Who Values Diversity? Comparing Gender Effects across the Public, Private and Nonprofit Sectors

Statistical Appendix

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In this Statistical Appendix, we present additional information about the *FY2010 Hospital Management Survey* and the assessment of survey non-response bias. We also discuss the rationale of recoding the dependent variable, and present additional descriptive statistics and an alternative model specification for Table 4 in the paper.

1. Survey Sample and the Analysis of Survey Non-Responses

We draw data from an original *Hospital Management Survey* to measure American hospital CEOs' managerial priority on diversity. The *Hospital Management Survey* draws a convenient non-probability sample of 6,000+ American Hospital Association (AHA) member hospitals across the public, nonprofit, and private sectors. Administrated during the Fiscal Year (FY) 2010, all surveys were sent to hospitals' AHA registered mailing addresses. Recent studies on hospital management show that it is extremely difficult to engage top-level managers in large-N survey research. For example, Goldstein and Naor (2005) surveyed 814 American hospitals for their total quality management activities. Their mail survey produced 195 valid cases (6 public hospitals, 31 for profit hospitals, and 158 nonprofit hospitals). To improve the survey response rate, we mailed out additional surveys to the hospitals that did not respond to our initial inquiry. In total, we mailed out four waves of the survey and received 1036 valid responses. For the question regarding managerial priority on diversity, we obtained 970 valid responses. Ninety-two cases were excluded from the empirical models reported in the paper primarily due to non-responses about managerial tenure and managerial perceptions about community conditions. As a result, the two empirical models include a sample of 898 hospitals, in which there are 305 government-owned hospitals (33.96%), 431 nonprofit hospitals (48.00%) and 162 private hospitals (18.04%). Based on the AHA's full list of registered member hospitals in FY 2010, there are 1,586 public hospitals (25.69%), 3,087 nonprofit hospitals (50%) and 1,501 private hospitals (24.31%). Though not perfect, our survey sample is substantially better than prior hospital management survey studies for three reasons. First, it produced a much larger sample than prior studies such as Goldstein and Naor's hospital management survey. Second, it proportionally covers all three sectors, while previous studies have extremely limited samples for both public and for-profit hospitals. Third, our survey yielded valid responses from hospitals from almost all states (except Delaware), which permits us to control for various contextual factors specific to geographic areas.

In Table 1, we present detailed information about the ownership characteristics of all in-sample cases used in our empirical models. Coding survey non-responses as 1 and in-sample cases as 0, we further evaluate survey non-response bias associated with organizational size, geographic areas (state code and rural dummy), local markets (AHA service areas), service specialization, and ownership. We did not include personal traits of managers, because we only observe information on managers' personal traits from in-sample cases. We are looking for insignificant coefficients for all the included variables, which means that the included variables do not significantly predict survey responses. For statistically significant variables, we need to further compare the odds-ratio coefficients to 1 to gauge whether the response bias is large enough to be troublesome. A value that is much larger than 1 indicates a sizable bias of under-

sampling (i.e. positive association with non-response bias). A value that is substantially smaller than 1 indicates a bias of over-sampling (i.e. negative association with non-response bias).

Table 2 reports the results of the logistic regression model. We do observe that the coefficients for *state*, *ownership*, *rural hospital*, and *hospital size* are statistically significant. Further evaluating the odds-ratio coefficients associated with these variables, only the rural dummy substantially affects survey participation; rural hospitals are 28% more likely to participate in the survey than urban hospitals. Hence, we controlled for this variable in our analysis. After considering the rural dummy variable, organizational size has a statistically significant, but substantively small impact on the probability of survey non-response. *Ownership* also does not have a substantial impact on survey response. The odds-ratio coefficient for *Ownership* is statistically significant, but very close to 1.

Table 1. Survey Response Rates by Organizational Type

Ownership (AHA Classification Code)	Non-Response	In-Sample	Total
Public (Government-Owned)			
State (12)	264	48	312
County (13)	308	78	386
City (14)	78	27	105
City-County (15)	28	5	33
Hospital District or Authority (16)	413	127	540
Air Force (41)	9	1	10
Army (42)	19	2	21
Navy (43)	11	1	12
Public Health Service Other than 47	9	0	9
Veteran Affairs (45)	119	15	134
Public Health Service-Indian Health (47)	21	1	22
Department of Justice (48)	2	0	2
Nonprofit			
Church-Operated	476	65	541
Other Nonprofit	2,180	366	2,564
Private			
Investor-Owned	2	0	2
Individual-Owned	21	4	25
Private Partnership	216	47	263
Corporation	1,100	111	1,211
Total	5,276	898	6,174

Table 2. Logistic Regression Predicting Survey Non-Responses (1= Non-Responses, 0=In-Sample Cases)

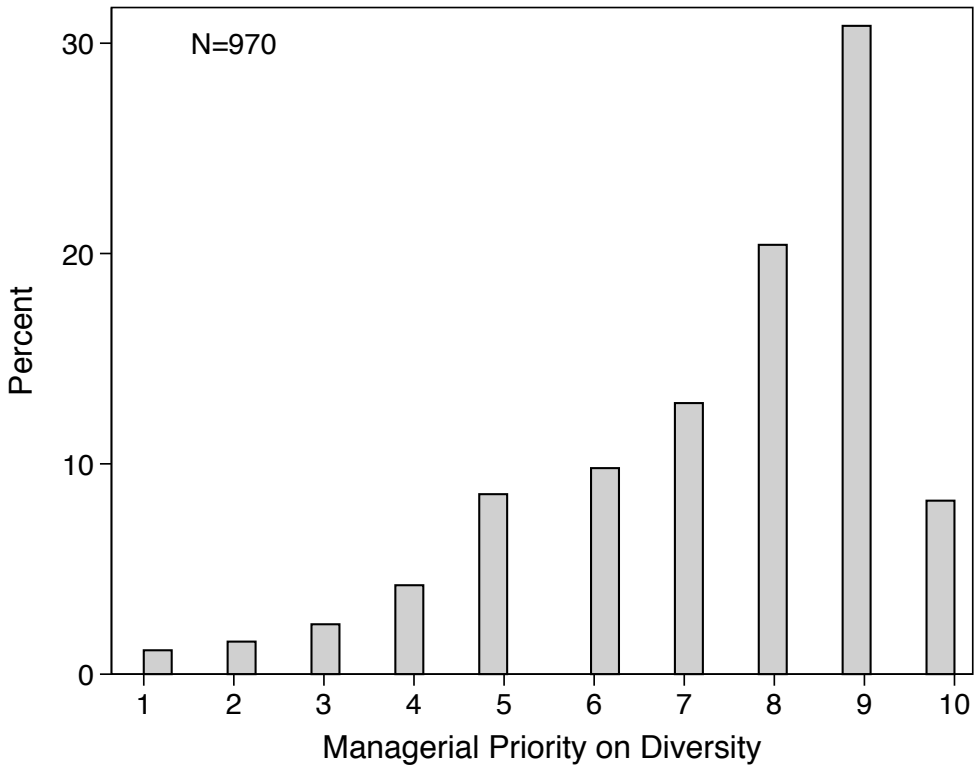
Variable	Coefficient	Odds Ratio	S.E.	z
Service specialization	0.0012	1.0012	0.0022	0.54
State code	-0.0044	0.9956	0.0016	-2.69
AHA area code	2.20e-06	1.0000	0.0002	0.01
Rural hospital	-0.322	0.7245	0.0921	-3.50
Ownership	0.0303	1.0308	0.0055	5.67

Hospital size	0.0002	1.0002	0.00004	4.76
N	6174			

2. Recoding the Dependent Variable

Our dependent variable, managerial priority on diversity, is measured based on the survey item asking a manager to use a 1-to-10 priority scale to indicate how much priority he gives to cultural sensitivity and diversity, with "1" indicating that diversity is the most important priority and 10 referring to the least important priority. Figure 1 presents the sample distribution of the original responses.

Figure 1. The Distribution of Managerial Priority on Diversity based on the Original 1-to-10 Scale (1= Most Important, 10=Least Important)



To simplify the substantive interpretation of the empirical analysis, we recoded the original responses based on two steps. First, we reversed the order of the scale, such that a higher value refers to more managerial priority on diversity. After reversing the scale, "1" refers to the least important priority and "10" refers to the most important priority. Second, we collapsed the 10 response categories into three, because an ordered logistic regression model predicting 10 response categories is difficult to interpret. We covert the 10-response categories into 3 categories based on the sample distribution of the reversed 1-to-10 scale. We parse the full distribution into three quantiles. All responses that fall in the top quantile are coded as "3" (high priority). Responses in the middle quantile are coded as "2" (moderate priority). Values in the bottom quantile are coded as "1" (low priority). The recoding reflects the level of managerial priority compared to peer organizations and based on the sample distribution

3. Additional Descriptive Statistics

Table 3. Pairwise Correlations among Variables

	Priority	Female	Owner-ship	Tenure	Minority	Business School	Medical School	Size	Low-Income	Diversity Match	Rural	State Diversity
Priority	1.0000											
Female	0.1224	1.0000										
Owner-ship	0.1220	0.0719	1.0000									
Tenure	-0.0808	-0.2436	-0.0664	1.0000								
Minority	0.0429	0.0226	0.0317	-0.0684	1.0000							
Business School	-0.0448	-0.0650	0.0074	-0.1079	-0.0490	1.0000						
Medical School	-0.0157	-0.0359	-0.0069	0.0627	0.0130	-0.3745	1.0000					
Hospital Size	0.0500	-0.0597	-0.1157	0.0201	-0.0425	-0.0085	0.1310	1.0000				
Low-Income Community	-0.0104	0.0171	-0.2060	-0.0368	0.0075	0.0153	0.0106	-0.0899	1.0000			
Community Diversity Match	-0.0347	-0.0164	0.0536	-0.0725	0.0142	-0.0245	0.0218	-0.1207	0.0104	1.0000		
Rural Hospital	-0.1925	0.0076	-0.2409	0.0598	-0.0197	-0.0746	-0.0102	-0.2490	0.2042	0.0639	1.0000	
State Diversity	0.2007	-0.0168	0.0995	-0.0381	0.1135	0.0470	0.0564	0.0868	0.0652	-0.0303	-0.2235	1.0000

4. Comparing Male and Female Managers' Priority on Diversity, by Sector

Table 3 compares mean differences by gender and sector. The t-test evaluates the null hypothesis that gender-based sample means are equal against the alternative hypothesis that sample means are different. As Table 3 shows, based on the full sample (N=898), female hospital managers report significantly higher mean priority scores than male hospital managers. When examining the gender-based sample means within each sector, we observe significantly different mean priority scores reported by female and male managers in both the nonprofit and private sectors. However, in the public sector, the gender based sample means are not statistically different.

Table 3: Mean differences of Male and Female Managers, by Sector, in Priority on Diversity

	Female Mean (N)	Male Mean (N)	t-statistic	Significance
All Sectors	2.452 (199)	2.282 (699)	-3.507	0.0001
Public	2.360 (61)	2.262 (244)	-1.063	0.291
Nonprofit	2.344 (90)	2.229 (341)	-1.695	0.092
Private	2.771 (48)	2.482 (114)	-3.145	0.002

5. Alternative Model Specification: A Three Category Ownership Measure

As a robustness check, we re-estimate the two models in Table 4 in the paper based on an alternative model specification. Instead of using two sector dummies, we adopt a three-category ownership variable. For the ownership variable, Public is coded 1, Nonprofit is coded 2, and Private is coded 3. We obtain consistent statistical results and the same substantive findings based on the alternative specification. Model (1) in Table 4 is the alternative linear model, showing the mean effects of *Female* and *Sector*. The *Female* dummy variable is positive and significant in this model, which is consistent with what is reported in the paper. The sector variable is also significant. The positive coefficient means that, moving from public to nonprofit and then to private is associated with an increase in managerial priority placed on diversity. This is also consistent with the linear model in the paper.

In the interaction model, the coefficient for female manager becomes insignificant while the coefficient for ownership remains significant. All these findings are consistent with the two models reported in the paper.

Table 4. Empirical Models based on the Alternative Model Specification: Adopting a Three Category Ownership Measure

	Model (1)	Model (2)
Variable	Coefficient (Clustered SE)	Coefficient (Clustered SE)
Female	0.461***	-0.295
	(0.161)	(0.472)
Sector	0.240**	0.226*
	(0.103)	(0.123)
Female X Sector	--	0.398*
		(0.233)
Controls		
Managerial tenure	-0.009	-0.009
	(0.007)	(0.007)
Minority	0.039	1.562**
	(0.270)	(0.668)
Minority X Sector	--	-0.788**
		(0.355)
Business school training	-0.364**	-0.358**
	(0.167)	(0.167)
Medical school training	-0.310**	-0.313**
	(0.138)	(0.138)
Number of hospital employees	-0.00003	-0.00002
	(0.00008)	(0.00008)
Low-income community	0.055	0.055
	(0.077)	(0.078)
Community diversity match	-0.102	-0.106
	(0.075)	(0.076)
Rural hospital	-0.620***	-0.594***
	(0.150)	(0.151)
State diversity	2.484***	2.487***
	(0.479)	(0.486)
Cut point 1	-1.259	-1.280
Cut point 2	1.741	1.730
N	898	898

Significance Levels: * p<.10, ** p<.05, *** p<.01.

References

Goldstein, Susan M., and Michael Naor. 2005. Linking publicness to operations management practices: a study of quality management practices in hospitals. *Journal of Operations Management,* 23: 209-228.