DID Expanded and Maps

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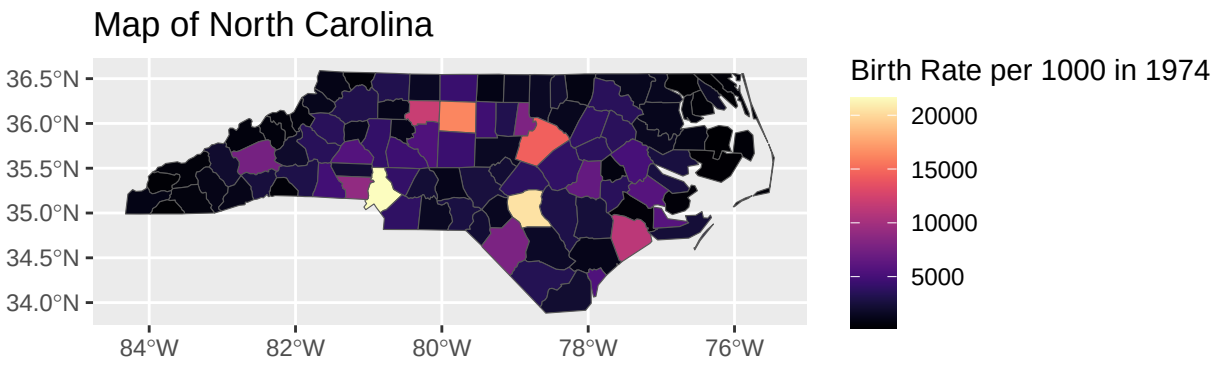
ggplot map

```
# Create the map with ggplot2
ggplot(data = nc, aes(fill = BIR74)) + geom_sf() +
  labs(title = "Map of North Carolina", fill = "Birth Rate per 1000 in 1974") +
  scale_fill_viridis(option = "magma")
```



DID with multiple periods example

```
# read in data
simulated_did_data <-
  read_csv("~/Documents/GitHub/Econometrics-Slides/data for tasks/simulated_did_data_clean.csv")

# check it out
head(simulated_did_data, 10)
```

```
## # A tibble: 10 x 7
##     unit  time treated treatment_time post_treatment outcome DID_treat
##    <dbl> <dbl>   <dbl>          <dbl>          <dbl>   <dbl>     <dbl>
##  1     1     1       0             NA              0    50.9         0
##  2     1     2       0             NA              0    47.0         0
##  3     1     3       0             NA              0    50.9         0
##  4     1     4       0             NA              0    30.1         0
##  5     1     5       0             NA              0    47.8         0
##  6     1     6       0             NA              0    53.6         0
##  7     1     7       0             NA              0    64.8         0
##  8     1     8       0             NA              0    44.8         0
##  9     1     9       0             NA              0    41.9         0
## 10     1    10       0             NA              0    45.0         0
```

```r
# run regressions (don't worry about the NA, its simulated data)
lm(outcome ~ post_treatment + treated + post_treatment:treated, data = simulated_did_data)
```

```
##
## Call:
## lm(formula = outcome ~ post_treatment + treated + post_treatment:treated,
##     data = simulated_did_data)
##
## Coefficients:
##            (Intercept)          post_treatment                 treated
##                 52.472                   1.593                  -1.470
## post_treatment:treated
##                     NA
```

```r
feols(outcome ~ post_treatment:treated | unit + time, data = simulated_did_data)
```

```
## OLS estimation, Dep. Var.: outcome
## Observations: 2,000
## Fixed-effects: unit: 100,  time: 20
## Standard-errors: Clustered (unit)
##                          Estimate Std. Error   t value Pr(>|t|)
## post_treatment:treated -0.026858   0.792781 -0.033878  0.97304
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## RMSE: 9.66346     Adj. R2: 0.032196
##                 Within R2: 5.592e-7
```