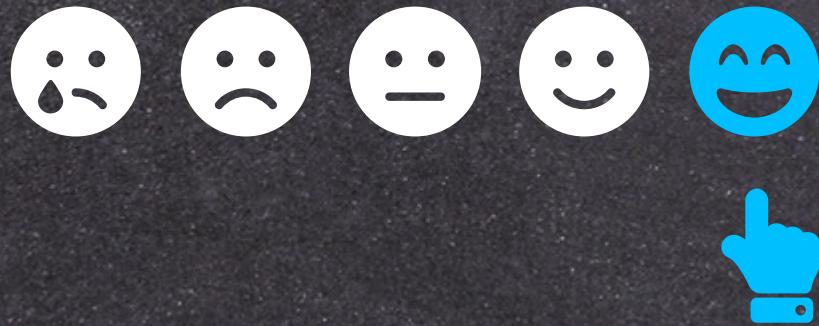
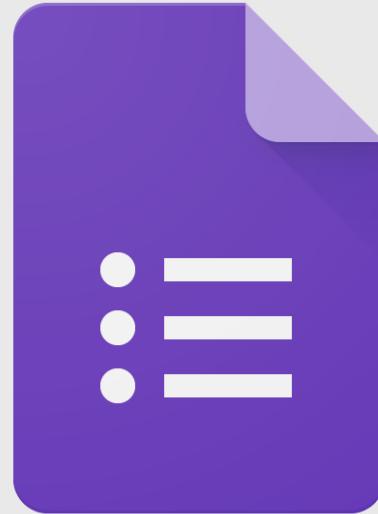


# Using {formr} to create powered surveys with individualized feedback

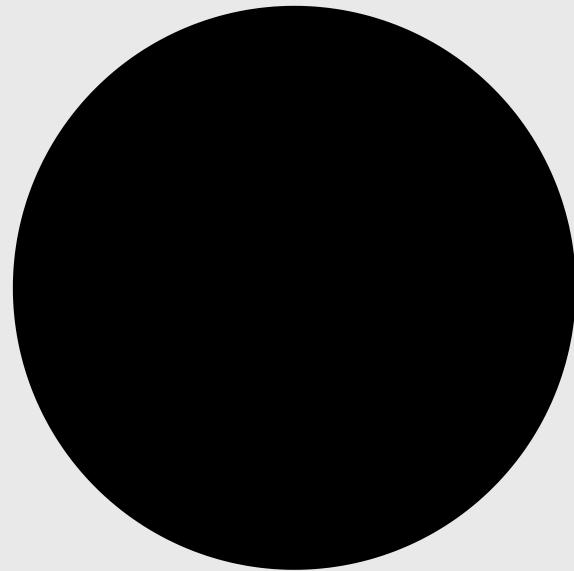


by John Paul Helveston

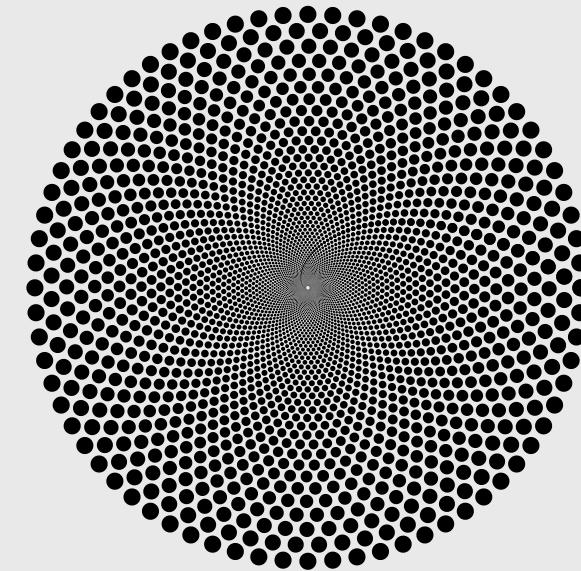
Jan. 21, 2021



# Google Forms



SIMPLE?



COMPLEX?

form{r}



Ruben C. Arslan



Cyril S. Tata

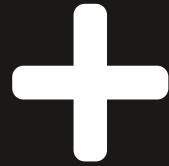


I ❤  
form{r}



form{`r`}

?





[https://formr.org/interactive\\_charts](https://formr.org/interactive_charts)

## Your risk preferences

The distributions show how common values are in the population.  
The dots show your values.

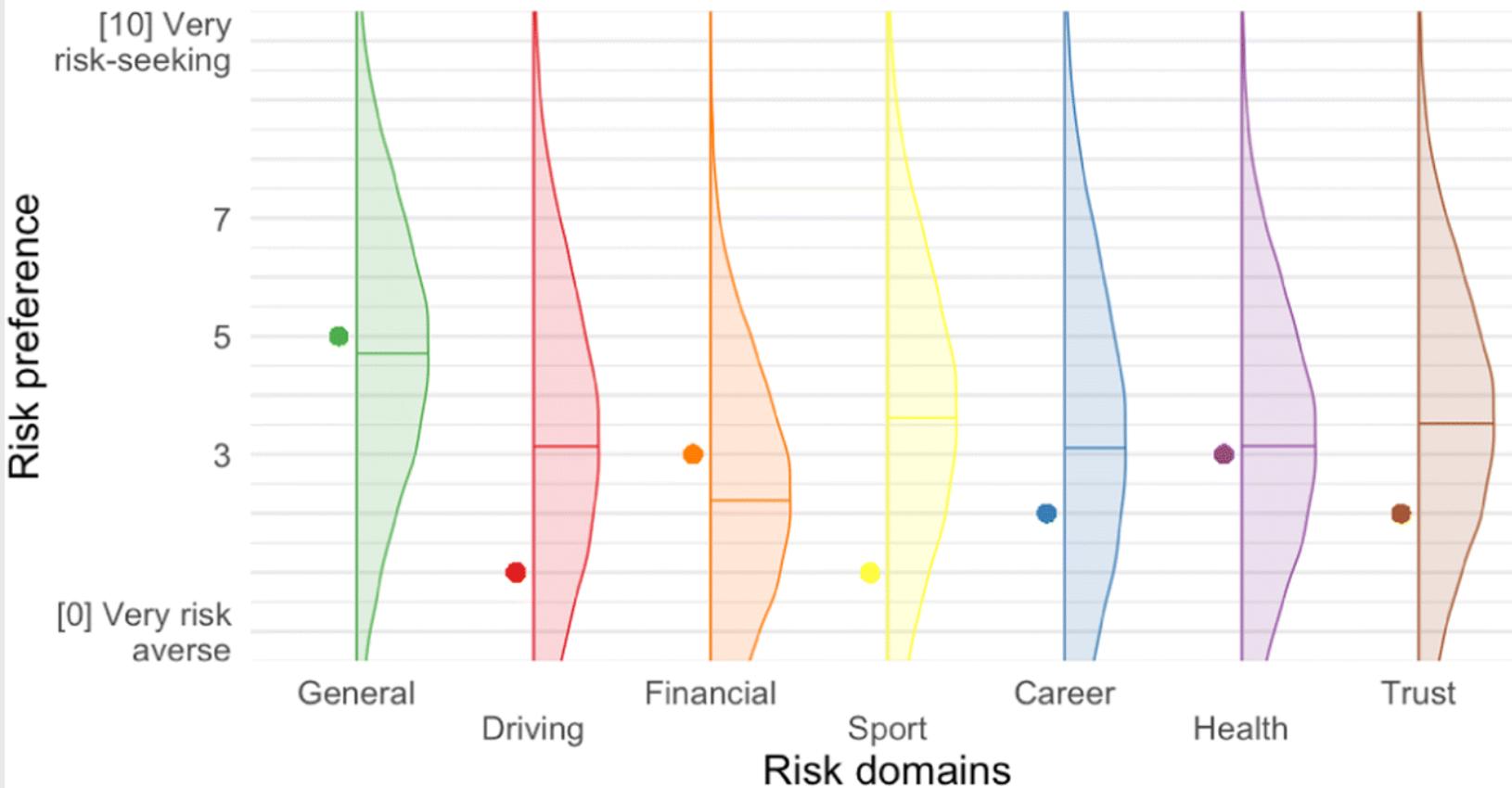


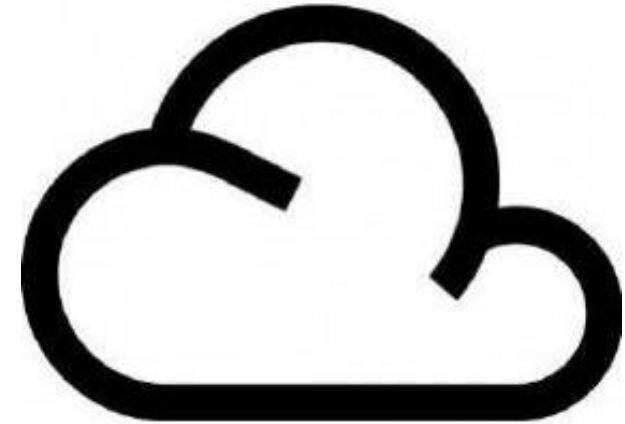
Fig. 3 from Arslan, R.C., Walther, M.P. & Tata, C.S. [formr: A study framework allowing for automated feedback generation and complex longitudinal experience-sampling studies using R](#). Behav Res 52, 376–387 (2020).

# how form{r} works

# Open source components



+



Google Sheets

OpenCPU

(Thanks to Jeroen Ooms! )

randomImagesDemo - Google Sheets

docs.google.com/spreadsheets/d/1hs551J6PYJNxc4sftmJyUqj6XYGYFVnN\_5faQBWY7cs/edit#gid=1611481919

randomImagesDemo

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Share

welcome

	B	C	D	E	F	G	H	I	J
1	class	type	optional	name	showif	label	choice1	choice2	choice3
9		note		welcome		# Welcome to our survey!			
10	answer_below_label label_align_left	mc_button		likeFruit		Do you like fruit?	Yes!	Kind of	
11		submit		next1		Next page			
12	answer_below_label label_align_left	mc_button		q1		## Which type of apple do you think this is?  <img src = `r paste0(imageRoot, apple1)` width = 250>	Fuji	Gala	Honeycrisp
13		submit		next2		Next page			
14	answer_below_label label_align_left	mc_button		q2		## Which type of apple do you think this is?  <img src = `r paste0(imageRoot, apple2)` width = 250>	Fuji	Gala	Honeycrisp
15		submit		next3		Next page			
16	answer_below_label label_align_left	mc_button		q3		## Which type of apple do you think this is?  <img src = `r paste0(imageRoot, apple3)` width = 250>	Fuji	Gala	Honeycrisp

survey

Explore

randomImagesDemo - Google Sheets

docs.google.com/spreadsheets/d/1hs551J6PYJNxc4sftmJyUqj6XYGYFvN\_N\_5faQBWY7cs/edit#gid=1611481919

randomImagesDemo

File Edit View Insert Format Data Tools Add-ons Help Last edit was seconds ago

100% Calibri 12 B I S A

welcome

	B	C	D	E	F	H	I	J
1	class	type	optional	name	showif	choice1	choice2	choice3
9		note		welcome		# Welcome to our survey!		
10	answer_below_label label_align_left	mc_button		likeFruit		Do you like fruit?	Yes!	Kind of
11		submit		next1		Next page		
12	answer_below_label label_align_left	mc_button		q1		## Which type of apple do you think this is?  <img src = `r paste0(imageRoot, apple1)` width = 250>	Fuji	Gala Honeycrisp
13		submit		next2		Next page		
14	answer_below_label label_align_left	mc_button		q2		## Which type of apple do you think this is?  <img src = `r paste0(imageRoot, apple2)` width = 250>	Fuji	Gala Honeycrisp
15		submit		next3		Next page		
16	answer_below_label label_align_left	mc_button		q3		## Which type of apple do you think this is?  <img src = `r paste0(imageRoot, apple3)` width = 250>	Fuji	Gala Honeycrisp

survey

Explore

markdown / code chunks

randomImagesDemo - Google Sheets

docs.google.com/spreadsheets/d/1hs551J6PYJNxc4sftmJyUqj6XYGYFvN\_N\_5faQBWY7cs/edit#gid=1611481919

randomImagesDemo

File Edit View Insert Format Data Tools Add-ons Help Last edit was seconds ago

100% Calibri 12 B I S A

welcome

question type

optional name showif choice1 choice2 choice3

1 class

9 note welcome

10 answer\_below\_label likeFruit Yes!

label\_align\_left

11 submit Kind of

12 answer\_below\_label next1 Fuji

label\_align\_left q1 Gala

13 submit Honeycrisp

14 answer\_below\_label next2 Fuji

label\_align\_left q2 Gala

15 submit Honeycrisp

16 answer\_below\_label next3 Fuji

label\_align\_left q3 Gala

17 submit Honeycrisp

# Welcome to our survey!  
Do you like fruit?  
  
Next page  
## Which type of apple do you think this is?  
  
<img src = `r paste0(imageRoot, apple1)` width = 250>  
  
Next page  
## Which type of apple do you think this is?  
  
<img src = `r paste0(imageRoot, apple2)` width = 250>  
  
Next page  
## Which type of apple do you think this is?  
  
<img src = `r paste0(imageRoot, apple3)` width = 250>

survey Explore

randomImagesDemo - Google Sheets

docs.google.com/spreadsheets/d/1hs551J6PYJNxc4sftmJyUqj6XYGYFvN\_N\_5faQBWY7cs/edit#gid=1611481919

randomImagesDemo

File Edit View Insert Format Data Tools Add-ons Help Last edit was seconds ago

100% Calibri 12 B I S A

welcome

question type

optional name showif

markdown / code chunks

choice options

	B	D	E	F	
1	class	optional	name	showif	
9			welcome		# Welcome to our survey!
10	answer_below_label label_align_left	mc_button	likeFruit		Do you like fruit?
11		submit	next1		Next page
12	answer_below_label label_align_left	mc_button	q1		## Which type of apple do you think this is?
13		submit	next2		<img src = `r paste0(imageRoot, apple1)` width = 250>
14	answer_below_label label_align_left	mc_button	q2		Next page
15		submit	next3		## Which type of apple do you think this is?
16	answer_below_label label_align_left	mc_button	q3		<img src = `r paste0(imageRoot, apple2)` width = 250>

Explore

randomImagesDemo - Google Sheets

docs.google.com/spreadsheets/d/1hs551J6PYJNx4sftmJyUqj6XYGYFvN\_N\_5faQBWY7cs/edit#gid=1611481919

randomImagesDemo

File Edit View Insert Format Data Tools Add-ons Help Last edit was seconds ago

style options question type markdown / code chunks choice options

optional name showif

	D	E	F			
1						
9	answer_below_label label_align_left	note mc_button	welcome likeFruit	# Welcome to our survey! Do you like fruit?	Yes!	Kind of
10		submit	next1	Next page ## Which type of apple do you think this is? 	Fuji	Gala Honeycrisp
11	answer_below_label label_align_left	mc_button	q1			
12		submit	next2	Next page ## Which type of apple do you think this is? 	Fuji	Gala Honeycrisp
13	answer_below_label label_align_left	mc_button	q2			
14		submit	next3	Next page ## Which type of apple do you think this is? 	Fuji	Gala Honeycrisp
15	answer_below_label label_align_left	mc_button	q3			
16		submit				

+ survey Explore



## Import a Googlesheet

### Survey Name

apples

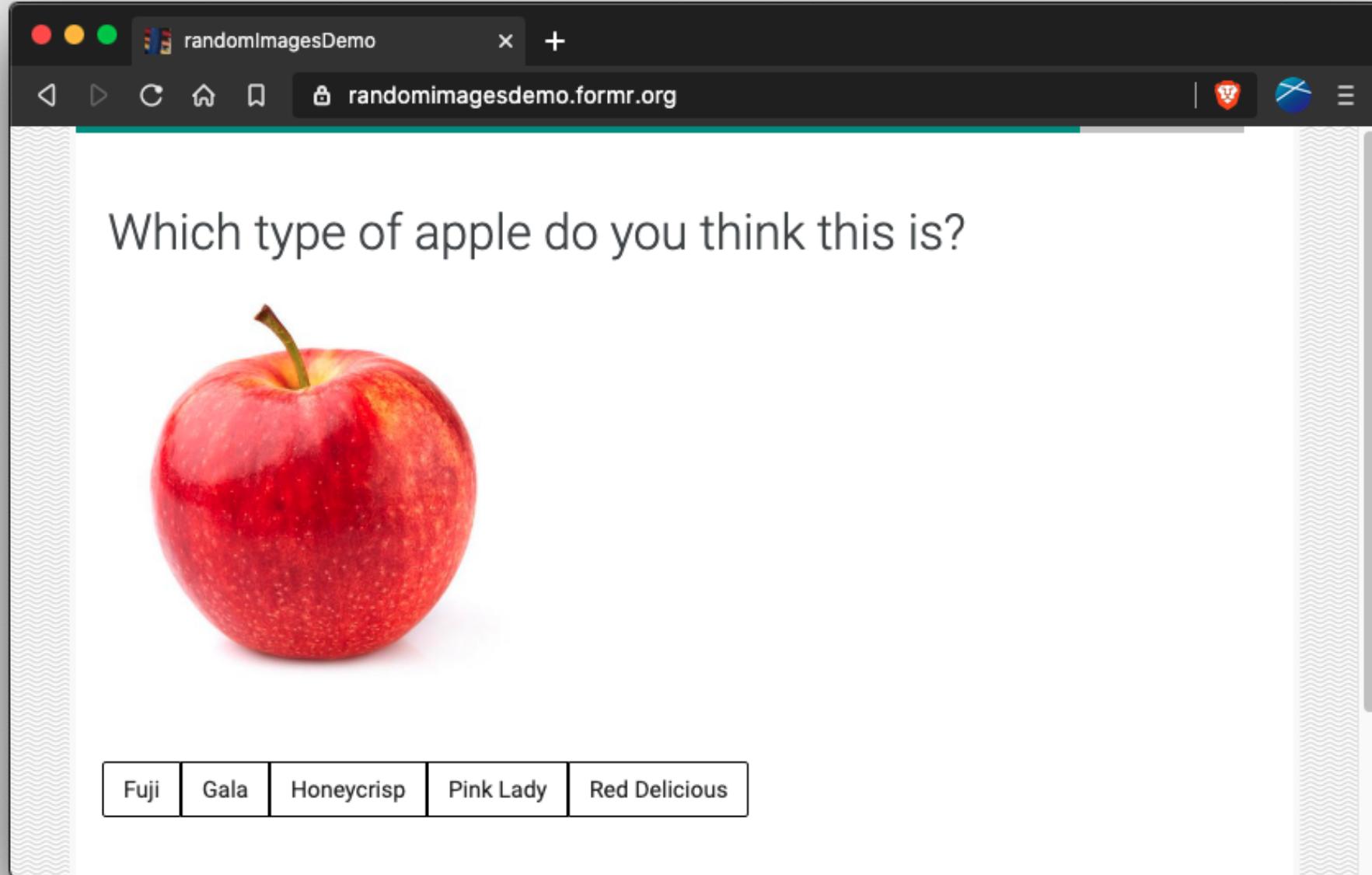
Enter a survey name following the hints above..

### Sheet link

[https://docs.google.com/spreadsheets/d/1hs551J6PYJNx4sftmJyUqj6XYGYFVnN\\_5faQBWY7cs  
/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1hs551J6PYJNx4sftmJyUqj6XYGYFVnN_5faQBWY7cs/edit?usp=sharing)

Make sure this sheet is accessible by anyone with the link

**Import**



# Use the {formr} package to get data

```
library(formr)

# Connect to formr
formr_connect(
  email    = 'youremail@gmail.com',
  password = '*****')

# Import raw data
raw <- formr_raw_results(survey_name = 'apples')

# Save raw data
write_csv(raw, here::here('raw_data.csv'))
```

# Showing randomized images

## Timed, randomized quizzes

# Showing randomized images

## Timed, randomized quizzes

formr-test-run x +

formr.org/run/formr-test-run

50%

(1 of 3) If these were your only options, which would you choose?

Option 1	Option 2	Option 3
		
<b>Type:</b> Gala <b>Price:</b> \$ 1 / lb <b>Freshness:</b> Excellent	<b>Type:</b> Gala <b>Price:</b> \$ 4 / lb <b>Freshness:</b> Poor	<b>Type:</b> Pink Lady <b>Price:</b> \$ 1 / lb <b>Freshness:</b> Excellent

Next page

hBvgOWI2GI ()

```

#>          type price freshness           image respID qID altID obsID
#> 1        Gala  1.0  Excellent  gala.jpg   1   1   1   1
#> 2        Gala  4.0    Poor   gala.jpg   1   1   2   1
#> 3  Pink Lady  1.0  Excellent pinkLady.jpg 1   1   3   1
#> 4 Honeycrisp  2.5    Poor honeycrisp.jpg 1   2   1   2
#> 5 Red Delicious  2.5    Poor redDelicious.jpg 1   2   2   2
#> 6 Red Delicious  1.0  Excellent redDelicious.jpg 1   2   3   2

```

50%

(1 of 3) If these were your only options, which would you choose?

Option 1	Option 2	Option 3
		
Type: Gala Price: \$ 1 / lb Freshness: Excellent	Type: Gala Price: \$ 4 / lb Freshness: Poor	Type: Pink Lady Price: \$ 1 / lb Freshness: Excellent

[Next page](#)

hBvgOWI2GI 0

# Showing randomized images

## Timed, randomized quizzes

```
q1a <- "What's your favorite **animal**?"  
q1b <- "What's your favorite **color**?"
```

## Version A

```
q1_text <- sample(c(q1a, q1b), size = 1)  
q1_text
```

```
#> [1] "What's your favorite  
**animal**?"
```

Display text:

```
`r q1_text`
```

What's your favorite **animal**?

## Version B

```
q1_text <- sample(c(q1a, q1b), size = 1)  
q1_text
```

```
#> [1] "What's your favorite  
**color**?"
```

Display text:

```
`r q1_text`
```

What's your favorite **color**?

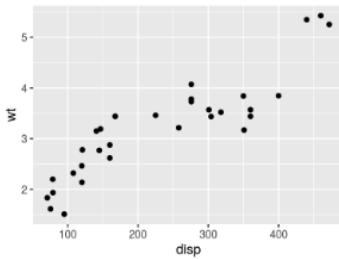
Time Remaining: 04:37

- Your quiz will be automatically submitted when the timer ends.
- Once you click **submit**, you will not be able to revise your answers.

1) What's your favorite animal?

2) TRUE or FALSE: R is awesome!  TRUE  FALSE

3) Use the `mtcars` data frame and the `ggplot2` library to write code to create the following plot:



impossibleMoose (10)

**Submit (you cannot undo)**

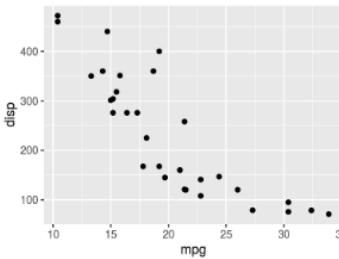
Time Remaining: 04:56

- Your quiz will be automatically submitted when the timer ends.
- Once you click **submit**, you will not be able to revise your answers.

1) What's your favorite color?

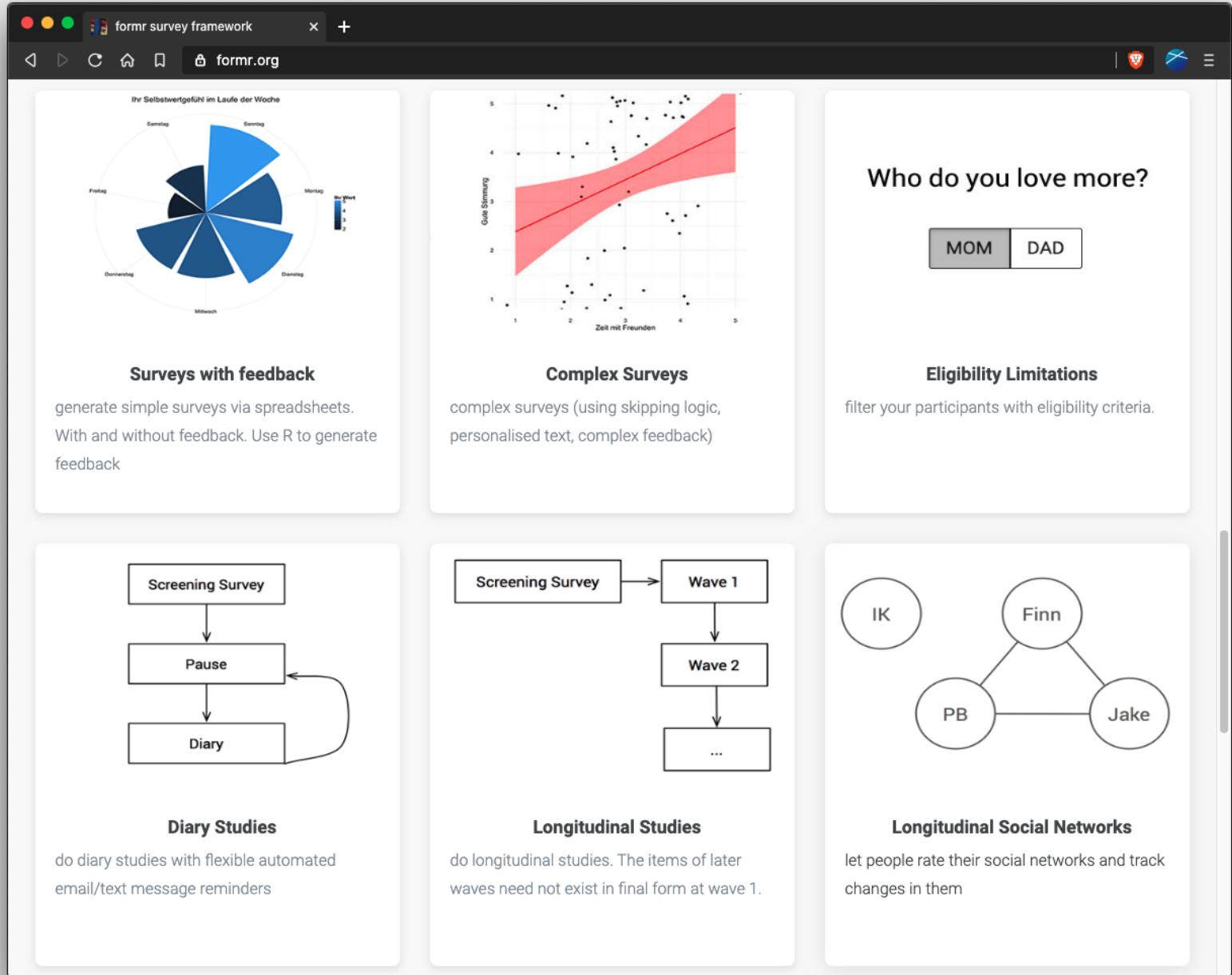
2) TRUE or FALSE: R is awesome!  TRUE  FALSE

3) Use the `mtcars` data frame and the `ggplot2` library to write code to create the following plot:



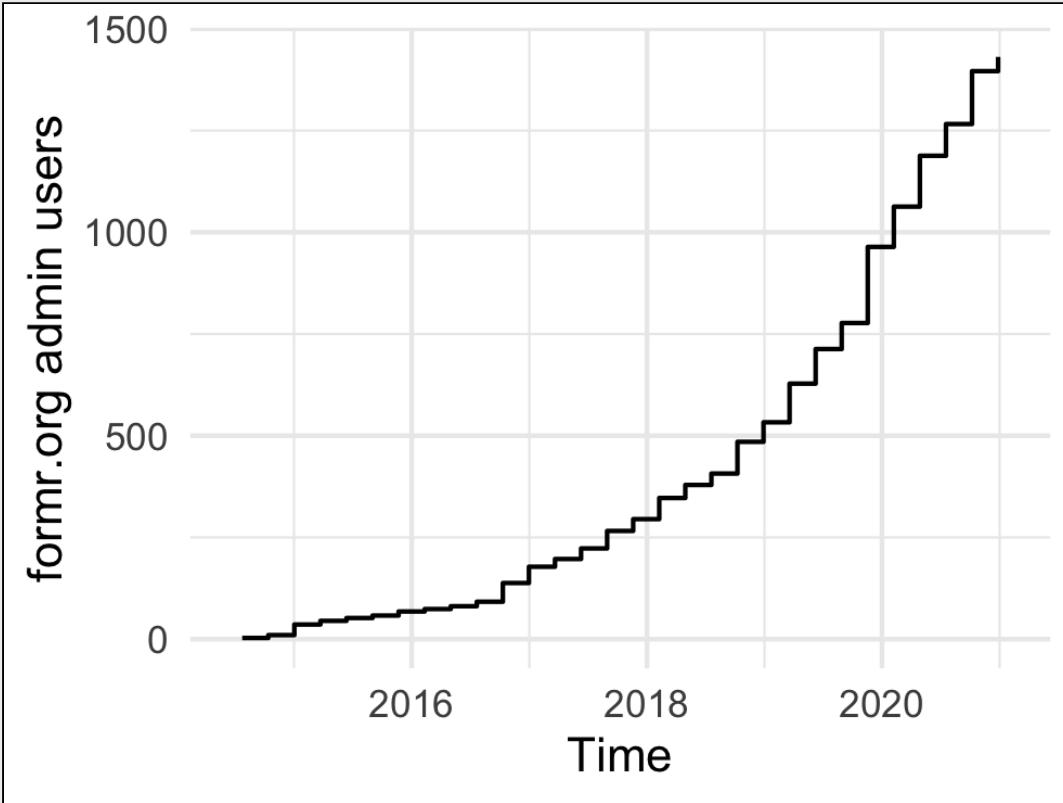
cleverServal (10)

**Submit (you cannot undo)**

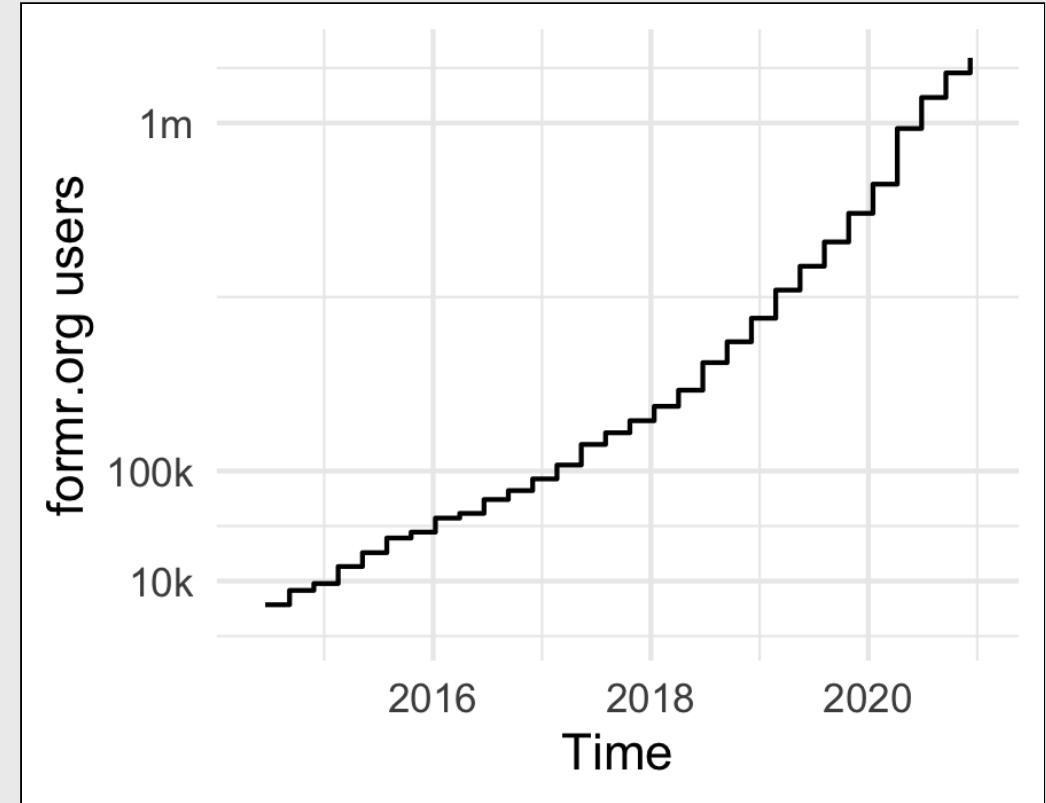
A screenshot of a web browser displaying the 'formr survey framework' at [formr.org](https://formr.org). The page is organized into six main sections, each illustrating a different type of survey or study design:

- Surveys with feedback**: Shows a pie chart titled "Ihr Selbstwertgefühl im Laufe der Woche" (Your self-esteem over the course of the week) with segments for Monday through Saturday, and a color scale from 1 (dark blue) to 5 (light blue).
- Complex Surveys**: Displays a scatter plot with "Zeit mit Freunden" (Time with friends) on the x-axis and "Gute Stimmung" (Good mood) on the y-axis, featuring a red shaded regression line.
- Eligibility Limitations**: A section with two buttons: "MOM" and "DAD". Below it, text says "filter your participants with eligibility criteria."
- Diary Studies**: A flowchart showing a "Screening Survey" leading to a "Pause" step, which then leads to a "Diary" step, with a feedback loop from Diary back to Pause.
- Longitudinal Studies**: A flowchart showing a "Screening Survey" leading to "Wave 1", then "Wave 2", and finally an ellipsis (...), indicating a series of repeated measurements over time.
- Longitudinal Social Networks**: A diagram of a social network with nodes labeled "IK", "Finn", "PB", and "Jake", connected by lines representing relationships.

# Number of admin accounts



# Number of surveys taken



# Thanks!



<https://formr.org/>

[@johnhelveston](#)   
[@jhelvy\\_](#)   
[@jhelvy\\_](#)   
[jhelvy.com](#)   
[jph@gwu.edu](mailto:jph@gwu.edu)