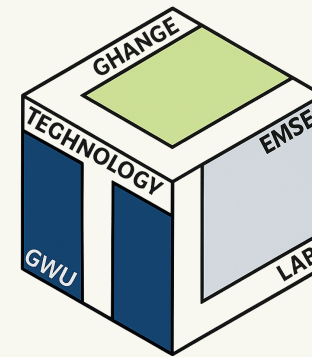


PhD Proposal Defense:

Electric Vehicle Smart Charging Adoption,
Economic Implications for the Grid, and
the **surveydown** Survey Platform

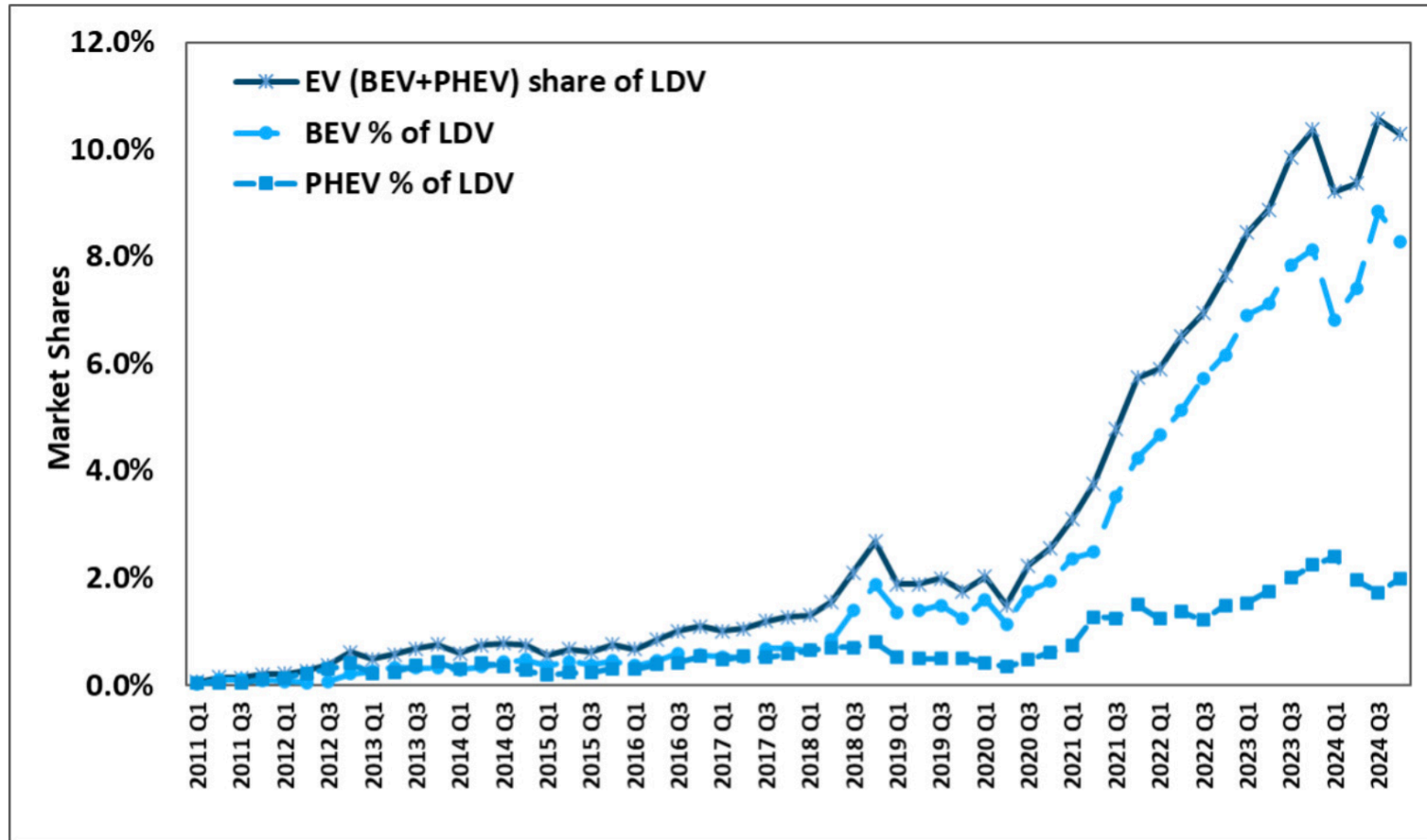
Pingfan Hu
George Washington University



Study 1

Electric Vehicle Smart Charging Adoption

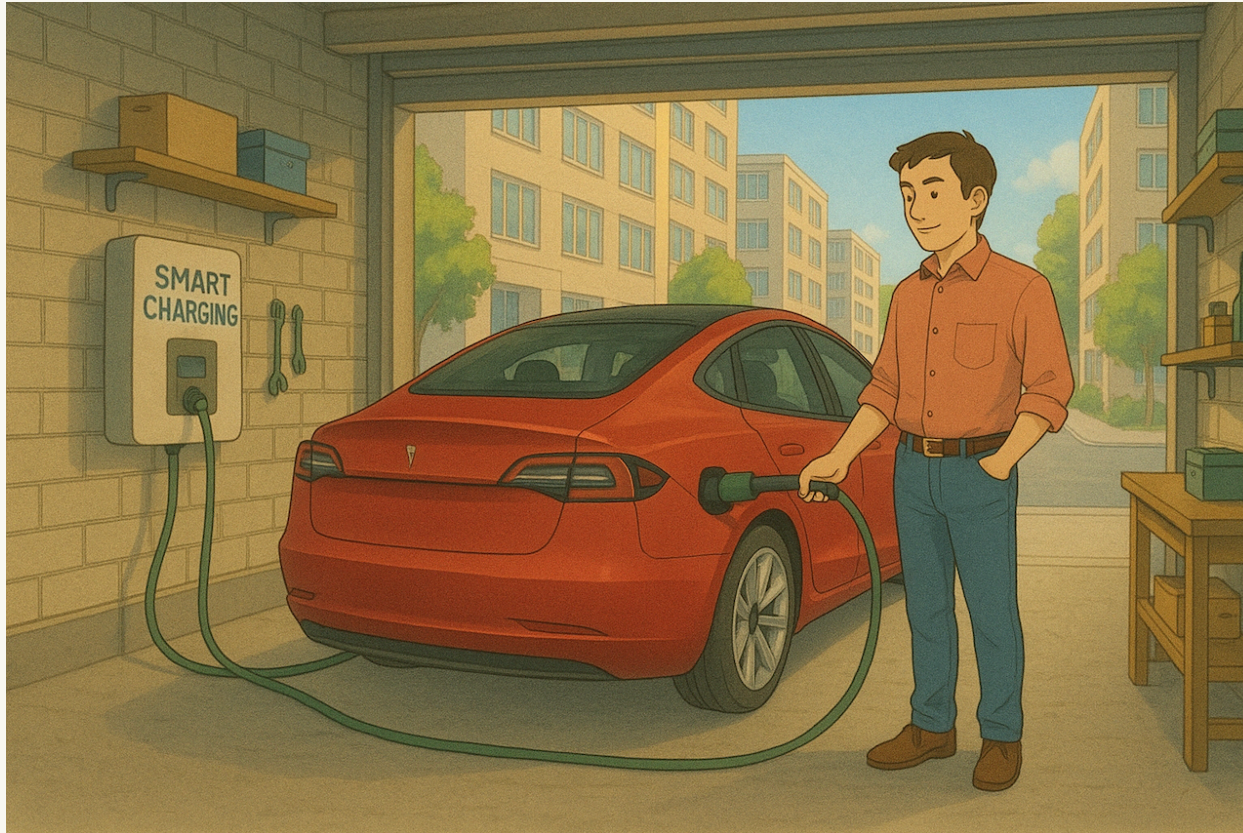
EV sales in US reaching ~10% of sales



Source: Argonne National Lab, www.anl.gov/ev-facts/model-sales

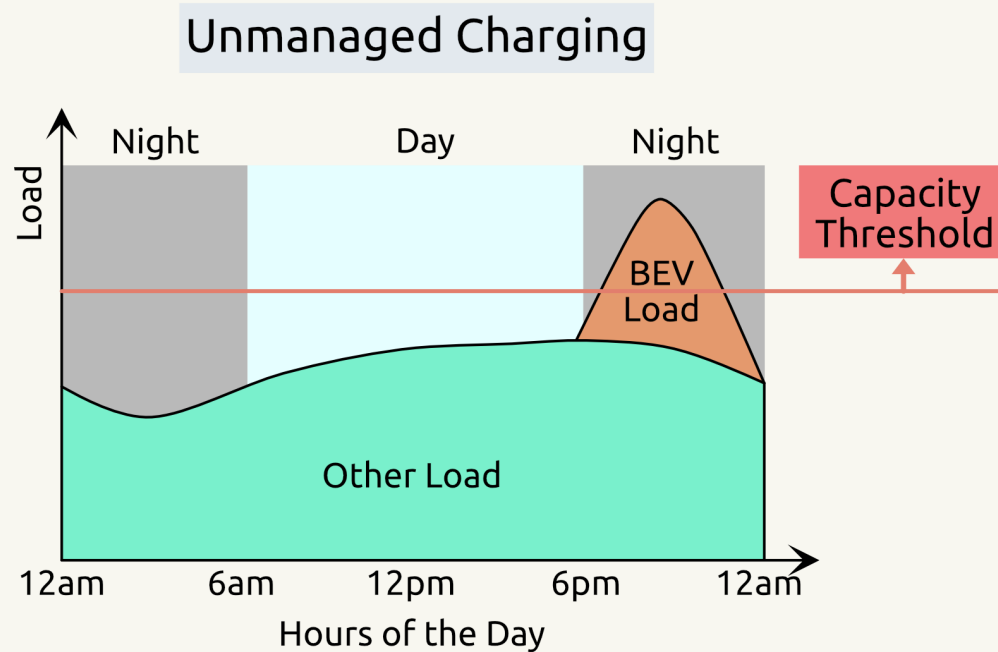
Introduction

- **Unmanaged** BEV charging is becoming a problem to the grid.
- **Managed** charging is cheaper and smoothes out the grid load.
- **Smart** charging: Supplier-Managed Charging (SMC) and Vehicle-to-Grid (V2G).



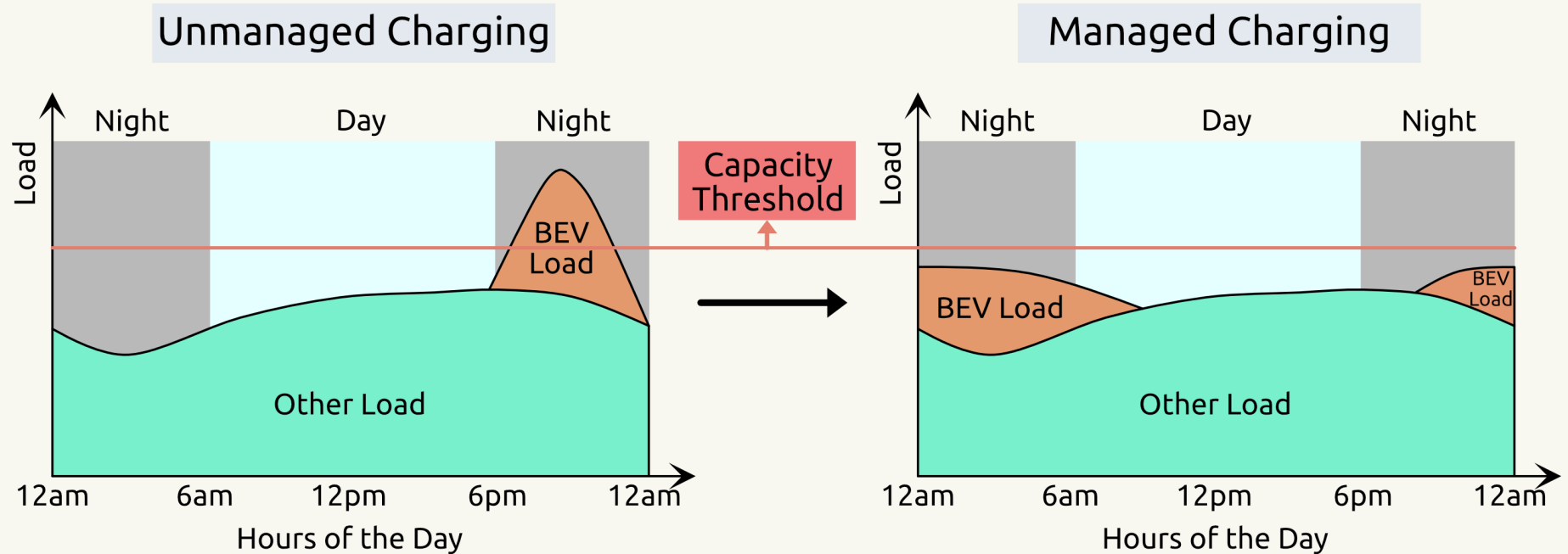
SMC - Supplier Managed Charging

- SMC smooths out overnight EV charging demand.
- Electricity demand is controlled below capacity threshold.
- It saves money and reduces pollution.



SMC - Supplier Managed Charging

- SMC smooths out overnight EV charging demand.
- Electricity demand is controlled below capacity threshold.
- It saves money and reduces pollution.



Managed charging avoids overload caused by BEV charging.

V2G - Vehicle-to-Grid

Non-V2G (Single Direction)

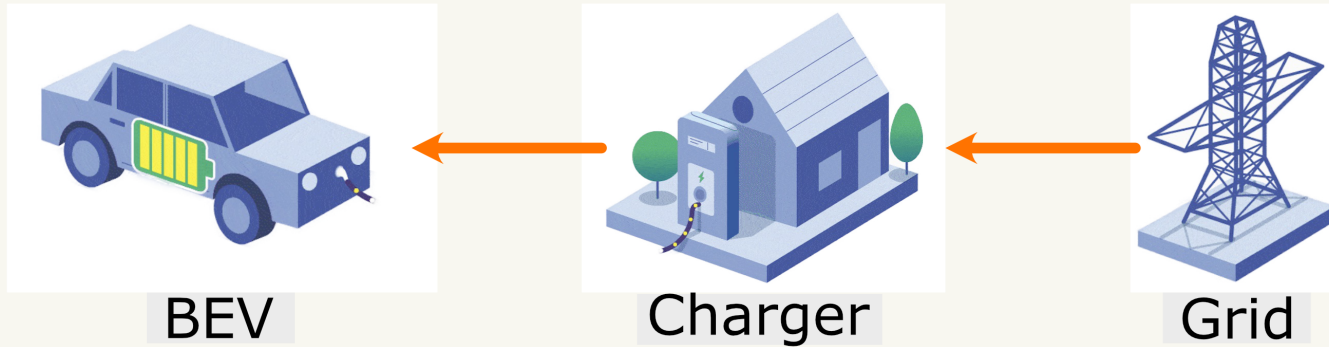
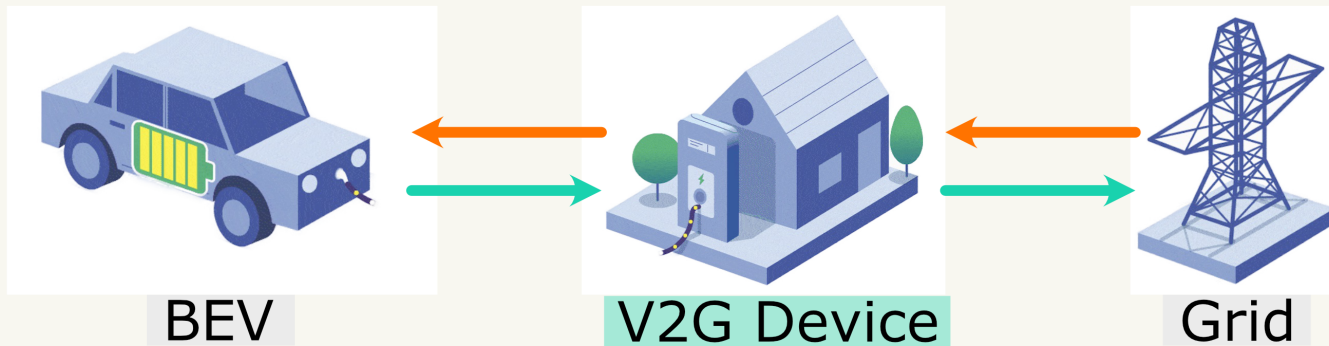


Figure Source: wri.org

V2G (Bi-direction)



In a V2G event, BEVs can charge the grid when necessary. BEVs are charged back eventually. Owners earn money.

Smart charging depends on enrollment.

Literature Review

1. A study by Wong et al. (2023) examined **incentives** affect the EV owners' acceptance, **but EV ownership is only 19%**.
2. A study by Philip and Whitehead (2024) found **range anxiety** matters, **but EV ownership is only 1.28%**.
3. Another study by Huang et al. (2021) indicates the importance of **fast charging**, **but the sample size is only 157**.

None of them have demographics data to study **heterogeneity**.
We need high EV ownership & large sample size, and consider heterogeneity.

Research Questions

1. **Sensitivity:** How do changes in smart charging program **features** influence BEV owners' willingness to opt in?
2. **Enrollment Rate:** Under what **combinations of features** will BEV owners be more willing to opt in to smart charging programs?

Conjoint survey to collect BEV owners' willingness.

Multinomial logit model for utility simulations.

Survey Design with formr

Conjoint Questions

1. Monetary Incentives
2. Charging Limitations
3. Flexibility

Demographic Questions

1. BEV Ownership
2. Personal Info
3. Household Info

Conjoint Question Explained

A Sample Conjoint Question

For example, if these were the only apples available, which would you choose? *

Option 1	Option 2	Option 3
		
Type: Fuji	Type: Pink Lady	Type: Honeycrisp
Price: \$ 2 / lb	Price: \$ 1.5 / lb	Price: \$ 2 / lb
Freshness: Average	Freshness: Excellent	Freshness: Poor

1. Provide respondents with different **sets** of attributes.
2. Observe choices across random sets.
3. Estimate **utility** of each attribute.

SMC Programs

Attributes

No.	Attributes	Range
1	Enrollment Cash	\$50 to \$300
2	Monthly Cash	\$2 to \$20
3	Monthly Override	0 to 5
4	Min Battery	20% to 40%
5	Guaranteed Battery	60% to 80%

Sample Program

Attributes	Values
Enrollment Cash	\$300
Monthly Cash	\$20
Monthly Override	5

0 80 160 200 miles

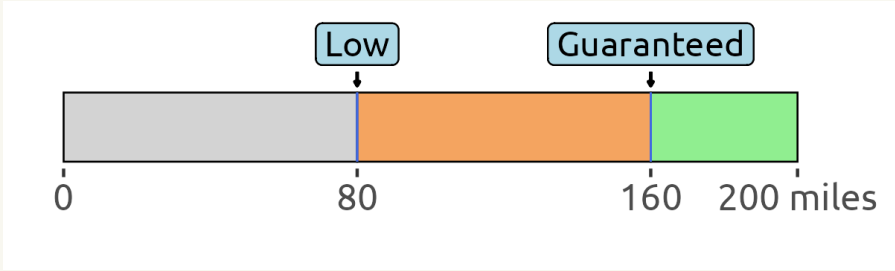
(Range determined by stated vehicle they own)

V2G Programs

Attributes

No.	Attributes	Range
1	Enrollment Cash	\$50 to \$300
2	Occurrence Cash	\$2 to \$20
3	Monthly Occurrence	1 to 4
4	Lower Bound	20% to 40%
5	Guaranteed Battery	60% to 80%

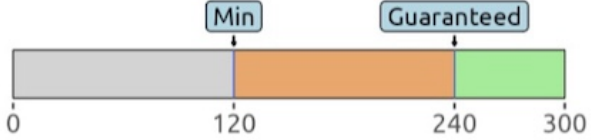
Sample Program

Attributes	Values
Enrollment Cash	\$300
Occurrence Cash	\$20
Monthly Occurrence	1
 (Range determined by stated vehicle they own)	

Sample SMC Question

(1 of 6) If your utility offers you these 2 SMC programs, which one do you prefer?
(Your BEV has maximum range of **300** miles.)

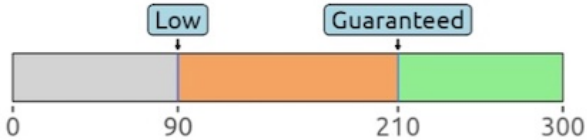
[Access the SMC Attributes](#)

Option 1	Option 2	Option 3
Enrollment Cash: \$100 Monthly Cash: \$20 Override Allowance: 1 per Month Battery Thresholds (in Miles):  A horizontal bar representing a 300-mile range. It is divided into three segments: a grey segment from 0 to 60 miles, an orange segment from 60 to 240 miles, and a green segment from 240 to 300 miles. A blue box labeled 'Min' points to the 60-mile mark, and another blue box labeled 'Guaranteed' points to the 240-mile mark.	Enrollment Cash: \$200 Monthly Cash: \$10 Override Allowance: 1 per Month Battery Thresholds (in Miles):  A horizontal bar representing a 300-mile range. It is divided into three segments: a grey segment from 0 to 120 miles, an orange segment from 120 to 240 miles, and a green segment from 240 to 300 miles. A blue box labeled 'Min' points to the 120-mile mark, and another blue box labeled 'Guaranteed' points to the 240-mile mark.	Not Interested

Sample V2G Question

(1 of 6) If your utility offers you these 2 V2G programs, which one do you prefer?
(Your BEV has maximum range of **300** miles.)

[Access the V2G Attributes](#)

Option 1	Option 2	Option 3
Enrollment Cash: \$100 Occurrence Cash: \$5 Monthly Occurrence: 2	Enrollment Cash: \$100 Occurrence Cash: \$20 Monthly Occurrence: 2	
Battery Thresholds (in Miles): 	Battery Thresholds (in Miles): 	Not Interested

Survey Fielding - 1356 in Total



Meta Ads: Voluntary participants

- 803 responses
- March to July in 2024

Dynata Recruitment: Paid survey

- 553 responses
- September to November in 2024



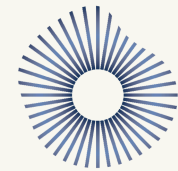
Facebook



Messenger



Instagram



dynata

Survey Question - Car Ownership

Car Ownership

1. What is your ZIP code?

22180

2. How many cars do you have?

- ☐ 1
☒ 2
☐ 3
☐ 4
☐ 5 or more

3. What is the **make** of your primary car?

3.1 What is the **model** of your primary car?

4. What is the **model year** of your primary car?

5. What is the **make** of your secondary car?

5.1 What is the **model** of your secondary car?

6. What is the **model year** of your secondary car?

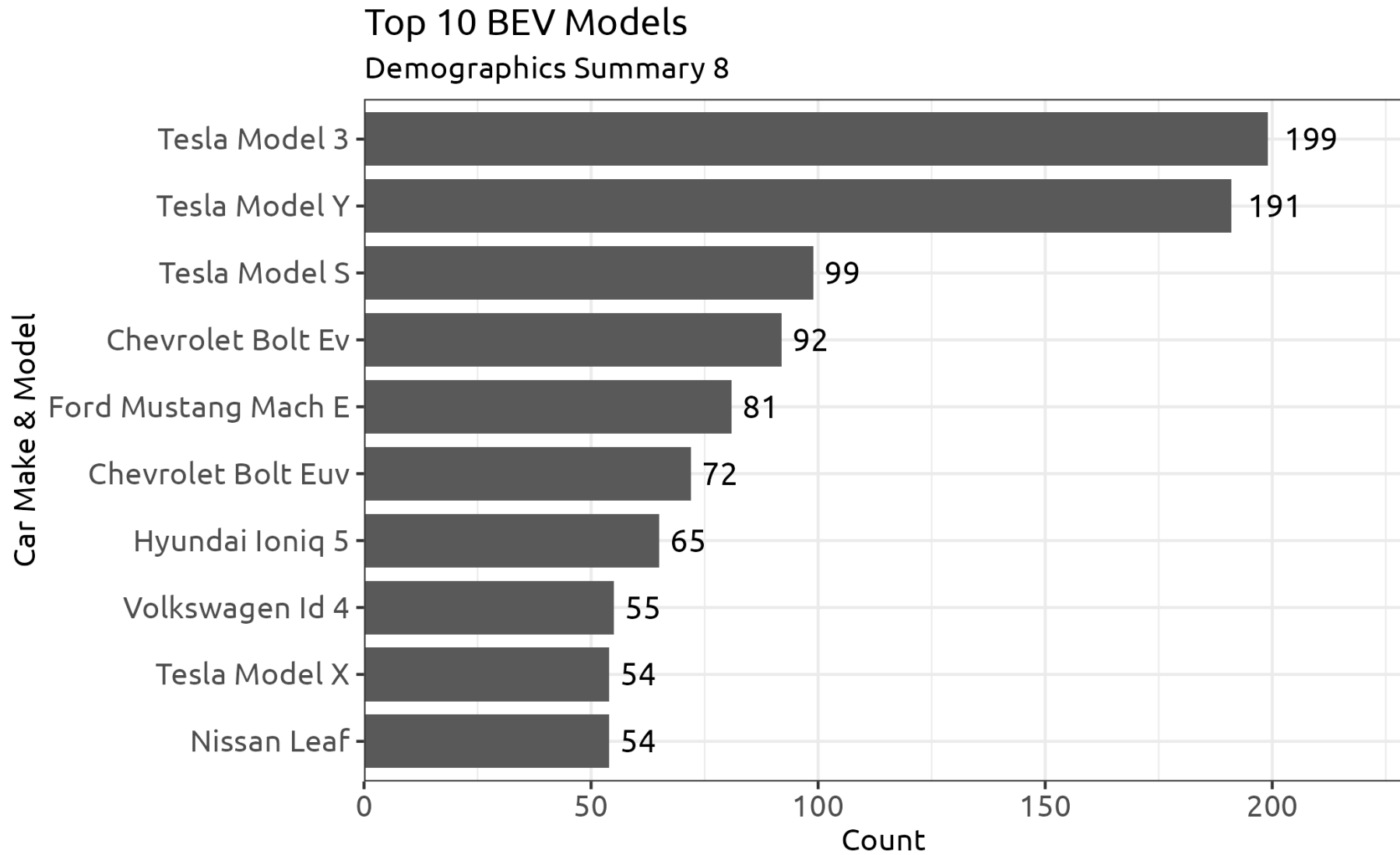
Other

✓ Acura

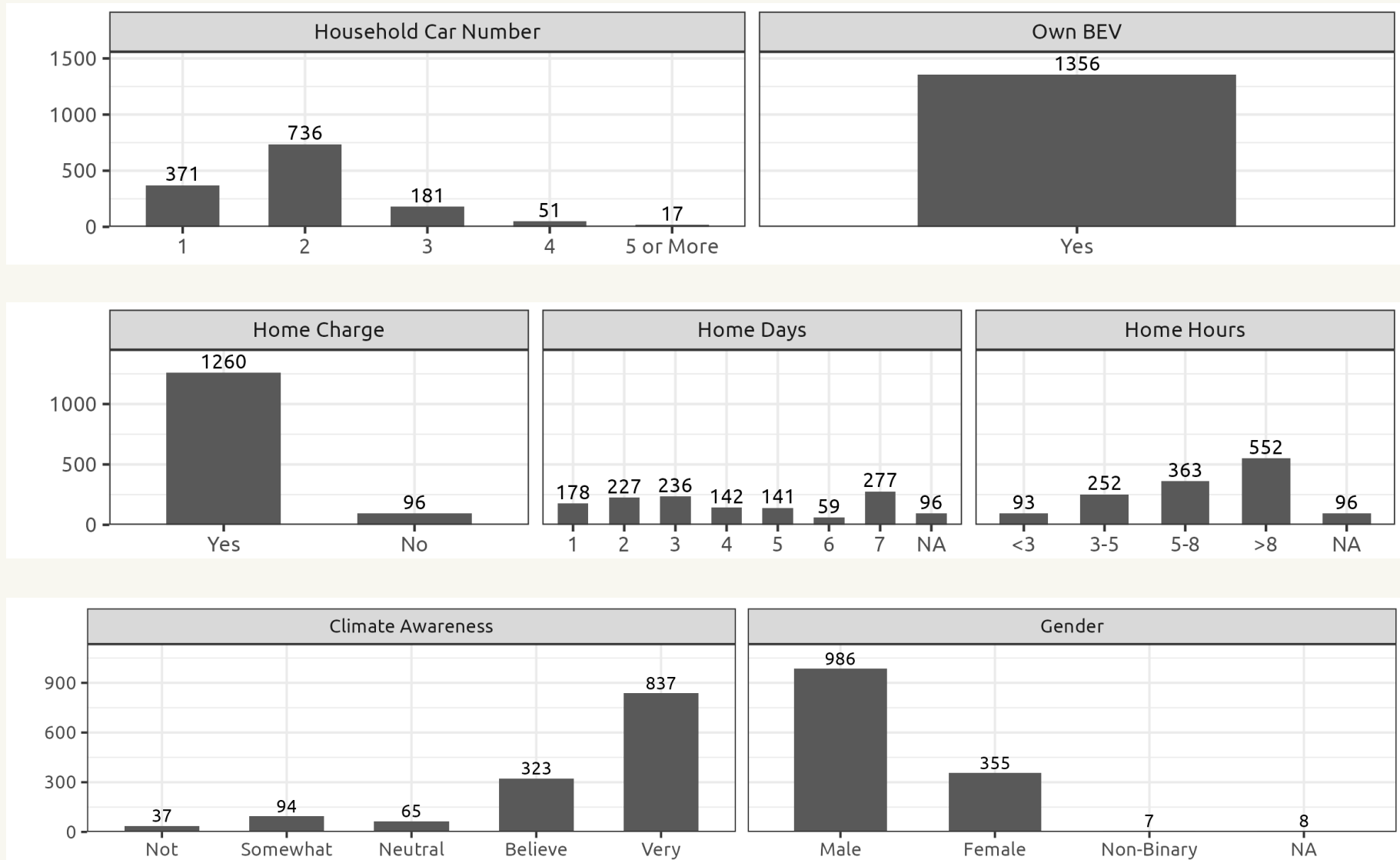
Alfa Romeo
Aston Martin
Audi
Bentley
BMW
Bugatti
Buick
Cadillac
Chevrolet
Chrysler
Daewoo
Dodge
Ferrari
FIAT
Fisker
Ford
Genesis
GMC
Honda

Next Page

Survey Results - Top 10 BEV



Survey Results - Demographics



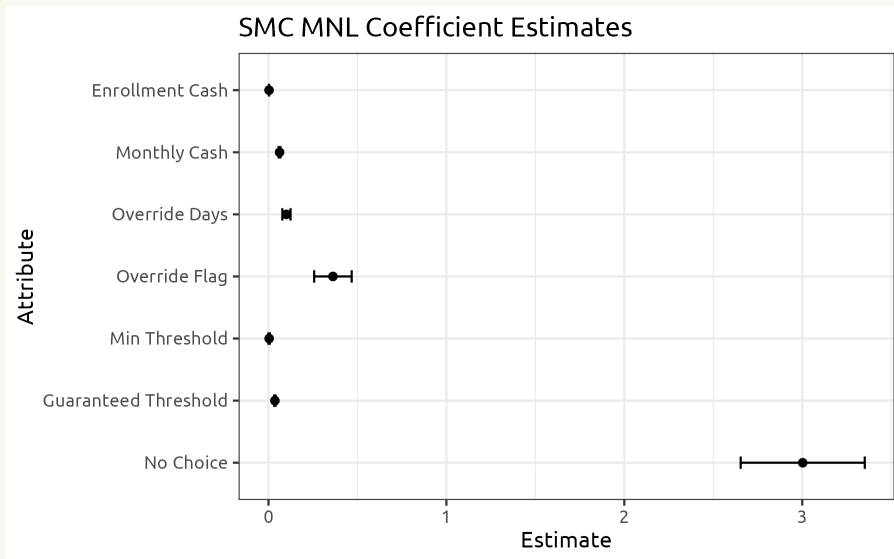
Survey Results - Willingness to Participate

Multinomial Logit Models

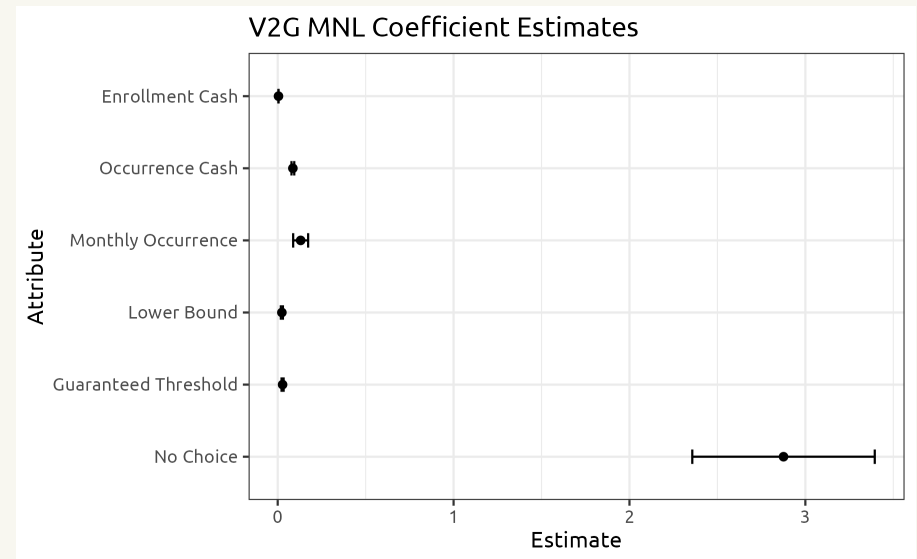
$$u_j = v_j + \epsilon_j = \beta'x + \epsilon_j \quad P_j = \frac{e^{v_j}}{\sum_{k=1}^J e^{v_k}}$$

Utility estimated using maximum likelihood estimation (MLE).

SMC Estimates



V2G Estimates



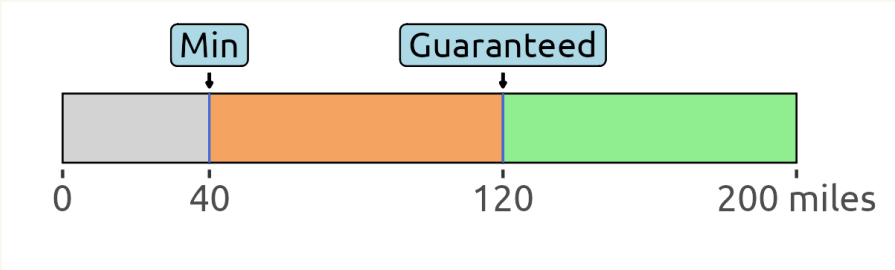
Without compensation, users will not participate.

Enrollment Sensitivity

Baseline Simulation

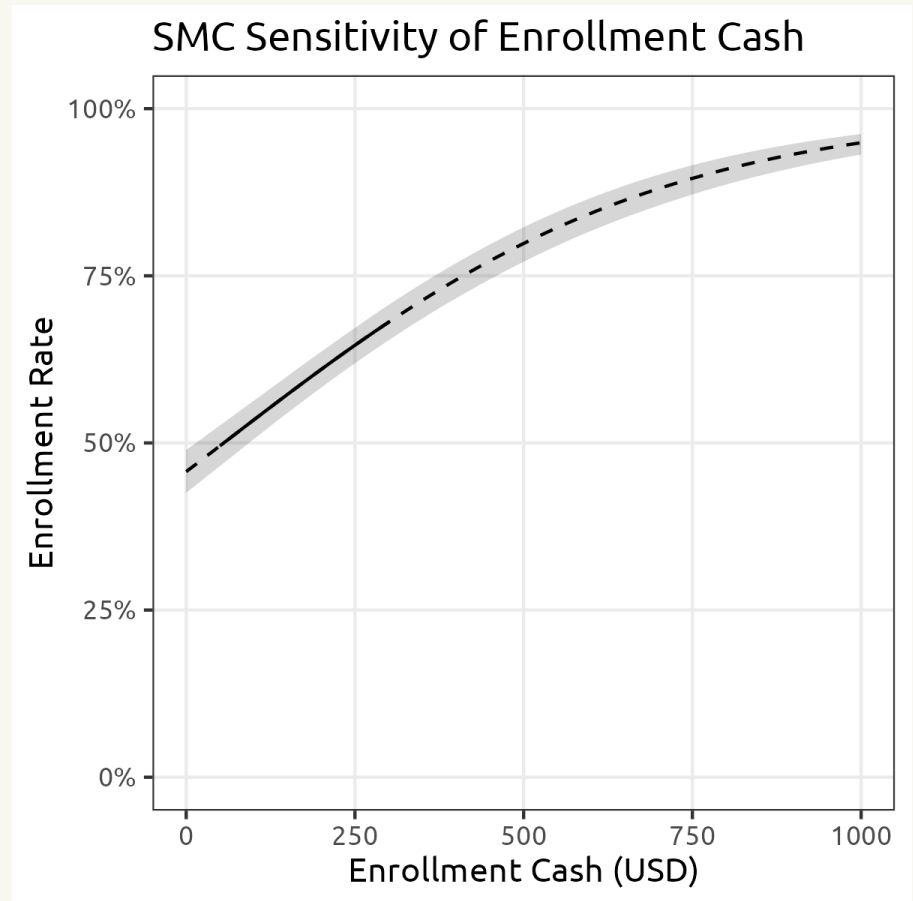
Choice between “None” and this program:

Attributes	Values
Enrollment Cash	\$0 - \$1000
Monthly Cash	\$2
Monthly Override	1



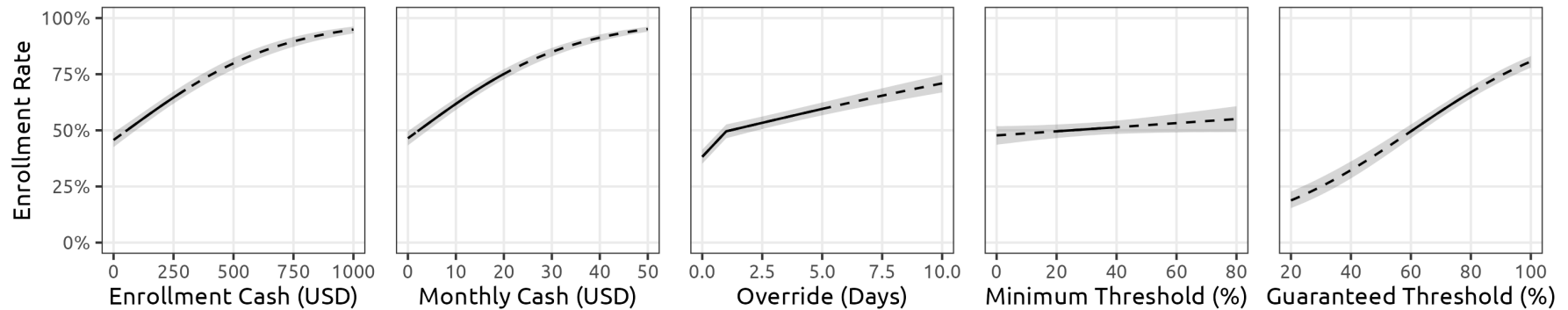
0 40 120 200 miles

Sensitivity Plot

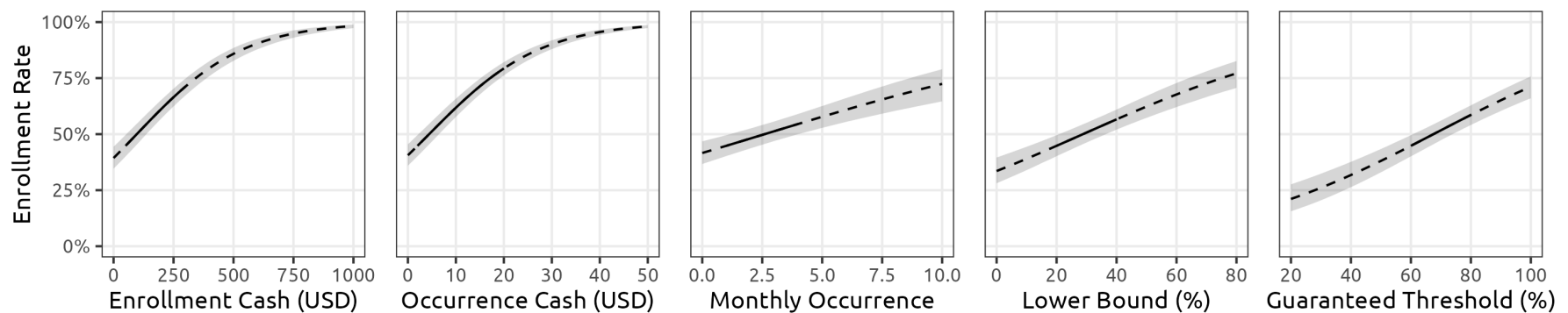


Enrollment Sensitivity

A) Supplier Managed Charging (SMC)



B) Vehicle-to-Grid (V2G)



1. Steeper slope indicates higher sensitivity.
2. Diminishing returns exist.

Equivalencies of 5% Enrollment Increase

SMC

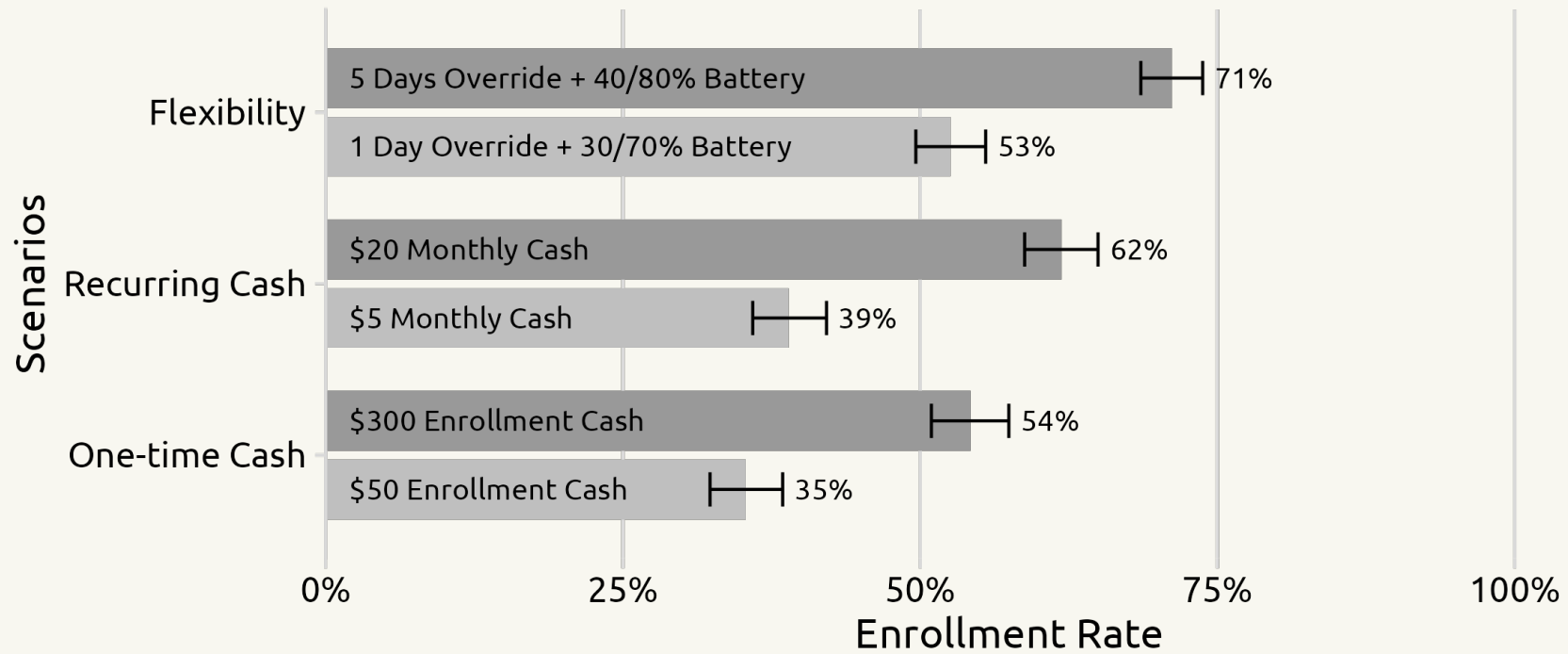
Attribute	Equivalence Value	Unit
Enrollment Cash	64.7	\$
Monthly Cash	3.2	\$
Override Days	2.0	Days
Minimum Threshold	54.8	%
Guaranteed Threshold	5.5	%

V2G

Attribute	Equivalence Value	Unit
Enrollment Cash	45.0	\$
Occurrence Cash	2.3	\$
Monthly Occurrence	1.5	Times
Lower Bound	8.5	%
Guaranteed Threshold	7.2	%

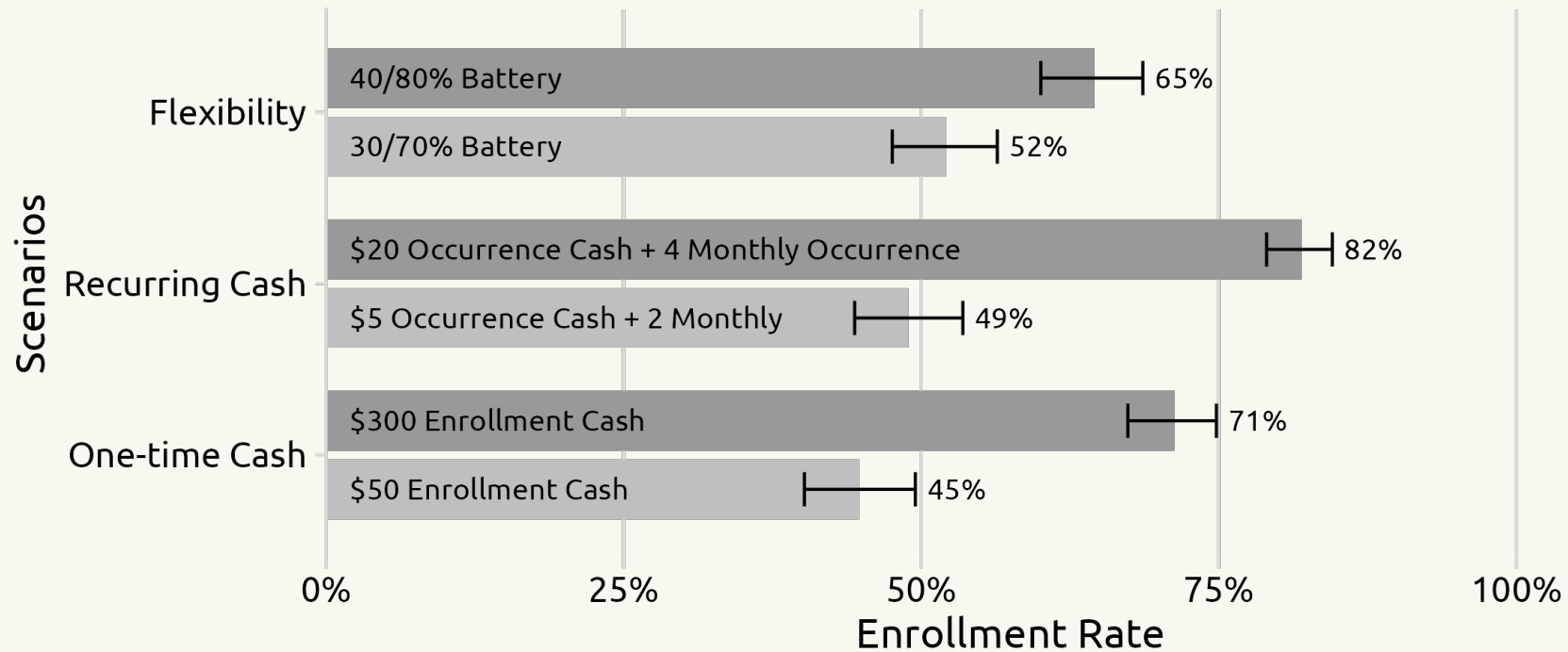
1. **Smaller** value indicates higher efficiency.
2. **Monetary** incentives are valued more in V2G than SMC.
3. **Guaranteed** threshold is more important in SMC than V2G, indicating range anxiety.
4. Attribute equivalencies can be used to inform incentive design.

SMC Scenario Analysis



1. **Flexibility** is highly valued.
2. **Recurring** incentives are more important than one-time.
3. Payment alone is not enough.

V2G Scenario Analysis



1. Still, **recurring** incentives are more important than one-time.
2. But **flexibility** is not as important compared with SMC.
3. Owners are willing to leverage BEV as a source of income.

Smart Charging Enrollment Simulator

Smart Charging Enrollment Simulator

[About](#)

[⚡ SMC \(Supplier-Managed Charging\)](#)

[🔌 V2G \(Vehicle-to-Grid\)](#)



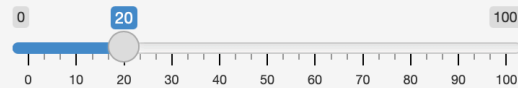
SMC Attributes:

Enrollment Cash (\$)

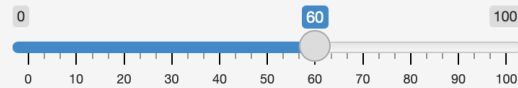
Monthly Cash (\$)

Override Allowance per Month

Minimum Threshold (%)



Guaranteed Threshold (%)



Reset

Predicted SMC Enrollment Probability:

31.9%

About SMC:

- SMC (Supplier-Managed Charging) allows the utility to monitor, manage, and restrict BEV charging to optimize energy flow during night charging at home.
- By participating in SMC, your BEV will be mostly charged during off-peak periods.

SMC Attributes Explained:

Attribute	Description
Enrollment Cash	The one-time payment you'll receive if you stay for at least 3 months.
Monthly Cash	The recurring monthly payment you'll receive if you don't exceed override allowance.
Override Allowance	The monthly frequency of override to normal charging, effective for 24hrs. If you exceed the limit, no monthly cash for this month.
Minimum Threshold	SMC won't be triggered below this threshold. In the survey it's converted to miles.
Guaranteed Threshold	SMC will give you this much of range by the morning (8 hrs' charging). In the survey it's converted to miles.

Contributions

1. First **large N** study of BEV owners' preferences for smart charging programs.
2. Quantified the **sensitivity** of BEV owners' preferences for smart charging features.
3. Introduced the concept of attribute **equivalencies** to inform incentive design.

Appendix - SMC Logit Model

Attribute	Coef.	Est.	SE	Level	Unit
Enrollment Cash	β_1	0.0031	0.0002	50, 100, 200, 300	USD
Monthly Cash	β_2	0.0623	0.0027	2, 5, 10, 15, 20	USD
Override Days	β_3	0.1010	0.0118	0, 1, 3, 5	Days
Override Flag	β_4	0.3622	0.0538	Yes, No	-
Minimum Threshold	β_5	0.0037	0.0021	20, 30, 40	%
Guaranteed Threshold	β_6	0.0362	0.0021	60, 70, 80	%
No Choice	β_7	3.0026	0.1779	-	-

Appendix - V2G Logit Model

Attribute	Coef.	Est.	SE	Level	Unit
Enrollment Cash	β_1	0.0045	0.0026	50, 100, 200, 300	USD
Occurrence Cash	β_2	0.0863	0.0040	2, 5, 10, 15, 20	USD
Monthly Occurrence	β_3	0.1305	0.0217	1, 2, 3, 4	Times
Lower Threshold	β_4	0.0237	0.0030	20, 30, 40	%
Guaranteed Threshold	β_5	0.0278	0.0030	60, 70, 80	%
No Choice	β_6	2.8759	0.2647	-	-

Study 2

Smart Charging Economy

Study 3

The **surveydown** Survey Platform

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

Next

WYSIWYG Interface

36

The screenshot shows a Google Forms editor for a survey titled "Super Hero Survey!". The interface includes a top navigation bar with "Questions", "Responses", and "Settings" tabs. A question is being edited: "Do you have a favorite super hero?". Below the question are radio button options for "Yes", "No", and an "Add option or add 'Other'" link. A context menu is open, displaying 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 right sidebar contains icons for adding different content types like images, videos, and text.

docs.google.com

Super Hero Survey! All changes saved in Drive

Questions Responses Settings

Super Hero Survey!

Form description

Do you have a favorite super hero?

☐ Yes

☐ No

☐ Add option or [add "Other"](#)

Short answer

Paragraph

☒ Multiple choice

☒ Checkboxes

☒ Dropdown

☒ File upload

Linear scale

★ Rating **New**

☒ Multiple choice grid

☒ Checkbox grid

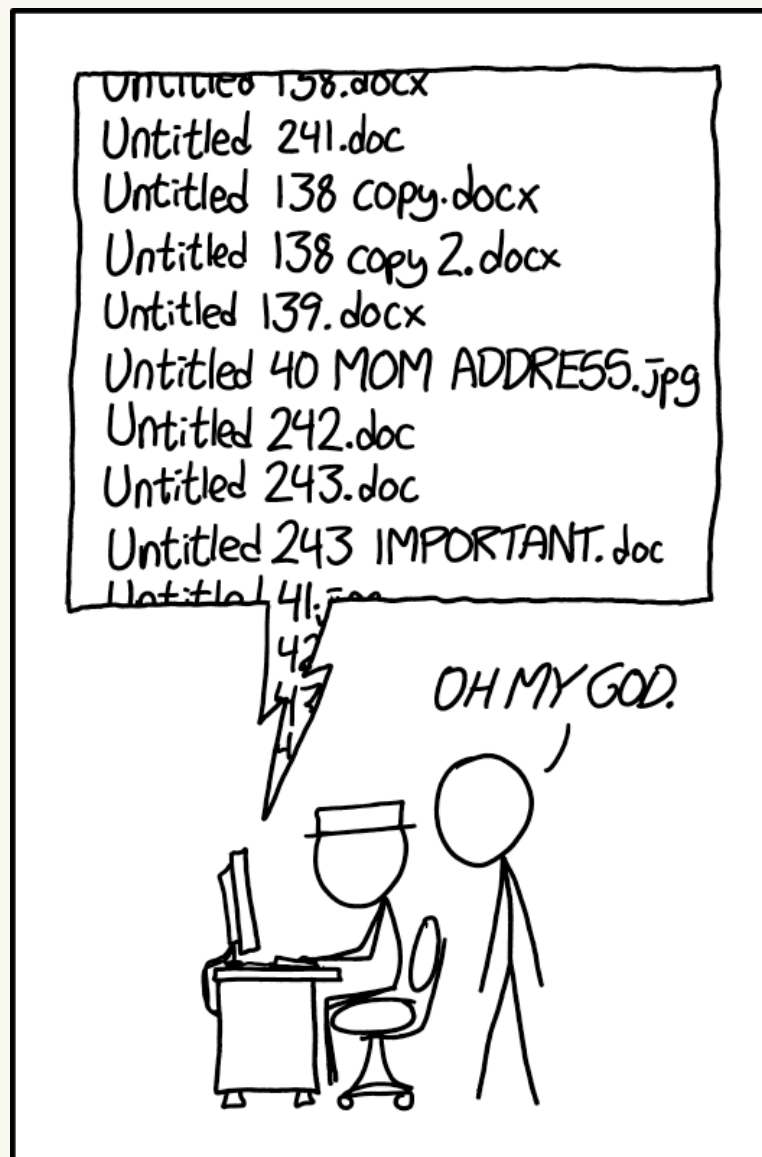
☒ Date

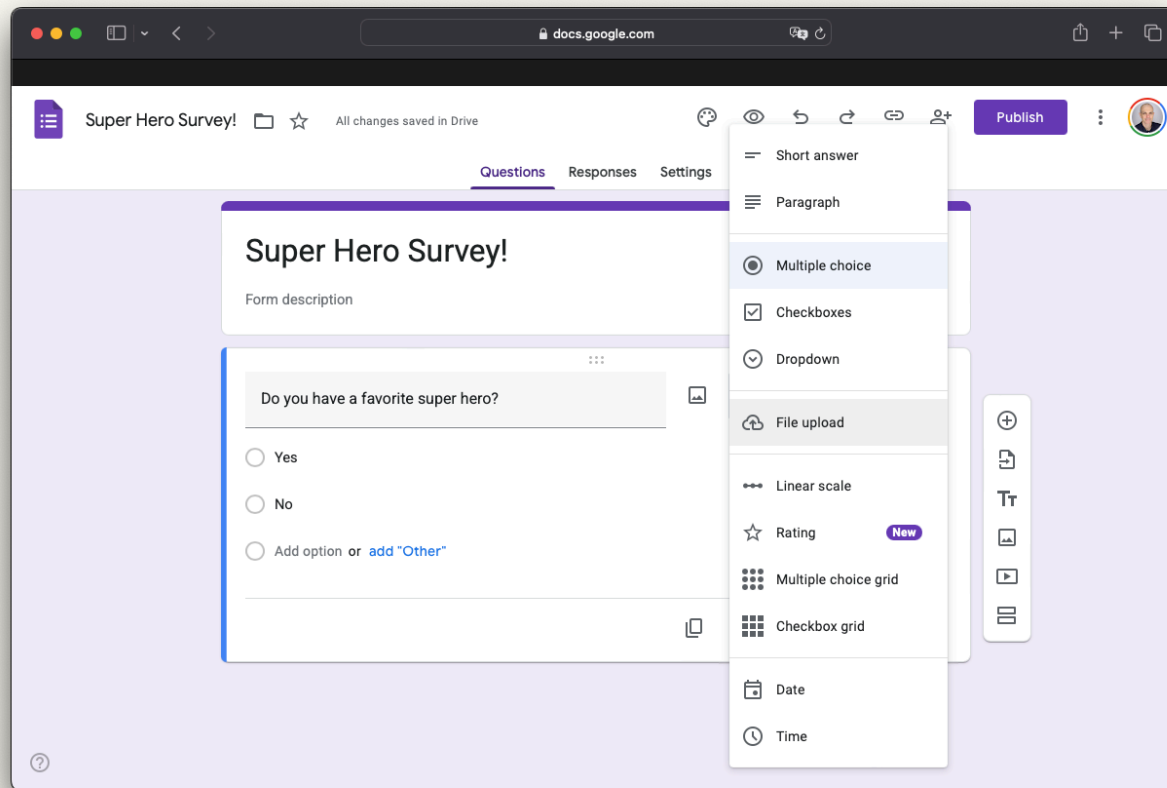
☒ Time

Limitations

- ✗ Reproducibility
- ✗ Version control

The screenshot shows the Google Forms editor interface. At the top, the browser address bar displays 'docs.google.com'. The form title is 'Super Hero Survey!' and it is saved in Drive. The 'Questions' tab is active, showing a question: 'Do you have a favorite super hero?'. Below the question, there are radio button options: 'Yes', 'No', and 'Add option or add "Other"'. A dropdown menu is open, displaying various question types: 'Short answer', 'Paragraph', 'Multiple choice' (selected), 'Checkboxes', 'Dropdown', 'File upload', 'Linear scale', 'Rating' (marked 'New'), 'Multiple choice grid', 'Checkbox grid', 'Date', and 'Time'. The right sidebar contains icons for adding elements like images, videos, and sections.





Limitations

- ✗ Reproducibility
- ✗ 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?

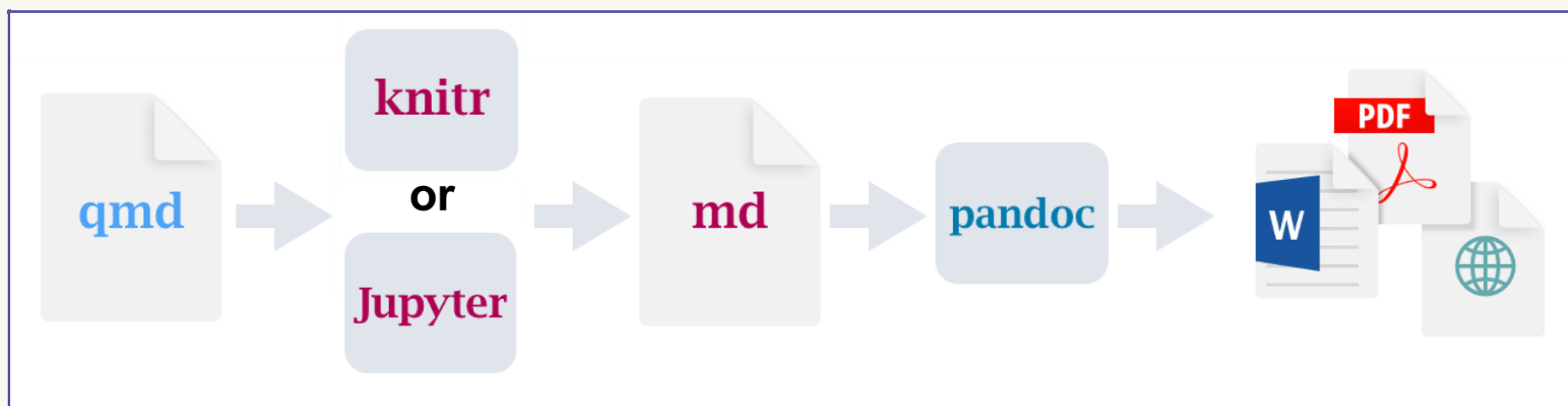
What is **surveydown**?



R package that renders Quarto files into surveys



Quarto is a publishing system



Original `qmd` file

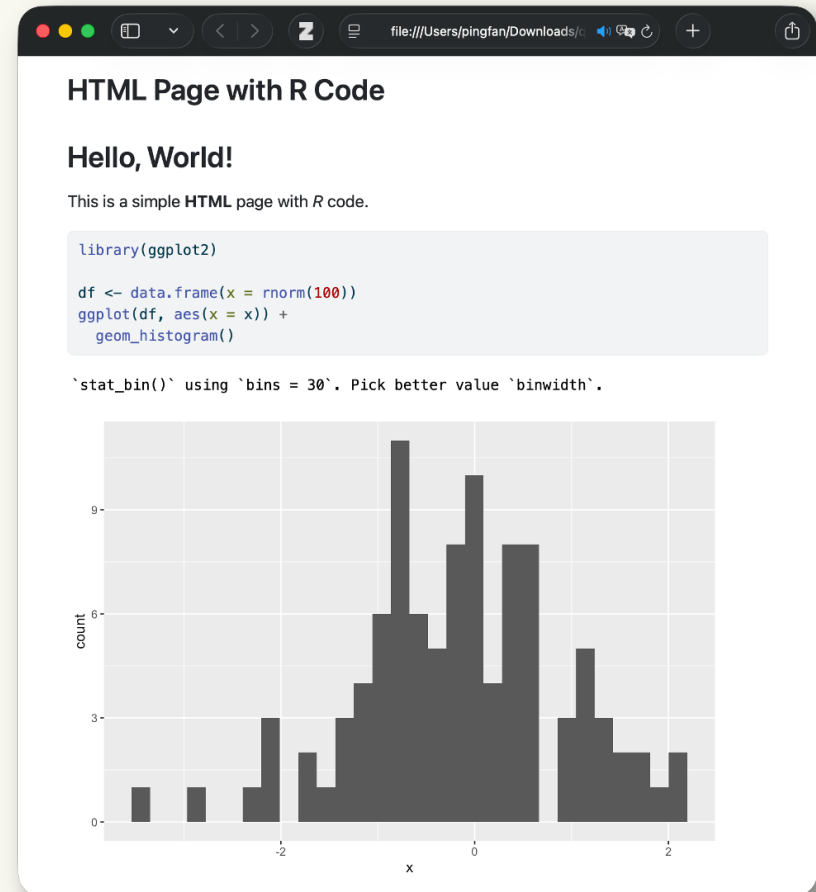
Markdown + R code chunks

```

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

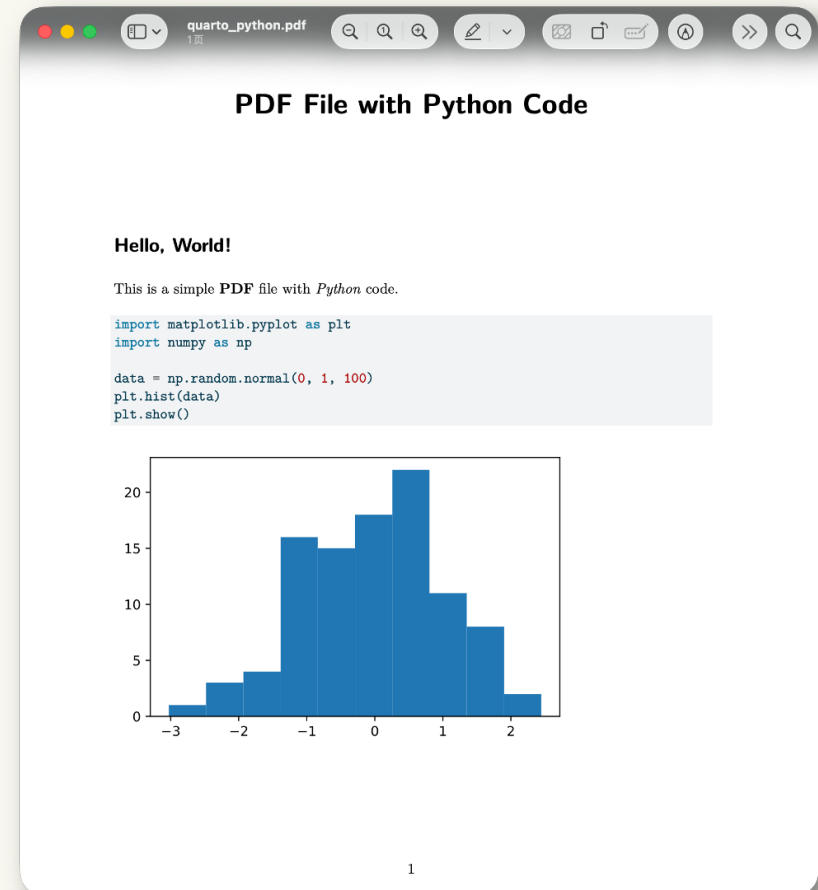


Original `qmd` file

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

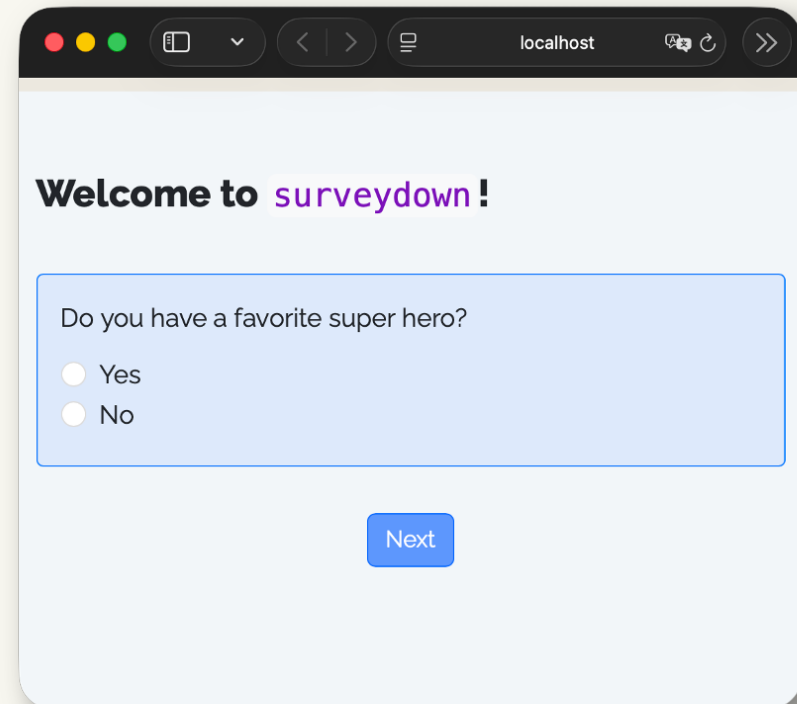




survey.qmd

```
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



localhost

Welcome to surveydown!

Do you have a favorite super hero?

☐ Yes

☐ No

Next

survey.qmd

```

1  ---
2  format: html
3  echo: false
4  warning: false
5  ---
6
7  ```{r}
8  library(surveydown)
9  ```
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11  ::: {#welcome .sd-page}
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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  :::

```

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 ```
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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
11 ::: {#welcome .sd-page}
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13 # Welcome to `surveydown`!
14
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16 sd_question(
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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 :::
```

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  :::

```

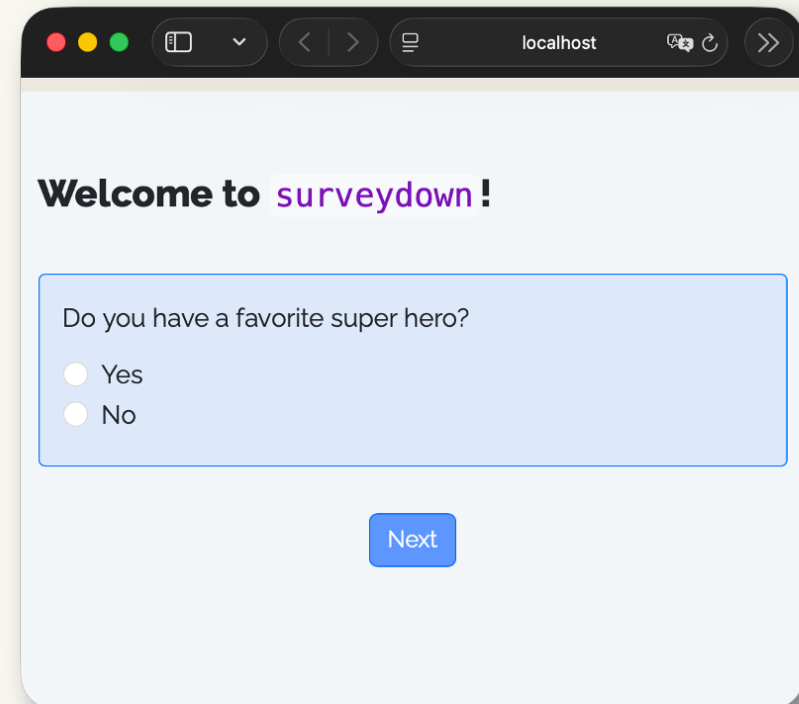
Page content

- 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}
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9 ```
10
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24 )
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26 sd_next()
27 ```
28
29 :::
```

Rendered Survey



localhost

Welcome to **surveydown!**

Do you have a favorite super hero?

☐ Yes

☐ No

Next

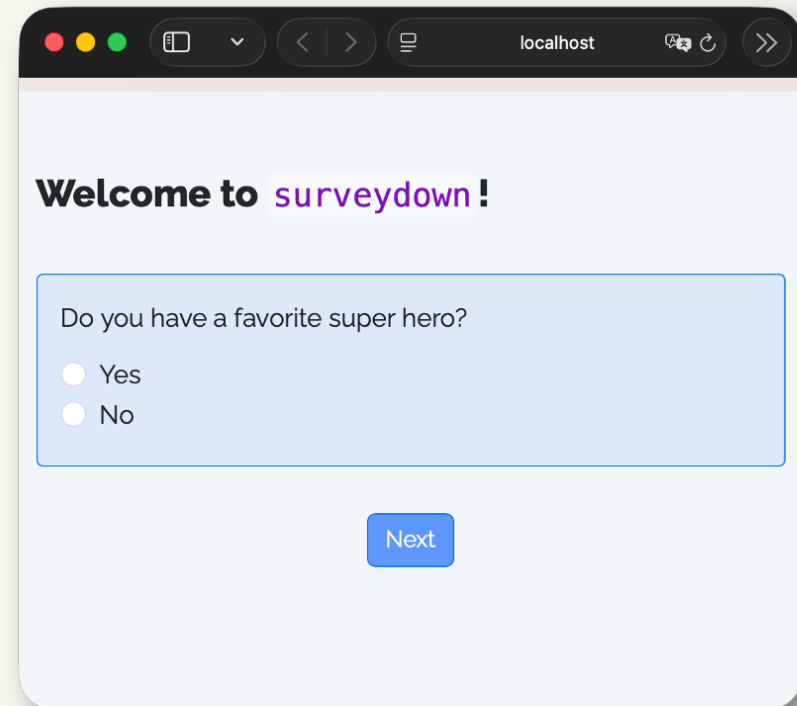
survey.qmd

```

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



Welcome to surveydown!

Do you have a favorite super hero?

☐ Yes

☐ No

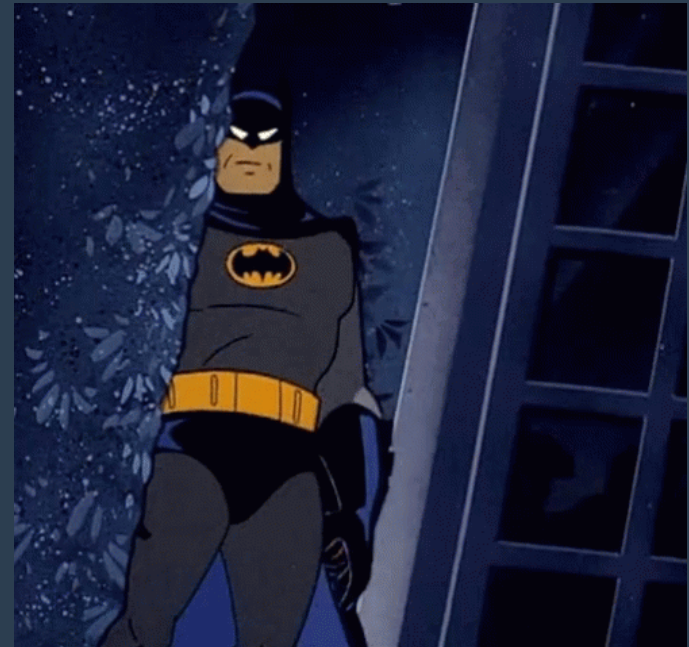
Next

has_fav_hero
yes
no
no
yes

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



Shiny to the rescue!

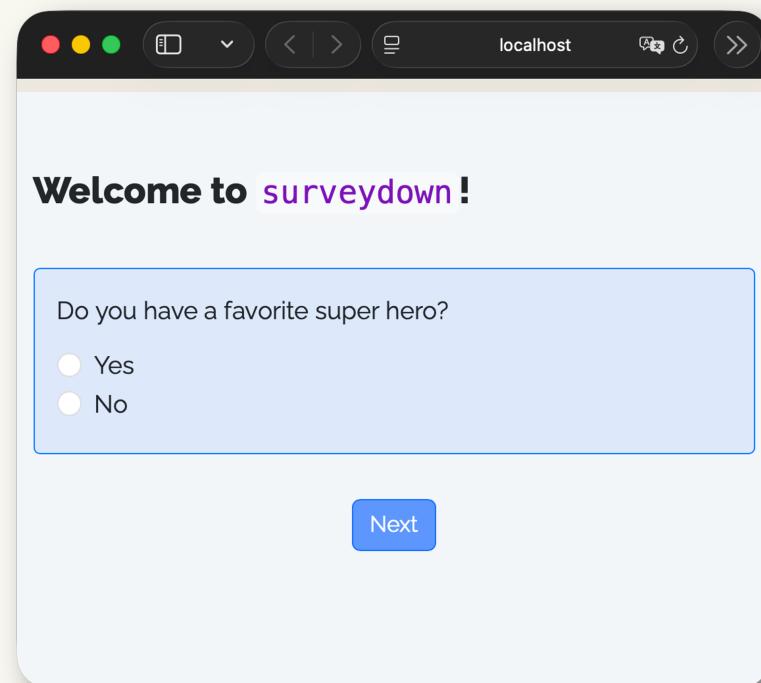




Shiny App



UI

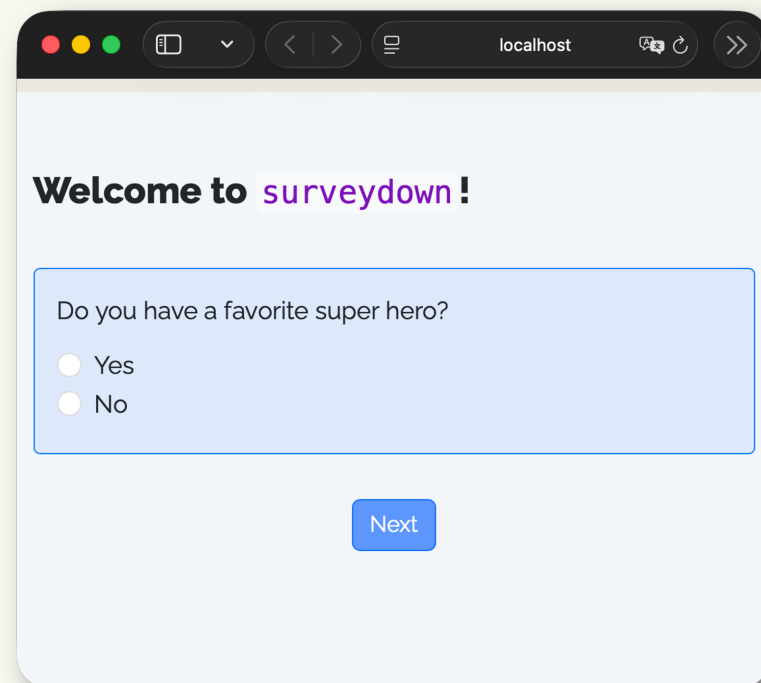


Shiny App

UI



Server



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   sd_server()
7 }
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   sd_server()
7 }
8
9 }
10
11 shiny::shinyApp(ui = ui, server = server)
```

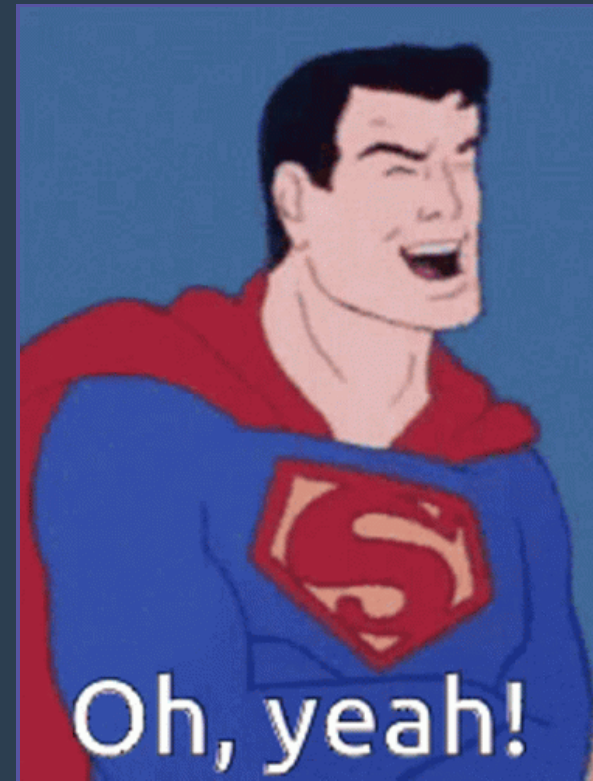
Render `survey.qmd` as UI

Run the `surveydown` server

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



PostgreSQL to the rescue!



The screenshot displays the Supabase Table Editor interface. The left sidebar shows a list of tables in the 'public' schema, with 'superheroes' selected. The main area shows the 'superheroes' table with columns: session_id, has_fav_hero, fav_hero_name, and hero_universe. The table contains 20 records. The bottom of the interface shows pagination (Page 1 of 1) and a 'Refresh' button.

Table Editor

schema: public

+ New table

Search tables...

superheroes

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
676ae2ebd611f7fe70586c23af5b53c	NULL	NULL	NULL
68fe326c20852efae79bca9b0b089815	no	NULL	NULL
6f436b4a64f154324ad6c4c883e99002	yes	Monkey King	marvel
8352cbbaad349838729c489c43f08c4f	yes	Spiderman	dc
86e11fbaa660bcd94b686fd0206b55d	yes	Superman	all
a426816365182d50dc133ee0c6255b3d	yes	NULL	NULL
a754b629d48ad2c53049c6741e9d4645	no	NULL	NULL
bb7021e8ad7e35be6d75831a2f5c51cd	yes	Spiderman	all
bbe8c56090359bb4eb37e58b95b31316	yes	Spider Man	marvel

Page 1 of 1 | 100 rows | 20 records

Refresh Data Definition

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()`

demo - main - RStudio

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

```

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...

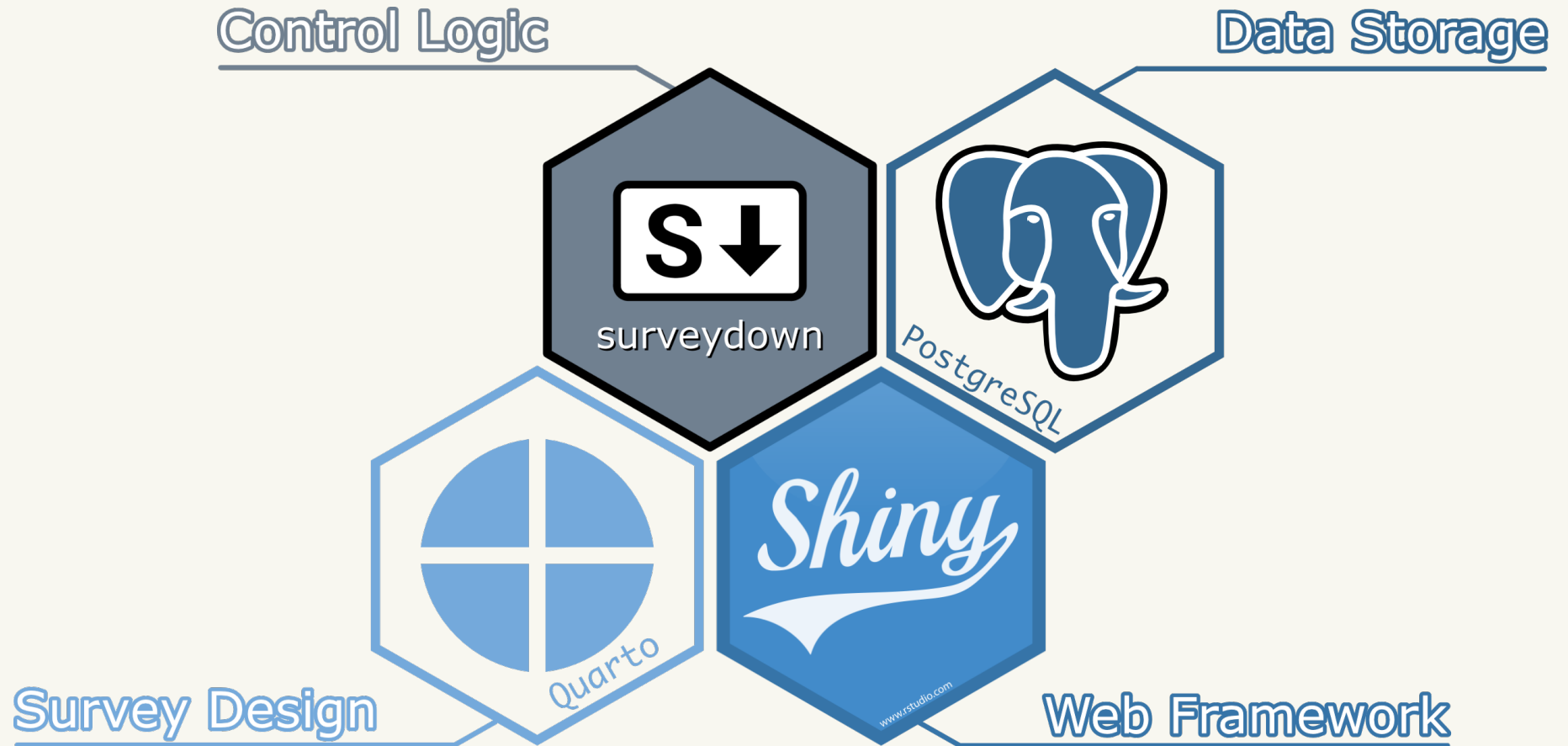
```

9:1 (Top Level) Copilot: Completion response received. R Script

Environment History Connections Git Tutorial Files Plots Packages Help Viewer Presentation

What is **surveydown**?





What can **surveydown** do?

surveydown is feature-packed!

73

The screenshot shows the surveydown.org website. The browser address bar displays 'surveydown.org'. The navigation bar includes links for 'About', 'Documentation', 'Templates', and 'Blog', along with icons for FAQ, GitHub, RSS, and a search icon. A left sidebar contains a 'Documentation' menu with categories like 'Features & Roadmap', 'Survey Basics', 'Question Development', 'Survey Design Concepts', 'Interactivity', and 'Data Management'. The main content area is titled 'Features' and contains a table with four columns: 'Feature', 'Docs', 'Version', and 'Discussion'. The table lists various features such as 'Wide variety of question types', 'Conditionally show questions', 'Markdown formatting for options and buttons', and 'Support for bootstrap themes'. To the right of the table, a section titled 'On this page' lists links for 'surveydown package', 'Features', 'To Do', and 'sdstudio package'. The footer of the website states 'Site made with ♥, ✨, and quarto'.

surveydown.org About Documentation Templates Blog FAQ GitHub RSS Search

Features

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

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

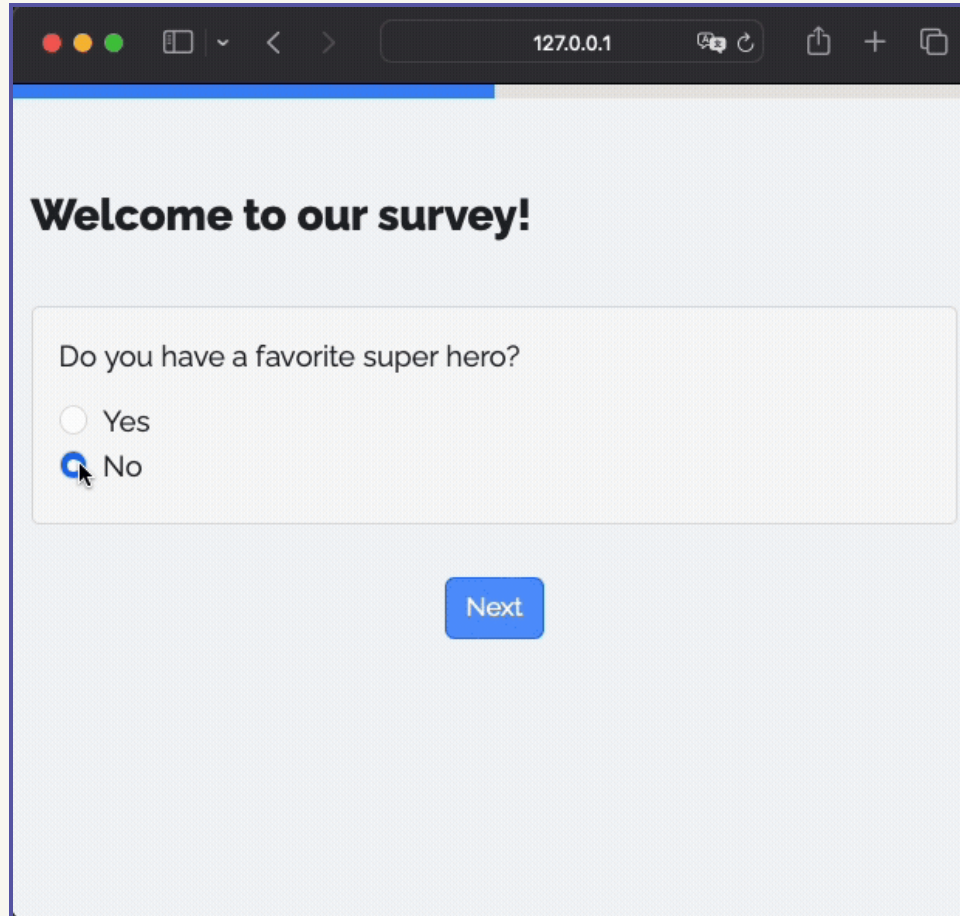
Conditional logic

Conditional showing

Conditional skipping

Conditional stopping

Conditional showing - `sd_show_if()`



A screenshot of a web browser window displaying a survey. The browser's address bar shows the URL `127.0.0.1`. The survey content is as follows:

Welcome to our survey!

Do you have a favorite super hero?

☐ Yes

☒ No

Next

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}”

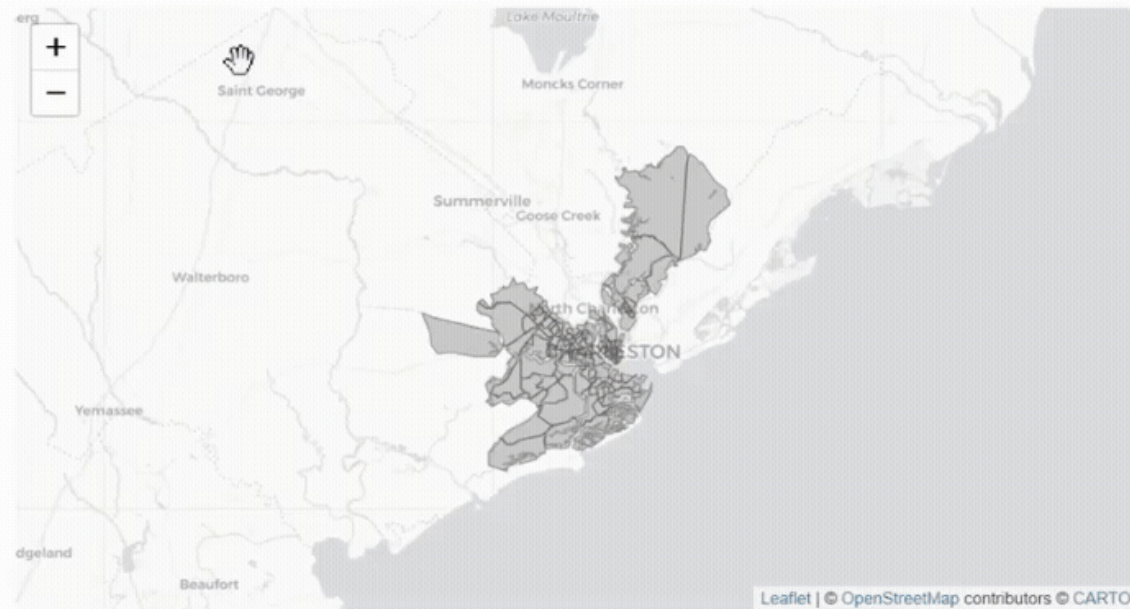
If it works in **Shiny**,
it works in **surveydown**.

Embedding an interactive map with leaflet:

82

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.

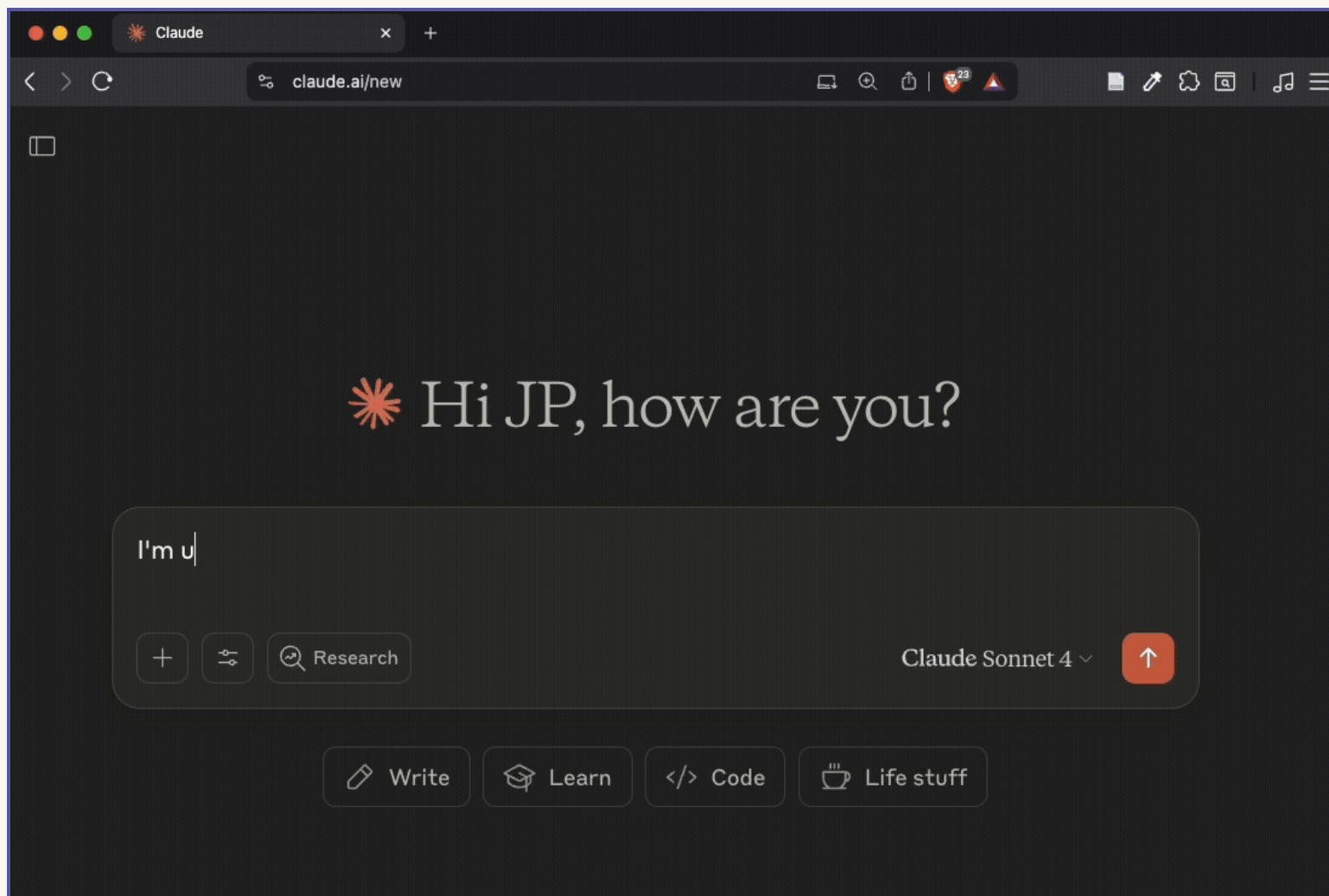


Next Question



surveydown + LLMs
is pretty cool

Generate surveys with LLMs!



What's next?

Try out the companion `sdstudio` package:

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


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 +Q |

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 +Q |

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
18 powers! This survey will help us understand what makes superheroes
19 appealing to different people.
20
21 **This survey should take about 3-5 minutes to complete.**
22
23 <br>
24 ```{r}
25 sd_question(
26   type = "mc",
27   id    = "has_fav_hero",
28   label = "Do you have a favorite super hero?",
29   option = c("Yes" = "yes", "No" = "no")
30 )

```

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.

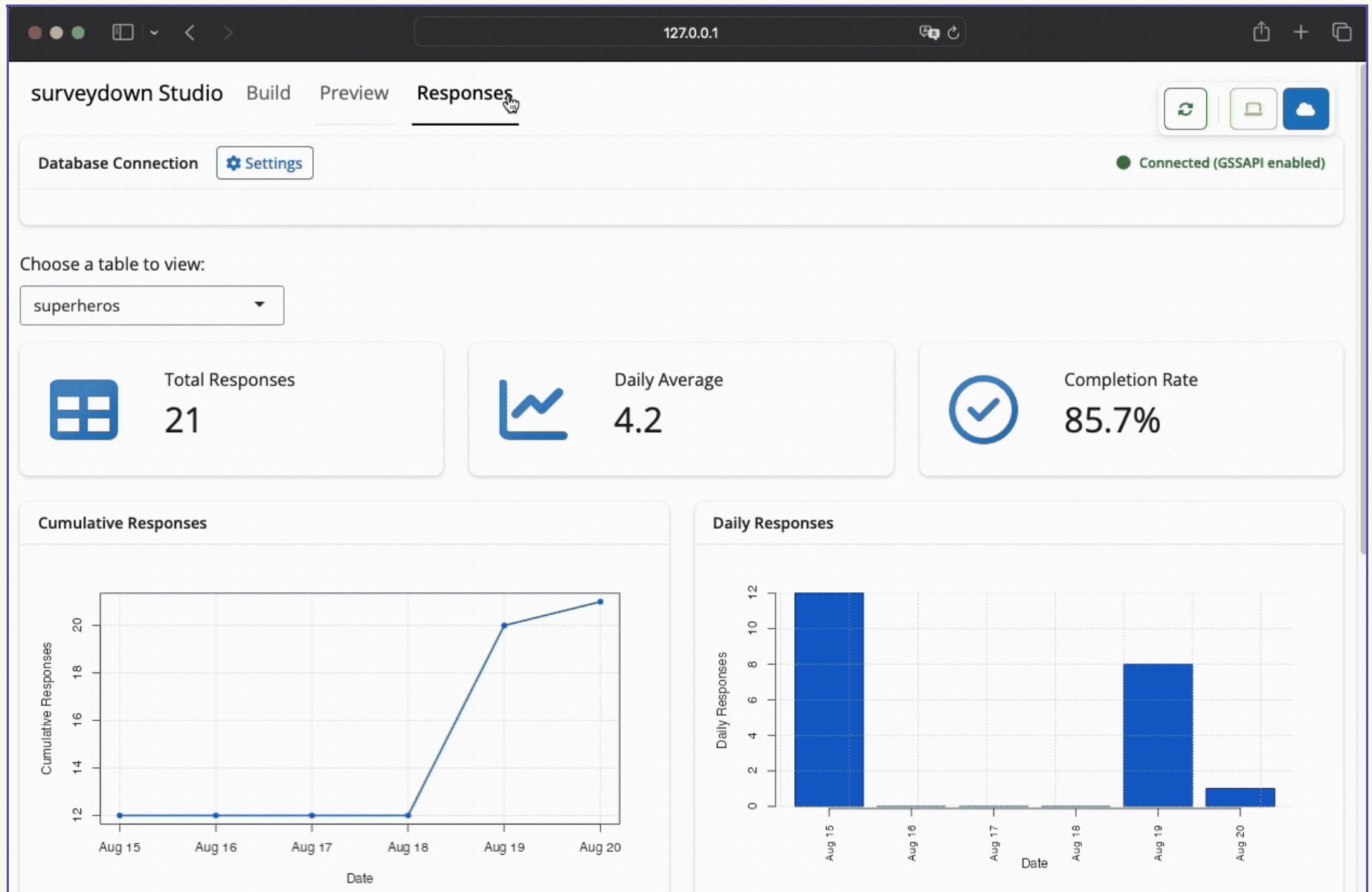
Do you have a favorite super hero? *

☒ Yes

☐ No

Who is your favorite super hero?

Next



**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



John Helveston, Ph.D.



Pingfan Hu



Bogdan Bunea



Reference List

- Huang, Bing, Aart Gerard Meijssen, Jan Anne Annema, and Zofia Lukszo. 2021. "Are Electric Vehicle Drivers Willing to Participate in Vehicle-to-Grid Contracts? A Context-Dependent Stated Choice Experiment." *Energy Policy* 156 (September): 112410. <https://doi.org/10.1016/j.enpol.2021.112410>.
- Philip, Thara, and Jake Whitehead. 2024. "Consumer Preferences Towards Electric Vehicle Smart Charging Program Attributes: A Stated Preference Study." Rochester, NY. <https://doi.org/10.2139/ssrn.4812923>.
- Wong, Stephen D., Susan A. Shaheen, Elliot Martin, and Robert Uyeki. 2023. "Do Incentives Make a Difference? Understanding Smart Charging Program Adoption for Electric Vehicles." *Transportation Research Part C: Emerging Technologies* 151 (June): 104123. <https://doi.org/10.1016/j.trc.2023.104123>.