



Wayne County Respiratory Illness Dashboard

Methodology and Technical Notes

Purpose: The Wayne County Respiratory Illness Dashboard provides an overview of respiratory illness trends in Out-Wayne County, which consists of Wayne County excluding the city of Detroit. Information on the dashboard can inform recommendations from healthcare providers and decisions from Out-Wayne County residents about their health and the health of people they care for.

Dashboard Owner and Frequency updates:

This dashboard is maintained and updated weekly on Wednesdays during the respiratory illness season or the next business day when there is a holiday. The respiratory illness season stretches from [MMWR Week 40 through MMWR Week 20](#) (see the *Week of the Year* definition in the *Glossary Definitions* section on Page 10 for more information), which typically aligns with the end of September through mid-May.

For questions, comments, concerns or feedback, please contact epi_info@waynecountymi.gov

Acronyms

- **CDC** – Centers for Disease Control and Prevention
- **Flu** – Influenza
- **MDHHS** - Michigan Department of Health and Human Services
- **MDSS** - Michigan Disease Surveillance System
- **MSSS** - Michigan Syndromic Surveillance System
- **RSV** – Respiratory Syncytial Virus

Overview

The Wayne County Respiratory Illness Dashboard is a resource for healthcare providers and the public to access information about community transmission of respiratory viruses. The dashboard provides data on activity levels, healthcare visits, reported cases, and vaccination coverage with healthcare visits and reported cases presented over time and stratified by age group.

This document summarizes the data sources and methodology followed to produce this dashboard. While activity levels and vaccination coverages for the conditions included in this analysis reflect current levels, data in the Healthcare Visits and Reported Cases pages provide current as well as historic data since 1/1/2023.

Activity Levels Page

This page provides respiratory activity levels for three specific conditions (RSV, Flu, and COVID-19) and overall respiratory activity. These levels measure how many people are seeking medical care and may indicate the level of community respiratory virus activity and severity. Levels are provided at four geographic levels: Out-Wayne County, Metro Detroit, Michigan, and United States. The levels reported in the dashboard reflect activity levels that are evaluated and updated on a weekly basis. They consist of five levels that range from Very Low to Very High as shown in Figure 1.

Estimates for Metro Detroit, Michigan and the United States are obtained from the [CDC Respiratory Illness Data Channel](#). The Metro Detroit activity levels are based on the Wayne County Health Service Area (HSA) which includes four local health department jurisdictions: City of Detroit, Wayne County, Oakland County, and Macomb County. Activity levels for Out-Wayne County are calculated using data from the Michigan Syndromic Surveillance System (MSSS)

Out-Wayne Respiratory Activity Level Methodology

Key Takeaway: The CDC does not provide activity levels for unique jurisdictional boundaries. To generate local levels that can allow for more targeted actionable information a modified CDC methodology was utilized to create five disease activity levels for Out-Wayne County ranging from "Very Low" to "Very High" for the diseases COVID-19, RSV, and Influenza, as well as All Respiratory.

To establish virus-specific activity thresholds for Out-Wayne County, we closely followed the CDC methodology, deviating when needed due to differences in local data availability. The Out-Wayne County activity levels are based on historic total healthcare visits (emergency department and urgent care centers), while CDC's methodology uses emergency department (ED) visits reported through the National Syndromic Surveillance Program (NSSP). To determine regional low-activity weeks, CDC uses test positivity data. However, due to testing data not being available at the local health department jurisdiction level in Michigan, Out-Wayne utilized healthcare visit data to determine weeks of low activity. Specifically, CDC utilizes test positivity cut off percentages for each of RSV, COVID-19 and Influenza to identify weeks of low activity where a low-activity week is one in which all three conditions are below the cut off points. Out-Wayne utilized weeks in which all three of the conditions were below their respective 33rd percentiles. Table 5 summarizes the differences between methodologies. For CDC data notes visit [Respiratory Virus Activity Levels | Respiratory Illnesses | CDC](#) (Centers for Disease Control and Prevention, 2026).

To estimate the Out-Wayne County activity thresholds as well as estimated levels on a weekly basis, data were obtained from the Michigan Syndromic Surveillance System (MSSS). For the threshold estimations we used the three most recent respiratory seasons, with data ranging from July 2nd, 2023-July 4th, 2026 (aligning with MMWR Week 27, 2023-MMWR Week 26, 2026), a 157-week period. Data points extracted from MSSS include weekly visit counts for COVID-19 (MSSS COVID-19 discharge diagnosis [DD] filter), Influenza (MSSS Influenza DD filter), RSV (MSSS RSV DD filter), respiratory illness (MSSS Respiratory syndrome chief complaints [CC]), and total visits. For details on the diagnostic codes used in the filters see Table 4 in the Appendix. Estimates are used to calculate the percent of condition-specific visits each week. See the *Glossary Definitions* for more information on CC and DD.

After data is obtained, the steps listed on Table 1 are taken to calculate activity level thresholds for the current season. Table 2 demonstrates how those thresholds are used weekly to determine current activity levels.

Table 1. Respiratory activity level threshold calculation methodology

Methodology Steps	Hypothetical RSV Scenario
Step 1. Percent of Attributable Healthcare Visits Calculate the percentage of total healthcare visits that were associated with each condition (RSV, COVID-19, Influenza, and All Respiratory) for each week in the 157-week period.	Calculate the percentage of all healthcare visits attributed to RSV for a given week in the 157-week period. <u>Example:</u> <i>In the given week, there were 10,000 total healthcare visits in Out-Wayne County and 50 of those visits were attributed to RSV.</i> $RSV\ Visits_{Given\ Week, \%} = \frac{50}{10,000} * 100 = 0.5\%$
Step 2. Low Activity Weeks The estimates from Step 1 are ranked from highest to lowest for each condition in the 157-week period. Based on the rankings, the bottom 33rd percentile of healthcare visit rates for each of the three conditions (RSV, COVID-19, and Influenza) is identified. Weeks in which all three conditions fell within the bottom 33% were classified as low-activity weeks.	There are 157 total weeks examined in the three-year period. <u>Example:</u> <i>10 weeks were found to be in the lowest 33rd percentile for all three conditions, Weeks 17, 18, 112, 122, 123, 124, 128, 131, 138, and 139. These are the low-activity weeks for this example.</i>
Step 3. Low Activity Statistics The mean (average) and standard deviation of healthcare visits are calculated for each condition during the low-activity weeks.	<u>Example:</u> <i>For the low-activity weeks for RSV:</i> <i>Mean = 0.005% of total healthcare visits</i> <i>Standard Deviation = 0.0010% of total healthcare visits</i>
Step 4. Maximum Standard Deviation (N) A maximum standard deviation value (N) was calculated utilizing the mean and standard deviation of the low activity weeks and the maximum value of healthcare visits for the entire three-year period for each condition using the following formula: $N = \frac{(maximum\ observed\ value - mean)}{standard_deviation}$	<u>Example:</u> <i>Maximum percent of total healthcare visits for RSV over the entire three-year period = 1.1%</i> $N_{RSV} = \frac{1.1\% - 0.005\%}{0.0010\%} = 1,095$
Step 5. Threshold Deviation	<u>Example:</u>

A threshold deviation is then calculated for each condition by dividing N by 4 and multiplying by standard deviation, this value is denoted as D $D = \left(\frac{N}{4}\right) * standard_deviation$	<i>Threshold Deviation for RSV is calculated below.</i> $D_{RSV} = \left(\frac{1,095}{4}\right) * 0.0010\% = 0.27\%$
Step 6. Respiratory Activity Thresholds Respiratory virus activity levels are defined as follows: • Very Low: $value \leq mean$ (activity at or below baseline) • Low: $mean < value \leq mean + D$ (up to 1 threshold deviation above baseline) • Moderate: $mean + D < value \leq mean + 2 * D$ (between 1 and 2 threshold deviations above baseline) • High: $mean + 2 * D < value \leq mean + 3 * D$ (between 2 and 3 threshold deviations above the mean) • Very High: $mean + 3 * D < value$ (more than 3 threshold deviations above the mean)	<u>Example:</u> <i>RSV Thresholds, X represents the current week's percent of total healthcare visits.</i> Very Low: $X \leq 0.005\%$ Low: $0.005\% < X \leq 0.005\% + 0.27\%$ Moderate: $0.005\% + 0.27\% < X \leq 0.005\% + 2(0.27\%)$ High: $0.005\% + 2(0.27\%) < X \leq 0.005\% + 3(0.27\%)$ Very High: $X \geq 0.005\% + 3(0.27\%)$ <u>Example RSV Final Thresholds</u> Very Low: $\leq 0.005\%$ Low: $0.005\% - 0.275\%$ Moderate: $0.276\% - 0.545\%$ High: $0.546\% - 0.815\%$ Very High: $\geq 0.816\%$ <i>Note: example does not align with actual RSV thresholds calculated below in Figure 1.</i>

All Respiratory					
Level	Very Low	Low	Moderate	High	Very High
Value Range	<=12.521%	12.522%-16.058%	16.059%-19.595%	19.596%-23.132%	>23.132%

COVID-19					
Level	Very Low	Low	Moderate	High	Very High
Value Range	<=0.3965%	0.3966%-1.7965%	1.7966%-3.1965%	3.1966%-4.5965%	>4.5966%

Influenza					
Level	Very Low	Low	Moderate	High	Very High
Value Range	<=0.0922%	0.0923%-3.3525%	3.3526%-6.6128%	6.6129%-9.8731%	>9.8731%

RSV					
Level	Very Low	Low	Moderate	High	Very High
Value Range	<=0.0073%	0.0074%-0.3073%	0.3074%-0.6073%	0.6074%-0.9073%	>0.9073%

Figure 1. Respiratory level values calculated for the 2026-2027 season.

Once the activity levels are calculated for the current season (Figure 1), they can be used to determine the current week's activity level for each condition. See Table 2 below.

Table 2. Calculating the Current Week's Activity Levels

Methodology Steps	Hypothetical RSV Scenario
Step 1. Percent of Attributable Healthcare Visits Take the total number of each condition's healthcare visits for a given week and divide by the total healthcare visits for that same week.	<i>In Out-Wayne County RSV has 75 associated healthcare visits in Week 51.</i> <i>There were 10,000 total healthcare visits in Week 51 in Out-Wayne.</i> <i>RSV % of Total Healthcare Visits for Week 51 in Out-Wayne = $75/10,000 \times 100 = 0.75\%$</i>
Step 2: Compare with condition specific threshold levels for the season Use the thresholds calculated above in Figure 1 to identify which range the percent of total healthcare visits falls into for each condition. Use the respective condition row of the figure that corresponds with the condition used for the percent of total healthcare visits.	<i>RSV in Week 51 accounted for 0.75% of total healthcare visits in Out-Wayne County.</i> <i>Looking at Figure 1 above in the RSV section, we can see that 0.75% would fall into the "High" range (0.6074%-0.9073%)</i> <i>Therefore, RSV in Week 51 is High</i>

Healthcare Visits Page

This page summarizes trends from 2023-current season as well as age group breakdown of healthcare visits, meaning ED and UC visits related to RSV, Flu, COVID-19 and overall respiratory activity, in Out-Wayne County. This data comes from the Michigan Syndromic Surveillance System (MSSS).

- Data is presented as a percentage of total healthcare visits for each condition and syndrome.
- Age group breakdown is for the percentage of healthcare visits amongst all healthcare visits in that age group, not total healthcare visits overall.
 - *i.e. If there are 100 total healthcare visits in a week and 10 of those total healthcare visits were in the 0–4-year age group, the denominator would be the latter (10) for the age group-specific percent of healthcare visits among the 0–4-year age group.*
 - Age groups included:
 - 0-4 years (infants and preschool-aged children)
 - 5-17 years (school-aged children)
 - 18-64 years (adults)
 - 65+ years (elderly)

Reported Cases Page

This page provides a summary of RSV, Flu, and COVID-19 cases as reported to the Michigan Disease Surveillance System (MDSS). Positive molecular and rapid antigen tests and sequencing results for influenza, COVID-19, and RSV are required to be reported by laboratories capable of sending electronic messages, including electronic laboratory reporting (ELR), electronic case reporting (eCR), and CSV Upload. ([Respiratory-Virus-Reporting-Requirements_FINAL.pdf](#)). Cases are included in the analysis if their status at the time of export is set to Active, Completed, Completed-Follow Up, New, Review and their home address is within Out-Wayne County. Superseded and Canceled cases and cases outside of Out-Wayne County are excluded from the analysis (Michigan Department of Health and Human Services, 2026). The referral date (typically the date a case is first reported to the MDSS) is used to determine the week in which that case is allocated.

This data is displayed by year and by age group. Age groups included in the analysis are 0-4 years, 5-17 years, 18-64 years, and 65+ years. Data by year is shown as counts while data by age group is displayed as rates per 100,000 people to allow for comparisons between groups. Data for this page is obtained from the MDSS. For privacy and to align with the

department's data suppression policy, counts of 5 cases or fewer are suppressed and displayed as 0 cases or 0 cases per 100,000 population in the visualization.

Age group-specific rates are calculated using population estimates from the 2024 American Community Survey (ACS 5-Year Estimates) for Out-Wayne County (U.S. Census Bureau, n.d.)

Table 3. Population Estimates for Out-Wayne County

Age Group	2024 Population Estimate
Total	1,133,729
0-4 years	67,651
5-17 years	192,425
18-64 years	676,408
65+ years	197,245

Case rates are calculated using the formulas below:

- $\text{Case rate per 100,000 population} = \frac{\text{Total Cases}}{\text{Population estimate}} * 100,000$
 - *Note: There is no age-adjustment for the overall rate*

Reporting requirements for RSV and Flu Cases changed recently.

As of January 1st, 2026, RSV and Flu are now mandatorily reportable for healthcare providers with electronic case reporting capabilities which may increase case counts moving forward.

As such, case counts may not be entirely representative of the burden experienced. Post January 1st, 2026, an increase in case count does not necessarily mean an increase in disease burden but rather may be an increase in reporting. Caution should be utilized when comparing case rates before and after January 1st, 2026, due to this change in reporting requirement. [Respiratory-Virus-Reporting-Requirements_FINAL.pdf](#) (Michigan Department of Health and Human Services, 2026).

Vaccination Page

This page contains data on vaccination coverage among all Out-Wayne County residents for COVID-19 and Influenza and among Out-Wayne residents 50 years and over for RSV. Vaccine coverage estimates are obtained from MDHHS Respiratory Disease Reports Dashboard [Respiratory Disease Reports](#). (Michigan Department of Health and Human Services, 2026)

Data Limitations

The data sources utilized within this dashboard have some notable limitations.

- All surveillance data is transient and occurs 24/7. There can be a delay in cases and healthcare visits being reported into surveillance systems. All data is considered preliminary and is subject to change.
- MSSS is a voluntary reporting system with over 95% of healthcare facilities participating in the Out-Wayne County region.
- MSSS visit address is based on the patient's address and not the facility's address, so data does not account for individuals who access care at Out-Wayne facilities that are not Out-Wayne residents.
- Influenza and RSV may be undercounted prior to the new reporting requirements introduced January 1st, 2026, which makes comparing year to year difficult for these two conditions.
- By utilizing a 3-year period to determine respiratory disease baseline activity levels, the levels are potentially more susceptible to uncharacteristic respiratory seasons than if a longer period was utilized.

Glossary Definitions

- **Chief Complaint (CC):** Primary reason for a visit to an emergency department or urgent in the patient's or provider's own words
- **Diagnostic codes** – Codes that detail the official diagnosis that is reported for billing purposes for a healthcare visit. There are multiple universal code systems with ICD-10 being the most recent and currently used, SNOMED and ICD-9 were also both used historically and are included in the MSSS filter criteria (Table 4) to capture any facilities still using the outdated coding systems.
- **Discharge Diagnosis (DD)** – Diagnostic code assigned to a healthcare visit.
- **Healthcare Visits** – Visits to emergency departments (ED) and urgent cares (UC)

- **Health Service Area (HSA)** – CDC defined geographical region. Oakland County, Wayne County, City of Detroit, and Macomb County. This is denoted as “Metro Detroit” in the dashboard (Centers for Disease Control and Prevention, 2026)
 - Below in Figure 2 the entire CDC Wayne County HSA is outlined in black and filled in. The light blue is the portion that is Out-Wayne.

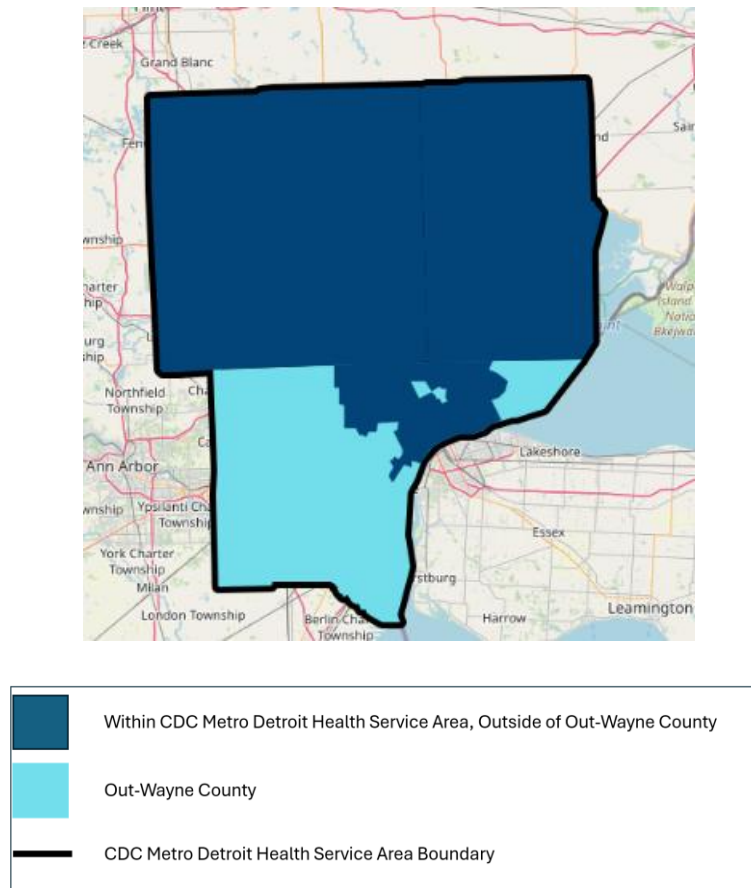


Figure 2. CDC Metro Detroit Health Service Area with Out-Wayne County portion defined

- **Out-Wayne** - Wayne County Health Department’s jurisdiction which contains all of Wayne County excluding the city of Detroit which is served by the City of Detroit Health Department
- **Reported Cases** – Individuals who tested positive for a reportable condition, and that positive test was reported to public health
- **Week ending dates** – The last day of the weekly reporting period, Saturday dates. Data for each reporting period consists of data from the Sunday through Saturday (week-ending date)

- ***Week of the Year*** - Standard week numbers that are used by the CDC for disease surveillance purposes across a variety of conditions. These weeks align closely, but not perfectly, with the regular calendar year. Week 1 typically aligns closely with the first full week of January and week 52 typically aligns closely with the last full week in December. Because these weeks do not align perfectly with years there are some Week 1s and Week 52s that contain days in multiple years. Furthermore, there is occasionally a Week 53 in a calendar year, which occurred in 2025. See this link provided by the CDC to see how the 2025 and 2026 week calendars look. [CDC MMWR Week Log 2025-2026](#)

Appendix

Table 4. Diagnostic codes for MSSS Condition Filters

MSSS Condition Filter	Diagnostic Codes
RSV DD	B97.4, B974, J12.1, J121, J20.5, J205, J21.0, J210, 466.11, 46611, 480.1, 4801, 079.6, 0796, 55735004, 408684006, 195881003, 10625551000119103, 57089007, 195739001, 79479005, 195727009, 72204002, 31309002
COVID-19 DD	J12.81, U07.1, U071, J1281, 840539006, 840544004, 840533007
Influenza DD	J09, J10, J11, all codes beginning with 487. or 488.

Table 5. Differences in Out-Wayne vs CDC Methodology

Portion of Methodology with Difference	CDC Methodology	Out-Wayne Methodology
Syndromic Surveillance Data Source	National Syndromic Surveillance Program (NSSP) Emergency Department Visits Hospitalization Data	Michigan Syndromic Surveillance System (MSSS) Emergency Department and Urgent Care Visits
Data Source for Determining Low-Activity Weeks	Test positivity data for each condition	MSSS Emergency Department and Urgent Care Visits
Method for Determining Low-Activity Weeks	Utilized cutoff points for weekly percent test positivity for each condition for the previous two respiratory seasons. Selected weeks where all three conditions were low-activity based on test positivity cutoff points.	Identified weeks in the previous three respiratory seasons where each condition's weekly percent of total healthcare visits was in the lower third (below the 33 rd percentile) of the respective condition's weekly percent of total healthcare visits for the entire three season period.

Data Sources

Centers for Disease Control and Prevention. *Respiratory Illnesses Data Channel*. Retrieved from cdc.gov: <https://www.cdc.gov/respiratory-viruses/data/index.html>

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U.S. Census Bureau. (n.d.). *American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B01001*. Retrieved from https://data.census.gov/table/ACS5Y2024.B01001?q=B01001&g=050XX00US26163_160XX00US2622000.