



Workforce Health Index

Published May 2023





Table of Contents

Foreword	4
Medical & Prescription Drug Spend Trend	5
Prescription Drug Spend by Therapeutic Category	8
Medical Spend by Clinical Category	10
Preventive Care Utilization	11
Preventive Care Utilization by Income	13
Primary Care Engagement Impact on Clinical Risk & Spending	16
Conclusion	18
Appendix	19



Workforce Health Index Advisory Board & Authors

Dena M. Bravata, M.D., M.S., Chief Medical Advisor, apree health; Senior Affiliate, Stanford Center for Primary Care and Outcomes Research

Anne Fischer, B.S.E., Vice President, Analytics, apree health

Pen-Che Ho, M.S., Senior Manager, Analytics, apree health

Justin Mohatt, M.D., Medical Director for Innovation, Ohana, Montage Health; Chair, Department of Maternal Child Medicine, Community Hospital of the Monterey Peninsula

Shannon Prater, PharmD, M.S., B.C.P.S., Clinical Pharmacology Advisor, apree health

Katie Roda, M.B.A., Director, Product Marketing, apree health

Bruce Sherman, M.D., Medical Director, North Carolina Business Group on Health; Adjunct Professor, Department of Public Health Education, University of North Carolina-Greensboro, Greensboro, NC

Christopher M. Whaley, Ph.D., Economist, Professor, Pardee RAND Graduate School

Foreword

As we emerge from the COVID-19 pandemic, healthcare plan sponsors seek to stem the escalating costs of care for their populations and to maximize the value of their investments toward supporting the health of their populations. Given current macroeconomic factors, they are evaluating benefits with the goal of improving health outcomes, while better managing healthcare spend. With increased momentum on diversity and equity initiatives, many leaders are also focused on ensuring healthcare benefits and programs are inclusive and address the needs of their most vulnerable populations. Faced with the challenge of engaging a hybrid workforce both in the workplace and at home, many organizations recognize a need for new approaches to connect with and support their people. Organizations, big and small, can benefit from data-driven insights to inform their benefit strategies, especially in light of the ever-shifting dynamics in healthcare utilization and spend.

Recognizing that employee health and wellbeing are critical components of overall workforce strategy, the **2023 Workforce Health Index** examines historical trends, current state, and forecasts, for key aspects of medical and prescription drug spending for commercially-insured populations. We hope this report will be used by benefit leaders, health plans, consultants, policymakers, and providers working to improve access to, and affordability of the care needed to ensure a productive, engaged, and healthy workforce.

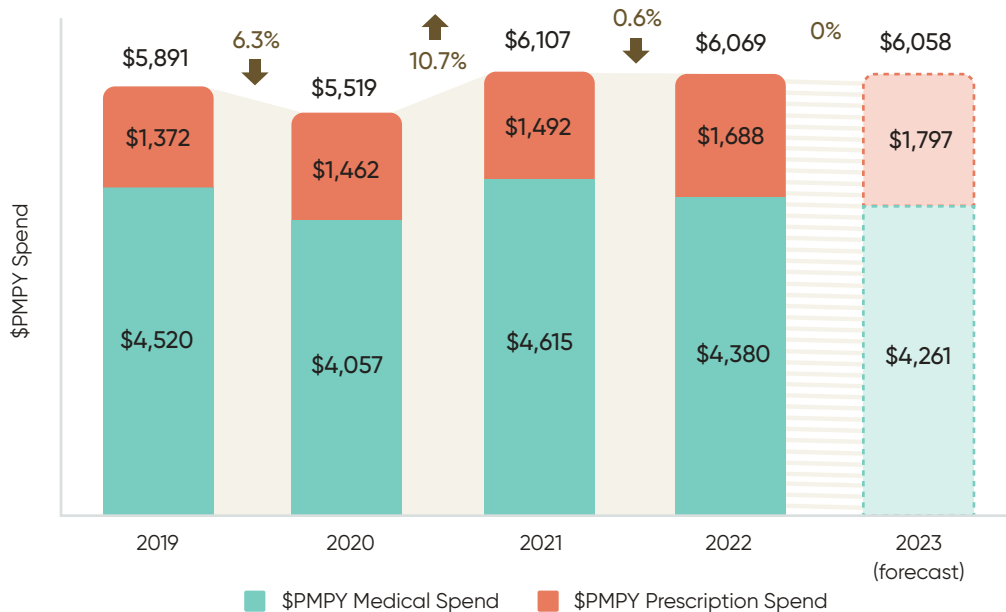


Medical & Prescription Drug Spend Trend

Commercial medical spendⁱ dropped slightly in 2022, while prescription drug spendⁱⁱ continues to grow. Forecasts predict flat growth in total commercial healthcare spendⁱⁱⁱ in 2023.

In our 2022 edition of the [Workforce Health Index](#), we observed a meaningful bounce-back in medical spend in 2021 as access to care was restored following the peak of the pandemic. In 2022, however, medical spend dipped slightly below pre-pandemic levels rather than resurging to historically observed growth patterns^{1,2}.

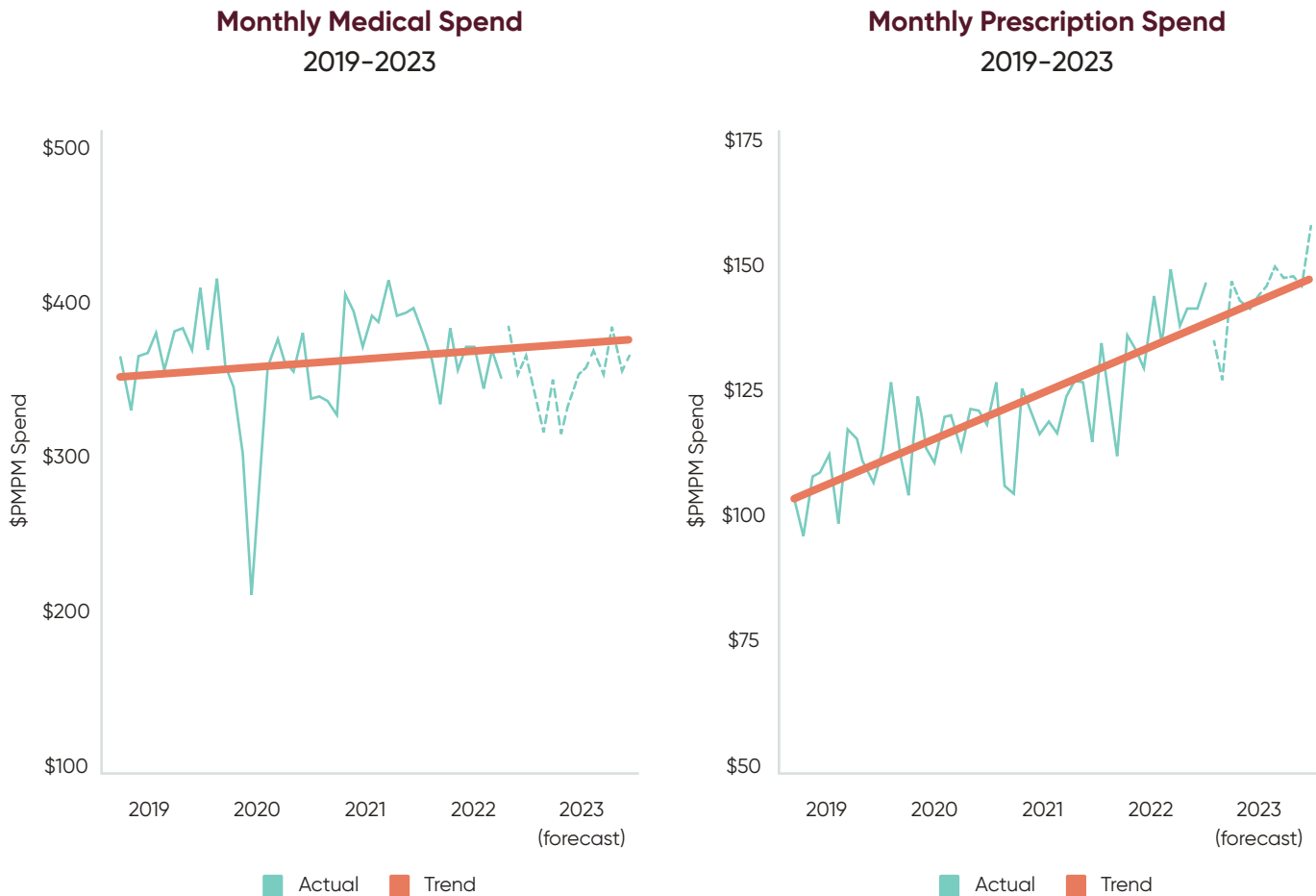
Total Commercial Healthcare Spend



- Total healthcare spend (including medical and prescription drug spend) remained flat in 2022; our forecasts project flat growth for total healthcare spend in 2023
- The rebound in medical spend trend observed in 2021 tapered off in 2022, with growth rates of 14% and -5% respectively
- Prescription drug spend continued to increase in 2022, growing 23% from 2019 pre-pandemic levels

i. **Medical spend:** Per member per year (\$PMPY) allowed medical spend which reflects the paid amount by both employer and employee. Prescription drug spend not included. Medications which are paid through medical claims, including chemotherapy and other infusions, are included in this category.
 ii. **Prescription drug spend:** Per member per year (\$PMPY) allowed spend on prescription drugs which reflects the paid amount by both employer and employee.
 iii. **Total commercial spend:** Per member per year (\$PMPY) allowed medical and prescription drug spend which reflects the paid amount by both employer and employee.

In contrast, prescription drug spend grew throughout the pandemic, and this growth has continued. The sharp increase in spend on prescription drugs paired with reduced medical spend resulted in prescription drug spend ballooning to 28% of total commercial healthcare spend in 2022.



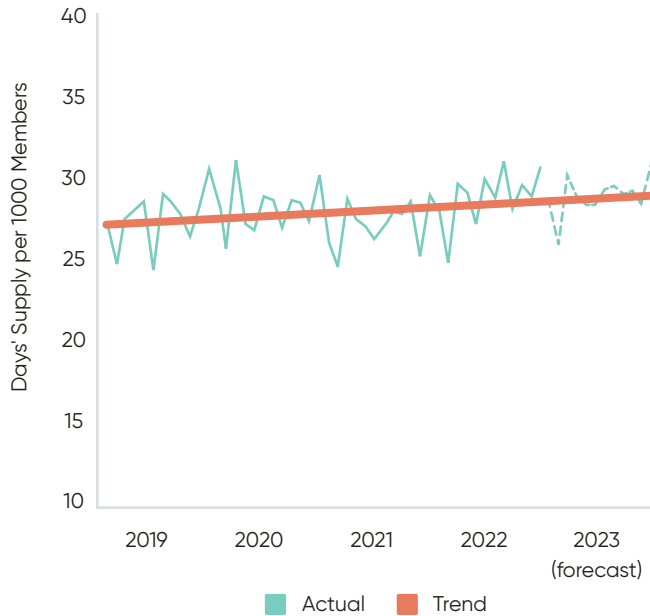
- Where medical spend dropped dramatically at the start of the pandemic, prescription drug spend proved to be less elastic, with continued growth into 2022

Were our 2022 medical spend forecasts accurate?

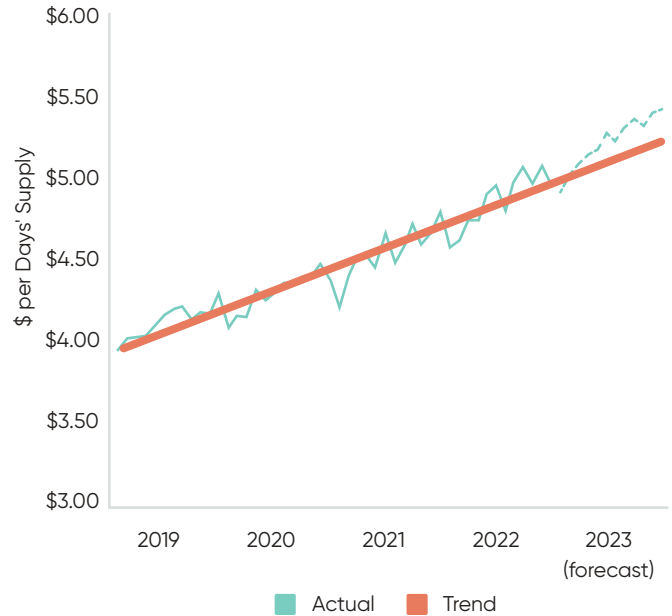
Yes. In the [2022 Workforce Health Index](#), we predicted total medical spend growth in 2022 would stay flat or dip slightly, as compared to 2021. Our forecasts indicated we would not see the return to historical rates of a 6 to 7% increase in medical spend, but rather we predicted medical spend would remain relatively consistent from 2021 to 2022. Further, our predictions indicated we would see engagement with preventive care shrink across all categories in 2022. Indeed, this is where actual 2022 spend trends landed, suggesting that the **Workforce Health Index** can serve as a reliable predictive view into what to expect for future spend trends.

Notably, our analysis indicates that price^{iv} is the primary driver of prescription drug spend growth, increasing from \$4.14 per days' supply in early 2019 to \$4.89 per days' supply by the end of 2022, an 18% increase. Comparatively, drug utilization rates^v remained flat over the same time period, indicating that prescription drug spend growth is largely driven by higher drug prices, rather than prescribing patterns.

Monthly Drug Utilization Rate
2019-2023



Monthly Drug Pricing
2019-2023



- Price is largely driving the increase in prescription drug spend, as prices increased by 18% from 2019 (\$4.14 per days' supply) to 2022 (\$4.89 per days' supply)
- Drug utilization remained flat from 2019 to 2022

iv. Drug pricing: Allowed dollar of prescription drug spend per days' supply of medication.
v. Drug utilization rate: Prescription drug days' supply per member per month.

18%

increase in prescription drug prices since 2019

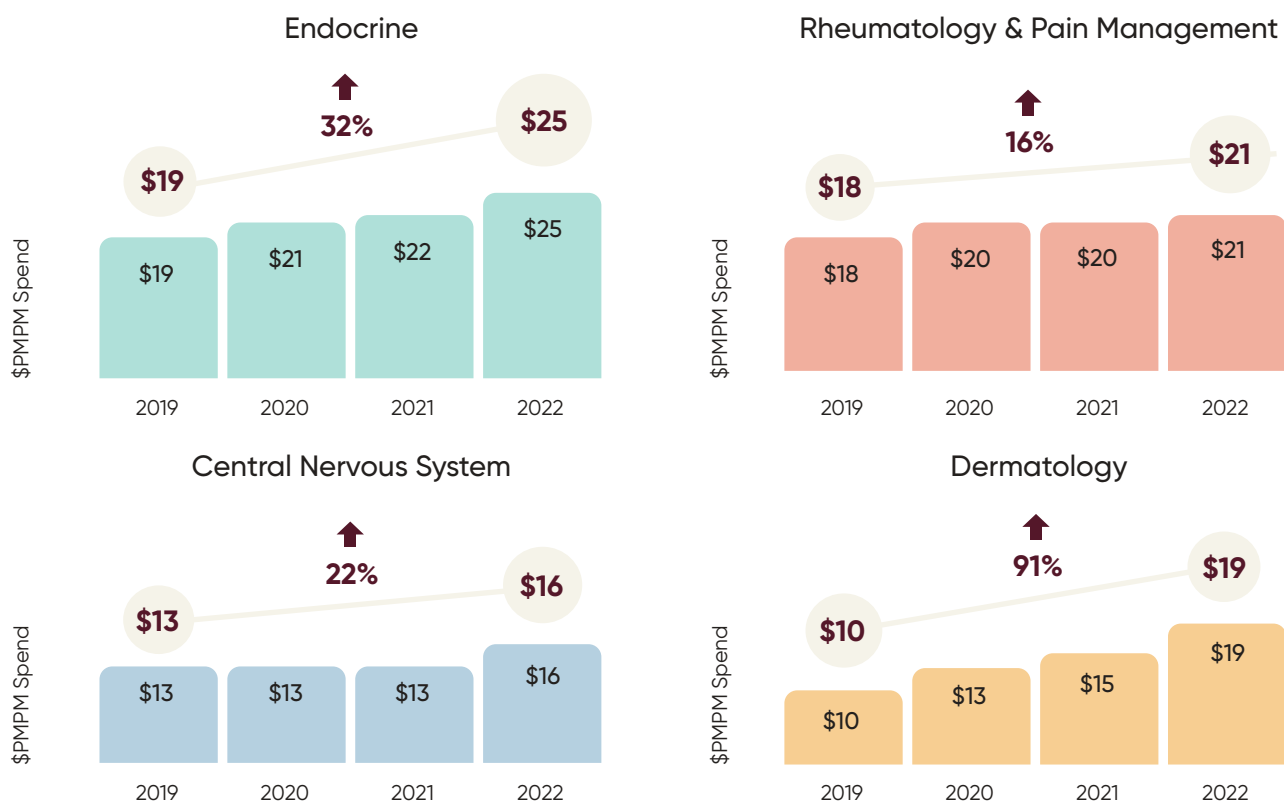


Prescription Drug Spend by Therapeutic Category

Market factors and demographic trends suggest endocrinology will continue to be a prevalent category of ongoing commercial prescription spend.

The categories associated with the highest prescription spend are: (1) endocrine (e.g., agents used to treat diabetes, thyroid disorders, and hormone imbalance); (2) rheumatology and pain management (e.g., agents used to treat inflammatory arthritis conditions, connective tissue disease, and chronic pain); (3) central nervous system (e.g., agents to treat behavioral health disorders, mood disorders, anxiety disorders, psychotic disorders, and attention deficit disorder); and (4) dermatology (e.g., agents used to treat plaque psoriasis, eczema, and acne).

Average Monthly Prescription Drug Spend by Key Therapeutic Categories



- Growth in spend on endocrine agents likely reflects the increased utilization of newer diabetes medications to treat obesity
- The dramatic increase in spend for dermatologic agents is primarily driven by newer specialty drugs to treat skin conditions¹⁰

Looking forward, new FDA-approved indications for branded specialty and biologic medications will undoubtedly exacerbate growth in commercial prescription drug spending^{3,4}. Given the stark increase in drug prices over a four-year period, employers and payers will want to prioritize strategies to ensure those with limited means are able to access needed medications while also considering broader cost containment strategies.



Prescription drug spend ballooned to 28% of total commercial healthcare spend in 2022

Emerging trends outlined in this report suggest specific opportunities to redesign prescription benefits and formularies to drive preferred behaviors, such as step therapies, use of biosimilars over specialty drugs, and routing to specific medications with a goal of achieving bulk discounts. Further, differential pharmacy benefits can be deployed to reduce or eliminate co-pays for lower-wage employees and dependents and subsidize those costs with a less generous plan for higher-wage employees. A similar approach can be incorporated into the medical benefit, with wage-based subsidies to improve equitable allocation of healthcare costs among enrollees.

For 2023, we project flat total commercial healthcare spend, as continued prescription drug spend growth will compensate for a projected slight decrease in 2023 medical spend.

What is driving up prescription drug costs?

The rising price of prescription drugs, rather than increasing utilization, is the key driver of increased prescription drug spend. Specific medication classes are largely responsible for this increased spend, which offers opportunities to deploy targeted strategies to control expenditures.

For example, market factors and demographic trends suggest endocrine agents will continue to be a significant category of ongoing commercial prescription drug spend. The escalating prevalence of diabetes in the U.S. workforce⁵, paired with the additional FDA-approved indications for SGLT2 inhibitors and GLP-1 agonists⁶, will certainly drive spending in the absence of targeted strategies. To address future spend driven by the use of GLP-1 agonists for weight loss (which cost \$10-15K annually⁷), health payers may look to negotiate bulk discounts to a particular agent through formulary design, or require that patients meet restricted clinical criteria for reimbursement. As there are no generic alternatives for GLP-1 agonists and SGLT2 inhibitors, these drugs will carry an ongoing cost burden for the foreseeable future. Despite these trends, some good news has surfaced for health payers and people diagnosed with diabetes such as caps on insulin prices⁸.

Some medical conditions, such as multiple sclerosis (MS) and plaque psoriasis, have particularly high prescription drug spend despite low prevalence due to extremely high drug prices^{9,10}. Options to curtail costs for MS drugs include requiring an annual second opinion or requiring care to be received at an MS Center of Excellence to ensure comprehensive treatment including appropriate dosing and duration of medication therapy and to provide holistic support for MS patients and their families.

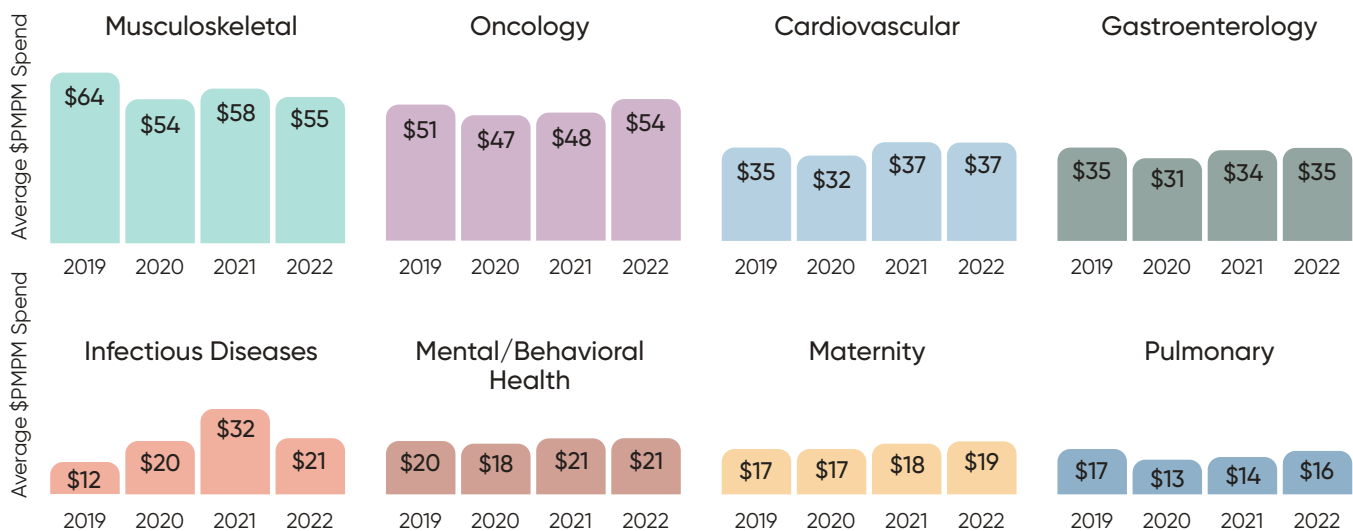
Medical Spend by Clinical Category

Musculoskeletal and cancer care continue to dominate commercial medical spend, as infectious diseases maintain a position in the top areas of spend.

The clinical categories driving medical spend remained largely consistent in 2022 compared with prior years, with musculoskeletal and cancer care accounting for nearly 30% of total spend. As musculoskeletal care continues to dominate, investments in tele-physical therapy, ergonomics (including for home workstations), and musculoskeletal second-opinion programs may all be valuable approaches for addressing this area of need. Investments in early cancer detection and education programs can help improve population health outcomes by identifying cancers at earlier stages when they are more responsive to treatment and less costly to manage¹¹. These approaches should be paired with comprehensive emotional wellbeing and caregiver support for cancer patients and their families.

Spend on infectious diseases (which includes COVID-19) spiked in 2021, accounting for more than 8% of medical spend, but fell to 5% in 2022. Infectious diseases had not placed in the top medical spend categories in 2019 but maintains a stronghold as the 8th highest category of spend in 2022. A notable decrease in spending from 2019 to 2022 for pulmonary conditions other than COVID-19 was found to be due to decreases in seasonal influenza¹².

Average Monthly Medical Spend by Key Clinical Categories



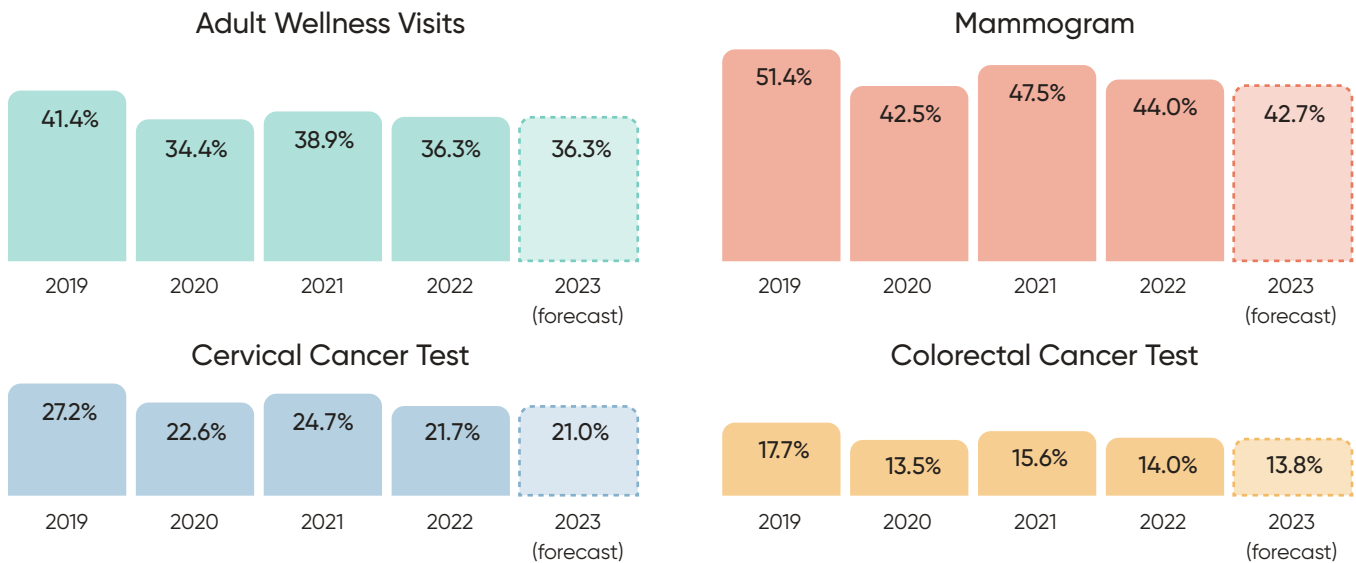
- Musculoskeletal and cancer care consistently drive the most spend, capturing 14.6% and 14.1% share respectively in 2022
- Spend on infectious diseases spiked to \$32 PMPM in 2021 as COVID-19 drove hospitalizations, tapering off in 2022 to below \$21 PMPM
- Predictions of a post-pandemic baby boom failed to materialize, with maternity spend accounting for 4.5-5% of spend each year

Preventive Care Utilization

Adult wellness visits and preventive care screenings dropped in 2022 after a slight rebound in 2021, with 2022 cervical cancer screenings slumping below 2020 levels.

The benefits of primary care and preventive screenings include better health outcomes, reduced medical costs for populations over the long-term, and improved quality of life when conditions are detected early^{13,14}. For those reasons, the trends observed in our analysis of representative services for preventive care^{vi} should be concerning for employers and payers of commercial medical care.

Percentage of Eligible Members with a Visit



- Utilization dropped across all categories of preventive care in 2022, after a slight rebound in 2021
- The significant drop in cervical cancer screenings in 2020 worsened in 2022, with less than 22% of eligible women receiving this service in 2022

Across every category of preventive care for adults, we observed a significant decline in utilization in 2020, followed by a meaningful bounce-back in 2021, though failing to return to pre-pandemic utilization levels. Our analysis reveals a concerning trend in 2022, as utilization of preventive screenings across all categories, from wellness visits to colon cancer screenings, declined again.

vi. **Representative services for adult preventive care:** Analysis includes adult wellness visits, cervical cancer screenings, colorectal cancer screenings, and mammograms. See appendix for eligibility criteria.

The decline in cervical cancer screenings is particularly worrisome, as our analysis showed that 2022 screening rates slumped below 2020 levels. Missing cancer screenings increases the risk that cancer is not diagnosed until it has reached an advanced stage, reducing chances of a curative outcome and dramatically increasing cost¹⁵.

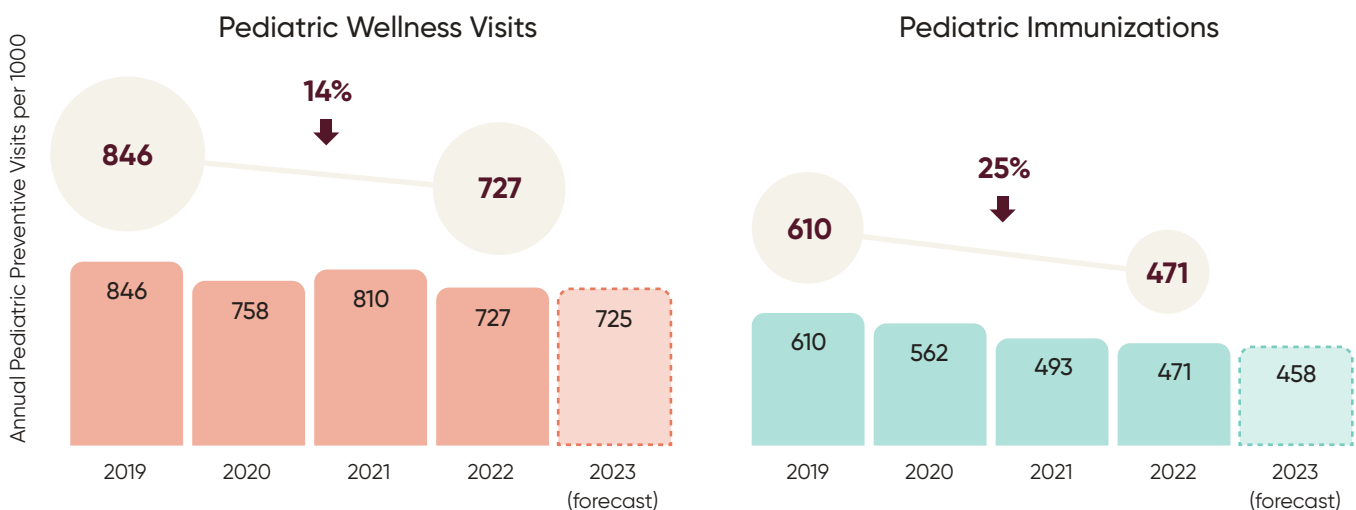
Closing gaps in adult wellness visits should be a primary area of focus for employers, as the primary care provider (PCP) visit usually serves as the point of entry to broader preventive screenings and early diagnosis and management of other clinically significant and costly conditions. Potential strategies include aligning the wellness visit with Health Savings Account funding or other incentives, reducing transportation barriers with onsite/near site primary care strategies or mobile/traveling care services, and investing in novel approaches to primary care.



2022 pediatric immunizations are down 25% from 2019 levels

Trends in pediatric wellness exams and pediatric immunizations are also troubling. While a rebound in preventive exams among children was observed in 2021, we saw another falloff in 2022: pediatric wellness visit utilization was similar to the low levels observed in 2020 and pediatric immunizations continued to decline, achieving only 77% of 2019 levels. Pediatric immunizations are critical to the health of the community as they protect not only the affected children but all vulnerable members, including infants, those with underlying medical conditions, and the elderly¹⁶. Inadequate immunization against contagious illnesses can have dire consequences, increasing risks of outbreaks among the non-immune¹⁷. Working-aged caregivers may bear a significant burden as pediatric immunizations decline and the economic impact will be tangible. Educational campaigns to provide accurate and easily accessible information about the benefits of childhood immunizations, the safety of immunizations and how and where children can receive their immunizations, may help to reverse current trends.

Annual Pediatric Immunizations per 1000 Eligible Members



- Pediatric wellness visits declined more than 13% from 2019 to 2022
- Pediatric immunizations in 2022 declined nearly 25% from 2019 levels

Preventive Care Utilization by Income

People living in low-income communities continue to receive less preventive care compared to those living in high-income communities.

Our data demonstrate persistent disparities in the utilization of preventive services in commercially-insured populations living in low-income communities^{vii} compared to those living in high-income communities^{viii}. Specifically, in 2022, adults living in low-income communities had 77% fewer wellness visits than those living in high-income communities, which are almost uniformly offered at no out-of-pocket costs¹⁸. Facility closures in rural areas¹⁹ and lower income urban neighborhoods^{20, 21} are restricting access to care in the communities that are most in need. This is particularly worrisome given that the burden of chronic disease, and therefore cost, lies disproportionately with Non-White populations (e.g., hypertension, diabetes, and obesity are all more prevalent in Black populations than White ones)^{22, 23}.



In 2022, adults living in low-income communities had 77% fewer wellness visits than those living in high-income communities

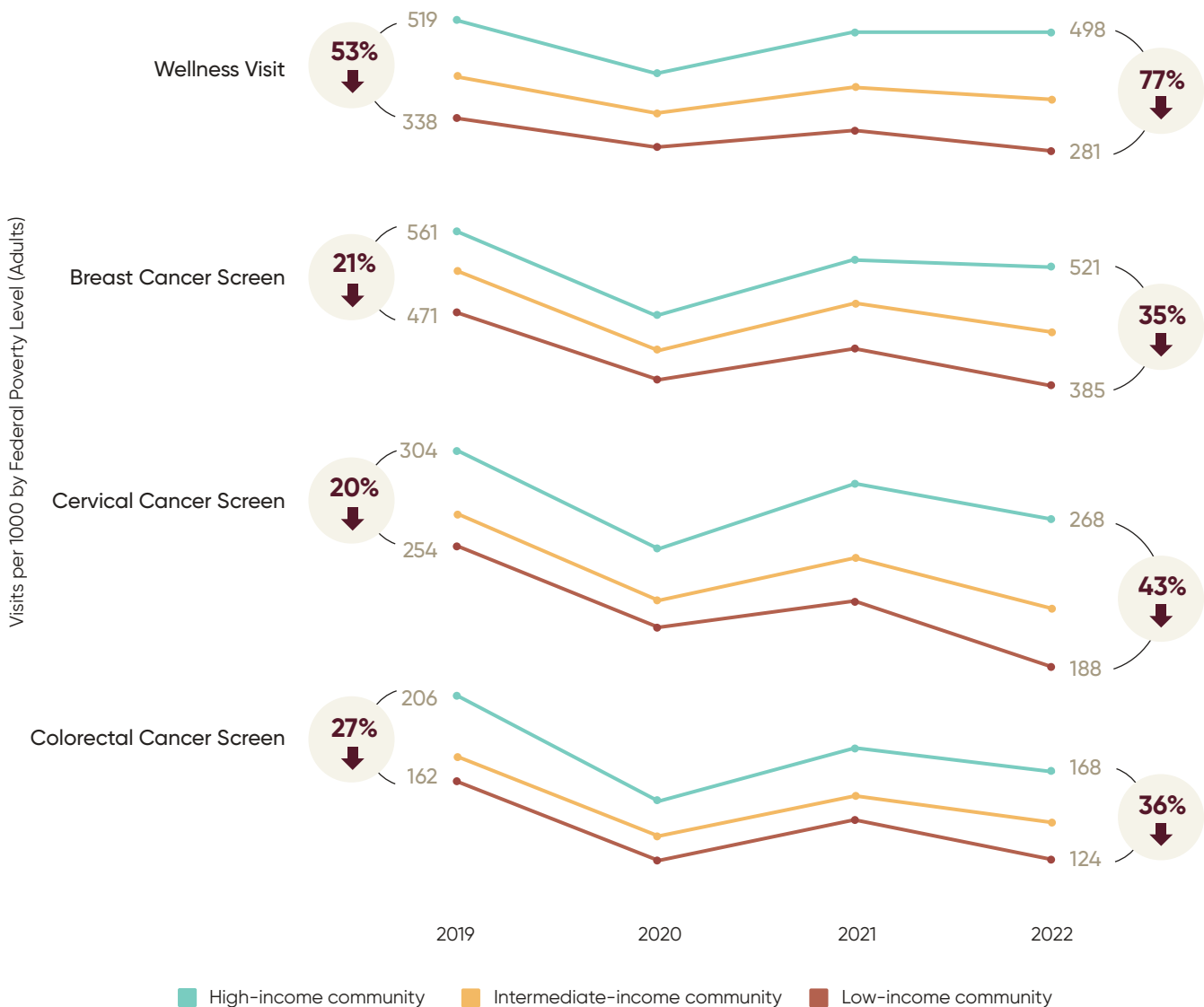
There is no easy solution to this challenge. Populations facing social and environmental barriers to care are significantly less likely to engage with health and healthcare, even when incentives are available to them²⁴. A thoughtful and comprehensive solution is required to address the root causes driving this lack of engagement. It will be important for employers and payers to proactively converse directly with their benefits enrollees to better understand the specific barriers that limit engagement with preventive care and wellness visits. Employers may consider using employee resource groups to conduct focus groups to learn about the unique challenges in their own

vii. **Low-income communities:** Includes zip-codes where the median household income is less than or equal to 200% of the Federal Poverty Level. The Federal Poverty Level (FPL) is a measure of income issued every year by the U.S. Department of Health & Human Services.

viii. **High-income communities:** Includes zip-codes where the median household income is greater than 400% of the Federal Poverty Level. The Federal Poverty Level (FPL) is a measure of income issued every year by the U.S Department of Health & Human Services.

populations, positioning the conversation as an exploration of unmet needs and potential solutions rather than a hard commitment to execute, as a way to align expectations. Pairing this qualitative evidence with objective health services utilization data can help to prioritize interventions when tackling challenges of health equity. For example, proactively creating access to care via mobile clinics and telehealth can alleviate some of the strain on capacity for at-risk populations that have been impacted by facility closures. Other common social barriers to care such as the need for childcare, inability to get time off, lack of transportation, and limited health literacy may reveal themselves through conversations with employees and population data analyses.

Increasing Disparities in Engagement with Adult Preventive Care High-Income Communities vs. Low-Income Communities



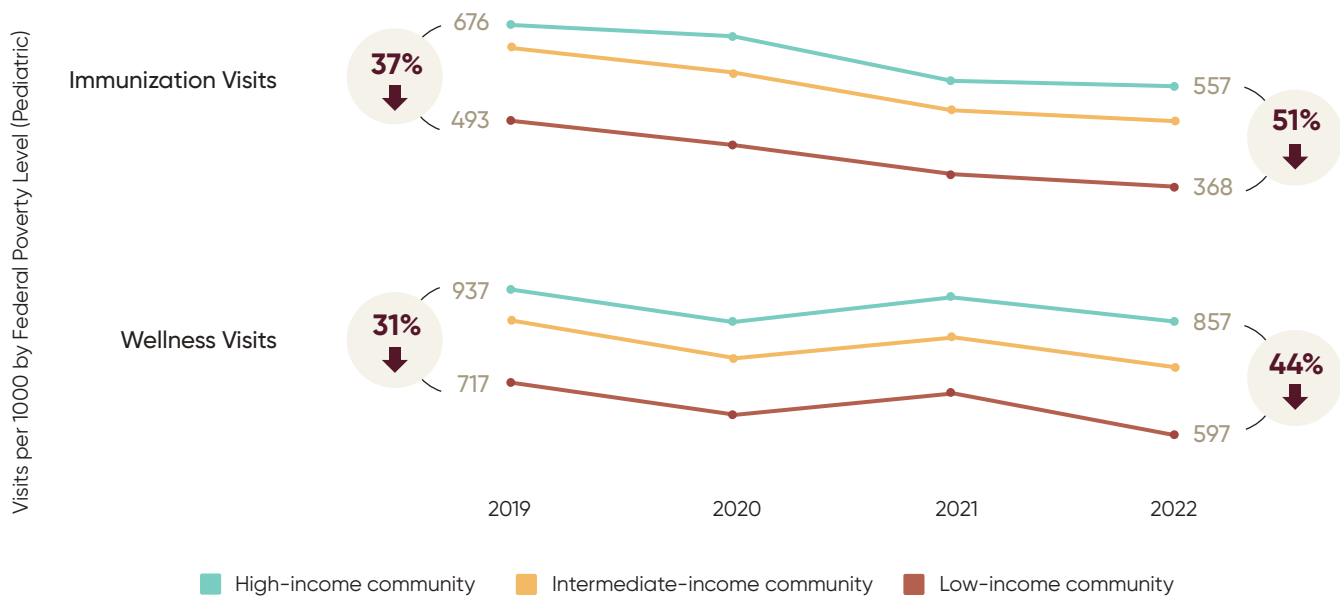
- Across all preventive services, disparities in engagement are growing between low income and high-income communities, and in some cases, such as cervical cancer screenings, more than doubling
- In 2022, adults living in low-income communities had 77% fewer wellness visits than those living in high-income communities

The disparity in utilization between the poorest and wealthiest populations is increasing. Prompt action is warranted to address these health inequities. From 2019 to 2022, adult wellness visits in low-income communities declined 17% compared to a 4% decline for high-income communities over the same timeframe. Similarly, members of low-income communities engaged in cancer screenings at a notably lower rate than their high-income counterparts. The trend is most pronounced in mammograms: In 2022, women living in low-income neighborhoods received mammograms 35% less than their eligible high-income counterparts. Only 40% of eligible women living in low-income neighborhoods got a mammogram in accordance with evidence-based guidelines. While our analysis focuses on income levels, these findings can serve as a proxy to other social determinants of health²⁵.

Employers seeking to improve engagement with wellness and preventive screenings can implement solutions designed to educate and drive awareness of no and low-cost preventive care and their benefits. Care navigation or advocacy services can also support health literacy around out-of-pocket expenses and appropriate sites of care. Offering dedicated time off, reimbursement for childcare and other incurred expenses, or deploying mobile screening clinics (e.g., mobile mammogram vans, mobile dental clinics) can remove financial and transportation barriers. Determining the right tactics to deploy will depend on the population in question.

Substantially lower rates of pediatric wellness visits and immunizations were observed in lower-income communities compared to their higher-income counterparts, with low-income communities engaging in care around 50% less in both categories. As described earlier, failing to provide children with preventive care and immunizations has economic implications for employers and caregiving workers who may need to take time off to care for their sick child, may be distracted by their child’s illness, and may even need to leave the workplace^{26, 27}. For those with low wages and limited budgetary wiggle room, the magnitude of the impact from these pediatric care trends can be profound.

Increasing Disparities in Engagement with Pediatric Preventive Care High-Income Communities vs. Low-Income Communities



- Children in low-income communities receive 51% fewer immunizations and 44% fewer wellness visits than those in high-income communities

Primary Care Engagement Impact on Clinical Risk & Spending

Engagement with primary care is associated with improved health risk and flattening the medical spend trend.

We sought to understand the impact of having a PCP on members' health outcomes and associated spending. To do so, we evaluated diagnosis-based risk scores^{ix} and total medical spend for two cohorts: those who had a PCP visit in 2019 compared to the full population (which includes those with or without a PCP visit in 2019). We found that those who had a PCP visit in 2019 had lower trends in both clinical risk score and medical spending through 2021. Specifically, \$PMPY medical spend for those who visited a PCP decreased by 2% from 2019 to 2021 as compared to 10% growth in \$PMPY medical spend over the same timeframe for the full population.

Those who had a PCP visit in 2019 maintained a similar risk profile over the two-year time horizon. Diagnosis-based risk scores increase as the result of newly diagnosed chronic diseases, increasing chronic disease severity, and acute illnesses²⁸. The clinical risk of any population should increase by about 5-6% over the same time frame simply due to age. Therefore, the flat trend in clinical risk for the population with a PCP visit is notable, suggesting that this population did a better job of managing their health and were less likely to develop new clinical conditions two years later as compared to the full population, whose clinical risk score increased 9% from 2019 to 2022.



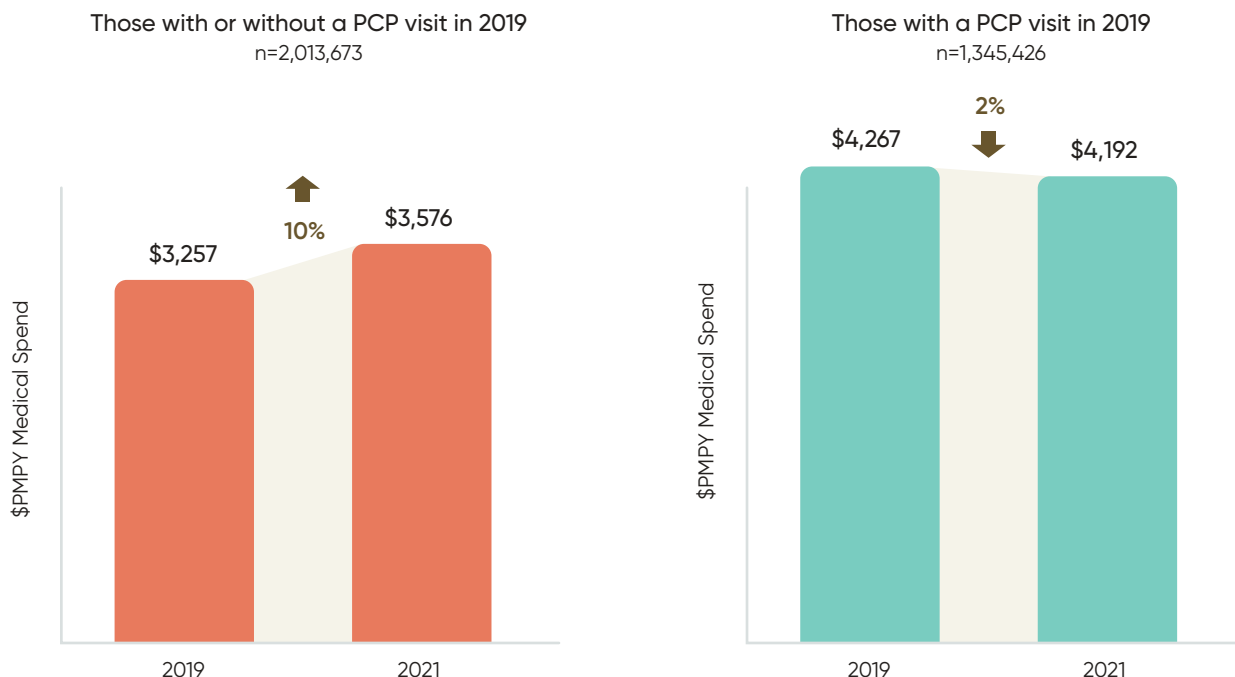
Those who had a PCP visit in 2019 had lower trends in both clinical risk score and medical spending through 2021

Serving as the member's medical home and healthcare "quarterback," the PCP makes recommendations for lifestyle changes, provides key preventive care services, drives referrals to downstream care, and directs to appropriate sites of care. Fostering this relationship through strategies outlined above (mobile clinics, new approaches to primary care models, telehealth, education, etc.) could reverse trends revealed earlier around declining rates of wellness visits and

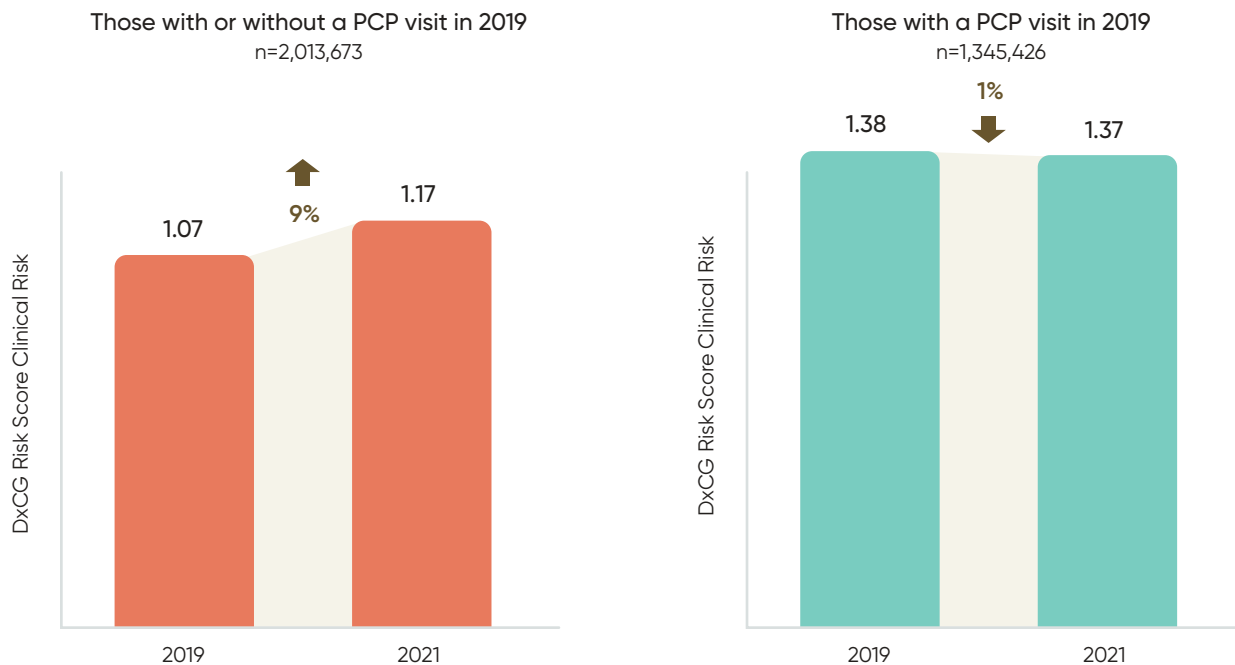
ix. Diagnosis based risk scores: DxCG risk scores are calculated based on medical and prescription claims data.

screenings. Importantly, a strong focus on addressing social and environmental barriers to care not only supports organizational health equity efforts but also stands to drive the biggest impact in those populations with the most significant disease burden.

Change in Annual Medical Spend



Change in Clinical Risk Score



- Individuals who went to a PCP in 2019 had flat \$PMPY medical spend comparing 2019 to 2021, whereas including both individuals who went to a PCP and those who did not go to a PCP resulted in a 10% increase in \$PMPY medical spend
- Individuals who went to a PCP in 2019 showed flat DxCG medical risk scores, while baseline age/gender risk scores increased 5-6% over a two year period, as expected due to aging of the population

Conclusion

Workforce health and wellbeing are core to the overall strategy of forward-thinking organizations. While some of the approaches recommended in this report may increase spend in the short term, the proactive initiatives recommended ultimately aim to improve organizational profitability. As a recent Gallup poll underscores, talented employees are leaving their jobs in search of workplaces that show authentic concern for their individual wellbeing²⁹. Given that employee health and wellbeing is a key driver of workforce retention, employers and payers of care would be wise to invest with the understanding that these efforts will promote the development of an engaged and high wellbeing workforce, ultimately resulting in improved organizational performance and profitability.



Appendix

Methods

The **2023 Workforce Health Index** provides robust data on medical and prescription spending and health benefits utilization of commercially-insured populations in the U.S. The team at apree health analyzed more than 220 million medical and pharmaceutical claims across four years for 4.1 million unique lives to provide insights into past healthcare utilization and predictions for future spend and utilization. Analyses included both employer and member spend. Nearly all employers included in the analysis are self-insured, and are thus responsible for the allowed amount paid to providers.

Time Frame: Most analyses included claims from 2019 through 2022. Member medical claims were analyzed from January 2019 through September 2022 and then forecasted from October 2022 through December 2023. Member prescription claims were analyzed from January 2019 through December 2022 and forecasted from January 2023 through December 2023. The final analysis of PCP impact on \$PMPY medical spend and clinical risk score analyzed claims from 2019 through 2021.

Forecasting Approach: Exponential smoothing models using medical and prescription claims were used for all the forecasts.

Medical Inflation: Forecasts capture medical inflation, if any, as this will be included as a part of the cost trends. We did not assume a fixed medical inflation (i.e. 6-7%) in our calculations as the COVID-19 pandemic altered medical and prescription spending since 2020.

Cost Risk Calculations: Member-level cost risk was calculated from individual's claims using the DxCG concurrent medical and prescription model²⁸. This model calculates the member's risk of incurring costs related to their diagnoses where a risk of 1 indicates that the member is expected to have exactly an average health spend, while less than and greater than 1 indicate below and above average expected spend, respectively.

Eligibility Criteria for Preventive Care Analyses: For the analyses of utilization of preventive care services, we calculated the percentage of eligible members who received the service in question. We defined eligibility for each service as follows:

- Adult Wellness Exam: All members age ≥ 19 years
- Mammogram: Women age 40 to 60 years
- Cervical cancer test: Women age 21 to 64 years
- Colorectal cancer test: All members age 50 to 64 years
- Pediatric Wellness Exam: All members ≤ 18 years
- Pediatric Immunizations: All members ≤ 18 years

Definitions

Medical spend: Per member per year (\$PMPY) allowed medical spend which reflects the paid amount by both employer and member. Prescription drug spend is not included. Medications which are covered through medical benefits rather than prescription drug benefits, including chemotherapy and other infusions, are included in this category.

Prescription drug spend: Per member per year (\$PMPY) allowed spend on prescription drugs which reflects the paid amount by both employer and member.

Total commercial spend: Per member per year (\$PMPY) allowed medical and prescription drug spend which reflects the paid amount by both employer and member.

Drug pricing: Allowed prescription drug spend per days' supply of medication provided.

Drug utilization rate: Prescription drug days' supply of medication provided per member per month.

Member: An individual covered by employer medical benefits. Members may be employees or covered dependents (children or adults).

Pediatric populations: Members \leq 18 years of age.

Low- and high-income communities: Low-income communities are those zip-codes where the median household income is less than or equal to 200% of the Federal Poverty Level. The Federal Poverty Level (FPL) is a measure of income issued every year by the U.S. Department of Health & Human Services. In 2023, the FPL is \$14,580 for an individual or \$30,000 for a family of four³⁰. High-income communities are those zip-codes where the median household income is greater than 400% of the Federal Poverty Level.

Sources

1. Agency for Healthcare Research and Quality. (2023). *Medical Expenditure Panel Survey*. meps.ahrq.gov/mepsweb. Accessed March 16, 2023.
2. Centers for Medicare & Medicaid Services. (2023). *National Health Expenditure Fact Sheet*. cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NHE-Fact-Sheet. Accessed March 16, 2023.
3. Adams, B. *10 most anticipated drug launches of 2022*. Fierce Pharma. fiercepharma.com/special-report/10-most-anticipated-drug-launches-2022. February 7, 2022.
4. U.S. Food and Drug Administration. *Novel drug approvals: 2023*. fda.gov/drugs/new-drugs-fda-cders-new-molecular-entities-and-new-therapeutic-biological-products/novel-drug-approvals-2023. Accessed March 16, 2023.
5. Centers for Disease Control and Prevention. *By the numbers: Diabetes in America*. cdc.gov/diabetes/health-equity/diabetes-by-the-numbers.html. Accessed March 16, 2023.
6. Brown, E, Heerspink, HJL, Cuthbertson, DJ, Wilding, JPH. *SGLT2 inhibitors and GLP-1 receptor agonists: established and emerging indications*. Lancet. 2021 (398:10296): 262-276. doi.org/10.1016/S0140-6736(21)00536-5.
7. NiceRx. *GLP-1 Receptor Agonists: Uses, most common brand names, and safety information*. nicerx.com/classes/glp-1-receptor-agonists/#how-much-do-glp-1-receptor-agonists-cost. Accessed March 17, 2023.
8. Eli Lilly and Company. *Lilly Cuts Insulin Prices by 70% and Caps Patient Insulin Out-of-Pocket Costs at \$35 Per Month*. investor.lilly.com/news-releases/news-release-details/lilly-cuts-insulin-prices-70-and-caps-patient-insulin-out-pocket. March 1, 2023.
9. Hartung DM. *Economics and Cost-Effectiveness of Multiple Sclerosis Therapies in the USA*. Neurotherapeutics. 2017 Oct;14(4):1018-1026. doi: 10.1007/s13311-017-0566-3. PMID: 28812229; PMCID: PMC5722771.
10. Yang EJ, Beck KM, Sekhon S, Bhutani T. *Pharmacy costs of specialty medications for plaque psoriasis in the United States*. J Am Acad Dermatol. 2019 Jan;80(1):274-275. doi: 10.1016/j.jaad.2018.04.019. Epub 2018 Apr 16. PMID: 29673778.
11. World Health Organization. *Early cancer diagnosis saves lives, cuts treatment costs*. who.int/news/item/03-02-2017-early-cancer-diagnosis-saves-lives-cuts-treatment-costs. February 3, 2017.
12. Cunningham, A. *COVID-19 precautions may have helped limit flu, respiratory infections this season*. Science News. sciencenews.org/article/covid-19-coronavirus-precautions-flu-respiratory-infections-cases. February 25, 2021.
13. Pacific Business Group on Health. *Using Primary Care's Potential to Improve Health Outcomes*. pbgh.org/using-primary-cares-potential-to-improve-health-outcomes. October 28, 2022.
14. Amadeo, K. *Preventive Care: How It Lowers ACA Costs*. The Balance. thebalancemoney.com/preventive-care-how-it-lowers-aca-costs-3306074. October 28, 2022.
15. McGarvey, N, Gitlin, M, Fadli E, Chung, K.C. *Increased healthcare costs by later stage cancer diagnosis*. BMC Health Services Research. 2022 22: 1155. DOI.org/10.1186/s12913-022-08457-6
16. Talbird SE, Carrico J, La EM, Carias C, Marshall GS, Roberts CS, Chen YT, Nyaku MK. *Impact of Routine Childhood Immunization in Reducing Vaccine-Preventable Diseases in the United States*. Pediatrics. 2022 Sep 1;150(3):e2021056013. doi: 10.1542/peds.2021-056013. PMID: 35821599.
17. Ezeji-Okoye S, Bilodeau BL, Madhusudhan DK, Pruett E, Thokala S, Bravata DM. *Inadequate Measles, Mumps, Rubella, and Varicella Immunity Among Employees*. J Prim Care Community Health. 2021 Jan-Dec;12:21501327211005902.

Sources (cont.)

- doi: 10.1177/21501327211005902. PMID: 33813919; PMCID: PMC8020216.
18. Shiffer, E. *Preventative health insurance: What it covers and how to get it*. Healthline. healthline.com/health/consumer-healthcare-guide/preventative-health-insurance. September 17, 2020.
 19. The Cecil G. Sheps Center for Health Services Research at the University of North Carolina at Chapel Hill. *Rural Hospital Closures*. 2023. shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures. Accessed March 16, 2023.
 20. Thomas, L. *Hospitals, doctors moving out of poor city neighborhoods to more affluent areas*. Pittsburgh Post-Gazette. archive.jsonline.com/news/health/hospitals-doctors-moving-out-of-poor-city-neighborhoods-to-more-affluent-areas-b99284882z1-262899701.html. June 14, 2014.
 21. The Commonwealth Fund. *It's Harder for People Living in Poverty to Get Health Care*. commonwealthfund.org/publications/podcast/2019/apr/its-harder-people-living-poverty-get-health-care. April 17, 2019.
 22. NORC at the University of Chicago & Henry J. Kaiser Family Foundation. *Health Disparities in Employer-Sponsored Insurance*. norc.org/PDFs/Morgan%20Health/NORC%20x%20Morgan%20Health%20ESI%20Report.pdf. July 2022.
 23. Artiga, S., Orgera, K., & Damico, A. *Key data on health and health care by race and ethnicity*. Kaiser Family Foundation. kff.org/racial-equity-and-health-policy/report/key-data-on-health-and-health-care-by-race-and-ethnicity. Accessed March 21, 2023.
 24. Sherman BW, Addy C. *Association of Wage With Employee Participation in Health Assessments and Biometric Screening*. Am J Health Promot. 2018 Feb;32(2):440-445. doi: 10.1177/0890117117708607. Epub 2017 May 23. PMID: 28535717.
 25. Pera MF, Cain MM, Emerick A, Katz S, Hirsch NA, Sherman BW, Bravata DM. *Social Determinants of Health Challenges Are Prevalent Among Commercially Insured Populations*. J Prim Care Community Health. 2021 Jan-Dec;12:21501327211025162. doi: 10.1177/21501327211025162. PMID: 34120503; PMCID: PMC8207279.
 26. Wellable. *Study: Caregiving Crisis Impacting Employee Productivity*. wellable.co/blog/study-caregiving-crisis-impacting-employee-productivity. January 23, 2019.
 27. Murray, T. *The Impact of Sick Season on Working Parents*. Verywell Family. verywellfamily.com/the-impact-of-sick-season-on-working-parents-7090227. January 02, 2023.
 28. Cotiviti. *DXCG Intelligence*. cotiviti.com/solutions/quality-and-performance/dxgc-intelligence. Accessed March 16, 2023.
 29. Gallup. *Employees Want Wellbeing From Their Job, and They'll Leave to Find It*. gallup.com/workplace/352952/employees-wellbeing-job-leave-find.aspx. January 14, 2021.
 30. Department of Health and Human Services. *Annual Update of the HHS Poverty Guidelines*. federalregister.gov/documents/2023/01/19/2023-00885/annual-update-of-the-hhs-poverty-guidelines. January 19, 2023.

For inquiries about this report, visit apreehealth.com/contact/