

# Physician Professional Satisfaction, Job Role and Income in the United States

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## Abstract

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This dissertation is composed of three papers covering different aspects of physicians' working lives.

The first paper is a qualitative systematic review of demographic, workplace, and health system factors related to physician professional satisfaction. Our search of the EBSCO PubMed and CINAHL databases yielded 2064 unique publications (as well as 15 from a hand search), and 71 of these met the inclusion criteria for the review. We found consistent evidence that physician professional satisfaction is positively associated with age, an academic workplace, non-participation in health management organizations, strong relationships with co-workers and practice leadership, the perception of delivering high quality patient care, and income. We also found emerging evidence that satisfaction is negatively associated with electronic health records, and positively associated with participation in patient centered medical homes and capitation programs.

The second paper is a qualitative thematic analysis of semi-structured interviews with primary care physicians about administrative work and physician job roles. I interviewed twenty-eight family physicians and internists in the Chicago, Los Angeles, and Miami areas about their perceptions of administrative work. I found three major themes: (1) administrative work was not central to primary care physicians' job role beliefs, (2) among solo practitioners, the need for autonomy was worth the responsibility of administrative work, (3a) "below license" work should be delegated to non-physicians, and (3b) team-based care reduces administrative work for primary care physicians and helps clarify job roles.

The third paper is a quantitative multivariable analysis of sex differences in physician income using a multi-region survey. Four hundred and forty-three (67% response rate; 226 men; 177 women) practicing physicians from six states (Colorado, Massachusetts, North Carolina, Texas, Washington, and Wisconsin) responded to the survey. Male physicians earned higher annual incomes than female physicians in the sample (mean \$291,188 vs. \$202,973; difference \$88,216, 95% confidence interval [CI] \$61,612 to \$114,819). In our adjusted multivariable analysis, this difference dropped by nearly 70% to \$29,007 (95% CI \$8568 to \$49,446) after excluding physicians who work more than the 95th percentile in hours, Winsorizing income at the 95th percentile, and controlling for hours worked, composition of work hours (patient care, teaching, research, and administration), physician specialty, percent of patient care time spent providing procedures, and practice random effects.



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<sup>1</sup> Hemingway, Ernest (1926). *The Sun Also Rises*. New York: Scribner. 2006 edition.





## Abbreviations

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ACO	Accountable care organization
ACS	American College of Surgeons
AMA	American Medical Association
CI	Confidence interval
CPOE	Computerized physician order entry
CPT	Current procedural terminology
CTS	Community Tracking Study/Health Tracking Physician Survey
EHR	Electronic health record
HMO	Health maintenance organization
LVN	Licensed vocational nurse
MA	Medical assistant
MEMO	Minimizing Error, Maximizing Outcome Study
NAM	National Academy of Medicine
P4P	Pay-for-performance
PCMH	Patient-centered medical home
PDA	Personal data assistant
PWBI	Physician Well-Being Index
PWS	Physician Worklife Study
UTI	Urinary tract infection
WPHS	Women Physicians' Health Study



## Chapter 1. Introduction<sup>b</sup>

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Since the passage of the Patient Protection and Affordable Care Act (ACA) in 2010, there has been increased media scrutiny over the pay and working lives of physicians. Three popular narratives are: (1) healthcare reform will negatively affect physician professional satisfaction and lead to labor shortages,<sup>1-4</sup> (2) the practice of medicine is currently so complex that physicians are overburdened by administrative work and regulation,<sup>5-7</sup> and (3) that female physicians are still paid less than males.<sup>8-10</sup>

As the healthcare system continues to change, so will the working lives of physicians. The only question is what these changes will look like,<sup>11</sup> and how physicians will be affected. Therefore, several key questions emerge: (1) if changes to the healthcare system and subsequent increased administrative work and regulation are likely, how can we ensure that they preserve physician professional satisfaction and job roles?, and (2) does the physician gender pay gap exist and, if it does, how can it be affected by policy?

Physician professional satisfaction is an important indicator in the healthcare system. Significant work over the past several decades has revealed that physician professional satisfaction is correlated with several important outcomes, including continuity of care,<sup>12-14</sup> patient satisfaction,<sup>15-17</sup> and continuing the practice of medicine.<sup>18,19</sup> Conversely, poor satisfaction is associated with burnout and leaving the workforce.<sup>18,20,21</sup> Even in a highly professional field like medicine, satisfaction is still a crucial part of long, productive careers.

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<sup>b</sup> This chapter adapted from 2015 and 2016 Pardee RAND Graduate School Dissertation Award applications.

Many factors in the workplace and health system affect professional satisfaction, and one such factor is administrative work (e.g. electronic health records, insurance claims, patient scheduling, etc.). Increased quantity of and time spent performing administrative work is linked to lower professional satisfaction.<sup>22,23 24</sup> Physicians now spend large amounts of their work week on administrative work outside of patient face-to-face encounters.<sup>25-27 28</sup> Beliefs about job role have been qualitatively linked to electronic health record use,<sup>29,30</sup> but the link between administrative work and job role are understudied. Job role beliefs may play an intermediary role between administrative work and professional dissatisfaction.

The overall gender pay gap<sup>31</sup> and the physician gender pay gap are well documented.<sup>32-</sup>  
<sup>36</sup> The gender pay gap may represent systematic discrimination on the part of employers against women. Beyond that, it reduces women's ability to save and pay down debt, and could hold down economic growth through lower consumer spending.<sup>37-38</sup> According to a 2015 Medscape Survey, more female physicians carry more educational debt than male physicians, so the gender pay gap could exacerbate the bad financial situation of many women in medicine.<sup>39</sup> Although physicians earn very high incomes relative to the average household, a gender pay gap could very much adversely affect female physicians' ability to save and the economy overall.

This dissertation explores the above three topics in three major research chapters. Chapter 2 is a systematic review of workplace and health system factors affecting physician professional satisfaction. This chapter updates the last major systematic review on physician satisfaction, with a special emphasis on factors related to new health system changes. This chapter also presents a review and analysis of the major surveys of physician satisfaction in the

literature. Chapter 3 is a qualitative analysis of semi-structured interviews about administrative work and job role with 28 primary care physicians in the Chicago, Los Angeles, and Miami areas. This chapter presents major themes from the interviews concerning respondent beliefs about job role and administrative work, and about the relationships between solutions to decreasing administrative work and job role. Chapter 4 is a quantitative analysis of the factors affecting the physician gender income gap using a multistate survey. These factors, including specialty, hours worked in performing different tasks, and percent of patient care time spent performing procedures are modeled in a multilevel regression to account for the income gap. The adjusted income gap is then compared to other major physician income gap analyses in the literature. Chapter 5 summarizes the results from these research chapters and presents policy implications and future directions for research.

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## Chapter 2. A systematic review of physician professional satisfaction in the United States

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### **Abstract**

**Introduction:** Many stakeholders have voiced concerns about professional satisfaction and burnout among physicians, especially when associated with changes in patient care. With health system reforms, the factors affecting physician professional satisfaction might change. Therefore, we sought to: review methods previously used to measure physician professional satisfaction; review factors associated with physician professional satisfaction, with a focus on recent health system innovations such as electronic health records and new models of health care delivery and payment; and review the associations between physician professional satisfaction and quality of care.

**Methods:** We systematically searched the EBSCO PubMed and CINAHL databases from January 1, 1985 through July 31, 2017 for publications concerning physician professional satisfaction-related outcomes. We retained quantitative studies in the United States during abstract and full text reviews, supplemented by publications from a separate hand search. We then analyzed these 71 publications for associations between determinants and physician/patient outcomes. From these publications, we summarized seven major surveys, three major constructs of satisfaction, and seventeen categories of related determinants and quality of care outcomes.

**Results:** We found that implementation of healthcare innovations that involve physician input and involvement are essential to improving satisfaction. Consistent with previous systematic reviews, physician professional satisfaction was associated with older age, working in an academic environment, non-participation in HMOs, strong relationships with co-workers and practice leadership, the perception of delivering high quality patient care, and income. There is emerging evidence that satisfaction is negatively associated with the use of electronic health records and positively associated

with participation in patient centered medical homes and capitation programs. There is inconsistent evidence that satisfaction is associated with participation in pay-for-performance programs. Finally, there was consistent evidence that physician professional satisfaction was associated with greater patient experience, higher continuity of care, and lower physician attrition from the workforce.

Conclusions: Physician professional satisfaction is linked to important health system outcomes like patient experience, continuity of care and physician retention. Policies like patient-centered medical homes and capitation programs, as well as improved electronic health records and pay-for-performance programs could help create more satisfied physicians. These health reforms could independently increase both physician and patient experience and patient continuity of care, and decrease physician attrition to ensure a happier, healthier patient population and a more sustainable physician workforce.

## Introduction

The importance of professional satisfaction among physicians in the United States is by now well established. In the past few decades, numerous studies have shown that physicians who are satisfied in their work lives are more likely to continue practicing medicine,<sup>1,2</sup> provide good continuity of care to their patients,<sup>3-5</sup> and have patients who are satisfied with the care they receive.<sup>6,7</sup> These studies have also documented the negative effects of dissatisfaction among physicians, such as professional burnout, and attrition from the workforce.<sup>1,8-11</sup>

As the health care landscape changes, the role of physicians, and the factors that affect their professional satisfaction, may also change. The last major systematic review of physician professional satisfaction in the United States (2009)<sup>12</sup> preceded recent health reforms. A more recent review is available from the National Academy of Medicine, but it focuses primarily on physician burnout rather than professional satisfaction.<sup>13</sup> In particular, this review focuses on the increasing importance of electronic health records and non-traditional models of care delivery and payment, such as patient-centered medical homes (PCMHs) and pay-for-performance (P4P) programs.

In previous reviews, differences between the survey instruments used to study physician professional satisfaction over the years have not been described in detail. The degree to which these instruments have influenced the results and comparability of studies is unknown.

Our research questions are threefold:

1. What demographic, workplace, and health system factors are associated with physician professional satisfaction?
2. In turn, professional satisfaction is associated with which physician and patient outcomes?
3. How have major surveys of professional satisfaction changed over time in terms of content, size, and detail?

## **Methods**

### *Literature search*

We conducted our searches in EBSCO's MEDLINE and CINAHL databases from January 1, 1985 through July 31, 2017. Four main search terms were used: the phrases "physician job satisfaction," and "physician burnout," as well as the combined search terms "'physician' AND 'job satisfaction'" and "'physician' AND 'job stress'". Our search initially yielded 2064 unique publications. We identified 17 additional publications through a hand search of reviews and known studies.

### *Publication review*

One author reviewed titles and abstracts to identify publications acceptable for review at the full-text level. We conducted screening and abstraction by hand and with the software program DistillerSR (Evidence Partners; Ottawa, Ontario, Canada). Because our search was for publications that examined the quantitative association between

physician professional satisfaction and other factors, we excluded commentaries, opinion pieces, editorials, and letters to the editor. Qualitative, descriptive, and behavioral intervention (e.g. teaching physicians to meditate) studies were outside the scope of our review. Next, because the focus of this review is the relative professional satisfaction of physicians in the United States, we excluded publications that examined physicians in other countries. We also excluded any publications that focused on physicians-in-training or allied health professionals. Finally, we reviewed the references of all included publications to identify any publications that met our inclusion criteria but had not already been identified in our searches.

Of the initial 2064 publications, 14 were duplicates detected by a hand search, and 1887 were screened out in the title/abstract review because they did not meet our inclusion/exclusion criteria (See Figure 2.1 for the publication flow diagram; this total includes the 17 publications identified in the hand search). This left 180 publications flagged for full-text review. Of these, 109 were excluded because they were commentaries or other non-research publications, existing reviews of research publications, or did not explicitly examine the relationship between demographic, workplace or health system factors and physician professional satisfaction, burnout, or intent to leave practice or profession. We included the remaining 71 publications in our review.

### *Data abstraction*

Two authors abstracted information from the publications included in the study using a standardized template in order to ensure consistent and systematic capture of data. We were specifically focused on study findings examining the relationships between demographic and workplace factors, or “determinants” of satisfaction, on physicians. For example: what is the relationship between physician professional satisfaction and electronic health records? We also examined the dynamic association between satisfaction and patient outcomes: for example, is a higher level of physician professional satisfaction associated with greater continuity of care or better patient experience?

Table 2.1 describes the relationships between these three factors in more detail. Determinants are demographic, workplace, and health system change factors that might directly affect physician outcomes (professional satisfaction, burnout, attrition), and that also might affect patient outcomes (patient experience, continuity of care).

### *Summary of major surveys*

In addition to our systematic review of the literature, we have also examined similarities, differences and potential generalizability of major survey instruments of physician satisfaction, and tracked the evolution of measures and determinants of satisfaction throughout these surveys. We begin our discussion of findings with a review of the major survey instruments used to measure physician professional satisfaction,

and how these instruments have evolved since the first major survey was conducted in 1985.

### **Overview of physician professional satisfaction survey instruments**

In Table 2.2, we provide a brief overview of the seven major physician professional satisfaction surveys that have been conducted since 1984 and led to research publications, and the satisfaction, stress, and determinant constructs they contain, excluding demographic characteristics, which are captured in most surveys. (See Figure 2.2 for a detailed timeline.) These surveys are counted in the 67 studies included in this review. We included survey instruments that were either first in their examination of aspects of physician professional satisfaction that had not been previously studied, or surveys from which data have been analyzed repeatedly in the peer-reviewed literature. Here we detail general survey constructs instead of specific survey items or response frames as the actual items and frames changed nearly every time from survey to survey.

Fielded in 1984, the first major survey of physician professional satisfaction examined clinical and teaching faculty affiliated with a single academic medical center.<sup>5</sup> This first survey instrument framed satisfaction as opportunities for promotion and the degree of status/prestige associated with one's work. Burnout and stress were also assessed with separate items on stress in one's personal life and work-related stress. As shown in Figure 2.2, the major determinants of satisfaction examined in this instrument were meeting patient needs, administrative roles, relationships with other physicians and staff, intellectual and educational opportunities, manpower, income, patient diversity, personal gratification from patient care, and patient volume.

The next major survey instrument, the Women Physicians' Health Study (WPHS), was a nationally representative, one-time survey administered in 1993-94. The WPHS surveyed over 2500 female physicians, randomly drawn from the American Medical Association (AMA) Physician Masterfile, who graduated from medical school between 1950 and 1989. Here, satisfaction was explicitly measured by three questions: "are you generally satisfied with your career?" "if you relived your life, would you still want to become a physician?" and "would you change your specialty?"<sup>9</sup> This survey collected data on stress (conceptually unchanged from the 1984 survey), physician mental health, control of work life, and workplace hostility.

The Physician Worklife Survey (PWS), administered between 1996 and 1997, was a national study of roughly 2300 physicians in primary care and subspecialties of internal medicine drawn from the AMA Physician Masterfile.<sup>14</sup> Satisfaction and constructs were unchanged from the WPHS survey, but the PWS measured personal time, rather than stress in personal life. The PWS collected data for most of the major determinants of satisfaction, including: meeting patient needs, work control, administrative roles, relationships with colleagues, staff, patients, and the community, adequate space, supplies, and staffing, income, and patient needs and demands.

The Community Tracking Study/Health Tracking Physician Survey (CTS) was a multi-year survey studying both communities and physicians run by the Center for Studying Health System Change. The CTS used a nationally representative sample of physicians from sixty communities and ran for four rounds: 1996/1997, 1998/1999, 2000/2001, and 2004/2005.<sup>15-17</sup> The survey shifted from a community-based to a nationally-based



sampling strategy and three more rounds: 2007, 2008, and 2010, although only 2008 continued the physician survey.<sup>18-20</sup> The CTS examined multiple facets of physician experiences and practice, and used only a single general question about overall career satisfaction. The survey did not assess burnout or stress. Determinants in the CTS were similarly somewhat limited, including only: meeting patient needs, timely reports from other physicians and facilities, available patient services, patient finances, communication, and compliance, and time with patients.

The Minimizing Error, Maximizing Outcome Study (MEMO), a regional survey, was administered to 420 physicians in the Upper Midwest and New York in 2001. MEMO was partially derived from the PWS, and thus retains some of the constructs used in the earlier survey.<sup>21</sup> In terms of satisfaction and burnout, MEMO used questions on general career satisfaction, work-related stress, and physician mental health, but added questions on the likelihood of leaving practice, work-life balance, and burnout. In terms of determinants, MEMO included control of work life, use of information systems and communication with colleagues, patient needs and demands, and time with patients. MEMO also collected data on pace of office environment, and on organizational culture, trust and belonging.

The national Physician Well-Being Index (PWBI) was administered in 2011 and 2014 to 7200 and 6880 physicians, respectively, drawn from the AMA Physician Masterfile.<sup>22,23</sup> The PWBI asked respondents if they would become physicians again, if they intended to leave their practice or reduce their hours, if they had good mental and physical quality of life, and if they had ever experienced suicidal ideation. Since this

survey was focused on assessing well-being in and of itself, few determinants were captured, though there were questions on achieving meaning in work, and self-reported medical errors.

The most recent survey instrument, the 2013 RAND Corporation/American Medical Association Physician Experience Survey (RAND-AMA), was administered to 656 physicians across six states.<sup>4</sup> The sample was composed of five practices per state, and balanced in terms of practice size, specialty, and ownership model. The RAND-AMA survey asked physicians about their overall professional satisfaction, whether they would become physicians again, whether they would choose their specialty again, any symptoms of burnout they experienced, their intent to leave their practice within two years, and their intent to leave the profession within two years. The survey asked respondents questions about a wide variety of determinants, including: practice environment (work control, chaos, pressure to attract and retain patients, time pressure, values alignment with leadership, receipt of quality and patient data, adaptive reserve, and perceptions of performance feedback from their practice), autonomy, perceptions of being respected as a professional, quantity and content of clinical work, quantity and adequacy of staff and equipment support, coordination with other providers, electronic health records, compensation and benefits, professional liability, and patient mix.

Finally, it is important to note that item question stems, item response frames, and number of items for a given construct varied by survey instrument. For example, the PWS measured global satisfaction over 5 items with a Likert-type response frame,

whereas the CTS only used one item with a similar response frame. Nonetheless, most of these survey instruments used a Likert-type scale, composed of multiple levels, to measure professional satisfaction. The CTS allowed respondents to report that they were very dissatisfied, somewhat dissatisfied, neither satisfied nor dissatisfied, somewhat satisfied, or very satisfied.<sup>15</sup> However, methods of coding of satisfaction scales as dependent variables varied by study. Three separate analyses of the CTS illustrate this point: one analysis coded their dependent variable for satisfaction as 1 for respondents who reported being “very satisfied” or “somewhat satisfied” and as 0 for all other responses,<sup>24</sup> another analysis coded only “very satisfied” as 1,<sup>17</sup> and a third coded their dependent variable as 1 for “very satisfied,” 0 for “somewhat satisfied” or “neither” and -1 for “somewhat dissatisfied” or “very dissatisfied.”<sup>15</sup> We note that this heterogeneity in the coding of satisfaction, even among analyses of the same survey, may result in conflicting findings.

## **Results**

Workplaces are key to the lives of physicians, and their characteristics can have a significant effect on professional satisfaction. Physicians are most satisfied in workplaces that give them the autonomy to engage in patient care at a high income without the burden of administrative and organizational issues. Demographics also play an important role in shaping physicians’ professional satisfaction. Satisfaction is also higher among physicians who are older, graduated from a US medical school, and who are work in certain specialties. Finally, satisfied physicians care for satisfied patients.

Patients who are treated by satisfied physicians generally have higher patient satisfaction and greater continuity of care.

We examined three broad categories of determinants, or factors associated with physician professional satisfaction: physician demographics, workplace factors, and changes in the health care system. Our review confirms prior findings about the positive association between physician professional satisfaction and certain demographic factors such as age, specialty, and where a physician attended medical school. Our review also supports the important role that workplace factors play in determining physician professional satisfaction: the size of a practice, autonomy and control at work, the number of hours spent with patients, income, the perception of delivering high quality patient care, relationships with colleagues and leadership, and HMO participation all correlate significantly with overall physician professional satisfaction. Findings on the negative association between physician professional satisfaction and the use of electronic health records (EHRs) were consistent. The relationship between physician professional satisfaction and new models of health care delivery and payment remain unclear, though the limited research in this area is at least promising. Research on the downstream effects of physician professional satisfaction, while also limited, suggests a generally positive association between physician professional satisfaction and patient experience.

### *Physician demographics: summary*

Physician demographics are easily measurable and correlated with professional satisfaction, but not easily changed. Physicians who are most satisfied are older, have graduated from a US medical school, and work in certain specialties.

Physician professional satisfaction varies significantly across demographic factors, including age, domestic versus foreign medical school, race and ethnicity, and specialty. For the most part, physicians are more satisfied and less likely to be burned out as they age. Physicians who graduate from foreign medical schools generally report lower satisfaction than those who graduate from U.S. schools, but this issue has not been studied extensively. The associations between a physician's race and ethnicity and satisfaction was mixed, with no consistent trend across studies. Although pediatricians consistently report the highest satisfaction among all specialties, in general, it was difficult to rank satisfaction by specialty due to the specialty comparisons and methods of comparison across studies.

### Physician age

Several national studies found a monotonic relationship between age and satisfaction, with older physicians reporting greater satisfaction than their younger counterparts. One analysis was limited to general internists surveyed in the Physician Worklife Survey (PWS), and another was based on the nationally representative Women Physicians' Health Survey (WPHS).<sup>9,14</sup> These findings were confirmed in 2008 by an American College of Surgeons (ACS) national survey and in 2013 by a national survey of roughly 27,000 physicians drawn from the AMA Physician Masterfile.<sup>8,25</sup>

However, analyses of data from the nationally representative Community Tracking Study/Health Tracking Physician Study (CTS) differed from the above results. In one study using CTS data, authors found a negative association between physician age and satisfaction, with older physicians reporting lower professional satisfaction.<sup>26</sup> Several other analyses using the CTS show a U-shaped relationship between age and satisfaction: physicians younger than 35 and physicians older than 65 reported the highest levels of overall satisfaction, while middle-aged physicians reported the lowest levels of satisfaction.<sup>15,27</sup> We note that the CTS coded age categorically rather than continuously, and this increased model flexibility may have led to U-shaped or negative associations between age and satisfaction, rather than the positive relationship found in studies using a continuous age variable.

According to two national studies using the AMA Physician Masterfile and national surveys of physicians in general, of oncologists, and of surgeons, older physicians were less likely than younger physicians to be burned out.<sup>8,23,25,28,29</sup>

#### Domestic versus foreign medical school

In all analyses of the nationally representative CTS, physicians who graduated from foreign medical schools reported lower career satisfaction than those who graduated from medical schools in the U.S.<sup>2,17,27,30-32</sup> However, in general, country of medical school attendance is not examined in studies of physician professional satisfaction. The WPHS collected data on physician birthplace (born domestically or outside the U.S.), and analysis shows that physicians born outside the U.S. report slightly

higher professional satisfaction than those born domestically.<sup>9</sup> However, place of birth is a blunt instrument for assessing country of medical school matriculation.

#### Physician race and ethnicity

Findings on the relationship between race and satisfaction were mixed, with no consistent findings across studies. In the WPHS, nonwhite female physicians were more satisfied compared with white female physicians. Satisfaction among these women was highest for Hispanic physicians, followed by black, other race, and Asian physicians.<sup>9</sup> However, in two separate regional studies conducted in Massachusetts and the Seattle-area, white physicians were more likely to report professional satisfaction than nonwhite physicians.<sup>33,34</sup> Finally, in a relatively small national study of primary care physicians, authors reported no difference in satisfaction by race.<sup>1,35</sup>

#### Physician specialty

It is difficult to compare findings on the relationship between physician specialty and physician professional satisfaction across the studies we found as they do not compare the same specialties. One study examines thirty-three specialties, but the others only assess a group of seven specialties, psychiatrists, and primary care physicians.<sup>17,27,31,34,36,37</sup> In several nationally representative studies using the CTS, pediatricians reported higher satisfaction than either family medicine physicians or general internists and psychiatrists report higher satisfaction than all other specialties.<sup>17,27,31,37</sup> The most comprehensive study in this area is an analysis of the CTS that includes data on a wide range of thirty-three specialties. Using family medicine physicians as the referent group, this study indicated that dermatologists, geriatricians,

neonatologists, and pediatricians were more likely to be satisfied, while internists, obstetrician/gynecologists, ophthalmologists, orthopedic surgeons, and otolaryngologists were less likely to be satisfied.<sup>27</sup> The finding that internists were less satisfied than family practitioners and pediatricians was confirmed by a regional study in Massachusetts,<sup>34</sup> and the finding that internists were less satisfied than family practitioners was confirmed by a regional study in the Seattle area.<sup>36</sup>

An analysis of the 2014 wave of the PWBI reported that emergency physicians, neurologists, orthopedists, physical medicine and rehabilitation physicians, radiologists and urologists were more burned out than general internal medicine subspecialists.<sup>23</sup> However, general internal medicine subspecialists reported less burnout than all other sixteen specialties combined. Burnout was higher among frontline care physicians in another nationally representative study,<sup>38</sup> among pediatric subspecialists (vs. pediatricians) in another national study,<sup>28</sup> and among primary care physicians (vs. specialists) in a study of alumni from a single medical school.<sup>39</sup> Finally, a national study of hospitalists indicated that they were more likely to leave their current practice within two years compared to outpatient general internists.<sup>40</sup>

Finally, authors of a nationally representative study analyzed CTS data by categorizing specialties as "controllable" (dermatology, emergency medicine, neurology, ophthalmology, otolaryngology, and child, adolescent, and adult psychiatry) or "uncontrollable" (family practice, general practice, internal medicine, internal medicine and pediatrics-combined, obstetrics and gynecology, orthopedic surgery, pediatrics, general surgery, and urology). This study found that physicians working in



“uncontrollable” specialties reported lower career satisfaction.<sup>15</sup> This classification of specialties was based on a previous definition of a "controllable" specialty, or lifestyle, in which a physician has control over work hours.<sup>41</sup>

#### *Workplace factors: summary*

Workplaces have a significant influence over the professional lives of physicians. Satisfaction among physicians is higher in workplaces that value their autonomy, are larger in size, pay high incomes, allow more hours of patient care, are part of a HMO, foster strong relationships between colleagues and practice leadership, give physicians the perception that they deliver high quality patient care and do not use EHR.

Physician professional satisfaction also varies significantly across workplace factors. For the most part, physicians working in larger academic settings were more likely to report satisfaction, and less likely to report being burned out or intending to leave their practices. Geography and patient populations generally had no significant correlation with satisfaction, with the exception of very rural areas and very specific patient populations. In the work environment, less time constraint pressures, fewer work hours, and greater control over work were related to more satisfaction and less burnout and intent to leave. The relationship between administrative duties and satisfaction was mixed. Strong relationships with co-workers and practice leadership were important for physician professional satisfaction, as was the perception of delivering high quality patient care. Attitudes toward electronic health records (EHRs) were consistently negative, and most studies indicated that at EHRs were associated

with lower satisfaction and higher burnout and intent to leave. Lastly, satisfaction generally increased with income, except at very high levels. Perceptions of receiving a “fair” income were significantly associated with higher reported satisfaction.

### Practice structure

Data from three nationally representative studies using the CTS report an inverse correlation between practice size and career satisfaction. Physicians in small practices of one to two practitioners generally report lower career satisfaction and a higher likelihood of leaving their practice within two years, compared with physicians in larger groups.<sup>2,17,31</sup> These findings were echoed in studies utilizing data from several states, as well as in data from a single county in Arizona.<sup>42,43</sup> However, a national study of plastic surgeons reported that solo practitioners were less burned out than those in groups.<sup>44</sup> Finally, a small study of physicians in the family medicine department at a large Midwestern university reported that running a “micropractice” (an independent practice with low overhead allowing for extended patient visits) had no relation to satisfaction.<sup>45</sup>

A nationally representative study using CTS data from 1998 also reported that physicians who were sole proprietors (full-owners) were less likely than part- or non-owner physicians to report being very satisfied.<sup>27</sup> However using more recent CTS data, from 2004-2005, authors report no statistically significant difference in satisfaction between full- or partial-owners and non-owners.<sup>15,30</sup>

Primary care physicians and specialists working in an academic environment were more likely to report career satisfaction in three separate nationally representative analyses of data from the CTS.<sup>15,17,32</sup> CTS data also indicate that physicians in medical school-based practices are less likely than those in other practice environments to report intent to leave their current practice within two years.<sup>2</sup>

Similar findings on the association between academic practices and satisfaction, as well as a lower likelihood of burnout, were reported in an analysis of the PWBI, a nationally representative study of emergency physicians and several national studies of surgeons in multiple subspecialties, oncologists, and plastic surgeons.<sup>23,25,29,44,46</sup>

### Geographic location

Physicians practicing in rural locations were generally as satisfied as physicians in non-rural locations, as reported in two nationally representative analyses of data from the WPHS and the CTS, and one regional study of physicians in Massachusetts.<sup>9,27,33</sup> However, in very rural areas, satisfaction appears to be affected by location. A national study of physicians practicing in rural areas (counties with populations of less than 1,000 individuals) reported that physicians farther away from a major referral center were more likely to be dissatisfied.<sup>47</sup>

### Patient population

Two nationally representative analyses of data from the PWS and from a regional survey of primary care physicians in the Seattle area indicated no statistically significant relationship between patient characteristics and physician professional satisfaction.<sup>14,34,48</sup> However, nationally representative data from the CTS indicated that

physicians practicing in communities with larger populations of uninsured patients were less likely to report being satisfied.<sup>32</sup> Another regional study of physicians participating in a Rochester area pay-for-performance program reported that a median patient age lower than 41 is associated with less satisfaction.<sup>49</sup> Regional data from the Minimizing Error, Maximizing Outcomes (MEMO) study indicated that physicians with more difficult encounters with patients were more likely to be burned out and dissatisfied.<sup>50</sup> Finally, oncologists in a national study were more likely to report being burned out if they focused on a single type of cancer instead of on multiple types of cancer.<sup>29</sup>

### Working environment

Findings from one study using CTS data indicate that physicians who perceive that they have adequate time with patients are more likely to report higher satisfaction.<sup>26</sup> Another study using CTS data, the MEMO study, the RAND-AMA study, an analysis of the PWBI, and a study of faculty at one academic medical center have found that physicians with the fewest work hours or lowest time pressure report the highest satisfaction, lowest burnout, and lowest intent to leave practice.<sup>4,5,23,24,50,51</sup>

These findings were confirmed in an analysis of the American College of Surgeons (ACS) survey, which reported that among surgeons a greater number of nights per week on call and hours worked per week were associated with higher burnout (for both nights on call and hours worked) and lower satisfaction (for nights on call only).<sup>25</sup> The association between greater work hours and burnout was confirmed in an analysis of the nationally administered PWBI and in national studies of oncologists and plastic surgeons.<sup>29,44,52</sup>

At the same time one analysis of CTS data found that physicians who work more hours in direct patient care were more likely to report satisfaction.<sup>26</sup> Similarly, surgeons who spend a greater number of hours per week in the operating room report higher career satisfaction.<sup>25</sup>

The relationship between increased administrative duties and career satisfaction is more nuanced. In one nationally representative analysis of the CTS, there was no significant relationship between increased managed care administrative duties and satisfaction, but in another, a greater proportion of time spent on administrative duties was associated with lower satisfaction.<sup>37,53</sup> However, a negative relationship between administrative duties and physician professional satisfaction was found in two regional studies of physicians in Massachusetts and in a study of academic and clinical faculty at one academic medical center.<sup>5,36,54</sup> One of the studies of physicians in Massachusetts also linked administrative duties to higher rates of burnout.<sup>54</sup>

Data from the CTS indicates that physicians who reported less control over the terms and content of their work, and those who felt unable to provide necessary services to patients, were more likely to report being dissatisfied.<sup>55</sup> In a small, national study of primary care physicians those who had greater control over their work schedule were less likely to report that they intended to leave their practice within two years.<sup>1</sup> Similar findings between lack of control and lower satisfaction have also been reported in both a nationally representative and a national study of emergency physicians,<sup>46</sup> and in regional studies of family practitioners and internists in New York and the Upper Midwest,<sup>51</sup> of physicians in the RAND-AMA study,<sup>4</sup> of physicians in Arizona,<sup>43</sup> and of

physicians in a Rochester area pay-for-performance program.<sup>49</sup> Physicians who reported having the ability to make referrals to specialists were more likely to report being satisfied.<sup>2,55</sup>

### Relationships with co-workers and practice leadership

The perception that practice management and administration value the work performed by physicians can have a positive effect on physician professional satisfaction, as well as on burnout and intent to leave. These findings were reported in physicians in the RAND-AMA study,<sup>4</sup> in a regional study of family practitioners and internists in New York and the Upper Midwest,<sup>51</sup> in several regional studies of physicians in Texas,<sup>56,57</sup> of family physicians in a single Midwestern state,<sup>58</sup> of surgical faculty from 14 medical schools,<sup>59</sup> and in a study of academic and clinical faculty at a single academic medical center.<sup>5</sup>

In addition, good working relationships between physicians and their colleagues and staff also have important positive effects on satisfaction. These results were found using data from the CTS,<sup>17</sup> a nationally representative study of emergency department physicians,<sup>46</sup> several national analyses of data from the PWS,<sup>42,60</sup> a regional study of family practitioners and internists in New York and the Upper Midwest,<sup>51</sup> the RAND-AMA study,<sup>4</sup> a national study of pediatricians,<sup>61</sup> a regional study of family physicians in a single Midwestern state,<sup>58</sup> and an analysis of academic and clinical faculty at a single academic medical center.<sup>5</sup>

Conversely, in a regional study, physicians who reported having difficulty getting along with others in a work setting were more likely to report dissatisfaction than those who had less difficulty.<sup>57</sup>

Finally, physicians who perceived sufficient opportunities for career advancement and promotion were more likely to report satisfaction, as evidenced by findings from a regional study of physicians in Texas<sup>57</sup> and from a study of academic and clinical faculty at a single academic medical center.<sup>5</sup>

#### Perceived quality of patient care

Findings from the PWS, from the RAND-AMA study, and from a study of academic and clinical faculty at one academic medical center indicate that the perceived ability to deliver high-quality care to patients was associated with physician professional satisfaction.<sup>4,5,42</sup>

#### Electronic Health Records

Electronic health records (EHRs) are increasingly important in the professional lives of physicians, especially in the wake of the “meaningful use” regulations put in place by the American Recovery and Reinvestment Act of 2009. EHR is generally linked to lower physician satisfaction, especially if the EHR contains a greater number of features. In a 2014 regional analysis of participants in the MEMO study, physicians who worked in clinics using some or many EHR features reported lower satisfaction than those working in clinics with few features. Physicians in clinics with many EHR features had perceptions of time pressure (time allocated for routine clinical care vs. time available) and lack of practice cohesiveness associated with dissatisfaction, burnout, and

intent to leave their practice within two years.<sup>62</sup> Likewise, physicians in the 2014 wave of the PWBI using EHR or computerized physician order entry (CPOE) were more likely to report being burned out.<sup>63</sup> In the RAND-AMA study, physicians satisfied with EHRs reported higher professional satisfaction.<sup>4</sup> Similarly, in a recent study of physicians in a neonatal intensive care unit, satisfaction also increased after the implementation of CPOE.<sup>64</sup> However, in the RAND study, physicians who reported that EHRs impeded face-to-face patient-doctor communication, produced too many electronic messages, were inferior to paper records, or slowed down their clinical care had lower satisfaction. Those using EHRs with more features were also less likely to be satisfied. Likewise, a regional study of a 2009-2013 survey of physicians in Rhode Island reported that EHRs had not improved professional satisfaction. This finding was present among an absolute majority of survey respondents and among respondents using a majority of EHR software brands.<sup>65</sup>

In a regional survey of Massachusetts physicians conducted in 2007, 30 percent of physicians said that EHRs created new opportunities for error, and this perception was associated with a lower likelihood of reporting overall satisfaction with current practice.<sup>66</sup> In another regional survey of Massachusetts physicians conducted in 2005, authors found that physicians whose practices used EHRs were more likely to report dissatisfaction.<sup>33</sup> However, study authors found mixed attitudes toward EHRs in a 2005 regional analysis of physicians in Florida. Physicians who reported using EHRs and those who reported using a personal data assistant (PDA), such as a Palm Pilot, were more likely to report satisfaction with both the level of computerization in their practice and



with their current practice of medicine. But physicians who used email to communicate with their patients were less likely to report being satisfied with computerization in practice.<sup>67</sup>

### Physician Income

Higher income has been associated with greater professional satisfaction in many studies, including the three nationally representative studies using the WPHS,<sup>9</sup> the CTS,<sup>15,30</sup> the RAND-AMA study,<sup>4</sup> another nationally representative study,<sup>68</sup> a national sample of emergency physicians,<sup>46</sup> and a regional study of physicians in Texas.<sup>57</sup> However, several other nationally representative studies utilizing data from the CTS indicated a slight drop in satisfaction among physicians with the highest incomes, possibly indicating greater stress associated with the work required to earn very high levels of income.<sup>17,27,31</sup>

Two studies utilizing data from the PWS found no relationship between income and physician professional satisfaction.<sup>14,60</sup> However, both these analyses were limited to general internists, and incomes may have been relatively consistent within a single specialty.

Physicians' perceptions of earning "fair" incomes were also some of the strongest indicators of overall satisfaction, as indicated by a national study of physicians practicing in rural areas of the country (counties with populations of less than 1,000 individuals),<sup>47</sup> the RAND-AMA study,<sup>4</sup> a regional study of physicians in Arizona,<sup>43</sup> and a study of academic and clinical faculty at a single academic medical center.<sup>69</sup>

### *Health system changes: summary*

Physicians are more satisfied when working in health maintenance organizations (HMOs) than in other healthcare delivery models. Little research is available on the relationship between professional satisfaction and other delivery or payment models, but this evidence base is likely to grow as the health system changes.

New models of health care delivery and payment such as patient-centered medical homes (PCMHs) and affordable care organizations (ACOs) are important contextual factors to consider with regard to physician professional satisfaction—especially since these factors, like EHRs, are amenable to change. Although PCMHs and ACOs in their present form are too recent to have been studied extensively, especially in terms of secondary outcomes such as physician professional satisfaction, some research on PCMHs does exist. Moreover, in lieu of a large body of research on PCMHs and any research on ACOs, we can look to research on previous health system changes such as managed care and HMOs, both of which were studied extensively in the 1980s and 1990s, and both of which bear important similarities to the recent changes in our health care system. This prior research can help inform our understanding of how the transition to new models of care delivery and payment may affect physician professional satisfaction.

### Delivery models

Managed care has had mostly negative effects on physician professional satisfaction. Physicians in markets with larger proportions of managed care reported lower professional satisfaction in a study using CTS data,<sup>15</sup> a study of the PWS,<sup>42</sup> in two

national surveys of physicians drawn from the AMA Physician Masterfile (one of physicians younger than 45 years old),<sup>1,70</sup> and in two regional studies of primary care physicians in Massachusetts<sup>36</sup> and Arizona.<sup>43</sup>

This finding was especially marked among primary care physicians. A study utilizing earlier data from the CTS found that primary care physicians with exposure to managed care reported a significant decline in satisfaction, while the effect among specialists was not significant.<sup>55</sup>

Two small studies, found a positive relationship between implementing a PCMH model, better staff morale, and lower physician burnout.<sup>71,72</sup> It is important to note the limitations of these two studies: one was national yet cross-sectional<sup>71</sup> and the other was of a single practice site.<sup>72</sup> A third study did not find any changes in physician professional satisfaction after 30 months among practices participating in PCMH pilots in Rhode Island and Colorado.<sup>73</sup>

#### Legal and regulatory factors

With regard to the association between physician professional satisfaction and the legal and regulatory environment, research was fairly limited. One national study utilizing data from the ACS survey indicated that surgeons experiencing a malpractice suit in the prior 24 months were more likely to be dissatisfied, burned out, and to have experienced suicidal ideation.<sup>74</sup> Another study utilizing data from the PWS reported that the "hassle factor" (economic and regulatory forces external to one's practice, e.g. insurance authorizations and gatekeeping requirements) was negatively correlated with satisfaction.<sup>60</sup>

## Payment models

Only one study has examined physician professional satisfaction with capitation in a non-HMO environment. Physicians working at an urban teaching hospital experienced an increase in satisfaction as fully capitated contracts expanded from covering less than 5 percent of patients to nearly 25 percent between 1996 and 1997.<sup>75</sup>

In a regional study of a pay-for-performance (P4P) model, most physicians were satisfied.<sup>49</sup> Those who felt that quality targets were generally achievable or useful were more likely to be satisfied, whereas those who felt that clinical practice guidelines were a hindrance to patient care, or that they had low autonomy or control, were more likely to be dissatisfied.<sup>49</sup> In contrast, respondents to the ACS survey were more likely to be burned out if they received incentive pay versus a straight salary.<sup>25</sup> Oncologists two other national surveys also reported more burnout as more of their compensation was tied to performance and higher intent to leave their current practice within two years if their compensation structure was pure salary or incentive instead a mix of the two.<sup>29,76</sup>

### **Patient outcomes associated with physician professional satisfaction**

Satisfied physicians are associated with better patient experiences. Patients of physicians with higher professional satisfaction have higher patient satisfaction and continuity of care.

In addition to examining the relationships between determinants of physician professional satisfaction and physician outcomes, we also sought to better understand the relationships between physician outcomes—that is, physician professional

satisfaction or dissatisfaction—and certain patient outcomes, including access to care, the quality and continuity of care provided to patients.

Research on the association between patient outcomes and physician professional satisfaction was relatively sparse, so here we cover only the relationship between physician professional satisfaction and patient outcomes in one major area: quality and continuity of care. Overall, higher physician professional satisfaction was positively associated with both higher rates of patient experience and better continuity of care.

Physician professional satisfaction was not associated with the quality of care provided in a regional study of family practitioners and general internists in New York and the Upper Midwest.<sup>51</sup> Physician professional satisfaction was positively associated, however, with patients' adherence to medical treatment in a small, multi-city study of primary care physicians.<sup>77</sup> This study also indicated a correlation between physician professional satisfaction and patient experience, as did a number of other studies, including a study using both physician and patient datasets from the CTS,<sup>6</sup> a regional study of general internists at academically affiliated practices in Massachusetts,<sup>7</sup> and a study of clinical and academic faculty at a single academic medical center.<sup>5</sup>

In addition, greater physician professional satisfaction has been associated with greater continuity of patient care. A regional study of primary care physicians in Seattle found that patients with persistent pain were less likely to change physicians over a six-month period if their initial physician reported a high level of professional satisfaction.<sup>34</sup> In addition, a study of clinical and academic faculty at a single academic medical center

found that patients were more likely to show up for appointments and more likely to see the same provider on repeated visits when their physicians reported higher levels of satisfaction.<sup>5</sup>

### **Physician professional satisfaction and workforce attrition**

Physicians with lower professional satisfaction are more likely to attrite from the workforce.

One national study of primary care physicians under 45 years old found that those who reported dissatisfaction at the first of two survey time points were more likely to have left their practice at the second survey time point, three years later, than those who did not initially report dissatisfaction.<sup>1</sup>

Another study utilizing data from two waves of the CTS compared physicians who reduced their work hours per week or left the practice of medicine between the first and second waves of data collection. Those who reported greater dissatisfaction in the first wave were more likely to have reduced their hours or left medicine by the second wave than those who reported less dissatisfaction.<sup>2</sup>

In a nationally representative study of surgical faculty, physicians who were satisfied with their jobs were less likely to report an intention to leave their institutions.<sup>59</sup> A similar result was found in a 2011 national study of physicians drawn from the AMA Physician Masterfile: being retired or not in practice was independently associated with burnout in this study, suggesting that leaving one's practice is associated with burnout.<sup>8</sup> In a national study utilizing data from the PWS, physician

dissatisfaction was associated with intent to leave within two years, but actual data on attrition was not available.<sup>42</sup>

## **Discussion**

Our objective was to focus, in particular, on factors representing ongoing and anticipated changes in the healthcare system such as the increasing reliance on electronic health records, PCMHs, ACOs and other alternative models of healthcare payment and delivery. This review laid out the complex system of relationships that ties physician professional satisfaction to demographic factors, workplace factors, health system changes, and workforce and clinical outcomes. It also detailed the contents and backgrounds of seven major surveys on physician satisfaction.

We found that more satisfied physicians were older, used less complex EHR or did not use EHR at all, did not participate in HMOs, worked in larger practices and academic environments, had strong relationships with their co-workers and practice leadership, had the perception that they delivered high quality patient care, and earned higher incomes. Satisfaction is also associated with participation in patient centered medical homes and capitation programs, but the evidence is limited. The relationship between satisfaction and pay-for-performance programs is still unclear. Physician professional satisfaction was consistently associated with better patient experiences, greater continuity of care, and lower physician attrition from the workforce. Finally, seven major surveys have measured physician professional satisfaction and related determinants in greater and more robust detail over time.

The last major systematic review of the determinants of physician professional satisfaction by Scheurer and colleagues reported similar findings in the literature.<sup>12</sup> They noted that satisfaction was significantly related to age, specialty, work demand and control, support from colleagues, ability to maintain patient relationships, practice setting, satisfaction with income, and incentive structure. We found associations between satisfaction and all of these determinants other than incentive structure and patient relationships, as well as associations with EHR, the perception of delivering high quality patients care and HMOs. While Scheurer, et al. analyzed all incentives programs together; we examined them payment and delivery models separately and found only limited evidence for specific models. We also detailed the relationship between satisfaction and other health system outcomes such as patient experience and continuity of care as well as physician attrition. Finally, we extensively detailed the components and background of seven major surveys on satisfaction. Our main contributions to the literature beyond Scheurer, et al. are fourfold: (1) the negative associations between satisfaction and EHR and managed care, (2) the mixed evidence between satisfaction and payment and delivery models, (3), the positive relationship between satisfaction and other health system outcomes, and (4) a comprehensive review of significant physician satisfaction surveys.

In this review, there is strong evidence that satisfaction is associated with older age, multiple aspects of the practice environment (larger practices, academic environments, good relationships with coworkers and leadership, and the perception of delivering high quality patient care), less or no EHR, non-participation in HMOs, and



higher income. Limited evidence indicates that satisfaction is higher among physicians who participate in a patient centered medical home or capitation program. However, the connection between satisfaction and pay-for-performance is still unclear. There is also consistent evidence that higher physician satisfaction is related to better patient experience and continuity of care and lower physician attrition. Future research should examine the relationship between satisfaction, new payment and delivery models, and other health system outcomes. The evidence base on these models and outcomes is limited thus far, but they are potentially the most policy-relevant areas included in this review.

Two major policy implications follow from these findings: (1) physicians are more satisfied in inclusive and efficient working environments, and (2) health system changes do not have to lead to lower satisfaction. Physicians are more satisfied in workplaces that value their input, as evidenced by greater satisfaction in working environments that are academic or non-HMOs, provide good relationships with coworkers and leadership, and give physicians the perception of delivering high quality patient care. Workplaces with these qualities are more likely to value physicians as partners rather than as employees or contractors. Satisfaction is also higher among efficient workplaces, such as those that are larger and have no less or no EHR. This last association seems counterintuitive, but there is evidence that EHR does not always improve workflow, depending on the quality of its implementation.<sup>4</sup>

Despite these findings, this review has several limitations. First, it is a qualitative review instead of a meta-analysis. The heterogeneity of constructs and determinants

examined in the physician professional satisfaction literature make such a meta-analysis difficult or impossible. Repeated survey work on a limited number of determinants and satisfaction constructs would bolster our knowledge of this topic. Next, much of the quantitative work reviewed here is cross-sectional and was designed to find associations between determinants and satisfaction, not causal directionality. In the absence of expensive or infeasible experimental quantitative work, further exploratory qualitative work, such as interviews, is necessary to determine the causal directionality of these relationships. Finally, the search conducted in this review is based on a limited number of search terms and in two databases. While the major surveys of physician satisfaction are well known, a more exhaustive search could be conducted to find additional smaller studies in this area.

## **Conclusion**

In conclusion, this review confirms that physician professional satisfaction and patient outcomes are co-affected by a variety of actionable factors. Many of these factors, such as EHR, aspects of the workplace, and new delivery/payment models, are actively evolving components of the healthcare system. Physician professional satisfaction could be an integral aspect of the continuing refinement and implementation of these factors. If satisfaction is taken into consideration in future workplace redesign, health system changes, and the implementation of EHRs, our health care system can be better for both physicians and patients.

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## Tables and Figures

**Table 2.1. Determinants, mediators, and outcomes related to satisfaction**

<b>Determinant category</b>	<b>Specific determinants</b>	<b>Physician outcomes</b>	<b>Patient outcomes</b>
Physician demographics	Age Domestic/foreign medical school Race/ethnicity Specialty		
Workplace factors	Practice structure Geographic location Patient population Working environment Relationships with coworkers/practice leadership Perceived quality of patient care Electronic health records Physician income Delivery models: managed care, patient centered medical homes Legal/regulatory factors Payment models: capitation, pay-for-performance		

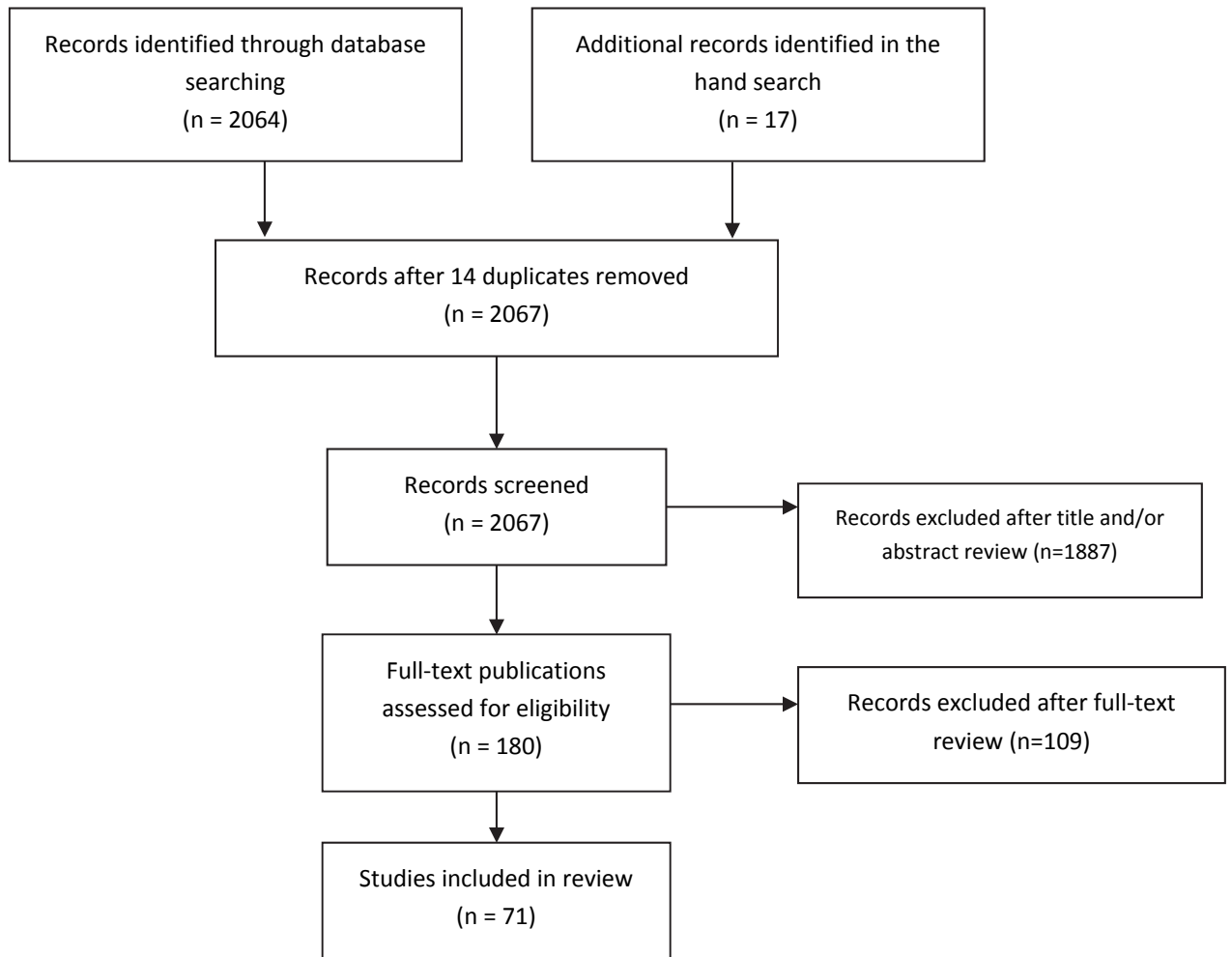
Note: The bolded physician outcomes are the focus of this paper

**Table 2.2. Strengths and weaknesses of major physician professional satisfaction instruments**

<b>Instrument</b>	<b>Years administered</b>	<b>Strengths</b>	<b>Weaknesses</b>
Linn, et al.	1984	- One of the first instruments	- Single academic center; - No explicit examination of physician professional satisfaction as a construct - One time administration only
WPHS	1993-1994	- Closer examination of women than previously possible - Explicit measure of physician professional satisfaction - Nationally representative	- Women only - One time administration only
PWS	1996-1997	- Expanded examination of determinants of satisfaction - Nationally representative	- Internal medicine only - One time administration only
CTS	1996-2005	- Multiple survey rounds - Used frequently to examine physician professional satisfaction	- No stress/burnout outcomes - Limited determinants of satisfaction
MEMO	2001	- Comprehensive set of outcomes including stress, burnout, etc. - Important determinants such as physician health, use of information systems	- Regional sample - One time administration only
PWBI	2011-2014	- Nationally representative - New determinant domains	- Few determinants
RAND-AMA	2013	- Covered electronic health records (EHRs) in detail - Comprehensive set of survey items in each determinant domain	-Multi-region sample - One time administration only

Note: WPHS: Women Physicians' Health Study; PWS: Physician Worklife Study; CTS: Community Tracking Study; MEMO: Minimizing Error, Maximizing Outcomes Study; PWBI: Physician Well-Being Index; RAND-AMA: RAND Corporation/American Medical Association Physician Experience Survey

Figure 2.1. PRISMA 2009 publication flow diagram<sup>c</sup>



<sup>c</sup> Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

**Figure 2.2. Lineage of survey items in major physician professional satisfaction instruments**

		WPHS	PWS	CTS	MEMO	PWBI	RAND-AMA
		(1993-1994)	(1996-1997)	(1996-2005)	(2001)	(2011)	(2013)
		Linn (1984)					
Career and job satisfaction	Opportunities for promotion						
	Degree of status/prestige						
	Generally satisfied with career						
	Would become a physician again						
	Would change specialty				<i>Intent to leave practice</i>	<i>Intent to leave practice; Intent to reduce hours</i>	<i>Would change specialty; Intent to leave practice; Intent to leave profession</i>
Stress	Stress in personal life		<i>Personal time</i>		Work-life balance		
	Work-related stress						
Burnout					Burnout	Suicidal ideation	Burnout
		Physician mental health					

Autonomy/ control	Meeting patient needs						
		Control of work life					
Administrative burden/ opportunities	Administrative roles						
Quality of relationships	With other physicians			<i>Timely reports from other physicians and facilities</i>	<i>Information and communication</i>		<i>Coordination with other providers; Values alignment with leadership</i>
	With staff						
		Workplace hostility					
			With patients				
			With the community				
Intellectual and educational opportunities	Intellectual and educational opportunities					<i>Achievement and meaning in work</i>	
Perceived practice resources	Manpower		<i>Space, supplies, and staffing</i>	<i>Available patient services</i>			<i>Staff and equipment support</i>
	Income						

Physician perceptions of patients	Diversity of patient age, sex, types of problems and disease						
	Personal gratification from patient care			<i>Patient finances, communication and compliance</i>			
Workplace pressures	Patient volume		<i>Patient needs and demands</i>	<i>Time with patients</i>	<i>Pace of office environment</i>	<i>Self-reported medical errors</i>	<i>Work chaos</i>
Electronic Health Records (EHR)							
Perceptions of practice culture					Organizational culture		
					Organizational trust and belonging		

Legend: Grey shading: item included in instrument; Italics: item underwent alteration; Abbreviations: WPHS = Women Physicians' Health Study, PWS = Physician Worklife Study, CTS = Community Tracking Study Physician Survey/Health Tracking Study Physician Survey, MEMO = Minimizing Errors, Maximizing Outcomes Study, PWBI = Physician Well Being Index, RAND-AMA = 2013 RAND Corporation/American Medical Association Physician Experience Survey

## Chapter 3. Administrative work and job role beliefs in primary care physicians: a qualitative analysis of semi-structured interviews

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Eric Apaydin

### **Abstract**

**Introduction:** Primary care physicians face increasing amounts of administrative work (e.g. entering notes into electronic health records, managing insurance issues, delivering test results, etc.) outside of face-to-face patient visits. This work is associated with lower professional satisfaction and higher burnout, but few studies have qualitatively examined the link between this work and dissatisfaction. This study extends this research by using interviews with primary care physicians to elucidate the relationship between administrative work and job role beliefs. The objective of this study is to qualitatively describe the experience that primary care physicians have with administrative work, with an emphasis on their beliefs about their job role.

**Methods:** I conducted semi-structured interviews with 28 family physicians and internists in practices in the Chicago, Miami and Los Angeles areas. I qualitatively analyzed the interviews for themes pertaining to administrative work and physician job roles.

**Results:** Two major themes concerning the relationship between primary care physicians and administrative work were discovered: (1) administrative work was not central to primary care physicians' job role beliefs, and (2) among solo practitioners, the need for autonomy was worth the responsibility of administrative work, as well as two subthemes regarding acceptable solutions to the burden of administrative work: (3a) "below license" work should be delegated to non-physicians, and (3b) team-based care reduces administrative work for primary care physicians and helps clarify job roles.

**Conclusions:** Primary care physicians have a complex relationship with administrative work. Respondents did not consider such work to be part of their job role, and were amenable to solutions that delegate "below license" work to non-physicians and institute team-based care. Most physicians reported that these solutions did not threaten autonomy and can clarify job roles. Future efforts to reduce the burden of administrative work on physicians should consider the effect of these solutions on job role and autonomy.



## Introduction

Administrative work, such as charting, scheduling, and handling insurance issues, takes up a significant amount of work time that primary care physicians spend outside of face-to-face patient encounters.<sup>1-3</sup> Internists in two health care systems in New York reported spending an average of 20% of their work day on activities outside of office visits.<sup>2</sup> Internists at another major medical center, on average, entered just over 7 orders, wrote almost 3 prescriptions, and reviewed, edited, and signed nearly 2 electronic health records (EHR) notes per patient visit.<sup>3</sup> A study of 57 family physicians, internists, cardiologists and orthopedists reported that these physicians spent an average of twice the amount of time during their workday on EHR and desk work compared to direct clinical face time with patients.<sup>1</sup>

Physicians who spend more time doing administrative work<sup>4,5</sup> and who have larger administrative workloads<sup>6</sup> have reported lower professional satisfaction. There is also evidence that the use of EHR, is related to lower professional satisfaction,<sup>7,8</sup> and higher burnout.<sup>9,10</sup> However, administrative work can still be valuable, as there is evidence that telephone and electronic communication with patients can reduce office visits<sup>2</sup> and improve patient outcomes.<sup>11-13</sup>

### *Model of work content in primary care*

Administrative work is defined differently by different authors, and so I present my own model of primary care work content in the outpatient setting in Figure 3.1. I subdivide all work into patient care, administrative work and office work. Patient care (white circle in Figure 3.1) includes activities most directly related to the practice of medicine including non-administrative

work like diagnosis and treatment; patient administration (light grey circle) covers includes that have mixed clinical and administrative aspects like scheduling appointments and handling insurance issues; office work (dark grey circle) includes purely administrative work like reordering supplies or troubleshooting EHR issues. I also note which activities can be completed by non-physicians in part (e.g. some level of diagnosis and treatment, depending on licensure) or in total (e.g. patient education and insurance issues). Most tasks that do not have to be performed by a physician are administrative and office work. I present this model to elucidate the concept of administrative work, as opposed to patient care or management of an office, and to highlight tasks that can be performed by non-physician providers and staff.

Primary care is at the forefront of the changing healthcare landscape, and many changes intended to increase efficiency in the field lead to the unintended consequence of increased administrative work. Previous authors have examined the volume or type of administrative work undertaken by primary care physicians, but few studies have examined the qualitative aspect of this work. One recent effort did obtain physician perspectives on specific administrative tasks, and reported that physicians cited these tasks as a source time pressure and dissatisfaction.<sup>14</sup> This study examines the perceptions that physicians have about administrative work and how this work fits into their job role beliefs. Previous work has established that physicians are most satisfied when their work content is composed of tasks they were trained for clinically and requires that the work at the “top of their license.”<sup>8</sup> This analysis of interviews extends such analysis to primary care physicians and seeks to clarify the relationship between administrative work and job role beliefs for physicians who are expected to be generalists.

Understanding the context in which practicing primary care physicians perform administrative work can help future redesign efforts more efficiently allocate limited physician time. Further, contextual knowledge can lead to a refined implementation of existing changes to both allow primary care physicians to continue to provide more efficient care and more efficiently use their time for clinical tasks. In the present study, I interviewed twenty-eight primary care physicians about the nature of administrative work they performed, the context in which they performed it in and the relationship it has with their perceived job role.

## **Methods**

### *Study design*

I conducted semi-structured phone interviews with family physicians and internists in the Los Angeles, Chicago, and Miami metropolitan areas from February to December 2016. Respondents were drawn from personal contacts of members of my dissertation committee (Peggy Chen, Gery Ryan, and Michael Tutty), as well as through cold calling physicians listed as sole proprietors in the Centers for Medicare and Medicaid Services National Provider Identifier Registry. Purposeful sampling was conducted to ensure sample diversity in terms of specialty, gender, and location. The study protocol was approved by the RAND Human Subjects Protection Committee, and all respondents provided informed verbal consent. In total, 28 physicians participated in interviews.

### *Data collection*

I conducted all interviews over the phone. The interview guide, written for a concurrent exploratory study on factors affecting physician professional satisfaction, contained many broad overview questions of physician professional satisfaction, as well as directed questions on satisfaction and several workplace/health system drivers of satisfaction (Appendix 1; intrinsic/extrinsic drivers of satisfaction, electronic health records, patient/workplace relationships, and non-traditional payment/delivery models). Analyses of professional satisfaction overall and specific topics unrelated to administrative work will be presented elsewhere. While the questions in Appendix 1 were always asked, respondents were given the freedom to direct the interview toward drivers of satisfaction that they found most personally relevant. The first ten respondents participated without compensation, and when funding then became available, the last eighteen respondents were compensated with a \$100 electronic Amazon.com gift card. Interviews were recorded and lasted 30 minutes on average. The recordings were professionally transcribed and I checked the transcripts for accuracy.

### *Analysis*

I inductively coded the interview transcripts using the principles of grounded theory to develop an initial conceptual code structure.<sup>15</sup> Using a previously described framework for developing a code structure, I also coded directional participant perspectives on particular concepts, and noted participant characteristics (gender; specialty; years in practice) and participant setting (location; practice ownership model).<sup>16</sup> I used the constant comparison method to consolidate these conceptual codes, and developed broader themes.<sup>17</sup> The themes

presented in this paper were refined with input from another researcher, Peggy Chen. All coding was conducted using the qualitative analysis software Dedoose (Version 7.5.16, SocioCultural Research Consultants LLC, Los Angeles, CA).

## **Results**

### *Demographic characteristics*

My sample consisted of 28 primary care physicians (Table 3.1). Just over half of the respondents were male, and were nearly equally divided between the Chicago, Los Angeles, and Miami areas. About two thirds specialized in family medicine (vs. internal medicine), and most worked in a setting owned by a hospital or other corporation. Years in practice ranged from less than one year to over thirty-one years, but most respondents had less than sixteen years in practice, and over a third of respondents had less than six years in practice.

### *Interview themes*

My analysis of these interviews uncovered two key themes highlighting the perspectives that primary care physicians have on administrative work: (1) administrative work was not central to primary care physicians' job role beliefs, and (2) among solo practitioners, the need for autonomy was worth the responsibility of administrative work, and two subthemes highlighting potential solutions the burden of administrative work: (3a) "below license" work should be delegated to non-physicians, and (3b) team-based care reduces administrative work for primary care physicians and helps clarify job roles.

*Administrative work was not central to primary care physicians' job role beliefs*

Nearly half of respondents spontaneously described a relationship between administrative work and their job role and work content. Much of this discussion centered around beliefs that primary care physicians have about their job role while performing clinical work. Unsurprisingly, no respondents complained about their duty to deliver patient care, but many bemoaned the level of administrative work they were required to perform. As one family practitioner in Miami summarized the problem: "I feel like I was trained to be a doctor. And now I'm like 50% a doctor and 50% this computer clerk person." This loss of patient care time to administrative work was expanded upon by a family practitioner in Los Angeles:

"Yeah, and trying to get the medicine that's right for the patient is often a[n] administrative hassle. Trying to basically do what's right for the patient requires dealing way too much with bureaucracy and cuts away from my ability to spend more time with the patients."

Although respondents did not always elaborate on what they considered "administrative work", their descriptions seemed to encompass the type of administrative work I detail in the administrative work domain in Figure 3.1 (light grey circle; e.g. charting, insurance, orders, etc.). These tasks are largely "paperwork," and may require some physician expertise, but there was no consensus on how much of this work can or should be delegated to non-physicians. Interestingly, many respondents complained about one of these tasks, charting, even though physicians are legally required to perform this work. In California, Florida, and Illinois, the three respondent locations in this sample, physicians are legally required to create

and maintain medical records as a component of their licensure.<sup>18-20</sup> These requirements were touched on by an internist in Chicago discussing the increasing necessity of performing administrative work to get paid for clinical work:

“...In my clinical role, the reason I enjoy it is because I love seeing patients, but it comes at a cost these days. The cost is the amount of administrative bureaucracy and paperwork that goes along with seeing those patient[s], and often the volume that we have to see to maintain the salaries that we are accustomed to...And then over the past ten years they’ve added on so many more layers, actually 20 years of documentation requirements, electronic medical records. You know, it’s basically put more and more work onto the doctor. I can go in and see a patient and talk to them for two minutes, figure everything out and know what I need to do. I then need to spend the next 10 to 15 minutes documenting everything so, I can get paid for it.”

Many respondents did not perceive administrative work to be an important part of their job role. Many respondents instead found type of work outlined in the patient care domain of my model to be meet their expectations about being a physician (Figure 3.1; white circle; e.g. diagnosis and treatment, patient education, etc.). Because of this, many respondents expressed disappointment that the reality of frequent administrative work was very different than the expectations they had about work in their role as a physician. Despite this, no respondent claimed that they should not be responsible for any administrative work. An internist in Miami agreed that administrative work was part of their job:

“....The paperwork...[is] not really in the ideal job description that I imagined when I decided to go and study medicine; I just wanted to take care of people and then I realize that it comes with all these other things, the documentation, the forms, all of that. But if you take a step back and you say okay, this is what I’m trying to accomplish and, yes, I do a lot of paperwork but I get compensated for it, then it’s okay.”

Only one physician in my sample was satisfied with their administrative work. This physician worked in a pre-paid concierge practice, while most of my other respondents worked in traditional, hospital- or corporate-owned practice with a non-cash payment model. This Chicago concierge internist noted that the lack of administrative work is directly tied to the payment model:

“So [, in this concierge practice,] the volume of administrative work is much less and that’s a huge satisfier. And so, I have more time to follow-up on the actual patient care. Say, if my patient has seen a specialist, now I have time to actually call that specialist on the phone and talk to the other doc and discuss the case as opposed to wanting to do that but not ever having the time to.”

This counterexample highlights the importance of the system that surrounds a physician’s job role. New payment models such as pay-for-performance have been associated with an increase in administrative work.<sup>8</sup> Physicians working in cash-based concierge practices may not have as much administrative work as those working in practices that accept insurance.<sup>8</sup> Very few physicians in my sample working in non-concierge practices acknowledged that some



of their burden of administrative work was related to the requirements laid out by third-party payers or their employer. However, most of these physicians were employed directly or had a contracting relationship with a hospital or corporate healthcare system, so their knowledge of the legal or regulatory requirements for administrative work may have been limited.

*Among solo practitioners, the need for autonomy was worth the responsibility of administrative work*

Over twenty percent of the sample spontaneously discussed their autonomy in practice. A family physician solo practitioner in Chicago defined autonomy as “the freedom to do the things I want to do,” and noted that autonomy is “the greatest satisfaction because I’m the boss.” Solo practitioners may have nearly complete autonomy, but their job role is less well defined as they are responsible for all aspects of their practice, including all administrative work. These physicians were comfortable with job roles that contained non-clinical tasks in the administrative work or office work domains of my model, such as patient scheduling or troubleshooting EHR issues, because these tasks were the price of nearly complete autonomy. Some respondents working for large healthcare organizations spontaneously mentioned the value of autonomy, but most did not bring up the topic. Another family physician in Chicago summarizes the difference between working as a solo practitioner and working for a large healthcare organization:

“...In that situation, I was really the decision maker. Even though I might have a business manager who was there to help with the books and, you know, it was subsidized by a hospital, the clinical operations I had total control over...And that was

really nice because I felt like as a clinician I knew how to take care of my patients better than an administrator who was 20 or 30 miles away. In a large group of 1000 employed physicians it seems much more top down where the administration decides how things are going to be for all of the doctors.”

In contrast, a family medicine solo practitioner in Miami opened up a private practice later in their career, because they were dissatisfied with the lack of autonomy as an employed physician. This solo practitioner also highlights their perception of autonomy as a reward for responsibility. They explain:

“Yeah, I call the shots. I set it up. It’s a happy working place. I get to hire the people I want to hire and fire the people I want to fire, and I have autonomy. I have autonomy, I have responsibility, but it comes with an equal amount of autonomy. Where you have a situation where all, like I had with the Federally Qualified Health Center, all I had was responsibility but I didn’t have any freedom, didn’t have any freedom to choose, you know, which people work with me. I didn’t have the freedom to choose what I can do or not do for my patients for free, for example. I can’t do that. I can’t do that if I’m employed.”

The other respondents spontaneously mentioning autonomy had more balanced opinions about their level of autonomy, and the majority of the sample did not have strong views on autonomy. Most respondents had never worked in their own practice and did not plan on working in an independent group or solo practice. The solo practitioners I did interview

valued autonomy strongly, but some admitted they faced more administrative work and lower salaries versus comparable jobs in larger healthcare organizations. In spite of this, they remained solo practitioners in large part for their desire to retain their autonomy.

*Solutions to administrative burden: 'below license' work should be delegated to non-physicians*

Administrative work that does not require clinical expertise or a medical license to complete is often referred to as “below license” work, because the requirements to complete it are below the license of a physician. These tasks that can be completed by non-physicians, like communicating normal test results to patients outside of office visits, dealing with insurance issues or scheduling patient visits, are noted by an asterisk in Figure 3.1. Several respondents suggested that delegating this work to non-physicians would be a more efficient use of their time. A Los Angeles-based internist summarized this idea well:

“We’ve got to get everybody to the top of their license...A physician shouldn’t be doing what a LVN [licensed vocational nurse] can do, a LVN shouldn’t be doing what a MA [medical assistant] can do, and MA shouldn’t be doing what a secretary can do, and a secretary shouldn’t be doing what a patient can do.”

While, as above, several respondents noted that performing below license care is an inefficient use of time, others were concerned about such work encroaching on their job role as a physician. These concerns are often still expressed in terms of overall practice efficiency, even if respondents may also be concerned about their job role. A Chicago internist explains that

their expertise is best allocated towards performing direct patient care, not administrative work:

“...But don’t make the doctor be the one who has to remind the patient to do the colonoscopy or get the tetanus shot when a team member can do that just as well. Let me be the one who figures out why is he dizzy[.]...Is his fatigue due to thyroid disease or depression or something else? That’s where I’m going to excel and be at my top level of service. Not reminding the patient to see an eye doctor and to do X, Y, and Z.”

A family physician in Miami also complained that they were paid too much to perform below license work. They explain:

“And other people could do this[;] a doctor doesn’t need to do this. Doctors should do what doctors were trained to do. [For] the level of pay that I’m receiving and the training that I have, I really should do the things that I am only qualified to do. ...[W]e could hire other people, and not pay them as much because they don’t have the qualifications I have, to do this other computer stuff...”

Pay was not discussed by most other respondents or they only mentioned that their pay was fair and market rate. In most cases, physicians discussed pay separately from their hours and the content of their work. Much non-procedural, administrative below license work is not reimbursed by payers, and so it could be considered unpaid.<sup>21-22</sup> For example, Medicare only reimburses physicians for communication with patients over the Internet in rural areas and only if the communication involves both audio and video.<sup>23</sup> In line with this distinction, I categorize

non-face-to-face patient communication in the administrative work domain of my conceptual model, rather than in the patient care domain (Figure 3.1). The majority of physicians in my sample were not paid by the hour, and so this below license work could alternatively be viewed as a component of their work duties. An internist from Chicago explores this issue and highlights the institutional pushback to paying non-physicians to perform work that does not generate revenue:

“Nor do we do a good job of delegating it to ancillary staff and for everyone to work at the top of their license in a team-based approach. That’s partly because of culturally and historically that’s how we’ve been set up. It’s partly because economically, the incentives are such that the doctor literally has to do a certain number of things and/or much of it is not reimbursable work. And we haven’t gotten to the point where we feel like if we could hire an extra person to do this non-reimbursable work, the doctor would make it up somehow.”

The implication here is that physicians are not paid for below license work, but that hiring another employee would incur a cost. Of course, the alternative view is that non-hourly physicians are already paid for all work performed in relation to their job duties. Many physicians in this sample did not perceive their job role to encompass below license work, even if they were technically paid for it.

*Solutions to administrative burden: team-based care reduces administrative work for primary care physicians and helps clarify job roles*

Over twenty percent of respondents discussed team-based care as a solution to their complex and sometimes overburdened job roles. Team-based care involves a practice or hospital working internally with other physicians or non-physician employees (medical assistants, nurses, social workers, etc.) to both care for a patient in-house and to delegate tasks to providers with the appropriate level of licensure. This can cut down on administrative work by requiring fewer outside referrals and insurance authorizations. Caring for patients as a team can also help all members of the team be more efficient, as they are completing more specialized tasks in-house, and can help define the job roles of all team members, as all members act more as specialists than generalists. A family physician in Los Angeles explain how team-based care can reduce administrative work and improve patient care:

“Where I did residency we would have to get outside authorization for a lot of referrals and exams and testing and things like that. Here everything’s internal, so I feel like it’s really nice. Also, we can ask each other a lot of questions about certain patient care plan and we can see what the specialists, for instance, are thinking, or maybe one department can order a test and we can see what the test is. So, that’s kind of nice.”

A family physician in Miami expands on the concept:

“Again, it makes my job a little bit easier because part of it is that I think medicine is so deep and so vast and can be really complicated and complex that it helps having a team-based approach. An example is patients who are overweight have diabetes or heart

disease, it's really helpful to have a dietician aboard. Part of it is that they can give them specific information that maybe I might not have all the time to give them in my 15- to 20-minute visit, but they can give them 40 minutes to an hour because there's very important things about diet control. In addition, there's also social workers involved, if a patient has depression or anxiety or any mental health, I can refer them to someone in-house and they can discuss that as well, also given them more time they may need than the time they have allotted."

Team-based care allows the clarification of job roles and can prevent clinical team members from overburdening themselves with tasks that are outside of their specialty. In this case, the family physician is happy to have a dietician or social worker spend the time to educate patients on their health conditions, rather than rush an explanation during a patient visit. These tasks fall in to the patient care domain of the conceptual model, but are outside the core patient care activities performed by primary care physicians, as they do not fit into the time allotted for an office visit. Respondents did not find this delegation of work to be threatening to their job role, but as complimentary and perhaps even inevitable. An internist in Los Angeles noted that "the future of medicine...is going to be team-centric, it's not going to be physician-centric."

Several other respondents noted that there was a lack of team-based care in their practices and a need for more delegated work. An internist in Chicago noted that their present staff were already engaged in work below their licenses and that their practice could be more

efficient by delegating work in both the administrative work and patient care domains to more appropriate staff. They explained:

“I know we could train [my medical assistant] to be a bigger part of the team and have more meaningful work. I also think that our nurses are spending time doing stuff that’s beneath their license. And I think it could function better if we were able to give her also certain responsibilities that would raise her game so she’s not just triaging silly phone calls, so that she’s really doing a lot of the [urinary tract infections] UTIs and the stuff that’s clogging up our system.”

Just as team-based care can increase efficiency through the delegation of work, it can also help a practice become more efficient by managing acute patient symptoms before they become chronic. The application of preventative care by non-physician team members can help improve patient outcomes by treating symptoms when they are most mild and prevent patients from needing frequent visits for more chronic health conditions. One internist in Los Angeles explains:

“[We] need an in-office immediate resource -- immediate symptom management and I think because we don’t do that, a lot of things become chronic. The anxiety becomes chronic, and the insomnia becomes chronic. The death in the family that the grief isn’t appropriately treated becomes complicated grief and then it needs a psychiatrist.”

Despite all its positives, an internist from Chicago had reservations about team-based care. This respondent summarized their reservations:



“What if I had a team of folks were able to take care of a much larger group of patients? I’m not 100% sure how much happier I’d be. I know I could take care of and manage more patients. Yeah, I do worry sometimes, as we move into that level of team-based care, where I have a team taking care of more people, I start losing out on those direct one-on-one connections.”

While team-based care could weaken the traditional physician-patient relationship, compartmentalize knowledge of patients, or increase patient panel size, no respondent in the sample actually experienced these negative outcomes. The negative consequences of team-based care noted by this respondent may be more perceived than real.

## **Discussion**

I conducted qualitative, semi-structured interviews with twenty-eight primary care physicians about the relationship between their professional satisfaction, job role beliefs, and administrative work. I also constructed a conceptual model of clinical work that describes tasks in the domain of patient care, administrative work, and office management. I learned that administrative work was practiced by most respondents but it was not central to their perception of their job role. Autonomy was paramount feature of job role for solo practitioners, and some considered it a worthwhile tradeoff for the increased amount of administrative work in solo practice. Below license administrative work was spontaneously highlighted by many respondents as being particularly distal to their job role and ripe for delegation to non-physician providers and staff. Finally, many respondents embraced the idea of team-based care

as a solution that clarified job roles, reduced below license work, and did not threaten autonomy.

Previous work has proposed<sup>24</sup> and confirmed<sup>25</sup> that physicians adopt EHR in relation to its perceived effect on their job role, and several working groups have urged physicians to adopt and use EHR use as a part of their professional role.<sup>26,27</sup> Authors have examined the physician perspectives on administrative work,<sup>14</sup> but the relationship between administrative work and primary care physician role remains understudied. “The work no one sees” (as described by Dyrbye and colleagues),<sup>3</sup> exclusive of EHR, is often work in the administrative work domain of my model that physicians do not necessarily have a legal or regulatory requirement to do themselves (as denoted by the asterisks in Figure 3.1). This is a key distinction – in the EHR literature, it is accepted that physicians have a legal requirement to complete their own charts, and so research is focused on the acceptance of EHR by physicians. A large proportion of administrative work can be delegated to non-physicians without a loss of productivity or legal/regulatory consequences. As such, there is potential for future research to examine the reduction in physician role with respect to administrative work instead of the expansion.

This study implies that much of administrative work often does not fit into the job role beliefs of primary care physicians. Team-based care and the delegation of below license work to non-physicians are potential solutions to reduce the burden of administrative work and clarify job roles. Aside from solo practitioners, primary care physicians do not primarily value autonomy over the burden of administrative work, and did not express concerns about a change in administrative work as a threat to such autonomy. Future work should examine the extent that physician job role is affected by administrative workload and changes to practice

workflow. Research questions similar to the following should be addressed: (1) what features of administrative work are central to physician job roles?; (2) to what extent do physicians value autonomy in activities not central to their job role?; (3) how are physician job roles affected in the medium- and long-term by the transition to team-based care?

The major strengths of this study were providing primary care physician perspectives on: (1) the relationship between administrative work and physician job role beliefs, and (2) how that relationship is affected by delegating below license work and instituting team-based care. However, this study also had several limitations: (1) the sample is of limited size and not representative of primary physicians nationwide; (2) the sample is skewed towards younger physicians, with most having less than 16 years in practice; (3) administrative work is not a well-defined topic and varies by institution and position, so respondents may have discussed non-comparable experiences; (4) most respondents have not worked in enough environments to accurately compare and contrast different levels of administrative work and solutions reduce to it; and (5) the interview guide did not specifically address administrative work and all respondents discussed it either in response to direct question following up a related topic or spontaneously as a response to an open-ended question.

## **Conclusion**

As the healthcare system continues to evolve in the 21<sup>st</sup> century, so too does the role of the primary care physician. These physicians can spend as much or more time conducting administrative work as they do delivering direct patient care. This burden of administrative work decreases job satisfaction and creates a disconnect between expectations about

practicing primary care and the reality of the day-to-day working environment. Many primary care physicians are dissatisfied with effect that this work has on their job role, but, luckily, they are largely amenable to solutions that approach patient care from a team-based perspective and delegate below license work to non-physicians. As the practice and delivery of medicine becomes more complicated, specialization and delegation are clear solutions to the increasingly overburdened physician.

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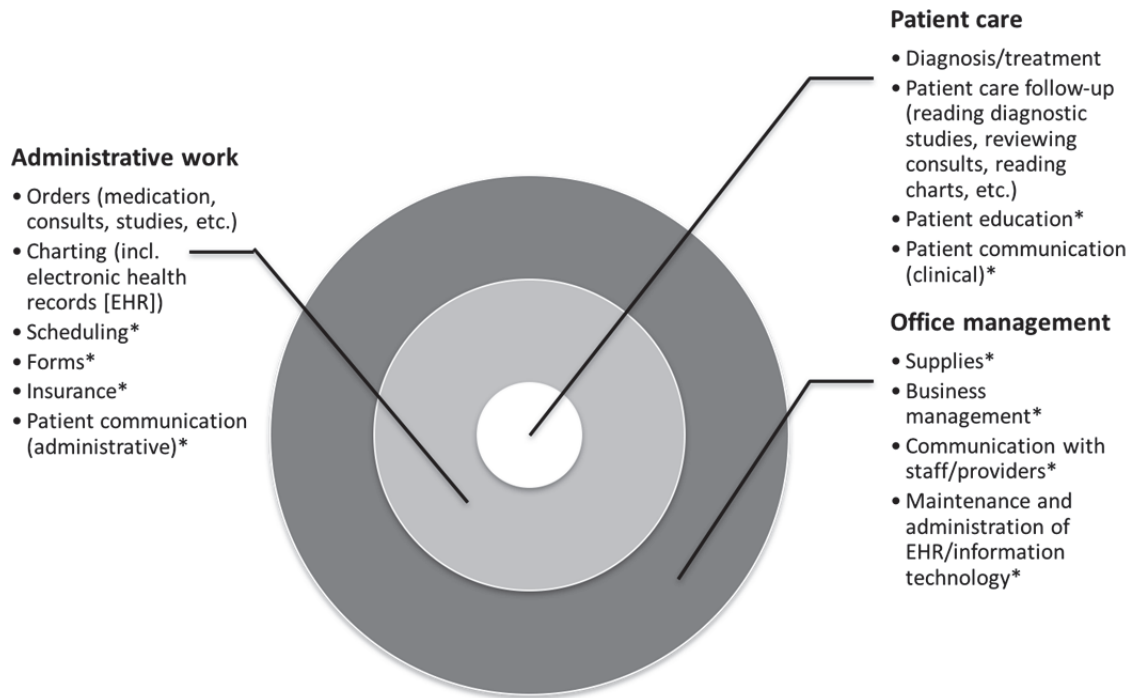
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## Tables and Figures

**Table 3.1. Sample demographic characteristics**

<b>Characteristic</b>	<b>Count (%)</b>
Male	15 (54)
Specialty	
Internal medicine	11 (39)
Family medicine	17 (61)
Years in practice	
0-5 years	10 (36)
6-10 years	2 (7)
11-15 years	4 (14)
16-20 years	3 (11)
21-25 years	6 (21)
26-30 years	1 (4)
31+ years	1 (4)
Unknown	1 (4)
Location	
Chicago area	9 (32)
Los Angeles area	9 (32)
Miami area	10 (36)
Practice ownership model	
Hospital or corporate owner	17 (61)
Academic	5 (18)
Sole proprietorship	4 (14)

**Figure 3.1. Diagram of primary care outpatient work content**



Note: Adapted from Chen, et al. 2011 and Sinsky, et al. 2016<sup>1,2</sup>; \* can be performed by non-physician providers or staff



### **Appendix 3.1. Interview guide** (adapted from Friedberg, et al. 2013)

Hi – thank you for agreeing to participate in this interview. As you may already know, I am writing my dissertation on physician professional satisfaction in the United States. I want to ask you a few questions about your professional satisfaction and working environment over the next 30 minutes or so.

Your participation is entirely voluntary, and you are free to refuse to answer questions or end the interview at any time. I will also be recording this interview, so that I don't miss anything. Do you consent to this recorded interview?

Great! Can you please state your name and the name of your practice/employer?

#### *Introductory questions*

1. Can you briefly describe your current career position and role in this practice?
  - a. How long have you been here?
  - b. Roughly how many physicians does your practice employ?
2. How many years of experience do you have practicing?\*

#### *Satisfaction overview*

3. How satisfied are you with your current position, on a scale of one to five, one being very dissatisfied and five being very satisfied?
4. What could make your satisfaction higher? Why is your satisfaction an X instead of a Y?

#### *Expectations*

5. Does your job meet your expectations? If not, what accounts for the discrepancy between your expectations and reality?

#### *Intent to leave*

6. Leaving position within 2 years?\*

#### *Intrinsic vs. extrinsic job satisfaction*

We often think of job satisfaction as being made up of two components – the first is what makes you “feel good” (like challenging cases, recognition by patients, relationship with practice leadership, etc.). The second component to job satisfaction is your working environment (like your pay, regulations, liability, call shifts, etc.).

7. What makes you feel good about your job?
8. What do you like about your working environment?

Now I'm going to drill down into a few specific areas of your working life – the first is electronic health records.

#### *EHR*

9. How does your electronic health record system affect your professional satisfaction?
  - a. Why?

#### *Colleagues & allied health professionals*

10. How do your physician colleagues affect your professional satisfaction?
  - a. Why?
11. Your non-physician colleagues?
  - a. Why?

#### *New delivery/payment models*

12. How do nontraditional delivery systems (i.e. patient-centered medical homes, accountable care organizations, etc.) affect your professional satisfaction?
  - a. Why?
13. How do nontraditional payment models (i.e. bundled payments, pay-for-performance, etc.)?
  - a. Why?

#### *Conclusion*

14. What other factors in your workplace affect your job satisfaction? Can you talk about them?
15. Thank you for participating! Do you have any colleagues that you think would like to participate in an interview? If so, I can send you an email template about the study that you can forward to this colleague. Thanks for your participation!

\*Question added to interview guide in the middle of data collection and not asked of all respondents.

## Chapter 4. Differences in physician income by sex in a multi-region survey

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### **Abstract**

**Introduction:** Previous studies have documented income differences between male and female physicians. However, the interpretation of these differences is unclear, since previous studies have lacked the data necessary to control directly for hours worked and the composition of work hours. We sought to identify the sources of these income differences using data from a novel, detailed survey of physician work and income. The objective of this study is to compare differences in income between male and female physicians.

**Methods:** We surveyed 656 practicing physicians in thirty practices in six states (Colorado, Massachusetts, North Carolina, Texas, Washington, and Wisconsin) and received 443 responses (67% response rate): 226 from males and 177 from females. We then estimated adjusted and unadjusted sex differences in annual income using data from a multistate survey that we fielded in 2013. The adjusted model excluded physicians who reported work hours above the 95<sup>th</sup> percentile (>3550 hours per year), Winsorized income at the 95<sup>th</sup> percentile, controlled for hours worked, composition of work hours (patient care, teaching, research, and administration), physician specialty, percent of patient care time spent providing procedures, and practice random effects.

**Results:** Male physicians had significantly higher annual incomes than female physicians (mean \$291,188 vs. \$202,973; difference \$88,216, 95% confidence interval [CI] \$61,612 to \$114,819) and worked significantly more total hours (mean 2459 vs. 2071; difference 389, 95% CI 234 to 534) and more patient care hours (mean 2196 vs. 1843; difference 353, 95% CI 206 to 499) per year. Male and female physicians had similar hours in teaching, research, and administration. Male physicians were less likely than family physicians to specialize in primary care (49.6% vs. 70.2%) and more likely to perform procedures with (32.7% vs. 15.4%) or without general anesthesia (84.1% vs. 72.6). After adjustment, male physicians' incomes were \$29,007 (95% CI \$8,568 to \$49,446) greater than female physicians' incomes.

Conclusions: Adjustment for multiple possible confounders, including hours worked and composition of work hours, can explain nearly 70% of unadjusted income differences between male and female physicians; just over 30% remains unexplained. The persistence of substantial income differences between male and female physicians, even after accounting for multiple potential confounders, suggests that factors other than the quantity and content of physician work might underlie these disparities. Additional study and dedicated efforts might be necessary to identify and address the causes of these disparities.

## Introduction

Almost 55 years after the passage of the Equal Pay Act, women still earn less than men.<sup>1</sup> Approximately half of medical school matriculants are women,<sup>2,3</sup> and the Medicare physician fee schedule does not pay different amounts to male and female physicians who perform the same service.

However, prior analyses have noted income differences between men and women in the physician population at large,<sup>4,5</sup> among Medicare-participating physicians,<sup>6</sup> among academic physicians,<sup>7</sup> and among physicians within the same specialties and geographic areas.<sup>3</sup> These income differences have been partially explained by differences in physician age, approximate hours worked, geographic location,<sup>5</sup> year,<sup>4</sup> specialty, years of experience, annual number of Medicare beneficiaries, and annual number of Medicare services provided.<sup>6</sup> In addition, among academic physicians these differences have been partially explained by age, faculty rank, years since residency, specialty, receipt of National Institutes of Health funding, clinical trial participation, publication count, Medicare payments, graduating medical school rank, and fixed effects for medical schools.<sup>7</sup>

However, none of these studies has controlled for the exact quantity and composition of hours worked – which is especially important because time spent performing procedures tends to be more highly compensated than time performing cognitive services.<sup>8</sup>

To determine whether controlling for the quantity and composition of work hours could “explain away” observed disparities in incomes, we analyzed responses to a multistate survey of physicians.

## **Methods**

### *Data Source*

In a 2013 study of physician professional satisfaction, we surveyed 656 practicing physicians in 5 practices within each of 6 states: Colorado, Massachusetts, North Carolina, Texas, Washington, and Wisconsin.<sup>9</sup> The practice sample was not nationally representative but was stratified for variation by practice size (number of physicians), specialty (multispecialty, primary care, single subspecialty), and ownership model (physician owned or physician partnership, hospital or other corporate ownership). We surveyed all physicians within each practice, receiving 452 responses, of which 443 included a response for physician sex (69% response rate overall; 67% response rate for sex).

The physician survey<sup>d</sup> collected self-reported income from the past year as well as sex, specialty, hours worked per week, weeks worked per year, composition of work hours (patient care, teaching, research, administration), and percent of patient care time spent providing procedures. Analysis of these survey data was approved by the RAND Human Subjects Protection Committee.

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<sup>d</sup> Available here:  
[https://www.rand.org/pubs/research\\_reports/RR439.html](https://www.rand.org/pubs/research_reports/RR439.html)

### *Statistical analyses*

We estimated several multilevel mixed effects linear regression models of annual income as a function of different covariates. Model 1 estimated income as a function of physician sex alone, Model 2 additionally adjusted for practice random effects, Model 3 additionally adjusted for hours worked per year, Model 4 additionally adjusted for specialty (primary care: family practice, general practice, internal medicine, and pediatrics; obstetrics/gynecology; medical specialties: cardiology, dermatology, gastroenterology, neurology, oncology, and pulmonology; surgical specialties: general surgery, obstetrics/gynecology, otolaryngology, ophthalmology, orthopedic surgery, and urology; other: emergency medicine, psychiatry and other), Model 5 additionally adjusted for work hour composition (percentage of time spent on patient care, teaching, research, and administration), and Model 6 additionally adjusted for the percent of patient care hours spent performing procedures (categorized as 0%, 1-24%, or  $\geq 25\%$ ).

We excluded respondents whose reported work hours exceeded the 95<sup>th</sup> percentile (3550 hours/year) because such extreme values might have been misreported or might be considered “overtime” hours that deserve higher effective hourly wages. To summarize, Model 6 estimated annual income for respondents working less than 3550 hours per year as a function of: physician sex; hours worked per year; percentage of work hours spent in patient care, teaching, research, and administration; specialty group; percent of patient care hours spent performing procedures, and practice random effects.

In all models, we Winsorized income at the 95<sup>th</sup> percentile (\$600,000) to limit the influence of extreme outliers.

## **Results**

### *Sample characteristics*

The survey sample contained 443 physicians with sex data (266 men and 177 women, Table 4.1). The Winsorized mean income in the sample was \$260,277 overall (95% confidence interval [CI] \$246,836 to \$273,718) and \$258,133 (95% CI \$244,423 to \$271,843) among those working less than the 95<sup>th</sup> percentile in annual hours, with men earning significantly more than women in both cases (overall: mean \$296,160 vs. \$200,961; difference \$95,199, 95% CI \$69,172 to \$121,226; bottom 95<sup>th</sup> percentile of annual hours: mean \$291,188 vs. \$202,973; difference \$88,216, 95% CI \$61,612 to \$114,819). Men worked significantly more total hours per year than woman (mean 2459 vs. 2071; difference 389, 95% CI 234 to 534) and more patient care hours (mean 2196 vs. 1843; difference 353, 95% CI 206 to 499). Hours worked in teaching, research and administration did not differ significantly between sexes. A larger percentage of men provided procedures, either with or without general anesthesia (32.7%, 84.1%), compared to women (15.4%, 72.6%).

A significantly smaller percentage of male physicians (130 [49.6%]) were primary care physicians (family practice, general practice, internal medicine, or pediatrics) compared to female physicians (125 [70.2%];  $p=0.012$ ). Mean incomes were lower in than primary care (\$196,668) than in obstetrics/gynecology (\$279,417), medical



subspecialties (cardiology, dermatology, gastroenterology, neurology, oncology, and pulmonology; [\$407,406]), surgical subspecialties (general surgery, obstetrics/gynecology, otolaryngology, ophthalmology, orthopedic surgery, and urology; [\$420,832]) and other subspecialties (emergency medicine, psychiatry and other; [\$288,842]).

### *Multivariable analyses*

Table 4.2 describes the difference between average male and female income in each of our models and the covariates in each model. In the unadjusted model, Model 1, male physicians earned \$88,216 (95% CI \$61,612 to \$114,819) more income than female physicians. This difference decreased to \$49,959 (95% CI \$24,651 to \$75,267) when adjusting for practice random effects (random effects account for nonspecific differences in income between practices not associated with other covariates in the model [Model 2]), and decreases further to \$37,346 (95% CI \$12,098 to \$62,593) (Model 3) when additionally adjusting for hours worked. When additionally adjusting for specialty group, this difference falls further to \$24,062 (95% CI \$2661 to \$46,464, Model 4). In Model 5, we adjust for percent of work hours per category in addition to the covariates in Model 4, but the male-female difference in income only decreases slightly to \$24,055 (95% CI \$2080 to \$46,029).

In the full model, Model 6, male physicians earned \$29,007 (95% CI \$8568 to \$49,446) than female physicians after restricting the sample to the bottom 95% of hours (<3550 hours per year), Winsorizing income at the 95<sup>th</sup> percentile and adjusting for

hours worked, percent of hours worked per activity, specialty group, percent of patient care time spent providing procedures under and not under general anesthesia, and practice random effects. This indicates that adjusting for the characteristics in the full model explained 69.1% of the unadjusted Winsorized income difference between men and women in our sample. Additional model specifications are detailed in Tables 4.3 and 4.4.

## **Discussion**

We presented an analysis of sex differences in physician income using a survey administered in thirty practices across six states. The unadjusted difference of \$88,216 (95% CI \$61,612 to \$114,819) decreased by 67.1% to an adjusted difference of \$29,007 (95% CI \$8,568 to \$49,446) in our full model.

This unexplained residual income gap may represent disparities in income due to differences in work composition that were not captured by our survey (e.g., performing more profitable procedures, spending less time with patients, etc.), or it may represent discrimination in pay. Building more complete models of the physician sex income gap and determining the composition of unexplained residuals is important in understanding and closing gaps in physician pay. Of note, we were able to reduce this residual in our model by an amount similar to that in a prior analysis of academic physicians and more than in a prior analysis of a national sample of physicians (Table 4.5).<sup>4,7</sup> The persistence of similar unexplained residuals in models of separate populations of physicians with separate covariates suggests that other drivers of sex differences in income are present.

Future work should examine the linkage between hours worked and income, as well as other factors that may affect sex differences in income, including overt discrimination, payment arrangements (e.g. salary vs. productivity-based pay), and favoritism in career development.

Our study has limitations. First, our analysis was based on responses to a survey that was of modest sample size and which was not designed to be nationally representative. Second, we relied on self-reported incomes and hours worked per year; we were unable to validate these figures by comparison to another data source. Third, we lacked data on patient volume or type of procedures performed.

## **Conclusion**

Men reported significantly higher incomes than women in a sample of 443 physicians in 30 practices across six states. After adjusting for a variety of relevant factors, including hours worked and time spent performing procedures, just over 30% of this residual difference continued to be unexplained. Future work is necessary to determine the cause of this persistent disparity.

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## Tables and Figures

**Table 4.1. Characteristics of the sample**

Characteristic	Total (n=443)	Male (n=266)	Female (n=177)	P-value	n
<i>Income/wage (mean, SD), \$</i>					
Income	273,612 (191,153)	310,579 (184,364)	213,123 (188,258)	<0.001	388
Winsorized income	260,277 (134,658)	296,160 (140,219)	200,961 (99,495)	<0.001	388
Winsorized income; annual hours <95 <sup>th</sup> percentile	258,133 (133,199)	291,188 (138,970)	202,973 (100,885)	<0.001	359
<i>Hours (mean, SD)</i>					
Total hours worked per year	2316 (779)	2459 (739)	2071 (774)	<0.001	438
Patient care hours per year	2068 (775)	2196 (731)	1843 (789)	<0.001	438
Teaching hours per year	46 (113)	49 (112)	42 (111)	0.53	438
Research hours per year	15 (72)	15 (72)	16 (75)	0.73	438
Administration hours per year	187 (345)	200 (322)	169 (386)	0.39	438
<i>Specialty or specialty group (n, column %)</i>					
Specialty: cardiology	16 (3.6%)	13 (5%)	3 (1.7%)	0.078	16
Specialty: dermatology	3 (0.7%)	2 (0.8%)	1 (0.6%)	0.81	3
Specialty: emergency medicine	1 (0.2%)	1 (0.4%)	0 (0%)	0.41	1
Specialty: family practice	88 (19.9%)	45 (17.2%)	43 (24.2%)	0.057	88

Specialty: general practice	8 (1.8%)	2 (0.8%)	6 (3.4%)	<b>0.041</b>	8
Specialty: general pediatrics	49 (11.1%)	18 (6.9%)	31 (17.4%)	<b>&lt;0.001</b>	49
Specialty: gastroenterology	6 (1.4%)	4 (1.5%)	2 (1.1%)	0.74	6
Specialty: general surgery	19 (4.3%)	14 (5.3%)	5 (2.8%)	0.22	19
Specialty: internal medicine	110 (24.9%)	65 (24.8%)	45 (25.3%)	0.81	110
Specialty: neurology	3 (0.7%)	3 (1.1%)	0 (0%)	0.16	3
Specialty: obstetrics/gynecology	27 (6.1%)	14 (5.3%)	13 (7.3%)	0.37	27
Specialty: oncology	7 (1.6%)	6 (2.3%)	1 (0.6%)	0.16	7
Specialty: ophthalmology	3 (0.7%)	2 (0.8%)	1 (0.6%)	0.81	3
Specialty: orthopedic surgery	21 (4.8%)	20 (7.6%)	1 (0.6%)	<b>0.001</b>	21
Specialty: otolaryngology	6 (1.4%)	6 (2.3%)	0 (0%)	<b>0.044</b>	6
Specialty: psychiatry	3 (0.7%)	2 (0.8%)	1 (0.6%)	0.81	3
Specialty: pulmonology	5 (1.1%)	5 (1.9%)	0 (0%)	0.067	5
Specialty: urology	8 (1.8%)	8 (3.1%)	0 (0%)	<b>0.02</b>	8
Specialty: other	57 (13%)	32 (12.2%)	25 (14%)	0.65	57
Specialty group: Primary care (family practice, general practice, internal medicine, and pediatrics)	255 (57.7%)	130 (49.6%)	125 (70.2%)	<b>0.012</b>	255
Specialty group: Obstetrics/gynecology	27 (6%)	14 (5.3%)	13 (7.3%)	0.37	27
Specialty group: Medical specialties (cardiology, dermatology, gastroenterology, neurology, oncology, and pulmonology)	40 (9%)	33 (12.6%)	7 (3.9%)	<b>0.002</b>	40

Specialty group: Surgical specialties (general surgery, obstetrics/gynecology, otolaryngology, ophthalmology, orthopedic surgery, and urology)	57 (13%)	50 (19.1%)	7 (3.9%)	<b>&lt;0.001</b>	57
Specialty group: Other (emergency medicine, psychiatry and other)	61 (13.8%)	35 (13.4%)	26 (14.6%)	0.65	61
<i>Patient care activities (n, column %)</i>					
Percent of patient care hours: providing procedures to patients who are under general anesthesia				<b>0.002</b>	438
Never	325 (74.2%)	177 (67.3%)	148 (84.6%)		
1-9%	36 (8.2%)	23 (8.7%)	13 (7.4%)		
10-24%	29 (6.6%)	24 (9.1%)	5 (2.9%)		
25-49%	20 (4.6%)	15 (5.7%)	5 (2.9%)		
50-74%	23 (5.3%)	19 (7.2%)	4 (2.3%)		
>75%	5 (1.1%)	5 (1.9%)	0 (0%)		
<i>Patient care activities (n, column %)</i>					
Percent of patient care hours: providing procedures to patients who are not under general anesthesia				<b>0.027</b>	420
Never	86 (20.5%)	40 (15.9%)	46 (27.4%)		
1-9%	201 (47.9%)	118 (46.8%)	83 (49.4%)		

10-24%	76 (18.1%)	52 (20.6%)	24 (14.3%)		
25-49%	28 (6.7%)	20 (7.9%)	8 (4.8%)		
50-74%	17 (4%)	14 (5.6%)	3 (1.8%)		
>75%	12 (2.9%)	8 (3.2%)	4 (2.4%)		

Note: P-values reflect two-sided t-tests or chi-squared tests for continuous and binary or categorical variables, respectively.



**Table 4.2. Summary of multivariable analyses of characteristics associated with physician income**

<b>Model</b>	<b>Male/female difference in income, Coefficient (95% CI), \$</b>
Model 1: no adjustment	88,216 (61,612 to 114,819)
Model 2: practice random effects	49,959 (24,651 to 75,267)
Model 3: hours worked per year + practice random effects	37,346 (12,098 to 62,593)
Model 4: hours worked per year + specialty group + practice random effects	25,660 (3687 to 47,633)
Model 5: hours worked per year + percent of hours worked per category + specialty group + practice random effects	24,062 (2661 to 46,464)
Model 6: hours worked per year + percent of hours worked per category + specialty group + percent of patient care time spent performing procedures under and not under anesthesia + practice random effects	29,007 (8568 to 49,446)

Note: All models include Winsorized income at the 95<sup>th</sup> percentile and are restricted to observations with less than the 95<sup>th</sup> percentile of annual hours worked (<3550 hours per year) to avoid the influence of outliers

**Table 4.3. Multivariable analyses of characteristics associated with physician income**

	Model 1		Model 2			Model 3		Model 4	
	(Coefficient, 95% CI), \$	p-value	(Coefficient, 95% CI), \$		p-value	(Coefficient, 95% CI), \$	p-value	(Coefficient, 95% CI), \$	p-value
Male	88,216 (61,612 to 114,819)	<b>&lt;0.001</b>	49,959 (24,651 to 75,267)		<b>&lt;0.001</b>	37,346 (12,098 to 62,593)	<b>&lt;0.001</b>	25,660 (3687 to 47,633)	<b>0.022</b>
<i>Hours</i>									
Total hours worked						41.43 (22.92 to 59.93)	<b>&lt;0.001</b>	32.25 (16.19 to 48.31)	<b>&lt;0.001</b>
Percent of total hours worked: patient care (10% increment)									
Percent of total hours worked: teaching (10% increment)									
Percent of total hours worked: research (10% increment)									
Percent of total hours worked: administration (10% increment)									
<i>Specialty</i>									
Primary care: family practice, general practice, internal medicine and pediatrics								Ref	

Obstetrics/gynecology								83,107 (38,947 to 127,268)	<b>&lt;0.001</b>
Medical specialties: cardiology, dermatology, gastroenterology, neurology, oncology, and pulmonology								195,551 (152,600 to 238,502)	<b>&lt;0.001</b>
Surgical specialties: general surgery, otolaryngology, ophthalmology, orthopedic surgery, and urology								175,085 (138,050 to 212,120)	<b>&lt;0.001</b>
Other (emergency medicine, psychiatry and other)								68,915 (38,647 to 99,184)	<b>&lt;0.001</b>
<i>Providing procedures</i>									
0% of time providing procedures to patients who are under general anesthesia									
1-24% of time providing procedures to patients who are under general anesthesia									
>=25% of time providing procedures to patients who are under general anesthesia									
0% of time providing procedures to patients who are not under general anesthesia									

1-24% of time providing procedures to patients who are not under general anesthesia									
>=25% of time providing procedures to patients who are not under general anesthesia									
Constant	202,973 (182,147 to 223,798)	<b>&lt;0.001</b>	219,940 (186,237 to 253,643)		<b>&lt;0.001</b>	135,256 (84,897 to 185,615)	<b>&lt;0.001</b>	113,947 (74,276 to 153,618)	<b>&lt;0.001</b>
Practice random effects	N		Y			Y		Y	
Bottom 95% of hours (<3550 hours per year)	Y		Y			Y		Y	
<i>n</i>	359		359			359		359	

Notes: Estimates are from a multilevel mixed effects model. Cells list coefficients in plain text and standard deviations in parentheses. Both of these estimates are in dollars. Bolded p-values are less than 0.05. Model constants, a flag for practice random effects, a flag for trimming the sample to the bottom 95<sup>th</sup> percentile of hours and the sample size of each model are listed at the bottom of the table.

**Table 4.4. Additional multivariable analyses**

	<b>Model 5</b>		<b>Model 6</b>	
<b>Covariates</b>	<b>(Coefficient, 95% CI), \$</b>	<b>p-value</b>	<b>(Coefficient, 95% CI), \$</b>	<b>p-value</b>
Male	24,062 (2661 to 46,464)	<b>0.028</b>	29,007 (8568 to 49,446)	<b>0.005</b>
<i>Hours</i>				
Total hours worked	31.47 (15.80 to 48.39)	<b>&lt;0.001</b>	21.26 (5.57 to 36.95)	<b>0.008</b>
Percent of total hours worked: patient care (10% increment)	Ref		Ref	
Percent of total hours worked: teaching (10% increment)	-13,935 (-40,002 to 12,132)	0.295	-28,821 (-53,030 to -4611)	<b>0.02</b>
Percent of total hours worked: research (10% increment)	-6822 (-43,139 to 29,495)	0.713	3050 (-29,796 to 35,897)	0.856
Percent of total hours worked: administration (10% increment)	5864 (-835 to 12,562)	0.086	6061 (-68 to 12,190)	0.053
<i>Specialty</i>				
Primary care: family practice, general practice, internal medicine and pediatrics	Ref		Ref	
Obstetrics/gynecology	83,251 (38,797 to 127,704)	<b>&lt;0.001</b>	-21,327 (-77,565 to 34,911)	0.457

Medical specialties: cardiology, dermatology, gastroenterology, neurology, oncology, and pulmonology	196,949 (153,744 to 240,155)	<b>&lt;0.001</b>	155,872 (113,898 to 197,847)	<b>&lt;0.001</b>
Surgical specialties: general surgery, otolaryngology, ophthalmology, orthopedic surgery, and urology	174,316 (137,158 to 211,474)	<b>&lt;0.001</b>	52,971 (2446 to 103,496)	0.04
Other (emergency medicine, psychiatry and other)	69,136 (38,951 to 99,322)	<b>&lt;0.001</b>	45,220 (16,214 to 74,225)	<b>0.002</b>
<i>Providing procedures</i>				
0% of time providing procedures to patients who are under general anesthesia			Ref	
1-24% of time providing procedures to patients who are under general anesthesia			85,769 (42,403 to 129,136)	<b>&lt;0.001</b>
>=25% of time providing procedures to patients who are under general anesthesia			154,851 (97,201 to 212,500)	<b>&lt;0.001</b>
0% of time providing procedures to patients who are not under general anesthesia			Ref	
1-24% of time providing procedures to patients who are not under general anesthesia			8818 (-15,553 to 33,189)	0.478

>=25% of time providing procedures to patients who are not under general anesthesia			53,966 (14,447 to 93,385)	<b>0.007</b>
Constant	112,459 (72,114 to 152,805)	<b>&lt;0.001</b>	122,053 (79,583 to 164,523)	<b>&lt;0.001</b>
Practice random effects	Y		Y	
Bottom 95% of hours (<3550 hours per year)	Y		Y	
<i>n</i>	358		341	

Notes: Estimates are from a multilevel mixed effects model. Cells list coefficients in plain text and standard deviations in parentheses. Both of these estimates are in dollars. Bolded p-values are less than 0.05. Model constants, a flag for practice random effects, a flag for trimming the sample to the bottom 95<sup>th</sup> percentile of hours and the sample size of each model are listed at the bottom of the table.

**Table 4.5. Estimates of adjusted male/female physician income differences from various authors**

<b>Paper</b>	<b>Unadjusted male/female difference</b>	<b>% Difference of male mean income</b>	<b>Adjusted male/female difference</b>	<b>% Difference of male mean income</b>	<b>% Reduction in difference</b>
Apaydin/Friedberg <sup>a</sup>	\$88,216	29.8%	\$29,007	9.8%	67.1%
Jena 2016 <sup>b</sup>	\$51,316	19.9%	\$19,878	7.7%	61.2%
Ly 2016 <sup>c</sup>	\$75,147	30.0%	\$61,781	25.0%	17.0%

Notes: Columns 3 and 5 show percent of unadjusted and adjusted male/female income differences as percentages of unadjusted mean male incomes (not shown).

a. Winsorized mean incomes; model adjusted for sex, hours worked per year, type of hours worked, percent of clinical time spent on procedures under and not under anesthesia, specialty group, practice and restricted to bottom 95% of hours (<3500 per year).

b. Mean incomes; academic physicians at public medical schools only; model adjusted for age, years of experience, sex, NIH funding, publication count, clinical trial participation, Medicare payments, and medical school

c. 2010-13 mean incomes; model adjusted for age, race, sex, hours worked, time period, state, and interactions between race, sex, and time period.



## Chapter 5. Conclusion

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This dissertation examined three important aspects of physicians' working lives using three different methodologies.

### **Summary**

Chapter 2 was an updated systematic review of demographic, workplace, and health system factors related to physician professional satisfaction. We reviewed sixty-seven publications, provided an overview of seven major surveys, and summarized the evidence for relationships between satisfaction and seventeen different health system and workplace factors. We confirmed previous findings that satisfaction is associated with age, an academic working environment, not participating in HMOs, strong relationships with colleagues and practice leadership, the perception of delivering high quality patient care, and income. We also found emerging evidence that satisfaction is negatively related to electronic health record use, and positively related to patient centered medical home and capitation program participation. Finally, we confirmed that satisfaction is related to greater patient experience, higher continuity of care and lower physician attrition.

Chapter 3 was a qualitative analysis of semi-structured interviews with primary care physicians about administrative work and job role beliefs. I interviewed 28 physicians in the Chicago, Miami and Los Angeles areas about their experiences with and beliefs about administrative work. I found that these physicians did not think that administrative work was central to their clinical job role., and solutions to reduce this burden of administrative work

could clarify and strengthen job roles. These solutions, like the delegation of below license work or team-based care, did not seem to threaten the autonomy of my respondents, except for solo practitioners. These respondents generally valued their autonomy over the increase in administrative work associated with a solo practice.

Chapter 4 was a quantitative analysis of factors associated with the physician gender pay gap using a multistate survey. On average, male physicians in our sample made about \$95,000 more annually than female physicians. We found that the pay gap could be reduced by 70% after Winsorizing income at the 95<sup>th</sup> percentile, restricting hours worked to the 95<sup>th</sup> percentile, and accounting for practice, specialty, hours worked, hours worked performing specific activities, percent of patient care time spent performing procedures. This reduction in the pay gap is in line with other regression analyses of the disparity using other data sets and explanatory variables. Our analysis was the first to use a data set with detailed data on hours worked, overall and by activity, and percent of patient care time spent on procedures.

### **Policy implications**

Ensuring that physicians have higher professional satisfaction, less administrative work, and equal pay between the sexes requires a set of complex, multifaceted solutions. Multiple stakeholders throughout the health system affect factors that contribute to all of these problems, and, therefore, they could all play a role in solving them. Several possible solutions are presented by stakeholder and problem area in Table 5.1, and are detailed below.

## Professional satisfaction

Our review concludes that physicians are more satisfied when they work in inclusive and efficient workplaces. Hospitals and practices can ensure that physicians have sufficient control over their work, are listened to by leadership, and have efficient workflows. Evidence on organizational interventions for physician professional satisfaction is not available, but several systematic reviews reported that organizational and individual interventions do decrease burnout, with organizational interventions having higher effectiveness.<sup>1,2</sup> Several studies of intensivists showed a reduction in burnout associated with staff work shift discussions<sup>3</sup> and schedules that allow for nights without call and weekends without work.<sup>4,5</sup> There was also evidence for several multidimensional interventions among primary care physicians<sup>6,7</sup> which contained numerous components including staff discussions, flexible work schedules, and care management,<sup>6</sup> as well as shifting below license administrative work to non-physicians and reducing time pressure with patients.<sup>7</sup>

While organizational interventions that remove the stressors in a physician's working life are most effective at reducing burnout, individual interventions are effective as well. A recent systematic review and meta-analysis reported that mindfulness-based and stress management interventions were effective at reducing burnout among physicians.<sup>1</sup> Hospitals and practices could offer classes teaching these techniques to help physicians cope with work-related stress.

Workplaces play the significant role in physician working lives, but other stakeholders can implement solutions to increase satisfaction and reduce burnout as well. Medical schools could teach students about satisfaction and burnout in medicine, as well as mindfulness and

stress management strategies, warning signs for burnout and when to seek help from others. Payers could include physician wellness as a quality metric, and pay bonuses to hospitals and practices with more satisfied and less burned out physicians. They could also increase efficiency and reduce unnecessary physician work by implementing payment models that incentivize value instead of volume. Physician organization and physicians themselves could advocate for regulatory and legal changes that promote inclusive and efficient physician workplaces. Lastly, where applicable and legal, physicians could use their market power as medical groups or labor unions, and bargain with hospitals and health systems for better working conditions.

### Administrative work

My interviews suggest that primary care physicians do not find administrative work to be central to their job role and want solutions implemented to delegate their share of below license administrative work to non-physicians. Several studies report that the use of scribes to complete medical documentation and other administrative forms increases physician productivity<sup>8-10</sup> and satisfaction.<sup>11</sup> Hospitals and practices could hire scribes to reduce the physician burden of administrative work, and delegate below license tasks to other non-physician providers, like medical assistants and nurses. By more efficiently allocating administrative tasks, and ensuring that everyone works at the top of their license, hospitals and practices can increase productivity and satisfaction overall. In addition, hospitals and practices should seek to streamline work processes and implement EHR that follows this workflow, to ensure that all physicians and non-physicians can work as efficiently as possible.

Other stakeholders can also significantly affect the amount of administrative work faced by physicians. Medical schools can keep students aware of the importance of EHR in real world inpatient and outpatient medicine; for example, the AMA and the Regenstrief Institute are currently disseminating a pilot EHR educational program to medical schools.<sup>12</sup> Payers can promote a unified EHR standard so that physicians face similar systems throughout their career and more efficiently care for patients. Payers can also encourage the use of electronic billing systems, including prior authorizations and claims, that are unified with EHR. Finally, physician organizations and physicians can advocate for payer reimbursement of administrative procedure codes (the current procedural terminology (CPT) for “special reports or forms,” 99080, is not reimbursed by Medicare),<sup>13</sup> and the implementation of standardized, user-friendly EHR.

### Gender income gap

Our analysis and research by other authors showed that the underlying cause of the physician gender income gap is still unknown.<sup>14-17</sup> Of course, this unclear etiology makes solutions to the problem difficult to formulate. Authors studying the income gap in medicine and law have suggested that men may be paid more than woman because of “compensating differentials.”<sup>18-19</sup> That is, women are paid less than men because they work in jobs that are more favorable in some other (?) way. Another author takes this idea further, showing that the pay gap widens with experience in law and business, and posits that the differential is not due to unpleasantness but lack of substitutability.<sup>20</sup> Unlike, for example, pharmacists, individual physicians may be poor substitutes for each other, because of specific institutional, patient or

technical knowledge. In turn, this could mean that jobs with more flexibility and fewer hours, which are more likely to be held by women, are less competitive and paid less.<sup>20</sup> For example, research has shown that women spend more time with patients, but this may be due to a lack of experience instead of an inherent behavioral difference.<sup>21</sup> As most physicians, including those in our sample, are paid a salary adjusted for productivity or quality measures, these differentials are more likely due to competitiveness gained by working many hours without many breaks over a career.

Making physicians more substitutable is very challenging, as medicine involves many complex and irregular tasks. However, hospitals and practices could attempt to regularize work by implementing ideas like pooled patient panels, shift work, team-based care, and checklists. They can also offer and encourage the use of paternity leave and personal time off for men performing child-related tasks (school events, taking their children to their pediatrician, etc.). Increased male involvement in child-rearing could lessen the increased institutional, relationship, and technical knowledge gained from increased working hours. Next, medical schools could encourage and support women to have children while in school, so that they do not miss out on compensating differentials as an attending. Finally, payers could implement more value-based payment programs to limit the profitability of productivity, and physician organizations could advocate for payment reform as well.

### **Future research**

The working lives of physicians are an important, yet understudied aspect of the healthcare system. The research presented in this dissertation is descriptive, not causal, but this

is reflective of most of the literature on these topics. Due to the complexity of physicians' working lives, there is still a lack of consensus in the literature on many aspects of satisfaction, job role beliefs, and the gender pay gap. Even our review of factors affecting professional satisfaction shows that our understanding of the relationship between satisfaction and various factors has significant gaps (e.g. payment and delivery system changes) or lacks detail (e.g. specific aspects of EHR). As noted in a recent commentary published by the National Academy of Medicine (NAM), most research on satisfaction is not generalizable due to the use of nonstandard outcomes, convenience samples, cross-sectional designs, and lack of comparison across work settings, among other issues.<sup>22</sup> Again, as noted by the NAM, future work in this area should standardize outcomes, use representative samples from a diversity of work settings, use longitudinal studies to determine the long term effects of dissatisfaction on other health system outcomes, and establish causality using randomized interventional trial designs.

Qualitative work on physician administrative work is similarly scarce, likely owing to the (1) the lack of a consensus on the definition of administrative work, and (2) the expense and difficulty of recruiting a diverse sample of physicians to discuss their working lives. Additional research in this area should seek to study physicians across different work settings and survey the types of administrative work performed by physicians before asking their perspectives on it (as achieved by one recent pair of studies).<sup>23,24</sup> A detailed understanding of legal and regulatory mechanisms behind administrative work would also contextualize this issue, instead of presupposing that all paperwork is useless and burdensome. It would also be informative to interview samples of physicians at institutions that have implemented solutions to reduce administrative burden. Understanding different perspectives on known interventions would be

a more helpful in reducing administrative burden than a cross-section of perspectives from physicians who have experienced a variety of interventions at a variety of institutions.

Our analysis of the physician gender income gap also mirrors other major findings on the topic in the literature.<sup>14-17</sup> We were able to reduce the unadjusted male-female income gap by 70% using novel covariates (e.g. detailed work hours, overall and by category, etc.), but a large portion of the gap still remains unexplained. It is unclear how much of this unexplained gap is due to overt discrimination or other factors related to pay as of yet undetermined. Many physicians are paid according to some combination of salary, productivity, and quality incentives rather than via a flat salary,<sup>25</sup> so it is likely that gender differences in other factors related to productivity are driving this gap. For example, it has been noted that women spend more time with patients,<sup>21</sup> and this may be driving differences in income. Men and women may also bill for different quantities or types of procedures, even with similar patient populations. These differences in productivity could also be due to long term differences in institutional, patient or technical knowledge due to differences in hours worked.<sup>20</sup> Survey-based analyses of the physician gender income gap largely rely on self-reported income and demographics, rather than physician behavior. Our survey contains data on work hours and percent of patient care time spent performing procedures, but it is self-reported and therefore likely imprecise. Future research should attempt to obtain longitudinal administrative data at the hospital- or practice-level regarding pay, hours, and diagnosis and procedure codes. Understanding the nature and the frequency of billed procedures will further explain the physician gender income gap, in a way that current self-reported data cannot.



## **Conclusion**

The working lives of physicians remain an important component of the healthcare system. Professional satisfaction is linked to a variety of factors in the workplace and health system, and many of these factors, such as workplace collegiality and electronic health records, can be an important lever to improving satisfaction. Administrative work currently overburdens many physicians, reduces their satisfaction, and is outside their job role beliefs. Solutions to institute team-based care and reduce below license work can help to alleviate that burden. The physician gender income gap is still not well understood, despite several inquiries into the matter. Further research is needed to identify the drivers of the gap and to help close it. By continuing to research physicians' working lives, we can understand the problems that they face, and implement solutions to create a happier, healthier, and more enduring physician workforce.

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**Table**

**Table 5.1. Potential policy solutions to physician worklife problems**

Problem area	Stakeholders			
	Hospitals and practices	Medical schools	Payers	Physician organizations
Satisfaction and burnout	<ul style="list-style-type: none"> <li>• Regular staff meetings with physicians*</li> <li>• Shifting below license administrative work to non-physicians*</li> <li>• Allowing flexibility in terms of scheduling and type of work*</li> <li>• Hold classes on stress management/mindfulness-based stress reduction*</li> </ul>	<ul style="list-style-type: none"> <li>• Teach courses on mindfulness/resilience</li> <li>• Inform students of satisfaction/burnout statistics by specialty</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporate physician wellness to quality metrics</li> <li>• Implement value-based payment models that reward efficient care</li> </ul>	<ul style="list-style-type: none"> <li>• Advocate for efficient and inclusive physician working environments</li> <li>• Advocate for physician unionization or the formation of physician practice groups, where applicable and legal</li> </ul>
Administrative burden	<ul style="list-style-type: none"> <li>• Delegate below license tasks to non-physicians</li> <li>• Hire scribes*</li> <li>• Implement efficient EHR and work processes</li> </ul>	<ul style="list-style-type: none"> <li>• Teach students how to use EHR</li> </ul>	<ul style="list-style-type: none"> <li>• Promote a unified standard for EHR systems</li> <li>• Incentivize the use of electronic prior authorization and claims</li> </ul>	<ul style="list-style-type: none"> <li>• Advocate for procedure codes for administrative work</li> <li>• Advocate for standardized and user-friendly EHR</li> </ul>
Gender income gap	<ul style="list-style-type: none"> <li>• Regularize work</li> <li>• Increase substitutability of individual physicians</li> <li>• Offer maternity and paternity leave</li> </ul>	<ul style="list-style-type: none"> <li>• Accommodate women that have children during medical school</li> </ul>	<ul style="list-style-type: none"> <li>• Implement value-based payment programs</li> </ul>	<ul style="list-style-type: none"> <li>• Advocate for value-based payment</li> </ul>

\* = evidence available for intervention