

DOE-report2

資料前處理

```
#load data
setwd("C:/Users/user/Desktop/R/DOE/Data")
library(readr)
library(dplyr)
library(ggplot2)
df = as_tibble(read.csv("covid_data_pain.csv", encoding = "CP950"))

df = df[c(1,2,8:10)]

# wash data####
age = c()
for(i in df$AGE_YRS){
  if(15<i & i<=35){
    age = append(age, "15_35")
  }
  else if(35<i & i<=55){
    age = append(age, "35_55")
  }
  else if(55<i & i<=75){
    age = append(age, "55_75")
  }
  else{
    age = append(age, "75_95")
  }
}
df$age = age

df_ijk_trans = function(df, age, pain, vax){
  index = which(df$age == age & df$Pain_type == pain & df$VAX_MANU == vax)
  return(df[index,])
}

age_iter = c("15_35", "35_55", "55_75", "75_95")
# pain_iter = c("四肢痛", "其他痛", "頭頸痛", "軀幹痛")
pain_iter = c("四肢痛", "頭頸痛", "軀幹痛")
vax_iter = c("MODERNA", "PFIZER\BIONTECH", "JANSSEN")

df = df %>% filter(Pain_type!="其他痛")
df
```

SEX <fctr>	DIED <fctr>	VAX_MANU <fctr>	AGE_YRS <dbl>	Pain_type <fctr>	age <chr>
F	N	MODERNA	22	頭頸痛	15_35
M	N	MODERNA	27	軀幹痛	15_35
F	N	MODERNA	33	四肢痛	15_35
F	N	PFIZER\BIONTECH	61	頭頸痛	55_75
F	N	MODERNA	26	軀幹痛	15_35
F	N	PFIZER\BIONTECH	28	軀幹痛	15_35
F	N	PFIZER\BIONTECH	30	頭頸痛	15_35
F	N	MODERNA	54	頭頸痛	35_55
F	N	MODERNA	39	頭頸痛	35_55
F	N	PFIZER\BIONTECH	33	頭頸痛	15_35

1-10 of 919 rows

Previous123456...92Next

計算cell

```
library(hash)
magic = function(df){
  res = hash()
  p = sum(df$DIED=="Y")/(length(df$DIED))
  n = df %>% nrow()
  q = 1-p
  res[["n_obs"]] = n
  res[["mean"]] = n*p
  res[["std"]] = n*p*q
  return(res)
}

n_obs = c()
cell_mean = c()
cell_std = c()

for(k in vax_iter){
  for(i in age_iter){
    for(j in pain_iter){
      i = as.character(i)
      tmp = magic(df_ijk_trans(df, age = i,pain = j, vax = k))
      n_obs = append(n_obs, tmp$n_obs)
      cell_mean = append(cell_mean, tmp$mean)
      cell_std = append(cell_std, tmp$std)
    }
  }
}

coln = age_iter
rown = pain_iter
```

cell mean/std/replication in matrix (“MODERNA”)

- mean matrix

```
matrix(c(cell_mean[1:12]), nrow = 3, ncol = 4,byrow = TRUE,dimnames = list(rown, coln))
```

##	15_35	35_55	55_75	75_95
## 四肢痛	0	0	0	0
## 頭頸痛	0	1	2	3
## 軀幹痛	2	3	2	6

- std matrix

```
matrix(c(cell_std[1:12]), nrow = 3, ncol = 4,byrow = TRUE,dimnames = list(rown, coln))
```

##	15_35	35_55	55_75	75_95
## 四肢痛	0.000000	0.000000	0.000000	0.000000
## 頭頸痛	0.000000	0.9714286	1.904762	2.763158
## 軀幹痛	1.882353	2.4375000	1.500000	3.000000

- replication matrix

```
matrix(c(n_obs[1:12]), nrow = 3, ncol = 4,byrow = TRUE,dimnames = list(rown, coln))
```

##	15_35	35_55	55_75	75_95
## 四肢痛	54	52	24	85
## 頭頸痛	90	35	42	38
## 軀幹痛	34	16	8	12

cell mean/std/replication in matrix (“PFIZER\BIONTECH”)

- mean matrix

```
matrix(c(cell_mean[13:24]), nrow = 3, ncol = 4,byrow = TRUE,dimnames = list(rown, coln))
```

##	15_35	35_55	55_75	75_95
## 四肢痛	2	0	0	1
## 頭頸痛	0	0	1	0
## 軀幹痛	2	3	1	0

- std matrix

```
matrix(c(cell_std[13:24]), nrow = 3, ncol = 4,byrow = TRUE,dimnames = list(rown, coln))
```

##	15_35	35_55	55_75	75_95
## 四肢痛	1.916667	0.000000	0.000000	0.9875
## 頭頸痛	0.000000	0.000000	0.9677419	0.0000
## 軀幹痛	1.833333	2.181818	0.800000	0.0000

- replication matrix

```
matrix(c(n_obs[13:24]), nrow = 3, ncol = 4,byrow = TRUE,dimnames = list(rown, coln))
```

##	15_35	35_55	55_75	75_95
## 四肢痛	48	29	33	80
## 頭頸痛	59	45	31	28
## 軀幹痛	24	11	5	6

cell mean/std/replication in matrix (“JANSSEN”)

- mean matrix

```
matrix(c(cell_mean[25:36]), nrow = 3, ncol = 4,byrow = TRUE,dimnames = list(rown, coln))
```

##	15_35	35_55	55_75	75_95
## 四肢痛	0	0	0	0
## 頭頸痛	0	0	0	0
## 軀幹痛	0	NaN	NaN	NaN

- std matrix

```
matrix(c(cell_std[25:36]), nrow = 3, ncol = 4,byrow = TRUE,dimnames = list(rown, coln))
```

##	15_35	35_55	55_75	75_95
## 四肢痛	0	0	0	0
## 頭頸痛	0	0	0	0
## 軀幹痛	0	NaN	NaN	NaN

- replication matrix

```
matrix(c(n_obs[25:36]), nrow = 3, ncol = 4,byrow = TRUE,dimnames = list(rown, coln))
```

##	15_35	35_55	55_75	75_95
## 四肢痛	1	4	2	5
## 頭頸痛	4	5	2	2
## 軀幹痛	5	0	0	0