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 1,314 observations.As we know every row is an observation ,age ,smoker,outcome.

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
```

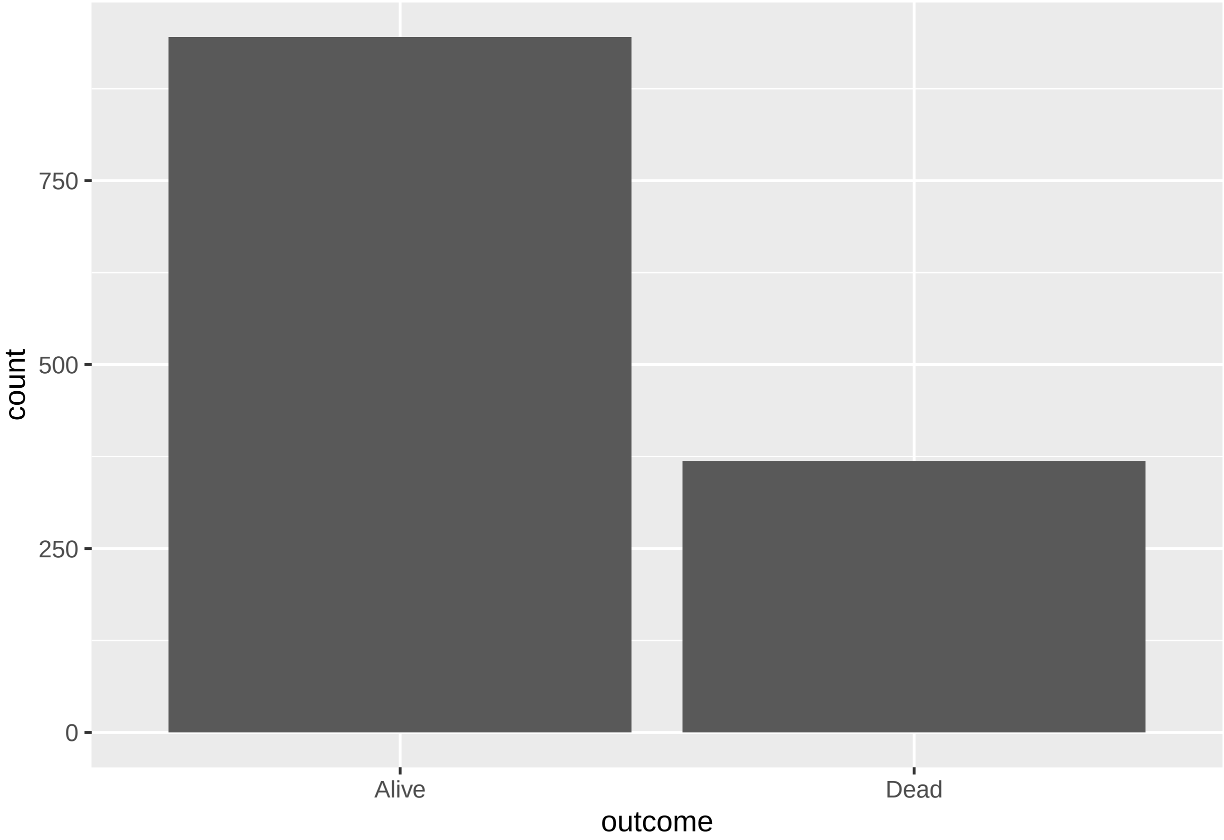
```
unique(Whickham$age)
```

```
##  [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
```

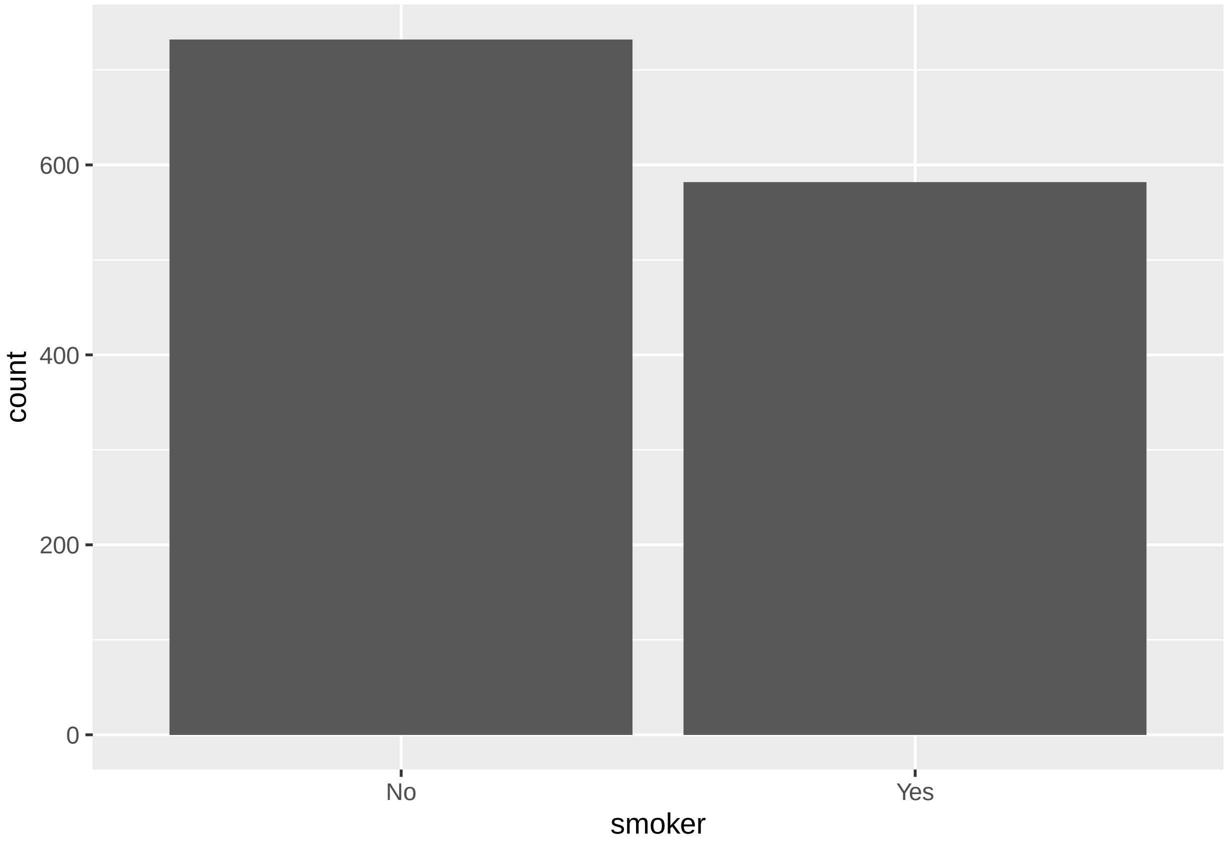
Your answer: Using the unique() function on the 3 variables we could see that “outcome” only takes Alive or Dead value , which makes it categorical non-ordinal. “smoker”only takes yes or No , which also makes it categorical non-ordinal.Age is numerical continous data.

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

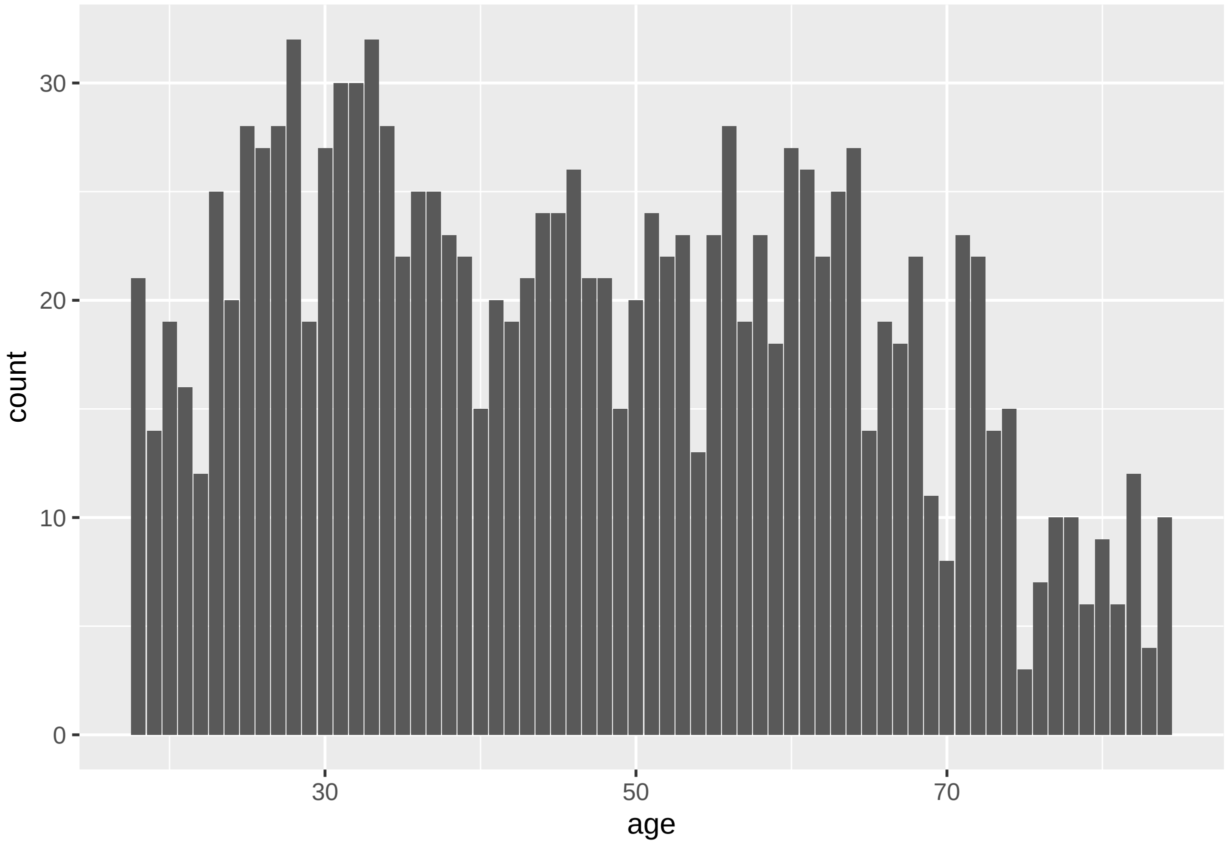
```
ggplot(Whickham, aes(x = outcome)) +

 geom_bar()
```



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

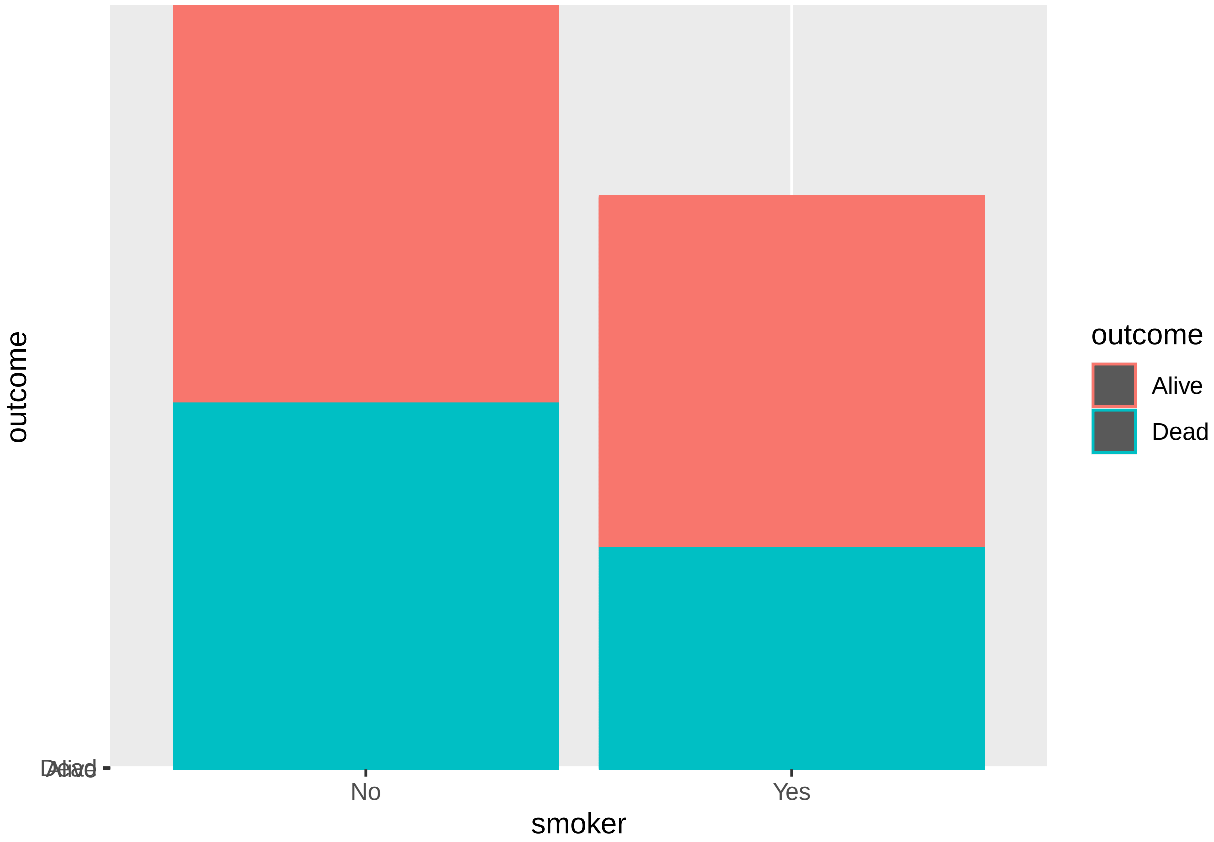


```r
ggplot(Whickham, aes(x = age)) +
geom_bar()
```



4. NA: I expect that the more and continuing to smoke will destroy health and increase diseases and make the health condition worse .

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



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
```

Somker (732) No ——> 31,4“Dead” > (68,6)Alive Somker (582) yes——> 23,8“Dead” > (76.2)Alive

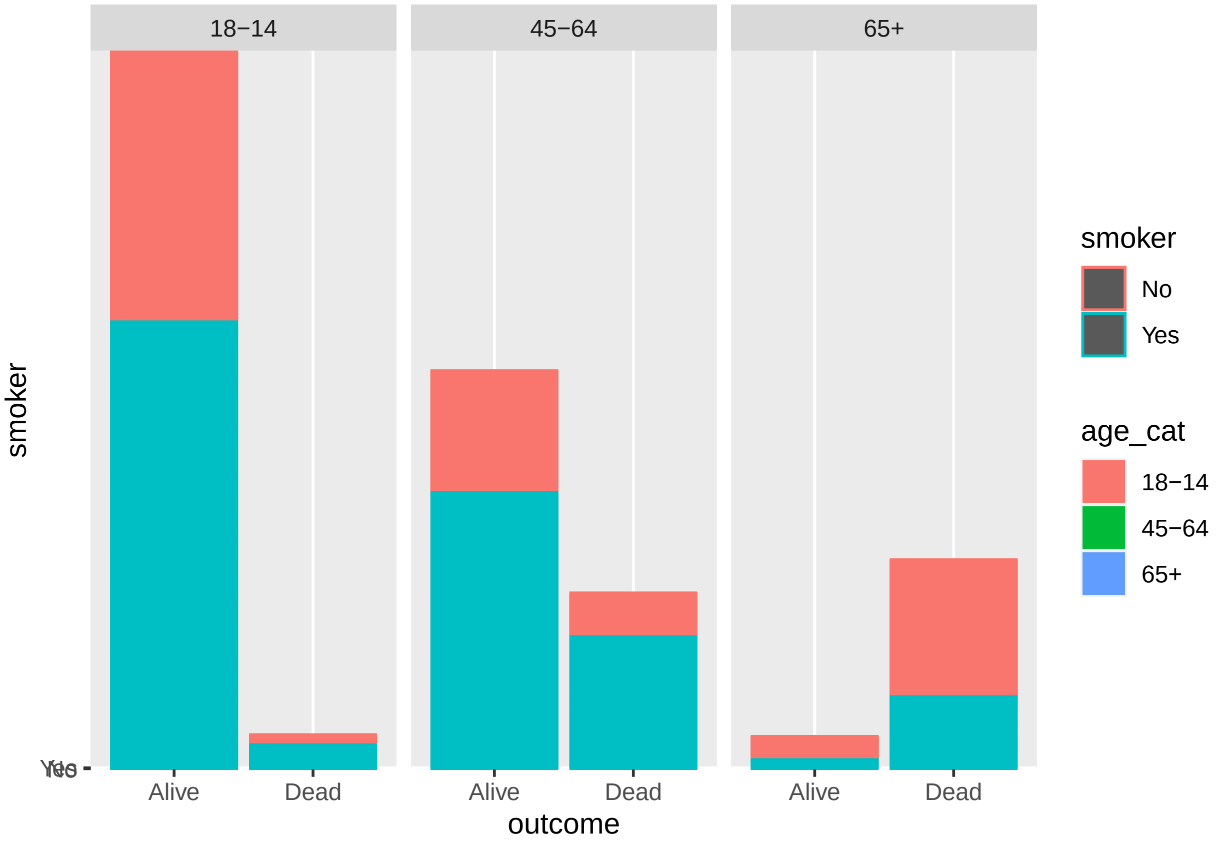
I does’nt expected this result because now most died people not smoker

6.

```
Whickham <- Whickham %>% mutate(age_cat = case_when(age <= 44 ~ "18-14" , age > 44 & age <= 64 ~ "45-64
```

7.

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



AN: People aged between (14-18): The number of people who live smoker is higher than the number of people who non-smoker, The number of people who died and smoked is higher than the number of non-smokers .

People aged between (45-64): The number of people who live smoker is higher than the number of people who non-smoker,The number of people who died and smoked is higher than the number of non-smokers .

People over 65 years of age: People who live and non- smoke are higher than people who smoke, people who died and non-smokers more than smokers.

Knit, commit, and push to github.