Hospital Length of Stays

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```
library(tidyverse)
library(NHSRdatasets)
library(knitr)
library(kableExtra)
```

Load the data from the package

```
data("LOS_model")
```

Inspect

```
str(LOS_model)
```

```
## tibble [300 x 5] (S3: tbl_df/tbl/data.frame)
##  $ ID          : int [1:300] 1 2 3 4 5 6 7 8 9 10 ...
##  $ Organisation: Ord.factor w/ 10 levels "Trust1"<"Trust2"<..: 1 2 3 4 5 6 7 8 9 10 ...
##  $ Age         : int [1:300] 55 27 93 45 70 60 25 48 51 81 ...
##  $ LOS         : int [1:300] 2 1 12 3 11 7 4 4 7 1 ...
##  $ Death       : int [1:300] 0 0 0 1 0 0 0 0 1 0 ...
```

```
head(LOS_model)
```

```
## # A tibble: 6 x 5
##      ID Organisation   Age   LOS Death
##   <int> <ord>        <int> <int> <int>
## 1     1 Trust1          55     2     0
## 2     2 Trust2          27     1     0
## 3     3 Trust3          93    12     0
## 4     4 Trust4          45     3     1
## 5     5 Trust5          70    11     0
## 6     6 Trust6          60     7     0
```

Make Death a factor

```
hospital_data <- LOS_model %>%
  mutate(Death = factor(Death))

head(hospital_data)
```

```
## # A tibble: 6 x 5
##      ID Organisation   Age   LOS Death
##   <int> <ord>        <int> <int> <fct>
## 1     1 Trust1          55     2 0
## 2     2 Trust2          27     1 0
## 3     3 Trust3          93    12 0
## 4     4 Trust4          45     3 1
## 5     5 Trust5          70    11 0
## 6     6 Trust6          60     7 0
```

Recode Death levels

```
#Instead of 0s and 1s, died or survived.
hospital_data <-  hospital_data %>%
  mutate(Death = Death %>%
           fct_recode("Survived" = "0",
                      "Died" = "1"))
head(hospital_data)
```

```
## # A tibble: 6 x 5
##      ID Organisation   Age   LOS Death
##   <int> <ord>        <int> <int> <fct>
## 1     1 Trust1          55     2 Survived
## 2     2 Trust2          27     1 Survived
## 3     3 Trust3          93    12 Survived
## 4     4 Trust4          45     3 Died
## 5     5 Trust5          70    11 Survived
## 6     6 Trust6          60     7 Survived
```

Create a summary table where each combination of Organisation and Death gets a count (n).

```
hosp_summary <-  hospital_data %>%
  group_by(Organisation, Death) %>%
  tally()
```

Make a wide table with Dead and Survived as rows with a column for each Trust

```
hosp_data_wide <- hosp_summary %>%
  pivot_wider(
    names_from = Organisation,
    values_from = n
  )
```

Another pivot with Survived and Died as columns, Trusts as rows.

Also calculate the % survived for each Trust

```
hosp_pretty <-  hosp_summary %>%
  pivot_wider(
    names_from = Death,
    values_from = n
  ) %>%
  mutate(Total = Survived + Died,
         Percent_Survived = (Survived/Total)*100)
```

Make the wide table pretty with kable(), col.names to change the name of the columns, digits to round the percentages, caption to put a title, align, lcccc = aligns to the middle.

```
hosp_pretty %>%
  kable(
    col.names = c("Trust" , "Surivived", "Died", "Total", "Percent Survived"),
    digits = 0,
    caption = "Hospital Length of Stays data: Percent Survived by Trust",
    align = "lcccc"
  )
```

Table 1: Hospital Length of Stays data: Percent Survived by Trust

Trust	Surivived	Died	Total	Percent Survived
Trust1	23	7	30	77
Trust2	25	5	30	83
Trust3	24	6	30	80
Trust4	26	4	30	87
Trust5	23	7	30	77
Trust6	26	4	30	87
Trust7	22	8	30	73

Trust	Surivived	Died	Total	Percent Survived
Trust8	25	5	30	83
Trust9	27	3	30	90
Trust10	26	4	30	87

```
#  ##this below is from kableExtra package, problems with knitting it with pdf (so I commented them out
#  kable_styling("striped", full_width = FALSE) %>%
# footnote("Data from LOS model")
```

Let's knit to PDF