

At-home COVID-19 testing costs for commercial health plans

Estimating the financial impact of the recent federal requirement for employers and individual health insurance plans to cover self-administered and self-read COVID-19 tests.

Jason Karcher, FSA, MAAA
Jordan Pettibon, FSA, MAAA
Hanna Holzer



Since January 15, 2022, employer health plans and individual health insurance issuers have been required to cover at-home COVID-19 tests purchased over the counter for the duration of the coronavirus public health emergency. The resulting costs to health plans for covering these tests could represent a significant unanticipated expenditure in 2022 and beyond, though overall cost levels are likely to be driven by the scale of COVID-19 concern over this timeframe.

Starting in January 2022, all individual health insurers and employer-sponsored health plans (whether fully insured or self-insured) are required to cover self-administered, self-read over-the-counter (OTC) COVID-19 tests for at-home use without an order from a healthcare professional (referred to in this paper as at-home COVID-19 tests). Because this requirement was not in place when plans developed initial premiums for 2022, estimating costs under this requirement has become an urgent priority for many health plans.

Several factors present challenges to understanding potential insurer exposure to OTC COVID-19 test costs:

- Variation in COVID-19 infections and mitigation efforts at a local level as a result of individual attitudes toward the pandemic
- Variation with respect to testing requirements from schools, workplaces, and businesses
- Federal efforts to provide four free tests to each household¹ beginning on January 14, 2022,² and again on March 7, 2022³
- The intricacies of potential compliance pathways in the guidance from the U.S. Departments of Health and Human Services (HHS) and Labor (DOL)

In this paper, we provide two illustrative estimates of the potential costs of a fully compliant direct coverage pathway in 2022 to address the magnitude of variability in costs associated with these factors.

1. A fading pandemic scenario showing costs of about \$2 to \$4 per member per month (PMPM) with no projected costs in 2023.
2. An unabated pandemic scenario showing costs of about \$17 to \$25 PMPM, with this level of costs potentially continuing into 2023.

The illustrative cost estimates in this paper assume relatively active participation in this program and communication of the at-home COVID-19 test benefit to members. To the extent that health plans or issuers seek narrower approaches to test availability, such as via the direct coverage pathway, use of a reimbursement approach, or limited communication of this benefit with members, we would generally expect lower utilization and expenditures for this benefit than those estimated above.

¹ Determined by mailing address.

² As discussed in the release of January 14, 2022, which also announced the availability of four free tests per household courtesy of the federal government. See <https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/14/fact-sheet-the-biden-administration-to-begin-distributing-at-home-rapid-covid-19-tests-to-americans-for-free/>.

³ Officially announced during the president's State of the Union address on March 1, 2022, tests became available for delivery on March 7, 2022, per <https://www.nbcnews.com/health/health-news/people-us-can-order-four-free-covid-tests-online-rcna19018>.

A brief review of the requirements

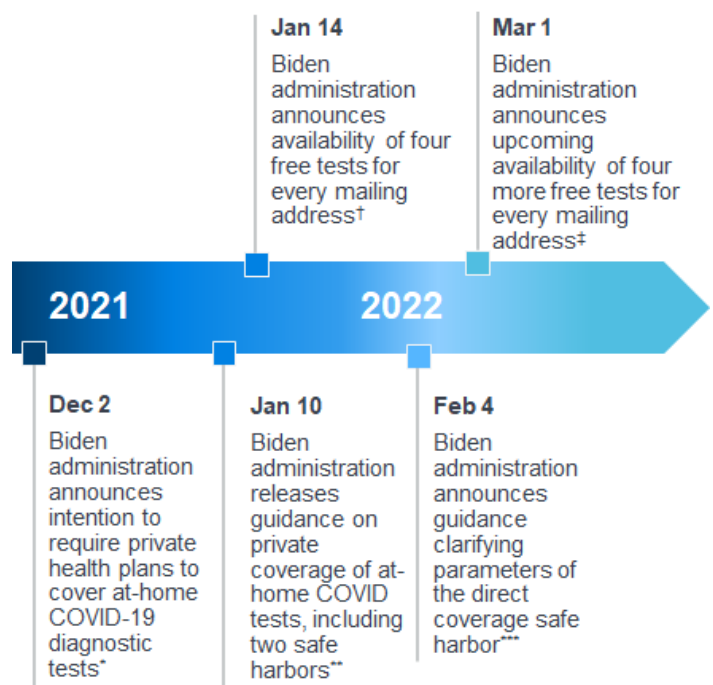
The Families First Coronavirus Response Act (FFCRA),⁴ as amended by the Coronavirus Aid, Relief, and Economic Support (CARES) Act,⁵ requires employer-sponsored health plans and individual health insurance policies (collectively “health plans”) to cover all tests for COVID-19 that are approved, authorized, or cleared by the U.S. Food and Drug Administration (FDA) at \$0 cost sharing without any prior authorization or medical management, whether in or out of network, for the duration of the COVID-19 public health emergency (PHE). Further federal guidance clarified that this requirement is intended to be health-focused and is not required to extend to tests for employment purposes or other public health screening measures.⁶ However, plans are limited in their ability to verify that testing is only for approved purposes. As outlined in Figure 1, the administration took action to extend this guidance to at-home COVID-19 tests at the end of 2021.

The core determination underlying the updated guidance is that the requirement to provide COVID-19 testing free of member cost sharing and medical management extends to tests purchased OTC for at-home use without a provider’s involvement. However, a requirement to cover OTC COVID-19 tests under the same terms as provider-administered tests would have presented several challenges.

One key challenge of ensuring equal treatment of OTC COVID-19 tests and provider-administered COVID-19 tests is systems integration—OTC tests are not typically covered or processed under commercial benefits. To address the systems issue, plans are permitted to require members to purchase tests up-front on the condition that the plans must also reimburse all eligible tests at the purchase cost (provided the test is not reimbursed by any other source). Health plans are permitted to require an attestation that the test is for health use as well as proof of purchase but may not implement a multi-step or otherwise burdensome process for reimbursement of tests.

Alternately, and in recognition of the potential consumer and health plan burdens associated with this all-reimbursement approach, DOL established a safe harbor where plans can cover at-home OTC COVID-19 tests through a direct purchase agreement, so that members have reasonable access to procure tests in person or via a direct-to-consumer pathway at no cost. To encourage health plans to adopt this safe harbor, DOL permitted plans that implement this safe harbor to cap reimbursement for tests from nonnetwork providers or other retailers at \$12 per test, provided the direct purchase pathway creates adequate access to tests for plan members.

FIGURE 1: TIMELINE OF FEDERAL AT-HOME COVID-19 TESTS FOR INDIVIDUALS IN PRIVATE HEALTH COVERAGE



* <https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/02/fact-sheet-president-biden-announces-new-actions-to-protect-americans-against-the-delta-and-omicron-variants-as-we-battle-covid-19-this-winter/>

** <https://www.dol.gov/sites/dolgov/files/EBSA/about-ebsa/our-activities/resource-center/faqs/aca-part-51.pdf>

*** <https://www.dol.gov/sites/dolgov/files/EBSA/about-ebsa/our-activities/resource-center/faqs/aca-part-52.pdf>

† <https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/14/fact-sheet-the-biden-administration-to-begin-distributing-at-home-rapid-covid-19-tests-to-americans-for-free/>

‡ <https://www.npr.org/2022/03/07/1085022030/you-can-order-free-covid-tests-from-the-government-again>

HHS and DOL also recognized that a limited ability to verify appropriate usage of tests could lead to abuses of the OTC test reimbursement requirement. As such, DOL established an additional safe harbor where plans are considered to have provided adequate access to tests if they limit coverage (whether through reimbursement or the direct purchase pathway) to no fewer than eight tests per member per month.

⁴ Full text of the FFCRA can be found at <https://www.congress.gov/116/plaws/publ127/PLAW-116publ127.pdf>.

⁵ The text of the CARES Act can be found at <https://www.congress.gov/116/plaws/publ136/PLAW-116publ136.pdf>.

⁶ This guidance was published by DOL at <https://www.dol.gov/sites/dolgov/files/ebsa/about-ebsa/our-activities/resource-center/faqs/aca-part-44.pdf>.

Drivers of cost

While there are many factors under consideration with the new guidance, the question of plan costs for tests largely relies on two factors: how many tests individual members will purchase per month and at what cost per test. As discussed in more detail in this section, we first estimate what utilization might be at its peak, when a plan has fully implemented a direct coverage pathway with no supply issues, and all plan members are aware of this benefit and how to obtain available tests.

Figure 2 shows the range of peak utilization estimates based on variation in state demographics and COVID-19 characteristics.

FIGURE 2: ESTIMATED PEAK UTILIZATION OF AT-HOME COVID-19 TESTS

COHORT	MONTHLY TESTS PER MEMBER		
	LOW-DEMAND MARKET	AVERAGE MARKET	HIGH-DEMAND MARKET
Vaccinated ⁷ Children	0.23	0.29	0.43
Unvaccinated Children	0.54	0.67	0.84
Vaccinated Adults	1.84	2.18	2.49
Unvaccinated Adults	0.73	0.99	1.15
Overall	1.38	1.62	2.02

We further estimate that tests will cost about \$16 per test, resulting in total peak costs of about \$22 to \$32 PMPM, averaging approximately \$25 PMPM.

These peak utilization levels are unlikely to occur in practice due to a combination of test availability, individual awareness of testing requirements, and individual prioritization of getting tested in the event of symptoms. We estimated utilization relative to these peak estimates for a fading pandemic and for an ongoing pandemic scenario for a health plan that has implemented a direct coverage pathway. Both scenarios' ranges of cost estimates, based on variation in state demographics and relevant COVID-19 data points, are outlined in Figure 3.

FIGURE 3: ESTIMATED 2022 OTC TEST PMPM COST

SCENARIO	PMPM COST		
	LOW-DEMAND MARKET	AVERAGE MARKET	HIGH-DEMAND MARKET
Fading Pandemic	\$2.36	\$2.79	\$3.48
Unabated Pandemic	\$17.06	\$20.14	\$25.10

⁷ Throughout this paper, the phrase "vaccinated" means fully vaccinated, but does not reflect any use of booster shots.

⁸ On January 28, 2022, the Kaiser Family Foundation released polling that indicated seven in 10 adults have COVID-19 fatigue, which they define as being tired of the current state of the COVID-19 pandemic. See <https://www.kff.org/coronavirus-covid-19/poll-finding/kff-covid-19-vaccine-monitor-january-2022/>.

There are many reasons a health plan's specific costs could vary meaningfully from those presented in Figure 3, and they are addressed in the following section. The remainder of this section is focused on how we arrived at these values.

FACTORS AFFECTING AT-HOME OTC COVID-19 TEST UTILIZATION

Utilization rates are likely to be shaped by a mix of local and national factors. Here are some that are likely to be important:

- Local infection rates: The need for testing is likely to be higher in regions with high community transmission.
- Daycare or communal settings may require regular testing as a condition of attendance or may require testing when any symptoms are present.
- Parents of school-age children may test more frequently, particularly where vaccination may be less common, mask mandates may be prohibited, or publicly available testing is not viable.
- Adults may have different levels of concern regarding the virus and varying exposure to potential transmission based on a variety of factors, including their jobs, vaccination status, and prevailing local attitudes.

Local infection rates are likely to have more influence on testing demand than the other factors, but also represent the most challenging factor to model. If the omicron variant was to represent the last COVID-19 variant of concern to trigger hospitalization rates and death counts at the levels observed to date, then testing utilization would presumably be lower than in a scenario where further variants lead to additional waves of high hospitalization counts and deaths.

In the former situation, the public's readiness to move toward a new normal may have a significant role in utilization.⁸ This COVID-19 fatigue is also likely to play a role in reduced testing over time, even if the PHE were to continue on a longer-term basis. In the latter scenario, usage of this testing benefit may persist throughout 2022 and into 2023. For our analysis, we treat the national environment of infection and hospitalization rates as an overall scalar to the demand for testing, independent of other population and market-specific drivers of variation in utilization and demand. As such, we approach our cost estimate by first estimating peak utilization, and then applying multiplicative adjustments specific to the state of the pandemic and availability of testing at any given point in time.

To produce a utilization estimate for these times of higher demand, we split our population into several different cells in which testing utilization may be more predictable than for the population at large. Using census data and national COVID-19 vaccination data, we split the U.S. population enrolled in private health coverage by age, school setting for children, public interaction in employment for adults, and vaccination status.

We did not explicitly model variation in adult vaccination status and utilization across job settings and ages. While there are certainly variations in adult vaccination rates by age and other factors, we did not expect this variation to be material to the overall results of our analysis as we expect utilization will be driven more by exposure than age, particularly among the working age population. Additionally, we encountered limited data on variation in vaccinations at this level of detail.

For children, we reviewed U.S. data on childcare by age and prevalence of homeschooling to determine how many children who are not in public or private schools are enrolled in daycare or communal settings, where the need for convenient COVID-19 testing is more common versus entirely at home. We estimated vaccination rates by age using public COVID-19 vaccination data by age band and relative propensity of individuals in each school setting to be vaccinated.

Within each of these cohorts, we estimated three distinct factors that may together determine the test utilization by cohort during a period of higher utilization under this benefit:

- The likelihood that an individual in this cell will want or need to test
- The number of at-home tests that an average individual utilizer is likely to purchase and use (including the need for two tests to confirm a negative result for many antigen tests)
- The likelihood that testing costs are covered by another source (such as the four free tests provided by the federal government in January⁹ and March¹⁰ and other public health programs)

Furthermore, we anticipate that societal attitudes toward COVID-19 (as opposed to government measures taken in response to COVID-19) are likely to influence testing utilization. In regions where individuals are generally less compliant with public health recommendations, there are likely to be fewer testing requirements and less testing utilization. In regions where

individuals are more compliant with public health recommendations, there are likely to be more testing requirements and increased testing. In order to estimate compliance, we estimated a ratio of vaccinated adults to the number of adults who are willing to be vaccinated as a proxy that quantifies this adjustment. Where more of those who are willing to be vaccinated are vaccinated, we presume there is greater community prioritization of COVID-19 measures and include an adjustment to utilization that reflects prioritization relative to the national average. These estimates were then composited across each cohort to estimate the total utilization estimates shown in Figure 2 above.

FACTORS AFFECTING AT-HOME COVID-19 TEST UNIT COST

There are a variety of COVID-19 tests available that are FDA-authorized and can be self-administered and self-read. Most of these tests are antigen tests. The most common of these tests cost \$10 to \$12 each across a wide variety of retailers.¹¹ These tests are the least expensive option available to consumers, and can confirm a positive result with a single test but may require a second test to confirm a negative result, particularly when the individual is asymptomatic. In fact, these tests are often sold in two-packs to enable the user to take the test twice. A second class of antigen tests requires only one test to confirm a negative result, but these tests tend to be modestly more expensive, closer to \$20 per test. Additionally, at least two molecular tests have been authorized by the FDA and appear to be self-read and self-administered, though costs for these tests are significantly higher—nearing \$100.^{12,13}

While current DOL guidance is not clear about which tests must be covered in order for a safe harbor to meet adequate access, the guidance is clear that not all tests need to be covered. In the absence of clear requirements from DOL as to whether more expensive tests must be covered, we anticipate that the bulk of utilization will be focused on the least expensive class of tests, but that each population may be more likely to lean toward a more expensive test when it is available to them in-store or direct-to-consumer. Additionally, the administrative costs associated with implementing a direct purchase pathway (or even when reimbursing requests directly) will increase costs further, and test costs are anticipated to be higher than \$12 per test. Overall, our estimates assume an average cost per test of about \$16, including \$4 per test in administrative costs to the plan.

⁹ The White House announced the free tests as part of a broader suite of efforts to address the surging omicron COVID-19 variant.

¹⁰ In his March 1, 2022, State of the Union address, President Biden announced that the federal government will provide a second round of four free tests per household.

¹¹ Determined by a review of at-home test costs on Walmart.com, Amazon.com, Target.com, CVS.com, and Walgreens.com.

¹² Cue Health offers a molecular test that runs approximately \$60 per test but requires a \$249 test reader (which can be reused). See <https://www.axios.com/cue-health-home-covid-19-test-74983030-43c0-4808-8eb1-2f79ea8b9617.html> (retrieved March 23, 2022).

¹³ Lumira offers a molecular test that is available for home use for \$75 at <https://checkit.lucirahealth.com/> (retrieved March 23, 2022).

We then composited these estimates across each cohort to estimate average test cost. We anticipate that vaccinated adults may be more likely to seek out more precise but higher-cost tests as a result of greater concern regarding COVID-19. Overall, we estimate that vaccinated adults will spend roughly \$16.40 on average per COVID-19 test, about \$0.80 higher than nonvaccinated adults or children.

FACTORS THAT INFLUENCE TEST UTILIZATION MORE BROADLY

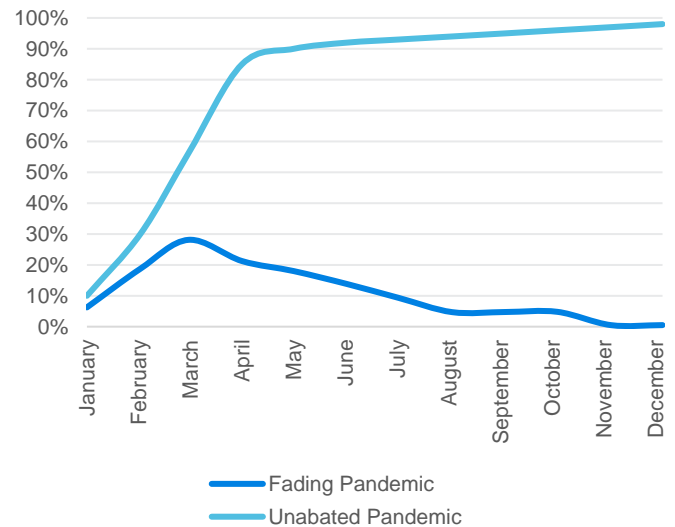
The detailed cohort approach used here is focused on modeling “peak utilization”—in other words, how many people will use testing assuming there is material community transmission locally and/or nationally and that the population at large remains engaged with the pandemic at levels observed in January 2022. From there, we apply three broad adjustments to the estimate to determine costs for each month in 2022:

- **Testing supply:** Reporting suggests that over 60% of individuals had trouble obtaining an OTC COVID-19 test in January 2022.¹⁴ The Biden administration cited supply issues in its announcement of December 2, 2021, and is working to restore supply.¹⁵ We are modeling a situation where supply will be capable of meeting peak demand in April 2022.
- **Testing awareness:** The guidance places limited requirements on plans to ensure that members are aware of how they may obtain free OTC COVID-19 tests. Consumer awareness is likely to somewhat limit utilization in early 2022, though consumer need and peer experience are likely to increase overall awareness over time.
- **Testing prioritization:** Consumers are likely to prioritize testing differently in a low transmission scenario and a high transmission scenario, but any relevant testing requirements are likely to persist well after the end of the most recent COVID-19 wave.

We focused our analysis on two primary scenarios—one in which the omicron variant represents the last major period of high-severity COVID-19 (the “fading pandemic” scenario), and one in which recurrent waves of COVID-19 persist through 2022 (the “unabated pandemic” scenario). These scenarios are intended to provide an indication of the range of costs that plans may experience under a direct coverage pathway. Under both scenarios, supply and awareness curves are similar, while test

prioritization varies significantly. Figure 4 shows the estimated monthly test utilization relative to peak utilization outlined in Figure 2 above as a result of test supply, awareness, and prioritization under each scenario.

FIGURE 4: MONTHLY TEST UTILIZATION RELATIVE TO PEAK UTILIZATION UNDER DIFFERENT PANDEMIC SCENARIOS



A RANGE OF COST ESTIMATES FOR A DIRECT COVERAGE PATHWAY

Throughout 2022, we estimate specifically covering rapid antigen at-home tests through the new guidance may cost fully compliant commercial health plans somewhere between \$2 and \$4 PMPM in a low utilization scenario in which cases continue to subside following the winter 2021-2022 omicron variant wave and no other variant emerges to drive a comparably substantial surge in cases.

We also estimated that costs could rise to \$17 to \$25 PMPM if COVID-19 cases return to high levels as a result of new COVID-19 waves in the months to come. Both scenarios’ ranges of cost estimates are based on variation in state demographics and relevant COVID-19 data points. These estimates are not intended to bookend maximum or minimum possible outcomes for any given plan or market, but instead provide reasonable estimates of potential variation in costs across markets for plausible lower-demand and higher-demand scenarios.

¹⁴ Kaiser Family Foundation. 42% of Adults, and 70% of Those Likely Booster-Eligible, Now Say They’ve Gotten a COVID-19 Booster Shot. News Release. Retrieved March 23, 2022, from <https://connect.kff.org/vaccine-monitor-42-of-adults-and-70-of-those-likely-booster-eligible-now-say-theyve-gotten-a-covid-19-booster-shot>.

¹⁵ As discussed in the release of January 14, 2022, which also announced the availability of four free tests per household courtesy of the federal government. See <https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/14/fact-sheet-the-biden-administration-to-begin-distributing-at-home-rapid-covid-19-tests-to-americans-for-free/>.

These estimates account for peak utilization of almost two at-home tests taken per person per month at the current average price of rapid antigen at-home tests at big box stores and online retailers, including administrative fees that may be incurred by the plan. These ranges consider the relative ease of access associated with creation of a network of at-home test providers due to the incentivized cap per test obtained out-of-network, as well as a delay in obtaining the at-home tests during any nationwide shortage such as that present in January and February, and reflects the variety of potential testing needs, vaccination rates, and public attitudes toward the COVID-19 pandemic. Our estimates reflect considerable variation in monthly costs over the year based on the relative test utilization in each month. Estimated costs for an average market start under \$2 PMPM in January due to the influence of limited supply and member awareness coupled with challenges rolling out a robust consumer program. Costs rise to \$6 to \$9 PMPM in March in our fading pandemic scenario and over \$25 PMPM in the second half of the year in our unabated pandemic scenario, as supply increases and members become more knowledgeable about their specific health plan programs.

Uncertainty in estimates and incorporation of early experience

These estimates are predicated on a series of assumptions. Some of these factors could drive costs above the ranges outlined here—for example, peak test utilization could be higher in various populations than we project, and test prioritization could be above that modeled. However, most adjustments that a health plan may want to make are likely to result in lower costs—after two years, individuals may be particularly eager to return to a life without COVID-19 worries, regulatory vagueness may lead to health plan decisions that limit member awareness of how to use a benefit, and members may simply not send in requests to be reimbursed for tests purchased and paid for out of pocket. We now explore some of the more important levers that may have a meaningful influence on a specific health plan's experience.

ADJUSTING THESE ESTIMATES

As with all actuarial estimates, our estimates are very dependent on how actual experience emerges. We describe some factors health plans should consider as they review these estimates:

Does the plan implement a direct purchase pathway?

While members can be reimbursed for a broader range of tests at a higher rate if a plan does not establish a direct purchase pathway, the requirement to purchase tests up-front creates the perception of skin in the game, similar to the role of a health

savings account (HSA) in a high-deductible health plan. This could reduce utilization by up to half via a combination of avoided utilization and failure of members to submit reimbursement forms, although the average cost of covered tests could be higher. Utilization and cost are likely to depend on the health plan's specific mix of enrollees.

Furthermore, health plans that do not implement a direct purchase pathway should consider the potential for consumer pushback, particularly if public advertising gives enrollees the perception that they are entitled to up-front coverage of OTC tests.

Effectiveness of plan communications

Current federal guidance is not prescriptive as to how plans must communicate the at-home test benefit to members. A plan that provides more robust and straightforward communication to members could increase awareness of (and corresponding utilization of) an at-home testing benefit, while plans that draw less attention to the benefit may incur lower costs.

Engagement of plan membership

Not all members are equally engaged with their health coverage—a less engaged member base may not respond as strongly to plan communications, while more engaged members may be more responsive to plan communications and more likely to drive utilization of an at-home testing benefit even in the absence of plan outreach. This may be a significant issue for health plans on the Patient Protection and Affordable Care Act (ACA) exchanges as compared to the employer group market, where individuals may have less capacity or willingness to engage in care and related processes relative to employer-sponsored coverage. As the market of last resort, the individual market has a greater proportion of lower-income individuals than a typical employer plan. Research indicates lower income is associated with reduced health literacy, which we anticipate would correlate with reduced utilization of this new and potentially confusing benefit.¹⁶ A reimbursement approach in lieu of a direct coverage pathway could particularly disadvantage lower-income individuals who may struggle to afford the up-front cost of testing.

The effect on laboratory testing

With at-home tests often being more convenient than laboratory-based polymerase chain reaction (PCR) tests, some PCR test utilization may shift to at-home tests as people substitute one type of test for the other in instances where PCR tests are not strictly required. This could help offset plan costs due to the higher average unit cost of PCR tests, although this may be limited if larger numbers of positive test results via at-home testing lead more individuals to seek confirmation using the laboratory test.

¹⁶ For example, see <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/health-literacy>.

Duration of the PHE

Currently, commercial health plans are only required to provide test coverage for the duration of the COVID-19 public health emergency (PHE). When will this PHE end, and how will health plans respond to member expectations regarding testing following the conclusion of the PHE? Current expectations are that the PHE will extend through at least early July 2022, and potentially longer.¹⁷

Implications of cost

The January 10, 2022, testing requirements come well after health plan premiums have been filed and employee health coverage contributions have been set for 2022. While group health insurance may have some flexibility in certain jurisdictions to prospectively revise premiums for new policies to reflect the anticipated increase in costs, this option may not be available for current policies or in the individual market. Some insured health plan premiums in 2022 may already be priced below insurers' expectations for required revenue, as the federal medical loss ratio (MLR) requirement for calendar year 2022 includes plan experience for 2020 and 2021, the former of which was particularly favorable for many issuers. As a result, plans may have limited margin to absorb the additional costs of unanticipated testing. Therefore, unanticipated costs such as those associated with the omicron variant wave and the at-home COVID-19 testing coverage mandate could drive some insurers into a premium deficiency position.

Additionally, the potential for the PHE to extend into 2023 creates implications for 2023 pricing, which will be established in midyear 2022 at the latest. Individual and small group insurers are in the midst of the 2023 pricing cycle, and as such should consider the potential for this requirement to persist into 2023 as they develop and file rates.

Conclusion

The new requirement to cover at-home OTC COVID-19 tests for enrollees of employer group health plans and individual health insurers creates significant administrative hurdles and exposes health plans to potentially significant costs based on a variety of regional and national factors. Moreover, the long-term nature of the ongoing pandemic creates an uncertain sunset for these requirements.

The pandemic has had significant effects on healthcare utilization and costs, and this January 10, 2022, and February 4, 2022, guidance continues the trend of unpredictability that has been the pandemic's hallmark. Issuers have strong incentives to create provider COVID-19 testing networks for the at-home tests due to the high cost of these tests available in the market, at the risk of higher utilization associated with reduced consumer burden. Health plans should evaluate the member benefit of a direct purchase pathway versus associated administrative burdens and their ability to sustain the potentially significant cost levels associated with this requirement, particularly as signs point to additional extensions of the public health emergency into July 2022 and possibly beyond. With rate filing deadlines for 2023 coverage approaching, plans should additionally evaluate how these requirements may influence the breadth and cost of plan offerings in the coming year.

Methodology and Data Sources

One of the major lessons of this ongoing pandemic is that pandemic-related experience is profoundly local. While federal legislation and regulation has established many of the parameters for public health efforts, state and local officials, employers, businesses, and health plans have been charged with implementation of many of the key federal responses to the pandemic. Varying attitudes toward the pandemic across geographic regions have influenced the degree of public concern and measures adopted in different environments, and we anticipate that these local issues are likely to shape how much testing may be purchased by members under this mandate and thus the resulting cost impact. As such, we base our analysis on characteristics of various states in order to understand the degree to which local attitudes may cause costs to vary.

We relied on demographic information from the 2019 American Community Survey (ACS), which is the latest complete microdata sample from the U.S. Census Bureau. We considered several demographic and employment-related factors in the ACS in development of our estimates. While this federal requirement does not require health plans to cover employment-related testing, we anticipate that the factors that cause employers to require tests are likely to be associated with general exposure to COVID-19 and related concerns about contracting the disease. Similarly, we anticipate that children's experience will be largely informed by their school or daycare settings, which will shape any testing requirements as well as ease of access to publicly funded testing.

¹⁷ The current PHE declaration extends into April 2021. Federal regulators have indicated they will provide at least 60 days' notice prior to nonrenewal of the PHE declaration, and this notice was not provided. As a result, we expect that the PHE will be renewed for an additional 90 days.

We separated individuals in the ACS by age into individuals under 18, adults 18 to 64, and adults 65 and over, restricting our data to households who identified as having private coverage in 2019.

For children, we further subdivided our analysis to reflect whether the child was under 2, or else enrolled in a public school, a private school, or at home. Based on public data from the Centers for Disease Control and Prevention (CDC), we estimated that roughly 33% of children under 2 are in daycare settings. We reviewed data on homeschooling and daycare utilization for older children and determined that approximately 27% of children age 2 to 17 who are not enrolled in a public or private school setting are enrolled in a homeschool setting, with the remainder in daycare or other care settings.

For adults, we separated by household employment type. We classified various industries as public-facing or not public-facing, as individuals with public-facing jobs may be more likely to encounter individuals of unknown COVID-19 status and desire additional testing that could be viably justified as concern for their health.

We further split individuals into vaccinated and unvaccinated segments based on vaccination rates by age and state. We assumed that vaccination rates are similar for individuals with private coverage and individuals without private coverage. Research suggests that homeschooled children are significantly less likely to be vaccinated for COVID-19 compared to public and private school, so we adjusted vaccination rates for each age/school cohort to account for the reduced likelihood of vaccination of individuals not enrolled in a public or private school. We did not assume any variation in vaccination rate for adults age 18 to 64 and adults 65 and over by industry.

Within each cohort based on vaccination status, age, and school setting or type of employment, we estimated utilization based on estimates of member awareness, test availability, and member prioritization of testing.

We assumed that some of the highest utilization rates will be associated with daycare settings, where regular testing in the case of any symptoms is currently required and negative tests may be required to return to daycare if a positive test is incurred. We expect that the lowest utilization percentages will be found in individuals in homeschool settings because of generally lower interaction in close contact situations where COVID-19 transmission may be more likely. We also project higher utilization rates for individuals in public-facing jobs due to greater exposure and potential concern.

Another factor that is likely to affect utilization rates is regional attitudes toward the pandemic. A higher level of local concern and action may increase the willingness to test, while more lax requirements and higher vaccine hesitancy may create more concern about exposure when symptoms occur. As such, we reviewed a range of test utilization assumptions based on the relationship between prevailing vaccination rates and regional rates of vaccine hesitancy to understand the potential influence of regional variation in COVID-19 attitudes on overall testing utilization. The level of local concern was measured as the percentage of vaccinated adults among adults who are willing to get a vaccine at some point in time. We relied on state-level COVID-19 vaccination rate data published by federal and state officials as well as public vaccine hesitancy survey data published by Morning Consult.¹⁸

Supply and demand concerns of the tests can be very local but are very real in many areas at this point in time. As such, our projections include an adjustment for supply issues, with supply steadily increasing from about 50% of total need in February to full supply by April. We also estimated two separate demand curves for testing. Current public opinion polling suggests a high level of fatigue with regards to the pandemic. In the absence of any further major COVID-19 activity, this is likely to be reflected in reduced requirements in various settings and reduced desire to utilize at-home testing. This is likely consistent with a late 2022 end to the PHE, and our lower utilization demand curve reflects testing demand dropping from peak utilization demand in January and February to about 60% of those highs in June, before tapering to near 0% in September 2022 and onward. Our higher demand curve is more likely to apply if another variant of concern emerges and individuals return to higher levels of vigilance and align with high demand throughout the year.

Caveats, qualifications, and limitations

The authors of this report are consulting actuaries for Milliman, Inc. Jason Karcher and Jordan Pettibon are members of the American Academy of Actuaries, and meet the qualification standards of the American Academy of Actuaries to perform the analysis supporting this white paper.

The material in this white paper represents the opinion of the authors and is not representative of the views of Milliman. As such, Milliman is not advocating for, or endorsing, any specific policy changes to commercial market OTC COVID-19 testing coverage guidance in this white paper.

¹⁸ Survey results retrieved from <https://morningconsult.com/covid19-vaccine-dashboard/> on January 31, 2022.

We do not intend this information to benefit, or create a legal liability to, any third party, even if we grant permission to distribute this information to such third party.

Milliman has developed certain models to estimate the values included in this white paper. The intent of the models was to illustrate the potential impacts of potential variations in OTC COVID-19 test utilization and cost under commercial health coverage requirements outlined by the federal government. We have reviewed the models, including their inputs, calculations, and outputs, for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice (ASOP).

The models rely on data and information as input to the models. We have relied upon federal regulation published on January 10, 2022, and February 4, 2022, as well as data from the 2019 American Community Survey (ACS), the national COVID-19 dashboard, and public opinion polling from Morning Consult. We accepted this information without audit. We have reviewed this data for reasonableness. There is no single comprehensive source that estimates local COVID-19 vaccination rates, school settings, or type of employment for commercial market enrollees.

As such, we connected publicly available aggregate information across states to determine prevalence of individuals satisfying certain identified characteristics. To the extent that the data and information relied upon is not accurate, or is not complete, the values provided in this white paper may likewise be inaccurate or incomplete.

The information presented in this white paper is designed to provide insight into costs and utilization and to help understand and estimate the financial impact of recent federal guidance requiring coverage of OTC COVID-19 testing by employer group health plans and individual health insurance policies. Future healthcare costs are highly uncertain and will likely vary from our current estimates and will depend on market dynamics, a plan's regional makeup, and many other external factors, including those cited in this white paper.

The authors are not lawyers and this white paper does not constitute legal advice. Readers should consult with counsel prior to taking any action based on the information in this white paper.

This white paper is designed to assist group health plans and individual health insurers in better understanding the costs and dynamics of recent OTC COVID-19 test coverage requirements. This information may not be appropriate, and should not be used, for other purposes.



Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in life insurance and financial services, property & casualty insurance, healthcare, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

[milliman.com](https://www.milliman.com)

CONTACT

Jason Karcher
jason.karcher@milliman.com

Jordan Pettibon
jordan.pettibon@milliman.com

Hanna Holzer
hanna.holzer@milliman.com