Gov 50: 7. Measurement: Visualizing Distributions

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Fall 2018

1. Today's agenda

2. Visualizing data

3. Anchoring vignettes

1/ Today's agenda

Where are we going?

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2/ Visualizing data

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    5. unlimited say

Data

- Load the data:

```
vignettes <- read.csv("data/vignettes.csv")
head(vignettes)
```

```
##   self alison jane moses china age
## 1    1      5    5     2     0  31
## 2    1      1    5     5     0  54
## 3    2      3    1     1     0  50
## 4    2      4    2     1     0  22
## 5    2      3    3     3     0  52
## 6    1      3    1     5     0  50
```

Contingency table

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```

```
##
##      1      2      3      4      5
## 0.4187 0.2689 0.1665 0.0717 0.0743
```

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barplot(prop.table(table(vignettes$self)),
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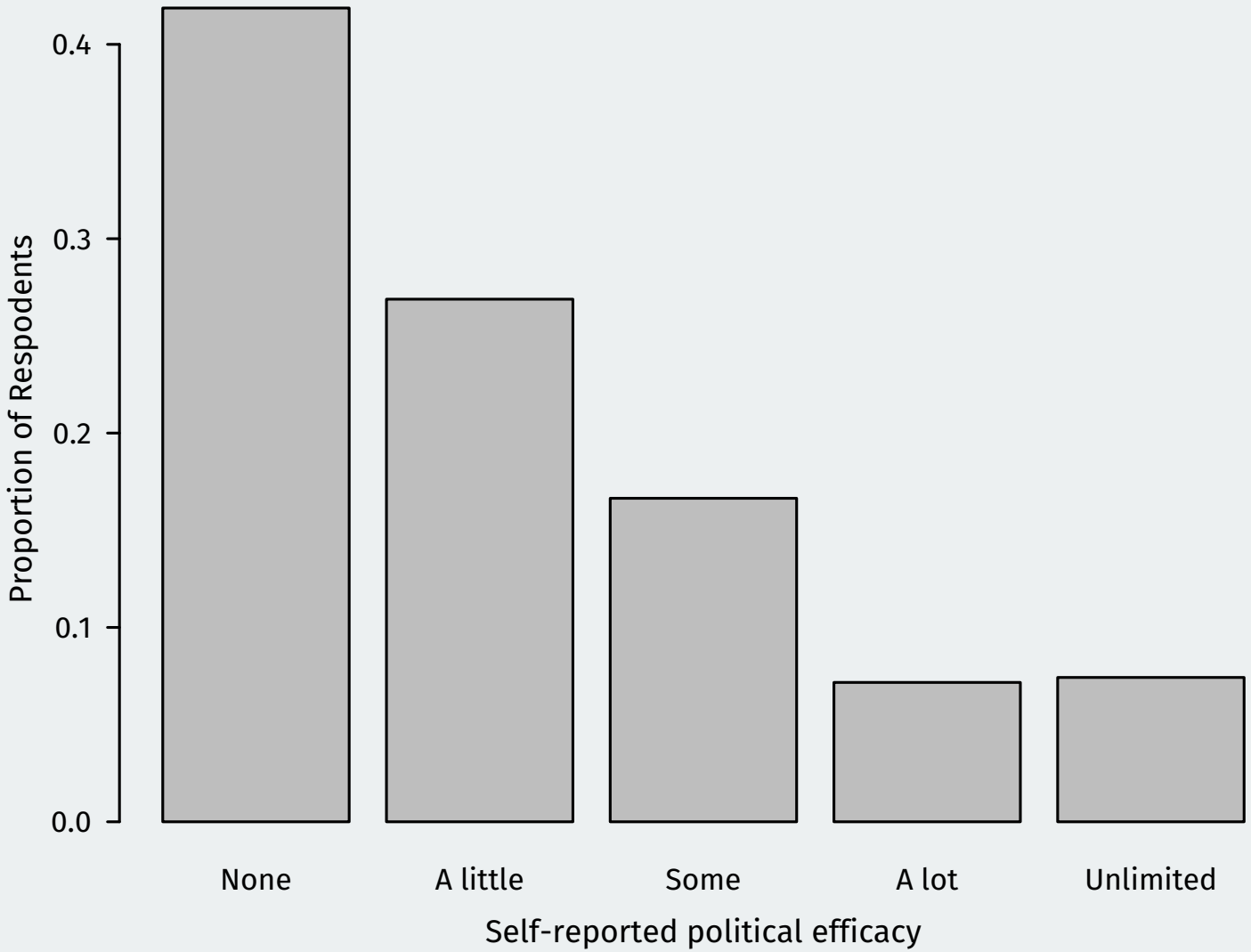
  - `xlab`, `ylab` are axis labels

Barplot


0.4
0.3
0.2
0.1
0.0
Proportion of Respodents
None
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Self-reported political efficacy

Histogram

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- In R, we use `hist()` with `freq = FALSE`:

```
hist(vignettes$age, freq = FALSE, ylim = c(0, 0.04),
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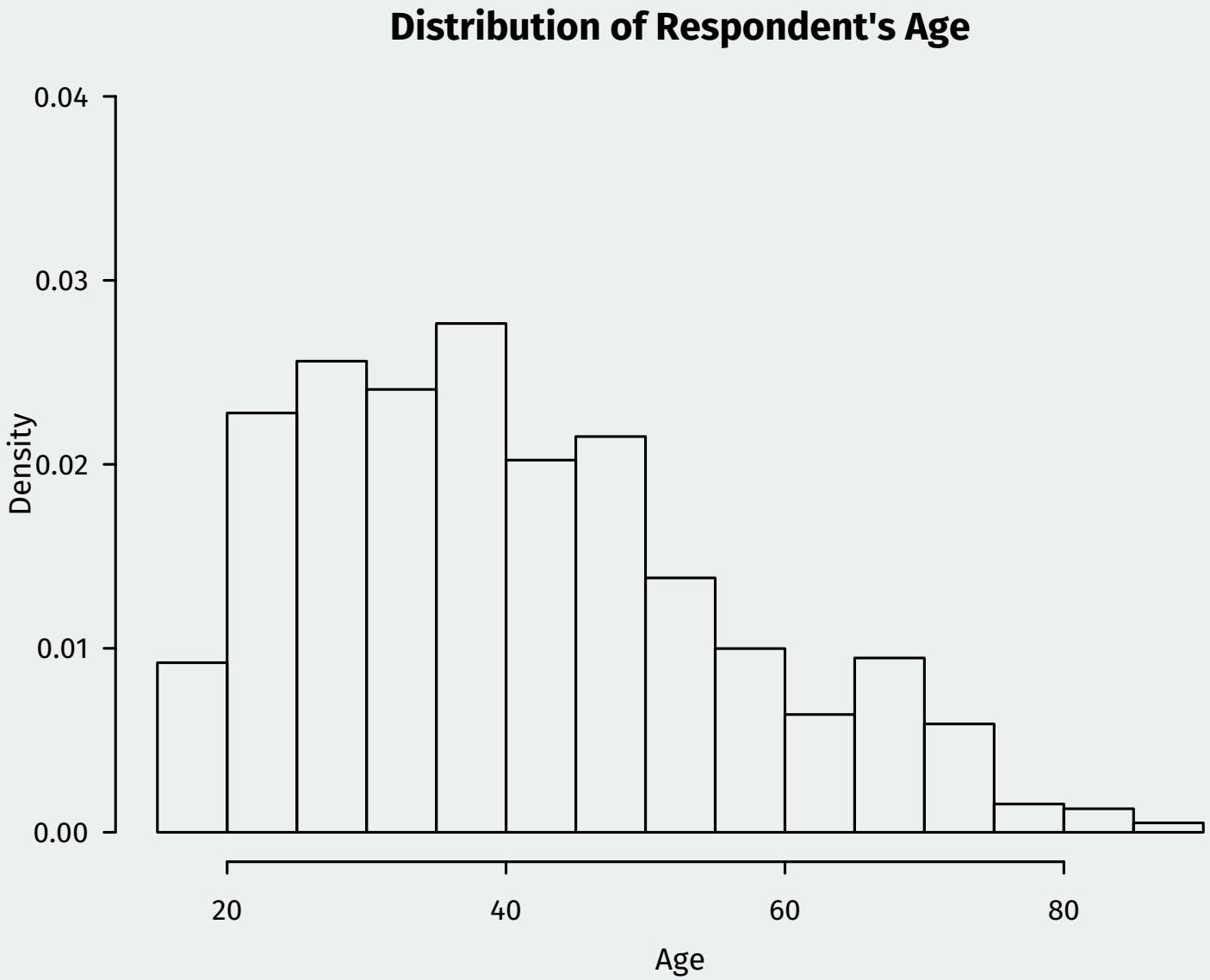
  - `main` sets the title for the figure.


Distribution of Respondent's Age
0.04
0.03
0.02
0.01
0.00
Density
20
40
60
80
Age

What is density?

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- We can also choose the bin locations on our own via the `breaks` (location of the bin breaks) or `nclass` (number of bins):

```
hist(vignettes$age, freq = FALSE,
     breaks = c(0, 18, 25, 45, 65, 100),
     xlab = "Age",
     main = "Distribution of Respondent's Age")
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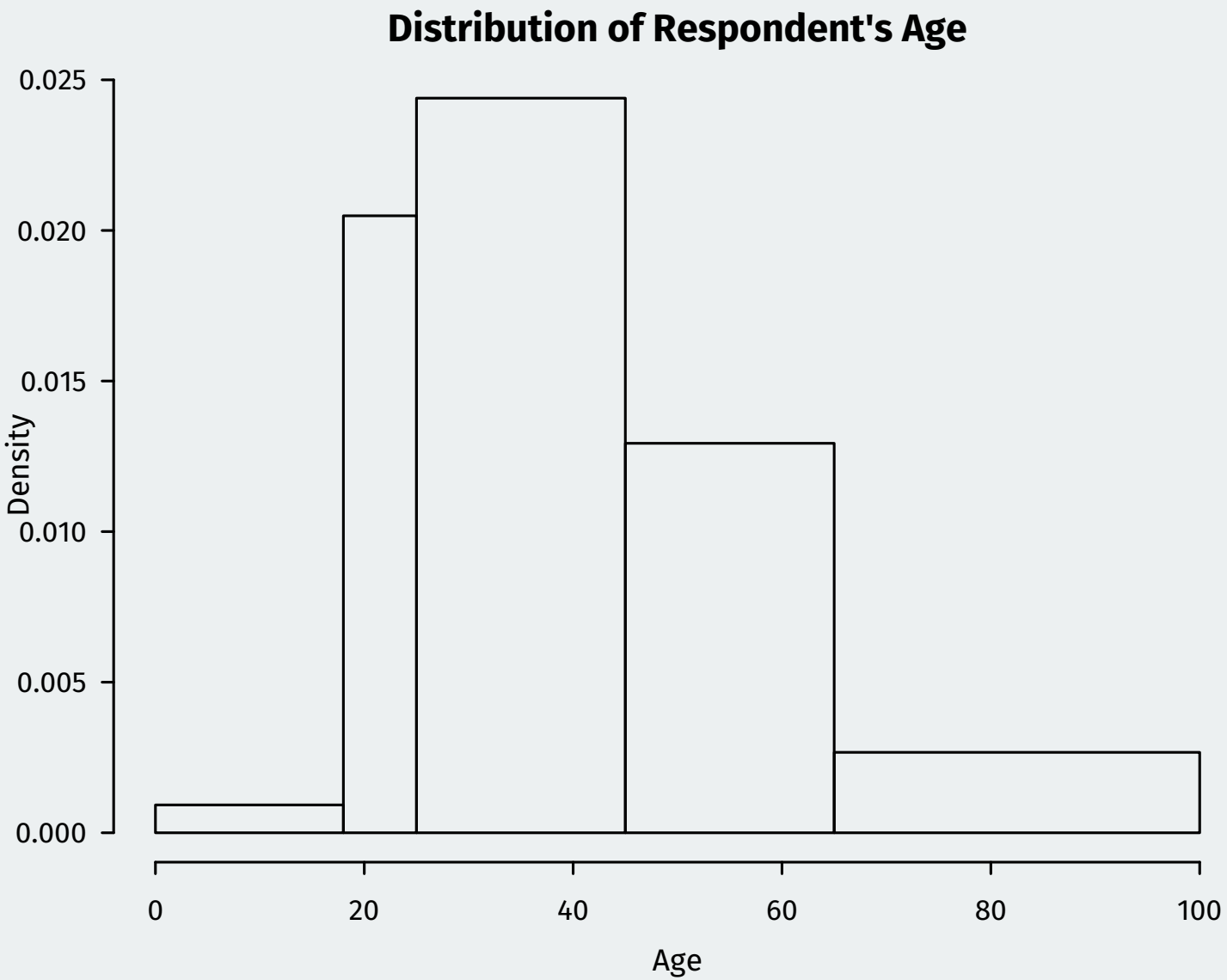
Creating our own bins



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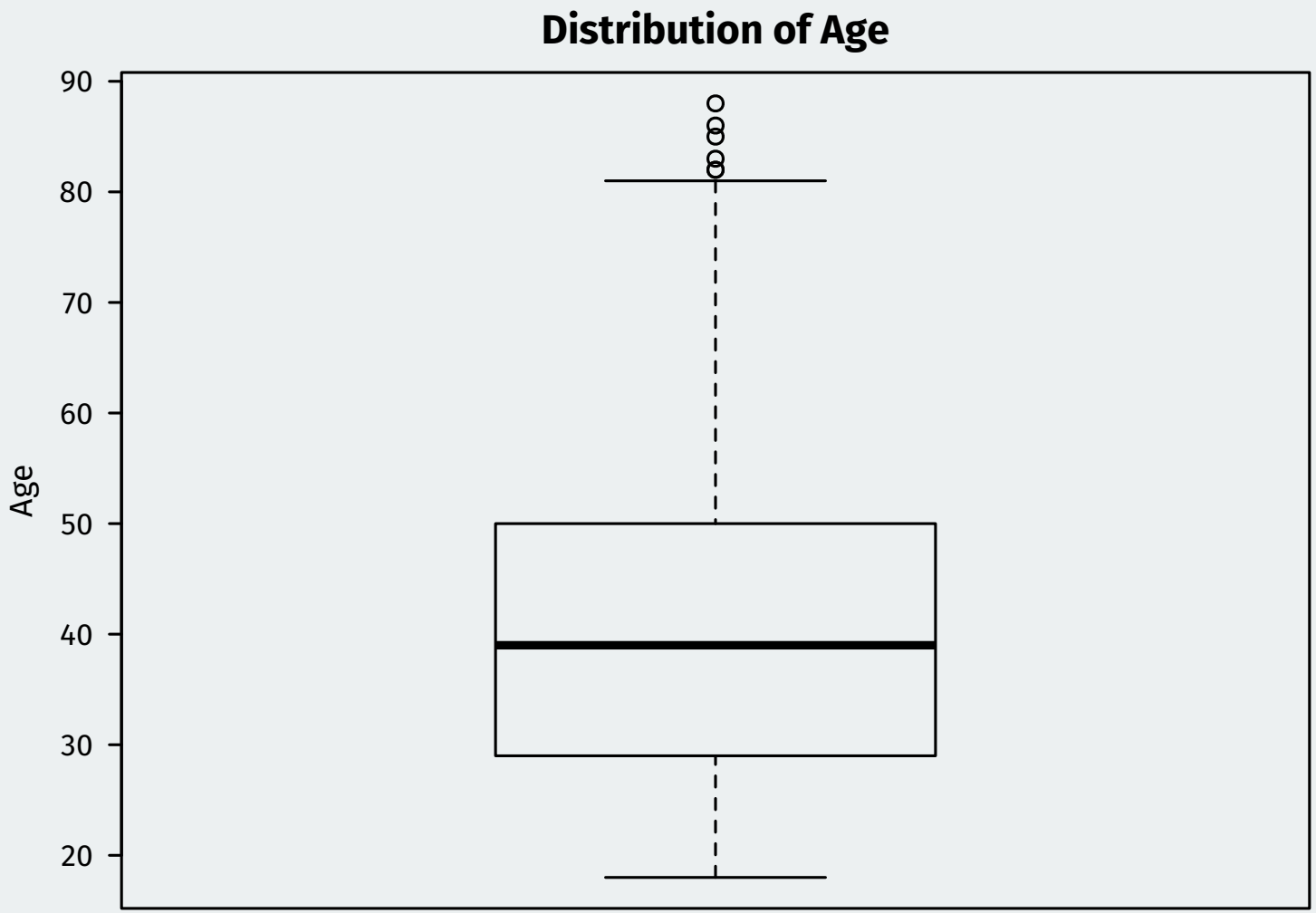
  - Points beyond whiskers are outliers.

Boxplot



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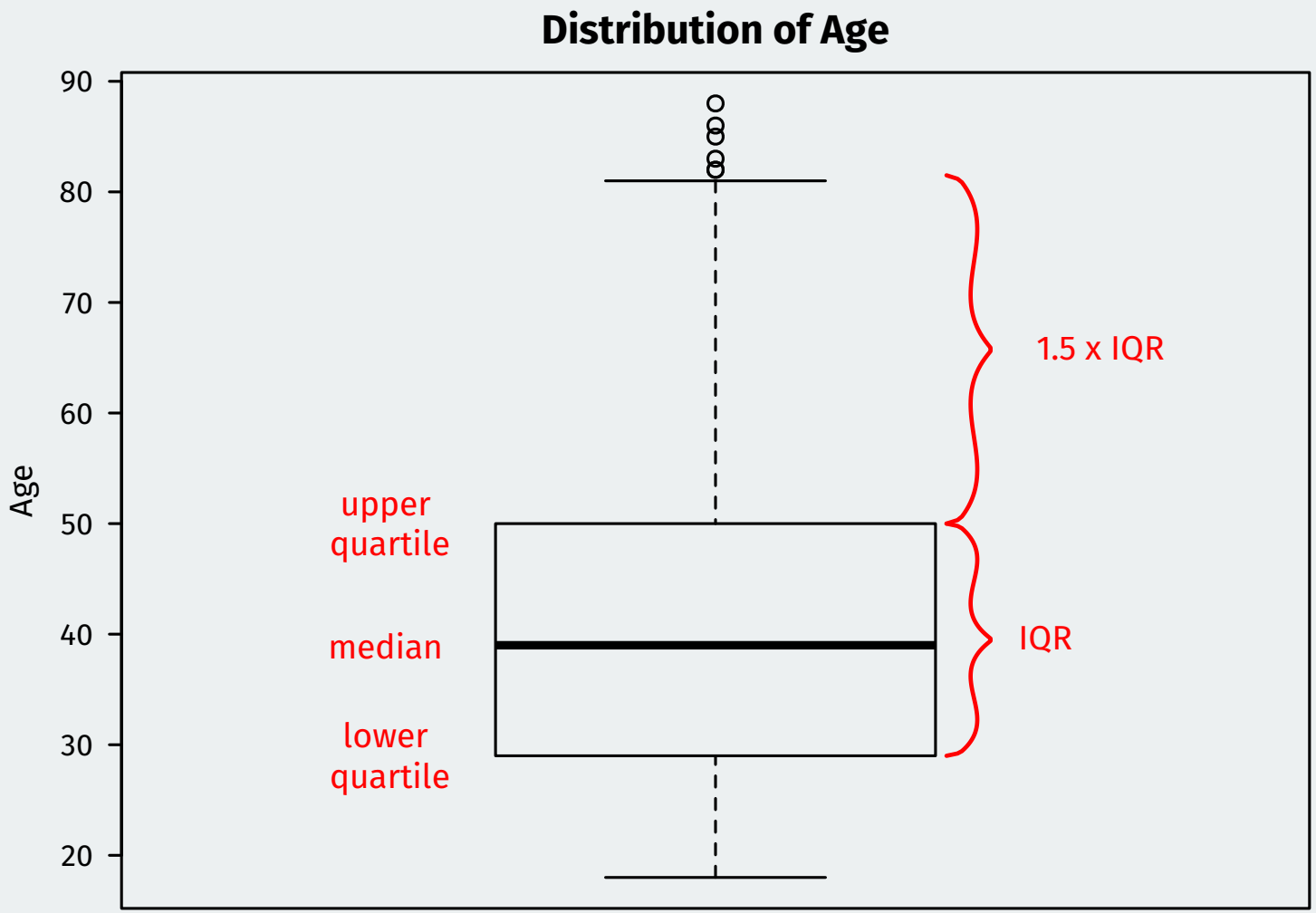
Distribution of Age
Age
90
80
70
60
50
40
30
20
upper
quartile
median
lower
quartile
1.5 x IQR
IQR

Comparing distribution with the boxplot

- Useful for comparing a variable across groups:

```
boxplot(age ~ china, data = vignettes,
        names = c("Mexico", "China"),
        main = "Age by Country of Respondent",
        ylab = "Age")
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  - `x` is the grouping variable.

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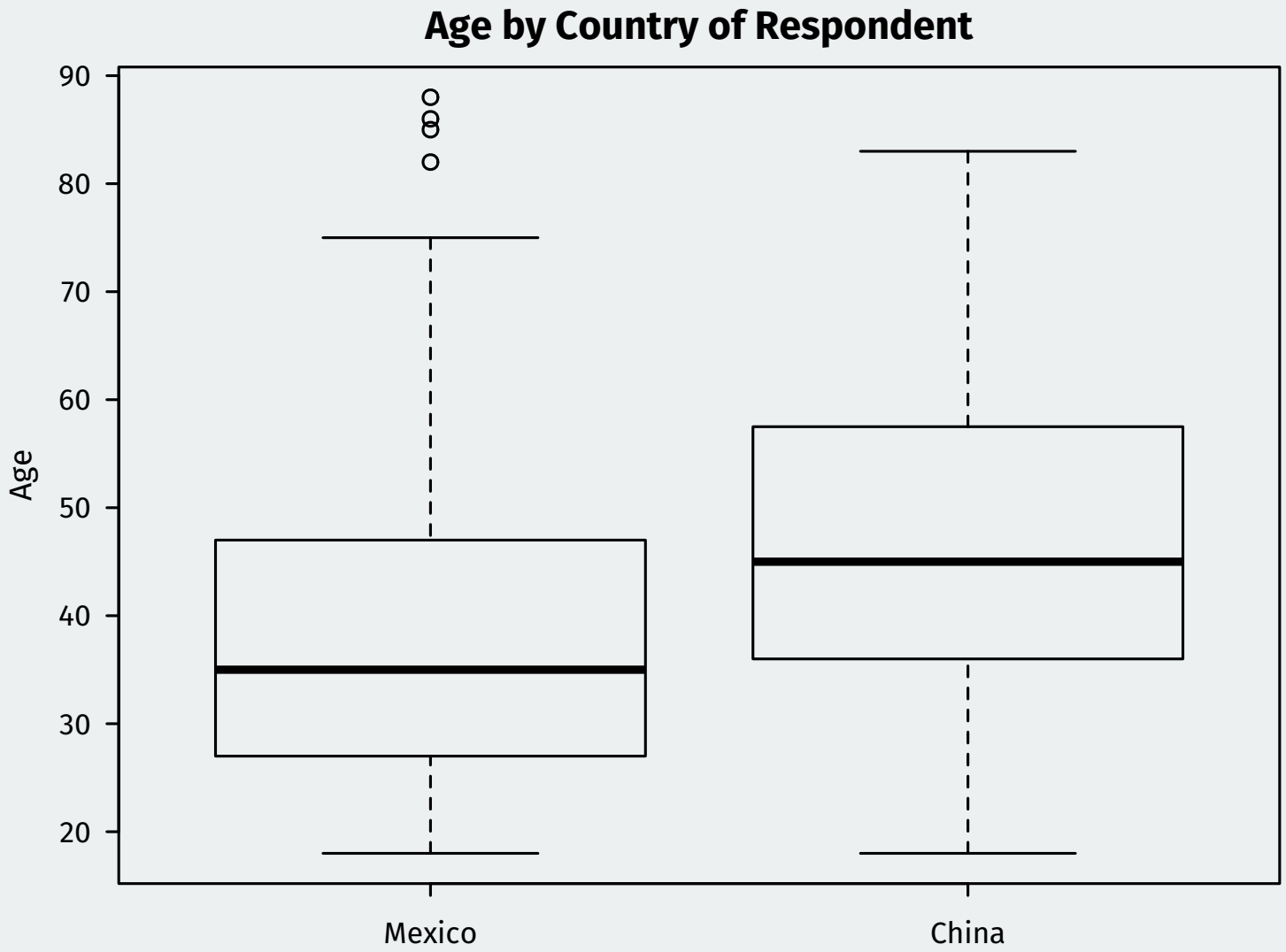
  - `y` is the continuous variable whose distribution we want to explore.
  - `x` is the grouping variable.
  - When using a formula, we need to add a `data` argument.


Age by Country of Respondent
Age
90
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Mexico
China

3/ Anchoring vignettes

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  2. little say
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- Problem? Different people interpret questions differently
  - Cross-cultural differences, vague questions.

Vignettes to the rescue

- Solution: try to anchor responses with **vignettes** with different levels of "objective" efficacy:

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  `Alison lacks clean drinking water. She and her neighbors are supporting an opposition candidate in the forthcoming elections that has promised to address the issue. It appears that so many people in her area feel the same way that the opposition candidate will defeat the incumbent representative.`

Vignettes to the rescue

- Solution: try to anchor responses with **vignettes** with different levels of "objective" efficacy:

  `Alison lacks clean drinking water. She and her neighbors are supporting an opposition candidate in the forthcoming elections that has promised to address the issue. It appears that so many people in her area feel the same way that the opposition candidate will defeat the incumbent representative.`

- How much say does Alison have in getting the government to address issues that interest her?

Vignettes to the rescue

- Solution: try to anchor responses with **vignettes** with different levels of "objective" efficacy:

  `Alison lacks clean drinking water. She and her neighbors are supporting an opposition candidate in the forthcoming elections that has promised to address the issue. It appears that so many people in her area feel the same way that the opposition candidate will defeat the incumbent representative.`

- How much say does Alison have in getting the government to address issues that interest her?
  - Use the same scale as self-assessment.

Jane vignette

> Jane lacks clean drinking water because the government is pursuing an industrial development plan. In the campaign for an upcoming election, an opposition party has promised to address the issue, but she feels it would be futile to vote for the opposition since the government is certain to win.

- How much say does Jane have in getting the government to address issues that interest her?

Moses vignette

Moses lacks clean drinking water. He would like to change this, but he can't vote, and feels that no one in the government cares about this issue. So he suffers in silence, hoping something will be done in the future.

- How much say does Moses have in getting the government to address issues that interest him?

Moses vignette

Moses lacks clean drinking water. He would like to change this, but he can't vote, and feels that no one in the government cares about this issue. So he suffers in silence, hoping something will be done in the future.

- How much say does Moses have in getting the government to address issues that interest him?
- "Objective" ranking: Alison $>$ Jane $>$ Moses.

Data

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head(vignettes)
```

```
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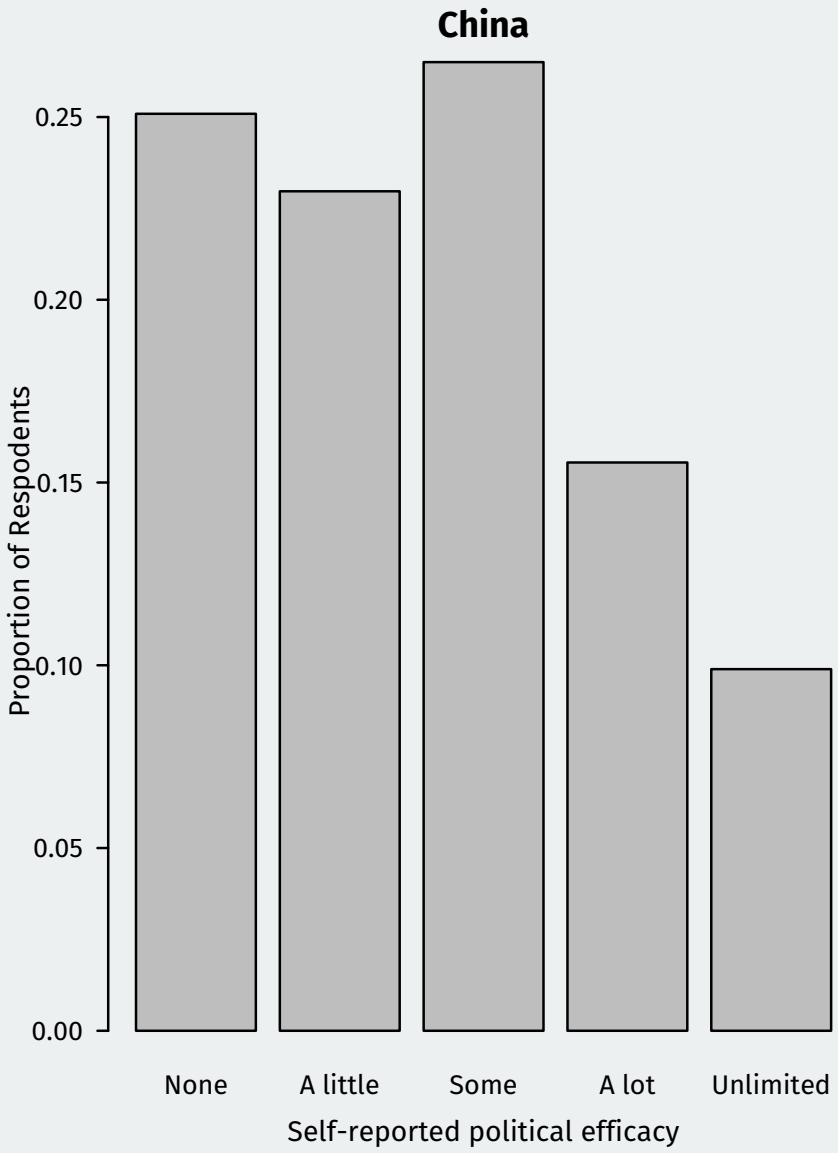
```

Self-reported efficacy

```
china <- vignettes[vignettes$china == 1,]
mexico <- vignettes[vignettes$china == 0,]

barplot(prop.table(table(china$self)),
        names = c("None", "A little",
                  "Some", "A lot", "Unlimited"),
        xlab = "Self-reported political efficacy",
        ylab = "Proportion of Respodents",
        main = "China")

barplot(prop.table(table(mexico$self)),
        names = c("None", "A little",
                  "Some", "A lot", "Unlimited"),
        xlab = "Self-reported political efficacy",
        ylab = "Proportion of Respodents",
        main = "Mexico")
```


China
Proportion of Respodents
0.00
0.05
0.10
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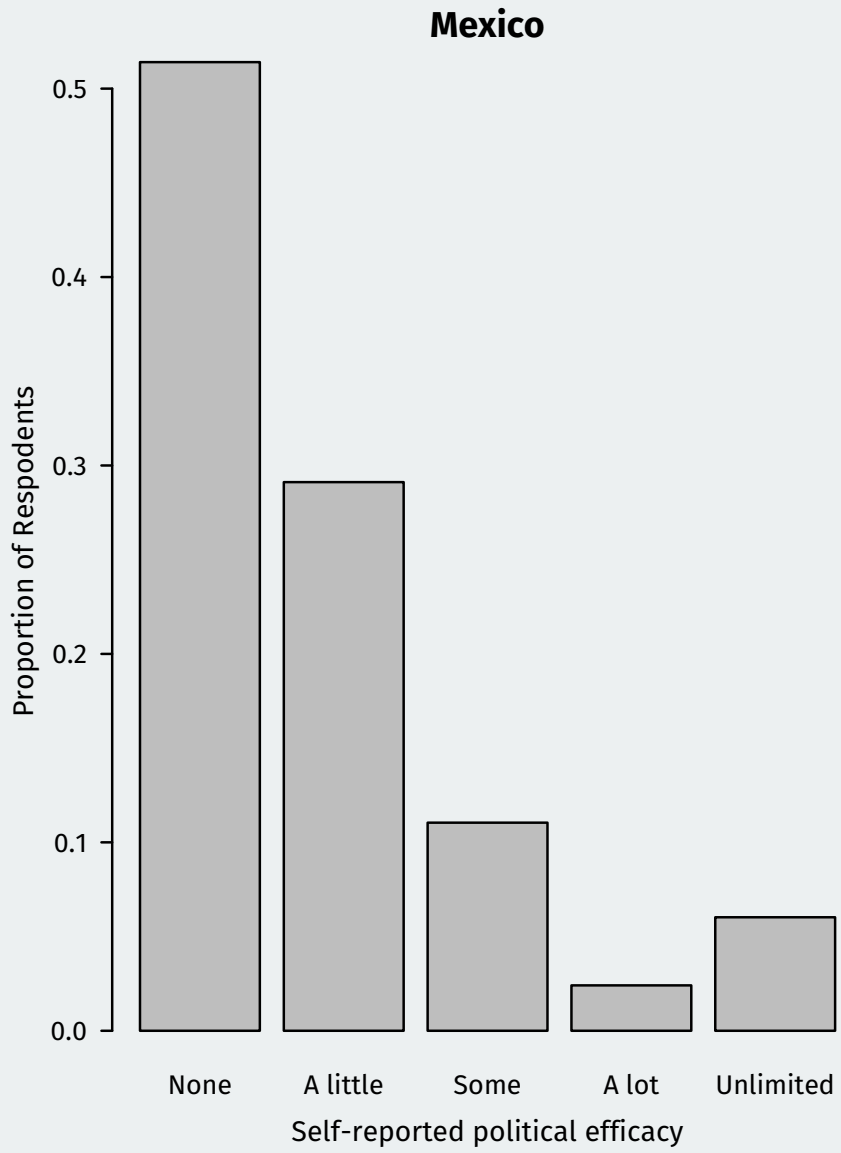
Mexico
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  - China has no free and fair elections.
- Could it be due to age differences between the samples?
  - Maybe Mexico sample is older and has more experience under 1-party rule?

```
hist(china$age, freq = FALSE, xlab = "Age", main = "China")
abline(v=median(china$age), col = "dodgerblue", lwd = 2)

hist(mexico$age, freq = FALSE, xlab = "Age",
     main = "Mexico")
abline(v=median(mexico$age), col = "dodgerblue", lwd = 2)
```

- `abline(v = 1)` adds a vertical line at 1, `abline(h = 1)` adds a horizontal line at 1.

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- Weird since:
  - Mexico just ousted long-ruling party (PRI) in 2000 election.
  - China has no free and fair elections.
- Could it be due to age differences between the samples?
  - Maybe Mexico sample is older and has more experience under 1-party rule?

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hist(china$age, freq = FALSE, xlab = "Age", main = "China")
abline(v=median(china$age), col = "dodgerblue", lwd = 2)

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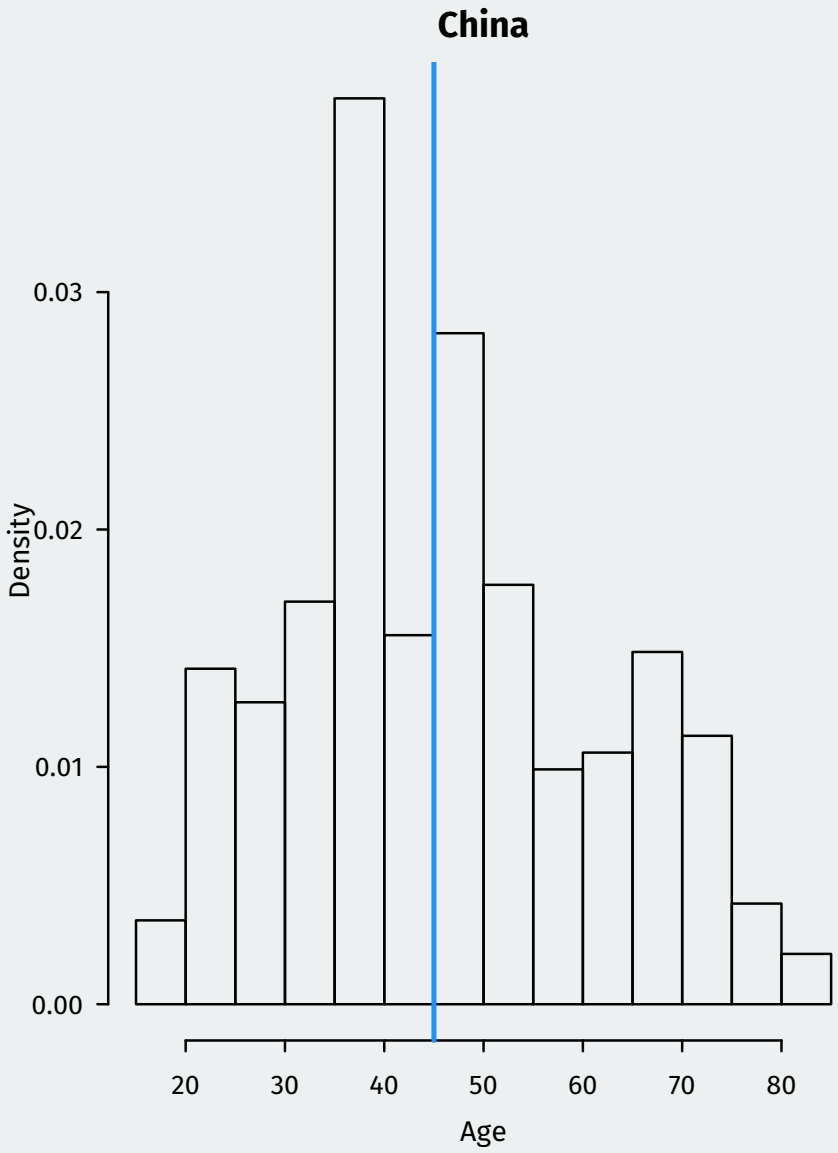
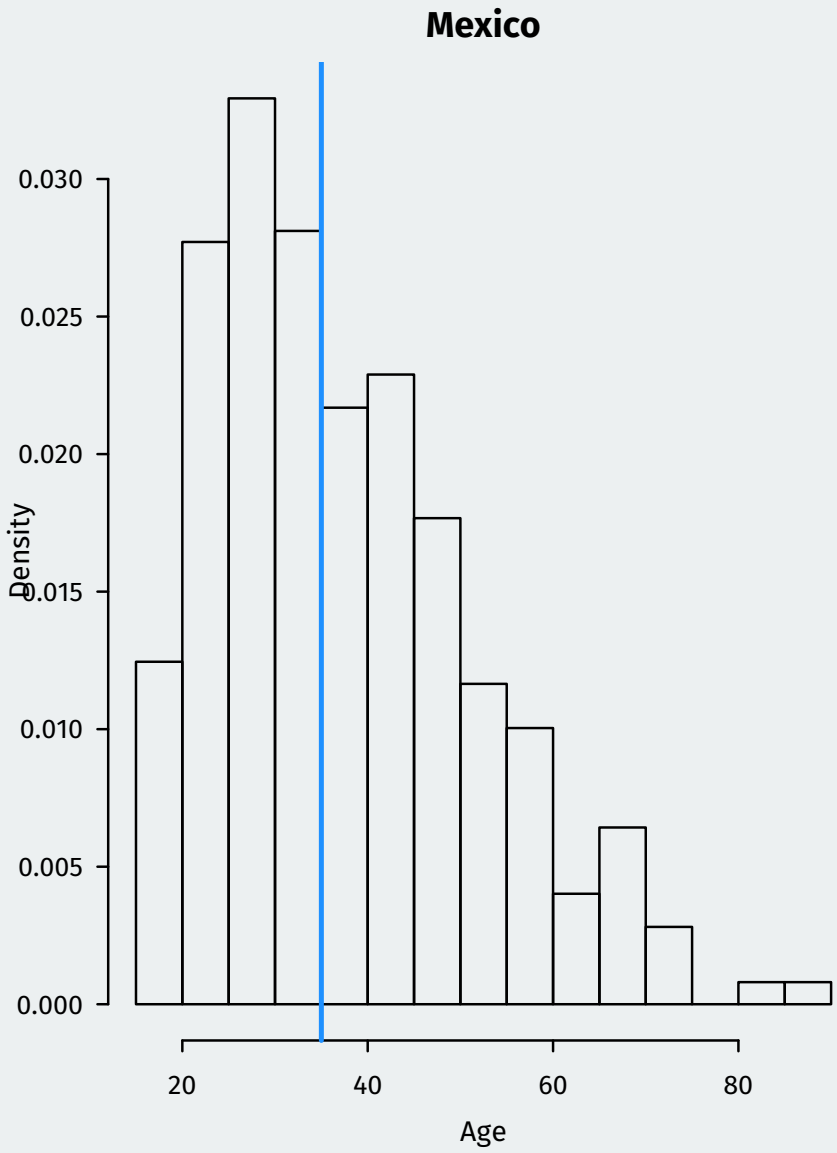

China
Density
0.00
0.01
0.02
0.03
20
30
40
50
60
70
80
Age


Mexico
Density
0.000
0.005
0.010
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20
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Relative self-efficacy

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Adjust self-reported efficacy

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china.sane$self.adj <- 1 +
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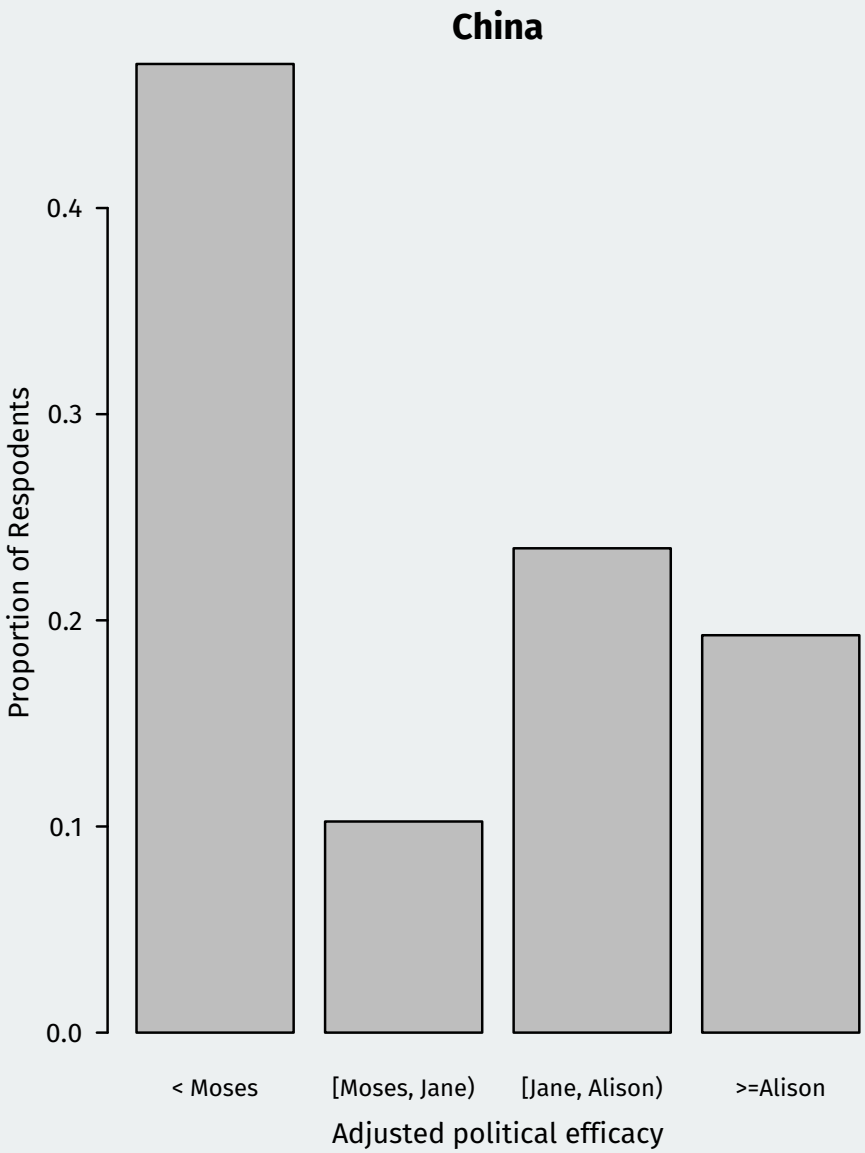
- R converts `TRUE` to `1` and `FALSE` to `0` when adding.


China
Proportion of Respodents
0.0
0.1
0.2
0.3
0.4
< Moses
[Moses, Jane)
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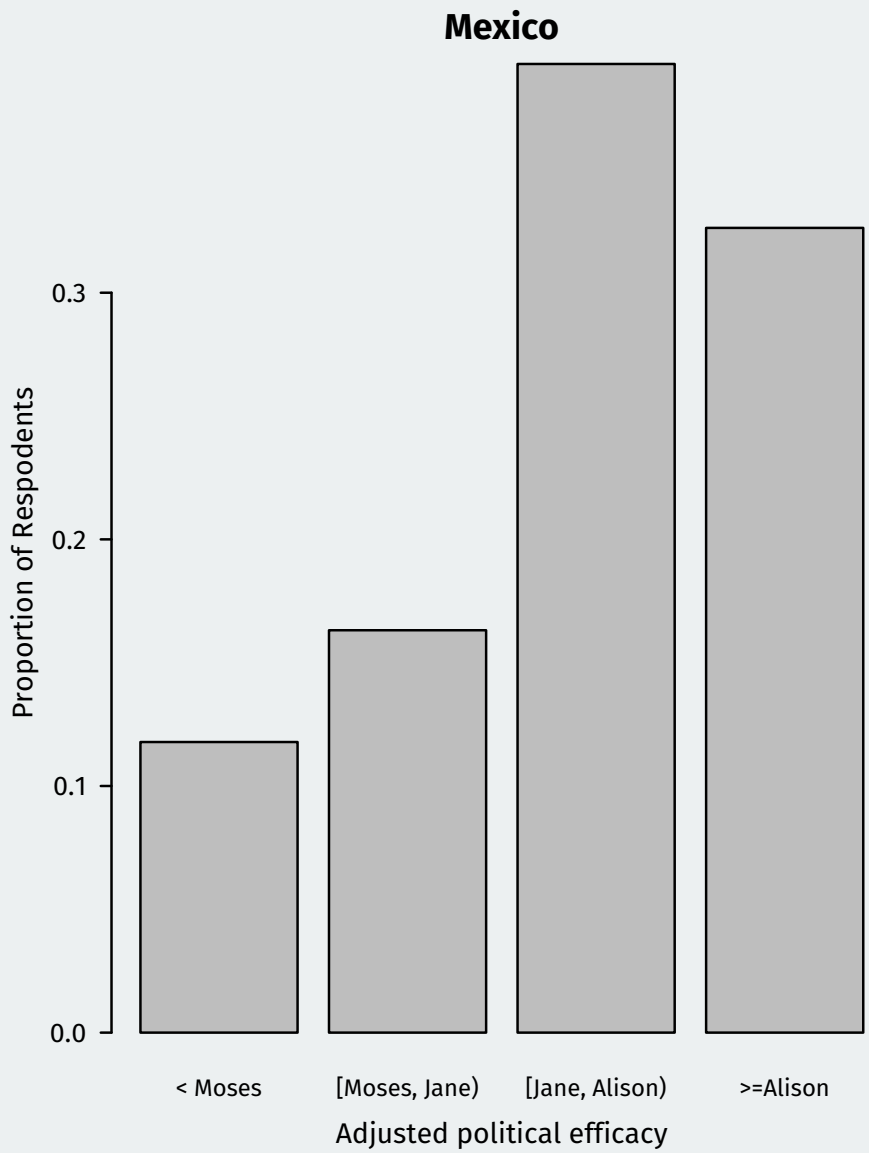
Adjusted political efficacy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  - Get started early!