R Markdown
解決轉換中文字型PDF

R 大數據分析

李明昌

2024-09-15

第 1 章 R Markdown 簡介

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

這是一個 R Markdown 文件。Markdown 是一種用於創作 HTML、PDF 和 MS Word 文件的簡單格式語法。有關使用 R Markdown 的更多詳細信息，請參閱 http://rmarkdown.rstudio.com。

Lee, Ming-Chang

https://www.youtube.com/@alan9956

http://rwepa.blogspot.com/

alan9956@gmail.com

Outline

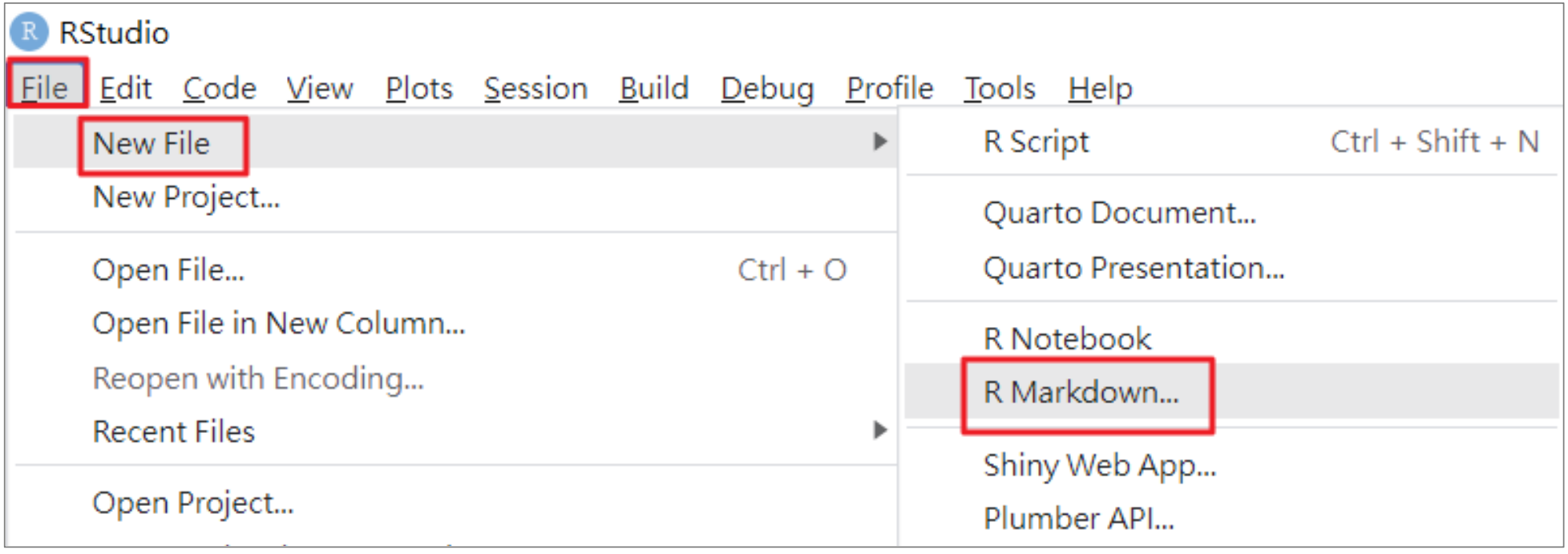
- 1.建立 R Markdown
- 2.加入中文字型
- 3.解決轉換中文字型PDF
- 4.R Markdown 使用
- 5.結論

1.建立 R Markdown

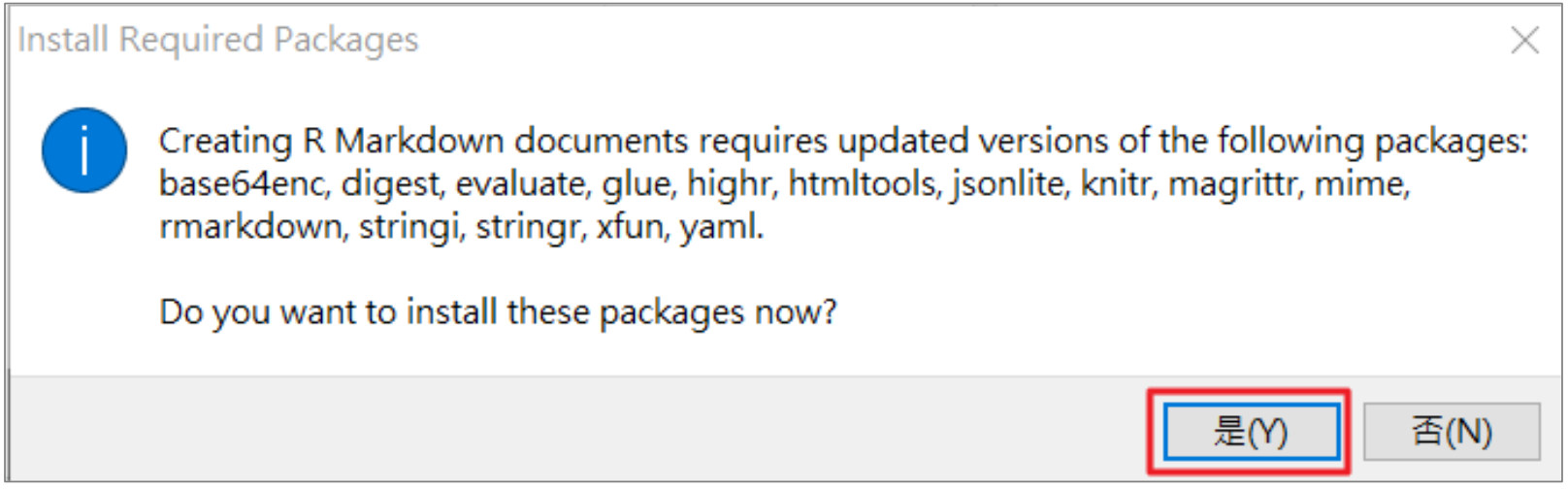
下載: https://github.com/rwepa/DataDemo/blob/master/rmarkdown-test.Rmd

新增 Rmd 檔案

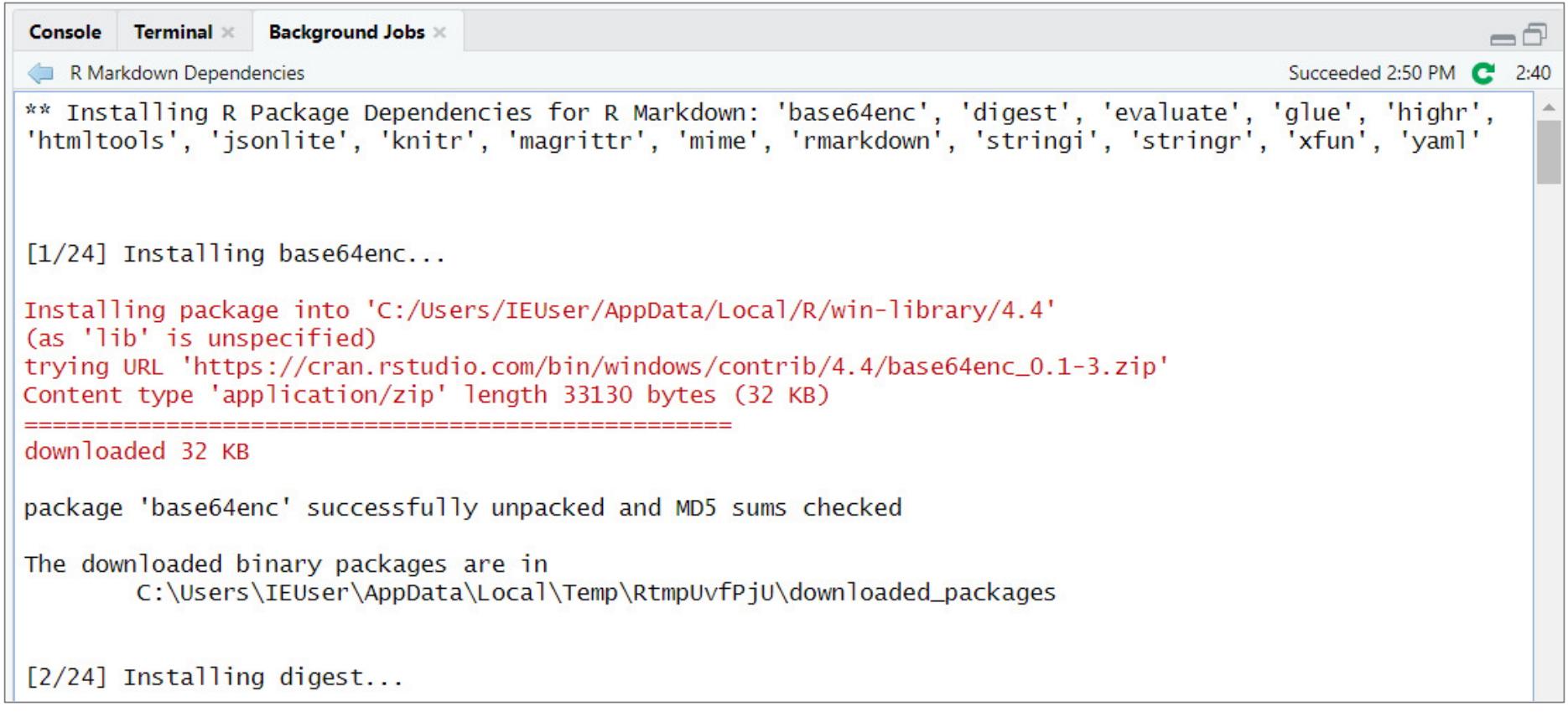
- File \ New File \ R Markdown



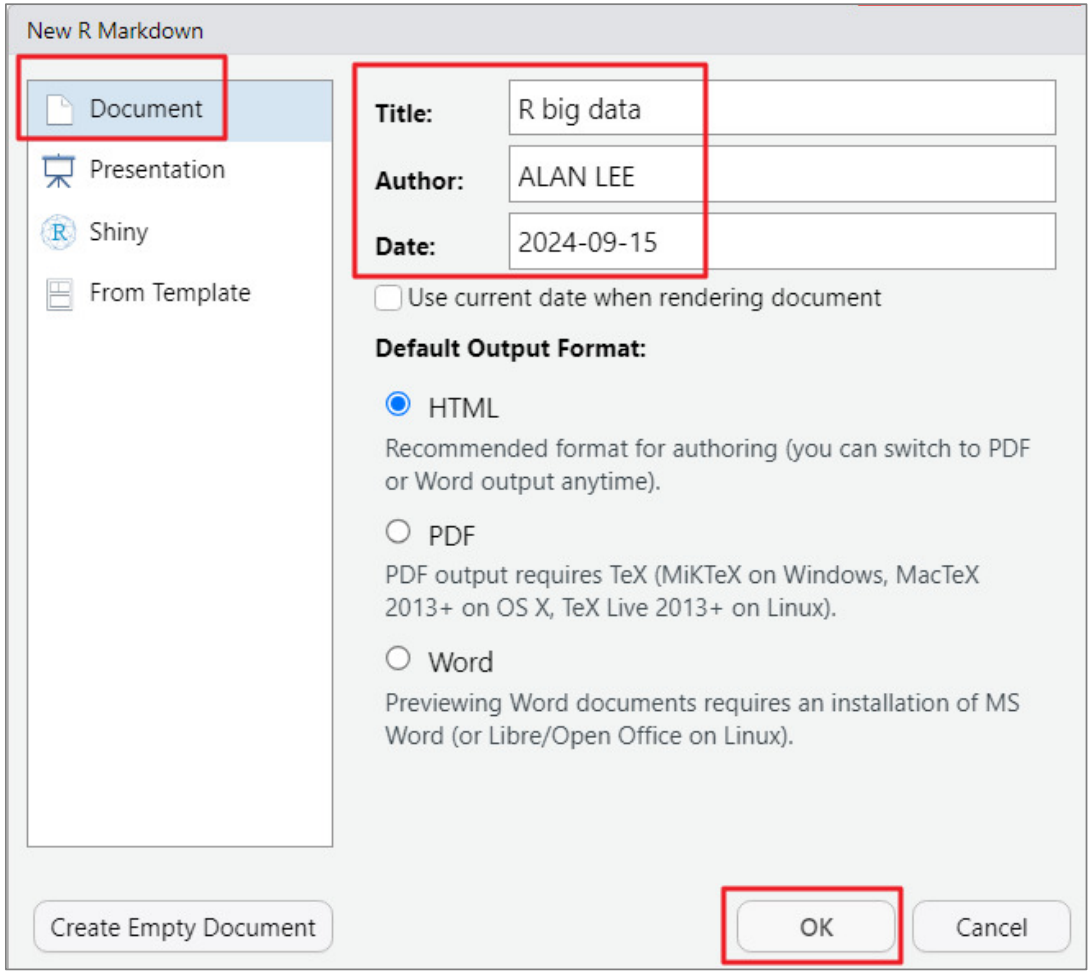
第一次使用須安裝套件


Install Required Packages
Creating R Markdown documents requires updated versions of the following packages:
base64enc, digest, evaluate, glue, highr, htmltools, jsonlite, knitr, magrittr, mime,
rmarkdown, stringi, stringr, xfun, yaml.
Do you want to install these packages now?
是(Y)
否(N)

安裝24個套件畫面

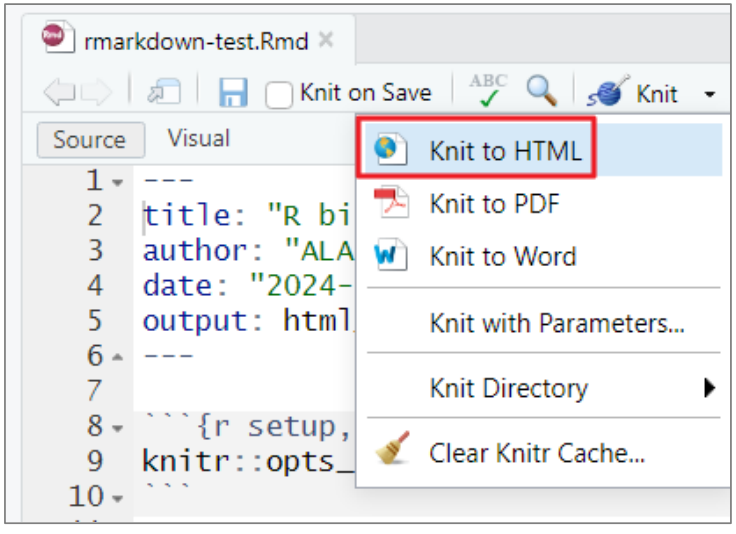

Console
Terminal
Background Jobs
R Markdown Dependencies
Succeeded 2:50 PM
2:40
** Installing R Package Dependencies for R Markdown: 'base64enc', 'digest', 'evaluate', 'glue', 'highr', 'htmltools', 'jsonlite', 'knitr', 'magrittr', 'mime', 'rmarkdown', 'stringi', 'stringr', 'xfun', 'yaml'
[1/24] Installing base64enc...
Installing package into 'C:/Users/IEUser/AppData/Local/R/win-library/4.4'
(as 'lib' is unspecified)
trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.4/base64enc_0.1-3.zip'
Content type 'application/zip' length 33130 bytes (32 KB)
==
downloaded 32 KB
package 'base64enc' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
C:\Users\IEUser\AppData\Local\Temp\RtmpUvfPjU\downloaded_packages
[2/24] Installing digest...

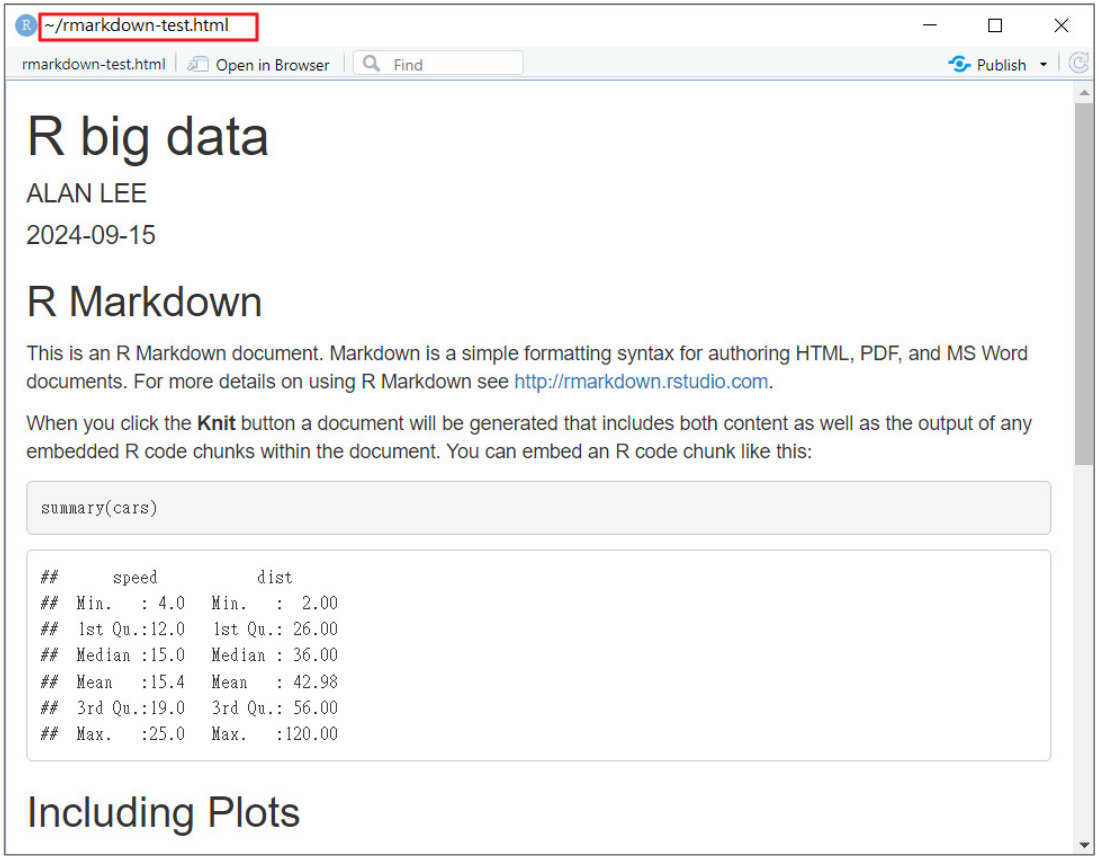
New R Markdown 視窗



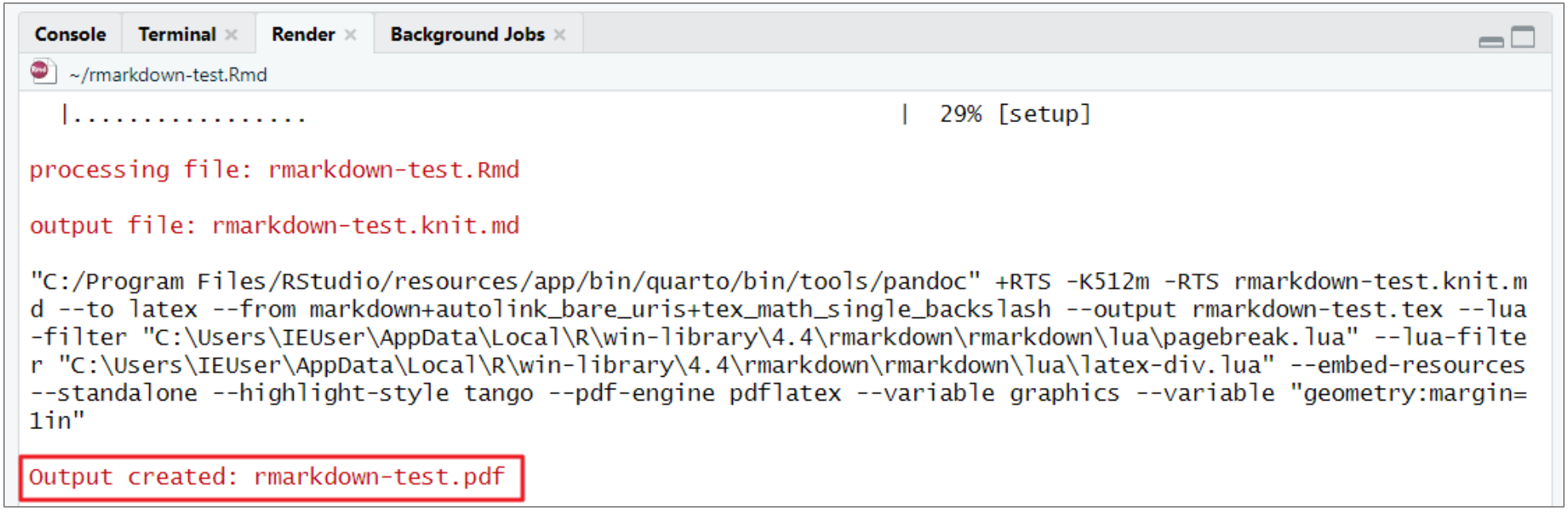
Knit to HTML

- File \ Save \ rmarkdown-test.Rmd

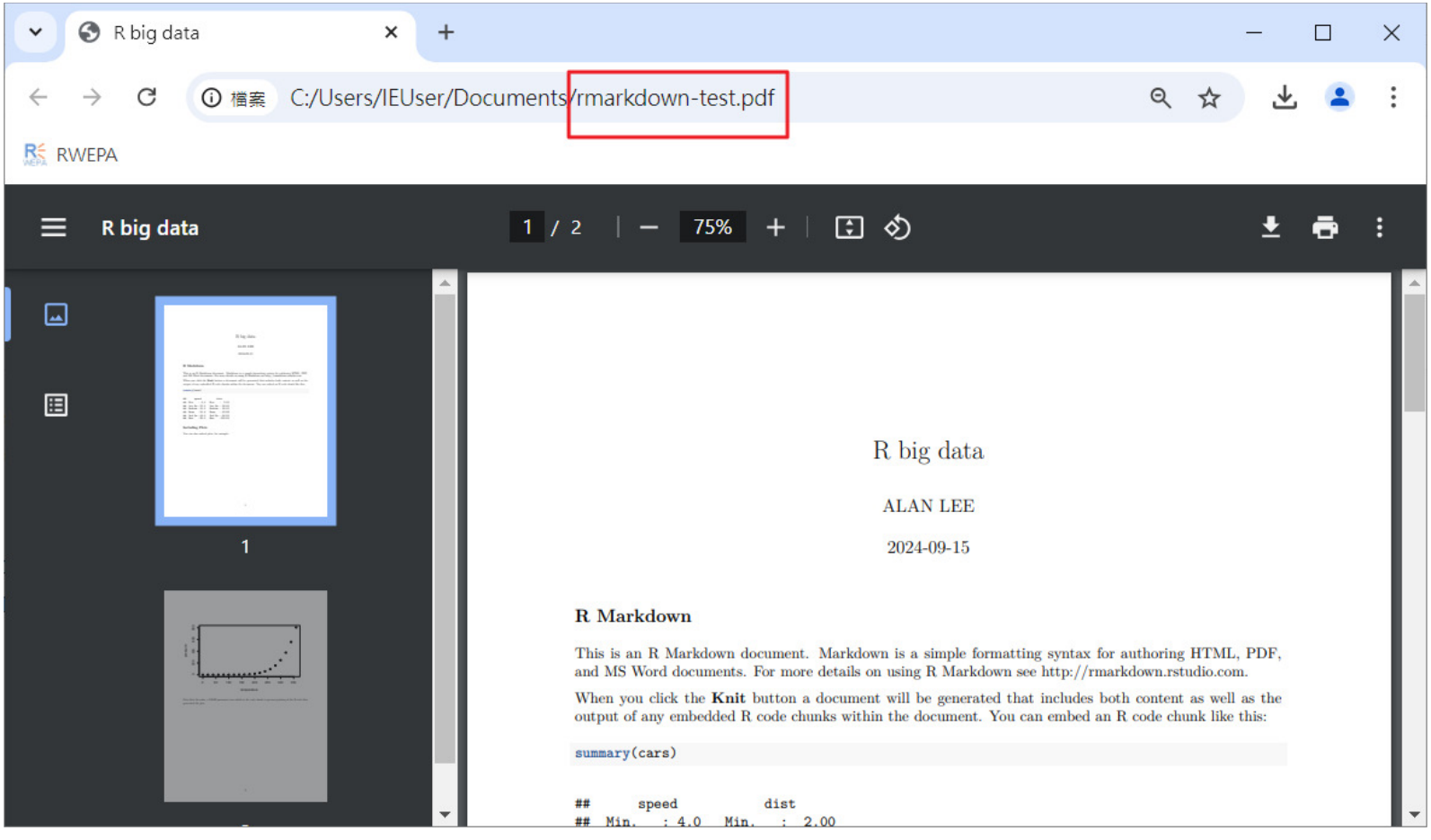




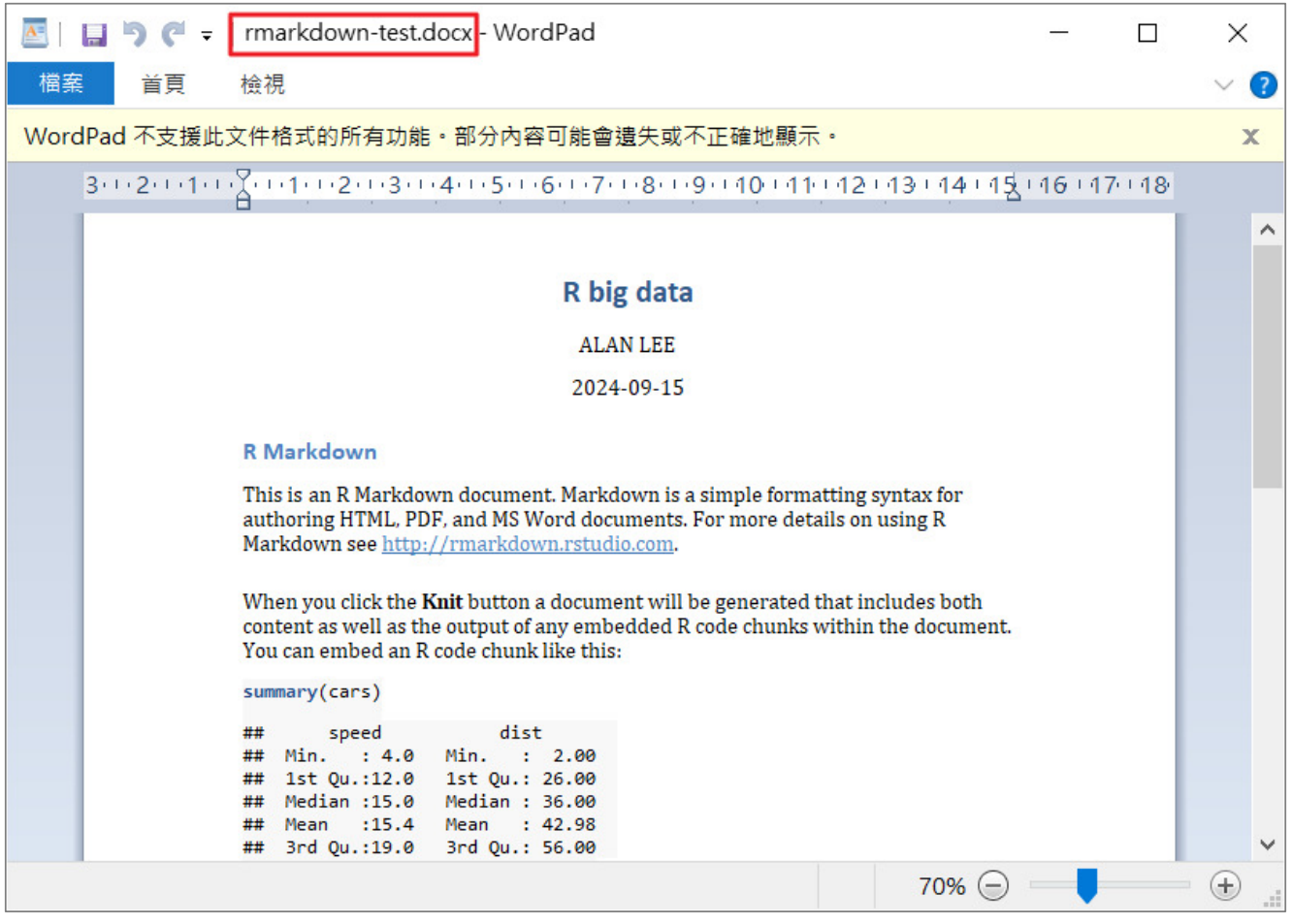
Knit to PDF


Console
Terminal
Render
Background Jobs
~/rmarkdown-test.Rmd
|.................. | 29% [setup]
processing file: rmarkdown-test.Rmd
output file: rmarkdown-test.knit.md
"C:/Program Files/RStudio/resources/app/bin/quarto/bin/tools/pandoc" +RTS -K512m -RTS rmarkdown-test.knit.md --to latex --from markdown+autolink_bare_uris+tex_math_single_backslash --output rmarkdown-test.tex --lua-filter "C:\Users\IEUser\AppData\Local\R\win-library\4.4\rmarkdown\rmarkdown\lua\pagebreak.lua" --lua-filter "C:\Users\IEUser\AppData\Local\R\win-library\4.4\rmarkdown\rmarkdown\lua\latex-div.lua" --embed-resources --standalone --highlight-style tango --pdf-engine pdflatex --variable graphics --variable "geometry:margin=1in"
Output created: rmarkdown-test.pdf

Knit to PDF (續)


R big data
C:/Users/IEUser/Documents/rmarkdown-test.pdf
RWEPA
R big data
1 / 2
75%
1
R big data
ALAN LEE
2024-09-15
R Markdown
This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.
When you click the Knit button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:
summary(cars)
speed dist
Min. : 4.0 Min. : 2.00

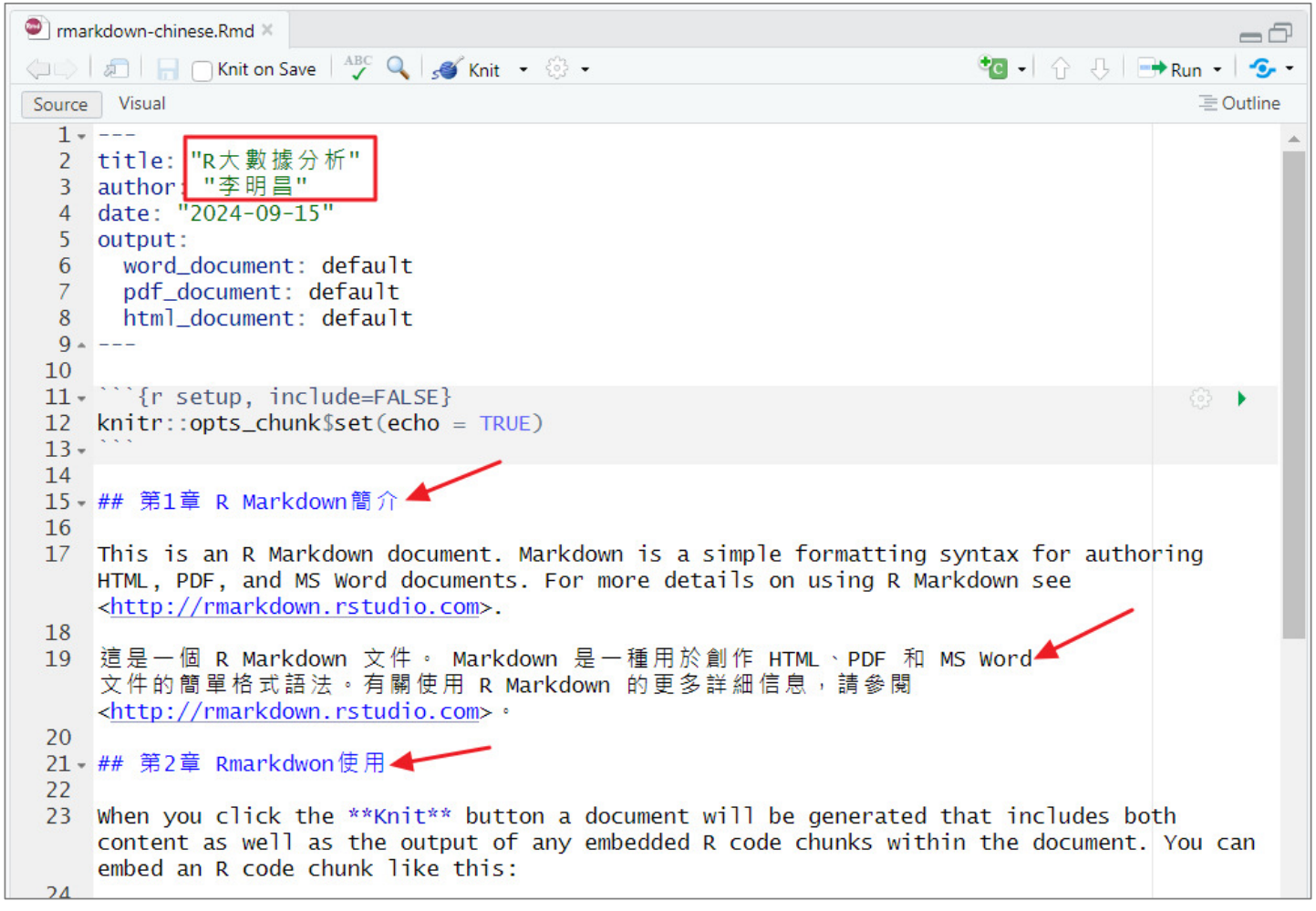
Knit to Word


rmarkdown-test.docx - WordPad
檔案
首頁
檢視
WordPad 不支援此文件格式的所有功能。部分內容可能會遺失或不正確地顯示。
R big data
ALAN LEE
2024-09-15
R Markdown
This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.
When you click the Knit button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:
summary(cars)
speed dist
Min. : 4.0 Min. : 2.00
1st Qu.:12.0 1st Qu.: 26.00
Median :15.0 Median : 36.00
Mean :15.4 Mean : 42.98
3rd Qu.:19.0 3rd Qu.: 56.00
70%

2.加入中文字型

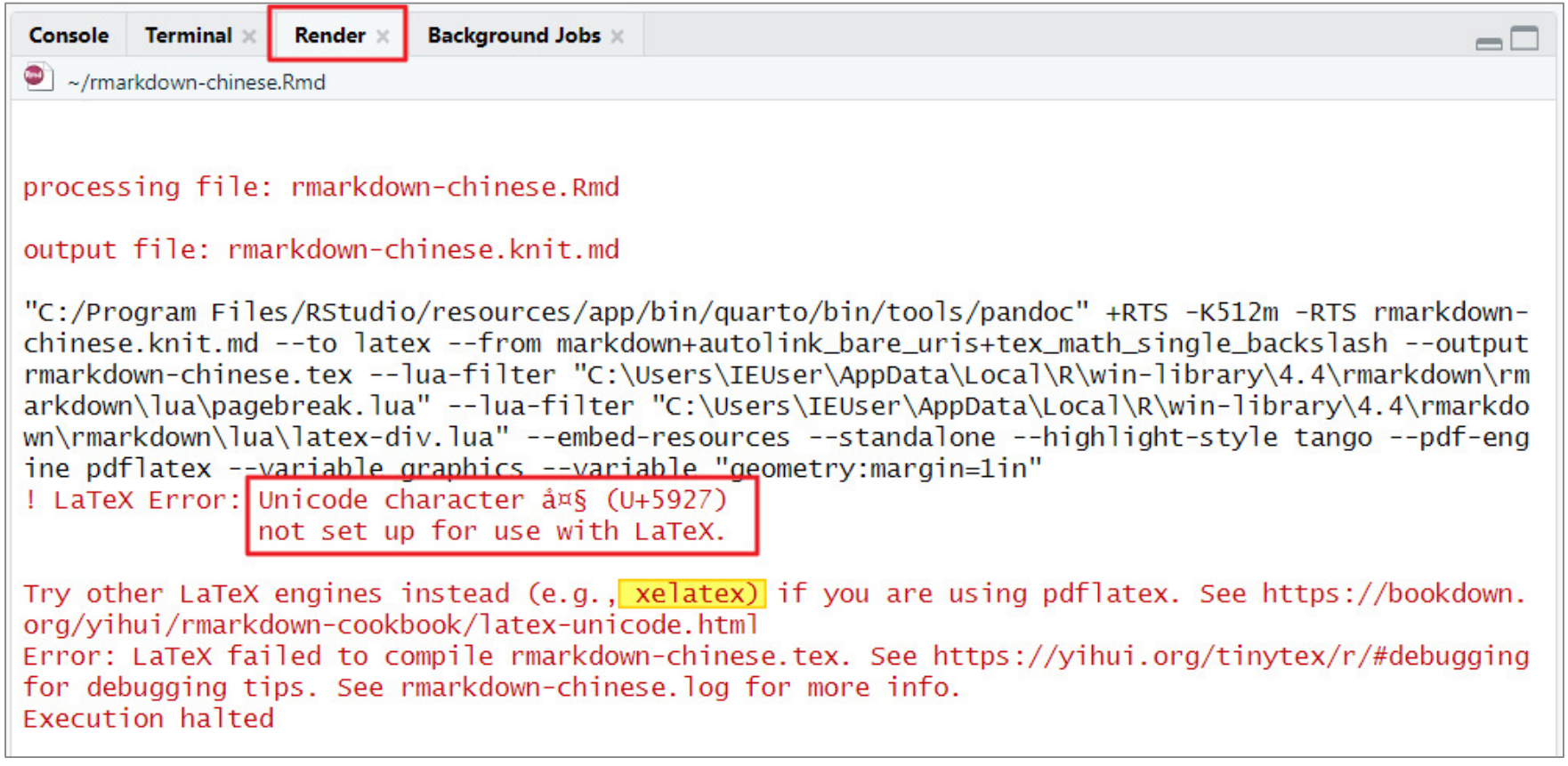
下載: https://github.com/rwepa/DataDemo/blob/master/rmarkdown-chinese.Rmd

rmarkdown-chinese.Rmd



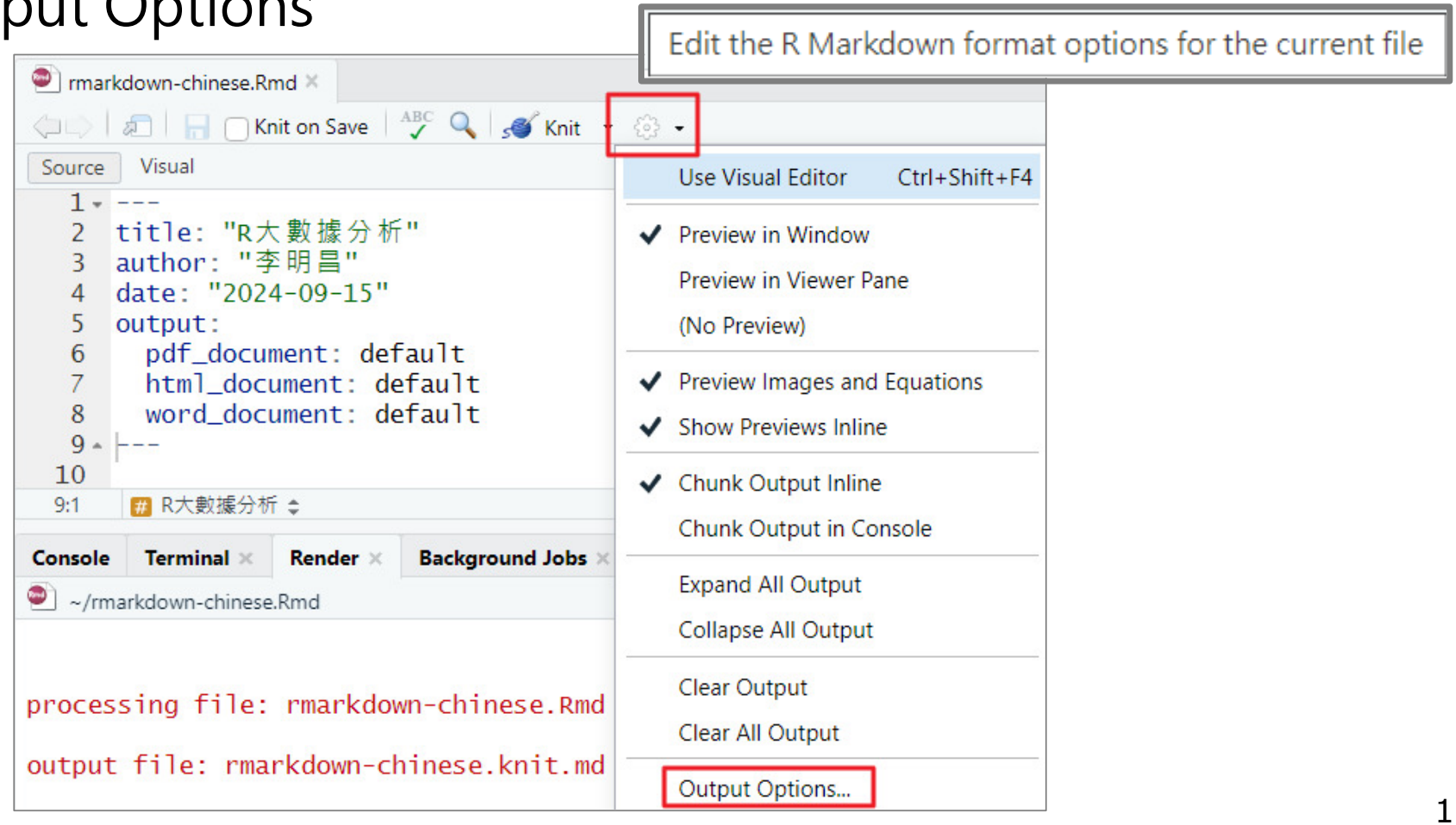
Knit to HTML – 中文正常顯示

Knit to PDF – 中文 Error!

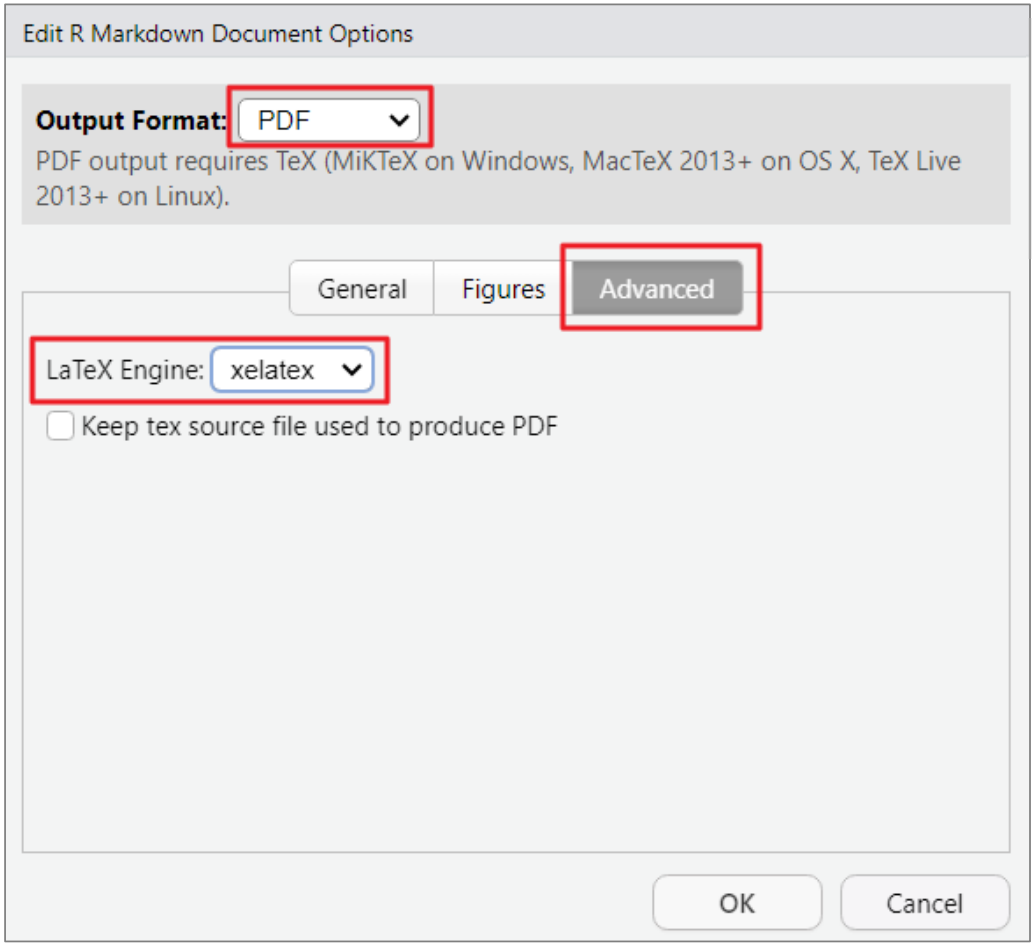


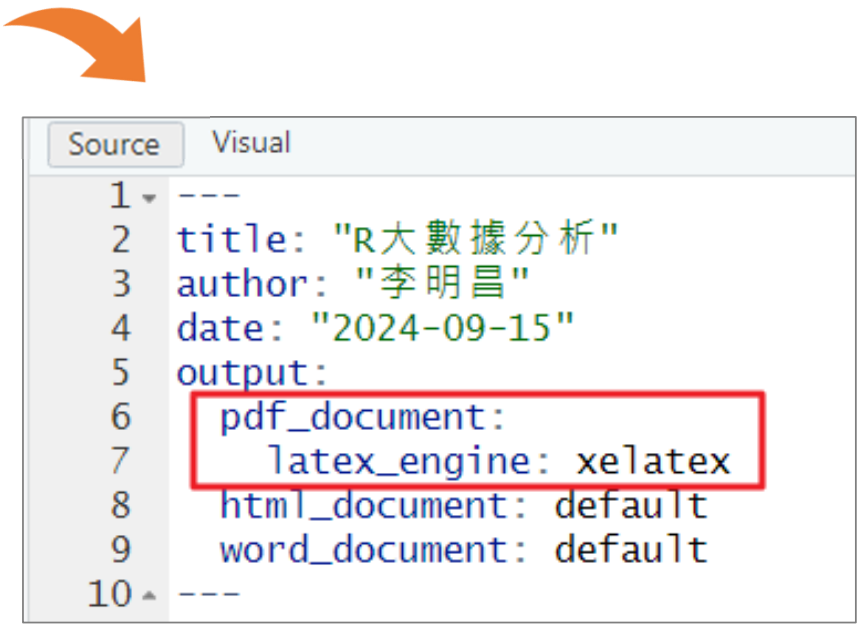
Output Options

- Edit \ Output Options

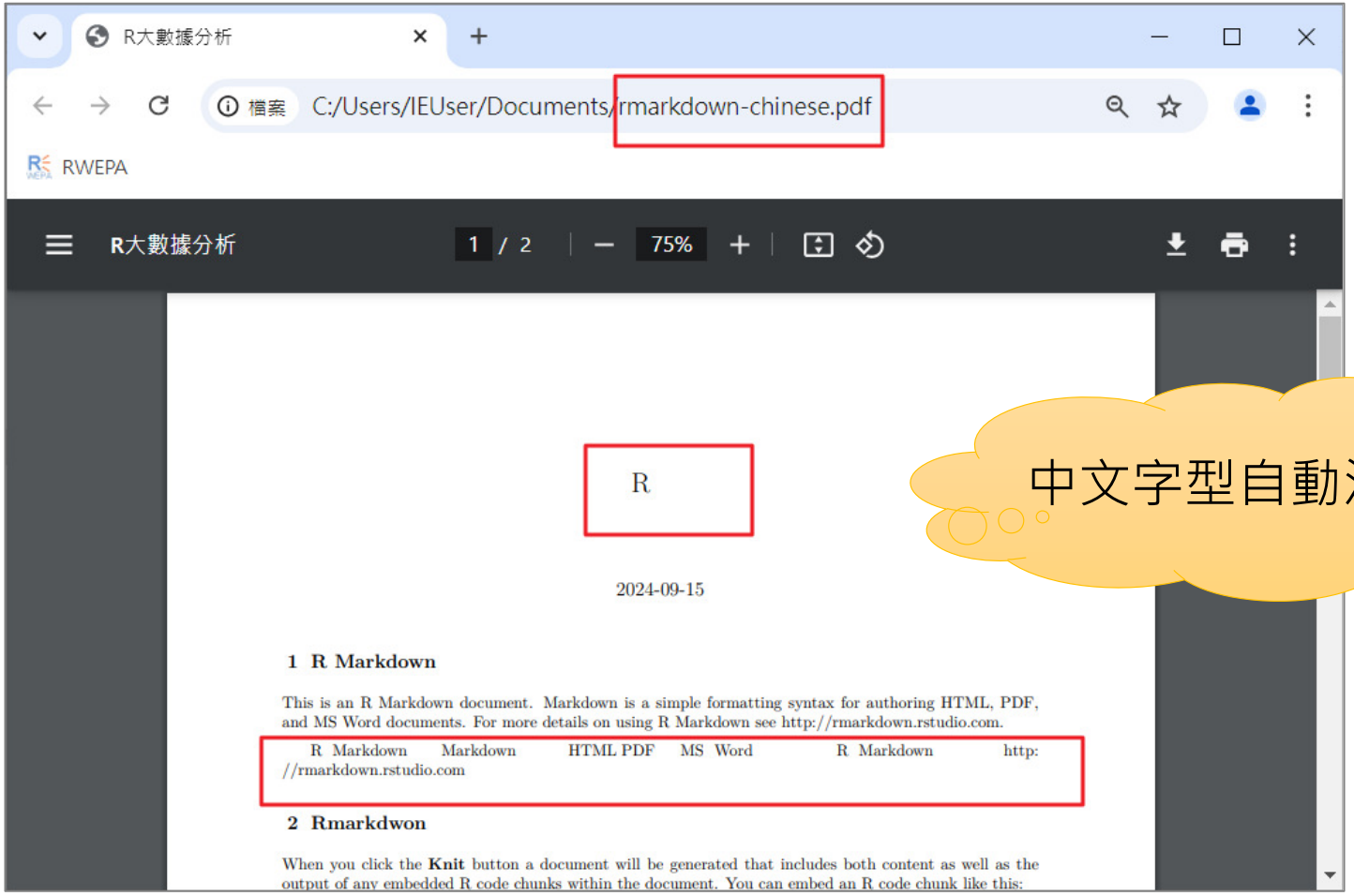


LaTex Engine: xelatex





Knit to PDF – 中文 仍有Error 唉!



中文字型自動消失!

Knit to Word – 中文正常顯示

3.解決轉換中文字型PDF

usepackage{ctex}

- 使用 ctex 套件 (https://ctex.org/)
- 新增 2行程式碼

Source Visual

```
1  ---
2  title: "R大數據分析"
3  author: "李明昌"
4  date: "2024-09-15"
5  header-includes:
6    - \usepackage{ctex}
7  output:
8    word_document: default
9    html_document: default
10   pdf_document:
11     latex_engine: xelatex
12 ---
```

```
header-includes:
  - \usepackage{ctex}
```

第1次Render - 缺少 SimHei 字型 (黑體)

Console | Terminal | Render | Background Jobs

~/rmarkdown-chinese.Rmd

```
  |.................                                        |  29% [setup]

processing file: rmarkdown-chinese.Rmd

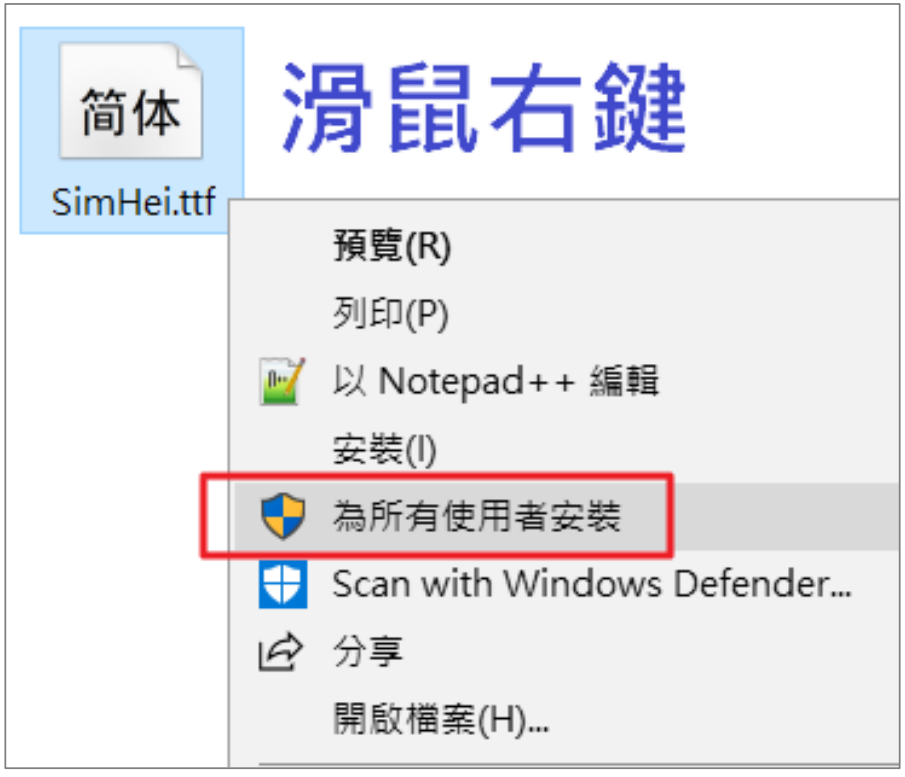
output file: rmarkdown-chinese.knit.md

"C:/Program Files/RStudio/resources/app/bin/quarto/bin/tools/pandoc" +RTS -K512m -RTS rmarkdown-
chinese.knit.md --to latex --from markdown+autolink_bare_uris+tex_math_single_backslash --output
rmarkdown-chinese.tex --lua-filter "C:\Users\IEUser\AppData\Local\R\win-library\4.4\rmarkdown\rm
arkdown\lua\pagebreak.lua" --lua-filter "C:\Users\IEUser\AppData\Local\R\win-library\4.4\rmarkdo
wn\rmarkdown\lua\latex-div.lua" --embed-resources --standalone --highlight-style tango --pdf-eng
ine xelatex --variable graphics --include-in-header "C:\Users\IEUser\AppData\Local\Temp\RtmpA7sU
9v\rmarkdown-str1d2c283a2a84.html" --variable "geometry:margin=1in"
! Package fontspec Error:
(fontspec)                The font "SimHei" cannot be found; this may be but
(fontspec)                usually is not a fontspec bug. Either there is a
(fontspec)                typo in the font name/file, the font is not
(fontspec)                installed (correctly), or there is a bug in the
(fontspec)                underlying font loading engine (XeTeX/luaotfload).

Error: LaTeX failed to compile rmarkdown-chinese.tex. See https://yihui.org/tinytex/r/#debugging
for debugging tips. See rmarkdown-chinese.log for more info.
Execution halted
```

下載與安裝 SimHei.ttf

- 下載: https://github.com/rwepa/DataDemo/blob/master/fonts/SimHei.ttf
- 安裝: 滑鼠右鍵 \ 為所有使用者安裝



第2次Render - 缺少 KaiTi 字型 (楷體)

Console | Terminal | Render | Background Jobs

~/rmarkdown-chinese.Rmd

```
  |.................                                        |  29% [setup]

processing file: rmarkdown-chinese.Rmd

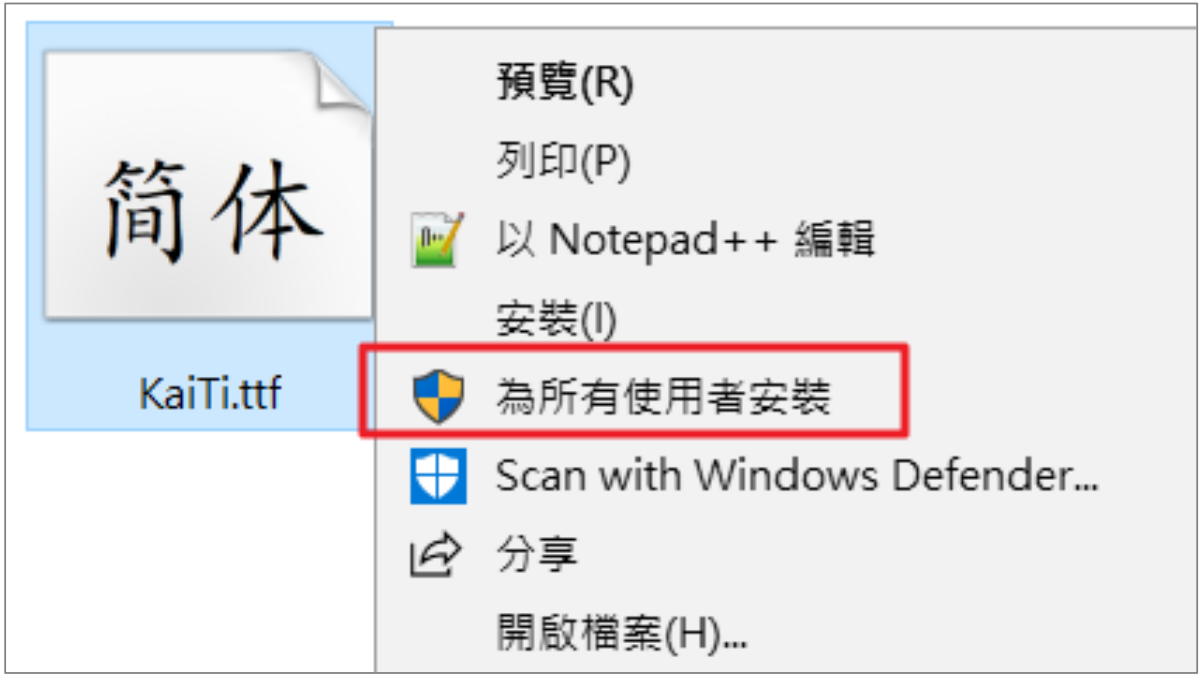
"C:/Program Files/RStudio/resources/app/bin/quarto/bin/tools/pandoc" +RTS -K512m -RTS rmarkdown-
chinese.knit.md --to latex --from markdown+autolink_bare_uris+tex_math_single_backslash --output
rmarkdown-chinese.tex --lua-filter "C:\Users\IEUser\AppData\Local\R\win-library\4.4\rmarkdown\rm
arkdown\lua\pagebreak.lua" --lua-filter "C:\Users\IEUser\AppData\Local\R\win-library\4.4\rmarkdo
wn\rmarkdown\lua\latex-div.lua" --embed-resources --standalone --highlight-style tango --pdf-eng
ine xelatex --variable graphics --include-in-header "C:\Users\IEUser\AppData\Local\Temp\Rtmpshad
1w\rmarkdown-str19fc2b4c1d15.html" --variable "geometry:margin=1in"
output file: rmarkdown-chinese.knit.md

! Package fontspec Error:
(fontspec)                The font "KaiTi" cannot be found; this may be but
(fontspec)                usually is not a fontspec bug. Either there is a
(fontspec)                typo in the font name/file, the font is not
(fontspec)                installed (correctly), or there is a bug in the
(fontspec)                underlying font loading engine (XeTeX/luaotfload).

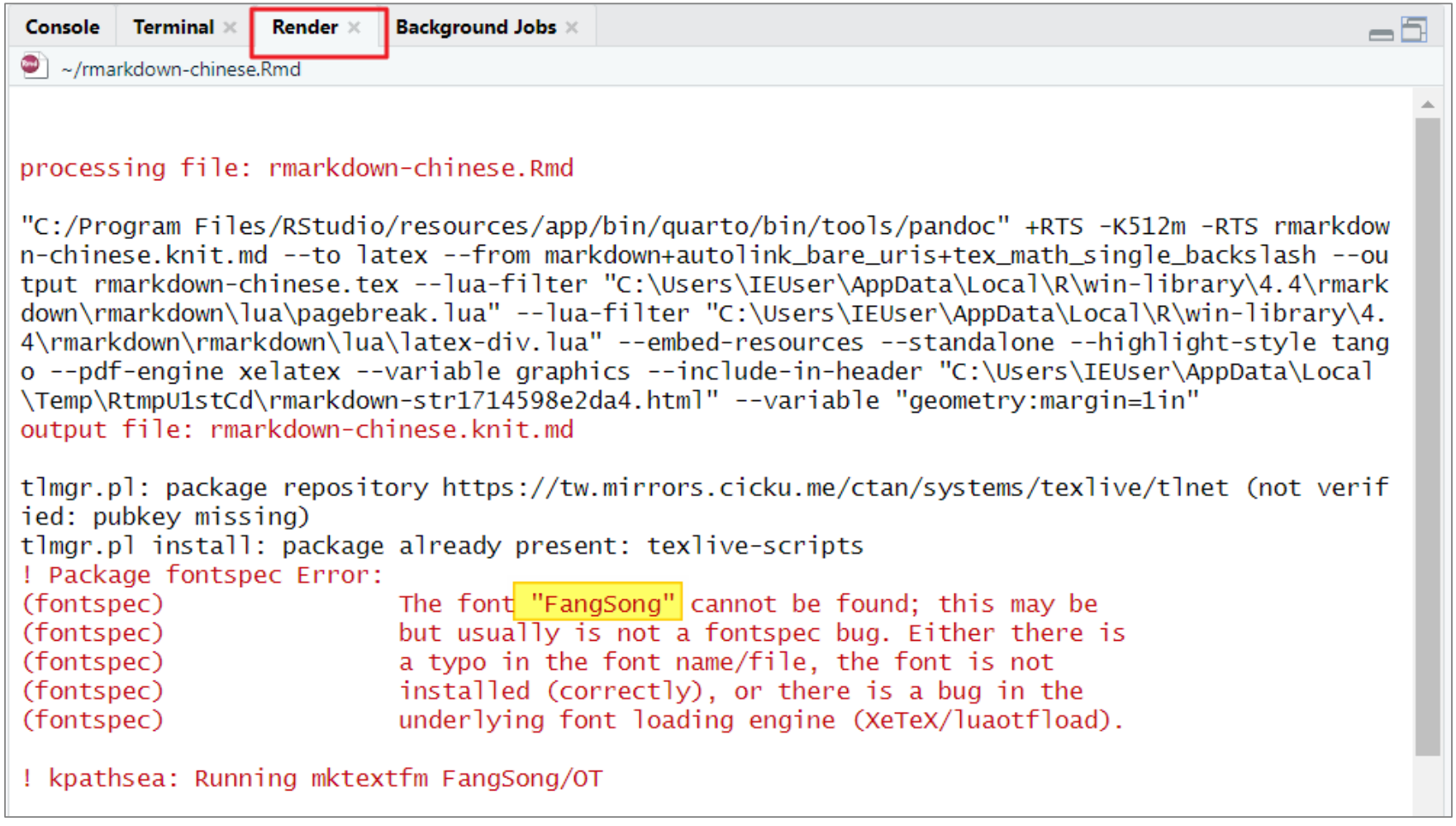
Error: LaTeX failed to compile rmarkdown-chinese.tex. See https://yihui.org/tinytex/r/#debugging
for debugging tips. See rmarkdown-chinese.log for more info.
Execution halted
```

下載與安裝 KaiTi.ttf

- 下載: https://github.com/rwepa/DataDemo/blob/master/fonts/KaiTi.ttf
- 安裝: 滑鼠右鍵 \ 為所有使用者安裝

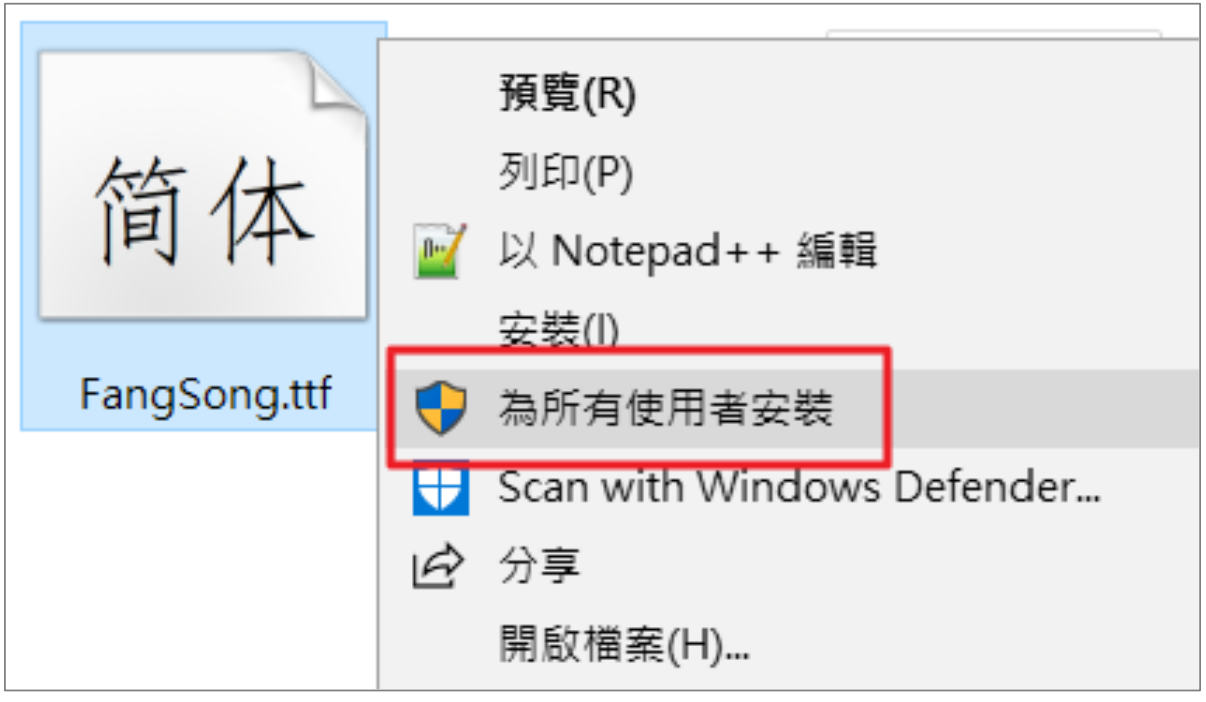


第3次Render - 缺少 FangSong 字型 (仿宋)

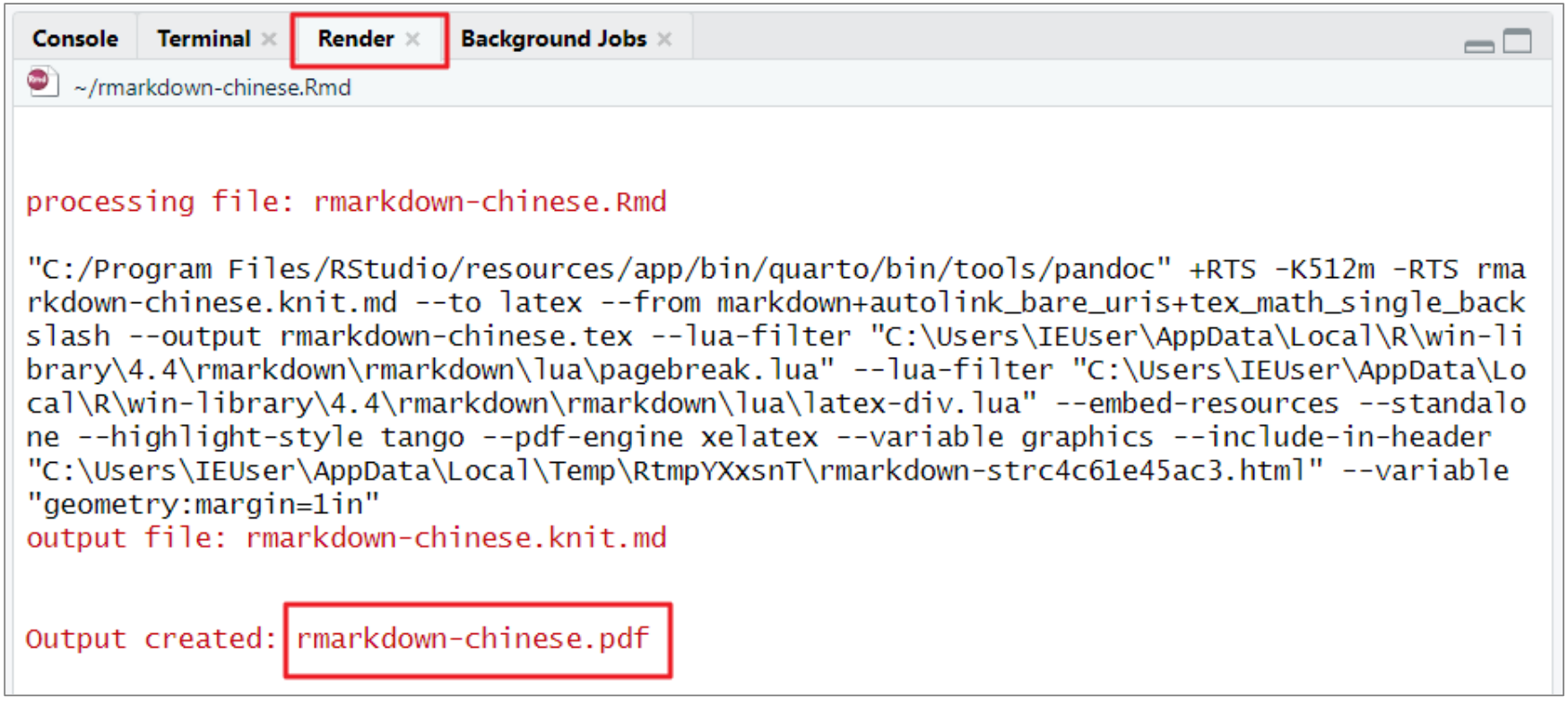


下載與安裝 FangSong.ttf

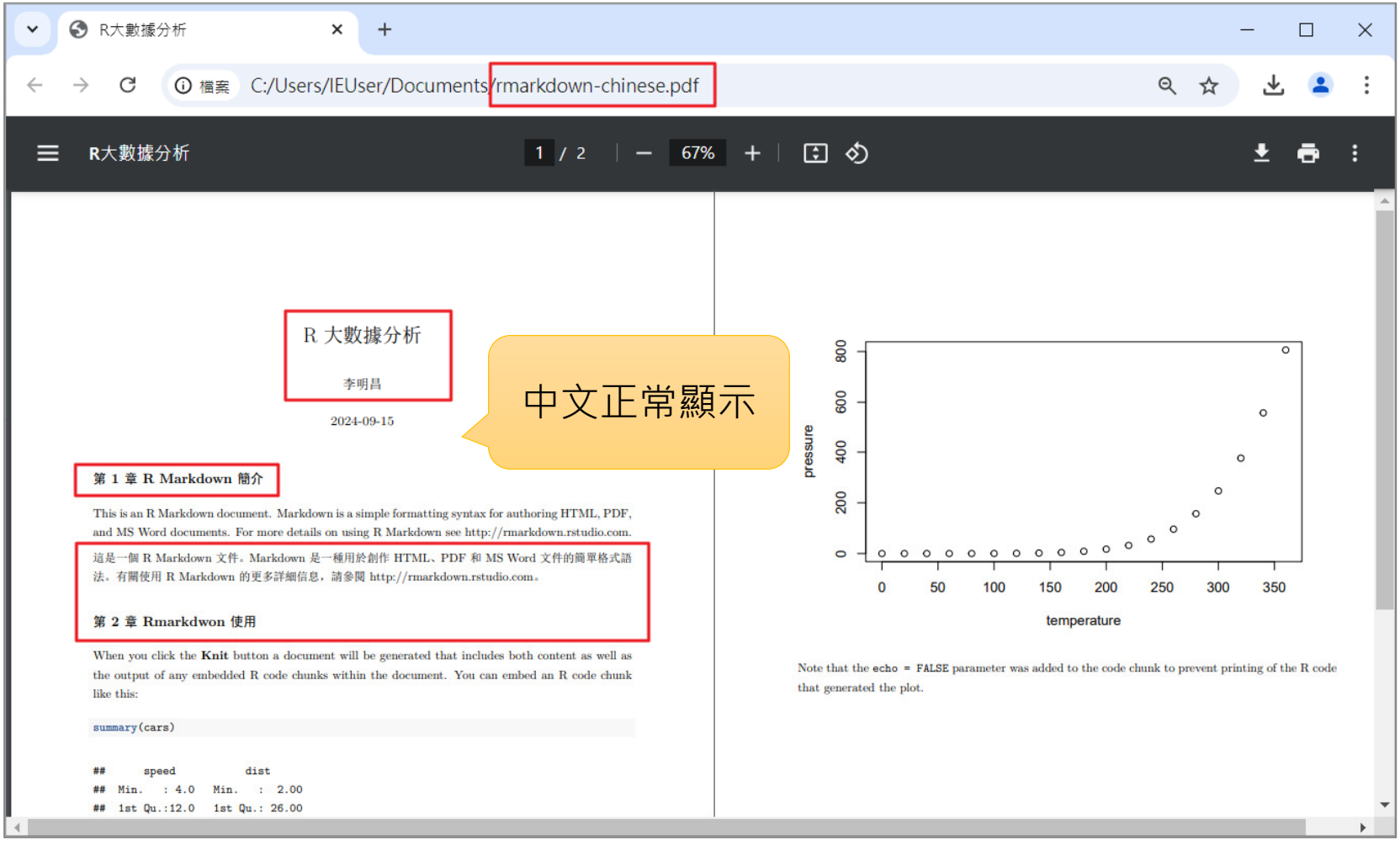
- 下載: https://github.com/rwepa/DataDemo/blob/master/fonts/FangSong.ttf
- 安裝: 滑鼠右鍵 \ 為所有使用者安裝



第4次Render – OK

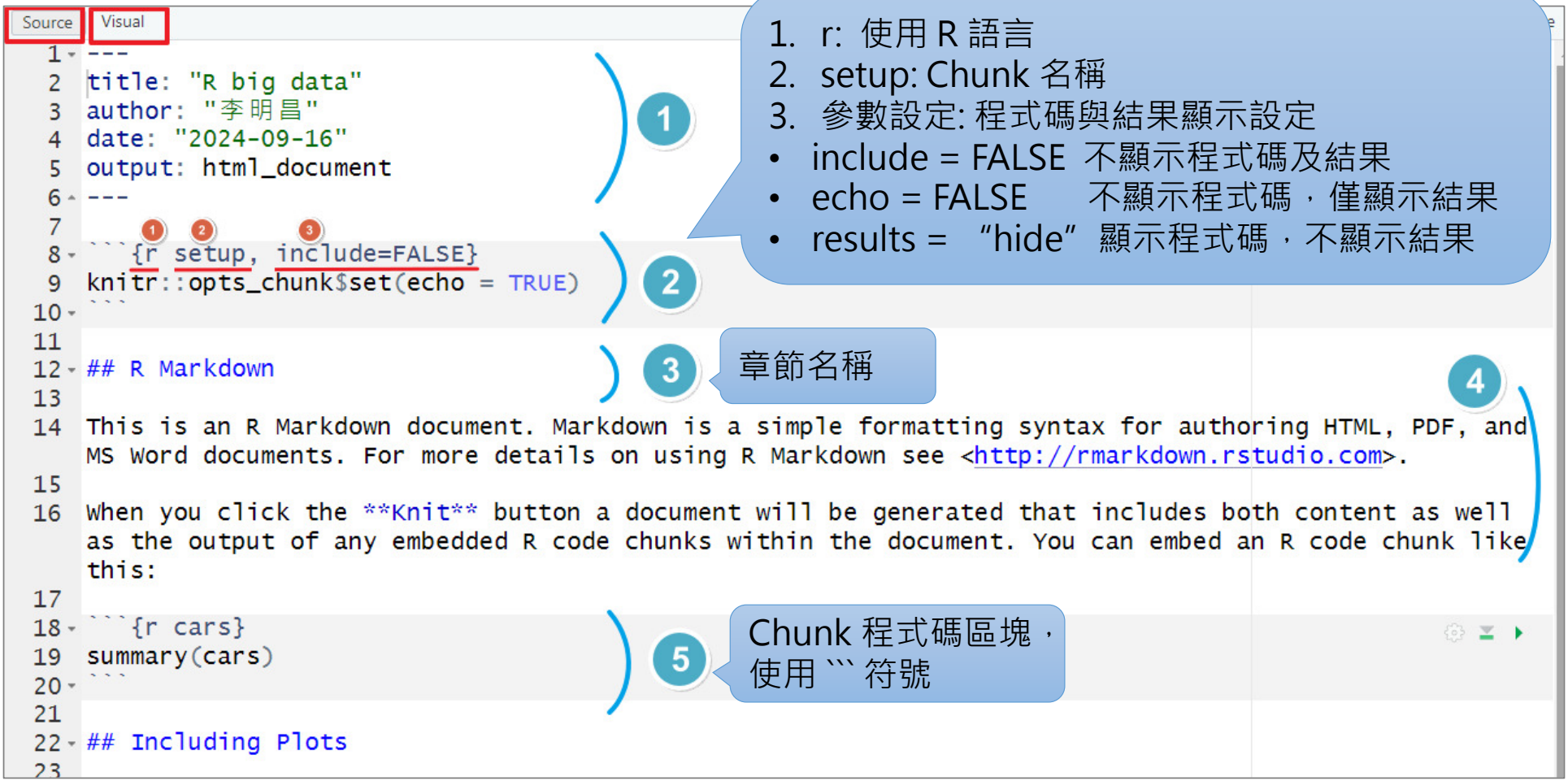


rmarkdown-chinese.pdf



4.R Markdown 使用

認識 Rmd 檔案




```
---
title: "R big data"
author: "李明昌"
date: "2024-09-16"
output: html_document
---

```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
```

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```{r cars}
summary(cars)
```

Including Plots
```

1. r: 使用 R 語言
2. setup: Chunk 名稱
3. 參數設定: 程式碼與結果顯示設定
   - include = FALSE 不顯示程式碼及結果
   - echo = FALSE 不顯示程式碼，僅顯示結果
   - results = “hide” 顯示程式碼，不顯示結果

R Markdown 參考資料

- R Markdown cheatsheet
  - https://rstudio.github.io/cheatsheets/rmarkdown.pdf
- R Markdown from Rstudio
  - https://rmarkdown.rstudio.com/
- Yihui Xie, J. J. Allaire, Garrett Grolemund, R Markdown: The Definitive Guide, 2023-12-30
  - https://bookdown.org/yihui/rmarkdown/
- Yihui Xie, Christophe Dervieux, Emily Riederer, R Markdown Cookbook, 2024-02-29
  - https://bookdown.org/yihui/rmarkdown-cookbook/

5.結論

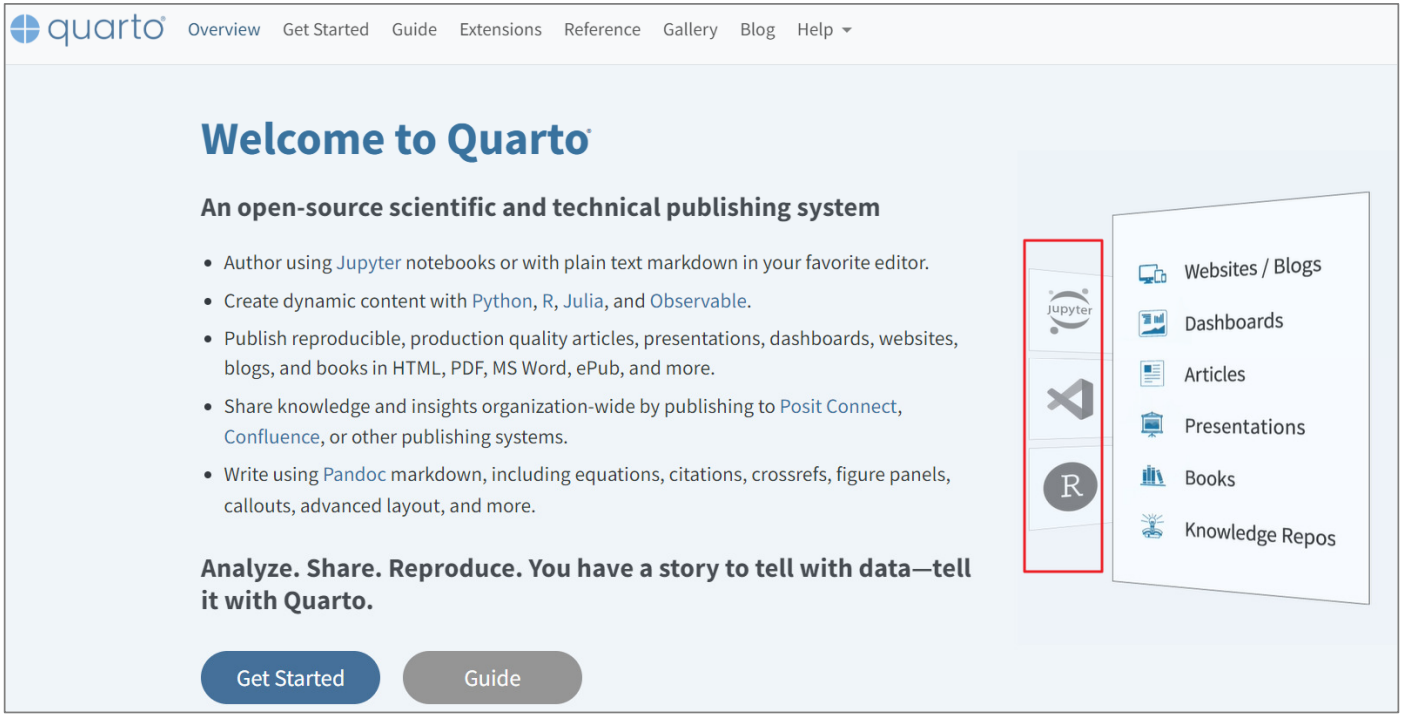
Rmarkdown → Quarto

Quarto

- R Markdown 進階版
- 支援 R, Python, Julia, Observable JS

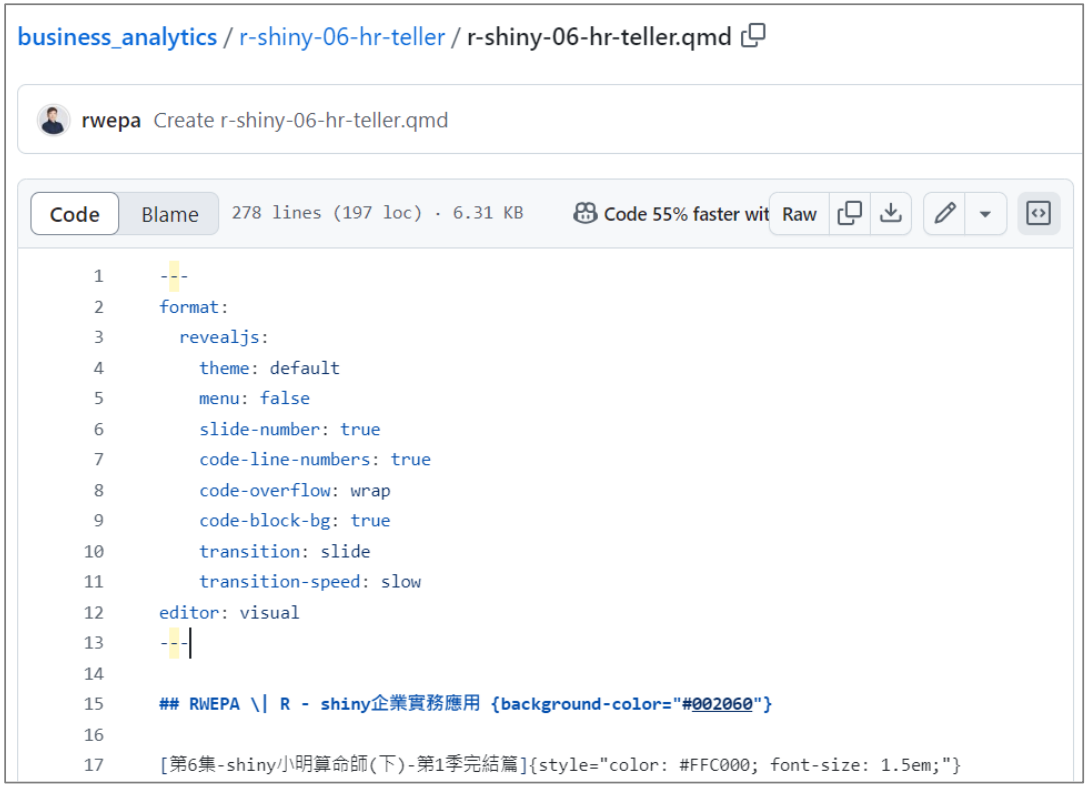
Quarto, Since 2022.8 (v1.0.38)

- Quarto: RMarkdowm 的下一世代產品.
- 參考: https://quarto.org/



Quarto 應用

- RWEPA | shiny企業實務應用 第6集-小明算命師(下) 【附小明算命師實作成果、投影片與中文字幕】
- r-shiny-06-hr-teller.qmd
- https://github.com/rwepa/business_analytics/blob/main/r-shiny-06-hr-teller/r-shiny-06-hr-teller.qmd



謝謝您的聆聽

Q & A

李明昌

alan9956@gmail.com

http://rwepa.blogspot.tw/