lab-07-simpsons.Rmd

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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 observation.

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)
```

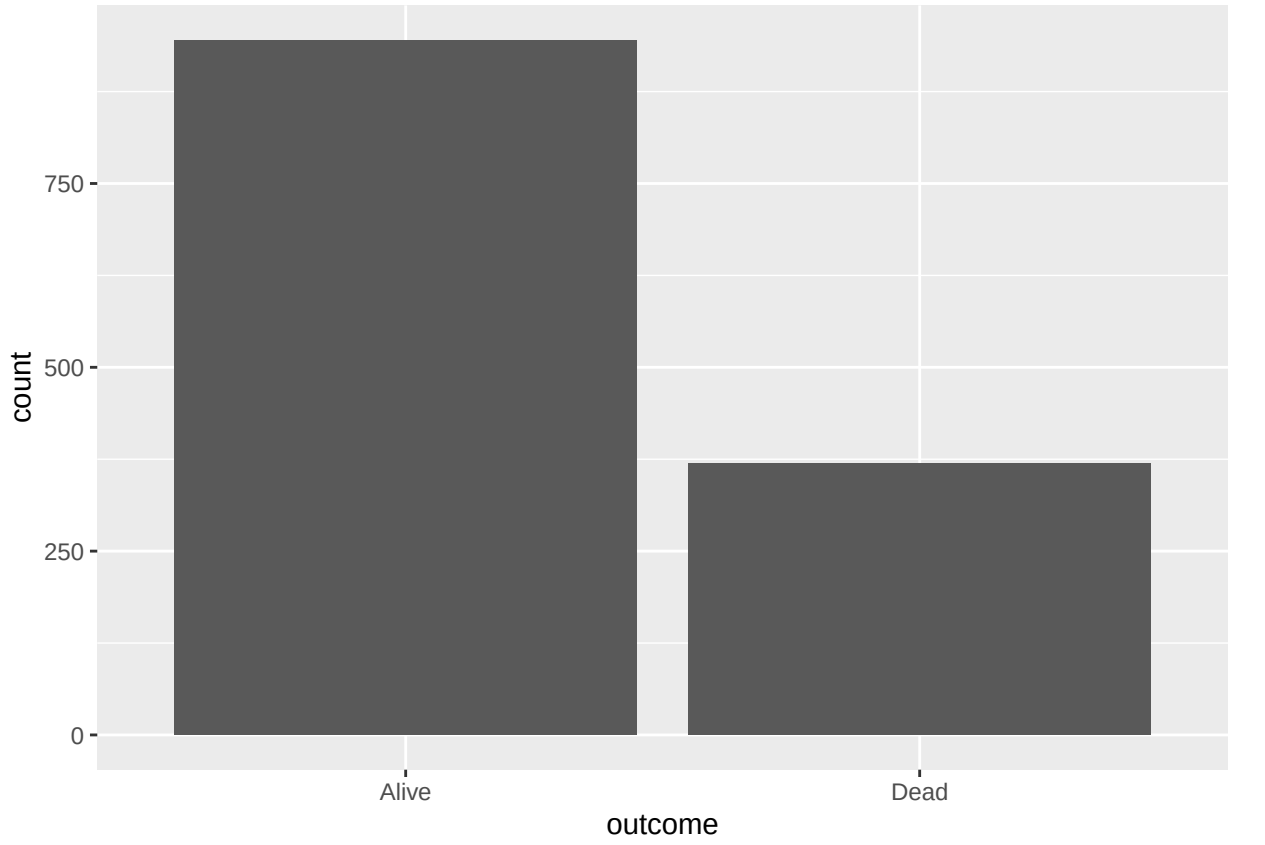
```
##  [1] 23 18 71 67 64 38 45 76 28 27 34 20 72 48 66 30 33 68 61 43 47 22 39 80 59
## [26] 56 62 51 32 60 37 36 50 55 73 52 25 53 31 54 69 79 75 21 29 24 26 49 84 40
## [51] 44 74 46 35 77 57 42 81 19 63 78 83 82 70 58 41 65
```

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

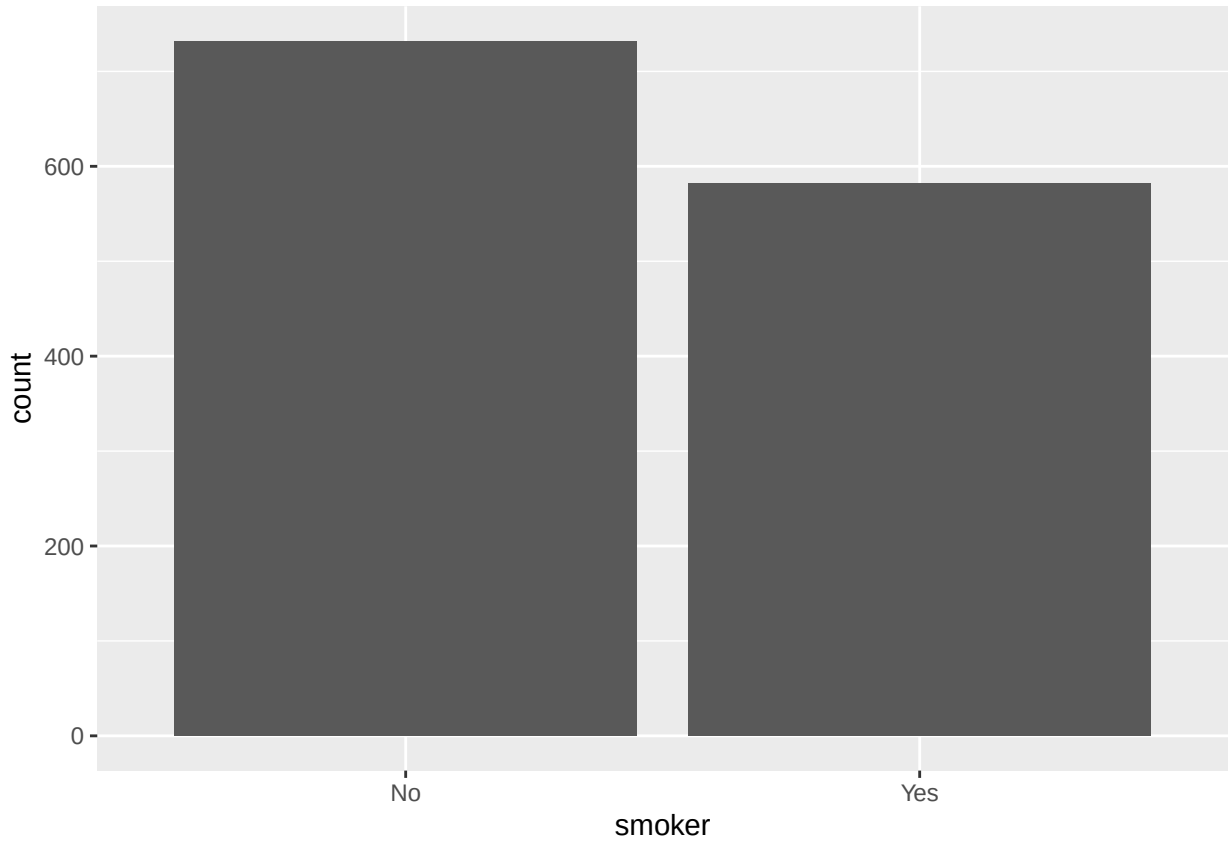
categorical non-ordinal. Age is numerical continous data.

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

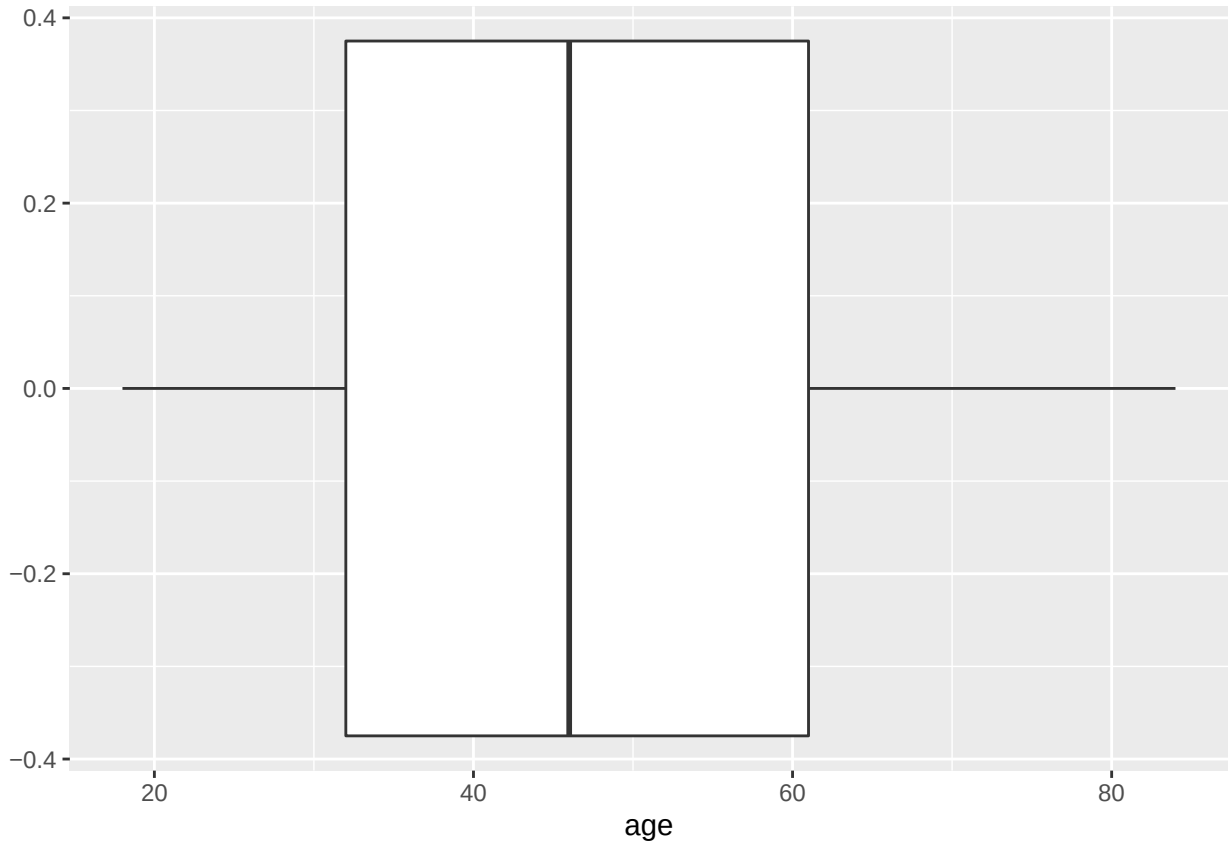
```
ggplot(Whickham,aes(x = outcome)) +
  geom_bar()
```




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

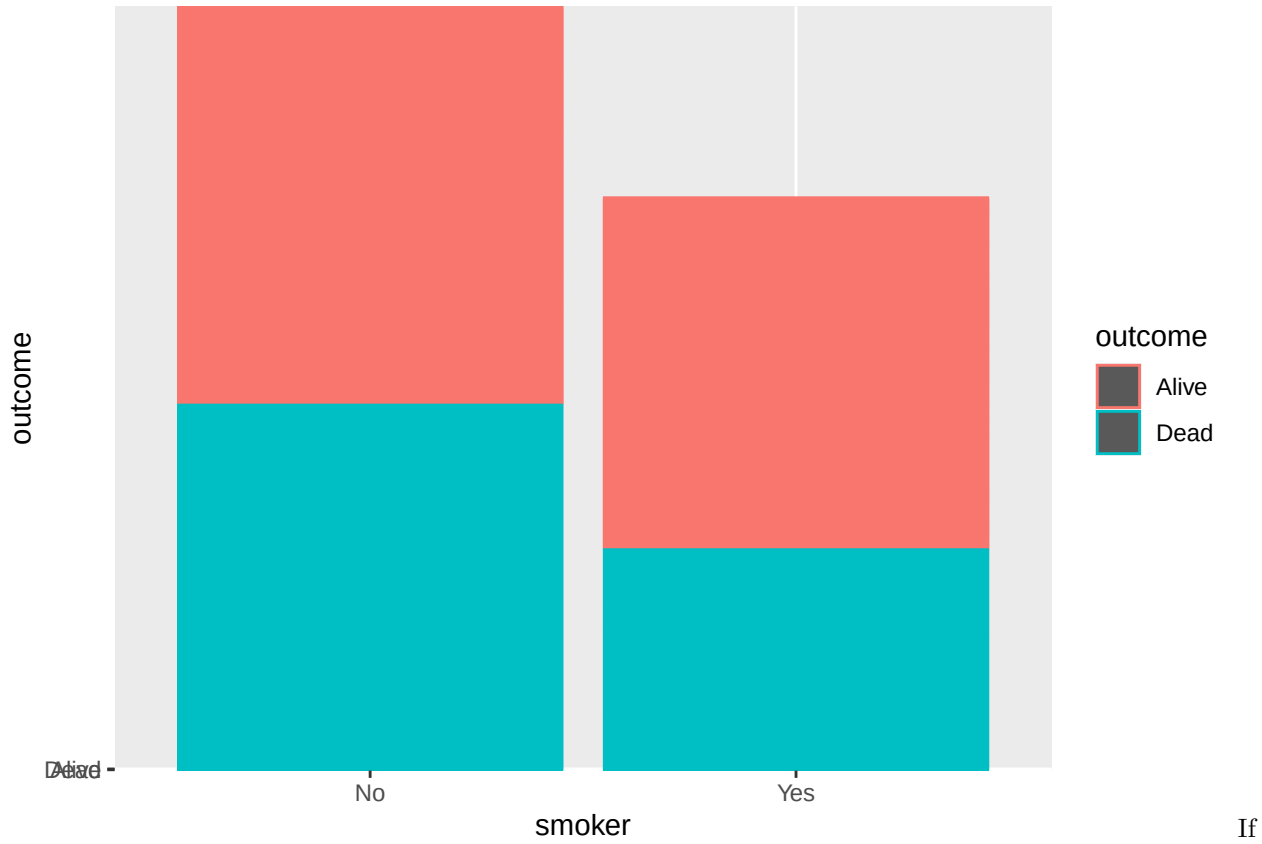



```
ggplot(Whickham,aes(x = age))+
  geom_boxplot()
```



4.

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



If people who smoke continue to smoke, the number of dead ones may increase.

Knit, commit, and push to github.

5.

```
Whickham %>%
  count(smoker, outcome)
```

```
##   smoker outcome   n
## 1     No   Alive 502
## 2     No    Dead 230
## 3    Yes   Alive 443
## 4    Yes    Dead 139
```

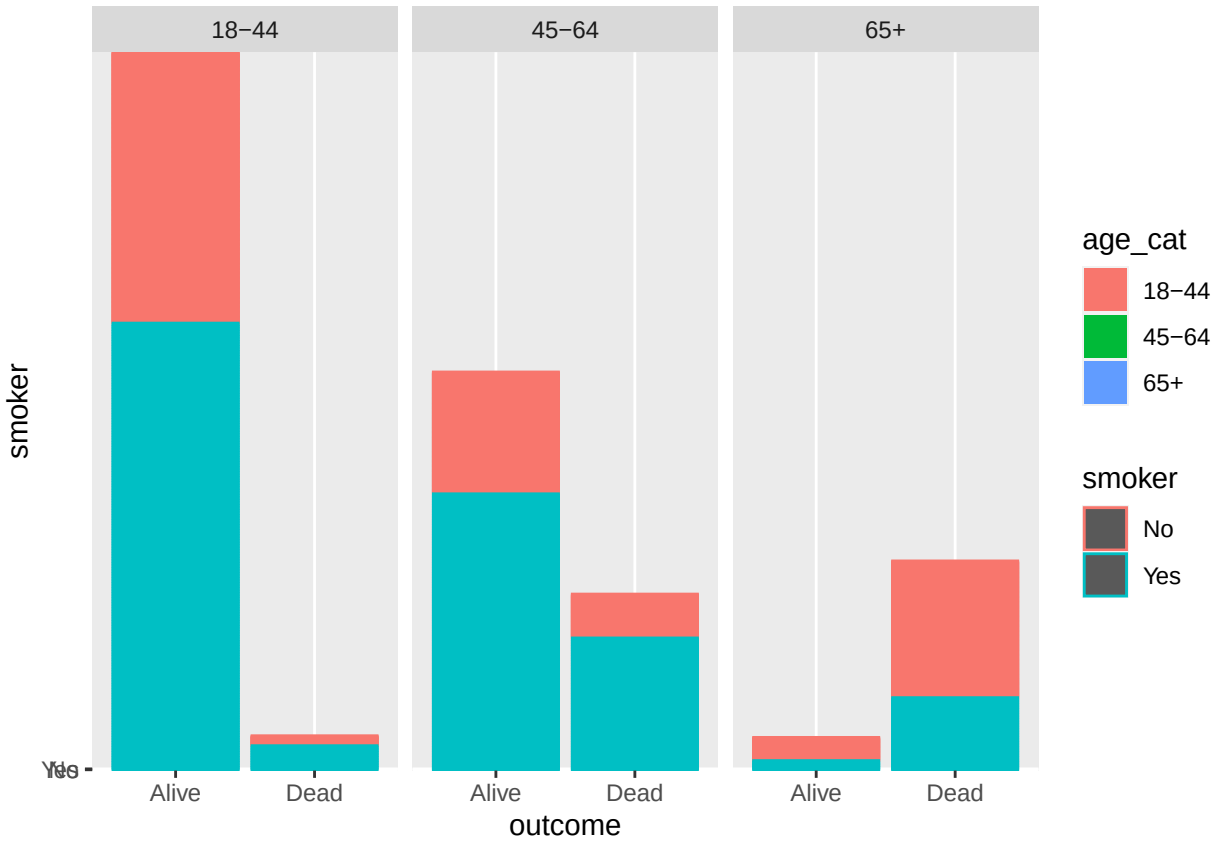
smoker no (732) : 31,4 (dead) » (68,6) alive smoker yes (582) : 23,8 (dead) » (76,2) alive The number of dead nonsmokers is greater than that of smokers.

6.

```
Whickham <- Whickham%>% mutate (age_cat = case_when (age <= 44 ~ "18-44", age > 44. & age <= 64 ~ "45-64
```

7.

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



what changes > the category of the age it's appear to us and we see the most of dead people not smoker in age (65+).. but in age (45-64)and (18-44)the most dead people are smoker that is relationship between the smoking and helth not clearly but can say that your helth will be change to worst if you be smoker.

Knit, commit, and push to github.