

COVID-19 Weekly Trend Insights

Compiled on 12/4/2020

Executive Summary

COVID-19 News & Latest Trends

- Since our last COVID-19 insights report on November 20th, global cases have increased by approximately 8.88 million or 16%. The United States continues to observe large spikes in cases all across the country. Overall cases in the US have increased by 21% or 2.39 million since the last report.
- COVID-19 demographic trends have remained consistent since our last report, 51% of the diagnosed patients are 50 years or older. Median age is 51, 15% of the diagnosed patients had at least one record of inpatient care for their diagnosis.
- Treatment patterns remain consistent week over week, with Azithromycin and Dexamethasone continue to be most common treatments. Over the most recent 4 weeks, 32% of patients with a COVID-19 diagnosis had an observed steroid use.

Deep Dive: Back to School Trends

- This report deep dive looked at the Impact of Covid-19 Restrictions on Common Respiratory Illnesses in the Patient Populations Age 0-17.
- There is no consistent correlation between restrictions and respiratory illness prevalence. Certain states acted contradictory to the notion of high restrictions equaling less prevalence.
- In 2020 all common school age illnesses, except influenza have decreased up to 40%, from 2019. This could be due to the impact of social distancing and proper hygiene initiatives.
- Infection for bronchitis, common cold, and strep throat were down by 35% to 49% across age groups, with high-risk age groups seeking more telemedicine appointments compared to 2019.
- Covid-19 restrictions appear to impact the younger populations more significantly than older populations. With the reopening of school in the fall, rates of respiratory illnesses have started to increase again

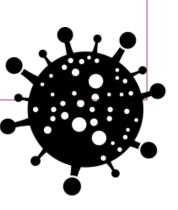
General Health Checks

- There have been modest increases in use of telemedicine by most diagnosis groups corresponding to the latest surge in infections. During the month of November there has been also been an observed slight uptick in the use of telemedicine for most specialties.
- Use of telemedicine for Medicaid patients has increased in recent weeks going from an index of 24.4 in the week of November 6th to an index of 32.2 in the week of November 27th. Medicare patients have shown a similar uptick in the use of telemedicine, going from an index of 15.0 to 28.8 in the same time frame.
- Slide 32 provides a retrospective look at notable market events during the Pandemic cross-walked with National Prescription Trends, a telling look at the affects COVID-19 has had on 2020 prescription activity.
- With a resurgence of COVID-19 outbreaks in recent weeks, the gap between current and prior year prescription thresholds continue to widen.
- Retail store activity continues to report below 2019 levels. Recovery remains stalled with recent surges in COVID-19 outbreaks.



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COVID-19: Current Events & Latest Trends





Timeline: Latest COVID-19 Developments



The coronavirus is mutating as it spreads around the world in the pandemic, but none of the mutations currently documented appear to be making it able to spread more rapidly [according to scientists].

In a study using a global dataset of virus genomes from 46,723 people with COVID-19 from 99 countries, researchers identified more than 12,700 mutations, or changes, in the SARS-CoV-2 virus.

The United Kingdom's Medicines & Healthcare Products Regulatory Agency (MHRA) granted temporary authorization for emergency use to Pfizer and BioNTech for their COVID-19 mRNA vaccine, BNT162b2. This is the first Western Emergency Use Authorization for a COVID-19 vaccine - vaccines are already being distributed in China and Russia by their respective

governments.

AstraZeneca's COVID-19 vaccine could be as much as 90% effective, cheaper to make, easier to distribute and faster to scale-up than rivals.

Nov

The British drugmaker said it will have as many as 200 million doses by the end of 2020, around four times as many as U.S. competitor Pfizer. 700 million doses could be ready globally as soon as the end of the first quarter of 2021.

Auris Medical stock rose by as much as 480% yesterday after it announced lab test results showing that its nasal spray could potentially protect users against COVID-19 [Business Insider].

Dec

2nd

The Bermuda-based clinical stage company exhibited its positive efficacy data from testing AM-301 in vitro.

The toll from COVID-19 reached its second-highest level on December 2nd with 2,811 lives lost, according to a Reuters tally of official data, one short of the record from April 15th.

Nearly 200,000 new U.S. cases were reported on Wednesday, with record hospitalizations approaching 100,000 patients, taxing an already overwhelmed healthcare system.

https://www.pharmalive.com/mutations-not-making-coronavirus-able-to-spread-more-rapidly-study/

https://www.pharmalive.com/astrazeneca-says-covid-19-vaccine-for-the-world-can-be-90-effective/ https://www.pharmalive.com/uk-approves-pfizer-biontech-covid-19-vaccine/

https://www.pharmalive.com/auris-medical-stock-soars-with-promising-covid-19-nasal-spray-results/

https://www.pharmalive.com/u-s-pandemic-death-toll-mounts-as-danger-season-approaches/





COVID-19 INSIGHTS

Confirmed Cases Worldwide

- Global cases continue to rise as COVID-19 cases surge despite many countries implementing more restrictions to reduce new cases.
- Fifteen countries have observed an increase of over 100,000 new cases in the last two weeks, compared to nineteen countries on our last report.
- Since our last COVID-19 insights report on November 20th, global cases have increased by approximately 8.88 million or 16%.

Confirmed Cases 65,048,192

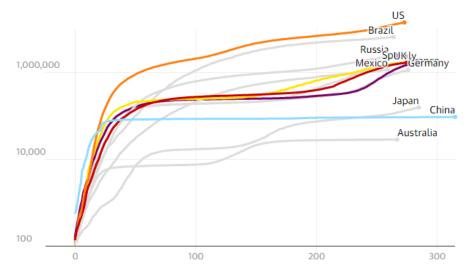
Deaths 1,503,107

Recovered 41,731,105

Confirmed cases of Covid-19 for selected countries

Showing the number of cases since the day of the 100th case, using a log scale. Data correct at 04.59 UTC 3 December

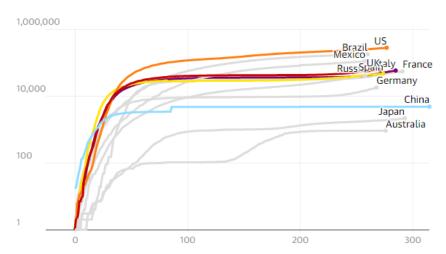




Source: Johns Hopkins CSSE Note: The CSSE states that its numbers rely upon publicly available data from multiple sources, which do not always agree

Confirmed deaths of Covid-19 for selected countries

Showing the number of deaths since the day of the first one, using a log scale. Data correct at 04.59 UTC 3 December



Source: Johns Hopkins CSSE Note: The CSSE states that its numbers rely upon publicly available data from multiple sources, which do not always agree



COVID-19 INSIGHTS

Confirmed Cases in the USA

- The United States continues to observe large spikes in cases all across the country. Overall cases in the US have increased by 21% or 2.39 million since the last report.
- Within the top 10 states, Georgia was the only state to see an increase in cases below 10%. Tennessee broke into the top 10, reporting over 110,000 new cases.
- Deaths related to COVID reached over 275,000, representing an increase of 9% since the last report.

Number of confirmed cases per 100,000 Americans

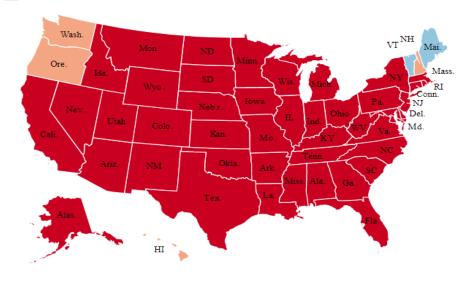
ewer than 500 per 100k At least 500 per 100k At least 1,000 per 100k

At least 2,500 per 100k



Confirmed Cases 14,048,207

Deaths 275,041



Last updated: 3 Dec 6:25pm EST

Source: Maps are updated daily at 12am ET using state-level and county-level case and death figures reported from Johns Hopkins University. State populations were provided by Johns Hopkins CSSE.

State/Territory	Tests	Test % Change	Confirmed Cases	Case % Change	Deaths	Death % Change
California	24,299,126	13%	1,245,948	18.9%	19,324	5%
Texas	10,932,546	15%	1,200,674	14.5%	21,756	9%
Florida	7,343,888	9%	1,001,800	12.3%	19,012	6%
Illinois	10,699,586	14%	748,603	23.4%	13,397	17%
New York	19,761,724	15%	664,238	15.7%	26,889	3%
Ohio	6,217,744	16%	437,928	37.4%	6,671	14%
Georgia	4,362,964	10%	428,980	8.9%	9,567	6%
Wisconsin	2,583,704	8%	420,930	20.0%	3,703	27%
Michigan	6,762,022	14%	402,886	32.9%	9,842	15%
Tennessee	4,605,389	22%	384,285	42.4%	4,688	35%

COVID-19: Overview of PRA Real World Data

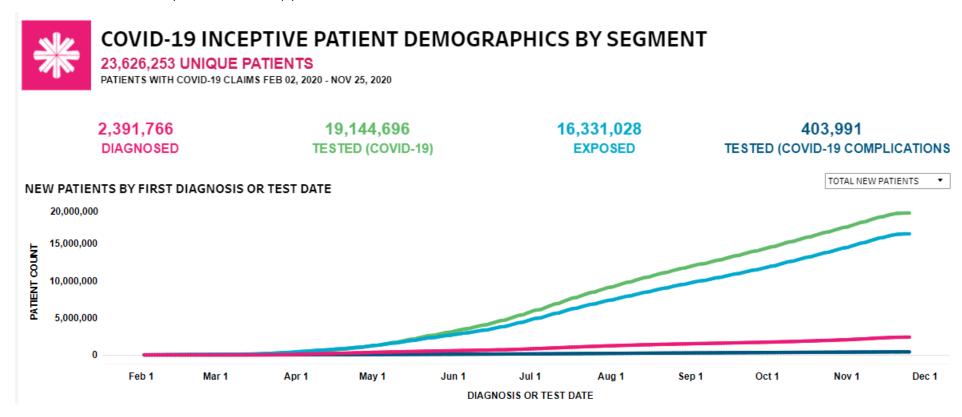


COVID-19 Patient Monitoring: Demographics & Treatments



PRA US Patient Real World Data COVID-19 Infection Trends

Through patient activity observed for diagnosis, testing, exposure or symptoms of Covid-19 infection, PRA is tracking about 23.6 million patients overall and 2.39 million diagnosed patients in its US real world data during the time period Feb 2 to Nov 25, 2020. Patients could be reported in multiple status categories based on claims captured and mapped to status



TOTAL DIAGNOSED PATIENT VOULMES BY WEEK ENDING DATE

11-Jul 18-J	ul 25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	24-Oct	31-Oct	7-Nov	14-Nov	21-Nov	28-Nov
101,561 100,5	590 92,387	83,888	73,600	65,257	58,351	55,000	52,526	44,967	49,348	50,650	55,938	65,329	72,027	79,051	89,945	114,661	131,236	95,201	79,113



PRA is tracking 428,835 Covid-19 patients during the most recent 4-week time period of Nov 1-Nov 28, 2020

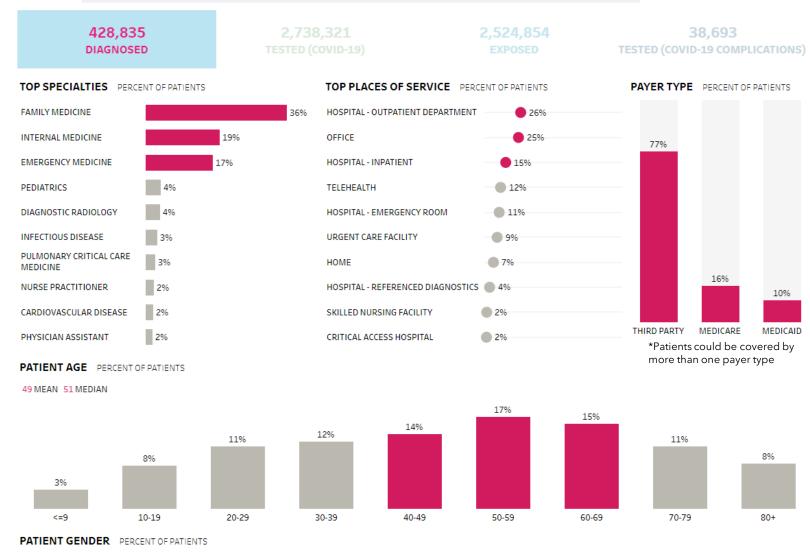
Amongst the Covid-19 diagnosed patients:

- 51% of the diagnosed patients are 50 years or older
- Median age is 51
- 15% of the diagnosed patients had at least one record of inpatient care for their diagnosis.



55%

FEMALE



PRA US patient longitudinally linked medical and hospital claims data, raw patient volumes

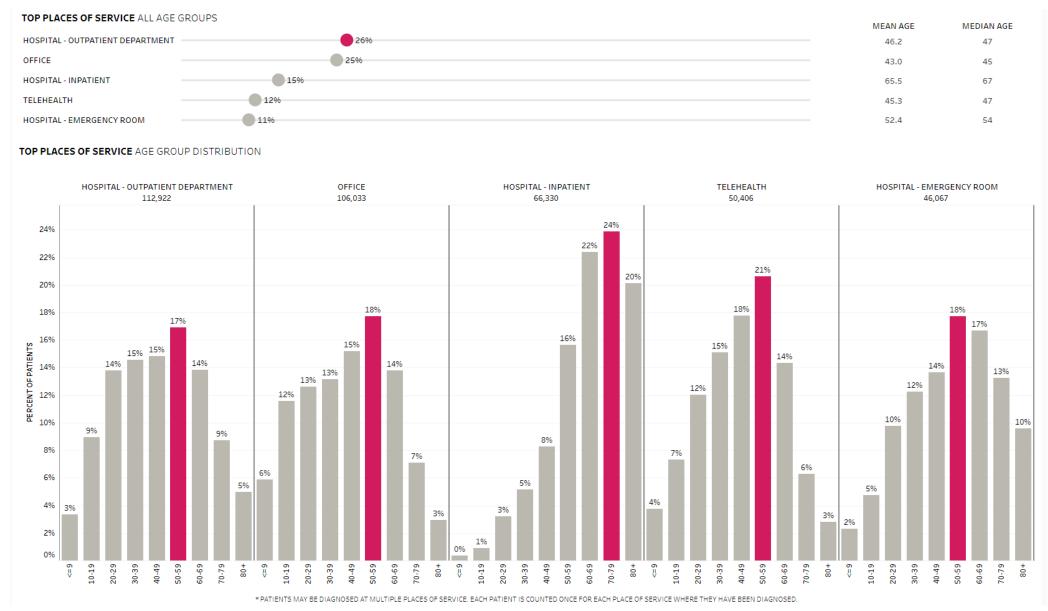
45%

MALE



Place of Service Distributions by Age for COVID-19 Diagnosed Patients (N=428,835)

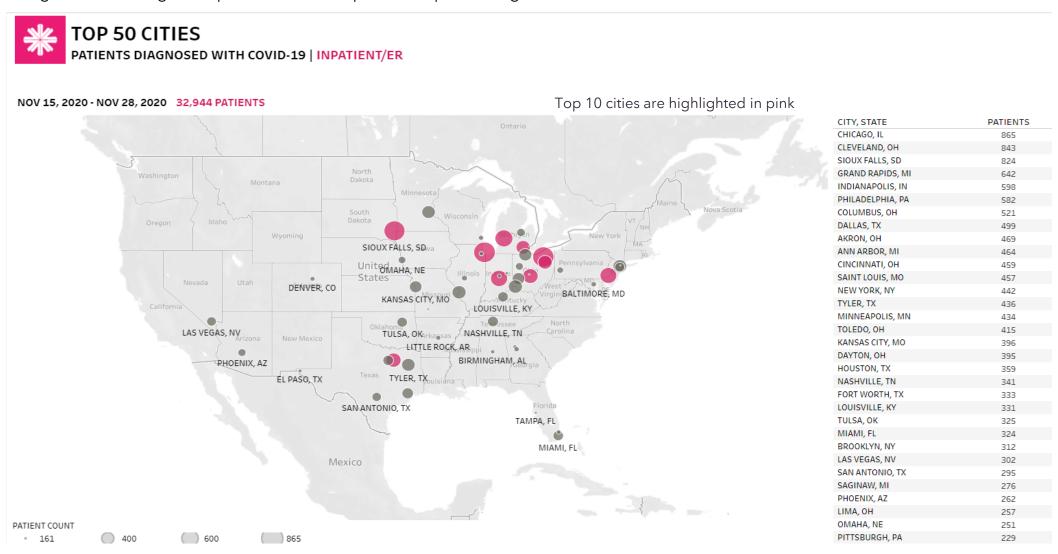
Amongst the most common locations of care for Covid-19 diagnosed patients over most recent 4-week time period of Nov1- Nov 28, patients seen in inpatient hospital setting are almost 20 years older than patients seen through outpatient, office, and telehealth.





ER and Inpatient Hospital - Top 50 Cities

PRA is tracking patients diagnosed with Covid-19 at Emergency Room and Inpatient Hospital settings to identified cities with high patient volume of severe cases. In the most recent 2-week period, **Chicago, Cleveland, Sioux Falls, Grand Rapids, and Indianapolis** continue to be the top cities, with high Covid-19 diagnosed patients at ER or inpatient hospital settings.

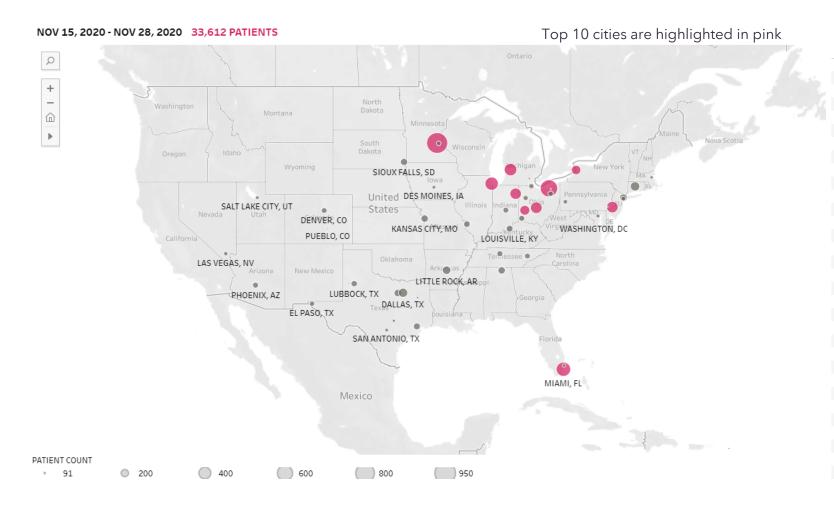




Outpatient - Top 50 Cities

PRA is tracking patients diagnosed with Covid-19 at Outpatient settings to identify cities with high patient volume of Covid-19 cases. In the most recent 2-week period, **Minneapolis, Cleveland, Miami, Chicago and Grand Rapids** were the top 5 cities with high Covid-19 diagnosed patients at outpatient settings.





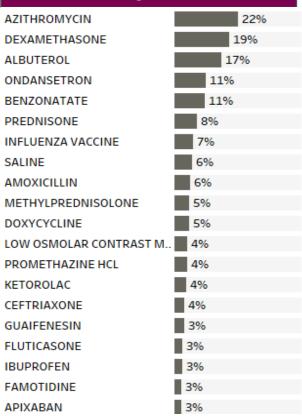
CITY, STATE PATIENTS MINNEAPOLIS, MN 950 CLEVELAND, OH 677 MIAMI, FL 493 437 CHICAGO, IL GRAND RAPIDS, MI 399 COLUMBUS, OH 354 PHILADELPHIA, PA 352 344 FORT WAYNE, IN DAYTON, OH 281 BUFFALO, NY 263 NEW BRITAIN, CT 260 DALLAS, TX 256 LITTLE ROCK, AR 232 NEW YORK, NY 205 FORT WORTH, TX 202 HUNTSVILLE, AL 196 KANSAS CITY, MO 196 SIOUX FALLS, SD 192 HOUSTON, TX 183 LOUISVILLE, KY 181 SAINT LOUIS, MO 174 LUBBOCK, TX 167 CINCINNATI, OH 161 NASHVILLE, TN 161 PHOENIX, AZ 161 INDIANAPOLIS, IN 156 DENVER, CO 155 KNOXVILLE, TN 154 AKRON, OH 146 EL PASO, TX 146 TOLEDO, OH 143 LIMA, OH 142



Observed Drug Use Within +/- 30 Days of COVID-19 Diagnosis

PRA evaluated Covid-19 diagnosed patients for observed treatments within a 30-day window of diagnosis. Over the most recent 4-week period of Nov 1- Nov 28, 32% of these patients had an observed steroid use

Covid-19 diagnosed patients within +/- 30 days of diagnosis



Observed Drug Use by Age within +/- 30 days of Covid-19 diagnosis N= 146,441

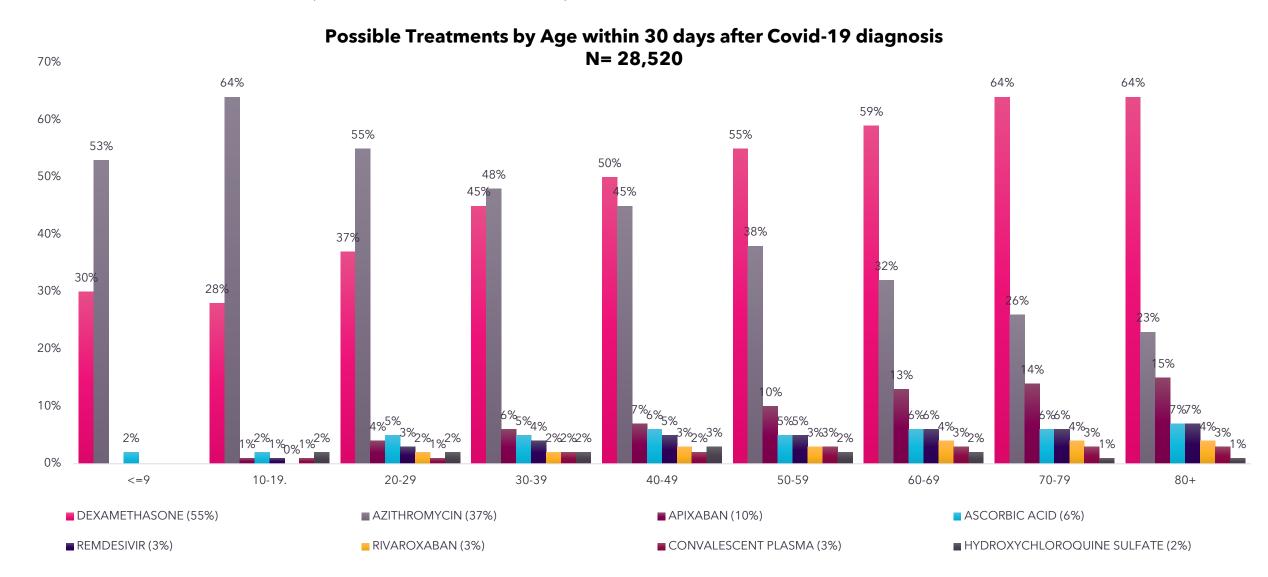




Possible Treatments within 30 Days after COVID-19 Diagnosis

PRA evaluated Covid-19 diagnosed patients for possible treatments within a 30- day window after diagnosis.

Over the most recent 4-week period of Nov 1- Nov 28, Azithromycin and Dexamethasone continue to be most common treatments







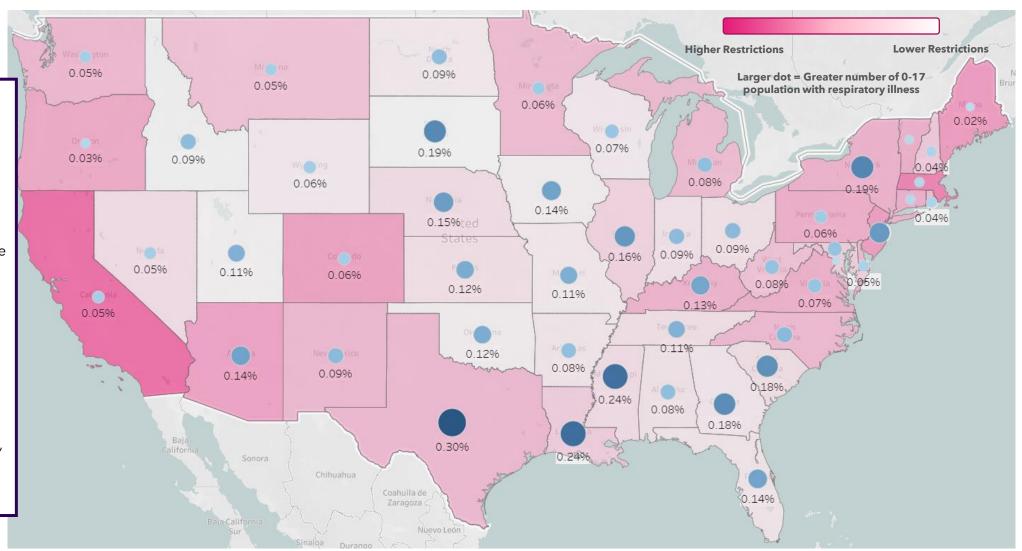




Back to School 2020: The Impact of Covid-19 Restrictions on Common Respiratory Illnesses in the Patient Populations Age 0-17

*Bronchitis, Common Cold, Covid-19, Flu, Mononucleosis, Strep Throat

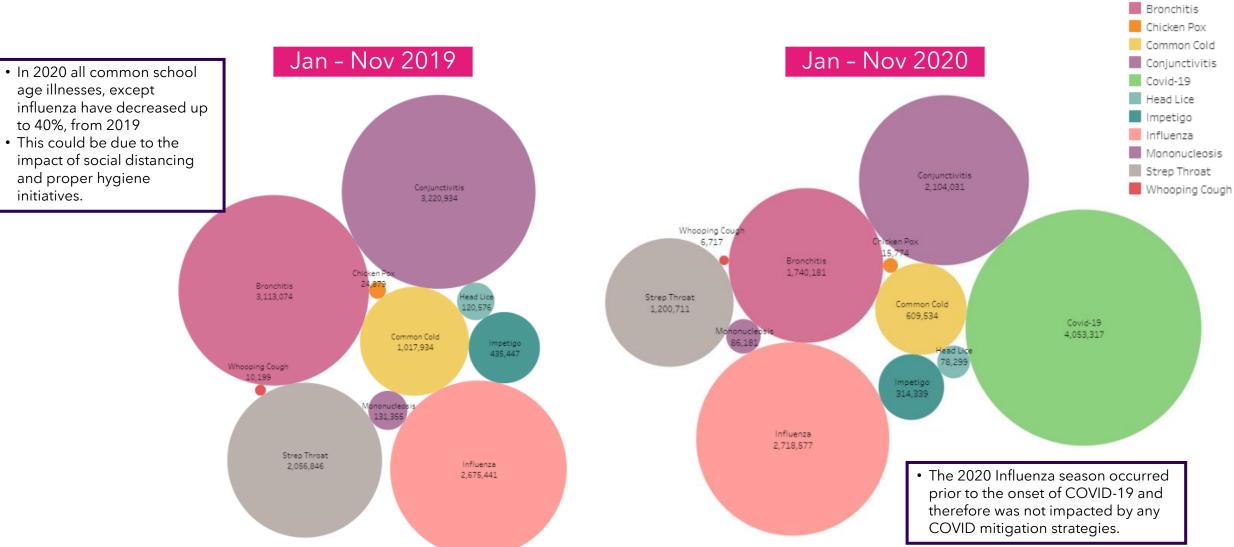
- There is no consistent correlation between restrictions and respiratory illness prevalence. Certain states acted contradictory to the notion of high restrictions equaling less prevalence.
- Even with High to Medium restrictions in NY and NJ, there is a higher prevalence of respiratory illness in the 0-17 population
- CA, having the highest restrictions, has a low prevalence of respiratory illness in the 0 -17 population
- States with Medium Low restrictions such as SD, LA, MS, and TX have high respiratory illness prevalence







Incidence of common school age repository illnesses has declined during 2020, likely due to **COVID** mitigation strategies and school closures during the spring Analysis Group

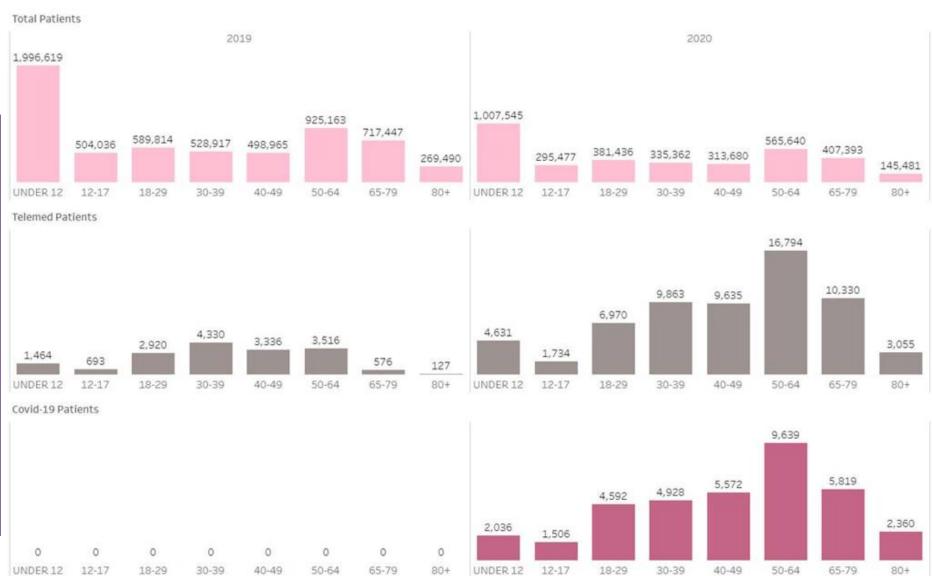






Infection for bronchitis, common cold, and strep throat were down by 35% to 49% across age groups, with high-risk age groups seeking more telemedicine appointments compared to 2019

- 49% fewer patients under the age of 12 have been diagnosed with bronchitis, common cold or strep throat during 2020 compared to the same time period in 2019.
- Decreases in bronchitis, common cold and strep throat were also observed for older populations (Age 30-49 down 37%, Age 50-64 down 39%, Age 65-79 down 43%, Age 80+ down 46%).
- In 2020 use of telemedicine increased by 477% compared to 2019 in patients 50 - 64 years of age.
- On the bottom row, 0.2% of 0-17 patients with bronchitis, common cold or strep eventually contracted Covid-19; 1.7% for the 50-64 age group.

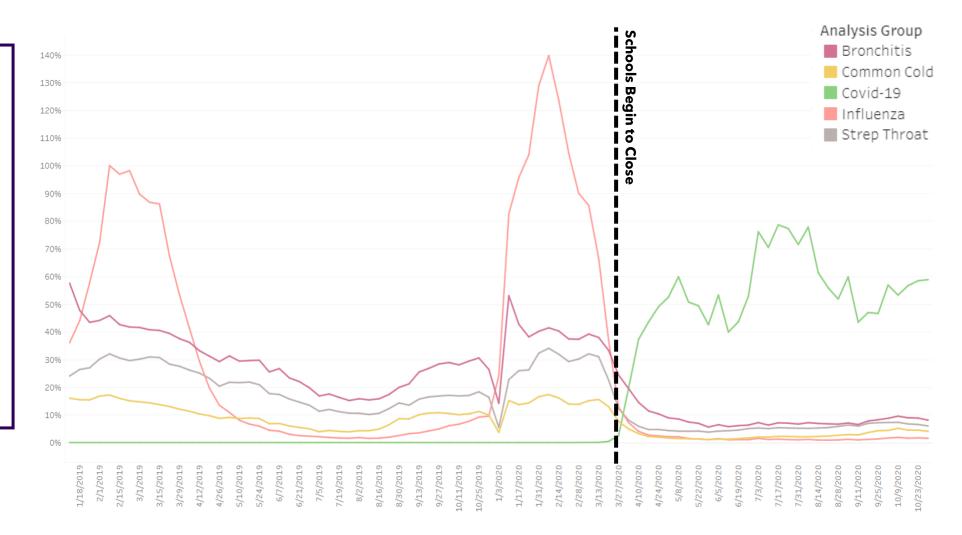






Declines in common respiratory illnesses occurred at the time schools began to close in the spring and have continued through 2020

- 2020 pre-COVID was shaping up to be a normal year for respiratory ailments, but since COVID struck and schools closed all common respiratory illnesses have declined and remain lower than normal as of the end of October.
- The normal seasonal upswing in respiratory illnesses that can be observed beginning in late August 2019, have not materialized in 2020.
- While COVID-19 remains a serious challenge for the US, social distancing, better hygiene and school closings appear to have significantly decreased the incidence of other common ailments.

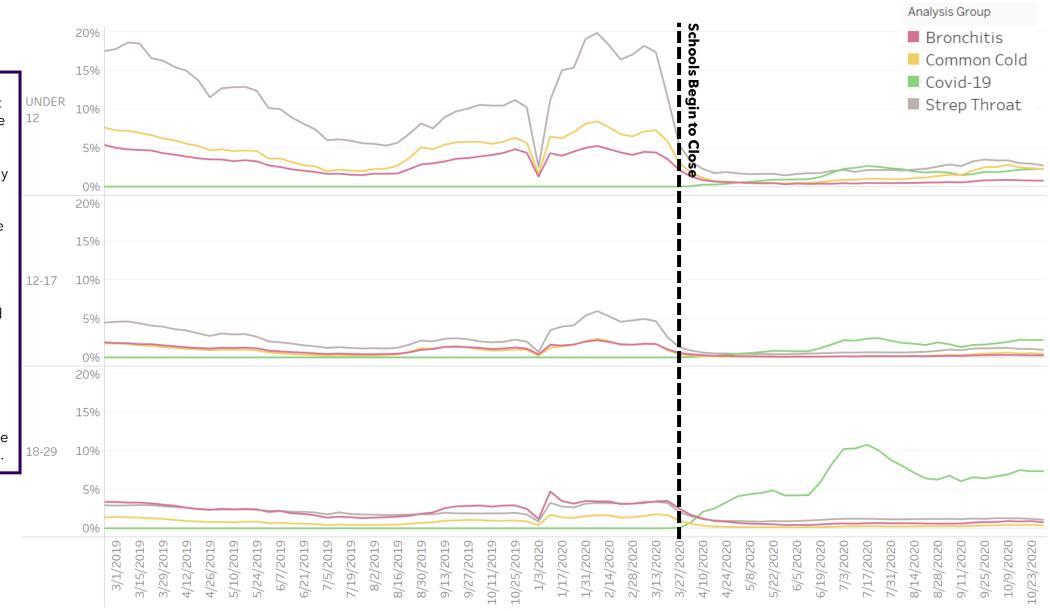






Covid-19 restrictions impact the younger populations more significantly than older populations

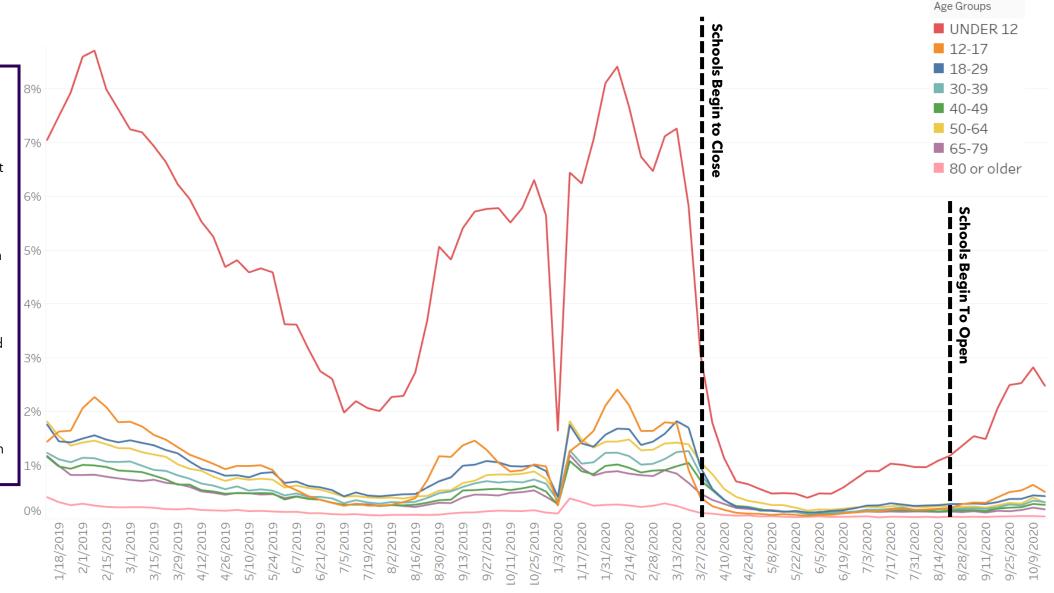
- The drop in common respiratory conditions is most dramatic in patients under the age of 12.
- That same group has relatively little COVID-19 diagnoses compared to the 12-29 year olds and to a lesser extent the 12-17 year olds.
- Older patients continue to have lower than normal rates of bronchitis, strep throat and the common cold since the school closing.
- Patients under the age of 12 show some resurgence in the common respiratory conditions, although no where near the rates prior to COVID.





Across all Age Groups, the common cold affects Under 12 disproportionately

- The common cold decreased precipitously following the implementation of COVID restrictions including school closing for all age groups, but most noticeable among the patient under the age of 12.
- Following the reopening of schools there is an increase in common colds among patients under the age of 12, but as of mid-October those rates were still almost 50% below the comparable period in 2019.
- For other age groups the reduction in common colds following COVID restrictions has largely continued through mid-October.

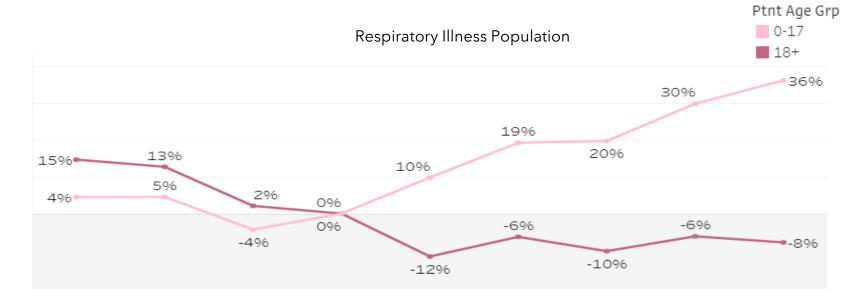


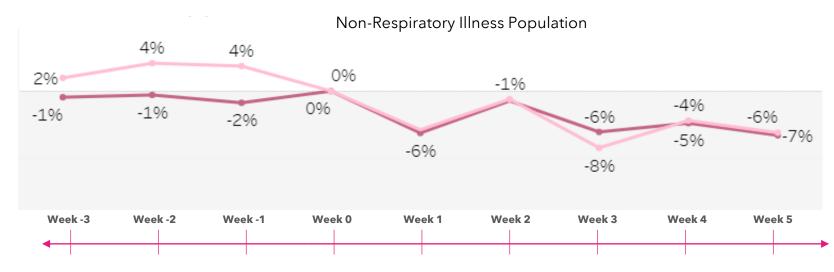


With the reopening of school in the fall, rates of respiratory illnesses have started to increase again

- Common respiratory illnesses (bronchitis, common cold, covid-19, influenza, mononucleosis, strep throat, whooping cough) among patients 0-17 years of age rose as much as 36% in the first 5 weeks post school opening.
- During the same period the rates of those illnesses declined as much as 27% for patients age 18+.

 Non-respiratory illness (conjunctivitis, headlice, impetigo) drops 4-8% once school starts for both age groups.



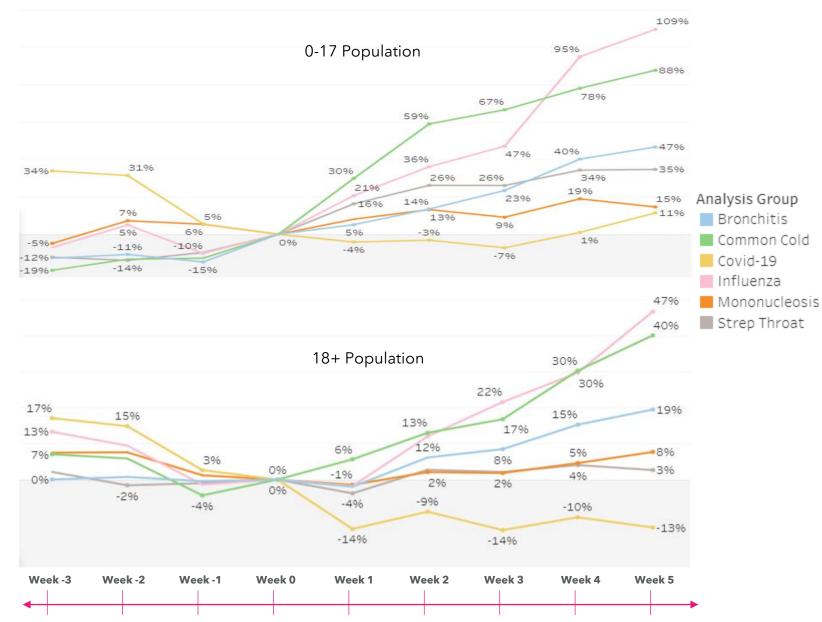






Detailed view of respiratory illnesses following the opening of schools

- Within the 0-17 population, all respiratory illnesses increase post school opening with flu and the common cold rising 109% and 88% respectively. Compared to one week prior to the school openings the increase is even more dramatic (119% and 103% respectively).
- While Covid-19 infections among patients age 0-17 initially decreased they began to rise again in the 4th and 5th week post school reopening.
- For the 18+ population, all respiratory illnesses, except COVID-19, increased but at a lower rate than the 0-17 population.
- Rates of COVID-19 among patients 18+ decreased 9-14% in the 5 weeks following school openings.





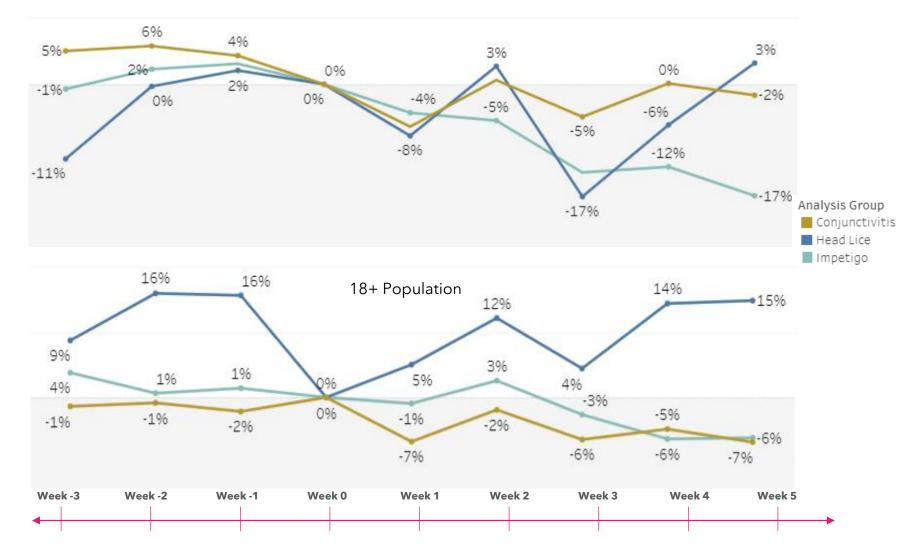


Detailed view of non-respiratory illnesses following the opening of schools

- Among patients 0-17 the rate of Impetigo diagnoses decreased significantly following the reopening of school.
- 5 weeks after the reopening of schools the rate of conjunctivitis diagnoses is down 2% and head lice diagnoses are up 3%. However the head lice diagnosis rates have fluctuated wildly.

- Both conjunctivitis and Impetigo diagnosis rates among patient 18+ have declined following the reopening of schools (down 7% and 6% respectively as of week 5).
- Head lice in this population remains at rate similar to those prior to schools reopening.

0-17 Population









Care Delivery Trends: Telemedicine & Office Visits



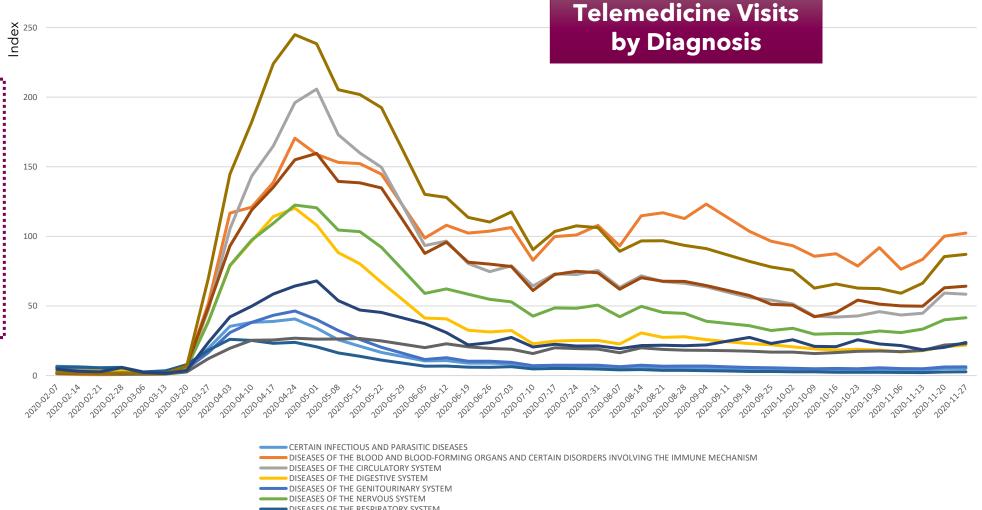
National / Channel Summaries & Elective Therapy Monitoring



Telemedicine Visits: Diagnosis



- While telemedicine visits remain WELL above 2019 levels, they have leveled off or declined from the COVID-19 peak for most diagnoses.
- Neoplasms and disease of the blood currently have the highest relative increase in use of telemedicine.
- There have been modest increases in use of telemedicine by most diagnosis groups corresponding to the latest surge in infections.





An index of 1 means the current week has the same number of claims as the 12 week rolling average from 2019 (100% of 2019 volume).

• An index of 5 means there are 5 times as many claims in the current week as in the 12 week rolling average from 2019 (500% of 2019 volume).

• An index of 0.5 means the current week had 50% fewer claims than the 12 week rolling average from 2019 (50% of 2019 volume).

NEOPLASMS

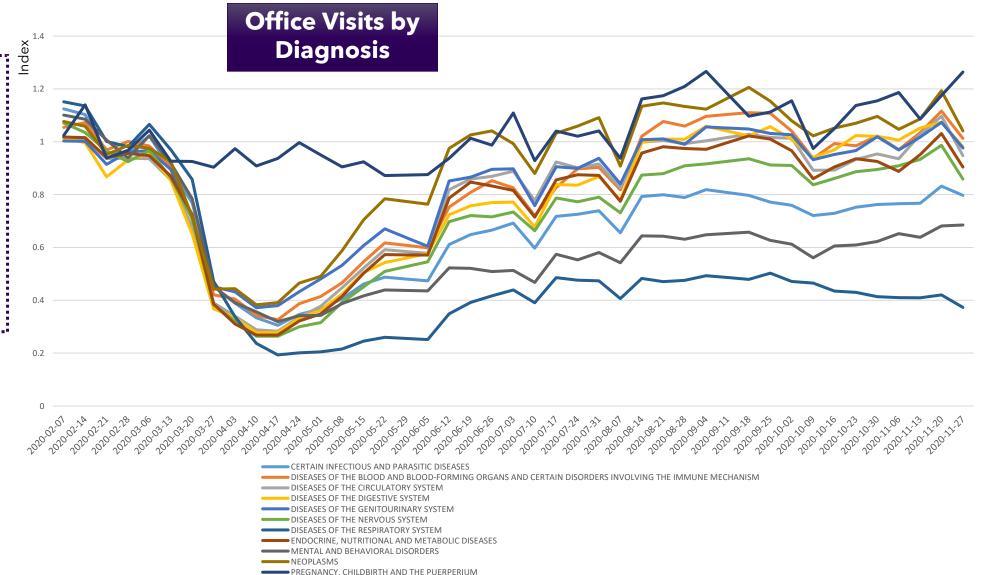
PREGNANCY, CHILDBIRTH AND THE PUERPERIUM

Index = Current Week divided by the 12 Week Rolling

Office Visits: Diagnosis



- Office visits gradually increased from their lowest point during the week of March 27th through mid-September.
- As of the week of November 27th. the only diagnosis groups at or above 2019 levels were pregnancy/child birth, diseases of the blood and blood forming organs and neoplasms.
- Visits for pregnancy and childbirth were the least affected diagnosis group.





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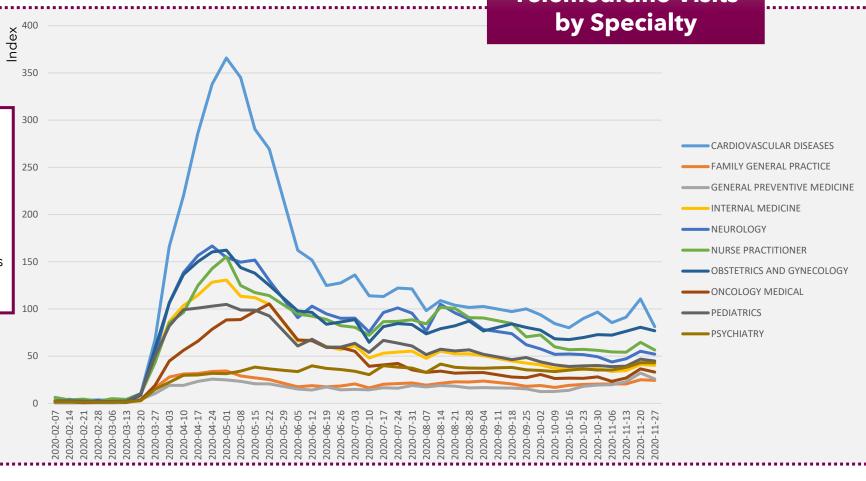


Telemedicine Visits: Specialty



Telemedicine Visits by Specialty

- Telemedicine use by provider specialty has leveled off or declined slightly since the peak in mid-April.
- During the month of November there has been a slight uptick in the use of telemedicine for most specialties.
- The use of telemedicine by cardiologists remains the highest among specialties tracked.

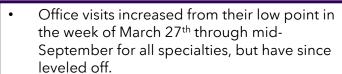




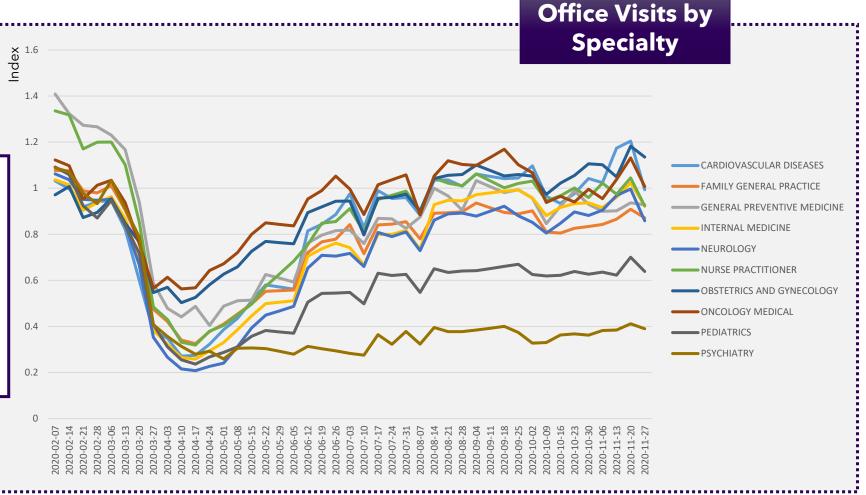
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- Psychiatry office visits remain down by more than 60% and visits to pediatricians are down almost 40% compared to 2019 levels. Both have shown no signs of improvement since August.
- All other specialties are at least 85% of 2019 levels.





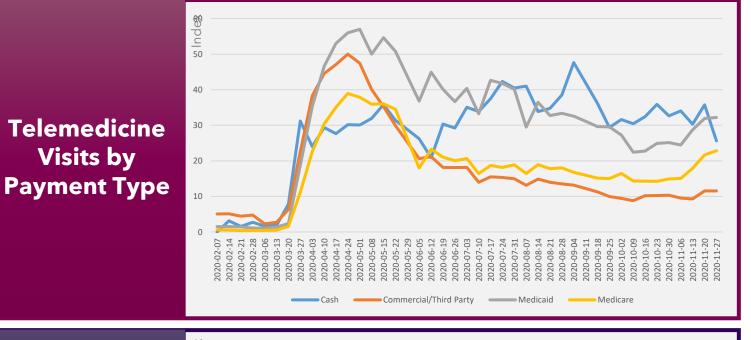
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[•] An index of 0.5 means the current week had 50% fewer claims than the 12 week rolling average from 2019 (50% of 2019 volume).



- Use of telemedicine for Medicaid patients has increased in recent weeks going from an index of 24.4 in the week of November 6th to an index of 32.2 in the week of November 27th.
- Medicare patients have shown a similar uptick in the use of telemedicine, going from an index of 15.0 to 28.8 in the same time frame.
- Office visits for Cash patients remain down over 40% from 2019 levels. This may be due, at least in part, to increased unemployment.







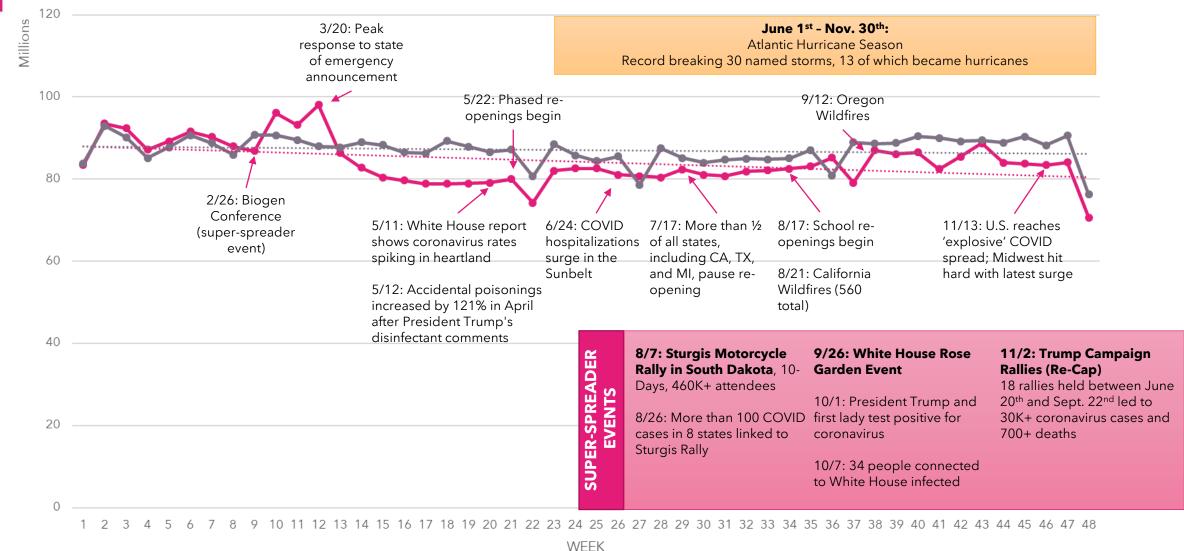
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NATIONAL PRESCRIPTION TRENDS: PANDEMIC HIGHLIGHTS





Symphony Health A PRA Health Sciences Company

CURRENT YEAR



...... Linear (CURRENT YEAR)

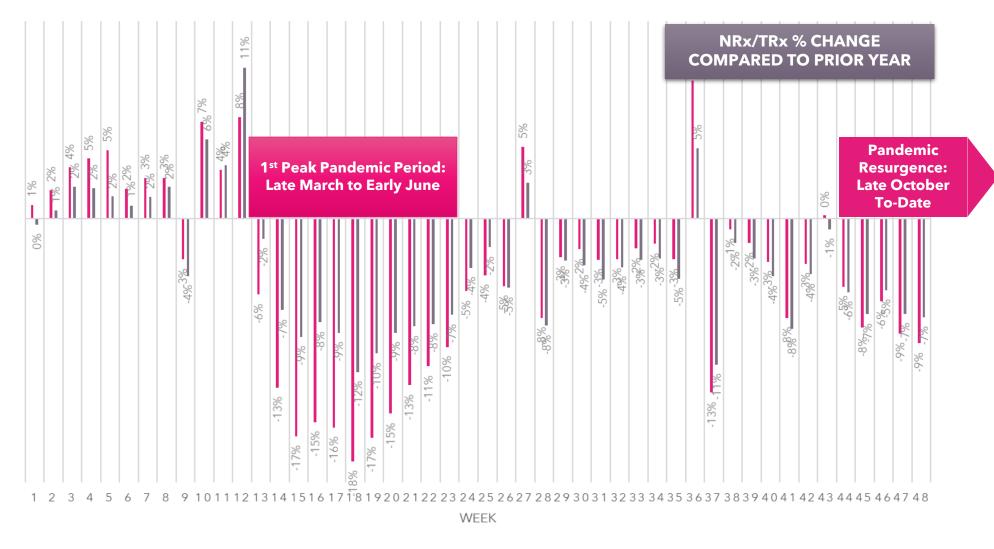
..... Linear (PRIOR YEAR)

Data Week 48: November 27th, 2020 Projected Retail, Unprojected Mail Order, Projected LTC, All Other NRx/TRx Counts



NATIONAL TRENDS: With a resurgence of COVID-19 outbreaks in recent weeks, the gap between current and prior year prescription thresholds continue to widen.





■ NRx: Current vs. Prior Year % Change

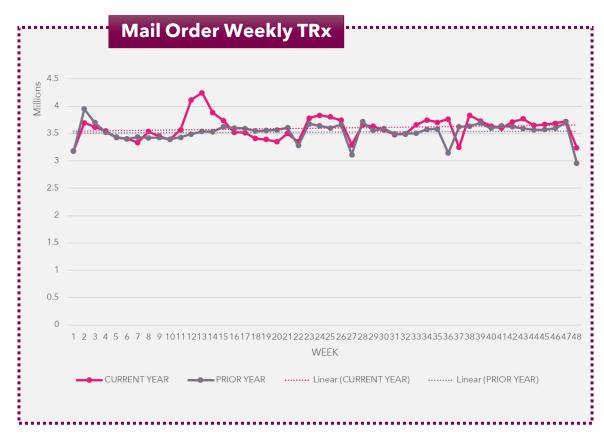
■ TRx: Current vs. Prior Year % Change



NATIONAL TRENDS: Retail store activity continues to report below 2019 levels as of week ending November 27th. Recovery remains stalled with recent surges in COVID-19 outbreaks.









ELECTIVE THERAPIES: While Dermatologicals have recovered since the start of the pandemic, other elective therapy trends continue to display stagnant growth.



