

# Physician Financial Incentives and Care for the Underserved in the United States

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US healthcare spending continues to rise faster than the gross domestic product (GDP) and significant gaps persist between the care people should and do receive, particularly for persons from lower socioeconomic status (SES) classes and racial/ethnic minorities.<sup>1-3</sup> Since the Affordable Care Act of 2010 (ACA), payment and delivery system reform efforts have intensified, and there is substantial interest in healthcare delivery systems (eg, accountable care organizations [ACOs]) in which physicians increasingly serve as employees.<sup>4-7</sup> This may further catalyze efforts to restructure the types of financial incentives that physicians face (eg, a greater emphasis on cost profiling).<sup>4-7</sup>

Until now, payment and delivery system policy discussions have tended to focus on the incentives that flow between payers (eg, governmental and commercial health plans) and practices (which range in size from small solo practitioners to large multidisciplinary medical groups that may include a hospital system), and less attention has been paid to the types of financial incentives that physicians face as individuals through their compensation arrangements.<sup>4-7</sup> Even less is known about how compensation may differ if practices derive a substantial proportion of their revenues from Medicaid-insured patients or if they care for greater percentages of patients with minority racial/ethnic backgrounds or non-English speaking patients, who are disproportionately medically and socially complex.<sup>8</sup>

The types of incentives that physicians face affect healthcare costs, quality, and disparities.<sup>9-11</sup> Physicians who are paid fixed salaries tend to see fewer patients and perform fewer procedures than physicians who are paid according to productivity.<sup>12-15</sup> However, paying physicians according to visit or procedure volumes can cause physicians to focus on services that can be delivered quickly (eg, acute care for self-limited problems like colds) and spend less time on those that require more time (eg, teaching patients how to manage their diabetes), even though the latter has a better chance of improving patients' health.<sup>16</sup> Tying financial bonuses to care quality (eg, pay for performance [P4P]) can be effective at improving care quality, but many are concerned that this strategy will yield negative unintended consequences (eg, unincentivized care will suffer).<sup>17-21</sup> There is even concern that P4P could cause physicians to avoid caring for patients of lower SES or patients of minority racial/ethnic backgrounds because it may be more difficult to improve care

**Objectives:** To estimate: (1) the percentage of physicians whose compensation is variable; (2) the frequency at which performance incentives for productivity, care quality, patient satisfaction, and resource use were used to determine compensation; and (3) how much incentives differ for physicians who serve greater percentages of patients who are Medicaid-insured, racial/ethnic minorities, or who face language barriers, versus those who do not.

**Study Design:** Cross-sectional study of 3234 nationally representative physicians responding to the 2008 Center for Studying Health System Change's HealthTracking Physician Survey (HTPS).

**Methods:** We examined the degree to which practices' percentage of Medicaid revenues and physicians' panel characteristics were associated with physicians' financial incentives using  $\chi^2$  statistics and multivariate logistic regression (adjusting for physician specialty, practice type, and capitation levels, and area-based factors).

**Results:** Compensation was variable for 69% of respondents, was most frequently tied to productivity (68%), and less often to care quality (19%), patient satisfaction (21%), or resource use (14%). Physicians were significantly less likely to report variable compensation if the percentage Medicaid revenues was 50% or more (adjusted odds ratio [OR] 0.73, 95% confidence interval [CI], 0.57-0.95) or if physician panels were at least 50% Hispanic (adjusted OR 0.74, 95% CI, 0.56-0.99). However, physicians were significantly more likely to report use of all 4 performance incentives if percentage of Medicaid revenues was 6% to 24%.

**Conclusions:** Physicians report different types of financial incentives designed to alter care quality and quantity; incentive types differ by the degree that practices derive revenues from Medicaid or serve Hispanic patients. Further investigation is needed to understand how to align financial incentives with disparity-reduction efforts.

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### Take-Away Points

- Financial incentives alter the quality and quantity of care that physicians provide.
- Understanding physicians' past experience with financial incentives can help shape future compensation strategies.
- There is a complex relationship between physicians' experience of financial incentives and the degree to which practices derive revenue from Medicaid—pay based on performance is more prevalent when percent Medicaid is between 6% and 24%, but fixed salaries are more common when percent Medicaid is greater than or equal to 50%.
- Fixed salaries are also more common when physician panels are greater than or equal to 50% Hispanic.

quality for these patients.<sup>18-21</sup> It is important to understand the quickly evolving payment environment, especially as certain types of incentives may recede (eg, those for productivity) while others increase (eg, those for quality, patient satisfaction, and resource use).

Prior studies suggest that although the majority of physicians who receive variable compensation are paid for productivity, the use of productivity incentives may be declining, while performance incentives related to care quality, patient satisfaction, and resource use may be increasing (Table 1).<sup>20,22-30</sup> These studies also demonstrate that practice and regional factors (eg, private practice vs health maintenance organizations [HMOs], the degree to which practice revenue depends on capitated contracts, whether practices are located in low-SES areas, and region of the United States) influence the types of financial incentives that physicians face.<sup>20,22,30,31</sup>

It is also unclear whether physicians who treat high proportions of underserved patients may be exposed to different financial incentives than those who do not. For example, there is anecdotal evidence that physicians serving vulnerable populations (eg, physicians affiliated with federally qualified health centers or academic medical centers) tend to receive fixed salaries.<sup>12,32-34</sup> To our knowledge, there are no nationally representative data on whether the types of financial incentives that individual physicians face vary depending on the degree to which physicians care for Medicaid-insured patients, patients of minority racial/ethnic backgrounds, or patients who typically face language barriers when seeking medical care, after adjusting for other factors such as practice setting, for one, that may also influence the use of these incentives.<sup>33-36</sup>

Thus, this study aims to: (1) estimate the percentage of physicians whose compensation is variable (as opposed to fixed); (2) determine, for physicians whose compensation is variable, the frequency at which physicians experience 4 common performance incentives—productivity, quality, patient satisfaction, and resource use; and (3) assess the degree to which these incentives may vary for physicians whose practices serve more Medicaid-insured patients, whose panels

comprise larger proportions of minorities, or whose panels include more patients facing language barriers, adjusting for specialty, practice, and geographic characteristics.

## METHODS

### Study Design and Data Source

This is a cross-sectional study of physicians responding to the Center for Health System Change's 2008 Health Tracking Physician Survey (HTPS). The HTPS is a periodic national survey of nonfederal allopathic and osteopathic physicians engaged in patient care at least 20 hours per week. Residents, fellows, and specialty physicians with limited patient contact in ambulatory settings (radiology, anesthesiology, and pathology) were ineligible for the survey. The HTPS utilized a nationally representative sample that included information from more than 4700 physicians and was conducted by mail. To our knowledge, the HTPS (and its predecessor, the Community Tracking Study) is the only nationally representative survey of active, ambulatory-based physicians that gathers this level of detail on physician compensation arrangements; alternate physician surveys do not.<sup>37-39</sup> The response rate for this survey was 61.9%.<sup>36</sup>

### Measures

Our first outcome of interest was the proportion of physicians that reported their compensation to be variable (as opposed to fixed). We defined physician compensation as "variable" if respondents answered "yes" to the survey item asking if a physician's compensation was tied to *any* of the following measures: productivity, quality, patient satisfaction, or resource use; otherwise, physician compensation was considered to be fixed.

Our second set of outcomes was the performance measures to which compensation could be tied: productivity, care quality, patient satisfaction, and resource use. For example, we defined compensation as varying according to "productivity" if respondents answered "yes" to the question that asked if their practice took their personal productivity (eg, number of patients seen or procedures done per clinical session) into account when determining their pay. We did the same for questions related to physicians' performance on clinical quality measures (eg, rates of preventive care services), satisfaction surveys (completed by their own patients), or pattern of using medical resources relative to their peers (ie, resource use or cost profiling). The 2008 HTPS did not ask these questions of solo practitioners, nor did it include questions about the size of the variable component of compensation.

**Table 1. Physician Financial Incentives: Use of Performance Incentives in Prior Waves of the Community Tracking Study (CTS)<sup>22,23,a</sup>**

| Variable Portion of Compensation Is Tied to: | 2000-2001 | 2004-2005 |
|--|-----------|-----------|
| Productivity (%)                             | 78.1      | 70.4      |
| Care quality (%)                             | 13.1      | 20.2      |
| Patient satisfaction (%)                     | 17.7      | 24.6      |
| Resource use (%)                             | 9.3       | 13.9      |

<sup>a</sup>Please note that survey methods changed from telephone to paper-based in the switch from the CTS (1996-2005) to the Health Tracking Physician Survey (2008).

We used 4 predictor variables to assess the degree to which physicians provided care to Medicaid-insured patients or patients with minority racial/ethnic backgrounds: (1) percentage of practice revenue derived from Medicaid, and the percentage of patients in each physician's practice who (2) were Hispanic, (3) were African American, or (4) faced language barriers when seeking healthcare (ie, the percentage of each physician's patient panel that had a "hard time speaking with or understanding because you speak different languages"). The validity of physician report of the racial/ethnic composition of their patient panels has been previously established.<sup>40</sup> In each of these cases, since the data were skewed, we defined categories based on those providing care to 5% or less, 6% to 24%, 25% to 49%, and 50% or more of the demographic group of interest. Alternative categorizations (eg, <50% vs ≥50%) yielded substantively similar results. There was no co-linearity between these 4 variables (Variance Inflation Factor: 1.17) and less than 0.5% of the responses were missing.

**Covariates**

In multivariate analyses, we adjusted for 5 major factors known to be associated with physician compensation: (1) physician specialty (primary care, medical sub-specialty, or surgery); (2) practice type (1-2 physicians, ≥3 physicians, group model or staff model health maintenance organization [HMO], hospital-based practice, medical school and other [eg, community health centers, municipal boards of health]); (3) the proportion of practice revenue that was capitated or prepaid (none, 1%-24%, or ≥25%); (4) an area-based marker of SES (the median household income of the zip code in which the practice was located using the 2004 Area Resources File [ARF]); and (5) regional location (North, Midwest, South, West).<sup>9-16,18,19</sup>

**Analysis**

We used descriptive statistics to provide the percentages of our 2 outcomes of interest, stratifying by the degree to which physicians served patients insured by Medicaid, patients who were of minority background, or patients who faced language

barriers. We then examined bivariate and multivariate associations between our financial incentives of interest and our covariates using  $\chi^2$  statistics and logistic regression models. We used a separate multivariate logit model for each type of performance measure (ie, productivity, quality, satisfaction, and/or resource use incentives). In our multivariate models, we included covariates that may contribute to variation in financial incentives: physician specialty, practice type, proportion of practice revenues from capitation, area SES, and regional location.<sup>22,41</sup> We retained all covariates in the adjusted model because of their conceptual significance, regardless of the statistical significance of their bivariate association.<sup>42</sup> We applied survey weights to account for the complex sampling strategy of the HPTS (ie, known differences between probability of selection, response, nonresponse, and location) in accordance with HPTS technical recommendations.<sup>43</sup>

We conducted our analyses using STATA 9.0, and all reported *P* values are 2-sided. The Institutional Review Board (IRB) at the University of Chicago reviewed the study protocol and deemed it exempt from official review.

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**RESULTS**

**National Estimates: Variable Compensation and Types of Performance Incentives**

In this nationally representative survey of physicians, 68.5% of respondents indicate that their compensation is variable (Table 2). Among physicians reporting variable compensation, a majority (67.7%) report having their compensation tied to productivity; a minority indicate that their pay is tied to quality measures (18.7%), patient satisfaction (21.4%), or resource use (14.0%).

■ **Table 2.** Prevalence of Financial Incentives Facing Physicians<sup>a</sup>

|   | Compensation Is |       |       | Variable Portion of Compensation Is Tied to: |       |              |       |                      |       |              |       |
|---|-----------------|-------|-------|--|-------|--------------|-------|----------------------|-------|--------------|-------|
|   | Variable        |       |       | Productivity                                 |       | Care Quality |       | Patient Satisfaction |       | Resource Use |       |
|   | N <sup>b</sup>  | %     | P     | %  | P     | %            | P     | %                    | P     | %            | P     |
| National Estimates  | 3234            | 68.5  | —     | 67.7   | —     | 18.7         | —     | 21.4                 | —     | 14.0         | —     |
| <b>By Degree to Which Physicians Serve Vulnerable Patient Populations</b> |                 |       |       |  |       |              |       |                      |       |              |       |
| <b>% of Practice Revenue From Medicaid</b>                                |                 |       | <.001 |  | <.001 |              | <.001 |                      | <.001 |              | <.001 |
| ≤5%   | 1405            | 69.11 |       | 68.86  |       | 16.02        |       | 16.7                 |       | 11.41        |       |
| 6-24%   | 1133            | 73.55 |       | 73.02  |       | 21.87        |       | 25.62                |       | 17.01        |       |
| 25-49%  | 435             | 64.41 |       | 63.07  |       | 21.17        |       | 25.18                |       | 16.08        |       |
| ≥50%  | 261             | 55.18 |       | 51.62  |       | 18.99        |       | 21.91                |       | 12.42        |       |
| <b>% of Physicians' Panel That Is Hispanic</b>                            |                 |       | <.001 |  | <.001 |              | .25   |                      | .07   |              | .18   |
| ≤5%   | 1447            | 70.46 |       | 70.37  |       | 17.73        |       | 19.63                |       | 12.79        |       |
| 6-24%   | 1199            | 70.03 |       | 68.18  |       | 20.15        |       | 22.47                |       | 14.93        |       |
| 25-49%  | 394             | 64.11 |       | 63.86  |       | 19.09        |       | 24.03                |       | 15.67        |       |
| ≥50%  | 194             | 57.11 |       | 55.81  |       | 20.73        |       | 22.05                |       | 14.25        |       |
| <b>% of Physicians' Panel That Is African American</b>                    |                 |       | .36   |  | .45   |              | .20   |                      | .64   |              | .55   |
| ≤5%   | 1301            | 69.46 |       | 68.65  |       | 19.03        |       | 21.03                |       | 13.52        |       |
| 6-24%   | 1184            | 69.07 |       | 67.85  |       | 19.32        |       | 22.19                |       | 14.73        |       |
| 25-49%  | 539             | 66.77 |       | 66.45  |       | 16.86        |       | 20.14                |       | 13.15        |       |
| ≥50%  | 210             | 65.42 |       | 64.57  |       | 22.44        |       | 22.56                |       | 15.64        |       |
| <b>% of Physicians' Panel Facing Language Barriers</b>                    |                 |       | .003  |  | <.001 |              | .42   |                      | .03   |              | .34   |
| ≤5%   | 2535            | 69.65 |       | 69.18  |       | 18.77        |       | 20.41                |       | 13.64        |       |
| 6-24%   | 535             | 66.93 |       | 65.03  |       | 20.56        |       | 25.19                |       | 16.05        |       |
| 25-49%  | 110             | 60.34 |       | 56.35  |       | 15.5         |       | 22.66                |       | 12.9         |       |
| ≥50%  | 43              | 55.97 |       | 53.79  |       | 20.42        |       | 23.64                |       | 15.97        |       |
| <b>By Physician or Practice Characteristics</b>                           |                 |       |       |  |       |              |       |                      |       |              |       |
| <b>Physician Specialty</b>  |                 |       | <.001 |  | <.001 |              | <.001 |                      | <.001 |              | <.001 |
| Primary care  | 1530            | 68.96 |       | 67.66  |       | 25.73        |       | 24.42                |       | 16.15        |       |
| Medicine subspecialty   | 1160            | 65.87 |       | 65.07  |       | 14.02        |       | 19.55                |       | 12.8         |       |
| Surgery   | 539             | 73.84 |       | 74.44  |       | 11.13        |       | 15.66                |       | 10.68        |       |
| <b>Practice Type</b>  |                 |       | <.001 |  | <.001 |              | <.001 |                      | <.001 |              | <.001 |
| Solo/2 physicians   | 935             | 59.84 |       | 61.23  |       | 14.76        |       | 14.52                |       | 11.3         |       |
| ≥3 physicians   | 1462            | 78.52 |       | 78.61  |       | 17.39        |       | 19.35                |       | 13.28        |       |
| Group/staff model HMO   | 135             | 83.55 |       | 63.35  |       | 66.32        |       | 73.99                |       | 34.65        |       |
| Medical school  | 256             | 75.35 |       | 74.59  |       | 17.04        |       | 25.72                |       | 14.23        |       |
| Hospital-based practice   | 362             | 60.27 |       | 56.46  |       | 22.09        |       | 28.56                |       | 18.54        |       |
| Other   | 84              | 43.75 |       | 40.75  |       | 19.58        |       | 17.5                 |       | 9.89         |       |
| <b>Regional Location</b>  |                 |       | <.001 |  | <.001 |              | <.001 |                      | <.001 |              | .002  |
| North   | 660             | 60.93 |       | 61.6   |       | 17.69        |       | 16.95                |       | 13.85        |       |
| Midwest   | 778             | 75.76 |       | 75.21  |       | 23.54        |       | 26.69                |       | 16.39        |       |
| South   | 1092            | 67.87 |       | 67.52  |       | 13.86        |       | 16.47                |       | 11.45        |       |
| West  | 704             | 70.05 |       | 66.6   |       | 23.29        |       | 27.85                |       | 15.66        |       |
| <b>Area Socioeconomic Status<sup>c</sup></b>                              |                 |       | .007  |  | .006  |              | .004  |                      | .06   |              |       |
| <\$31,000   | 156             | 60.47 |       | 60.52  |       | 13.87        |       | 18.19                |       | 10.64        |       |
| \$31,000-40,999   | 1098            | 70.79 |       | 70.68  |       | 18.25        |       | 19.52                |       | 14.17        |       |
| \$41,000-49,999   | 1080            | 67.22 |       | 66.48  |       | 17.95        |       | 22.22                |       | 12.48        |       |
| ≥\$50,000   | 900             | 68.60 |       | 67.15  |       | 22.04        |       | 23.14                |       | 16.39        |       |
| <b>% of Practice Revenue From Capitation</b>                              |                 |       | <.001 |  | .008  |              | <.001 |                      | <.001 |              | <.001 |
| None  | 1904            | 66.34 |       | 67.02  |       | 12.78        |       | 14.51                |       | 9.4          |       |
| 1-24%   | 746             | 72.48 |       | 71.6   |       | 21.81        |       | 23.99                |       | 17.05        |       |
| ≥25%  | 584             | 70.93 |       | 65.12  |       | 36.29        |       | 41.3                 |       | 25.87        |       |

CI indicates confidence interval; HMO, health maintenance organization.

<sup>a</sup>P values reflect  $\chi^2$  tests of proportions.

<sup>b</sup>Values vary slightly for each analysis.

<sup>c</sup>Median household income for the zip code in which practices are located.

**Relationship Between Variable Compensation and Degree to Which Physicians Serve Vulnerable Populations**

In bivariate analysis, the degree to which compensation is variable depends significantly upon the degree to which practices derive revenues from Medicaid or physicians care for patients with Hispanic backgrounds; there is no association for physicians caring for varying proportions of African American patients or of patients facing language barriers (Table 2). These relationships remain significant in multivariate analysis (Table 3). Physicians with 50% or more of their practice revenue from Medicaid have three-fourths the odds of receiving variable compensation compared with physicians with 5% or less of their practice revenues from Medicaid (adjusted OR: 0.73; 95% CI, 0.57-0.95,  $P < .05$ ). Findings are similar for physicians with at least 50% Hispanic patients on their panels (adjusted OR: 0.74; 95% CI, 0.56-0.99,  $P < 0.05$ ) compared with those whose patient panels are 5% or less Hispanic.

**Relationship Between Performance Incentives and Degree to Which Physicians Serve Vulnerable Populations**

Among physicians who indicate that their compensation depends on performance incentives, there is a significant bivariate association between physicians' percentage of practice revenues from Medicaid and all 4 of our performance

**Table 3.** Adjusted Odds of Physician Having a Variable Compensation (N = 5623)<sup>a</sup>

| Physician's Practice Characteristic                        | Compensation Is Variable (Adjusted OR) | 95% CI                   |
|--|--|--------------------------|
| <b>% of Practice Revenue From Medicaid</b>                 |  |                          |
| ≤5%  | REF                                    |                          |
| 6-24%  | 1.16                                   | (0.99-1.37)              |
| 25-49%   | 0.88                                   | (0.71-1.09)              |
| ≥50%   | 0.73                                   | (0.57-0.95) <sup>b</sup> |
| <b>% of Physicians' Panel That Is Hispanic</b>             |  |                          |
| ≤5%  | REF                                    |                          |
| 6-24%  | 1.00                                   | (0.85-1.18)              |
| 25-49%   | 0.87                                   | (0.69-1.09)              |
| ≥50%   | 0.74                                   | (0.56-0.99) <sup>b</sup> |
| <b>% of Physicians' Panel That Is African American</b>     |  |                          |
| ≤5%  | REF                                    |                          |
| 6-24%  | 0.99                                   | (0.84-1.16)              |
| 25-49%   | 0.95                                   | (0.77-1.17)              |
| ≥50%   | 1.05                                   | (0.78-1.40)              |
| <b>% of Physicians' Panel That Faces Language Barriers</b> |  |                          |
| ≤5%  | REF                                    |                          |
| 6-24%  | 0.92                                   | (0.76-1.11)              |
| 25-49%   | 0.79                                   | (0.56-1.12)              |
| ≥50%   | 0.92                                   | (0.54-1.57)              |
| <b>Physician Specialty</b>                                 |  |                          |
| Primary care   | REF                                    |                          |
| Medicine subspecialty                                      | 0.87                                   | (0.75-1.01)              |
| Surgery  | 1.16                                   | (0.95-1.42)              |
| <b>Practice Type</b>                                       |  |                          |
| Solo/2 physicians  | REF                                    |                          |
| ≥3 physicians  | 2.26                                   | (1.93-2.64) <sup>e</sup> |
| Group/staff model HMO                                      | 2.84                                   | (1.79-4.51) <sup>e</sup> |
| Medical school   | 2.12                                   | (1.59-2.83) <sup>e</sup> |
| Hospital-based practice                                    | 1.10                                   | (0.89-1.37)              |
| Other  | 0.63                                   | (0.45-0.87) <sup>c</sup> |
| <b>Regional Location</b>                                   |  |                          |
| North  | REF                                    |                          |
| Midwest  | 1.75                                   | (1.43-2.14) <sup>e</sup> |
| South  | 1.34                                   | (1.12-1.61) <sup>c</sup> |
| West   | 1.56                                   | (1.27-1.91) <sup>e</sup> |
| <b>Area Socioeconomic Status<sup>f</sup></b>               |  |                          |
| <\$31,000  | REF                                    |                          |
| \$31,000-40,999  | 1.31                                   | (0.97-1.76)              |
| \$41,000-49,999  | 1.09                                   | (0.80-1.48)              |
| ≥\$50,000  | 1.26                                   | (0.92-1.73)              |
| <b>% of Practice Revenue From Capitation</b>               |  |                          |
| None   | REF                                    |                          |
| 1-24%  | 1.32                                   | (1.11-1.56) <sup>c</sup> |
| ≥25%   | 1.20                                   | (0.98-1.46)              |

CI indicates confidence interval; HMO, health maintenance organization; OR, odds ratio.  
<sup>a</sup>Physician compensation was considered variable if a compensation level was tied to any of the following measures: productivity, quality, patient satisfaction, or resource use.  
<sup>b</sup> $P < .05$ .  
<sup>c</sup> $P < .01$ .  
<sup>d</sup> $P < .001$ .  
<sup>e</sup> $P < .0001$ .  
<sup>f</sup>Median household income for the zip code in which practices are located.

■ **Table 4.** Adjusted Odds of Compensation Being Tied to Various Types of Performance Measures<sup>a</sup>

|   | Productivity |                          | Quality of Care |                          | Patient Satisfaction |                           | Resource Use |                          |
|---|--------------|--------------------------|-----------------|--------------------------|----------------------|---------------------------|--------------|--------------------------|
|   | Adjusted OR  | CI                       | Adjusted OR     | CI                       | Adjusted OR          | CI                        | Adjusted OR  | CI                       |
| <b>% of Practice Revenue From Medicaid</b>                |              |                          |                 |                          |                      |                           |              |                          |
| ≤5%   | REF          |                          |                 |                          |                      |                           |              |                          |
| 6-24%   | 1.19         | (1.01-1.40) <sup>b</sup> | 1.45            | (1.19-1.76) <sup>e</sup> | 1.55                 | (1.28-1.87) <sup>e</sup>  | 1.43         | (1.16-1.76) <sup>c</sup> |
| 25-49%  | 0.87         | (0.70-1.08)              | 1.25            | (0.96-1.63)              | 1.38                 | (1.07-1.79) <sup>b</sup>  | 1.22         | (0.91-1.64)              |
| ≥50%  | 0.69         | (0.53-0.88) <sup>c</sup> | 0.89            | (0.64-1.24)              | 1.06                 | (0.76-1.48)               | 0.82         | (0.57-1.18)              |
| <b>% of Physicians' Panel That Is Hispanic</b>            |              |                          |                 |                          |                      |                           |              |                          |
| ≤5%   | REF          |                          |                 |                          |                      |                           |              |                          |
| 6-24%   | 0.97         | (0.83-1.14)              | 1.12            | (0.91-1.37)              | 1.06                 | (0.87-1.28)               | 1.15         | (0.92-1.44)              |
| 25-49%  | 0.93         | (0.73-1.17)              | 1.10            | (0.82-1.48)              | 1.12                 | (0.85-1.48)               | 1.28         | (0.93-1.75)              |
| ≥50%  | 0.82         | (0.61-1.10)              | 1.08            | (0.73-1.59)              | 0.93                 | (0.63-1.39)               | 1.11         | (0.73-1.69)              |
| <b>% of Physicians' Panel That Is African American</b>    |              |                          |                 |                          |                      |                           |              |                          |
| ≤5%   | REF          |                          |                 |                          |                      |                           |              |                          |
| 6-24%   | 0.98         | (0.83-1.15)              | 1.09            | (0.89-1.32)              | 1.11                 | (0.92-1.34)               | 1.08         | (0.87-1.33)              |
| 25-49%  | 0.99         | (0.80-1.22)              | 0.97            | (0.75-1.26)              | 0.96                 | (0.75-1.23)               | 0.92         | (0.70-1.22)              |
| ≥50%  | 1.12         | (0.83-1.50)              | 1.16            | (0.82-1.65)              | 0.93                 | (0.66-1.30)               | 1.04         | (0.71-1.51)              |
| <b>% of Physicians Panel That Faces Language Barriers</b> |              |                          |                 |                          |                      |                           |              |                          |
| ≤5%   | REF          |                          |                 |                          |                      |                           |              |                          |
| 6-24%   | 0.90         | (0.75-1.09)              | 0.91            | (0.72-1.15)              | 1.00                 | (0.80-1.25)               | 0.97         | (0.76-1.25)              |
| 25-49%  | 0.72         | (0.51-1.03)              | 0.61            | (0.37-0.99) <sup>b</sup> | 0.81                 | (0.53-1.25)               | 0.73         | (0.44-1.23)              |
| ≥50%  | 0.90         | (0.52-1.56)              | 0.88            | (0.43-1.80)              | 0.91                 | (0.45-1.81)               | 1.06         | (0.51-2.18)              |
| <b>Physician Specialty</b>                                |              |                          |                 |                          |                      |                           |              |                          |
| Primary care  | REF          |                          |                 |                          |                      |                           |              |                          |
| Medicine subspecialty                                     | 0.90         | (0.77-1.04)              | 0.46            | (0.39-0.56) <sup>e</sup> | 0.78                 | (0.65-0.93) <sup>c</sup>  | 0.77         | (0.64-0.94) <sup>b</sup> |
| Surgery   | 1.23         | (1.00-1.51)              | 0.40            | (0.30-0.52) <sup>e</sup> | 0.63                 | (0.49-0.81) <sup>e</sup>  | 0.69         | (0.52-0.92) <sup>b</sup> |
| <b>Practice Type</b>                                      |              |                          |                 |                          |                      |                           |              |                          |
| Solo/2 physicians   | REF          |                          |                 |                          |                      |                           |              |                          |
| ≥3 physicians   | 2.18         | (1.86-2.55) <sup>e</sup> | 1.05            | (0.86-1.28)              | 1.20                 | (0.99-1.46)               | 1.03         | (0.83-1.28)              |
| Group/staff model HMO                                     | 1.04         | (0.71-1.51)              | 6.22            | (4.09-9.47) <sup>e</sup> | 8.01                 | (5.24-12.22) <sup>e</sup> | 2.09         | (1.35-3.22) <sup>c</sup> |
| Hospital-based practice                                   | 1.93         | (1.44-2.58) <sup>e</sup> | 1.15            | (0.80-1.64)              | 1.68                 | (1.22-2.31) <sup>c</sup>  | 1.06         | (0.73-1.55)              |
| Medical school  | 0.90         | (0.72-1.12)              | 1.56            | (1.17-2.06) <sup>c</sup> | 1.95                 | (1.49-2.54) <sup>e</sup>  | 1.50         | (1.12-2.01) <sup>c</sup> |
| Other   | 0.55         | (0.39-0.76) <sup>e</sup> | 1.16            | (0.76-1.77)              | 1.00                 | (0.66-1.54)               | 0.73         | (0.43-1.25)              |
| <b>Regional Location</b>                                  |              |                          |                 |                          |                      |                           |              |                          |
| North   | REF          |                          |                 |                          |                      |                           |              |                          |
| Midwest   | 1.63         | (1.32-2.00) <sup>e</sup> | 1.45            | (1.14-1.84) <sup>c</sup> | 1.87                 | (1.48-2.37) <sup>e</sup>  | 1.25         | (0.96-1.62)              |
| South   | 1.21         | (1.01-1.46) <sup>b</sup> | 0.81            | (0.64-1.04)              | 1.12                 | (0.88-1.42)               | 0.89         | (0.69-1.15)              |
| West  | 1.38         | (1.12-1.69) <sup>c</sup> | 1.07            | (0.83-1.38)              | 1.52                 | (1.19-1.95) <sup>c</sup>  | 0.99         | (0.75-1.32)              |
| <b>Area Socioeconomic Status<sup>f</sup></b>              |              |                          |                 |                          |                      |                           |              |                          |
| <\$31,000   | REF          |                          |                 |                          |                      |                           |              |                          |
| \$31,000-40,999   | 1.29         | (0.95-1.75)              | 1.29            | (0.87-1.93)              | 0.95                 | (0.66-1.37)               | 1.27         | (0.81-1.99)              |
| \$41,000-49,999   | 1.08         | (0.79-1.47)              | 1.12            | (0.74-1.69)              | 1.00                 | (0.68-1.45)               | 0.97         | (0.61-1.55)              |
| ≥\$50,000   | 1.17         | (0.85-1.61)              | 1.39            | (0.91-2.11)              | 1.04                 | (0.71-1.54)               | 1.30         | (0.81-2.09)              |
| <b>% of Practice Revenue From Capitation</b>              |              |                          |                 |                          |                      |                           |              |                          |
| None  | REF          |                          |                 |                          |                      |                           |              |                          |
| 1-24%   | 1.25         | (1.05-1.49) <sup>b</sup> | 1.54            | (1.26-1.89) <sup>e</sup> | 1.55                 | (1.28-1.89) <sup>e</sup>  | 1.76         | (1.41-2.18) <sup>e</sup> |
| ≥25%  | 1.02         | (0.84-1.24)              | 2.56            | (2.08-3.16) <sup>e</sup> | 2.80                 | (2.30-3.42) <sup>e</sup>  | 2.76         | (2.19-3.48) <sup>e</sup> |

CI indicates confidence interval; HMO, health maintenance organization; OR, odds ratio.

<sup>a</sup>Adjusted for all listed variables.

<sup>b</sup> $P < .05$ .

<sup>c</sup> $P < .01$ .

<sup>d</sup> $P < .001$ .

<sup>e</sup> $P < .0001$ .

<sup>f</sup>Median Household Income for the zip code in which practices are located.

incentives of interest (Table 4). This relationship remains significant after multivariate analysis adjusting for physician specialty, practice type, and area-level factors. Physicians who report deriving 6% to 24% of their practice revenues from Medicaid have significantly greater odds of reporting that their compensation is tied to productivity (adjusted OR 1.19, 95% CI, 1.01-1.40), care quality (adjusted OR 1.45, 95% CI, 1.19-1.76), patient satisfaction (adjusted OR 1.55, 95% CI, 1.28-1.87), and resource use (adjusted OR 1.43, 95% CI, 1.16-1.76) compared with those deriving 5% or less of practice revenues from Medicaid. Within the group of physicians, physicians at practices with 50% or more of their revenues from Medicaid have significantly lower odds of receiving incentives for productivity (adjusted OR 0.69, 95% CI, 0.53-0.88).

After adjusting for covariates, there is no consistently significant relationship between use of our 4 performance incentives of interest and the percentage of patient panels that are Hispanic, African American, or facing language barriers.

### Practice Characteristics and Physician Performance Incentives

The above multivariate analysis also confirms that the odds of physicians having variable compensation is significantly associated with practice type, level of capitation, and regional location, but not with physician specialty or area SES (Table 3). For example, physicians working in group/staff model HMOs are nearly 3 times as likely to report variable compensation as physicians working in solo/2-physician practices (adjusted OR 2.84, 95% CI, 1.79-4.51).

When evaluating the types of performance incentives; physician specialty, practice type, capitation level, and regional location are also—to varying degrees—significantly associated with incentives for productivity, care quality, patient satisfaction, and resource use in multivariate analysis (Table 4). For example, medicine subspecialists and surgeons have significantly lower odds of experiencing incentives for care quality, patient satisfaction, and resource use compared with primary care physicians, and surgeons alone have significantly greater odds of reporting incentives for productivity. Physicians in group/staff model HMOs have 2 to 8 times greater odds of reporting incentives for care quality, patient satisfaction, and resource use, but do not have different odds of exposure to productivity incentives.

## DISCUSSION

First, the unadjusted results show that, in 2008, US physicians faced a variety of financial incentives to alter care quantity and quality, and that productivity incentives predominated. Although governmental and private payers imple-

mented numerous large-scale interventions aimed at better aligning financial rewards with healthcare quality in the years immediately preceding the 2008 HTPS, the prevalence of productivity incentives remained similar to past waves of this survey's predecessor, the Community Tracking Survey (Table 1).<sup>20,22,23,30,31</sup>

Second, the adjusted multivariate results suggest how complex the relationship between physicians' financial incentives and Medicaid were at that time. On the one hand, the more that practices derived revenue from Medicaid, the less likely physicians were to report having variable compensation. This finding corroborates anecdotal information about the prevalence of fixed salaries in underserved settings.<sup>12,32-34</sup> On the other hand, physicians receiving variable compensation were significantly more likely to report all 4 types of performance incentives if their practices derived 6% to 24% of their revenues from Medicaid. The observation is consistent with the idea that physicians working in practices that are able to modulate the degree to which their practices care for Medicaid-insured patients may be better able to create and operate performance-based incentive programs.<sup>44</sup> Practices may need to be of a certain size, level of infrastructure, or degree of technical sophistication in order to titrate Medicaid revenues or operate performance-based compensation programs.

Third, we show that the relationship between physicians' financial incentives and the degree to which physicians serve patients of minority racial/ethnic backgrounds also appears complex. After adjusting for key covariates, physicians with patient panels that were more than 50% Hispanic were significantly less likely to report variable compensation. Perhaps this is because physicians working with large panels of Hispanic patients find it difficult to provide culturally appropriate care when productivity incentives are in place and negotiate alternate compensation arrangements. Or, possibly, Hispanic patients are located in settings where variable compensation is less common and our covariates were insufficient to adjust for those other factors. Or, another causative mechanism may exist that we are unaware of. Further qualitative work could shed important light on why physicians caring for Hispanic patients and physicians in underserved settings are more likely to receive fixed compensation.

Fourth, among physicians receiving variable compensation, there appeared to be no significant correlation between the degree to which physicians care for minority patients and the types of performance incentives physicians face after these adjustments (eg, practice type and setting). That performance incentives are no different for physicians who serve vulnerable patients versus those who do not is striking given the difference in the complexity of the clinical work and the magnitude of disparities in healthcare quality among these populations. This

study underscores the notion that physicians working with greater proportions of minority patients may benefit from performance incentives that support disparity reduction.<sup>45</sup>

Interest in aligning physicians' financial incentives with desired healthcare processes and outcomes is only likely to rise as physicians increasingly seek employee positions in large provider organizations. Yet each incentive type has an advantage and disadvantage. Productivity incentives may increase visit access, but reduce the amount of time that physicians have with those patients.<sup>22</sup> Quality and patient satisfaction incentives may reward physicians for addressing sociocultural barriers important to vulnerable populations,<sup>25</sup> but could also deter them if performance assessment is invalid or unreliable.<sup>46</sup> Resource use incentives may reduce waste, but exacerbate underuse of recommended services that is already prevalent within minority populations (eg, cancer screening, influenza vaccinations).<sup>26,27,30</sup> It is critical to understand how these incentives vary depending on patient, physician and practice characteristics to target interventions and pursue the "right blend" of financial incentives.<sup>5</sup>

Our study has 4 main limitations. First, the data are based on physician self-report and may not accurately reflect their actual financial incentives. However, we have no reason to suspect social desirability bias in responses and would expect even inaccurate responses to be informative. That is, if a physician believes that he or she is exposed to quality-based incentives, that physician is more likely to behave accordingly, even if the incentives are not actually present. Second, our analysis does not account for reputational incentives such as public reporting, which may have different effects among physicians and on healthcare disparities.<sup>47</sup> Third, although solo/2-physician practices responded that they are less likely to have variable compensation, those working in smaller practices may be more likely to be influenced by variation in their practices' profitability than their counterparts in staff-model practices. Fourth, this study does not contain any information on how financial incentives should be ideally structured for different care settings.

Nonetheless, our study has several strengths. First, it examines a time period that is between 2 different waves of payment reforms taking place across the nation. Second, it is, to our knowledge, the first study to examine relationships between financial incentives and the extent to which a physician treats various types of vulnerable patient populations. Third, it utilizes a nationally representative data set.

In summary, we found that in 2008, the majority of front-line physicians in our nation indicated receiving variable compensation, and that the most frequently reported performance measure was that for productivity. We also found that physicians' financial incentives are significantly modified by the degree to which physicians care for patients who are

Medicaid-insured or Hispanic, and not substantially altered by the degree to which they care for patients who are African American or face language barriers. It remains to be seen whether the ACA—with its emphasis on continued use of P4P, introduction of global payment strategies, and ACOs—will yield significant changes in the degree to which physicians face different types of financial incentives when they do and do not care for vulnerable populations.

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