UH Rural Health Research and Policy Center

Medicare Physician Fee-For-Service Payments: Adjusting for Variation in Geographic Practice Costs and Challenges for Hawai‘i

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Executive Summary

Medicare adjusts physician and outpatient payments nationwide through the Geographic Practice Cost Index (GPCI), which modifies the Physician Fee Schedule (PFS) to reflect geographic differences in physician work, practice expenses, and malpractice costs.[1] Although the GPCI aims to promote payment equity across regions of the United States, Hawaiʻi is currently at a disadvantage due to its non-contiguous geography, high cost of living, and distinct labor market conditions.[2] Much of Hawaiʻi's population lives in small, rural island communities that face higher transportation and staffing costs, further magnifying these disparities. In 2024, Hawaiʻi's GPCI values were 1.149 for practice expense, 0.561 for malpractice, and 1.000 for physician work—the latter fixed at the national average despite living costs that are roughly 82 percent higher than the U.S. average.[3] This discrepancy results in Medicare reimbursement rates that undervalue physician work, contributing to persistent provider shortages and barriers to care.

Hawaiʻi currently faces an estimated deficit of 776 full-time physicians, particularly in primary care, and nearly half of practicing providers report plans to retire or relocate.[4] Low reimbursement rates amplify the impact of high housing, supply, and operational costs, creating major challenges for physician recruitment and retention. Analyses from the University of Hawaiʻi Rural Health Research and Policy Center (RHRPC) in this report indicate that Hawaiʻi has the largest wage-cost gap in the nation among high-cost states. By contrast, Alaska, which experiences similar isolation and high costs, benefits from a statutory Physician Work (PW) GPCI floor of 1.5 that ensures higher Medicare reimbursement levels.

To address this inequity, this report identifies several potential policy remedies: (1) Congress could establish a statutory 1.5 PW GPCI floor for Hawaiʻi, similar to Alaska's current floor, such as by passing the Protecting Access to Care in Hawaiʻi (PATCH) Act (H.R. 3263/S.1624); (2) CMS could, through regulation, provide a 1.5 PW GPCI floor for Hawaiʻi, either directly for the Hawaiʻi/Guam locality or by merging Hawaiʻi with Alaska's fee schedule locality; (3) CMS could incorporate cost-of-living metrics, such as Regional Price Parities (RPP), into the GPCI calculation; or (4) Congress could direct CMS to establish a fixed percentage bonus for non-contiguous states, similar to the Health Professional Shortage Area (HPSA) incentive payments. The analysis concludes that a statutory or regulatory adjustment aligning Hawaiʻi with Alaska offers the most direct and equitable path to fair compensation. Without reform, Medicare's geographic adjustment framework will continue to undervalue Hawaiʻi's physicians practicing in a high cost of living state, exacerbating workforce shortages and limiting access to care for the state's Medicare population.

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[1] Centers for Medicare & Medicaid Services. *Select CMS Authorities Under 42 U.S.C. § 1395w–4(e) for GPCI and GAF Calculation*. Accessed December 23, 2024. https://www.cms.gov/medicare/physician-fee-schedule/search/overview

[2] Bond-Smith, Steven, Bond-Smith, Daniela. 2024. "How does Hawaiʻi's Economic Geography Affect Its Healthcare Industry?" The Economic Research Organization at the University of Hawai'i. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/.

[3] Missouri Economic Research and Information Center. "Cost of Living Data Series," 2023. https://meric.mo.gov/data/cost-living-data-series.

[4] University of Hawaiʻi System. *Annual Report on the Findings From the Hawaiʻi Physician Workforce Assessment Project*. December 2022. https://ahec.hawaii.edu/_docs/2023-physician-workforce-report.pdf.

FULL REPORT

Background

Established in 1965 by Congress, Medicare is the U.S. federal health insurance program for people who are 65 or older, people under 65 with certain disabilities, and people with End-Stage Renal Disease.[5] The Medicare program is financed through a combination of taxes, beneficiary premiums, and general revenue from the federal government. The program is administered by the Centers for Medicare and Medicaid Services (CMS) within the U.S. Department of Health and Human Services.[6] As of March 2025, 68.6 million people were enrolled in at least one program of Medicare.[7]

Medicare Organizational Structure

The Medicare program consists of four parts: Part A (inpatient care), Part B (outpatient care), Part C (Medicare Advantage), and Part D (outpatient prescription drug benefit). Medicare uses different systems and payment rates to provide payment for various types of providers and different settings in which care is provided.[8] Additional detail follows:

- Part A covers hospital and nursing facility stays, some home health visits, and hospice care. It is funded by a tax on individual earnings with an additional assessment on higher-income taxpayers.
- Part B covers physician and preventive services, as well as some home health services. It is funded by general government revenues and beneficiary premiums, with higher premiums for beneficiaries with higher incomes.
- Part C allows beneficiaries to enroll in private healthcare plans, such as Health Maintenance Organizations (HMOs) or Preferred Provider Organizations (PPOs), as an alternative to traditional government-administered Medicare. These plans, often referred to as Medicare Advantage (MA) plans, receive payments from Medicare to provide all covered benefits, including hospital (Part A) and physician (Part B) services and, if coverage is elected, prescription drug benefits (Part D). In addition, patients might make additional payments depending on the specific plan they chose.
- Part D is a voluntary outpatient prescription drug benefit program provided through private insurance companies (often offered as additional coverage with Part C MA programs) that contract with Medicare. Beneficiaries pay premiums and cost-sharing for prescriptions, which vary by plan.[9]

As above, Medicare Part B generally covers physician and outpatient services. Part B payments to physicians and other licensed clinical practitioners follow a fee-for-service (FFS) payment

[5] "Physician Fee Schedule Search Overview." 2023. Centers for Medicare and Medicaid Services. 2023. https://www.cms.gov/medicare/physician-fee-schedule/search/overview.

[6] Ibid.

[7] Centers for Medicare & Medicaid Services. "Medicare Monthly Enrollment." Data.CMS.gov, 2025. https://data.cms.gov/summary-statistics-on-beneficiary-enrollment/medicare-and-medicaid-reports/medicare-monthly-enrollment.

[8] Cubanski, Juliette, Christina Swoope, Cristina Boccuti, Gretchen Jacobson, Giselle Casillas, Shannon Griffin, and Tricia Neuman. "A Primer on Medicare: Key Facts about the Medicare Program and the People It Covers | KFF." KFF, March 31, 2016. https://www.kff.org/medicare/report/a-primer-on-medicare-key-facts-about-the-medicare-program-and-the-people-it-covers/.

[9] Kaiser Family Foundation. "An Overview of Medicare." kff.org, June 13, 2023. https://www.kff.org/medicare/issue-brief/an-overview-of-medicare/.

schedule as established in the Medicare Physician Fee Schedule (PFS). The PFS was established in 1992 by CMS under statutory authority from Congress as an attempt to reduce increasing Medicare costs and equitably pay physicians across a variety of services.[10] FFS systems utilize a system in which a provider submits a claim to Medicare or an MA Program for every service provided, and Medicare or the MA Program pays the provider a fee for each service. The PFS includes a variety of covered services such as office visits, surgical procedures, and diagnostic and therapeutic services. The total federal spending within this model (excluding beneficiary cost sharing) was $425 billion in 2021.[11] The PFS is adjusted annually through a regulatory process facilitated by CMS, in which CMS introduces a proposed rule, accepts comments, adjusts the proposed rule as necessary, and then produces a Final Rule for the following year.[12]

Physician Fee Schedule Procedure

Medicare follows the rates set in the PFS to pay physicians who offer services to Medicare Part B enrollees. The PFS sets payment rates through determinations of Service Values.[13] Three different components determine the value of a service: (a) Practice Expense (PE), (b) Malpractice Premium (MP), and (c) Physician Work (PW). For each of these components, a separate geographic adjustment is made.[14] A Service Value is calculated for each of the three components (PE, MP, and PW) and adjusted by geographic location, then added together to form the payment.

In the following sections of this report, we will provide a detailed explanation of the various components that comprise this payment formula. We will begin by discussing the Service Value, followed by the geographic adjustments to the Service Values by factors known as Geographic Practice Cost Indexes (GPCIs), and how those are combined to determine the final payment amount. This understanding is critical to understanding Medicare's overall calculation of physician payment rates.

Service Value

An Service Value is determined by three factors[15]:
(a) PE: material costs for maintaining a practice;
(b) MP: costs for malpractice insurance; and
(c) PW: cost of time, skill, effort, judgment, stress.

The Service Value is expressed in Relative Value Units (RVUs). As explained by the American Academy of Professional Coders, "*RVUs, or relative value units, do not directly define physician compensation in dollar amounts. Rather, RVUs define the value of a service or procedure relative*

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[10] Levy, J. M., and M. Borowitz. "The Medicare Fee Schedule Unveiled: An Account of Physician Payment Reform." *Health Policy (Amsterdam, Netherlands)* 22, no. 3 (October 1992): 263–86. https://doi.org/10.1016/0168-8510(92)90001-r.
[11] Kaiser Family Foundation. "The Facts about Medicare Spending." kff.org, 2023. https://www.kff.org/interactive/the-facts-about-medicare-spending/.
[12] Centers for Medicare & Medicaid Services. "Physician Fee Schedule." cms.gov, 2023. https://www.cms.gov/medicare/payment/fee-schedules/physician.
[13] Social Security Act, 42 U.S.C. § 1395w-4
[14] Edmunds, Margaret, Frank A Sloan, in Medicare, Board, and Institute of Medicine. "Physician Work Adjustment." Nih.gov. National Academies Press (US), June 2011. https://www.ncbi.nlm.nih.gov/books/NBK190056/.
[15] Ibid.

to all services and procedures. This measure of value is based on the extent of physician work, clinical and nonclinical resources, and expertise required to deliver the healthcare service to patients. RVUs ultimately determine physician compensation when the Conversion Factor [a percentage that translates RVUs to dollar amounts] is applied to the total RVU."[16] Historically, a group of about 30 physicians, who are part of the American Medical Association (AMA) Specialty Society Relative Value Scale Update Committee (RUC), are charged with determining Medicare's RVU values.[17] RVUs are calculated for each category of Service Value (RVU_{pw}, RVU_{pe}, RVU_{mp}) and combined with the GPCI to form a final payment rate.

Geographic Practice Cost Indexes (GPCIs)

Once base Service Values are determined, CMS adjusts each Service Value for geographic differences in costs across different geographic areas through GPCIs, which are calculated for 109 distinct "localities." One of these designated localities includes the state of Hawai'i, along with Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands (CNMI).[18] Alaska represents another locality, which, through statutory change enacted by the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA), receives a significantly higher PW GPCI score than any other locality (a 1.5 PW GPCI floor).[19]

The first GPCI for the PFS was developed by Stephen Zuckerman, PhD, Pete Welch, PhD, and Gregory Pope, MS, from the Urban Institute in Washington, DC, and The Center for Health Economics Research in Needham, MA, in 1989,[20] citing geographic differences in physicians' work effort, employee wages, office rent, and malpractice insurance. This proposal was incorporated into statute as the GPCI was established in 1992 through select CMS authorities under Section 1848(e)(1)(A) of the Social Security Act (SSA) "*Payment for physicians' services*."[21] CMS uses separate GPCIs for each component of the Service Value (PE, MP, and PW), and the relative contribution of these three components varies by type of service and the setting in which the service is provided.

- The PE GPCI recognizes geographic differences in costs for goods and services. The PE GPCI consists of four parts: Employee Wages, Purchased Services, Office Rent, Equipment Supplies, and "Other."
- The MP GPCI provides a mechanism to account for geographic differences in malpractice insurance costs.
- The PW GPCI adjusts for the geographic differences in costs for physician "work effort." In practice, the PW GPCI is intended as an adjustment for geographic differences in physician wages.

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[16] American Academy of Professional Coders. "What Are Relative Value Units (RVUs)?" aapc.com, 2022. https://www.aapc.com/resources/what-are-relative-value-units-rvus?srsltid=AfmBOoqzTVD9xdlMmXvHH157n1SsRw0M4-1NM9xYOpws6AX30mvMyr8z.

[17] Uwe Reinhardt, "The Little-Known Decision-Makers for Medicare Physician Fees," *The New York Times*, December 10, 2010, https://economix.blogs.nytimes.com/2010/12/10/the-little-known-decision-makers-for-medicare-physicians-fees/.

[18] Government Accountability Office, *Medicare: Information on Geographic Adjustments to Physician Payments for Physicians' Time, Skills, and Effort*, GAO-22-103876 (Washington, D.C.: Government Accountability Office, 2022), https://www.gao.gov/assets/gao-22-103876.pdf.

[19] "H.R. 6331—110th Congress: Medicare Improvements for Patients and Providers Act of 2008." *Congress.gov*. Last modified July 15, 2008. https://www.congress.gov/bill/110th-congress/house-bill/6331.

[20] Stephen Zuckerman, Gregory Pope, and W. Pete Welch, "A Geographic Index of Physician Practice Costs," *Journal of Health Economics* 9, no. 1 (June 1990): 39–69, https://doi.org/10.1016/0167-6296(90)90040-a.

[21] 42 U.S.C. §§ 1395w–4

Originally, GPCIs were established in 1992 with 89 localities. Section 220(h) of the Protecting Access to Medicare Act of 2014 (PAMA) directed that California would expand from its original nine localities to a total of 32 localities; therefore, in the Calendar Year (CY) 2017 PFS Final Rule (81 FR 80265 through 80268), CMS expanded the total number of PFS localities from 89 to 112. The 112 localities were later reduced to 109 (three California localities were retired). To date, the California change has been the only change to payment localities since the establishment of the PFS in 1992.

For more information on congressional and administrative action related to the GPCI, please see the following appendices:

- Appendix A: History of the Physician Work (PW) Geographic Practice Cost Index (GPCI) development
- Appendix B: Legislation on the GPCI
- Appendix C: Review of All Rules Published on GovInfo.gov by CMS on the Physician Fee Schedule Containing the GPCI Keyword

Geographic Adjustment Factor

The Geographic Adjustment Factor (GAF) is an estimate of the total geographic adjustments across all three Service Value components. The GAF is calculated based on a weighted average of each of the three GPCI components. As of 2023, the GAF set by CMS considers the PW GPCI at 50.24%, the PE GPCI at 45.59%, and the MP GPCI at 4.17% of the total Service Value. According to a CMS Final Rule from 2022 (87 FR 69404), the GAF is not used to calculate GPCIs, but rather is seen as "*a useful metric for the purposes of comparing overall costs and payments across fee schedule areas.*"[22] CMS also explains that the actual effect of GPCIs on payment for services deviates from the GAF due to differing proportions of work, physicians' expenses, and malpractice RVUs.

Conversion Factor

As described in the schematic below (Figure 1), the Service Value consists of three separate values (PE, MP, and PW) that are each adjusted by the GPCI. This total is then multiplied by a conversion factor (CF). The CF is adjusted every year to ensure that the overall spending for Medicare stays the same, as required by the Omnibus Budget Reconciliation Act (OBRA) of 1989, which mandated that the PFS program be budget neutral.[23] The CF is determined by an involved formula that includes the state of the economy, the number of beneficiaries using Medicare, the amount spent in previous years, and changes in coverage.[24] The final fee paid by Medicare is the product of the Service Value, as adjusted by GPCIs, and the CF.[25]

[22] Centers for Medicare & Medicaid Services. *Revisions to Payment Policies Under the Medicare Physician Fee Schedule, Quality Payment Program, and Other Revisions to Part B for CY 2023*. CMS-1770-F. Published November 18, 2022. https://www.cms.gov/medicare/medicare-fee-service-payment/physicianfeesched/pfs-federal-regulation-notices/cms-1770-f.
[23] Cottrill, Alex, Juliette Cubanski, and Tricia Neuman. "What to Know About How Medicare Pays Physicians." *KFF* (blog), March 6, 2024. https://www.kff.org/medicare/issue-brief/what-to-know-about-how-medicare-pays-physicians/.
[24] Seidenwurm, D.J., and J.H. Burleson. "The Medicaid Conversion Factor." *American Journal of Neuroradiology* 35, no. 2 (February 2014): 242–43. https://doi.org/10.3174/ajnr.A3674.
[25] Ibid.

FIGURE 1: FORMULA FOR DETERMINING PHYSICIAN PAYMENT RATE

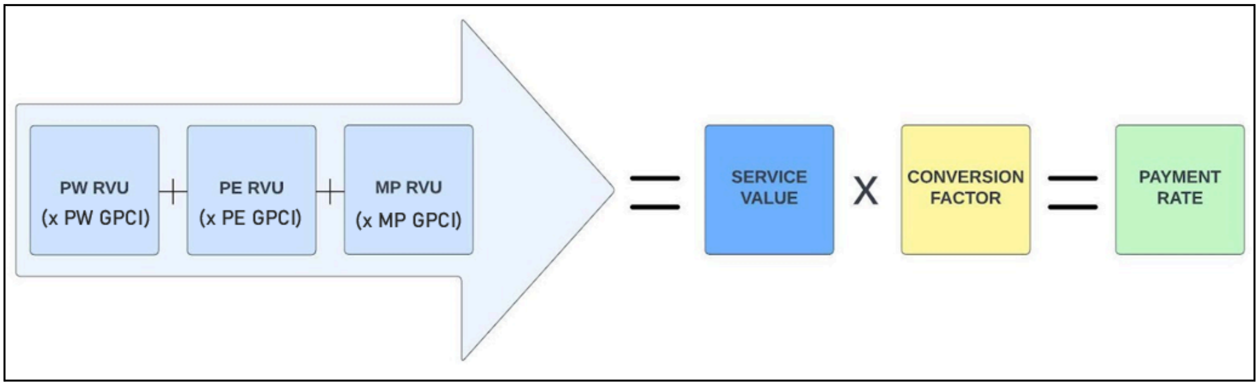

Figure created by RHRPC, information sourced from a 2022 Government Accountability Office (GAO) Report.[26]

Bonus Payment Based on Health Professional Shortage Area (HPSA) Designation

In addition to the base Medicare Part B payment model, providers who deliver care within an area that has been designated as a Health Professional Shortage Area (HPSA) can qualify for a bonus payment, as established in statute in Section 1833(m) of the SSA.[27] HPSA designations are provided to facilities, populations, and geographic areas where a healthcare provider shortage exists. HPSAs are designated by the U.S. Health Resources and Services Administration (HRSA), based upon census tracts, townships, or counties, and encompass primary care, mental health, and dental needs. However, Section 1833(m) of the SSA states that the Medicare HPSA Physician Bonus Program includes only geographic primary care and mental health HPSAs.[28] CMS pays a 10 percent bonus on top of the defined Medicare rate when a physician or psychiatrist delivers Medicare-covered services to patients in a geographic HPSA.

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[26] Government Accountability Office. *Medicare: Information on Geographic Adjustments to Physician Payments*. GAO-22-103876. 2022. https://www.gao.gov/assets/gao-22-103876.pdf.

[27] Centers for Medicare & Medicaid Services. *Health Professional Shortage Area Physician Bonus Program*. 2020. CMS Medicare Learning Network. https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/Downloads/HPSAfctshtTextOnly.pdf

[28] Centers for Medicare & Medicaid Services. *Medicare Claims Processing Manual: Chapter 12*. 2023. Centers for Medicare & Medicaid Services. https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Downloads/clm104c12.pdf#page=102.

The Physician Work (PW) Geographic Practice Cost Index (GPCI)

As described above, the PW GPCI is a measure that is used to adjust payment rates for physicians by compensating for geographic differences in "work effort" costs of physicians. In practice, the PW GPCI adjusts for geographic differences in physician wages. In 1989, Congress passed the OBRA, which mandated that CMS implement the Medicare Fee Schedule (MFS),[29] eventually becoming the PFS.

"Work Effort" is the language used in the OBRA that assigns to CMS the task of creating a PW GPCI. In the OBRA legislation, CMS was ordered to establish … "*an index which reflects 25% of the difference between the relative value of a physician's work effort in each of the different fee schedule areas and the national average of such work effort*."[30] The term "work effort" was not further defined in this legislation, and it was left to CMS to define this term through rulemaking. As part of the legislation, Section 1848(e)(1)(A) of the SSA requires CMS to develop a GPCI to measure cost differences relatively in localities compared to the national average for work effort. The definition of work effort, which was founded on principles established by Zuckerman et al. (see details below), was implemented by CMS in following Medicare PFS Final Rules, and can be found in the 2025 CMS PFS Final Rule.[31]

The practice of using wages as a proxy for work effort is founded on principles from the initial research conducted by Zuckerman et al.[32] The underlying assumption for adjusting for work effort in different areas, as explained by Zuckerman, Welch, and Pope, is to "... *compensate physicians at the same real rate across the nation*." The "same real rate" implies that differences in costs and amenities experienced by physicians are accounted for by the PW GPCI to allow for a similar level of economic purchasing power and access to non-financial amenities. In their original construction of the PW GPCI, the authors state, "*...in the interest of creating an equitable compensation system, nominal payment for own-time costs [i.e., physicians' time] should be higher in high-cost areas*."[33]

"Spatial Equilibrium" is the economic theory behind this assumption. The theory posits that physician wages differ depending on the affordability and desirability of an area as a place to live or work.[34] For example, in areas with a lower cost of living but a high availability of amenities (such as available cultural attractions, good schools, and low crime rates), wages are generally lower. In areas with a higher cost of living and fewer amenities, there are usually higher wages.[35]

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[29] H.R. 3299—101st Congress: Omnibus Budget Reconciliation Act of 1989. *Congress.gov*. Last modified December 19, 1989. https://www.congress.gov/bill/101st-congress/house-bill/3299.

[30] Centers for Medicare & Medicaid Services. *Select CMS Authorities Under 42 U.S.C. § 1395w–4(e) for GPCI and GAF Calculation*. Accessed December 23, 2024. https://www.cms.gov/medicare/physician-fee-schedule/search/overview

[31] Centers for Medicare & Medicaid Services, "Calendar Year (CY) 2025 Medicare Physician Fee Schedule (PFS) Final Rule," Federal Register 89, no. 236 (December 9, 2024): 97710–98045, https://www.cms.gov/medicare/payment/fee-schedules/physician/federal-regulation-notices/cms-1807-f.

[32] Zuckerman, Stephen, Gregory Pope, and W. Pete Welch. "A Geographic Index of Physician Practice Costs." *Journal of Health Economics* 9, no. 1 (June 1990): 39–69. https://doi.org/10.1016/0167-6296(90)90040-a.

[33] Ibid.

[34] Bond-Smith, Steven. "Diversifying Hawai'i's Specialized Economy: A Spatial Economic Perspective." *The Economic Research Organization at the University of Hawai'i*, 2022. https://uhero.hawaii.edu/diversifying-hawaiis-specialized-economy-a-spatial-economic-perspective/.

[35] Committee on Geographic Adjustment Factors in Medicare Payment, Board on Health Care Services, Institute of Medicine, eds. *Geographic Adjustment in Medicare Payment: Phase I: Improving Accuracy, Second Edition*. Washington, DC: National Academies Press, 2011. Appendix I, "Physician Work Adjustment." https://www.ncbi.nlm.nih.gov/books/NBK190056/.

Likewise, it is assumed that when two areas have the same cost of living, the place with more amenities will have lower wages. In this scenario, physicians in the location with more amenities may be willing to accept lower wages compared to physicians in the location with fewer amenities.[36]

The theory of lower wages being acceptable when more amenities exist assumes that there will be a better quality of life for physicians and their families, making it more attractive for them to live and work there. As a result, the demand for physician jobs in such locations increases, and (theoretically) employers can offer lower wages as physicians are willing to accept lower pay for the benefits of living in a location with more amenities.

Recognizing that differences in physician income vary significantly throughout the country, Congress, in adopting the PW GPCI, decided to restrict the index to reflect only 25% of the differences in value for "work effort" by physicians in different areas of the country.[37] By restricting the index to reflect only 25% of the actual differences, large variations could be moderated.[38] This restriction limits the impact of large differences between physician incomes across different areas. For instance, in an area where the value for work effort is determined to be 10% above the national average, the adjustment factor would be 10% x 25% = 2.5% over the national average.

The PW GPCI Formula

The PW GPCI adjusts the PW RVU, which is one of the three components of the Service Value, and is determined by the median wage in an area as compared to the U.S. average median wage.

Index value = (locality's median wage / U.S. average median wage – 1) * 0.25 + 1

The PW GPCI is calculated by dividing average wages, based on nine proxy professions, within a specific geographic locality by the national average wage, and then dividing that value by four (to reduce the adjustment to 25%). The resulting value is the PW GPCI for that locality.[39]

In the index, "1" reflects the relative value of the national median average. For an area with wages that are 8% higher than the U.S. average (1.08), its adjustment factor would only be 1.02. This is because the wage difference can only be 25% of the actual difference.

Determining an Area and the National Median Wage

Since the inception of the GPCI in 1992, CMS has computed the PW GPCI using the relative median hourly earnings in *non-physician occupations* collected as part of the Bureau of Labor Statistics (BLS) Occupational Employment and Wage Statistics (OEWS) data.[40] CMS currently

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[36] Bond-Smith, Steven, and Daniela Bond-Smith. 2024. "How Does Hawai'i's Economic Geography Affect Its Healthcare in Hawai'i?" The Economic Research Organization at the University of Hawai'i. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/

[37] "Geographic Adjustment in Medicare Payment: Phase I: Improving Accuracy: Appendix I: Physician Work Adjustment." 2011. Washington, DC: Institute of Medicine. https://www.ncbi.nlm.nih.gov/books/NBK190056/

[38] Ibid.

[39] Ibid.

[40] Ibid.

uses nine proxy occupation groups[41] to estimate the variation in wages of physicians nationally. Prior to 2023, CMS used seven occupation groups, as shown below; however, in 2023, two occupation groups were added by CMS due to updated BLS OEWS data: 1) Management Occupations and 2) Business and Financial Operations Occupations.

The proxy professions are determined by CMS[42] and include:

1. Architecture and Engineering;
2. Computer, Mathematical, Life and Physical Science;
3. Social Science, Community and Social Service and Legal;
4. Education, Training and Library;
5. Registered Nurses;
6. Pharmacists;
7. Art, Design, Entertainment, Sports, and Media;
8. Management; and
9. Business and Financial Operations.[43]

CMS adjusts and updates the PW GPCI index every three years (in accordance with original PFS statutory language),[44] and can also add occupation groups, if deemed necessary.[45]

According to CMS, "*[The PW GPCI reflects] differences in living and other costs faced by practitioners in different areas, since other similarly educated professionals face similar costs.*"[46] Consequently, the proxy professional wages from the BLS OEWS data are not a proxy for physician *wages*; rather, the geographic *variation* in proxy professional wages is used as a proxy for the geographic variation in physician wages.

There are two main reasons cited often by CMS for using proxy professions in place of real physician wages:[47]

1. There is very little continuous, reliable data available on physician wages,[48] and
2. Physicians or healthcare facilities can change physician salaries themselves, thus directly influencing the reimbursement levels for the following year (i.e., a single large practice or facility could strongly affect the wage calculations).[49]

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[41] Centers for Medicare & Medicaid Services. *CMS-1770-F: Medicare Physician Fee Schedule (PFS) Final Rule*. 2022. Table 26. https://www.cms.gov/medicare/medicare-fee-service-payment/physicianfeesched/pfs-federal-regulation-notices/cms-1770-f.

[42] "Payment for Physicians' Services." 2023. 42 U.S.C. § 1395w-4.

[43] Centers for Medicare & Medicaid Services. *CMS-1770-F: Medicare Physician Fee Schedule (PFS) Final Rule*. 2022. Table 26. https://www.cms.gov/medicare/medicare-fee-service-payment/physicianfeesched/pfs-federal-regulation-notices/cms-1770-f.

[44] Committee on Geographic Adjustment Factors in Medicare Payment, Board on Health Care Services, Institute of Medicine, eds. *Geographic Adjustment in Medicare Payment: Phase I: Improving Accuracy, Second Edition*. Washington, DC: National Academies Press, 2011. 5, "Geographic Practice Cost Indexes." https://www.ncbi.nlm.nih.gov/books/NBK190061/.

[45] "Payment for Physicians' Services." 2023. 42 U.S.C. § 1395w-4.

[46] "CY 2023 Medicare PFS Update to the GPCIs and MP RVUs Final Report." Centers for Medicare & Medicaid Services. 2023. https://www.cms.gov/medicare/medicare-fee-service-payment/physicianfeesched/pfs-federal-regulation-notices/cms-1770-f.

[47] Committee on Geographic Adjustment Factors in Medicare Payment, Board on Health Care Services, Institute of Medicine, eds. *Geographic Adjustment in Medicare Payment: Phase I: Improving Accuracy: Appendix I: Physician Work Adjustment.* Washington, DC: National Academies Press, 2011. https://www.ncbi.nlm.nih.gov/books/NBK190056/.

[48] Ibid.

[49] Ibid.

The PW GPCI Floor

In 2003, Section 412 of the Medicare Modernization Act (Public Law 108-173) temporarily raised the PW GPCI to the national average for all localities that have a PW GPCI under 1.0.[50,51] This is referred to in statute as the "Work GPCI floor." This floor prevents low-income, low-cost states from receiving sustained, relatively lower reimbursements. For instance, if a state has a PW GPCI of 0.89, then the value would be automatically raised to the PW GPCI floor of 1.0. This floor is generally beneficial to rural localities where wages are, on average, lower than the national average.[52] This temporary adjustment has been repeatedly extended through the annual federal appropriations process, and was last extended through September 30, 2025.[53] However, as of the publication of this report, the 2026 proposed GPCIs do not include the 1.00 floor as it has not been extended.[54]

Historical Challenges to the PW GPCI Methodology

The PW GPCI methodology has been criticized over the years by federal- and state-level stakeholders, including national research organizations, the U.S. Government Accountability Office (GAO), congressional representatives, and more.[55] Concerns include: 1) The validity of proxy professions in relation to physician wages; 2) Overall challenges to the use of BLS OEWS data; and 3) Limiting variation to 25% of the difference between the relative value of a physician's work effort.

Validity of Proxy Professions in Relation to Physician Wage

In 2013, the Medicare Payment Advisory Commission (MedPAC) examined whether the wages for proxy occupation groups were correlated with physician wages within two subsets of physicians (family/general practice, and internal medicine).[56] The report found no statistically significant correlation between the proxy occupation group wages and the wages of family and general practice physicians. It actually found a negative correlation for internal medicine physicians, meaning that as the wages for the reference occupation categories increased, wages for internal medicine physicians decreased. These results suggest that the wages of the proxy occupation groups might not be comparable to those types of physicians. Commenters for the 2017 PFS Final Rule suggested that CMS re-evaluate these proxy occupations to determine if

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[50] Office of the Federal Register, National Archives and Records Administration. "Public Law 108-173—Medicare Prescription Drug, Improvement, and Modernization Act of 2003." *U.S. Government Printing Office*, December 7, 2003. https://www.govinfo.gov/content/pkg/PLAW-108publ173/pdf/PLAW-108publ173.pdf.

[51] 42 U.S.C. § 1395w-4(e)(1)(A)

[52] Richardson, Indira, Rebecca Slifkin, Randy Randolph, and George M. Holmes. "A Rural–Urban Comparison of Allied Health Professionals' Average Hourly Wage." *Journal of Allied Health* 39, no. 3 (2010): e91–e96. https://www.jstor.org/stable/48722070.

[53] Hastert, Dennis. 2003. Medicare Prescription Drug, Improvement, and Modernization Act of 2003. Vol. L. https://www.congress.gov/bill/108th-congress/house-bill/1.

[54] American Medical Association. 2026 Medicare Physician Payment Schedule and Quality Payment Program Proposed Rule Summary. Chicago: American Medical Association, July 14, 2025. https://www.ama-assn.org/system/files/2026-mpfs-proposed-rule-summary.pdf

[55] U.S. Government Accountability Office. *Medicare: Information on Geographic Adjustments to Physician Payments*. GAO-22-103876. February 2022. https://www.gao.gov/assets/gao-22-103876.pdf.

[56] Medicare Payment Advisory Commission. *Report to the Congress: Medicare and the Health Care Delivery System*. Washington, DC: Medicare Payment Advisory Commission, June 2013. https://www.medpac.gov/document/june-2013-report-to-the-congress-medicare-and-the-health-care-delivery-system-12/.

any modifications are needed.[57] These concerns were echoed by other stakeholders criticizing the method through which reference occupations were chosen.[58]

In response to these criticisms and comments, GAO examined the extent to which certain additional geographic location variables were able to predict physician earnings.[59] GAO's subsequent 2022 report, “Medicare: Information on Geographic Adjustments to Physician Payments for Physicians' Time, Skills, and Effort,” concluded that in 90 of the 119 localities (including past and current California localities, increasing the count from 109 to 119),[60] proxy profession wages accurately predicted physician wages. GAO concluded that “*the work GPCI value is appropriately adjusting for geographic variation in physician earnings in these localities.*”[61] Of note, GAO’s report indicated that the Hawai‘i/Guam locality is one of the localities where proxy professional wages reflected physician earnings.[62] However, in our view, to completely assess the PW GPCI’s validity, it should be measured from multiple different perspectives:

1. Criterion Validity: This criterion compares how accurately a test measures the outcome it was designed to measure (i.e., Do the results accurately measure the concrete outcome they are designed to measure?);[63]
2. Construct Validity: This criterion assesses the degree to which a test or other measurement method measures what it claims to measure (i.e., Does the test measure the concept that it is intended to measure?);[64] and
3. Content Validity: This criterion examines whether the indicators are capturing the concept for which the latent variable stands (i.e., is the test fully representative of what it aims to measure?).[65]

In its analysis, GAO only tested criterion validity, as it compared the index to physician wages only.[66] A test of construct validity would have included other related constructs, such as the cost of living, in addition to physician wages. Lastly, the test for content validity would have measured work effort through an investigation of expert judgment of the measured items, i.e., wage, in relation to the concept, “differences in value of work effort.” The last update to the GPCI was in the 2023 CMS Medicare PFS Final Rule.

As detailed above, since 2006, CMS has used the BLS OEWS data to calculate the PW GPCI and updates the data at least once every three years. In 2021, a bill was introduced but failed to

[57] "Medicare Program; Revisions to Payment Policies Under the Physician Fee Schedule and Other Revisions to Part B for CY 2018;." Federal Register Vol. 82, no. 219 (November 15, 2017): https://www.govinfo.gov/content/pkg/FR-2017-11-15/pdf/2017-23953.pdf
[58] Hammond, Jackson. "Primer: Geographic Adjustment of Medicare Rates, Part II – Challenges and Proposed Solutions." *American Action Forum*, February 2, 2022. https://www.americanactionforum.org/insight/geographic_adjustment_part_2/.
[59] United States Government Accountability Office. *Medicare: Information on Geographic Adjustments to Physician Payments for Physicians’ Time, Skills, and Effort.* Washington, DC: GAO-22-103876, February 2022. https://www.gao.gov/assets/gao-22-103876.pdf.
[60] GAO’s calculation includes a higher number of localities (119 rather than the total of 109 localities, due to their calculations including previously existing localities that were split up into multiple localities in the course of 2017).
[61] Ibid.
[62] Ibid.
[63] Middleton, Fiona. 2019. "The 4 Types of Validity in Research | Definitions & Examples." Scribbr. September 6, 2019. https://www.scribbr.com/methodology/types-of-validity/.
[64] Ibid.
[65] Ibid.
[66] United States Government Accountability Office. *Medicare: Information on Geographic Adjustments to Physician Payments for Physicians’ Time, Skills, and Effort.* Washington, DC: GAO-22-103876, February 2022. https://www.gao.gov/assets/gao-22-103876.pdf.

pass through the U.S. House of Representatives that would stop the use of nonphysician professional wage data as a proxy for physician wage data.[67] Sponsors of the bill (reintroduced in 2023) cited the need for modernization of GPCI methods to better represent rural patients and create reasonable reimbursement rates for providers caring for rural communities.[68]

Overall Challenges to the Use of BLS OEWS Data

Several challenges to the use and application of the BLS OEWS data to calculate the PW GPCI can be identified.

The OEWS survey used to provide data to BLS is conducted semiannually and measures occupational employment and wage rates for workers in non-farming categories. It includes cross-industry wage estimates across the nation, split into over 580 areas, and is a cooperative effort with state workforce agencies.[69]

First, the nature of the data measurement and categories change over time. This impacts the inputs of the index and causes variation that is not inherent to changes in Service Value, but rather to changes in the quality and organization of the data. In 2022, CMS calculated that the recent changes to the proxy professions and data, in addition to changes in PE and MP methodologies, would result in GAF changes of less than half of a percent in 74 localities, with a maximum GAF change of 4 percent.[70]

Second, the survey BLS uses to collect their data does not include data on benefits received by employees aside from salary, thus lowering the salary inputs for certain localities in the PW GPCI calculation, as differences exist geographically in the proportion of compensation from salary versus other benefits such as health insurance. This results in an estimated lower variation from the U.S. average in certain states where substantial benefits are awarded to employees in lieu of salary, as compared to other states where such benefits are not paid for by the employer.[71] See Appendix D for an analysis of the potential impact of benefits on wage calculations.

Third, precise salary information is not available at higher salary levels because wages above $187,200 (2011) are collected in a single category of ‘x or higher’, leading to inaccurate measurements.[72]

Fourth, data for medical residents is included in the proxy professional groups. These medical residents have a lower income variation from the mean than those who practice within their licensure.[73]

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[67] Axne, Cindy. 2021. Keep Physicians Serving Patients Act of 2021. https://www.govtrack.us/congress/bills/117/hr5054.
[68] “Smith, Bipartisan Colleagues Reintroduce Keep Physicians Serving Patients Act | Representative Adrian Smith,” November 8, 2023. http://adriansmith.house.gov/media/press-releases/smith-bipartisan-colleagues-reintroduce-keep-physicians-serving-patients-act.
[69] Bureau of Labor Statistics. "Technical Notes for May 2024 OEWS Estimates." Last modified April 23, 2024. https://www.bls.gov/oes/current/oes_tec.htm.
[70] “CY 2023 Medicare PFS Update to the GPCIs and MP RVUs Final Report.” 2022. Actual Research Corporation. https://www.cms.gov/medicare/medicare-fee-service-payment/physicianfeesched/pfs-federal-regulation-notices/cms-1770-f.
[71] Committee on Geographic Adjustment Factors in Medicare Payment, Board on Health Care Services, Institute of Medicine, eds. *Geographic Adjustment in Medicare Payment: Phase I: Improving Accuracy, Second Edition*. Washington, DC: National Academies Press, 2011. https://www.ncbi.nlm.nih.gov/books/NBK190056/.
[72] Ibid.
[73] Ibid.

Fifth, data at the Metropolitan Statistical Area (MSA)/statewide non-MSA level are only available for a limited number of specialties.[74]

Limiting Variation to 25% of the Difference between Relative Value of a Physician's Work Effort

Several issues with this limitation can be discussed:

1. The limit of one-quarter, or 25%, of the difference between relative value of a physician's work effort is established in legislation, but was chosen at random and lacks evidence-based support, as found by the Committee on Geographic Adjustment Factors in Medicare Payment, which is a part of the National Academy of Medicine (known at the time as the Institute of Medicine).[75] This Committee proposed to use a systematic empirical process to determine the level of adjustment in the future.[76] This process could help to ensure that Medicare payments are distributed more fairly across different areas.
2. The adjustment does not seem to reflect variation in countrywide differences for medical specialties. Differences in physician wages are not as large for certain specialties as for others.[77] This implies that the limitation of 25% of the variation reduces differences unnecessarily, while in other specialties, a limitation is needed to reduce large differences.
3. The index is calculated using proxy wages, and it is not clear if the proxy wages are similarly varying across different areas as are physician wages.[78]

As a hypothetical exercise, GAO modeled in a 2022 report what would happen if the 25% adjustment was canceled and instead a full adjustment was implemented. Their results showed that implementing a full adjustment (while the PW GPCI floor of 1.0 was in place) would result in overall Medicare costs increasing substantially.[79] However, if the PW GPCI floor were not in place, this adjustment would significantly decrease reimbursement in areas with lower-than-average wages.

Challenges with the PW GPCI for Hawaiʻi

For years, many healthcare providers across the state of Hawaiʻi have expressed that the Medicare rates in the state are too low for sustaining a practice and therefore impact retention of providers. Recent surveys conducted by the Hawaiʻi/Pacific Basin Area Health Education Center (AHEC) found that increasing Medicare reimbursements was in the top three priorities for Hawaiʻi physicians.[80]

Indeed, Hawaiʻi has perennially faced difficulty with providing adequate access to care for its population and health care provider shortages. In 2022, 58% of patients in Hawaiʻi stated they

[74] Ibid.
[75] Ibid.
[76] Ibid.
[77] Ibid.
[78] Ibid.
[79] U.S. Government Accountability Office. *Medicare: Information on Geographic Adjustments to Physician Payments*. GAO-22-103876. Washington, DC: U.S. Government Accountability Office, 2022. https://www.gao.gov/assets/gao-22-103876.pdf.
[80] Hawaiʻi Area Health Education Center, 2024 Physician Workforce Report, https://ahec.hawaii.edu/_docs/annual-physician-workforce-report-2024.pdf

experienced health care delays in the past year, and 48% of providers believe that for a patient to see a specialist would take more than a month or even two months currently.[81] Moreover, rural areas of the state face additional challenges in accessing care due to travel constraints (i.e., limited travel options, cost, and time), limited availability of providers on their home islands, and lack of appointment availability on Oʻahu.

Hawaiʻi also faces significant challenges with retaining and recruiting healthcare personnel. Fifty-three percent of providers are contemplating leaving or retiring from medicine, and 49% of providers are considering moving to the contiguous states.[82] These challenges compound an already-existing significant shortage of healthcare personnel. In the 2024 AHEC Hawaiʻi Physician Workforce Assessment, Hawaiʻi had an estimated unmet need of 776 full-time-equivalent (FTE) physicians.[83] The highest need is in primary care, with a shortage of 162 physicians; however, shortages exist in almost every specialty field.[84] Additionally, there were over 4,200 open positions for non-physician healthcare positions in 2023.[85] Furthermore, 22% of Hawaiʻi physicians are over the age of 65, and shortages are increasing by 10% annually in some counties.[86] These shortages will become more pressing over time due to an aging population with more intense healthcare needs.

Causes of this workforce shortage are manifold:

- Notably, over 250 healthcare workers who attended the 2022 AHEC Hawaiʻi Health Workforce summit voted that the highest-priority issues facing Hawaii's health workforce include lifting administrative burdens, increasing local insurance reimbursement and salaries, and increasing Medicare rates.[87] Calls to address these priorities follow years of state stakeholder advocacy, including the Hawaiʻi Provider Shortage Crisis Task Force, AHEC, the Healthcare Association of Hawaiʻi (HAH), and others, to increase Medicare and Medicaid reimbursement rates in Hawaiʻi. In fact, financial concerns have resulted in the closure of physician practices in rural areas of the state.[88]
- The separation of islands increases challenges for recruiting and retaining healthcare workers and results in fragmentation of healthcare services.[89,90]
- Wages for skilled healthcare workers in Hawaiʻi are generally lower than what is found in the contiguous United States, despite the cost of living being higher. Due to the isolated

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[81] "Community First Access to Care Report." 2022. Community First Hawaiʻi. https://communityfirsthawaii.org/access-to-care/.
[82] Ibid.
[83] University of Hawaiʻi System. *Annual Report on the Findings From the Hawaiʻi Physician Workforce Assessment Project*. December 2022. https://ahec.hawaii.edu/_docs/2023-physician-workforce-report.pdf.
[84] Ibid.
[85] Department of Business, Economic Development and Tourism, State of Hawaiʻi. *The Health Care Industry in Hawaiʻi*. April 2023. https://files.hawaii.gov/dbedt/economic/reports/DBEDT_Health_Care_Research_April2023.pdf.
[86] Wade, John Lauris. *The Perfect Storm 2021: Hawaiʻi's Physician Shortage Crisis*. Hawaiʻi Physician Shortage Crisis Task Force, 2021. https://www.scribd.com/document/490581230/The-Perfect-Storm-2021-Hawai%CA%BBi-s-Physician-Shortage-Crisis.
[87] Hawaiʻi Pacific Basin Area Health Education Center. *Annual Report on Findings from the Hawaiʻi Physician Workforce Assessment Project*. 2022. https://ahec.hawaii.edu/_docs/2022-physician-workforce-report.pdf.
[88] Akina, Keliʻi. "Bold Change Needed to Fix Hawaii Healthcare." *Grassroot Institute of Hawaii*, December 2021. https://www.grassrootinstitute.org/2021/12/bold-change-needed-to-fix-hawaii-healthcare/.
[89] Ibid.
[90] Bond-Smith, Steven, and Daniela Bond-Smith. "How Does Hawaiʻi's Economic Geography Affect Its Healthcare Industry?" *The Economic Research Organization at the University of Hawaiʻi*, April 22, 2024. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/.

economy and housing crisis, there are limited places to settle and fewer career opportunities for partners of healthcare workers.[91,92]

It should be noted that both Alaska and Hawaiʻi face unique challenges as non-contiguous states, including geographic isolation, healthcare systems that are vulnerable and fragmented due to unique geographies, difficulties recruiting and retaining healthcare professionals, the need to ship medical goods long distances, small and dispersed populations, and elevated living expenses.

Some of the financial concerns for providers in Hawaiʻi have been caused by physicians' experiences with Medicare rates. Providers have been concerned about the low level of Medicare Part B rates for many years.[93] The following sections will outline how geographic adjustments for physician payments to Hawaiʻi are much lower than in other localities with high costs of living. This is a growing concern, considering the Medicare population is steadily increasing. In Hawaiʻi, by January 2025, 309,100 people were enrolled in Medicare, which has grown steadily from 259,408 in 2017 and represents 21% of the entire population of Hawaiʻi.[94]

Consequently, a review of the payment structures that affect Medicare rates for Hawaiʻi would inform us on how to address this concern. This section aims to identify the current challenges that Hawaiʻi faces regarding the PW GPCI. First, we summarize the Medicare payment structure, then dive deeper into the geographic adjustment to Medicare rates in Hawaiʻi, followed by a discussion of how the current construction of the geographic adjustment fits the situation in Hawaiʻi.

Medicare Payment Structure

As described above, Hawaiʻi is part of a PFS locality that includes Guam, American Samoa, and the CNMI.[95] In 2024, Hawaiʻi received a geographic adjustment for its higher costs for goods and services (PE GPCI = (1.149)); lower costs for Malpractice Insurance (MP GPCI = 0.561); and zero adjustment for physician work effort (PW GPCI = 1.000). As a reminder, these GPCIs are weighted as follows: PW: 50.24%, PE: 44.59%, and MP: 4.17%.

Summary of Research on the Validity of the Current PW GPCI Calculation

In response to questions on how the PW GPCI does not reflect the cost of living in Hawaiʻi, CMS has reported that "*The GPCIs are a measure of relative resource cost differences among localities compared to the national average as informed by the data (not a measure of absolute*

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[91] Simpson, Hilery. "How Do Wages in Hawaii Compare to Wages on the Mainland?" *Bureau of Labor Statistics*, 1998. https://www.bls.gov/opub/mlr/cwc/how-do-wages-in-hawaii-compare-to-wages-on-the-mainland.pdf.

[92] Bond-Smith, Steven, and Daniela Bond-Smith. "How Does Hawaiʻi's Economic Geography Affect Its Healthcare Industry?" *The Economic Research Organization at the University of Hawaiʻi*, April 22, 2024. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/.

[93] Riley, Nathan, Kelley Withy, Kevin Rogers, and Ragan DuBose-Morris. "Comparison of Primary Care Physician Reimbursement Rates in the United States." *Hawaii Journal of Medicine and Public Health*, 2017. https://hawaiijournalhealth.org/past_issues/HJMPH_Mar17Suppl1.pdf.

[94] Centers for Medicare and Medicaid Services. "Medicare Monthly Enrollment Data." *Centers for Medicare and Medicaid Services*, 2025. https://data.cms.gov/summary-statistics-on-beneficiary-enrollment/medicare-and-medicaid-reports/medicare-monthly-enrollment.

[95] "Medicare Physician Services: Payment Rates, Utilization, and Expenditures of Selected Services in Alaska, Hawaii, and the U.S. Territories." Government Accountability Office, September 11, 2021. https://www.gao.gov/assets/gao-21-607r.pdf.

costs.)".[96] This means that cost of living does not form the base for the PW GPCI calculation, but rather the relative costs for paying a physician in that locality.[97]

In 2013, in its report to Congress, MedPAC concluded that professional earnings do not correlate with the cost of living index nationwide.[98] MedPAC investigated the correlation between the proxy professional occupation wages and cost of living as reported by the Council for Community and Economic Research (C2ER). The C2ER indexes cost of living for professionals in managerial positions in the top income quintile. C2ER found that the GPCI generally correlates well with the cost of living for those areas that earn above the average (with a correlation between the GPCI and cost of living of 0.65 out of 1.0), but incomes below the national average do not correlate well with cost of living as reported by the C2ER, with a correlation of 0.09. MedPAC additionally found that wage differentials for the seven (in 2013)[99] proxy occupations are consistent with the theory behind the implementation of the PW GPCI, i.e., the theory that availability of amenities has an opposing effect on wages. In areas with high levels of amenities, employers may be able to pay workers lower wages relative to the cost of living, compared to areas with low levels of amenities, while workers may require higher wages, adjusted for cost of living, in areas with unattractive features.

However, the 2013 MedPAC report found that the variation in physician wages does not follow this relationship between amenities and wages. As opposed to wages in the proxy professions, physician wages are generally higher in high amenity areas and lower in low amenity areas. Additionally, MedPAC found that this contradiction to the theory was also applicable to urban/rural differences. Overall, physician wages were higher in rural areas than in urban areas, as opposed to the trends seen in the selected proxy professions. As a limitation to its analyses, MedPAC notes that the influence of such factors as return on investment, service volume, and market power makes these findings inconclusive.[100]

In 2022, GAO conducted a further investigation into the validity of the use of proxy professions in place of physician wages. In their analyses, GAO corrected for the factors that may influence physician wages and concluded that in 90 of the 119 localities (including past and current California localities, increasing the count from 109 to 119)[101], including Hawai‘i/Guam, proxy profession wages accurately predicted physician wages. GAO interpreted this finding to mean

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[96] Centers for Medicare & Medicaid Services. "Medicare Program; CY 2020 Revisions to Payment Policies under the Physician Fee Schedule and Other Revisions to Part B for CY 2020." *Federal Register*, November 15, 2019, Vol. 84, No. 219. https://www.federalregister.gov/documents/2019/11/15/2019-24086/medicare-program-cy-2020-revisions-to-payment-policies-under-the-physician-fee-schedule-and-other

[97] Centers for Medicare & Medicaid Services. 2022. "Final Report on the Sixth Update of the Geographic Practice Cost Indices (GPCIs)." https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/downloads/GPCI_Report.pdf.

[98] "Report to the Congress: Medicare and the Health Care Delivery System." 2013. Washington, DC: Medicare Payment Advisory Commission. https://www.medpac.gov/document/june-2013-report-to-the-congress-medicare-and-the-health-care-delivery-system-12/.

[99] In 2013, CMS used seven proxy occupations to calculate the PW GPCI Centers for Medicare & Medicaid Services. 2015. "Physician Fee Schedule: Geographic Practice Cost Index (GPCI) Methodology." Centers for Medicare & Medicaid Services. https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/Downloads/CY2015-PFS-FR-GPCI.pdf.

[100] Medicare Payment Advisory Commission. *Report to the Congress: Medicare and the Health Care Delivery System*. Washington, DC: Medicare Payment Advisory Commission, 2013. https://www.medpac.gov/document/june-2013-report-to-the-congress-medicare-and-the-health-care-delivery-system-12/.

[101] GAO's calculation includes a higher number of localities (119 rather than the total of 109 localities, due to their calculations including previously existing localities that were split up into multiple localities in the course of 2017). U.S. Government Accountability Office**.** 2022. "Medicare: Information on Geographic Adjustments to Physician Payments for Physicians' Time, Skills, and Effort." GAO-22-103876. https://www.gao.gov/products/gao-22-103876.

that *"the work GPCI value is appropriately adjusting for geographic variation in physician earnings in these localities."*[102]

While GAO concluded that the PW GPCI is an appropriate reflection of the variation in "physician earnings," physician earnings may be an inaccurate reflection of the value of "work effort" for Hawaiʻi, due to an overall historical undervaluation of work in the state.[103]

The PW GPCI in Hawaiʻi

Based on our following analysis, Hawaiʻi's PW GPCI value causes relatively low Medicare rates due to a discrepancy between the high cost of living experienced by physicians and the geographic compensation for their efforts, which makes physicians in the state unable to maintain similar living conditions as physicians who live in the contiguous United States. Consequently, increasing the PW GPCI, which compensates for a physician's value for work effort, has often been shared by healthcare workforce advocacy groups as an option to increase the overall Medicare reimbursement rate in the state, and, therefore, boost retention and recruitment of physicians. (Note: a by-product of a reimbursement increase would be to incentivize physicians to prioritize taking more patients on Medicare, thereby improving access to care for seniors, who often are also on limited incomes.)

While it is evident that the GPCI (specifically the PW GPCI) would not by itself make a large impact on a physician's income (perhaps 2-3%),[104] adjustments made to the Medicare PFS rates also carry over into other payment mechanisms and private insurance, as the Medicare rate is often used as the benchmark or standard. For instance, private insurance plans often use PFS rates and CMS rate-setting methodologies as the standard for their own rate calculations.

Additionally, MA plans provided by private insurers in lieu of traditional Medicare (Parts A and B) are benchmarked to the Medicare PFS.[105] CMS determines the benchmark rates that form the basis for the bidding procedures for MA plans. These benchmarks are determined by the average Medicare FFS costs in a county. This means that the geographic adjustments that influence the overall costs for providing healthcare in a county indirectly influence rate-setting for MA as well. Finally, Medicaid rates are linked to the traditional Medicare rates, currently mandated at 60% of Medicare rates,[106,107] with Hawaiʻi state legislation passed in 2023 to bring Medicaid

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[102] "Medicare: Information on Geographic Adjustments to Physician Payments." 2022. Government Accountability Office GAO-22-103876. https://www.gao.gov/assets/gao-22-103876.pdf.

[103] Simpson, Hilery. 1998. "How Do Wages in Hawaii Compare to Wages on the Mainland?" Bureau of Labor Statistics. https://www.bls.gov/opub/mlr/cwc/how-do-wages-in-hawaii-compare-to-wages-on-the-mainland.pdf.

[104] GAO conducted a study to investigate if any adjustments in the GPCI might result in providers to work in rural areas. In its report to the Congressional Committee on Medicare Physician Fees in 2005, GAO concluded the impact of GPCIs on a physician's decision to work in rural areas is minimal. GPCIs only affect a small portion of a physician's reimbursement and the impact on their income is usually small, typically only 2-3%. MedPac considered other factors, such as a physician's spouse's employment opportunities, local schools, and the availability of other physicians, to have a greater influence on a physician's decision to work in rural areas. This was supported by interviews with physician recruitment experts and a review of relevant literature.

[105] "Understanding Medicare Advantage Payment and Policy Recommendations." 2018. Better Medicare Alliance. https://bettermedicarealliance.org/wp-content/uploads/2020/03/BMA_WhitePaper_MA_Bidding_and_Payment_2018_09_19-1.pdf.

[106] "Hawaii State Plan Amendment (SPA) 22-0003." 2017. Hawaii Department of Human Services. https://humanservices.hawaii.gov/wp-content/uploads/2022/07/Attachment-4-Rev.-9.2021-4.19-Bje07.13.22.pdf.

[107] "Medicare to Fee Index." 2019. Kaiser Family Foundation. https://www.kff.org/medicaid/state-indicator/medicaid-to-medicare-fee-index/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D.

reimbursement to 100% of the Medicare PFS starting in 2024 for most professional services.[108] Consequently, if the Medicare PFS rates are improved, this additionally impacts reimbursements across the state beyond the PFS providers.

As explained in the earlier sections, Medicare rates are adjusted for geographic factors. One of these factors is the value of the physician's work effort through the PW GPCI. The PW GPCI adjusts the physician's work using RVUs, which define the value of a physician's work effort for a particular service.

Hawai‘i, with Guam, American Samoa, and the CNMI, makes up the Hawai‘i/Guam locality for the purposes of the GPCI. Hawai‘i's PW GPCI has fluctuated over time, ranging from 0.998 in the year 2000 to 1.010 in 2022, and dropping to 1.000 in 2024,[109] as is indicated in Figure 2.

FIGURE 2: PW GPCI HAWAI‘I/GUAM FROM 2000 TO 2024

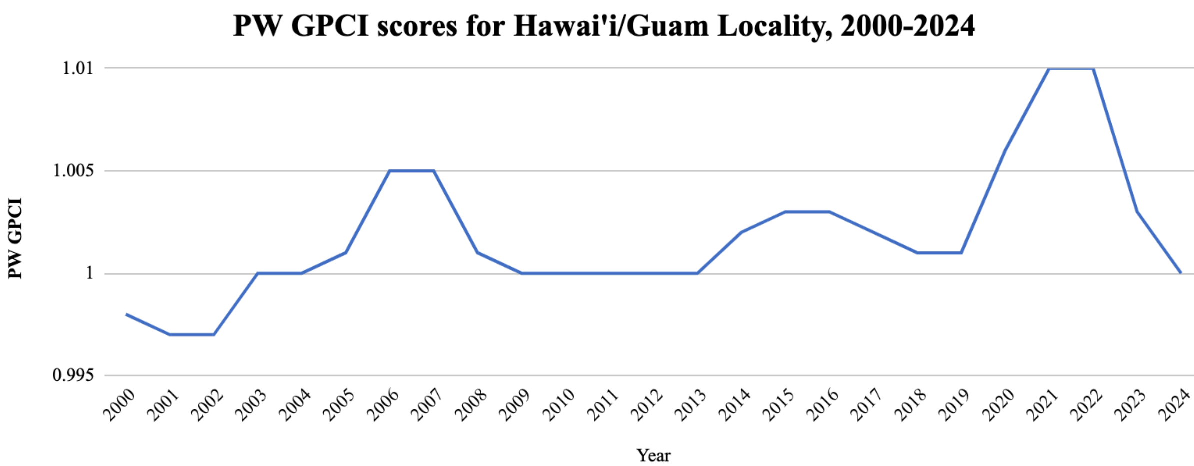


Figure created by RHRPC, with data from Medicare Monthly Enrollment Data.[110]

Recently, CMS updated its PW GPCI calculations using the new three-year period of 2023-2025. This calculation increased the proxy profession groups from seven to nine, and updated which professions were included within each group. CMS also modified the occupations for which wage data are used, reflecting changes in both BLS definitions and CMS decisions about appropriate codes for inclusion.[111] These changes resulted in a decrease of the PW GPCI for Hawai‘i. Past index values include:

- PW GPCI 2022: 1.010
- PW GPCI 2023: 1.003
- PW GPCI 2024: 1.000

[108] Huff. "Hawaii Doctors Who Treat Medicaid Patients to Get Significant Pay Raise," May 1, 2023. https://www.hawaiinewsnow.com/2023/05/02/hawaii-doctors-who-treat-medicaid-patients-get-significant-pay-raise-thanks-state-legislature/.
[109] Centers for Medicare and Medicaid Services. 2023. "Medicare Monthly Enrollment Data." https://data.cms.gov/summary-statistics-on-beneficiary-enrollment/medicare-and-medicaid-reports/medicare-monthly-enrollment.
[110] Ibid.
[111] "CY 2023 Medicare PFS Update to the GPCIs and MP RVUs Final Report." 2022. Actual Research Corporation. https://www.cms.gov/medicare/medicare-fee-service-payment/physicianfeesched/pfs-federal-regulation-notices/cms-1770-f.

From 2022 to 2024, the Hawaiʻi PW GPCI received a -0.99% reduction in adjustment of the PW RVU. This means that physicians in Hawaiʻi received a 0.3% geographical adjustment to their physician work Service Value (i.e., PW RVU) in 2023 and a 0% adjustment to the physician work RVU in 2024 (due to the 1.0 floor).[112]

As discussed above, the PW GPCI only compensates for the physician work Service Value (comprising 50.24% of the total geographic compensation), while the PE GPCI compensates for differences in practice expense (comprising 45.59% of the total geographic compensation), and the MP GPCI compensates for differences in malpractice insurance (comprising 4.17% of the total geographic compensation). When considering the adjustments to all three components of the GPCI (i.e., PW, PE, and MP), the total change in geographic adjustment from 2022-2023 for Hawaiʻi is -0.31%. This means that physicians in Hawaiʻi have experienced an overall reduction in their payment rates due to the 2024 decrease in the GPCI adjustment, further exacerbating the workforce shortage and health care access problems. In addition, in its 2024 PFS Final Rule, CMS reduced the overall payment rates for the PFS by 3.40% in CY2024 compared to CY2023, which many physicians and advocacy groups have spoken out against.[113]

The Level of the PW GPCI is Low Compared to the Cost of Living in Hawaiʻi

As established in Section 1848(e) of the SSA, the PW GPCI is intended to "reflect the difference between the relative value of a physician's work effort in each of the different fee schedule areas and the national average of such work effort." [114] The underlying assumption for making geographic adjustments is that physician compensation for work effort is different in geographic areas depending on the affordability and desirability of an area as a place to live or work, i.e., for physicians to be willing to work and live in a certain area, a balance between wage and amenities is required.[115]

As explained earlier, the spatial equilibrium theory is the basis for the use of wages to calculate geographic differences in physician work effort. This theory explains that when more amenities are available in an area, workers are assumed to accept lower wages. If an area has a higher cost of living, however, workers will require higher wages.[116] This means it can be considered that compensation for work includes wages and the provision of amenities in an area where work is located. Simply put, compensation = wage + local amenities.[117] The economic assumption is that when local amenities and prices balance each other out, there is no incentive for workers to move to a different area.

Consequently, CMS assumes that wages are adjusted naturally to a reasonable level based on a location's amenities, and, therefore, uses *wages* as an indicator of the relative value of work

[112] Currently, a PW GPCI floor of 1.0 is in place by federal statute: 42 U.S.C. § 1395w-4(e)
[113] "2024 Medicare physician fee schedule reduces conversion factor, but has positives for primary care." 2023. American Academy of Family Physicians. https://www.aafp.org/pubs/fpm/blogs/gettingpaid/entry/2024-medicare-fee-schedule.html
[114] Payment for Physicians' Services. 42 USC 1395w-4. https://www.ssa.gov/OP_Home/ssact/title18/1848.htm
[115] Bond-Smith, Steven, and Daniela Bond-Smith. "How Does Hawaiʻi's Economic Geography Affect Its Healthcare Industry?" *The Economic Research Organization at the University of Hawaiʻi*, April 22, 2024. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/.
[116] Committee on Geographic Adjustment Factors in Medicare Payment, Board on Health Care Services, and Institute of Medicine. Geographic Adjustment in Medicare Payment: Phase I: Improving Accuracy, Second Edition. Edited by Margaret Edmunds and Frank A. Sloan. Washington (DC): National Academies Press (US), 2011. http://www.ncbi.nlm.nih.gov/books/NBK190070/.
[117] This is in line with the urban economics theory of spatial equilibrium. Spatial equilibrium occurs when local amenities and prices balance each other out, and there is no incentive to move to a different area.

effort in the calculation of the PW GPCI. However, Hawaiʻi may not fit with this assumption as wages do not reflect the cost of living.

Wages in Hawaiʻi are lower compared to the rest of the country due to the state's unique geography, economic structure, and cost dynamics. The high cost of living, driven largely by expensive housing and limited land availability, creates a compressed wage distribution, where lower-wage workers seek real wage parity across income groups and higher-income workers may accept lower wages to enjoy Hawaiʻi's natural amenities or stay closer to family living there. Additionally, Hawaiʻi's isolation and small scale mean that non-tradable industries, like healthcare, which rely on the local population for demand, cannot benefit from increasing returns to scale, resulting in lower productivity or higher costs. Wages in these sectors are often influenced by benchmarks tied to tradable industries, which can underestimate the rates needed to attract and retain workers. This challenge is further compounded by recruitment difficulties, particularly in rural and isolated areas, where the state's geographic isolation makes it harder to draw in skilled professionals from out of state.[118]

Wages in Hawaiʻi as Compared to Cost of Living in Other States

In this section below, we explore the discrepancy between wages (as used by the PW GPCI) and cost of living (as indicated by Regional Price Parities, RPPs).

Various sources provide information on cost of living. A widely-used source for determining differences in cost of living includes the cost of living data series by the Missouri Economic Research and Information Center. In 2023, Hawaiʻi had the highest cost of living index compared to all other states at 180.3.[119] In the first quarter of 2025, the cost of living in Hawaiʻi was 182.3% of the national average.

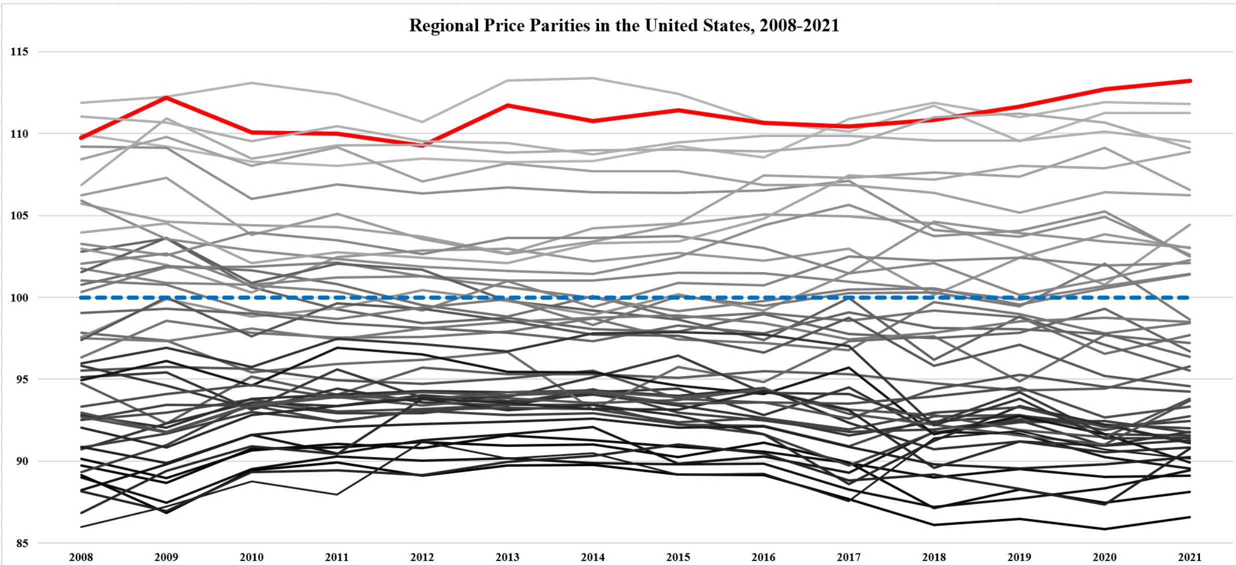
Another means to analyze cost of living is via RPPs. The U.S. Bureau of Economic Analysis calculates RPPs to measure the differences in price levels in various categories across states for a given year. RPPs are expressed as a percentage of the overall national price level, and are therefore a good indicator of cost of living in different states as compared to the U.S. average.[120] For instance, RPPs higher than 100 indicate a higher price level than the national average. RPPs below 100 indicate a price level below the national average. The states with the highest RPPs in 2021 were Hawaiʻi (113.2), California (111.8), and New York (109.5). Hawaiʻi's RPP indicates that prices are, on average, 13.2% higher than the national average.[121]

RPPs for all states between 2008-2021 are illustrated in Figure 3, highlighting changes in Hawaiʻi's RPP over time. Hawaiʻi is visualized in red, the national average is visualized by a

[118] "Tradable industries have the ability to contract in Hawaiʻi and expand in other places. This means that tradeable industries probably allow a greater ability to select people who place higher value on natural amenities since there is greater propensity to locate elsewhere rather than pay a higher wage." Bond-Smith, Steven, and Bond-Smith, Daniela. 2024. *Hawaiʻi's Economic Geography and the Healthcare Industry*. UHERO. https://uhero.hawaii.edu/wp-content/uploads/2024/04/HawaiisEconomicGeographyHealthcare.pdf.
[119] Missouri Economic Research and Information Center. "Cost of Living Data Series," 2023. https://meric.mo.gov/data/cost-living-data-series.
[120] U.S. Bureau of Economic Analysis. 2023. "SARPP Regional Price Parities by State." https://www.bea.gov/data/prices-inflation/regional-price-parities-state-and-metro-area.
[121] "Real Personal Consumption Expenditures by State and Real Personal Income by State and Metropolitan Area." 2022. Bureau of Economic Analysis. December 2022. https://www.bea.gov/news/2022/real-personal-consumption-expenditures-state-and-real-personal-income-state-and.

dashed blue line, and other states are in gray. Data were used from the U.S. Bureau of Economic Analysis, "SARPP RPP by state".[122]

FIGURE 3: REGIONAL PRICE PARITIES (RPPs) IN THE UNITED STATES



Legend: — Hawai'i — Other states and D.C. - - - USA Average

Figure created by RHRPC (from data provided by U.S. Bureau of Economic Analysis[123]). In all years, Hawai'i is in the top three states with the highest RPP. In 2021, Hawai'i had the highest RPP in the nation.

Difference Between Cost of Living and Proxy Professional Wages for States with Higher than U.S. Average Wages

The PW GPCI is an indicator of wage variation from the U.S. average for the nine occupations included in the CMS calculations. To examine the gap between cost of living and the wages used for the PW GPCI calculation in high cost of living states, we conducted an analysis of the gap between a geographic area's average wage and the cost of living. As the raw wage data utilized is not available from CMS, we created a "Proxy Professional Wage Index" (PPWI) derived from the PW GPCI. (Note: The PPWI was created for this research, as the CMS Wage Index was not available.) We took the PW GPCI for all localities with a PW GPCI score over 1.0 and reversed the 25% reduction included in the GPCI calculation,[124] resulting in a PPWI for states with GPCI scores above 1.0 (we excluded Alaska due to its statutory PW GPCI floor of 1.5).[125] As no specific price parity data is available by FFS locality level, we aggregated the PW GPCIs to state

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[122] U.S. Bureau of Economic Analysis. 2023. "SARPP Regional Price Parities by State." https://www.bea.gov/data/prices-inflation/regional-price-parities-state-and-metro-area.

[123] Ibid.

[124] This index only took data from states with a PW GPCI score above 1.0. This is because the raw GPCI scores of localities below 1.0 are not available, as the current PW GPCI formula converts all those scores to 1.0.

[125] A limitation of this approach is that the sizes of different localities within a state have not been considered. Therefore, the presented average for a state with multiple localities may not represent the true average of PPW per state. For instance, if localities with high PW GPCIs are much larger than their counterparts, the lower GPCI may lower the state average PW GPCI.

level by averaging all locality PW GPCIs for each state. The PPWI measures the differences in wage levels across states for a given year and is expressed as a percentage of the overall national wage level.

Proxy Professional Wage Index

Excluding Alaska, 15 states and the District of Columbia (DC) have an average PW GPCI value above 1.0. This includes the following states and DC: California (CA), Colorado (CO), Connecticut (CT), DC, Delaware (DE), Hawaiʻi (HI), Illinois (IL), Massachusetts (MA), Maryland (MD), New Jersey (NJ), New York (NY), Oregon (OR), Pennsylvania (PA), Rhode Island (RI), Texas (TX), and Washington (WA). Figure 4 shows the PPWI from 2008-2023 for the included states.

A higher PPWI indicates a higher wage level compared to the national average. Of these states with PW GPCI scores above 1.0 in 2021, the highest PPWI value was for DC, with a value of 1.224, while the lowest average PPWI value is 1.012 for Hawaiʻi.

FIGURE 4: PROXY PROFESSIONAL WAGE INDEX FROM 2008-2023

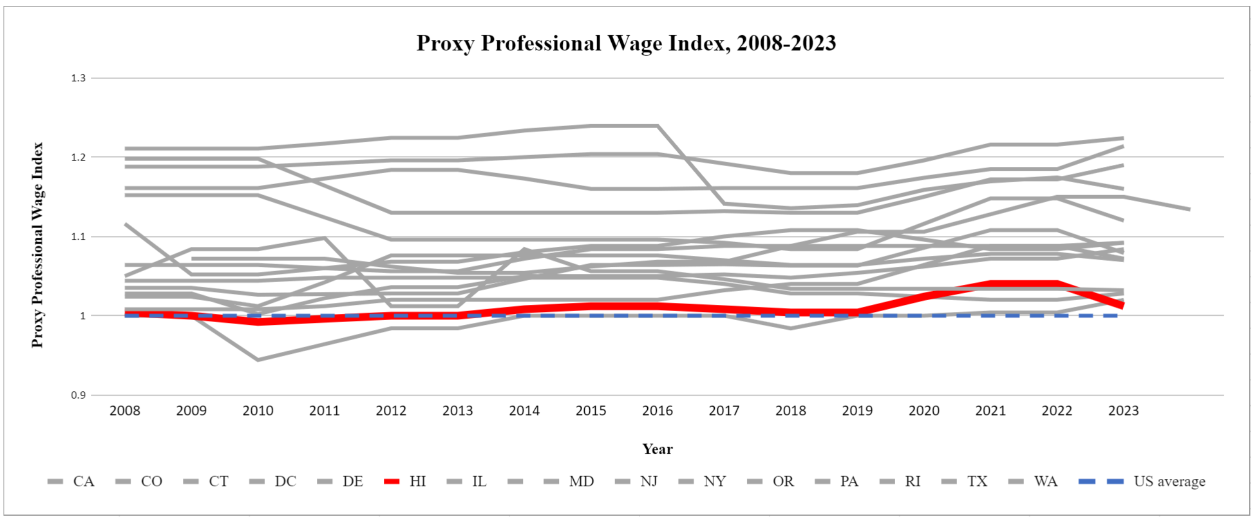


Figure created by RHRPC, detailing the PPWI for the 15 states with a PW GPCI adjustment above the 1.0 floor over time.

RPP Compared to Proxy Professional Wages

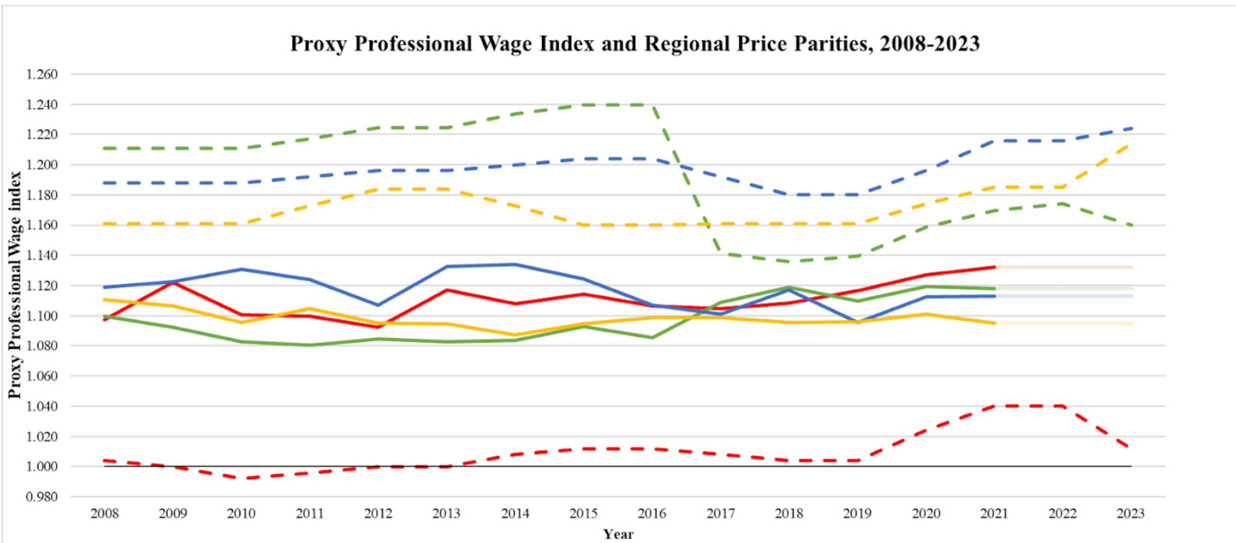
The Regional Price Parity Index (RPPI) expresses RPPs as an index. The difference between the RPPI and the PPWI can indicate the gap between cost of living and wages used for the calculation of the GPCI. We divided the RPP by 100 to adjust to the same scale as the PPWI value.

Differences between the PPWI value and the RPPI value (latest data from 2021), as compared to the national average, range from -0.13 lower PPWI value for Hawaiʻi and +0.13 higher PPWI value for PA as compared to the RPPI value. Table 2 in Appendix E shows all index values and differences.

Thus, Figure 5 indicates that while for Hawai‘i prices are on average 13% higher than the national average, wages for the proxy professional groups are at the national average, creating a wage/cost gap of -13%. In PA, prices are 4% lower than the national average, but wages for the proxy professionals are 9% higher than the national average, creating a wage/price gap of 13%.

Figure 5 illustrates the difference between RPPs and the PPWI over time. The RPP for four areas with the highest price parities (HI, NY, CA, DC) are compared to their wages as represented by the proxy professional groups included in the GPCI wage index calculations. PPWIs are represented by dashed lines, and RPP are represented with solid lines. This figure illustrates that, as opposed to other high-cost states, Hawai‘i has lower wages as compared to its cost of living.

FIGURE 5: PPWI AND RPP BETWEEN 2008-2023



Legend:

Figure created by RHRPC. Note: In 2017, California expanded its localities. This changed the distribution of the PW GPCI across the state, thus affecting our calculated state average PPWI. This is visible in a drop in the PPWI in the same year.

Hawai‘i’s Wages Do Not Show the Same Relationship Between Wage and Prices as Continental High-Cost States

To examine the relationship between wages and price levels, we correlated the PPWI and the RPPI. Figure 6 shows the correlation between the PPWI and the RPPI for high cost of living states and illustrates that the PW GPCI for Hawai‘i is a unique outlier in relation to cost of living. Cost of living is strongly correlated with the PW GPCI when excluding Hawai‘i ($r(15) = .720$, $p = 0.003$); however, including Hawai‘i strongly reduces the correlation ($r(16) = .460$, $p = 0.080$).

The calculations made using the PW GPCI and the PPWI include limitations, mostly in the use of the wage index. Ideally, the analysis would have incorporated the inputs into the wage index directly and used those to compare the inputs to other states' inputs; however, that data is not publicly available. Utilizing the index rather than the direct inputs generalizes the wages inputted in there to a single number, limiting the applicability of the results.

For further research, we recommend that CMS use its original wage index data to review to what extent Hawai‘i's proxy professional wages differ from those of the contiguous United States. This will provide more precise information as to what the shortcomings of the PW GPCI are.

FIGURE 6: CORRELATION OF THE PPWI (2023) COMPARED TO THE RPPI (2021) FOR STATES WITH HIGHER THAN U.S. AVERAGE WAGE

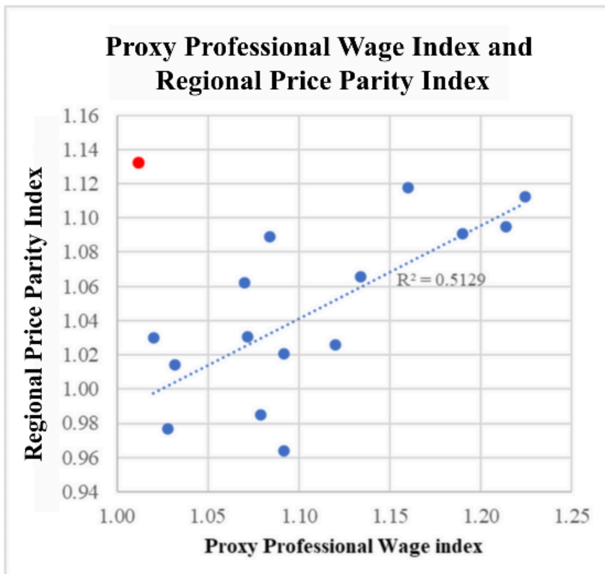


Figure created by RHRPC. The red dot indicates Hawai'i, while blue dots represent the other 15 high-income states and DC in our proxy professional wage index. (r (15) = .72, p = 0.003) excludes Hawai'i.

PW GPCI Compared to Cost of Living

On average, the PW GPCI adequately adjusts the cost of living for most states. However, 14 states have a lower PW GPCI value than the RPPI. **Importantly, Hawai‘i has the highest negative difference at 13%.** Figure 7 demonstrates the difference between PW GPCI and RPPI for all states in 2021.

FIGURE 7: DIFFERENCES BETWEEN AVERAGE PW GPCI AND RPPI FOR ALL STATES (EXCLUDING ALASKA) IN 2021

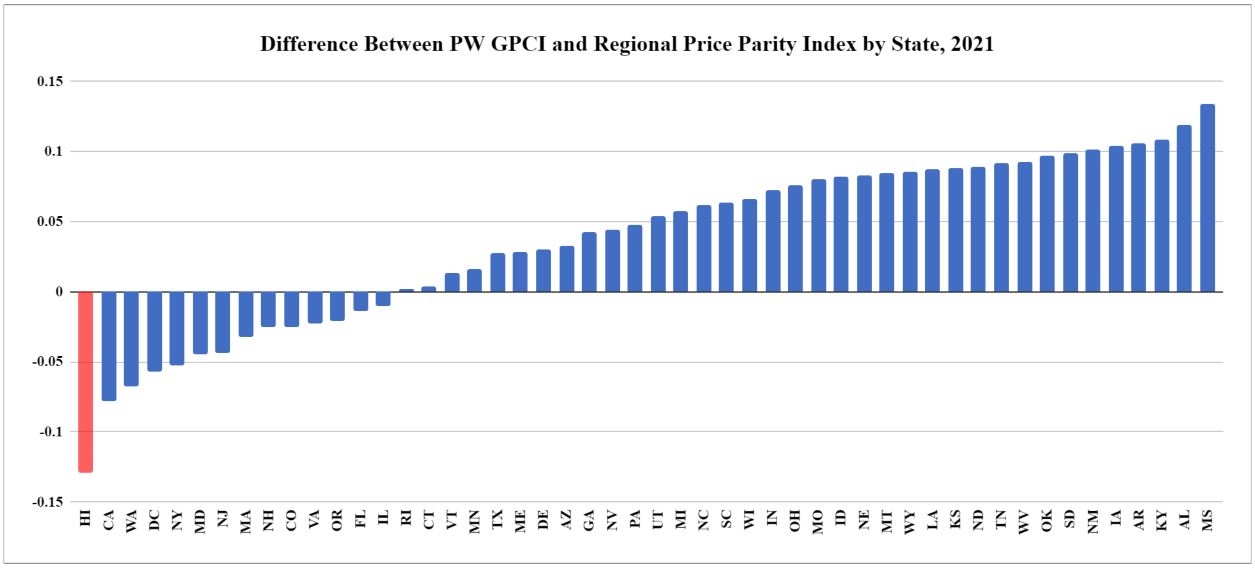


Figure created by RHRPC.

The PW GPCI is Designed to Capture the Concept of Cost of Living.

In the construction of the PW GPCI, the original developers explained that, "*Unless nominal payments are adjusted by area cost differentials, real payments will vary across locations. Therefore, in the interest of creating an equitable compensation system, nominal payment for own-time costs should be higher in high-cost areas*."[126]

Currently, CMS operationalizes the concept of "value of work effort" by using wage differentials across geographic areas in line with the first construction of the PW GPCI, as designed by Zuckerman, Welch, and Pope in 1990.[127] In a recent report to Congress, "CY 2023 Medicare PFS Update to the GPCIs and MP RVUs," CMS states that the PW GPCI "*captures the relative cost of physician and non-physician practitioner labor across Medicare payment localities*," thus allowing "*the GPCI to reflect differences in living and other costs faced by practitioners in different areas*".[128]

Thus, CMS confirms that at this time, the GPCI is intended to reflect the differences in costs faced by physicians.[129] However, our initial analyses on the correlation between RPP, as well as research conducted by the University of Hawaiʻi Economic Research Organization (UHERO),[130] indicate that Hawaiʻi's wages regarding PPW as used by CMS are not in line with the patterns

[126] Zuckerman, Stephen, Gregory Pope, and W. Pete Welch. 1990. "A Geographic Index of Physician Practice Costs." Journal of Health Economics (1):39-69 (June). https://doi.org/10.1016/0167-6296(90)90040-a.
[127] Ibid.
[128] "CY 2020 Medicare PFS Update to the GPCIs and MP RVUs." 2023. Centers for Medicare and Medicaid Services. https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/Downloads/CY2020-PFS-FR-Final-Report.pdf.
[129] Ibid.
[130] Bond-Smith, Steven, Bond-Smith, Daniela. 2024. "How does Hawaiʻi's Economic Geography Affect Its Healthcare Industry?" The Economic Research Organization at the University of Hawaiʻi. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/.

found in the continental United States.[131] Moreover, CMS does not define "work effort" explicitly in its regulatory frameworks. Nowhere in these documents were the terms "work effort" or "physician labor" further defined.

In fact, in the original research done that constructed the GPCI, it was already considered a concern that rural areas would suffer from lower levels of reimbursement.[132] In 1989, it was recognized by healthcare advocates that if payment rates for fee schedule services did not reflect the local cost of living and amenities, the supply of physicians and other health professionals would not be sufficient in high-cost areas, and beneficiaries' access to care in those areas would suffer.[133]

In 2002, Zuckerman (who developed the original GPCI) testified to the U.S. House of Representatives Committee on Ways and Means that if "*properly adjusted, Medicare physician payments should tend to promote an adequate supply of physicians in both urban and rural areas*."[134] Nevertheless, it was recognized early on that "*GPCIs are useful, but imperfect measures of geographic differences in physician practice input prices*."[135] The developers of the GPCI additionally recognized that policymakers could consider changes to the GPCIs related to factors other than input prices to ensure the overall objective of access to care was achieved. For instance, the implementation through the Affordable Care Act in 2008 of the PW GPCI floor of 1.0 for frontier states, which passed as a statutory requirement,[136] was one solution to alleviate the financial reductions that would result from a negative GPCI index in these areas.[137]

Wage is an Inadequate Measure of "Value for Work Effort" in Hawai‘i

The methodology proposed by the original developers intends to account for differences in cost of living, including the supply of local amenities, by using PPW wages to calculate PW GPCI. This standard theory of spatial equilibrium requires competitive labor and land markets where workers can move freely between areas.[138] Hawai‘i (and other non-contiguous areas) cannot adhere to this requirement, as the economy of Hawai‘i is isolated, and lacks scale and economic

[131] Bond-Smith, Steven, and Daniela Bond-Smith. "How Does Hawai‘i's Economic Geography Affect Its Healthcare Industry?" *The Economic Research Organization at the University of Hawai‘i*, April 22, 2024. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/.
[132] Welch, W., S. Zuckerman, and G. Pope. 1989. "The Geographic Medicare Economic Index: Alternative Approaches." Urban Institute Working Paper 3839-01–01 (June).
[133] Pope, Gregory, Stephen Zuckerman, Mary Henderson, and W. Pete Welch. 1989. "Cost of Practice and Geographic Variation in Medicare Fees." Health Affairs 8;3117-128. https://doi.org/10.1377/hlthaff.8.3.117.
[134] Why Do We Adjust Medicare Physician Fees for Geographic Practice Cost Differences? Testimony before the Committee on Ways and Means, Subcommittee on Health." Urban Institute, 2002. https://www.urban.org/sites/default/files/publication/64041/900540-Just-Why-Do-We-Adjust-Medicare-Physician-Fees-for-Geographic-Practice-Cost-Differences-.pdf.
[135] Gillis, K. D., R. J. Willke, and R. A. Reynolds. "Assessing the Validity of the Geographic Practice Cost Indexes." *Inquiry* 30, no. 3 (Fall 1993): 265–80. PMID: 8406784.
[136] "Frontier states are defined as states where more than half the counties have a population density of less than six persons per square mile. The floor applies to the entire state, not just to the frontier counties. There are 5 frontier states (Montana, Nevada, North Dakota, South Dakota, and Wyoming), and these include 30 metropolitan and 42 nonmetropolitan IPPS hospitals." National Academies of Sciences, Engineering, and Medicine. 2012. "Geographic Adjustment in Medicare Payment: Phase II: Implications for Access, Quality, and Efficiency." Washington, DC: The National Academies Press. https://nap.nationalacademies.org/read/13420/chapter/4#30
[137] Zuckerman, Stephen, and Stephanie Maxwell. "Reconsidering Geographic Adjustments to Medicare Physician Fees." Urban Institute, June 4, 2016. https://www.urban.org/research/publication/reconsidering-geographic-adjustments-medicare-physician-fees.
[138] Kline, Patrick, and Enrico Moretti. 2013. "Place Based Policies with Unemployment." American Economic Review, American Economic Association 103 (3): 238-43,.

integration with the contiguous United States.[139,140,141] In fact, recent studies developing spatial equilibrium models exclude non-contiguous states such as Hawai‘i and Alaska, due to their geographic separation from the contiguous United States.[142,143,144] Small and isolated economies have higher spatial transaction costs, cannot benefit from increases in industry scale (as their remoteness limits industry growth), and the limited availability of land increases costs for holding inventory or hosting production.[145,146]

To illustrate this context, UHERO investigated economic cluster development in Hawai‘i, and noted that in 2014, 37% of traded employment in Hawai‘i was in strong traded clusters, ranking it 25th among all states.[147] The typical state has ten strong traded clusters, as compared to Hawai‘i, which has only three. This lack of large economic clusters leads to lower wages for the different industries in Hawai‘i as compared to the contiguous United States. In particular, traditionally higher-wage occupations in Hawai‘i receive lower wages relative to the contiguous United States, when adjusted for cost of living. Notably, UHERO found that the average wages for the studied clusters in Hawai‘i were $20,000 to $30,000 lower than contiguous U.S. wages within those same industries.[148] (See the comparison of cost of living with the proxy professional wages used for the PW GPCI in the previous section.)

Moreover, the assumption that lower amenities lead to higher wages is not applicable to Hawai‘i, especially on the neighbor islands.[149] To illustrate, while the small islands of Lāna‘i and Moloka‘i have few to no amenities in the form of entertainment, schools, healthcare facilities, or any urban convenience, due to their remoteness, cost of living on these islands is inevitably higher. Wages, however, do not increase proportionally to this imbalance in cost of living and amenities.[150]

Consequently, the different economic possibilities and consequences of being a non-contiguous state with multiple remote islands create an exception in the underlying theory of using concurrent wage as a basis for attaining a balanced reimbursement rate that supports the retention of healthcare personnel. The consequences of being non-contiguous limit economic competition,

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[139] The Economic Research Organization at the University of Hawai‘i. “Diversifying Hawai‘i’s Specialized Economy: A Spatial Economic Perspective - UHERO.” UHERO, August 23, 2022. https://uhero.hawaii.edu/diversifying-hawaiis-specialized-economy-a-spatial-economic-perspective/.

[140] Bonham, Carl, and Makena Coffman. 2017. “A New Perspective on Hawai‘i Economy: Understanding the Role of Clusters.” The Economic Research Organization at the University of Hawai‘i. https://uhero.hawaii.edu/wp-content/uploads/2019/08/New_Perspective_Hawaii.pdf.

[141] Bond-Smith, Steven, and Daniela Bond-Smith. "How Does Hawai‘i’s Economic Geography Affect Its Healthcare Industry?" *The Economic Research Organization at the University of Hawai‘i*, April 22, 2024. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/.

[142] Kleinman, Benny, Ernest Liu, and Stephen J Redding. “Dynamic Spatial General Equilibrium.” *Econometrica* 91, no. 2 (January 1, 2023): 385–424. https://doi.org/10.3982/ecta20273.

[143] Wukuang, Cun, and Hashem Pesaran. 2021. “A Spatiotemporal Equilibrium Model of Migration and Housing Interlinkages.” CESifo, October. https://dx.doi.org/10.2139/ssrn.3943026.

[144] Zabek, Mike. 2019. “Local Ties in Spatial Equilibrium.” In Finance and Economics Discussion Series 2019-080. Washington: Board of Governors of the Federal Reserve System. https://doi.org/10.17016/FEDS.2019.080.

[145] Bond-Smith, Steven. 2022. “Diversifying Hawai‘i’s Specialized Economy: A Spatial Economic Perspective.” The Economic Research Organization at the University of Hawai‘i. https://uhero.hawaii.edu/diversifying-hawaiis-specialized-economy-a-spatial-economic-perspective/.

[146] The Economic Research Organization at the University of Hawai'i. “How Does Hawai‘i’s Economic Geography Affect Its Healthcare Industry? - UHERO.” UHERO, April 22, 2024. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/.

[147] Ibid.

[148] Bonham, Carl, and Makena Coffman. 2017. “A New Perspective on Hawai‘i Economy: Understanding the Role of Clusters.” The Economic Research Organization at the University of Hawai‘i. https://uhero.hawaii.edu/wp-content/uploads/2019/08/New_Perspective_Hawaii.pdf.

[149] Bond-Smith, Steven, and Daniela Bond-Smith. "How Does Hawai‘i’s Economic Geography Affect Its Healthcare Industry?" *The Economic Research Organization at the University of Hawai‘i*, April 22, 2024. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/.

[150] Ibid.

resulting in lower wages for high-skilled labor in the state, as well as additional difficulties with retaining healthcare workers within the various islands.[151] **As such, Hawai'i and other non-contiguous states cannot be treated on a similar scale with the contiguous states.**

Currently, there is not an adequate supply of physicians prepared to work in Hawai'i's rural areas, with high costs and a lack of amenities. As providers have indicated that a significant barrier to work in the state is financial burden,[152] our report analyzed Medicare rates and found that they are not properly adjusted for the value of work effort for Hawai'i at this time. Providers moving away from Hawai'i present an increasingly clear picture that physician work effort, as directed by Congress via statute[153] and implemented by CMS, is insufficiently valued through concurrent physician and proxy professional earnings. Hawai'i's significant healthcare workforce shortages show additional evidence that this methodology includes shortcomings that need to be addressed.

[151] Ibid.
[152] Medeiros, Kelsey Kukaua. 2020. "Why Hawaii Island Doctors Are Looking for Tax Relief." *Pacific Business News*. https://www.bizjournals.com/pacific/news/2020/01/14/why-hawaii-island-doctors-are-looking-for-tax.html.
[153] 42 U.S.C. § 1395w-4

Policy Options

As discussed above, there have been both statutory and regulatory precedents for adjusting the GPCI in recent decades. In 2003, Congress statutorily adjusted the lower limits of geographic compensation with the 1.0 PW GPCI floor to assure that providers in low-wage areas were not disadvantaged compared to high-cost/high-wage areas. Additionally, a bonus payment of 10% to providers serving in shortage areas based on HPSA designations supports additional access in rural areas, and was authorized as part of the Medicare Incentive Payment Program in the Balanced Budget Act of 1997.[154] In addition, Alaska's 1.5 PW GPCI floor was established by Congress in 2008 to artificially increase the "work effort" compensation to 50% above the national average for Alaska. Part of the implementation through the Affordable Care Act in 2008 was a new PW GPCI floor of 1.0 for frontier states, which passed as a statutory requirement.[155] Geographic localities were expanded by CMS, as directed by the PAMA of 2014, from 87 to 112 to account for differences in California. Notably, over the years, adjustments have been made by CMS to include more proxy professional groups to adjust for shortcomings in the data provision.

Given Hawai‘i's unique geographic and economic considerations as described in this report, we present multiple policy options for Congress and CMS to consider to better compensate for the differences in value of work effort in non-contiguous areas.

A: Congress Could Enact a Statutory Change to Provide Parity for Non-Contiguous States by Adjusting the PW GPCI for Hawai‘i to a 1.5 Floor in Line with Alaska's Existing Floor

This policy option proposes that Congress pass a bill to establish a floor of 1.5 for the PW GPCI in non-contiguous states through statute, which is in line with the current PW GPCI floor in Alaska. Doing so would provide a PW GPCI of 1.5 for Hawai‘i and is consistent with the Protecting Access to Care in Hawai‘i (PATCH) Act (H.R. 3263/S.1624) that was introduced by Hawai‘i's Congressional delegation.

The proposed congressional action would address the disparity in reimbursement rates between the two non-contiguous states, Hawai‘i and Alaska. The current PW GPCI floor for Alaska ensures that physicians in that area receive a minimum reimbursement rate of 1.5 times the national average for PW, even if the calculated PW GPCI is lower. The proposed adjustment would extend this same floor to Hawai‘i.

By implementing a 1.5 PW GPCI floor in line with Alaska, non-contiguous states would be treated equally with respect to statute regarding Medicare reimbursement and the additional needs that result from unique non-contiguous geographies. There is significant precedent in statute and regulation for treating non-contiguous states similarly. For example, Alaska and Hawai‘i are treated differentially in Medicare payment for Durable Medical Equipment (42 U.S.C. 1395m(a)(1)(10)(A): "*Exceptions to the amounts recognized under the previous provisions of this subsection shall be made to take into account the unique circumstances of*

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[154] Balanced Budget Act of 1997, Pub. L. No. 105-33, 111 Stat. 251 (1997).

[155] "Frontier states are defined as states where more than half the counties have a population density of less than six persons per square mile. The floor applies to the entire state, not just to the frontier counties. There are 5 frontier states (Montana, Nevada, North Dakota, South Dakota, and Wyoming), and these include 30 metropolitan and 42 nonmetropolitan IPPS hospitals (National Academies of Sciences, Engineering, and Medicine. 2012. Geographic Adjustment in Medicare Payment: Phase II: Implications for Access, Quality, and Efficiency. Washington, DC: The National Academies Press. https://nap.nationalacademies.org/read/13420/chapter/4#30

covered items furnished in Alaska, Hawaii, or Puerto Rico") and Medicare payment for telehealth store-and-forward technologies (42 U.S.C. 1395m(m)(1): "*For purposes of the preceding sentence, in the case of any Federal telemedicine demonstration program conducted in Alaska or Hawaiʻi, the term 'telecommunications system' includes store-and-forward technologies that provide for the asynchronous transmission of health care information in single or multimedia formats.")*. Additionally, the federal poverty guidelines use the same poverty rate for all 48 contiguous states, but use a different, higher rate for Alaska and Hawaiʻi to account for higher costs of living in non-contiguous areas.[156] Furthermore, throughout the debate process of the One Big Beautiful Bill Act (OBBBA), which passed into law in 2025, proposed amendments from Republican Senators were discussed to grant cost-sharing waivers to both Alaska and Hawaiʻi for the Supplemental Nutrition Assistance Program (SNAP).[157]

The benefits of this proposal include the creation of equal treatment of non-contiguous states in terms of PW GPCI reimbursement adjustment, without requiring significant new resources or changes to the current calculation method.

However, there are also potential risks associated with the proposal. Nationally, Medicare costs may have to be adjusted elsewhere to maintain budget neutrality, as costs may rise (albeit moderately) because of the increased reimbursement rates for Hawaiʻi.

If implemented, the PW GPCI in Hawaiʻi would be increased to 1.5. This would result in an overall increase of the GAF in Hawaiʻi from 1.050 to 1.301, meaning Hawaiʻi would potentially receive a 23.9% increase to Medicare reimbursement rates within the PFS when applying the adjustment to the PW GPCI for Hawaiʻi.

As discussed above, the PATCH Act proposed language is as follows:

"To amend title XVIII of the Social Security Act to establish a floor on the work geographic index for physicians' services furnished in Hawaii.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. Short title.

This Act may be cited as the "Protecting Access To Care in Hawaii Act" or the "PATCH Act".

SEC. 2. Floor on work geographic index for physicians' services furnished in Hawaii.

Section 1848(e) of the Social Security Act (42 U.S.C. 1395w–4(e)) is amended—

> *(1) in paragraph (1)(A), in the matter preceding clause (i), by striking "and (I)" and inserting "(I), and (J)"; and*

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[156] U.S. Department of Health and Human Services. (2025). Poverty Guidelines for 2025. Office of the Assistant Secretary for Planning and Evaluation (ASPE). Retrieved from https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines.
[157] Benson, Samuel. "Senate GOP Adds SNAP Waivers for Alaska, Hawaii in New Megabill Text." Politico, June 28, 2025. https://www.politico.com/live-updates/2025/06/28/congress/senate-gop-snap-waivers-alaska-hawaii-megabill-00430999.

(2) by adding at the end the following new subparagraph:

> *"(J) FLOOR ON WORK GEOGRAPHIC INDEX FOR SERVICES FURNISHED IN HAWAII.—For purposes of payment for services furnished in Hawaii on or after January 1, 2025, after calculating the work geographic index in subparagraph (A)(iii), the Secretary shall increase the work geographic index to 1.5 if such index would otherwise be less than 1.5. The preceding sentence shall not be applied in a budget neutral manner."*

B: Through Regulation, CMS Could Ensure Parity Between Non-Contiguous States by Providing Hawai‘i with a 1.5 PW GPCI Floor (By Directly Adjusting its GPCI or By Adding Hawai‘i to the Alaska Fee Schedule Locality)

This policy option proposes that CMS use its existing authority to provide a 1.5 PW GPCI floor for Hawai‘i by directly applying the floor to the Hawai‘i locality or by adding Hawai‘i, and by extension Guam, American Samoa, and the CNMI (as they are also in the Hawai‘i fee schedule locality), into the Alaska fee schedule locality.

Congress gave CMS the authority in 42 U.S.C. 1395w-4(e)(1)(C) to "*revise such [geographic] index and adjust such index values*," and to "*use the most recent data available*." Recent data show that Hawai‘i has very high costs and severe health workforce shortages.[158,159] CMS can–now–implement a 1.5 PW GPCI floor for the Hawai‘i locality based on recent data to fully and accurately reimburse for services.

CMS also has the authority under the same statute to add Hawai‘i to the Alaska locality. Doing so would mean that the GPCI (PW, PE, and MP) would be calculated based on data from all three states/territories, and the 1.5 PW GPCI floor that is currently in place for Alaska would additionally apply to Hawai‘i.

Benefits include the ease of implementation and the parity for participating non-contiguous states, given their unique geographic challenges and precedents of being treated similarly in statute and regulation. Adding Hawai‘i to the Alaska fee schedule locality would not require the collection of new data but would correct the shortcomings in the PW GPCI calculation for Hawai‘i.

Being in Alaska's fee schedule locality would mean that Hawai‘i's PE value would decrease in line with Alaska's PE GPCI, which is currently 6.05% lower. Nevertheless, this effect of the PE GPCI decrease, in comparison to the gain in PW GPCI from 1.003 to 1.500, would be negligible given the small percent decrease of the PE compared to the PW. As discussed above, nationally, the PW GPCI is 50.24% of the total geographic compensation, PE GPCI is 45.59% of the total geographic compensation, and MP GPCI is 4.17% of the total geographic compensation. Additionally, Alaska's GAF would increase slightly, due to Hawai‘i's PE GPCI being higher than Alaska's.

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[158] Hawai‘i Area Health Education Center, "2024 Physician Workforce Report," https://ahec.hawaii.edu/_docs/2024-physician-workforce-report.pdf.

[159] Bond-Smith, Steven, and Daniela Bond-Smith. 2024. "How Does Hawai‘i's Economic Geography Affect Its Healthcare in Hawai‘i?" The Economic Research Organization at the University of Hawai‘i. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-in-hawaii/.

If this policy proposal of moving Hawai‘i to Alaska's locality were implemented in 2024, it would result in an estimated overall increase, for example, of the Alaska and Hawai‘i/Guam GAF from 1.271 and 1.045, respectively, to 1.289. This means that Hawai‘i would potentially receive a 20.9% increase to Medicare reimbursement rates within the PFS if added to the Alaska locality.

C: CMS Could Incorporate Cost of Living through the RPP into the GPCI Calculation for the Hawai‘i/Guam Locality and/or Nationally

One policy option is that CMS reevaluate the work effort in the Hawai‘i/Guam fee schedule locality and make appropriate adjustments based on a more nuanced method that considers the unique geography, high cost of living, and physician work value seen in Hawai‘i. The current national method of calculation relies solely on a standard economic theory of spatial equilibrium that is not applicable to Hawai‘i.[160] Therefore, a different method of judging value for physician work effort in Hawai‘i needs to be determined. This proposed re-evaluation would involve adjusting the calculation method for the PW GPCI that considers the specific cost of living conditions. This re-evaluation requires additional data to be integrated into the calculation method and would provide a fairer assessment of the value of work effort.

One proposal to mitigate the need for the collection of data is to use the RPP data as an additional correction to the CMS PPWI currently used by CMS. As indicated by our calculations, the difference between the currently-used PPWI and the RPPI creates financial outliers for the locality of Hawai‘i (with a 13% difference between the PPWI and the RPPI). This would mean that CMS includes data from the RPPI to limit strong differences that are currently seen when using the current methodology in the Hawai‘i/Guam locality. The inclusion of the RPP would result in a more suitable index of the relative value of a PW effort that does not solely rely on wage.

Including the RPP in the GPCI calculation may be achieved by averaging the RPPI with the current PW GPCI for the Hawai‘i/Guam locality. The RPPI uses transparent, reliable, and annually collected national data. This average index would affect the applied PW GPCI in Hawai‘i due to the large disparity between cost of living and wages. Including RPP as an average with the proxy professional wage index would maintain the goal of not fully compensating for cost of living while still reducing the negative impact of egregious differences between cost of living and wage.

Using the most recent RPP and averaging it with the PW GPCI would change PW GPCI value in 2023 for Hawai‘i from 1.003 to 1.068. Roughly, the adjustment would look like this:

$$\text{(PW GPCI + RPPI)/2 = cost of living-adjusted PW GPCI}$$
$$\text{Adjusted Hawai‘i PW GPCI} = (1.003+1.132)/2 = 1.068$$

Since the PW GPCI only compensates for the PW Service Value part of physician compensation, we use the cost share weights to estimate the effect of the adjustment on the total geographic

[160] Bond-Smith, Steven, and Daniela Bond-Smith. "How Does Hawai‘i's Economic Geography Affect Its Healthcare Industry?" *The Economic Research Organization at the University of Hawai‘i*, April 22, 2024. https://uhero.hawaii.edu/how-does-hawaiis-economic-geography-affect-its-healthcare-industry/.

compensation. Nationally, the PW GPCI is 50.24% of the total geographic compensation, PE GPCI is 45.59% of the total geographic compensation, and MP GPCI is 4.17% of the total geographic compensation. Using these cost share weights, we can calculate the total geographic adjustment for Hawaiʻi. This hypothetical adjustment of the PW GPCI to 1.068 would result in a GAF of 1.101: a change in GAF of 1.071 to 1.101. On average, reimbursement in the PFS would increase by 3% in Hawaiʻi when applying this adjustment to work effort.

Two policy options may be considered regarding this solution. The first option is to integrate the RPPI in the GPCI calculation, which can be implemented for Hawaiʻi as a non-contiguous state to compensate for its unique outlier status. Given the outlier status of Hawaiʻi as a non-contiguous state, this policy option focuses on creating an adjustment to the PW GPCI based on cost of living specifically for the Hawaiʻi/Guam locality.

The second option is to implement the adjustment throughout all localities to maintain uniformity in the GPCI calculation. This widescale approach would impact all localities, adjusting the GPCI upward for high cost of living localities and decreasing the GPCI for localities in states with low cost of living. However, when the 1.0 PW GPCI floor applies, reimbursement rates will not suffer consequences.

D: Congress Could Enact a Statutory Change to Implement a Predetermined Bonus in Physician Fee Schedule Payments for Non-Contiguous States to Compensate for Wage and Cost of Living Disparities in These Areas

This policy option involves Congress passing a law directing CMS to implement a to-be-determined percentage bonus for non-contiguous states, such as Hawaiʻi, to compensate for wage and cost of living disparities that exist in these areas and are not already reflected in the GPCI calculation. The bonus would not be integrated into the GPCI wage formula but would be added on top of the geographic adjustment, similar to the HPSA bonus.

This approach would involve conducting a study to determine an appropriate bonus rate that would adequately compensate physicians for the higher cost of living and practice costs in non-contiguous states. As soon as a bonus has been determined, it can be provided to providers in non-contiguous states. This will result in a simple and direct approach to increase payments to physicians in a non-contiguous state.

The benefits of a bonus implementation are the efficiency and simplicity of the approach. Once the bonus is determined and implemented, no further work is required to acquire additional data or make additional adjustments. Moreover, the PW GPCI values remain the same, while still compensating for any shortcomings in the PW GPCI formula. For example, since the PW GPCI for Hawaiʻi is determined to be 13% below the cost of living value, a 13% bonus added to the total reimbursement might be suitable. This means that on average, reimbursement in the PFS would increase by 13% in Hawaiʻi when applying an adjustment for non-contiguous states.

However, the downsides to this approach are that the set bonus rate may not adequately compensate for discrepancies in costs between non-contiguous states in the United States in the future, assuming the rate is not adjusted in the future. Additionally, the bonus rate may not translate into other reimbursement schemes, such as Medicaid and MA rate calculations, which could create further disparities in payment for physicians in non-contiguous states. Finally, with Alaska's current PW GPCI floor of 1.5, bonus payments for the Alaska locality would be redundant and lead to much higher reimbursement rates. To account for this issue, the bonus could be considered for Hawai‘i only, the only other non-contiguous state without a separate GPCI adjustment, or additionally consider the bonus payment for all non-contiguous areas.

Conclusion

The PW GPCI was designed to adjust Medicare physician payments to account for geographic differences in the relative value of physician work across fee schedule areas, with the intent of promoting equitable compensation nationwide. However, as demonstrated in this report, Hawai‘i's wages and cost structures deviate markedly from the economic assumptions underlying the index. The state's high cost of living, geographic isolation, and unique labor market conditions result in physician compensation that fails to reflect the true "value of work effort" as envisioned by Congress and implemented by CMS. Because the PW GPCI relies on proxy professional wages that do not align with Hawai‘i's wage-to-cost realities, current reimbursement rates undervalue physician services, exacerbating workforce shortages and access-to-care challenges across the islands. Therefore, a statutory or regulatory adjustment—such as establishing a 1.5 PW GPCI floor for Hawai‘i in parity with Alaska—represents the most direct and equitable mechanism to correct the persistent undervaluation of physician work in Hawai‘i and ensure fairer Medicare reimbursement in non-contiguous states.

APPENDICES

Appendix A: History of the Physician Work (PW) Geographic Practice Cost Index (GPCI) development

Based the Committee on Geographic Adjustment Factors in Medicare Payment (BOX 5-1: Geographic Practice Cost Index Timeline of Events,[161] with additions)

1987: Zuckerman, Welch and Pope publish "the development of an interim Geographic Medicare Economic Index,"[162] explaining the theory and methodology behind the GPCI.

1989: The U.S. Congress requires that the U.S. Department of Health and Human Services (HHS) account for physician work, practice expenses, and malpractice expenses when calculating the GPCIs (OBRA of 1989. P.L. 101-239, December 19, 1989).

1990: Zuckerman, Welch and Pope publish "A Geographic Index of Physician Practice Costs,"[163] describing the first construction of the GPCI.

1992: Section 1848 of the SSA establishes a fee schedule for physicians' services.

1996: The Health Care Financing Administration (now CMS) reduces the number of payment areas from 210 to 89 (CMS, 1996).

1997: The U.S. Congress requires CMS to implement resource-based malpractice RVUs for all services provided, effective in the year 2000 (The Balanced Budget Act of 1997. P.L. 105-33, August 5, 1997).

2003: The U.S. Congress mandates review of the PE GPCI (Medicare Prescription Drug, Improvement, and Modernization Act of 2003. P.L. 108-173, December 8, 2003).

2004: The Work GPCI floor is enacted by increasing the work geographic index to 1.00 for any locality for which such work geographic index is less than 1.00.[164]

2005: GAO reports that the GPCIs are sound conceptually but that data and data collection methods could be improved, such as by collecting more data on physician assistant wages and using commercial rent data rather than residential rent rates (GAO, 2005).

2007: GAO recommends that CMS design a uniform approach to defining payment areas, so that there is consistency from state to state, and that CMS base its locality structure on the most recent data (GAO, 2007).

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[161] Committee on Geographic Adjustment Factors in Medicare Payment, Board on Health Care Services, Institute of Medicine, edited by Marian Edmunds and Frank A. Sloan. *Geographic Adjustment in Medicare Payment: Phase I: Improving Accuracy, Second Edition.* Washington, DC: National Academies Press, 2011. Appendix I, "Physician Work Adjustment." https://www.ncbi.nlm.nih.gov/books/NBK190056/.
[162] Stephen Zuckerman, W. Peter Welch, and Gregory C. Pope, The Development of an Interim Geographic Medicare Economic Index (Baltimore, MD: U.S. Dept. of Health & Human Services, Health Care Financing Administration, Office of Research and Demonstrations, December 1987).
[163] Zuckerman, Stephen, W. P. Welch, and Gregory C. Pope. "A Geographic Index of Physician Practice Costs." Journal of Health Economics 9, no. 1 (March 1990): 39–69.
[164] Reauthorized multiple times by wide bipartisan majorities (depending on the vehicle); this is a very beneficial provision for rural, low-cost states.

2007: MedPAC recommends that CMS exclude expenses that do not vary geographically (including supplies and medical equipment) from the GPCI formulas to improve their accuracy (MedPAC, 2007).

2008: Acumen report for CMS evaluates four smoothing techniques, and concludes that each method would significantly reduce large disparities between payment areas (O'Brien-Strain et al., 2008).

2010: On behalf of Health and Human Services Secretary Kathleen Sebelius, CMS commissions the Institute of Medicine to evaluate the accuracy of the GAF in a two-year study. The Committee on Geographic Adjustments in Medicare Payments was thus established.

2010: The U.S. Congress passes the Patient Protection and Affordable Care Act of 2010, which establishes a wage index floor of 1.0 for frontier states, sets a PW GPCI floor for Frontier States, and extends the work GPCI floor through December 31, 2010 (P.L. 111-148).

2010: In November 2010, CMS posted the final PFS rule with a comment period for the 2011 GPCI. The Final Rule describes updates to GPCI weights and includes new regulations in response to provisions in the Patient Protection and Affordable Care Act of 2010 (CMS, 2010b).

2011: On July 8, 2011, CMS issues the CY 2012 PFS Proposed Rule, which proposes to change the GPCI cost share weights by decreasing the weight for work and increasing the PE weight; to add a new category for contract labor as a component of the PE; and to use American College of Surgeons (ACS) residential rent data for the office rent component of the GPCI.

2011: The MedPAC advises CMS to investigate whether proxy professional wages predict physician wages.

2013: MedPAC published empirical results indicating that while proxy professional wages do not follow a similar economic pattern as physician wages, proxy professionals have lower wages in rural areas, while physicians have higher wages in rural areas. MedPAC concluded that the proxy professional wages were not correlated with the physician wages.

2014: H.R.4302 - The PAMA: Section 102 extends the GPCI floor through April 1, 2015 and Sec. 220 makes MSAs in California fee schedule areas for calculation of the geographical adjustment factor in the formulae for setting physicians' fees.

2015: H.R.2 - The Medicare Access and Child Health Improvement Program (CHIP) Reauthorization Act of 2015 in Section 201 extends through CY 2017 the 1.0 floor for the work GPCI for adjusting the MFS for physician services.

2015: Puerto Rico proposed a legislative solution: Section 212 of H.R. 2635 to modify the PE GPCI to consider additional costs for non-contiguous states and territories.[165] In 2017, CMS acted through its statutory authority and assigned the national average of 1.0 to each GPCI index for both Puerto Rico and the Virgin Islands.

2017: In the CY 2017 PFS Final Rule (81 FR 80265 through 80268), CMS expands the 89 geographic localities to 112 geographic localities as directed by the PAMA of 2014.

[165] Committee on Finance, United States Senate. *Financial and Economic Challenges in Puerto Rico.* 2015. https://www.govinfo.gov/content/pkg/CHRG-114shrg20867/pdf/CHRG-114shrg20867.pdf.

2018: H.R.1892 - Section 50201 of the Bipartisan Budget Act of 2018 extends by two years the floor of the PW GPCI.[166]

2021: Section 101 of the Consolidated Appropriations Act of 2021 extends the PW GPCI floor of 1.0 in all localities through 2023.

2022: CMS publishes updates to the GPCI calculation in ''Final Report for the CY 2023 Update of GPCIs and MP RVUs for the Medicare PFS.''

2022: Cost share weights for the balance between the PW, PE and MP GPCI were updated in the PFS Final Rule. PW GPCI consists of 47.522%, PE of 51.129% and MP 1.349% of the total GAF.

2022: CMS expands the seven proxy professional groups used to determine the PW GPCI with two additional professional groups and adjusts the group coding.

2023: Congress extended the Work GPCI floor of 1.0 through 12/31/2023 (via Appropriations Act). CMS rule maintained expanded proxy professions and updated weights.

2024: Further extended the Work GPCI floor through 12/31/2024. CMS rule sustained nine proxy groups and cost shares.

2025: MedPAC issued a new analysis questioning the long-term equity of the PW GPCI floor.[167] Pending bills propose extensions of the PW GPCI floor beyond 2025; however, no enacted extension yet.

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[166] Method legislative history: congress.gov, look up "Geographic Practice Cost Index" years 2011-2023. Result, 3 bills that became law. Govinfo.gov, search "Geographic Practice Cost Index" 2012-2023. Result, 208 records, all records are screened for the context in which the GPCI is mentioned. Included in this list are changes to legislation or rules, and significant research results leading to new insights.

[167] Medicare Payment Advisory Commission. Report to the Congress: Medicare and the Health Care Delivery System. Washington, DC: MedPAC, June 2025. https://www.medpac.gov/wp-content/uploads/2025/06/Jun25_MedPAC_Report_To_Congress_SEC.pdf

Appendix B: Legislation on the GPCI

Select CMS Authorities Under 42 USC § 1395w–4(e)

"(1)(A) Geographic Adjustment Factors, Establishment of Geographic Indices, In General
…the Secretary shall establish –

i. an index which reflects the relative costs of the mix of goods and services comprising practice expenses (other than malpractice expenses) in the different fee schedule areas compared to the national average of such costs,
ii. an index which reflects the relative costs of malpractice expenses in the different fee schedule areas compared to the national average of such costs, and
iii. an index which reflects 25% of the difference between the relative value of a physicians' work effort in each of the different fee schedule areas and the national average of such work effort.

(1)(B) Periodic review and adjustments in GAF. The Secretary, not less often than every 3 years, shall, in consultation with appropriate representatives of physicians, review the indices established under subparagraph (A) and the geographic index values applied under this subsection for all fee schedule areas. Based on such review, the Secretary may revise such index and adjust such index values, except that, if more than 1 year has elapsed since the date of the last previous adjustment, the adjustment to be applied in the first year of the next adjustment shall be ½ of the adjustment that otherwise would be made.

(1)(C) Periodic Review. The Secretary shall review, and, if appropriate, adjust the geographic indices established under subparagraph (A) no less often than every three years. Any adjustments under this subparagraph shall be made in a budget neutral manner."

(1)(D) Use of recent data. In establishing indices and index values under this paragraph, the Secretary shall use the most recent data available relating to practice expenses, malpractice expenses, and physician work effort in different fee schedule areas.

(1)(E) Floor at 1.0 on the work geographic index. After calculating the work geographic index [above; (A)(iii)], for purposes of payment for services furnished on or after January 1, 2004, and before January 1, 2024, the Secretary shall increase the work geographic index to 1.00 for any locality for which such work geographic index is less than 1.00.[168]

(1)(G) Floor for practice expense, malpractice, and work geographic indices for services furnished in Alaska. For purposes of payment for services furnished in Alaska on or after January 1, 2004, and before January 1, 2006, after calculating the practice expense, malpractice, and work geographic indices in clauses (i), (ii), and (iii) of subparagraph (A) and in subparagraph (B), the Secretary shall increase any such index to 1.67 if such index would otherwise be less than 1.67. For purposes of payment for services furnished in the State described in the preceding sentence on or after January 1, 2009, after calculating the work

[168] Reauthorized multiple times by wide bipartisan majorities (depending on the vehicle); this is a very beneficial provision for rural, low-cost states.

geographic index in subparagraph (A)(iii), the Secretary shall increase the work geographic index to 1.5 if such index would otherwise be less than 1.5."

"(2) Computation of GAF
…for all physicians' services for each fee schedule area the Secretary shall establish a GAF equal to the sum of the geographic cost-of-practice factor [specified below; (3)], the geographic malpractice adjustment factor (4), and the geographic physician work factor (5) for the service and the area."

(3) Geographic Cost-Of-Practice Adjustment Factor
…the "geographic cost-of-practice adjustment factor" ...is the product of–

A. the proportion of the total value for the service that reflects the RVUs for the PE component,[169] and
B. the geographic cost-of-practice index value for the area for the service, based on the index established in paragraph (1)(A)(i) or (1)(B).

(e)(5) Geographic Physician Work Adjustment Factor
…the "geographic physician work adjustment factor" ...is the product of–

A. the proportion of the total relative value for the service that reflects the RVUs for the work component,[170] and
B. the geographic physician work index (GPWI) value for the area, based on the index established under paragraph (1)(A)(iii)."

[169] "Practice expense component" is defined as, "the portion of the resources used in furnishing the service that reflects the general categories of expenses (such as office rent and wages of personnel but excluding malpractice expenses) comprising practice expenses." (42 U.S.C. § 1395w-4(c)(2)(C)(ii)).

[170] "Work component" is defined as, "the portion of resources used in furnishing the service that reflects physician time and intensity in furnishing the service…[and] shall (i) include activities before and after direct patient contact, and (ii) be defined, with respect to surgical procedures, to reflect a global definition including pre-operative and post-operative physicians' services." (42 U.S.C. § 1395w-4(c)(1)(A)).

Appendix C: Review of All Rules Published on GovInfo.gov by CMS on the Physician Fee Schedule Containing the GPCI Keyword

A comprehensive review of all rules published on GovInfo.gov by CMS on the PFS containing the keyword GPCI was conducted. Of 44 published documents, the definition of the GPCI and the work GPCI remained relatively constant. The GPCI was described in CY 2002 as reflecting "*the relative costs of practice expenses, malpractice insurance, and physician work in an area compared to the national average for each component.*" This definition remains the same in the most recent 2023 Medicare PFS update.

The work GPCI has also remained consistent in its definition. Between 2001 and 2011, CMS used data files of the median hourly earnings from the 2000 decennial census supplied by the U.S. Census Bureau. Six professions were used as a proxy for physician wages. CMS also acknowledged the issue of circularity in the 2007 PFS Final Rule, stating, "*Medicare payments are a key determinant of physicians' earnings; therefore, including physician wages in the physician work GPCI would, in effect, make the index dependent upon Medicare payments.*"

In 2010, CMS included a consistent section defining the work GPCI. It states, "*The physician work GPCIs are designed to capture the relative cost of physician labor by Medicare PFS locality.*" Additionally, in the sixth GPCI update in 2010, CMS began using the BLS Occupational Employment Statistics (currently OEWS) data instead of the 2000 Census data. This data set is updated every three years, and its use in calculating the work GPCI has remained constant.

In 2012, the National Academy of Medicine recommended replacing the current work GPCI methodology with a regression-based approach that would use data on hours worked and earnings to capture geographic differences in physician work.[171] CMS responded by further describing the methodology used to calculate the work GPCI. These steps include, "*(1) Selecting the proxy occupations and calculating an occupation-specific index for each proxy; (2) Assigning weights to each proxy occupation index based on each occupation's share of total national wages to create an aggregate proxy occupation index; and (3) Adjusting the aggregate proxy occupation index by a physician inclusion factor to calculate the final work GPCI.*"

In the CY 2023 PFS Final Rule, following an update to the BLS OEWS data occupational codes, CMS made changes to the work GPCI occupation groups and codes. Two additional occupation groups were added to the previous seven occupation groups.

Nowhere in these documents were the terms "work effort" or "physician labor" further defined.

[171] Institute of Medicine (U.S.). Geographic Adjustment in Medicare Payment: Phase II: Implications for Access, Quality, and Efficiency. Washington, DC: National Academies Press, 2012. https://doi.org/10.17226/13420

Appendix D: Impact of Benefits on Wage Differentiation in Hawaiʻi as Compared to the Contiguous United States

One of the criticisms of the calculation of the work GPCI is the use of wage data unadjusted for location-related benefits, including payments an employer makes for Social Security, state unemployment, Medicare, federal unemployment, disability insurance, health insurance and retirement plan contributions directly from the employer.

To demonstrate the potential effect of these benefits on the GPCI, we used benefits data compiled by Tipalti,[172] a comprehensive end-to-end platform for global payables, to calculate the total costs of employment, including benefits. Data includes the average annual salary (based on 2021 BLS data) and the above-mentioned benefits. For more information on the data, please see https://tipalti.com/cost-of-employment/.

We then constructed two comparable indexes that showed wage differentiation from the national average wage for both (1) the State Annual Salary and (2) the State Annual Salary including benefits. Finally, we calculated the difference between these two indexes.

Results

The average annual salary for Hawaiʻi without benefits was $59,760, with an average annual salary including benefits of $77,620. The national average annual salary was $55,365, and the national average salary including benefits was $70,643.

Hawaiʻi's index value without benefits compared to the national average is 1.08, while the index value adjusted for benefits is 1.10. This means that if benefits are considered, Hawaiʻi's average annual salaries are 10% higher than the national average. Without incorporating benefits, this means that Hawaiʻi's average annual salaries are 8% higher than the national average, which is a difference of about 2%.

The GPCI represents only 25% of the national average; therefore, the potential adjustment based on average wage data, including all occupations, would be a 0.5% adjustment to the PW GPCI.

Discussion

The data used for this calculation includes national averages of all major occupational groups included in the U.S. Census data. The PW GPCI calculation includes nine select occupational groups and thus yields a different index. For example, the 2023 PW GPCI index calculation for Hawaiʻi was 1.003, which indicates a wage differentiation from the national average of 1.2%. Certain benefit payments might differ in both scale and amount depending on state regulations. The included groups likely have higher incomes compared to average wages across all occupations, and thus, the impact of benefit payments in this group might differ.

[172] Tipalti. "Cost of Employment." Tipalti. Accessed July 14, 2025. https://tipalti.com/cost-of-employment/.

Conclusion

Considering location-related benefits as a component of wages in the calculation of the PW GPCI could increase the overall GAF for Hawaiʻi and increase Medicare PFS payments.

Table 1. RHRPC Analysis of Triptali Wage and Benefits Data of 10 Select States with High Cost of Living

State	Avg Annual Salary	Total Annual Cost of benefits	Avg Annual Salary including benefits	PPWI excluding benefits	PPWI including benefits	Difference in index value*
Hawaiʻi	$59,760	$17,860	$77,620	1.08	1.10	1.9%
New York	$70,460	$18,947	$89,407	1.27	1.27	-0.7%
California	$68,510	$18,330	$86,840	1.24	1.23	-0.8%
Massachusetts	$72,940	$18,206	$91,146	1.32	1.29	-2.7%
Oregon	$59,070	$16,751	$75,821	1.07	1.07	0.6%
Alaska	$63,480	$18,991	$82,471	1.15	1.17	2.1%
Maryland	$65,900	$16,943	$82,843	1.19	1.17	-1.8%
Connecticut	$66,130	$17,222	$83,352	1.19	1.18	-1.5%
Rhode Island	$62,120	$17,124	$79,244	1.12	1.12	0.0%
Vermont	$55,450	$15,432	$70,882	1.00	1.00	0.2%

** Green color indicates a decrease in index value with the inclusion of benefits, and red color indicates an index value increase.*

Appendix E: Proxy Professional Wage Index, PW GPCI and Regional Price Parity Index

Table 2: Proxy Professional Wage Index, PW GPCI and Regional Price Parity index for states with PW GPCI value over 1.0[173,174]

State	Difference PW GPCI and RPP	Difference Wage variation and RPP	Average of PW GPCI	Regional Price Parity Index	Proxy Professional Wage Index
HI	-0.13	-0.12	1.00	1.13	1.01
CA	-0.08	0.04	1.04	1.12	1.16
DC	-0.06	0.11	1.06	1.11	1.22
NY	-0.04	0.12	1.05	1.10	1.21
NJ	-0.04	0.10	1.05	1.09	1.19
WA	-0.07	0.00	1.02	1.09	1.08
MA	-0.03	0.07	1.03	1.07	1.13
MD	-0.04	0.01	1.02	1.06	1.07
OR	-0.01	0.04	1.02	1.03	1.07
CO	-0.03	-0.01	1.01	1.03	1.02
CT	0.00	0.09	1.03	1.03	1.12
RI	0.00	0.07	1.02	1.02	1.09
IL	-0.01	0.02	1.01	1.01	1.03
TX	0.03	0.09	1.02	0.99	1.08
DE	0.03	0.05	1.01	0.98	1.03
PA	0.06	0.13	1.02	0.96	1.09

[173] Centers for Medicare & Medicaid Services (CMS). “Physician Fee Schedule Search.” https://www.cms.gov/medicare/physician-fee-schedule/search
[174] U.S. Bureau of Economic Analysis (BEA). “Regional Price Parities by State and Metro Area.” https://www.bea.gov/data/prices-inflation/regional-price-parities-state-and-metro-area