

# **Lab 1 Exercises**

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## Purpose

Stata is a powerful software for data analysis and visualization. This exercise set aims to showcase the capabilities of Stata in creating informative graphics . We will be using data on the UK and Sweden to demonstrate the process of making a map , a combined plot , and a summary table . The purpose of this accompanying post is to provide a step-by-step guide on how to use Stata's built-in tools to create effective visualizations that help communicate insights from your data .

## Get started

As before, we want to load our data from the `regional_dataset.dta` file.

```
cd "C:/Users/User/Documents/Recon/E0SE09/stata_files/" # set your directory
use regional_dataset, clear

format regional_gdp_cap_1990 %12.0fc # 12 numbers left of the decimal point; 0 to the right;
```

## Question 1

- Map of GDP per capita in Sweden and the United Kingdom in 1990

There are two ways to do this.

### Method 1: use their locations on a map

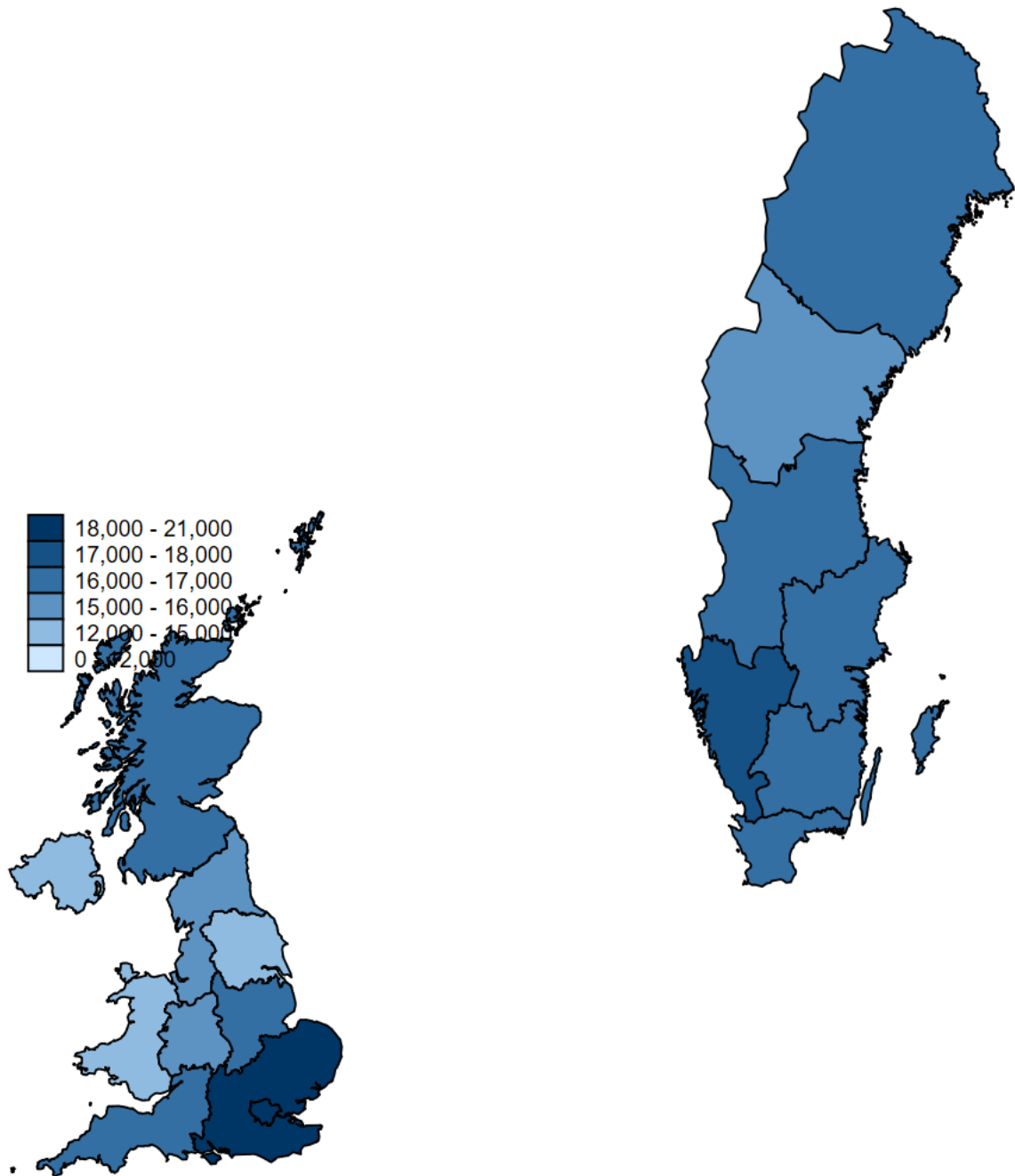
First we create a variable for if the country is Sweden or the UK.

Then we use this variable to create the map with an `if` statement.

Note that you need to change your breaks in order to display the full range of data.

```
gen uk_sv = .  
replace uk_sv = 1 if country == "Sweden" | country == "United Kingdom"  
  
spmap regional_gdp_cap_1990 using "nutscoord.dta" if year == 1990 & uk_sv == 1, id(_ID) fcol  
    title("Regional GDP per Capita - 1990", size(medium))  
    clmethod(custom) clbreaks(0 12000 15000 16000 17000 18000 21000)
```

## Regional GDP per Capita - 1990



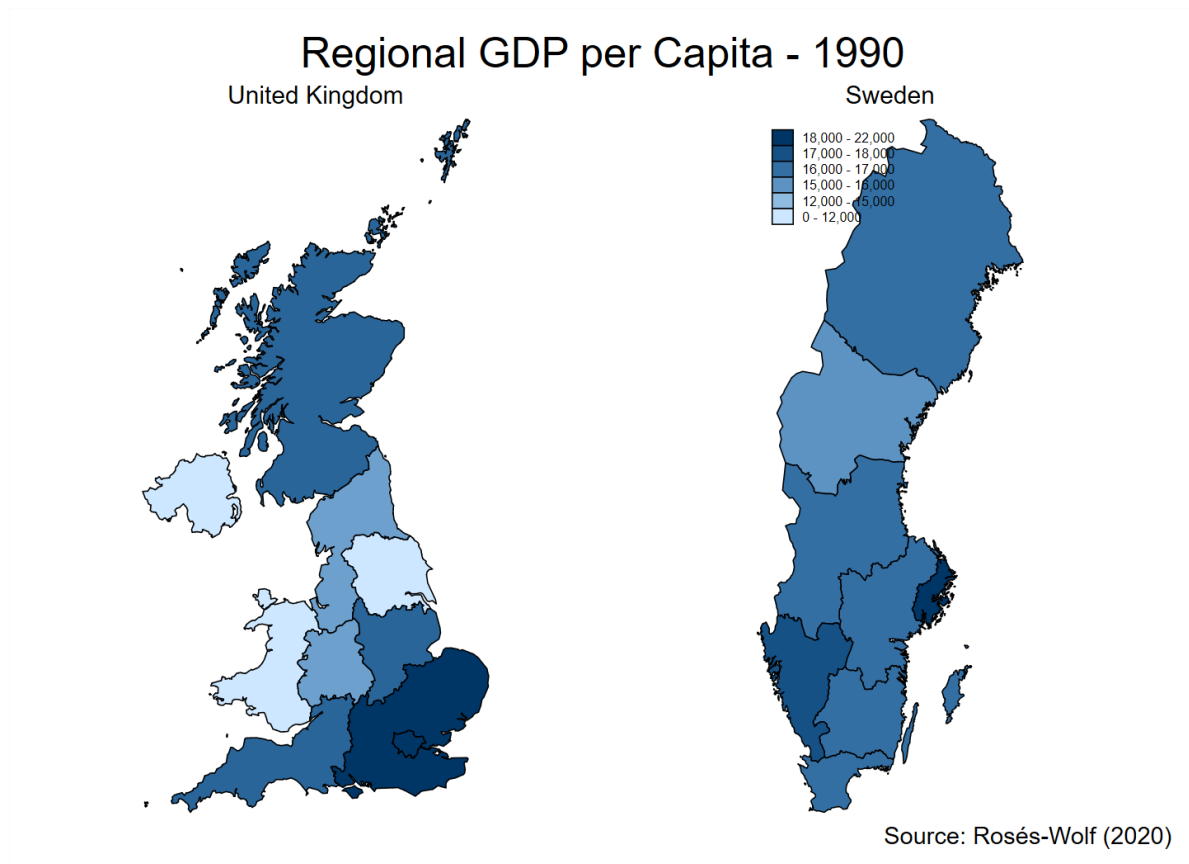
## Method 2: graph combine

Here we make two graphs with the same scale, but only the graph for Sweden includes a legend.

The UK map has the legend suppressed with the `leg(off)` command.

Then we name each, and combine it with a title in the final step.

```
spmap regional_gdp_cap_1990 using "nutscoord.dta" if year == 1990 & country == "United Kingdom"  
    title("United Kingdom", size(medium)) ///  
    name(UK_GDP_1990, replace) ///  
    leg(off)  
  
spmap regional_gdp_cap_1990 using "nutscoord.dta" if year == 1990 & country == "Sweden", id(  
    title("Sweden", size(medium)) ///  
    clmethod(custom) clbreaks(0 12000 15000 16000 17000 18000 22000) ///  
    name(SV_GDP_1990, replace)  
  
graph combine UK_GDP_1990 SV_GDP_1990, graphregion(color(white)) ///  
    title("Regional GDP per Capita - 1990") ///  
    note(Source: Rosés-Wolf (2020), size(small) position(5)) ///  
    scheme(s2mono)
```



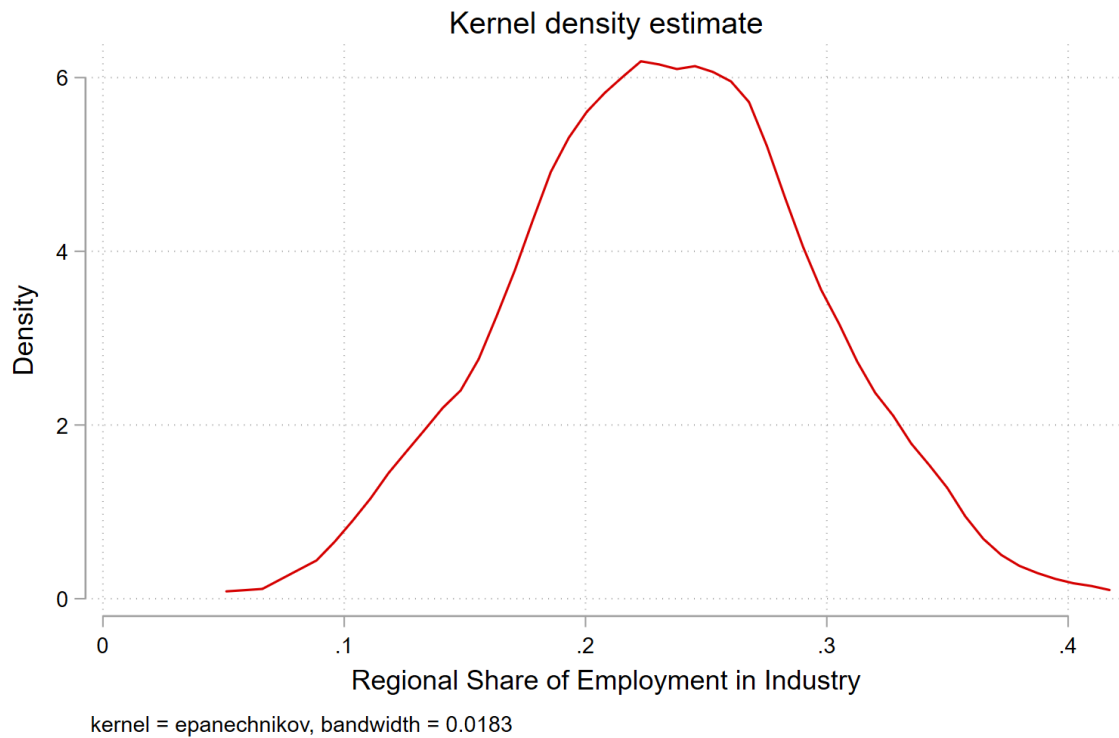
## Question 2

- Map of share of employment in industry in 2010 across the whole dataset

First we must ask where the cutoffs should be in the legend.

We can draw a density plot to find out.

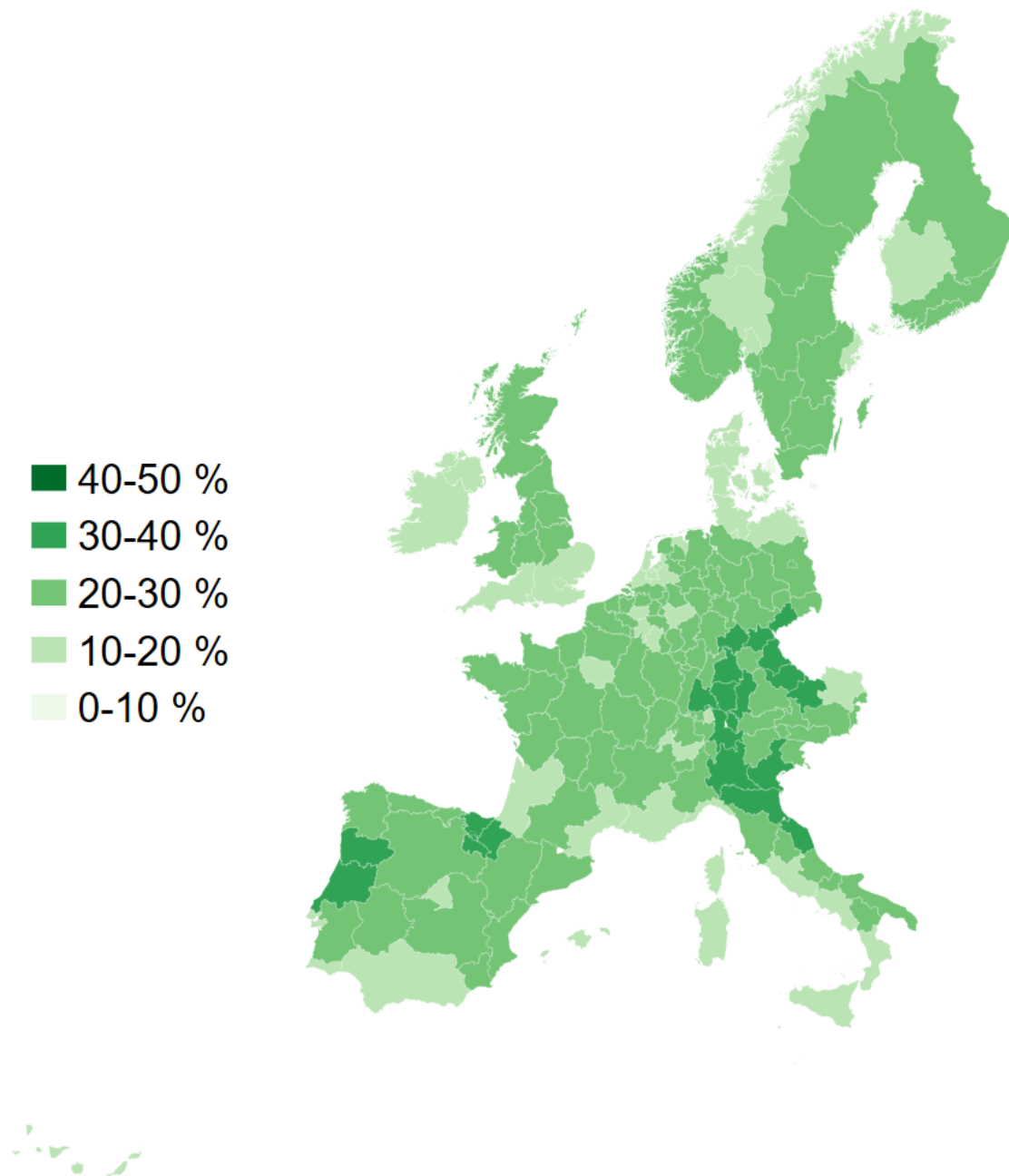
```
kdensity employment_share_industry if year == 2010
```



Next we use this information to create breaks between 10 percent and 40 percent, where the bulk of the distribution is.

```
spmap employment_share_industry using "nutscoord.dta" if year == 2010, id(_ID) fcolor(Greens)
title("Employment Share Industry - 2010", size(large)) ///
osize(0.02 ..) ocolor(white ..) ///
clmethod(custom) clbreaks(0 (0.1) 0.5) ///
legend(pos(9) size(medium) rowgap(1.5) label(6 "40-50 %") label(5 "30-40 %") ///
label(4 "20-30 %") label(3 "10-20 %") label(2 "0-10 %") label(1 "No Data")) ///
ndfcolor(gray) ndocolor(white ..) ndsize(0.02 ..)
```

## Employment Share Industry - 2010





### Question 3

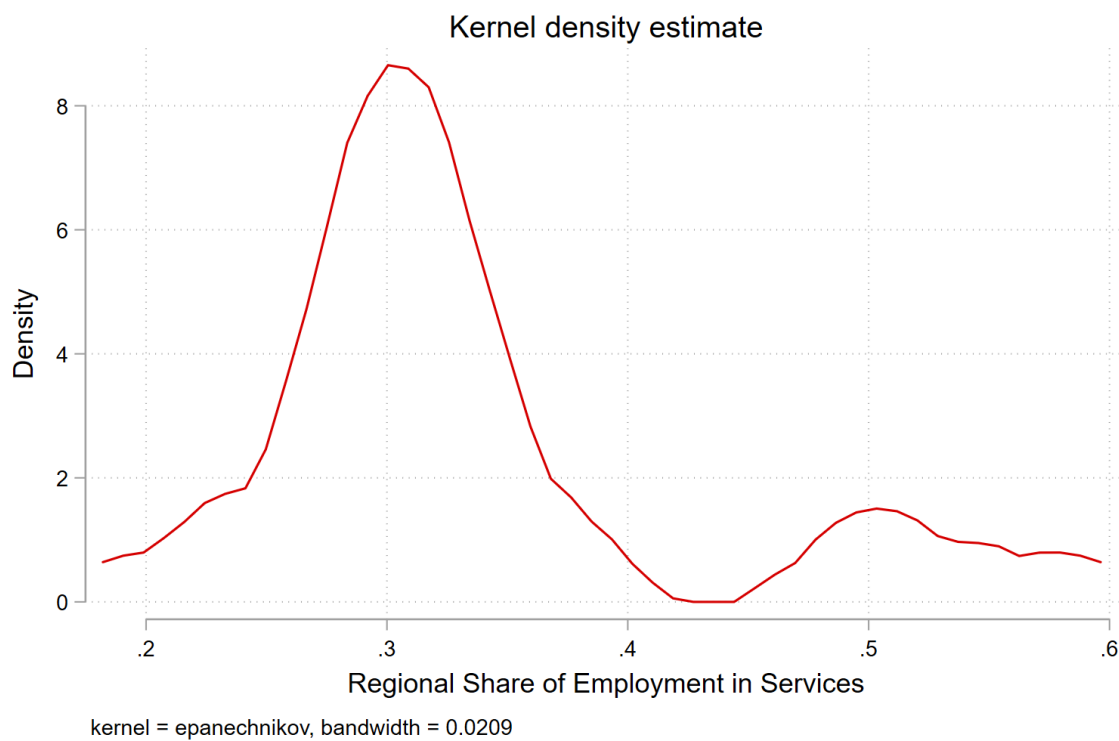
- Map of share of employment in services in 1950 in Scandinavia

Generate variable for Scandinavian countries

```
gen scandinavia = .  
replace scandinavia = 1 if country == "Sweden" | country == "Denmark" | country == "Norway"
```

Check where the weight of the distribution is

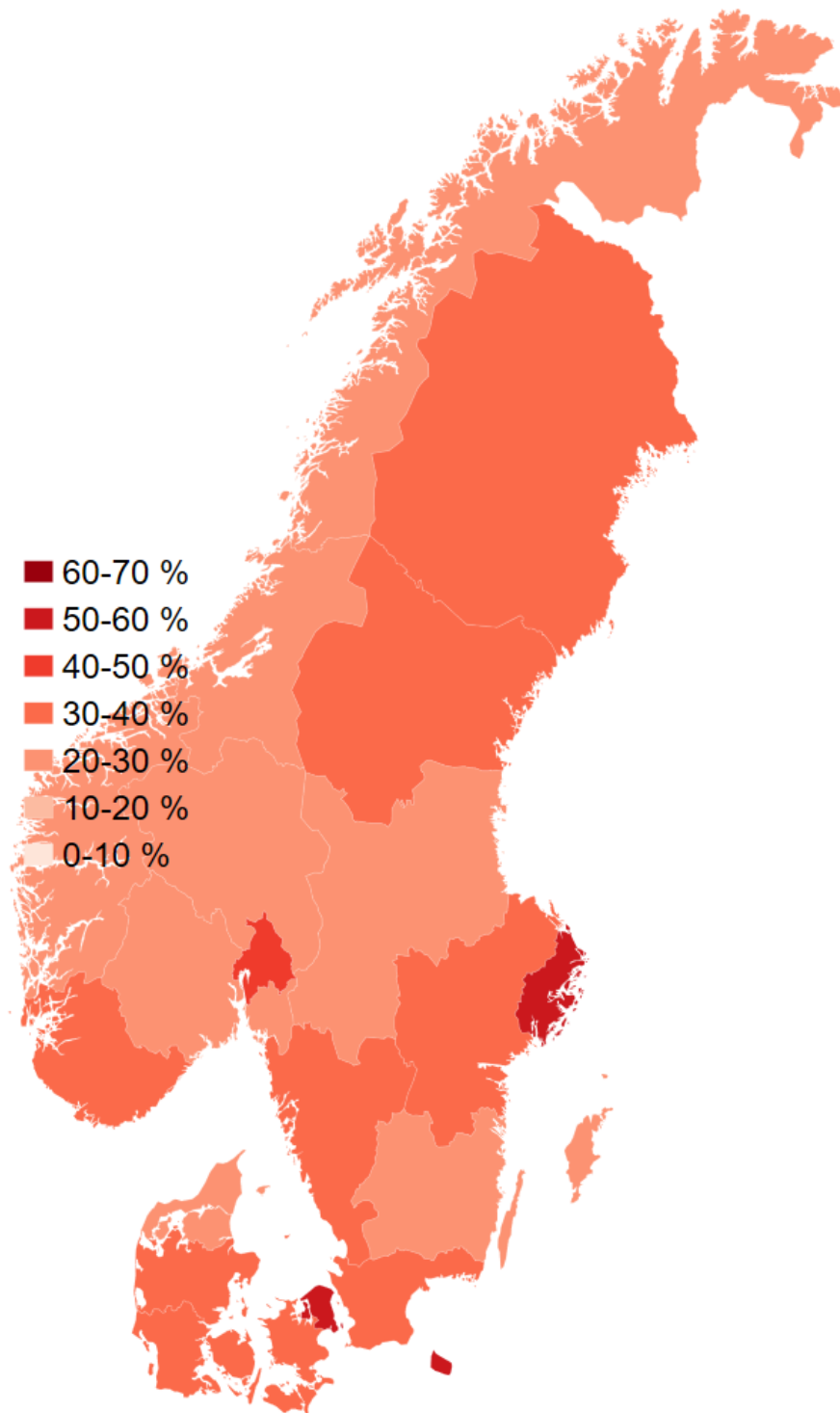
```
kdensity employment_share_services if year == 1950 & scandinavia == 1
```



```
spmap employment_share_services using "nutscoord.dta" if year == 1950 & scandinavia == 1, id  
title("Employment Share Services - 1950", size(large)) ///  
osize(0.02 ..) ocolor(white ..) ///  
clmethod(custom) clbreaks(0 (0.1) .7) ///  
legend(pos(9) size(medium) rowgap(1.5) label(8 "60-70 %") label(7 "50-60 %") ///  
label(6 "40-50 %") label(5 "30-40 %") ///
```

```
label(4 "20-30 %") label(3 "10-20 %") label(2 "0-10 %") label(1 "No Data")) ///  
ndfcolor(gray) ndocolor(white ..) ndsize(0.02 ..)
```

## Employment Share Services - 1950



## Question 4

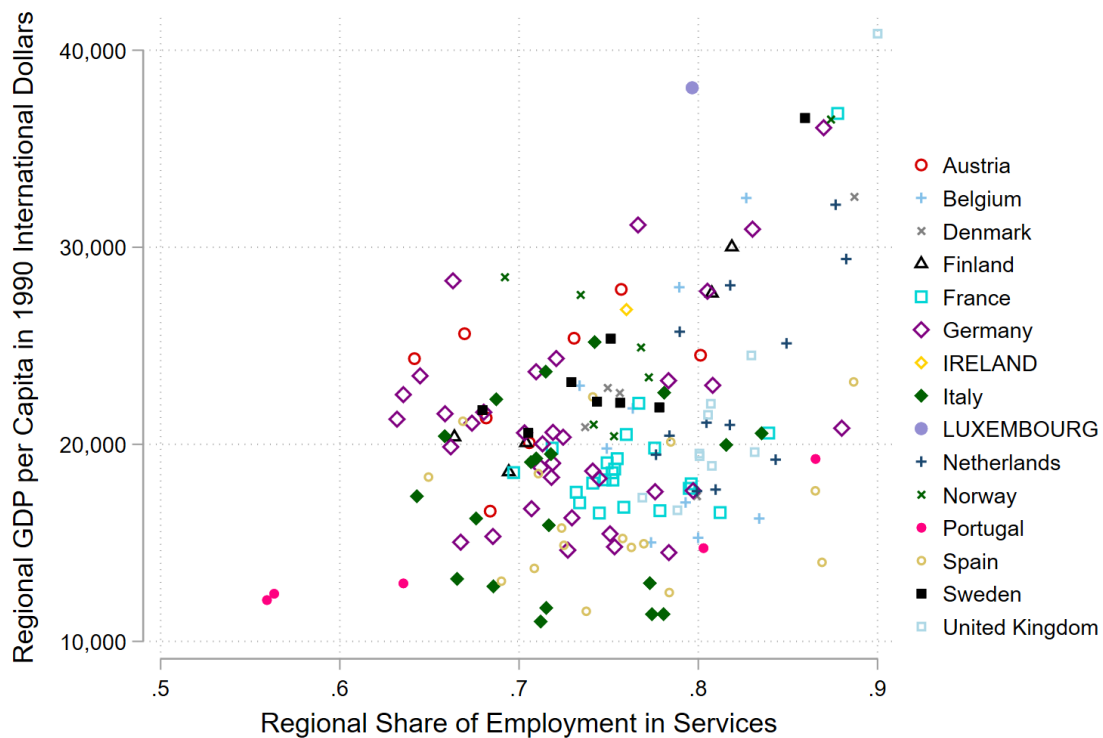
Scatterplot of GDP per capita in 1990 dollars on the x-axis and share of employment in services on the y-axis for the year 2015. Make the colour of the points on the scatter plot show what country it is.

Here we need an additional package to help us.

```
ssc install sepscatter
```

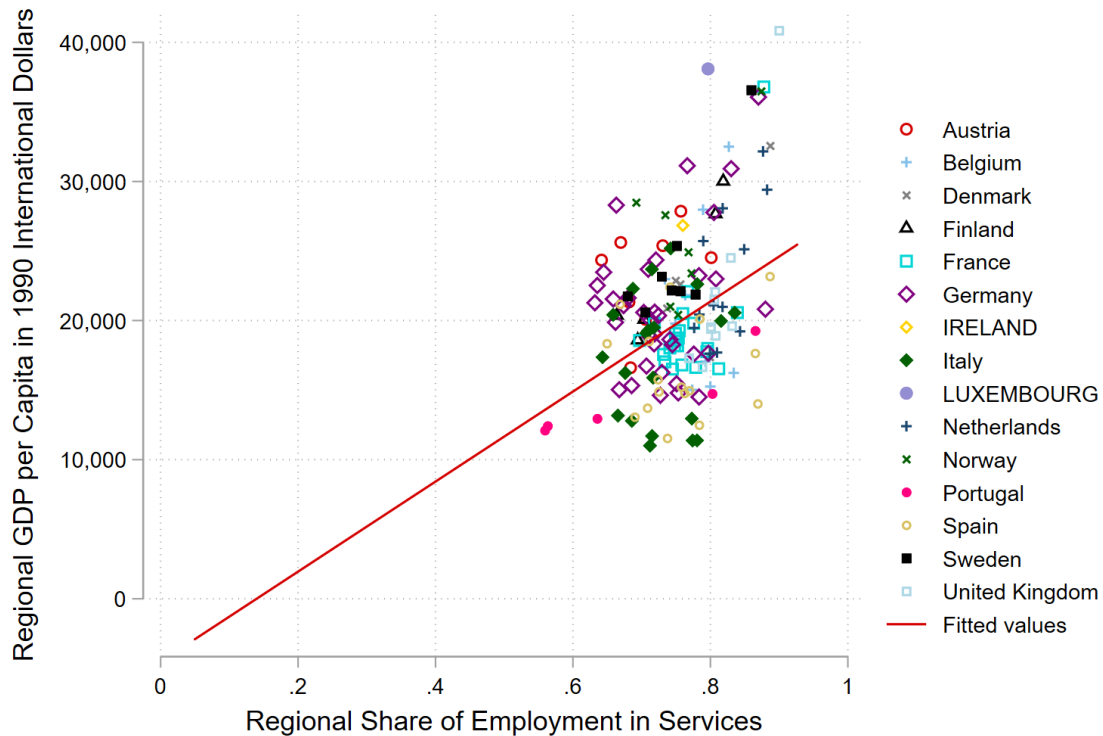
Basic scatter plot

```
sepscatter regional_gdp_cap_1990 employment_share_services if year == 2015, separate(country)
```



Add in linear regression line

```
sepscatter regional_gdp_cap_1990 employment_share_services if year == 2015, separate(country)
```



## Question 5

- Make a table of the mean GDP per capita by country in 2000. Export it with the Outreg2 command.

Remember how we made a national GDP per capita variable

```
bysort country year: egen national_gdp_1990 = total(regional_gdp_1990)
bysort country year: egen national_population = total(regional_population)
gen national_gdp_cap_1990 = national_gdp_1990 / national_population
```

Now format this number

```
format national_gdp_cap_1990 %12.0fc # 12 numbers left of the decimal point; 0 to the right;
```

We could do this with Outreg2. We can also just keep the data that we want, and export it as a csv file. This is quick and dirty, but it works.

```
keep country national_gdp_cap_1990 year

keep if year == 2000

duplicates drop

export delimited using national_gdp_cap_1990.csv, replace
```

Open this file in excel Go to the data tab, select text to columns, delimited, comma, and then format it.

We can make a nice little bar graph with in Excel too.

