library(plyr)

library(ggplot2)

myfun<-function(){

#讀取整合104～107年數據 #nrow=233100

url<-"/Users/hongtingluo/Documents/School/107-2/107-2巨量資料分析/project/"

data104 <- read.csv(paste(url,"opendata104b050.csv",sep = ""), header=T, sep=",")#104年數據

data105 <- read.csv(paste(url,"opendata105b050.csv",sep = ""), header=T, sep=",")#105年數據

data106 <- read.csv(paste(url,"opendata106b050.csv",sep = ""), header=T, sep=",")#106年數據

data107 <- read.csv(paste(url,"opendata107b050.csv",sep = ""), header=T, sep=",")#107年數據

names(data107)[names(data107) == "X.birth\_sex"] <- "birth\_sex"

dataAll <-rbind(data104,data105,data106,data107)#合併

dataAll$site\_id<-substr(dataAll$site\_id,1,3)#只看縣市ex:新北市板橋區->新北

#類別

year <-as.vector(unique(dataAll$statistic\_yyy))#年份

year <-year[2:length(year)]

place <-as.vector(unique(substr(dataAll$site\_id,1,3)))#區域

place <-place[2:length(place)]

age <-as.vector(unique(dataAll$mother\_age))#生母年齡

age <-age[2:length(age)]

education <-as.vector(unique(dataAll$mother\_education))#生母教育程度

education <-education[2:length(education)]

#各地方區域分佈

north <-c("臺北市","新北市","基隆市","新竹市","桃園市","新竹縣","宜蘭縣") #北

middle<-c("臺中市","苗栗縣","彰化縣","南投縣","雲林縣") #中

south <- c("高雄市","臺南市","嘉義市","嘉義縣","屏東縣","澎湖縣") #南

east <- c("花蓮縣","臺東縣") #東

island <-c("金門縣","連江縣") #離島

#各年度區域總人數

dataPopulation <- read.csv(paste(url,"population104～107.csv",sep = ""), header=T, sep=",")#104～107各地區人口數

population104 <-as.numeric(as.vector(dataPopulation$X104))

population105 <-as.numeric(as.vector(dataPopulation$X105))

population106 <-as.numeric(as.vector(dataPopulation$X106))

population107 <-as.numeric(as.vector(dataPopulation$X107))

#各年度新生兒數

baby104 <-sum(as.numeric(as.vector(dataAll$birth\_count[dataAll$statistic\_yyy=="104"])))#104的新生兒數

baby105 <-sum(as.numeric(as.vector(dataAll$birth\_count[dataAll$statistic\_yyy=="105"])))#105的新生兒數

baby106 <-sum(as.numeric(as.vector(dataAll$birth\_count[dataAll$statistic\_yyy=="106"])))#106的新生兒數

baby107 <-sum(as.numeric(as.vector(dataAll$birth\_count[dataAll$statistic\_yyy=="107"])))#107的新生兒數

#各年度各地新生兒數量統計

BabyNum104 <- CountBabyNum("104",place,dataAll) #104各地區新生兒統計

BabyNum105 <- CountBabyNum("105",place,dataAll) #105各地區新生兒統計

BabyNum106 <- CountBabyNum("106",place,dataAll) #106各地區新生兒統計

BabyNum107 <- CountBabyNum("107",place,dataAll) #107各地區新生兒統計

BabyNum104Area <-CountBabyNumArea(BabyNum104) #104各區域新生兒統計

BabyNum105Area <-CountBabyNumArea(BabyNum105) #104各區域新生兒統計

BabyNum106Area <-CountBabyNumArea(BabyNum106) #104各區域新生兒統計

BabyNum107Area <-CountBabyNumArea(BabyNum107) #104各區域新生兒統計

nursery <-read.csv(paste(url,"File\_177195.csv",sep = ""), header=T, sep=",")#托育資源中心名冊

nursery <-nursery[2:nrow(nursery),]#第一行不重要的去掉

colnames(nursery)<-c("place","name","address","tel")#更改colnames

#各地區托育資源中心數量

countNursery<-c(adply(place, .margins = 1, .fun = CountNum,nursery=nursery))$V1#計算托育資源中心數量

numNursery <-data.frame(place=place,num=countNursery)

#各區域托育資源中心數量#北、中、南、東、離島

northNurseyNum <-sum(adply(north, .margins = 1, function(n)numNursery$num[numNursery$place==n])$V1) #計算北部托育資源中心數量

middleNurseyNum <-sum(adply(middle, .margins = 1, function(n)numNursery$num[numNursery$place==n])$V1)#計算中部托育資源中心數量

southNurseyNum <-sum(adply(south, .margins = 1, function(n)numNursery$num[numNursery$place==n])$V1)#計算南部托育資源中心數量

eastNurseyNum <-sum(adply(east, .margins = 1, function(n)numNursery$num[numNursery$place==n])$V1)#計算東部托育資源中心數量

islandNurseyNum <-sum(adply(island, .margins = 1, function(n)numNursery$num[numNursery$place==n])$V1)#計算離島托育資源中心數量

count\_Area <-c(northNurseyNum,middleNurseyNum,southNurseyNum,eastNurseyNum,islandNurseyNum)

Area <-c("北部","中部","南部","東部","離島")

numNursery\_Area <-data.frame(Area=Area,Num=count\_Area)#各區域托育資源中心數量

#各地區新生兒and托育中心

dataBabyAndNursery104<-data.frame(BabyNum104,numNursery=numNursery$num)

dataBabyAndNursery105<-data.frame(BabyNum105,numNursery=numNursery$num)

dataBabyAndNursery106<-data.frame(BabyNum106,numNursery=numNursery$num)

dataBabyAndNursery107<-data.frame(BabyNum107,numNursery=numNursery$num)

#各區域新生兒and托育中心

dataBabyAndNurseryArea104<-data.frame(BabyNum104Area,numNursery=numNursery\_Area$Num)

dataBabyAndNurseryArea104$BabyRatio<-dataBabyAndNurseryArea104$Total/rep(sum(dataBabyAndNurseryArea104$Total),nrow(dataBabyAndNurseryArea104))

dataBabyAndNurseryArea104$NurseryRatio<-dataBabyAndNurseryArea104$numNursery/rep(sum(dataBabyAndNurseryArea104$numNursery),nrow(dataBabyAndNurseryArea104))

dataBabyAndNurseryArea104$Ratio<-dataBabyAndNurseryArea104$BabyRatio/dataBabyAndNurseryArea104$NurseryRatio

show(dataBabyAndNurseryArea104,"104")

dataBabyAndNurseryArea105<-data.frame(BabyNum105Area,numNursery=numNursery\_Area$Num)

dataBabyAndNurseryArea105$BabyRatio<-dataBabyAndNurseryArea105$Total/rep(sum(dataBabyAndNurseryArea105$Total),nrow(dataBabyAndNurseryArea105))

dataBabyAndNurseryArea105$NurseryRatio<-dataBabyAndNurseryArea105$numNursery/rep(sum(dataBabyAndNurseryArea105$numNursery),nrow(dataBabyAndNurseryArea105))

dataBabyAndNurseryArea105$Ratio<-dataBabyAndNurseryArea105$BabyRatio/dataBabyAndNurseryArea105$NurseryRatio

show(dataBabyAndNurseryArea105,"105")

dataBabyAndNurseryArea106<-data.frame(BabyNum106Area,numNursery=numNursery\_Area$Num)

dataBabyAndNurseryArea106$BabyRatio<-dataBabyAndNurseryArea106$Total/rep(sum(dataBabyAndNurseryArea106$Total),nrow(dataBabyAndNurseryArea106))

dataBabyAndNurseryArea106$NurseryRatio<-dataBabyAndNurseryArea106$numNursery/rep(sum(dataBabyAndNurseryArea106$numNursery),nrow(dataBabyAndNurseryArea106))

dataBabyAndNurseryArea106$Ratio<-dataBabyAndNurseryArea106$BabyRatio/dataBabyAndNurseryArea106$NurseryRatio

show(dataBabyAndNurseryArea106,"106")

dataBabyAndNurseryArea107<-data.frame(BabyNum107Area,numNursery=numNursery\_Area$Num)

dataBabyAndNurseryArea107$BabyRatio<-dataBabyAndNurseryArea107$Total/rep(sum(dataBabyAndNurseryArea107$Total),nrow(dataBabyAndNurseryArea107))

dataBabyAndNurseryArea107$NurseryRatio<-dataBabyAndNurseryArea107$numNursery/rep(sum(dataBabyAndNurseryArea107$numNursery),nrow(dataBabyAndNurseryArea107))

dataBabyAndNurseryArea107$Ratio<-dataBabyAndNurseryArea107$BabyRatio/dataBabyAndNurseryArea107$NurseryRatio

show(dataBabyAndNurseryArea107,"107")

ggplot(dataBabyAndNurseryArea104, aes(dataBabyAndNurseryArea104$place, dataBabyAndNurseryArea104$total)) + geom\_col(position = "dodge")

#各年度生母教育部分

Education104<-CountEducation("104",education,dataAll) #104各區域生母教育統計

Education104$Ratio<-Education104$Count/rep(BabyNum104Area$Total,each=length(education))

education104<-ggplot(Education104, aes(Area, Ratio, fill = Eduction)) + geom\_col(position = "dodge")+labs(title = "104MomEducation")

print(education104)

Education105<-CountEducation("105",education,dataAll) #104各區域生母教育統計

Education105$Ratio<-Education105$Count/rep(BabyNum105Area$Total,each=length(education))

education105<-ggplot(Education105, aes(Area, Ratio, fill = Eduction)) + geom\_col(position = "dodge")+labs(title = "105MomEducation")

print(education105)

Education106<-CountEducation("106",education,dataAll) #106各區域生母教育統計

Education106$Ratio<-Education106$Count/rep(BabyNum106Area$Total,each=length(education))

education106<-ggplot(Education106, aes(Area, Ratio, fill = Eduction)) + geom\_col(position = "dodge")+labs(title = "106MomEducation")

print(education106)

Education107<-CountEducation("107",education,dataAll) #107各區域生母教育統計

Education107$Ratio<-Education107$Count/rep(BabyNum107Area$Total,each=length(education))

education107<-ggplot(Education107, aes(Area, Ratio, fill = Eduction)) + geom\_col(position = "dodge")+labs(title = "107MomEducation")

print(education107)

}

CountNum<-function(n,nursery){

num <-length(which(substr(nursery$address,1,3)==n))

return(num)

}#計算托育資源中心數量

CountBabyBoyNum<-function(n,dataAll,year){

num <-sum(as.numeric(as.vector(dataAll$birth\_count[dataAll$site\_id==n & dataAll$birth\_sex=="男" & dataAll$statistic\_yyy==year])))

return(num)

}#計算各縣市男新生兒

CountBabyGirlNum<-function(n,dataAll,year){

num <-sum(as.numeric(as.vector(dataAll$birth\_count[dataAll$site\_id==n & dataAll$birth\_sex=="女" & dataAll$statistic\_yyy==year])))

return(num)

}#計算各縣市女新生兒

CountBabyNum<-function(n,place,dataAll){

numBoyBaby <-adply(place, .margins = 1, CountBabyBoyNum,dataAll=dataAll,year=n)$V1#各地區男新生兒

numGirlBaby <-adply(place, .margins = 1, CountBabyGirlNum,dataAll=dataAll,year=n)$V1#各地區女新生兒

numBaby <-numGirlBaby+numBoyBaby#各地區新生兒總數

Baby <- data.frame(place=place,Boy=numBoyBaby,Girl=numGirlBaby,Total=numBaby)

return(Baby)

}#計算各縣市男新生兒

CountEducation<-function(year,education,dataAll){

#各地方區域分佈

north <-c("臺北市","新北市","基隆市","新竹市","桃園市","新竹縣","宜蘭縣") #北

middle<-c("臺中市","苗栗縣","彰化縣","南投縣","雲林縣") #中

south <- c("高雄市","臺南市","嘉義市","嘉義縣","屏東縣","澎湖縣") #南

east <- c("花蓮縣","臺東縣") #東

island <-c("金門縣","連江縣") #離島

Area <-c("北部","中部","南部","東部","離島")

education <-as.vector(unique(dataAll$mother\_education))#生母教育程度

education <-education[2:length(education)]

nn<-adply(north, .margins = 1,function(n)rbind(dataAll[dataAll$site\_id==n & dataAll$statistic\_yyy==year,]))

nedu<-adply(education, .margins = 1,function(n) sum(as.numeric(as.vector(nn$birth\_count[nn$mother\_education==n]))))

mm<-adply(middle, .margins = 1,function(n)rbind(dataAll[dataAll$site\_id==n & dataAll$statistic\_yyy==year,]))

medu<-adply(education, .margins = 1,function(n) sum(as.numeric(as.vector(mm$birth\_count[mm$mother\_education==n]))))

ss<-adply(south, .margins = 1,function(n)rbind(dataAll[dataAll$site\_id==n & dataAll$statistic\_yyy==year,]))

sedu<-adply(education, .margins = 1,function(n) sum(as.numeric(as.vector(ss$birth\_count[ss$mother\_education==n]))))

ee<-adply(east, .margins = 1,function(n)rbind(dataAll[dataAll$site\_id==n & dataAll$statistic\_yyy==year,]))

eedu<-adply(education, .margins = 1,function(n) sum(as.numeric(as.vector(ee$birth\_count[ee$mother\_education==n]))))

ii<-adply(island, .margins = 1,function(n)rbind(dataAll[dataAll$site\_id==n & dataAll$statistic\_yyy==year,]))

iedu<-adply(education, .margins = 1,function(n) sum(as.numeric(as.vector(ii$birth\_count[ii$mother\_education==n]))))

d1<-rep(Area,each=length(education))

d2<-rep(education,length(Area))

d3<-c(nedu$V1,medu$V1,sedu$V1,eedu$V1,iedu$V1)

temp<-data.frame(d1,d2,d3)

colnames(temp)<-c("Area","Eduction","Count")

return(temp)

}#計算各縣市女新生兒

CountBabyNumArea<-function(df){

#各地方區域分佈

north <-c("臺北市","新北市","基隆市","新竹市","桃園市","新竹縣","宜蘭縣") #北

middle<-c("臺中市","苗栗縣","彰化縣","南投縣","雲林縣") #中

south <- c("高雄市","臺南市","嘉義市","嘉義縣","屏東縣","澎湖縣") #南

east <- c("花蓮縣","臺東縣") #東

island <-c("金門縣","連江縣") #離島

#計算北部新生兒數量

northBabyNum <-adply(north, .margins = 1,function(n)cbind(df$Boy[df$place==n],df$Girl[df$place==n],df$Total[df$place==n]))

nn<-colSums(northBabyNum[1:nrow(northBabyNum),2:ncol(northBabyNum)])

#計算中部新生兒數量

middleBabyNum <-adply(middle, .margins = 1, function(n)cbind(df$Boy[df$place==n],df$Girl[df$place==n],df$Total[df$place==n]))

mm<-colSums(middleBabyNum[1:nrow(middleBabyNum),2:ncol(middleBabyNum)])

#計算南部新生兒數量

southBabyNum <-adply(south, .margins = 1, function(n)cbind(df$Boy[df$place==n],df$Girl[df$place==n],df$Total[df$place==n]))

ss<-colSums(southBabyNum[1:nrow(southBabyNum),2:ncol(southBabyNum)])

#計算東部新生兒數量

eastBabyNum <-adply(east, .margins = 1, function(n)cbind(df$Boy[df$place==n],df$Girl[df$place==n],df$Total[df$place==n]))

ee<-colSums(eastBabyNum[1:nrow(eastBabyNum),2:ncol(eastBabyNum)])

#計算離島新生兒數量

islandBabyNum <-adply(island, .margins = 1, function(n)cbind(df$Boy[df$place==n],df$Girl[df$place==n],df$Total[df$place==n]))

ii<-colSums(islandBabyNum[1:nrow(islandBabyNum),2:ncol(islandBabyNum)])

#合併

count\_Area <-rbind(nn,mm,ss,ee,ii)

Area <-c("北部","中部","南部","東部","離島")

AreaBabyCount<-data.frame(Area,count\_Area)

colnames(AreaBabyCount)<-colnames(df)

return(AreaBabyCount)

}

show<-function(n,year){

dn <- ggplot(n, aes(factor(1), numNursery, fill = place)) + geom\_col()+labs(title = year)+ coord\_polar("y", start = pi)

print(dn)

db <- ggplot(n, aes(factor(1), Total, fill = place)) + geom\_col()+labs(title = year)+ coord\_polar("y", start = pi)

print(db)

dnb<-ggplot(n, aes(place, Ratio,fill=place)) + geom\_col(position = "dodge")+labs(title = year)

print(dnb)

}

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沛蓉部分:8張圖

myfun<-function()

{

url<-"C:/Users/asus/Desktop/巨量期末project/"

data104 <- read.csv(paste(url,"opendata104b050.csv",sep = ""), header=T, sep=",") #104年數據

data105 <- read.csv(paste(url,"opendata105b050.csv",sep = ""), header=T, sep=",") #105年數據

data106 <- read.csv(paste(url,"opendata106b050.csv",sep = ""), header=T, sep=",") #106年數據

data107 <- read.csv(paste(url,"opendata107b050.csv",sep = ""), header=T, sep=",") #107年數據

names(data107)[names(data107) == "X.birth\_sex"] <- "birth\_sex"

dataAll <-rbind(data104,data105,data106,data107)

nation <-as.vector(unique(dataAll$mother\_nation))#國籍

nation <-nation[2:length(nation)]

age <-as.vector(unique(dataAll$mother\_age))#生母年齡

age <-age[2:length(age)]

year <-as.vector(unique(dataAll$statistic\_yyy))#年份

year <-year[2:length(year)]

#第一張圖 折線圖

CountNationBabyNum<-function(nation,dataAll,year)

{

num<-sum(as.numeric(as.vector(dataAll$birth\_count[dataAll$mother\_nation== nation & dataAll$statistic\_yyy==year]))) #各國籍 各年度 新生兒人數

proportion<-num/sum(as.numeric(as.vector(dataAll$birth\_count[dataAll$statistic\_yyy==year])))

data<-data.frame(num,proportion) #各國籍 各年度 新生兒人數占總新生兒比例

return(data)

}

CountBabyNum<-function(n,nation,dataAll){

numBaby <-adply(nation, .margins = 1, .fun = CountNationBabyNum,dataAll,n)

Baby <- data.frame(year=n,nation=nation,count = numBaby$num,proportion=numBaby$proportion)

return(Baby)

} #計算各國籍新生兒

BabyNum104 <- CountBabyNum("104",nation,dataAll) #104各國籍新生兒統計

BabyNum105 <- CountBabyNum("105",nation,dataAll) #105各國籍新生兒統計

BabyNum106 <- CountBabyNum("106",nation,dataAll) #106各國籍新生兒統計

BabyNum107 <- CountBabyNum("107",nation,dataAll) #107各國籍新生兒統計

BabyAll<-rbind(BabyNum104,BabyNum105,BabyNum106,BabyNum107) #104~107 各國籍新生兒統計

YearIncrement<-function(BabyAll,x,y) #今年新生兒/去年新生兒， >1新生兒人數逐年增加，**<1** 新生兒人數逐年減少

{

num<-BabyAll$count[BabyAll$year== y] / BabyAll$count[BabyAll$year== x]

return(num)

}

show<-function(BabyAll,x,y)

{

data<-ddply(BabyAll, .variables = "nation", .fun = YearIncrement, x, y)

string<-paste(x,"-",y,sep = "")

data<-cbind(year = string,data)

return(data)

}

BabyNum104105 <- show(BabyAll,"104","105") #104~105各國籍新生兒漲幅

BabyNum105106 <- show(BabyAll,"105","106") #105~106各國籍新生兒漲幅

BabyNum106107 <- show(BabyAll,"106","107") #106~107各國籍新生兒漲幅

data3<-rbind(BabyNum104105,BabyNum105106,BabyNum106107)

a<-ggplot(data3, aes(data3$year , data3$V1, color = data3$nation,group=data3$nation)) + geom\_point(size=5) + geom\_line(size = 1, linetype = 2, color = 4)+ labs(x = "年", y = "新生兒人數增漲比例", color = "國籍", title = "104~107年 各國籍生母與新生兒人數比例變化折線圖")

print(a) #折線圖

#第二張及第三張圖 折線圖 以104年為主

AgeNum<-function(age,data104,nation)

{

num<-sum(as.numeric(as.vector(data104$birth\_count[data104$mother\_nation == nation & data104$mother\_age == age])))

return(num)

}

AgeShow<-function(data104,nation,age)

{

result<-adply(age, .margins = 1, .fun = AgeNum,data104 ,nation)

result<-result[,2]

data<-data.frame(year="104",nation=nation,age = age,count=result)

return(data)

}

Age1 <- AgeShow(data104 ,"本國",age)

Age2 <- AgeShow(data104 ,"大陸地區",age)

Age3 <- AgeShow(data104 ,"港澳地區",age)

Age4 <- AgeShow(data104 ,"東南亞地區",age)

Age5 <- AgeShow(data104 ,"其他地區",age)

data4<-rbind(Age1,Age2,Age3,Age4,Age5)

b1<-ggplot(data4, aes(age , count, color = nation,group=nation)) + geom\_point(size=5) + geom\_line(size = 1, linetype = 2, color = 4)+ labs(x = "年齡", y = "新生兒人數", color = "國籍",title = "各國國籍生母年齡與新生兒人數關係折線圖")

print(b1)

data41<-data4[-1:-9,]

b2<-ggplot(data41, aes(age , count, color = nation,group=nation)) + geom\_point(size=5) + geom\_line(size = 1, linetype = 2, color = 4)+ labs(x = "年齡", y = "新生兒人數", color = "國籍",title = "非本國國籍生母年齡與新生兒人數關係折線圖")

print(b2)

#第四~七張圖 圓餅圖

#104~107 各國籍生母之新生兒人數/總新生兒人數

c1<-ggplot(BabyNum104, aes(factor(1), proportion, fill = nation)) + geom\_col()+ coord\_polar("y")+ labs(x = "占總新生兒比例", y = "", fill = "國籍", title = "104年 各國籍生母所生小孩占總新生兒比例")

c2<-ggplot(BabyNum105, aes(factor(1), proportion, fill = nation)) + geom\_col()+ coord\_polar("y")+ labs(x = "占總新生兒比例", y = "", fill = "國籍", title = "105年 各國籍生母所生小孩占總新生兒比例")

c3<-ggplot(BabyNum106, aes(factor(1), proportion, fill = nation)) + geom\_col()+ coord\_polar("y")+ labs(x = "占總新生兒比例", y = "", fill = "國籍", title = "106年 各國籍生母所生小孩占總新生兒比例")

c4<-ggplot(BabyNum107, aes(factor(1), proportion, fill = nation)) + geom\_col()+ coord\_polar("y")+ labs(x = "占總新生兒比例", y = "", fill = "國籍", title = "107年 各國籍生母所生小孩占總新生兒比例")

print(c1)

print(c2)

print(c3)

print(c4)

#第八章圖 折線圖

show1<-function(year,BabyAll)

{

p<-BabyAll$proportion[BabyAll$nation=="本國" & BabyAll$year == year]

p1<-data.frame(year=year,nation = "本國",proportion=p)

p2<-data.frame(year=year,nation = "非本國",proportion=1-p)

data<-rbind(p1,p2)

return(data)

}

NationBabyNum<-function(year,BabyAll)

{

data<-adply(year, .margins = 1, .fun = show1,BabyAll)

data<-data[,-1]

return(data)

}

NationBabyNum104 <- NationBabyNum(year,BabyAll) #本國籍與非本國籍新生兒比例統計

d<-ggplot(NationBabyNum104, aes(NationBabyNum104$year , NationBabyNum104$proportion, color = NationBabyNum104$nation,group=NationBabyNum104$nation)) + geom\_point(size=5) + geom\_line(size = 1, linetype = 2, color = 4)+ labs(x = "年", y = "占總新生兒人數比例", color = "國籍", title = "104~107年 本國籍與非本國籍生母之新生兒人數比例折線圖")

print(d)

}

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