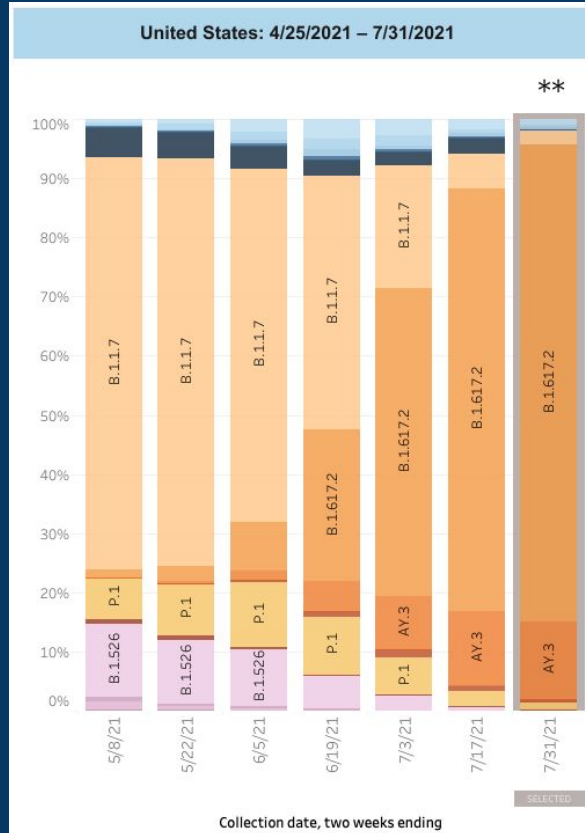


# Covid-19 Health Metrics

Littleton School Committee  
August 11, 2021

# Delta Variant - what the science says



- Highly infectious - a case spreads on average to 5-9 people <sup>1</sup>
- Replicates faster and higher viral load <sup>2</sup>
- Contagious earlier (4 days vs 6 days) <sup>2</sup>
- Vaccine effectiveness lower for symptomatic disease<sup>3</sup> but remain high for hospitalization and death <sup>4,5</sup>
- Breakthrough infections for fully vaccinated people possible <sup>5,4</sup>
- Reinfection after prior natural infection possible <sup>7,8</sup>
- Severity of delta infections still under study <sup>9, 10, 11</sup>

**Vaccines remain the best way to protect yourself and those around you**

**The best way to protect kids <12 is to vaccinate all the adults and siblings around them**

# Delta has changed the calculus

$R > 1$ : virus will spread/outbreaks possible

$R < 1$ : virus will not spread / fade away on own

Mitigation Scenario	Original / Alpha variant	Delta variant
Base Case (no mitigation)	$R_0 = 2$ to $3$	$R_0 = 5$ to $9$
Vaccination only (72% Littleton vax coverage)	$Re = 0.6$ to $0.9$ Pfizer 95% efficacy against original/Alpha	$Re = 1.9$ to $3.5$ Delta lowers vaccine efficacy to 85% for Pfizer
Vaccination plus 25% usage of cloth masks	<div>Vaccines were so effective against the alpha variant and our vax rate was high enough to be protective, which is why the mask order could be dropped in June and rates didn't rise (<math>Re &lt; 1</math>)</div>	$Re = 1.7$ to $3.1$
Vaccination plus 90% usage of cloth masks		$Re = 1.1$ to $1.9$
Increase Vaccination Coverage to 87% of all residents (no masks)		$Re = 1.3$ to $2.3$

Vaccines have significantly lowered Delta transmission in our town ( $< \text{half}$ ), but vax rates have not meaningfully increased since mid-June

But Delta is more transmissible and it lowered vaccine efficacy

**As a result, the  $Re$  against Delta is now similar to what it was against the original strain / alpha variant**

**We need to add other layers of mitigation to slow spread of Delta, especially in indoor public places**

The more people using additional mitigation strategies, the bigger impact

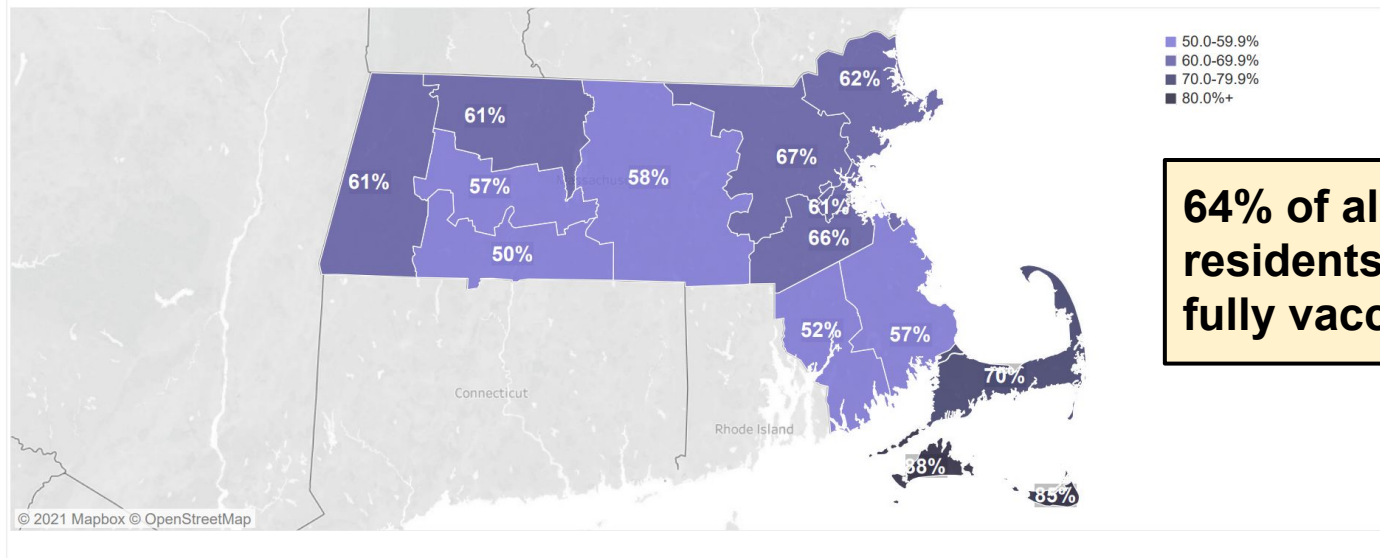
Note: These estimates will most likely change as we progress into the school year and we learn more about Delta, exposure patterns, and when vaccinations for children  $< 12$  are widely available and used

# MA State Data

# Cumulative Percentage of Individuals who are Fully Vaccinated by County of Resident Address

Data as of August 03, 2021

## Percentage of Individuals Fully Vaccinated



NOTE: Data from MIIS (see "definitions"). Data reflect doses administered and reported (see "definitions"), including Janssen/Johnson & Johnson beginning on 3/5/21. An individual is counted as fully vaccinated if they have received the 2nd dose of Moderna or Pfizer or have received a dose of Janssen/Johnson & Johnson vaccine. Doses without address records are not included in this view. Some individuals may receive a first or second dose of Moderna or Pfizer from a non-reporting provider and would not be included as fully vaccinated. These proportions use Donahue population estimates from 2019. Colors may be reindexed as data evolve.



# Massachusetts Department of Public Health | COVID-19 Dashboard

## Trends: 7-day Averages Over Time

Released on: August 11, 2021  
Data as of: August 10, 2021  
Caution: recent data may be incomplete

### Navigation

Today's Overview

#### Overview Trends

COVID-19 Cases

COVID-19 Testing

Hospitalizations

COVID-19 Deaths

Higher Ed & LTCF

Patient Breakdown

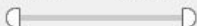
City & Town Data

Resources

Data Archive

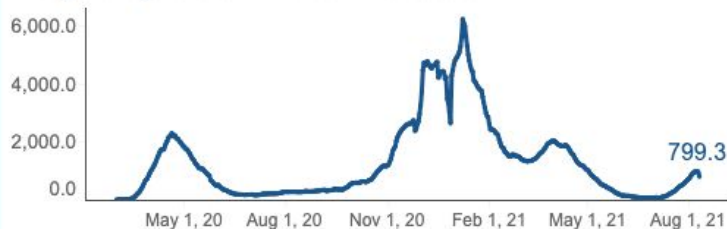
#### Select dates:

3/1/2020 8/10/2021



### Cases

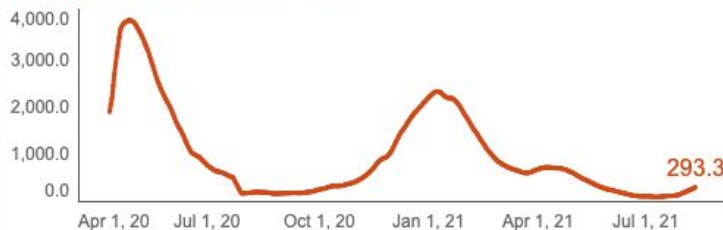
#### 7-day average of COVID-19 confirmed cases



The lowest observed value was 64.3 on 6/25/2021.

### Hospitalizations

#### 7-day average of hospitalizations



The lowest observed value was 84.8 on 7/9/2021.

### Testing

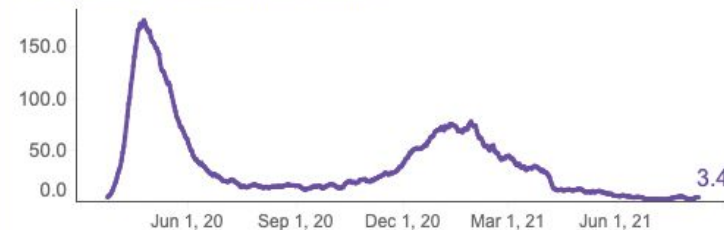
#### 7-day weighted average percent positivity



The lowest observed value was 0.31% on 6/25/2021.

### Deaths

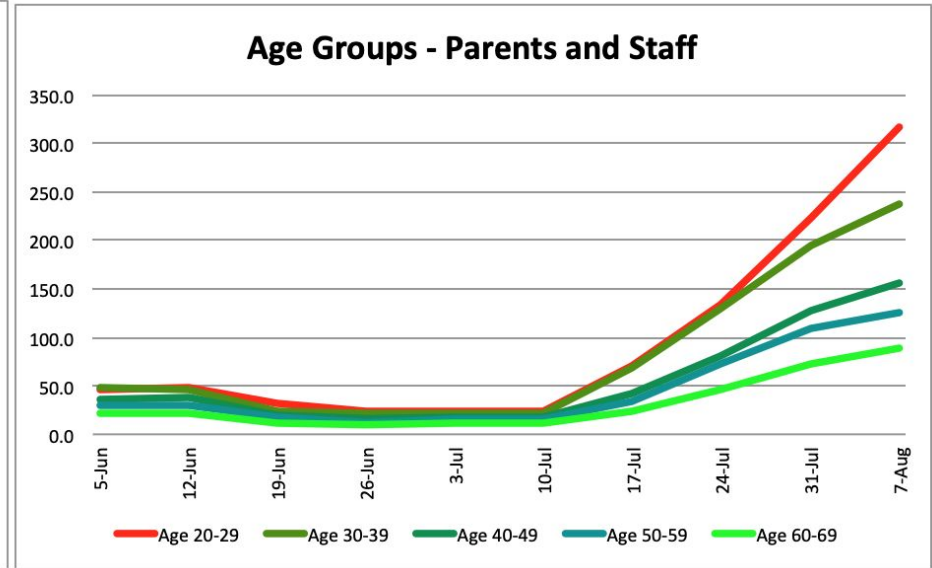
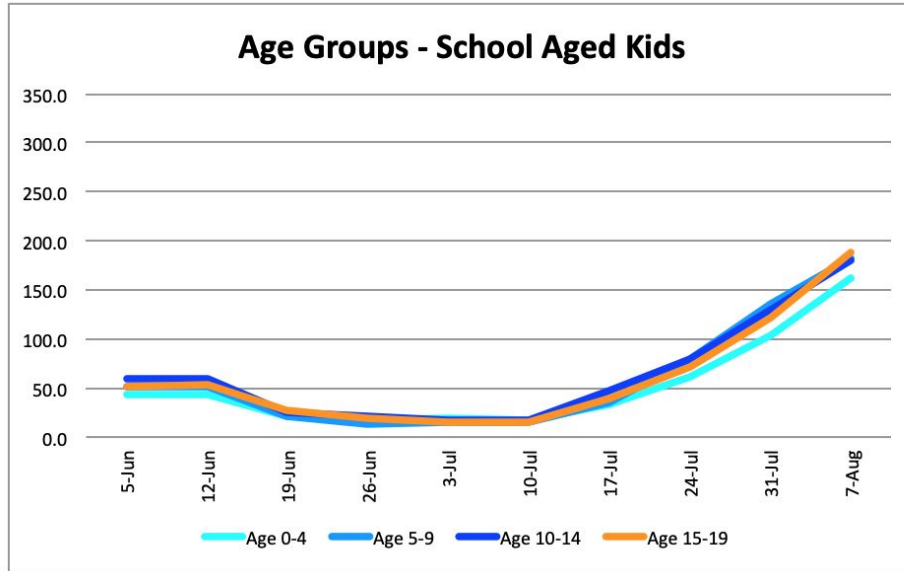
#### 7-day average of confirmed deaths



The lowest observed value was 1.1 on 7/12/2021.

The lowest observed value is since tracking of the lowest value began on April 15, 2020. For details on the definitions of each indicator please see the corresponding tab for that indicator. All data included in this dashboard are preliminary and subject to change. Data Sources: COVID-19 Data provided by the Bureau of Infectious Disease and Laboratory Sciences and the Registry of Vital Records and Statistics; Created by the Massachusetts Department of Public Health, Bureau of Infectious Disease and Laboratory Sciences, Office of Integrated Surveillance and Informatics Services.

# Covid Case Rate per 100k for the last 2 weeks, by Age Group

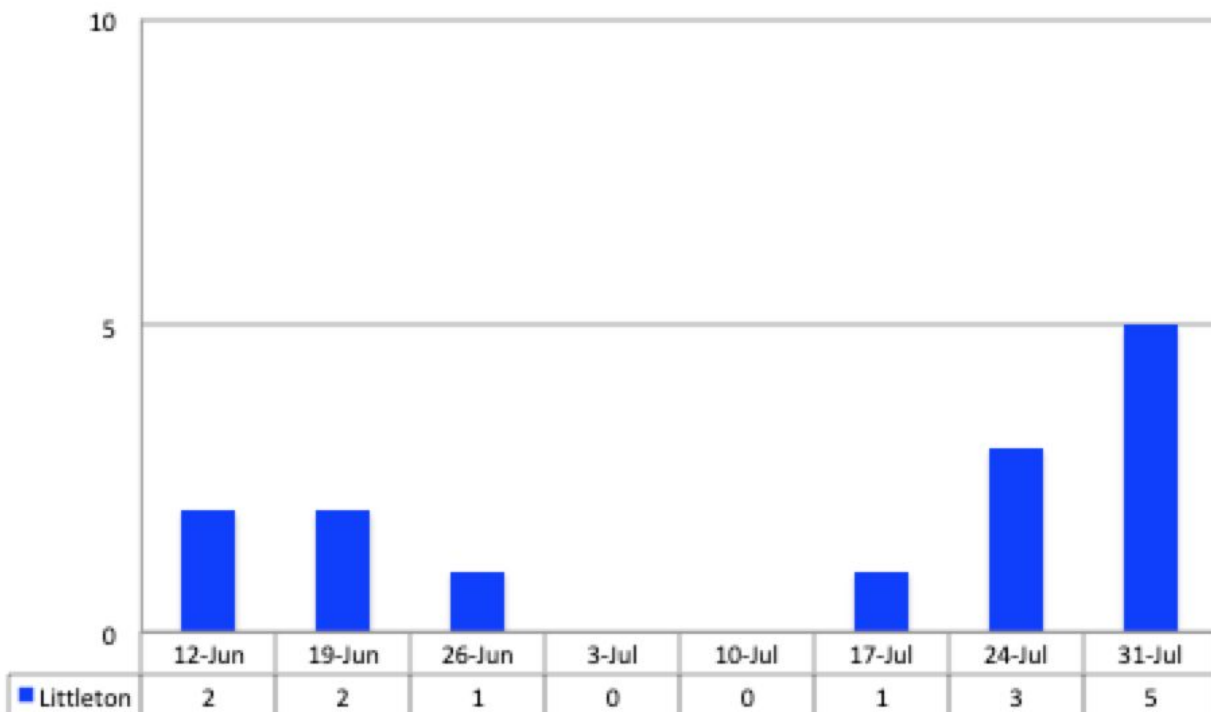


Data Source: MA DPH Covid Dashboard - 8/5/21

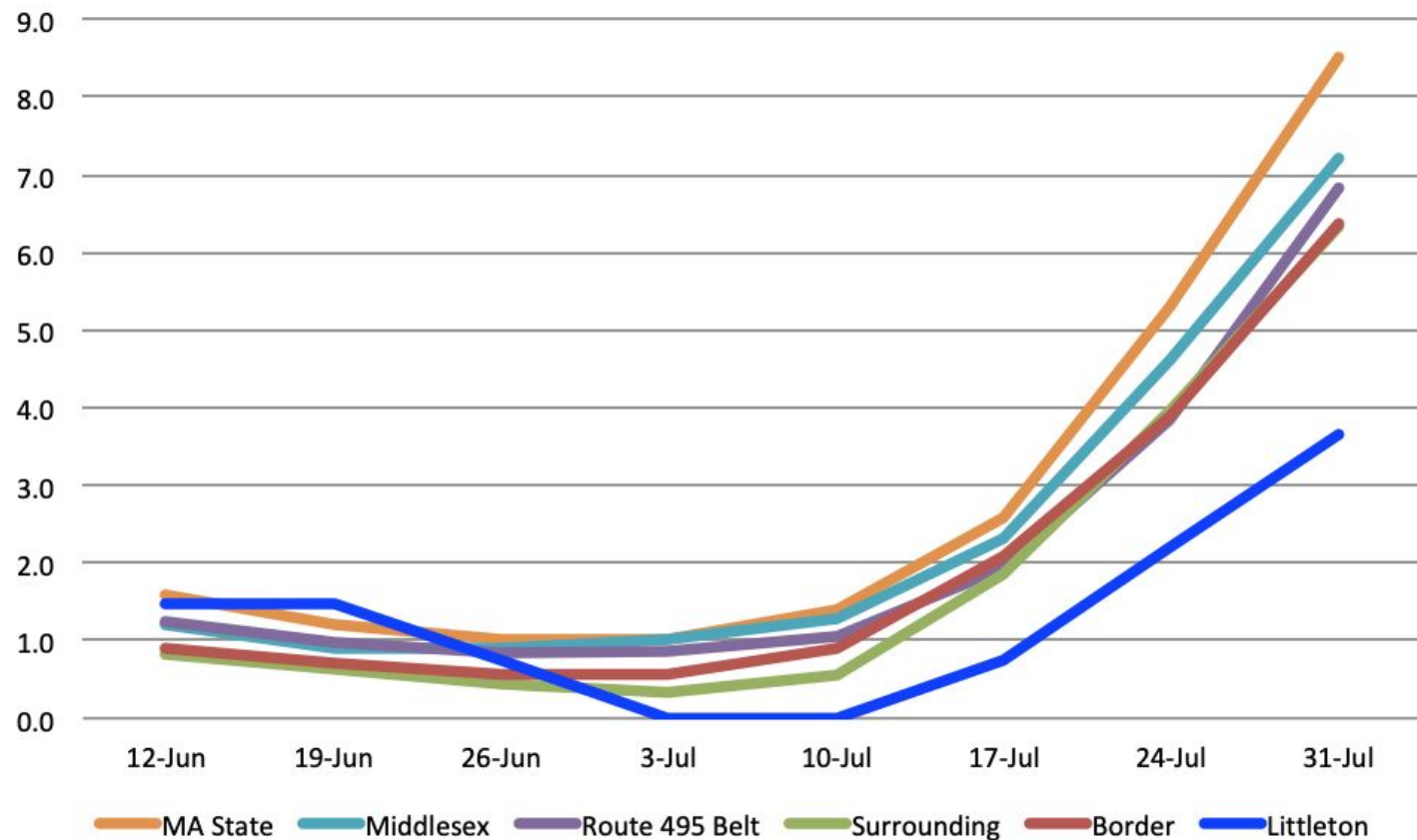
# Littleton Data



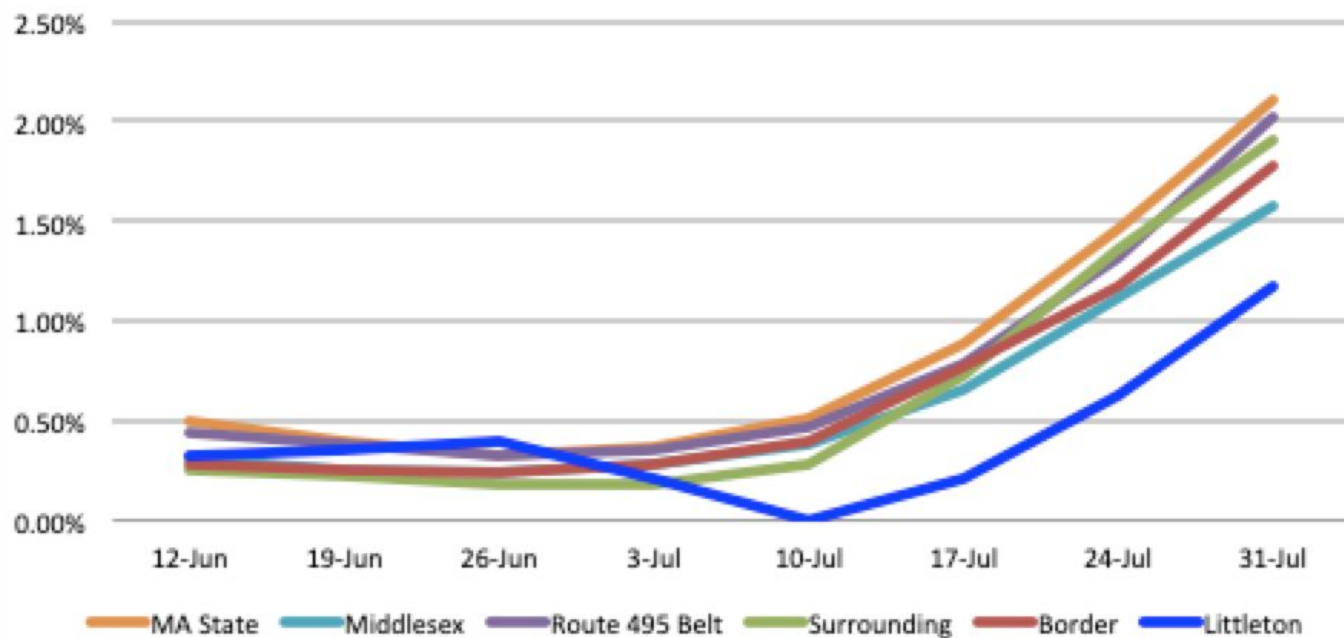
**Littleton: Number of Cases in 14-Day Period**



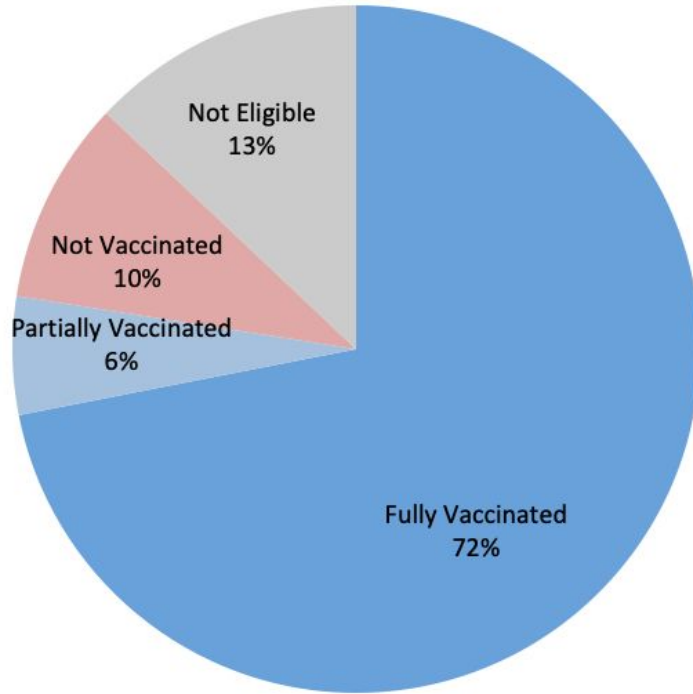
**Average Daily Incidence Rate per 100,000 for Past 14 Days**



### Total Test Positivity for past 14 days

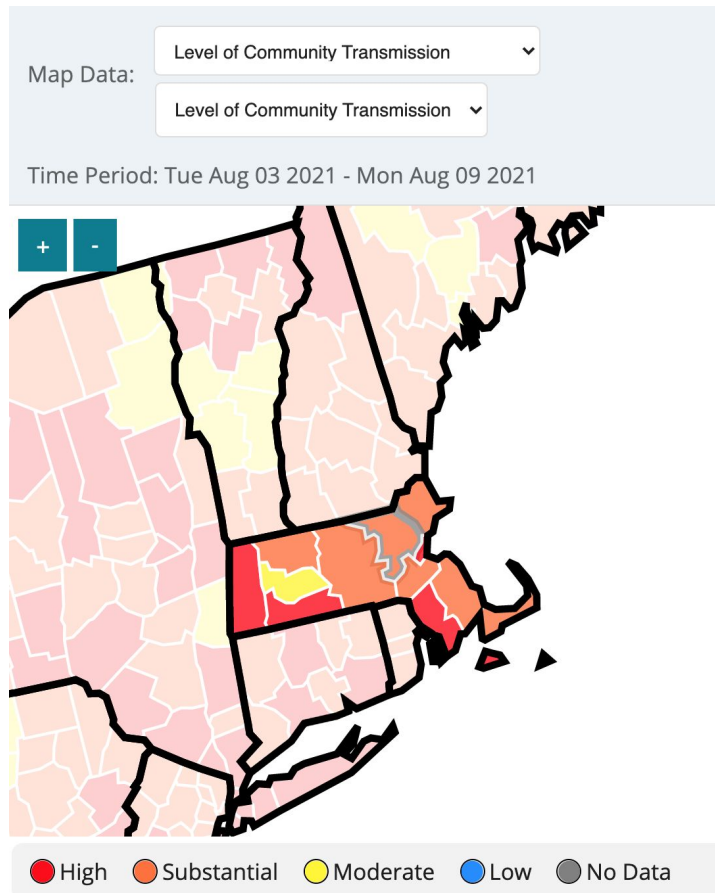


# Littleton's Vaccination Coverage



Age Group	Fully Vaccinated	Partially Vaccinated	Not Vaccinated
0-11	Not eligible	Not eligible	100%
12-15	394 (76%)	63 (12%)	61 (12%)
16-19	415 (74%)	36 (6%)	108 (19%)
20-29	743 (82%)	95 (10%)	69 (8%)
30-49	1893 (86%)	131 (6%)	178 (8%)
50-64	2196 (84%)	100 (4%)	292 (12%)
65-74	916 (92%)	58 (6%)	22 (2%)
75+	560 (71%)	58 (7%)	167 (21%)

# CDC Community Transmission Rates

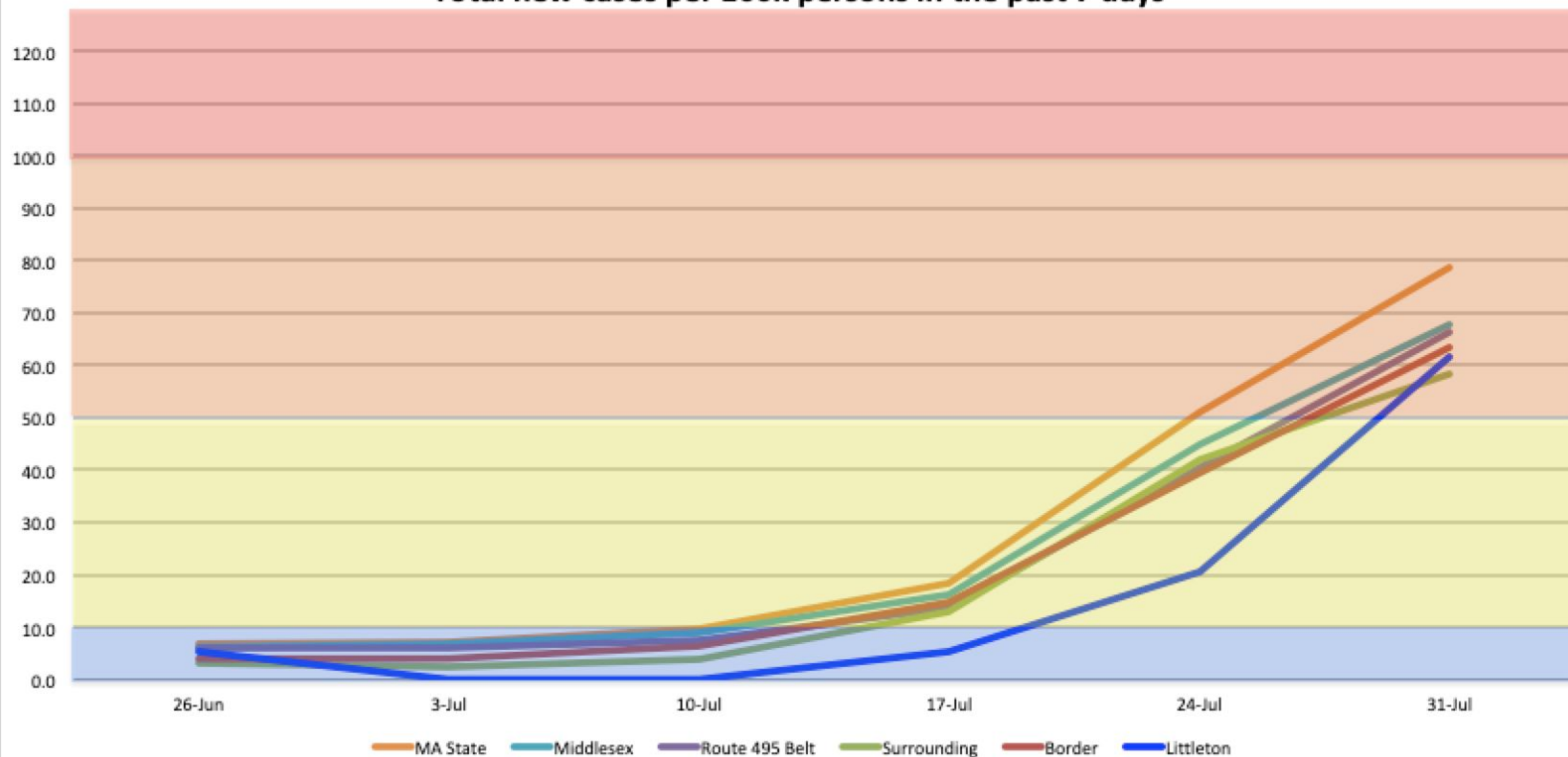


Indicator - If the two indicators suggest different transmission levels, the higher level is selected	Low Transmission Blue	Moderate Transmission Yellow	Substantial Transmission Orange	High Transmission Red
Total new cases per 100,000 persons in the past 7 days	0-9.99	10-49.99	50-99.99	≥100
Percentage of NAATs <sup>1</sup> that are positive during the past 7 days	0-4.99%	5-7.99%	8-9.99%	≥10.0%

**Middlesex County: 82 per 100k (up 37% in last 7 days)**

Data Source: <https://covid.cdc.gov/covid-data-tracker/#county-view>

**CDC Community Transmission Indicator:  
Total new cases per 100k persons in the past 7 days**



# As Littleton's Covid rates increased, so did school cases

Littleton's total new cases per 100k people in last 7 days (CDC metric)	LPS Health Notification Letters (2020-2021)			
	N weeks	N weeks with cases	N cases reported	Average cases per week
0-9 (low)	1	0	0	0
10-49 (moderate)*	11	3	3	0.3 (range 0-1)
50-99 (substantial)	6	5	7	1.2 (range 1-2)
100+ (high)	22	18**	56	2.5 (range 0-6)

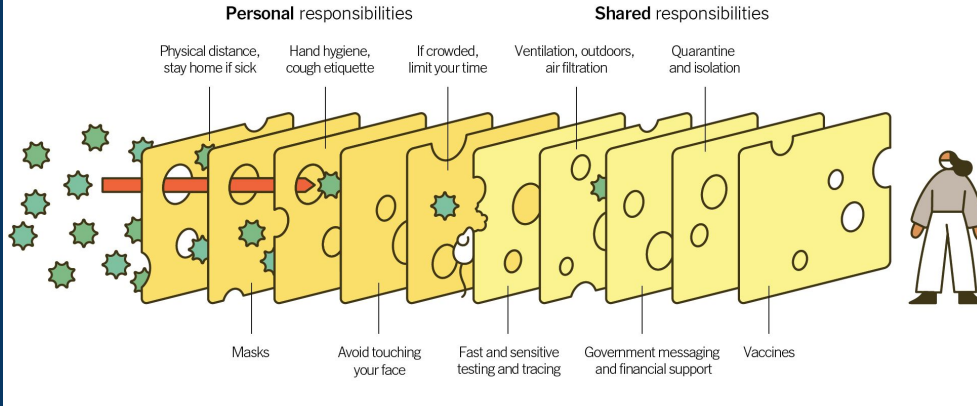
\*Lowest community transmission level where LPS sent health notification letters during 2020-2021 school year was when Littleton's 7 day average was 30 per 100k

\*\*Of the 4 weeks where rates were 100+ (high) but no cases were reported, 3 corresponded to week at the start of December break, week of MLK day, and week after February break.

# Covid experts recommend 5 main tools \*\*used in combination\*\* to limit transmission in schools

## Multiple Layers Improve Success

The Swiss Cheese Respiratory Pandemic Defense recognizes that no single intervention is perfect at preventing the spread of the coronavirus. Each intervention (layer) has holes.



1. Vaccinate
2. Ventilate
3. Masks
4. Testing
5. Avoid indoor crowding



# Masks

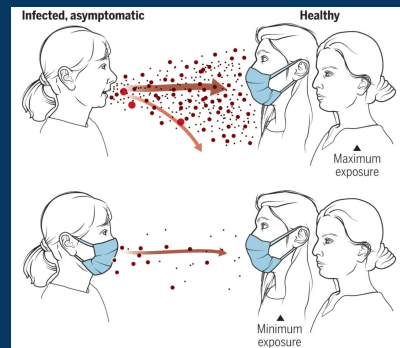
## Science Brief: Community Use of Cloth Masks to Control the Spread of SARS-CoV-2

Updated May 7, 2021

Print

**CDC and American Academy of Pediatrics recommend universal masking of all students, teachers, staff, and visitors to K-12 schools, regardless of vaccination status**

- Consistent and correct mask use is important in indoors and in crowded settings <sup>1</sup>
  - Masks provide source control by reducing emission of virus laden droplets and aerosols (of Covid or other respiratory diseases)
  - Masks reduce inhalation of virus particles by the wearer (filtration protection)
  - The combination of these effects is key to prevention
- **Community benefits increase with increasing numbers of people using masks**



### An evidence review of face masks against COVID-19

● Jeremy Howard, Austin Huang, ● Zhiyuan Li, ● Zeynep Tufekci, Vladimir Zdimal, ● Helen...  
+ See all authors and affiliations

PNAS January 26, 2021 118 (4) e2014564118; <https://doi.org/10.1073/pnas.2014564118>

Edited by Lauren Ancel Meyers, The University of Texas at Austin, Austin, TX, and accepted by Editorial Board Member Nils G. Stenseth December 5, 2020 (received for review July 13, 2020)

Article

Figures & SI

Info & Metrics

PDF

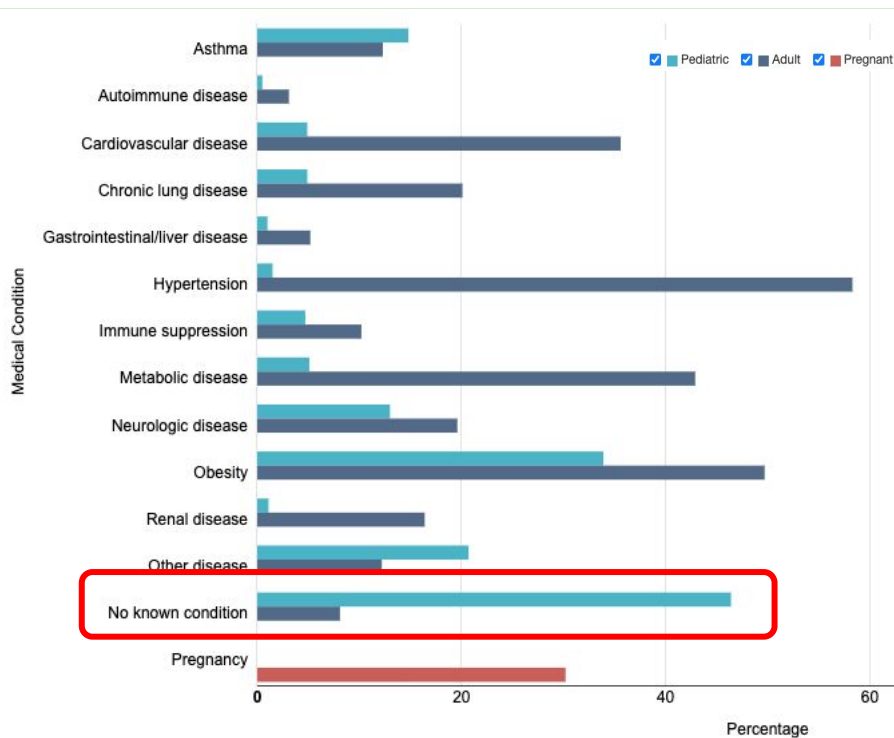
#### Abstract

The science around the use of masks by the public to impede COVID-19 transmission is advancing rapidly. In this narrative review, we develop an analytical framework to examine mask usage, synthesizing the relevant literature to inform multiple areas: population impact, transmission characteristics, source control, wearer protection, sociological considerations, and implementation considerations. A primary route of transmission of COVID-19 is via respiratory particles, and it is known to be transmissible from presymptomatic, paucisymptomatic, and asymptomatic individuals. Reducing disease spread requires two things: limiting contacts of infected individuals via physical distancing and other measures and reducing the transmission probability per contact. The preponderance of evidence indicates that mask wearing reduces transmissibility per contact by reducing transmission of infected respiratory particles in both laboratory and clinical contexts. Public mask wearing is most effective at reducing spread of the virus when compliance is high. Given the current shortages of medical masks, we recommend the adoption of public cloth mask wearing, as an effective form of source control, in conjunction with existing hygiene, distancing, and contact tracing strategies. Because many respiratory particles become smaller due to evaporation, we recommend increasing focus on a previously overlooked aspect of mask usage: mask wearing by infectious people ("source control") with benefits at the population level, rather than only mask wearing by susceptible people, such as health care workers, with focus on individual outcomes. We recommend that public officials and governments strongly encourage the use of widespread face masks in public, including the use of appropriate regulation.

<sup>1</sup><https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/masking-science-sars-cov2.html>

# What we think we know about Covid and kids is changing

**Covid-NET Hospitalizations by Underlying Medical Condition  
(through June 30, 2021)**



- Most data collected during social restrictions and high mask use - exposure opportunity was limited
- Delta infections in children are on the rise
  - ~94,000 children infected with Covid in the US last week (up from 72,000 and 39,000 the prior two weeks)
  - 15% of all new cases were children this week
- With more infections, more likely to see serious outcomes
- Serious outcomes and death have been low
  - In Covid-Net through July 31, 2021, there were 3353 pediatric hospitalized cases versus 188,790 adults
  - For underlying medical condition data through June 30, 2021, 46.4% of hospitalized children had no known underlying condition (vs 8.1% of adults)
- More research on acute and long term health impacts of infected children is needed
- Slowing spread will help prevent education and activity disruptions, quarantines, and protect mental health

