# Newborn Screening Timeliness Simulator (NBSTS) Tutorial

The Newborn Screening (NBS) Timeliness Simulator is for newborn screening programs and hospitals to evaluate processes from the time of birth to receipt of the dried blood spot (DBS) NBS specimen at the laboratory.

It allows you to:
- Use the data from the Michigan manuscript
- Use your own aggregate state-level data
- Use hospital-specific data

The app is concerned with the following portions of the DBS NBS process:
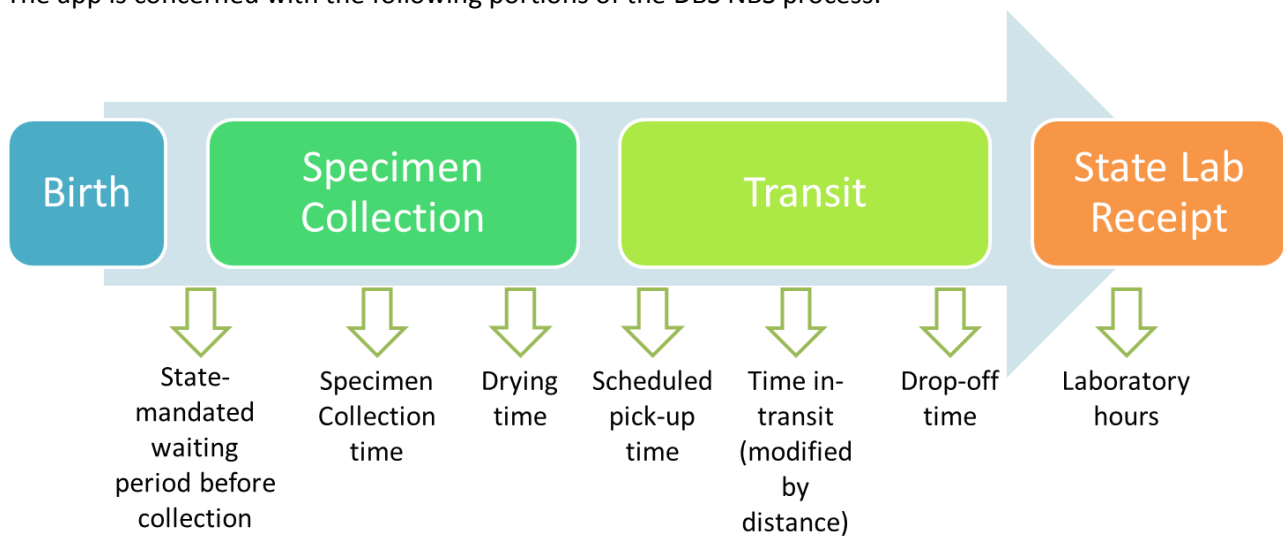
This guide will use example data and walk-through how to enter the data step-by-step.

Click or type in this link into your preferred web browser (note: histograms may not be visible in Internet Explorer, try using a different web browser if possible):

https://nbstimelinesssimulator.app.appery.io/app/Login.html

1. On the login page, enter your username and password, OR, if you are a new user, click the **New user?** button to create a Username and password.

2. After you sign in, you will be taken to the home screen. From here you can start a session or click on the **Info** button in the bottom left corner for more guidance specific to the data fields. These icons will always be available to you on each page of the simulator. Click the **Home** icon to return to the home screen. Click on the **Letter** icon to view creator and funding information for the app.

Home

Welcome to Newborn Screening Timeliness Simulator

Estimate time from birth to receipt of NBS specimen at a state laboratory

How would you like to proceed?

Start new session

First time? Click the 'info' icon below to learn more about the simulator.
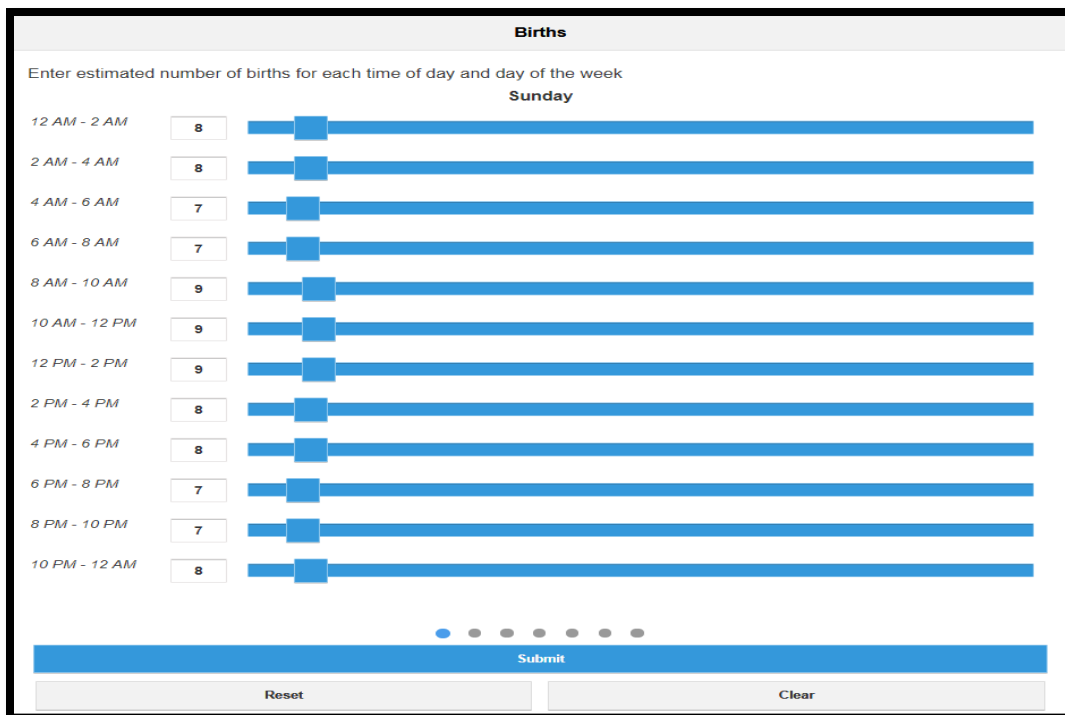
INFO

HOME

LETTER
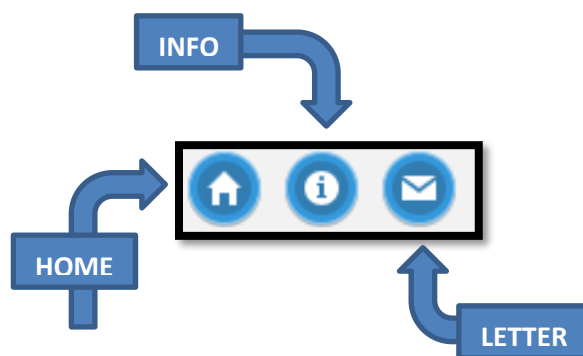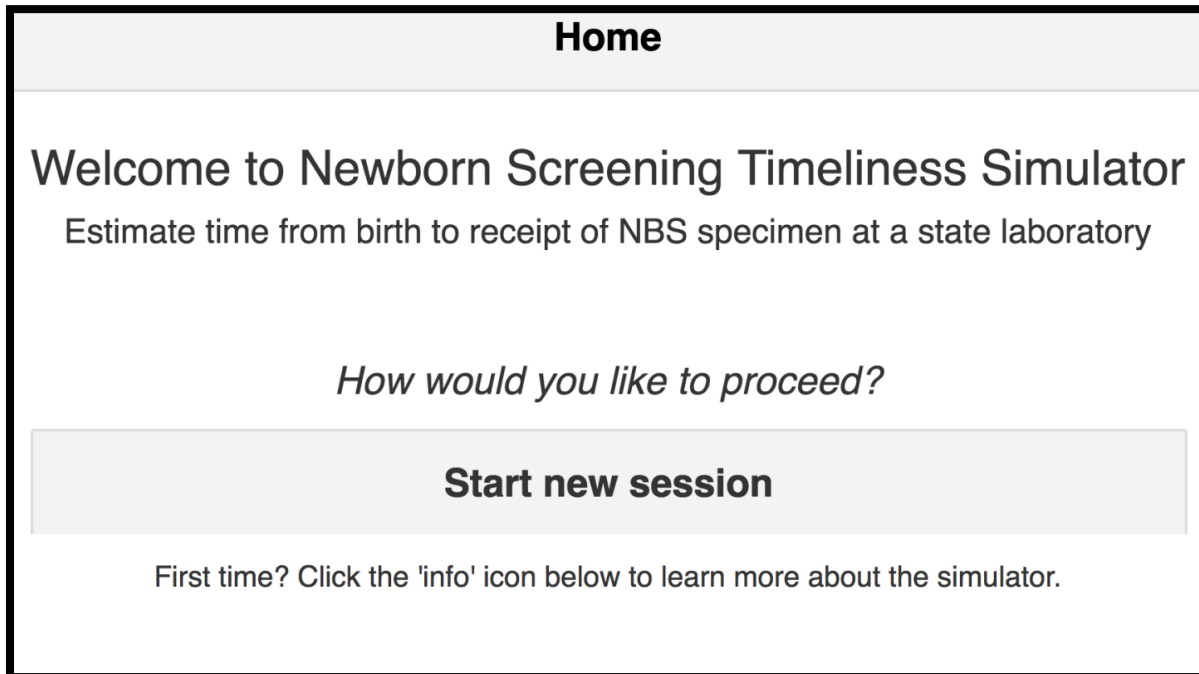
Click the Start a New Session button when ready.

3. Clicking the **Start a New Session** button allows you to start entering your data. You can enter data in any order, but we will go through them in the order they appear on the app. Click on **Births**.
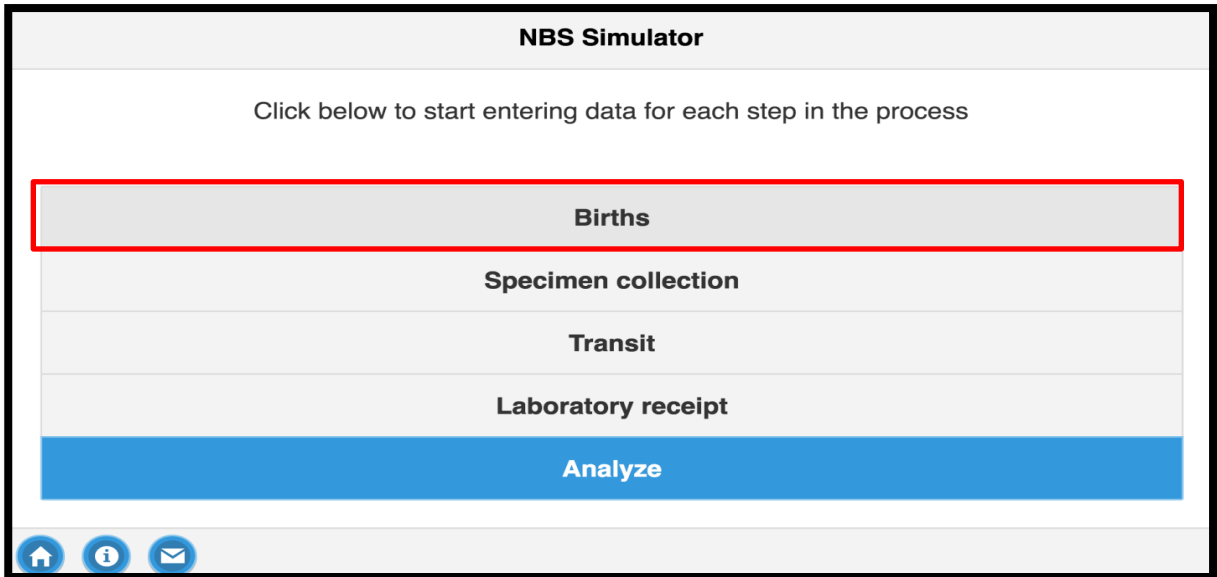
4. At this point you will need to enter how many births you have in your hospital/state during each designated time period. You can do this by entering in a number in the text field or by using the sliders. When you finish with Sunday, click on the dots at the bottom (of the page to enter the number of births for each day of the week. *Each dot at the bottom of the webpage is a different day of the week. **Please note:** All pages are pre-loaded with Michigan data.*

What quantities need to be entered on the 'Births' page?

Enter in an estimated number (i.e. count) of regular vaginal births (i.e., no C-section or NICUs) for the given two hour period of the day, for each day of the week. If no estimate is available, then the program should use an estimate based on births across all Michigan hospitals.

In the simulator, the maximum estimated number of births per each two hour period cannot exceed 100. If your estimated number of births per two hour period exceeds 100, divide the number of births per two hour period for all two hour periods by a fixed amount that makes all of the counts less than 100. This division will not affect your results.
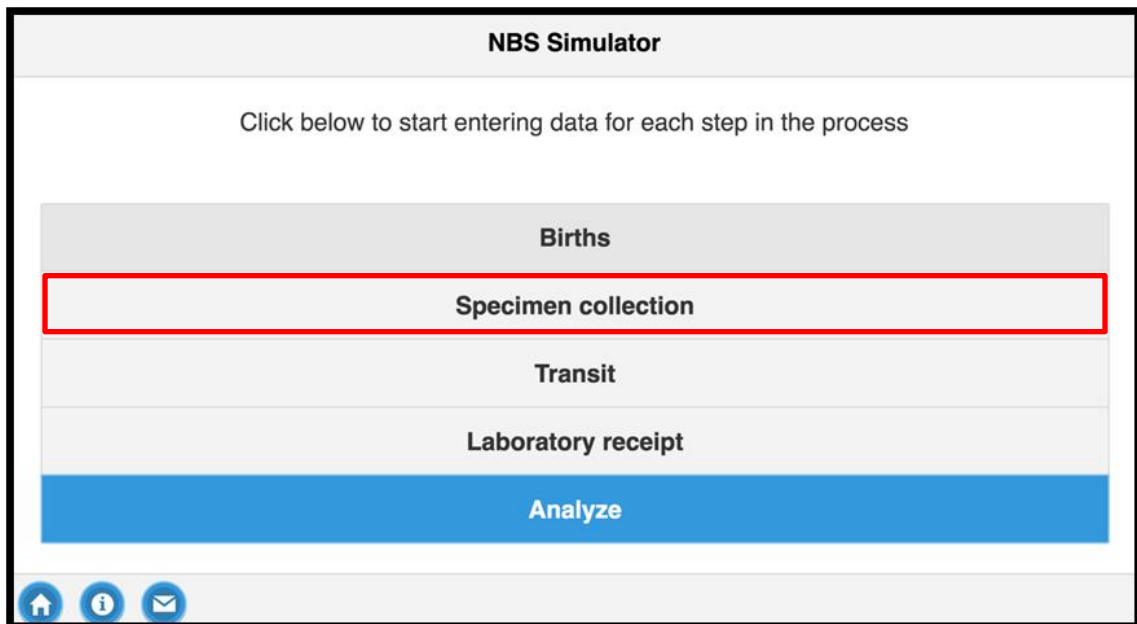
Example:
Hospital X has 300 births from 12 to 2am on Sunday, and 200 births from 2am to 4am. To enter these values, one can divide ALL the values you are entering by 10, and you would enter 30 for the 12 to 2 am slot, and 20 for the 2am to 4am slot.

5. Once you make it through all of the days, you can click **Submit**. This will take you back to the Home page.

Please note: The **Reset** buttons in the app will reset all data points to the Michigan data, and the **Clear** button here will set all data points to 0. If pressed, these buttons will ask if that is what you would like to do, before the action is taken.
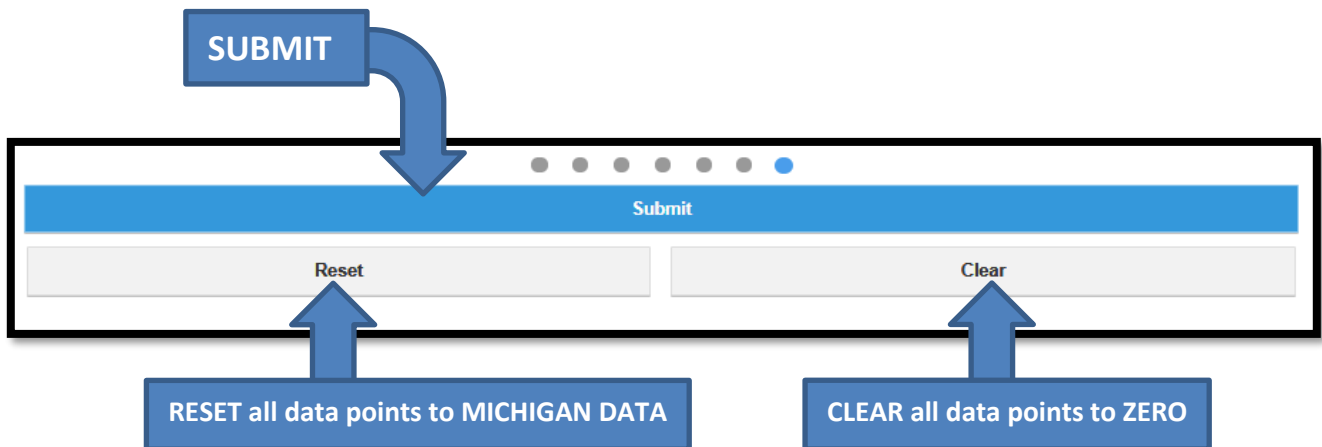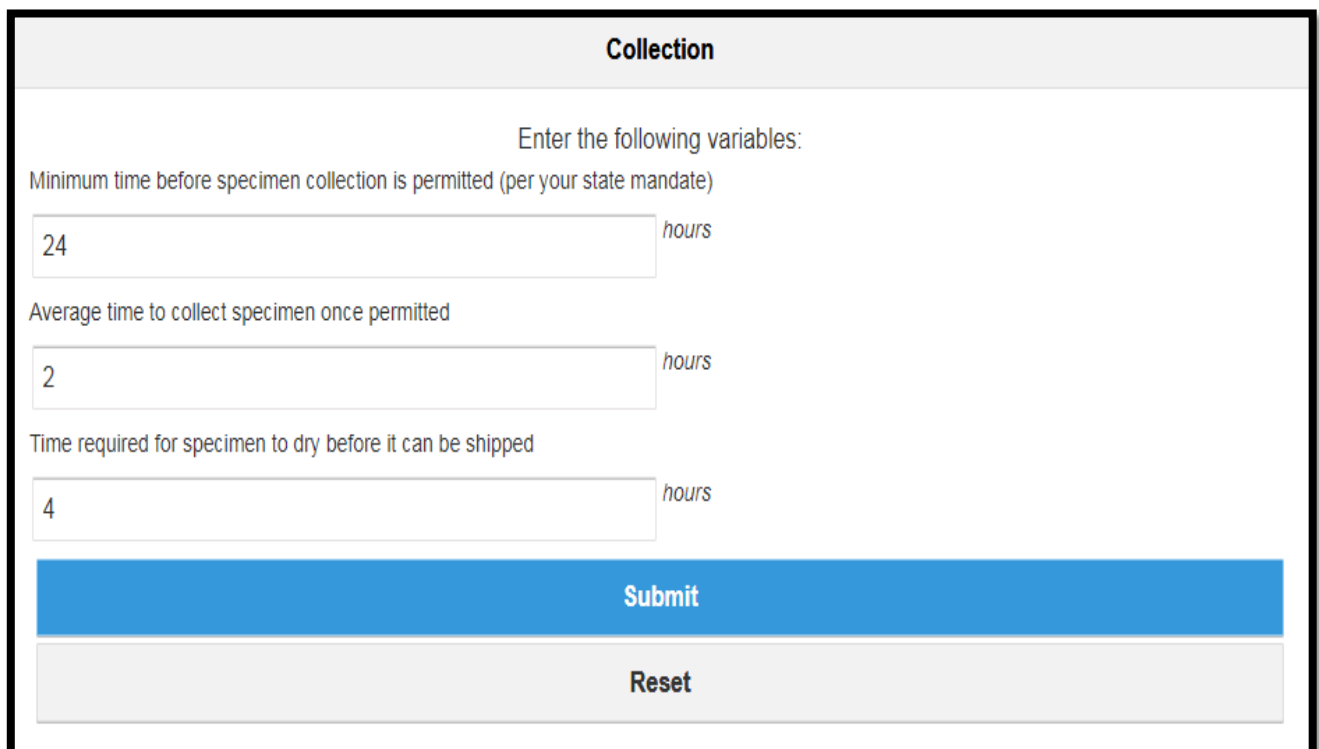
6. Click on the **Specimen Collection** button.

7. On the Collection page you will need to enter your hospital/state's information about when a specimen can be collected, when it is collected, and how long it is required to dry. After you have entered this information, click the **Submit** button to return to the main page.
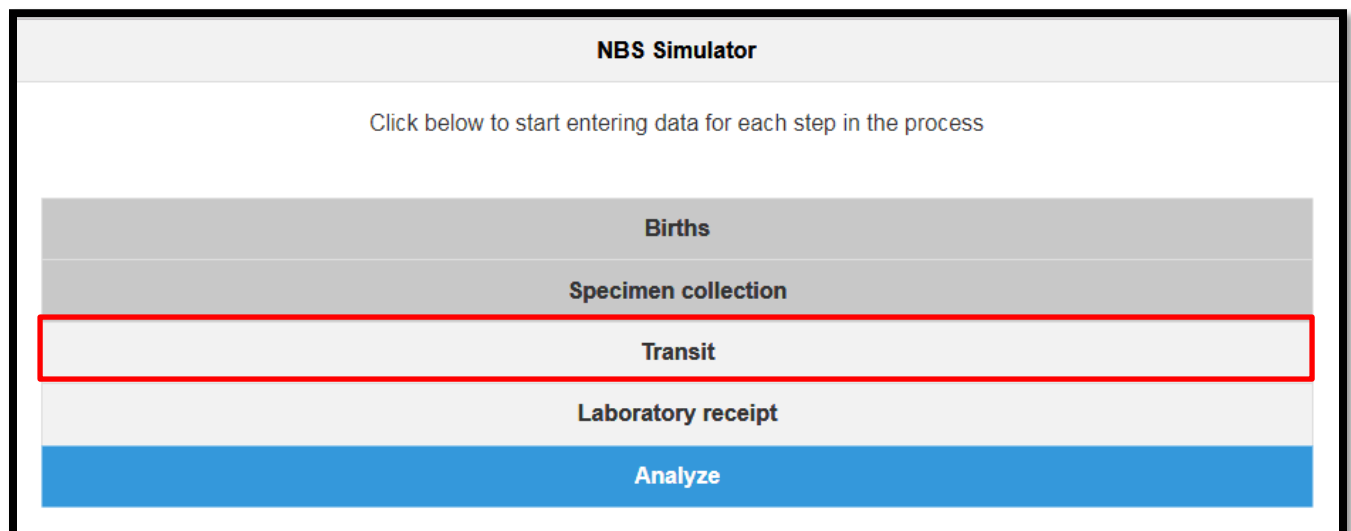
What quantities need to be entered on the 'Collection' page?

Collection refers to the process by which the specimen is collected after birth, dried, and placed for pickup by courier to deliver to the state lab. There are three components that the Simulator requires:

- Minimum amount of time in hours before collection of the specimen is permitted (per your state mandate);
- Time beyond the above value the specimen is collected. For example, if the hospital collects specimens at 26 hours after birth, and the minimum amount of time before collection is permitted is 24 hours, then this quantity will be 2 hours; and
- Time required for the specimen to dry before it can be shipped or picked up from the hospital.

NOTE: Zero is an acceptable value for the average time to collect specimen once permitted.

8. Click on the **Transit** button.

NBS Simulator

Click below to start entering data for each step in the process

Births
Specimen collection
Transit
Laboratory receipt
Analyze

9. Use this page to enter data about your hospital/state's transit time and lab hours. If specimens are not picked up on a specific day, leave that slot blank. Once you have entered this information, click **Submit** to return to the main screen.

What quantities need to be entered on the 'Transit' page?

Here, the Simulator requires two quantities. The first is the transit time (in hours), which is the time (or estimate of the time, say, average) it takes the specimen to travel from the hospital to the laboratory. The second is the time that the specimen is picked from the hospital each day of the week. For the latter, if there is no pick up on a particular day, leave the time blank. You can also add a second pickup time if appropriate for each day of the week or otherwise leave the second pickup time blank.

10. Click the **Laboratory Receipt** button.

NBS Simulator

Click below to start entering data for each step in the process

Births

Specimen collection

Transit

Laboratory receipt

Analyze

11. On the Lab Receipt page you will need to enter the hours that your laboratory is open and accepting NBS specimens each day to be accessioned for testing. If your lab is not open a certain day, leave the slots blank. When you are finished, click the **Submit** button to return to the main screen.

Lab receipt

Laboratory hours when a specimen can be accessioned as received

	Opens	Closes
Sun	--:-- --	--:-- --
Mon	07:00 AM	05:00 PM
Tue	07:00 AM	05:00 PM
Wed	07:00 AM	05:00 PM
Thu	07:00 AM	05:00 PM
Fri	07:00 AM	05:00 PM
Sat	06:30 AM	04:00 PM

Leave hours blank if lab is not open on the corresponding day.

Submit

Reset

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and The Association of Public Health Laboratories™

12. When you have all of your data entered, click the **Analyze** button.

13. The results page displays in two ways: quality indicators and a histogram. Click the dots at the bottom of the screen to switch back and forth between the two.
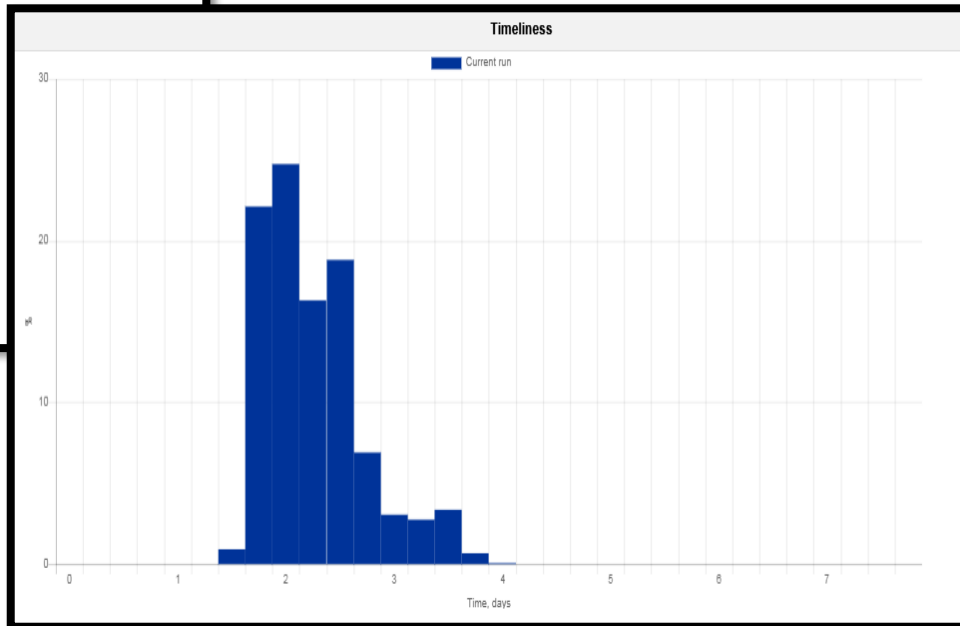

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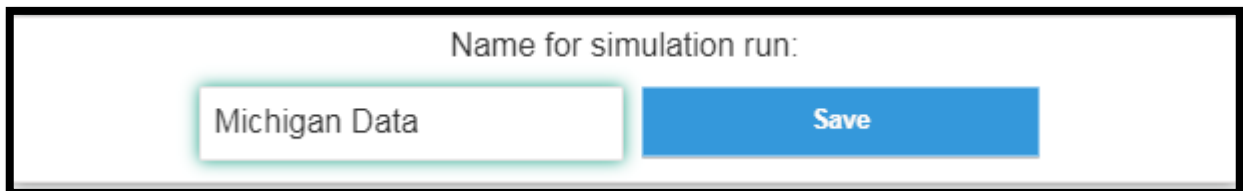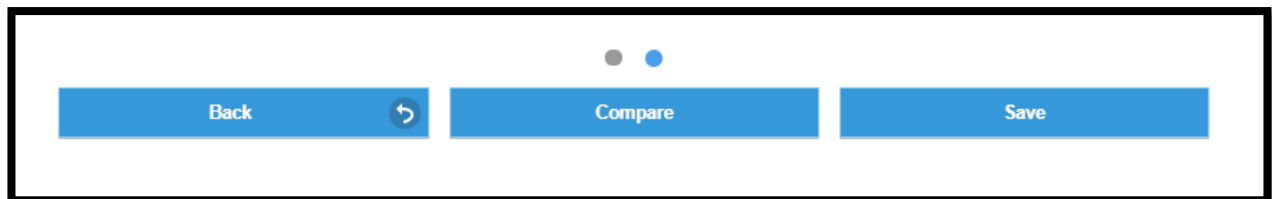14. At this point you may want to save your data so you can revisit it later or compare it with another session. Do this by clicking on the **Save** button in the bottom right. Choose a name for your session and click **Save** again. The session will now be available for you to re-load next time you log in.

Back ↺	Compare	Save

Name for simulation run:

Michigan Data	Save

Additional Features

Now that you have a session saved, you have more options on the home screen. You can start a new session, return to the one you were working on, load an old session, and delete sessions.

Home

Welcome to Newborn Screening Timeliness Simulator
Estimate time from birth to receipt of NBS specimen at a state laboratory

How would you like to proceed?

Start new session

Return to current session

Load prior session

Delete prior session

First time? Click the 'info' icon below to learn more about the simulator.

Start a New Session

When you click "Start a New Session" you will be prompted that you are about to delete your current session. **THIS WILL NOT DELETE PREVIOUS SAVED SESSIONS, ONLY UNSAVED SESSIONS.**

You are about to delete your current session. Do you still want to proceed?

Yes   **No**
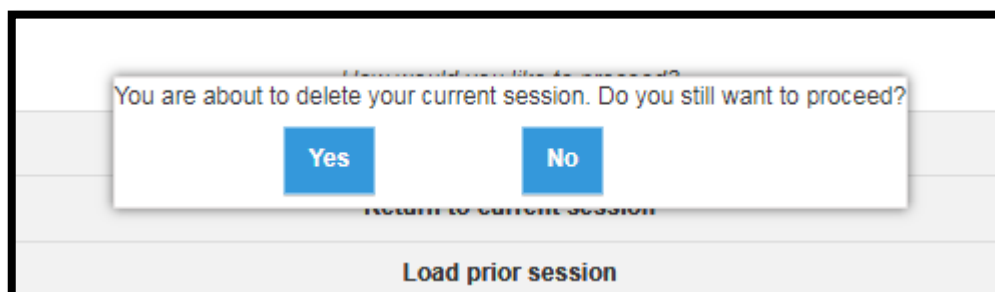
Loading a Prior Session

1. On the home screen, click **Load Prior Session**. Then click the session that you wish to open in the pop-up.
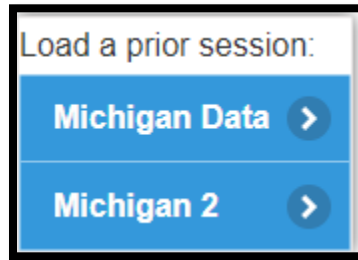
Then you can revisit the quality indicators or edit the data for that session.
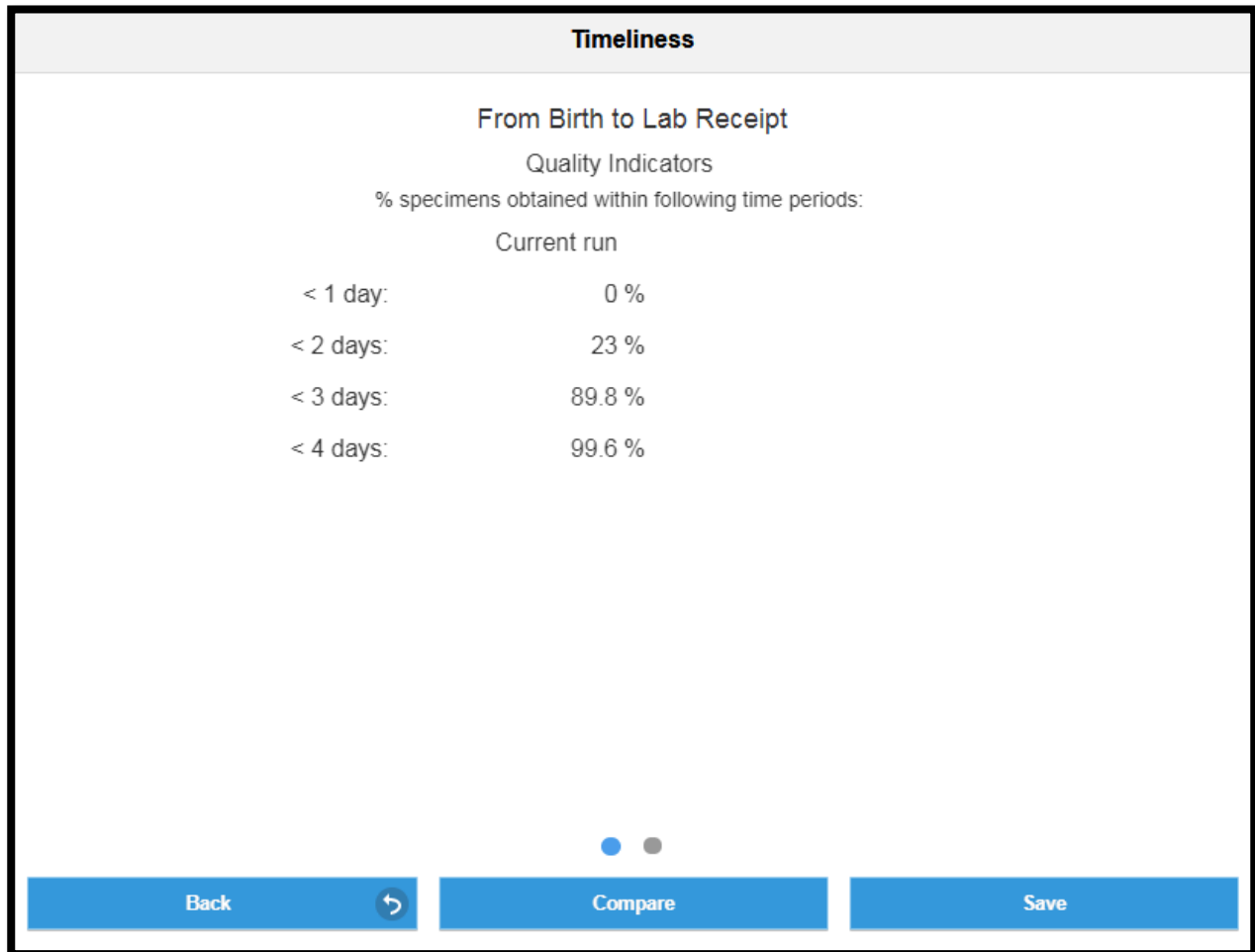
Deleting a Session

1. On the home screen, click **Deleting a Session.** Then click the session that you wish to delete in the pop-up. **Please note:** There is no way to recover a session after it has been deleted.
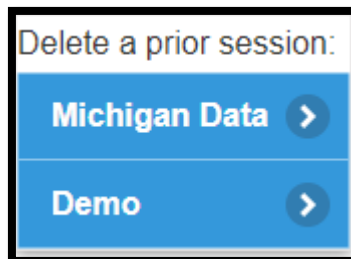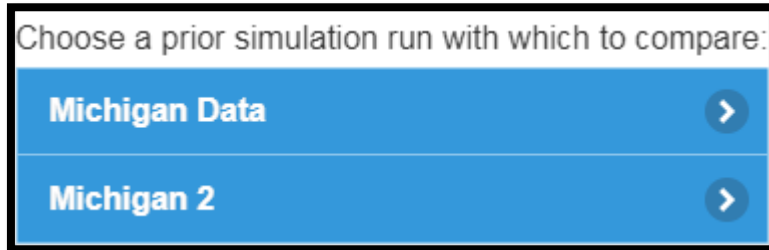
Comparing Sessions

1. Once you have two sessions saved, you can compare their quality indicators. First, load one of the sessions as shown above.

2. Click on the **Compare** button in the bottom middle.

3. Select the session you wish to compare it to from the pop-up.

Choose a prior simulation run with which to compare:

Michigan Data ❯

Michigan 2 ❯

Michigan Data: Data left as is throughout the whole simulator.
Michigan 2: Data modified to have courier pick-up and lab open 7 days a week.

4. You can now compare quality indicators for the two sessions side by side and in the same histogram!

From Birth to Lab Receipt

Quality Indicators

% specimens obtained within following time periods:

	Current run	Michigan 2
< 1 day:	0 %	0 %
< 2 days:	23 %	25.7 %
< 3 days:	89.8 %	99.4 %
< 4 days:	99.6 %	99.7 %

From Birth to Lab Receipt