R for Korean Studies: A Gentle Introduction to Computational Social Science

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Preface

Korean Studies is traditionally dominated by scholars of history and literature. It's relatively rare to see R, Python, or other computational social science tools being used or taught in this field.

I believe computational social science offers huge opportunities for Korean Studies, not only for quantitative research but also for qualitative studies, including those on history and literature!

In this book, I aim to increase data literacy and convince as many Korean Studies scholars and students as possible about the relative ease of learning R with code samples, and motivational case studies about Korea.

This book is supposed to be a gentle introduction, so I do not go into the details of the R language. You can refer to the links that I provide in this book for more information. Furthermore, I also strongly encourage you to use `Github's Copilot` which is free for academic use, `Chatgpt` which is not necessarily a coding bot, but still helpful especially for simple tasks, `Stackoverflow`, and `Google` for help whenever you are stuck or come across an error.

I also encourage you to join our bootcamps for problem solving! You can sign up for my newsletter to get updates on the workshops.

Current Status of the book

- 0.Preface: Done
- 9.Text Analysis: 50% Done
- 14.Making Korean Data Visualization Social: Done
- 15.Bootcamp: Done

I will complete the Text Analysis chapter and then move on to the next chapters. Subscribe to my newsletter to get updates on the book and the bootcamps.

How to Cite This Book

You can freely use this book, but you must cite my work to avoid plagiarism. You can cite it in the following way: (Ayhan 2024).

```
@book{ayhan_2024_r4ks,
  title = {R for {Korean Studies}: A Gentle Introduction to {Computational Social Science}},
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  year = {2024},
  month = {May},
  edition = {Draft Version 0.0.1},
  url = {https://r4ks.com}
}
```

1 Introduction

> Recently, I had to repeat myself while talking to a few students about Ewha GSIS Computational Social Science Workshop(s). Now, you and future students have this post instead!

This is what I wrote in my blog post about Ewha GSIS Computational Social Science Workshops that I have organized.

Following the same spirit in David Robinson's tweet, I decided to write this book.

1.1 "Why Do I Need Computational Tools in Korean Studies?"

Simply put, there is so much more data out there that is useful for Korean Studies research, and we have faster computers, and handy tools to analyze such data.

Korean Studies curricula across the world are quite rich and interdisciplinary. Those courses often equip students with the history, culture, literature, and language of Korea to understand the country better. Yet, Korean Studies scholars and students are not exposed to computational methods/ tools that can handle big or complex data as much.

If you are already here, it probably means that you appreciate the increasing importance of the computational tools in your research. This book, and bootcamps based on this book, will teach you the basics of R, and give you sample codes based on Korean Studies-related examples.

In the age that we live in, I strongly believe that these computational methods/ tools will empower you in your research as well as in the job market given wide range of prospective jobs Korean Studies graduates seek and find (corporations, international organizations, think tanks, NGOs, media, academia etc.).

1.2 "Why R?"

R is free! There are so many packages that are rich with a wide range of functions that you would need in all kinds of research, analysis, and reporting. Many more are being built as you read this book! You can do from simple math to data pre-processing, from data visualization to

regressions, from building your CV to building your website, from analyzing tweets to machine learning.

Python is probably getting more popular in the industry jobs in recent years. Yet, I think, for the time being, R is better suited for social science research. At least there are more books, tutorials, examples that you can learn from in terms of social sciences.

Once exposed to R, you may also consider learning Python as well if it seems more attractive for you.

1.3 "I don't know anything about coding! Indeed, I am frustrated about coding!"

Then this book, and the bootcamps, are very much for you! I don't expect the readers, and bootcamp participants, to have any prior knowledge of R, coding, or other statistical software.

This book is supposed to be a gentle introduction, so I do not go into the details of the R language. You can refer to the links that I provide in this book for more information. Furthermore, I also strongly encourage you to use `Github's Copilot` which is free for academic use, `ChatGPT` which is not necessarily a coding bot, but still helpful especially for simple tasks, `Stackoverflow`, and `Google` for help whenever you are stuck or come across an error.

Learning curve is steep in the beginning. So you may need a trigger to begin and NOT GIVE UP. This book plays this trigger role. So, there is no need to be intimidated by R, or your lack of background with coding. I got you covered!

2 Setting Up

Both R and Rstudio are free to use, and setting them up is quite straightforward.

R is a programming language and software environment, produced mainly for statistical computing and graphics. RStudio is an integrated development environment (IDE) for R (as well as for other programming languages including Python, Stan, Julia and others).

In order to use R, installing RStudio is not enough. Installing R is enough, but RStudio is recommended for a better experience.

You can use R in other IDEs, such as VS Code as well, but RStudio is the most popular and widely used IDE for R.

2.1 Installing R

You need to install R on your computer. You can download the latest version of R from the CRAN website by clicking one of the mirror links in a location that is close to you. In the next page, you can download the installer for your operating system (Windows, Mac, or Linux).

2.2 Installing RStudio

After installing R, you can download RStudio from the RStudio website. You can download the free version of RStudio Desktop by clicking 2: Install RStudio on the right. It automatically recognizes your operating system and downloads the correct installer for you.

2.3 Running R on RStudio

After installing R and RStudio, you can open RStudio and start using R.

When you open RStudio, you will see something like in the Figure 2.1.

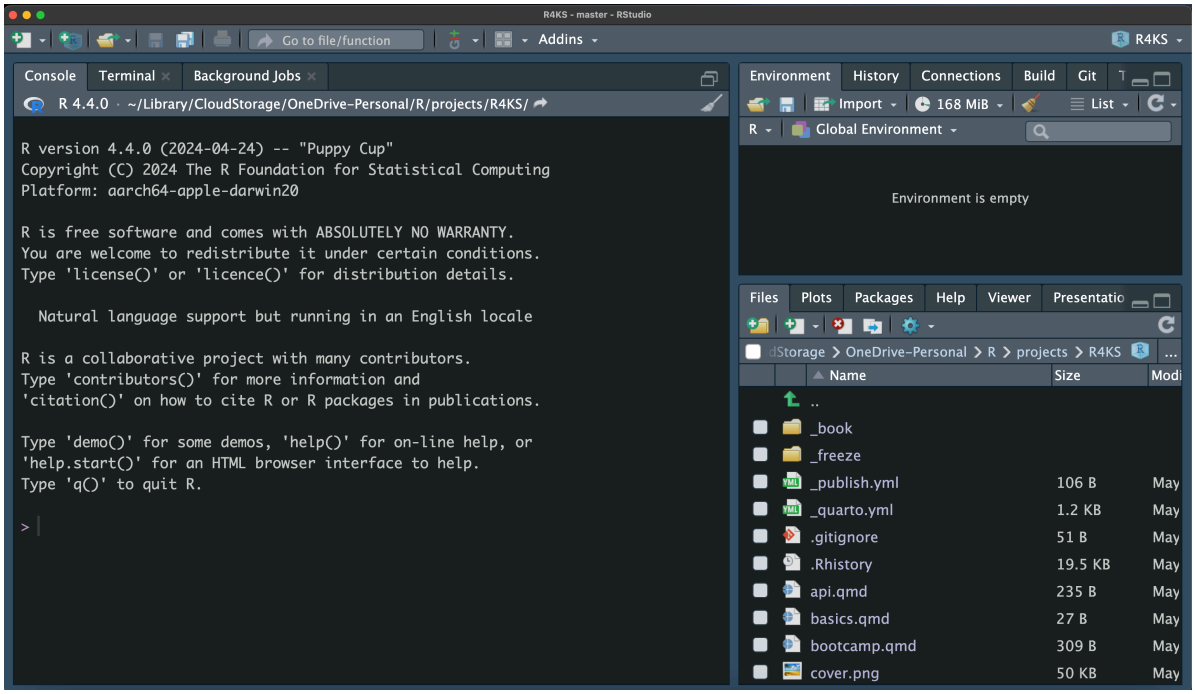


Figure 2.1: RStudio

Well, what you will see will be a default white screen, but you can customize it to look like the one in the image. You can change the theme of RStudio by going to `Tools > Global Options > Appearance` and selecting the theme you like.

For now, pay attention to the two panes in RStudio:

1. Console: This is where you can write your R code. For example try writing `1+1` and clicking enter there. You will see the result in the console.
2. Environment: This is where you can see the objects you have created in your R session. For example, if you write `x <- 5` (that is assigning the number '5' to an object named 'x') in the source pane, you will see `x` in the environment pane.

Check out the The Basics of R chapter to learn the basics of R.

2.4 Further Information

You can refer to the following video for further help on installing R and RStudio, unless above information is enough.

https://youtu.be/ulIv0NiVTs4

3 Korean Studies Data Sources

3.1 Statistical Data

3.2 Text Data

4 The Basics of R

In this chapter, we learn the basics of R.

4.1 Creating a Project

For each of your new projects, you should create a new project in RStudio. To do this, click on the "File" menu, then "New Project". You will be asked to choose a directory for your project. Choose a directory where you want to store your project files. You can also create a new directory for your project. After you have chosen a directory, click on "Create Project". You will see a new RStudio window with your project. You can now start working on your project.

For now, this is all you need to know about creating a project. We learn more about projects that are connected with Github in the Productivity Tools chapter.

When you work within a project, managing the files for your project becomes easier. When you work within the project, you don't need to worry about getting and setting your working directory. To give you an idea, this is how you can find the working directory for your project:

```
getwd()
```

```
[1] "/Users/pd/Library/CloudStorage/OneDrive-Personal/R/projects/R4KS"
```

You can also set the working directory to some other path using the `setwd()` function. But you don't need to do this when you work within a project. On another note, when you are writing code script in an R script file or within a code chunk, you can add non-code comments like this by adding a # sign at the beginning of the line.

```
# You can uncomment a comment line and make it a code line by removing the '#' sign at the be

# Replace "path/to/your/directory" with the actual path to your directory (folder) that you w

# Try removing the '#' sign at the beginning of the line and running the code.

# setwd("path/to/your/directory")
```

When you work within a project, you don't need to worry about the working directory. You can store all the files for your project in the project directory. You can also save your R scripts in the project directory. This way, you can easily find the files for your project.

4.2 Scripting in R

You can simply type your R code in the console and press Enter to run the code. But this is not a good practice. You should write your code in a script file and then run the script file. This way, you can save your code and run it again whenever you want. You can also share your code with others.

One of the most important advantages of R, for example over Excel, is that you can reproduce your results. That's why you should write your code in a script file. Every time you exit R, you should save your R script(s) and then rely on them next time you work on the same project.

4.2.1 Creating a New R Script

The most basic way to create a new R script is to click on the "File" menu, then "New File", and then "R Script". You will see a new R script file in the RStudio editor. You can now write your R code in this file.

4.2.2 Creating a Quarto File

You can also create a new Quarto file by clicking on the "File" menu, then "New File", and then "Quarto File". You will see a new Quarto file in the RStudio editor. You can now write your R code in this file.

Quarto allows you to write your code in chunks. In between chunks, you can have other text, images, and other content. You can also run the code in each chunk and see the output in the document. This is a great way to write reports, papers, and books.

Personally I prefer to write my code in Quarto files. When you click to create a new Quarto file, it will ask you to add a title and author, and select a format for your Quarto file. I explain Quarto further in the Storytelling with Quarto chapter. For now, click "Create Empty Document" on the left bottom. Click File > Save and save you Quarto document in your project directory.

On the top right of the RStudio editor, you can see a green C button with a + sign. That button allows you to insert a code chunk in your document. See Figure 4.1.

Then after you write your code and when you want to run the code in a chunk, you can click on the green Run button on the right side of the chunk. See Figure 4.2.

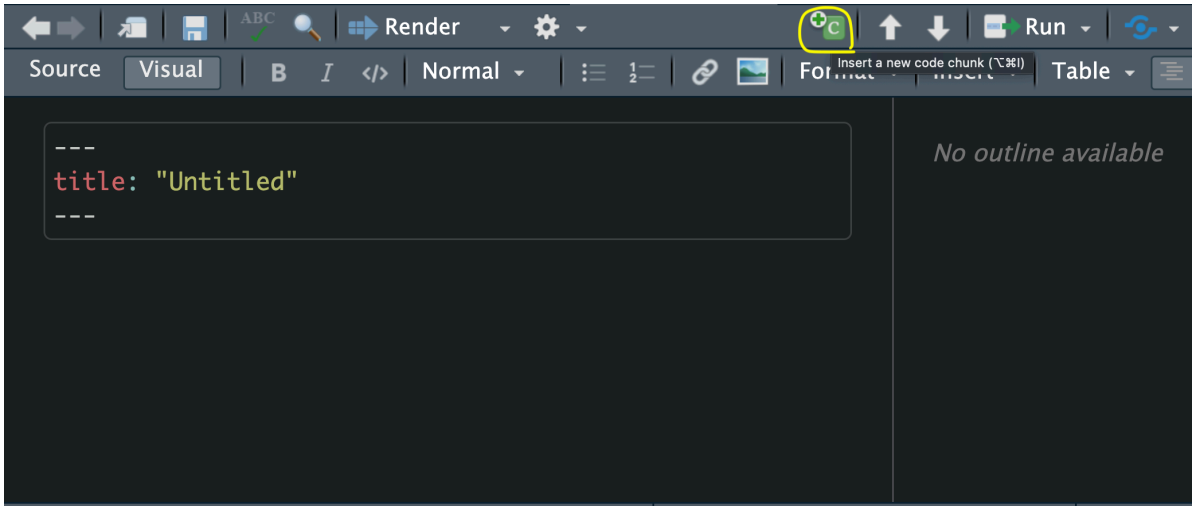


Figure 4.1: Quarto: Inserting a New Code Chunk

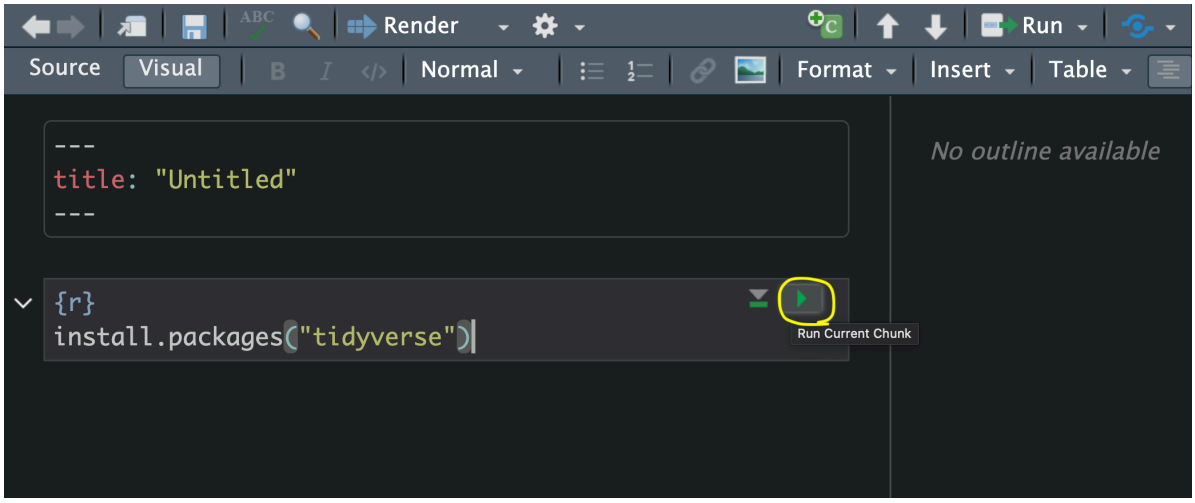


Figure 4.2: Quarto: Running a Code Chunk

When you are working in a simple R script, you don't need to worry about chunks. You can simply write your code in the script file and select the lines of code you want to run and click on the Run button.

4.3 Installing Packages

Packages in R are like apps for your phone. Just like your phone comes with some basic apps, R comes with 14 base packages (as of May 11, 2024) including `base`, `utils`, and `stats`. But you can, and you will need to, install other packages to do different things just like you install apps on your phone.

You can install a package using the `install.packages()` function. This book uses the `tidyverse` package, which is a universe of packages that follow a common "tidy" data philosophy.

You can install the `tidyverse` package using the following command:

```
# uncomment the following line by removing "#" and run the code to install the tidyverse pacl

# install.packages("tidyverse")
```

You need to install the packages you need only once, and then you can use them whenever you want.

4.4 Loading Packages

Just like apps on your phone, you need to load the packages you need every time you start a new R session. You can load the package using the `library()` function. For example, to load the `tidyverse` package, you can use the following command:

```
library(tidyverse)
```

The `[tidyverse](https://tidyverse.org/)` package is a collection of packages including `ggplot2`, `dplyr`, `tidyr`, `readr`, `purrr`, `tibble`, `stringr`, `forcats`, `rvest`, `lubridate`, and a few other packages. We learn some of these packages in this book. Once you load the `tidyverse` package, you can use all the functions in these packages. In other words, you don't need to load, for example, the `ggplot2` package separately by running `library(ggplot2)`.

4.5 Assigning Values to Variables

You can assign values to variables in R using the <- operator. For example, you can assign the value 14 to a variable `x` using the following command:

```
x <- 14
```

After assigning 14 to `x`, you can use `x` in your code. For example, you can print the value of `x` using the following command:

```
print(x)
```

```
[1] 14
```

See, `x` is now 14. You can also see the value of `x` by typing `x` in the console and pressing Enter. Try it.

```
x
```

```
[1] 14
```

You can also make additional data manipulations using `x` and assign it to another variable `y` using the following command:

```
y <- x + 3
```

Let's see the value of `y`:

```
y
```

```
[1] 17
```

R is an advanced calculator. You can do all kinds of calculations using R. For example, check out the following calculations:

```
# Square root of 16
sqrt(16)
```

```
[1] 4
```

```
# 2 to the power of 8
2^8
```

```
[1] 256
```

```
# Logarithm of 100
log(100)
```

```
[1] 4.60517
```

```
# Exponential of previously assigned value y, i.e. 17, times x, i.e. 14.
exp(y) * x
```

```
[1] 338169339
```

You can also assign a character string to a variable. For example, you can assign the string "한국학 학자들 및 학생들도 R 좀 배웠으면 좋겠다." to a variable `z` using the following command:

```
z <- "          R        ."
```

You can print the value of `z` using the following command:

```
z
```

```
[1] "          R        ."
```

4.6 Make sure to get the spelling right!

As a novice R user, more often than not, you will get error messages because you make mistakes in spelling. For example, we assigned the value 14 to a variable `x`. If you try to print the value of `X` instead of `x`, you will get an error message. Try it.

```
# Uncomment the following line by removing "#" and run the code to see the error message.

# X
```

You will get an error message saying that "Error: object 'X' not found". This is because R is case-sensitive. `X` is not the same as `x`. Make sure to get the spelling right.

If you want to use more than two words for a variable name, you can use an underscore `_` (`my_variable`) or a dot `.` (`my.variable`) to separate the words; or you can write the words together with each new word beginning with a capital letter (`myVariable`). You better be consistent with your naming convention, although technically you can name your variables however you want. For example, you can assign `c(" ", " ", " ", " ")` to a variable `my_variable` using the following command:

```
my_variable <- c(" ", " ", " ", " ")
```

4.7 Data Types

R has several data types including numeric, character, logical, date, list, dataframe and so on. Let's see the data types of the variables we created above. We can use the `class()` function to see the data type of a variable. For example, you can see the data type of `x`, `y`, and `z` using the following commands:

```
class(x)
```

```
[1] "numeric"
```

```
class(y)
```

```
[1] "numeric"
```

```
class(z)
```

```
[1] "character"
```

The data type of `x` and `y` is numeric, and the data type of `z` is character.

If we write numbers in quotes, they become character strings. For example, you can assign the string "14" to a variable `w` using the following command:

```
w <- "14"
```

You can see the data type of `w` using the following command:

```
class(w)
```

```
[1] "character"
```

The data type of `w` is character. You can also turn it into a numeric value using the `as.numeric()` function. For example, you can turn `w` into a numeric value using the following command:

```
w <- as.numeric(w)
```

4.8 Vectors

A vector is a collection of elements of the same data type. You can create a vector using the `c()` function. For example, you can create a vector `v` with the elements "서울", "부산", "대구", "인천", and "대전" using the following command:

```
v <- c(" ", " ", " ", " ", " ")
```

You can print the vector `v` using the following command:

```
v
```

```
[1] " " " " " " " " " "
```

You can see the data type of `v` using the following command:

```
class(v)
```

```
[1] "character"
```

The data type of `v` is character. You can also create a numeric vector. For example, you can create a vector `numbers` with the elements 1, -2, 3.1, 49, and 0 using the following command:

```
numbers <- c(1, -2, 314, -49, 0)
```

You can print the vector `numbers` using the following command:

```
numbers
```

```
[1]   1  -2 314 -49   0
```

You can see the data type of `numbers` using the following command:

```
class(numbers)
```

```
[1] "numeric"
```

The data type of `numbers` is numeric.

4.9 Dataframes

A dataframe is a collection of vectors of the same length. You can create a dataframe using the `data.frame()` function. For example, you can create a dataframe `df` with three columns `city_name_en`, `city_name_kr`, and `population` using the following command:

```
# Relying on this link for the population data (in millions):
# https://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1B040A3

df <- data.frame(city_name_en = c("Busan", "Daegu", "Incheon", "Seoul", "Daejeon"),
                 city_name_kr = c(" ", " ", " ", " ", " "),
                 population = c(3.3, 2.4, 3, 9.4, 1.4))
```

You can print the dataframe `df` using the following command:

```
df
```

```
  city_name_en city_name_kr population
1        Busan                    3.3
2        Daegu                    2.4
3      Incheon                    3.0
4        Seoul                    9.4
5      Daejeon                    1.4
```

You can see the data type of `df` using the following command:

```r
class(df)
```

```
[1] "data.frame"
```

The data type of `df` is dataframe. We can reach the columns of the dataframe using the `$` sign. For example, you can see the column `city_name_en` using the following command:

```r
df$city_name_en
```

```
[1] "Busan"   "Daegu"   "Incheon" "Seoul"   "Daejeon"
```

4.10 Some Basic Functions

You can use the `head()` function to see the first few rows of a dataframe. For example, you can see the first few rows of the dataframe `df` using the following command:

```r
head(df)
```

```
  city_name_en city_name_kr population
1        Busan                    3.3
2        Daegu                    2.4
3      Incheon                    3.0
4        Seoul                    9.4
5      Daejeon                    1.4
```

By default, the `head()` function shows the first 6 rows of the dataframe. You can also specify the number of rows you want to see. For example, you can see the first 3 rows of the dataframe `df` using the following command:

```r
head(df, 3)
```

```
  city_name_en city_name_kr population
1        Busan                    3.3
2        Daegu                    2.4
3      Incheon                    3.0
```

You can use the `tail()` function to see the last few rows of a dataframe. For example, you can see the last few rows of the dataframe `df` using the following command:

```
tail(df)
```

```
  city_name_en city_name_kr population
1        Busan                    3.3
2        Daegu                    2.4
3      Incheon                    3.0
4        Seoul                    9.4
5      Daejeon                    1.4
```

In this example, both the `head()` and `tail()` functions show the entire dataframe because the dataframe `df` has only 5 rows. But, in longer dataframes, you can see the first or last few rows using these functions.

In a similar vein, `glimpse()` function from the `dplyr` package is a function to see the structure of a dataframe. For example, you can see the structure of the dataframe `df` using the following command:

```
glimpse(df)
```

```
Rows: 5
Columns: 3
$ city_name_en <chr> "Busan", "Daegu", "Incheon", "Seoul", "Daejeon"
$ city_name_kr <chr> " ", " ", " ", " ", " "
$ population   <dbl> 3.3, 2.4, 3.0, 9.4, 1.4
```

The `nrow()` function gives the number of rows in a dataframe. For example, you can see the number of rows in the dataframe `df` using the following command:

```
nrow(df)
```

```
[1] 5
```

Likewise, the `ncol()` function gives the number of columns in a dataframe. For example, you can see the number of columns in the dataframe `df` using the following command:

```
ncol(df)
```

```
[1] 3
```

The `dim()` function gives the dimensions of a dataframe. For example, you can see the dimensions of the dataframe `df` using the following command:

```
dim(df)
```

```
[1] 5 3
```

The `summary()` function gives a summary of a dataframe. For example, you can see the summary of the dataframe `df` using the following command:

```
summary(df)
```

```
 city_name_en       city_name_kr         population
 Length:5           Length:5           Min.   :1.4
 Class :character   Class :character   1st Qu.:2.4
 Mode  :character   Mode  :character   Median :3.0
                                       Mean   :3.9
                                       3rd Qu.:3.3
                                       Max.   :9.4
```

4.11 Rows and Columns

You can select rows and columns of a dataframe using the `[]` operator. The first argument of the `[]` operator is the row index, and the second argument is the column index. `df[row, column]` selects the row with the index `row` and the column with the index `column`.

For example, you can select the first row and the second column of the dataframe `df` using the following command:

```
df[1, 2]
```

```
[1] " "
```

You can select the first row of the dataframe `df` using the following command:

```
df[1, ]
```

```
  city_name_en city_name_kr population
1        Busan                   3.3
```

You can select the second column of the dataframe `df` using the following command:

```
df[, 2]
```

```
[1] " " " " " " " " " " " " " " " "
```

4.12 Piping

The pipe operators `|>` and `%>%` are powerful tools in R.[1] The pipe allows you to write code in a more readable way. You can use the pipe operator to pass the output of one function to the input of another function. For example, you can use the pipe operator to pass the dataframe `df` to the `head()` function. You can see the first few rows of the dataframe `df` using the following command:

```
df |> head()
```

```
  city_name_en city_name_kr population
1        Busan                    3.3
2        Daegu                    2.4
3      Incheon                    3.0
4        Seoul                    9.4
5      Daejeon                    1.4
```

We can arrange the dataframe `df` using the `arrange()` function from the `dplyr` package. For example, you can arrange the dataframe `df` by the `population` column using the following command with a pipe:

```
df |> arrange(population)
```

```
  city_name_en city_name_kr population
1      Daejeon                    1.4
2        Daegu                    2.4
3      Incheon                    3.0
4        Busan                    3.3
5        Seoul                    9.4
```

[1] In most cases, these two pipes work the same way. Refer to this link for more explanation on the difference between the `base` pipe `|>` and the `magrittr` pipe `%>%`. For now, you can simply ignore the difference.

`arrange()` function arranges the dataframe by the selected numeric column in ascending order by default. If it is a character column, it arranges the dataframe in alphabetical order. You can arrange the dataframe in descending order by using the `desc()` function. For example, you can arrange the dataframe `df` by the `population` column in descending order using the following command:

```
df |> arrange(desc(population))
```

```
  city_name_en city_name_kr population
1        Seoul                   9.4
2        Busan                   3.3
3      Incheon                   3.0
4        Daegu                   2.4
5      Daejeon                   1.4
```

We can also assign `df` to the rearranged dataframe. For example, you can assign the arranged dataframe to `df` using the following command:

```
df <- df |> arrange(desc(population))
```

Now, `df` is arranged by the `population` column in descending order. Let's check out:

```
df
```

```
  city_name_en city_name_kr population
1        Seoul                   9.4
2        Busan                   3.3
3      Incheon                   3.0
4        Daegu                   2.4
5      Daejeon                   1.4
```

Good. We learned the basics of R. In the next chapter, we learn about data wrangling using mainly the `dplyr` package.

5 Data Wrangling

6 Data Visualization: Figures

7 Data Visualization: Plots

8 Data Visualization: Maps

9 Korean Text Analysis

In this chapter, we will learn how to analyze Korean text data using R. We will use the `tidyverse`, `pdftools`, and `bitNLP` packages to extract text from a pdf file and analyze it. We will use Korea's 2022 Diplomatic White Paper (외교백서, waegyo baekseo) as an example text.

We will learn the following things in order:

- Extracting text and tables from a PDF file.
- Extracting text and tables from the internet.
- Ensuring accurate spacing between words in Korean text.
- Analyzing morphemes in Korean text.
- Analyzing word frequency in Korean text.
- Analyzing the noun word network in Korean text.
- Analyzing the sentiment of Korean text.
- Topic modeling of Korean text.

9.1 Libraries

First, we need to install `bitNLP` which requires us to install the `MeCab` library for Korean text analysis. Uncomment the following lines in your first usage. After the first usage, you can comment out the installation lines.

```
# install.packages("remotes")
# remotes::install_github("bit2r/bitNLP")
library(bitNLP)
# install_mecab_ko()
# install.packages("RcppMeCab")
```

Now let's load the necessary libraries. If you are missing any of the following packages, you can install them by uncommenting the `install.packages` lines.

```
# install.packages("tidyverse")
# install.packages("pdftools")
# install.packages("rvest")
# install.packages("tidytext")
# install.packages("igraph")
# install.packages("ggraph")
# install.packages("extrafont")
library(tidyverse)
library(pdftools)
library(rvest)
library(tidytext)
library(igraph)
library(ggraph)
library(extrafont)
```

9.2 Loading pdf Data

Let's analyze the text from Korea's 2024 Public Diplomacy Comprehensive Implementation Plan (2024년 공공외교 종합시행계획 개요) which is available as a pdf file on the Ministry of Foreign Affairs' (MOFA) website[1].

If the pdf file is in your local directory, you can load it using the following code.

```
# Load PDF
pdf_path <- "data/2024      .pdf"
```

Alternatively, you can download the pdf file from the MOFA's website using the `download.file` function. You can then load the pdf file using the `pdf_path` variable. Working with the online pdf file and the local pdf file is the same. We can do either. For now, I will use the local pdf file since the MOFA might change the url for the pdf later. That is why I commented the download code. You can comment the earlier code for the local pdf file and uncomment the following code for the online pdf file.

```
# Download PDF
#file <- tempfile()

# This url works for now. But MOFA might change it later. You can replace the link with any
```

[1] Please bear in mind that MOFA website's url might change later, making this hyperlink broken. In that case, you can download the pdf file on the MOFA's website by searching for "2024년 공공외교 종합시행계획 개요".

```
#url <- "https://www.mofa.go.kr/cntntsDown.do?path=www&physic=2024%EB%85%84%EB%8F%84_%EA%B3%

# download.file(url, pdf_path, headers = c("User-Agent" = "My Custom User Agent"))
```

Now let's extract the text from the pdf file using the `pdf_text` function from the `pdftools` package.

```
# Extract text
pdf_text_all <- pdf_text(pdf_path)
```

Now, `pdf_text_all` is a list of character vectors, where each element corresponds to a page in the pdf file. For example, we can look at the 4^{th} page of the pdf file in the following way.

```
# Let's look at the 4th page
pdf_text_all[4]
```

```
[1] "                \n[   ]\n                  ‘24      ‘23      ‘24           ‘23   \n
```

Oh, this is too long even for an example. But you can realize that there are many `\n` characters in the text. Let's split the text by the newline character and look at the first 10 lines of the 4th page. `\n` refers to a new line in the text. We can split the text into lines by using the `str_split` function from the `stringr` package, which is part of `tidyverse`. So, we don't need to load it separately. Let's look at the first six lines of the 4th page.

```
# Look at the first 10 lines of the 4th page
pdf_text_all[4] |>
  # Split by newline character.
  str_split("\n") |>
  # Unlist
  unlist() |>
  # Take the first 10 lines
  head(10)
```

```
 [1] "                "
 [2] "[   ]"
 [3] "                  ‘24      ‘23      ‘24           ‘23   "
 [4] "         "
 [5] "                                   ( )           ( )"
 [6] " 1                  16       16          194,996          94,963"
 [7] " 2                   6        6           32,852          40,283"
```

```
 [8] " 3                    73       63          40,215          39,419"
 [9] "3-1                37       41          42,514          44,664"
[10] " 4                     6        6           1,831           2,386"
```

The 4th page in the pdf file looks like this:

참고 **기관별 사업규모 및 예산**

[중앙행정기관]

기관명		'24년 사업수	'23년 사업수	'24년 예산 (백만원)	'23년 예산 (백만원)
1	교육부	16	16	194,996	94,963
2	과학기술정보통신부	6	6	32,852	40,283
3	외교부	73	63	40,215	39,419
3-1	한국국제교류재단	37	41	42,514	44,664
4	통일부	6	6	1,831	2,386
5	법무부	3	3	15,068	14,346
6	국방부	7	8	6,165	7,221
7	행정안전부	3	3	594	574
8	문화체육관광부	21	22	185,478	145,049
9	농림축산식품부	6	7	3,048	4,268
10	보건복지부	7	7	6,497	8,557
11	환경부	1	1	1,888	1,427
12	고용노동부	1	1	1,264	1,529
13	여성가족부	6	7	1,531	2,748
14	국토교통부	4	4	2,394	2,394
15	중소벤처기업부	5	5	7,246	5,548
16	국가보훈부	1	1	8,774	3,637
17	법제처	2	2	327	327
18	해양수산부	1	1	100	100
19	재외동포청	5	-	22,289	-
합계		**211**	**204**	**475,038**	**419,440**

[지자체]

기관명		'24년 사업수	'23년 사업수	'24년 예산 (백만원)	'23년 예산 (백만원)
1	경기도	25	14	21,558	3,899
2	강원특별자치도	10	11	78,593	11,024
3	충청북도	7	8	789	736
4	충청남도	10	10	2,508	1,731
5	전라북도	19	19	2,626	10,703
6	전라남도	13	13	2,962	6,917
7	경상북도	18	18	2709	3,314
8	경상남도	8	10	미정	1,408
9	제주특별자치도	23	24	4,433	7,343
10	서울특별시	31	31	10,005	9,628
11	부산광역시	36	35	3,017	2,355
12	대구광역시	11	11	316	321
13	인천광역시	26	25	5,516	5,008
14	광주광역시	22	26	3,487	6,459
15	대전광역시	38	44	3685	3,848
16	울산광역시	17	14	1,302	660
17	세종특별자치시	8	9	96	373
합계		**322**	**322**	**143,602**	**75,727**

Figure 9.1: 2024 Public Diplomacy Comprehensive Implementation Plan, p. 4

9.3 pdf Table Extraction

Let's try to extract the second table on page 4 of the pdf file. The table has the number of public diplomacy projects and budgets for first-tier local administration unit (hereafter, province_city for short) in Korea. We will unlist each line as we did earlier so that we can see the table in a more readable way.

```
# Look at the first 10 lines of the 4th page
lines_pdf_4 <- pdf_text_all[4] |>
  # Split by newline character.
  str_split("\n") |>
  # Unlist
  unlist()
```

First, let's look at the 29th and 30th lines for the column names in the pdf file.

```
lines_pdf_4[29:30]
```

```
[1] "                  '24      '23       '24            '23   "
[2] "         "
```

The column names are the line number, province or city's name, project numbers for 2024 and 2023 respectively, and the budget for 2024 and 2023 in million Korean Won respectively. Let's use the following English column names that correspond to the Korean column names in the pdf file.

```
# Column names
col_names <- c("no", "province_city", "project_no_2024", "project_no_2023", "budget_2024", "
```

By observing the `lines_pdf_4` object using `view(lines_pdf_4)`, we can see that the second table starts from the 32nd line and ends on the 48th. We will extract only those lines. We will use `str_trim` "removes whitespace from start and end of string". We will also use `str_replace_all` to remove commas from each line to convert entries into numbers. We will then split each line based on two or more consecutive spaces (our string is "`\s{2,}`") using `str_split` and simplify the result into a matrix. We will convert this matrix into a data frame with non-factor columns using `data.frame(stringsAsFactors = FALSE)`. We will set the column names of the data frame using the `col_names` vector that we created above. These explanations are also available in each step in the following code chunk.

```
# Select lines 32 to 48 from the lines_pdf_4 data frame
province_city_pd <- lines_pdf_4[32:48] |>
  # Trim whitespace from both ends of each element in the selected rows
  str_trim() |>
  # Replace all commas with an empty string in each element
  str_replace_all(",", "") |>
  # Split each element based on 2 or more consecutive spaces and simplify into a matrix
  str_split("\\s{2,}", simplify = TRUE) |>
  # Convert the matrix into a data frame with non-factor columns
  data.frame(stringsAsFactors = FALSE) |>
  # Set column names for the data frame using the provided 'col_names' vector
  setNames(col_names)
```

Let's rearrange the table (which is originally in alphabetical order) by descending order based on public diplomacy budgets in 2024.

```
province_city_pd |>
  arrange(desc(budget_2024))
```

```
   no  province_city project_no_2024 project_no_2023 budget_2024 budget_2023
1   8                          8              10                  1408
2  17                      8               9          96         373
3   3                          7               8         789         736
4   2                     10              11        78593       11024
5  13                        26              25         5516        5008
6   9                     23              24         4433        7343
7  15                        38              44         3685        3848
8  14                        22              26         3487        6459
9  12                        11              11          316         321
10 11                        36              35         3017        2355
11  6                         13              13         2962        6917
12  7                         18              18         2709        3314
13  5                         19              19         2626       10703
14  4                         10              10         2508        1731
15  1                          25              14        21558        3899
16 16                        17              14         1302         660
17 10                        31              31        10005        9628
```

But these province_city names are in Korean since the document was in Korean. Let's practice extracting a table from internet then to find English names for these Korean provinces or cities. As of May 6, 2024, Wikipedia's list of South Korea's administrative divisions seems to be correct. Let's extract the table there.

9.4 html Table Extraction

We will use the `rvest` package to extract the table from the Wikipedia page. We will use the `read_html` function to read the html content of the Wikipedia page. We will then use the `html_node` function to select the table we want to extract. You can refer to `rvest` package for more information on how to extract what you want. We can use the xpath of the table we want to extract. You can find the xpath of the table by right-clicking on the table on the Wikipedia page and selecting "Inspect" or "Inspect Element" depending on your browser. You can then right-click on the highlighted html element in the "Elements" tab of the "Developer Tools" and select "Copy" -> "Copy XPath". The xpath of the table we want to extract is `//*[@id="mw-content-text"]/div[1]/table[5]`. We will use the `html_table` function to extract the table as a data frame. We will use the `fill = TRUE` argument to fill in the missing values in the table.

```
html <- read_html("https://en.wikipedia.org/wiki/Administrative_divisions_of_South_Korea")

table <- html |>
  html_node(xpath = '//*[@id="mw-content-text"]/div[1]/table[5]') |>
  html_table(fill = TRUE)
```

Let's look at the first 10 rows of the table.

```
head(table)
```

```
# A tibble: 6 x 9
  Code  Emblem Name   Official English nam~1 Hangul Hanja Population 2020 Cens~2
  <chr> <lgl>  <chr>  <chr>                  <chr>  <chr> <chr>
1 KR-11 NA     Seoul~ Seoul                   ~   .mw-~ 9,586,195
2 KR-26 NA     Busan~ Busan                   ~    ~ 3,349,016
3 KR-27 NA     Daegu~ Daegu                   ~    ~ 2,410,700
4 KR-28 NA     Inche~ Incheon                 ~    ~ 2,945,454
5 KR-29 NA     Gwang~ Gwangju                 ~    ~ 1,477,573
6 KR-30 NA     Daeje~ Daejeon                 ~    ~ 1,488,435
# i abbreviated names: 1: `Official English name[5]`,
#   2: `Population 2020 Census`
# i 2 more variables: `Area (km2)` <chr>,
#   `Population density  2022 (per km2)` <chr>
```

Perfect! Now, let's keep only the columns that we will need.

```r
# Select columns 4 and 5 from the table
table <- table |>
  select(4:5)

# Let's change the English province_city column name.

table <- table |>
  rename(province_city_eng = `Official English name[5]`)
```

Let's hope that the Korean names in the Wikipedia table and the MOFA's pdf file are the same. Let's merge the two tables based on the Korean names.

```r
# Merge the two tables based on the Korean names
province_city_pd_joined <- province_city_pd |>
  left_join(table, by = c("province_city" = "Hangul"))
```

Let's see if we have any missing values in the English names.

```r
# Check for missing values in the English names
province_city_pd_joined |>
  filter(is.na(province_city_eng))
```

```
  no province_city project_no_2024 project_no_2023 budget_2024 budget_2023
1  5                          19              19        2626       10703
  province_city_eng
1              <NA>
```

We almost got it! The only difference is 전라북도 (North Jeolla Province) in the MOFA's pdf file which is written as 전북특별자치도 (Jeonbuk State) in the Wikipedia table. Let's fix this.

```r
# Move the English name column next to the Korean name column, and remove the 'no' column

province_city_pd_joined <- province_city_pd_joined |>
  select(province_city, province_city_eng, everything(), -no)

# Fix the English name of

province_city_pd_joined <- province_city_pd_joined |>
  mutate(province_city_eng = ifelse(province_city == "  ", "North Jeolla province_city", pro
```

9.5 Text Analysis

9.5.1 Word Frequency

This time let's look at all of the text in the 2024 Public Diplomacy Comprehensive Implementation Plan. We will combine all the text into a single character vector.

```
# Combine text
pdf_text <- str_c(pdf_text_all, collapse = " ")
```

We will now split the text into words using the `str_split` function from the `stringr` package. We will then convert the result into a data frame with non-factor columns using the `data.frame(stringsAsFactors = FALSE)` function. We will set the column name of the data frame as `word`.

```
# Split the text into words
words <- pdf_text |>
  # Split the text into words
  str_split("\\s+") |>
  # Convert the result into a data frame with non-factor columns
  data.frame(stringsAsFactors = FALSE) |>
  # Set the column name of the data frame as "word"
  setNames("word")
```

Let's look at the first 10 rows of the data frame.

```
head(words, 10)
```

```
           word
1
2         2024
3
4
5
6
7
8
9
10
```

Now, let's count the frequency of each word in the text using the `count` function from the `dplyr` package package. We will then arrange the result in descending order based on the frequency of the words.

```
# Count the frequency of each word
word_freq <- words |>
  count(word, sort = TRUE)
```

Let's look at the first 10 rows of the data frame

```
head(word_freq, 10)
```

```
       word  n
1           72
2          - 55
3     40
4           33
5           28
6        , 22
7          22
8          18
9          18
10         17
```

This is not very useful. There are two main issues with Korean text. First, Korean text does not have consistent spacing between words. Second, Korean text has particles and other morphemes that are not words. We will address these issues now.

9.5.2 Spacing in Korean Text

Let's get the spacing right in Korean text using the `bitNLP` package's `get_spacing` function, which will add spaces between words in the Korean text. So, for example "한국공공외교" will become "한국 공공 외교".

```
# Get the spacing right in Korean text
pdf_text_ko <- get_spacing(pdf_text)
```

Now, let's split the text into words again using the `str_split` function from the `stringr` package.

```r
# Split the text into words
words_ko <- pdf_text_ko |>
  # Split the text into words
  str_split("\\s+") |>
  # Convert the result into a data frame with non-factor columns
  data.frame(stringsAsFactors = FALSE) |>
  # Set the column name of the data frame as "word"
  setNames("word")
```

Let's analyze the word frequency in the text again.

```r
# Count the frequency of each word
word_freq_ko <- words_ko |>
  count(word, sort = TRUE)

head(word_freq_ko, 10)
```

```
   word   n
1       175
2     (  97
3     -  80
4        73
5     67
6     62
7     36
8     35
9        33
10    30
```

We have many special characters in the text. Let's remove all characters except for Korean characters, spaces, English letters, and numbers using the `str_replace_all` function from the `stringr` package.

```r
# Remove all characters except for Korean characters, spaces, English letters, and numbers
word_freq_ko <- pdf_text_ko |>
  # Remove all characters except Korean characters, English letters, numbers, and spaces
  str_replace_all("[^ - a-zA-Z0-9\\s]", "") |>
  # Split the cleaned text into words based on one or more spaces
  str_split("\\s+") |>
  # Convert the list result into a data frame with non-factor columns
  data.frame(stringsAsFactors = FALSE) |>
```

```
  # Set the column name of the data frame as "word"
  setNames("word")
```

Let's analyze the word frequency in the text again.

```
# Count the frequency of each word
word_freq_ko <- word_freq_ko |>
  count(word, sort = TRUE)

head(word_freq_ko, 10)
```

```
   word  n
1      73
2    67
3    62
4    44
5    37
6    36
7      35
8    30
9    29
10   28
```

This is much better! We have removed the special characters and have more meaningful words in the text. Let's move on to morpheme analysis which makes more sense in Korean text analysis context.

9.5.3 Morpheme Analysis in Korean Text

Let's analyze the morphemes in the Korean text using the `morpho_mecab` function from the `bitNLP` package, which will extract morphemes from the Korean text.

```
# Analyze the morphemes in the Korean text
morphemes <- morpho_mecab(pdf_text_ko)
```

This creates a list of character vectors, where each element corresponds to a morpheme in the text. We can also combine all of the morphemes and tokenize them into a single character vector.

```r
# Combine all the morphemes into a single character vector

morphemes_single <- morpho_mecab(pdf_text_ko, indiv = FALSE)
```

Now, let's split the text into words again this time by converting `morphemes_single` into a data frame using the `as.data.frame` function. We will set the column name of the data frame as "word".

```r
# Split the text into words
words_morphemes <- morphemes_single |>
  as.data.frame() |>
  # Set the column name of the data frame as "word"
  setNames("word")
```

We will now count the frequency of each morpheme in the text using the `count` function from the `dplyr` package package. We will then arrange the result in descending order based on the frequency of the morphemes.

```r
# Count the frequency of each morpheme

morpheme_freq <- words_morphemes |>
  count(word, sort = TRUE)

head(morpheme_freq, 10)
```

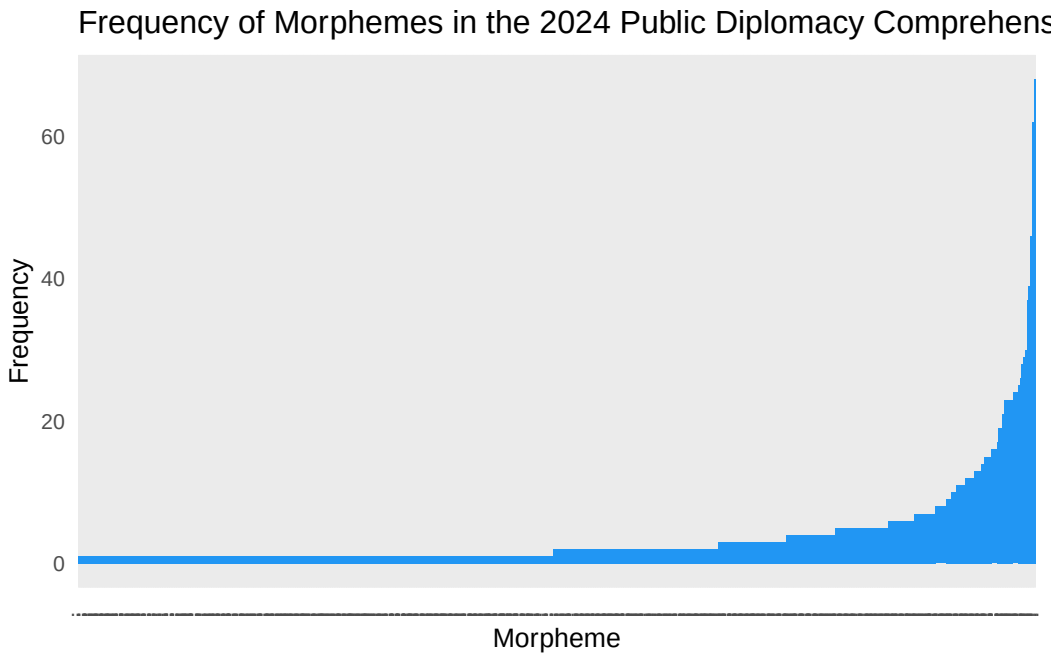
```
   word  n
1    68
2    62
3    46
4    39
5    37
6    30
7    29
8    28
9    26
10   25
```

Now, this is more like it!

Let's visualize the frequency of the morphemes in the text using a bar plot. We will use the `ggplot` function from the `ggplot2` package to create the plot. We will use the `geom_col`

function to add the bars to the plot. We will use the `theme_minimal` function to set the theme of the plot to minimal. We will use the `theme` function to adjust the font size in the plot. We will set the font size to 10. We will use the `labs` function to add the title and labels to the plot.

```
# Visualize the frequency of the morphemes in the text

morpheme_freq |>
  # Create a bar plot
  ggplot(aes(x = reorder(word, n), y = n)) +
  geom_col(fill = "#2196f3") +
  theme_minimal() +
  theme(text = element_text(size = 10)) +
  labs(title = "Frequency of Morphemes in the 2024 Public Diplomacy Comprehensive Implementat
       x = "Morpheme",
       y = "Frequency")
```



9.5.4 Word Network in Korean Text

Let's analyze the word network in the Korean text using the `tokenize_noun_ngrams` function from the `bitNLP` package which builds on `tidytext` package. We will use the `tokenize_noun_grams` function to extract the noun word network from the Korean text.

```
# We can use a user-defined dictionary to improve the accuracy of the tokenization. We will i

dic_path <- system.file("dic", package = "bitNLP")
dic_file <- glue::glue("{dic_path}/buzz_dic.dic")

word_network <- tokenize_noun_ngrams(pdf_text_ko, simplify = TRUE, user_dic = dic_file, n = 2
  as_tibble() |>
  setNames("paired_words")
```

Now, let's separate the paired words into two columns using the `separate` function from the `tidyr` package which is loaded as part of the `tidyverse` package. This will allow us to create bigrams from the paired words.

```
word_network_separated <- word_network |>
  separate(paired_words, c("word1", "word2"), sep = " ")
```

We will now count the frequency of each bigram in the text using the `count` function from the `dplyr` package package, which is also party of the `tidyverse`. We will then arrange the result in descending order based on the frequency of the bigrams.

```
# new bigram counts:
word_network_counts <- word_network_separated |>
  count(word1, word2, sort = TRUE)
```

Korean text sometimes is not visible in the graph due to the font issue. This was the case in my Macbook. Let's set the font to one that supports Korean characters. We will use the `extrafont` package to set the font to one that supports Korean characters. We will use the `font_import` function to import the fonts from the system. This may take some time. You only need to do it once. That's why I commented it. You can uncomment it in first usage.

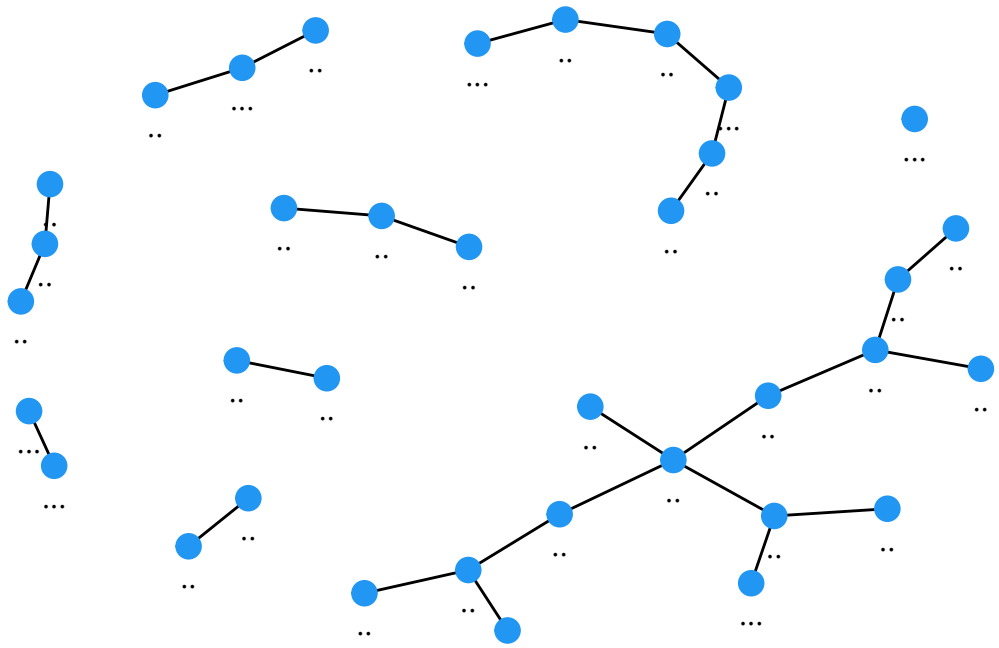
```
# Load extrafont and register fonts

#font_import()  # This might take a while if it's the first time you're running it
```

We will then use the `loadfonts` function to load the fonts. We will use the `fonts` function to display the available fonts and find one that supports Korean characters. We will set the font to one that supports Korean characters. For now, I have chosen "Arial Unicode MS" as the Korean font. You can replace it with a font from your system that supports Korean characters if necessary.

```
#loadfonts(device = "all")

# Display available fonts, find one that supports Korean
#fonts()

# Set the font to one that supports Korean characters
korean_font <- "Arial Unicode MS"  # Replace with a font from your system that supports Korea
```

We will now create a graph from the bigram counts using the `graph_from_data_frame` function from the `igraph` package. We will use the `ggraph` function from the `ggraph` package to create the graph. We will use the `geom_edge_link` function to add the edges to the graph. We will use the `geom_node_point` function to add the nodes to the graph. We will use the `geom_node_text` function to add the labels to the nodes in the graph. We will set the font to the Korean font that we set earlier. We will then adjust the font in the graph. Here, `n >= 6` is used to filter out bigrams that appear less than 6 times. You can adjust this number as needed. You can check out `ggraph` layout options here.

```
word_network_select <- word_network_counts |>
  filter(n >= 6) |>
  graph_from_data_frame() |>
  ggraph(layout = "fr") +
  geom_edge_link(aes()) +
  geom_node_point(color = "#2196f3", size = 4) +
  geom_node_text(aes(label = name), family = korean_font, vjust = 2, size = 4) +  # Set fami
  theme_void()


word_network_select
```



9.5.5 Sentiment Analysis

9.5.6 Topic Modeling

9.6 Korean Tweet Analysis

9.7 Further Readings

9.8 References

9.9 Session Info

```
sessionInfo()
```

```
R version 4.4.0 (2024-04-24)
Platform: aarch64-apple-darwin20
Running under: macOS Sonoma 14.4.1
```

```
Matrix products: default
BLAS:   /Library/Frameworks/R.framework/Versions/4.4-arm64/Resources/lib/libRblas.0.dylib
LAPACK: /Library/Frameworks/R.framework/Versions/4.4-arm64/Resources/lib/libRlapack.dylib;  L

locale:
[1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8

time zone: Asia/Seoul
tzcode source: internal

attached base packages:
[1] stats     graphics  grDevices utils     datasets  methods   base

other attached packages:
 [1] extrafont_0.19    ggraph_2.2.1      igraph_2.0.3      tidytext_0.4.2
 [5] rvest_1.0.4       pdftools_3.4.0    lubridate_1.9.3   forcats_1.0.0
 [9] stringr_1.5.1     dplyr_1.1.4       purrr_1.0.2       readr_2.1.5
[13] tidyr_1.3.1       tibble_3.2.1      ggplot2_3.5.1     tidyverse_2.0.0
[17] bitNLP_1.4.3.9000

loaded via a namespace (and not attached):
 [1] tidyselect_1.2.1    viridisLite_0.4.2   farver_2.1.1
 [4] viridis_0.6.5       fastmap_1.1.1       tweenr_2.0.3
 [7] janeaustenr_1.0.0   promises_1.3.0      shinyjs_2.1.0
[10] digest_0.6.35       timechange_0.3.0    mime_0.12
[13] lifecycle_1.0.4     qpdf_1.3.3          tokenizers_0.3.0
[16] magrittr_2.0.3      compiler_4.4.0      rlang_1.1.3
[19] sass_0.4.9          tools_4.4.0         utf8_1.2.4
[22] knitr_1.46          labeling_0.4.3      askpass_1.2.0
[25] graphlayouts_1.1.1  htmlwidgets_1.6.4   curl_5.2.1
[28] xml2_1.3.6          miniUI_0.1.1.1      ngram_3.2.3
[31] withr_3.0.0         grid_4.4.0          polyclip_1.10-6
[34] fansi_1.0.6         xtable_1.8-4        colorspace_2.1-0
[37] extrafontdb_1.0     scales_1.3.0        MASS_7.3-60.2
[40] tinytex_0.50        cli_3.6.2           rmarkdown_2.26
[43] generics_0.1.3      RcppParallel_5.1.7  rstudioapi_0.16.0
[46] httr_1.4.7          tzdb_0.4.0          cachem_1.0.8
[49] ggforce_0.4.2       RcppMeCab_0.0.1.2   parallel_4.4.0
[52] rhandsontable_0.3.8 vctrs_0.6.5         Matrix_1.7-0
[55] jsonlite_1.8.8      hms_1.1.3           ggrepel_0.9.5
[58] jquerylib_0.1.4     shinyBS_0.61.1      glue_1.7.0
[61] stringi_1.8.3       gtable_0.3.5        later_1.3.2
[64] munsell_0.5.1       pillar_1.9.0        htmltools_0.5.8.1
```

```
[67] R6_2.5.1            tidygraph_1.3.1     evaluate_0.23
[70] shiny_1.8.1.1       lattice_0.22-6      SnowballC_0.7.1
[73] memoise_2.0.1       DataEditR_0.1.5     httpuv_1.6.15
[76] bslib_0.7.0         Rcpp_1.0.12         Rttf2pt1_1.3.12
[79] gridExtra_2.3       xfun_0.43           pkgconfig_2.0.3
```

10 Statistical Analysis

11 Storytelling with Quarto

12 Productivity Tools

Setting up Github.

Creating a new Github project.

Copilot etc.

13 Working with API to get Korean Data

WDI etc. readily available packages

Creating your own API

https://httr2.r-lib.org/articles/wrapping-apis.html

https://www.andrewheiss.com/blog/2024/01/12/diy-api-plumber-quarto-ojs/_book/

14 Making Korean Data Visualization Social

14.1 #kdiplo #kdiploviz

I love Korea, and I love data.

Combining my enthusiasm for Korean Studies and data, I am initiating an exciting project to make engaging and valuable Korean datasets publicly accessible… in an enjoyable manner!

I invite you to explore and interact with the data I will be sharing. Let's craft stories together using these datasets and connect through the hashtags `#kdiplo`, #kdiploviz, `#kdata`, and #kdataviz.

Recently, I have created several novel datasets on Korean diplomacy for my research[1], mainly focusing on high-level diplomatic visits (both outgoing and incoming), their formats (bilateral, multilateral, informal), nature (such as state visits), purposes (economic, security, etc.), timelines, and the conveners in multilateral contexts among others.

I will make these datasets available via a new R package, `#kdiplo`. Although this is a work in progress, the first version is already shaping up.

The current development version features a pivotal function (along with an accompanying dataset) designed to assist researchers in merging various Korean datasets by country names. Due to inconsistent naming conventions across Korean government datasets (for instance, Thailand might appear as 태국 [Taeguk] or 타이 [Tai]), the kdiplo::iso3c function creates iso3c country codes for Korean country names, simplifying the joining process (similar to countrycode::countrycode).

Next on the agenda is adding comprehensive Korean trade data spanning from 1948 to 2023, inclusive of multiple sources and estimations/ imputations for missing data.

More datasets are on the way, and I am open to data requests.

Stay tuned (follow hashtags #kdiplo, #kdiploviz #kdata, and #kdataviz) for more updates on (https://github.com/kjayhan/kdiplo) - a one-stop public repository for data insights on Korean diplomacy and foreign policy!

For now check this website out, which I will soon update as well.

[1] See these blog posts for now.

14.2 #kdata #kdataviz

While my main interests in Korean Studies lie in foreign policy and (public) diplomacy, I am also interested in everything related to Korea, from business to education to culture.

Indeed, I was trained as an economist, with a double major in international trade, wrote my master's thesis on Korean popular culture (from an international relations angle), and have published at least 8 peer-reviewed articles on international student mobility programs (from a public diplomacy angle).

So… in addition to the `#kdiplo` package, I am happy to announce that, I am also building another package, `#kdata`, dedicated to datasets on Korean business, culture, and education. Although this is a work-in-progress, I have already uploaded multiple datasets to the `#kdiplo` repository. I will upload documentation and vignettes for these datasets soon.

To kick things off with the vibrant Spring season in Korea, I present our first challenge: the Korean Festivals dataset! ☐☐☐

Explore and interact with the data available at `#kdiplo` `kdiplo::korean_festivals_data`.

Check out my blog post where I've used this dataset.

I encourage you to dive into this dataset and share your insights. Remember to use hashtags `#kdiplo`, #kdiploviz `#kdata`, and #kdataviz in your posts across various social media platforms!

15 R for Korean Studies Bootcamps

I plan to organize bootcamps to help Korean Studies scholars and students to jumpstart their R learning with Korean Studies-based examples.

You can sign up for my newsletter to get updates on the workshops.

You can find more information about the bootcamps here.

References

Ayhan, Kadir Jun. 2024. R for Korean Studies: A Gentle Introduction to Computational Social Science. Draft Version 0.0.1. https://r4ks.com.