How to Visualize Binary Outcomes in Research

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In my research I frequently want visualize outcomes over groups. The nature of clinical reserach means that often times outcomes are binary and I want to find the proportion of binary outcomes over groups. This was not straight forward for me, so I decided to make a post about it.

load libraries

```
library(tidyverse)
library(ggpubr)
```

create the variables

```
set.seed(15762)
death<-rbinom(1000,1,0.03)
readmit <-rbinom(1000,1, 0.1)
id<-rbinom(1000,5,0.2)
```

combine into dataframe

```
x <- data.frame(death,readmit,id)
names(x) <- c("death", "readmit", "id")
```

check the results

```
head(x)
##   death readmit id
## 1     0       0  2
## 2     0       0  0
## 3     0       0  0
## 4     0       0  3
## 5     0       0  2
## 6     0       0  0
```

Now here is where it was tricky for me. If you, like I typically do, work with large data then you will need to extract the components you want. Typically for the specific outcome I am interested in, i'll use `na.omit(df)` to restrict to only observations with all outcomes observed; excluding NAs

So once you do that you want to select out the binary outcome you are interested in, and I will be using death as the outcome to evaluate.

pull out the observations I am interested in the proportion of death across different IDs

```
death_x <-dplyr::select(x, death, id)
```

create proportion table to get proportion of deaths across different IDs

```
death_prop <- death_x %>% count(death, id) %>% mutate(prop=prop.table(n))
```

now just look at the proportion of those that died; this next step basically makes sure we only visualize the proportion of death

```
death_prop <- dplyr::filter(death_prop, death==1)
```

then just graph it; ive chosen to use a lollipop plot, because I think that is the best

```
ggplot(death_prop, aes(x=id, y=prop)) +
  geom_point() +
  geom_segment( aes(x=id, xend=id, y=0, yend=prop))+theme_classic()+geom_hline(aes(yintercept=0))+labs(
```