Supplemental Digital Appendices

Note: All data used to develop these appendices are from California's Office of Statewide Health Planning and Development.[15]

Supplemental Digital Appendix 1

Teaching Hospital Classification

Criteria used by the OSHPD to identify teaching hospitals:
- An initial list of potential teaching hospitals was identified based on the American Medical Association's Graduate Medical Education Directory
- Teaching hospital status was then assigned to hospitals that met all 4 of the following criteria:
  - 2 or more clinical teaching programs;
  - Total residents/fellows > 30
  - Licensed beds > 200
 - Resident/fellow hours / licensed bed > 200

Teaching hospitals included in the sample in fiscal year 2014:

Arrowhead Regional Medical Center
Cedars Sinai Medical Center
Children's Hospital Los Angeles
Community Regional Medical Center
Highland Hospital
Keck Hospital Of USC
Kern Medical Center
LAC/USC Medical Center
Loma Linda University Children's Hospital
Loma Linda University Medical Center
Long Beach Memorial Medical Center
Los Angeles County Olive View-UCLA Medical Center
Los Angeles County/Harbor-UCLA Medical Center
Lucile Packard Children's Hospital
Rady Children's Hospital - San Diego
Riverside County Regional Medical Center
Ronald Reagan UCLA Medical Center
San Francisco General Hospital Medical Center
San Joaquin General Hospital
Santa Barbara Cottage Hospital
Santa Clara Valley Medical Center
Scripps Mercy Hospital
St. Mary's Medical Center - San Francisco
Stanford Hospital & Clinics
UCSF Medical Center
UCSD Medical Center
UCD Med Center
UCI Medical Center
Ventura County Medical Center
White Memorial Medical Center

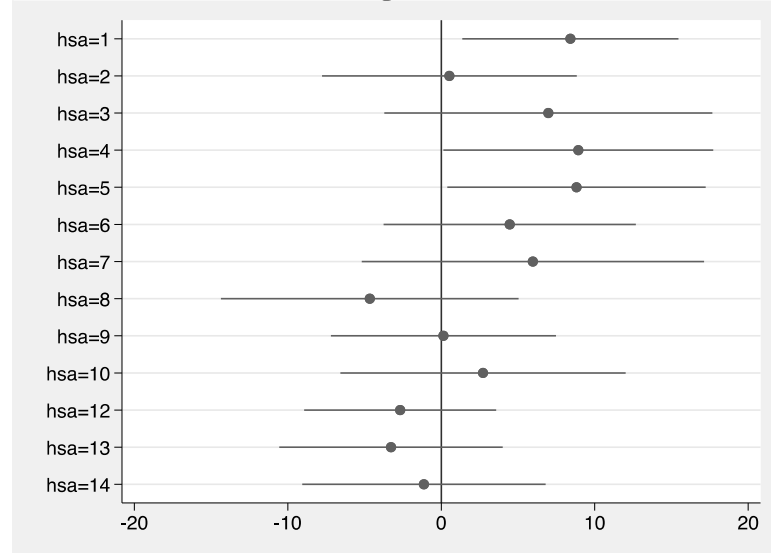## Supplemental Digital Appendix 2

Association of Case Mix Index and Health Services Area with Total OR Cost Per Minute

<u>Association of total OR cost per minute and case mix index, fiscal year 2014</u>
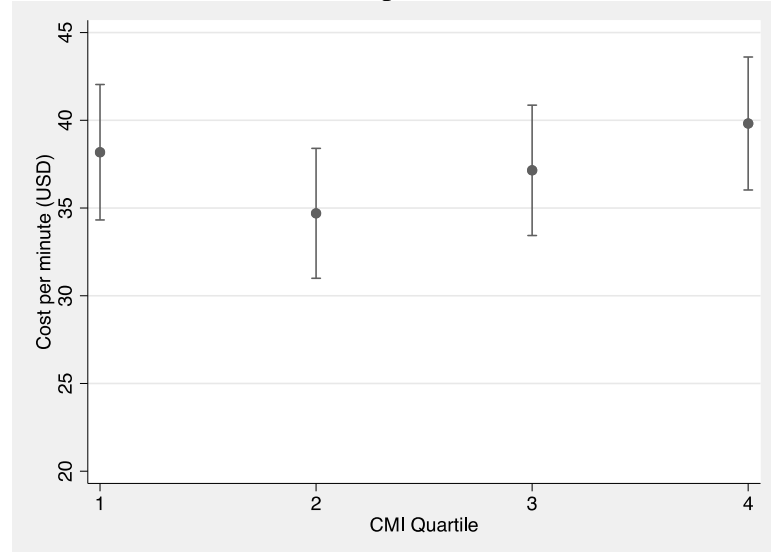
Note: Graph derived as post-estimation linear margin following multivariate linear regression of cost per minute with teaching status, CMI, HSA, and ownership as covariates. Error bars represent 95% confidence intervals around the margin.

<u>Association of total OR cost per minute and Health Services Area (HSA), fiscal year 2014</u>
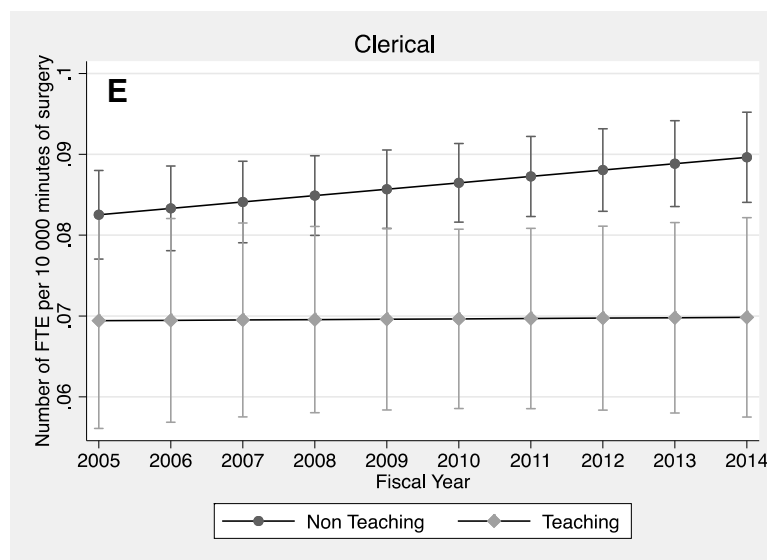

Note: Coefficient plot of multivariate linear regression using total cost per minute as the outcome, with teaching status, CMI, HSA and ownership as covariates. HSA 11 (Los Angeles county) was used as the reference category.

Supplemental Digital Appendix 3

Trends (FY2005-FY2014) in FTE for Individual Employment Categories, Stratified by Teaching Status
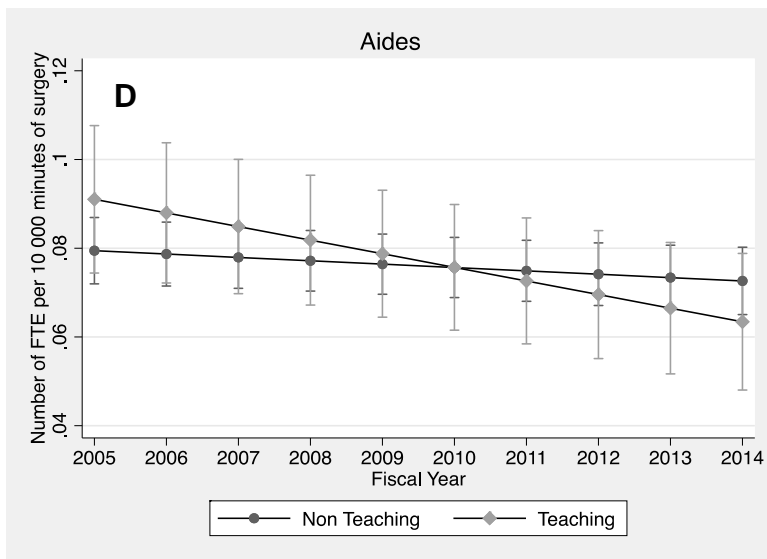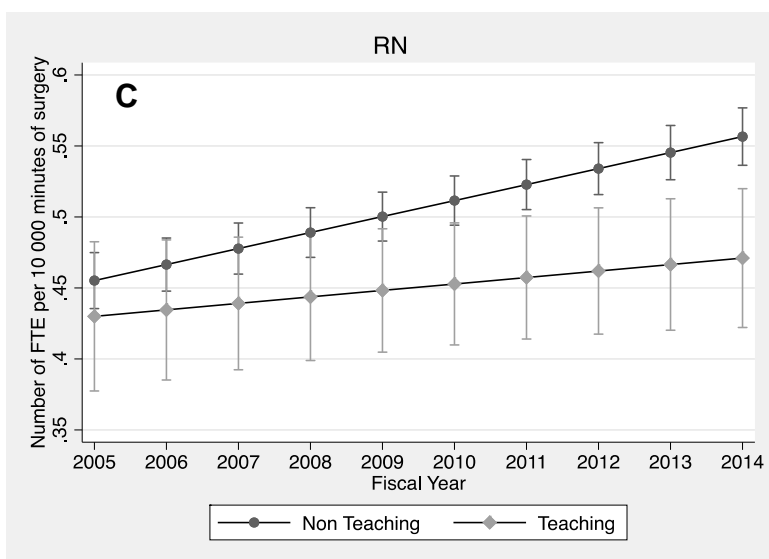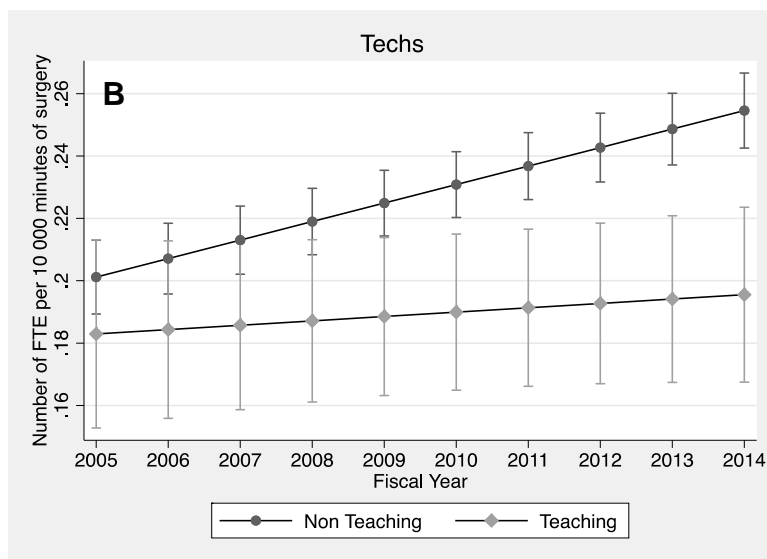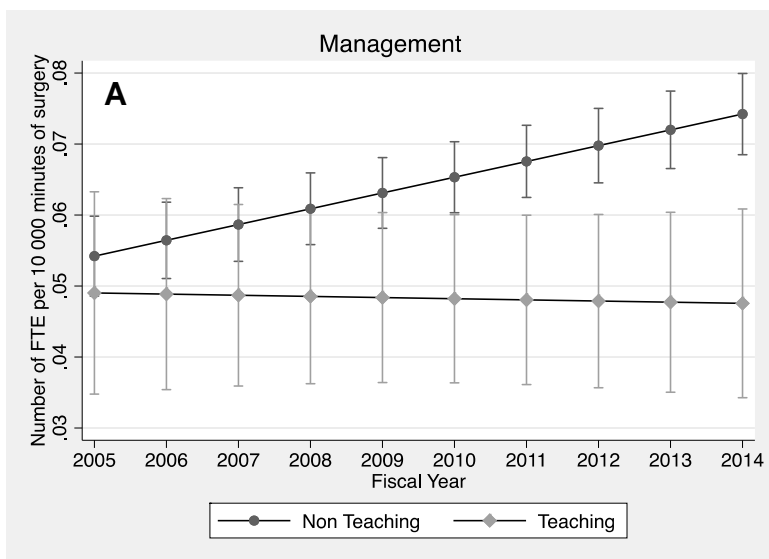
Notes

FTE = Full Time Equivalent; LVN = Licensed vocational nurse; RN = Registered Nurse

General Notes:

We limited analysis to staff categories that were reported in at least 75% of hospital financial statements over the study time period. Categories with large amounts of missing data included LVN, salaried physicians, non-physician providers, and "other." FTE were calculated as the number of productive hours worked by individual staff categories (eg, techs) divide by 2080. This definition differs from the calculation used for Figure 3 in the manuscript which included both productive and non-productive hours. Non-productive hours were not available for individual staff categories. We then divided the total FTE by the number of surgical minutes and multiplied by 10,000 to generate the number of FTE per 10,000 minutes of surgery.

Graphs derived as post-estimation linear margins following mixed effects regression including 95% confidence intervals around the margin. Fixed effects included year, teaching status, an interaction between continuous time and teaching status, case mix index (including a quadratic term), as well as indicators for hospital ownership and health services area; a random intercept was included for each facility to adjust for the longitudinal analysis.

Models utilized complete case analysis with no attempt to impute missing values. The sample size varied across the graphs as follows:

A: Management & Supervision, total observations 2,789, 332 unique facilities
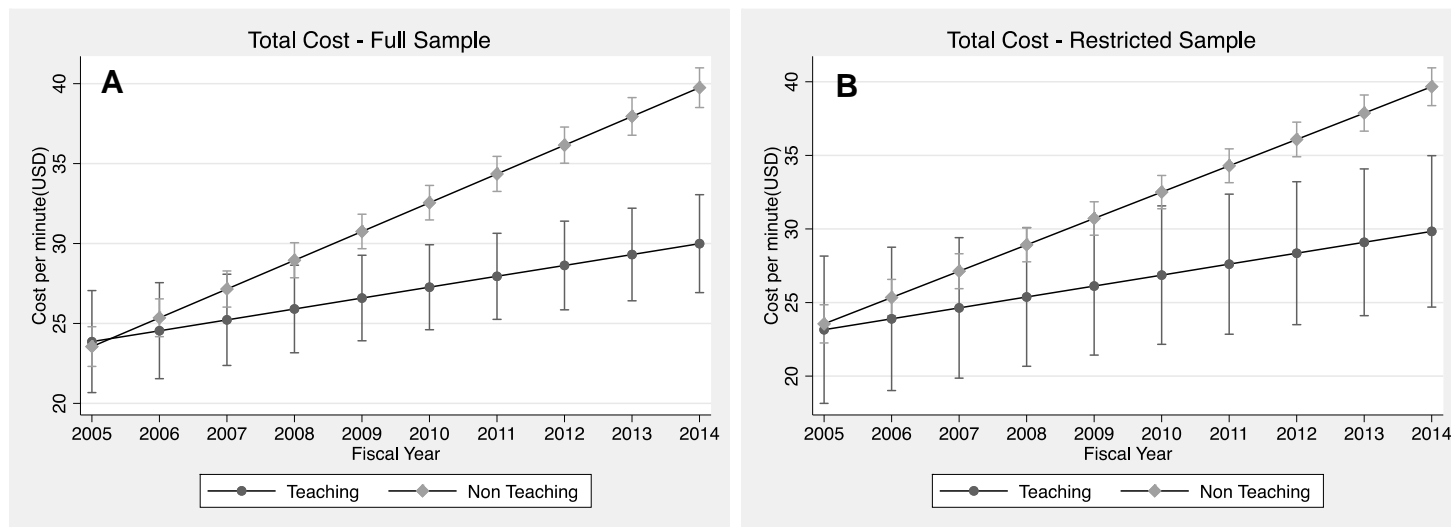B: Techs, total observations 2,923, 336 unique facilities
C: RN, total observations 2,979, 335 unique facilities
D: Aides, total observations 2,364, 310 unique facilities
E: Clerical, total observations 2,708, 319 unique facilities

Supplemental Digital Appendix 4

Sensitivity Analysis – Limiting Sample to Hospitals with Constant Teaching Status

The full (original) sample contained 2992 observations from 337 facilities while the restricted sample contained 2834 observations from 321 facilities. The difference-in-difference coefficient was -$1.12 (CI -1.50 to -0.74) in the full sample and -$1.05 (CI -1.49 to -0.61) in the restricted sample.

Supplemental Digital Appendix 5

Sensitivity Analysis – Excluding Short-Term Pediatric and Short-Term Specialty Hospitals
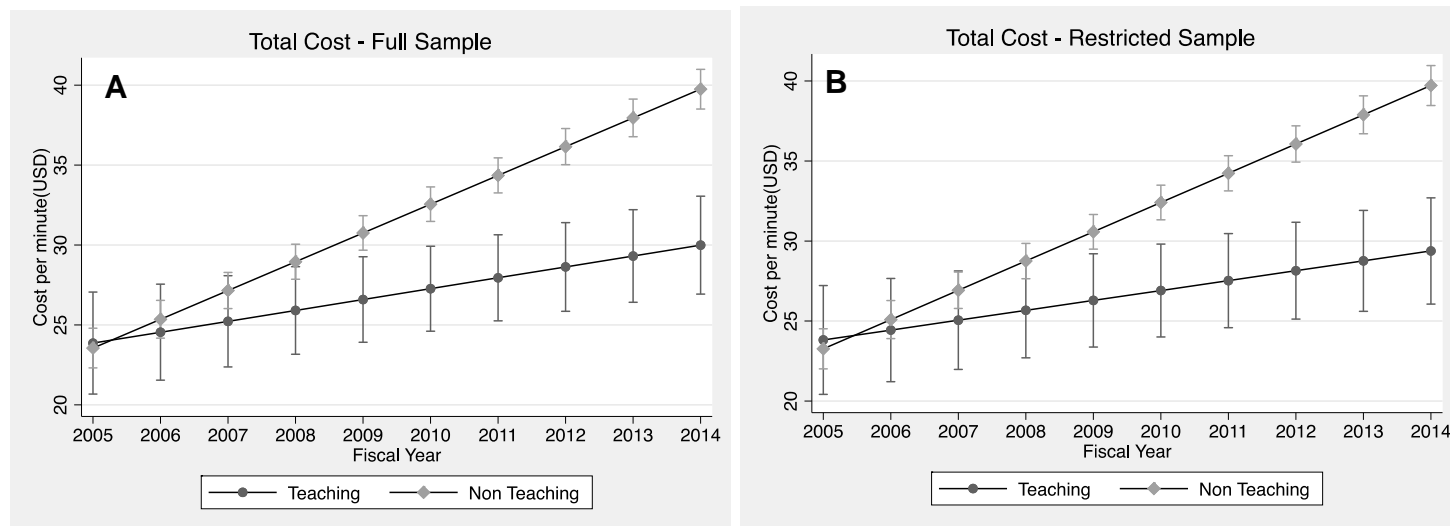
The full (original) sample contained 2992 observations from 337 facilities while the restricted sample contained 2842 observations from 322 facilities. The difference-in-difference coefficient was -$1.12 (CI -1.50 to -0.74) in the full sample and -$1.21 (CI -1.60 to -0.82) in the restricted sample.