

미세먼지농도와 풍향비교

```
load("../../refinedata/analysis/analysis_total_Fixed.rda")
library(dplyr)
```

```
## Warning: package 'dplyr' was built under R version 3.6.3
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##   filter, lag
```

```
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

```
analysis_total_Fixed <- analysis_total_Fixed %>% filter(substr(일시,1,7)=='2016-01'|substr(일시,1,7)=='2016-02')
```

```
analysis_total_Fixed$`최다풍향(16방위)` <- as.factor(analysis_total_Fixed$`최다풍향(16방위)`)
```

```
analysis_total <- analysis_total_Fixed %>% dplyr::select(`최다풍향(16방위)`, PM10, PM25, 발병률)
```

```
## Adding missing grouping variables: `시도코드`
```

```
analysis_total <- rename(analysis_total, wind = `최다풍향(16방위)`)
```

```
fit.aov <- aov(formula = 발병률 ~ wind, data = analysis_total)
```

```
summary(fit.aov)
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## wind       15  0.00221  0.0001473    1.47  0.109
## Residuals 1004  0.10059  0.0001002
```

```
## Warning: package 'multcomp' was built under R version 3.6.3
```

```
## Loading required package: mvtnorm
```

```
## Loading required package: survival
```

```
## Warning: package 'survival' was built under R version 3.6.3
```

```
## Loading required package: TH.data
```

```
## Warning: package 'TH.data' was built under R version 3.6.3
```

```
## Loading required package: MASS
```

```
##
## Attaching package: 'MASS'
```

```
## The following object is masked from 'package:dplyr':
##
##   select
```

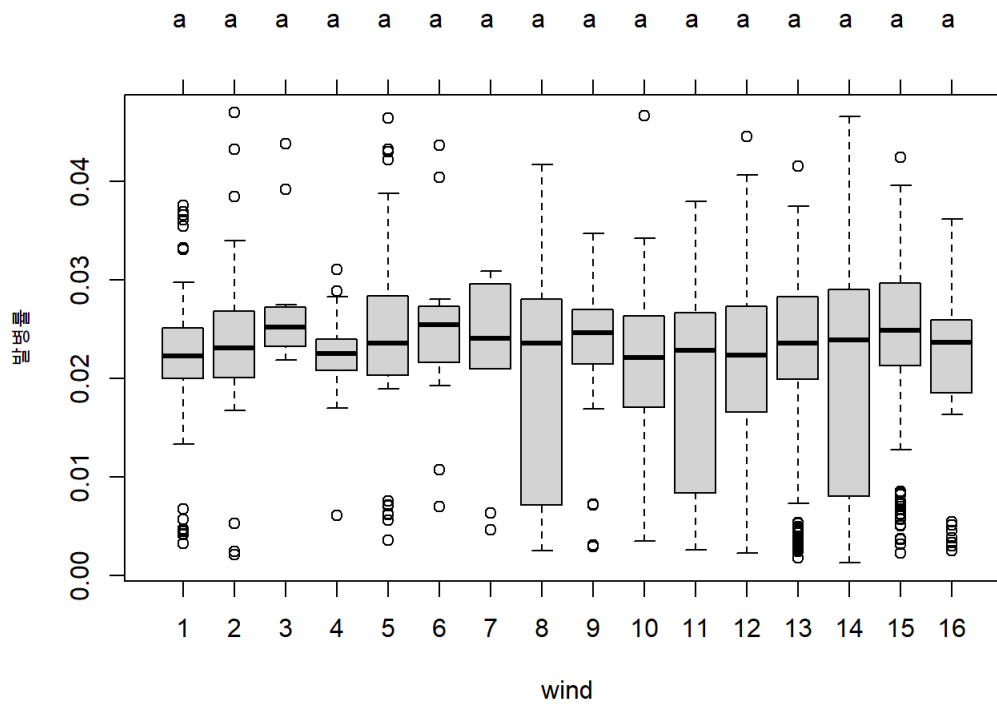
```
##
## Attaching package: 'TH.data'
```

```
## The following object is masked from 'package:MASS':
##
##      geyser
```

```
## Call:
##   aov(formula = 발병률 ~ wind, data = analysis_total)
##
## Terms:
##
##               wind  Residuals
## Sum of Squares  0.00220884  0.10059470
## Deg. of Freedom      15      1004
##
## Residual standard error: 0.01000969
## Estimated effects may be unbalanced
```

```
## Warning in RET$pffunction("adjusted", ...): Completion with error > abseps
```

[illegible]



```
library(readr)
```

```
library(dplyr)
```

```
temp <- analysis_total_Fixed %>% dplyr::select(시도코드, `최다풍향(16방위)`)
```

```
library(data.table)
```

```
##
## Attaching package: 'data.table'
```

```
## The following objects are masked from 'package:dplyr':
##
##   between, first, last
```

```
#temp <- melt(temp,id.vars=c("시도코드"))
```

```
#temp
```

```
library(prettyR)
```

```
temp <- rename(temp , `최다풍향`=`최다풍향(16방위)` )
```

```
temp$최다풍향 <- as.factor(temp$최다풍향)
```

```
temp$시도코드 <- as.factor(temp$시도코드)
```

```
temp2 <- xtabs(data=temp,formula = ~시도코드+최다풍향 )
temp2 <- as.data.frame(temp2)
```

```
library(kormaps2014)
```

```
library(ggiraphExtra)
```

```
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.6.3
```

```
library(data.table)
library(dplyr)

tempmap <- kormapl

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp_map_join <- inner_join(tempmap,df_sido,by=c('name1'))
```

```
## Warning: Column `name1` joining factors with different levels, coercing to
## character vector
```

```
temp_map_join <- temp_map_join %>% dplyr::select(-code.x)
temp_map_join <- rename(temp_map_join,code=code.y)
temp_map_join$code <- as.character(temp_map_join$code)

temp_map_join$region <- temp_map_join$code
temp_map_join$SIDO_CD <- temp_map_join$code
```

```
ggChoropleth(data=analysis_total_Fixed,

  digits = 2,

  aes(fill=발병률,

      map_id=시도코드,

      tooltip=시도

    ),
  #palette = '',
  map=temp_map_join,

  interactive=TRUE)
```

```
ggChoropleth(data=analysis_total_Fixed,

  aes(fill=PM10,

      map_id=시도코드,

      tooltip=시도

    ),
  #palette = '',
  map=temp_map_join,

  interactive=TRUE)
```

```
ggChoropleth(data=analysis_total_Fixed,

              aes(fill=PM25,

                  map_id=시도코드,

                  tooltip=시도

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 1)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최대풍향: Factor w/ 16 levels "1","2","3","4",...: 1 1 1 1 1 1 1 1 1 1 ...
## $ Freq      : int   2 0 0 6 19 0 6 1 3 3 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 2)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최다풍향: Factor w/ 16 levels "1","2","3","4",...: 2 2 2 2 2 2 2 2 2 ...
## $ Freq      : int   5 7 0 1 19 0 3 2 4 1 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 3)
```

```
code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최다풍향: Factor w/ 16 levels "1","2","3","4",...: 3 3 3 3 3 3 3 3 3 3 ...
## $ Freq      : int   1 0 0 0 1 0 0 0 1 0 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 4)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최대풍향: Factor w/ 16 levels "1","2","3","4",...: 4 4 4 4 4 4 4 4 4 4 ...
## $ Freq      : int  6 0 1 3 0 0 0 0 1 1 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

  aes(fill=Freq,

      map_id=시도코드,

      tooltip=name1

  ),
  #palette = '',
  map=temp_map_join,

  interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 5)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최대풍향: Factor w/ 16 levels "1","2","3","4",...: 5 5 5 5 5 5 5 5 5 5 ...
## $ Freq      : int  3 1 11 4 0 4 2 2 2 0 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 6)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최대풍향: Factor w/ 16 levels "1","2","3","4",...: 6 6 6 6 6 6 6 6 6 6 ...
## $ Freq     : int  1 1 0 0 0 1 0 0 1 0 ...
## $ name1    : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 7)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```



```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최다풍향: Factor w/ 16 levels "1","2","3","4",...: 7 7 7 7 7 7 7 7 7 ...
## $ Freq      : int   1 0 0 2 1 0 0 1 0 0 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 8)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최다풍향: Factor w/ 16 levels "1","2","3","4",...: 8 8 8 8 8 8 8 8 8 ...
## $ Freq      : int   0 0 0 3 1 0 0 0 4 1 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 9)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최대풍향: Factor w/ 16 levels "1","2","3","4",...: 9 9 9 9 9 9 9 9 9 9 ...
## $ Freq     : int  0 0 0 0 0 9 0 6 1 3 ...
## $ name1    : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

  aes(fill=Freq,

      map_id=시도코드,

      tooltip=name1

  ),
  #palette = '',
  map=temp_map_join,

  interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 10)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최대풍향: Factor w/ 16 levels "1","2","3","4",...: 10 10 10 10 10 10 10 10 10 10 ...
## $ Freq     : int  1 1 0 0 2 0 2 0 3 4 ...
## $ name1    : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 11)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최대풍향: Factor w/ 16 levels "1","2","3","4",...: 11 11 11 11 11 11 11 11 11 11 ...
## $ Freq      : int   0 3 3 3 9 0 5 3 0 5 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 12)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최다풍향: Factor w/ 16 levels "1","2","3","4",...: 12 12 12 12 12 12 12 12 12 ...
## $ Freq      : int   3 14 13 4 4 0 8 9 9 27 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 13)
```

```
code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최다풍향: Factor w/ 16 levels "1","2","3","4",...: 13 13 13 13 13 13 13 13 13 13 ...
## $ Freq      : int   3 11 29 19 1 2 7 7 25 8 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 14)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame': 17 obs. of 4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최대풍향: Factor w/ 16 levels "1","2","3","4",...: 14 14 14 14 14 14 14 14 14 14 ...
## $ Freq : int 23 2 3 5 2 26 14 15 5 5 ...
## $ name1 : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame': 17 obs. of 2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

aes(fill=Freq,

map_id=시도코드,

tooltip=name1

),
#palette = '',
map=temp_map_join,

interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 15)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame': 17 obs. of 4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최대풍향: Factor w/ 16 levels "1","2","3","4",...: 15 15 15 15 15 15 15 15 15 15 ...
## $ Freq : int 10 13 0 8 0 14 11 10 0 1 ...
## $ name1 : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame': 17 obs. of 2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```

```
temp3 <- temp2 %>% filter(최다풍향 == 16)

code <- c('42','41','43','44','30','47','48','45','46','11','28','27','31','29','26','49','36')
name1 <- c('강원도','경기도','충청북도','충청남도','대전광역시','경상북도','경상남도','전라북도','전라남도','서울특별시',
'인천광역시','대구광역시','울산광역시','광주광역시','부산광역시','제주특별자치도','세종특별자치시')
df_sido <- data.frame("code"=code,"name1"=name1)

temp3 <- inner_join(temp3,df_sido,by=c("시도코드"="code"))
str(temp3)
```

```
## 'data.frame':   17 obs. of  4 variables:
## $ 시도코드: Factor w/ 17 levels "11","26","27",...: 1 2 3 4 5 6 7 8 9 10 ...
## $ 최대풍향: Factor w/ 16 levels "1","2","3","4",...: 16 16 16 16 16 16 16 16 16 16 ...
## $ Freq      : int   1 7 0 2 1 4 2 4 1 1 ...
## $ name1     : Factor w/ 17 levels "강원도","경기도",...: 9 8 6 12 5 7 11 10 2 1 ...
```

```
str(df_sido)
```

```
## 'data.frame':   17 obs. of  2 variables:
## $ code : Factor w/ 17 levels "11","26","27",...: 10 9 11 12 6 15 16 13 14 1 ...
## $ name1: Factor w/ 17 levels "강원도","경기도",...: 1 2 17 16 7 4 3 14 13 9 ...
```

```
ggChoropleth(data=temp3,

              aes(fill=Freq,

                  map_id=시도코드,

                  tooltip=name1

              ),
              #palette = '',
              map=temp_map_join,

              interactive=TRUE)
```