sdstudio

A Companion Package for Designing and Managing surveydown Surveys

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George Washington University

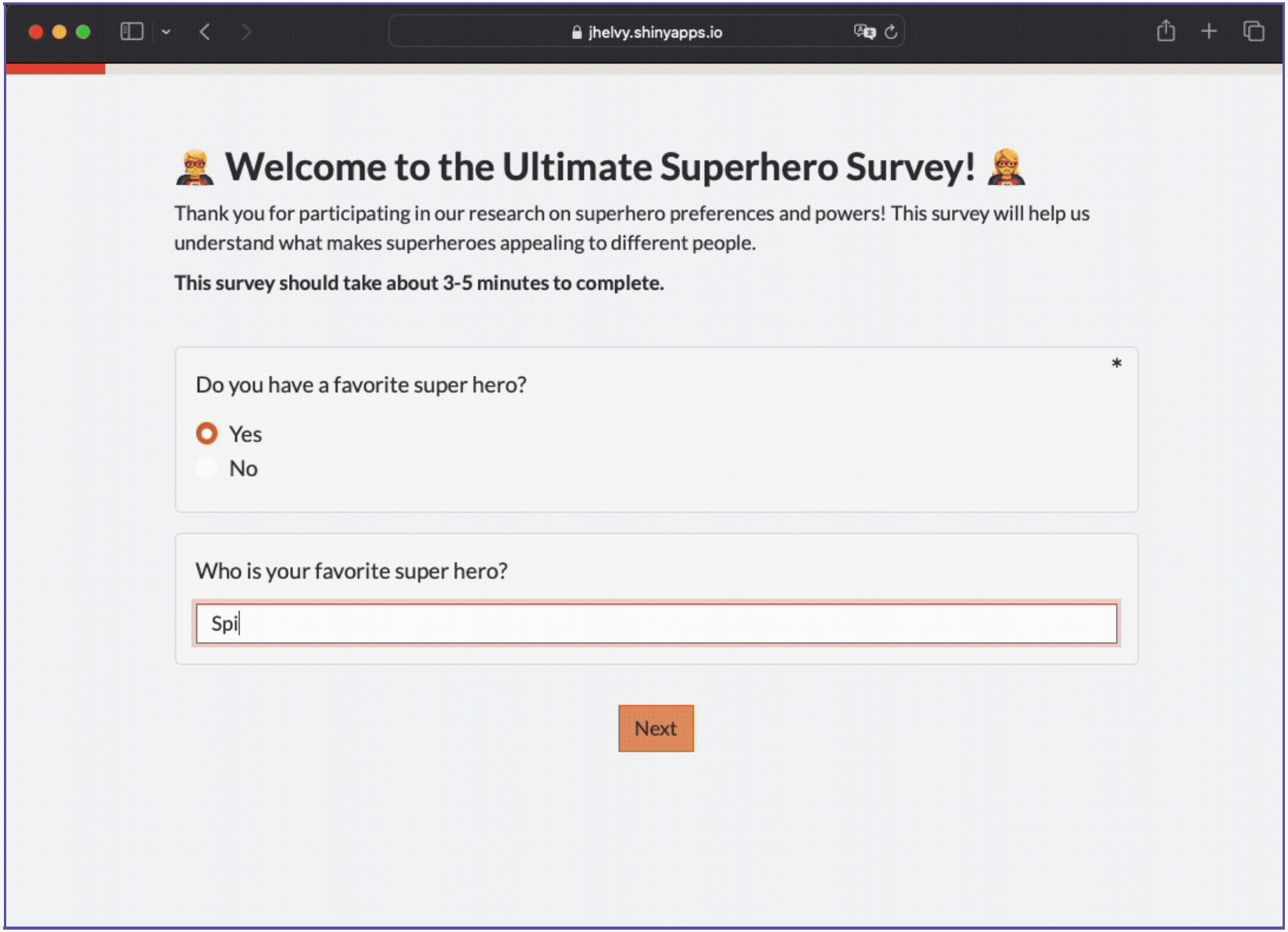
GW OSCON 2026

About Me

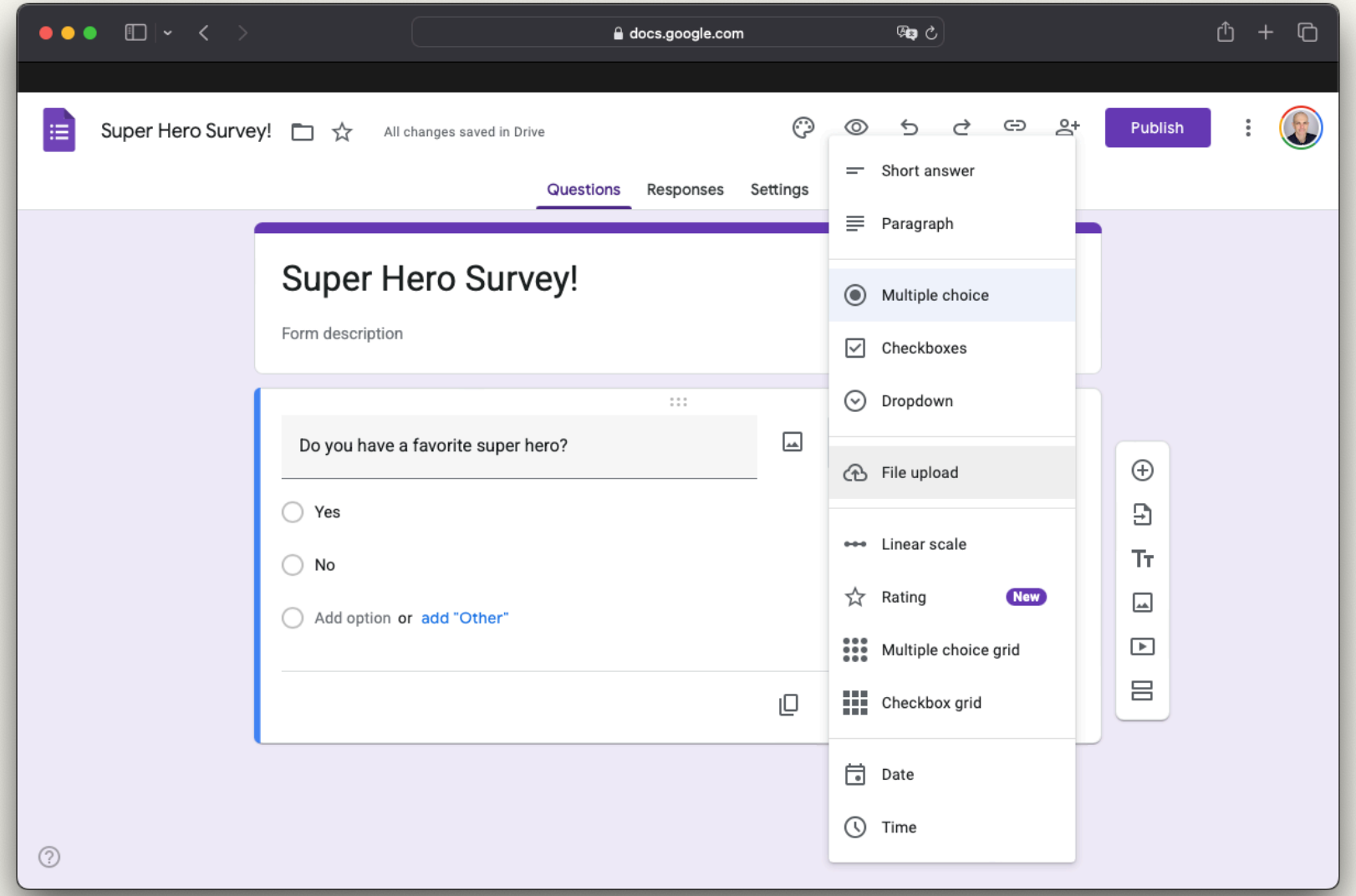
- My name is **Pingfan Hu**, a PhD Candidate at George Washington University, supervised by Dr John Helveston.
- Graduating in **Spring 2025.**
- Research focuses:
    1. Sustainable transportation
    2. Choice modeling & data analysis
    3. Research software development
- For more infomation, visit **pingfanhu.com**

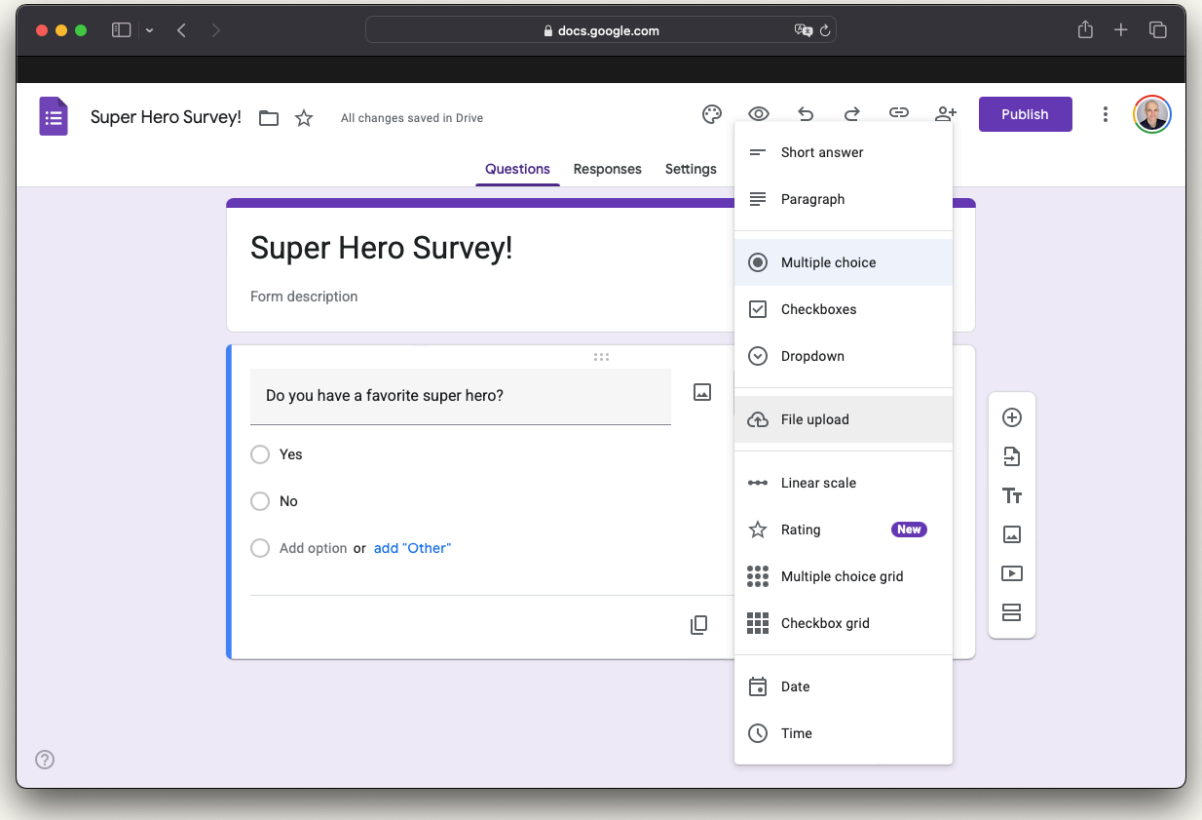
I try to figure out what people want…

Prof. John Helveston


jhelvy.shinyapps.io
🦸 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?
Spi
Next

WYSIWYG Interface

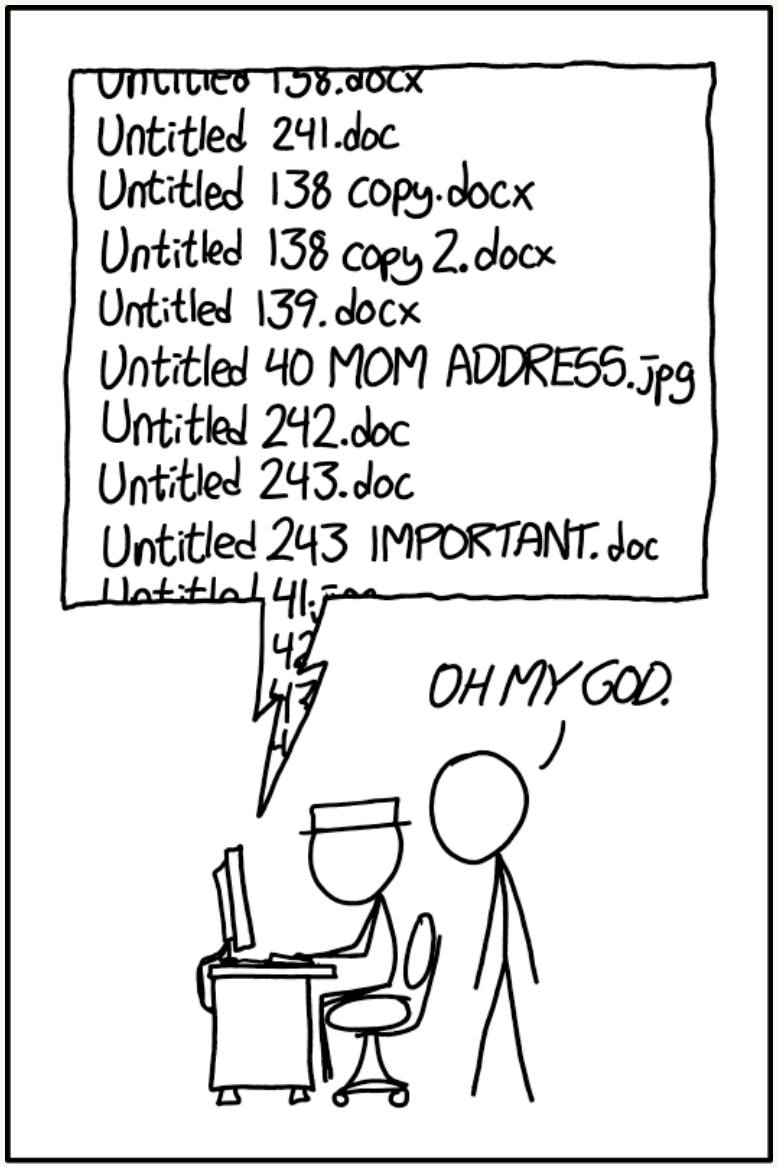


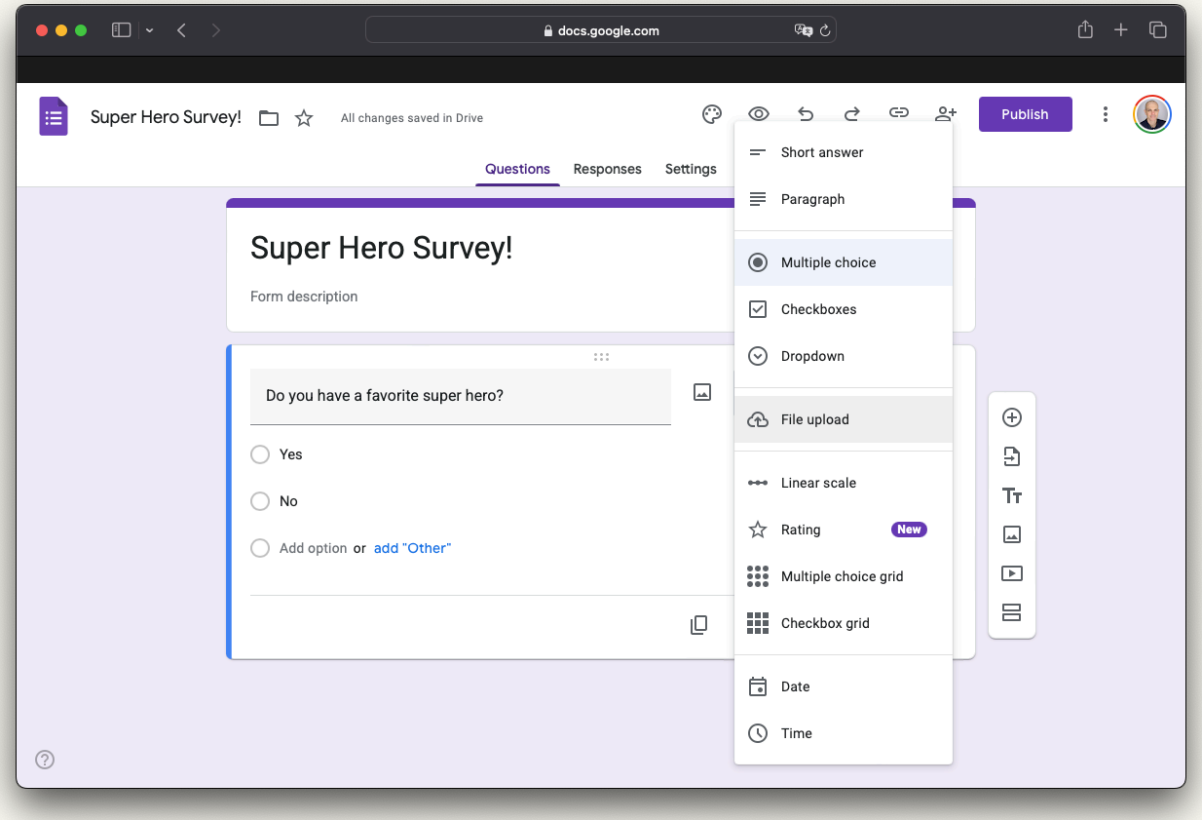


Limitations

❌ Reproduciblity

❌ Version control


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
OH MY GOD.



Limitations

- ❌ Reproduciblity
- ❌ Version control
- ❌ Limited features
- ❌ Open source

Why not make surveys from `code`?

~~Limitations~~

Features

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

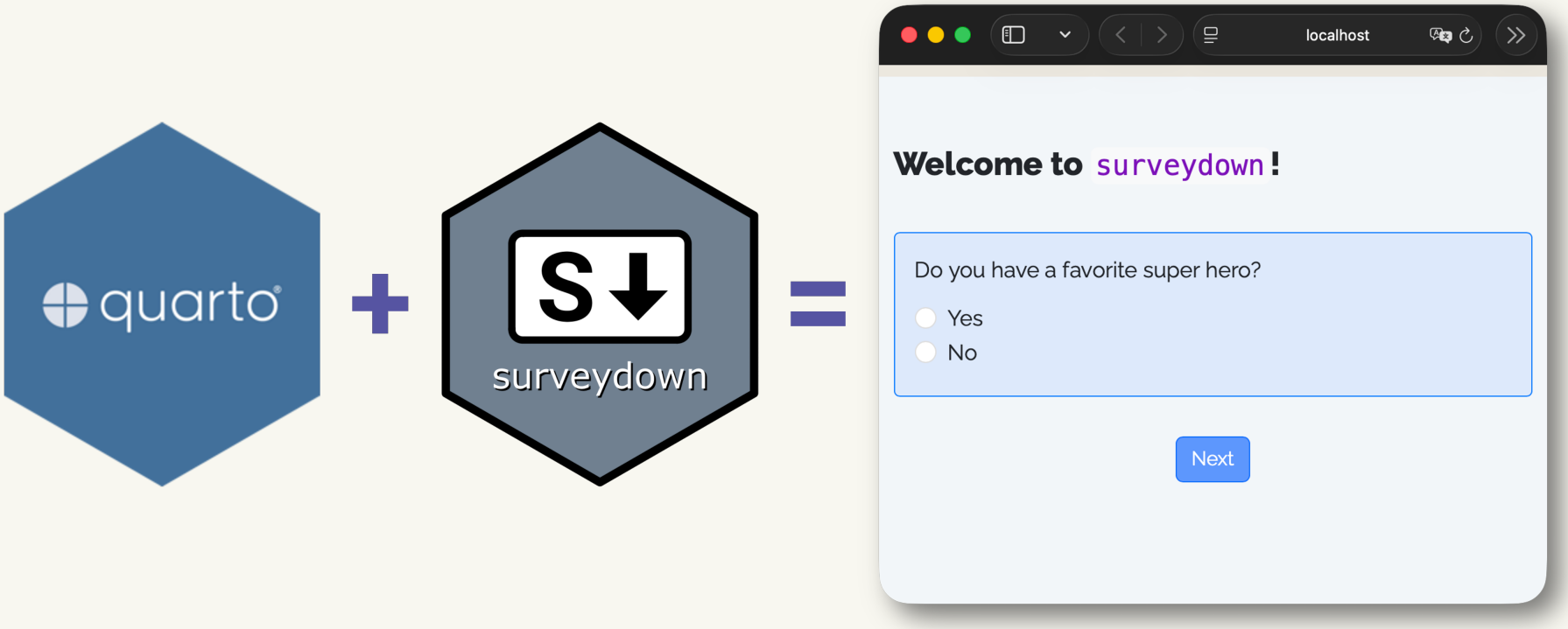
Introducing surveydown!

In this talk, we will cover:

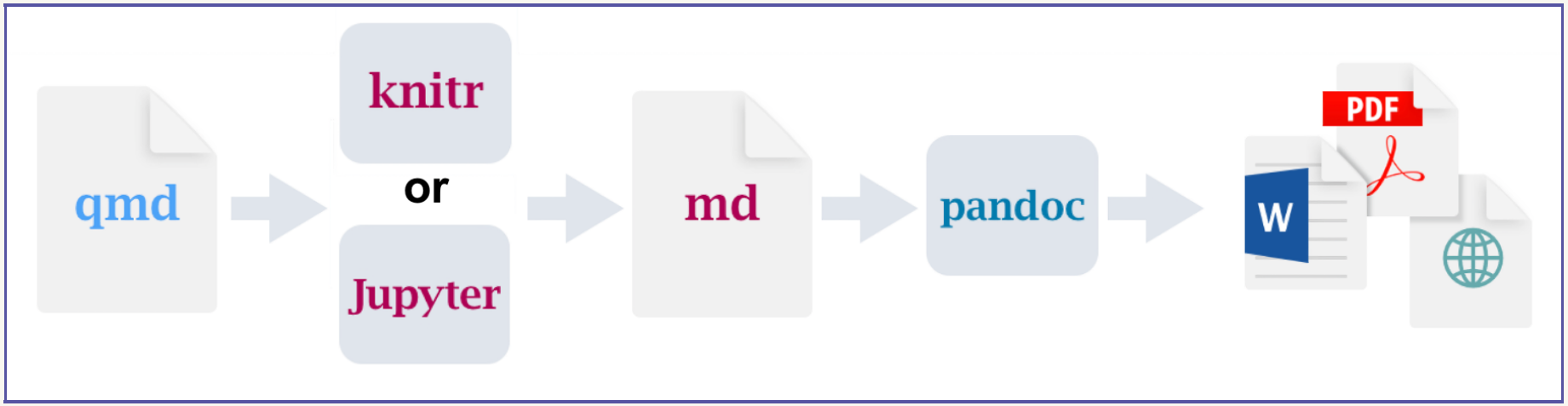
- What is `surveydown`?
- How does it work?
- What can I do with it?
- What's next?

What is surveydown?

R package that renders Quarto files into surveys



Quarto is a publishing system

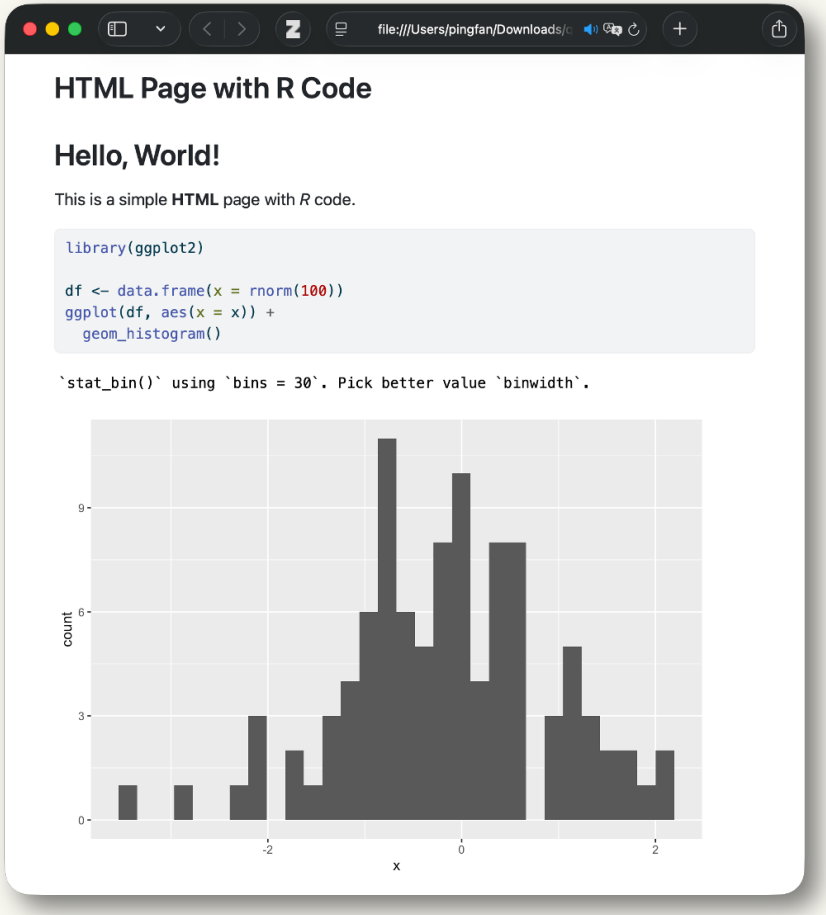


Original `qmd` file

Markdown + `R code` chunks

````
---
format: html
title: "HTML Page with R Code"
---

# Hello, World!

This is a simple **HTML** page with *R* code.

```{r}
library(ggplot2)

df <- data.frame(x = rnorm(100))
ggplot(df, aes(x = x)) +
  geom_histogram()
```
````

Rendered HTML

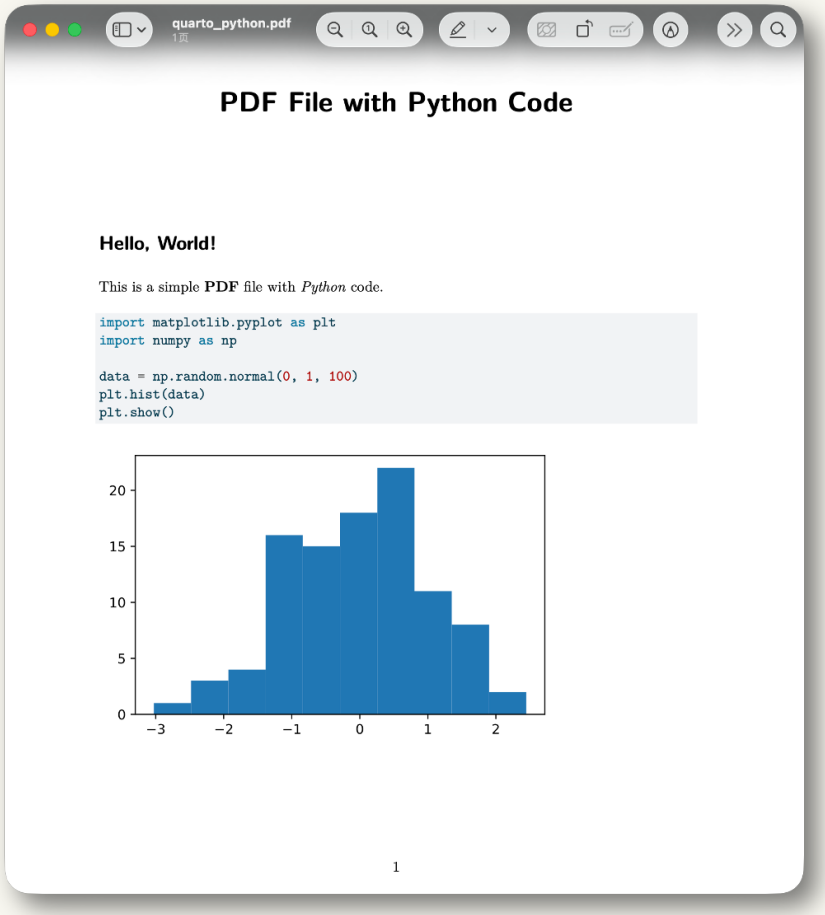


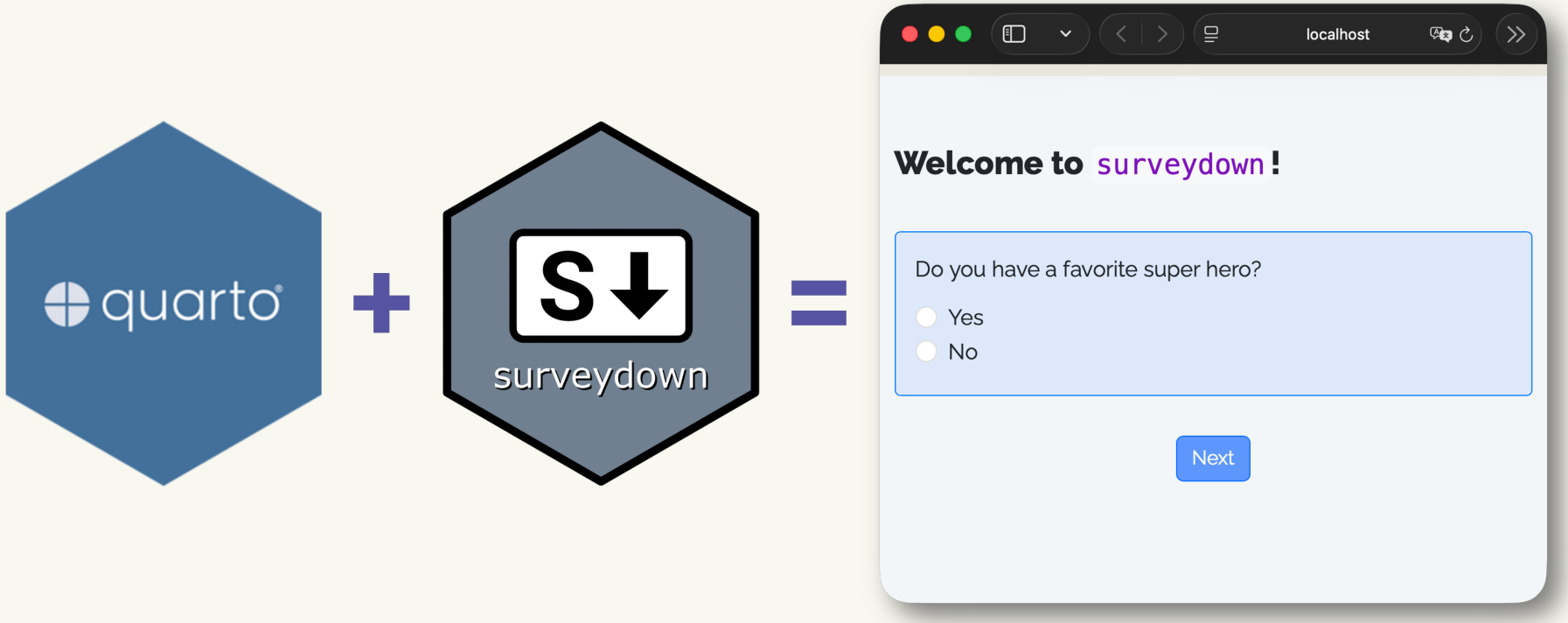
Original `qmd` file

Markdown + `Python code` chunks

````
---
format: pdf
title: "PDF File with Python Code"
---

# Hello, World!

This is a simple **PDF** file with *Python* code.

```{python}
import matplotlib.pyplot as plt
import numpy as np

data = np.random.normal(0, 1, 100)
plt.hist(data)
plt.show()
```
````

Rendered PDF

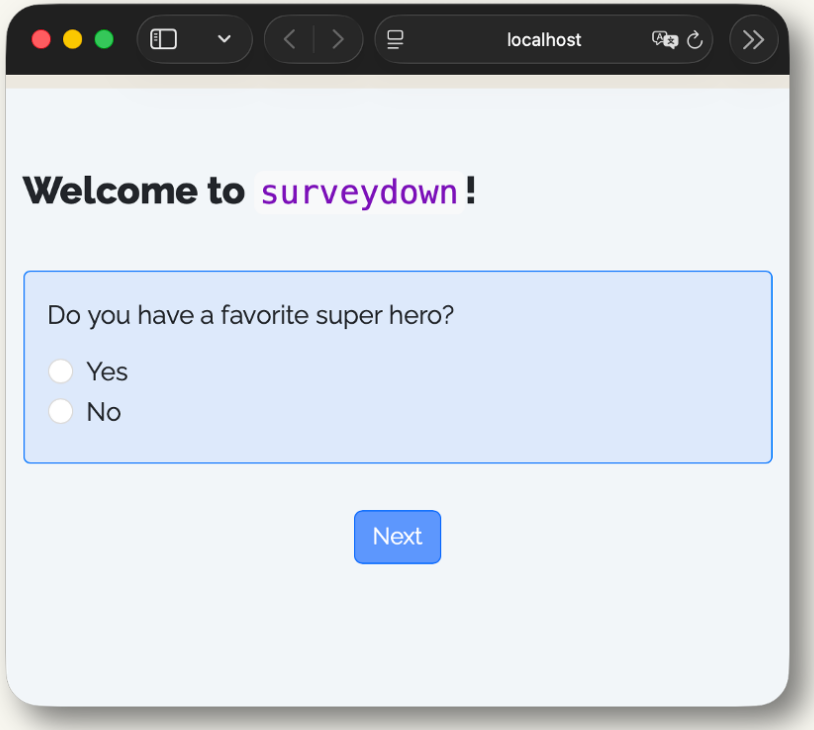



quarto
surveydown
localhost
Welcome to surveydown!
Do you have a favorite super hero?
Yes
No
Next

survey.qmd

````
---
format: html
echo: false
warning: false
---

```{r}
library(surveydown)
```

--- welcome

# Welcome to `surveydown`!

```{r}
sd_question(
  type  = "mc",
  id    = "has_fav_hero",
  label = "Do you have a favorite super hero?",
  option = c(
    "Yes" = "yes",
    "No"  = "no"
  )
)

sd_next()
```

--- some_other_page

Other content...
````

Rendered Survey



survey.qmd

````
---
format: html
echo: false
warning: false
---

```{r}
library(surveydown)
```

--- welcome

# Welcome to `surveydown`!

```{r}
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  type  = "mc",
  id    = "has_fav_hero",
  label = "Do you have a favorite super hero?",
  option = c(
    "Yes" = "yes",
    "No"  = "no"
  )
)

sd_next()
```

--- some_other_page

Other content...
````

YAML header for a “clean” output

survey.qmd

````
---
format: html
echo: false
warning: false
---

```{r}
library(surveydown)
```

--- welcome

# Welcome to `surveydown`!

```{r}
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  type  = "mc",
  id    = "has_fav_hero",
  label = "Do you have a favorite super hero?",
  option = c(
    "Yes" = "yes",
    "No"  = "no"
  )
)

sd_next()
```

--- some_other_page

Other content...
````

Load the `surveydown` Package

survey.qmd

````
---
format: html
echo: false
warning: false
---

```{r}
library(surveydown)
```

--- welcome

# Welcome to `surveydown`!

```{r}
sd_question(
  type  = "mc",
  id    = "has_fav_hero",
  label = "Do you have a favorite super hero?",
  option = c(
    "Yes" = "yes",
    "No"  = "no"
  )
)

sd_next()
```

--- some_other_page

Other content...
````

Use triple-dash marker (`---`) to define survey pages

Quarto fences (`:::`) also OK:

````
::: {#welcome .sd-page}

Page content

:::
````

survey.qmd

````
---
format: html
echo: false
warning: false
---

```{r}
library(surveydown)
```

--- welcome

# Welcome to `surveydown`!

```{r}
sd_question(
  type  = "mc",
  id    = "has_fav_hero",
  label = "Do you have a favorite super hero?",
  option = c(
    "Yes" = "yes",
    "No"  = "no"
  )
)

sd_next()
```

--- some_other_page

Other content...
````

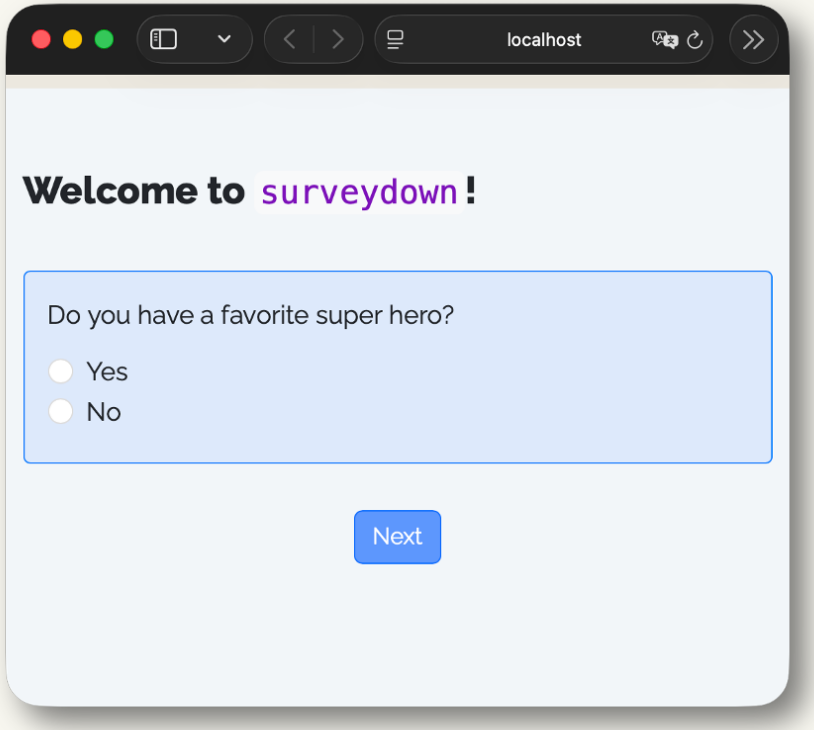
Page content

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

survey.qmd

````
---
format: html
echo: false
warning: false
---

```{r}
library(surveydown)
```

--- welcome

# Welcome to `surveydown`!

```{r}
sd_question(
  type  = "mc",
  id    = "has_fav_hero",
  label = "Do you have a favorite super hero?",
  option = c(
    "Yes" = "yes",
    "No"  = "no"
  )
)

sd_next()
```

--- some_other_page

Other content...
````

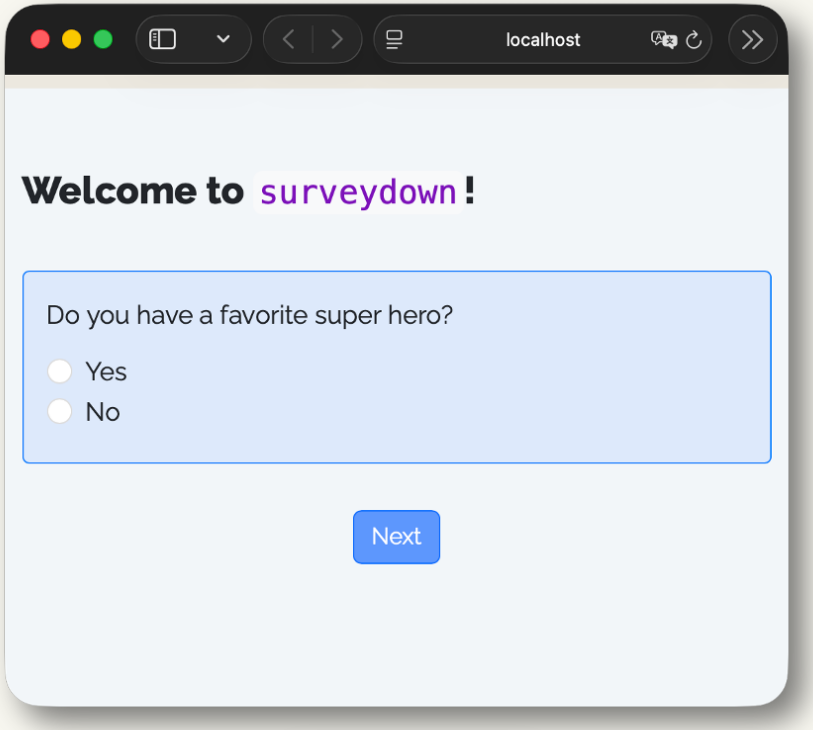
Rendered Survey



survey.qmd

````
---
format: html
echo: false
warning: false
---

```{r}
library(surveydown)
```

--- welcome

# Welcome to `surveydown`!

```{r}
sd_question(
  type  = "mc",
  id    = "has_fav_hero",
  label = "Do you have a favorite super hero?",
  option = c(
    "Yes" = "yes",
    "No"  = "no"
  )
)

sd_next()
```

--- some_other_page

Other content...
````

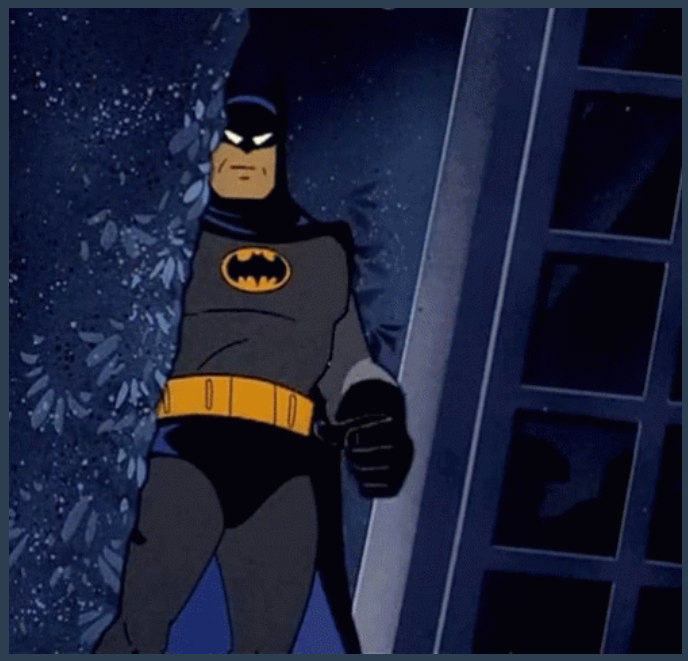
Rendered Survey

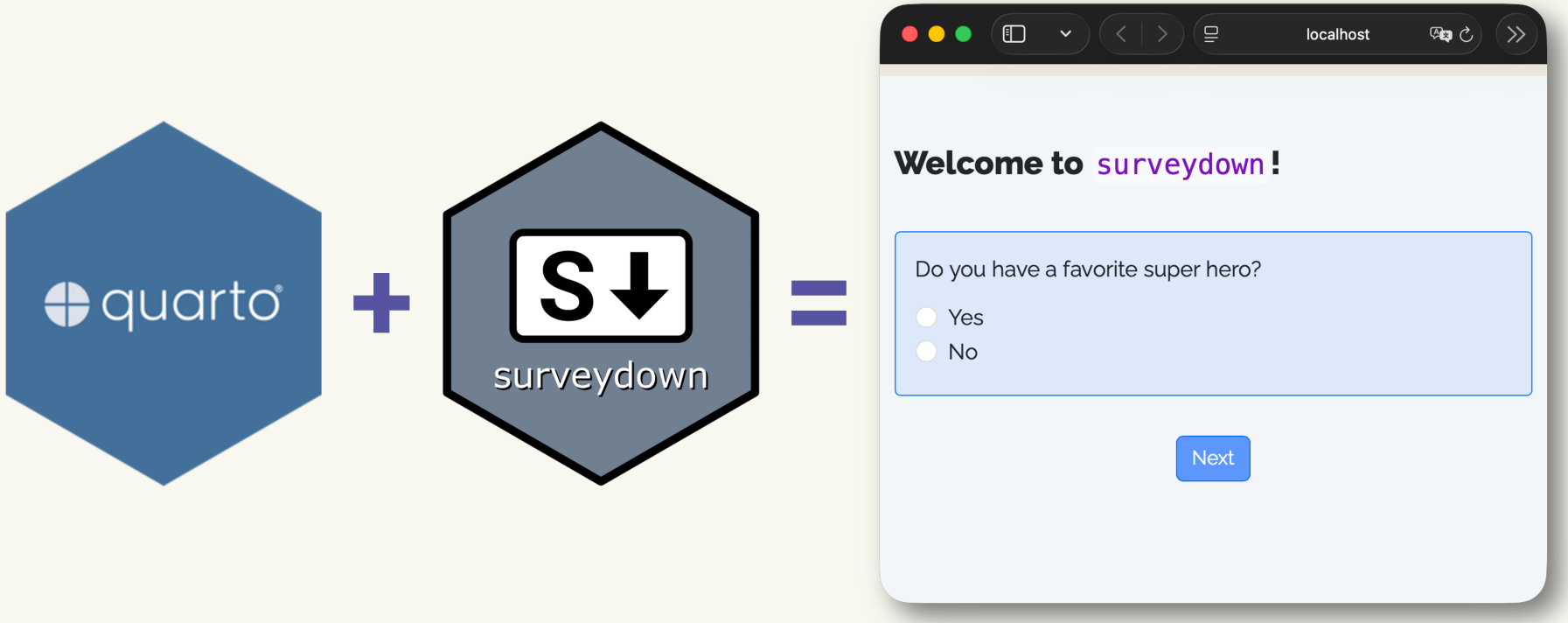


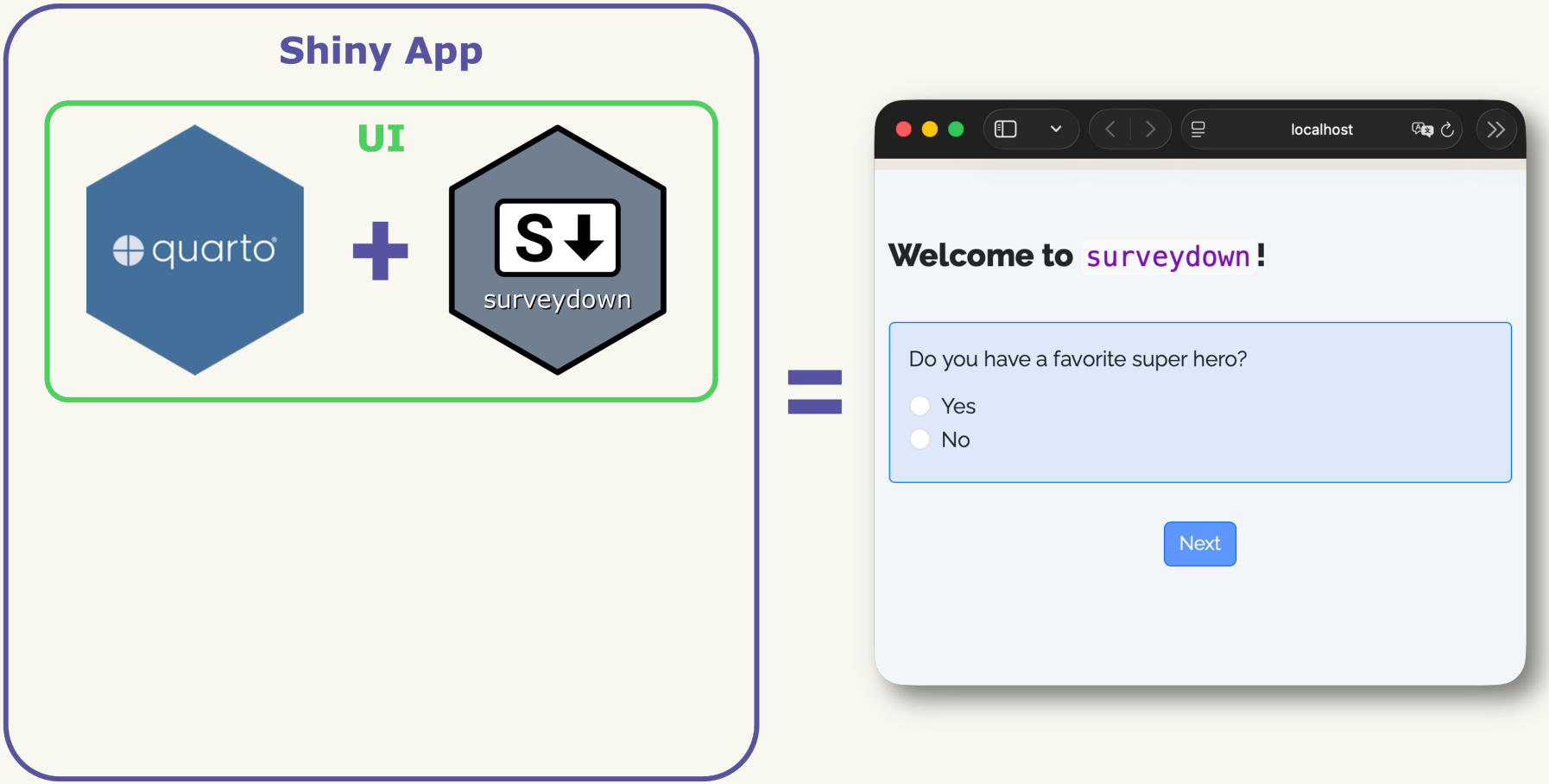
has_fav_hero
yes
no
no
yes

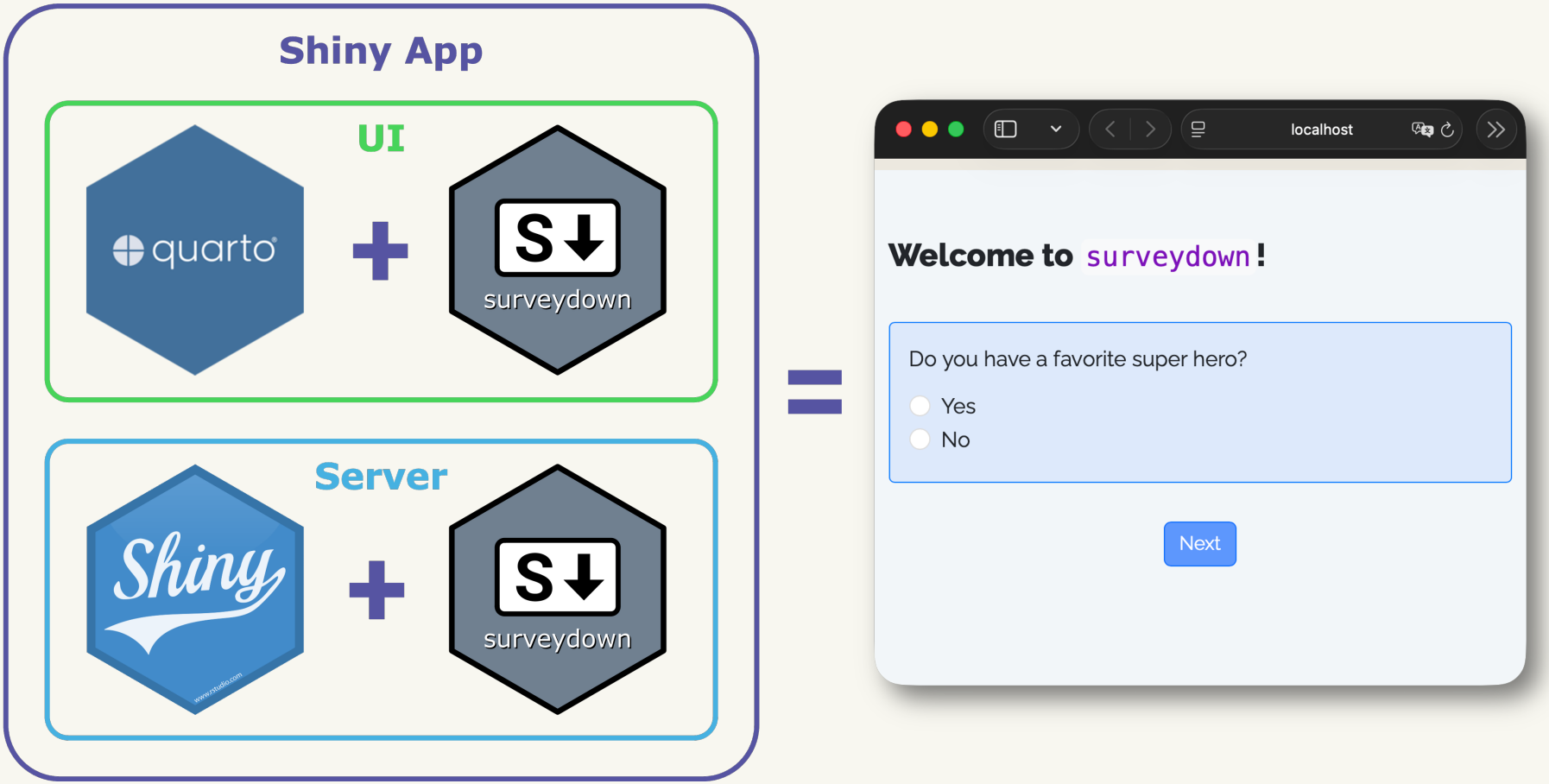
Wait a minute…
Quarto renders to static html pages, right?

Shiny to the rescue!




quarto
surveydown
localhost
Welcome to surveydown!
Do you have a favorite super hero?
Yes
No
Next


Shiny App
UI
quarto
surveydown
localhost
Welcome to surveydown!
Do you have a favorite super hero?
Yes
No
Next


Shiny App
UI
quarto
surveydown
Server
Shiny
surveydown
localhost
Welcome to surveydown!
Do you have a favorite super hero?
Yes
No
Next

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

```r
library(surveydown)

ui <- sd_ui()

server <- function(input, output, session) {

  sd_server()

}

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)
```

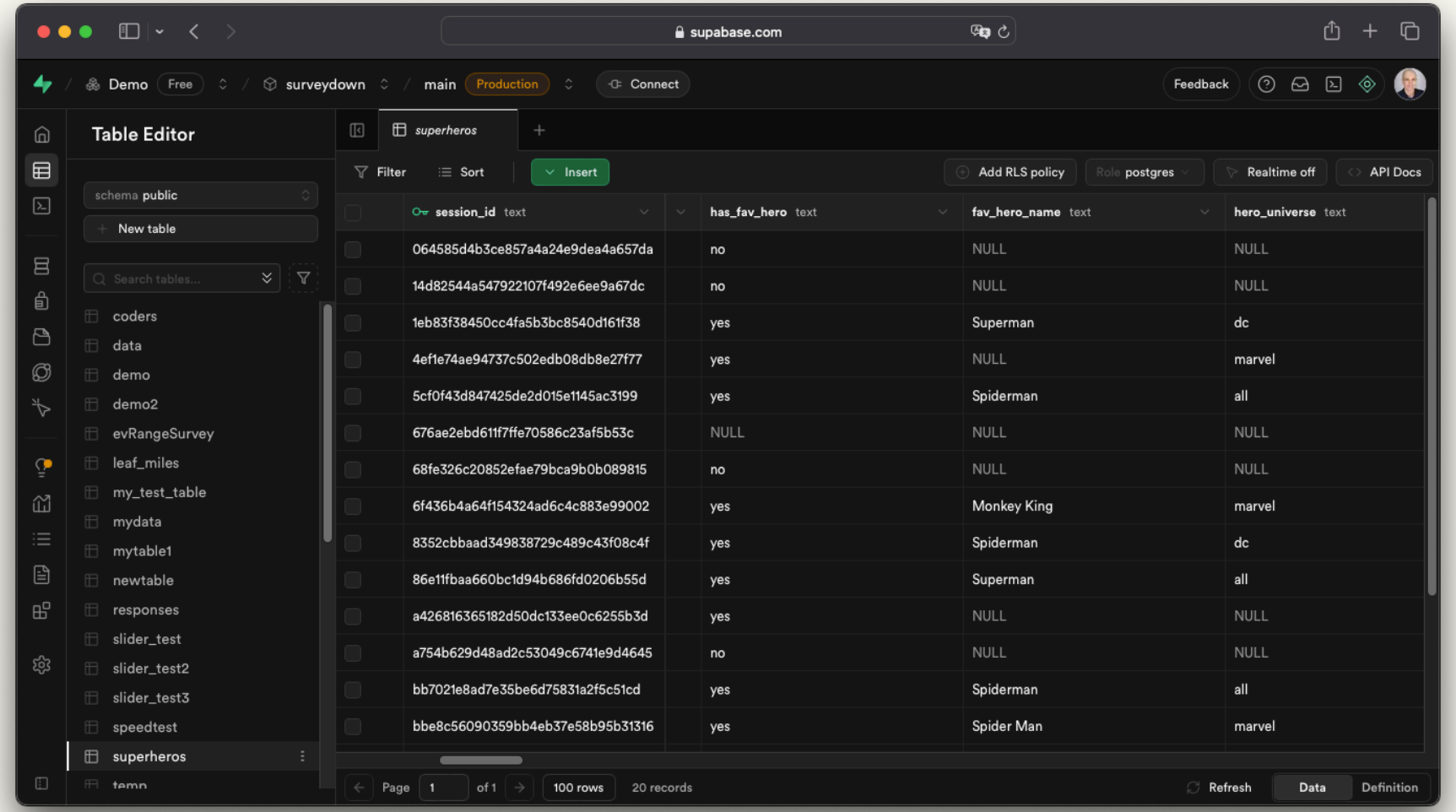
Render `survey.qmd` as UI

Run the `surveydown` server

Wait a minute…
How do you store the response data?

PostgreSQL to the rescue!

supabase.com



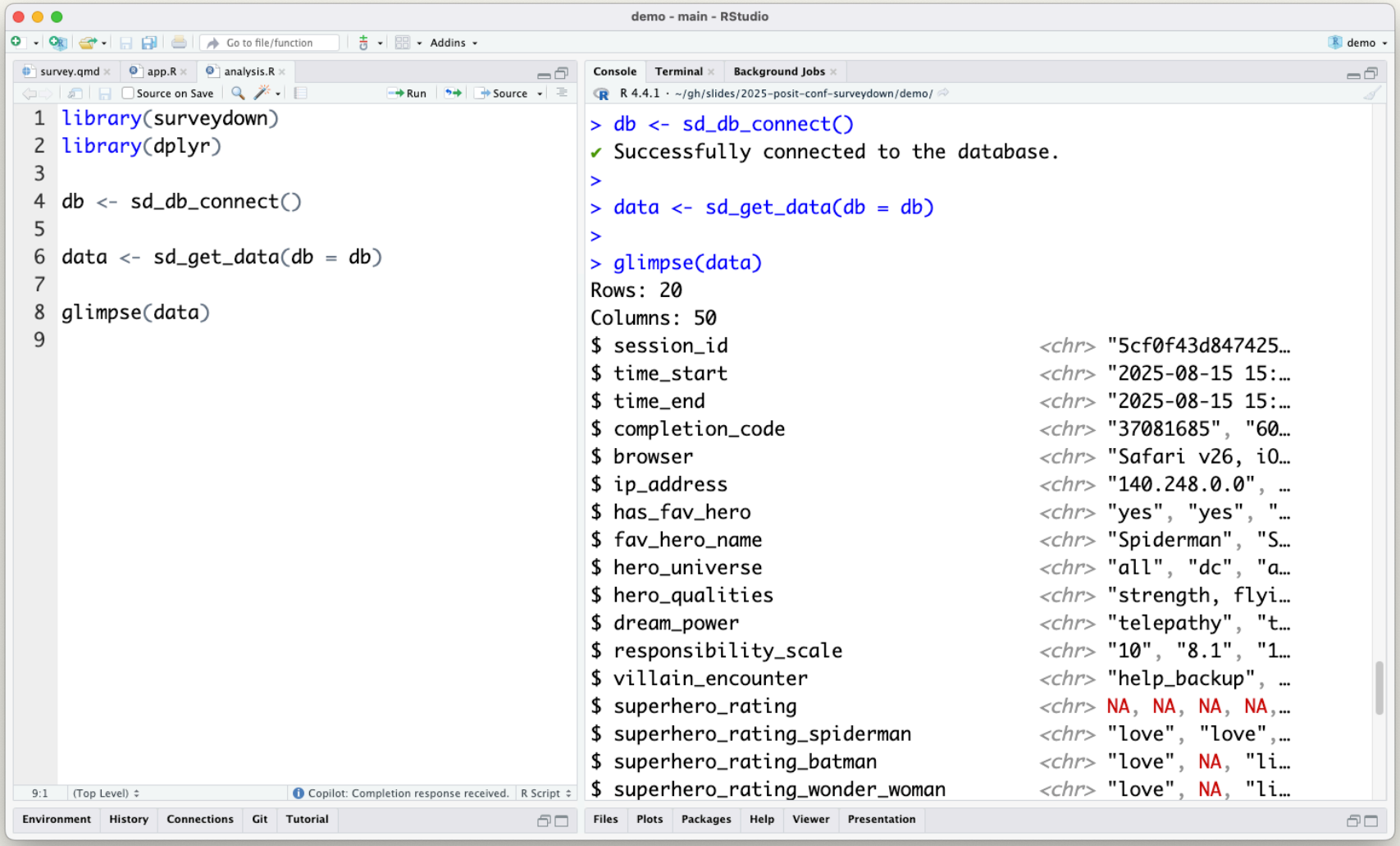
app.R

```r
library(surveydown)

# sd_db_config()
db <- sd_db_connect()

ui <- sd_ui()

server <- function(input, output, session) {

  sd_server(db)

}

shiny::shinyApp(ui = ui, server = server)
```

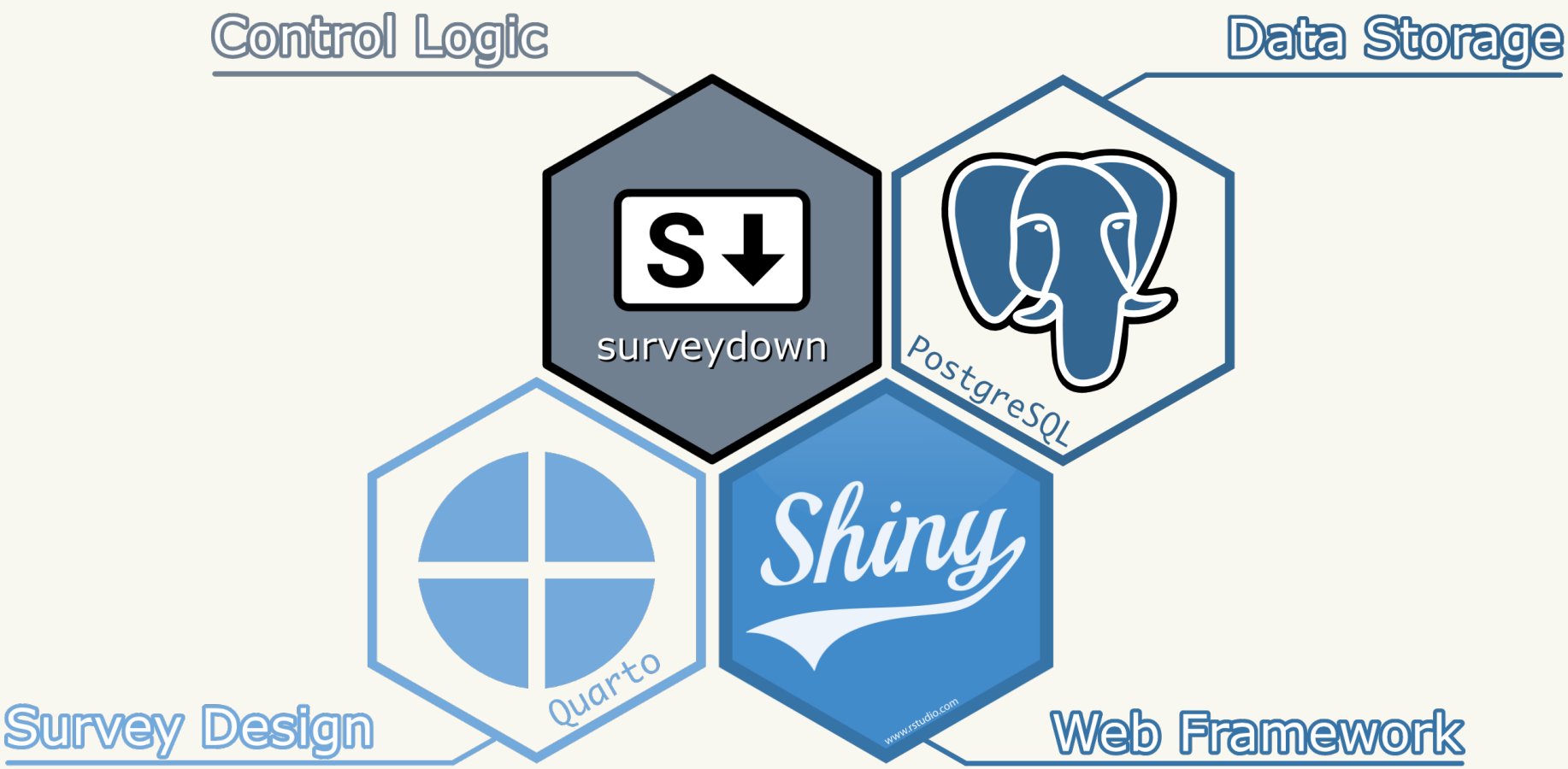
Store credentials

Connect to the database

Pass connection to `sd_server()`

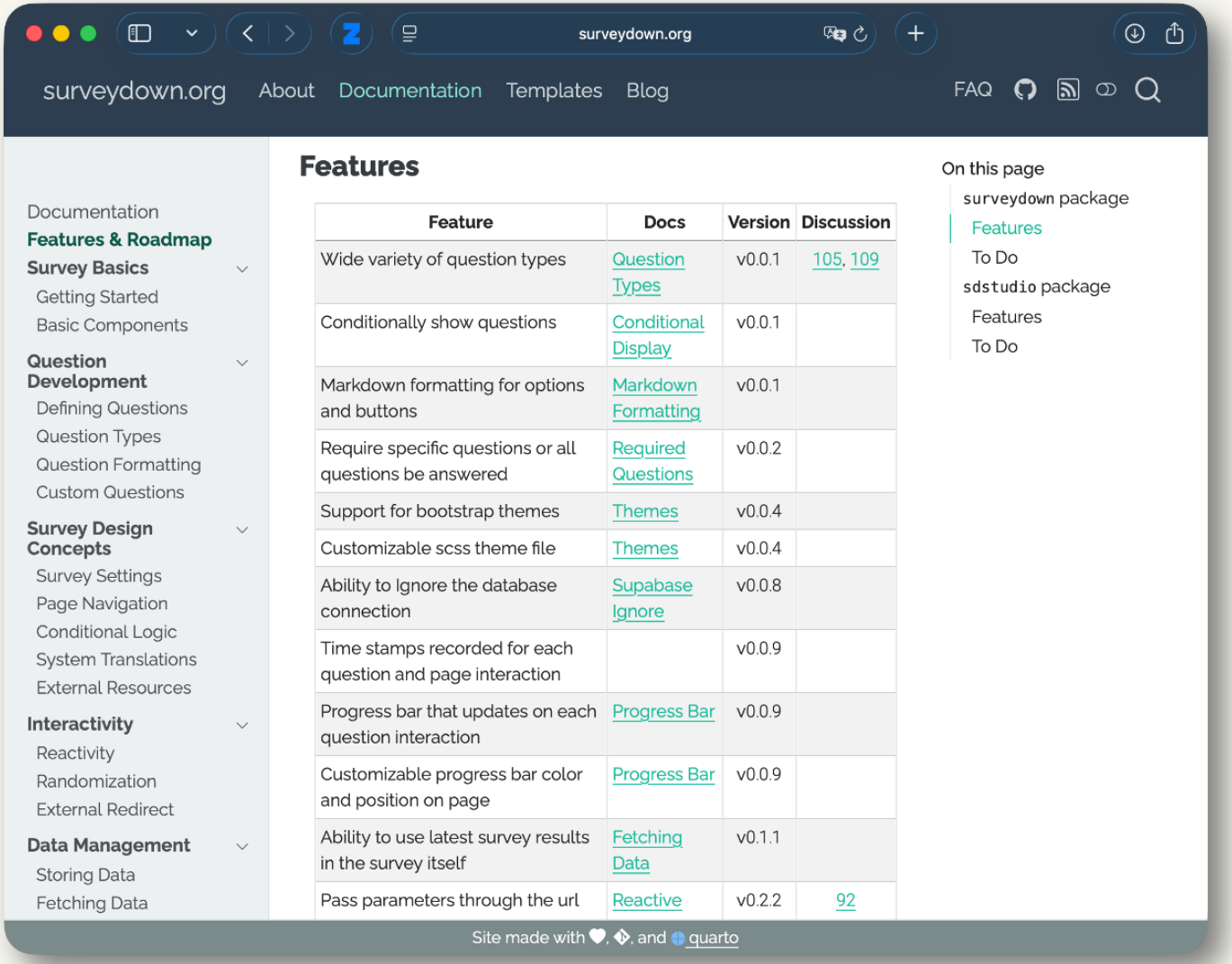

demo - main - RStudio
Go to file/function
Addins
demo
survey.qmd
app.R
analysis.R
Source on Save
Run
Source
1 library(surveydown)
2 library(dplyr)
3
4 db <- sd_db_connect()
5
6 data <- sd_get_data(db = db)
7
8 glimpse(data)
9
9:1
(Top Level)
Copilot: Completion response received.
R Script
Environment
History
Connections
Git
Tutorial
Console
Terminal
Background Jobs
R 4.4.1 · ~/gh/slides/2025-posit-conf-surveydown/demo/
> 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…
Files
Plots
Packages
Help
Viewer
Presentation

What is surveydown?


Control Logic
Data Storage
surveydown
PostgreSQL
Quarto
Shiny
www.rstudio.com
Survey Design
Web Framework

What can `surveydown` do?

surveydown is feature-packed!



Feature Highlights

Question types

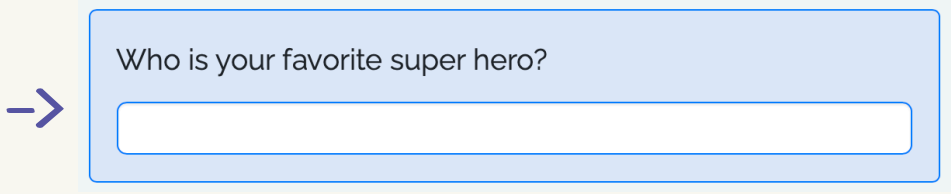
Conditional logic

12 Built-in Question Types

`text`	`textarea`	`numeric`	`mc`
`mc_multiple`	`mc_buttons`	`mc_multiple_buttons`	`select`
`slider`	`slider_numeric`	`date`	`daterange`

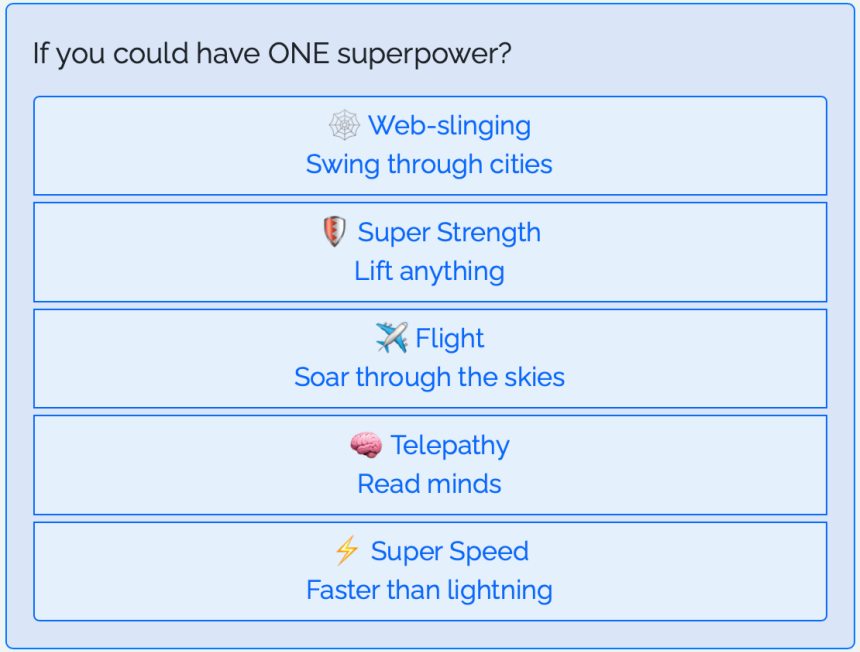
Question Type: `text`

```
sd_question(
  type  = "text",
  id    = "fav_hero_name",
  label = "Who is your favorite super hero?"
)
```



Question Type: `mc_buttons`

```
sd_question(
  type  = "mc_buttons",
  id    = "dream_power",
  label = "If you could have ONE superpower?",
  option = c(
    "🕸️ Web-slinging"   = "webslinging",
    "🛡️ Super Strength" = "strength",
    "✈️ Flight"         = "flight",
    "🧠 Telepathy"      = "telepathy",
    "⚡ Super Speed"    = "speed"
  ),
  direction = "vertical"
)
```



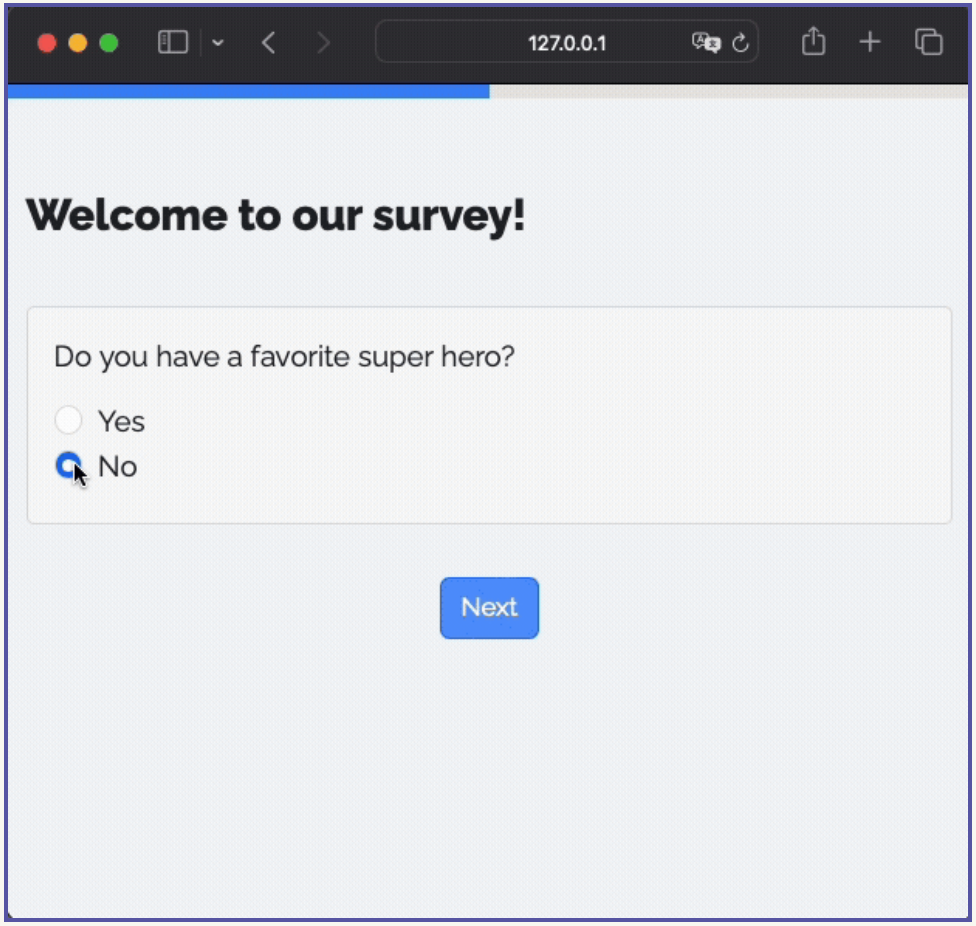
Conditional logic

Conditional showing

Conditional skipping

Conditional stopping

Conditional showing - `sd_show_if()`



Conditional showing - `sd_show_if()`

survey.qmd

```
# Conditional Question
sd_question(
  type  = "mc",
  id    = "has_fav_hero",
  label = "Do you have a favorite hero?",
  option = c("Yes" = "yes", "No" = "no")
)

# Target Question
sd_question(
  type  = "text",
  id    = "fav_hero",
  label = "Who is your favorite super hero?"
)
```

app.R

```
# Inside server
sd_show_if(
  input$has_fav_hero == "yes" ~ "fav_hero"
)
```

Condition ~ Target

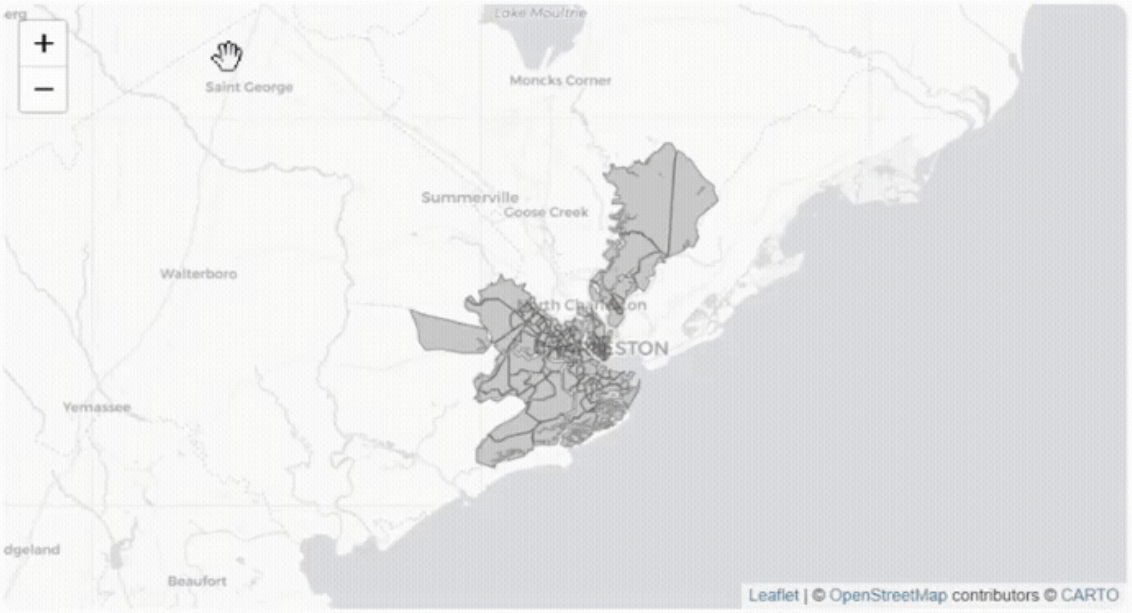
"If {condition}, then show {target}"

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.

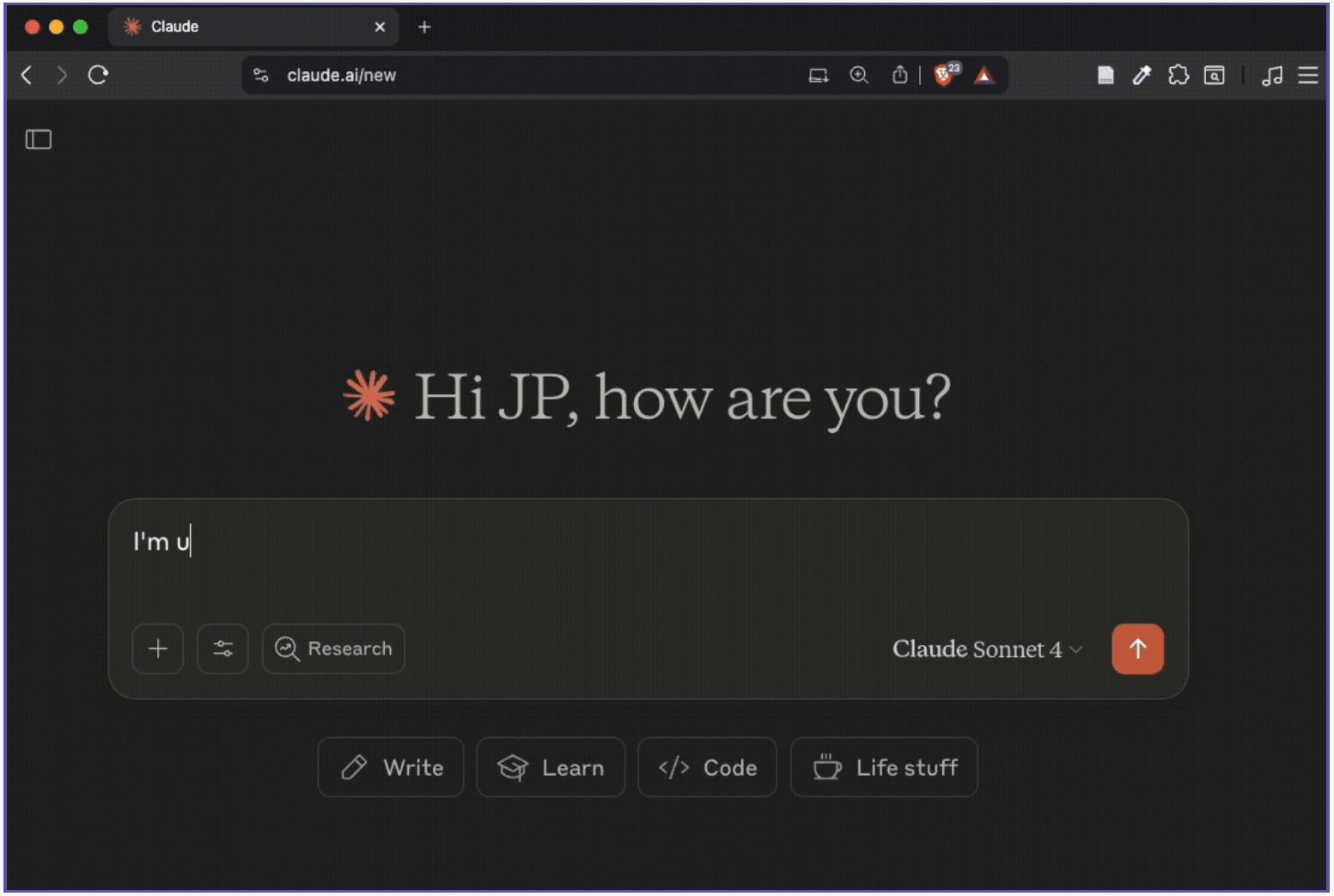
Please review the map of the City of Charleston, South Carolina, and select the areas you believe are more socially vulnerable to the impacts of hazardous events.



Next Question

`surveydown` + LLMs
is pretty cool

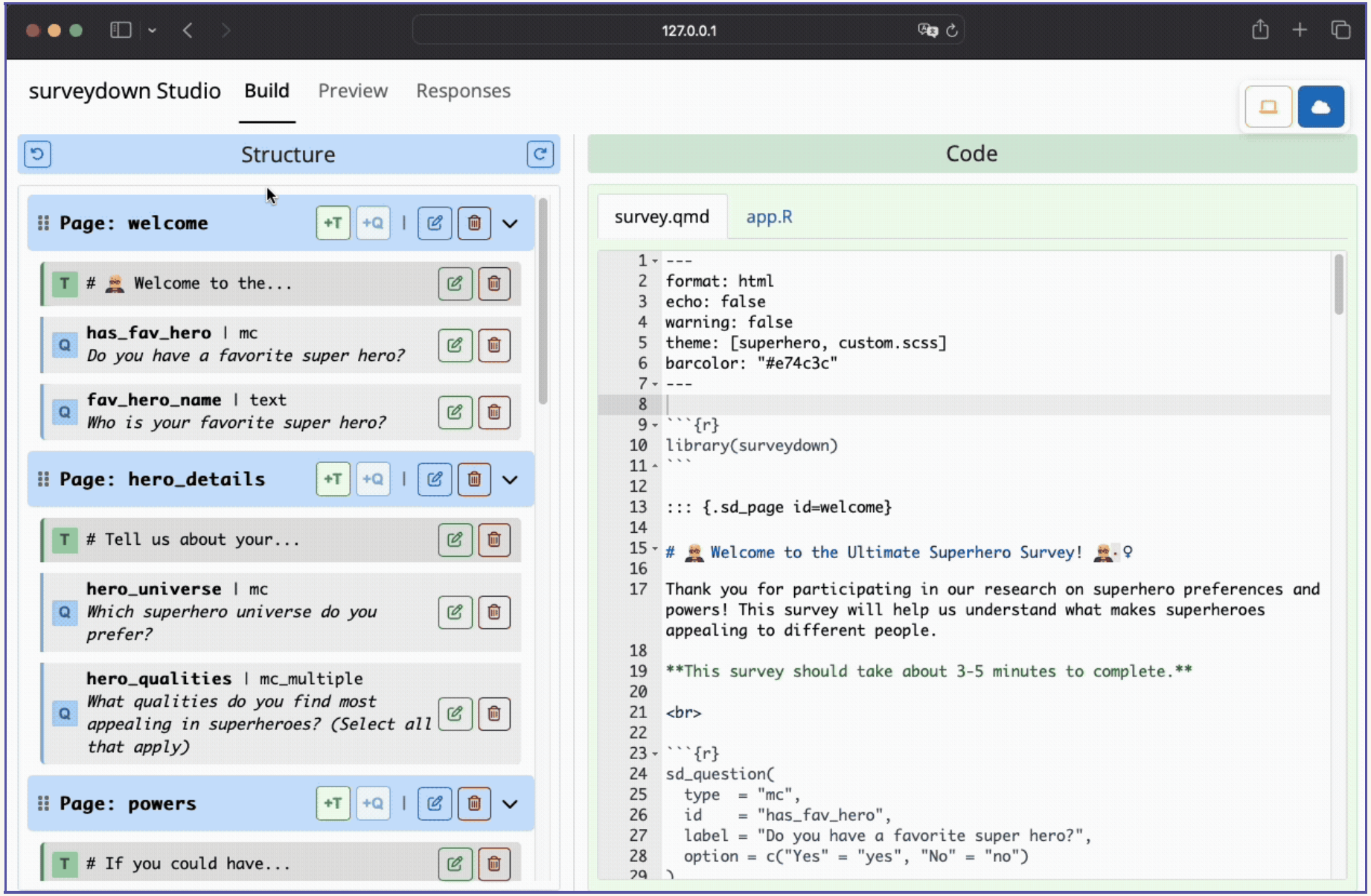
Generate surveys with LLMs!

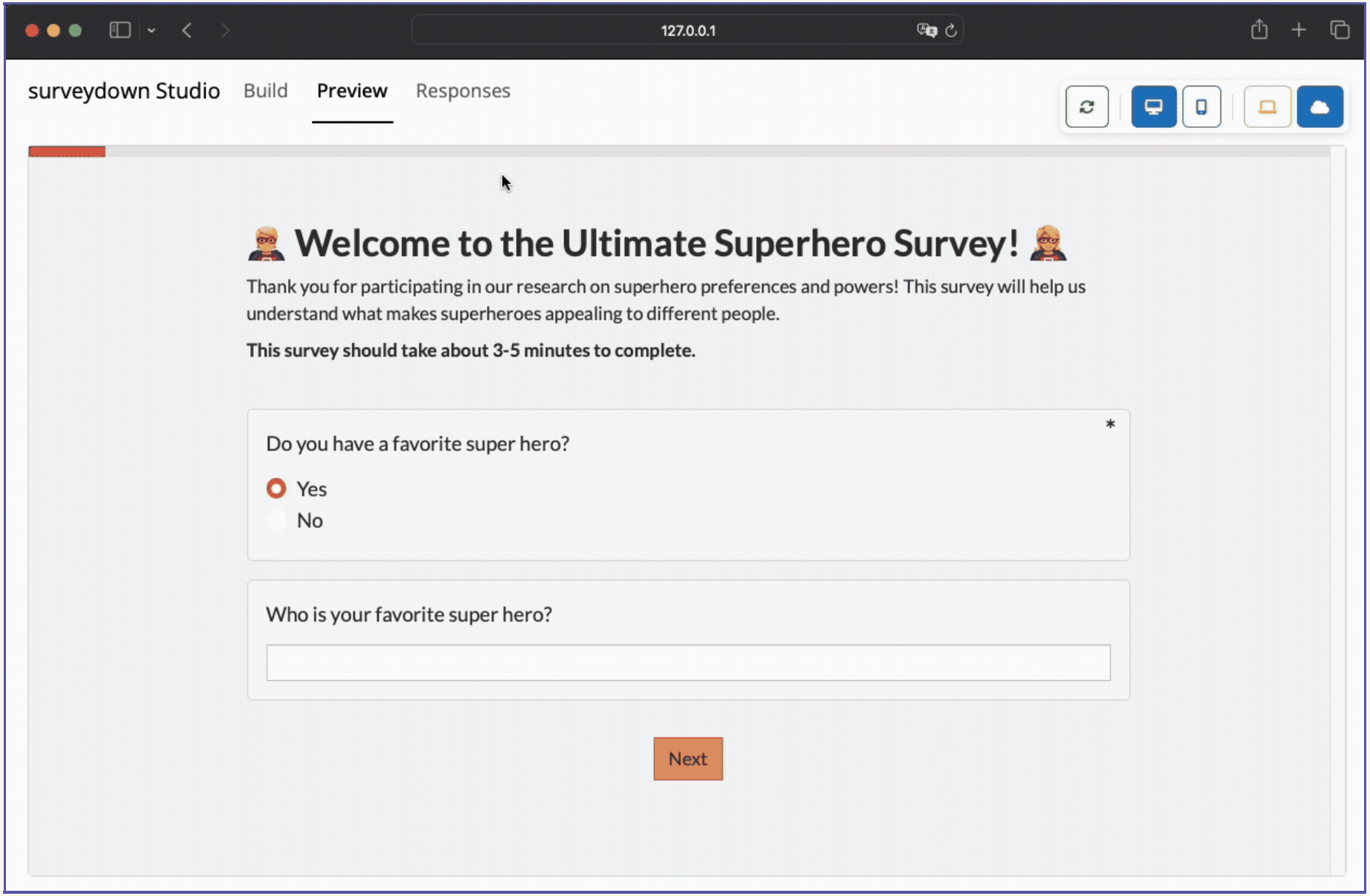


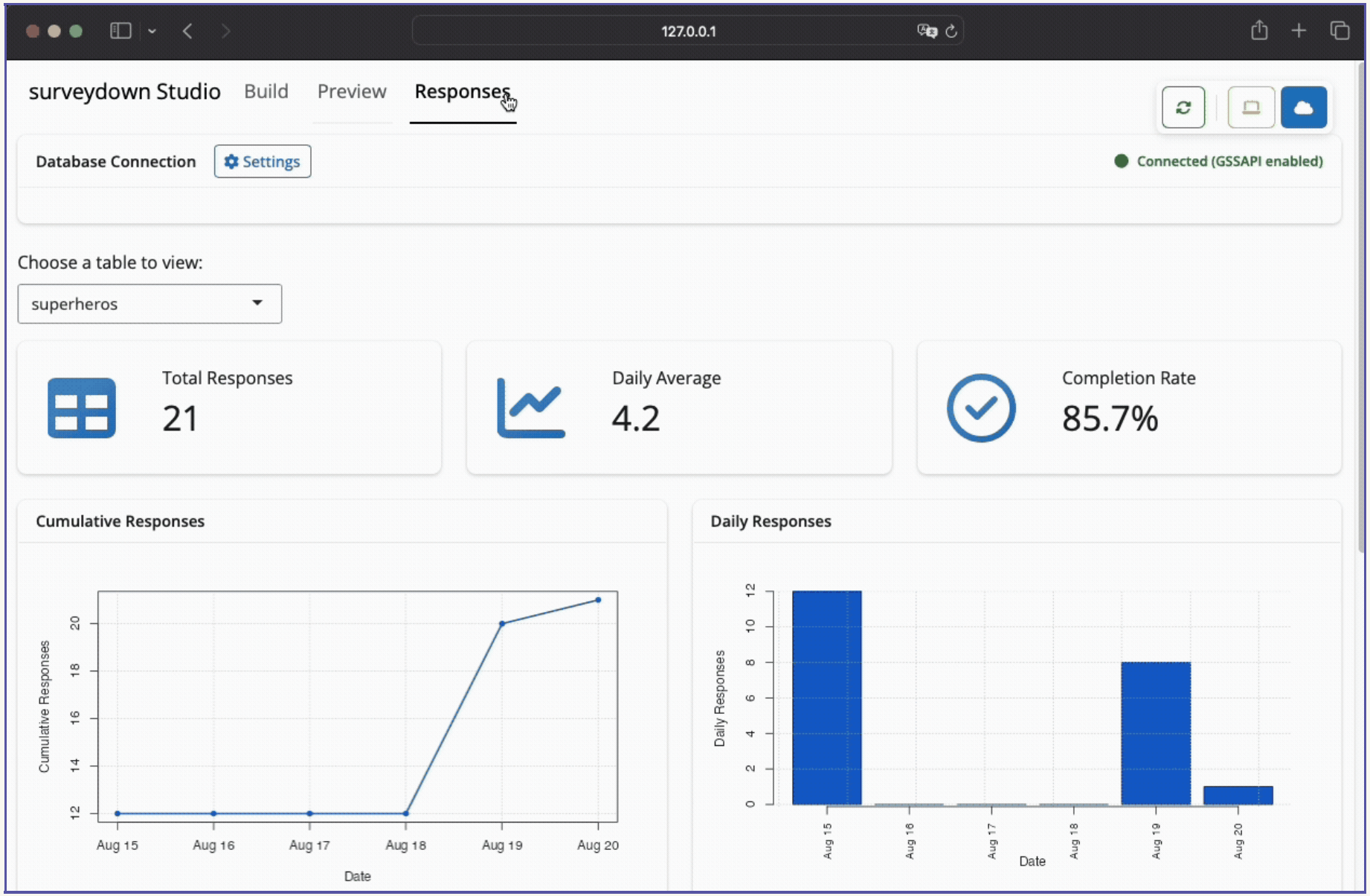
What’s next?

Try out the companion `sdstudio` package:

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


127.0.0.1
surveydown Studio
Build
Preview
Responses
Structure
Page: welcome
+T
+Q
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
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
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)


127.0.0.1
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


127.0.0.1
surveydown Studio
Build
Preview
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
Cumulative Responses
12
14
16
18
20
Aug 15
Aug 16
Aug 17
Aug 18
Aug 19
Aug 20
Date
Daily Responses
Daily Responses
0
2
4
6
8
10
12
Aug 15
Aug 16
Aug 17
Aug 18
Aug 19
Aug 20
Date

With great power comes great responsibility.

Ways to help:

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

John Helveston, Ph.D.

Pingfan Hu

Bogdan Bunea

One more thing…

Workshop by Dr John Helveston Tomorrow

jhelvy.github.io/2025-qux-surveydown-workshop/

Thursday Nov 6, **2:00 PM** UTC−5, Eastern Time (U.S.)