

# surveydown

An open-source platform for programmable,  
markdown-based surveys

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USRSE'25

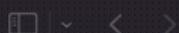
I try to figure out what people want...





Prof. John  
Helveston





# Welcome to the Ultimate Superhero Survey!



Thank you for participating in our research on superhero preferences and powers! This survey will help us understand what makes superheroes appealing to different people.

This survey should take about 3-5 minutes to complete.

Do you have a favorite super hero?

\*

- Yes
- No

Next

# WYSIWYG Interface

The screenshot shows a Google Forms interface titled "Super Hero Survey!". The main area displays a question: "Do you have a favorite super hero?" with options "Yes", "No", and "Add option or add 'Other'". A context menu is open over this question, listing various question types:

- Short answer
- Paragraph
- Multiple choice
- Checkboxes
- Dropdown
- File upload
- Linear scale
- Rating New
- Multiple choice grid
- Checkbox grid
- Date
- Time

The "Multiple choice" option is currently selected. On the right side of the interface, there is a vertical toolbar with icons for adding a new section, file upload, text, image, video, and table.



# Limitations

✗ Reproducibility  
✗ Version control

The screenshot shows the Google Forms interface for a survey titled "Super Hero Survey!". A context menu is open over a multiple-choice question about favorite super heroes. The menu lists various question types: Short answer, Paragraph, Multiple choice (selected), Checkboxes, Dropdown, File upload, Linear scale, Rating (New), Multiple choice grid, Checkbox grid, Date, and Time. The "Multiple choice" option is highlighted with a blue selection bar.

Untitled 158.docx  
Untitled 241.doc  
Untitled 138 copy.docx  
Untitled 138 copy 2.docx  
Untitled 139.docx  
Untitled 40 MOM ADDRESS.jpg  
Untitled 242.doc  
Untitled 243.doc  
Untitled 243 IMPORTANT.doc  
Untitled 41.jpg



# Limitations

- ✗ Reproducibility
- ✗ Version control
- ✗ Limited features
- ✗ Open source

The screenshot shows a Google Forms interface. At the top, there's a navigation bar with 'Questions' (highlighted in blue), 'Responses', and 'Settings'. Below the title 'Super Hero Survey!', there's a form description: 'Do you have a favorite super hero?'. Underneath, there's a multiple choice question with three options: 'Yes', 'No', and 'Add option or add "Other"'. A context menu is open on the right side of the screen, listing various question types: Short answer, Paragraph, Multiple choice (selected), Checkboxes, Dropdown, File upload, Linear scale, Rating (marked as New), Multiple choice grid, Checkbox grid, Date, and Time. The 'Multiple choice' option is highlighted with a light purple background.

Why not make  
surveys from **code**?

## Limitations Features

- ✓ Reproducibility
- ✓ Version control
- ✓ Lots of features
- ✓ Open source

# Introducing **surveydown!**



# In this talk, we will cover:

What is surveydown?

How does it work?

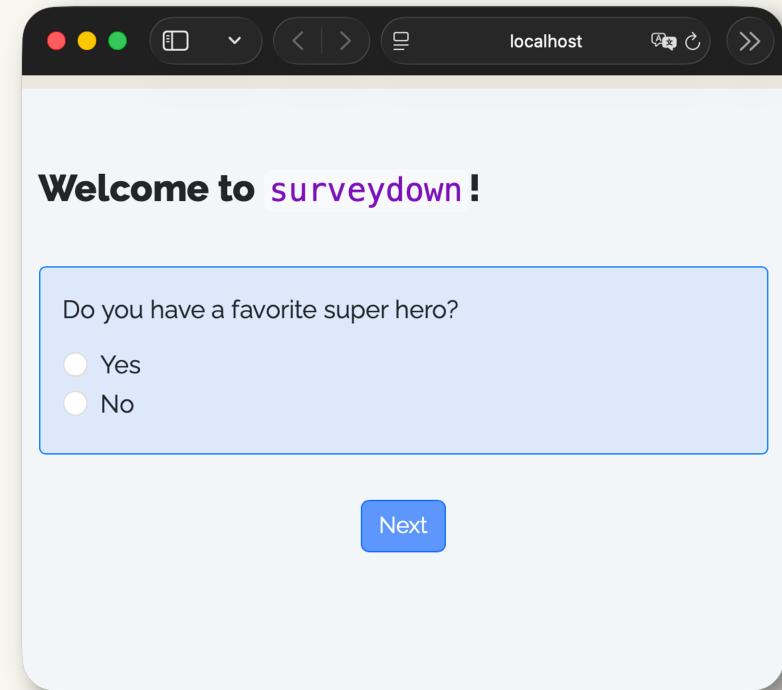
What can I do with it?

What's next?

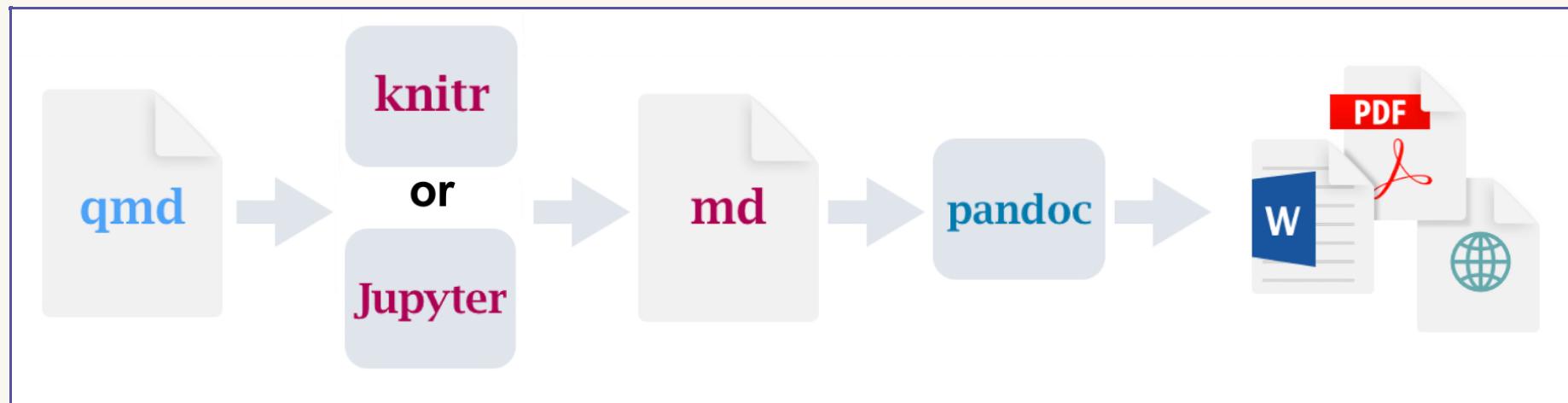
# What is **surveydown**?



# R package that renders Quarto files into surveys



# Quarto is a publishing system

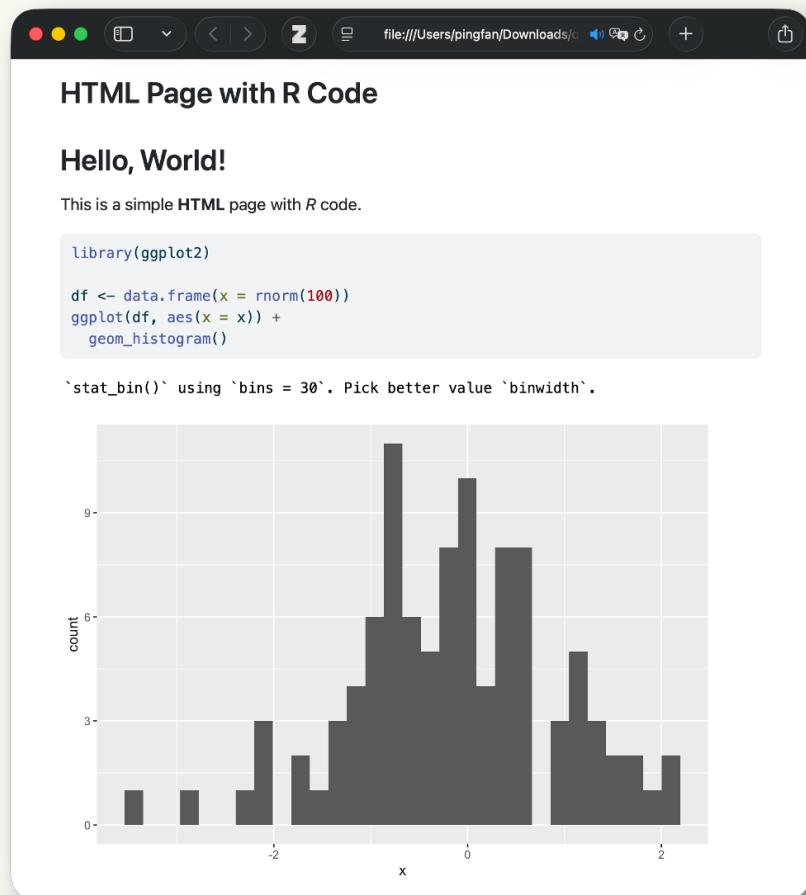


## Original qmd file

### Markdown + R code chunks

```
1 ---  
2 format: html  
3 title: "HTML Page with R Code"  
4 ---  
5  
6 # Hello, World!  
7  
8 This is a simple **HTML** page with *R* code.  
9  
10 ````{r}  
11 library(ggplot2)  
12  
13 df <- data.frame(x = rnorm(100))  
14 ggplot(df, aes(x = x)) +  
15   geom_histogram()  
16 ````
```

## Rendered HTML

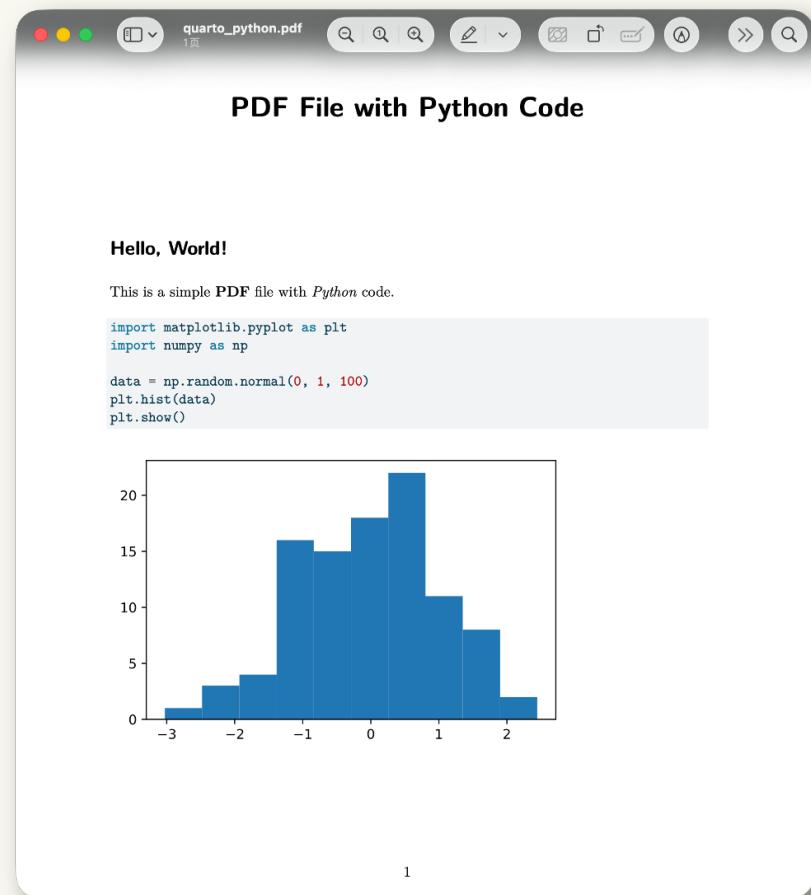


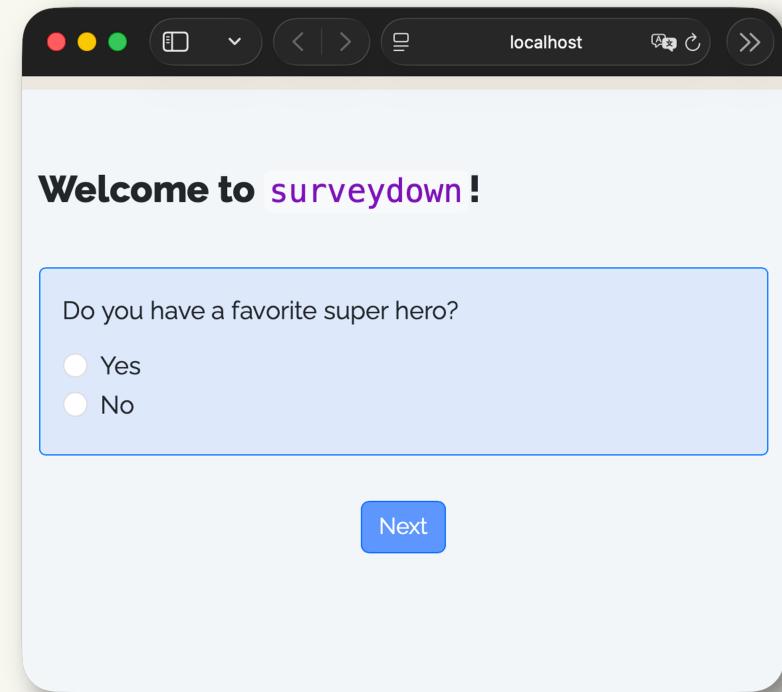
## Original qmd file

### Markdown + Python code chunks

```
1 ---  
2 format: pdf  
3 title: "PDF File with Python Code"  
4 ---  
5  
6 # Hello, World!  
7  
8 This is a simple **PDF** file with *Python* code.  
9  
10 ````{python}  
11 import matplotlib.pyplot as plt  
12 import numpy as np  
13  
14 data = np.random.normal(0, 1, 100)  
15 plt.hist(data)  
16 plt.show()  
17 ````
```

## Rendered PDF

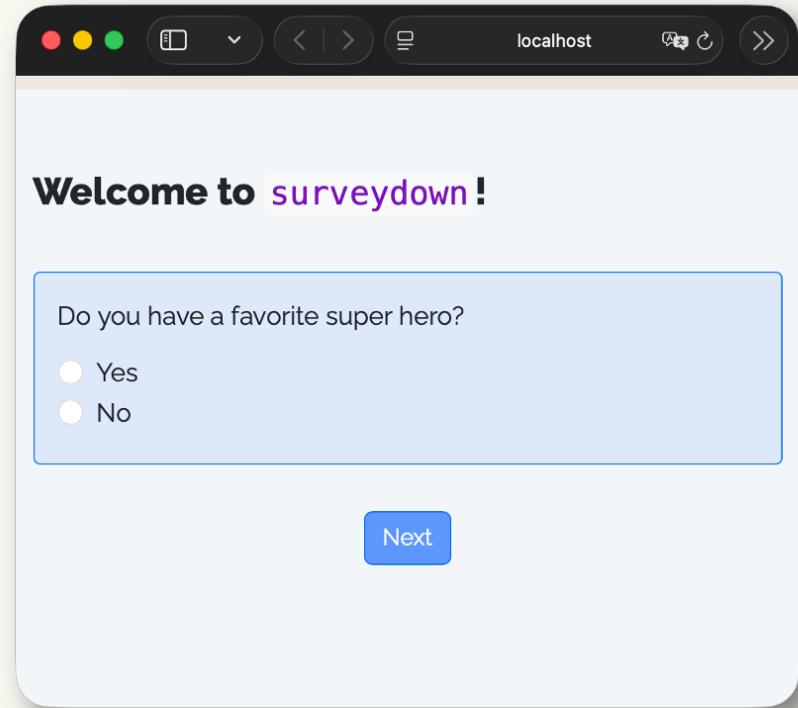




## survey.qmd

```
1 ---  
2 format: html  
3 echo: false  
4 warning: false  
5 ---  
6  
7 ```{r}  
8 library(surveydown)  
9 ```  
10  
11 :::: {#welcome .sd-page}  
12  
13 # Welcome to `surveydown`!  
14  
15 ```{r}  
16 sd_question(  
17   type = "mc",  
18   id = "has_fav_hero",  
19   label = "Do you have a favorite super hero?",  
20   option = c(  
21     "Yes" = "yes",  
22     "No" = "no"  
23   )  
24 )  
25  
26 sd_next()  
27  
28  
29 ::::
```

## Rendered Survey



## survey.qmd

```
1 ---  
2 format: html  
3 echo: false  
4 warning: false  
5 ---  
6  
7 `r`  
8 library(surveydown)  
9 `r`  
10  
11 :::{#welcome .sd-page}  
12  
13 # Welcome to `surveydown`!  
14  
15 `r`  
16 sd_question(  
17   type = "mc",  
18   id = "has_fav_hero",  
19   label = "Do you have a favorite super hero?",  
20   option = c(  
21     "Yes" = "yes",  
22     "No" = "no"  
23   )  
24 )  
25  
26 sd_next()  
27 `r`  
28  
29 :::
```

YAML header for a “clean” output

## survey.qmd

```
1 ---  
2 format: html  
3 echo: false  
4 warning: false  
5 ---  
6  
7 ```{r}  
8 library(surveydown)  
9 ```  
10  
11 :::: {#welcome .sd-page}  
12  
13 # Welcome to `surveydown`!  
14  
15 ```{r}  
16 sd_question(  
17   type = "mc",  
18   id = "has_fav_hero",  
19   label = "Do you have a favorite super hero?",  
20   option = c(  
21     "Yes" = "yes",  
22     "No" = "no"  
23   )  
24 )  
25  
26 sd_next()  
27 ```  
28  
29 ::::
```

Load the `surveydown` Package

## survey.qmd

```
1 ---  
2 format: html  
3 echo: false  
4 warning: false  
5 ---  
6  
7 ```{r}  
8 library(surveydown)  
9 ```  
10 :::: {#welcome .sd-page}  
11 # Welcome to `surveydown`!  
12  
13 sd_question(  
14   type = "mc",  
15   id = "has_fav_hero",  
16   label = "Do you have a favorite super hero?",  
17   option = c(  
18     "Yes" = "yes",  
19     "No" = "no"  
20   )  
21 )  
22  
23 sd_next()  
24 ```  
25  
26 ::::
```

Use Quarto fences (::::)  
to define survey pages

## survey.qmd

```
1 ---  
2 format: html  
3 echo: false  
4 warning: false  
5 ---  
6  
7 ```{r}  
8 library(surveydown)  
9 ```  
10  
11 :::: {#welcome .sd-page}  
12  
13 # Welcome to `surveydown`!  
14  
15 ```{r}  
16 sd_question(  
17   type = "mc",  
18   id = "has_fav_hero",  
19   label = "Do you have a favorite super hero?",  
20   option = c(  
21     "Yes" = "yes",  
22     "No" = "no"  
23   )  
24 )  
25  
26 sd_next()  
27  
28  
29 ::::
```

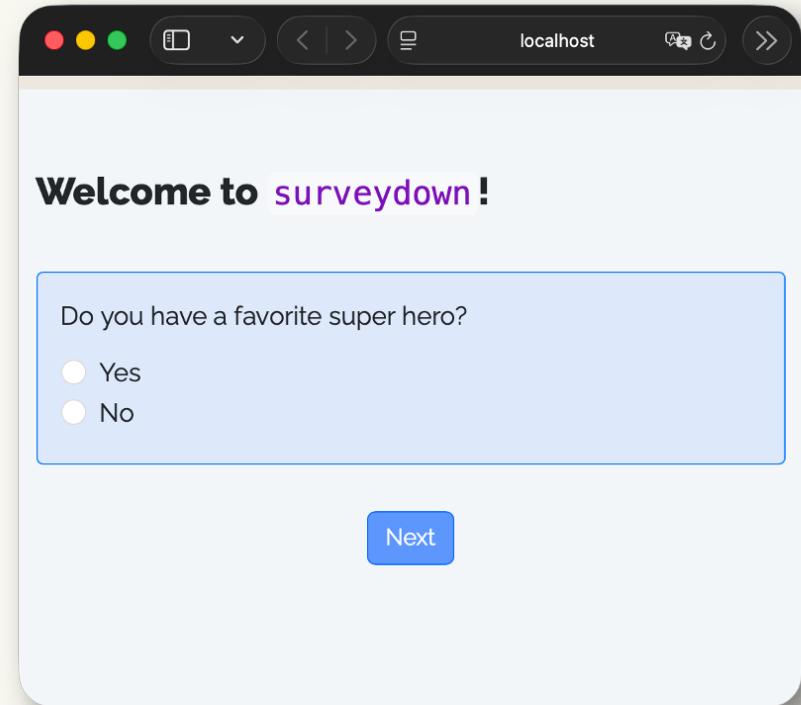
### Page content

- Markdown for texts, images, etc.
- `sd_question()` for survey questions
- `sd_next()` for page navigation

## survey.qmd

```
1 ---  
2 format: html  
3 echo: false  
4 warning: false  
5 ---  
6  
7 ```{r}  
8 library(surveydown)  
9 ```  
10  
11 :::: {#welcome .sd-page}  
12  
13 # Welcome to `surveydown`!  
14  
15 ```{r}  
16 sd_question(  
17   type = "mc",  
18   id = "has_fav_hero",  
19   label = "Do you have a favorite super hero?",  
20   option = c(  
21     "Yes" = "yes",  
22     "No" = "no"  
23   )  
24 )  
25  
26 sd_next()  
27  
28  
29 ::::
```

## Rendered Survey



## survey.qmd

```
1 ---  
2 format: html  
3 echo: false  
4 warning: false  
5 ---  
6  
7 `r`  
8 library(surveydown)  
9 ``  
10 :: {#welcome .sd-page}  
11 # Welcome to `surveydown`!  
12  
13 ``{r}  
14 sd_question(  
15   type = "mc",  
16   id   = "has_fav_hero",  
17   label = "Do you have a favorite super hero?",  
18   option = c(  
19     "Yes" = "yes",  
20     "No"  = "no"  
21   )  
22 )  
23  
24 sd_next()  
25 ``  
26 :::
```

## Rendered Survey

The screenshot shows a web browser window titled 'localhost'. The main content area displays a survey question: 'Welcome to surveydown! Do you have a favorite super hero?'. Below the question are two radio button options: 'Yes' and 'No'. A blue 'Next' button is located at the bottom right of the survey box. The browser's address bar shows 'localhost'.

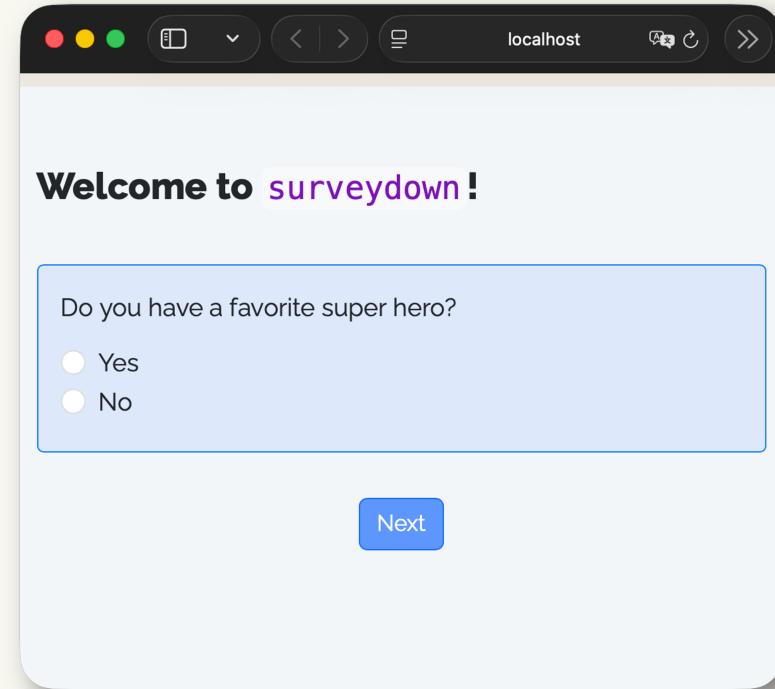
has_fav_hero
yes
no
no
yes

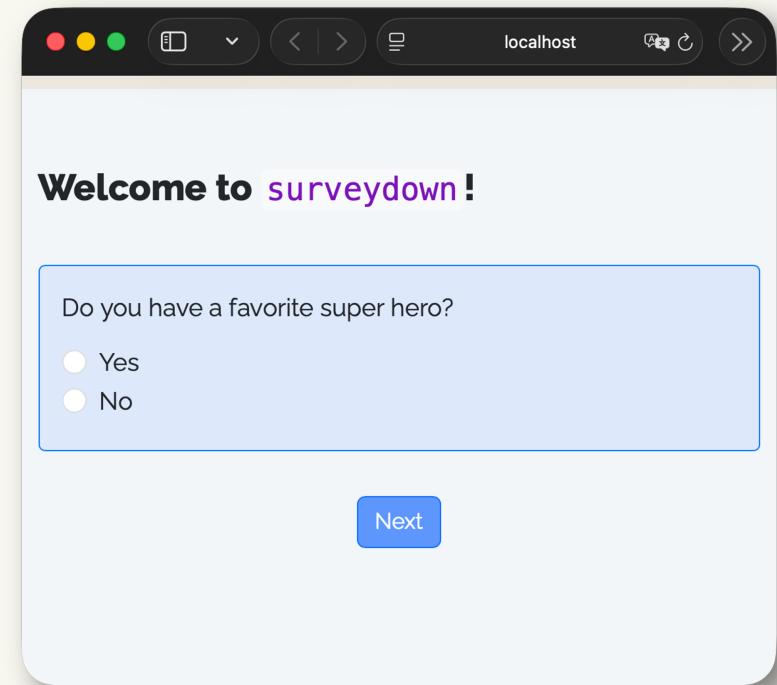
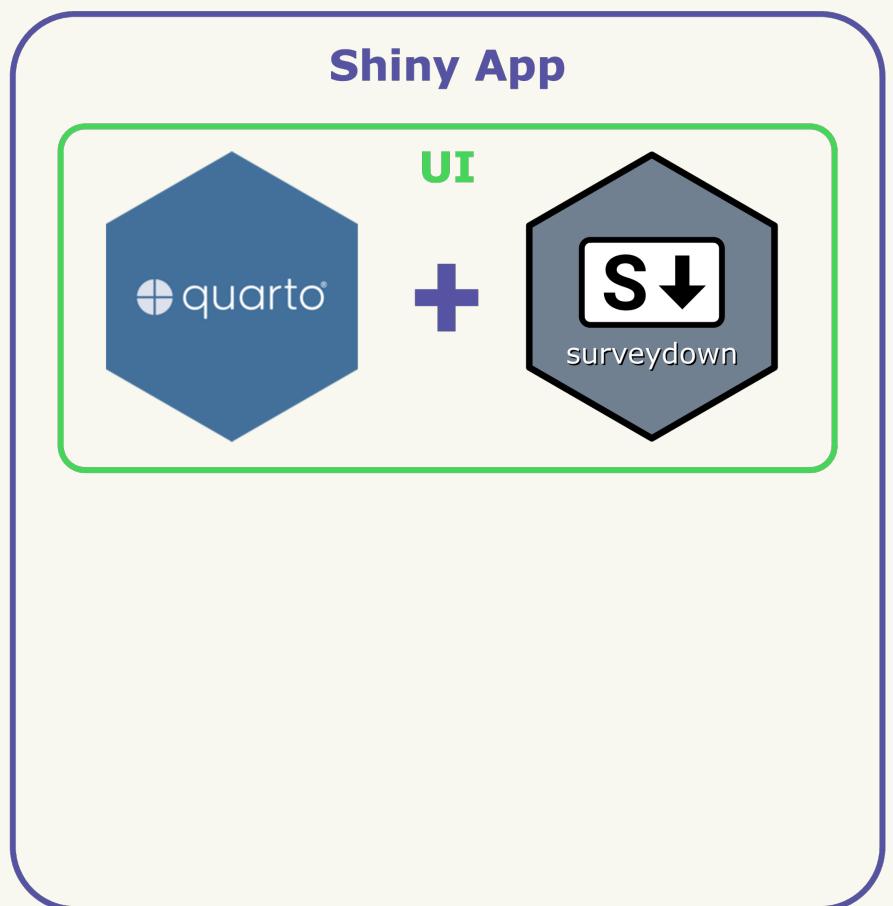
Wait a minute...  
Quarto renders to **static** html pages, right?

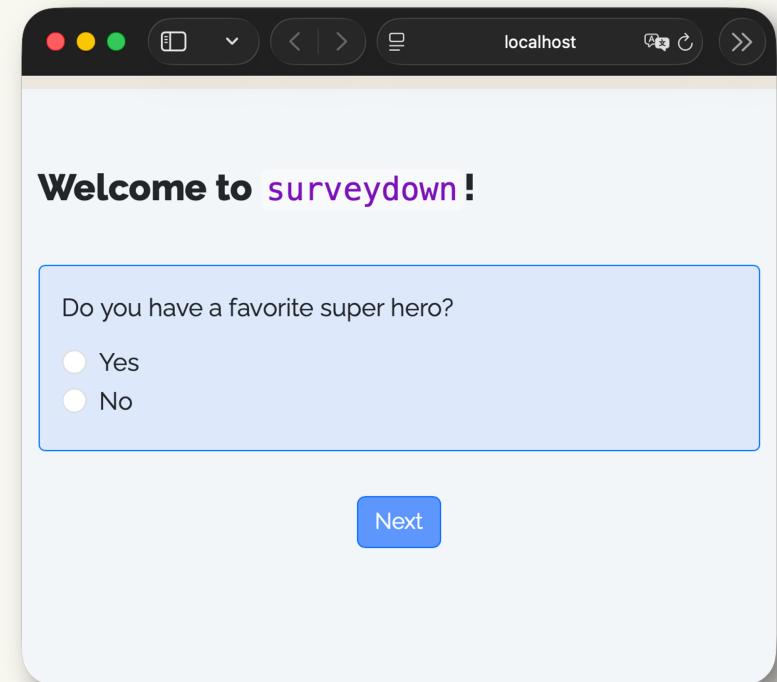
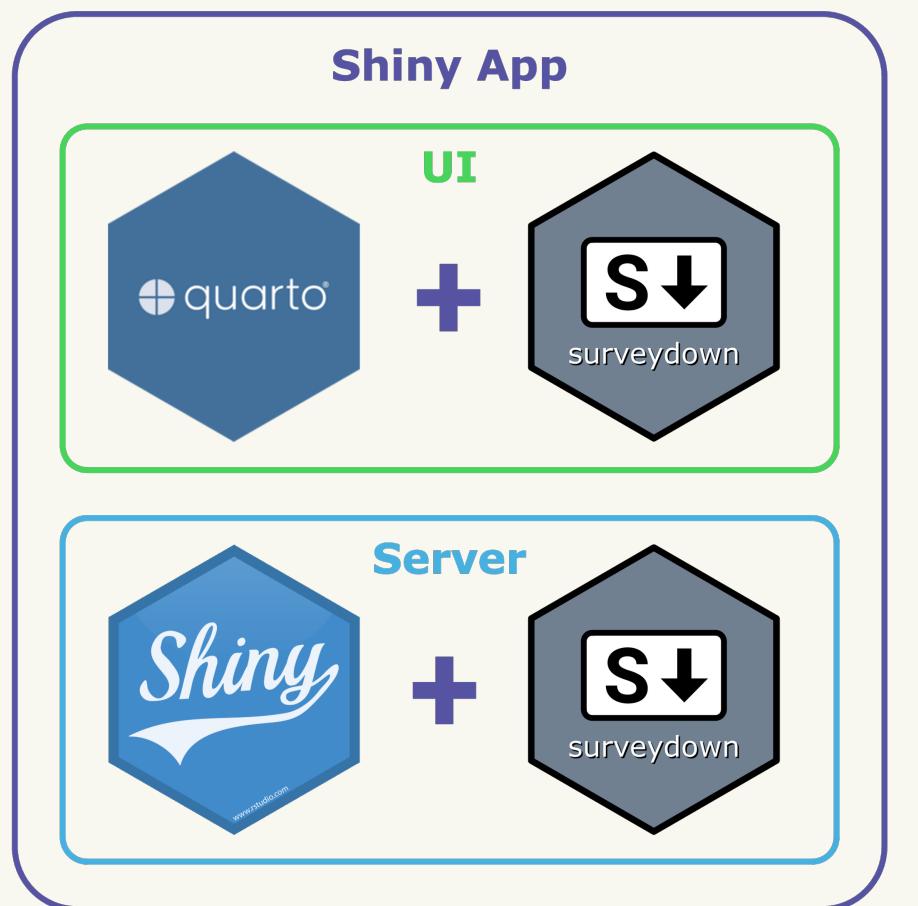


# Shiny to the rescue!









# A complete **surveydown** survey

`survey.qmd`

A **Quarto doc** defining the survey content (pages, texts, images, questions, etc).

`app.R`

An **R script** defining the survey Shiny app.

# Don't panic!



# app.R

```
1 library(surveydown)
2
3 ui <- sd_ui()
4
5 server <- function(input, output, session) {
6
7   sd_server()
8
9 }
10
11 shiny::shinyApp(ui = ui, server = server)
```

# app.R

```
1 library(surveydown)
2
3 ui <- sd_ui()
4
5 server <- function(input, output, session) {
6
7   sd_server()
8
9 }
10
11 shiny::shinyApp(ui = ui, server = server)
```

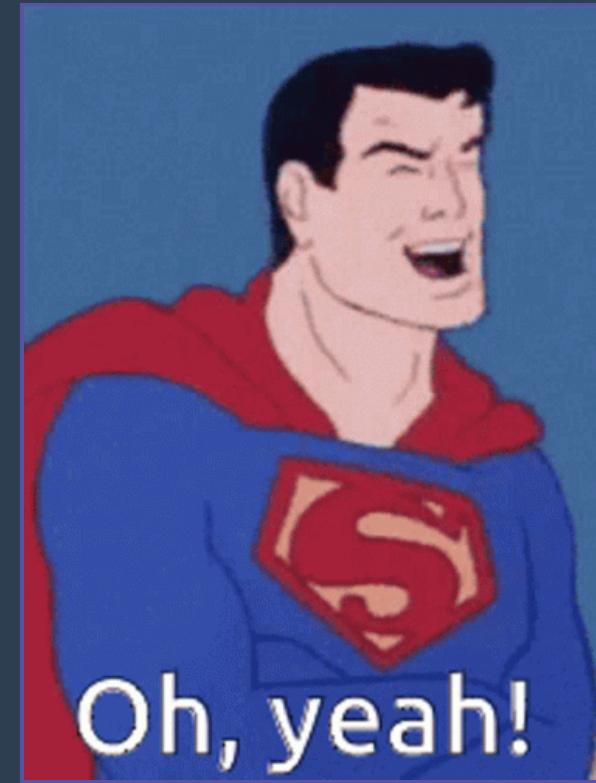
Render `survey.qmd` as UI

Run the `surveydown` server

Wait a minute...  
How do you store the response **data**?



# PostgreSQL to the rescue!



The screenshot shows the Supabase Table Editor interface. On the left, a sidebar lists various tables: coders, data, demo, demo2, evRangeSurvey, leaf\_miles, my\_test\_table, mydata, mytable1, newtable, responses, slider\_test, slider\_test2, slider\_test3, speedtest, superheros, and tpmn. The 'superheros' table is currently selected. The main area displays the 'superheros' table with the following columns: session\_id, has\_fav\_hero, fav\_hero\_name, and hero\_universe. The table contains 15 rows of data.

session_id	has_fav_hero	fav_hero_name	hero_universe
064585d4b3ce857a4a24e9dea4a657da	no	NULL	NULL
14d82544a547922107f492e6ee9a67dc	no	NULL	NULL
1eb83f38450cc4fa5b3bc8540d161f38	yes	Superman	dc
4ef1e74ae94737c502edb08db8e27f77	yes	NULL	marvel
5cf0f43d847425de2d015e1145ac3199	yes	Spiderman	all
676ae2ebd61ff7ffe70586c23af5b53c	NULL	NULL	NULL
68fe326c20852efae79bca9b0b089815	no	NULL	NULL
6f436b4a64f154324ad6c4c883e99002	yes	Monkey King	marvel
8352cbbaad349838729c489c43f08c4f	yes	Spiderman	dc
86e11fbcaa660bc1d94b686fd0206b55d	yes	Superman	all
a426816365182d50dc133ee0c6255b3d	yes	NULL	NULL
a754b629d48ad2c53049c6741e9d4645	no	NULL	NULL
bb7021e8ad7e35be6d75831a2f5c51cd	yes	Spiderman	all
bbe8c56090359bb4eb37e58b95b31316	yes	Spider Man	marvel

# app.R

```
1 library(surveydown)
2
3 # sd_db_config()
4 db <- sd_db_connect()
5
6 ui <- sd_ui()
7
8 server <- function(input, output, session) {
9
10   sd_server(db)
11
12 }
13
14 shiny::shinyApp(ui = ui, server = server)
```

Store credentials  
Connect to the database

Pass connection to `sd_server()`

The screenshot shows an RStudio interface with the following details:

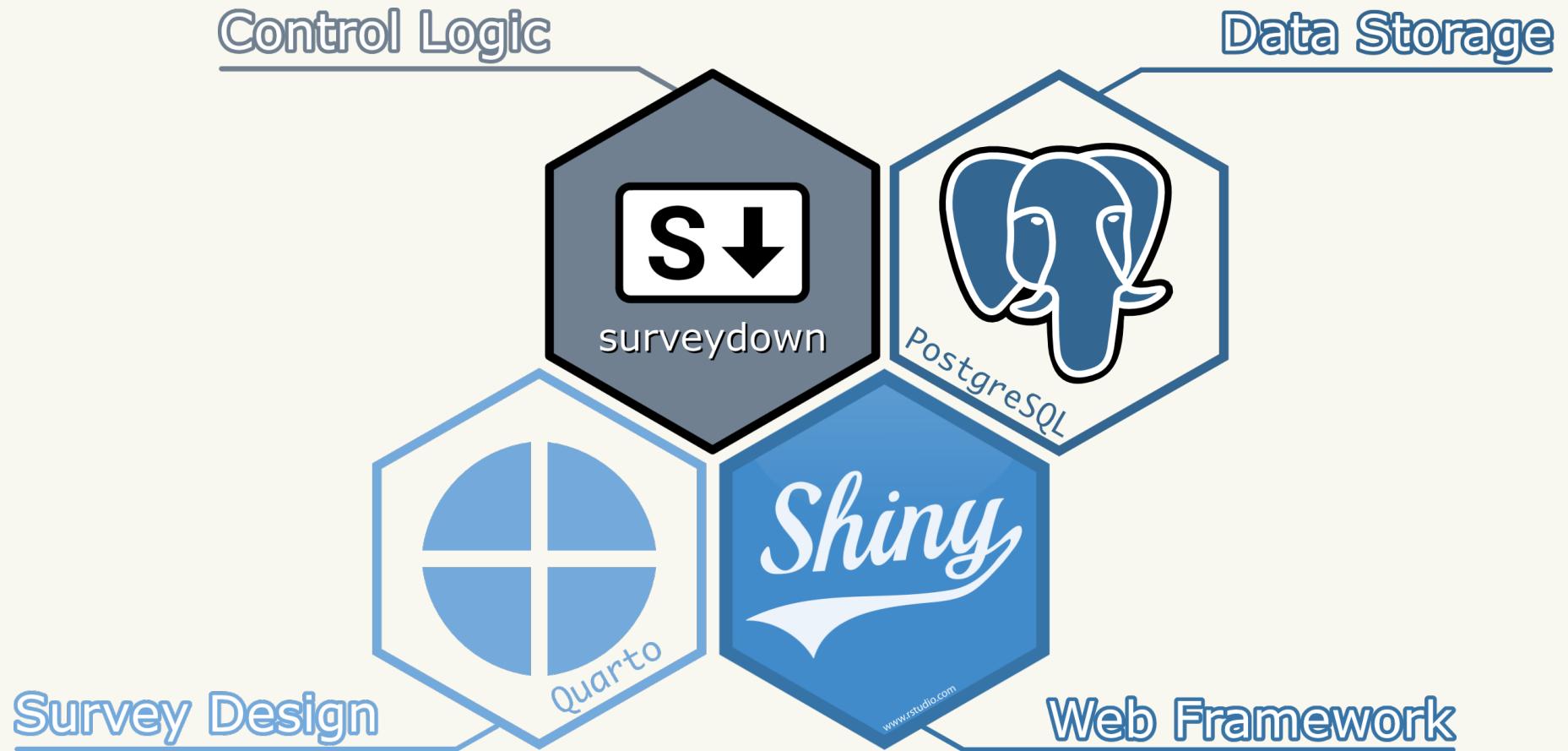
- Left Panel (Code Editor):** Contains an R script with the following code:

```
1 library(surveydown)
2 library(dplyr)
3
4 db <- sd_db_connect()
5
6 data <- sd_get_data(db = db)
7
8 glimpse(data)
9
```
- Right Panel (Console Output):** Shows the R session output. It starts with connecting to a database, followed by displaying the structure and first few rows of the 'data' object.

```
> db <- sd_db_connect()
✓ Successfully connected to the database.
>
> data <- sd_get_data(db = db)
>
> glimpse(data)
Rows: 20
Columns: 50
$ session_id <chr> "5cf0f43d847425...
$ time_start <chr> "2025-08-15 15:...
$ time_end <chr> "2025-08-15 15:...
$ completion_code <chr> "37081685", "60...
$ browser <chr> "Safari v26, iO...
$ ip_address <chr> "140.248.0.0", ...
$ has_fav_hero <chr> "yes", "yes", ...
$ fav_hero_name <chr> "Spiderman", "S...
$ hero_universe <chr> "all", "dc", "a...
$ hero_qualities <chr> "strength, flyi...
$ dream_power <chr> "telepathy", "t...
$ responsibility_scale <chr> "10", "8.1", "1...
$ villain_encounter <chr> "help_backup", ...
$ superhero_rating <chr> NA, NA, NA, NA, ...
$ superhero_rating_spiderman <chr> "love", "love", ...
$ superhero_rating_batman <chr> "love", NA, "li...
$ superhero_rating_wonder_woman <chr> "love", NA, "li...
```
- Bottom Navigation:** Shows tabs for Environment, History, Connections, Git, Tutorial, Files, Plots, Packages, Help, Viewer, and Presentation.

# What is **surveydown**?





# What can **surveydown** do?

# surveydown is feature-packed!

The screenshot shows a web browser window for [surveydown.org](https://surveydown.org). The page title is "Features". On the left, there's a sidebar with a navigation menu:

- Documentation
- Features & Roadmap**
- Survey Basics**
  - Getting Started
  - Basic Components
- Question Development**
  - Defining Questions
  - Question Types
  - Question Formatting
  - Custom Questions
- Survey Design Concepts**
  - Survey Settings
  - Page Navigation
  - Conditional Logic
  - System Translations
  - External Resources
- Interactivity**
  - Reactivity
  - Randomization
  - External Redirect
- Data Management**
  - Storing Data
  - Fetching Data

The main content area contains a table titled "Features" with the following data:

Feature	Docs	Version	Discussion
Wide variety of question types	<a href="#">Question Types</a>	v0.0.1	<a href="#">105, 109</a>
Conditionally show questions	<a href="#">Conditional Display</a>	v0.0.1	
Markdown formatting for options and buttons	<a href="#">Markdown Formatting</a>	v0.0.1	
Require specific questions or all questions be answered	<a href="#">Required Questions</a>	v0.0.2	
Support for bootstrap themes	<a href="#">Themes</a>	v0.0.4	
Customizable scss theme file	<a href="#">Themes</a>	v0.0.4	
Ability to ignore the database connection	<a href="#">Supabase Ignore</a>	v0.0.8	
Time stamps recorded for each question and page interaction		v0.0.9	
Progress bar that updates on each question interaction	<a href="#">Progress Bar</a>	v0.0.9	
Customizable progress bar color and position on page	<a href="#">Progress Bar</a>	v0.0.9	
Ability to use latest survey results in the survey itself	<a href="#">Fetching Data</a>	v0.1.1	
Pass parameters through the url	<a href="#">Reactive</a>	v0.2.2	<a href="#">92</a>

On this page

- surveydown package
- Features**
- To Do
- sdstudio package
- Features
- To Do

Site made with ❤️, ♫, and ♡ quarto



# Feature Highlights

Question types

Conditional logic

# 12 Built-in Question Types

text

textarea

numeric

mc

mc\_multiple

mc\_buttons

mc\_multiple\_buttons

select

slider

slider\_numeric

date

daterange

# Question Type: text

```
1 sd_question(  
2   type  = "text",  
3   id    = "fav_hero_name",  
4   label = "Who is your favorite super hero?"  
5 )
```



Who is your favorite super hero?

# Question Type: mc\_buttons

```
1 sd_question(  
2   type  = "mc_buttons",  
3   id    = "dream_power",  
4   label = "If you could have ONE superpower?",  
5   option = c(  
6     "🕸️ Web-slinging"  = "webslinging",  
7     "🛡️ Super Strength" = "strength",  
8     "✈️ Flight"        = "flight",  
9     "🧠 Telepathy"      = "telepathy",  
10    "⚡ Super Speed"    = "speed"  
11  ),  
12  direction = "vertical"  
13 )
```



If you could have ONE superpower?

	Web-slinging
	Swing through cities
	Super Strength
	Lift anything
	Flight
	Soar through the skies
	Telepathy
	Read minds
	Super Speed
	Faster than lightning

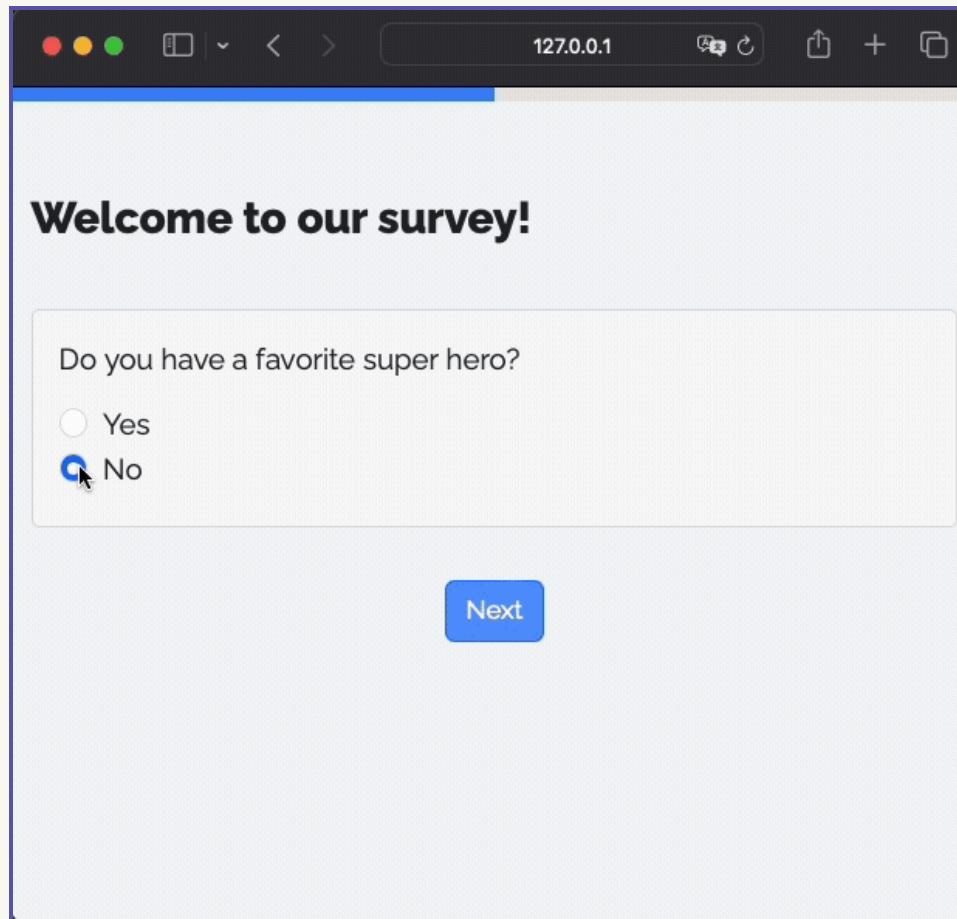
# Conditional logic

Conditional showing

Conditional skipping

Conditional stopping

# Conditional showing - sd\_show\_if()



# Conditional showing - `sd_show_if()`

## `survey.qmd`

```
1 # Conditional Question
2 sd_question(
3   type = "mc",
4   id   = "has_fav_hero",
5   label = "Do you have a favorite hero?",
6   option = c("Yes" = "yes", "No" = "no")
7 )
8
9 # Target Question
10 sd_question(
11   type = "text",
12   id   = "fav_hero",
13   label = "Who is your favorite super hero?"
14 )
```

## `app.R`

```
1 # Inside server
2 sd_show_if(
3   input$has_fav_hero == "yes" ~ "fav_hero"
4 )
```

Condition ~ Target

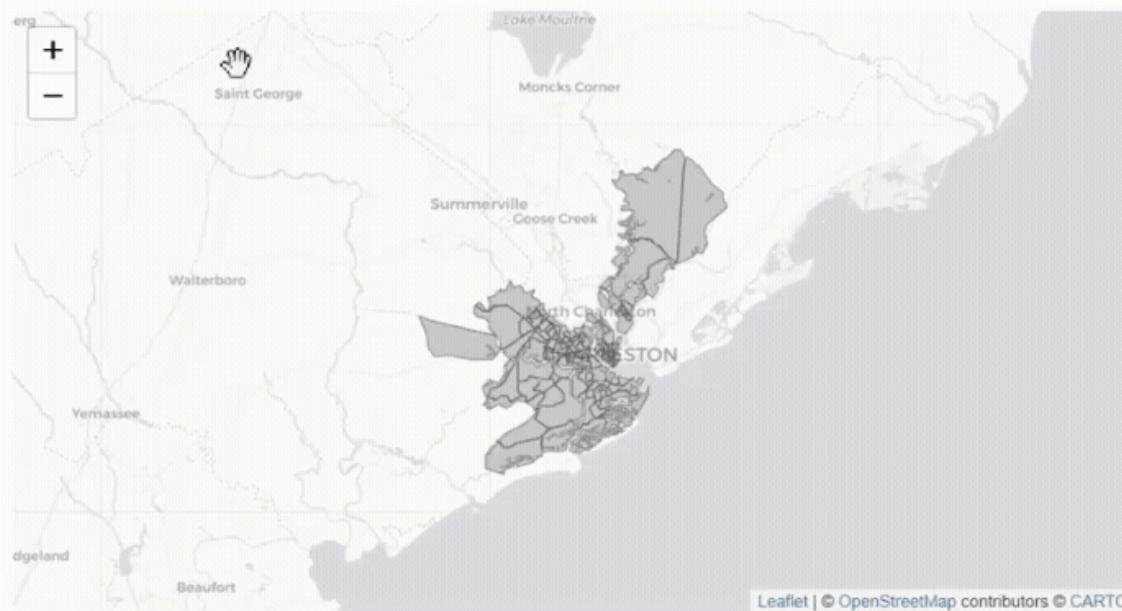
“If {condition}, then show {target}”

If it works in Shiny,  
it works in surveydown.

# Embedding an interactive map with leaflet:

**Question 1: Social Vulnerability** is how likely people are to face greater harm or impact on their lives after disruptive hazard events like flooding based on social or economic conditions like income or transportation access.

Please review the map of the City of Charleston, South Carolina, and select the areas you believe are more socially vulnerable to the impacts of hazardous events.



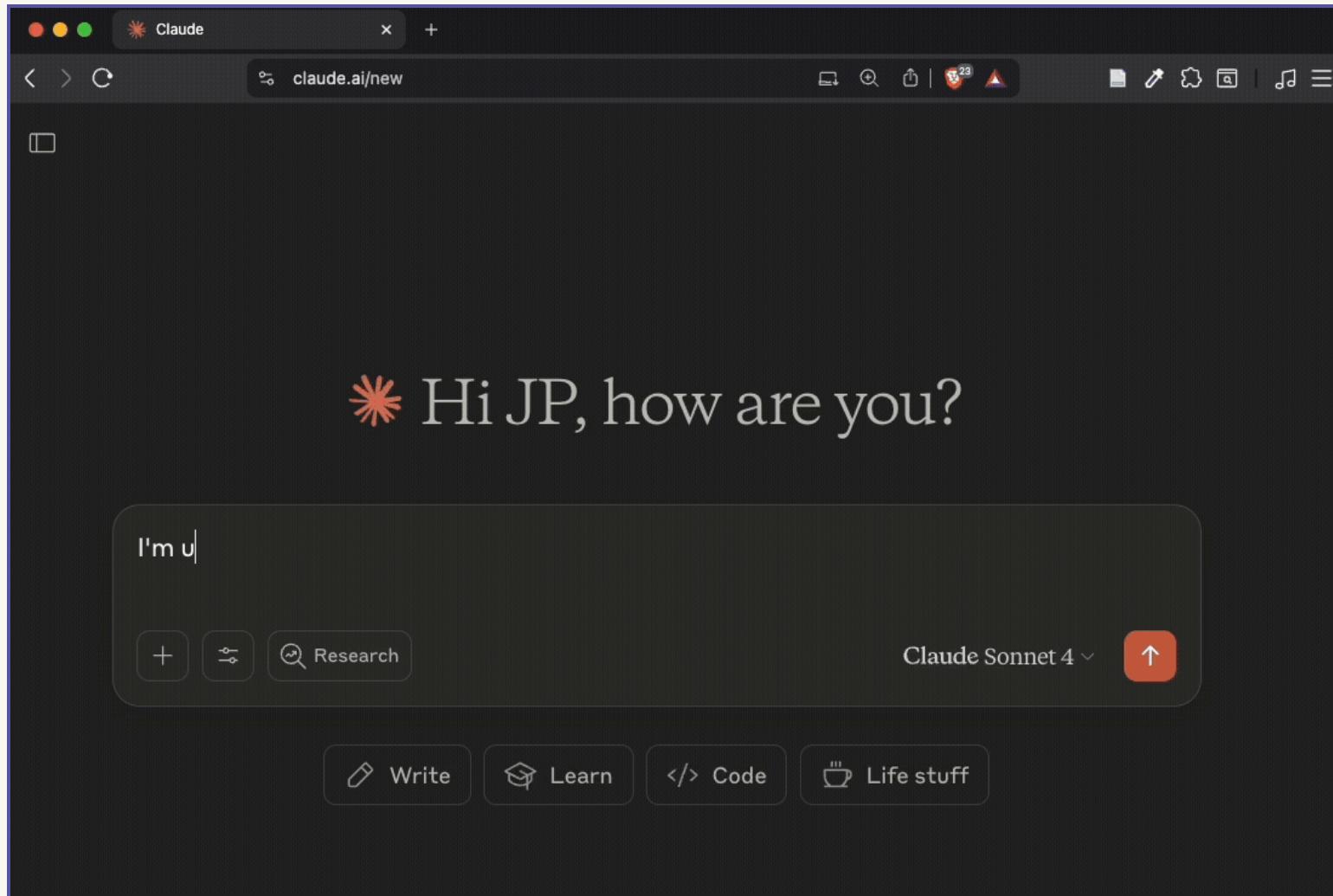
[Next Question](#)





**surveydown + LLMs**  
is pretty cool

# Generate surveys with LLMs!



# What's next?

Try out the companion `sdstudio` package:

```
sdstudio::launch()
```

The screenshot shows the surveydown Studio interface with two main panels: 'Structure' on the left and 'Code' on the right.

**Structure Panel:**

- Page: welcome**
  - T** # 🦸 Welcome to the...
  - Q** has\_fav\_hero | mc  
Do you have a favorite super hero?
  - Q** fav\_hero\_name | text  
Who is your favorite super hero?
- Page: hero\_details**
  - T** # Tell us about your...
  - Q** hero\_universe | mc  
Which superhero universe do you prefer?
  - Q** hero\_qualities | mc\_multiple  
What qualities do you find most appealing in superheroes? (Select all that apply)
- Page: powers**
  - T** # If you could have...

**Code Panel:**

```
survey.qmd app.R
1 ---  
2 format: html  
3 echo: false  
4 warning: false  
5 theme: [superhero, custom.scss]  
6 barcolor: "#e74c3c"  
7 ---  
8 |  
9 ````{r}  
10 library(surveydown)  
11 ````  
12  
13 :::. {sd_page id=welcome}  
14  
15 # 🦸 Welcome to the Ultimate Superhero Survey! 🦸♀️  
16  
17 Thank you for participating in our research on superhero preferences and  
powers! This survey will help us understand what makes superheroes  
appealing to different people.  
18  
19 **This survey should take about 3-5 minutes to complete.**  
20  
21 <br>  
22  
23 ````{r}  
24 sd_question(  
25   type = "mc",  
26   id   = "has_fav_hero",  
27   label = "Do you have a favorite super hero?",  
28   option = c("Yes" = "yes", "No" = "no")  
29 )
```

surveydown Studio Build Preview Responses

Welcome to the Ultimate Superhero Survey!

Thank you for participating in our research on superhero preferences and powers! This survey will help us understand what makes superheroes appealing to different people.

This survey should take about 3-5 minutes to complete.

Do you have a favorite super hero? \*

Yes

No

Who is your favorite super hero?

Next

surveydown Studio Build Preview Responses [Responses](#)

Database Connection [Settings](#) Connected (GSSAPI enabled)

Choose a table to view:

superheros

Total Responses 21

Daily Average 4.2

Completion Rate 85.7%

Cumulative Responses

Date	Cumulative Responses
Aug 15	12
Aug 16	12
Aug 17	12
Aug 18	12
Aug 19	21
Aug 20	22

Daily Responses

Date	Daily Responses
Aug 15	11
Aug 16	0
Aug 17	0
Aug 18	0
Aug 19	8
Aug 20	1

With great power comes great responsibility.

# Ways to help:

[github.com/surveydown-dev/surveydown/](https://github.com/surveydown-dev/surveydown/)

- Try it out!
- Give it a 
- Post an issue
- Join the GitHub discussion
- Contribute a template



# Meet the team!

[surveydown.org](https://surveydown.org)



John Helveston, Ph.D.



Pingfan Hu



Bogdan Bunea

