In [2]:

```
library(dplyr)
library(ggplot2)
library(tidyr)
```

```
Warning message:
“replacing previous import by ‘rlang:::=’ when loading ‘dplyr’”Warning
message:
“replacing previous import by ‘rlang::.data’ when loading ‘dplyr’”Warn
ing message:
“replacing previous import by ‘rlang::as_label’ when loading ‘dplyr’”W
arning message:
“replacing previous import by ‘rlang::as_name’ when loading ‘dplyr’”Wa
rning message:
“replacing previous import by ‘rlang::dots_n’ when loading ‘dplyr’”War
ning message:
“replacing previous import by ‘rlang::enquo’ when loading ‘dplyr’”Warn
ing message:
“replacing previous import by ‘rlang::enquos’ when loading ‘dplyr’”War
ning message:
“replacing previous import by ‘rlang::expr’ when loading ‘dplyr’”Warni
ng message:
“replacing previous import by ‘rlang::sym’ when loading ‘dplyr’”Warnin
g message:
“replacing previous import by ‘rlang::syms’ when loading ‘dplyr’”
Attaching package: ‘dplyr’

The following objects are masked from ‘package:stats’:

    filter, lag

The following objects are masked from ‘package:base’:

    intersect, setdiff, setequal, union
```

Read the tsv file and assign it to a variable

In [3]:

```
twitterdata <- read.table("sample_twitter_personal_data.tsv",header = TRUE)
```

In [8]:

```
head(twitterdata)
```

A data.frame: 6 × 14

twitter_id	age	dob_day	dob_year	dob_month	gender	followers_count	initiated_to_follow
<int>	<int>	<int>	<int>	<int>	<fct>	<int>	<int>
2094382	14	19	1999	11	male	0	0
1192601	14	2	1999	11	female	0	0
2083884	14	16	1999	11	male	0	0
1203168	14	25	1999	12	female	0	0
1733186	14	4	1999	12	male	0	0
1524765	14	1	1999	12	male	0	0

Q1. List all the headers in the dataset.

In [14]:

```
headers <- matrix(colnames(twitterdata))
headers
```

A matrix: 14 × 1 of type chr

```
              twitter_id
                     age
                 dob_day
                dob_year
               dob_month
                  gender
         followers_count
     initiated_to_follow
                   heart
          heart_received
        mobile_app_heart
mobile_app_heart_received
               web_heart
      web_heart_received
```

Q2. Order (ascending) the headers and assign numbers

for the ordered headers.

In [23]:

```
ordered_headers <- matrix(sort(headers , decreasing=FALSE))
index <- seq(1,length(ordered_headers))
data.frame( index , ordered_headers )
```

A data.frame: 14 × 2

index	ordered_headers
<int>	<fct>
1	age
2	dob_day
3	dob_month
4	dob_year
5	followers_count
6	gender
7	heart
8	heart_received
9	initiated_to_follow
10	mobile_app_heart
11	mobile_app_heart_received
12	twitter_id
13	web_heart
14	web_heart_received

Q3. List all Twitter users whose "followers_count" is greater (>) than 100.

In [28]:

```
twitterdata_great_1000 <- twitterdata %>%
    filter( followers_count > 1000 )
head(twitterdata_great_1000)
```

A data.frame: 6 × 14

twitter_id	age	dob_day	dob_year	dob_month	gender	followers_count	initiated_to_follow
<int>	<int>	<int>	<int>	<int>	<fct>	<int>	<int>
1154612	14	20	1999	11	female	1094	720
1584664	14	30	1999	5	male	1108	752
1302793	14	1	1999	10	male	1073	599
1395711	16	4	1997	12	male	1185	886
1926785	15	31	1998	5	female	1174	1061
1346281	15	6	1998	10	male	1001	745

Q4. List all the twitter MALE users whose "followers_count" is greater (>) than 100.

In [29]:

```
twitterdata_male_100 <- twitterdata %>%
    filter( followers_count > 100 ) %>%
    filter(gender == "male")

head(twitterdata_male_100)
```

A data.frame: 6 × 14

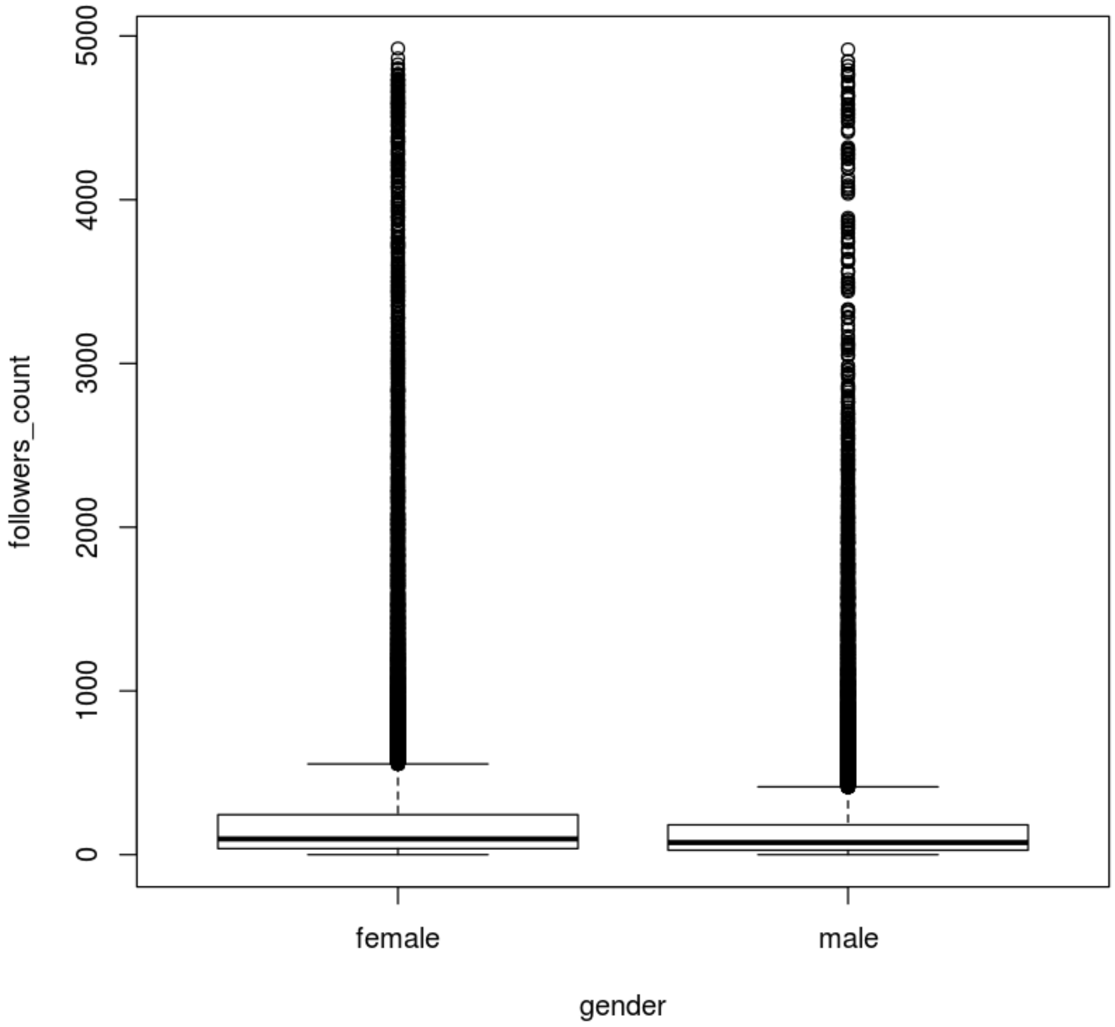
twitter_id	age	dob_day	dob_year	dob_month	gender	followers_count	initiated_to_follow
<int>	<int>	<int>	<int>	<int>	<fct>	<int>	<int>
1986751	14	23	1999	11	male	104	59
1309735	15	5	1998	11	male	104	44
1729330	15	17	1998	12	male	102	99
1364132	14	18	1999	1	male	104	43
1467199	14	9	1999	2	male	101	60
1013081	15	14	1998	4	male	103	87

Q5. It is a saying,

“ Males always initiate to follow another Twitter account (female/male account) FIRST than Female ” To prove the above statement, analyze the data and provide some evidence.

In [17]:

```
boxplot(twitterdata$followers_count ~ twitterdata$gender, data = mtcars, xlab = "ge
```



According to the above boxplot we can see there are lot of outliers involve. Let's do a two sample t-test using two groups of data

In [19]:

```
male_numbers <- twitterdata %>%
    drop_na(gender)%>%
    filter( gender == "male" )
female_numbers <- twitterdata %>%
    drop_na(gender)%>%
    filter( gender == "female" )
t.test(male_numbers$followers_count,female_numbers$followers_count,paired=FALSE , a
```

```
        Welch Two Sample t-test

data:  male_numbers$followers_count and female_numbers$followers_count
t = -28.565, df = 63218, p-value = 1
alternative hypothesis: true difference in means is greater than 0
95 percent confidence interval:
 -81.36469       Inf
sample estimates:
mean of x mean of y 
 165.0355  241.9699 
```

Our null hypothesis : mean (male) <= mean(female) alternative hypothesis : mean (male) > mean(female)

according to the t-test result t-score = -28.565

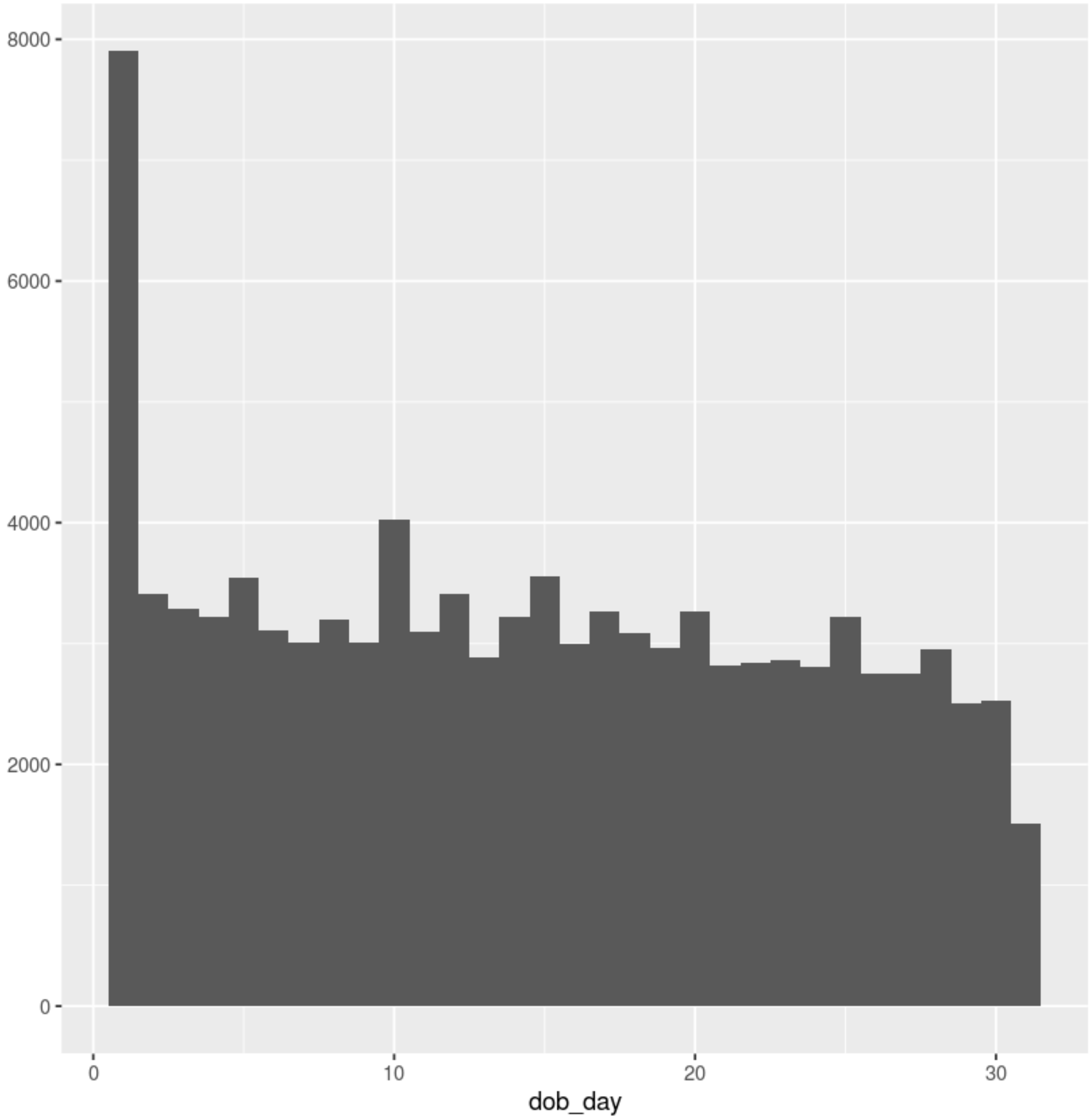
t-score lies within the confidence interval. So null hypothesis is rejected. So according to the alternative hypothesis above statement is false.

Q6.Your manager has requested study the data and asked you to provide a graphical representation for the following use cases,

1.HISTOGRAMS for day column in DOB (eg: dob_day)

In [59]:

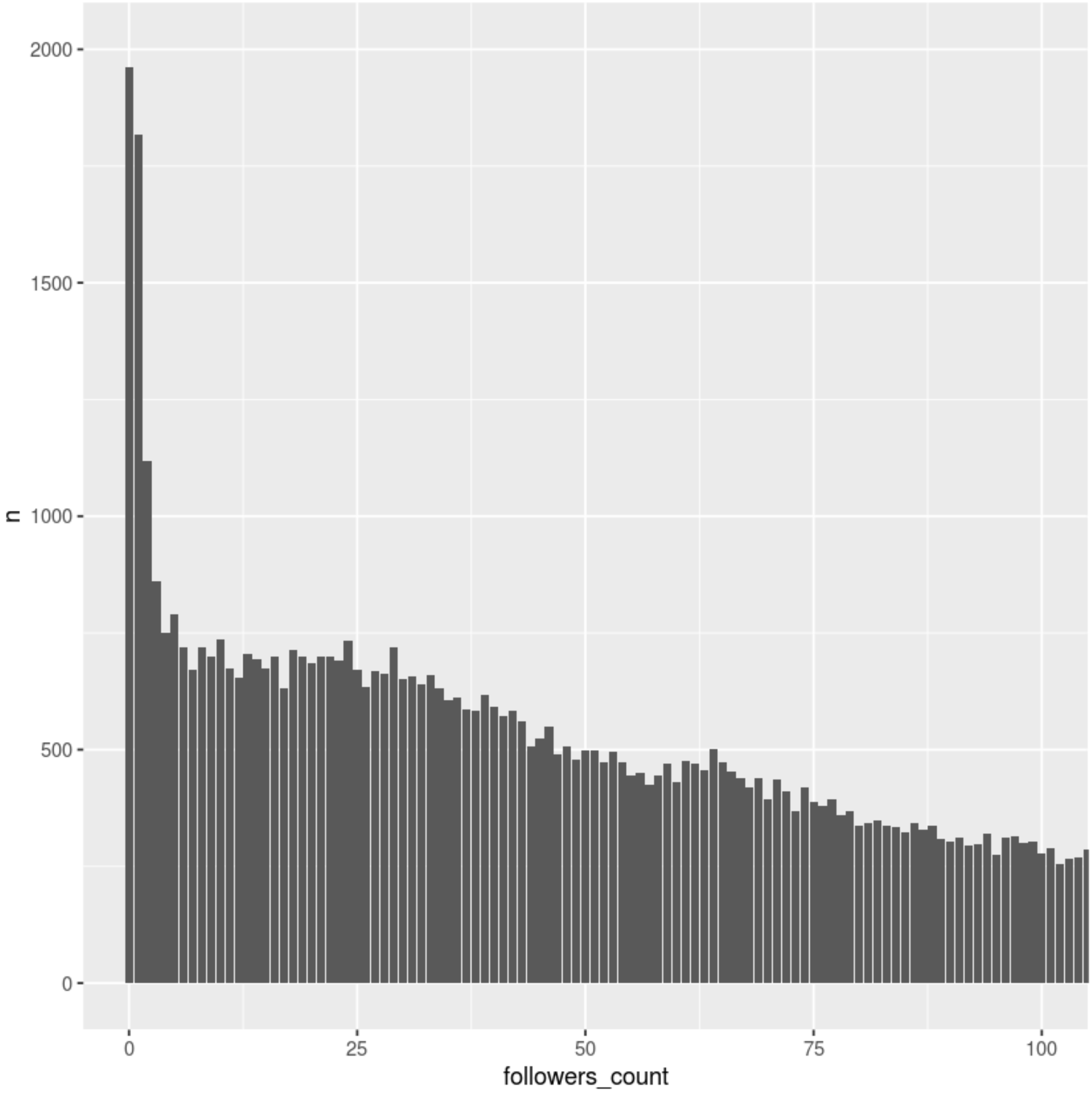
```
dob_day <- twitterdata$dob_day
qplot(dob_day, geom="histogram" , bins=31 , width= 1 )
```



2.FREQUENCY PLOT for the followers count

In [98]:

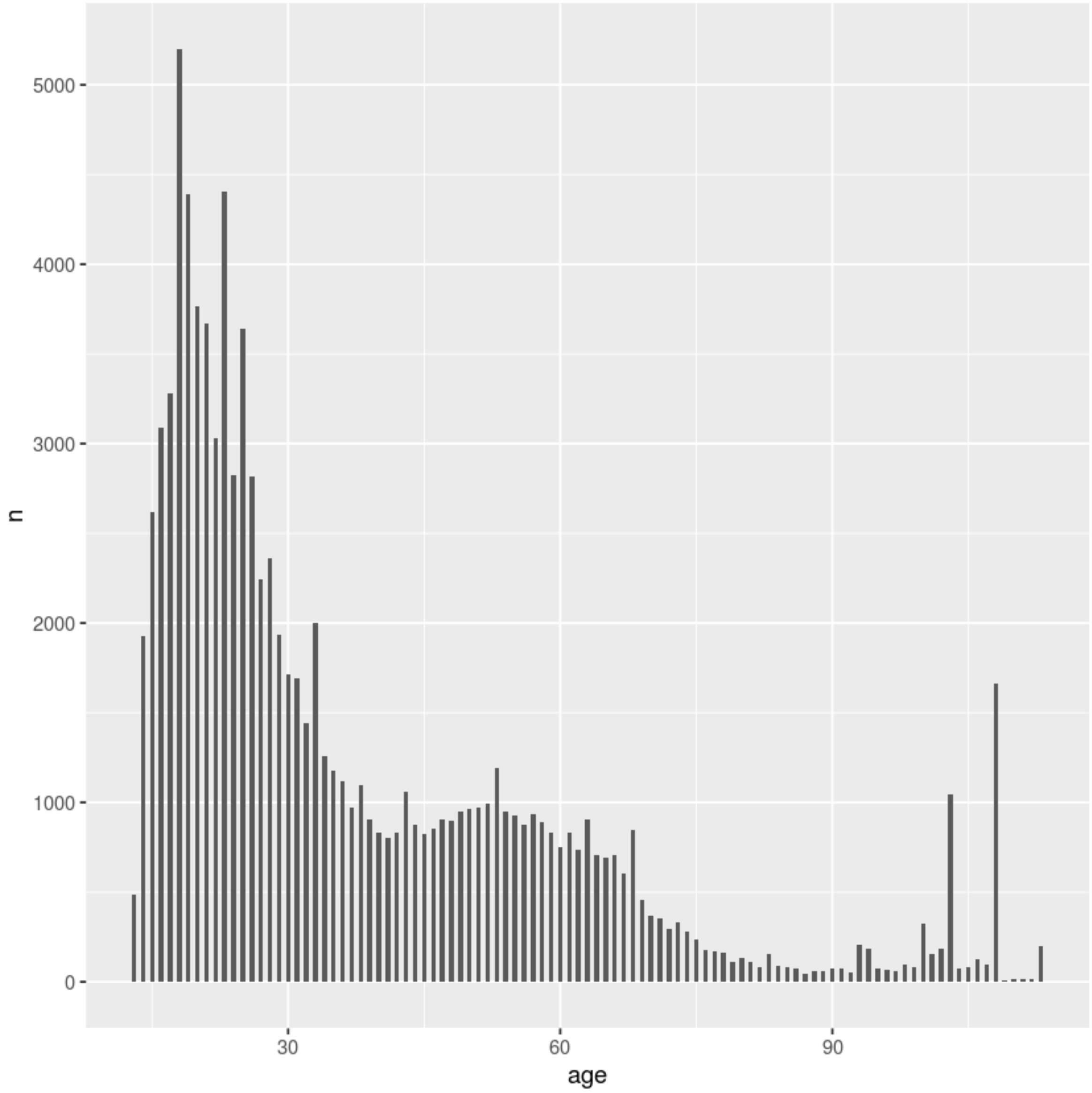
```
by_followers_count <- twitterdata %>%
    count(followers_count)

ggplot(by_followers_count, aes(x=followers_count,y=n  ))+
geom_col()+
coord_cartesian(xlim = c(0, 100), ylim = c(0, 2000))
#expand_limits(y=c(0,2000) , x = c(0,2000))
```



3.FREQUENCY PLOT for the age of the users over the years in the sample dataset

In [81]:

```
by_age <- twitterdata %>%
    count(age)

ggplot(by_age, aes(x=age,y=n, width= 0.5  ))+
geom_col()+
expand_limits(y=0)
```



4.Plot BAR CHART to indicate and show the total hearts given by male, female users

In [49]:

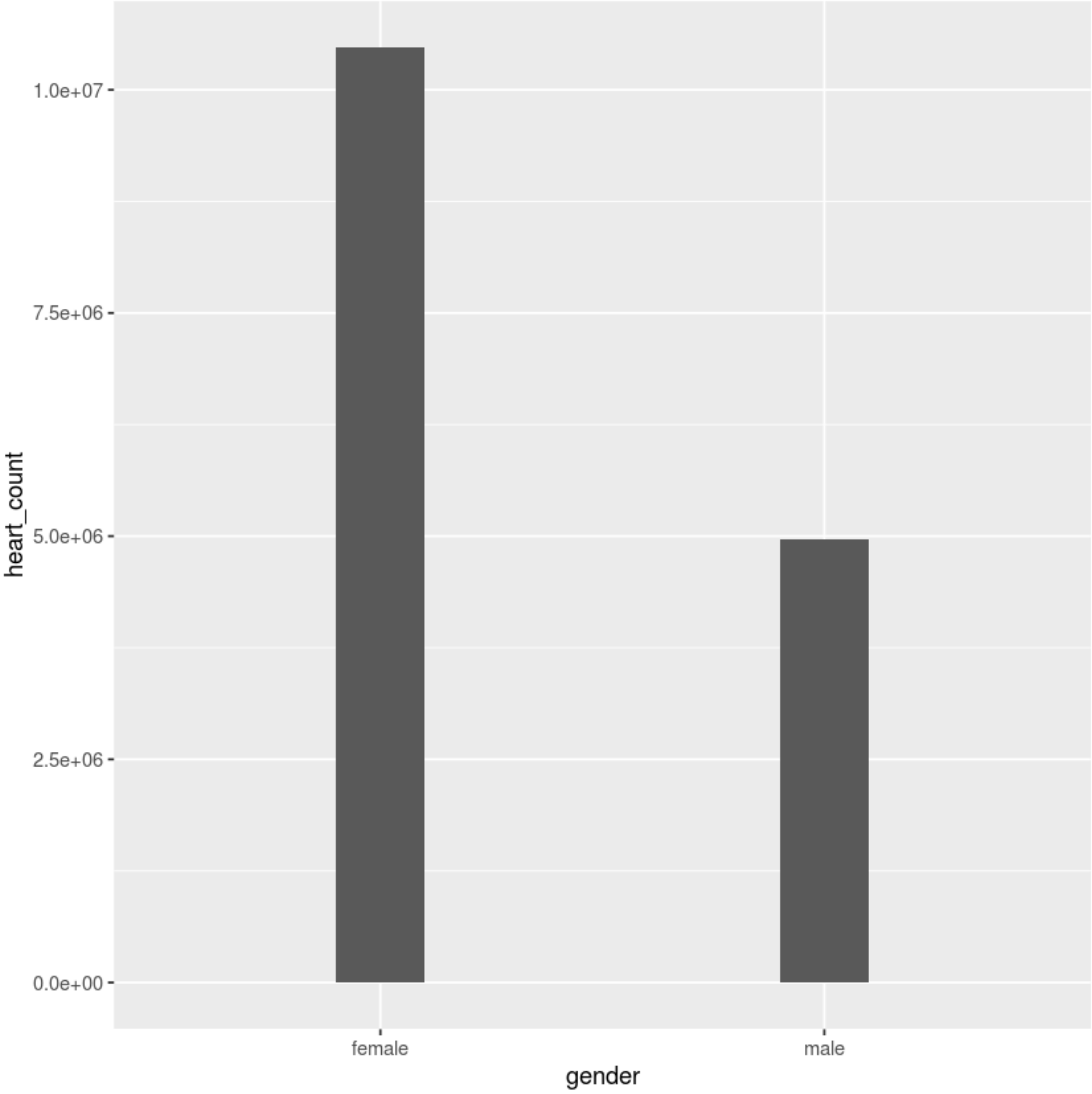
```
by_gender <- twitterdata %>%
    drop_na(gender)%>%
    group_by( gender ) %>%
    summarize(heart_count=sum(heart))

by_gender
```

A tibble: 2 × 2

gender	heart_count
<fct>	<int>
female	10468106
male	4959923

In [58]:

```
ggplot(by_gender, aes(x=gender,y=heart_count , width= 0.2 , height=0.1 ))+
geom_col()+
expand_limits(y=0)
```



5.Analyze and visualize in CHART to confirm that people use a mobile/web interface to experience twitter

In [39]:

```
heart_mobile <- twitterdata %>%
 summarize( heart_mobile = sum(mobile_app_heart))

heart_mobile
```

A data.frame: 1
× 1

heart_mobile
<int>
10505832

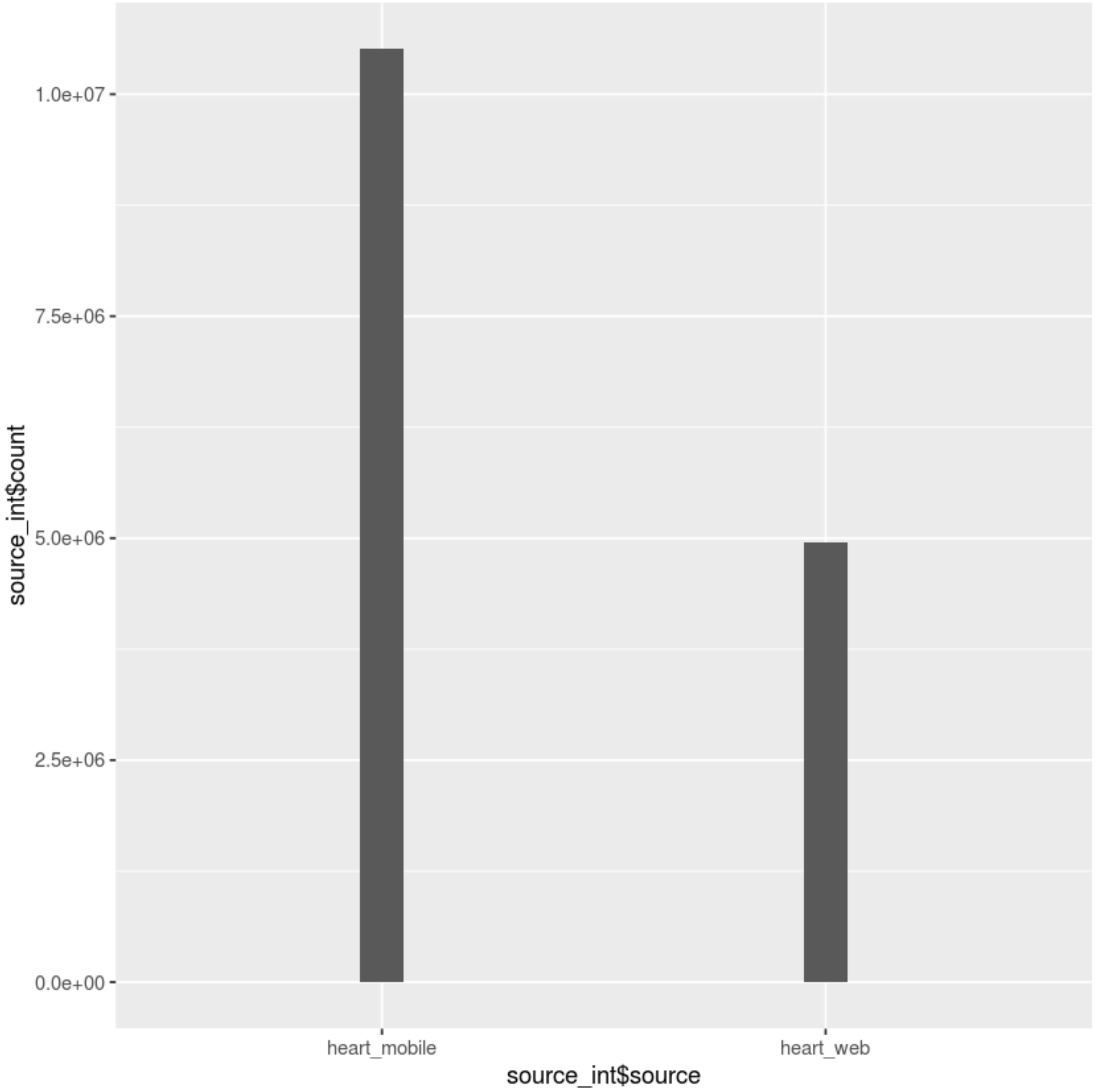
In [40]:

```
heart_web <- twitterdata %>%
 summarize( heart_web = sum(web_heart))

heart_web
```

```
A
data.frame: 1
× 1

 heart_web
     <int>
 ---------
   4946430
```

In [55]:

```
source_int <- data.frame( c("heart_web" ,"heart_mobile" ) , c(heart_web[1,1] , hear
colnames(source_int) <- c("source" , "count")

ggplot(source_int, aes(x=source_int$source,y=source_int$count , width=0.1  ))+
geom_col()+
expand_limits(y=0)
```



Q7. Based on your critical analysis write down in points your thoughts and suggestions to improve the twitter features.

In [36]:

```
head(twitterdata %>%count(heart))
```

A tibble: 6 × 2

heart	n
<int>	<int>
0	22308
1	6928
2	4434
3	3240
4	2507
5	2027

According to the above summarization there are 22308 twitter ids with 0 heart reaction. So increacing the numbers of reaction type may increace the interaction

According to the bar chart in Q6. 4. we can see that men interaction is less that female. So add features whose can attract men.

In [37]:

```
head(twitterdata %>%count(age))
```

A tibble: 6 × 2

age	n
<int>	<int>
13	484
14	1925
15	2618
16	3086
17	3283
18	5196

According to above summarization there are no user with age grater than 18. Introduce feature such that people with age grater than 18 attract to twitter

When we go through the dataframe we can't see location information. if there are location information, can suggest news based on locations.

In [ ]:

```

```