

Understanding Data and Policy: A Case Study on Productivity Measurement and the Federal EHR Transition

Brian Stanley, MPP, VA Boston Healthcare System
Senior Policy Analyst, PEPReC

Farai Kuwonza, MS, VA Boston Healthcare System
Research Fellow, PEPReC

Katherine O'Malley, MPH, VA Boston Healthcare System
Principal Policy Analyst, PEPReC

Stuart Figueroa, MSW, VA Boston Healthcare System
Senior Policy Analyst, PEPReC

Austin Frakt, PhD, VA Boston Healthcare System
Associate Director, PEPReC

Steve Pizer, PhD, VA Boston Healthcare System
Chief Economist, PEPReC

Bottom Line Up Front

In August 2023, the Partnered Evidence-based Policy Resource Center (PEPReC) was asked to evaluate the impact of the Electronic Health Record Modernization transition at Veterans Health Administration (VHA) Medical Centers. To do this, PEPReC used provider “visit rate,” or the number of patients seen for every 8-hours of time providers spend in the clinic. When compared to Relative Value Units (RVUs), another common metric of clinical productivity, PEPReC found that visit rate captures a unique picture of clinical productivity linked to Veteran access to care. Similarly, the comparison highlights the importance of using consistently generated and coded productivity metrics when evaluating policy or operational changes.

Background

The Veterans Health Administration (VHA) is the largest integrated health system in the United States, and since the 1980s it has used the Veterans Health Information Systems and Technology Architecture (VistA) as its Electronic Health Record (EHR) system. Beginning in 2018, VHA initiated the Electronic Health Record Modernization (EHRM) program to replace VistA with Cerner Millennium, a commercial EHR system currently known as “The Federal EHR.”¹ With complete enterprise-wide deployment set to be complete by 2031, VHA continues to analyze impacts of EHR go-live on medical provider productivity, Veteran access to care, and other aspects of health care operations.² Understanding how productivity measures should be used is a vital component of this assessment.

Productivity in health care can be measured by comparing output – patients seen or Relative Value Units (RVUs) generated – to input – typically capacity or staffing, represented by Full-Time Equivalent (FTEs). RVUs are tied to Current Procedural Terminology (CPT) codes and are meant to reflect the complexity and resource intensity of services delivered. On the other hand, FTEs may be based on budgeted labor (labor-mapped FTEs) or time observed providing patient care. Used together, both RVUs and FTEs are meant to provide a standardized way to quantify clinical activity across providers, and across VA medical centers.

These productivity measures were originally designed for reimbursement in fee-for-service (FFS) health care models, but are now used more expansively to measure productivity, track provider performance, and facilitate benchmarking.^{3,4} VHA, which operates outside the traditional FFS model, adopts RVUs per reported clinical FTE as a primary productivity metric, and is using it as a key indicator of successful EHRM transition.

In August 2023, the Partnered Evidence-based Policy Resource Center (PEPReC) was asked to evaluate the impact of the EHRM transition on VHA Medical Centers. A key outcome of this evaluation is provider productivity, for which PEPReC primarily uses measures linked to Veteran access to care rather than RVUs. First, PEPReC uses “clinic time” to measure the total hours clinicians spend in direct outpatient care each day. The measure is defined as the span from a provider’s first to last encounter, and includes scheduled visits, walk-ins, eConsults, and telehealth. Second, “visit rate” is calculated as the number of patients seen at a clinic, per eight hours of clinic time. When these measures are taken together, they show how many patients providers are seeing per clinic day - giving a metric of outpatient labor that is closely linked to patient access to care.^{5,6,7}

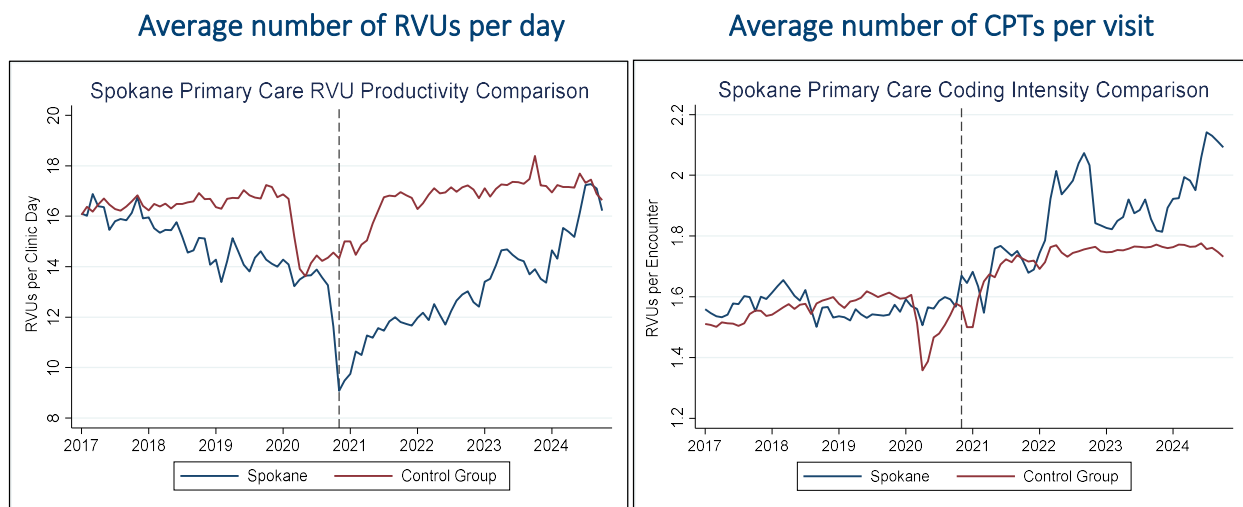
As a part of this evaluation, PEPRc needed to first translate visit rate and clinic time from the old EHR, VistA, to the new EHR. In doing this, the measures were built and then validated against RVUs, FTEs, and CPT codes. Then, PEPRc compared site-level, pre-post measures of provider coding and productivity, and reviewed those results against comparison sites still using the previous EHR. Evaluators focused on five specialty care services at EHR go-live sites: Cardiology, GI, Oncology, Orthopedics, and Urology. Through the process of translating and validating these metrics, PEPRc identified several important considerations for VHA managers evaluating site productivity. The remainder of this brief will discuss those findings.

PEPRc Findings

Summary

There are large differences in the quantity and type of CPT codes used at a facility, directly impacting RVU generation. Which CPT codes providers chose to use during a visit, and how those CPT codes count toward a facility workload, showed significant variation across time, health care service, and EHR. Since CPT codes are used to calculate RVUs, differences were observed in RVUs calculated for the same services provided. Nationwide policy changes also have impact over time because they can affect coding weights, coding intensity, or the number of codes assigned to each health care visit. In short, coding shifts at facilities adopting the new Federal EHR caused an increase in RVUs generated but obscured the actual number of patients being seen over time. This created conditions where a facility may look like it has recovered RVU-based productivity following an EHR transition, but provider visit rate may still be lower than before go-live. The following figures demonstrate these findings at two VHA facilities that underwent EHR transition: Spokane, WA (VAMC 668) and Columbus, OH (VAMC 757). For each figure, a comparison group of facilities matched on complexity, rurality, and enrollee count is used to distinguish between any enterprise-wide trends (i.e., COVID-19), and effects from the EHR transition.

Figure 1 – Primary Care RVU and CPT coding comparison in Spokane, WA

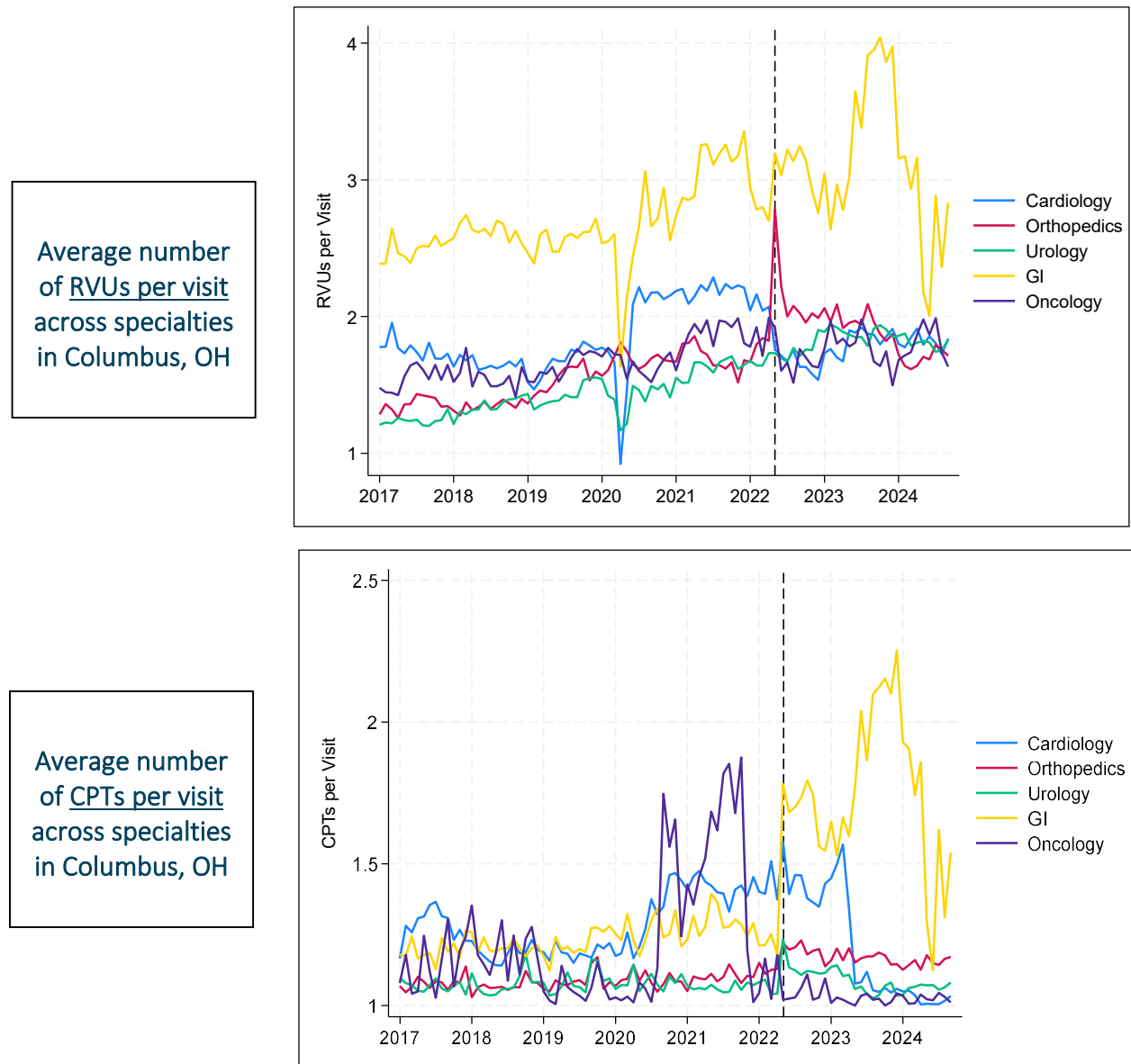


**Note: The blue line displays data for Spokane, WA, while the red line displays data for a control group of sites.*

Figure 1 compares RVU and CPT capture at Spokane, WA. In both, the EHR transition is represented by the dashed line. On the left is a graph depicting the RVU capture, showing a recovery and surpassing of

RVU workload prior to EHR go-live. On the right is a graph depicting CPT-coding intensity, or average number of CPTs per encounter. Similar to RVUs, this line also increases. Viewed together, a pattern is established: when CPTs increase, RVUs increase. Figure 2 shows a similar trend across all specialties evaluated at Columbus, OH.

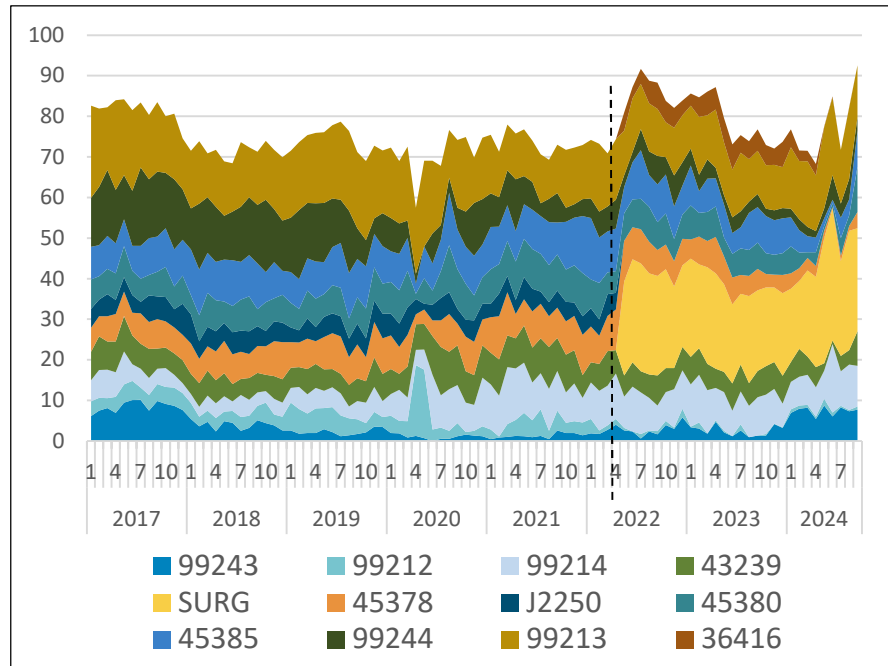
Figure 2 – Comparing CPT and RVUs per-visit at Columbus, OH



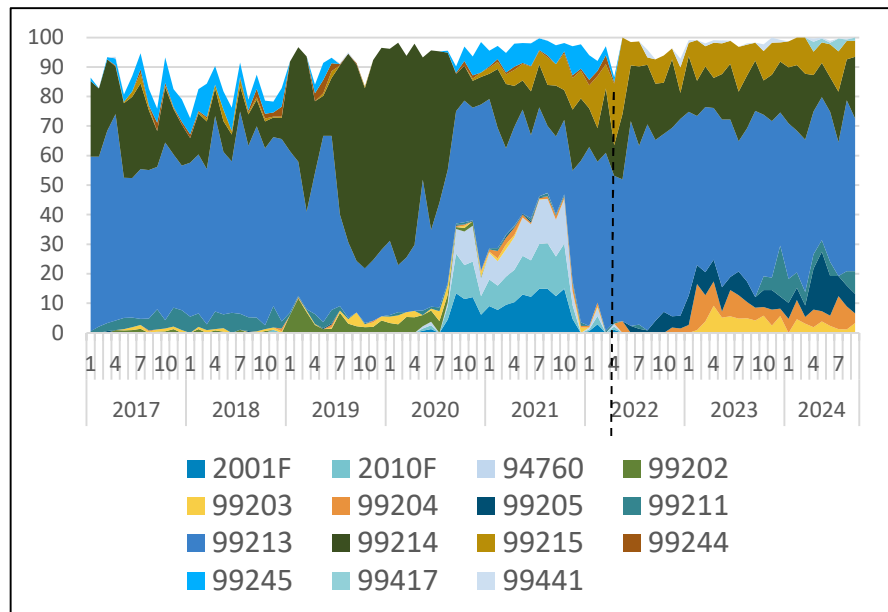
The RVU and CPT counts in the graphs above show large coding practice shifts throughout time, while also reflecting a connection between average CPTs coded and RVUs counted. Figure 3 shows significant coding shifts following EHR go-live, possibly explaining some of the variation seen in RVU count changes.

Figure 3: CPT Coding Distribution and Shifts at Columbus, OH following EHR Go-Live

Columbus Specialty
Care CPT Coding:
GI

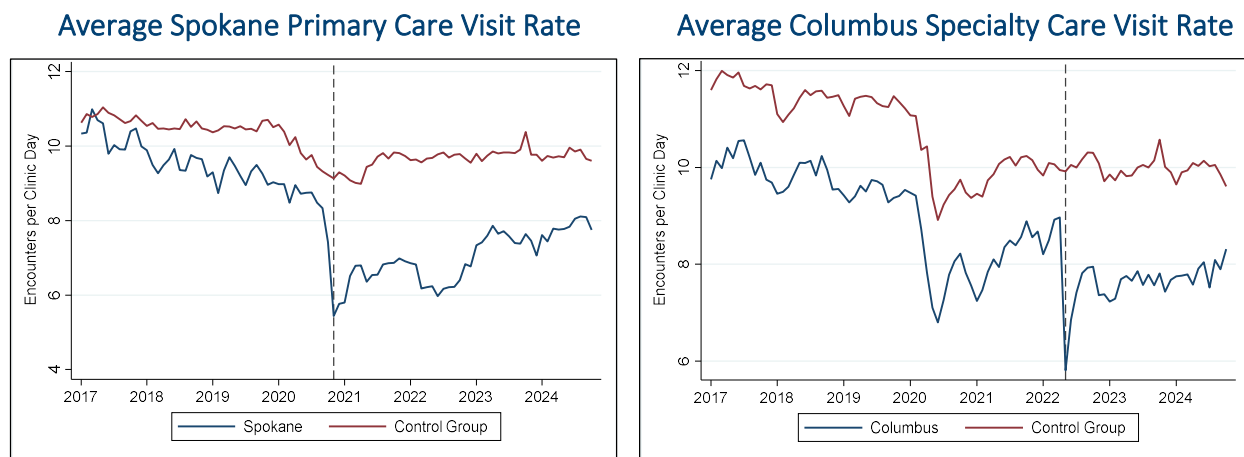


Columbus Specialty
Care CPT Coding:
Oncology



These graphs show CPTs used in GI and Oncology at Columbus, OH pre and post EHR go-live. The graphs show a major shift in the coding practices: new codes are used, some codes fall off, and some codes are used more or less frequently. The codes being used more often tend to be higher weight while likely representing approximately the same care rendered. The variation in coding may help explain why a facility has differing pictures of RVU capture and provider visit rate, as seen in Figure 4.

Figure 4: Visit Rate Comparisons: Spokane Primary Care and Columbus Specialty Care



**Note: The blue line displays data for Spokane, WA, while the red line displays data for a control group of sites.*

These graphs demonstrate that, in both case studies of EHR transition, provider visit rate remains lower than pre go-live, while also absorbing a decrease in visit rate seen across all control sites. This is different than RVU counts for the facilities, which show near recovery following the EHR transition.

Viewing all figures together, these findings show that RVUs and visit rate give a different sense of productivity recovery following the EHR transition. Changes in how care is coded, rather than changes in how much care is delivered, can drive higher RVU totals even while providers see fewer patients. Relying on RVUs alone risks overstating operational performance and access to care by giving a skewed image of facility-level productivity.

Discussion and Recommendations

Visit rate offers a complementary, and often more stable, perspective on provider productivity compared to RVU- or CPT-based measures. While it remains closely correlated with RVU capture within a medical service, visit rate is not affected by changes to RVU weights over time or by variation in facility or specialty-specific coding practices. This stability ensures that shifts in coding (e.g., providers using different codes to capture the same care following an EHR-transition) or differences in coding conventions across facilities (e.g., different codes used for the same procedure at different facilities) do not artificially inflate or depress measures of facility productivity. By grounding productivity measurement in the number of encounters per unit of clinic time, visit rate directly reflects provider outpatient capacity and patient access, making it especially useful for monitoring clinic operations and system-wide changes.

While these phenomena are clearly evident at sites experiencing the EHR transition, they also exist at the national level. In other PEPReC work, we see that enterprise-wide visit rates have declined since 2019, as community-based health care has increased. This is despite community care often having higher appointment wait times, and possibly worse quality of care.⁸ Similarly, nationwide coding weight shifts have resulted in some facilities having starkly different RVUs per encounter, even when accounting for a similar service. For example, in primary care, some facilities use code 99213 to capture

a patient visit, while others use 99214. In theory, which code is used should depend on how long a patient is seen, as 99213 is a 20-29 minute visit, and 99214 is a 30-39 minute visit. But providers may use these codes interchangeably, creating stark differences. For every 1,000 visits, appointments captured under 99213 generate 1,665 RVUs, while 99214 generates 1,808 RVUs - a 9 percent difference. These changes can have a large impact.

This evaluation has several limitations. PEPRc measures do not fully capture the complexity or intensity of services delivered by clinicians, something RVUs are designed to reflect. While validated statistically and reviewed by clinicians and managers, visit rate may also overlook between-facility differences in the patient population; it requires reliable underlying encounter data; and it does not reflect provider after-hours, non-patient facing activities (e.g. administrative work⁹). Additionally, in the private sector, RVUs are the primary metric of clinician productivity – making them a necessity to create across-market comparisons and assess reimbursement rates for community care providers. Together, these limitations underscore the need to interpret visit rate alongside other productivity measures to form a comprehensive understanding of provider performance and Veteran access.

Conclusion

CPT codes and RVUs are indispensable in certain contexts, but they often fall short when trying to understand patient access to care. Over-reliance on these metrics risks misrepresenting clinical operations, fostering conditions for inefficient resource allocation. Practitioners and policymakers should be mindful to use various measures of productivity at their clinic to optimize scarce resources and provide high-quality, timely care.

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ABOUT PEPR_eC POLICY BRIEFS

This evidence-based policy brief is written by Partnered Evidence-based Policy Resource Center (PEPR_eC) staff to inform policymakers and Veterans Health Administration (VHA) managers about the evidence regarding important developments in the broader health system and economy. PEPR_eC is a Quality Enhancement Research Initiative-funded resource center that collaborates with operational partners to design and execute randomized evaluations of VHA initiatives, develops and refines performance metrics, and writes evidence-based policy briefs. *The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.*

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