Why Donors Donate replication code

To maximize replicability, we wrote the manuscript using Quarto, which allowed us to mix computational figures, text, and tables with the actual prose of the manuscript. This means that there's no need to rely on comments within code to identify the location of each appropriate result in the manuscript—all results are programmatically included when rendering the document.

We use the {renv} package to create a stable version-specific library of R packages, and we use the {targets} package to manage all the file dependencies and run the analysis. {targets} is especially helpful with long-running objects like the main model, which takes 20–30 minutes to run—as long as upstream dependencies don't change, the model only needs to run once, and can be loaded from {targets}'s data store thereafter.

Because it can sometimes be difficult to set up and configure version-specific libraries of R packages and install specific versions of Stan, we provide two methods for replicating our analysis: (1) a Docker container built and orchestrated with Docker Compose, or (2) restoring a {renv} environment on your local computer.

The data for the analysis is accessible in `silent-skywalk/data/raw_data`. The {targets} pipeline cleans this data and creates an object named `data_full`—load it into an R session with `targets::tar_load(data_full)`.

The complete {targets} pipeline generates two output artifacts:

- **Manuscript**: An HTML version of the manuscript and appendix, located at `silent-skywalk/manuscript/output/manuscript.html` (or at `http://localhost:8888/notebook/manuscript.html` if you run the pipeline with Docker Compose).
- **Analysis notebook**: A static website containing more complete details about the survey, experiment design, preregistration, statistical methods and other information, located at `silent-skywalk/_site` (or at `http://localhost:8888` if you run the pipeline with Docker Compose).

Getting started

The repository for the paper itself is accessible at https://github.com/andrewheiss/silent-skywalk and should be cloned into this repository into a folder named `silent-skywalk`. You can either download the repository from GitHub or run this command in the terminal:

```
git clone https://github.com/andrewheiss/silent-skywalk.git
```

Make sure the folder structure looks like this:

```
.
├── README.md
├── README.pdf
├── docker-compose.yml
├── Dockerfile
├── ...
├── img/
├── ...
└── silent-skywalk
    ├── README.md
    ├── silent-skywalk.Rproj
    └── ...
```

Method 1: Docker Compose (recommended)

The entire analysis can be run in a Docker container based on R 4.3.3, with all packages locked at specific versions defined in `silent-skywalk/renv.lock`.

Here's how to do this:

1. Install Docker Desktop on your computer (instructions for macOS or Windows).
2. Make sure Docker is running.
3. In the Docker Desktop settings, make sure you allocate at least 8 CPUs and 16 GB of RAM.

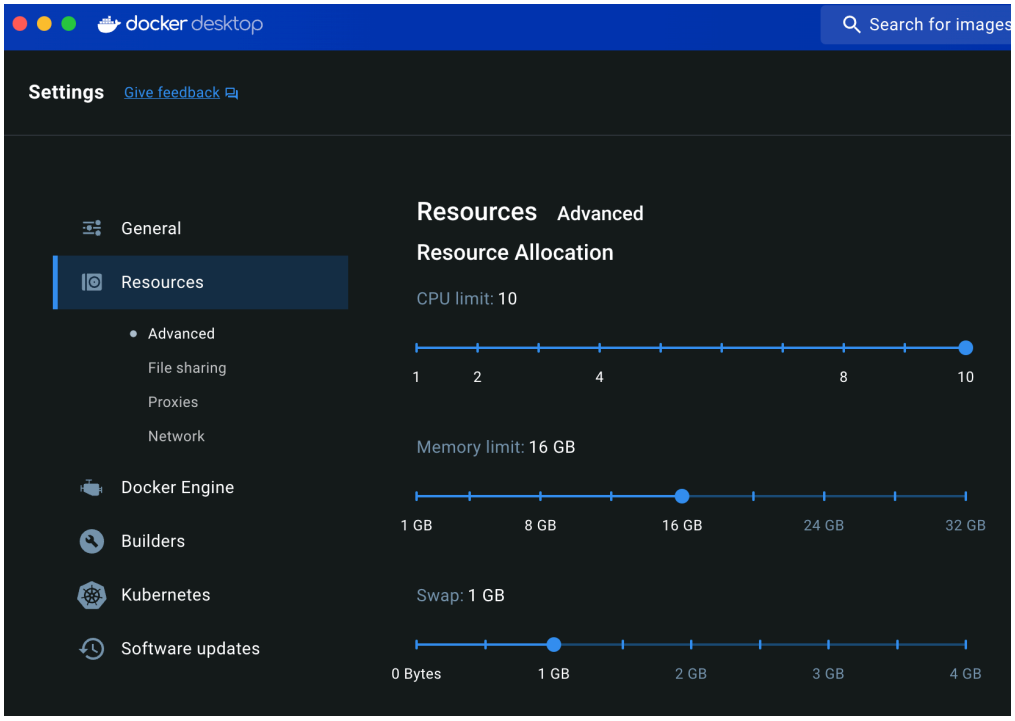

Figure 1: Docker Desktop resource settings

4. Build the analysis with Docker Compose. There are two general approaches:
   - **Using Visual Studio Code *(recommended)***: If you download Visual Studio Code and its Docker extension, you can right click on the `docker-compose.yml` file in the File Explorer sidebar and select "Compose Up".

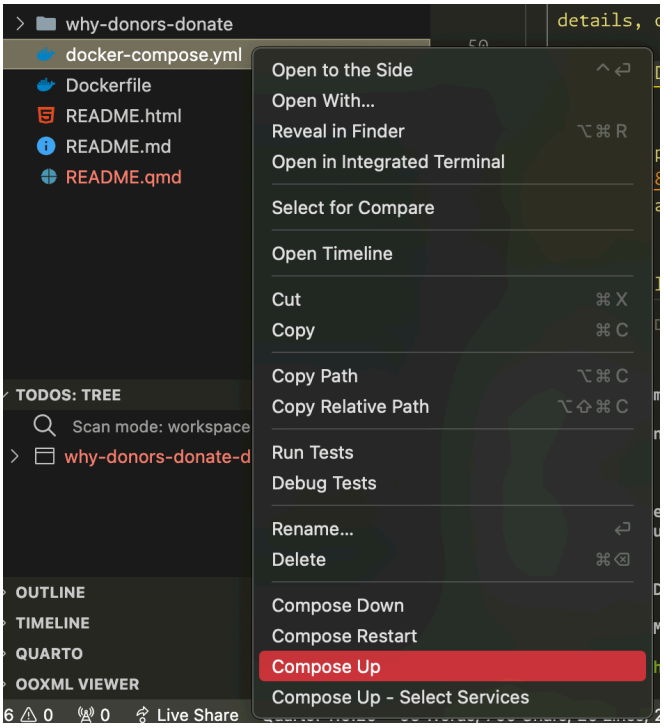

Figure 2: Docker Compose contextual menu in the Visual Studio Code sidebar

- **Using the terminal**: Using a terminal, navigate to this replication code directory and run this:

```
docker compose -f docker-compose.yml up
```

5. Wait. It takes 20–30 minutes to build the {renv} library (but only the first time you run this; subsequent runs of `docker compose` should be instant), and it takes about 30–40 minutes to run the analysis (but only the first time; subsequent runs of `targets::tar_make()` should be instant).

! Monitoring the pipeline progress

Depending on how you run `docker compose`, you might not see the progress of the {targets} pipeline. If you run it from the terminal, you should; if you run it from Visual Studio Code, you won't. You can see the logs of the pipeline from the Docker Desktop app in the container details, or by running `docker logs` from the terminal.

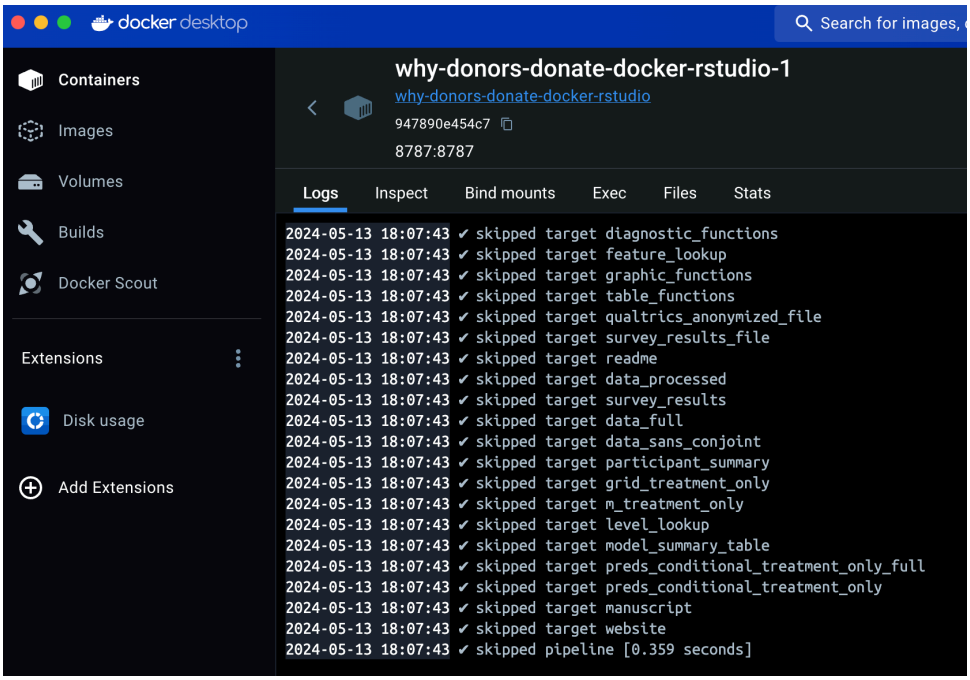

Figure 3: Docker Desktop logs

6. When the pipeline is all the way done, visit `http://localhost:8888` to see the analysis notebook and finished manuscript (at `http://localhost:8888/notebook/manuscript.html`).

   You can also see these outputs on your computer: the analysis notebook is at `silent-skywalk/_site` and the manuscript is at `silent-skywalk/manuscript/output/manuscript.html`.

7. Additionally, you can explore the data and analysis in an RStudio session in your browser if you visit `http://localhost:8787`. Any edits you make here will also be reflected on your local computer.

Method 2: {renv} locally

It's also possible to not use Docker and instead run everything locally.

1. Open `silent-skywalk/silent-skywalk.Rproj` to open a new RStudio project.
2. Run `renv::restore()` to install all the packages.
3. Run `cmdstanr::install_cmdstan()` to install CmdStan.
4. Download and install the Libre Franklin font.
5. Run `targets::tar_make()` to run the full analysis pipeline. This will take 30–40 minutes the first time.
6. When the pipeline is all the way done, find the analysis notebook at `silent-skywalk/_site` and the manuscript at `silent-skywalk/manuscript/output/manuscript.html`.