Scenario prediction figures

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## Load data

## Final case and death counts by scenario

statesvec <- fips\_table$Alpha.code[2:52]  
  
scen.df <- data.frame(state=sort(rep(statesvec,20)),  
 mu\_C = rep(rep(c(1,1,2,2),5),length(statesvec)),  
 mu\_Lambda = rep(rep(c(1,2,1,2),5),length(statesvec)),  
 DeltaDelta = rep(c(rep(0,4),rep(0.25,4),rep(0.5,4),rep(-0.25,4),rep(-0.5,4)),length(statesvec)),  
 stringsAsFactors = FALSE  
)  
scen.df$scenarioname <- paste("TimeSeries",scen.df$mu\_C,scen.df$mu\_Lambda,  
 scen.df$DeltaDelta,sep=".")  
scen.df$basename <- paste0("SEIR\_",scen.df$state,"\_",scen.df$scenarioname,".quantiles.csv")  
scen.df$scenariodesc <- paste0(scen.df$mu\_C,"X Contact Tracing, ",  
 scen.df$mu\_Lambda,"X Testing, Current",  
 ifelse(scen.df$DeltaDelta>0,  
 paste0("+",100\*scen.df$DeltaDelta,"%"),  
 ifelse(scen.df$DeltaDelta<0,  
 paste0(100\*scen.df$DeltaDelta,"%"),  
 "")),  
 " Reopening")  
scen.df$scenfactor <- factor(scen.df$scenariodesc,  
 levels=head(scen.df$scenariodesc,20))  
allscendat <-data.frame()  
for (k in 1:nrow(scen.df)) {  
 scenrow <- scen.df[k,]  
 statenow <- scenrow$state  
 popnow <- fips\_table[statenow,"pop"]  
 csvfile <- file.path(folder,statenow,scenrow$basename)  
 scendat <- read.csv(csvfile,as.is=TRUE)  
 scendat$state <- statenow  
 scendat$Output\_Var[scendat$Output\_Var=="CumDeath"] <- "CumulativeConfirmedDeaths"  
 scendat$Output\_Var[scendat$Output\_Var=="CumPosTest"] <- "CumulativeReportedCases"  
 scendat$Date <- as.Date(scendat$Time+60,origin=as.Date(datezero))  
 scendat <- subset(scendat,Date==max(scendat$Date) & Output\_Var %in% c(  
 "CumulativeConfirmedDeaths","CumulativeReportedCases"  
 ))  
 scendat$mu\_C <- scenrow$mu\_C  
 scendat$mu\_Lambda <- scenrow$mu\_Lambda  
 scendat$DeltaDelta <- scenrow$DeltaDelta  
 scendat$scenariodesc <- scenrow$scenariodesc  
 scendat$scenfactor <- scenrow$scenfactor  
 allscendat<-rbind(allscendat,scendat)  
}  
  
allscendat.df<-data.frame()  
scendatnorm <- subset(allscendat,scenfactor==levels(allscendat$scenfactor)[1])  
allscendat$PctDiff <- 0  
pdf("Fig\_Scenarios\_CumulPred\_Oct01.pdf",height=6,width=12)  
for (scenfactor.now in levels(allscendat$scenfactor)) {  
 scendat <- subset(allscendat,scenfactor==scenfactor.now)  
 scendat$PctDiff <- 100\*(scendat$Prediction.50./scendatnorm$Prediction.50. - 1)  
 #print(summary(scendat$PctDiff))  
 ptmp<-ggplot(scendat,aes(x=state,y=PctDiff,group=Output\_Var,fill=Output\_Var))+  
 geom\_col(position="dodge")+  
 coord\_cartesian(ylim=c(-100,100))+  
 ylab("Predicted Median Percent Difference in Cumulative Deaths/Reported Cases\non 01-Oct-2020 Relative to Baseline Scenario")+  
 theme\_bw()+theme(legend.position="bottom")+  
 scale\_fill\_viridis\_d(begin=0.2,end=0.8,option="plasma",name="")+  
 ggtitle(paste("Scenario:",scenfactor.now))  
 print(ptmp)  
 scendat.df <- pivot\_wider(scendat[,c("state","scenariodesc",  
 "Output\_Var","PctDiff")],  
 names\_from=Output\_Var,values\_from=PctDiff)  
 allscendat.df <- rbind(allscendat.df,scendat.df)  
}  
dev.off()

## quartz\_off\_screen   
## 2

fwrite(allscendat.df,"Fig\_Scenarios\_CumulPred\_Oct01.csv")

## Impact of different scenarios on daily cases and deaths for selected states





