

# lab-07-simpsons.Rmd

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17 March 2021

## Packages

```
library(tidyverse)
library(mosaicData)
```

## Exercises

1.

```
?Whickham
```

Your answer: The data is observational as the description states that is based on age, smoking, and mortality, which are all observable events and not produced via experiments.

2.

```
nrow(Whickham)
```

```
## [1] 1314
```

Your answer; there are 1,314 observations . as we know every row is an observations .

3.

```
names(Whickham)
```

```
## [1] "outcome" "smoker" "age"
```

Your answer: there are 3 variables “outcome” , “smoker” and “age”

```
unique(Whickham$outcome)
```

```
## [1] Alive Dead
```

```
## Levels: Alive Dead
```

```
unique(Whickham$smoker)
```

```
## [1] Yes No
```

```
## Levels: No Yes
```

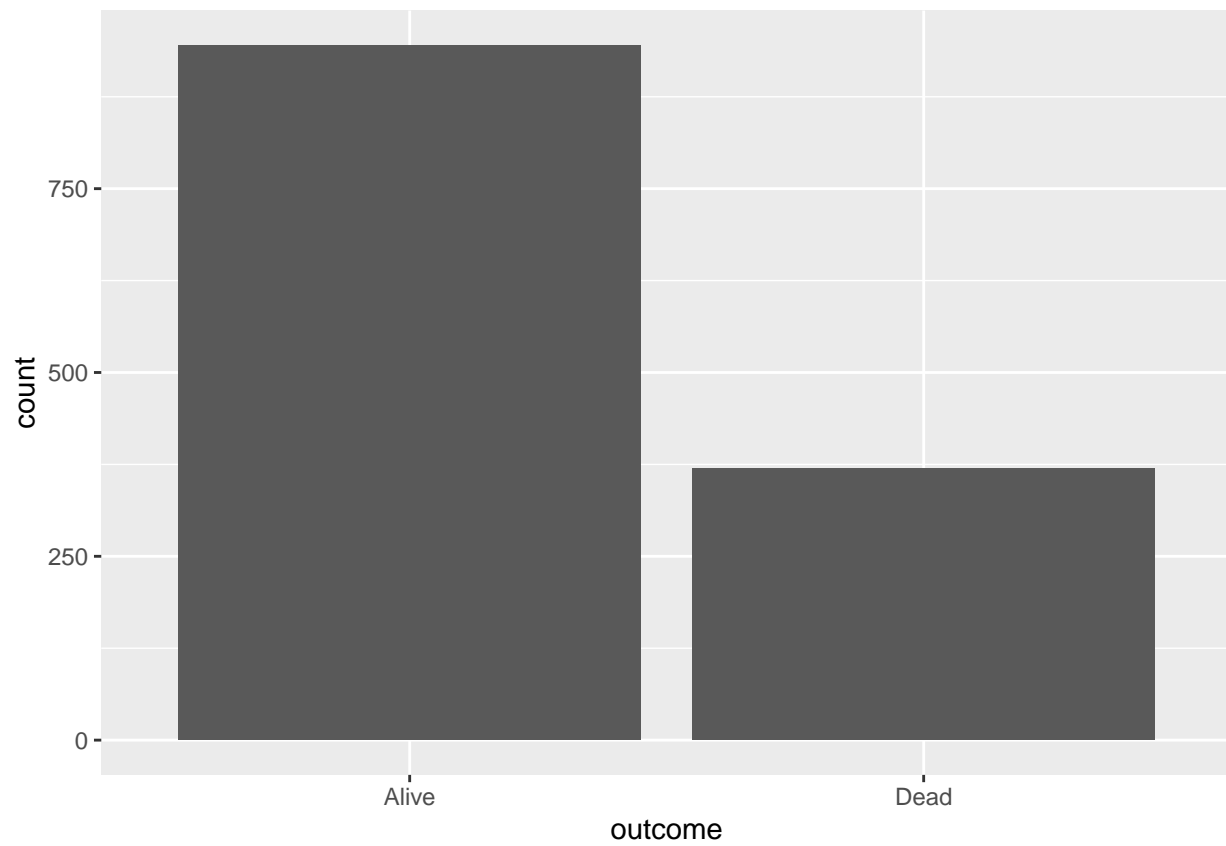
```
unique(Whickham$age)
```

```
## [1] 23 18 71 67 64 38 45 76 28 27 34 20 72 48 66 30 33 68 61 43 47 22 39 80 59
## [26] 56 62 51 32 60 37 36 50 55 73 52 25 53 31 54 69 79 75 21 29 24 26 49 84 40
## [51] 44 74 46 35 77 57 42 81 19 63 78 83 82 70 58 41 65
```

Your answer: Using the `unique()` function on the 3 variables we could see that “outcome” only takes Alive or Dead value, which makes it categorical non-ordinal. “smoker” only takes Yes or No, which also makes it categorical non-ordinal. Age is numerical continuous data.

One of the best ways to visualise categorical data is through the use of bar charts.

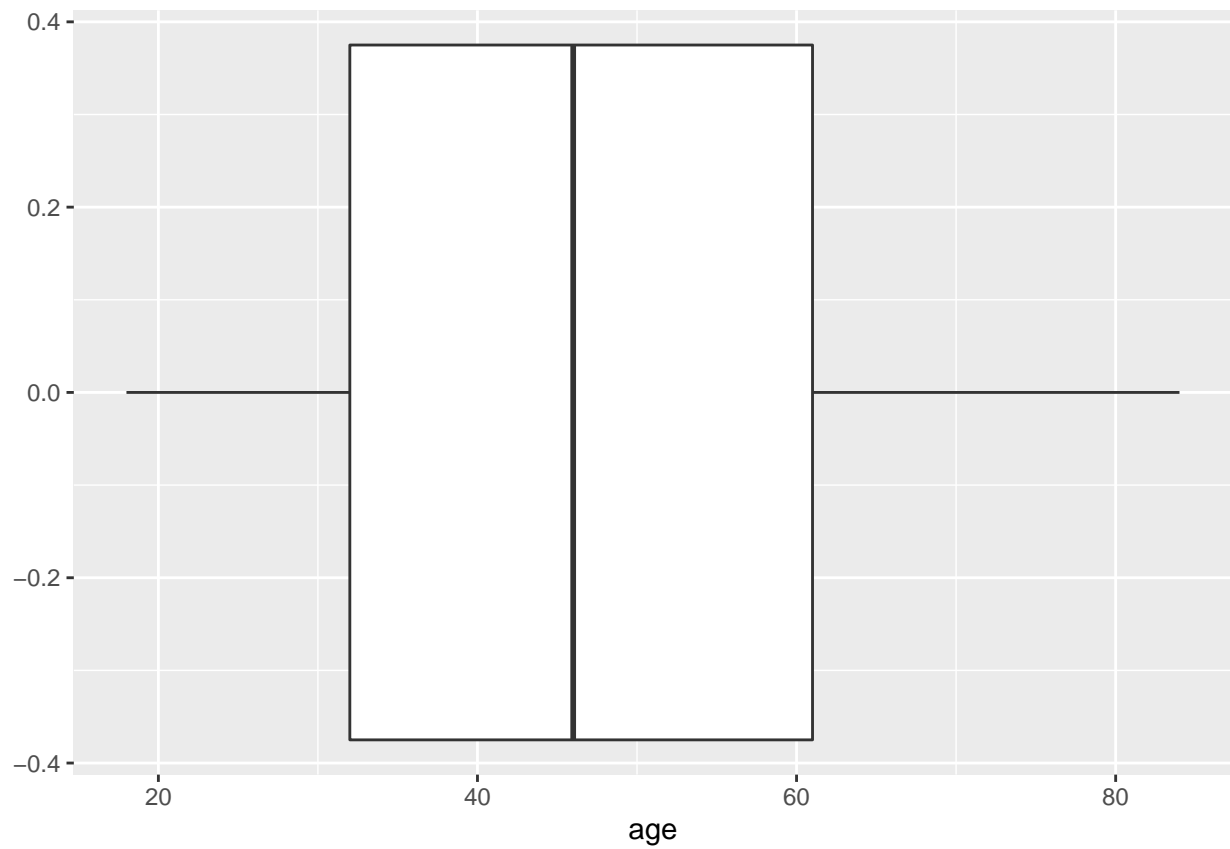
```
ggplot(Whickham, aes(x = outcome)) +  
  geom_bar()
```



```
ggplot(Whickham, aes(x = smoker)) +  
  geom_bar()
```



```
ggplot(Whickham, aes(x = age)) +  
  geom_boxplot()
```

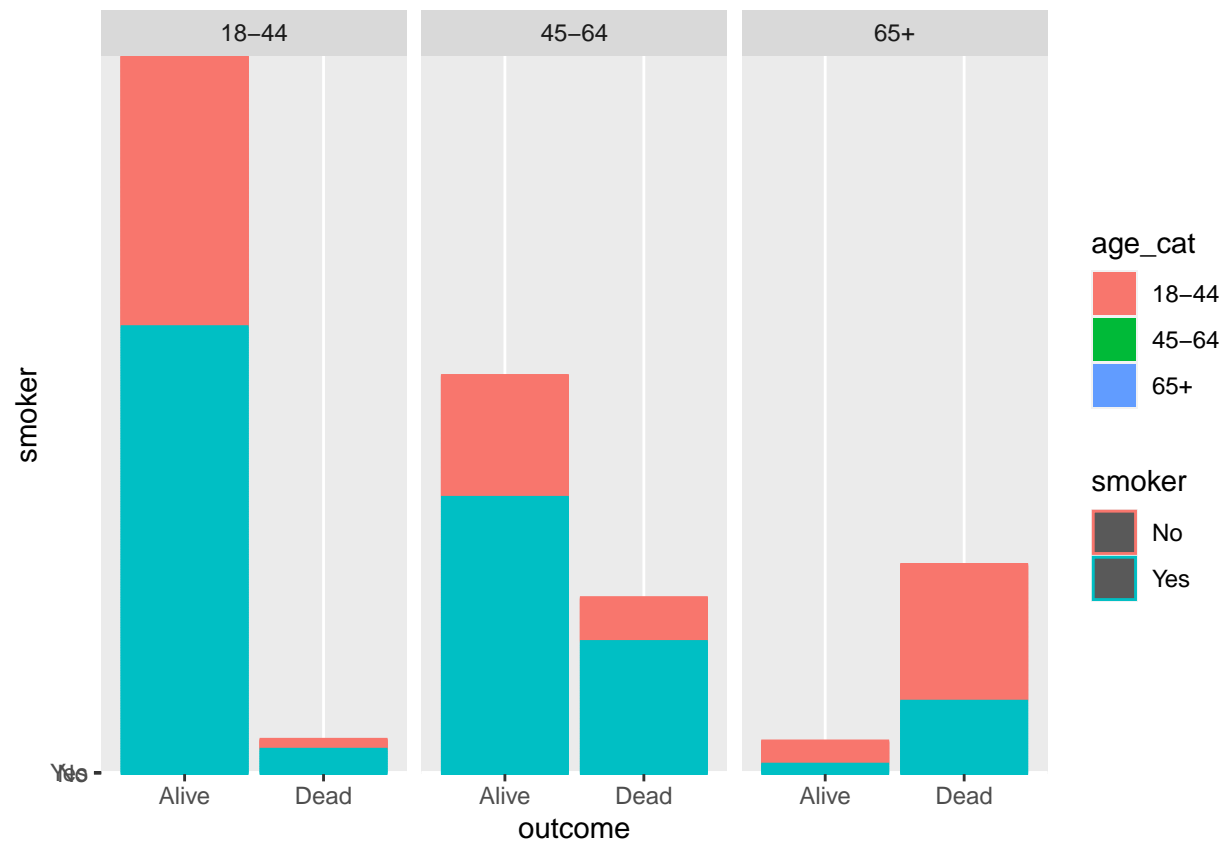


4.

```
ggplot(data=Whickham, aes(x=smoker, y=outcome, color=outcome)) + geom_bar(stat="identity")
```



```
ggplot(data=Whickham, aes(x=outcome, y=smoker,color=smoker, fill=age_cat)) + geom_bar(stat="identity")
```



Knit, commit, and push to github.