# Hospital Length of Stays

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### 2024-10-15

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

# Load the data from the package

```r
data("LOS_model")
?LOS_model
```

# Inspect

```r
summary(LOS_model)
```

```
##        ID           Organisation      Age            LOS
##  Min.   :  1.00   Trust1 : 30   Min.   : 5.00   Min.   : 1.000
##  1st Qu.: 75.75   Trust2 : 30   1st Qu.:24.00   1st Qu.: 2.000
##  Median :150.50   Trust3 : 30   Median :54.00   Median : 4.000
##  Mean   :150.50   Trust4 : 30   Mean   :50.66   Mean   : 4.937
##  3rd Qu.:225.25   Trust5 : 30   3rd Qu.:75.25   3rd Qu.: 7.000
##  Max.   :300.00   Trust6 : 30   Max.   :95.00   Max.   :18.000
##                   (Other):120
##      Death
##  Min.   :0.0000
##  1st Qu.:0.0000
##  Median :0.0000
##  Mean   :0.1767
##  3rd Qu.:0.0000
##  Max.   :1.0000
##
```

# Make Death a factor

```
LOS_model$Death = as.factor(LOS_model$Death)
```

## Recode Death levels

```
mut_df = LOS_model %>%
  mutate(Death = Death %>%
           fct_recode("Survived" = "0", "Died" = "1"))
```

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

```
# table(mut_df$Organisation, mut_df$Death)

summ_df = mut_df %>%
  group_by(Organisation, Death) %>%
  tally()
```

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

```
# t(table(mut_df$Organisation, mut_df$Death))

wide_df = summ_df %>%
  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

```
perc_df = summ_df %>%
  pivot_wider(
    names_from = Death,
    values_from = n
  ) %>%
  mutate(Total = Survived + Died,
         Percent_Survived = (Survived / Total) * 100) %>%
  mutate(Organisation = Organisation %>%
           fct_recode("Trust 1" = "Trust1", "Trust 2" = "Trust2", "Trust 3" = "Trust3", "Trust 4" = "Tr
```

## Make the wide table pretty with kable()

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

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

| Trust | Survived | Died | Total | Survived (%) |
|---|---|---|---|---|
| Trust 1 | 23 | 7 | 30 | 77 |
| Trust 2 | 25 | 5 | 30 | 83 |
| Trust 3 | 24 | 6 | 30 | 80 |
| Trust 4 | 26 | 4 | 30 | 87 |
| Trust 5 | 23 | 7 | 30 | 77 |
| Trust 6 | 26 | 4 | 30 | 87 |
| Trust 7 | 22 | 8 | 30 | 73 |
| Trust 8 | 25 | 5 | 30 | 83 |
| Trust 9 | 27 | 3 | 30 | 90 |
| Trust 10 | 26 | 4 | 30 | 87 |

```
  #kable_styling(
   # "striped",
    #full_width = FALSE
  #) %>%
  #footnote("Data from LOS_model")
# kableExtra stuff usually doesn't knit well to pdf
```

## Let's knit to PDF