

COVID-19 Mitigations in the U.S.

November 21, 2020





COVID-19 Mitigations in the U.S.

Week of November 21, 2020

AUTHORS David Ingram, CERA, FSA, MAAA
Daniel Ingram, MBA

Caveat and Disclaimer

The opinions expressed and conclusions reached by the authors are their own and do not represent any official position or opinion of the Society of Actuaries or its members. The Society of Actuaries makes no representation or warranty to the accuracy of the information.

Copyright © 2020 by the Society of Actuaries. All rights reserved.

COVID-19 Mitigations in the U.S.

Week of November 21, 2020

This report provides highlights of a weekly survey of practices regarding the mitigation of the spread of COVID-19 in the U.S. during the week of November 21, 2020. The survey asks about the degree to which the respondents perceive that people in their community are following 21 common mitigation practices. The responses are separated by state and compared to state level statistics regarding the level of COVID-19 infections from the Johns Hopkins COVID database for the same time period.

Executive Summary

A slight decline occurred in community mitigation practices across the country this week from 65.0% last week to 61.8% this week according to observations from 463 individuals in 46 states. At the same time, new COVID-19 infections set a morbidity record for the second week in a row, surpassing 1.1 million cases in a week. Since a recent low of 158 infections per 100,000 people in mid-September, infections have risen to 658 infections per 100,000 people and continue to climb.

This week there were sharp declines in the top mitigation practices. Next week may indicate if this was the start of trend of relaxing mitigation practices in anticipation of a vaccine or just a temporary change that will be reversed shortly as states tighten required and recommended practices. Of the sixteen states where we have significant data from one month ago and from this week, no two states have had the same approach to controlling COVID. A closeup at an example state, Pennsylvania, reveals an average decrease in use of 6.8% in 13 of the 21 surveyed mitigation practices, and an average increase in use of 5.3% in the remaining 8. Across all 21 mitigations in the 16 states, only 2 of 336 exhibited no change in the last month and the average change was $\pm 10.0\%$ with a standard deviation of 12.9%. The full set of mitigations surveyed are included in the appendix to this report.

Use of mitigations and the spread of COVID continue to demonstrate a reflexive relationship. As the virus spreads, mitigations are put in place and then withdrawn once the virus is more under control. Currently the U.S. is in the midst of the largest increase in spread of the pandemic yet and it is yet to be seen how this will change the efficacy of the various mitigations. Correlations can be identified between individual mitigations and the rate of infections but have yet to be able to identify a concise leading indicator with sufficient explanatory power to predict the course of the virus.

Mitigation Practices - National

Average percentage compliance with 21 COVID-19 mitigation strategies that we study was 61.8% this week, down from 65.0% last week. Six of the twenty-one mitigations practices had average compliance above 70%, two had average compliance below 40% and thirteen had average compliance between 50% and 70%.

Nationally the weighted average of compliance with these mitigations has remained steady since the beginning of August, averaging 63.7% with a standard deviation of 3.52%. When mitigations are broken out into practices within states and regions of states, we see a far greater variance in mitigations as respondents observe the results of individual states implementing changes in COVID mitigations to combat surges and relax those measures as the situation improves. Individuals are also reacting to their personal perceptions of the level of COVID danger locally. Many instances have been observed of cyclical COVID caseloads and mitigation practices within individual states even as the U.S. average remains steady.

Survey Details

Collects information from volunteers on perceptions of community compliance with 21 COVID Mitigation strategies.

Participants answer between 0% and 100% that they see the strategy in use in their area.

Participants are asked to fill out survey every week.

CHANGING MITIGATIONS

Throughout the past eight weeks, the five mitigations that our observers say have the highest average compliance have remained the same. Results from the last four weeks are presented below:

Top Five Mitigations	10/31/20	11/7/20	11/14/20	11/21/20
Special protection in hospitals areas that treat COVID	94%	91%	93%	81%
Visitors to senior living facilities to be restricted	85%	88%	85%	75%
Restaurants to have reduced seating	87%	87%	86%	77%
Hairdresser and barber to be open with restrictions	87%	86%	84%	77%
Quarantine people with positive tests	78%	79%	81%	71%

This week saw a sharp decline in all five practices nationwide. Next week will be able to further see if the decline was a one-time blip or a new trend of reduced mitigations in these categories. With the recent surge in COVID cases across the country, it is concerning to see the most used mitigations fall drastically without an accompanying increase in other practices. Mitigation practices with the largest increase are compared below:

Mitigations with Largest Increase	11/14/20	11/21/20	Increase
Get Antibody Testing	29.7%	36.8%	+7.2%
Schools (K-12) Closed or Remote Only	48.5%	53.8%	+5.3%
Violations of restrictions enforced by fines or police	23.6%	28.5%	+4.9%
Good Communication of Statewide Targets for Reducing COVID Spread	51.6%	56.4%	+4.8%
Quarantine of Travelers from Higher Infection Places	42.6%	46.9%	+4.3%

With the large increase in number of infections we are currently experiencing, it is also possible that mitigations are less effective when used at the same level than they were at lower infection levels. This may indicate that nationwide we need to adapt our behaviors on a large scale from the routinized mitigations that were in effect for much of the summer and into the fall.

Mitigation Practices – State Level

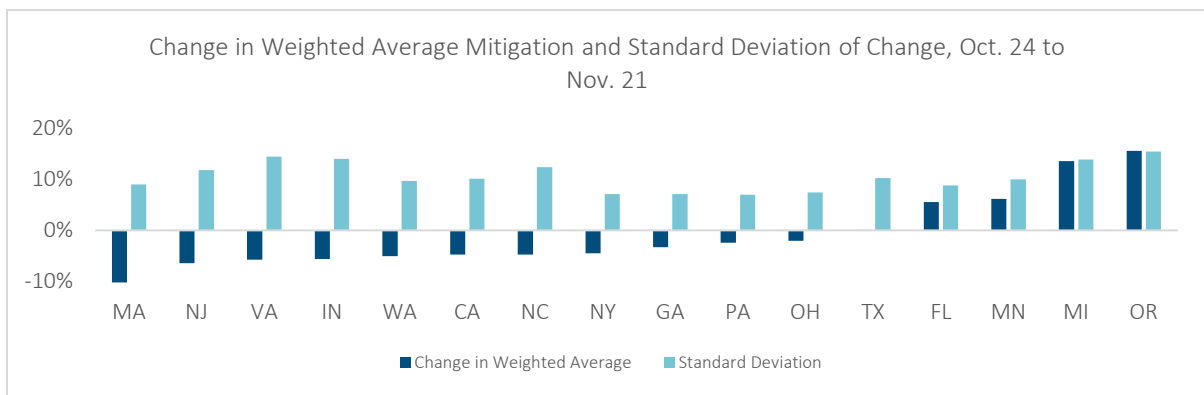
Weighting Basis

Weighting is based on average compliance in states where COVID was under control during September.

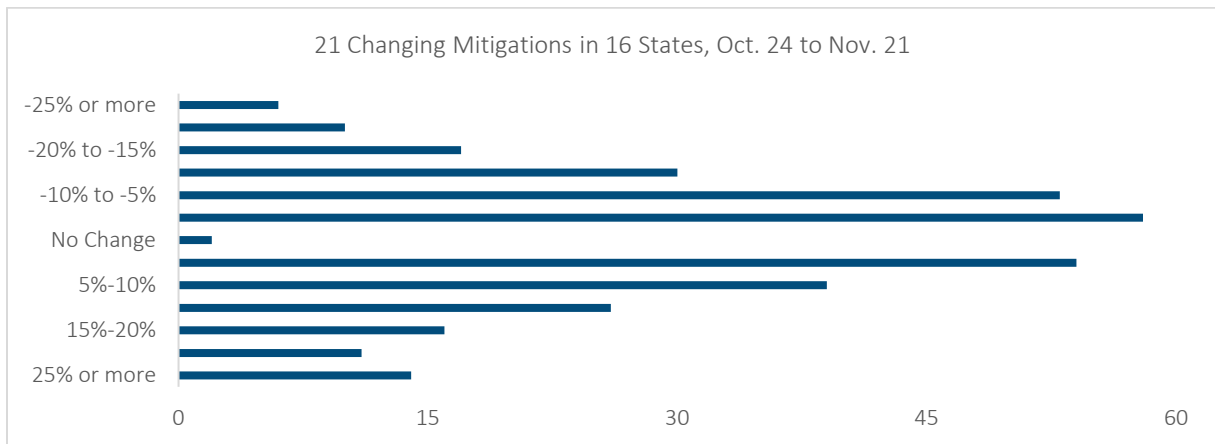
This week, the survey had a credible number of responses from 23 states. In those states the weighted average mitigation was 60.2% with a standard deviation of 5.2%. The states with the highest compliance were Minnesota (71.1%), Oregon (70.1%), and Michigan (69.6%). The states with the lowest compliance were Indiana (51.0%), Georgia (55.0), and Texas (55.5%). In the 16 states where we had a credible number of responses for both this week and one month ago, we notice some very interesting changes in mitigation practices from last month to this month.

I continue to be amazed at how many people are not taking this seriously. Masks because they must, not caring about distancing.
 -Survey Comment from New York, November 20, 2020

Taking just one state as an example for how nuanced the changes are, over the last month in Pennsylvania mitigations decreased in 13 of the 21 practices we measure, by an average of 6.8%. The 8 that increased went up by an average of 5.3%. Four mitigations, Restaurants reduced seating (-10%), Restrictions at Hairdressers and Barbers (-13%), Sanitizing commonly touched surfaces (-14%), and Limiting Large Gatherings (-10%) all went down by double digits. Of those that increased, the largest were for Testing for Antibodies (+8%), Good Communication of Local Level of COVID Infections (+7%), and Schools (K-12) Closed or Remote Only (+7%).



Each of the sixteen states has its own path over the last month. Massachusetts has seen an overall decrease of 10% in the last month while in Oregon mitigations have risen 16%. The chart below summarizes the average change and standard deviation over the last month for all 16 states. Mitigations rose in only four states, fell in 11, and remained the same in Texas, despite large changes within mitigants.



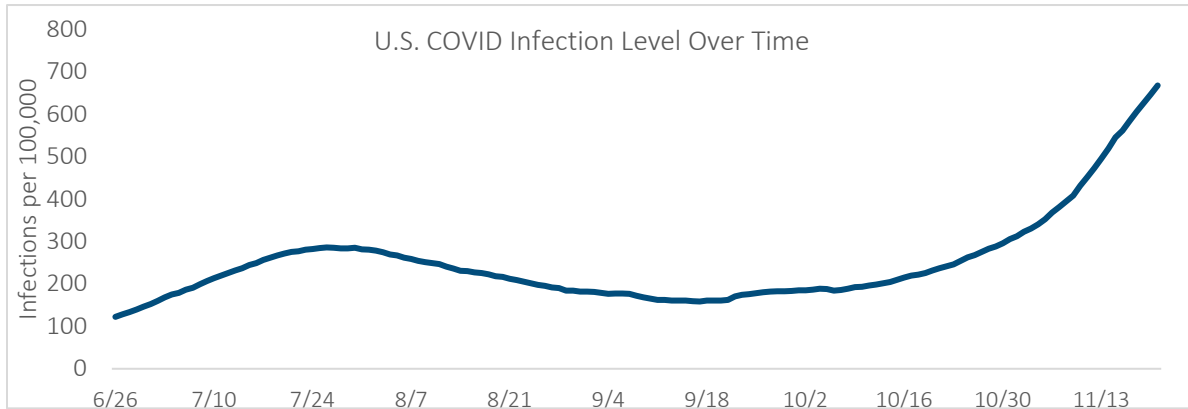
COVID-19 Spread of Infections – National & By State

NATIONAL

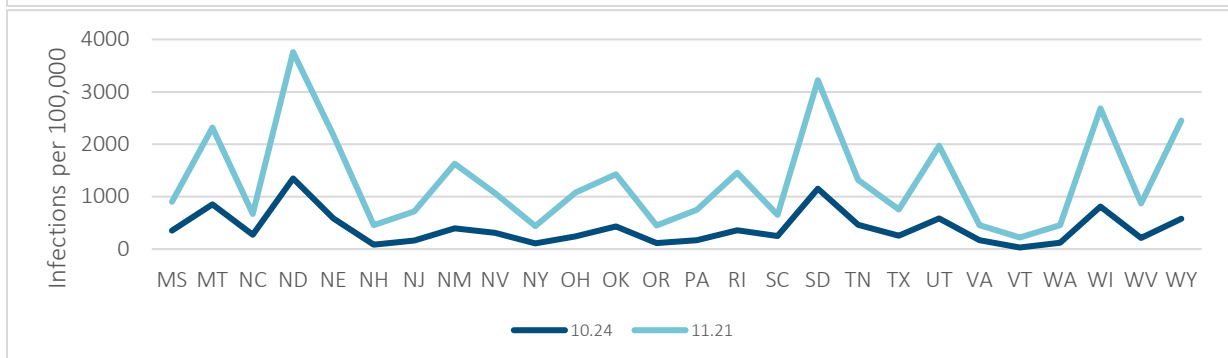
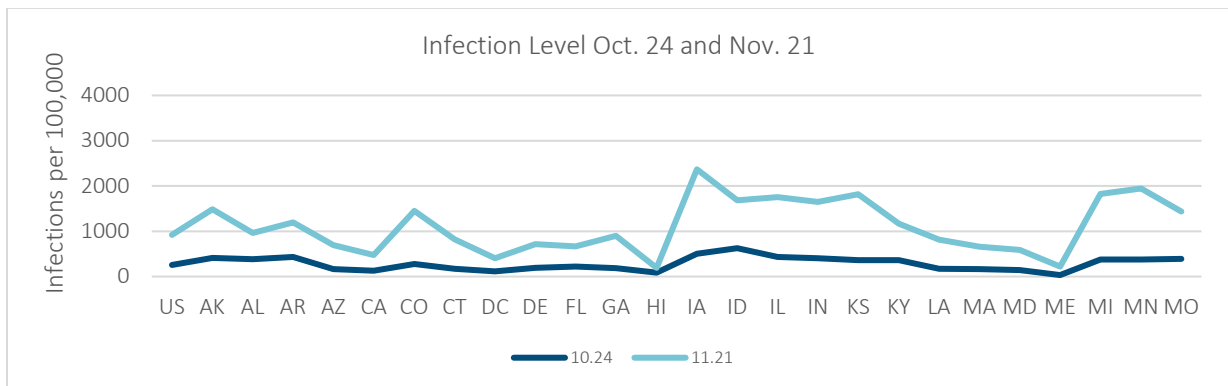
There were over 2.2 million new cases of COVID-19 reported in the past 14 days. The last two weeks have been the worst two weeks of the pandemic by far in the United States. As recently as October 26, the 7-day total was at half the current level.

Infection Level

is the number of active infections per 100,000 people.

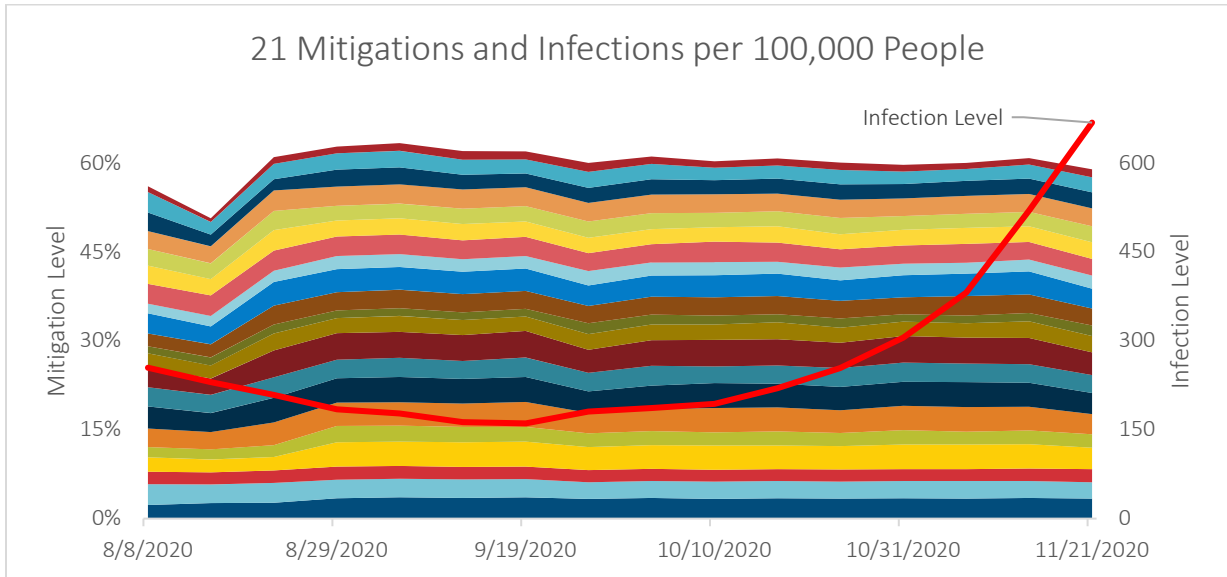


If this number down is broken down to look at individual state infections, a few interesting differences that show where the virus is spreading the most and least. Hawaii is the lone state with only a tiny increase in Infection Level over the last four weeks. Some states also have seen a more modest increase than others. New England has overall fared better in the last month, while the Midwest and Mountain states have seen incredible increases.



Spread of COVID-19 and Mitigations

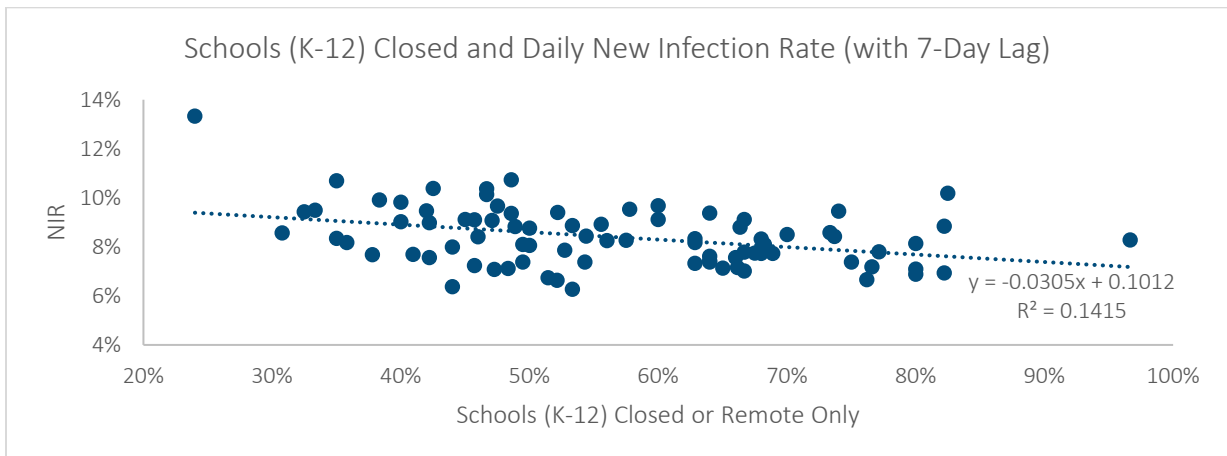
Over the recent weeks while the active COVID-19 infections have more than tripled from a low of 158 per 100,000 to the current level of 667, mitigations have not changed significantly in total across the US. News reports tell of state governments increasing their required or recommended mitigations in response to surges in COVID. This leads to a reflexive relationship between COVID infections and mitigations. Rises in infections often lead to increases in mitigations.



Daily New Infection Rate [NIR]

is the rolling 7-day average of each day's cases as a percentage of the total active cases.

It can be difficult to compare the effects of mitigations and the spread of COVID by looking at what the Daily New Infection Level [NIR] is doing over time. This statistic measures if the virus is growing or shrinking – if it stays below 7.14% for several weeks, infections will decrease. With a seven-day delay in the NIR, some patterns in how individual mitigations change the NIR, but there is little pattern between the total average mitigations in a state and that state's NIR. This suggests that the spread of the virus is complex and included not just the mitigations happening in one state, but also those in neighboring states and countries.



Acknowledgments

The researchers' gratitude goes to those without whose efforts this project could not have come to fruition: the Project Oversight Group and others for their diligent work overseeing questionnaire development, analyzing and discussing respondent answers, and reviewing and editing this report for accuracy and relevance.

Project Working Group members:

Max Rudolph, FSA, CFA, CERA
Kailan Shang, FSA, CFA, PRM, SCJP
Robert Wolf, FCAS, CERA
John Stark, FSA, CERA
Thomas McAndrew, Ph.D.

At the Society of Actuaries:

R. Dale Hall, FSA, MAAA, CFA, CERA

Note on Mitigation Compliance Observations

The COVID mitigation information is collected via a SurveyMonkey survey. In that survey, observers are asked to say what they are seeing in their community regarding the percentage compliance with 21 specific mitigation activities. The observers are volunteers who were either recruited personally by the project team or who responded to a variety of solicitations for observers via Twitter, Facebook, LinkedIn, and SurveyMonkey. This data is subject to self selection and other biases. No adjustments have been made to the data that we have collected in order to respond to possible biases. Responses are aggregated and the average of multiple views are treated as true information about the mitigation activity in a state. The variance of the responses in a state has been examined and targets are set for a higher number of responses in states where there is a higher variance of responses.

Appendix List of Mitigations under Study

- Wearing a mask in public
- Maintaining social distance
- Staying at home
- Restaurants to have reduced seating
- Businesses to be closed – work from home only
- Hairdresser and barber to be open with restrictions
- Visitors to senior living facilities to be restricted
- Commonly touched surfaces to be sanitized
- Special protection in hospitals areas that treat COVID patients
- Get tested for active virus
- Get antibody testing to detect prior infection
- Quarantine people who have been in close contact with people with positive tests
- Quarantine people with positive tests
- Quarantine travelers from higher infection places
- Limit large gatherings of people
- Local level of COVID infections
- Statewide targets for reducing COVID spread
- Local approach to limiting COVID spread
- Colleges are closed or holding only remote classes
- Schools (K-12) are closed or holding only remote classes
- Violations of COVID restrictions result in fines or police enforcement

About The Society of Actuaries

With roots dating back to 1889, the [Society of Actuaries](#) (SOA) is the world's largest actuarial professional organization with more than 31,000 members. Through research and education, the SOA's mission is to advance actuarial knowledge and to enhance the ability of actuaries to provide expert advice and relevant solutions for financial, business and societal challenges. The SOA's vision is for actuaries to be the leading professionals in the measurement and management of risk.

The SOA supports actuaries and advances knowledge through research and education. As part of its work, the SOA seeks to inform public policy development and public understanding through research. The SOA aspires to be a trusted source of objective, data-driven research and analysis with an actuarial perspective for its members, industry, policymakers and the public. This distinct perspective comes from the SOA as an association of actuaries, who have a rigorous formal education and direct experience as practitioners as they perform applied research. The SOA also welcomes the opportunity to partner with other organizations in our work where appropriate.

The SOA has a history of working with public policymakers and regulators in developing historical experience studies and projection techniques as well as individual reports on health care, retirement and other topics. The SOA's research is intended to aid the work of policymakers and regulators and follow certain core principles:

Objectivity: The SOA's research informs and provides analysis that can be relied upon by other individuals or organizations involved in public policy discussions. The SOA does not take advocacy positions or lobby specific policy proposals.

Quality: The SOA aspires to the highest ethical and quality standards in all of its research and analysis. Our research process is overseen by experienced actuaries and nonactuaries from a range of industry sectors and organizations. A rigorous peer-review process ensures the quality and integrity of our work.

Relevance: The SOA provides timely research on public policy issues. Our research advances actuarial knowledge while providing critical insights on key policy issues, and thereby provides value to stakeholders and decision makers.

Quantification: The SOA leverages the diverse skill sets of actuaries to provide research and findings that are driven by the best available data and methods. Actuaries use detailed modeling to analyze financial risk and provide distinct insight and quantification. Further, actuarial standards require transparency and the disclosure of the assumptions and analytic approach underlying the work.

Society of Actuaries
475 N. Martingale Road, Suite 600
Schaumburg, Illinois 60173
www.SOA.org