Public Awareness of and Contact With Physicians Who Receive Industry Payments:

A National Survey

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SUPPLEMENTARY APPENDIX

Appendix S1

Methods

Survey Design and Testing

Questions in the survey instrument were modeled on similar questions previously fielded in established public opinion surveys. The question on awareness was modeled after questions in the General Social Survey about physician incentives under managed care [1]. The question on the public availability of information was modeled on similar questions in the Massachusetts Medical Society 2013 Health Care Public Opinion Survey on the availability of price and quality information of medical services [2]. Core questions on health status, health behaviors, and health care utilization were modeled after questions in the National Health Interview Survey [3] and the General Social Survey.[1] The full survey instrument was reviewed and tested by GfK and by the investigators who brought a range of social science, medical, and legal expertise in physician-industry relationships and experience with surveys.

The survey was tested several days prior to the scheduled fielding. Fifty surveys were initially released for testing. Responses to the testing survey (23 of 50) were reviewed for anomalies; none were found and the remaining surveys were subsequently released for the full survey launch.

Survey Sampling and Administration

Individuals selected for the survey were recruited from KnowledgePanel® (KP), a nationally representative household panel assembled by the research firm GfK. KP households are selected through random digit dialing and address-based sampling so that landline households as well as cell-phone-only and no-phone households are in a sampling frame covering 97% of US households. KP households agree to participate in occasional surveys and,

in return for their participation, accumulate points that they can redeem for cash, merchandise, and other items of monetary value (average accumulation valued at $4-$6 per month). Households without Internet access are provided a web-enabled computer and free Internet service for the duration of their participation in the panel. Detailed information about KP sampling methodology, incentive structures, informed consent, and other human subjects issues are documented in Dennis and Thomas (2013).[4]

For our survey, individuals were sampled from among 55,000 KP households in all 50 states, excluding DC, to constitute a nationally representative sample, with oversampling in Massachusetts and Minnesota to enable us to detect smaller effects in these two states that had previously passed Sunshine laws. We did not oversample Vermont, the third Sunshine state, because even an oversample of this relatively small population would have not have generated sufficient power to detect an effect in that state. A sample of 7718 adults aged 18 and older residing in the US were selected from panel households using an equal probability selection method (with oversampling in Massachusetts and Minnesota).

Survey Fielding

The online surveys were fielded in late September and early October 2014. Individuals selected for the survey received a notification email with a link to the survey. After three days, individuals who had not responded to the survey were sent an email reminder.

Most surveys were completed prior to the Open Payments data release date of September 30, 2014, but some respondents did not respond to the survey until after September 30. Overall, 81% percent of surveys were completed by September 29 (the day before the data release), and 94% were completed by September 30 (the day of the data release). All of the remaining surveys were completed by October 3. Because of the relatively small proportion of surveys completed

shortly after the data release and the reported early difficulties experienced by users of the Open Payments website, [5,6] the effects of the overlap of survey field period with the initial data release were likely minimal.

Completion Rate

The overall completion rate was 45.9% (3542 completes out of 7718), which is higher than average for web and telephone public opinion surveys and within the norm for paper-based surveys.[7-9]. It is, however, somewhat lower than average for GfK surveys, primarily because our field period was shorter than the usual 2 weeks. Because this survey was designed to measure baseline pre-Open Payments knowledge and attitudes, we ended the field period after 9 days--shortly after the Open Payments data release--to minimize confounding that might occur from Open Payments media coverage and data availability. Completion rates varied by state and ranged from 30.8% to 66.7%. Average completion rates for Sunshine and non-Sunshine states did not differ from each other (44.7% and 46.0%, respectively).

Survey Weights

Our analysis uses survey weights provided by GfK that account for non-coverage, nonresponse, and oversampling. These GfK weights use, as a benchmark, distributions derived from the 2014 March Supplement Current Population Survey (CPS) so the survey sample matches the US adult population on key demographic dimensions (gender, age, race/Hispanic ethnicity, education, Census region, household income, homeownership status, metropolitan residence, Internet access). Details on the construction of survey weights are documented in Dennis and Thomas (2013).[4]

Physician Matching

Approximately 84% of 3542 respondents named a specific provider that they had seen most frequently in the past 12 months. Because all CMS and Open Payments providers must be registered in the CMS National Plan and Provider Enumeration System (NPPES) and assigned a National Provider Identifier (NPI), we matched respondents' provider information (name and practice location) to the list of licensed providers in the NPPES NPI Registry. We then matched these NPI-identified providers to the provider and payments information reported by the Open Payments program.

Two algorithms were used to link survey-named providers to those in the NPI Registry. The first, employed by GfK, used a team of expert coders to manually match providers based on the provider's name and location of practice as provided by the respondent. The second algorithm used probabilistic matching of names and locations to identify possible matches. The probabilistic matching algorithm used a bigram string comparator with a threshold bigram value of 0.99 for initial match/non-match classification. Match and non-match results from the two algorithms were compared, and discrepancies were manually reviewed and adjudicated by a third party research associate. Although the survey asked specifically about respondents' physicians, some respondents named providers who were not physicians or were unlicensed; these providers were excluded from our final match results.

Combined, the two algorithms were able to match 1971 physicians named by 1987 respondents (some respondents named the same physician). Overall, 66% of the 3542 respondents could be matched to a provider and 56% could be matched to a physician. We call the subgroup of respondents with matched physicians our Verified Sample.

Open Payments Matching

Having matched respondents' physicians to the standardized NPI Registry of physicians, we were able to then match NPI-identified physicians to the providers reported in the Open Payments system. Payments data for program years 2013 and 2014 made available by CMS in the July 2015 Open Payments data release were used to calculate both patient-based measures of exposure to physicians with industry contact and physician-based measures of industry contact. We focused on payments classified as General Payments, which included payments related to consulting; compensation for services other than consulting, including serving as faculty or as a speaker at an event other than a continuing education program; honoraria; gifts; entertainment; food and beverage; travel and lodging; education; royalty or license; compensation for serving as faculty or as a speaker for an unaccredited and non-certified continuing education program; and compensation for serving as faculty or as a speaker for an accredited or certified continuing education program. Open Payments reports General Payments separately and viewed as qualitatively distinct from Research Payments and Physician Ownership/Investment Interest. For this analysis, we focused on General Payments primarily because public concern about the effects of industry ties on patient care is somewhat lower for research grants than for personal income.[10] For this reason, our estimates should be considered a lower bound for consumer exposure to physicians who accept industry payments.

Characteristics of Non-Verified Respondents Versus Respondents in Verified Sample

We compared the distributions of key demographic variables for respondents in our Verified Sample and respondents who named physicians whose identities could not be verified.

Because of the sample weighting, we applied the Rao-Scott correction of the χ^2 test for independence to test for differences in the distributions. Because we conducted 14 different comparisons, the appropriate p-values—Bonferroni-corrected for multiple comparisons—are 0.0007 for $\alpha=0.01$ and 0.0036 for $\alpha=0.05$. The full results are reported in Table A1.

Nonresponse Analysis

Using base weights, we compared the distributions of key demographic variables available from KP profiles for both respondents and nonresponders. We also compared the distributions of these variables using, for responders, weights adjusted for nonresponse and non-coverage, to identify ways in which respondents systematically differed from nonresponders even with adjustments on CPS characteristics. Because of the sample weighting, we applied the Rao-Scott correction of the χ^2 test for independence to test for differences in the distributions. Because we conducted 14 different comparisons, the appropriate p-values—Bonferroni-corrected for multiple comparisons—are 0.0007 for $\alpha=0.01$ and 0.0036 for $\alpha=0.05$. The full results are reported in Table A2.

Appendix S2

Survey Questions

Awareness and Knowledge of Industry Payments

1. Some doctors receive payments from pharmaceutical (drug) and medical device companies
    in the form of small gifts such as pens, mugs, or books; reimbursement for travel and
    conference presentations; or financial compensation for consulting services. Have you heard
    about these payments before now?

    Response choices: Yes; No; Don't know

2. A variety of sources recently began posting information about payments made by
    pharmaceutical and medical device companies to doctors. Were you aware that this
    information is available?

    Response choices: Yes, I was aware; No, I was not aware; Not sure

3. Do you know whether the doctor you've seen most frequently in the past 12 months has
    received any payments from a pharmaceutical or medical device firm?

    Response choices: Yes, I know my doctor has received payments; Yes, I know my doctor
    has not received any payments; No, I do not know whether my doctor has received any
    payments; Not sure

Health and Health Care

4. Would you say your own health, in general, is excellent, good, fair, or poor?

    Response choices: Excellent, Good, Fair, Poor, Don't know

5. During the past 12 months, how many times have you seen a doctor or other health care professional about your own health at a doctor's office, a clinic, or some other place? Do not include times you were hospitalized overnight, visits to hospital emergency rooms, home visits, dental visits, or telephone calls.

    ＿＿＿＿＿＿＿ [range 0-99]

Table A1. Comparison of Characteristics of Non-Verified Respondents and Respondents in Verified Sample

		Non-Verified Respondents	Verified Sample	*p*†
Gender				0.0039
	Female	52%	45%	
	Male	48%	55%	
Race/Ethnicity				<0.0001**
	Caucasian	59%	71%	
	Hispanic	15%	9%	
	Black, Non-Hispanic	18%	13%	
	Other	8%	8%	
Age				<0.0001**
	<=20	6%	3%	
	21-30	24%	15%	
	31-40	18%	14%	
	41-50	17%	14%	
	51-60	18%	23%	
	61+	17%	32%	
Education				<0.0001**
	Less than high school	15%	10%	
	High school graduate	31%	29%	
	Some college	29%	28%	
	College graduate	25%	33%	
Marital Status				0.0043
	Married or cohabiting	43%	37%	
	Not married or cohabiting	57%	63%	
Household Income				<0.0001**
	$0 - $24,999	21%	16%	
	$25,000 - $49,999	24%	21%	
	$50,000 - $74,999	19%	18%	
	$75,000 - $99,999	15%	16%	
	$100,000+	22%	30%	
Employment				<0.0001**
	Employed for pay	53%	48%	
	Self-employed	8%	6%	
	Retired	12%	24%	
	Not working – disability	7%	8%	
	Not working – other	20%	14%	
Urban/Rural				0.6911
	Urban	84%	85%	
	Rural	16%	15%	
Resides in State with Sunshine Law				0.0148

No	97%	95%	
Yes	3%	5%	
Diagnosis of chronic condition‡			<0.0001**
No	84%	80%	
Yes	16%	20%	
Diagnosis of mental health disorder			0.0005**
No	47%	64%	
Yes	51%	69%	
Diagnosis of cancer			<0.0001**
No	95%	88%	
Yes	5%	12%	
Diagnosis of stroke or MI			0.0086
No	97%	96%	
Yes	3%	4%	
Any health insurance coverage			<0.0001**
No	25%	12%	
Yes	75%	88%	

** significant at 0.01 level with Bonferroni correction (0.01/14=0.0007)

* significant at 0.05 level with Bonferroni correction (0.05/14=0.0036)

Percentages may not add up to 100 because of rounding.
All analyses included 1,555 respondents whose doctors could not be verified and 1,987 in the Verified Sample, with the exception of analyses of the diagnosis of health conditions, which included 1,531 respondents whose doctor could not be verified and 1,982 respondents in the Verified Sample.

Notes:
† p-values are from χ^2 test of independence with Rao-Scott correction, testing the difference in distribution values between non-verified respondents and verified respondents.
‡ Chronic conditions include acid reflux, asthma, COPD, atrial fibrillation, chronic pain, cystic fibrosis, diabetes, epilepsy, eye disease, gout, heart disease, hepatitis C, hypertension, high cholesterol, HIV, kidney disease, multiple sclerosis, osteoarthritis, osteoporosis, rheumatoid arthritis, sleep disorder.

Table A2. Nonresponse Analysis

	Base-weighted Nonrespondents	Base-weighted Respondents	$p\dagger$	Fully-weighted Respondents	$p\ddagger$
Gender			<0.0001**		0.0465
Female	54%	49%		52%	
Male	46%	51%		48%	
Race/Ethnicity			<0.0001**		0.0002**
Caucasian	60%	72%		66%	
Hispanic	14%	9%		11%	
Black, Non-Hispanic	18%	12%		15%	
Other	8%	8%		8%	
Age			<0.0001**		<0.0001**
<=20	5%	3%		4%	
21-30	22%	16%		19%	
31-40	18%	15%		16%	
41-50	16%	15%		15%	
51-60	19%	22%		21%	
61+	20%	31%		25%	
Education			0.0001**		0.2428
Less than high school	14%	11%		12%	
High school graduate	29%	31%		30%	
Some college	30%	28%		29%	
College graduate	28%	31%		29%	
Marital Status			0.0238		0.4698
Married or cohabiting	41%	38%		40%	
Not married or cohabiting	59%	62%		60%	
Household Income			0.0001**		<0.0001**
$0 - $24,999	24%	20%		18%	
$25,000 - $49,999	24%	23%		22%	
$50,000 - $74,999	17%	19%		18%	
$75,000 - $99,999	13%	14%		15%	
$100,000+	22%	24%		26%	
Employment			<0.0001**		<0.0001**
Employed for pay	52%	48%		51%	
Self-employed	8%	7%		7%	
Retired	13%	23%		19%	
Not working - disability	8%	8%		7%	
Not working - other	19%	15%		17%	
Urban/Rural			0.5776		0.9746
Urban	84%	85%		84%	
Rural	16%	15%		16%	
Resides in State with Sunshine Law			0.7429		0.9937

No	96%	96%		96%	
Yes	4%	4%		4%	
Diagnosis of chronic condition#			<0.0001**		0.0736
No	47%	41%		.45%	
Yes	52%	59%		55%	
Diagnosis of mental health disorder			0.3048		0.1383
No	80%	81%		82%	
Yes	20%	19%		18%	
Diagnosis of cancer			<0.0001**		0.0653
No	92%	90%		91%	
Yes	8%	10%		9%	
Diagnosis of stroke or MI			0.0285		0.4940
No	97%	96%		97%	
Yes	3%	4%		3%	
Any health insurance coverage			<0.0001**		<0.0001**
No	24%	17%		18%	
Yes	76%	83%		82%	

** significant at 0.01 level with Bonferroni correction (0.01/14=0.0007)
* significant at 0.05 level with Bonferroni correction (0.05/14=0.0036)
Percentages may not add up to 100% because of rounding.
All analyses included 4176 respondents and 3542 nonrespondents, with the exception of analyses of the diagnosis of health conditions, which included 4141 nonrespondents and 3513 respondents.
Notes:
‡ p-values are from χ^2 test of independence with Rao-Scott correction, testing the difference in distribution values between nonrespondents and respondents using base weights.
‡ p-values are from χ^2 test of independence with Rao-Scott correction, testing the difference in distribution values between respondents using weights adjusted for nonresponse and noncoverage, and nonrespondents using base weights.
# Chronic conditions include acid reflux, asthma, COPD, atrial fibrillation, chronic pain, cystic fibrosis, diabetes, epilepsy, eye disease, gout, heart disease, hepatitis C, hypertension, high cholesterol, HIV, kidney disease, multiple sclerosis, osteoarthritis, osteoporosis, rheumatoid arthritis, sleep disorder.

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