurance Type - 2020") +

theme(axis.text.x = element\_text(angle=90, vjust = 0.5)) +

theme(text=element\_text(size=12)) +

theme(plot.title = element\_text(hjust = 0.5)) +

theme(legend.position = "bottom", legend.direction="horizontal",

legend.title = element\_blank()) +

labs(x=" MaritalStatus Level", y="Counts")

graph\_MaritalStatus2020

plot\_grid(graph\_MaritalStatus2017, graph\_MaritalStatus2018, graph\_MaritalStatus2019, graph\_MaritalStatus2020)