

Date: Tuesday, October 5, 2021
To: Participating Health Care Providers
From: Influenza Surveillance Coordinators:
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2020-2021 Season Summary

Nationally the 2020-2021 influenza season observed unusually low activity levels for both influenza-like illness (ILI) and influenza. ILI activity in the United States increased at week 41 (1.3%) and peaked at week 48 (1.6%) [Figure 2]. While in Washoe County, ILI activity began to increase during week 43 (1.3%) and peaked during week 53 (3.0%) [Figure 2]. Washoe County experienced the lowest level of ILI activity this season compared to the last four seasons [Figure 3]. Current national disease burden estimates for the 2020-2021 influenza season were not available.

In Washoe County, specimens collected by sentinel providers from patients exhibiting ILI symptoms are submitted to the Nevada State Public Health Laboratory (NSPHL) for subtyping. The samples submitted during the 2020-2021 season for surveillance purposes tested negative for influenza and no subtypes were identified [Figure 4].

There were 11 influenza related hospitalizations reported during the 2020-2021 season in Washoe County [Table 2]. Of the hospitalized cases, rapid diagnostic test results showed that 54.5% identified as influenza type A and 45.5% identified as influenza type B. Only 36.4% of those hospitalized cases were vaccinated with a seasonal flu vaccine [Table 2].

Washoe County concluded the 2020-2021 season with a total of 677 pneumonia, influenza, and COVID-19 (PIC) deaths, with a cumulative seasonal rate of 15.4% [Figure 7]. PIC deaths peaked in week 53 (35.3%), however, remained above the national epidemic threshold from week 46 through week 8. Only one influenza related death was reported this season. The total number of respiratory syncytial virus (RSV) cases reported during the 2020-2021 influenza season was five.

Survey Results for the 2020-2021 Weekly Summary Changes

During the 2020-2021 influenza season, the WCHD's Epidemiology Program included COVID-19 data in the weekly summary reports. A survey was designed to assess the utility of including COVID-19 data in the ILI Weekly Summary Reports. The survey was sent to the recipients of this report and was posted on the WCHD Influenza webpage. Respondents ranged in profession and identified as the following: governmental public health professionals (41.2%), physicians (17.6%) and non-governmental public health professionals (17.6%), infection preventionists and other stakeholder types (11.8%). Survey results indicated 43.8% of respondents would like to see PIC deaths displayed as currently seen, and 37.5% prefer the data in the ILI-CLI graph displayed independent of one another.

Discussion

There were several contributing factors to the abnormally lower levels of viral respiratory pathogens contributing to influenza-like illness and fewer confirmed cases of influenza during the 2020-2021 influenza season, compared to recent years. Many of the factors contributing to low levels of influenza virus and other viral respiratory pathogens circulating were directly related to the COVID-19 pandemic including changes to health-seeking behaviors, diminished or altered provider testing and diagnostic capacities, varied levels of implementation of and adherence to non-pharmaceutical interventions (NPI), and, other factors such as viral interference, which may not yet be fully understood.

Influenza patterns in the winter seasons of Southern Hemisphere are normally used as a reference to help predict the upcoming flu season for the Northern Hemisphere. However, this year, as COVID is a global pandemic, there were also inconsistent and low influenza cases for the Southern Hemisphere. The primary concerns with this upcoming influenza season include the low levels of circulating influenza virus last season, which leaves less of the population with natural immunity due to lack of exposure and illness during the preceding season. Due to lower levels of influenza virus circulating, the annual quadrivalent influenza vaccine for the 2021-2022 season was composed with fewer data points and the vaccine and future circulating flu viruses may not be matched well. Additionally, a reemergence of suppressed respiratory viruses is possible since the usage of NPI has changed and varies state to state and even county to county. Schools, daycares, and businesses that were once closed are now back in session throughout the nation. Although short lived, face mask usage in the U.S. declined due to the CDC no longer recommending face masks for those fully vaccinated against COVID-19.¹² As a result of reduced NPI implementation, data from the National Respiratory and Enteric Virus Surveillance Systems (NREVSS) has shown an upward trend of RSV since March of 2021, with unusually high cases being reported in June 2021. These cases are outside its typical seasonal period of October-May.¹³ It is possible ongoing changes to NPI or viral interference attributed to large numbers of people becoming infected with the COVID-19 Delta variant will once again affect the circulation of influenza and other respiratory illnesses.

The 2020-2021 influenza season in Washoe County saw historically low respiratory illnesses, not only the flu but other diseases such as RSV. At the close of the season, cumulative flu hospitalization rates were 2.3 per 100,000 population and ILI activity peaked at 2.6%. For comparison, the 2019-2021 influenza season hospitalization rate was 58.2 per 100,000 population and peaked at 4.2%. Similarly, the RSV activity was minimal during this flu season compared to the previous years (771 RSV cases for the 2019-2020 flu season in Washoe County). This trend is not unique to only Washoe County but was illustrated worldwide. Surveillance of the Southern hemisphere's influenza season (June-August) demonstrated low flu circulation in 2020 indicating the Northern hemisphere would likely experience the same movement.¹ Although not included in the flu surveillance report, other respiratory illnesses such as the common cold, parainfluenza, human metapneumovirus, and respiratory adenoviruses also followed a similar seasonal pattern. Reductions in respiratory illnesses can be attributed to the global pandemic and stronger mitigation efforts to stop the spread of COVID-19.

With the ongoing pandemic, the predictability of the 2021-2022 influenza season is variable. The next flu season has the propensity to be more severe than expected due to the low flu activity seen in the 2020-2021 season. This could lead to a reduction in natural immunity among the population to protect from future exposures. Natural immunity from influenza infection has been shown to last longer than vaccine induced immunity which wanes over a period of months.^{9,10,11} The early increase in RSV cases during the summer months is an indication that low natural immunity and changes to non-pharmaceutical interventions can cause an earlier respiratory disease spike.

Figures and Tables

Figure 1. ILI Activity Reported by Sentinel Providers by Age Group, Washoe County Influenza Surveillance, 2020-2021

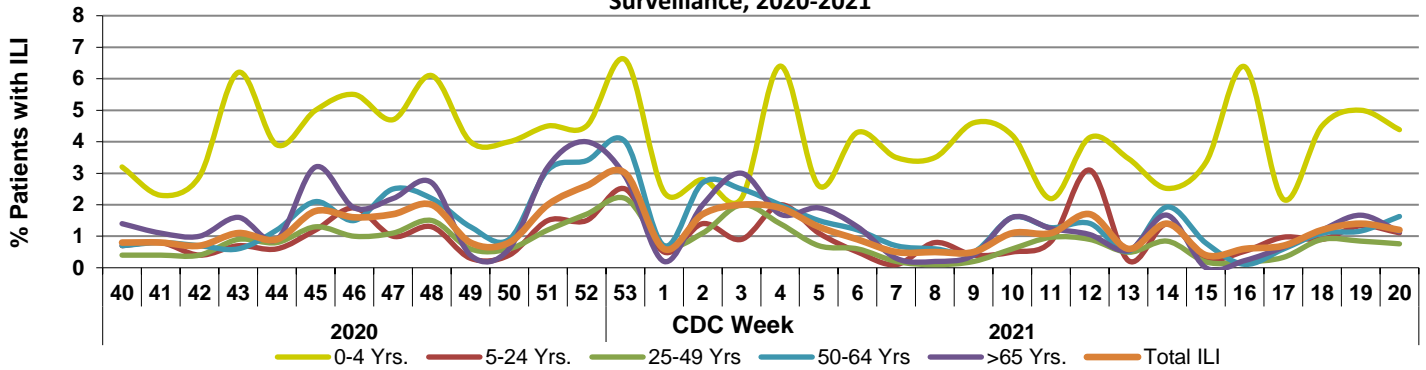
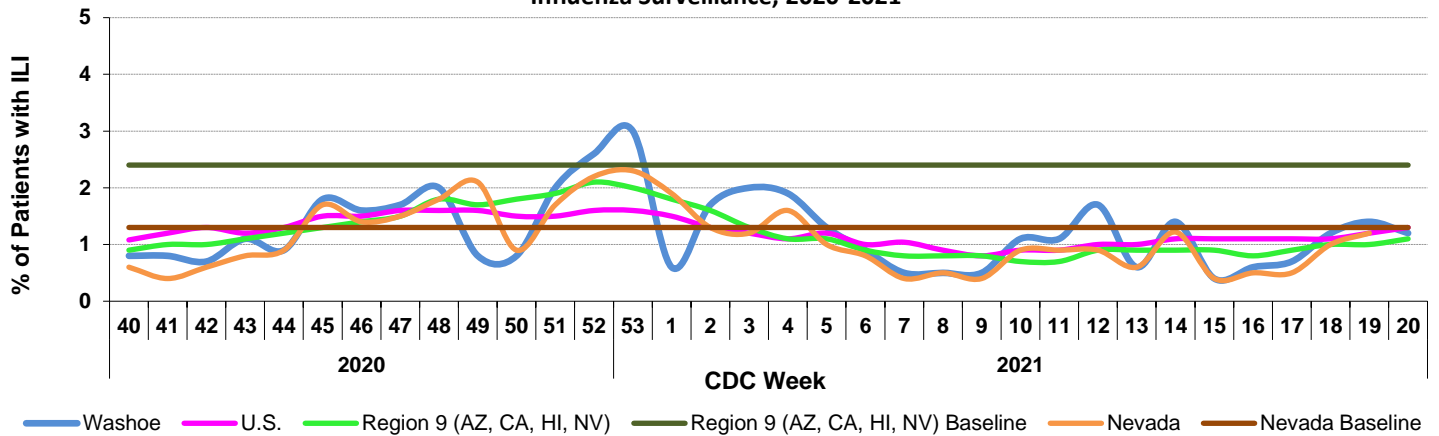


Figure 2. Comparison of ILI Activity at the Local, State, Regional, and National Level, Washoe County Influenza Surveillance, 2020-2021



Data source for U.S., Region 9, and Nevada ILI activity and baselines: CDC Flu View Interactive, <https://www.cdc.gov/flu/weekly/fluviewinteractive.htm>

Figure 3. Washoe County ILI Activity Reported by Sentinel Providers 2016-2021 Seasons

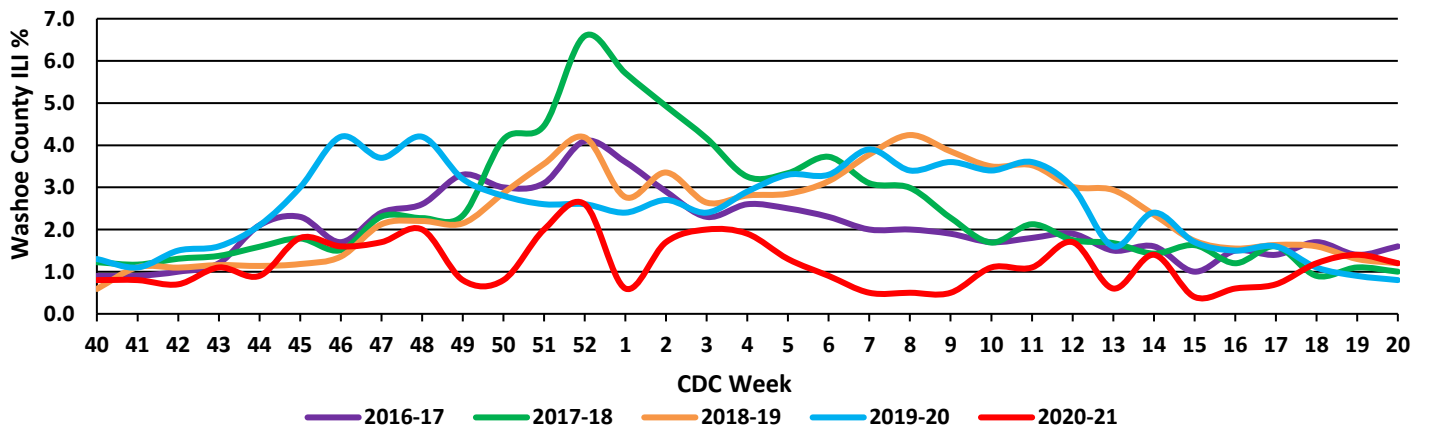
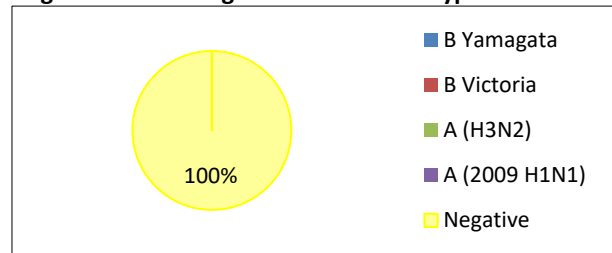


Table 1. Specimens Submitted to NSPHL for Subtyping to Date

Influenza Subtype	# of Specimens	% of Total Specimens
A (H3N2)	0	0
A (2009 H1N1)	0	0
B (Yamagata)	0	0
B (Victoria)	0	0
Negative	2	100%
Total (All Subtypes)	2	100%

Figure 4. Percentage of Influenza Subtypes to Date



**Table 2. Number of Hospitalized Cases, ICU Cases and Fatalities with Laboratory-Confirmed Influenza
Washoe County Influenza Surveillance, 2020-2021**

	Cumulative for 2020-2021 Influenza Season September 27, 2020 - May 22, 2021							
	Hospitalized		Vax ^s		ICU		Death	
	#	%	#	%	#	%	#	%
Total # of cases reported	11	100.0	4	36.4	1	9.1	0	0.0
Influenza A (2009 H1N1)	0	0.0	0	0.0	0	0.0	0	0.0
Influenza A (seasonal H3)	0	0.0	0	0.0	0	0.0	0	0.0
Influenza A (not subtyped)	0	0.0	0	0.0	0	0.0	0	0.0
Influenza A (RIDT*)	6	54.5	1	25.0	0	0.0	0	0.0
Influenza B (RIDT*)	5	45.5	3	75.0	1	100.0	0	0.0
Influenza B (non-RIDT**)	0	0.0	0	0.0	0	0.0	0	0.0
Influenza (unknown type, RIDT*)	0	0.0	0	0.0	0	0.0	0	0.0

*RIDT: *Rapid Influenza Diagnostic Test

**Confirmatory tests other than RIDT may include culture, PCR, immunofluorescence, DFA/IFRA antibody staining, or rapid molecular assay.

§Vaccination status determined among hospitalized cases only. Patient is considered vaccinated if they received a flu vaccine ≥ 2 weeks prior to illness onset.

Figure 5. Washoe County Hospitalization Rate per 100,000 Population, 2017-2021

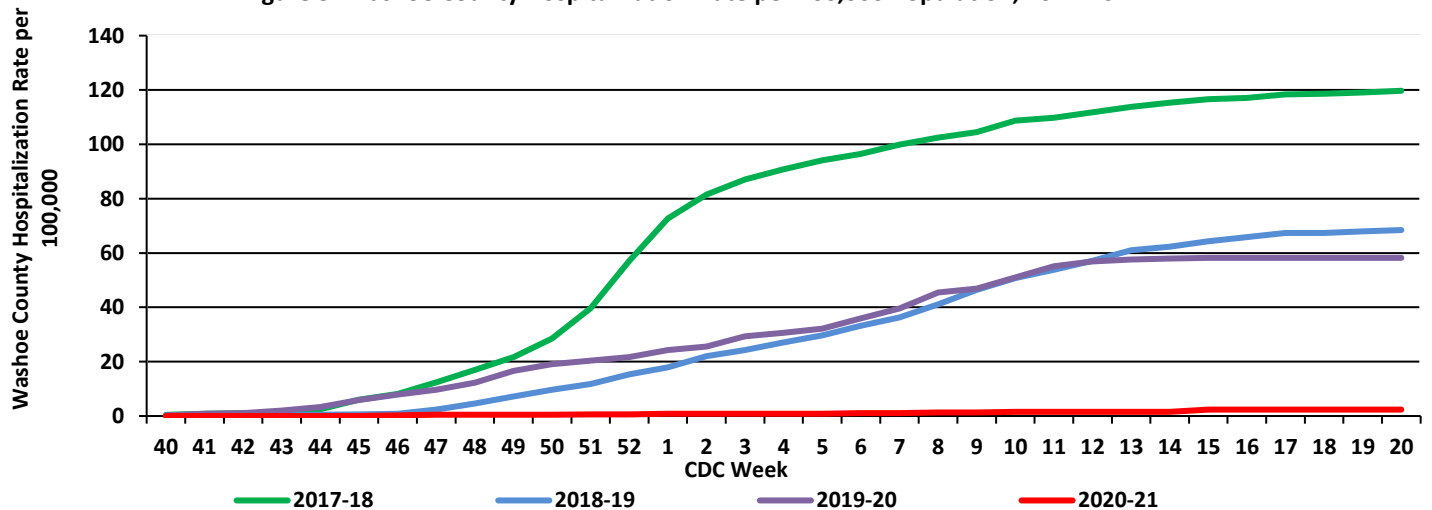


Figure 6. Influenza Positive Tests Among Hospitalized Cases by Week of Report, Washoe County
Influenza Surveillance, 2020-2021

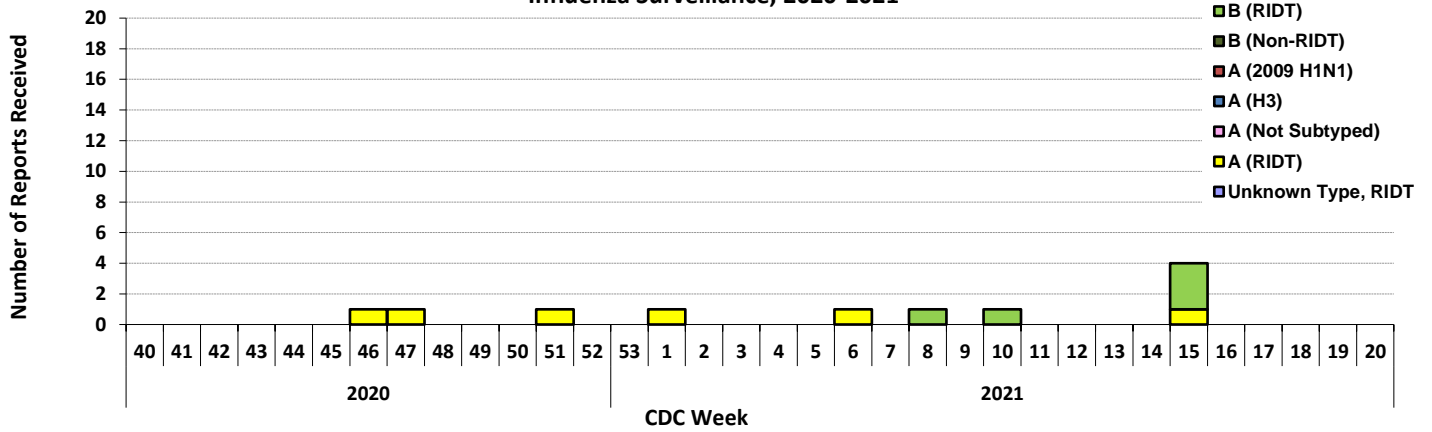


Figure 7. Pneumonia, Influenza and COVID-19 Mortality Surveillance, 2020-2021

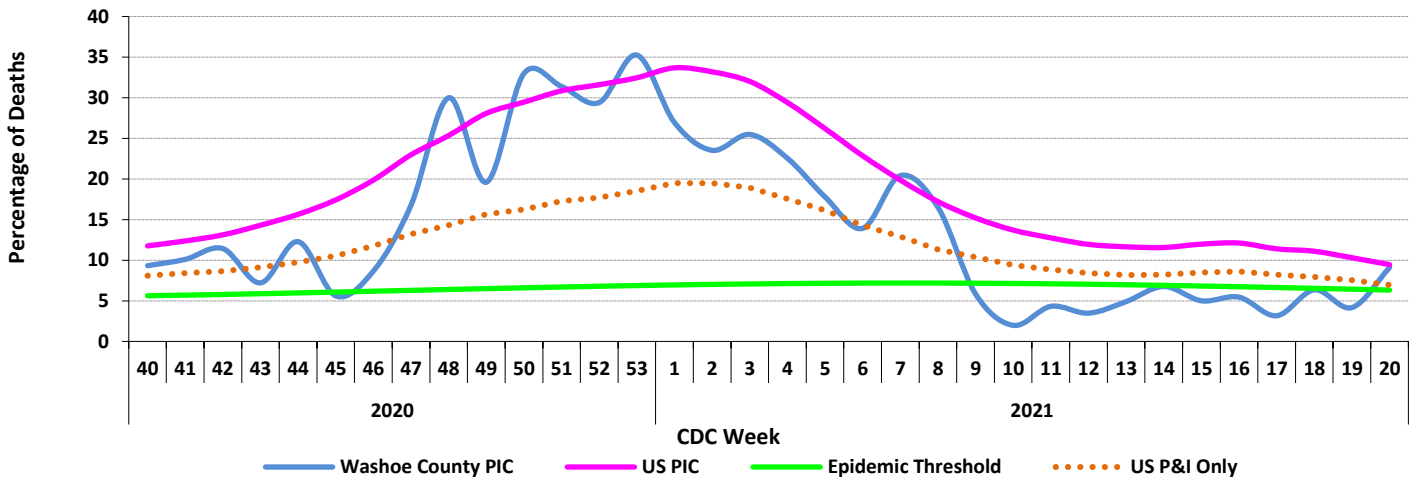


Figure 8. Number of RSV Cases, Washoe County Communicable Disease Surveillance, 2020-2021

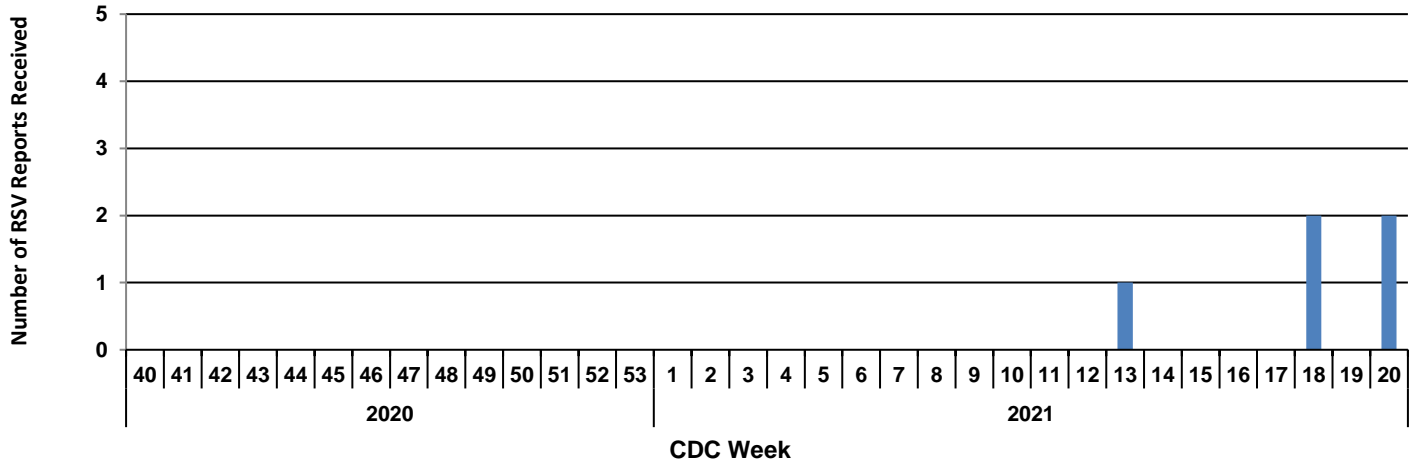


Figure 9. Percentage of ED and UC Visits for Influenza-Like Illness and COVID-19-Like Illness, Washoe County

Multiseries Time Series

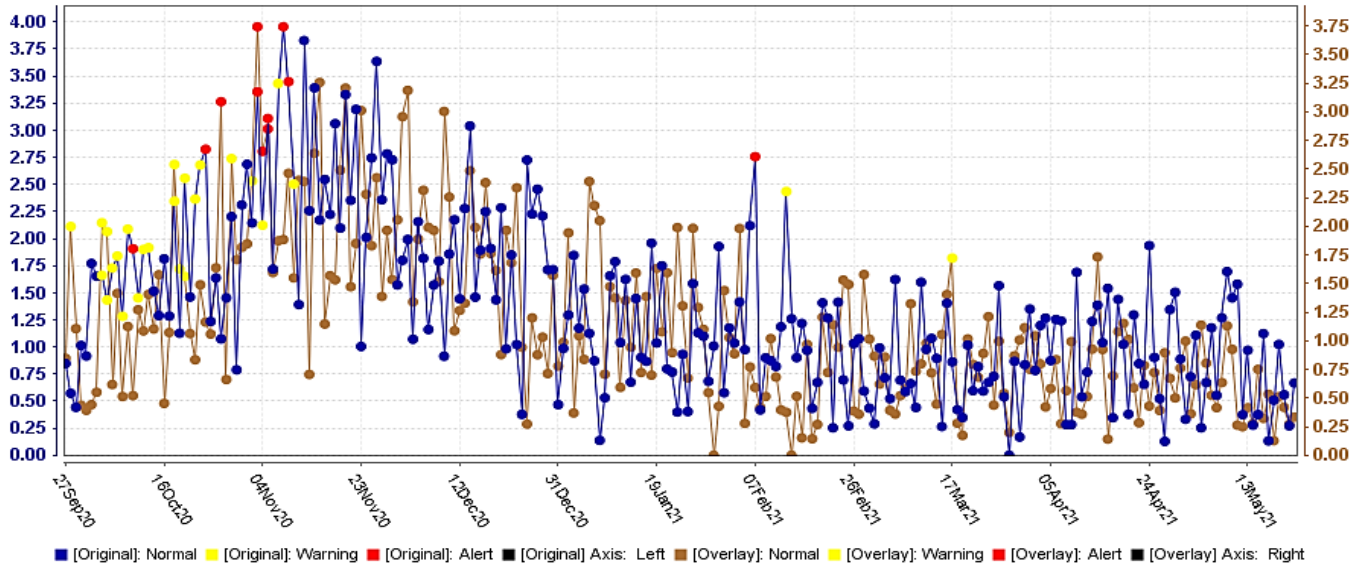


Figure 10. OTC sales for cough and/or cold remedies, Washoe Counts

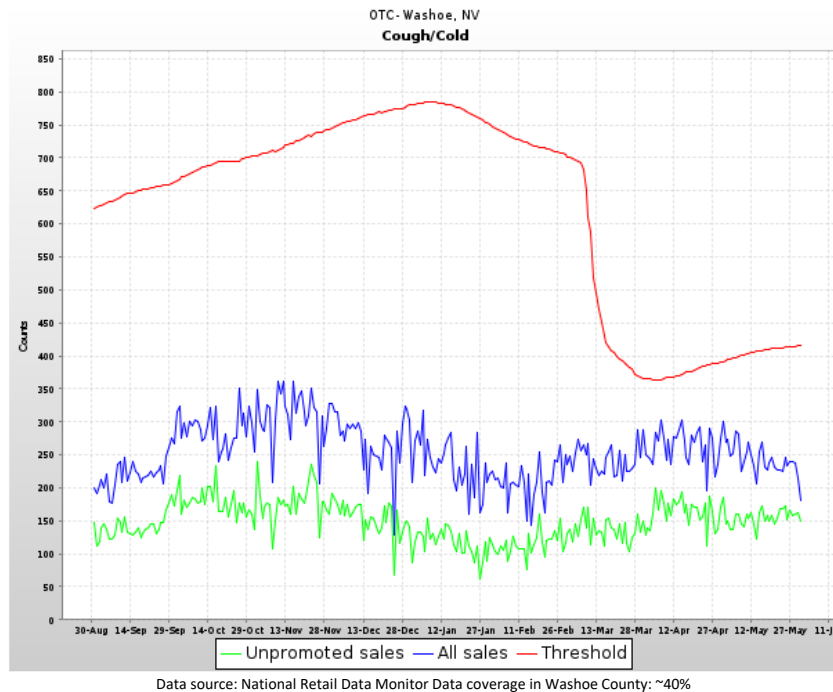
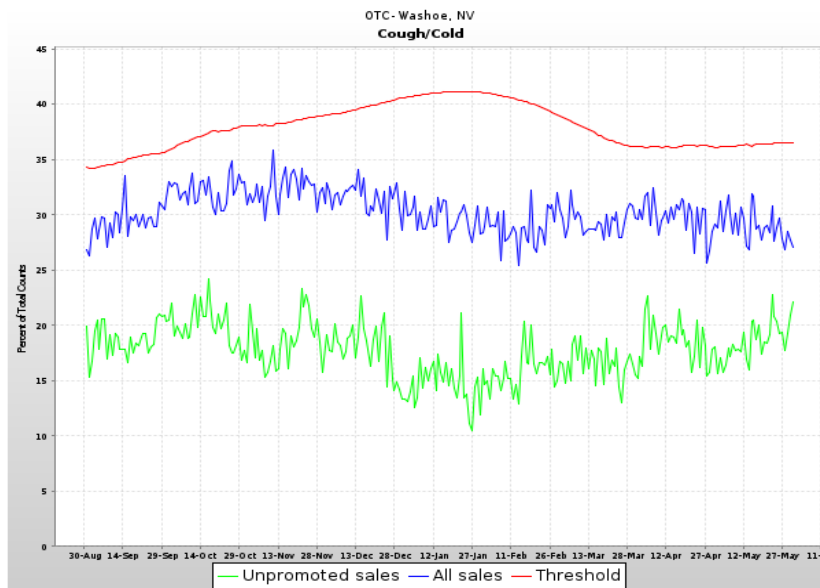


Figure 10.1 OTC sales for cough and/or cold remedies, Washoe Percentage



Over the Counter (OTC) medication sales graph displays a steep decline in threshold values [Figure 10]. This decline was a result of the algorithm’s predictive methods. The Wavelet algorithm utilizes predictive analytics to calculate a threshold based on the previous year’s sales. Data from a purchasing surge in March of 2020 was utilized to calculate the threshold for 2021, which explains the threshold drop in figure 10. Normalizing these data will bring the counts to a common scale without distorting differences in values. It will allow the counts to be expressed as proportions by dividing specific product daily frequencies by the sum of the OTC category being monitored. Historically, WCHD has presented this data as counts. Moving forward, the weekly influenza/ILI report will normalize OTC data which will express values in the Y axis as percentages [Figure 10.1].

Figure 11. Geographic Spread of ILI Activity Level for Week 20, 2020-21

2020-21 Influenza Season Week 20 ending May 22, 2021

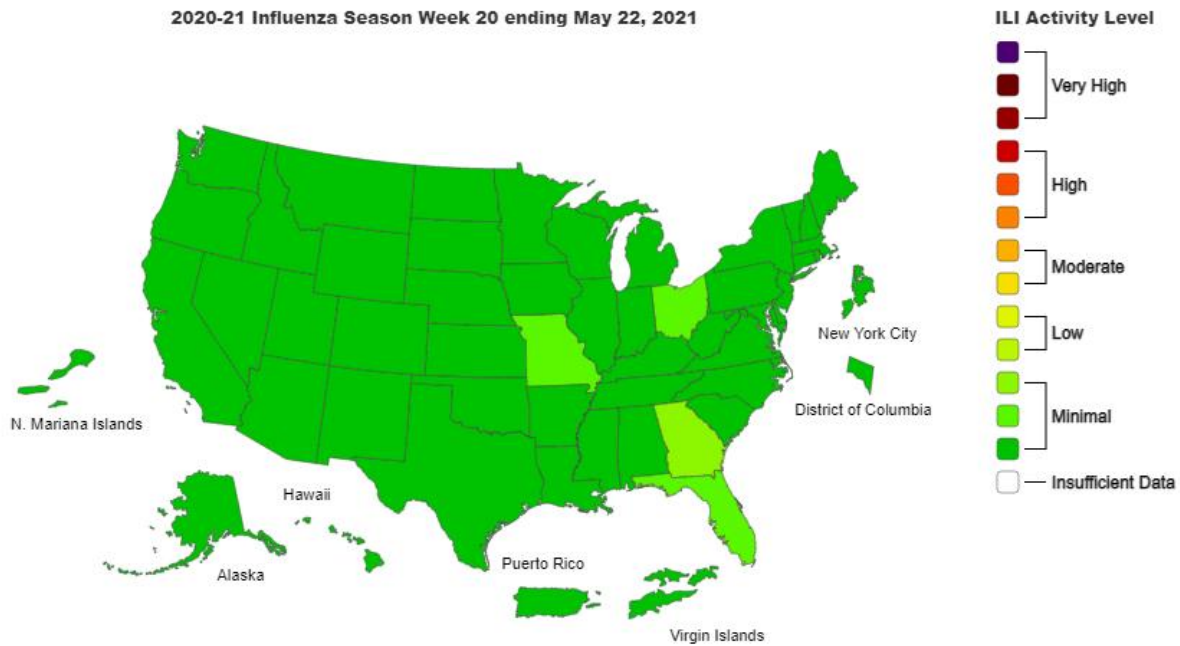
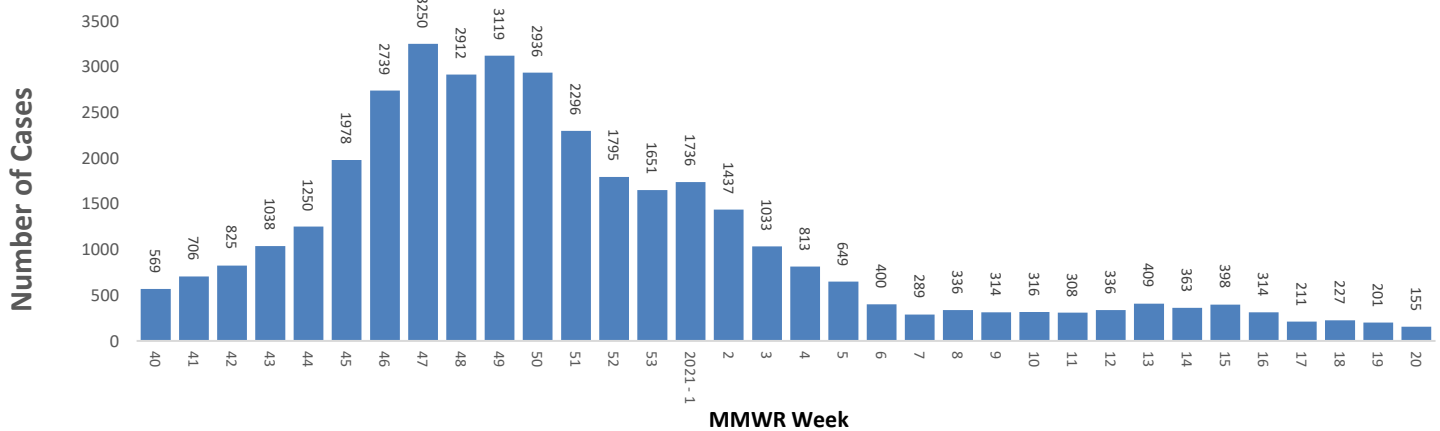


Figure 12. Total Number of Confirmed COVID-19 Cases by Week Reported Washoe County, 2020-2021



Washoe County Influenza Resources

Weekly Washoe County influenza surveillance reports are available at <http://tinyurl.com/WashoeFlu>. These weekly reports are also emailed to physicians, public health practitioners, infection preventionists, daycare operators, and others in the community. If you would like to be added to the email listserv, please email the following information to epicenter@washoecounty.us: your name (first and last), title, organization, and email address and request to be added.

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