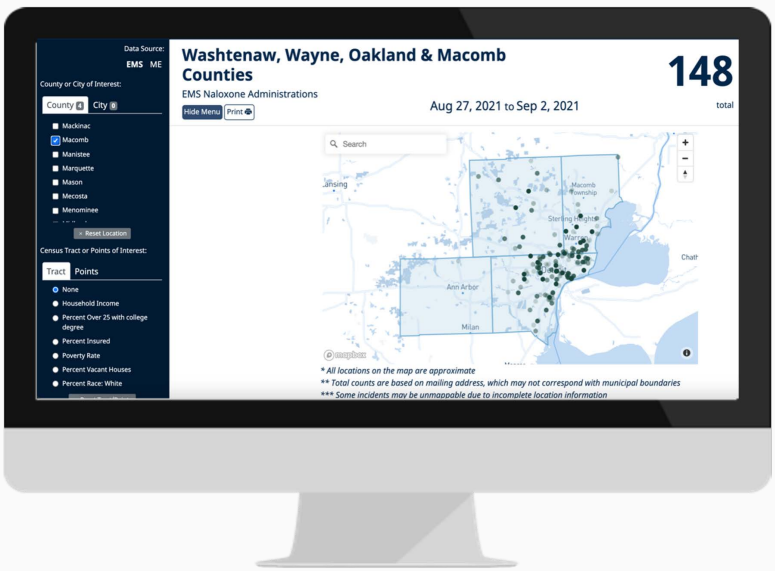
INJURY PREVENTION CENTER
UNIVERSITY OF MICHIGAN

The System for Opioid Overdose Surveillance (SOS) How-To Guide



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Overview of Capabilities

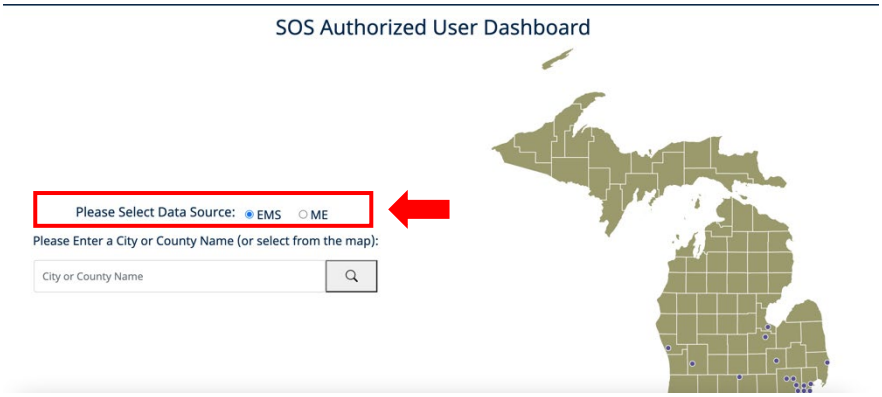
The System for Opioid Overdose Surveillance (SOS) is an integrated data system that automatically takes in, cleans, and displays data on suspected fatal and non-fatal overdose locations in Michigan. Using suspected fatal overdose reports from medical examiners (MEs), and EMS naloxone administration reports, the SOS web interface contains capabilities such as:

- Looking at county-level summaries of year-to-date suspected overdose counts and rates
- Displaying time trends in suspected overdoses within a given county or counties
- Showing approximate spatial trends in suspected overdoses within a county or counties
- Examining demographic breakdowns of suspected overdose victims within a given county or counties and timeframe
- Analyzing temporal and spatial trends, restricted to a user-selected demographic, time period, and county.

1) Authorized User Home Page:

The SOS Authorized User Dashboard Homepage allows you to view data by source and a specific county or city. In order to view the data, select both your data source of interest and a specific location.

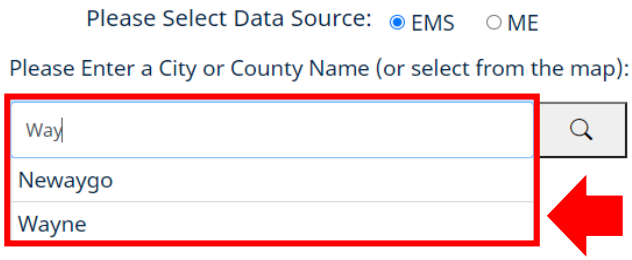
- First, select your data source by toggling between the following options on the left side of the screen:
    i. EMS – Emergency Medical Services
    ii. ME – Medical Examiner
        - **Note: ME data is not currently available for all counties. Users are unable to selects locations without ME data coverage.**



- Then select the county or city of choice through **one of the following methods:**
    i. Click on your county or city of interest on the map to the right of the screen.
        - Counties are outlined in white on the map, while select cities are marked with blue dots on the map.

- As you hover over a specific county or city on the map, it will turn yellow and label which specific county or city it is.
- As soon as you click on a county or city, the Dashboard will immediately take you to that location's data page.

ii. Search for your county or city in the search bar on the left side of the screen.
- As you type, all related options will appear below the search bar. For example, if you want to look at Wayne County, you can start to type "Wayne" into the search bar and it will appear in the options as seen below.



- Click on the county or city of choice from the search bar results and click the grey magnifying glass to go to that location's data page.

Note: While all counties are included in the SOS Dashboard, not all cities are currently available. Available city data is limited to those cities marked on the map.

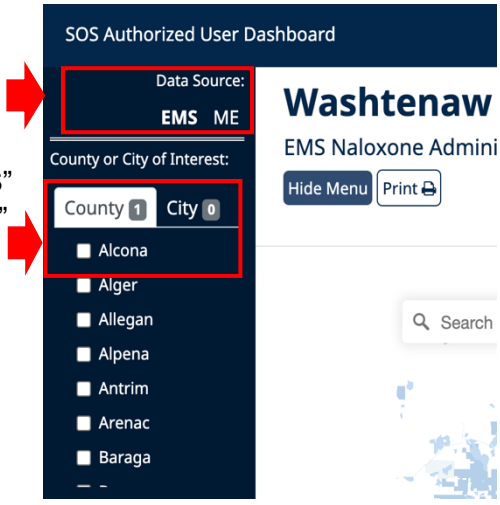
2) Selecting Data

a) Geographic Area of Interest

In addition to selecting geographies from the landing page as described in Section 1, the user will find facilities for selecting areas within the data display page as follows.

- The dark blue navigational panel located on the left side of the webpage called "Options Menu" contains three key navigational elements:
  i. Switching data sources:
  - At the very top of the dark blue panel, you will see a section titled "Data Source" with the options of "EMS" and "ME" listed below. You can click on either "EMS" or "ME" to view the data for each associated data source.

  ii. Switching county or city of interest:
  - Below the data source section on the navigation panel, there is a section titled "County or City of Interest'. Toggle over the headings under County or City to bring up the desired list of geographical regions.

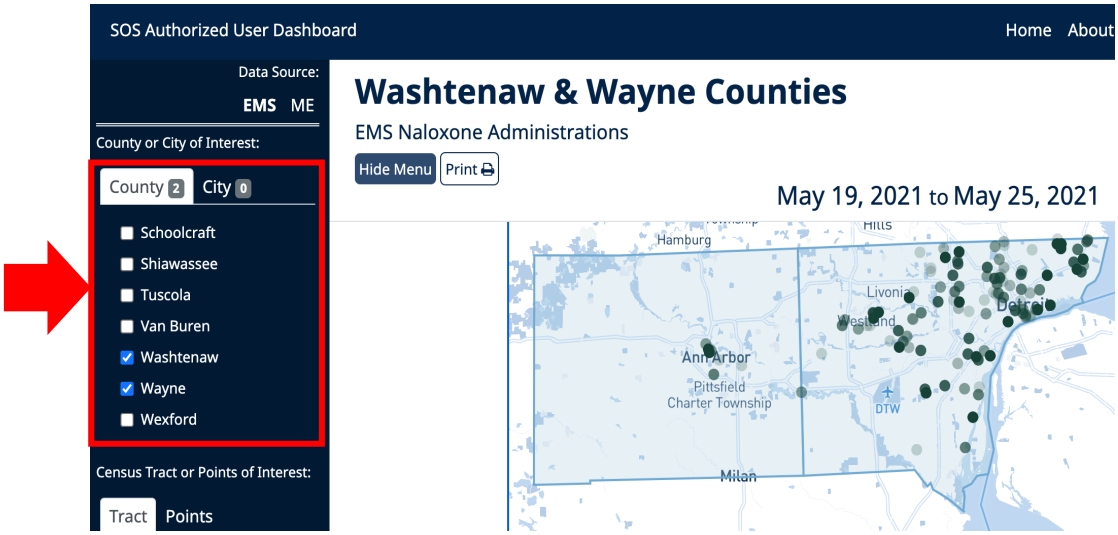


  - To switch to a new county or city, scroll through the alphabetical list of counties or cities and find your desired location. Click on the white box that corresponds with the location. A blue check mark will appear and the system will automatically upload that county or city.

- If you wish to view only the newly selected location's data, scroll to the previously selected county or city and click the blue check mark to unselect your original location selection.

iii. Selecting more than one county or city of interest:

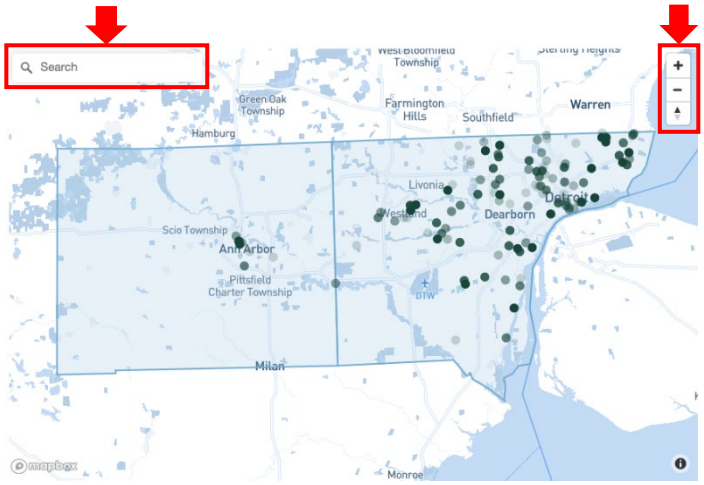
- To view more than one county or city of interest, select all the desired locations from the list. The dashboard will automatically update to display all chosen locations.



- If you wish to return to the original location and remove the other selected areas, scroll down to the bottom of the navigational panel and select the grey Reset Selections button.
- If you wish to view only one of the currently selected locations, rather than reset selections completely, you may hold down the 'Alt' key on your keyboard and click on the singular location you want to view. This will deselect all other locations you had previously selected.

Note: Selecting numerous locations at one time may cause the website to slow

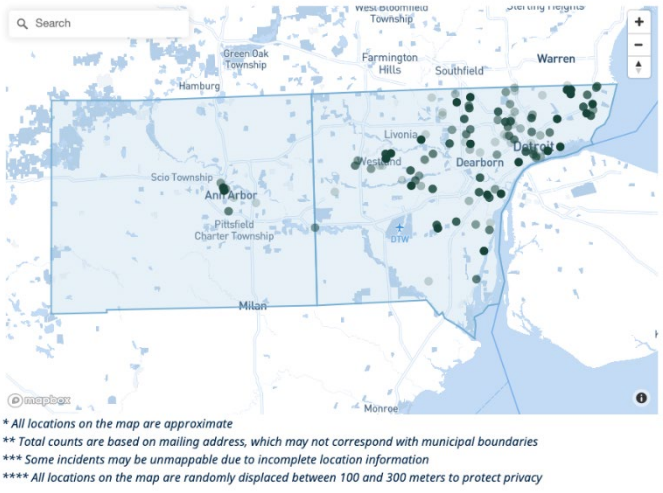
- At the top of the data page, there is a map that visually displays the selected county or city.
  - Within the map, you have the ability to zoom in and out from the current view using the "+" or "-" white buttons on the upper right hand side of the map. All data on the page filters based on the zoom level of the map.
  - You can search for a specific location within the selected county or city by typing in the location name into the white 'Search' bar, next to the magnifying glass in the upper left hand side of the map.

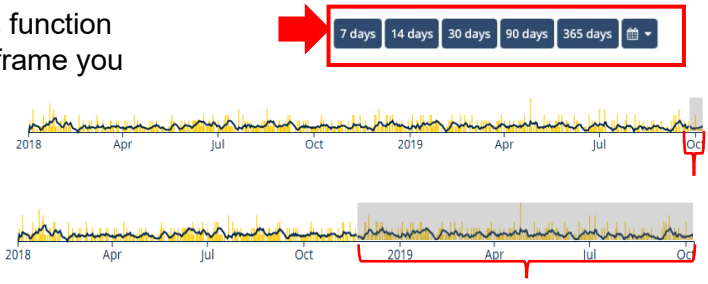


Note: You can only search for specific locations within your selected county(s) or city(s). If you enter in a location outside of your selected area, the data will not automatically update. Instead please navigate to the correct city or county that contains your location of interest.

b) Time period of interest

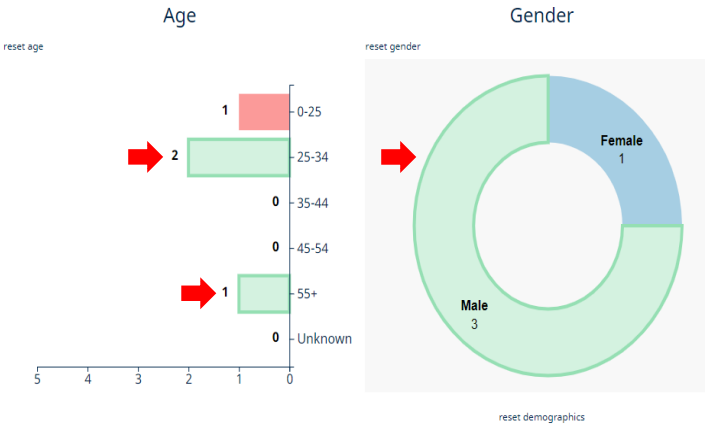
- All data visualizations and summaries update with the time window selected. The selected time displayed in the map can be changed through three different methods:
  i. Below the map, there are five blue buttons showing pre-set time periods. You can click each button to change the time period to display the most recent 7 days, 14 days, 30 days, 90 days, or 365 days.
  ii. Manually select a time period by stretching and/or dragging the grey bar in the second yellow bar chart located below the map. This function allows you to pick any time frame you want by dragging the bar over select times or by extending or decreasing the width of the grey bar over the bar chart, as seen in the images to your right. The time frame dates displayed above the map will change as the grey bar is manipulated.
  iii. Click the calendar function located to the right of the pre-set time periods. Select your desired start and end dates, click 'Apply' and the time frame will update.



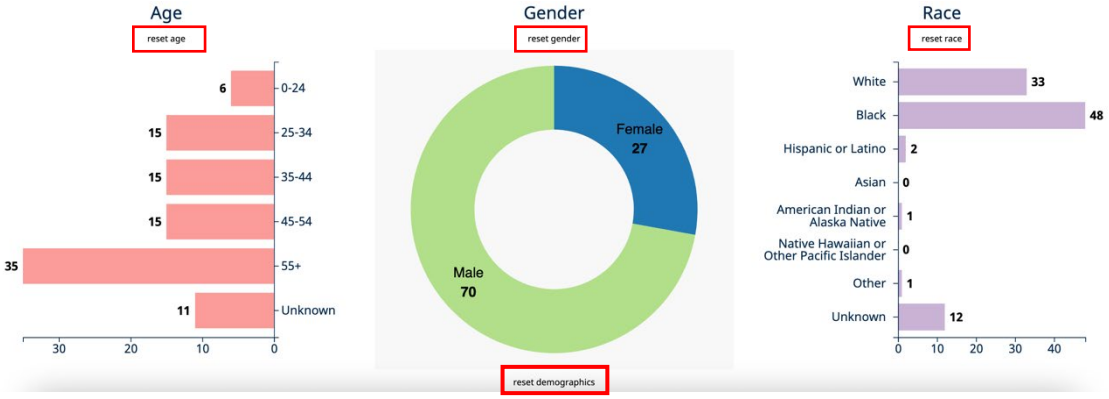


c) Demographic sub-sets of interest

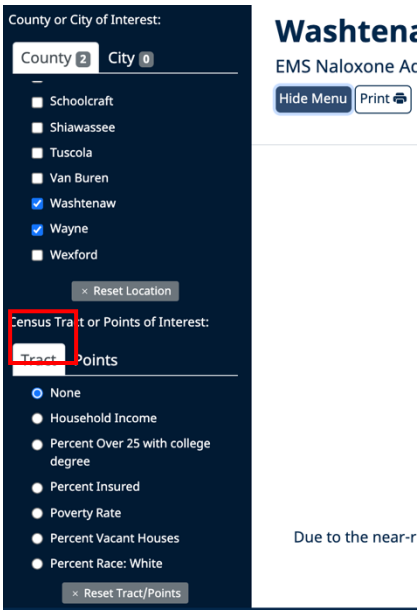
- The demographic bar and pie charts have interactive capabilities both within and across the demographic categories.
  - Within one demographic category, you can click on one or more of the sub-categories and the data will automatically update to reflect the selected categories. The sub-categories will turn green when they are selected.
  - Across demographic categories, you can select multiple sub-categories from each demographic and the data will automatically update to reflect the selected categories. The sub-categories will turn green when they are selected.
    - For example—in the screenshot above, the user has selected Male's, age 25-34 and 55+.



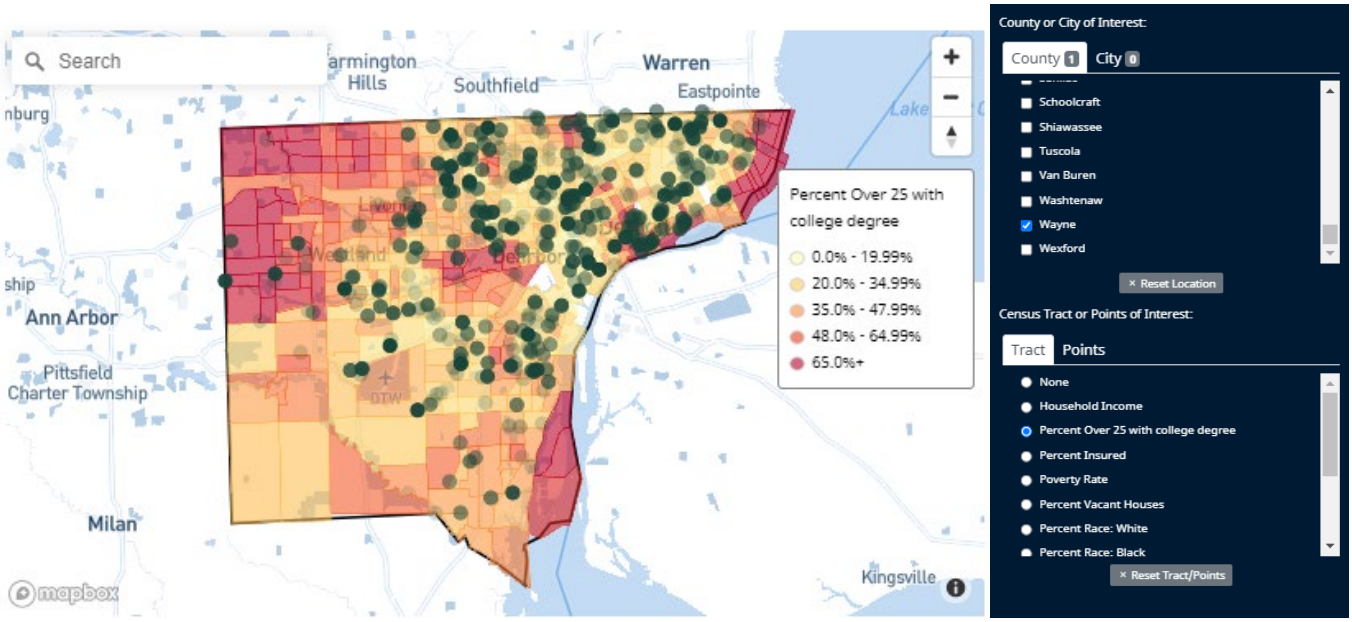
- You can reset the demographics back to their original formatting through two different ways:
  i. Click on the selected green demographics again to unselect them
  ii. Click one of the “reset age”, “reset gender”, “reset race” or “reset demographics” buttons.



d) Data Overlays

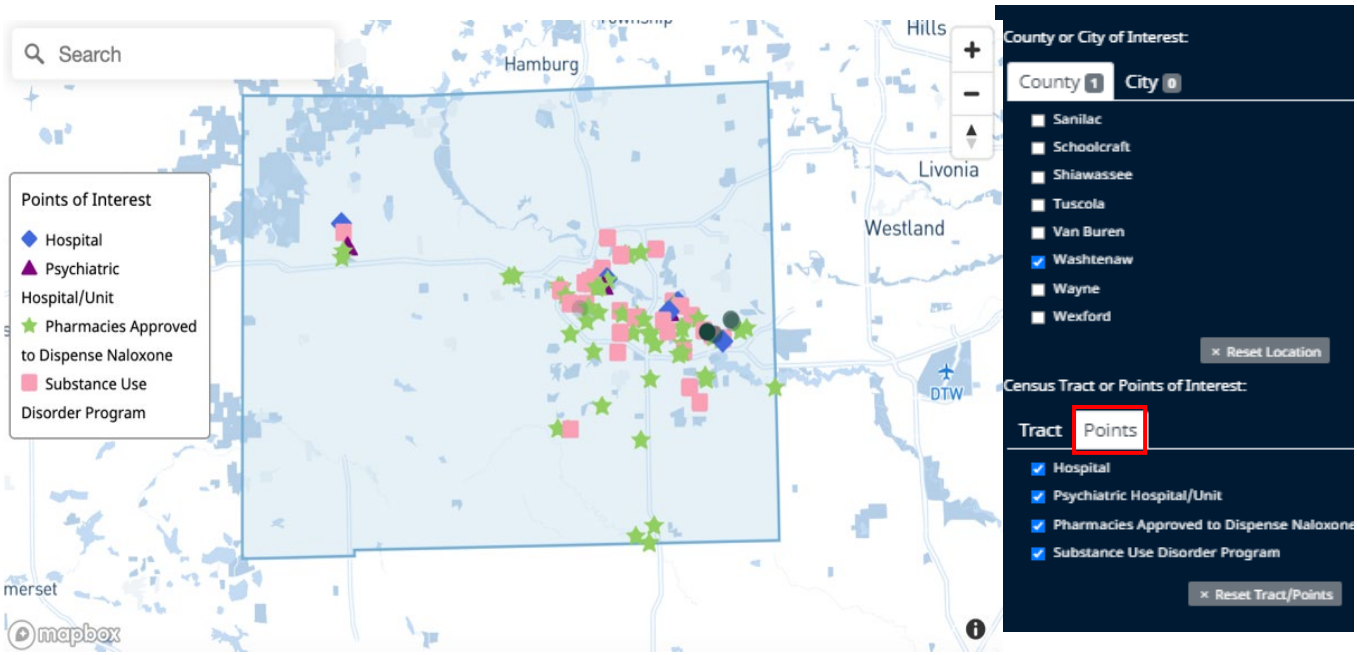


- The SOS dashboard now features the ability to overlay place-based features from publicly available data. These place-based features fall into two categories: area-level characteristics (e.g., demographics), and point locations for certain types of establishments (e.g., hospitals).
- **Area-level characteristics:** Within the SOS dashboard area-level characteristics are captured using data from the 2019 American Community Survey (ACS) at the census-tract level and include: median household income, % of those over 25 that have a college degree, % with health insurance, % of housing units that are vacant, and % within each of several race or ethnic categories.
- To view census tract overlays:
  i. From the main dashboard page, navigate to the panel on the left and select “Options Menu”.
  ii. Scroll down to “Census Tract or Points of Interest” section below the list of counties and cities, and toggle to “Tract.”
  iii. Select the overlay you wish to view. The system will automatically update, and data will overlay on the suspected overdose map.
- If you wish to remove the selected overlay, scroll to the top of the Census Tract list and select none. You may also click the ‘Reset Tract/Points’ button in gray, which will remove all selected overlays
- In this example, we are viewing Wayne County and selected percent over 25 with a college degree as the area-level characteristic of interest. This selection will render the map seen below.



- **Point locations**: Exact point locations for hospitals, psychiatric hospitals, pharmacies approved to dispense naloxone, and substance use disorder programs were taken from the Michigan Licensing and Regulatory Affairs website and can be overlayed on the map with overdose locations.
- To overlay point locations:
    i. From the main dashboard page, navigate to the panel on the left and select “Options Menu”.
    ii. Scroll down to “Census Tract of Points of Interest” below the list or counties and cities, and toggle to “Points"
    iii. Select the point(s) you wish to view. The system will automatically update, and the points of interest will overlay on the suspected overdose map.
        - You can select multiple categories at the same time; each will be displayed with a different shape and color, which will be shown in a legend displayed on the map.

- In this example, we are viewing Washtenaw County and selected all four available point locations. This selection will render the map seen below.



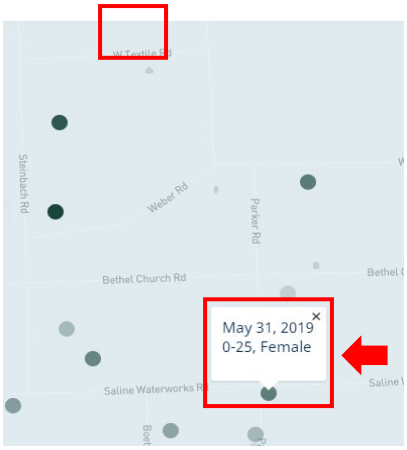
3) Data Display

a) Total Cases

- The top right corner contains the total number of suspected overdoses that have occurred in the selected time period. Displayed directly next to the total is the number of cases that are unmappable due to missing address information.

b) Map of suspected overdoses

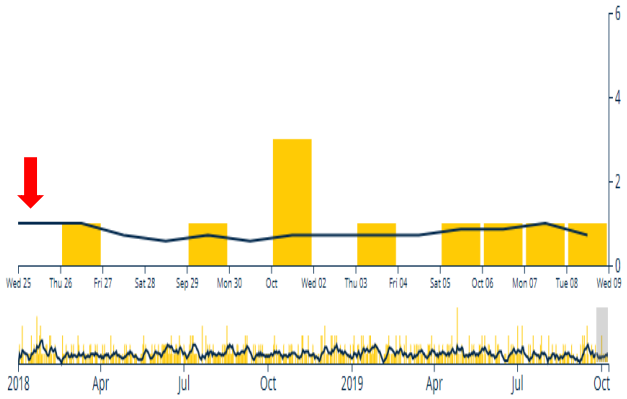
- Green dots found within the map denote suspected overdoses that occurred during the selected time period.
  - The dots are colored in different shades of green depending on when the suspected overdose occurred during the selected time period.
    - The darker green dots denote that the suspected overdose occurred more recently.
    - The lighter green dots denote that the suspected overdoses occurred longer ago (i.e., closer to the beginning of the time period).
  - If you click on one of the dots, a label with details on the suspected overdose incident will be displayed in a label.
  - The date of the suspected overdose is displayed on the first line, and the relevant age range and sex of the individual is displayed on the second line.



c) Time plot with 7-day moving average

- Below the interactive map, two yellow bar graphs are displayed with the following information:

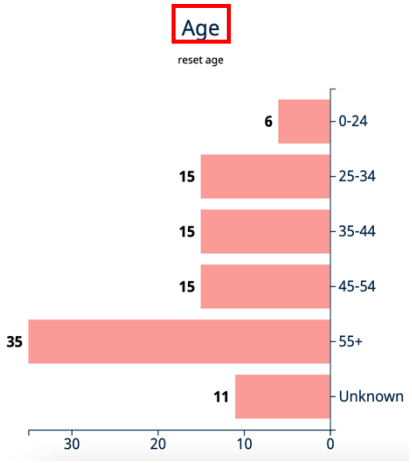
- Suspected overdose incidents by day in selected time period
  - The top bar graph displays the number of overdoses that occurred in each day within the selected time period in yellow. The X axis denotes the specific date associated with each bar of data. The Y axis denotes the number of suspected overdoses.
  - Within the bar graph, there is a dark blue line that runs over the yellow bar graph. This displays the 7 day moving average.
- Suspected overdose incidents by day for year-to-date
  - The bottom bar graph displays the number of suspected overdoses that have occurred from January 1, 2018, up through the most updated date, and provides a basis for manipulating the time window *(see section 2b)*.



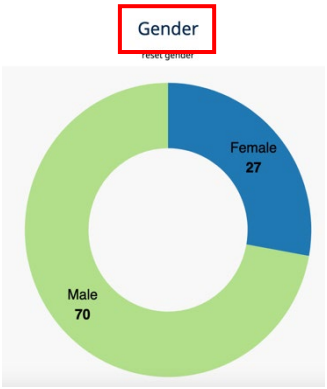
Note: Counts of zero appear in time periods from before data became available.

d) Demographic visualizations

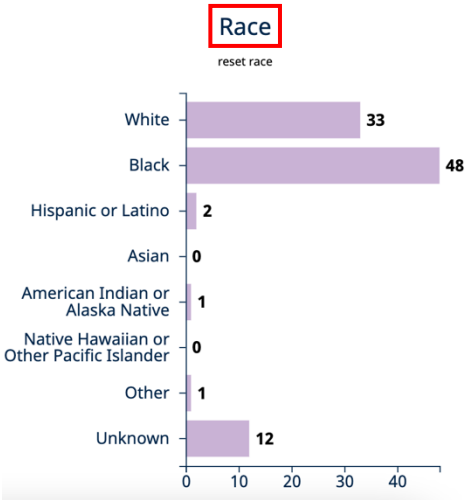
- The demographic data is displayed below the bar charts of suspected overdoses, and includes visual depictions of age, gender, and race, as outlined below:
  - Age
    - The left demographic bar chart in pink displays the ages of the individuals that had a suspected overdose during that time period.
    - The X axis denotes the number of suspected overdoses that occurred within each age group.
      - The Y axis displays the following age groups:
        - 0-24 years' old
        - 25-34 years' old
        - 35-44 years' old
        - 45-54 years' old
        - 55 years and older
        - Unknown



- Gender
  - The middle pie chart displays the gender distribution among individuals that had a suspected overdose during that time period.
    - Individuals identified as Male are in the light green section of the pie chart.
    - Individuals identified as Female are in the dark blue section of the pie chart.
    - Individuals whose genders are unknown are in the dark green section of the pie chart.



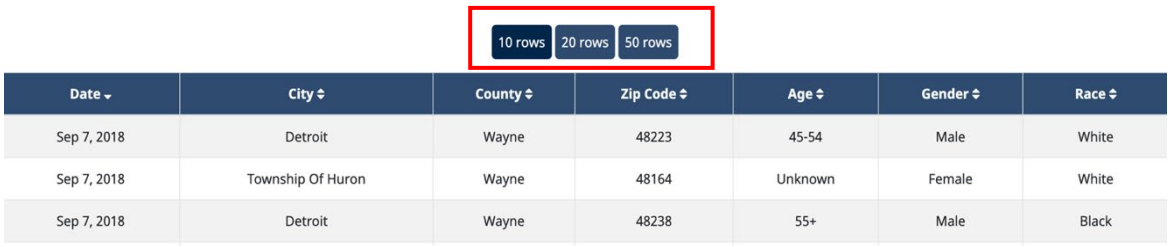
- Race
  - The right demographic bar chart in purple displays the race of the individuals that had a suspected overdose during that time period.
    - The X axis denotes the number of suspected overdoses that occurred within each race category.
    - The Y axis displays the following race categories:
      - White
      - Black
      - Hispanic or Latino
      - Asian
      - American Indian or Alaska Native
      - Native Hawaiian or Other Pacific Islander
      - Other
      - Unknown



Note: Demographic counts may not total incident counts due to missing demographic information.

e) Table

- The table located below the demographic visualizations contains relevant location and demographic information about each suspected overdose for the selected time period.
- Each row includes the following information for each suspected overdose:
  - The date of when the suspected overdose occurred
  - The city where the suspected overdose occurred
  - The county where the suspected overdose occurred
  - The zip code where the suspected overdose occurred
  - The age group of the individual that had a suspected overdose
  - The identified gender of the individual that had a suspected overdose
  - The race of the individual that had a suspected overdose



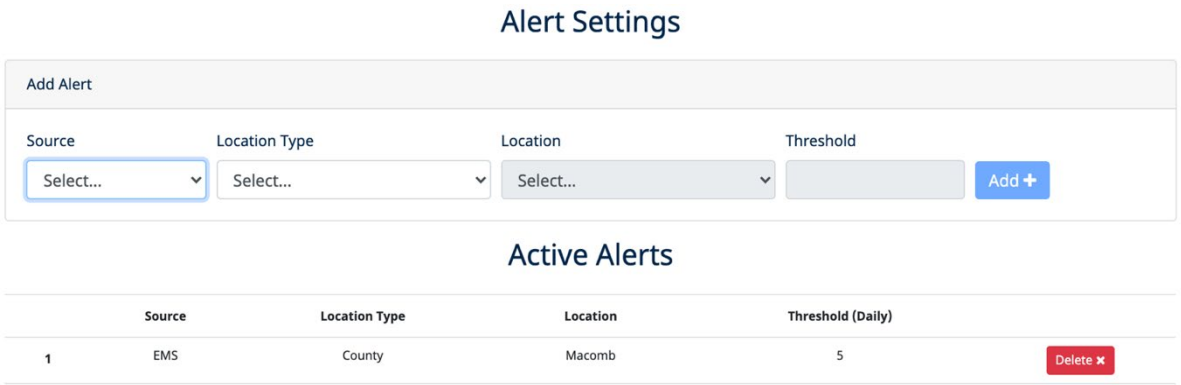
Note: At default, the table displays 10 rows of suspected overdoses. If you wish to view additional suspected overdoses within the same table view, you can click the "20 rows" or "50 rows" buttons above the table to display additional rows.

4) Surge Alerts:

- The SOS dashboard now includes functionality to notify users via their registered email if suspected overdoses exceed their pre-determined threshold value during a one-day period. The user can personalize surge alerts based on the data source (EMS or ME), the location type (city or county), the specific location of interest, and the threshold value.
- To set up a surge alert:
    i. Click on "Account" in the right-hand corner of the webpage. You will be taken to a page called "Alert Settings."

    ii. Select the dropdown menu under Source to select your data source: EMS or ME.
    iii. Select the dropdown menu under Location Type and select County or City.
    iv. Select your desired location from the alphabetized list of counties or cities in the next dropdown menu.
    v. Type your desired threshold value or use the arrows in the box to choose the threshold.
    vi. Click the blue 'Add+' button and your alert will show up as an active alert.

- The alert menu and dropdown menus are depicted in the image below.



Note: You can add numerous alerts for different locations with different thresholds. When alerts are triggered, meaning the designated suspected overdose count threshold is met or exceeded, you will receive an email alert.

- When a surge occurs, the user will be notified via their registered email address. In the above example, we set an alert to notify us when Macomb County met or exceeded 5 suspected overdoses based on the EMS data. This alert was triggered on 8/30/21, which generated the following email:

SOS Alert Notification

Michigan System for Opioid Overdose Surveillance

September 01, 2021

Hello (Registered User Email),

You requested to receive automated alerts from SOS when incident counts met your specified daily threshold. This email is notifying you that one or more of your thresholds was met:

- Macomb County — EMS (Threshold: 5)
  - Aug 30, 2021
    - 6 incident

To add/remove alert notifications please access your account settings.

Due to the near real-time nature of SOS, all data collected is provisional and subject to change. Please feel free to email sos.reports@umich.edu if you have any questions.

Best,
The SOS Team

Note: Occasionally, some data sources are retroactively backfilled for reasons beyond the control of SOS. Therefore, the alert will be triggered <u>the first time</u> the pre-set threshold is exceeded on a given day, even if it is days after the incidents occurred.

5) Report Generation:

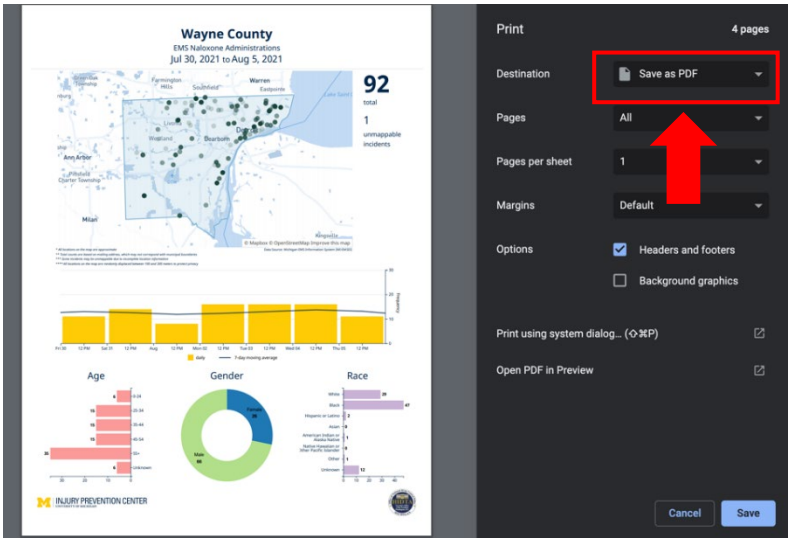
- The SOS Authorized User Dashboard allows users to generate their own SOS reports directly through the interactive dashboard. Reports are generated using the “Print” feature. Users are then able to either print or save this data in PDF format. Instructions on how to save and print to PDF are included below:

<u>a) Generating a SOS Report from the Dashboard</u>

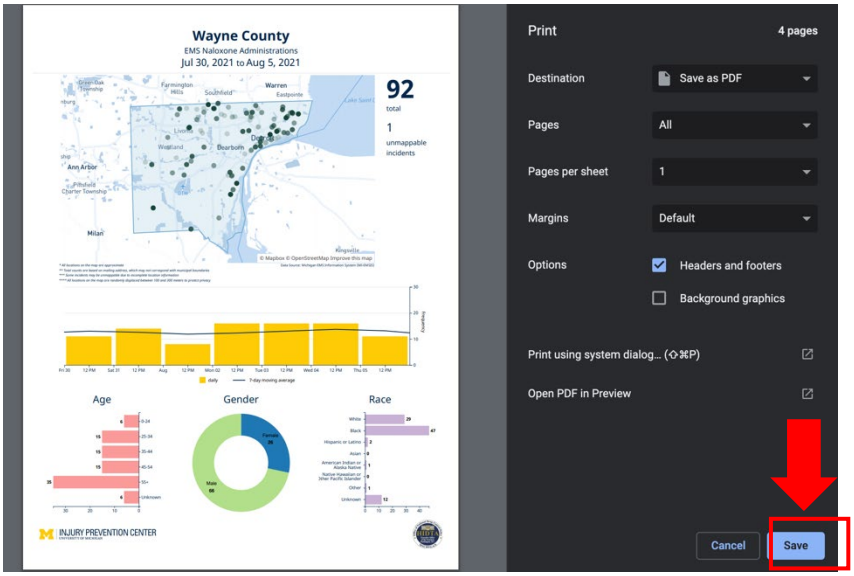
- Once you have accessed the data you wish to generate a report for, navigate to the “Print” button located in the upper left-hand corner of the webpage, directly to the right of the “Options Menu” button. See screenshot below:

b) Save to PDF

- When the print preview displays on the screen, on the right-hand side of this preview you will see “Destination.” The default destination in the dropdown menu should be “Save as PDF.” If not, select “Save as PDF” from the dropdown menu.

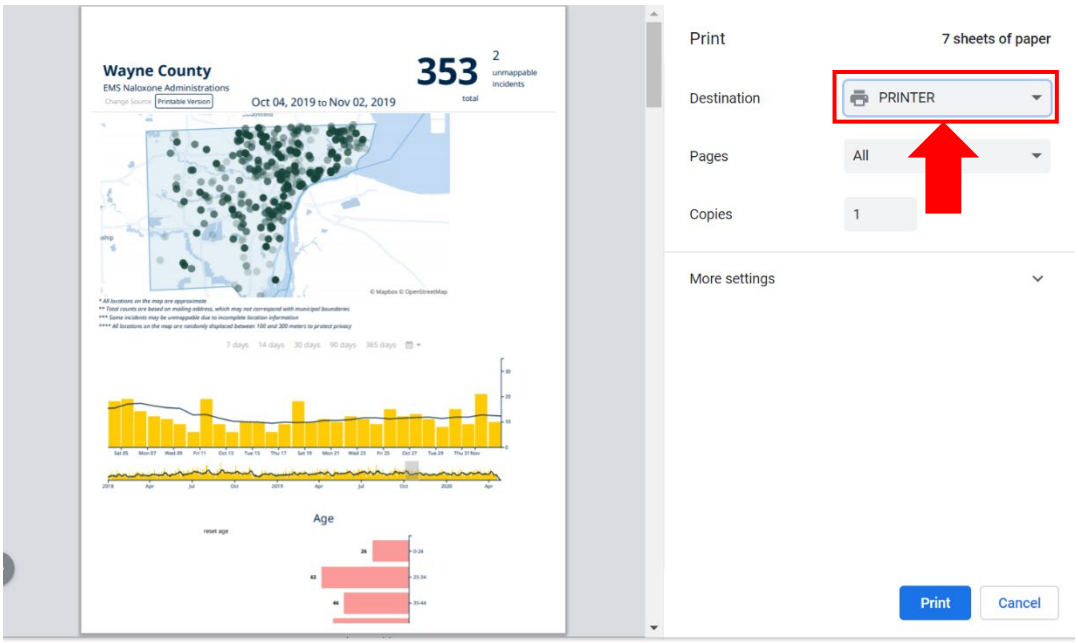


- Select “Save”



c) Printing

- When the print preview displays on the screen, on the right-hand side of this preview you will see “Destination.” From the drop-down menu located next to this, select your desired printer destination.



- Select “Print”