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2023 Hospital Workforce Trends Report
Project ID: HB21-1232

Submitted by:
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Submitted to: Colorado Division of Insurance
June 28, 2023

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Executive Summary

The State of Colorado has made significant strides in recent years toward making health care more affordable for all Coloradans through its efforts related to reinsurance, health insurance premiums, prescription drug costs, and price transparency. Building on previous success to improve affordability, in 2021 Colorado's General Assembly passed House Bill 21-1232 (HB21-1232), the Colorado Standardized Health Benefit Plan Act ("Colorado Option"). The Colorado Option is designed to offer an affordable standardized benefit health coverage plan to Colorado consumers in the individual and small group markets as well as to undocumented Coloradans.

HB21-1232 authorized the Colorado Insurance Commissioner to contract with a third-party organization to prepare three annual hospital workforce studies ("Hospital Workforce Trends Reports") to monitor the impact of the implementation of the Colorado Option on the state's hospital workforce, specifically regarding wages, benefits, staffing, training, and working conditions, to the extent information is available.

The Hospital Workforce Trends Reports present the first-of-its-kind opportunity to examine the intersection of the hospital workforce with Colorado's efforts to improve health care affordability, particularly setting insurance premium reduction targets for carriers to achieve on Colorado Option plans. To support carriers to meet premium targets, a key feature of the Colorado Option legislation also addresses hospital costs for carriers, as approximately 34% of every health care dollar in Colorado is attributed to hospital costs.[1] Further, as hospitals are service-driven, a substantial portion of their operating costs are labor costs.[2] As underscored by the current workforce shortages across nearly all occupational groups and workplace settings, each health care worker plays a critical role in creating an affordable, accessible, equitable, and quality health care delivery system.[3] Thus, monitoring the impact of the Colorado Option's implementation on the hospital workforce offers further insights on underlying health care costs that drive premium affordability for Colorado Option carriers.

The purpose of the following 2023 Hospital Workforce Trends Report (Report) is to establish the baseline for wages, benefits, staffing, training, and working conditions of the Colorado hospital workforce in the years leading up to implementation of the Colorado Option. This Report is a means to inform direct engagement with the hospital workforce to collect data on employee experiences through surveys and focus groups for the 2024 and 2025 Reports. The 2023 Report utilized secondary data to reach the following conclusions and recommendations.

[1] Affordability in Colorado | Colorado Hospital Association
[2] Hospital cost structure and the implications on cost management during COVID-19 | Journal of General Internal Medicine
[3] Fact sheet: Strengthening the health care workforce | American Hospital Association

Key Conclusions

1. **Colorado's hospital workforce looks similar to the national hospital workforce.**
   Hospital worker demographics, trends in wages, household poverty, and health uninsurance rates generally show similarities between Colorado's hospital workforce and that of the nation. Specifically, the hospital workforce is predominately White, female, and/or live in urban areas, and workers with all educational levels are represented. Wages and health insurance coverage are also comparable across hospital occupations at the state and national levels, except for Coloradan environmental services (EVS) hospital workers who are more likely to make less and lack health insurance.

2. **More than 80,000 Coloradans are directly employed by a hospital.**
   Hospitals directly employ more than 25% of Colorado's hospital workforce, not including contracted workers. Compared to the overall workforce, hospital workers in Colorado across all racial/ethnic groups generally have higher wages, are less likely to live in a low-income household, and are less likely to be uninsured. The exception is hospital EVS workers who are more likely to live in a low-income household and be uninsured compared to Colorado's overall workforce. These findings do not reflect workers' perceptions regarding wages and health insurance.

3. **Labor is one of the largest expenses in hospitals' budgets, consisting of both workers employed directly by hospitals and contract workers employed through staffing agencies.**
   Labor typically represents the largest share in operating costs, as hospitals are service-driven.[4] Workers are essential to providing the needed care, maintaining facilities, and ensuring overall operations to deliver high-quality, equitable services. Salaries, wages, and benefits of hospital workers represent 44.1% of Colorado hospital operating costs and 42.5% of revenue derived from patient services (net patient revenue).

4. **Contracted labor has seen the largest rate of growth among hospital expenses in recent years and puts further pressure on total hospital costs.**
   Staffing shortages at hospitals — from nurses to physicians to medical laboratory technicians — existed before the pandemic.[5] Aging in the health care workforce results in increased retirements, and those that could retire during the pandemic often did. At the same time, an aging population at large drives up demand for care, which was also exacerbated by COVID-19.

   Hospitals increasingly relied on staffing agencies to fill critical roles during the pandemic. The average pay for some hospital occupations more than doubled

[4] Hospital cost structure and the implications on cost management during COVID-19 | Journal of General Internal Medicine
[5] Fact sheet: Strengthening the health care workforce | American Hospital Association

compared to pre-pandemic levels due to an increased hospital demand for contract workers compared to salaried workers.[6] Contracted labor costs grew 115% from 2020 to 2021, in comparison to the next largest increase in hospital expenses of 13.4% for total supplies. Salaries, wages, and benefits rose by 8.4% during that same period.[7]

Hospitals pay for both the contracted worker and the staffing agency for placing the worker. For temporary staffing needs, the higher cost may be less of a concern. However, when hospitals must increasingly rely on agencies for staffing due to increased vacancies, high turnover, and recruitment and retention challenges, this reliance results in increased hospital spending.

Studying post-pandemic changes in the use of contracted labor will be an important part of future reports. The 2024 and 2025 Reports intend to include input from hospital workers through surveys and/or focus groups to understand why hospital workers have been shifting from direct employment to contracted labor and the impact that it has on hospital expenses.

Summary of Recommendations

The key conclusions, outlined above, lead to the 2023 Report's recommendations:

1. **Incorporating worker voices, both employed and contracted, will help shed light on the recent shift in hospital employment from direct employment to contracted work, which will increase understanding of a key hospital cost driver.**
   Increased reliance on staffing agencies and contracted workers increases hospitals' costs, as seen in recent trends in hospital costs since 2020. Continued, ongoing use of agencies would be an expensive stopgap for filling vacancies that would ideally be staffed by permanent employees to both control costs as well as maintain consistent staff, which leads to improved outcomes in care.[8]

   The Hospital Workforce Trends Reports present a unique opportunity for the hospital workforce to offer its perspective related to staffing, wages, benefits, working conditions, and training. These perspectives may help develop an understanding of why employees have shifted to contracted employment and potentially provide solutions to cost challenges facing hospitals.

   Therefore, the 2024 Hospital Workforce Trends Report intends to incorporate input directly from both employed and contracted workers regarding staffing, wages, benefits, training, and working conditions to understand the potential

[6] US hospitals hit with nurse staffing crisis amid COVID | AP News
[7] 2023 Hospital expenditure report | Colorado Department of Health Care Policy and Financing
[8] The 2022 labor shortage and the impact on patient safety | Willis Tower Watson

relationships more fully between these workforce experiences, hospital costs, and the Colorado Option implementation.

2. **Increased coordination within and across state agencies can help strengthen understanding of challenges facing the hospital workforce and the impacts on hospital costs and affordable health insurance for Colorado Option plans.** Monitoring the impact of the Colorado Option's implementation on the hospital workforce offers further insights on underlying health care costs that drive premium affordability for Colorado Option carriers. The Colorado Option's efforts to lower premiums for consumers in the individual and small group markets is one of Colorado's initiatives to increase health care affordability, but not the only one. At the same time, Colorado has also created programs to support the workforce in response to the health care workforce crisis. Many of the affordability and workforce initiatives are led by different state agencies. Opportunity exists to understand and utilize the learnings from these other initiatives, to strengthen the 2024 and 2025 Reports.

   For example, significant affordability and workforce efforts are occurring in the Colorado Department of Public Health and Environment (CDPHE), the Department for Health Care Policy and Financing (HCPF), and the Department of Labor and Employment (CDLE). Intentional and improved coordination between these state agencies with the Division of Insurance could provide a more holistic perspective on hospital expenditures and improve the likelihood that learnings are shared across agencies. As the 2024 Hospital Workforce Trends study is developed, coordination with these other state agencies may provide insight into the impact of the Colorado Option on the hospital workforce, as directed by HB21-1232.

The following 2023 Workforce Trends Reports substantiates these key findings and recommendations.

Background and Context

"Colorado Option" HB21-1232

Building on previous success in addressing affordability for Coloradans, the Colorado General Assembly passed the Colorado Option HB21-1232 in 2021. The aim of the Colorado Option is "to address the affordability of health insurance in Colorado, particularly for Coloradans who have historically and systematically faced barriers to health…including people of color, immigrants, and Coloradans with low incomes." [9] Colorado's standardized health benefit plan became available in all counties where health insurance carriers offer plans in the individual or small group markets beginning on January 1, 2023.

HB21-1232 sets insurance premium rate reduction targets for carriers to achieve on Colorado Option plans. Based on the baseline premium rates the carrier offered in 2021, carriers must reduce Colorado Option plan premiums by 5% in plan year (PY) 2023, 10% in PY 2024, and 15% in PY 2025. Additionally, as the cost of providing care represents a significant share of premium dollars, the Colorado Option legislation gives the Commissioner the ability, in certain circumstances, to set negotiated rates between a carrier and a hospital. Notably, approximately 34% of every health care dollar in Colorado is attributed to hospital costs.[10] Further, as hospitals are service-driven, labor costs are a substantial portion of hospital operating costs.[11]

HB21-1232 requires three annual hospital workforce studies (Hospital Workforce Trends Reports) conducted by an independent third party to monitor the impact of the implementation of the Colorado Option on the staffing, wages, benefits, training, and working conditions of the hospital workforce to the extent such information is available. The Hospital Workforce Trends Reports may include data from employers, employees, and other third-party sources and may also offer policy recommendations. These reports are due annually on July 1 from 2023 to 2025. DIRA Partners was selected by the Colorado Division of Insurance (DOI) as the contractor through the State's competitive bid process.

Health Insurance Affordability and the Workforce

Colorado has made significant strides in recent years toward making health care more affordable for all Coloradans by addressing key drivers of health care costs. It has pursued initiatives related to reinsurance, health insurance premiums, prescription drug costs, and price transparency.[12] Colorado has also invested in its health care workforce, notably through the passage of SB22-226, which is one of the state's

[9] Standardized health benefit plan Colorado Option | Colorado General Assembly
[10] Affordability in Colorado | Colorado Hospital Association
[11] Hospital cost structure and the implications on cost management during COVID-19 | Journal of General Internal Medicine
[12] HB19-1004 Proposal for Affordable Health Coverage Option; SB20-215 Health Insurance Affordability Enterprise; SB21-175 Prescription Drug Affordability Board; HB22-1370 Coverage Requirements for Health Care Products | Colorado General Assembly

largest investments in its health care workers. SB22-226 directed $61 million in American Rescue Plan Act (ARPA) funds to the wellbeing, education, training, and recruitment of Colorado's health care workforce.[13] Yet, opportunity exists to better understand potential interactions between health insurance affordability and the health care and hospital workforce. The 2023 Hospital Workforce Trends Report provides the first of three annual analyses of the hospital workforce as required by House Bill 21-1232, the Colorado Standardized Health Benefit Plan Act ("Colorado Option").

Unlike other industries where demand is largely determined by economic forces, demographics are a primary driver of health care demand. The COVID-19 global pandemic accelerated historic trends that were already stressing the health care workforce — most notably, an increasing demand for health care services by an aging population combined with a disproportionate retirements of health care workers relative to new professionals entering the field, a phenomenon commonly referred to as the "Silver Tsunami." The Colorado State Demography Office estimated that the population of adults aged 65-plus in Colorado will nearly double from approximately 876,000 in 2020 to more than 1.6 million by 2050.[14] Colorado recognized health care workforce shortages long before the pandemic,[15] and the pandemic exacerbated this dynamic by creating a kind of domino effect in the medical community. It prompted older workers to retire sooner and created a boom in the lucrative traveling medical professional industry that lured those staying in the health care field away from their staff jobs and into agency roles.[16] The Colorado Hospital Association highlighted the duress Colorado hospitals are under to find solutions to the current workforce crisis as shortages of more than 64,000 workers are anticipated by 2026.[17] Without meaningful interventions to recruit and retain health care workers, workforce shortages will worsen, potentially impacting access, costs, affordable health insurance, and ultimately the success of the Colorado Option.[18]

The hospital workforce crisis challenges carriers' ability to meet premium rate reduction requirements in multiple ways. In particular, increased utilization of staffing agencies in hospitals directly impacts hospital cost containment efforts, as the average pay for some agency-filled occupations in the hospital more than doubled when compared to pre-pandemic levels.[19] Hospitals now pay for the worker *and* the

[13] SB22-172 Colorado Rural Health-care Workforce Initiative; SB22-003 College Community Nursing Bachelor Degree Eligibility; SB22-181 Behavioral Health-care Workforce; SB22-226 Programs to Support Health-care Workforce | Colorado General Assembly
[14] 2020 Strategic action plan on aging | Colorado Strategic Action Planning Group on Aging
[15] Colorado health workforce development strategy 2014 | Colorado Department of Public Health and Environment; Colorado's future healthcare workforce and the role of advanced practice registered nurses | Colorado Center for Nursing Excellence; Health equity and racial and ethnic workforce diversity | The Colorado Trust; 2020 Strategic action plan on aging | Colorado Strategic Action Planning Group on Aging
[16] Why health care workers are quitting in droves | The Atlantic
[17] Colorado health care workforce | Colorado Hospital Association
[18] Colorado health care workforce | Colorado Hospital Association
[19] US hospitals hit with nurse staffing crisis amid COVID | AP News

agency placing the worker. For temporary staffing needs, the higher cost may be less of a concern. However, when hospitals must increasingly rely on agencies for staffing to cover increased vacancies, high turnover, and recruitment and retention challenges, this reliance results in increased spending. In addition to directly increasing labor costs, contract labor as well as high turnover can mean a frequent change of hospital workers who provide patient care. Inconsistencies in care are associated with poorer patient outcomes, including medical errors, avoidable infections, and in-hospital patient mortality[20], all of which increase insurance premiums and costs throughout the health care system.[21]

Existing hospital workforce shortages compound workers' burnout and their desire to leave the health care industry. Burnout, often stemming from increased workload, is associated with lower quality of care, as workers are physically, mentally, and emotionally depleted, impeding their productivity and quality of work.[22] Importantly, while the focus is often on nurses and physicians, burnout, and the corresponding turnover, is a topline issue that impacts nearly all occupational roles of hospital workers, generating substantial costs throughout the health care system.[23]

The Colorado Option also focuses on health equity. Lowered cost of health care ensures increased access to health care, especially for Coloradans who have historically and systematically faced barriers to affordable, quality, continuous, and equitable health care.[24] In turn, improving health equity – and decreasing racial, gender, and economic health disparities – can lower overall health care costs by preventing avoidable morbidities and mortality.[25] An important lever to advance health equity is building a diverse workforce across occupational roles, workplace settings, and geographic locations. Black, Indigenous, Hispanic, and other health care workers of color are more likely to work in underserved communities.[26] Hospital workforce diversity is a critical step towards health equity, as diverse workforces are best positioned to offer more culturally competent care and decrease implicit bias.[27] Intentional efforts to diversify the hospital workforce brings diverse perspectives, experiences, and backgrounds across occupational roles and workplace settings and which allows biases embedded throughout the health care system to not just be identified but addressed.

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[20] Continuity of care: Still important in modern-day general practice | British Journal of General Practice
[21] Medical error reduction and prevention | StatPearls Publishing; The economic measurement of medical errors | Society of Actuaries
[22] The relationship between professional burnout and quality and safety in healthcare: A meta-analysis | Journal of General Internal Medicine
[23] Health care workforce challenges threaten hospitals' ability to care for patients | American Hospital Association
[24] Department health equity plan: Fiscal year 2022-23 | Colorado Department of Health Care Policy and Financing
[25] US health care can't afford health inequities | Deloitte Insights
[26] The racial and ethnic composition and distribution of primary care physicians | Journal of Health Care for the Poor and Underserved
[27] Department health equity plan: Fiscal year 2022-23 | Colorado Department of Health Care Policy and Financing

Lastly, as the role of the hospital workforce within the affordability aims of the Colorado Option is considered, it is important to note that labor is typically the largest operating expense for hospitals as workers are the direct providers of patient care, facility maintenance, and overall operations to deliver high-quality, equitable health care services.[28] An opportunity exists to consider how to best structure the workforce (inclusive of occupational roles, demographic diversity, and professional experience) to return desired outcomes most efficiently – improved health and affordability for Colorado Option plan members.

Approach

HB21-1232 mandates an independent third-party contractor to produce three annual reports to monitor potential impacts of the Colorado Option on the Colorado hospital workforce and staffing, wages, benefits, training, and working conditions, to the extent information is available. At the same time the Colorado Option is implemented, the State of Colorado continues additional efforts to address affordability as well as stabilizing and rebuilding the health care workforce through additional legislation, which results in a rapidly shifting landscape for Colorado's hospital workforce. Annual reporting over three years provides closer to real-time information on the impact of those efforts on the hospital workforce and allows for faster and more accurate adjustments to achieve the State's affordability and health care workforce goals.

As the first of three annual Reports, the 2023 Report establishes the baseline for hospital workforce wages, benefits, and staffing in the years leading up to implementation of the Colorado Option. Specifically, this Report includes three aims:

1. **Describe the Colorado hospital workforce by occupation, geography, race/ethnicity, gender, and education,**

2. **Describe the wages, benefits, and staffing for Colorado's hospital workforce, and**

3. **Describe hospital labor costs as a share of operating expenses over time, including financial implications for increased utilization of contracted labor.**

Throughout these three aims, this Report offers comparisons to both the national hospital workforce as well as to Colorado's overall workforce. These baseline comparisons set relevant context for subsequent Hospital Workforce Trends Reports in 2024 and 2025.

[28] Hospital cost structure and the implications on cost management during COVID-19 | Journal of General Internal Medicine

Colorado's Hospital Workforce

Key Points:

- Colorado hospitals directly employ nearly a quarter of all health care workers and 2% of the overall Colorado workforce.
- In general, Colorado's hospital workforce mirrors the national hospital workforce, with a few notable outliers:
    - Colorado hospitals use a higher share of registered nurses (RNs) and advanced practitioners, but a lower share of aides and assistants than the U.S.
    - Colorado's workforce has a higher share of White and Hispanic hospital workers, but a notable smaller share of Black workers compared to the U.S.
    - Colorado's workforce has a higher share of workers with a college degree or higher.
- Compared to Colorado's overall workforce, hospital workers in Colorado are much more likely to be women and tend to be more educated. They are similar in geographic location and race/ethnicity.

Broadly, the hospital workforce consists of those who provide direct services to patients (e.g., physicians, registered nurses (RNs)), those who provide supportive services (e.g., nursing assistants, dietary, environmental service (EVS)), and those who support and manage hospital operations (e.g., executive leadership, administrative, billing). This report focuses on hospital workers who provide direct or supportive patient services. Administrative and operational roles, such as executives, information technology, or billing, consist of wide-ranging titles, functions, and educational requirements that result in a much broader range of jobs and roles in this category than other categories in this dataset. The broad range of roles in the administrative and operational category combined with less consistency across hospitals prevents meaningful comparison, and therefore administrative and operational roles are not included in this Report. However, direct outreach to the workforce in 2024 intends to include workers in administrative and operational roles.

Those working in a hospital may either be direct employees of the hospital or contracted. Contracted staff, which may include but is not limited to physicians, "agency" nurses, dietary, and EVS workers, make up a key component of the hospital workforce. As discussed earlier, the pandemic increased the use of contract workers, and they fill important gaps in hospitals. They provide temporary and flexible positions to either meet increased demand for services or cover extended leaves of directly employed workers. Additionally, certain roles such as dietary and EVS workers are increasingly filled by contract rather than hospitals directly staffing these roles.[29] Despite contracted workers' role in the hospital system, datasets vary on whether contracted staff are included, and of those that do include contracted staff, it

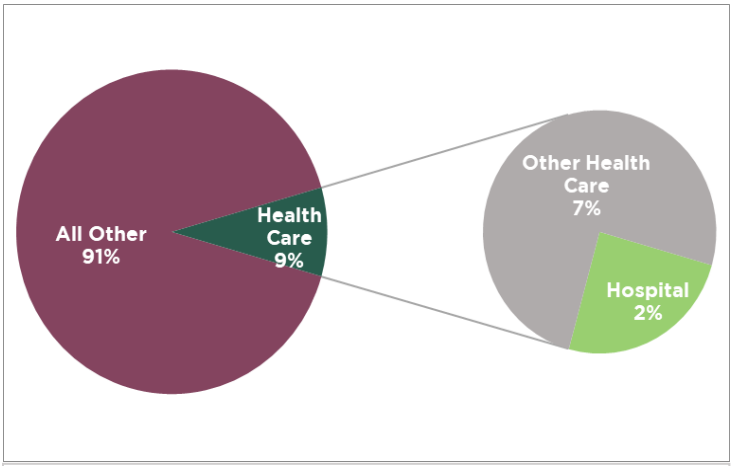
[29] Investing in our first line of defense: Environmental services workers | Annals of Internal Medicine; Outsourcing healthcare food service is common | Healthcare Facilities Today

is not possible to differentiate between those contracted and those directly employed by hospitals. Each section notes whether contract workers are included.

The following section describes Colorado's hospital workforce compared to the U.S. hospital workforce as well as Colorado's overall workforce using the 2021 American Community Survey (ACS). The ACS is an annual nationally representative survey conducted by the U.S. Census Bureau. The analytical sample includes individuals between the ages of 18 and 65 who are part of the labor force and work in the hospital industry. Like much of academic literature, the analysis collapses approximately 50 clinical and support occupations into nine categories based on job title and educational requirements. ACS data may include contract workers, as workers are categorized based on their place of employment rather than their actual employer (i.e., a hospital versus a staffing agency). Because the ACS does not survey individuals on their employer of record, there is no way to determine if a worker is a contract worker or directly employed. Thus, we are unable to isolate workers based on this classification. No workers are excluded based on part-time or full-time status in this section. A complete categorical list of the workforce included in this report is outlined in Appendix A of this Report.

Hospital Workforce Demographics

Figure 1: Hospital Workforce as a Share of Colorado's Total Workforce and Health Care Workforce



Source: Occupational Employment and Wage Statistics (OEWS), 2022.

Workers employed in health care represent 9% of Colorado's total workforce. Colorado hospitals directly employ more than 80,000 Coloradans. Those employed by hospitals represent 2% of Colorado's total workforce and nearly 25% (1 in 4) of Colorado's health care workforce (Figure 1). These statistics do not include contracted workers.

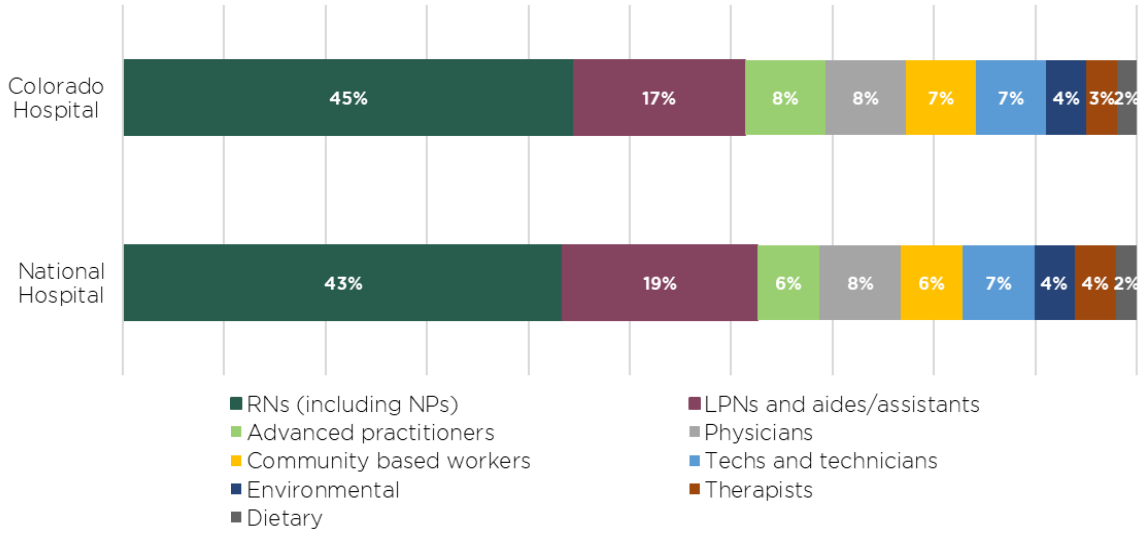
Figure 2 compares approximately 50 hospital job classifications at state and national levels, collapsed into the following categories, based on job title and educational requirements:

- *Advanced practitioners:* Medical scientists, psychologists, chiropractors, dentists, dieticians and nutritionists, optometrists, pharmacists, physician

assistants, podiatrists, audiologists, occupational therapists, physical therapists, speech-language pathologists;

- *Community based workers:* Medical and health service managers, social and community service managers, substance abuse and behavioral disorder counselors, mental health counselors, social workers;
- *Dietary:* Chefs, cooks, food preparation workers and supervisors, food servers, fast food and counter workers, dining room and cafeteria attendants, dishwashers;
- *Environmental (EVS):* Janitors and building cleaners and first-line supervisors, maids and housekeeping cleaners;
- *Licensed Practical Nurses (LPNs) and aides/assistants:* Home health aides, personal care aides, nursing assistants, orderlies and psychiatric aides, dental assistants, medical assistants, medical transcriptionists, pharmacy aides, licensed practical and vocational nurses;
- *RNs (including NPs):* Nurse anesthetists, nurse practitioners (NPs), registered nurses;
- *Techs and technicians:* Clinical lab technologists and technicians, dental hygienists, cardiovascular tech and technicians, diagnostic-related techs and technicians, Emergency medical technicians and paramedics, pharmacy technicians, psychiatric technicians, surgical technicians, dietetic technicians, medical records and health information technicians, opticians; and
- *Therapists:* Radiation therapists, recreation therapists, respiratory therapists, exercise physiologists and therapists, occupational therapist assistants and aides, physical therapist assistants and aides, massage therapists.

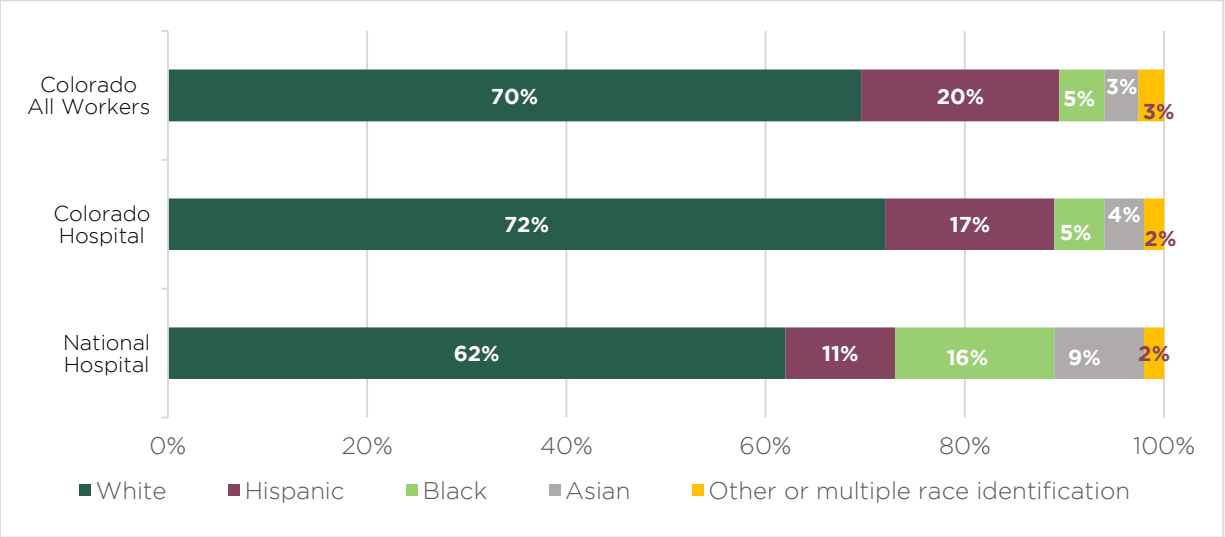
Figure 2: Colorado and U.S. Hospital Workforce by Occupation



Source: ACS, 2021.
Notes: Colorado Hospital and National Hospital totals do not add to exactly 100% due to rounding. Detailed occupation category definitions in Appendix A.

As shown in Figure 2, the distribution of the hospital workforce in Colorado by occupation is similar to the national distribution, though it is worth noting that small percentage differences can equate to thousands of people. In both Colorado and the U.S., nurses, inclusive of nursing aides/assistants, LPNs, RNs, and NPs, constitute 62% of the hospital workforce. However, Colorado employs a higher share of RNs and fewer LPNs compared to the U.S. overall. Additionally, advanced practitioners, such as physician assistants, audiologists, and physical therapists, also represent a higher share of Colorado's hospital workforce than they do in the national hospital workforce.

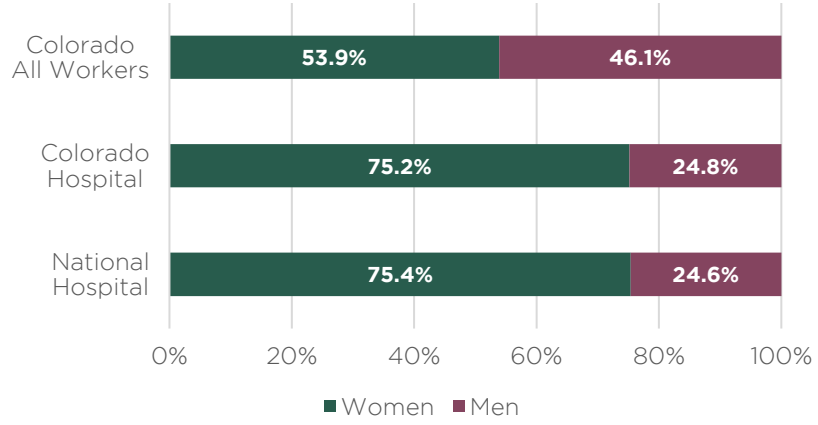
Figure 3: Colorado and U.S. Hospital Workforce by Race/Ethnicity



Source: ACS, 2021
Note: Colorado All Workers total does not add exactly to 100% due to rounding.

The majority of Colorado and the nation's hospital workforce is White. Colorado's hospital workforce is made up of a higher share of White workers as well as a higher share of Hispanic workers than that of the U.S. While this is reflective of Colorado's overall population, an important consideration is the diversity within occupations. Job segregation routinely happens in health care, where a higher share of workers of color are employed in lower-wage jobs, and workers in higher-paid jobs are disproportionately White. Sample sizes in available datasets prevented analysis to compare race and ethnic diversity by hospital occupation.

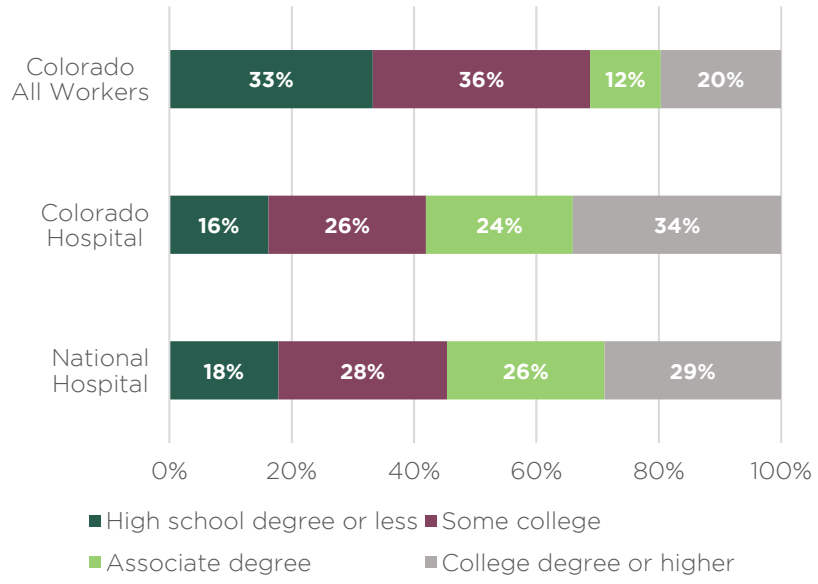
Figure 4: Colorado and U.S. Hospital Workforce by Gender



Source: ACS, 2021
Note: Datasets define gender based on self-report, which current definitions limit to male (men) or female (women) and therefore transgender, non-binary, or intersex identities are not distinguished

The Colorado hospital workforce is overwhelmingly represented by workers identifying as women, which is consistent with the national workforce. In contrast, women represent slightly more than half of Colorado's total workforce.

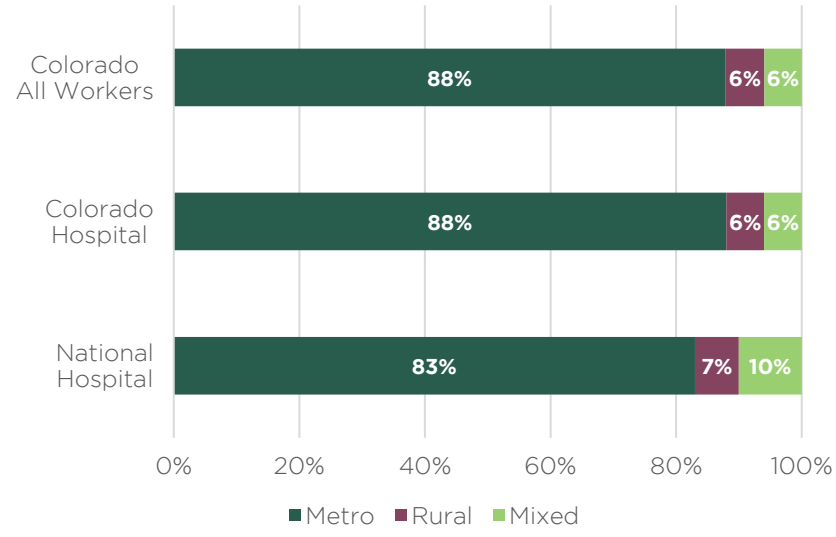
Figure 5: Colorado and U.S. Hospital Workforce by Education Level



Source: ACS, 2021
Note: Totals do not add to exactly 100% due to rounding.

While jobs requiring significant education and clinical training (i.e., nurses, physicians, specialists) often come to mind first when thinking of hospital workforce, there are many types of hospital workers, and education requirements for jobs within a hospital vary widely. As seen in Figure 5, the Colorado hospital workforce has a higher share of workers with formal education than that of the U.S. Thirty-four percent of Colorado's hospital workforce has a college degree, compared to 29% nationally and 20% of all Colorado workers.

Figure 6: Colorado and U.S. Hospital Workforce by Geography



Source: ACS, 2021
Note: ACS rural/urban data is captured at a county level. Thus, mixed indicates counties with rural and urban zip codes.

In both Colorado and the nation, the vast majority of hospital workers live in urban areas. Urban areas are both where most people are and where hospitals tend to be. Colorado hospital workers are more likely to live in urban areas than that of the U.S. hospital workforce, mirroring the geographic distribution of Colorado's total workforce.

A diverse hospital workforce plays a critical role in advancing health equity and access to care, both of which are integral features of the Colorado Option.

Colorado Hospital Workforce Wages and Benefits

This section describes the wages and benefits for Colorado's hospital workforce in comparison to the U.S. hospital workforce as well as Colorado's overall workforce.

Key Points

- There are few differences between the Colorado hospital workforce wages and benefits in comparison to the national hospital workforce. The exception is environmental workers who are more likely to make less, live in a low-income household, and lack health insurance.
- Compared to Colorado's overall workforce, hospital workers in Colorado generally have higher wages, are less likely to live in a low-income household, and less likely to be uninsured. The exception is hospital environmental workers who are more likely live in a low-income household and be uninsured compared to Colorado's overall workforce.

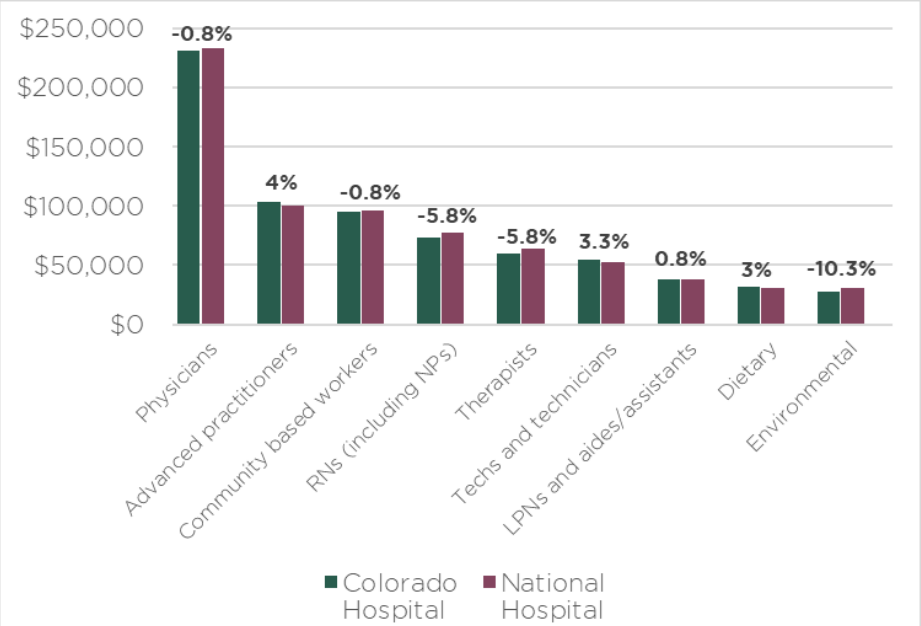
Wage data is sourced from ACS and Occupational Employment and Wage Statistics (OEWS) datasets. The OEWS survey is a federal-state cooperative program between the Bureau of Labor Statistics (BLS) and state workforce agencies that draws from payroll data submitted by the employer to state unemployment insurance programs. This means that the OEWS only includes those workers directly employed by hospitals and does not include contract workers. In comparison, ACS data is based on employment setting rather than employer and includes contract workers. However, since the ACS does not include data on employer of record, there is no way to distinguish whether workers are employed directly or via contract.

For the purposes of this section, benefits are defined as health insurance status via ACS. Other benefits, such as paid time off, childcare, transportation subsidies, or education reimbursement, are unavailable in the ACS dataset.

Comparisons of Wages

Figure 7 below compares the average annual wages of full-time workers in different occupational categories. The hospital workforce, as described in Figure 7, includes contracted workers that may not be directly employed by a hospital. In comparison to national hospital worker wages, the annual wages of Colorado hospital EVS workers, RNs, and therapists are notably lower.

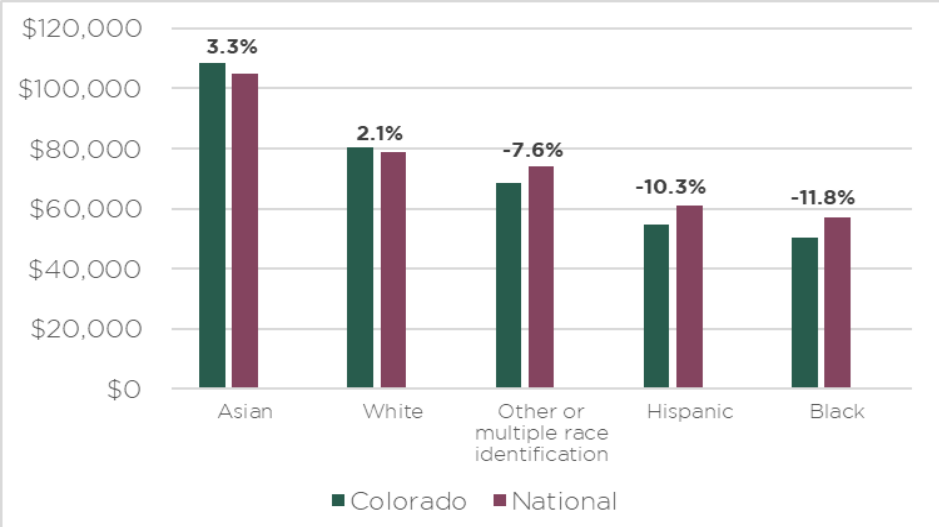
Figure 7: Average Annual Wages of Colorado and National Full-Time Hospital Workers by Occupational Group



Source: 2021 ACS.
Notes: Difference between Colorado and national hospital workers average annual wages depicted above each occupational group. Sample includes full-time workers only.

The secondary data does not allow for further analysis. For the 2024 Report, further hypotheses for these differences could be tested, such as RN and therapist age and experience and whether EVS are directly employed by hospitals or contracted.

Figure 8: Average Annual Wages of Colorado and National Full-Time Hospital Workers by Racial/Ethnic Group



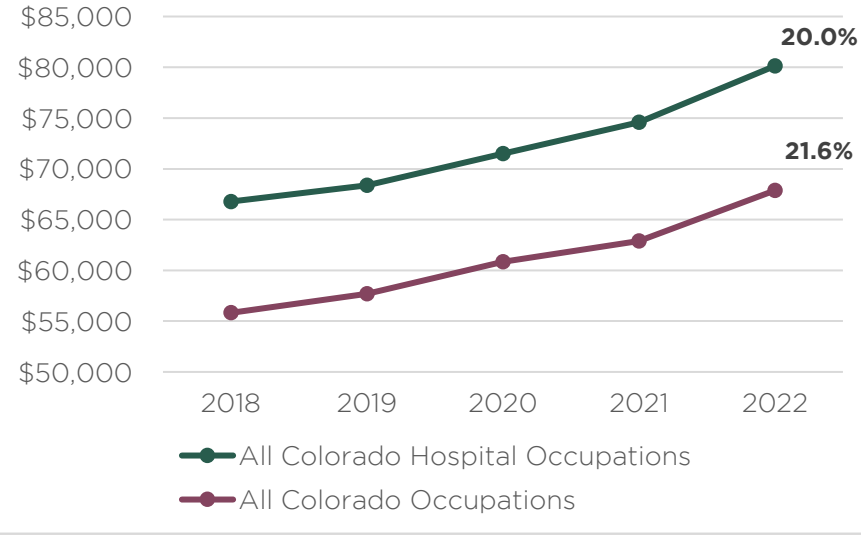
Source: 2021 ACS.
Notes: Difference between Colorado and National hospital workers average annual wages depicted above each occupational group. Sample includes full-time workers only.

Figure 8 compares the wages of Colorado hospital workers to national hospital workers by racial/ethnic group.

Notably, Colorado's Black and Hispanic hospital workers are paid considerably less than national hospital workers, 11.8% and 10.3% less respectively.

It can be hypothesized that this may align with occupational wage disparities, but this Report was unable to test occupational category by race due to sample sizes that are too small. Workers who identify as "other and multiple race identification" in Colorado are also paid 7.6% less than their national counterparts, but it is difficult to draw conclusions as the multiple race category includes a wide range of race and ethnic identities. As such, there may be significant variation in the actual race/ethnicity of the Colorado hospital workforce versus the national workforce that are included in the "other and multiple race identification" category. Further disaggregation of this category ("other and multiple race identification") was not conducted for this analysis due to limited sample sizes of the unique racial and ethnic identities.

Figure 9: Average Annual Wages of Colorado Full-Time Hospital and Overall Workforces from 2018 – 2022



Source: OEWS 2018-2022

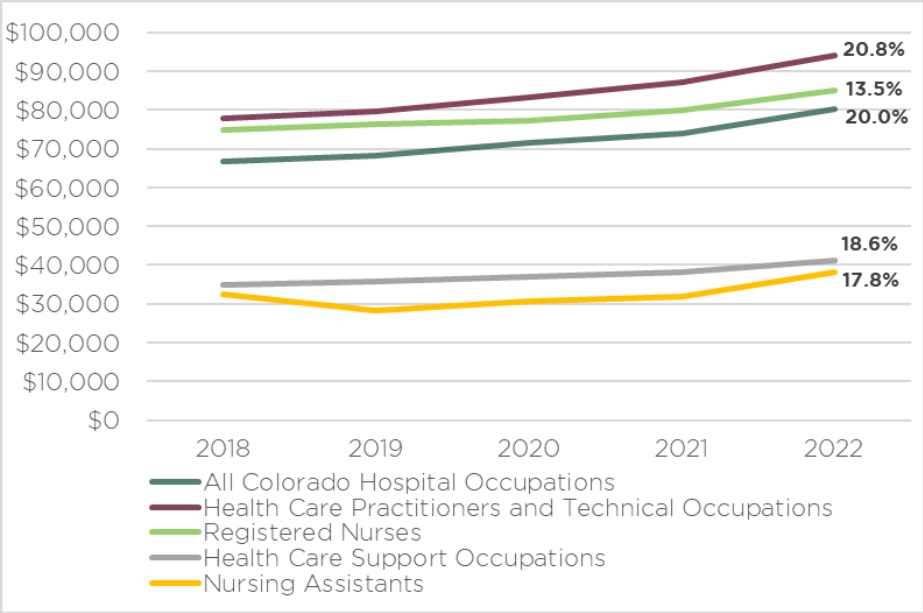
Figure 9 compares the average annual wage for Colorado's hospital workforce to that of Colorado's overall workforce. This comparison isolates the trends that may be unique to hospitals versus overall trends in Colorado's labor market. Wages for hospital-employed workers are generally higher than the wages for the overall workforce.

For those who are directly employed by Colorado hospitals, annual wages grew by 20% from 2018 to 2022. This is slightly less than the 21.6% wage growth for all occupations in Colorado during that same period.

Figure 10 shows annual wages for hospital occupational groups that provide patient-facing services from 2018 to 2022 in comparison to average hospital wages. The annual wages of health care practitioners and technicians (comprised of direct patient service occupations such as audiologists, physician assistants, RNs, therapists, and technicians) and support staff (comprised of patient support occupations such as medical assistants, nursing assistants, phlebotomists, and therapist aides) generally track with hospital wage growth. RN and nursing assistant annual wages are also shown as they comprise the largest occupations in the broader categories, health care practitioners and technicians and support staff respectively. Nursing assistant wage growth tracks with the broader hospital workforce. In contrast, RN wages

lagged the most with only 13% growth from 2018 to 2020. This may be a result of RN wage growth occurring in contracted staffing agencies.

Figure 10: Average Annual Wages of Colorado Full-Time Hospital Workers by Occupation Group from 2018 to 2022



Source: OEWS 2018-2022 each occupation. Appendix B includes occupational detail.
Note: Difference shown on figure compares 2018 vs. 2022 annual wages.

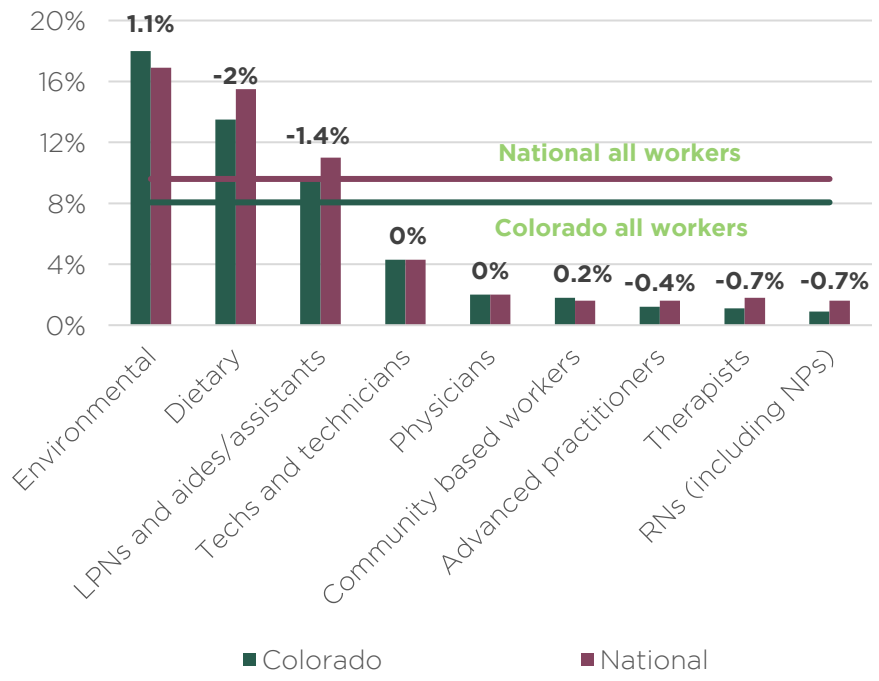
SB22-210 will allow annual wage comparisons of hospital-employed RNs versus staffing agency RNs. Beginning in April 2023, health care staffing agencies must report to the Department of Labor and Employment Division of Labor Standards and Statistics how much they charge health care facilities quarterly as well as how much they pay the staff, allowing for potential additional analyses in future reports.

Comparisons of Income Status

In addition to annual wages, household income status can provide a more holistic picture of a worker's financial situation. For the purposes of this report, low-income households are those defined as at or below 150% of the federal poverty level (FPL). This threshold was chosen to align with other studies in literature[30] and aligns with the definitions of low-income for several federal programs, such as the Marketplace Special Enrollment Period (SEP) for Advanced Payments of Premium Tax Credits (APTC), Extra Help Program for Medicare Part D subsidies, and the Low-Income Home Energy Assistance Program (LIHEAP)[31].

[30] Meet the low-wage workforce | The Brookings Institution; A review of the key considerations in mental health research: A focus on low-income children and families | Couple Family Psychology
[31] Marketplace stakeholder technical assistance tip sheet | Centers for Medicare & Medicaid Services; Eligibility for extra help program | Social Security Administration; LIHEAP fact sheet | Administration for Children & Families

Figure 11: Percent of Hospital Workers Living in Low-income Households by Occupational Group



Source: 2021 ACS.
Note: The difference between Colorado and National low-income percentage depicted above each occupational group. Sample includes full-time workers only. Details on low-income household calculation in Appendix A.

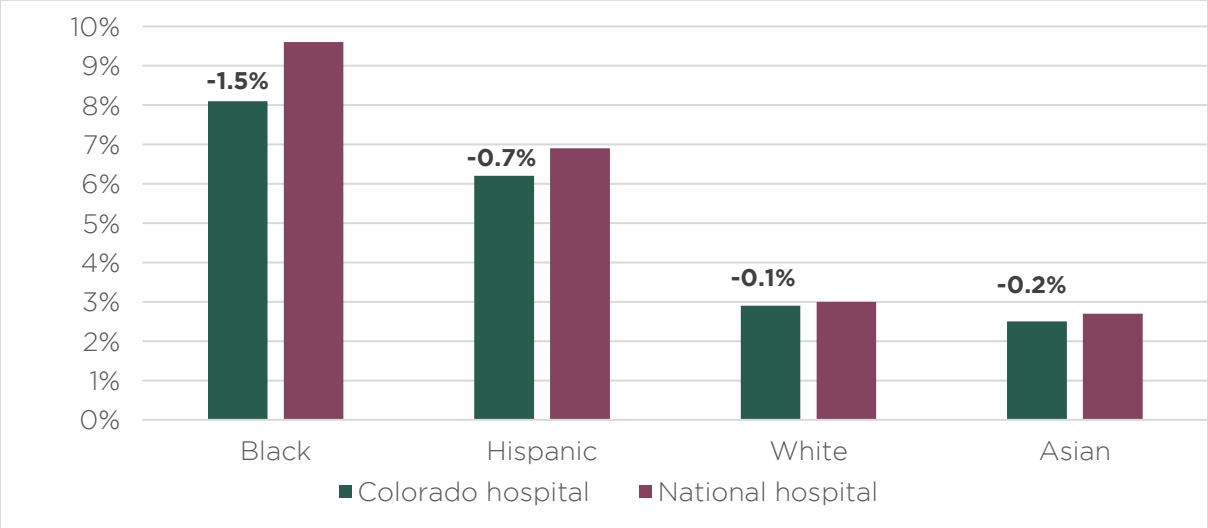
Figure 11 shows the percentage of low-income households in Colorado and national hospital workforces and provides comparisons of those to the overall workforce nationally and in Colorado. Lower rates mean fewer people are living in a low-income household.

For each occupational group, the share of Colorado's hospital workforce that lives in a low-income household aligns with national data.

EVS workers, dietary workers, LPNs, and nursing aides/assistants nationally and in Colorado are more likely to live in a low-income household than the overall workforce. Other occupational groups are less likely to live in a low-income household both nationally and in Colorado.

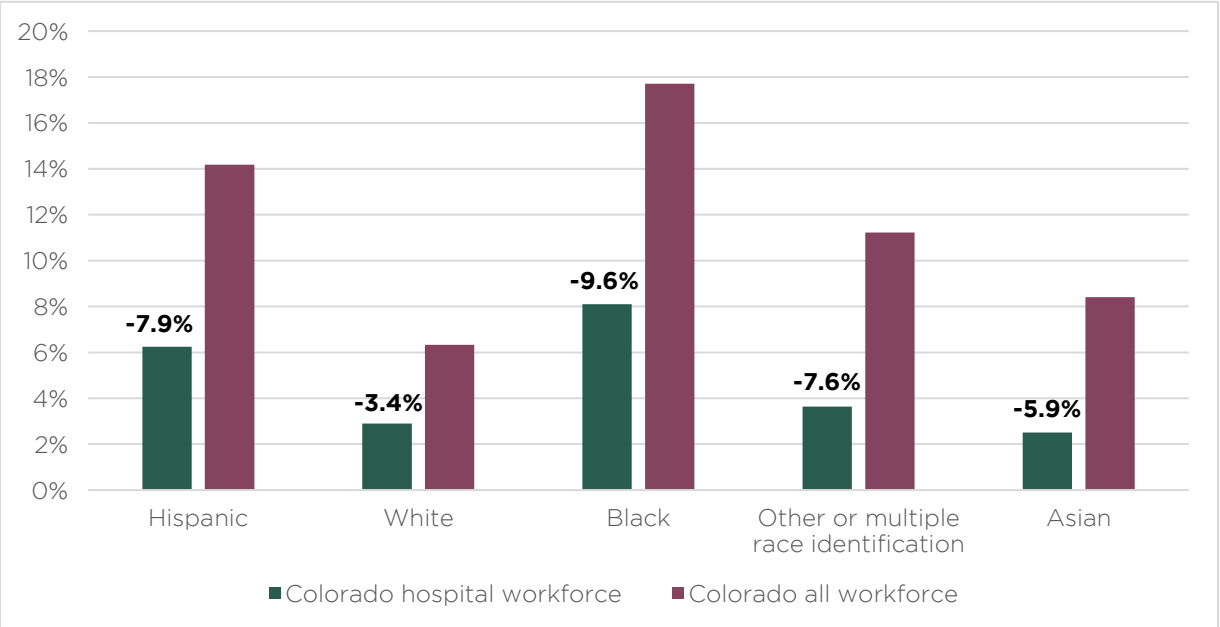
Figure 12 below illustrates that Colorado hospital workers of every racial/ethnic group are less likely to live in a low-income household versus their national counterparts. Figure 13 compares the percentage of Colorado's hospital workers to its overall workforce living in a low-income household by race. For every racial/ethnic group, Colorado hospital workers are less likely to live in a low-income household than the overall Colorado workforce of the same racial/ethnic group.

Figure 12: Colorado Hospital Workers in Low-income Households compared to National Hospital Workers by Racial/Ethnic Group



Source: 2021 ACS.
Note: The difference between Colorado and National low-income household percentage depicted above each race/ethnicity. Sample includes full-time workers only; Details on low-income household calculation included in Appendix A.

Figure 13: Colorado Hospital Workers in Low-income Households Compared to All Colorado Workers by Racial/Ethnic Group

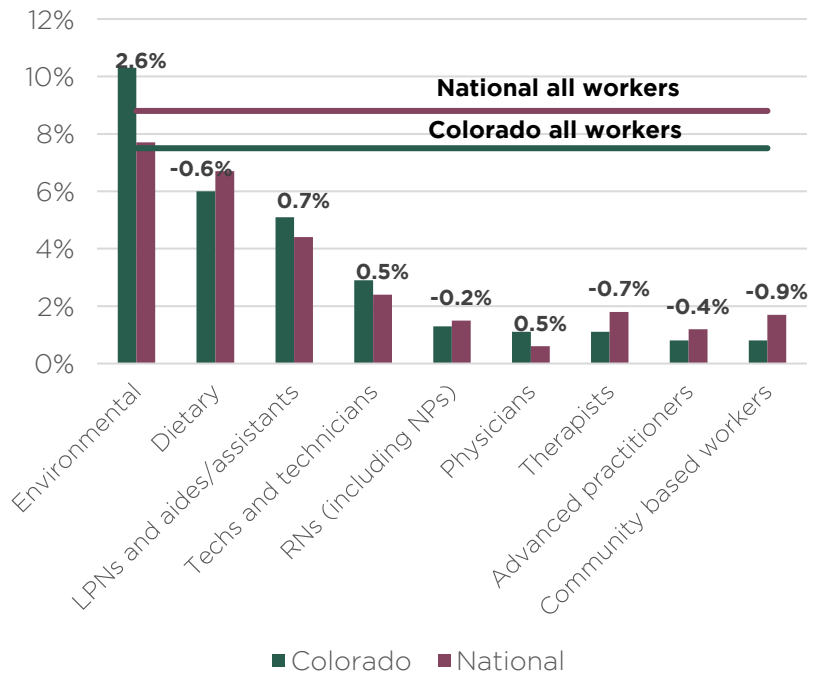


Source: 2021 ACS.
Note: The difference between Colorado hospital and all Colorado workers low-income household percentage depicted above each race/ethnicity. Sample includes full-time workers only; Details on low-income household calculation included in Appendix A.

Comparisons of Health Insurance Status

This section presents rates of health uninsurance for Colorado's hospital workforce compared to the national workforce and to all Colorado workers. Health insurance can be a key benefit provided by employers. Workers may receive health insurance benefits from their employers or be dependents covered by their spouses or their parents if under age 26. ACS data used does not differentiate if insurance is provided by hospital employers or another source, such as Medicaid, Medicare, or individual health insurance. Further, the figures below summarize whether the household is uninsured, but due to the limitations of secondary data, they do not offer any insight as to the availability or affordability of employer-sponsored health insurance. Higher rates represent more likely to be uninsured, so lower rates are preferred.

Figure 14: Uninsurance Rates by Occupational Group



Source: 2021 ACS.
Note: Difference in percent uninsured between Colorado and National depicted above each occupation. Sample includes full-time workers only.

Comparing the overall workforce, national workers are more likely to be uninsured (8.8%) than Colorado workers (7.5%). However, in the hospital workforce, the rates of uninsurance are generally closer between Colorado hospital workers and national hospital workers.

Notably, EVS workers stand out. EVS workers in Colorado are 2.6% more likely to be uninsured than their national counterparts. Colorado EVS is also the only occupational group in Colorado whose uninsurance rate is higher than the overall Colorado workforce. The relationship between being low-income and lacking health insurance is well-established, and it is worth noting that Colorado's EVS workers also stand out for having 10.3% lower wages than their national counterparts, the largest difference among occupational groups.

Figure 15: Colorado Hospital Worker Uninsurance Rates compared to National Hospital Workers by Racial/Ethnic Group

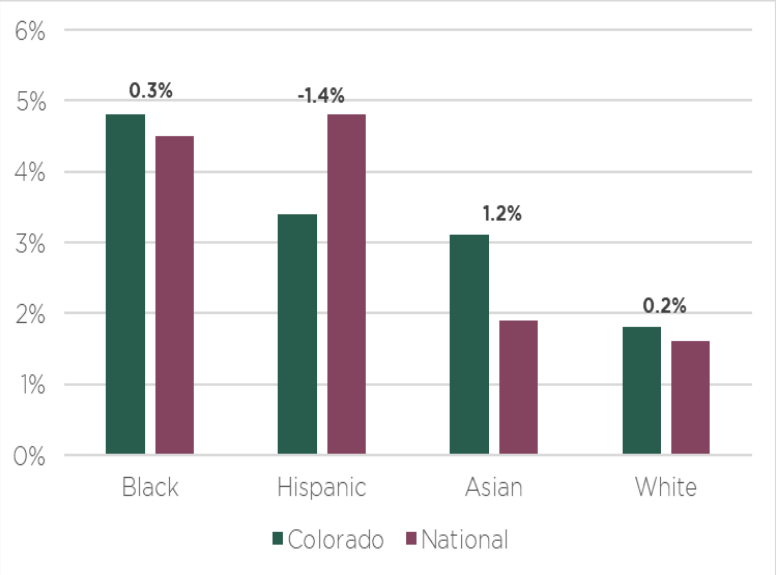


Figure 15 compares rates of uninsurance by racial/ethnic group. Hispanic hospital workers in Colorado are less likely to be uninsured than Hispanic hospital workers nationally.

Source: 2021 ACS.
Note: Difference in percent uninsured between Colorado and National depicted above each racial/ethnic group. Sample includes full-time workers only.

Figure 16: Colorado Hospital Worker Uninsurance Rates compared to All Colorado Workers by Racial/Ethnic Group

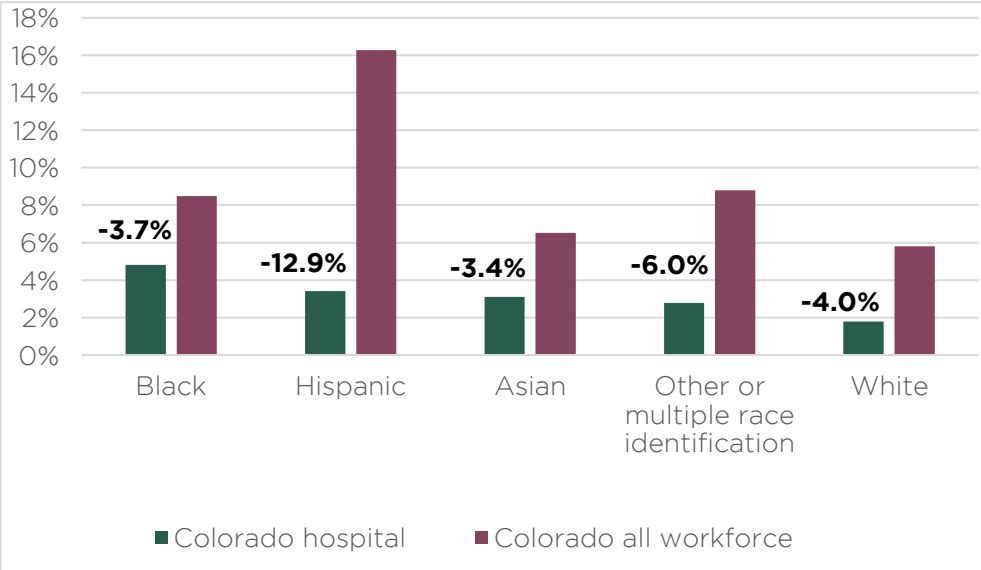


Figure 16 shows that Colorado hospital workers are less likely to be uninsured than their racial/ethnic group in the overall Colorado workforce.

Source: 2021 ACS.
Note: Difference in percent uninsured between all hospital workers and all workforce in Colorado depicted above each racial/ethnic group. Sample includes full-time workers only.

Relationships Between Hospitals, Workforce, and Affordability

This section describes relationships between hospital finances (i.e., revenue and expenses) and its workforce (i.e., salaries, wages, and benefits and staffing).

Key Points

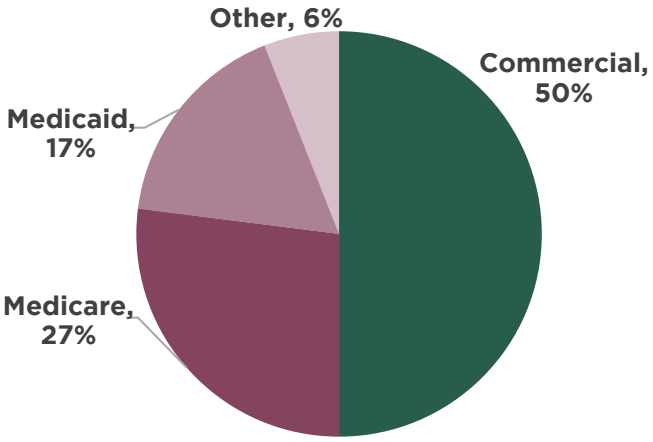
- Four hospital systems represent 62% of hospital net patient revenue in Colorado.
- Salaries, wages, and benefits represent 44.1% of Colorado hospital operating costs and 42.5% of patient revenue.
- Contracted labor costs increased by 115.3% from 2020 to 2021. Salaries, wages, and benefits only grew by 8.4%

This section uses data from the RAND Corporation[32] (derived from the Medicare Cost Reports which each hospital must complete annually and submit to the federal Centers for Medicare and Medicaid Services) and Colorado Hospital Expenditure Reports authorized by HB19-1001 (derived from annual hospital reporting submitted to HCPF).[33] Data on salaries, wages, and benefits was collected from the Colorado Hospital Expenditure Report and includes both contracted and directly employed workers. However, physicians, interns, residents, and other trainees not paid as employees are not captured in this data. Benefits referenced in this section include the employer's share of Social Security, state and federal unemployment insurance, group health insurance, group life insurance, pensions, annuities, retirement benefits, workers' compensation, group disability insurance, and all other employee benefits provided by the hospital.[34] As we do not have disaggregated data, we are unable to distinguish between contracted and directly employed workers as well as individual benefit costs.

[32] RAND hospital data | hospitaldatasets.org
[33] 2023 Hospital expenditure report | Colorado Department of Health Care Policy and Financing
[34] Definitions and descriptions of data fields | Colorado Department of Health Care Policy and Financing

As the Colorado Option seeks to lower health insurance premiums for consumers in the individual and small group markets for Colorado Option plans, controlling hospital costs will be key for carriers as 34% of every health care dollar is spent on hospitals.[35] Commercial payers are the largest payers for Colorado hospitals statewide, representing 50% of their net patient revenue as shown in Figure 17. Net patient revenue (NPR) is the total amount of money generated from patient services collected from payers, including private insurance, Medicaid and Medicare, minus patient discounts. It can be viewed as money paid to hospitals for its core purpose of serving patients. Factors impacting NPR include contracting rates with carriers, changes in federal reimbursement from Medicare, and changes in state policy or budget impacting Medicaid. The Colorado Option plans are offered to individuals and small groups in the commercial market.

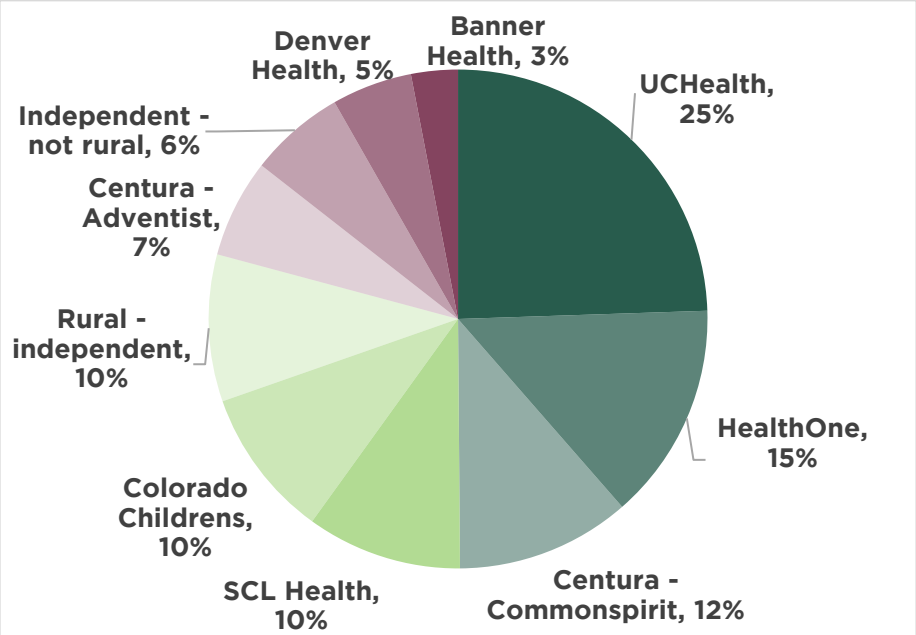
Figure 17: Statewide Hospital Net Patient Revenue Payer Mix



Source: 2023 Hospital Expenditure Reports
Note: Other includes Tricare, Colorado Indigent Care Program, and self-pay.

[35] Affordability in Colorado | Colorado Hospital Association

Figure 18: Colorado Hospital Market Share of Net Patient Revenue



Source: RAND
Note: Total does not add to exactly 100% due to rounding.

Figure 18 illustrates the market share of Colorado's hospital systems by NPR. Sixty-two percent of statewide hospital NPR is derived from the four largest hospital systems, UCHealth, HealthOne, Centura-CommonSpirit, and SCL Health (Intermountain). Hospitals unaffiliated with a system represent 16% of the Colorado hospital NPR. Thus, a few large systems comprise the majority of the Colorado hospital market.[36] Figure 18 illustrates that a few systems have a large impact on efforts to control hospital costs and ultimately premium costs. Further, as it relates to staffing, it stands to reason that the majority of the employed workforce will be concentrated at large systems. As such, it may be most efficient to target 2024 workforce survey outreach efforts to ensure that the samples represent the systems and maximize worker engagement.

Relationships Between Labor Costs, Operating Expenses, and Revenue

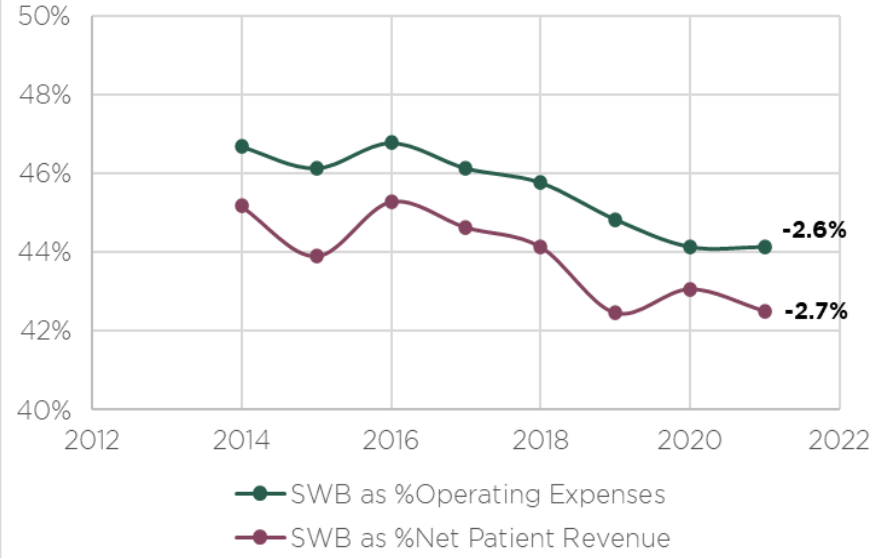
This section examines the relationships between labor as measured by salaries, wages, and benefits and hospitals' expenses and revenues.

Salaries, wages, and benefits are a major component of hospital's operating expenses, representing 44% of Colorado hospital aggregate operating costs in 2021. This reflects a 2.6% decrease from seven years prior. Physicians, interns, residents, and other trainees not paid as employees were reflected in operating or non-operating expenses in the HCPF Hospital Expenditure Reports.

[36] 2023 Hospital insights bulletin | Colorado Department of Health Care Policy and Financing

However, revenue is different from expenses, and hospitals classify their revenue in multiple ways. As previously discussed, net patient revenue is the total amount of money generated from patient services collected from payers, including private insurance, Medicaid, and Medicare, minus patient discounts. It can be viewed as money paid to hospitals for the core purpose of serving patients. However, NPR does not include all sources of hospital revenue. Other revenue may include revenue from investments or non-patient operations such as parking or other ancillary services. For example, federal COVID-19 stimulus funding was significant for hospitals and was often recorded as operating revenue or other revenue.

Figure 19: Salaries, Wages, and Benefits (SWB) as a Percentage of Total Expenses and Net Patient Revenue



Source: HCPF Hospital Expenditure Reports
Note: Difference in SWB percent of total expenses and net patient revenue from 2014 to 2022 depicted.

Salaries, wages, and benefits as a percentage of NPR have decreased from 2014 to 2021. If the analysis had included stimulus funds in 2020 and 2021, the percentage of salaries, wages, and benefits would have been smaller. A key finding from HCPF's 2023 Hospital Expenditures Report concludes that for the comparison period of 2014 to 2021, hospital NPRs have grown faster than operating expenses, leading to growing profits and margins.[37] The growth in salaries, wages, and benefits does not keep pace with the growth in revenues or profits.

Hospitals submitted about 30 different types of expenses as part of the 2023 Hospital Expenditure Report. Hospitals allocated expenses into four categories: direct patient, patient other, general and administrative, and other. As shown in Table 1, in every expense category, salaries, wages, and benefits were either the first or second highest expense.

[37] 2023 Hospital expenditure report | Colorado Department of Health Care Policy and Financing

Table 1: Salaries, Wages, and Benefits as a Percentage of Hospital Expense Categories

Expense Category	Salaries, Wages, and Benefits (in millions)	Total Expenses (in millions)	Salaries, Wages, and Benefits as a % of Expense Category
Direct Patient	$ 6,429.3	$ 13,879.9	46%
Patient Other	$ 505.8	$ 1,284.3	39%
General/Admin	$ 1,287.8	$ 3,254.0	40%
Other	$ 211.8	$ 653.0	32%
Total	$ 8,434.7	$ 19,071.2	44%

Source: 2023 HCPF Hospital Expenditure Reports utilizing 2021 data

Table 2 shows more detailed expense categories collected by HCPF as part of its annual Hospital Expenditure Reports. Except for employee benefits (defined as the employer's share of social security, state and federal unemployment insurance, group health insurance, group life insurance, pensions, annuities, retirement benefits, workers' compensation, group disability insurance, and all other employee benefits[38]), all expenses related to staff increased, with contracted labor expenditures increasing by 115% from 2020 to 2021.[39] Contracted labor had the largest rate of change by far at 115.3% in comparison to the next largest increase at 13.4% (total supplies). Further, contracted labor grew more than 13 times faster than total labor costs, which grew by 8.4% over the same period.

Table 2: Expense Category Growth 2019 – 2021

Expense	2019-2020 %Change	2020-2021 % Change	2020-2021 $ Change
Total payroll (directly employed only)	5.1%	6.1%	$ 370,987,992
Employee benefits	5.2%	-0.3%	$ (5,210,929)
Contracted labor	-10.1%	115.3%	$ 286,113,100
Total salaries, wages, benefits	4.5%	8.4%	$ 651,890,163
Total supplies	3.1%	13.4%	$ 445,165,817
Depreciation	13.3%	13.1%	$ 141,005,603
Leases & Rental	-20.0%	-2.8%	$ (5,252,534)
Maintenance and Utilities	-3.5%	-1.4%	$ 4,753,119
Interest	0.9%	-4.5%	$ 9,931,593

Source: 2023 HCPF Hospital Expenditure Reports

[38] Definitions and descriptions of data fields | Colorado Department of Health Care Policy and Financing
[39] 2023 Hospital expenditure report | Colorado Department of Health Care Policy and Financing

Colorado Hospital Staffing

This section examines Colorado hospital staffing levels to establish a baseline for the 2024 and 2025 Hospital Workforce Trend Reports. Staffing analysis uses RAND datasets collected from Medicare Cost Reports that hospitals submit annually to the Centers for Medicare and Medicaid Services (CMS). This dataset collects data on the workforce directly employed by hospitals, but not contracted workers.

As shown earlier, 62% of all net patient revenue in Colorado is received by the four largest hospital systems (UCHealth, HealthOne, Centura-CommonSpirit, and SCL Health (Intermountain)). The goal of this section is to provide a high level look at whether there may be differences in staffing levels, as this could potentially also be driven by hospital systems.

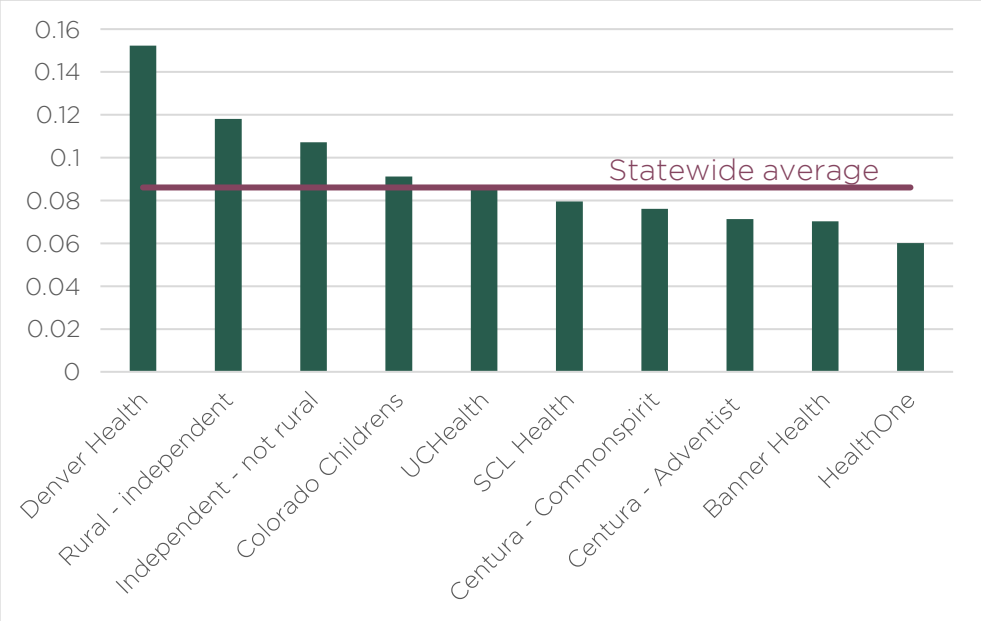
There is extensive literature on the impacts of hospital staffing and how to measure staffing, including detailed methodology for selecting which staff to include in patient care staffing and patient acuity and needs. In general, such a detailed look at staffing levels is beyond the scope of this Report. Staffing levels for this Report are represented by full-time employees (FTEs) per discharge equivalent. The RAND dataset provides a discharge equivalent variable that reflects hospitals' inpatient and outpatient service volumes into a single metric. RAND calculates discharge equivalents by multiplying the number of inpatient discharges by the ratio of total operating expenses divided by inpatient operating expenses. Dividing FTEs by discharge equivalent provides a measure of how many FTEs a hospital directly employs per discharge equivalent to capture a measure of staffing. Notably, this measure does not and cannot include the FTEs from staffing agencies since data on individual hospital use of staffing agencies was not available. The reverse of this metric, discharge equivalents per FTE, has historically been used by hospitals to measure output and efficiency. Like any metric, FTEs per discharge equivalent has some weaknesses, including a lack of case mix adjustment for patient acuity.

Yet, FTEs per discharge equivalent is sufficient to determine if the potential for staffing variation occurs among systems. These variations could be further investigated using both additional staffing metrics such as staffing per adjusted occupied bed from public data sources and direct engagement with the workforce to understand other aspects of staffing. The intent of the 2024 and 2025 Reports is to seek feedback from workers about their experience with staffing.

Figure 20 shows a measure of staffing levels by Colorado hospital systems with a comparison to independent hospitals, which are divided into rural and non-rural independents. While Colorado hospitals statewide have 0.086 FTEs per discharge equivalent, there is significant variation across the major Colorado health systems or types of hospitals, with a high staffing level of 0.152 FTEs per discharge equivalent and a low of 0.060. Safety net hospitals such as Denver Health, rural hospitals, and children's hospitals all have more FTEs per discharge equivalents (i.e., higher staffing levels) than the statewide average. Independent hospitals also appear to have higher staffing levels.

Hospitals are not homogenous in terms of overall workforce structure and staffing levels. Various market forces, roles in the health care delivery system, and structure/governance may result in differences reflected in staffing and the workforce. There may be many reasons that staffing differs among system hospitals, and many of these reasons go beyond the scope of this report.

Figure 20: Full-Time Employees per Discharge Equivalents



Source: RAND

The potential hypotheses offered here are meant to illustrate factors, rather than indicate direct learnings, from this Report. For example, independent hospitals often lack the efficiencies of scale inherent in system hospitals, resulting in more FTEs per discharge equivalent. In contrast, larger hospital systems may use their size to advance staffing efficiencies, particularly with administrative function staff. While rural hospitals generally face different and often more difficult challenges in workforce recruitment and retention,[40] they often have a minimum level of staffing and equipment required to ensure "standby" services are available on a 24/7 basis regardless of how many patients need to use them on any given day. For example, to be a birthing center, hospitals may need a minimum of two obstetricians on call, but their volume of deliveries may not fully support those two obstetricians, resulting in higher staffing. Thus, staffing at rural hospitals typically comprises a higher percentage of fixed costs in order to provide emergency essential services.[41] This may be true despite difficulties in attracting workforce to rural hospitals. In contrast, those systems with lower staffing tend to be predominantly urban, with only a few rural hospitals. Children's hospitals also require higher staffing levels as children require more monitoring to provide services, and this is labor intensive.[42] Finally, hospital systems may have various business models which lead to lower staffing models,

[40] Recruitment and retention for rural health facilities | Rural Health Information Hub
[41] Let's get a good deal on health care | The Rural Monitor
[42] 'Better' nurse staffing at children's hospitals | AMN Healthcare

including the patients and geographies served, the services provided, and pressures to generate increased profit margins. While further analysis is required to test these hypotheses, there is an opportunity to do so in future reports.

The 2024 Hospital Workforce Trends Report hopes to gather insights directly from the workforce on staffing level variations.

Limitations

The purpose of the 2023 Workforce Trends Report is to establish a baseline of the Colorado hospital workforce focusing specifically on wages, benefits, and staffing as it relates to the implementation of the Colorado Option. All analyses, particularly when using secondary data, have limitations, and this section describes the 2023 Report's limitations.

Key Points

- Secondary data generally lags more than a year behind current times.
- Datasets either excluded contracted hospital workers or, when included, it was not possible to separate them from employed workers to make comparisons.
- Secondary data contains limited information about working conditions and training.

Timing

Secondary data is often lagging. For several datasets, the most recent complete year of data available for this analysis is 2021. For example, though the 2023 Hospital Insights Report is used in this Report, its underlying data is from 2021. Because the goal of the 2023 Report was to establish a baseline leading up to the implementation of the Colorado Option plans first being offered as of January 1, 2023, this Report was unable to capture more timely data that may be more reflective of current conditions. Considering the significant impact of COVID-19 on hospitals in 2020 and 2021, both from workforce and financial perspectives, data from 2022 may help isolate pandemic impacts from potential Colorado Option impacts once it becomes available.

In the 2024 and 2025 Hospital Workforce Trends Reports, it will be possible to combine secondary data with survey and focus group data to show a more complete and timelier picture. Surveys and focus groups may also help isolate the impact of the Colorado Option. This will be particularly important as other workforce programs and initiatives passed in the 2021 and 2022 legislative sessions may impact wages, staffing, and working conditions.

Sample Population

As discussed in the Approach section of this Report, the sample population included direct patient service and supportive patient services roles. The hospital administrative workforce was excluded from the secondary data analyses for several reasons. First, in some cases, hospital administrative workers are not a separately tracked category, so there was an inability to isolate them as a subcategory. Second, in datasets where administrative roles are a separate category, the data on wages is so broad that it obscures any real findings.

Additionally, some of the datasets reviewed limit the salaries, wages, and benefits to hospital workers directly employed by the hospital. Yet, this is not a holistic view of the hospital workforce, especially as contracted labor costs were the largest expense

growth category for hospitals, growing by 115.3% from 2020 to 2021, the most recent year of data.[43] Monitoring the impact that the implementation of the Colorado Option may have on the hospital workforce's staffing, wages, benefits, working conditions, and training should also consider, to the extent such data are available, hospital workers staffed by agencies.

Data Availability

HB21-1232 requires specifically assessing Colorado's hospital workforce wages, benefits, staffing, training, and working conditions as it relates to the implementation of the Colorado Option to the extent information is available. However, there were significant limitations to measure all five considerations in secondary data. For example, this report does not address working conditions as this is primarily qualitative in nature, covering one's work environment, rest and break periods, and other matters which can impact a worker physically and psychologically. Additionally, while training can be measured in terms of activities, hours, and costs, this data is typically not available publicly. To the extent such data can be collected, training will be evaluated during the qualitative methods planned for 2024 and 2025.

While findings regarding wages, benefits, and staffing for Colorado's hospital workforce are a critical first step to establish baseline conditions, qualitative data may help provide a more comprehensive picture of the workforce and show the potential impacts of the Colorado Option as opposed to other health care initiatives or labor market dynamics. Surveys and focus groups are the best way to hear directly from the workers regarding their experience with staffing, wages, benefits, training, and working conditions. Secondary data analyses lack the richness provided by timely surveys and focus groups.

[43] 2023 Hospital Expenditure Report | Colorado Department of Health Care Policy and Financing

Recommendations

This year's Report used secondary data to establish a baseline overview of Colorado's hospital workforce. The following recommendations are intended to guide the 2024 and 2025 Reports so that those may offer more comprehensive insights to shape future potential policy recommendations.

Key Recommendations

- Incorporating worker voices, both employed and contracted, is essential to more thoroughly understanding Colorado hospital workforce trends.
- Increased coordination both within state agencies as well as across state agencies to strengthen both affordability and health care workforce efforts.

Importance of Directly Talking to the Workforce

As the impact of the Colorado Option's implementation is studied, the Hospital Workforce Trends Reports present an opportunity to ask hospital workers about staffing, benefits, training, working conditions, recruiting, and retention through surveys and focus groups. Talking directly to hospital workers about such factors can provide important insights in the Workforce Trends Reports.

Direct engagement with hospital workers employed by staffing agencies

Direct engagement with hospital workers, including both directly employed and contracted workers, may help understand increases in total hospital costs. Contract labor costs more than doubled from 2020 to 2021 (115% increase) and cannot be ignored, especially as this trend may be dynamic in future years.[44] It has been documented elsewhere that much of this growth in contract labor was driven by the unique circumstances of the COVID-19 pandemic.[45] The *need* for contract employees is likely driven by workforce shortages, which long predates the pandemic.[46] Furthermore, contracting among dietary and EVS workers was occurring well before the pandemic.[47] The use of agencies by hospitals to staff their workforce, and in particular, to staff nurses, should be explored further as staffing agencies are an expensive way to create the needed staff.[48] As labor is the largest hospital expense, monitoring this item will be important to help understand opportunities for hospitals to control costs.

[44] 2023 Hospital expenditure report | Colorado Department of Health Care Policy and Financing
[45] 2023 Hospital insights bulletin | Colorado Department of Health Care Policy and Financing
[46] Colorado health workforce development strategy 2014 | Colorado Department of Public Health and Environment; Colorado's future healthcare workforce and the role of advanced practice registered nurses | Colorado Center for Nursing Excellence; Health equity and racial and ethnic workforce diversity | The Colorado Trust; 2020 Strategic action plan on aging | Colorado Strategic Action Planning Group on Aging
[47] Investing in our first line of defense: Environmental services workers | Annals of Internal Medicine; Outsourcing healthcare food service is common | Health Care Facilities Today
[48] 2023 Hospital expenditure report | Colorado Department of Health Care Policy and Financing

The reasons behind the demand for staffing agencies have often been reported in the news over the past couple of years. However, understanding the supply of workers who choose staffing agencies as opposed to direct employment offers a different perspective on agency staff. Understanding why workers chose contracted agency work over direct employment offers a unique perspective in how to address these costs that are the fastest rising for hospitals.[49] Ultimately, controlling hospital costs is a key component to achieving more affordable insurance premiums.

Engage hospitals to survey workers

Colorado's three-year study of its hospital workforce is one of the first of its kind in the nation. Generally, studies are focused on specific occupations (e.g., nurses, physicians) or a specific subset of facilities or services (e.g., rural hospitals or maternal care). A particularly unique feature of the Workforce Trends Reports is the ability to capture and analyze employee experiences directly from all types of hospital workers across Colorado via surveys and focus groups. The goal is for employee surveys and focus groups to reflect the occupational, geographic, and demographic diversity of the hospital workforce. Therefore, outreach is key to ensuring inclusive, representational results as well as data integrity.

There are many ways to engage hospital workers in surveys and focus groups, including partnering with hospitals to distribute surveys, conducting phone interviews, engaging directly in hospital non-patient areas such as cafeterias, and/or other approaches to complete surveys.

Interagency Coordination on Health Care Workforce

Monitoring the impact of the Colorado Option's implementation on the hospital workforce offers further insights on underlying health care costs. As discussed throughout this Report, the Colorado Option's efforts to lower premiums for consumers in the individual and small group markets is one of Colorado's initiatives to increase health care affordability, but not the only one. At the same time, Colorado has also created programs to support the health care workforce. Many of the affordability and workforce initiatives are led by different state agencies. Opportunity exists to understand and utilize the learnings from these other initiatives to strengthen the 2024 and 2025 Reports.

Below are examples related to coordinating the Hospital Workforce Trends Reports with other state agencies.

Utilize data related to staffing agency wages collected via SB22-210

Much of the secondary data reviewed on salaries, wages, and benefits is for workers directly employed by hospitals and does not include contracted labor. However,

[49] 2023 Hospital expenditure report | Colorado Department of Health Care Policy and Financing

hospitals' use of contracted labor increased by 115.3% from 2020 to 2021,[50] the most recent year for which data is available, and monitoring the trends in future years is critical. Contracted labor is often used for RNs, dietary workers, and EVS staff. Without further data on contracted staff, any view of the impact on the hospital workforce is incomplete.

Beginning in April 2023, health care staffing agencies must report to the Department of Labor and Employment Division of Labor Standards and Statistics how much they charge health care facilities quarterly as well as how much they pay the staff. That data was not available for inclusion in this report but will be considered for the 2024 and 2025 Reports as available. This will provide further information related to the wages and benefits paid to the contracted labor at hospitals.

Increase focus on workforce in annual Hospital Expenditure Report

HCPF, in collaboration with the Colorado Health Care Affordability and Sustainability Enterprise (CHASE) Board, produces an annual Hospital Expenditure Report detailing uncompensated hospital costs and the different categories of expenditures made by hospitals in the state in accordance with HB19-1001. Salary, wage, and benefit information is collected as part of this process, but that data was not published in the 2022 or 2023 Hospital Expenditure Reports. Increased and ongoing coordination with HCPF's Hospital Expenditure Report will help provide hospital-specific information to monitor the impact of the Colorado Option's implementation on the hospital workforce.

Opportunities for the Hospital Workforce Trends Surveys to support other State initiatives

The first two examples describe how other data and learnings related to affordability and workforce could strengthen future Hospital Workforce Trends Reports. However, the 2024 workforce surveys may also shed light on the efforts of the state's other workforce initiatives intended to support the health care workforce. For example, Colorado CARES (authorized by SB22-226) provides $2 million to create the Health Care Workforce Resilience and Retention Program within CDPHE. It provides technical assistance, guidance, and funding support to community partners to develop programs and services aimed at retaining health care workers as well as collaborative partnerships with community partners, such as the development, implementation, and evaluation of peer support, recovery, and resilience programs, training, and coaching. While the workforce surveys and focus groups for the 2024 and 2025 Workforce Trends Reports will not inquire about these initiatives, it is possible these could be mentioned in worker responses. Even without direct mentions, general learnings from the surveys and focus groups could inform these or other State initiatives related to the workforce.

[50] 2023 Hospital expenditure report | Colorado Department of Health Care Policy and Financing

Conclusion

This Report is the first of three annual Hospital Workforce Trends Reports to study any potential impact of the Colorado Option implementation on Colorado's hospital workforce and its wages, benefits, staffing, training, and working conditions. The goal of this year's Report was to conduct a secondary data analysis to establish a baseline and specifically,

1. **Describe the Colorado hospital workforce by occupation, geography, race/ethnicity, gender, and education,**

2. **Describe the wages, benefits, and staffing for Colorado's hospital workforce, and**

3. **Describe hospital labor costs as a share of operating expenses over time, including financial implications for increased utilization of contracted labor.**

Throughout the Report, comparisons were offered between the Colorado and national hospital workforces as well as between Colorado's hospital and overall workforces. The intent was to understand trends in hospital and general labor markets, as both are incredibly dynamic at this moment.

As a result, four key conclusions were established:

1. Colorado's hospital workforce looks similar to the national hospital workforce.

2. More than 80,000 Coloradans are directly employed by a hospital.

3. Labor is one of the largest expenses in hospitals' budgets, consisting of both workers employed directly by hospitals and contract workers employed through staffing agencies.

4. Contracted labor has seen the largest rate of growth among hospital expenses in recent years and puts further pressure on total hospital costs.

Future year Reports hope to include insights from hospital workers across occupations, systems, and geographies to further explore their on-the-job experiences, with special attention to training and working conditions as those were unavailable in datasets used in the 2023 Report. Additionally, efforts will be made to further understand the role of contract labor in Colorado's hospitals and their ongoing costs.

Appendices

Appendix A: American Community Study (ACS) Data Methodology

Data

This report used the Integrated Public Use Microdata Series (IPUMS) American Community Survey (ACS) to analyze the Colorado hospital workforce. The ACS is an annual nationally representative survey conducted by the Census Bureau. The ACS 5-year sample from 2021 is used here, which is the latest ACS data available. IPUMS harmonizes the ACS data, allows users to customize their dataset, and manages the data cleaning. The analytical sample includes individuals between the ages of 18 and 65 who are part of the labor force and work in the hospital industry.

Measurement

Health care occupation: Collapsed approximately fifty health care occupations defined by U.S. Census occupational codes into eight categories based on similarities in title and education requirements: 1) physicians, 2) advanced practitioners (excluding nurses), 3) registered nurses (RNs), including nurse practitioners, 4) therapists (e.g., physical therapist, respiratory therapist), 5) health care technicians (e.g., ultrasound technicians, radiation technicians), 6) licensed practical nurses and licensed vocational nurses (LPNs/LVNs), 7) assistants/aides (e.g., certified nursing assistants, home health aides), 8) community-based health workers, 9) dietary, and 10) environmental (EVS) staff. A crosswalk is included further down that details which specific occupations are included in each category.

Race-ethnicity: Created the following mutually exclusive race-ethnicity categories within the existing race-ethnicity variable: *Hispanic, White*, *Black, Asian,* and *multiple race categories or other race-ethnicity*.

Education: Created the following mutually exclusive education categories within the existing education variable: *high school degree or less, some college, associate degree, and college degree or higher*.

Rural/urban: To define *rural* and *urban*, DIRA used the *metro* variable, which designates whether an individual is not in a metro area, is in a central city, outside of a central city, or unknown. DIRA designated those that live outside of a metro area as living in a rural area, while those that live in a central city or outside of a central city are designated as urban. According to the Census Bureau, a metro area consists of one or more counties that contain a city of 50,000 or more inhabitants, or contain a Census Bureau-defined urbanized area. If a county group lies only *partially* within metropolitan areas or central/principal cities, then it is indicated that the status is "indeterminable (mixed)."

Hours: Indicates the number of hours per week that the respondent usually worked.

Income. This variable reports each respondent's total pre-tax wage and salary income, i.e., money received as an employee, for the previous year. Includes income adjustment for inflation using the Consumer Price Index (CPI).

Insurance. This variable indicates if a person did not have any insurance coverage at the time of the interview.

Low-income household. Defined as a household with an income that falls within 150% of the federal poverty threshold. This variable expresses a family's total income for the previous year as a percentage of the poverty threshold established by the federal government. It is based on the total family income and on the size of the family, the number of people in the family who are children, and the age of the householder (under/over age 65).

Crosswalk of Detailed Health Care Occupation Codes and Occupation Groups Used in Study

Census Occupation Code	Census Job Title	Occupation Group Used in Study
350	Medical and health services managers	Community-Based Workers
420	Social and community service managers	Community-Based Workers
1650	Medical scientists	Advanced Practitioners
1820	Psychologists	Advanced Practitioners
2001	Substance abuse and behavioral disorder counselors	Community-Based Workers
2004	Mental health counselors	Community-Based Workers
2006	Counselors, all other	Community-Based Workers
2012	Health care social workers	Community-Based Workers
2013	Mental health and substance abuse social workers	Community-Based Workers
2014	Social workers, all other	Community-Based Workers
2025	Miscellaneous community and social service specialists, including health educators and community health workers	Community-Based Workers
3030	Dietitians and nutritionists	Advanced Practitioners
3040	Optometrists	Advanced Practitioners
3050	Pharmacists	Advanced Practitioners

3090	Other physicians	Physicians
3100	Surgeons	Physicians
3110	Physician assistants	Advanced Practitioners
3120	Podiatrists	Advanced Practitioners
3140	Audiologists	Advanced Practitioners
3150	Occupational therapists	Advanced Practitioners
3160	Physical therapists	Advanced Practitioners
3200	Radiation therapists	Therapists
3210	Recreational therapists	Therapists
3220	Respiratory therapists	Therapists
3230	Speech-language pathologists	Advanced Practitioners
3235	Exercise physiologists	Therapists
3245	Exercise physiologists and therapists, all other	Therapists
3255	Registered nurses	RNs
3256	Nurse anesthetists	APRNs
3258	Nurse practitioners	APRNs
3261	Acupuncturists	APRNs
3270	Health diagnosing and treating practitioners, all other	Advanced Practitioners
3300	Clinical laboratory technologists and technicians	Technicians
3321	Cardiovascular technologists and technicians	Technicians
3322	Diagnostic related technologists and technicians	Technicians
3401	Emergency medical technicians and paramedics	Technicians
3402	Paramedics	Technicians
3421	Pharmacy technicians	Technicians
3422	Psychiatric technicians	Technicians
3423	Surgical technicians	Technicians
3430	Dietetic technicians and ophthalmic medical technicians	Technicians
3500	Licensed practical and licensed vocational nurses	LPNs/LVNs
3510	Medical records and health information technicians	Technicians
3515	Medical records specialists	Technicians
3520	Opticians, dispensing	Technicians
3535	Miscellaneous health technologists and technicians	Technicians
3540	Other health care practitioners and technical occupations	Technicians
3545	Miscellaneous health technologists and technicians	Technicians

3550	Other health care practitioners and technical occupations	Technicians
3601	Home health aides	Aides/Assistants
3602	Personal care aides	Aides/Assistants
3603	Nursing assistants	Aides/Assistants
3605	Orderlies and psychiatric aides	Aides/Assistants
3610	Occupational therapist assistants and aides	Therapists
3620	Physical therapist assistants and aides	Therapists
3630	Massage therapists	Therapists
3645	Medical assistants	Aides/Assistants
3646	Medical transcriptionists	Aides/Assistants
3647	Pharmacy aides	Aides/Assistants
3649	Phlebotomists	Aides/Assistants
3655	Miscellaneous health care support occupations, including medical equipment preparers	Aides/Assistants
4000	Chefs and head cooks	Dietary
4010	First-line supervisors of food preparation and serving workers	Dietary
4020	Cooks	Dietary
4030	Food preparation workers	Dietary
4055	Fast food and counter workers	Dietary
4120	Food servers, non-restaurant	Dietary
4130	Dining room and cafeteria attendants and bartender helpers	Dietary
4140	Dishwashers	Dietary
4160	Food preparation and serving related workers, all other	Dietary
4200	First-line supervisors of housekeeping and janitorial workers	Environmental (EVS)
4220	Janitors and building cleaners	Environmental (EVS)
4230	Maids and housekeeping cleaners	Environmental (EVS)
4610	Personal and home care aides	Aides/Assistants
8760	Medical, dental, and ophthalmic laboratory technicians	Technicians
9110	Ambulance drivers and attendants, except emergency medical technicians	Aides/Assistants

Source: Census classification scheme: IPUMS ACS[51]

[51] IPUMS ACS | https://usa.ipums.org/usa/acs.shtml

Appendix B: Colorado Department of Labor Data Methodology

Data

Employment and occupational analysis were conducted utilizing the Occupational Employment and Wage Statistics (OEWS) program data. The OEWS survey is a federal-state cooperative program between the Bureau of Labor Statistics (BLS) and State Workforce Agencies. OEWS produces employment and wage estimates for approximately 830 occupations based on a survey of employers. This data is published annually, and data includes cross-industry occupational employment and wage estimates for the nation, with estimates being constructed from a sample of about 1.1 million establishments collected over a 3-year period. Data from all fifty states and the District of Columbia, Puerto Rico, Guam, and the Virgin Islands are included in the survey. The OEWS survey sample is drawn from the database of businesses reporting to the state unemployment insurance programs.

The OEWS program uses the Office of Management and Budget's Standard Occupational Classification (SOC) system to classify jobs into occupations based on their job duties, and the May 2022 OEWS estimates are based solely on survey data collected using the 2018 SOC. May 2022 estimates also use the 2022 North American Industry Classification System (NAICS) to classify establishments into industries based on the employer's primary activity.

Measurement

Colorado Workforce Distributions. To describe the Colorado health care workforce and general medical and surgical hospital workforce, employment totals from the 2022 OEWS survey state and industry data was used. The health care workforce was defined as health care practitioners and technical occupations and health care support occupations. This data was used to describe Colorado's health care workforce as a share of Colorado's total workforce in addition to Colorado's hospital (defined as general and surgical medical hospitals) workforce as a share of Colorado's health care workforce. General medical and surgical hospitals are referred to as hospitals in the report analysis, as these hospitals exclude specialty hospitals such as long term, rehabilitation, and psychiatric hospitals that have unique workforce characteristics and financial trends. Additionally, the majority of hospitals in the state are classified as general medical and surgical hospitals.

Colorado Hospital Wages, 2018 – 2022. OEWS state-level and industry-level data from 2018-2022 was combined and analyzed to evaluate annual wage growth for general medical and surgical hospitals relative to Colorado's overall workforce wages. General medical and surgical hospitals are referred to as hospitals in the report analysis, as these hospitals exclude specialty hospitals such as long term, rehabilitation, and psychiatric hospitals that have unique workforce characteristics and financial trends. Additionally, the majority of hospitals in the state are classified as general medical and surgical hospitals.

Additionally, OEWS survey state-level and industry-level data from 2018-2022 was combined and analyzed to evaluate wage growth among occupational groups for Colorado hospital workers. Survey data on mean annual wages were used to measure wages across the occupational categories. Mean annual wages were selected to compare average occupational wages and better understand the typical wage distribution of hospital occupational categories. Health Care Practitioners and Technical Occupations and Health Care Support Occupations were selected for analysis to evaluate major health care occupational trends. Registered Nurses and Nursing Assistants were selected for analysis based on the completeness of their employment data across the different years of the OEWS survey and their role as large contributors to the major occupational groups.

Both Health Care Practitioners and Technical Occupations and Health Care Support Occupations are categorized as major occupational groups. These groups are further broken into "detailed" occupational groups that are classified as subgroups of the major occupations. OEWS classifies Registered Nurses as a detailed, sub occupation of Health Care Practitioners and Technical Occupations, while Nursing Assistance are classified as a detailed, sub occupation of Health Care Support Occupations.

Crosswalk of Detailed Health Care Occupation Codes and Occupation Groups Used in OEWS Study

Occupation Code	Census Job Title	Study Occupation Group
00-000	All Occupations	Total
29-0000	**Health Care Practitioners and Technical Occupations**	**Major***
29-1011	Chiropractors	Health Care Practitioners and Technical Occupations
29-1021	Dentists, General	Health Care Practitioners and Technical Occupations
29-1031	Dietitians and Nutritionists	Health Care Practitioners and Technical Occupations
29-1041	Optometrists	Health Care Practitioners and Technical Occupations
29-1051	Pharmacists	Health Care Practitioners and Technical Occupations
29-1071	Physician Assistants	Health Care Practitioners and Technical Occupations
29-1081	Podiatrists	Health Care Practitioners and Technical Occupations
29-1122	Occupational Therapists	Health Care Practitioners and Technical Occupations

29-1123	Physical Therapists	Health Care Practitioners and Technical Occupations
29-1124	Radiation Therapists	Health Care Practitioners and Technical Occupations
29-1125	Recreational Therapists	Health Care Practitioners and Technical Occupations
29-1126	Respiratory Therapists	Health Care Practitioners and Technical Occupations
29-1127	Speech-Language Pathologists	Health Care Practitioners and Technical Occupations
29-1128	Exercise Physiologists	Health Care Practitioners and Technical Occupations
29-1129	Therapists, All Other	Health Care Practitioners and Technical Occupations
29-1141	**Registered Nurses**	**Health Care Practitioners and Technical Occupations**
29-1151	Nurse Anesthetists	Health Care Practitioners and Technical Occupations
29-1161	Nurse Midwives	Health Care Practitioners and Technical Occupations
29-1171	Nurse Practitioners	Health Care Practitioners and Technical Occupations
29-1181	Audiologists	Health Care Practitioners and Technical Occupations
29-1211	Anesthesiologists	Health Care Practitioners and Technical Occupations
29-1212	Cardiologists	Health Care Practitioners and Technical Occupations
29-1213	Dermatologists	Health Care Practitioners and Technical Occupations
29-1214	Emergency Medicine Physicians	Health Care Practitioners and Technical Occupations
29-1215	Family Medicine Physicians	Health Care Practitioners and Technical Occupations
29-1216	General Internal Medicine Physicians	Health Care Practitioners and Technical Occupations
29-1217	Neurologists	Health Care Practitioners and Technical Occupations
29-1218	Obstetricians and Gynecologists	Health Care Practitioners and Technical Occupations
29-1221	Pediatricians, General	Health Care Practitioners and Technical Occupations
29-1222	Physicians, Pathologists	Health Care Practitioners and Technical Occupations

29-1223	Psychiatrists	Health Care Practitioners and Technical Occupations
29-1224	Radiologists	Health Care Practitioners and Technical Occupations
29-1229	Physicians, All Other	Health Care Practitioners and Technical Occupations
29-1241	Ophthalmologists, Except Pediatric	Health Care Practitioners and Technical Occupations
29-1242	Orthopedic Surgeons, Except Pediatric	Health Care Practitioners and Technical Occupations
29-1249	Surgeons, All Other	Health Care Practitioners and Technical Occupations
29-1291	Acupuncturists	Health Care Practitioners and Technical Occupations
29-1292	Dental Hygienists	Health Care Practitioners and Technical Occupations
29-2010	Clinical Laboratory Technologists and Technicians	Health Care Practitioners and Technical Occupations
29-2031	Cardiovascular Technologists and Technicians	Health Care Practitioners and Technical Occupations
29-2032	Diagnostic Medical Sonographers	Health Care Practitioners and Technical Occupations
29-2033	Nuclear Medicine Technologists	Health Care Practitioners and Technical Occupations
29-2034	Radiologic Technologists and Technicians	Health Care Practitioners and Technical Occupations
29-2035	Magnetic Resonance Imaging Technologists	Health Care Practitioners and Technical Occupations
29-2036	Medical Dosimetrists	Health Care Practitioners and Technical Occupations
29-2042	Emergency Medical Technicians	Health Care Practitioners and Technical Occupations
29-2043	Paramedics	Health Care Practitioners and Technical Occupations
29-2051	Dietetic Technicians	Health Care Practitioners and Technical Occupations
29-2052	Pharmacy Technicians	Health Care Practitioners and Technical Occupations
29-2053	Psychiatric Technicians	Health Care Practitioners and Technical Occupations
29-2055	Surgical Technologists	Health Care Practitioners and Technical Occupations
29-2057	Ophthalmic Medical Technicians	Health Care Practitioners and Technical Occupations

29-2061	Licensed Practical and Licensed Vocational Nurses	Health Care Practitioners and Technical Occupations
29-2072	Medical Records Specialists	Health Care Practitioners and Technical Occupations
29-2081	Opticians, Dispensing	Health Care Practitioners and Technical Occupations
29-2091	Orthotists and Prosthetists	Health Care Practitioners and Technical Occupations
29-2099	Health Technologists and Technicians, All Other	Health Care Practitioners and Technical Occupations
29-9021	Health Information Technologists and Medical Registrars	Health Care Practitioners and Technical Occupations
29-9091	Athletic Trainers	Health Care Practitioners and Technical Occupations
29-9092	Genetic Counselors	Health Care Practitioners and Technical Occupations
29-9099	Health Care Practitioners and Technical Workers, All Other	Health Care Practitioners and Technical Occupations
31-0000	**Health Care Support Occupations**	**Major***
31-1120	Home Health and Personal Care Aides	Health Care Support Occupations
31-1131	**Nursing Assistants**	**Health Care Support Occupations**
31-1132	Orderlies	Health Care Support Occupations
31-1133	Psychiatric Aides	Health Care Support Occupations
31-2011	Occupational Therapy Assistants	Health Care Support Occupations
31-2012	Occupational Therapy Aides	Health Care Support Occupations
31-2021	Physical Therapist Assistants	Health Care Support Occupations
31-2022	Physical Therapist Aides	Health Care Support Occupations
31-9011	Massage Therapists	Health Care Support Occupations
31-9091	Dental Assistants	Health Care Support Occupations
31-9092	Medical Assistants	Health Care Support Occupations
31-9093	Medical Equipment Preparers	Health Care Support Occupations
31-9094	Medical Transcriptionists	Health Care Support Occupations
31-9097	Phlebotomists	Health Care Support Occupations
31-9099	Health Care Support Workers, All Other	Health Care Support Occupations

Source: OEWS 2019[52]

***Major occupation groups contain detailed occupations, which are listed below their respective major classification. Bolded occupation job titles were analyzed in the report.

[52] List of SOC occupations | Bureau of Labor Statistics

Crosswalk of Industry Codes and Industry Groups Used in OEWS Study

NAICS Industry Code	NAICS Industry Title	Industry Level Group
622100	General Medical and Surgical Hospitals	4-digit*

Source: OEWS 2019

NAICS is the North American Industry Classification System. * 4-digit refers to industry group

Appendix C: RAND Data Methodology

Each year, hospitals submit Medicare Cost Reports to the Centers for Medicare and Medicaid Services (CMS). The RAND Corporation publishes a dataset of selected fields from the Medicare Cost Reports and then makes a limited dataset available for free and a more comprehensive dataset available for purchase.[53] The purchased dataset was utilized for this report. The RAND dataset provides hospital level data on hospital characteristics, payer mix, salaries, wages, and benefits, and staffing as well as many other items. For the staffing analysis, DIRA used the RAND-generated metric of discharge equivalents. RAND defines discharge equivalents as the number of inpatient discharges multiplied by the ratio of total operating expenses divided by inpatient operating expenses. For each system, the aggregate full-time employees per system were divided by the aggregate discharge equivalents per system. To give a more accurate picture of hospital ownership, DIRA started with the RAND ownership variable in the following ways:

- Based on Centura's announcement that its partner organizations would begin separately managing their own hospitals, DIRA divided the hospitals into Centura – Adventist and Centura – CommonSpirit.
- Hospitals in a rural county who were not part of a system were labeled independent – rural.
- Denver Health was listed as its own due to its size and unique role.
- Children's Hospital Colorado has two hospitals and was listed on its own due to its size and unique role.
- Any other hospitals that were in a system of less than three hospitals and not in a rural county were labeled independent – not rural.

[53] RAND hospital data | https://www.hospitaldatasets.org/

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