[— pdf_document: default author: “NM2207: Computational Media Literacy- Tang Ching Xian” date: “16 October 2023” output: html_document: null df_print: paged pdf_document: default title: “Week-9: Code-along & Challenge” —

Tidy Versus Non-Tidy (Slide #8)

```
# Load the tidyverse package
library(tidyverse)
```

```
## ── Attaching core tidyverse packages ──────────────────────── tidyverse 2.0.0 ──
## ✓ dplyr     1.1.2     ✓ readr     2.1.4
## ✓ forcats   1.0.0     ✓ stringr   1.5.0
## ✓ ggplot2   3.4.3     ✓ tibble    3.2.1
## ✓ lubridate 1.9.2     ✓ tidyr     1.3.0
## ✓ purrr     1.0.2
## ── Conflicts ────────────────────────────────────────── tidyverse_conflicts() ──
## ✖ dplyr::filter() masks stats::filter()
## ✖ dplyr::lag()    masks stats::lag()
## ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to
become errors
```

```
# Create a tidy data frame using the tribble function
tidydata <- tribble(
  ~country, ~year, ~cases, ~population,
  "Afghanistan", 1999, 745, 19987071,
  "Afghanistan", 2000, 2666, 20595360,
  "Brazil", 1999, 37737, 172006362,
  "Brazil", 2000, 80488, 174504898,
  "China", 1999, 212258, 1272915272,
  "China", 2000, 213766, 1280428583
)

# Display the tidy data frame
tidydata
```

```
## # A tibble: 6 × 4
##   country      year  cases population
##   <chr>       <dbl>  <dbl>      <dbl>
## 1 Afghanistan  1999    745   19987071
## 2 Afghanistan  2000   2666   20595360
## 3 Brazil       1999  37737  172006362
## 4 Brazil       2000  80488  174504898
## 5 China        1999 212258 1272915272
## 6 China        2000 213766 1280428583
```

Tidy-ing data: Example 1 (Slide #11 & #12 & #13)

```
nontidydata <- tribble(
~country,~year,~rate,
"Afghanistan", 1999, "745/19987071",
"Afghanistan", 2000, "2666/20595360",
"Brazil", 1999, "37737/172006362",
"Brazil", 2000, "80488/174504898",
"China", 1999, "212258/1272915272",
"China", 2000, "213766/1280428583")
nontidydata
```

```
## # A tibble: 6 × 3
##   country      year rate
##   <chr>       <dbl> <chr>
## 1 Afghanistan  1999 745/19987071
## 2 Afghanistan  2000 2666/20595360
## 3 Brazil       1999 37737/172006362
## 4 Brazil       2000 80488/174504898
## 5 China        1999 212258/1272915272
## 6 China        2000 213766/1280428583
```

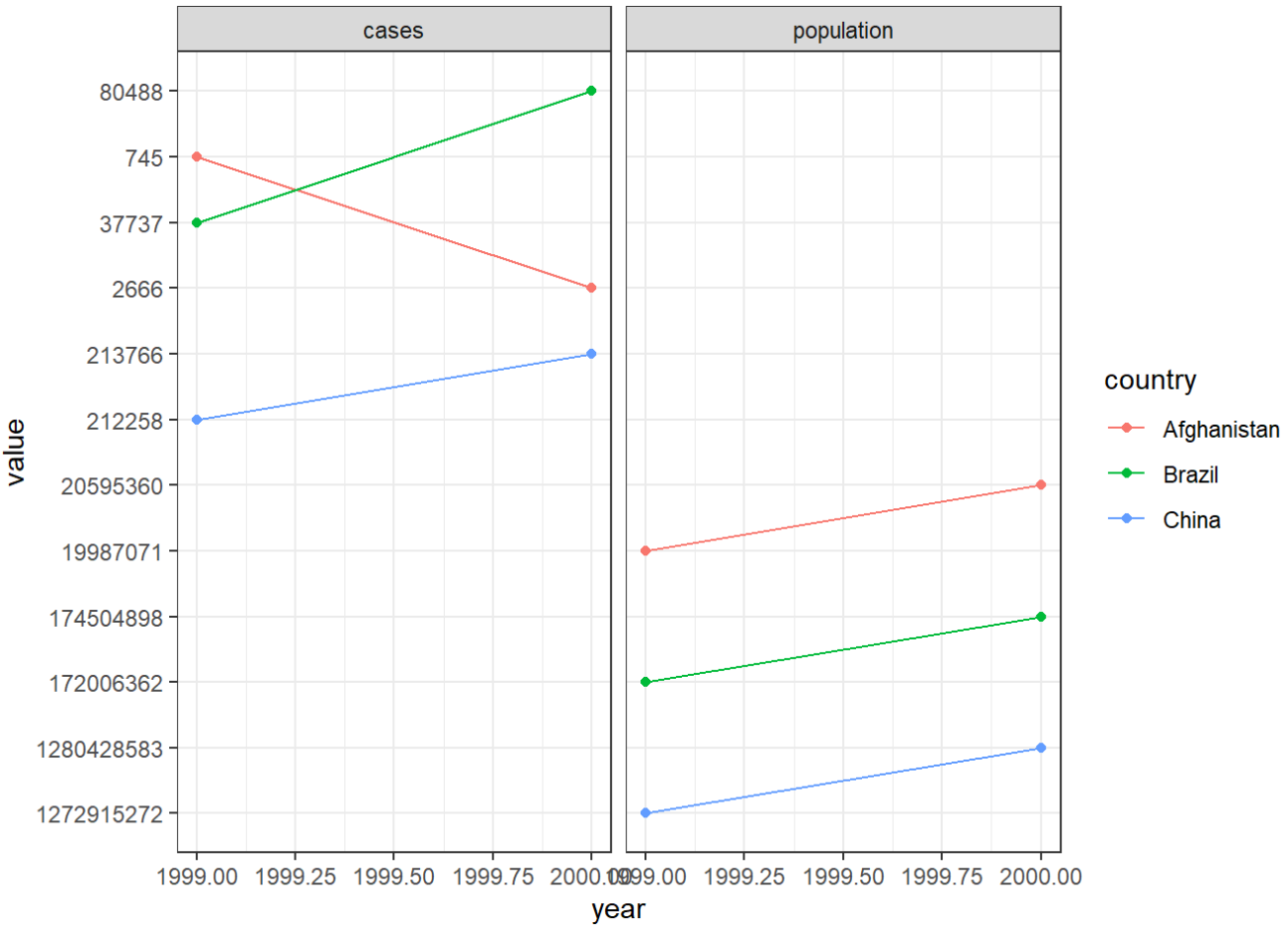
```
tidieddata <- nontidydata %>%
separate(rate, into = c("cases",
"population"),
sep = "/")
tidieddata
```

```
## # A tibble: 6 × 4
##   country      year cases  population
##   <chr>       <dbl> <chr>  <chr>
## 1 Afghanistan  1999 745    19987071
## 2 Afghanistan  2000 2666   20595360
## 3 Brazil       1999 37737  172006362
## 4 Brazil       2000 80488  174504898
## 5 China        1999 212258 1272915272
## 6 China        2000 213766 1280428583
```

```
# Pivot the tidieddata to long format using pivot_longer,
# creating new columns "measurement" and "value" to store variable names and values, respe
ctively.
newtidieddata <- tidieddata %>%
  pivot_longer(cols = cases:population, names_to = "measurement", values_to = "value")
newtidieddata
```

```
## # A tibble: 12 × 4
##    country      year measurement value
##    <chr>       <dbl> <chr>       <chr>
##  1 Afghanistan  1999 cases       745
##  2 Afghanistan  1999 population  19987071
##  3 Afghanistan  2000 cases       2666
##  4 Afghanistan  2000 population  20595360
##  5 Brazil       1999 cases       37737
##  6 Brazil       1999 population  172006362
##  7 Brazil       2000 cases       80488
##  8 Brazil       2000 population  174504898
##  9 China        1999 cases       212258
## 10 China        1999 population  1272915272
## 11 China        2000 cases       213766
## 12 China        2000 population  1280428583
```

```
# Create a ggplot visualization using newtidieddata:
# Scatter plot with lines connecting points, color-coded by country and faceted by measure
ment.
ggplot(newtidieddata) +
  aes(x = year, y = value, colour = country) +
  geom_point() +
  geom_line(aes(group = country)) +
  facet_wrap(~measurement) +
  theme_bw()
```



Tidy-ing data: Example 2 (Slide #14)

```
df <- tribble(
~id, ~bp1, ~bp2,
"A", 100, 120,
"B", 140, 115,
"C", 120, 125
)
df
```

```
## # A tibble: 3 × 3
##   id      bp1   bp2
##   <chr> <dbl> <dbl>
## 1 A       100   120
## 2 B       140   115
## 3 C       120   125
```

```
# Pivot the data to long format using pivot_longer
# creating new columns "measurement" and "value" to store variable names and values, respe
ctively.
df %>%
  pivot_longer(cols = bp1:bp2, names_to = "measurement", values_to = "value")
```

```
## # A tibble: 6 × 3
##   id    measurement value
##   <chr> <chr>       <dbl>
## 1 A     bp1           100
## 2 A     bp2           120
## 3 B     bp1           140
## 4 B     bp2           115
## 5 C     bp1           120
## 6 C     bp2           125
```

Tidy-ing data: Example 3 (Slide #18)

```
newtidieddata
```

```
## # A tibble: 12 × 4
##    country      year measurement value
##    <chr>       <dbl> <chr>       <chr>
##  1 Afghanistan  1999 cases       745
##  2 Afghanistan  1999 population  19987071
##  3 Afghanistan  2000 cases       2666
##  4 Afghanistan  2000 population  20595360
##  5 Brazil       1999 cases       37737
##  6 Brazil       1999 population  172006362
##  7 Brazil       2000 cases       80488
##  8 Brazil       2000 population  174504898
##  9 China        1999 cases       212258
## 10 China        1999 population  1272915272
## 11 China        2000 cases       213766
## 12 China        2000 population  1280428583
```

```
# creating new columns "cases" and "population" from the column "measurement"
newtidieddata %>%
pivot_wider(names_from="measurement",
values_from="value")
```

```
## # A tibble: 6 × 4
##   country      year cases  population
##   <chr>       <dbl> <chr>  <chr>
## 1 Afghanistan  1999 745    19987071
## 2 Afghanistan  2000 2666   20595360
## 3 Brazil       1999 37737  172006362
## 4 Brazil       2000 80488  174504898
## 5 China        1999 212258 1272915272
## 6 China        2000 213766 1280428583
```

Tidy-ing data: Example 4 (Slide #19)

```
df <- tribble(
~id, ~measurement, ~value,
"A", "bp1", 100,
"B", "bp1", 140,
"B", "bp2", 115,
"A", "bp2", 120,
"A", "bp3", 105
)
df
```

```
## # A tibble: 5 × 3
##   id    measurement value
##   <chr> <chr>       <dbl>
## 1 A     bp1           100
## 2 B     bp1           140
## 3 B     bp2           115
## 4 A     bp2           120
## 5 A     bp3           105
```

```r
# Pivot the data frame to wide format using pivot_wider
df %>%
  pivot_wider(names_from = measurement, values_from = value)
```

```
## # A tibble: 2 × 4
##   id      bp1   bp2   bp3
##   <chr> <dbl> <dbl> <dbl>
## 1 A       100   120   105
## 2 B       140   115    NA
```

Challenge week 9 Question 1

```r
# Load the tidyverse package
library(tidyverse)

# Load the billboard dataset
billboard
```

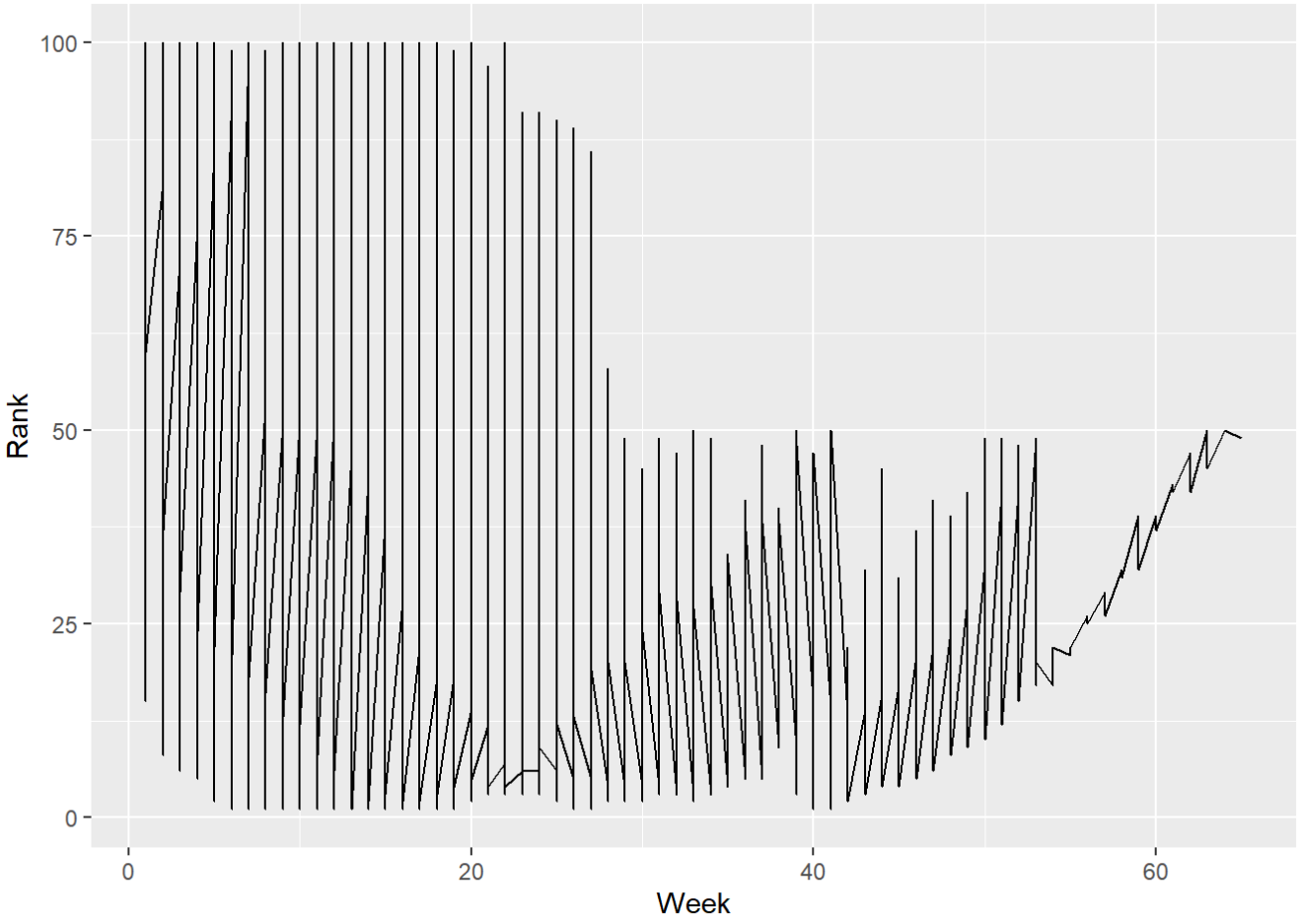
```
## # A tibble: 317 × 79
##    artist     track date.entered   wk1   wk2   wk3   wk4   wk5   wk6   wk7   wk8
##    <chr>      <chr> <date>       <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
##  1 2 Pac      Baby… 2000-02-26      87    82    72    77    87    94    99    NA
##  2 2Ge+her    The … 2000-09-02      91    87    92    NA    NA    NA    NA    NA
##  3 3 Doors D… Kryp… 2000-04-08      81    70    68    67    66    57    54    53
##  4 3 Doors D… Loser 2000-10-21      76    76    72    69    67    65    55    59
##  5 504 Boyz   Wobb… 2000-04-15      57    34    25    17    17    31    36    49
##  6 98^0       Give… 2000-08-19      51    39    34    26    26    19     2     2
##  7 A*Teens    Danc… 2000-07-08      97    97    96    95   100    NA    NA    NA
##  8 Aaliyah    I Do… 2000-01-29      84    62    51    41    38    35    35    38
##  9 Aaliyah    Try … 2000-03-18      59    53    38    28    21    18    16    14
## 10 Adams, Yo… Open… 2000-08-26      76    76    74    69    68    67    61    58
## # ℹ 307 more rows
## # ℹ 68 more variables: wk9 <dbl>, wk10 <dbl>, wk11 <dbl>, wk12 <dbl>,
## #   wk13 <dbl>, wk14 <dbl>, wk15 <dbl>, wk16 <dbl>, wk17 <dbl>, wk18 <dbl>,
## #   wk19 <dbl>, wk20 <dbl>, wk21 <dbl>, wk22 <dbl>, wk23 <dbl>, wk24 <dbl>,
## #   wk25 <dbl>, wk26 <dbl>, wk27 <dbl>, wk28 <dbl>, wk29 <dbl>, wk30 <dbl>,
## #   wk31 <dbl>, wk32 <dbl>, wk33 <dbl>, wk34 <dbl>, wk35 <dbl>, wk36 <dbl>,
## #   wk37 <dbl>, wk38 <dbl>, wk39 <dbl>, wk40 <dbl>, wk41 <dbl>, wk42 <dbl>, …
```

```r
# Pivot longer to arrange the rank values under new columns "week" and "rank"
billboard_long <- billboard %>%
  pivot_longer(cols = starts_with("wk"),
               names_to = "week",
               values_to = "rank",
# Remove observations with the entries "NA"
               values_drop_na = TRUE) %>%
# To only have numbers in the column "week"
  mutate(week = parse_number(week))

billboard_long
```

```
## # A tibble: 5,307 × 5
##    artist  track                   date.entered  week  rank
##    <chr>   <chr>                   <date>       <dbl> <dbl>
##  1 2 Pac   Baby Don't Cry (Keep... 2000-02-26       1    87
##  2 2 Pac   Baby Don't Cry (Keep... 2000-02-26       2    82
##  3 2 Pac   Baby Don't Cry (Keep... 2000-02-26       3    72
##  4 2 Pac   Baby Don't Cry (Keep... 2000-02-26       4    77
##  5 2 Pac   Baby Don't Cry (Keep... 2000-02-26       5    87
##  6 2 Pac   Baby Don't Cry (Keep... 2000-02-26       6    94
##  7 2 Pac   Baby Don't Cry (Keep... 2000-02-26       7    99
##  8 2Ge+her The Hardest Part Of ... 2000-09-02       1    91
##  9 2Ge+her The Hardest Part Of ... 2000-09-02       2    87
## 10 2Ge+her The Hardest Part Of ... 2000-09-02       3    92
## # ℹ 5,297 more rows
```

```
# Plot the rank along the y-axis and week along the x-axis
ggplot(billboard_long, aes(x = week, y = rank)) +
  geom_line() +
  labs(x = "Week", y = "Rank")
```



Challenge week 9 Question 2

```
# Load the cms_patient_experience dataset
cms_patient_experience
```

```
## # A tibble: 500 × 5
##    org_pac_id org_nm                              measure_cd measure_title prf_rate
##    <chr>      <chr>                               <chr>      <chr>            <dbl>
##  1 0446157747 USC CARE MEDICAL GROUP INC          CAHPS_GRP… CAHPS for MI…       63
##  2 0446157747 USC CARE MEDICAL GROUP INC          CAHPS_GRP… CAHPS for MI…       87
##  3 0446157747 USC CARE MEDICAL GROUP INC          CAHPS_GRP… CAHPS for MI…       86
##  4 0446157747 USC CARE MEDICAL GROUP INC          CAHPS_GRP… CAHPS for MI…       57
##  5 0446157747 USC CARE MEDICAL GROUP INC          CAHPS_GRP… CAHPS for MI…       85
##  6 0446157747 USC CARE MEDICAL GROUP INC          CAHPS_GRP… CAHPS for MI…       24
##  7 0446162697 ASSOCIATION OF UNIVERSITY PHYSI… CAHPS_GRP… CAHPS for MI…       59
##  8 0446162697 ASSOCIATION OF UNIVERSITY PHYSI… CAHPS_GRP… CAHPS for MI…       85
##  9 0446162697 ASSOCIATION OF UNIVERSITY PHYSI… CAHPS_GRP… CAHPS for MI…       83
## 10 0446162697 ASSOCIATION OF UNIVERSITY PHYSI… CAHPS_GRP… CAHPS for MI…       63
## # ℹ 490 more rows
```

```
# Pivot wider to create columns "measure_cd"
# Values in the columns correspond to "column prf_rate"
# Use id_cols to specify the columns identifying each row
cms_wide2 <- cms_patient_experience %>%
  pivot_wider(names_from = measure_cd, values_from = prf_rate, id_cols = starts_with("or
g"))

cms_wide2
```

```
## # A tibble: 95 × 8
##    org_pac_id org_nm CAHPS_GRP_1 CAHPS_GRP_2 CAHPS_GRP_3 CAHPS_GRP_5 CAHPS_GRP_8
##    <chr>      <chr>        <dbl>       <dbl>       <dbl>       <dbl>       <dbl>
##  1 0446157747 USC C…          63          87          86          57          85
##  2 0446162697 ASSOC…          59          85          83          63          88
##  3 0547164295 BEAVE…          49          NA          75          44          73
##  4 0749333730 CAPE …          67          84          85          65          82
##  5 0840104360 ALLIA…          66          87          87          64          87
##  6 0840109864 REX H…          73          87          84          67          91
##  7 0840513552 SCL H…          58          83          76          58          78
##  8 0941545784 GRITM…          46          86          81          54          NA
##  9 1052612785 COMMU…          65          84          80          58          87
## 10 1254237779 OUR L…          61          NA          NA          65          NA
## # ℹ 85 more rows
## # ℹ 1 more variable: CAHPS_GRP_12 <dbl>
```