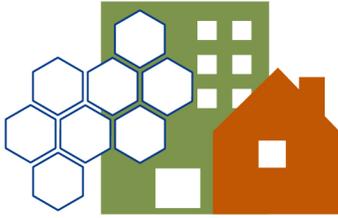




7. Stella M User Guide

December 2022



Contents

Introduction	1
Stella M Access	1
How to Use this Guide	2
I. Site Overview	3
Landing Page	3
Modeling Page	4
Navigating the Modeling Page	5
Dashboard	6
Results Preview	6
Modeling Panel	6
Results Page	6
II. Creating a Model	7
Setting Up the Model	8
Adjusting a Model's Settings	9
Changing Name, Target Group, or Geography	9
Changing Years	9
Steps to Building a Model	10
Households	10
Households in a Single-Year Model	12
Households in a Multi-Year Model	12
Household Projections (Multi-Year Only)	14
Project Types	15
Default Project Types	16
Creating a New Project Type	17
Pathways	17
Characteristics of a Pathway	18
Building the CoC Pathway Library	20
Building the Model Pathway Library	20



Adding Pathways to the Model.....	21
Adjusting Pathways from the Modeling Panel	22
Copy Year (Multi-Year Only)	25
Baseline Inventory.....	26
Costs	26
Target Year Costs (Single-Year Model)	26
Model Year Costs (Multi-Year Model)	26
III. System Modeling Results	27
Results Preview	27
Inventory by Project Type (vertical bar chart).....	27
Inventory Over Time (line chart)	28
Inventory and Cost Table	29
Days Assisted by Pathway.....	29
System Map.....	30
Results Page	32
Export	33
Summary Tab.....	33
Detail Tab	34
Understanding Stella M Results.....	39
Performance Measures by Year and Universe	39
Performance Measures by Pathway and Project Type	41
Implementation Guidance.....	44



Introduction

System modeling is a structured, data-informed process to develop estimates of the size and needs of a population of people experiencing homelessness and assumptions about the types and amounts of assistance that would effectively and equitably meet those needs. **Stella M** is a tool developed for communities to conduct the system modeling process for their homeless response system. Using data on homelessness, current inventory (housing, shelter, services), and performance goals, Stella M calculates the inventory needed for an ideal homeless response system. The results can guide resource investment decisions to serve individuals and households needing assistance most effectively, efficiently, and equitably.

This guide is the seventh of eight guides that are part of the **System Modeling Toolkit**. It comes after community partners have met as a system modeling planning group and have gone through the process of collecting data and developing assumptions and goals for an ideal homeless response system (see [5. Data Guide](#) and [6. Assumptions Guide](#)). This guide was developed to assist the person or persons responsible for entering data and assumptions into Stella M. This person will work closely with the facilitator and the system modeling workgroup. This guide will help Stella M users understand how to navigate the tool's pages and modules, create and update models, and create pathways and projects using the data and assumptions developed by the workgroup. It also orients Stella M users to the model results pages and explains how the results are calculated.

Stella M Access

Stella is hosted on the Homeless Data Exchange 2.0 ([HDX 2.0](#)). Users who have an active HDX 2.0 account for the Longitudinal Systems Analysis (LSA) module or the Stella Performance (Stella P) tool are all set to access Stella M.

Otherwise, users must [register for an account](#).

Access to Stella M is managed locally by the HDX 2.0 primary user. Contact the primary user to request access to the LSA module in HDX 2.0 to access Stella M. To find out who the primary user is for your specific Continuum of Care (CoC), [submit a question](#) to the HUD Exchange Ask a Question desk and select "HDX" in the "My question is related to" field.

Once logged in to HDX 2.0, click on the "Stella M" hyperlink in the upper right-hand corner of the screen. Models created in Stella M are accessible and editable to all HDX2.0 users that have been granted access to the CoC. Users are expected to coordinate and collaborate in their use of Stella M within their CoC.



How to Use this Guide

This guide is organized into three main sections:

- [Site Overview](#) orients users to the three main pages of Stella M and provides navigation tips.
- [Creating a Model](#) guides users through the key steps in creating a new model, using the data-informed assumptions developed by the workgroup about the number of households expected to be in the homeless response system and what projects and pathways would best meet their needs.
- Finally, [III. System Modeling Results](#) provides instructions on how to use the interactive results available in Stella M and how to interpret that data.

The screenshots of sample models used throughout the guide were developed for instructional purposes to demonstrate the functions of Stella M. They are not meant as an indication of an “ideal system.” To design the system that will work best for a specific community, it is essential to engage with key partners in a collaborative process, as described in the [System Modeling Toolkit](#).



I. Site Overview

This section is a high-level overview of the Stella M pages, navigation, and user tips.

From each page in Stella M, users can access the [Glossary](#) and the CoC Library by clicking the links in the upper left of the screen. The Glossary defines key terms used in Stella M and the [System Modeling Toolkit resources](#). The CoC Library allows users to create and view pathways and project types for the selected CoC.



Throughout Stella M, users will see the “i” icon, which opens a text window offering more information about the chart, input screen, or other Stella section where the icon appears.

There are three main pages in Stella M: the Landing Page, the Modeling Page, and the Results Page, each described below.

Landing Page

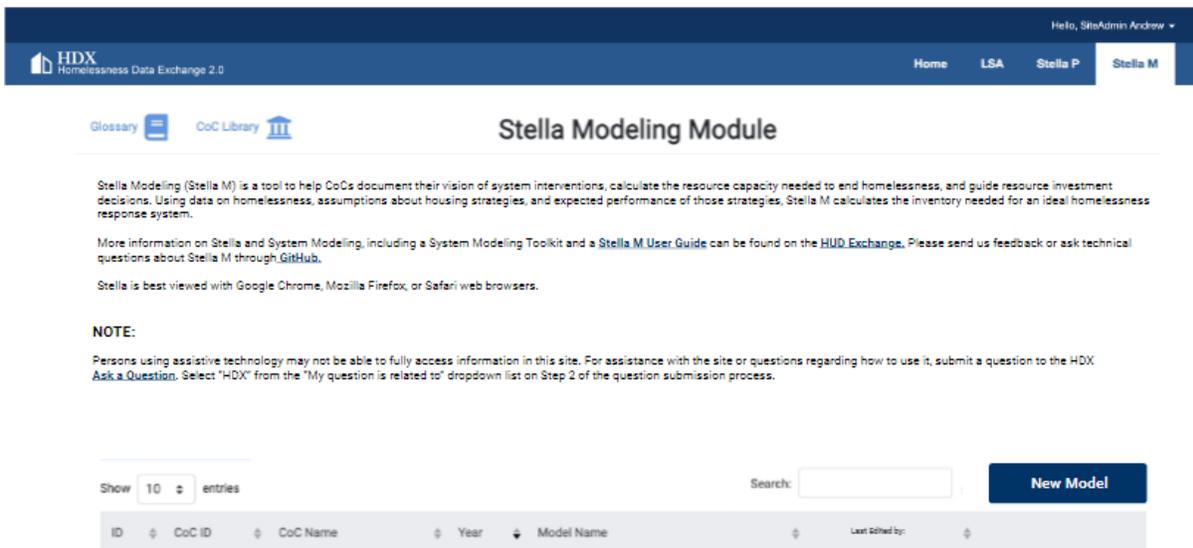
After signing in to HDX 2.0 and clicking on the Stella M tab, the Landing Page is the first page a user sees.

On this page, a user can **create a new model** by clicking the “+New Model” button and filling in the information on the Model Settings window.

Users also can click the copy button to create a new model by copying and then modifying an existing model.

From the Landing Page users also can **open existing models** by selecting the model name from the list; they can **edit model settings**; or they can **delete a model**.

Figure 1. Stella M Landing Page





Modeling Page

Creating a new model or opening an existing model on the Landing Page takes the user to the Modeling Page. If the model is new, much of the page will be blank. The Dashboard located near the top of the Modeling Page will show a placeholder value in the “Total Unserved” field initially, because no pathways have been created yet to serve the households. Once one or more pathways have been added to a model, the Dashboard and charts will update with calculated values.

Figure 2. Modeling Page

The screenshot shows the Modeling Page interface with several key components highlighted by green boxes and labels:

- Year Selector:** A dropdown menu showing years from 2022 to 2025, with 2025 selected.
- Copy Year:** A button with a copy icon next to the year selector.
- Household Projections:** A button with a grid icon and the text "See Results".
- Navigation Panel:** A row of icons for settings, users, navigation, and currency.
- Dashboard:** A summary section for the 2025 DASHBOARD showing:
 - Total Served: 1,335
 - Total Unserved: 45
 - Average Days Homeless: 41
 - Exits to Permanent Housing: 72.9%
 - Returns: 12.2%
 - Annual Costs: \$94.51M
- Results Preview:** A bar chart titled "Inventory By Project Type" showing units for D-ES, D-TH, D-RRH, and D-PSH. The y-axis is labeled "Units" and ranges from 0 to 1,500.
- Modeling Panel:** A detailed table for defining pathways. It includes sections for "Inflow" (total 1,169) and "Long-term Homeless" (total 211). Each section lists pathway types with their respective percentages and a table showing the flow of units between project types (D-ES, D-TH, D-RRH, D-PSH) and their performance metrics (Days Homeless, Exits to PH, Returns).

At the bottom of the Modeling Panel, there are three buttons: "Reset Model", "Save Model", and "See Results".



Navigating the Modeling Page

- **Navigation Panel:** From here users can navigate to the following windows by selecting the corresponding icons.
 -  **Model Settings:** This is where the basic settings are entered to create a model, including the CoC, household type, model type, and model year(s).
 -  **Households:** This is where information is entered on the number of households in the homeless response system for the Baseline Year, as well as the estimated change in the number of first-time homeless households for the years in the model.
 -  **Projects and Pathways:** Within this window there are two tabs. The Model Pathways tab is where the user enters information on the various combinations of project types ("pathways") in which households are served by the homeless response system. The Model Project Types tab allows users to set the order of project types to be reflected in charts, including in the System Map.
 -  **Baseline Inventory:** The user can enter baseline inventory here in order to compare it to the model results to help identify gaps or plan a transition to the ideal system.
 -  **Cost:** In this window, the user enters the cost per project type for each year in the model.
- **Year Selector:** In a single-year model, the Year Selector shows the target year. In a multi-year model, the Year Selector shows all model years and allows a user to navigate between years.
- **Copy Year (multi-year models only):** Clicking this button allows the user to copy pathway assumptions of one year into another year.
- **Household Projections (multi-year only):** Clicking this button opens the Household Projections table, which displays household estimates for each year of the model based on the model inputs.
- **See Results:** Clicking the See Results button takes the user to the Results Page.
- **Reset Model:** Clicking this button undoes any changes that have not yet been saved.
- **Save Model:** Clicking this button saves all changes to the model. If changes have not been saved, the user gets a warning at the top of the Modeling Page. If other users are viewing the model, they will not be able to view any changes until the model is saved.



Dashboard

The Dashboard shows a high-level summary of the model for the selected year, including the three main performance measures (Average Days Homeless, Exits to Permanent Destinations, and Returns).

- **Total Served:** Total number of households served in all the pathways included in the model year.
- **Total Unserved:** Total number of households not served by any of the pathways.
- **Average Days Homeless:** Average number of days households are homeless across all pathways.
- **Exits to Permanent Destinations:** Expected percentage of total households served that will exit to permanent destinations, based on the weighted average across all pathways.
- **Returns:** Expected percentage of households that will exit during the modeling year and will return to homelessness within six months of exit, based on the weighted average across all pathways.
- **Annual Costs:** Annual costs across all projects.

Results Preview

The Results Preview shows the outputs of the model in several chart formats. This preview responds to changes made to the modeling inputs so users can see the impact of the modeling assumptions as they are building the model. The Results Preview defaults to a bar chart view, but users can select other views using the toolbar in the upper right corner.

Modeling Panel

The Modeling Panel is both the interface for building and adjusting the model and a responsive visualization of the model pathways and assumptions for the selected year.

Results Page

Users get to the Results Page by clicking the See Results button from the Modeling Page.

The Results Page allows the user to view the model results based on the assumptions shown in the Modeling Panel of the Modeling Page. The Results Page has two tabs. The Summary tab shows a high-level summary of the results of the model. The Detail tab allows users to view and analyze the data generated by the model in different ways by selecting what measures and level of detail to display. (See [System Modeling Results](#) for more information.)



II. Creating a Model

Stella M is flexible enough to accommodate a wide range of objectives, from testing out the impacts of improving project performance to a complete redesign of the homeless response system. One of the most critical decisions is whether to create a single-year or multi-year model, as Stella M functionality, inputs, and results vary based on this selection. (For more information on determining the scope and purpose of a model, see [6. Assumptions Guide](#).)

Users should familiarize themselves with the following key concepts before they begin. A full list of key terms and definitions is available in the [System Modeling and Stella M Glossary](#).

Table 1. System Modeling Key Concepts

Understanding Households
<p>Household: A single individual or a group of people who want to be assisted together to obtain housing. Stella M uses households and not persons for modeling. The needs of households correspond to units, which serve households of one or more persons.</p>
<p>Inflow: Households expected to enter the homeless system each year. Inflow has two parts – the number of households experiencing homelessness for the first time and the number of households returning to homelessness after exiting the system in a prior period.</p> <ul style="list-style-type: none"> • <i>First-time homeless:</i> Inflow households that were not active in the homeless response system within the 24 months prior to their entry. • <i>Returners:</i> Inflow households that were active in the homeless response system within the 24 months prior to their re-entry.
<p>Long-term homeless: Households that were "unserved" in the prior year, meaning they were homeless in the prior year and were not enrolled in a pathway to housing (were not "served").</p>
<p>Universe: The group of households experiencing homelessness that is the focus of the model. Stella M allows users to model separately for the <i>inflow universe</i> and the <i>long-term homeless universe</i>. It can present results for each universe separately or for the two combined.</p>
<p>Served: Households that are offered assistance in a pathway to housing within a model. Everyone served in a model year is assumed to exit the homeless system at the conclusion of their pathway, though not all are assumed to exit to permanent housing. *</p>
<p>Unserved: Households that are not expected to be offered or do not enroll in a pathway to housing within the model year. Any households that are unserved within one model year are assumed to NOT exit the homeless system, and therefore will be added to the long-term homeless universe for the following model year. *</p>
Understanding Years
<p>Baseline year: The year representing the current state of the homeless response system. Stella M includes optional baseline inputs for the number of households experiencing homelessness (<i>baseline households</i>), the number and type of shelter and housing units currently available (<i>baseline inventory</i>), and the current cost of each project type (<i>baseline cost</i>). In multi-year models, baseline information is an input used to calculate target year estimates.</p>
<p>Model year: An interim or target year within a model. Each model year has a set of assumptions associated with the assistance that will be provided by the homeless response system. The target year is the final year of the model, representing the "end state" of the homeless response system once the system is built out. A multi-year model can have interim years to plan incremental changes in the assistance offered by the system between the baseline year and the model year.</p>



Starting year: The calendar year of the first year of a multi-year model. If a baseline year is included in the model, the starting year is the year after the baseline year.

Target year: The "end state" envisioned for the homeless response system in the year designated for the model, which represents the final year of a multi-year model.

**For the purposes of system modeling, not all households that receive services are counted as "served." Households that receive support services only or shelter only but not offered housing assistance are considered included in "unserved." To account for households that exit homelessness from shelter or the street with no additional housing support, users can include a pathway for "self-resolvers" in their model.*

Setting Up the Model

To create a new model, click the "+New Model" button on the Landing Page. This opens the Model Settings window.

Figure 3. Set up a Model (Model Settings)

Model Settings (i) x

Use the fields below to set up your model. An asterisk indicates a required field. Completing the model settings is the first step in building a model.

Select a CoC *	<input type="text" value="Select CoC"/>
Model Name *	<input type="text" value="Enter model name"/>
Model Description	<input type="text" value="Enter model description"/>
Household Type *	<input type="text" value="Select household type"/>
Target Group (if applicable)	<input type="text"/>
Geography	<input type="text"/>
Model Type *	<input type="text" value="Single Year"/>
Target Year *	<input type="text"/>

The user selects the CoC being modeled for and enters a model name and description in those fields.



For Household Type, the dropdown menu offers All Households, Adult Only Households, Adult & Child Households, and Child Only Households. Household types not included in the dropdown options or other subpopulations can be recorded in the optional Target Group field.

Geography is an optional field that can be useful to identify models for sub-CoC regions.

For Model Type, the choices are Single-Year or Multi-Year:

- For **single-year models**, the user records the year being modeled in the Target Year field.
- For **multi-year models**, the user inputs years into the Starting Year and Target Year fields. Note: The range for the model must be no more than five consecutive years.

Adjusting a Model's Settings

Once saved, a model's CoC, Household Type, and Model Type (single-year or multi-year) cannot be changed. The other model settings can be changed by opening the Model Settings window from the Navigation Panel.

Changing Name, Target Group, or Geography

Users can change entries in the Model Name, Target Group, and Geography fields.

User Tip: CoC, Household Type, and Model Type cannot be edited after those model settings have been saved.

Changing Years

Users can change the model's target year or starting year but doing so will cause Stella M to shift data and assumptions that have been input. That is, values for households, costs, and pathway assumptions from the model's original year will shift to the adjusted years or year range.

- In a **single-year model**, if a user changes the target year, the data previously entered for the former target year will shift to the new target year.
- In a multi-year model:
 - If a user changes the year values but the number of years remains the same, pathway assumptions entered for the original target year will shift to the new target year, and each preceding year will shift accordingly.
 - If a user changes the number of years, the prior target year pathway assumptions will shift into the new target year, and each preceding year will shift accordingly.



Steps to Building a Model

Once the model is set up, users can enter additional information to complete the model. This guide is written in a recommended sequence of steps. If data for one step is not available, users can skip that step or enter placeholder values, then return later.

1. **Households:** Estimate the number of households expected to be in the homeless response system each year.
2. **Project Types:** Create a set of project types to be used in the model. Project types categorize projects into similar groups, typically based on a project's purpose, service and housing components, and target population.
3. **Pathways:** Create pathways (combinations of project types) that households will use during their time in the homeless response system.
4. **Baseline Inventory:** Entering baseline inventory makes it possible to compare it to the model results to help identify gaps.
5. **Costs:** Enter the cost per project type for each year in the model. Baseline costs also can be entered for documentation and comparison purposes.

Each of these steps is addressed in detail below, including differences between single-year and multi-year models. (For more information on developing the inputs for households and baseline inventory, see [5. Data Guide](#). For information on developing project types, pathways, and cost estimates, see [6. Assumptions Guide](#).)

Households

The Households window is accessed through the Navigation Panel.

To determine the amount of inventory needed for any given model year, Stella M needs an estimate of the number of households expected to experience homelessness in a year.

The Households input window looks different for single-year versus multi-year models:

- For a **single-year model**, users must enter the number of households expected to experience homelessness in the target year. To support implementation planning, users also can choose to enter a baseline year estimates.
- For a **multi-year model**, users must enter the estimated number of households that experienced homelessness in the baseline year as well as assumptions about year-to-year changes in first-time homelessness. Stella M will calculate the estimated number of households in the target year based on those inputs.



Inflow and Long-term Homeless

Stella uses the concepts of **inflow** and **long-term homeless** in system modeling to identify the “**universe**,” or group of households experiencing homelessness, which is the focus of a model. There are several reasons for using inflow and long-term homeless in system modeling.

First, when developing assumptions about what services and housing people experiencing homelessness need, and how much of each type they need, it can be helpful to consider the needs of people entering the homeless response system during the course of the year (inflow) separate from the needs of households that have been experiencing long-term homelessness. The system modeling workgroup will use this information to develop pathways. The characteristics of each pathway, including assumptions about Days Homeless and percentage of people in the pathway, will be entered into Stella M.

For example, though both universes could include households that would be best served in permanent supportive housing (PSH), the proportion is likely different. Perhaps 10% of inflow households need PSH whereas 80% of long-term homeless households need PSH. It is also possible that people experiencing long-term homelessness have higher barriers to obtaining housing, will therefore take longer to find housing, and might require longer shelter stays prior to housing.

Some communities have used inflow and long-term homeless universes to plan separately for a **short-term scaling up** of resources (sometimes called a “surge”) to serve a backlog of unmet need and to scale the **ongoing year-after-year needs** of the homeless response system for households experiencing a housing crisis each year. A surge might entail an upfront investment to scale up PSH resources or other permanent housing options.

In a multi-year Stella M model, the two universes interplay with the number of households served and unserved. Unserved households in either universe will be part of the long-term homeless universe in the following year. The forecasting of annual unserved household sin multi-year models helps communities forecast the impact of not meeting the needs of all the households experiencing homelessness in a year. As homelessness is prolonged, people's conditions can deteriorate, their resources and social supports dwindle, and their needs increase. For example, a household that might have needed rapid rehousing but does not receive it might, over time, need PSH.



Households in a Single-Year Model

At minimum, single-year models require users to enter target year households for at least one of the universes – inflow or long-term homeless. Users may use both universes or leave one of the universes at “0” households.

Single-year models offer the option to enter data for a Baseline Year Estimate, which allows for a comparison to the required Target Year Estimate but is not included in subsequent calculations about pathways and services.

Figure 4. Baseline and Target Year Estimates for a Single-Year Model

Baseline Year Estimate (Optional)

	Inflow	Long-term Homeless	Total Households
Total Households Served	500	0	500
Additional Unserved Households	150	0	150
Total Households in Baseline Year	650	0	650

Target Year Estimates (Required)

	Inflow	Long-term Homeless	Total Households
Total Households in Target Year	1000	1000	2,000

Households in a Multi-Year Model

Baseline Year Estimate

Baseline Year Estimates are a requirement in multi-year models because they are needed to calculate the number of households in the target year. As explained above, Stella M includes estimates for two universes. The inflow universe includes households expected to enter the homeless system each year, including households experiencing homelessness for the first-time households returning to homelessness. The long-term homeless universe includes households that were “unserved” in the prior year, meaning they were homeless in the prior year and continue to be homeless.

Users enter the number of households in both the inflow and long-term homeless universes that are expected to be served by projects in the homeless response system. Users indicate the percentage of the inflow population expected to be households experiencing homelessness for the first time; the remainder will be considered returning households. Users enter the number of additional unserved households in both the inflow and long-term homeless universes. From these entries, the Total Households for each row and column are calculated.

Note: Entering “0” for the baseline value is technically possible but should be done only if that accurately reflects the community.



Figure 5. Baseline Year Estimate for a Multi-Year Model

Baseline Year Estimate

	Inflow	Long-term Homeless	Total Households
Total Households Served	5000	200	5,200
% of households served who are first-time homeless	40 %		
Additional Unserved Households	1000	500	1,500
Total Households in Baseline Year	6,000	700	6,700
Total Households expected to be first-time homeless	2,400		

Expected Change in First-time Homelessness from Baseline to Target Year

The next section in the Households set up for a multi-year model allows users to account for an anticipated change in the number of new households entering the homeless system each year. Anticipated increase in first-term homelessness is represented by a percent (e.g., 10%) and decreases are represented by a negative percent (e.g., -10%). The Global Annual Change is a percentage value that applies to all years in the model timeframe. To use this option, users input a percentage value and click the “Apply” button. Alternatively, users may enter a custom value for each year.

In the example below, there were 2,400 first-time homeless households in the system during the baseline year. Using historical data as a reference, the community estimated that first-time homeless inflow would increase by 10% each year. Stella M calculated an increase of 240 households in the first model year (2025), for a total of 2,640 households experiencing homelessness for the first time in 2025. This, combined with the returns to homelessness from each pathway in the system, will result in the total inflow households that are expected to be in the system in 2025. (Long-term homeless households anticipated in 2025 are calculated separately.)

Figure 6. Global Annual Change for a Multi-Year Model

Global Annual Change: %

% Change in first-time homeless inflow	Change in first-time homeless households	Total first-time homeless inflow
Baseline		2,400
2025 <input type="text" value="10"/> %	240	2,640
2026 <input type="text" value="10"/> %	264	2,904
2027 <input type="text" value="10"/> %	290	3,194
2028 <input type="text" value="10"/> %	319	3,513



The number of inflow households in a model year is based on the household assumptions for the percentage of inflow households that are newly homeless plus the percentage increase for newly homeless households for the year that was input into the Households window plus the percentage of households served in the prior year that were expected to return.

The total number of long-term homeless households in a model year is the total number of households from the prior year that were unserved across both the inflow and long-term homeless universes.

Household Projections (Multi-Year Only)

In a multi-year model, clicking on the "Household Projections" button on the Modeling Page takes users to the Household Projections table. This table can help users understand how the number of households in the system each year is calculated based on households served, anticipated first-time homeless inflow, and expected returns to homelessness.

Figure 7. Household Projections by Year Dashboard



Household Projections to Understand Impact of Leaving Households Unserved

In the example below, the 170 unserved households from the year 2022 inflow universe combined with the 126 unserved households from the year 2022 long-term homeless universe sums to the 296 long-term households for the following year.

Figure 8. Household Projections by Year

Year	Universe	First-time Inflow	Returning Inflow	Total Households	% Served	Served Households	Unserved Households	% Expected to Return
2022	Inflow	1,000	0	1,000	83%	830	170	20.3%
2022	Long-term Homeless	1,000	0	1,000	87.4%	874	126	19.4%
2022	Total	2,000	0	2,000	85.2%	1,704	296	19.8%
2023	Inflow	1,000	338	1,338	83.5%	1,117	221	16.6%
2023	Long-term Homeless	170	126	296	85%	251	45	17.8%
2023	Total	1,170	464	1,634	83.7%	1,368	266	16.8%



Household Projections to Understand Impact of Returns

In the example below, 20.3% of the 830 inflow households served in 2022 (orange boxes) are expected to return (168 households); and 19.4% of the 874 long-term homeless households served in 2022 (blue boxes) are expected to return (170 households). These returns (168 plus 170) make up the 338 returning inflow households in the following year (green box).

Figure 9. Household Projections to Understand Impact of Returns

Year	Universe	First-time Inflow	Returning Inflow	Total Households	% Served	Served Households	Unserved Households	% Expected to Return
2022	Inflow	1,000	0	1,000	83%	830	170	20.3%
2022	Long-term Homeless	1,000	0	1,000	87.4%	874	126	19.4%
2022	Total	2,000	0	2,000	85.2%	1,704	296	19.8%
2023	Inflow	1,000	338	1,338	83.5%	1,117	221	16.6%
2023	Long-term Homeless	170	126	296	85%	251	45	17.8%
2023	Total	1,170	464	1,634	83.7%	1,368	266	16.8%

Project Types

A project type is a way to categorize projects into similar groups, typically based on a project's purpose, service and housing components, and target population (if that group has distinct housing and service needs).

Project types are the building blocks of a system model and a key component of the system modeling results and implementation planning. The primary output of Stella M results are inventory recommendations by project type. Cost assumptions, if used, are entered by project type, and resulting cost estimates are reported by project type. If the Baseline Inventory window is used, that inventory is entered by project type, as well.

A Note about Units

*Stella M counts **households** rather than people when planning how to best serve people experiencing homelessness. Likewise, Stella M uses the concept of "units" rather than "beds" to measure how many of each project type are needed to serve households.*

In some cases, the number of units and beds can be equivalent; for example, an emergency shelter that serves single individuals. In other cases, a unit might represent a rental voucher paired with a case management slot.

Stella M uses units when considering project type cost, inventory baseline, and inventory results.



Default Project Types

Stella M offers four default project types, which are those included in the Longitudinal Systems Analysis (LSA) report. These four default project types are available in the CoC Library for all models:

- Default Emergency Shelter
- Default Transitional Housing
- Default Rapid Rehousing
- Default Permanent Supportive Housing.

They can be used as is to create pathways, or users may customize default project type or create entirely new project types. Default project types are identified with a “D” in the project type abbreviation.

Figure 10. CoC Library Project Types

CoC Library

i
✕

The CoC Library can be used to save default values for pathways and project types that can be added to future models. Select a CoC to view and manage pathways and project types in the library for that CoC.

(AA-123) Test CoC for Stella

CoC Library Pathways

CoC Library Project Types

Select an existing project type to update or choose 'Create Project Type' to add a new project type to the CoC Library.

	Project Type Name	Project Type Abbreviation	Household Type	Days Homeless	Days Housed
✎ ✖	<u>Default Emergency Shelter</u>	D-ES	Adult & Child	Yes	No
✎ ✖	<u>Default Transitional Housing</u>	D-TH	-	Yes	No
✎ ✖	<u>Default Rapid Rehousing</u>	D-RRH	-	Yes	Yes
✎ ✖	<u>Default Permanent Supportive Housing</u>	D-PSH	-	Yes	Yes

+ Create Project Type



Creating a New Project Type

From within the CoC Library Project Types tab, users click on the “+Create Project Type” button. A new window appears, where the user inputs the following:

- **HMIS Project Type** (*required*): Selects the standard Homeless Management Information System (HMIS) project type that best fits the new project being included in the model; or selects “Not an HMIS Project Type.”
- **Project Type Name** (*required*): Enters a unique name for the new project type.
- **Project Type Abbreviation** (*required*): Enters a unique abbreviation to label and differentiate the new project type from all other project types. This abbreviation will be used throughout Stella in charts and tables. There is an eight-character limit and special characters (such as `() , . _ $ - # % ^ &`) are allowed.
- **Project Type Description** (*optional*): Documents the key characteristics of the new project type, such as purpose and target population.
- **Household Type** (*optional*): Selects the household type the new project type is intended to serve. If a project type is not dedicated to serving a specific household type, selects “All.”
- **Cost per Unit** (*optional*): Enters the annual cost per unit for the new project type. For multi-year models, enters the cost for the project type for the first year. Goes to the Cost window (accessed through the Navigation Panel on the Modeling Page) to update cost data for subsequent years.
- **Notes** (*optional*): Adds notes to document rationale for decisions or anything else helpful to understand about the new project type.

Once all the values are entered into the Create Project Type window, the user clicks the “Add to Library” button to save the new project type. Provided there are no errors or missing required fields, the window will disappear, and the new project type will be listed and ready to be added to pathways.

Pathways

A pathway is a distinct combination of project types that a household is provided while involved in the homeless response system, with the goal of helping the household obtain permanent housing. In Stella M, pathways are used to represent how households will move through the system. Households that are in a pathway are considered “served”; households not in a pathway are considered “unserved” even if they are using system resources such as shelter or street outreach.

A pathway could last longer than a year, though Stella M accounts for the percentage of households in the system that enter each pathway over the course of the year. (For more information on how to source data and develop assumptions about pathways, see [5. Data Guide](#) and [6. Assumptions Guide](#).)



Pathways can either be created in the CoC Library for use across all CoC models, in the Model Library for use across all years of a multi-year model or created directly in a model year. Pathways created in a specific model are accessible only within that model. For this reason, creating pathways in the CoC Library is useful for those pathways that are likely to be used in multiple models.

Characteristics of a Pathway

Regardless of whether the pathway is created in the CoC Library or in a specific model, the user will input the following in the Create Pathway window:

- **Pathway Name** (*required*): Assigns a name that is concise yet helpful. The name could include the project types and populations included in the pathway.
- **Pathway Abbreviation** (*required*): Enters a pathway abbreviation that will serve as the unique identifier of the pathway and be used throughout Stella M in charts and tables.
- **Pathway Description** (*optional*): Describes the pathway.
- **Universe Targeted** (*required for model pathways only*): Identifies whether the pathway is for the inflow universe or the long-term homeless universe. This field cannot be edited after the pathway is saved. (CoC Library pathways are not assigned a targeted universe until they are used in a model.)

The following performance characteristics of a pathway can be entered when creating the pathway or added later. The characteristics are not required to save the new pathway, but the values will default to zero, and so produce inaccurate results. They can be edited after the pathway is saved. The user can input the following:

- **Percentage of households expected to use this pathway**: Enters the percentage of the total households (of the assigned universe type) that are expected to use the pathway.
- **Percentage of households expected to exit to permanent housing**: Enters the percentage of households within this pathway that are expected to exit to permanent housing.
- **Percentage of households expected to return to homelessness after exit**: Enters the percentage of households within this pathway who exit to any destination and are expected to return to homelessness within six months.
- **Project Type(s)** (*required*): Selects one or more project types from the dropdown list to include in the pathway. The list will include default project types as well as any project types that have been created in the CoC Library. Project types in a pathway

User Tip: Project types added to the pathway by mistake may be removed from the model by clicking the blue trash can icon to the left of the project type in the list.



cannot be edited once they have been added to a model. Editing project types in the CoC Library will not carry over to projects in pathways already added to a model. Project types are the core of a pathway. The user must add at least one project type to create a pathway.

- Number of Days Served in Each Project Type: While Homeless/Once Housed (required):** Enters the average time households are expected to be served, including time served while homeless and/or time served while housed. If households are not expected to have days homeless or days housed in the project, enters “0” in the respective field. Both Days Homeless and Days Housed are reported in the modeling results. Total Days Assisted (Days Homeless + Days Housed) is used to calculate inventory needs for each project type.
- Notes (optional):** Adds notes so that other users and key partners in the system modeling process can understand the data, decisions, and ideas behind each pathway.

Understanding Number of Days Served While Homeless

In the “While Homeless” column for the selected project type, the default check mark indicates that Days Homeless will be included in the Total Days Homeless calculation for the pathway. The user can uncheck this box to exclude the Days Homeless from the total if needed. For example, if an emergency shelter (ES) plus rapid rehousing (RRH) pathway assumes that households are concurrently enrolled in both projects and that the days they spend homeless in RRH prior to move-in are already counted in the days spent homeless in emergency shelter, the user would uncheck the box.

User Tip: Concurrent days housed cannot be accounted for in Stella M at this time.

In the example below, both boxes are checked, indicating that households are homeless for an *additional* 30 days while enrolled in RRH – that those 30 days do not overlap with the 90 days homeless in ES – resulting in a total of 120 days homeless for the pathway.

Figure 11. Create Pathway- Choosing Projects and Number of Days Served Part 1

Number of Days Served in Each Project Type

Project Type(s) *	While Homeless	Once Housed
D-ES	<input checked="" type="checkbox"/> 90 Days ▾	
D-RRH	<input checked="" type="checkbox"/> 30 Days ▾	360 Days ▾



In this next example, the box for RRH is unchecked, indicating that the 30 days spent homeless enrolled in the RRH project are already counted in the days homeless enrolled in the ES project – resulting in a total of 90 days homeless for the pathway.

Figure 12. Create Pathway- Choosing Projects and Number of Days Served Part 2

Number of Days Served in Each Project Type

Project Type(s) *	While Homeless	Once Housed
D-ES	<input checked="" type="checkbox"/> 90 Days	
D-RRH	<input type="checkbox"/> 30 Days	360 Days

Days Housed for Long-term Project Types

Estimating Days Assisted for projects that last longer than a year takes special consideration, as users might not be used to thinking of length of stay in the same terms as they would for a short-term project. For example, for a permanent supportive housing (PSH) project, users could look at the average length of time clients are housed across their PSH portfolio to estimate time assisted.

Building the CoC Pathway Library



To create a new pathway in the CoC Library, the user clicks on the CoC Library icon from the Landing Page or the Modeling Page. The window opens to the CoC Library Pathways tab where the user clicks the “+Create Pathway” button. This will open the Create Pathway window where the user completes the fields as described in the previous section. Once finished, the user selects the Add to CoC Library button to save the pathway to the CoC Library.

From the CoC Library Pathways tab, users can also select the pencil icon to edit a library pathway or select the trash can icon to delete a library pathway. Changes to the CoC Library pathways will not affect pathways which have already been included in a model, or “model pathways.” The name or abbreviation for a pathway cannot be changed in the CoC Library but can be changed in the model.

Building the Model Pathway Library

By selecting the Projects & Pathways option from the Navigation Panel, users will open the Model Library Window, which includes pathways and project types associated with the model. From the Model Pathways tab, users select Add Pathway to Model to open the Create Pathway Window. From here, the user has the option to create a pathway using a template from the CoC Library or start from scratch. Once the user completes the fields as described in the Characteristics of a Pathway section, they select “Add to the Model Library” to save the pathway to the Model Library.



From the Model Pathways tab, users can also select the pencil icon to edit a model pathway or select the trash can icon to delete a model pathway.

Adjusting the Order of Projects Within Pathways

Once the user has built pathways in the Model Library, they might want to adjust the order in which the project types appear in the charts and tables in Stella M. To do so, the user selects the Projects and Pathways window from the Navigation Panel and goes to the Model Project Types tab. Clicking the arrows in the “Order” column adjusts the order of project types in a pathway.

Figure 13. Model Library- Model Project Types

Model Pathways Model Project Types

Use the arrows next to the Model Project Type names to adjust the order in which project types should be displayed on the model page and results. Click 'Edit or create project type' to go to the CoC Library to edit or create project types.

Order	Project Type Name	Project Type Abbreviation	Household Type	Days Homeless	Days Housed
▲ 1 ▼	<u>Default Transitional Housing</u>	D-TH	-	Yes	No
▲ 2 ▼	<u>Default Rapid Rehousing</u>	D-RRH	-	Yes	Yes
▲ 3 ▼	<u>Default Emergency Shelter</u>	D-ES	-	Yes	No
▲ 4 ▼	<u>Default Permanent Supportive Housing</u>	D-PSH	-	Yes	Yes

[Edit or create project type](#)

Adding Pathways to the Model

+ Add Pathway Users add a pathway for the selected year by clicking the “+Add Pathway” button in the Modeling Panel. This will open the Model Library pathways window and show the available model pathways for the universe (inflow or long-term homeless). From here, users can do the following actions:

1. edit a model pathway by selecting the pencil icon to open the Update Pathway window,
2. delete a model pathway by selecting the trash can icon,
3. assign the pathway to the selected year by toggling the “include” switch, or
4. create a new model pathway by clicking the “+Add Pathway to Model” button.



Figure 14. Model Libraries Pathway Window

This window shows the pathways for the selected universe. Add or remove a pathway from the current model year by clicking the 'Include' toggle. On this window, the user can also edit an existing pathway or add a pathway to the Model Library.

	Pathway Name	Pathway Abbreviation	Project Types	Universe	Include
 	TH-RRH	TH-RRH	D-TH, D-RRH	Inflow	<input checked="" type="checkbox"/>
 	Rapid Rehousing	RRH	D-RRH	Inflow	<input checked="" type="checkbox"/>
 	shelter	ES	D-ES	Inflow	<input type="checkbox"/>

[Add Pathway to Model](#)

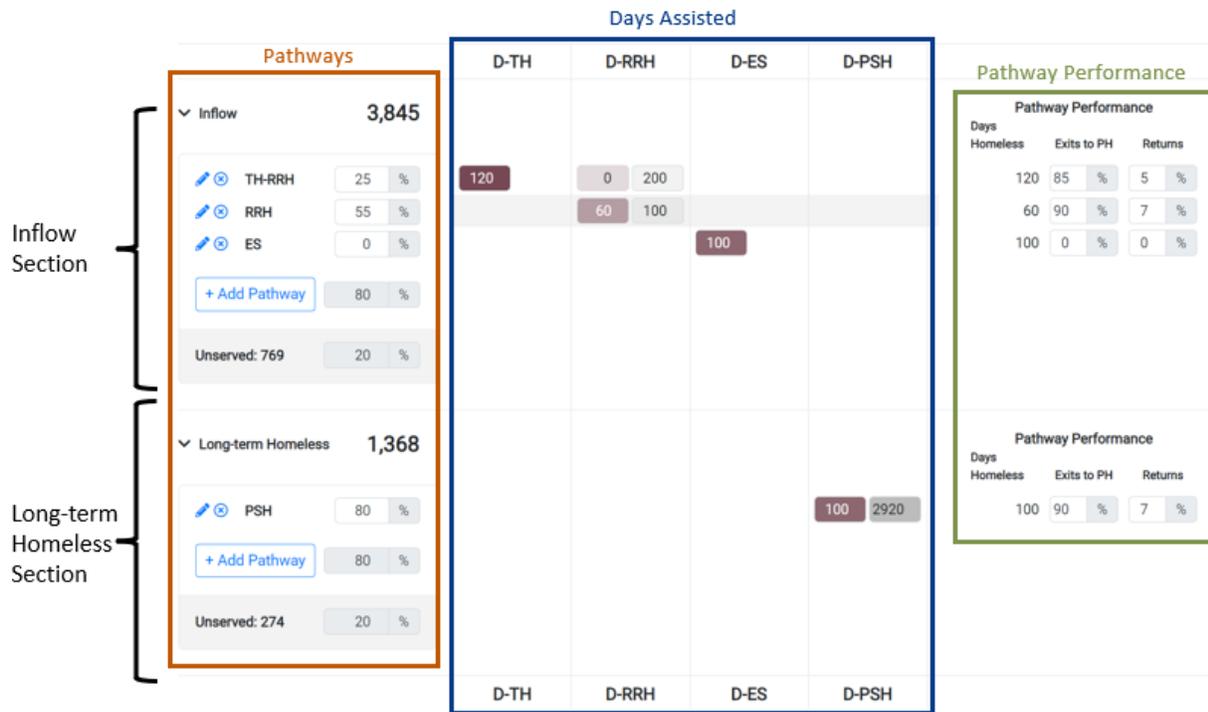
Clicking the “+Add Pathway to Model” button will open a Create Pathway window. After completing the required fields, the user selects Add to the Model Library which returns the user to the previous window and automatically includes the pathway in the selected year.

Adjusting Pathways from the Modeling Panel

The Modeling Panel allows users to view and adjust the model pathways for the selected year. As shown in Figure 15 below, the Modeling Panel has a separate section for each universe (inflow and long-term homeless), and each universe has three panes: Pathways, Days Assisted, and Pathway Performance.



Figure 15. The Modeling Panel: Pathways, Days Assisted, Pathway Performance



Pathways Pane

The Pathways Pane displays the number of households in each universe for the selected year. From the Pathways Pane, users can select the pencil icon to edit a pathway, select the icon ⊗ to delete a pathway, or add a pathway (see Adding Pathways to the Model).

Change Pathway Order

The order of the pathways on the Modeling Panel for the selected year can be changed by dragging and dropping the pathway abbreviations.

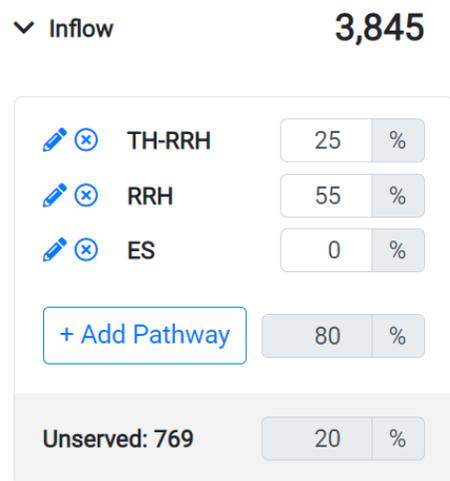
Change a Pathway's Percentage

The percentage of households in each pathway can be adjusted to the right of each pathway displayed, using the input boxes. If the sum of the pathway percentages is greater than 100%, the input boxes will turn red. Adjusting the percentages to be equal to or less than 100% resolves the error. The percentages also can be adjusted by clicking the pencil icon to the left of the desired pathway.

Unserved

The number and percent of unserved households are calculated based on the remainder of households not included in a pathway. If the percentages of households

Figure 16. The Pathways Pane





included in a pathway sum to 100%, there will be no unserved households for that universe for that year. These are calculated values and cannot be edited directly.

Days Assisted Pane

The Days Assisted Pane shows the number of days homeless (purple, left section of column) and days housed (gray, right section of column) for each project type in the pathway in that column. The darker colors correspond to higher values. Users can click on any box to adjust its value for the year.

To change the order in which project types appear in the Days Assisted Pane, see [Adjusting the Order of Projects Within Pathways](#).

Figure 17. The Days Assisted Pane

D-TH	D-RRH	D-ES
120	0 200	
	60 100	
		100

Pathway Performance Pane

The Pathway Performance Pane of the Modeling Panel shows the model's performance on the three key measures: Days Homeless, Exits to Permanent Destinations, and Returns.

Days Homeless

This right-hand column displays the sum of non-overlapping Days Homeless of each project included in the pathway in the Pathways Pane. This sum is a calculated value and must be adjusted by editing the Days Homeless field for each project included in the pathway. Overlapping Days Homeless can be excluded from the sum by unchecking the box in the Create Pathway window. (See [Understanding Number of Days Served While Homeless](#) for more information.)

Figure 18. The Pathways Performance Pane Pathway Performance

Days Homeless	Exits to PH	Returns
120	85 %	5 %
60	90 %	7 %
100	0 %	0 %

Exits to Permanent Destinations

An Exits to Permanent Destination percentage can be adjusted directly in the Pathway Performance Pane for the year. This value is recorded to assist in tracking performance assumptions but is not incorporated into the modeling calculations. This value also can be adjusted by clicking the pencil icon next to the pathway abbreviation in the Pathways Pane.



Returns

A Returns percentage can be adjusted directly in the Pathway Performance pane for the year. In a multi-year model, this value affects the returning inflow for the following model year. This value also can be adjusted by clicking the pencil icon next to the pathway abbreviation in the Pathways pane.

Copy Year (Multi-Year Only)

The "Copy Year" button on the Modeling Page allows a user to copy household and pathway assumptions of one year into another year. Clicking this button will open a popup window where the user selects which year to copy. Once the year is selected, the user selects which year(s) to copy it to. Doing this will overwrite any household and pathway assumptions already entered into the year being copied to.

Figure 19. Copy Year Function

Copy to Another Year ⓘ ×

Use the options below to copy the pathways from the selected model year to one or more other model years.

Year copying from:

Which years do you want to copy to?

2026

2027

2028

For example, if a user selected to copy from year 2026 to years 2027 and 2028, the number of households in the inflow and long-term universes and any pathways and pathway attributes that had been entered in the Modeling Panel for years 2027 and 2028 now would be overwritten with the values and assumptions from year 2026.

To reset the household inflow assumptions to what had previously been entered, users must open the Households window (accessed through the Navigation Panel) and click "Continue."



Baseline Inventory

The baseline inventory is the number of units of each project type available in the baseline year. (See [5. Data Guide](#) for more information on how to source and interpret community data to develop the inventory estimates.)

To access the Baseline Inventory window, select that option from the Navigation Panel on the Modeling Page.

Only project types that are included in a model pathway will appear in the Baseline Inventory Window. Therefore, it is recommended that users input baseline inventory after all project types and pathways are completed. Otherwise, users may inadvertently omit relevant inventory.

Costs

Average annual costs per unit by project type are optional inputs and can be entered in the Cost window. To access the Cost window, select that option from the Navigation Panel on the Modeling Page.

The first section of the Cost window is for the baseline year. Entering baseline cost the assumptions will allow users to compare project costs between the baseline year and model year.

Target Year Costs (Single-Year Model)

Users enter the average annual cost for each unit by project type for the target year. If costs were input in the CoC Library, those costs will automatically populate in the target year and can be updated in the Cost window.

User Tip: Project types and pathways must be assigned to the model before costs can be input.

Model Year Costs (Multi-Year Model)

Users enter the average annual cost for each unit by project type for each year in the model under Model Year Costs. If costs were input in the CoC Library, those costs will automatically populate in the first year of the model.

Users can choose to enter a global annual cost percentage increase to increase costs at the same rate for each year. Or costs may be manually adjusted up or down per year and per project type.

If a user later adds a project type to the model, unit costs will need to be added for the new project type. If a global annual cost percentage increase has been applied to the model, it must be re-applied to affect the new project type.



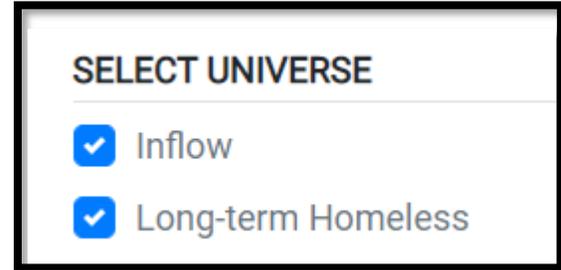
III. System Modeling Results

Results of a system model can be viewed in two areas: the Results Preview on the Modeling Page and the Results Page accessed through the See Results button on the Modeling Page. The Results Preview allows users to see the impact of the modeling inputs as they are building and adjusting the model. The Results Page includes a summary tab as well as an interactive Detail tab.

Results Preview

The Results Preview defaults to a bar chart view. Users can select other views using the toolbar in the upper right corner of the pane.

The Results Preview charts and tables can be filtered to show the inflow universe, the long-term homeless universe, or a combined view (default) by using the Select Universe options on the left of the Results Preview.



Inventory by Project Type (vertical bar chart)

The Results Preview defaults to a bar chart view that shows the estimated number of units needed each year. In multi-year models, the bar chart can be filtered to show all the years in the model or just the year that is selected in the Year Selector by turning on or off the switch on the left of the pane.

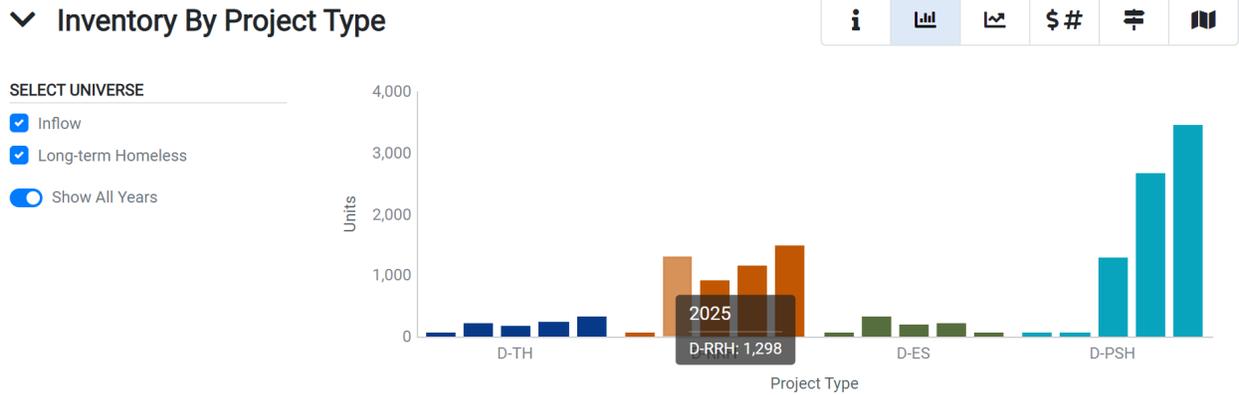
The project types are shown along the x-axis (horizontal). Within each project type are bars representing each year that is being modeled, with the leftmost bar being the earliest year and the rightmost being the latest year. The y-axis (vertical) shows the number of units.

User Tip: To alter the order of the project types in the bar chart, go to the Project Types tab in the Projects and Pathways window (accessed through the Navigation Panel).

Hovering the cursor on a bar reveals its project type(s), year, and number(s) of units. In this example, the hover text shows that in the year 2025 (the second of this multi-year model's five years), 1,298 rapid rehousing units are needed to serve the combined inflow and long-term homeless households.



Figure 20. Inventory by Project Type (Bar Chart)



Inventory Over Time (line chart)

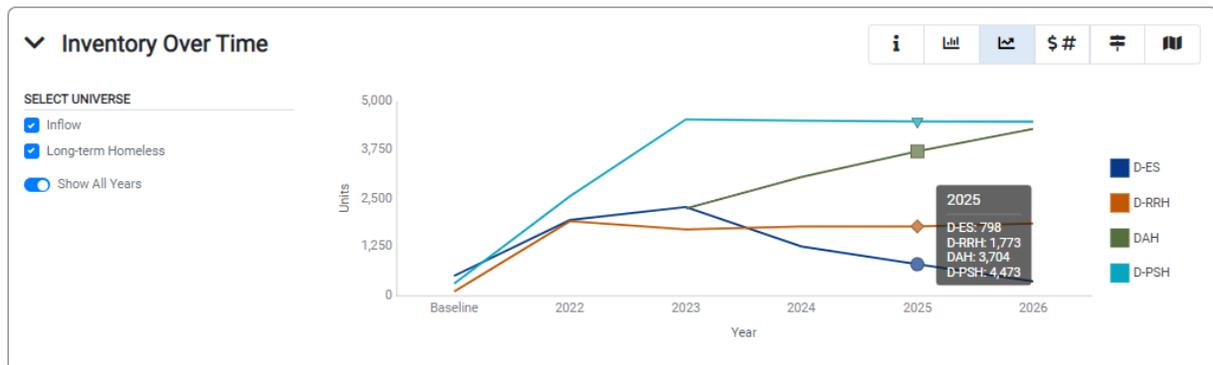


Choosing this option from the toolbar generates a line chart that shows the estimated number of units needed each year. The modeling years are shown on the x-axis (horizontal). Within each year are nodes representing the number of units in each project type during that year; the key on the right identifies the project type corresponding to each node. The y-axis (vertical) shows the number of units.

Hovering the cursor on a dot reveals the project type(s) and number(s) of units for that year.

In the example below, the chart shows the number of emergency shelter (D-ES) units increasing for the first two years of the model then decreasing in the later years. The number of permanent supportive housing (D-PSH) units surges over the first two years then levels out, as the number of dedicated affordable housing (DAH) units steadily increases.

Figure 21. Inventory Over Time (Line Chart)





Inventory and Cost Table



Choosing this option from the toolbar generates a table that shows the number of units and costs by universe for each project type in the model.

Unlike the rest of the Results Preview views, the results for the inflow and long-term homeless universes are shown separately as well as combined. In the example below, the model includes 93 emergency shelter units to serve the inflow universe and 185 emergency shelter units to serve the long-term homeless universe, for a total of 278 units for the selected model year.

Figure 22. Inventory & Cost Table

Inventory & Cost Table

	D-ES	D-TH	D-RRH	D-PSH
Inflow				
# of units	93	110	139	396
\$ cost	2.79M	3.30M	2.78M	27.72M
Long-term Homeless				
# of units	185	182	160	462
\$ cost	5.55M	5.46M	3.20M	32.34M
Model Total				
# of units	278	292	299	858
\$ cost	8.34M	8.76M	5.98M	60.06M

Days Assisted by Pathway



Choosing this option from the toolbar generates a chart that shows the average number of days households are expected to be assisted within each pathway for the selected year and universe. This chart is helpful for an at-a-glance comparison of the Days Homeless, Days Housed, and Total Days Assisted for each pathway.

The numbers of Days Homeless are indicated by the purple bars to the left of the "Point of Housing" divider. The numbers of Days Housed are indicated by the gray bars to the right of the divider. Overlapping Days Homeless are deduplicated within each pathway.

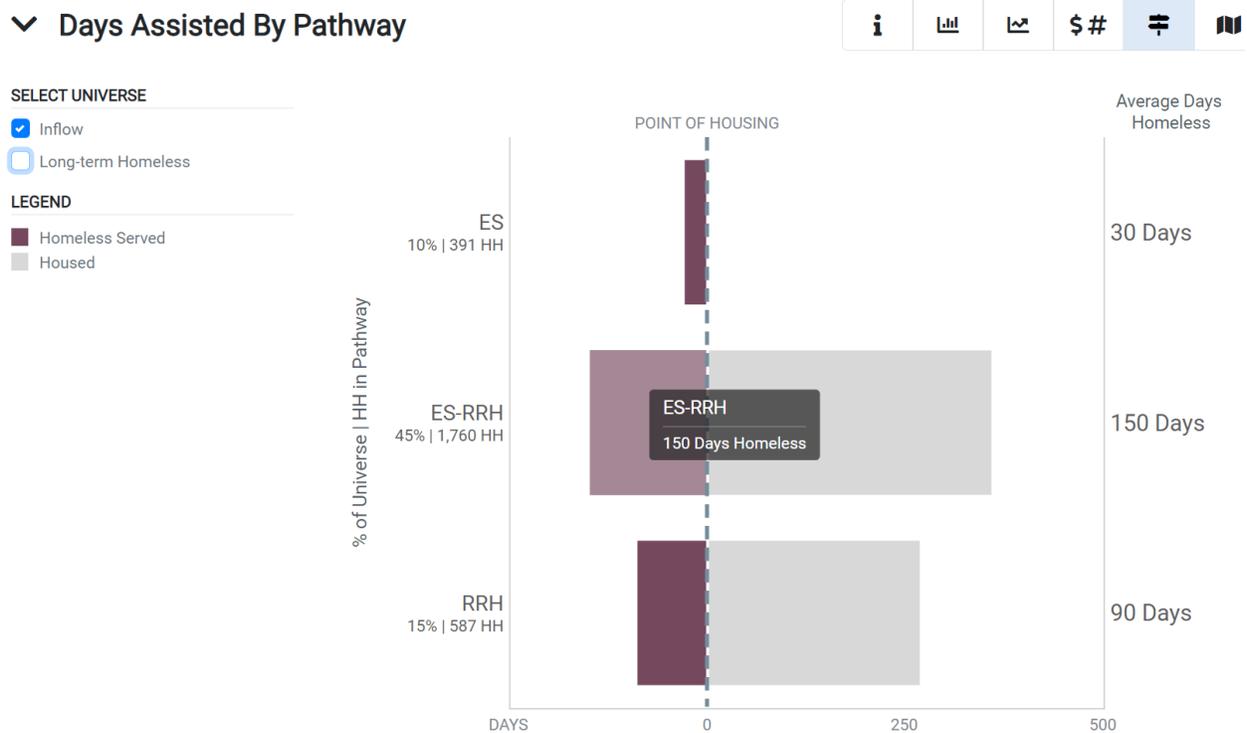
User Tip: The percentage of households served in each pathway might sum to less than 100% if there are unserved households in the selected universe and year.



For each pathway shown, its name and the percentage and number of households (HH) in that pathway are indicated to the left of its purple bar. The percentage of households shown for each pathway is a user input value representing the percentage of all households experiencing homelessness for the given universe (inflow or long-term homeless) in the model year that are served in that pathway. (The percentage does not represent *all served* households.) The number of households in the pathway is a calculated value based on the percentage of households and the total number of households in each universe in the selected year.

In the example below, the top bar shows that 10% of households (391 households) are in the ES pathway. This group of households has an average of 30 days homeless in shelter. The middle bar shows that 45% of households (1,760 households) are in the ES-RRH pathway, with 150 days homeless and 360 days housed. The final bar shows 15% of households in a rapid rehousing only pathway. Overall, the three pathways included in this model year are meeting the needs of 70% of the inflow universe (10% + 45% + 15%), with a remaining 30% unserved (not shown).

Figure 23. Days Assisted by Pathway



System Map



Choosing this option from the toolbar generates the System Map, a combined view of all of the pathways that are included in the model for the selected universe and year. It shows how households are expected to flow through the homeless response system. The Days Assisted by Pathway chart highlights the difference



between each pathway, whereas the System Map highlights how each project is used in the system as a whole.

The left-most bar on the map shows the number of households served and unserved in the model year, based on the percentage of households in each pathway. The boxes in the middle represent the project types included in the model, displaying for each project type the number of households, the average days homeless, and days housed across all pathways that include the project. The height of each box represents the number of households that use the project type; project types that serve more households will have taller boxes. The width of each box represents the days assisted, including days homeless and days housed; project types that have more days assisted will have wider boxes.

The dark purple sections of the map represent households in projects that provide crisis support and temporary shelter while the households are still homeless. The light gray sections of the map represent housing programs. The lines between the project types show the percent of all households served in that project type who are also served in the connected project type. Unlike in the Days Assisted by Pathway Chart, which has all households experiencing homelessness in a universe for the year as the denominator, the percentages in this chart are based on only the households served.

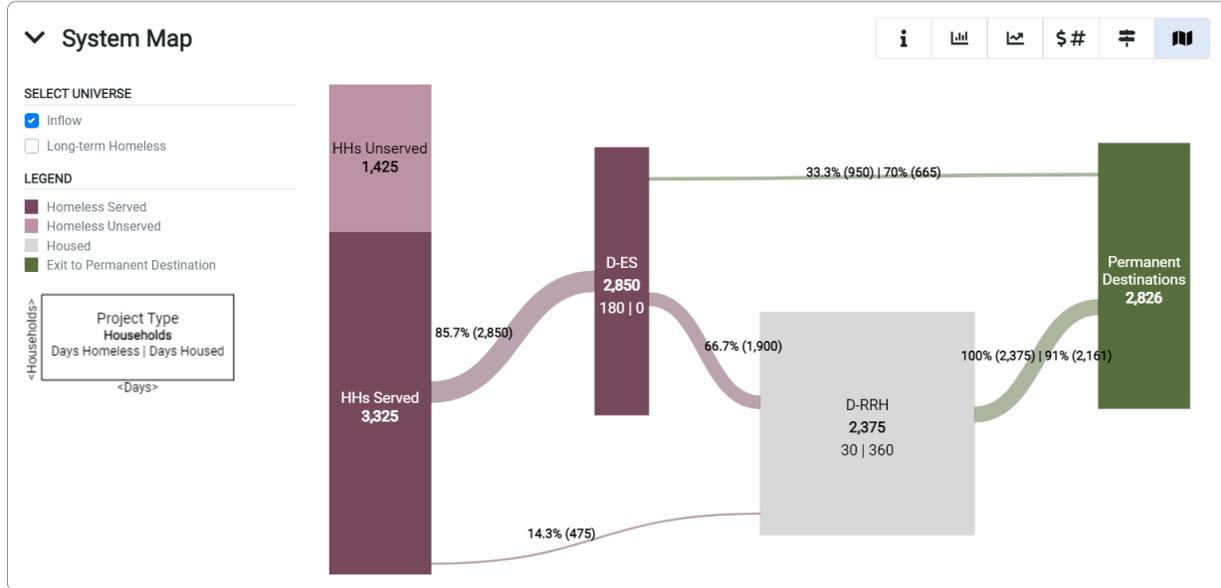
User Tip: To change the order of the projects on the System Map go to the Projects and Pathways window (accessed through the Navigation Panel).

The green lines show the portion of households exiting the system from each project type as a percent of all households served in that pathway, followed by the portion of households exiting to permanent destinations from each project type as a percent of all exits. The green box on the right shows the total number of households exiting to permanent destinations from all pathways based on the user inputs for each pathway. The percentage of exits to permanent destinations are calculated to show the exits by project type and for the system as a whole.

In the example below, of the 3,325 households (HH) served, 85.7% (2,850 households) are served in pathways that include emergency shelter (ES). Of those households that are served in shelter, 66.7% (1,900 households) are also served in rapid rehousing (RRH). The remaining 33.3% (950 households) are in the ES-only pathway and exited the homeless response system without further housing assistance. Of the 950 households exiting from the ES-only pathway, 70% (665) are expected to exit to permanent destinations.



Figure 24. The System Map

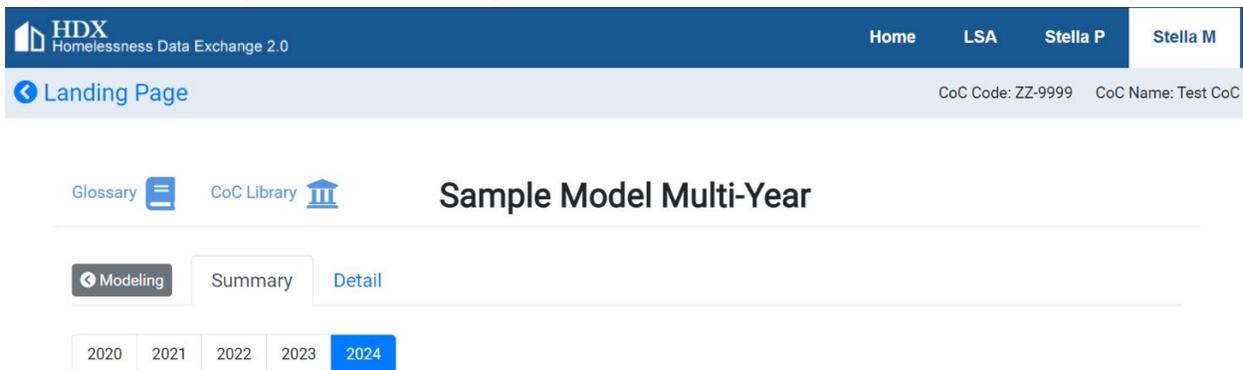


Results Page

Users can use results to view the modeling inputs and understand the impact of the inputs, as well as to share modeling recommendations with key partners and inform implementation planning and resource allocation.

The Results Page has two tabs. The Summary tab is a high-level overview of the system modeling results, including key performance and outcome metrics for all years and visualizations to help understand annual flow through the system. The Detail tab allows users to interact with the results, selecting from a variety of filters to show different formats and levels of detail. Multi-year models also include a year selector to show results for each year of the model, with default views displaying the target year.

Figure 25. Summary Tab of Results Page





Each section in the Results Page includes a description that can be expanded by clicking on the word “Description.”

SELECT UNIVERSE

- Inflow
- Long-term Homeless

Each results chart can be filtered to include data for only the inflow universe, only the long-term homeless universe, or both by selecting or unselecting the check boxes in the “Select Universe” section to the left of each chart.

As in the Results Preview on the Modeling Page, users can select other views using the toolbar. The toolbar icons differ slightly for each view, depending on which types of charts or tables are available for that view.

Export

Results in the charts and tables on the Results Page can be exported into Excel. Clicking on the Export icon located above any results chart will create an Excel workbook file that includes the tabs shown below.

Figure 26. Exporting Results Page



Summary Tab

The Results Summary tab includes two charts (1.1 and 1.2) each with multiple view options, described below.

1.1 System Map/Days Assisted by Pathway (chart)

The 1.1 chart displays a big picture view of how households are using the system for the selected year and universe. The default view (the view that first appears when arriving on the page) shows the system map for the target year. Users may use the Year Selector and the chart toolbar to select another year and the toolbar to switch to the Days Assisted by Pathway view using the toolbar. Both views are described above in the Results Preview [Results Preview](#) section. Data shown is for the selected year.

1.2 System Performance by Year (table)

This table includes households served and unserved, as well as the key performance measures for each model year. If the model includes baseline inventory, this table will show the net change from the baseline year to the final model year. The table includes all model years, but the selected year is highlighted in blue on the table.

User Tip: Percentage calculations show the difference in percentage points from baseline, not percent change.



Figure 27. System Performance by Year

1.2 System Performance by Year



SELECT UNIVERSE

- Inflow
- Long-term Homeless

> Description

Measure	Baseline	2025	2026	2027	2028	Net Change
Total Households	6,700	7,140	6,396	6,028	5,213	(1,487)
Total Served	5,200	3,948	3,841	4,660	4,170	(1,030)
Total Unserved	1,500	3,192	2,555	1,368	1,043	(457)
Households Served %	77.6%	55.3%	60.1%	77.3%	80%	2.4%
Days Homeless	0	80	88	88	84	84
Days Housed	0	86	1,033	1,028	863	863
Days Assisted	0	166	1,121	1,116	947	947
Exits to Permanent Destinations	0%	77.9%	82.7%	83.3%	88.8%	88.8%
Return %	0%	7.6%	7.3%	7.1%	6.5%	6.5%
Annual Costs		\$39.26M	\$67.62M	\$121.67M	\$159.00M	\$159.00M

Detail Tab

The views on this tab allow users to explore the model results and generate visualizations and tables that meet their needs.

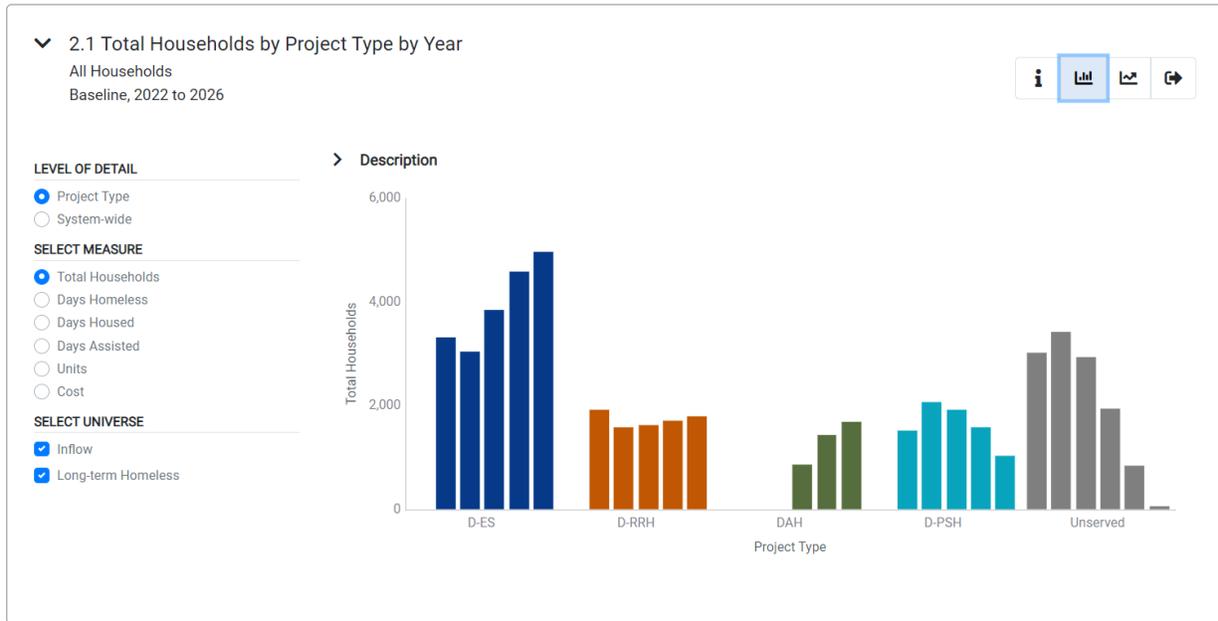
2.1 Measure by Level of Detail by Year (bar/line chart)

This chart displays model performance measures and results that can be grouped by project type or viewed system-wide and for a variety of performance measures using the selection menu on the left in the pane. The default view is a bar chart with the level of detail set at project type and the measure set at total households. The bar chart highlights year-to-year differences within each project type. Choosing the line chart makes it easier to compare project types.

In this example, the green bars show the number of households being served in dedicated affordable housing (DAH) increasing over time and the gray bars show the number of unserved households decreasing over time.

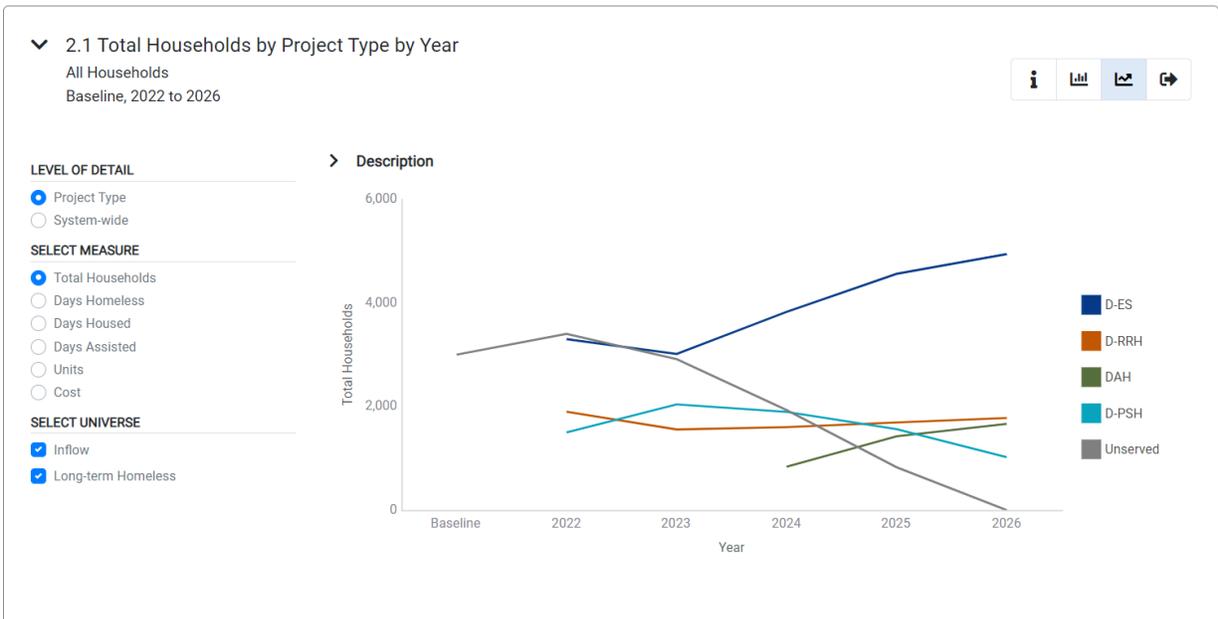


Figure 28. Total Households by Project Type by Year (Bar Chart)



The line chart view provides a contrast between the increase of households served in emergency shelter (D-ES) and the decrease of unserved households.

Figure 29. Total Households by Project Type by Year (Line Chart)



The system-wide level of detail displays the served and unserved households each year of the model. The bar chart makes it easy to see the proportion of served and unserved as well as the total households each year. In the example below, the hover text shows that there are expected to be 3,192 unserved households in the year 2025.



Figure 30. Total Households by System-wide by Year (Bar Chart)

2.1 Total Households by System-wide by Year

All Households
Baseline, None to 2028



LEVEL OF DETAIL

- Project Type
- System-wide

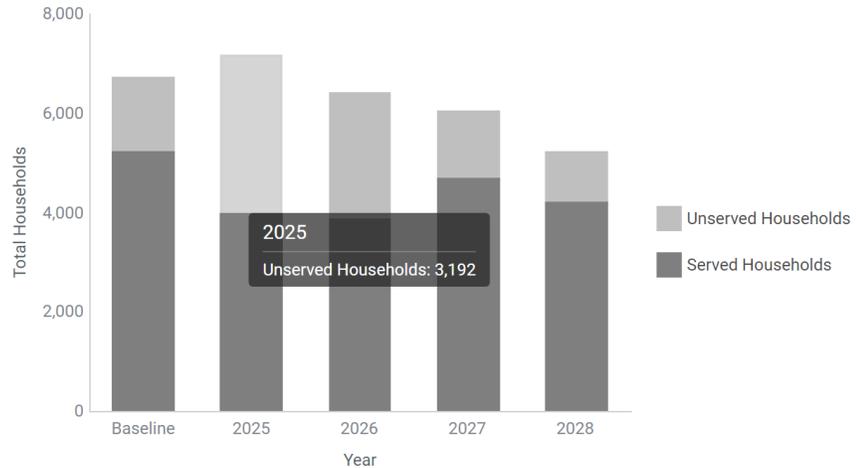
SELECT MEASURE

- Total Households
- Days Homeless
- Days Housed
- Days Assisted
- Cost

SELECT UNIVERSE

- Inflow
- Long-term Homeless

Description



The line chart view highlights the trajectory of each of these groups (served and unserved households). In this example, the number of unserved households decreases over time.

Figure 31. Total Households by System-wide by Year (Line Chart)

2.1 Total Households by System-wide by Year

All Households
Baseline, None to 2028



LEVEL OF DETAIL

- Project Type
- System-wide

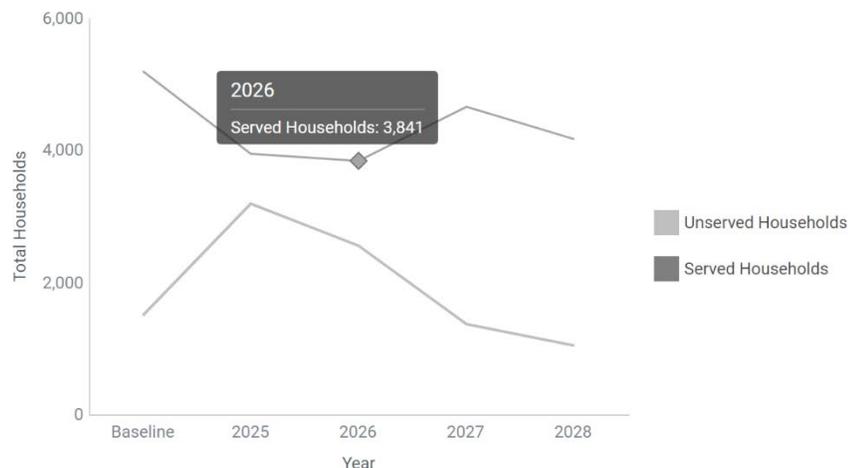
SELECT MEASURE

- Total Households
- Days Homeless
- Days Housed
- Days Assisted
- Cost

SELECT UNIVERSE

- Inflow
- Long-term Homeless

Description





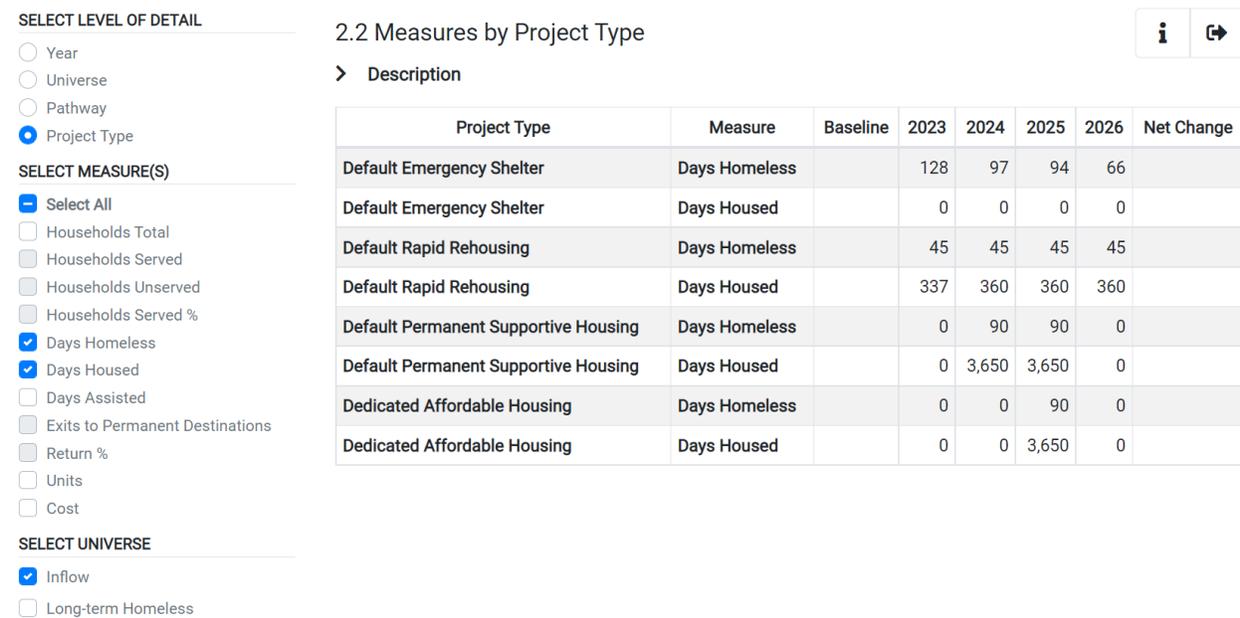
2.2 Measures by Level of Detail (table)

Users can create a custom table by selecting a level of detail (year, universe, pathway, or project type) in the selection menu. (The most granular level of data (by pathway AND project type) is available in table 2.3, described in the next section.)

Users first choose among the level of detail options, then select which measure(s) they would like displayed in the table. Note: Some measures can be displayed only at certain levels of detail. Or the user can click “Select All” to display all measures that are available for display for their selected level of detail. Under Select Universe, users can select which universe they would like the measures displayed by inflow, long-term homeless, or both universes. The value displayed in a cell will be the average for that project type across all pathways that include that project type, within the selected universe that year.

For example, the table below has “Project Type” selected for Level of Detail, “Days Homeless” and “Days Housed” selected for Measure(s), and “Inflow” selected for universe. The resulting table shows the average number of Days Homeless and Days Housed by project type for the inflow universe.

Figure 32. Measures by Project Type





Not all measures are available for all levels of detail in view 2.2, as shown below:

Table 2. Measures Used by Year/Universe/Pathway/Project Type

Measure	Year	Universe	Pathway	Project Type
Households Total	X	X	X	X
Households Served	X	X		
Households Unserved	X	X		
Households Served %	X	X	X	
Days Homeless	X	X	X	X
Days Housed	X	X	X	X
Days Assisted	X	X	X	X
Exits to Permanent Destinations	X	X	X	
Return %	X	X	X	
Units				X
Cost	X	X	X	X

2.3 Measures by Pathway & Project Type (table)

Results Table 2.3 (shown in Figure 33 below) displays results for the selected measure(s) by pathway and project type. This table breaks down the performance measure(s) for each pathway within the model, showing the measure(s) within each project type in each pathway.

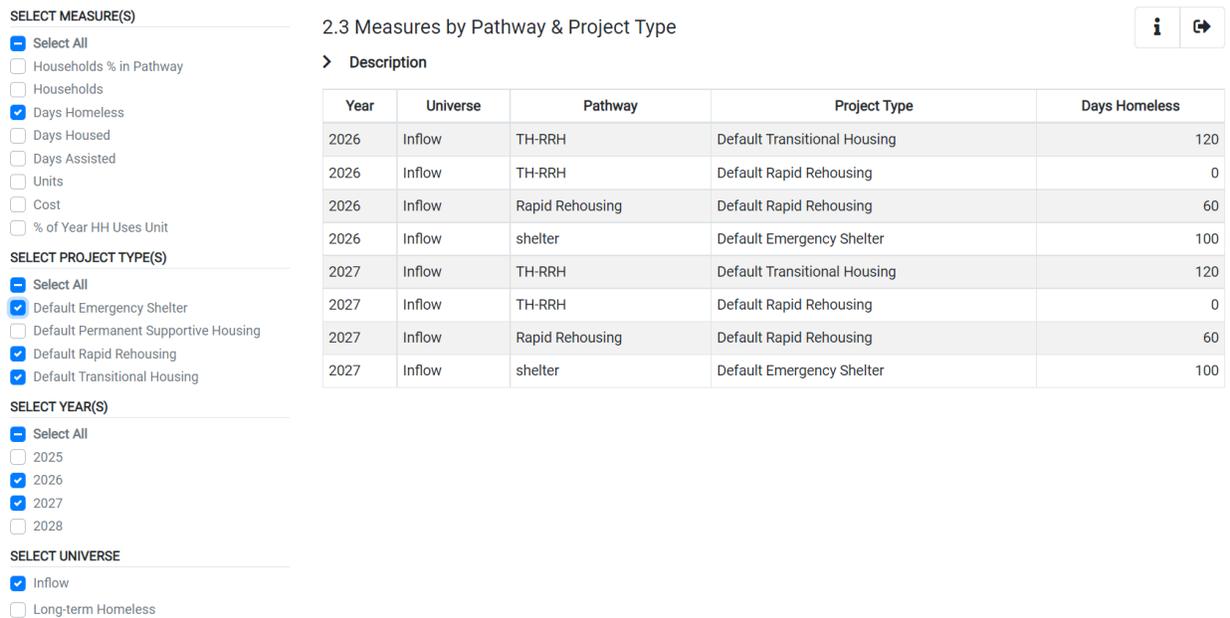
The selection menu on the left side of the pane offers options specific to 2.3. Under Select Measure(s), the user can select which measure(s) to display by project type within each pathway or click "Select All" to display all measures available in this view.

Under Select Project Type(s), users can choose to show measures by pathway for specific project types or click "Select All" to display measures by pathway for all project types. Under Select Year(s), they can choose to show all years, select a single year, or select any combination of years in the model. Under "Select Universe," they can choose which universe they would like the measures displayed by inflow, long-term homeless, or both universes.

For example, the table below displays, by pathway and project type, the number of days households are expected to experience homelessness in the remaining two years of the model (2024, 2025) for the inflow universe.



Figure 33. Measures by Pathway and Project Type



Understanding Stella M Results

The data shown in Stella's results are based on calculations using data and assumptions input by users in the windows accessed from the Navigation Panel and in the Modeling Panel.

Performance Measures by Year and Universe

Results tables 1.2 (System Performance by Year) and 2.2 (Measures by Level of Detail) display results for the performance measures for all years included in a model. See Figure 34, Figure 35, and Figure 36 below for examples, followed by descriptions of each measure. The descriptions apply to all years of a model after the baseline year.

Selecting only one universe (inflow or long-term homeless) in the Select Universe part of the selection menu will show the measures aggregated or averaged across that universe only. Selecting both universes will show the measures aggregated or averaged across both universes within the selected year.



Figure 34. Measures Across Universes by Specified Year

2.2 Measures by Year

> Description

Measure	Baseline	2025	2026	2027	2028
Households Total	a 6,000	5,640	3,204	b 3,473	3,845
Households Served	5,000	3,948	2,564	c 3,127	3,845
Households Unserved	1,000	1,692	640	d 346	0
Households Served %	83.3%	70%	80%	e 90%	100%
Days Homeless		80	81	f 82	83
Days Housed		86	94	g 100	105
Days Assisted		166	175	h 182	188
Exits to Permanent Destinations		77.9%	79.1%	i 80%	80.8%
Return %		7.6%	7.4%	j 7.2%	7.1%
Cost		\$39.26M	\$28.16M	k \$37.17M	\$48.93M

- a. Total Households (Baseline):** Data shown in the Baseline column come from the numbers entered by the user in the Households and Cost windows (accessed from the Navigation Panel) for the baseline year.
- b. Total Households:** The sum of the total served households and the total unserved households for the specified year within the selected universe(s).
- c. Total Served:** The number of households in a universe multiplied by the percentage of households in each pathway, summed across all pathways, summed across universes.
- d. Total Unserved:** The difference between the number of households in the universe and the number of households served, summed across universes.
- e. Households Served %:** The sum of the percentages of households served across all pathways within the universe(s), weighted across universes.
- f. Days Homeless:** Weighted average of the number of days homeless for households within a specified year across all project types, pathways within the selected universe or across both universes, excluding any days homeless that the user indicated should be excluded (toggled the “Include” switch to off) because the days overlap with days homeless in another project type in the same pathway; based on Days Homeless value input by the user in the Modeling Panel for each project type in a pathway during the specified year weighted by the number of households served by each pathway.



- g. Days Housed:** Weighted average of the number of days housed for households within a specified year across all project types, pathways within the selected universe or across both universes; based on the days housed entered by the user in the Modeling Panel for each project type in a pathway during the year weighted by the number of households served by each pathway.
- h. Days Assisted:** The sum of Days Homeless and Days Housed for the year within the selected universe or across both universes.
- i. Exits to Permanent Destinations:** The percentage of total households across all pathways within the selected universe or across both universes that are expected to exit to permanent housing within a specific year; weighted average of the percent of households expected to exit each pathway to permanent housing that was entered by the user in the Modeling Panel.
- j. Return %:** The percentage of all households in the selected year that return to the homeless response system after exiting within the selected universe or across both universes; weighted average of the percentage of households expected to return to homelessness after exiting each pathway that was entered by the user in the Modeling Panel and weighted by the number of households served in the pathway.
- k. Annual Costs:** Total annual costs for all units estimated to be needed in the model year within the specified universe or across both universes, based on assumptions of households to be served in a pathway and their average length of assistance entered by the user in the Modeling Panel and Cost window.

Performance Measures by Pathway and Project Type

Results view 2.2 also can display performance measure results for each pathway or each project type for each year in the model in tables 2.2 Measures by Pathway and 2.2. Measures by Project Type. Explanations for each displayed measure can be found below; these explanations apply to all years of a model after the baseline year. Selecting only one universe (inflow or long-term homeless) in the Select Universe part of the selection menu will show the measures aggregated or averaged across that universe only. Selecting both universes will show the measures aggregated or averaged across both universes within the selected year.



Pathway

Figure 35. Performance Measure Results by Pathway

2.2 Measures by Pathway

> Description

Pathway	Universe	Measure	Baseline	2025	2026	2027	2028
TH-RRH	Inflow	Households Total		564	481	695	961
TH-RRH	Inflow	Households Served %		10%	15%	20%	25%
TH-RRH	Inflow	Days Homeless		a 120	120	120	120
TH-RRH	Inflow	Days Housed		b 200	200	200	200
TH-RRH	Inflow	Days Assisted		c 320	320	320	320
TH-RRH	Inflow	Exits to Permanent Destinations		d 85%	85%	85%	85%
TH-RRH	Inflow	Return %		e 5%	5%	5%	5%
TH-RRH	Inflow	Units		495	423	610	843
TH-RRH	Inflow	Cost		f \$11.45M	\$10.07M	\$14.96M	\$21.30M

- a. **Days Homeless:** The sum of days homeless across all project types in the specified pathway in the specified universe and selected year excluding any days homeless that the user indicated should be excluded (toggled the “Include” switch to off) because the days overlap with days homeless in another project type in the same pathway; values for Days Homeless for each project type in the pathway are entered by the user in the Modeling Panel.
- b. **Days Housed:** The sum of days housed across all project types in the specified pathway in the specified universe and year; values for Days Housed for each project type in the pathway are entered by the user in the Modeling Panel.
- c. **Days Assisted:** The sum of total Days Housed and Days Assisted in the specified pathway in the specified universe and year excluding any days that the user indicated overlap between the project types.
- d. **Exits to Permanent Destinations:** The percentage of households in the specified pathway in that universe and year that are expected to exit the pathway to permanent destinations. This percentage is entered by the user in the Modeling Panel.
- e. **Return %:** The percentage of households served in the specified pathway in the universe and year that are expected to return to homelessness after exiting. This percentage is entered by the user in the Modeling Panel.
- f. **Cost:** The total cost of all units estimated by the model to be needed for all project types in the specified pathway in the specified universe and year. The costs are based on the Cost per Unit for each project type as entered by the user in the Cost window; these per unit costs are multiplied by the projected number of units needed for each project type in the specified pathway and universe for each year.



Project Type

Figure 36. Measure Over Years by Project Type

2.2 Measures by Project Type



> Description

Project Type	Measure	Baseline	2025	2026	2027	2028	Net Change
Default Transitional Housing	Households Total		a 564	481	695	961	
Default Transitional Housing	Days Homeless		b 120	120	120	120	
Default Transitional Housing	Days Housed		c 0	0	0	0	
Default Transitional Housing	Days Assisted		d 120	120	120	120	
Default Transitional Housing	Units	0	e 186	159	229	316	316
Default Transitional Housing	Cost		f \$3.72M	\$3.28M	\$4.86M	\$6.91M	\$6.91M

- a. **Households Total:** Total households in each universe multiplied by the sum of the percentages of households served in pathways containing the applicable project type within the universe, summed across the universes.
- b. **Days Homeless:** The weighted average of Days Homeless within the project type across all pathways in the selected universe or weighted across both universes within the year. Values for Days Homeless for each project type within each pathway are entered by the user in setting up the pathway (either in the Projects and Pathways window or on the Modeling Panel).
- c. **Days Housed:** The weighted average of days housed within the project type across all pathways in the selected universe or weighted across both universes within the year. Values for Days Housed for each project type within each pathway are entered by the user in the Modeling Panel.
- d. **Days Assisted:** The sum of the weighted averages of Days Homeless and Days Housed (described above) in the project type in the specified universe and year excluding any days that the user indicated overlap between the project types.
- e. **Units:** The total number of units projected by the model to be needed for all households served by the specified project type across all pathways in the selected universe or across both universes in the year. The Units calculation takes into account the average number of days homeless or housed that households spend in the project.
- f. **Cost:** The total cost of all units estimated by the model to be needed for the specified project type across all pathways in the specified universe and year. The costs are based on the Cost per Unit for each project type as entered by the user in the Cost window; these per-unit costs are multiplied by the projected number of units needed for each project type within each universe and year.



Implementation Guidance

System modeling is an iterative process. Once a model is created and saved, users likely will want to make adjustments based on feedback from the workgroup(s) or other partners or the availability of additional data.

To ensure charts and tables display any changes in inputs made, users might need to refresh their browser.

Once a model is complete, communities can develop an implementation plan to transition their homeless response system from the current state to the ideal system. This could include system-wide and project-level performance improvements, reallocation of current resources, and acquiring new resources and housing supply.

The Results and Implementation Guide in the [System Modeling Toolkit](#) can help users to think about how to interpret, communicate, and use the system modeling results to develop an implementation plan.

User Tip: Don't forget to save the model so other users can see the adjustments made.