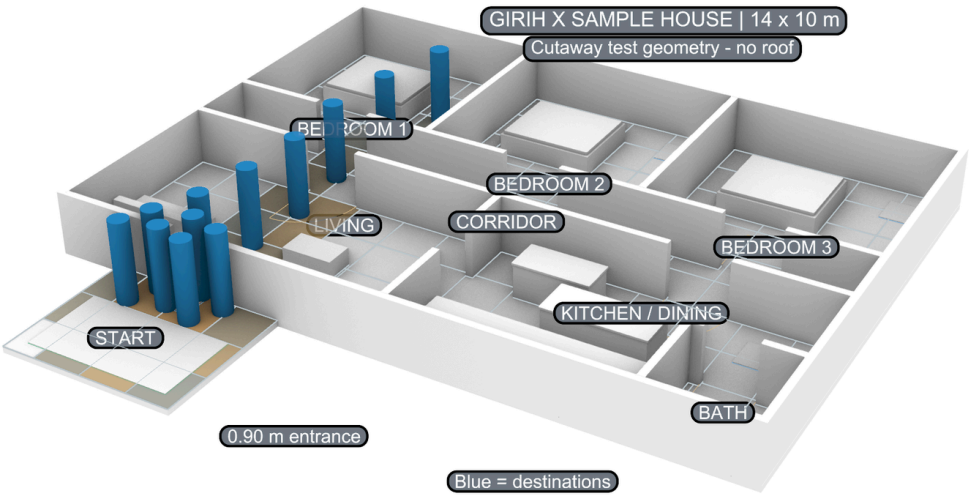
GIRIH X
STREAMLINE DESIGN
EMPOWER CONSTRUCTION

CHOOX-FLO USER GUIDE 2 OF 2

How to use *ChooX-FLO*

Set up, run and read an exploratory pedestrian study in Rhino 8, starting with the built-in test house.



Traffic zones after the test-house study: cells along the route to Bedroom 1 shade from slate to amber as more people pass.

01 SELECT
02 SET UP
03 CHECK
04 RUN
05 REVIEW

BEFORE YOU BEGIN

What ChooX-FLO *does*

An exploratory pedestrian movement tool for Rhino 8: test and compare the circulation of a layout early in design.

What it does

- Reads floors, walls, furniture, start areas and destinations straight from Rhino geometry.
- Checks the setup for blocked routes before you run.
- Calculates the movement of up to 500 people on your PC, then plays it in the viewport.
- Shows recent paths and a coloured traffic grid.
- Reports arrivals, journey times, route lengths and the busiest floor cells.
- Saves setups, compares up to four runs, bakes figures into Rhino and exports JSON, CSV and MP4.

WHAT IT IS NOT

ChooX-FLO supports early design exploration and comparative pedestrian studies using simplified, uncalibrated assumptions. Results depend on the inputs and settings provided. It is not a certified evacuation, safety or compliance assessment and does not replace appropriate professional assessment.

LOCAL PROCESSING

Studies run on your computer. ChooX-FLO does not upload your Rhino model or results.

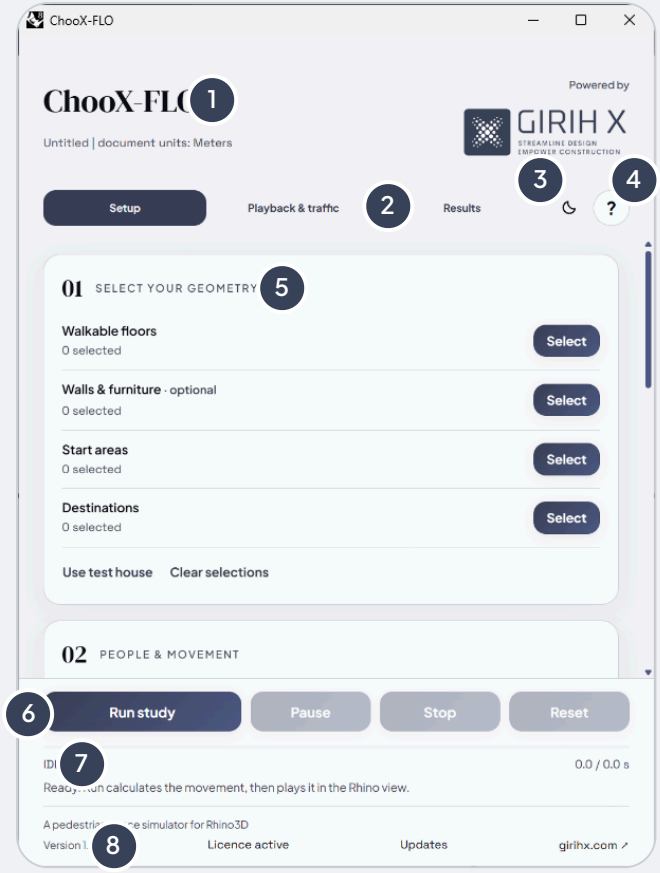
Key assumptions

Assumption	What it means for your study
One floor, in 2D	No stairs, ramps, lifts or levels. All walkable floors sit at one height and join into one area.
Walls and furniture are cut to a plan	Solids are sliced at the **Obstacle cut height** (0.10 m by default). Doors are simply gaps in that cut, so doorways must be open at that height.
Everyone walks the same way	One speed and one body radius for all. Each person keeps the destination given at the start.
Routes and local avoidance	People route around obstacles with body clearance and steer to avoid each other. Engine: JuPedSim 1.4.2, uncalibrated.
Repeatable	The same inputs and **Random seed** give the same run.

ORIENTATION

The ChooX-FLO *window*

Click the GIRIH X toolbar button to open it. It floats over Rhino and always works on the active model.



The window in a new, empty model.

#	Part
1	Header: the active file name and its document units.
2	Tabs: **Setup** for inputs, **Playback & traffic** to watch the run, **Results** for figures, saved runs and video.
3	Theme: switches the window between light and dark.
4	Help **?**: **Disclaimer**, **How to use**, **About** and **Licence**.
5	Setup cards: **01 Select your geometry**, **02 People & movement**, **03 Choose destinations**, then the setup actions. Scroll to see them all.
6	Run controls: **Run study**, **Pause**, **Stop** and **Reset**, visible on every tab.
7	Status: the state (IDLE, PREPARING, RUNNING, COMPLETE), the playback time and what to do next.
8	Footer: version, licence state, **Updates** and girihx.com.

GOOD TO KNOW

There is no command to type: open ChooX-FLO from its toolbar button. Clicking the button again brings the window to the front. Settings are kept per model while Rhino stays open; use **Save study** to keep them.

QUICK START

Your first study *in a minute*

The test house that ships with ChooX-FLO is the quickest way to see a full study.

1 **Start a new model**

In Rhino choose **File > New** and open ChooX-FLO from its toolbar button.

2 **Add the test house**

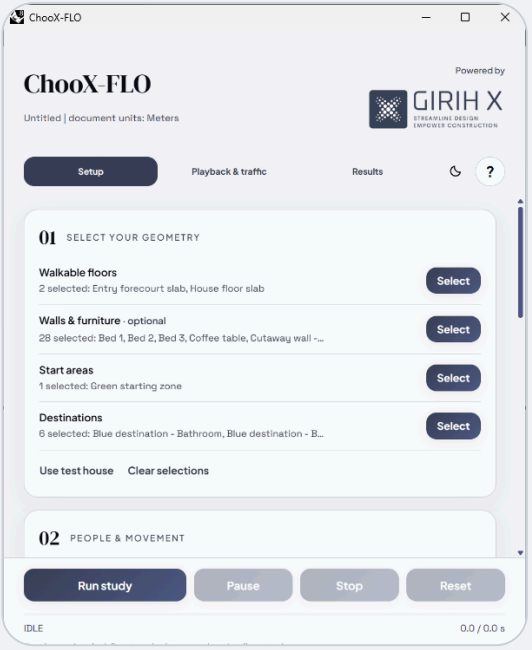
Click **Use test house**. ChooX-FLO adds the 14 x 10 m sample house and selects all its inputs, with **Bedroom 1** as the destination.

3 **Run the study**

Click **Run study**. PREPARING shows while it calculates, then playback starts.

4 **Watch and read**

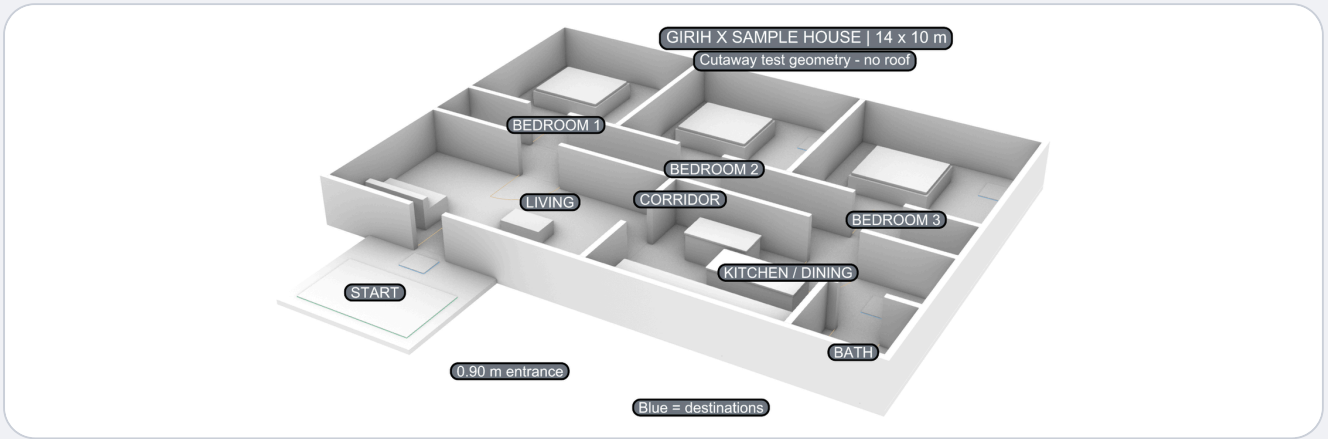
12 people walk from the forecourt to Bedroom 1. Open **Results** for the figures.



Setup after **Use test house**.

EXPECTED RESULT

Results shows 100.0% arrived and the status reads **All 12 people reached the destination in 23.06 s.**



The test house added to an empty model: green start area in the forecourt, six blue destination patches at the room doorways.

YOUR OWN MODEL

Prepare *your model*

ChooX-FLO reads ordinary Rhino geometry. A few minutes of preparation prevents most problems. Work on a copy of an important model.

Input	What ChooX-FLO accepts	Tips
Document units	Any Rhino unit, converted to metres. Units must be set.	Check with the Rhino `Units` command.
Walkable floors	Flat horizontal surfaces, polysurfaces, extrusions (top face) or closed flat curves, all at one height and joined. Meshes are not accepted.	Select only the slab or outline, not table tops or beds.
Walls & furniture (optional)	Solids are sliced at the cut height and must cross it. Flat footprints at floor height work too. Open curves do not.	Leave doorways open at the cut height. Leave out door swings and labels.
Start areas	Closed flat outlines or surfaces, wholly inside the floor and clear of obstacles.	Make them big enough for the people starting there.
Destinations	A flat surface uses its area. Points, text dots and curves use a circle of **Arrival radius** around them.	Give each a clear Rhino name; names appear in the results.

Good habits

- **Name your objects** in the Properties panel. Unnamed objects show as Object N.
- **One layer per input type**, so `SelLayer` can pick each group quickly.
- **Keep it simple.** 128 selected objects in total and about 800 outline corners.
- **Check door widths.** A person needs more than twice the **Body radius**, plus a margin.

STEP 01 AND 03

Select your geometry, then *check*

Two ways to select

A **Select, then pick**
Click **Select** on a row. The window hides; pick objects in Rhino and press `Enter`.

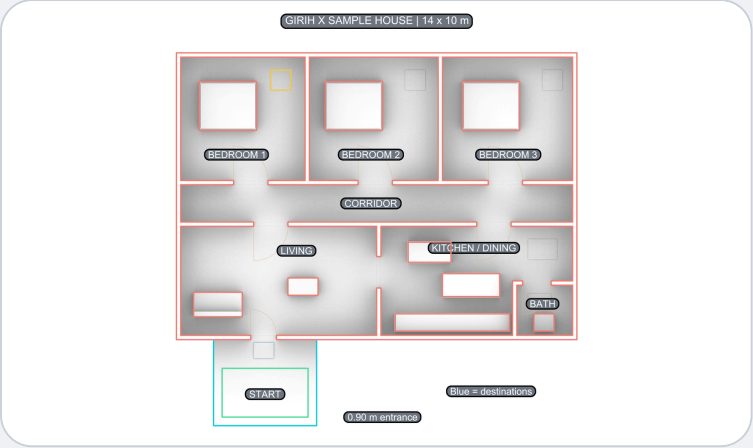
B **Pick, then Select**
Select objects in Rhino first (by name with `SelName` or by layer with `SelLayer`), then click **Select**.

Each **Select** replaces the list for that row. **Clear selections** empties all four.

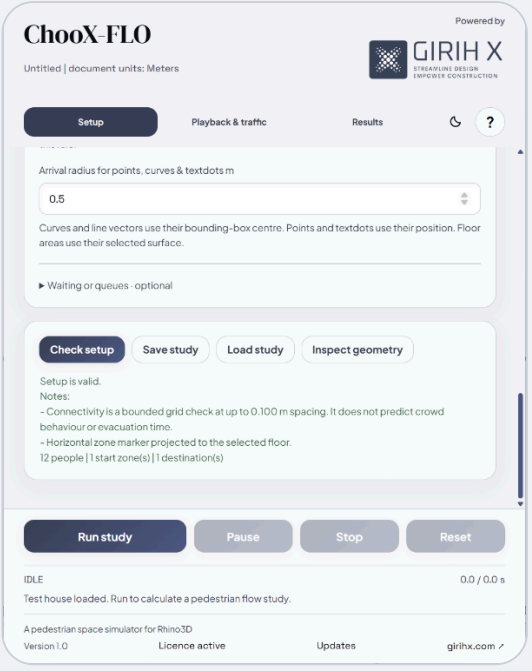
Check before you run

1 **Inspect geometry**
Draws temporary outlines: cyan floor, red obstacles, green starts, amber destinations. Check every doorway is open in red.

2 **Check setup**
Confirms every start can reach an enabled destination with room for one person. **Run study** also checks again.



Inspect geometry on the test house, Top view.



Result of **Check setup** on the test house.

STEP 02

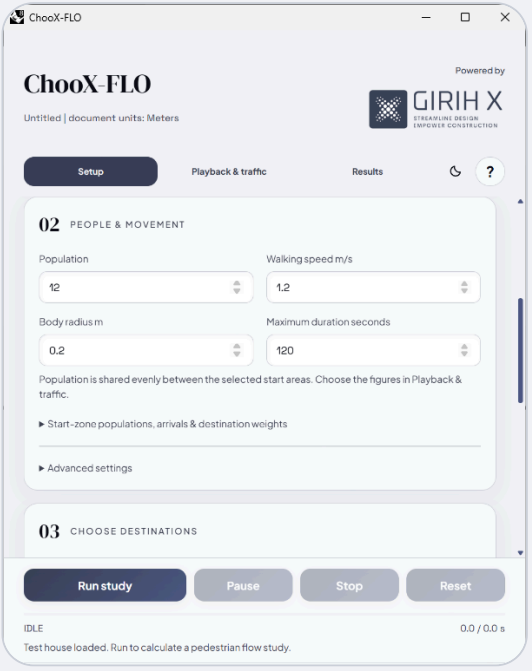
People and *movement*

Values take effect when you press Enter or click away. Any change means you run again.

Setting	Default	Range	What it does
Population	12	1 to 500	Total people, shared evenly between start areas.
Walking speed m/s	1.2	0.1 to 5	Desired speed when nothing is in the way. Not calibrated to your building.
Body radius m	0.2	0.05 to 1	Each person is a circle; 0.2 m radius is 0.4 m wide.
Maximum duration seconds	120	1 to 600	The run stops when everyone arrives or at this time.
Random seed	42	0 or more	Sets where people start. Keep it the same when comparing.
Obstacle cut height m	0.10	0.01 to 5	Height at which walls and furniture are sectioned.

Start-zone rules (expand to use)

Setting	What it does
Population by start zone	Share evenly or Set each zone, to enter people per start area.
First arrival seconds	Delay before a zone's first person appears.
Arrival interval seconds/person	0 brings everyone at once; a positive value brings people one at a time.
Set destination weights for this start zone.	Splits a zone's people by weight: 75 and 25 give about 3:1.



Card **02 People & movement**.

STEP 02 CONTINUED

Choose *destinations*

Pick which destinations are in use and how people are shared between them.

1 **Enable destinations**

Open the destination list and tick the ones to use, or use **Enable all** and **Clear**.

2 **Allocate people**

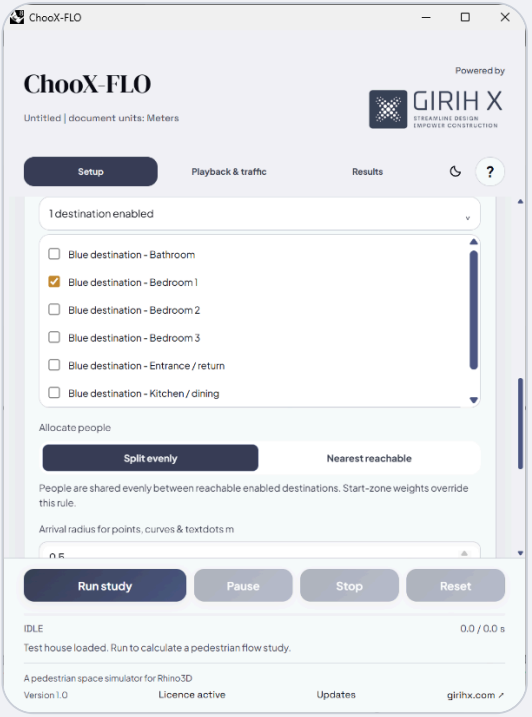
Split evenly shares people as equally as possible between reachable destinations. **Nearest reachable** sends each person to the shortest route their body fits through. Destination weights on a start zone override both.

3 **Set the arrival radius**

Arrival radius (0.5 m by default) is the arrival circle for points, curves and text dots.

Waiting or queues (optional)

- **Waiting area**: one stop before the destination; each person pauses for **Pause per person**.
- **Queue**: an open curve on the floor, front at its first end; people are released one at a time.
- Untick **Visit the selected waiting or queue stage** for zones that should go straight to their destination.



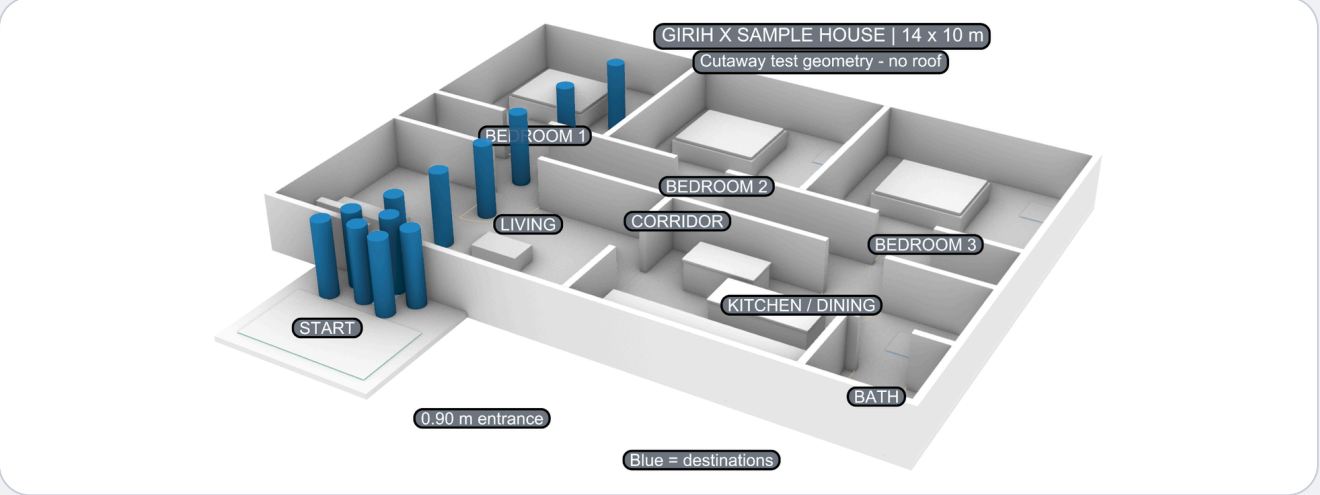
The destination list with **Bedroom 1** enabled.

STEP 04

Run and *watch*

Inputs are locked while a run is calculating or playing. Stop or Reset to change them.

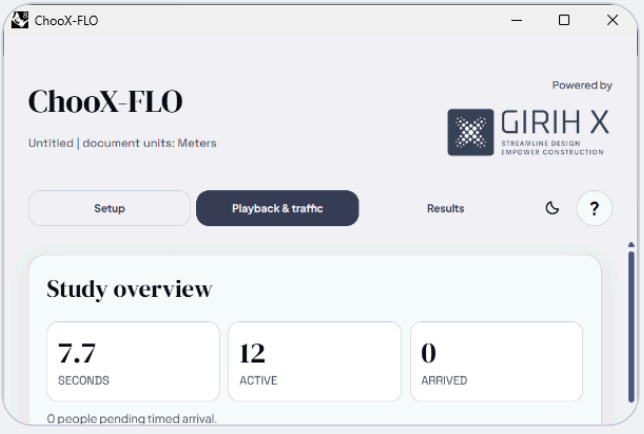
Control	What it does
Run study	Calculates in the background (PREPARING), then plays the movement in the viewport. An unchanged setup replays without recalculating.
Pause / Resume	Holds and continues playback.
Stop	Ends playback and keeps the calculated run.
Reset	Clears the run so you can change inputs.



Playback paused at 7.5 s: people heading for Bedroom 1.

Playback & traffic tab

- **SECONDS**, **ACTIVE** and **ARRIVED** at the current time.
- **← Frame** and **Frame →** step 0.1 s; drag the timeline to any time.
- **Playback speed** from 0.25× to 4×. It never changes the calculation.
- **People appearance**: Cylinders (1.7 m figures) or Chickens & roosters. Display only.

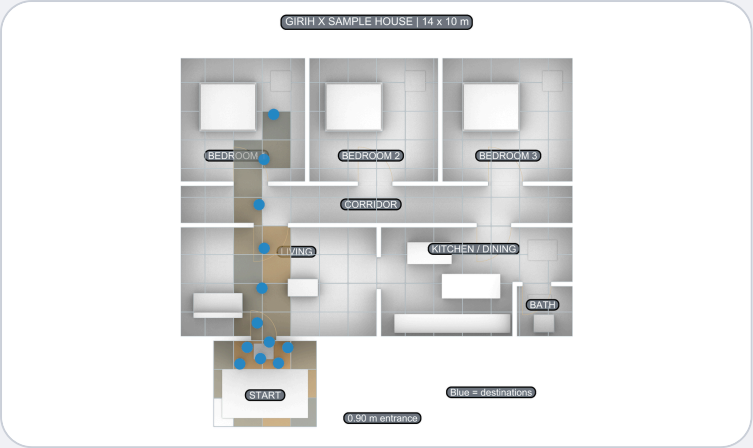


Study overview during playback.

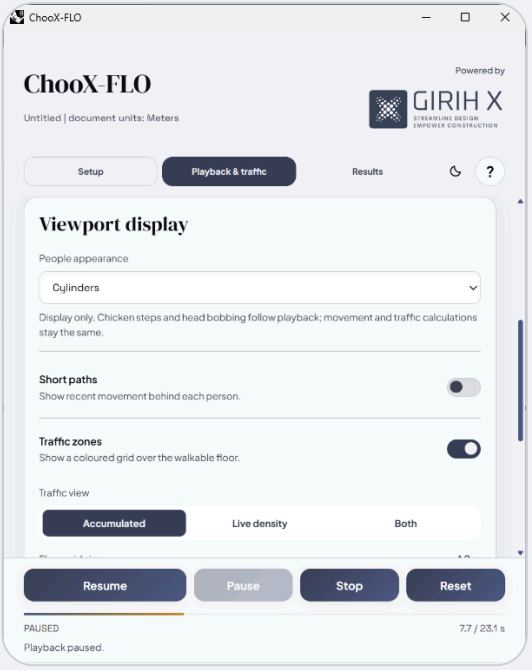
STEP 05

Read the *traffic*

Switch on **Traffic zones** to colour a grid over the walkable floor. It changes the display only, never the calculation.



Accumulated traffic on a 1.0 m grid, Top view.



Viewport display in the Playback & traffic tab.

Traffic view	What the colours show
Accumulated	How many different people have passed through each cell so far.
Live density	People in each cell at this moment, divided by its open floor area (people per m²).
Both	Accumulated fill with amber borders for live density.

COLOURS ARE RELATIVE

They run from lower (slate) to higher (amber) compared with the busiest cell, so far or at that moment. They do not mark safe or unsafe limits.

GRID SIZE MATTERS

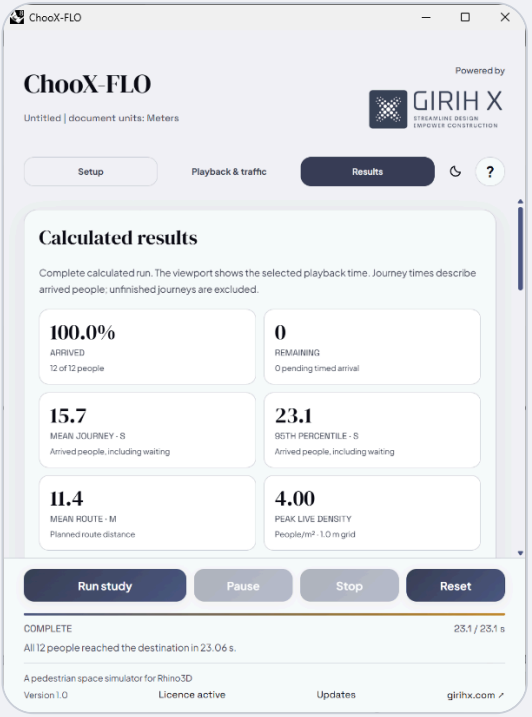
Floor grid size runs from 0.5 m to 2.0 m. Small cells can show high density peaks from one or two people. Compare options at the same grid size, 1.0 m or larger.

STEP 05 CONTINUED

The *Results* tab

Figures for the whole calculated run. The viewport shows only the selected playback time.

Card	What it means
ARRIVED	Share of people who reached their destination.
REMAINING	People still walking at the end, plus timed arrivals not yet started.
MEAN JOURNEY · S	Average time from appearing to arriving, for people who arrived. Includes waiting.
95TH PERCENTILE · S	95% of arrived people took this long or less.
MEAN ROUTE · M	Average planned route length, worked out before anyone moves. Not the distance walked.
PEAK LIVE DENSITY	Highest people per m² in any cell at any recorded moment, for the current grid size.



Results for the test house: 12 of 12 arrived.

Below the cards

- **Destination arrivals**: assigned against arrived for each destination. Fewer arrivals show where people got stuck.
- **Busiest floor cells**: the five cells most people passed through, with each one's peak density.

CHECK THAT EVERYONE ARRIVED

Journey times only include people who arrived. If **ARRIVED** is below 100%, the cause is usually the model (a narrow gap, a closed doorway, an unreachable destination), not the duration.

KEEP YOUR WORK

Save, compare *and export*

Option	Where	What it keeps
Save study / Load study	Setup actions	Your inputs as a .json file, for the same Rhino model. Not the movement.
Save run	Results, Compare scenarios	A calculated run, kept while the model stays open. Up to four.
Export results	Results, Calculated results	A .json file of the full result and a .csv of every position every 0.1 s.
Export video…	Results, Rhino animation & video	An MP4 of the active viewport. Needs FFmpeg, installed separately.
Bake displayed frame	Playback & traffic, Bake options	Rhino objects for the current frame, or a full replayable animation. One Undo removes a bake.

Compare two runs

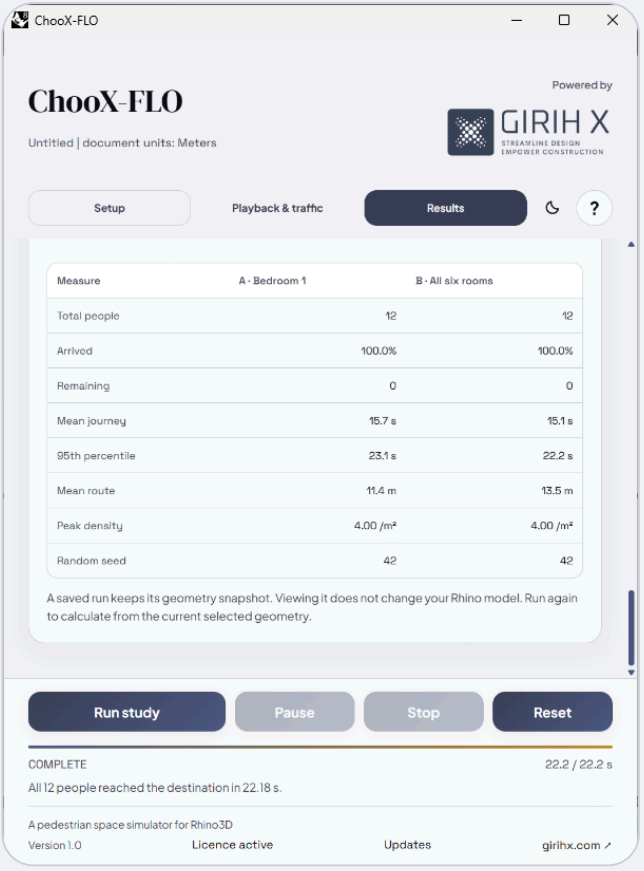
1 **Save the first run**
When a run finishes, open **Results**, type a **Scenario name** and click **Save run**.

2 **Change and run again**
Change the layout or settings, run, and save under a new name.

3 **Compare**
Tick two saved runs. A table compares them side by side.

SAVED RUNS ARE TEMPORARY

They are cleared when the model or Rhino closes. Use **Export results** for anything you need to keep.



The test house with Bedroom 1 only (A) against all six rooms (B), same seed.

HELP

When something *goes wrong*

You see	What to do
Set the Rhino document units before checking the setup.	Set units with the Rhino `Units` command.
… does not cross the analysis section.	Leave that obstacle out, or select a flat footprint for it.
The selected floor is split into disconnected areas.	Select floor pieces that join; check doorways with **Inspect geometry**.
… is not wholly inside the walkable boundary.	Move the zone inside the floor, or reduce **Arrival radius**.
… no body-clearance route to an enabled goal…	A gap is narrower than one person. Widen it in a copy of the model.
Duration reached: X of Y people arrived.	Usually a narrow gap. A longer duration alone does not fix an unreachable route.
The study references N missing Rhino objects.	Open the model the study was saved from.

Reading results responsibly

- Treat numbers as estimates and use them to compare options.
- Keep population, speed, body radius and seed the same between options.
- Re-run with two other seeds and a slightly smaller and larger body radius. Check the better option stays better.
- Report results as exploratory and uncalibrated.

More help

Help > How to use inside ChooX-FLO repeats the workflow in eight steps. Questions: **hello@girihx.com**.

Installing, activating and updating are covered in **User guide 1: Get started with ChooX-FLO**.

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