

Peering Behind the Veil: Trends in Types of Contracts between Private Health Plans and Hospitals

APPENDIX TABLES

Appendix Table 1. Claims by Contract Type for Algorithm

| Year | Analysis Sample: Private Health Plans | | | | | | Validation Sample: Medicare FFS | | | | | | Validation Sample: Medicaid FFS | | | | | |
|-------|---------------------------------------|-----------------------------|---|-------|----------|----------------------|---------------------------------|-----------------------------|---|-------|----------|----------------------|---------------------------------|-----------------------------|---|-------|----------|----------------------|
| | Total Claims (1000s) | Classifiable Claims (1000s) | <u>Contract Type (% of classifiable claims)</u> | | | | Total Claims (1000s) | Classifiable Claims (1000s) | <u>Contract Type (% of classifiable claims)</u> | | | | Total Claims (1000s) | Classifiable Claims (1000s) | <u>Contract Type (% of classifiable claims)</u> | | | |
| | | | Dis-count | Fixed | Per Diem | Tie (Not Classified) | | | Dis-count | Fixed | Per Diem | Tie (Not Classified) | | | Dis-count | Fixed | Per Diem | Tie (Not Classified) |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
| 2009 | 16.3 | 8.4 | 54.6 | 11.6 | 32.3 | 1.4 | - | - | - | - | - | - | 42.3 | 37.0 | 11.5 | 84.0 | 4.5 | 0.1 |
| 2010 | 14.4 | 7.1 | 53.0 | 13.4 | 32.7 | 0.9 | - | - | - | - | - | - | 44.1 | 38.3 | 11.7 | 84.0 | 4.1 | 0.2 |
| 2011 | 19.5 | 12.5 | 49.7 | 27.5 | 21.9 | 0.9 | - | - | - | - | - | - | 43.5 | 37.5 | 14.1 | 80.2 | 5.5 | 0.1 |
| 2012 | 27.9 | 20.5 | 47.1 | 30.2 | 22.0 | 0.8 | - | - | - | - | - | - | 43.3 | 37.2 | 12.5 | 83.1 | 4.2 | 0.3 |
| 2013 | 30.2 | 22.2 | 40.1 | 37.8 | 21.7 | 0.5 | - | - | - | - | - | - | 44.4 | 38.2 | 17.4 | 79.0 | 3.4 | 0.2 |
| 2014 | 30.9 | 21.9 | 28.6 | 43.8 | 27.1 | 0.5 | 101.0 | 90.9 | 5.3 | 89.1 | 5.3 | 0.3 | 51.8 | 44.5 | 18.3 | 73.4 | 8.1 | 0.2 |
| Total | 139.1 | 92.5 | 42.5 | 31.9 | 24.9 | 0.7 | 101.0 | 90.9 | 5.3 | 89.1 | 5.3 | 0.3 | 269.4 | 232.6 | 14.4 | 80.4 | 5.0 | 0.2 |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014 and MEDPAR's Colorado Medicare Fee-For-Service claims for January 2014-December 2014

NOTES Classifiable claims indicate that they are from quads with at least 3 claims, which is a requirement of our algorithm, as described in the methods section. Among classifiable claims, the percentages denote the fraction of claims our algorithm classifies as discounted charge, fixed rate, per diem, or (in case of an exact tie among CVs) not classified.

Appendix Table 2. Patient Characteristics

| | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|-------|
| Analysis Sample: Private Health Plans | | | | | | | |
| Age | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | Total |
| 0-17 | 14.0% | 15.5% | 18.1% | 20.7% | 20.2% | 17.8% | 18.3% |
| 18-24 | 6.9% | 5.5% | 6.3% | 6.2% | 6.0% | 5.4% | 6.0% |
| 25-34 | 24.5% | 24.3% | 23.7% | 24.3% | 24.8% | 26.8% | 24.9% |
| 35-44 | 16.1% | 16.3% | 14.6% | 13.8% | 14.6% | 15.3% | 14.9% |
| 45-54 | 17.1% | 16.8% | 15.1% | 13.4% | 12.9% | 12.6% | 14.1% |
| <65 | 21.5% | 21.6% | 22.3% | 21.6% | 21.5% | 22.1% | 21.8% |
| Sex | | | | | | | |
| Female | 67.2% | 66.2% | 67.2% | 66.9% | 66.7% | 68.2% | 67.2% |
| Male | 32.8% | 33.8% | 32.8% | 33.1% | 33.3% | 31.8% | 32.8% |
| Validation Sample: Medicare FFS | | | | | | | |
| Medicare FFS | - | | | | | | |
| Age | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | Total |
| <45 | - | - | - | - | - | 4.1% | 4.1% |
| 45-64 | - | - | - | - | - | 14.7% | 14.7% |
| 65-74 | - | - | - | - | - | 33.8% | 33.8% |
| 75-84 | - | - | - | - | - | 27.8% | 27.8% |
| 85 and over | - | - | - | - | - | 19.5% | 19.5% |
| Sex | | | | | | | |
| Female | - | - | - | - | - | 53.8% | 53.8% |
| Male | - | - | - | - | - | 46.2% | 46.2% |
| Validation Sample: Medicaid FFS | | | | | | | |
| Age | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | Total |
| 0-17 | 20.1% | 20.0% | 18.9% | 17.9% | 16.4% | 13.9% | 17.7% |
| 18-24 | 28.2% | 26.3% | 24.4% | 22.9% | 21.2% | 18.4% | 23.4% |
| 25-34 | 27.4% | 28.0% | 28.7% | 28.5% | 29.4% | 26.4% | 28.0% |
| 35-44 | 10.5% | 10.8% | 12.0% | 12.6% | 13.6% | 13.9% | 12.3% |
| 45-54 | 6.6% | 7.4% | 8.0% | 9.1% | 9.5% | 13.4% | 9.1% |
| <65 | 7.1% | 7.5% | 8.1% | 9.1% | 9.9% | 14.1% | 9.4% |
| Sex | | | | | | | |
| Female | 80.6% | 79.6% | 78.7% | 77.0% | 76.2% | 70.3% | 76.9% |
| Male | 19.4% | 20.4% | 21.3% | 23.0% | 23.8% | 29.7% | 23.1% |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014 and MEDPAR's Colorado Medicare Fee-For-Service claims for January 2014-December 2014.

NOTES This table shows descriptive statistics for our hospital inpatient sample. The age is member age at the time of service provided. The percentage represents the proportion of claims by each age group and sex after exclusion restrictions are applied.

Appendix Table 3-a. Contract Types by MS-DRG for Top 10 Clinical Conditions-Analysis Sample: Private Health Plans

| | MS DRG Descriptions (corresponding MS-DRGs) | Total Spending (in millions of dollars) (1) | Classifiable Spending (in millions of dollars) (2) | Classification | | | |
|----|---|---|--|-----------------|--------------|--------------------|--------------------------------|
| | | | | Discount (3) | Fixed (4) | Per Diem (5) | Tie (Not Classified) (6) |
| 1 | Major Joint Replacement Or Reattachment Of Lower Extremity W Mcc(469) | 2.1 | 0.0 | N/A | N/A | N/A | N/A |
| 2 | Major Joint Replacement Or Reattachment Of Lower Extremity W/O Mcc(470) | 210.9 | 184.4 | 51.7 | 45.6 | 2.0 | 0.8 |
| 3 | Vaginal Delivery W Sterilization &/Or D&C(767) | 4.9 | 2.2 | 31.8 | 31.8 | 31.8 | 4.5 |
| 4 | Vaginal Delivery W O.R. Proc Except Steril &/Or D&C(768) | 0.6 | 0.3 | 100.0 | 0.0 | 0.0 | 0.0 |
| 5 | Vaginal Delivery W Complicating Diagnoses(774) | 19.8 | 13.0 | 29.2 | 23.1 | 46.2 | 1.5 |
| 6 | Vaginal Delivery W/O Complicating Diagnoses(775) | 138.3 | 131.2 | 31.6 | 32.6 | 35.5 | 0.4 |
| 7 | Cesarean Section W Cc/Mcc(765) | 32.7 | 25.0 | 31.2 | 18.0 | 50.0 | 0.8 |
| 8 | Cesarean Section W/O Cc/Mcc(766) | 91.5 | 82.2 | 32.0 | 32.1 | 35.5 | 0.4 |
| 9 | Spinal Fusion Except Cervical W Mcc(459) | 1.5 | 0.3 | 66.7 | 0.0 | 33.3 | 0.0 |
| 10 | Spinal Fusion Except Cervical W/O Mcc(460) | 81.8 | 53.4 | 57.9 | 38.8 | 3.2 | 0.2 |
| 11 | Normal Newborn(795) | 52.0 | 49.5 | 75.2 | 2.6 | 22.0 | 0.2 |
| 12 | Major Small & Large Bowel Procedures W Mcc(329) | 6.0 | 0.4 | 100.0 | 0.0 | 0.0 | 0.0 |
| 13 | Major Small & Large Bowel Procedures W Cc(330) | 12.4 | 3.1 | 51.6 | 22.6 | 25.8 | 0.0 |
| 14 | Major Small & Large Bowel Procedures W/O Cc/Mcc(331) | 31.5 | 20.8 | 41.8 | 50.0 | 8.2 | 0.0 |
| 15 | Cervical Spinal Fusion W Mcc(471) | 1.0 | 0.0 | N/A | N/A | N/A | N/A |
| 16 | Cervical Spinal Fusion W Cc(472) | 6.1 | 1.6 | 50.0 | 37.5 | 6.3 | 6.3 |
| 17 | Cervical Spinal Fusion W/O Cc/Mcc(473) | 36.2 | 21.6 | 49.1 | 46.8 | 1.9 | 2.3 |
| 18 | Perc Cardiovasc Proc W/O Coronary Artery Stent W Mcc(250) | 3.6 | 0.4 | 100.0 | 0.0 | 0.0 | 0.0 |
| 19 | Perc Cardiovasc Proc W/O Coronary Artery Stent W/O Mcc(251) | 35.4 | 20.1 | 54.2 | 40.3 | 3.5 | 1.5 |
| 20 | Septicemia Or Severe Sepsis W/O Mv 96+ Hours W Mcc(871) | 10.5 | 3.3 | 60.6 | 21.2 | 18.2 | 0.0 |
| 21 | Septicemia Or Severe Sepsis W/O Mv 96+ Hours W/O Mcc(872) | 23.0 | 17.5 | 34.9 | 56.0 | 9.1 | 0.0 |
| 22 | Uterine & Adnexa Proc For Non-Malignancy W Cc/Mcc(742) | 5.9 | 1.6 | 50.0 | 25.0 | 18.8 | 0.0 |
| 23 | Uterine & Adnexa Proc For Non-Malignancy W/O Cc/Mcc(743) | 26.6 | 18.3 | 51.9 | 33.3 | 13.7 | 1.1 |

Appendix Table 3-b. Contract Types by MS-DRG for Top 10 Clinical Conditions-Validation Sample: Medicare FFS

| | MS DRG Descriptions (corresponding MS-DRGs) | Total Spending (in millions of dollars) (1) | Classifiable Spending (in millions of dollars) (2) | <u>Classification</u> | | | |
|----|--|---|--|-----------------------|--------------|--------------------|--------------------------------|
| | | | | Discount (3) | Fixed (4) | Per Diem (5) | Tie (Not Classified) (6) |
| 1 | Major Joint Replacement Or Reattachment Of Lower Extremity W Mcc (469) | 7.7 | 7.3 | 41.8 | 54.6 | 3.6 | 0.0 |
| 2 | Major Joint Replacement Or Reattachment Of Lower Extremity W/O Mcc (470) | 94.5 | 94.5 | 1.2 | 96.1 | 2.7 | 0.0 |
| 3 | Septicemia Or Severe Sepsis W/O Mv 96+ Hours W Mcc (871) | 52.0 | 52.0 | 0.1 | 98.7 | 1.3 | 0.0 |
| 4 | Septicemia Or Severe Sepsis W/O Mv 96+ Hours W/O Mcc (872) | 10.5 | 10.4 | 0.0 | 94.5 | 5.5 | 0.0 |
| 5 | Spinal Fusion Except Cervical W Mcc (459) | 4.4 | 3.7 | 17.5 | 79.1 | 3.4 | 0.0 |
| 6 | Spinal Fusion Except Cervical W/O Mcc (460) | 44.0 | 44.0 | 9.6 | 89.9 | 0.3 | 0.2 |
| 7 | Rehabilitation W Cc/Mcc (945) | 28.5 | 28.5 | 16.7 | 21.0 | 62.3 | 0.0 |
| 8 | Rehabilitation W/O Cc/Mcc (946) | 6.5 | 6.5 | 28.3 | 12.6 | 59.1 | 0.0 |
| 9 | Simple Pneumonia & Pleurisy W Cc (194) | 14.8 | 14.7 | 0.7 | 96.8 | 2.5 | 0.0 |
| 10 | Simple Pneumonia & Pleurisy W Mcc (193) | 11.2 | 11.1 | 0.0 | 82.3 | 17.7 | 0.0 |
| 11 | Simple Pneumonia & Pleurisy W/O Cc/Mcc (195) | 4.0 | 3.9 | 0.0 | 63.7 | 35.8 | 0.5 |
| 12 | Major Small & Large Bowel Procedures W Cc (330) | 13.6 | 13.4 | 7.9 | 90.0 | 2.1 | 0.0 |
| 13 | Major Small & Large Bowel Procedures W Mcc (329) | 10.9 | 10.6 | 7.8 | 89.6 | 2.6 | 0.0 |
| 14 | Major Small & Large Bowel Procedures W/O Cc/Mcc (331) | 4.2 | 4.0 | 9.3 | 87.1 | 3.6 | 0.0 |
| 15 | Heart Failure & Shock W Cc (292) | 13.1 | 13.0 | 2.6 | 95.3 | 2.1 | 0.0 |
| 16 | Heart Failure & Shock W Mcc (291) | 10.3 | 10.2 | 3.4 | 87.5 | 9.1 | 0.0 |
| 17 | Heart Failure & Shock W/O Cc/Mcc (293) | 2.7 | 2.5 | 1.1 | 77.7 | 20.4 | 0.8 |
| 18 | Hip & Femur Procedures Except Major Joint W Cc (481) | 6.1 | 5.7 | 14.4 | 82.3 | 3.4 | 0.0 |
| 19 | Hip & Femur Procedures Except Major Joint W Mcc (480) | 13.2 | 13.1 | 0.0 | 95.3 | 4.7 | 0.0 |
| 20 | Hip & Femur Procedures Except Major Joint W/O Cc/Mcc (482) | 3.8 | 3.7 | 0.0 | 92.5 | 6.6 | 0.8 |
| 21 | Infectious & Parasitic Diseases W O.R. Procedure W Cc (854) | 20.4 | 20.2 | 7.0 | 92.4 | 0.6 | 0.0 |
| 22 | Infectious & Parasitic Diseases W O.R. Procedure W Mcc (853) | 2.6 | 2.2 | 3.0 | 86.4 | 10.6 | 0.0 |
| 23 | Infectious & Parasitic Diseases W O.R. Procedure W/O Cc/Mcc (855) | 0.1 | 0.1 | 0.0 | 100.0 | 0.0 | 0.0 |
| 24 | Cardiac Valve & Oth Maj Cardiothoracic Proc W/O Card Cath W Cc (220) | 8.6 | 8.5 | 15.3 | 84.7 | 0.0 | 0.0 |
| 25 | Cardiac Valve & Oth Maj Cardiothoracic Proc W/O Card Cath W Mcc (219) | 10.3 | 10.2 | 51.2 | 48.8 | 0.0 | 0.0 |
| 26 | Cardiac Valve & Oth Maj Cardiothoracic Proc W/O Card Cath W/O Cc/Mcc (221) | 1.9 | 1.7 | 29.5 | 70.5 | 0.0 | 0.0 |

Appendix Table 3-c. Contract Types by MS-DRG for Top 10 Clinical Conditions-Validation Sample: Medicaid FFS

| | MS DRG Descriptions (corresponding MS-DRGs) | Total Spending (in millions of dollars) (1) | Classifiable Spending (in millions of dollars) (2) | Classification | | | |
|----|---|---|--|-----------------|--------------|--------------------|--------------------------------|
| | | | | Discount (3) | Fixed (4) | Per Diem (5) | Tie (Not Classified) (6) |
| 1 | Vaginal Delivery W Sterilization &/Or D&C(767) | 10.6 | 10.1 | 11.5 | 85.6 | 2.8 | 0.1 |
| 2 | Vaginal Delivery W O.R. Proc Except Steril &/Or D&C(768) | 0.2 | 0.0 | 0.0 | 100.0 | 0.0 | 0.0 |
| 3 | Vaginal Delivery W Complicating Diagnoses(774) | 64.2 | 64.1 | 21.8 | 76.5 | 1.6 | 0.0 |
| 4 | Vaginal Delivery W/O Complicating Diagnoses(775) | 231.1 | 231.1 | 22.0 | 78.0 | 0.0 | 0.0 |
| 5 | Cesarean Section W Cc/Mcc(765) | 82.3 | 82.1 | 9.9 | 72.6 | 17.5 | 0.0 |
| 6 | Cesarean Section W/O Cc/Mcc(766) | 80.2 | 80.1 | 6.6 | 92.5 | 0.8 | 0.0 |
| 7 | Septicemia Or Severe Sepsis W/O Mv 96+ Hours W Mcc(871) | 23.0 | 22.5 | 24.4 | 72.1 | 3.6 | 0.0 |
| 8 | Septicemia Or Severe Sepsis W/O Mv 96+ Hours W/O Mcc(872) | 9.5 | 8.7 | 14.0 | 80.9 | 5.1 | 0.0 |
| 9 | Prematurity W Major Problems(791) | 18.7 | 18.3 | 3.4 | 74.3 | 22.3 | 0.0 |
| 10 | Prematurity W/O Major Problems(792) | 13.7 | 13.5 | 17.3 | 18.4 | 64.3 | 0.0 |
| 11 | Admit For Renal Dialysis(685) | 31.2 | 31.1 | 0.0 | 86.5 | 13.4 | 0.1 |
| 12 | Bronchitis & Asthma W Cc/Mcc(202) | 8.4 | 7.9 | 12.7 | 83.4 | 3.9 | 0.0 |
| 13 | Bronchitis & Asthma W/O Cc/Mcc(203) | 17.9 | 17.5 | 1.0 | 98.0 | 0.9 | 0.1 |
| 14 | Major Joint Replacement Or Reattachment Of Lower Extremity W Mcc(469) | 0.8 | 0.2 | 33.8 | 66.2 | 0.0 | 0.0 |
| 15 | Major Joint Replacement Or Reattachment Of Lower Extremity W/O Mcc(470) | 22.7 | 21.6 | 11.0 | 87.1 | 1.3 | 0.6 |
| 16 | Simple Pneumonia & Pleurisy W Mcc(193) | 4.7 | 4.0 | 6.7 | 88.1 | 5.2 | 0.0 |
| 17 | Simple Pneumonia & Pleurisy W Cc(194) | 9.4 | 8.8 | 6.0 | 91.7 | 2.2 | 0.1 |
| 18 | Simple Pneumonia & Pleurisy W/O Cc/Mcc(195) | 7.1 | 6.6 | 9.9 | 86.0 | 3.8 | 0.3 |
| 19 | Spinal Fusion Except Cervical W Mcc(459) | 1.3 | 0.3 | 0.0 | 100.0 | 0.0 | 0.0 |
| 20 | Spinal Fusion Except Cervical W/O Mcc(460) | 19.2 | 18.0 | 12.7 | 85.1 | 2.2 | 0.0 |
| 21 | Major Small & Large Bowel Procedures W Cc(330) | 7.9 | 5.0 | 1.9 | 86.4 | 11.7 | 0.0 |
| 22 | Major Small & Large Bowel Procedures W Mcc(329) | 9.0 | 6.7 | 20.5 | 72.4 | 7.1 | 0.0 |
| 23 | Major Small & Large Bowel Procedures W/O Cc/Mcc(331) | 2.5 | 1.3 | 18.6 | 74.3 | 7.0 | 0.0 |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014 and MEDPAR's Colorado Medicare Fee-For-Service claims for January 2014-December 2014

NOTES Clinical conditions are defined by combining pairs or triplets of MS-DRGs with and without complications, or closely related procedures (vaginal delivery). Classifiable spending indicates that they are from quads with at least 3 claims, which is a requirement of our algorithm, as described in the methods section. Among classifiable spending, the percentages denote the fraction of spending our algorithm classifies as discounted charge, fixed rate, per diem, or (in case of an exact tie among CVs) not classified. All spending values have been inflation adjusted to 2014 dollars using the BLS All Items Consumer Price Index.

Appendix Table 4-a. Distribution of Payer Size

| | No. of Payers | No. of Claims per Payer | | | | | | |
|-------|---------------|-------------------------|--------|-----|-----|-----|-------|--------|
| | | mean | sd | min | p25 | p50 | p75 | max |
| 2009 | 24 | 681 | 1,318 | 2 | 35 | 83 | 653 | 5,505 |
| 2010 | 24 | 598 | 1,038 | 2 | 34 | 116 | 782 | 4,502 |
| 2011 | 27 | 724 | 1,501 | 1 | 22 | 91 | 604 | 6,881 |
| 2012 | 28 | 995 | 2,868 | 2 | 32 | 114 | 642 | 14,971 |
| 2013 | 27 | 1,117 | 3,078 | 1 | 22 | 100 | 718 | 15,399 |
| 2014 | 26 | 1,188 | 2,533 | 3 | 25 | 119 | 978 | 11,399 |
| Total | 30 | 4,638 | 10,210 | 2 | 188 | 531 | 3,898 | 48,650 |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014.

NOTES This table shows the annual number of distinct payers and the distribution of claims for each payer for each year in our analysis sample. The increasing trend in claims may reflect the addition of more payers, especially one large payer, which entered in 2011.

Appendix Table 4-b. Contract Types by Health Plans within Payer Family

| Payer Family/ Health Plan | Total Spending (in millions of dollars) (1) | Classifiable Spending (in millions of dollars) (2) | Contract Type (% of classifiable spending) | | | |
|------------------------------|---|--|--|--------------|-----------------|-----------------------------|
| | | | Discount (3) | Fixed (4) | Per Diem (5) | Tie (Not Classified) (6) |
| A/A1 | 598.2 | 511.4 | 25.1 | 63.9 | 10.6 | 0.4 |
| B/B1 | 485.7 | 224.7 | 49.0 | 28.0 | 21.9 | 1.2 |
| C/C1 | 235.6 | 117.7 | 82.7 | 6.9 | 9.7 | 0.7 |
| D | 197.8 | 75.6 | 59.0 | 9.6 | 29.7 | 1.7 |
| D1 | 141.6 | 58.8 | 64.7 | 8.2 | 25.3 | 1.8 |
| D2 | 49.5 | 15.4 | 38.6 | 15.1 | 45.3 | 1.0 |
| D3 | 6.7 | 1.4 | 42.0 | 9.7 | 43.5 | 4.8 |
| E | 115.9 | 30.8 | 53.5 | 20.0 | 25.2 | 1.3 |
| E1 | 60.3 | 13.6 | 70.7 | 14.5 | 14.8 | 0.0 |
| E2 | 55.5 | 17.2 | 40.0 | 24.3 | 33.4 | 2.4 |
| F/F1 | 92.4 | 41.0 | 27.7 | 49.9 | 21.2 | 1.2 |
| G | 82.6 | 29.0 | 41.4 | 12.1 | 44.8 | 1.7 |
| G1 | 28.7 | 9.9 | 40.9 | 7.2 | 49.3 | 2.6 |
| G2 | 53.9 | 19.1 | 41.7 | 14.7 | 42.4 | 1.2 |
| H/H1 | 38.3 | 18.2 | 92.8 | 1.6 | 5.1 | 0.5 |
| I/I1 | 16.4 | 4.4 | 70.6 | 1.4 | 26.6 | 1.4 |
| J | 7.3 | 5.8 | 98.9 | 0.0 | 0.6 | 0.5 |
| J1 | 6.3 | 5.0 | 99.5 | 0.0 | 0.0 | 0.5 |
| J2 | 1.0 | 0.8 | 95.5 | 0.0 | 4.5 | 0.0 |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014.

NOTES Payer families are indicated by a letter ("A" through "J") and health plans are indicated by a letter plus a number (e.g. "A1"). Payers with less than 100 classifiable claims are excluded. Classifiable spending indicates that they are from quads with at least 3 claims and Pay Families are identified using the 3 digit of 4 digit payer codes.

Appendix Table 5. Claims and Spending by Quad Size

| Quad size | | Analysis Sample: Private Health Plans | | | | | | Validation Sample: Medicare FFS | | | | | | Validation Sample: Medicare FFS | | | |
|-------------|--------------------|---------------------------------------|----------------------|---------------|-----------------------|---------------------------|-------------------------|---------------------------------|----------------------|---------------|------------------------|----------------------------|--------------------------|---------------------------------|-----------------------|----------------|------------------------|
| | | Quads (1) | % of Quads (2) | Claims (3) | % of Claims (4) | Spending (\$1M) (5) | % of Spending (6) | Quads (7) | % of Quads (8) | Claims (9) | % of Claims (10) | Spending (\$1M) (11) | % of Spending (12) | Quads (13) | % of Quads (14) | Claims (15) | % of Claims (16) |
| '09 | Quads w claims <3 | 6,802 | 85.6% | 7,974 | 48.8% | 120.9 | 57.4% | - | - | - | - | - | - | 4,294 | 68.4% | 5,349 | 12.6% |
| | Quads w claims >=3 | 1,143 | 14.4% | 8,359 | 51.2% | 89.8 | 42.6% | - | - | - | - | - | - | 1,986 | 31.6% | 36,978 | 87.4% |
| | Total | 7,945 | 100.0% | 16,333 | 100.0% | 210.8 | 100.0% | - | - | - | - | - | - | 6,280 | 100.0% | 42,327 | 100.0% |
| '10 | Quads w claims <3 | 6,243 | 85.6% | 7,287 | 50.7% | 123.7 | 60.1% | - | - | - | - | - | - | 4,598 | 68.2% | 5,727 | 13.0% |
| | Quads w claims >=3 | 1,054 | 14.4% | 7,076 | 49.3% | 82.2 | 39.9% | - | - | - | - | - | - | 2,149 | 31.9% | 38,327 | 87.0% |
| | Total | 7,297 | 100.0% | 14,363 | 100.0% | 205.9 | 100.0% | - | - | - | - | - | - | 6,747 | 100.0% | 44,054 | 100.0% |
| '11 | Quads w claims <3 | 6,084 | 82.9% | 7,053 | 36.1% | 126.4 | 48.1% | - | - | - | - | - | - | 4,762 | 68.0% | 6,027 | 13.9% |
| | Quads w claims >=3 | 1,256 | 17.1% | 12,495 | 63.9% | 136.4 | 51.9% | - | - | - | - | - | - | 2,239 | 32.0% | 37,477 | 86.2% |
| | Total | 7,340 | 100.0% | 19,548 | 100.0% | 262.8 | 100.0% | - | - | - | - | - | - | 7,001 | 100.0% | 43,504 | 100.0% |
| '12 | Quads w claims <3 | 6,353 | 81.3% | 7,380 | 26.5% | 136.2 | 37.8% | - | - | - | - | - | - | 4,848 | 67.8% | 6,139 | 14.2% |
| | Quads w claims >=3 | 1,463 | 18.7% | 20,471 | 73.5% | 223.7 | 62.2% | - | - | - | - | - | - | 2,304 | 32.2% | 37,152 | 85.8% |
| | Total | 7,816 | 100.0% | 27,851 | 100.0% | 359.9 | 100.0% | - | - | - | - | - | - | 7,152 | 100.0% | 43,291 | 100.0% |
| '13 | Quads w claims <3 | 6,743 | 81.1% | 7,905 | 26.2% | 157.6 | 37.4% | - | - | - | - | - | - | 4,927 | 68.1% | 6,276 | 14.1% |
| | Quads w claims >=3 | 1,576 | 18.9% | 22,249 | 73.8% | 263.6 | 62.6% | - | - | - | - | - | - | 2,307 | 31.9% | 38,159 | 85.9% |
| | Total | 8,319 | 100.0% | 30,154 | 100.0% | 421.2 | 100.0% | - | - | - | - | - | - | 7,234 | 100.0% | 44,435 | 100.0% |
| '14 | Quads w claims <3 | 7,667 | 81.5% | 9,022 | 29.2% | 185.4 | 41.2% | 7,770 | 52.4% | 10,180 | 10.1% | 125.2 | 10.7% | 5,697 | 64.6% | 7,239 | 14.0% |
| | Quads w claims >=3 | 1,737 | 18.5% | 21,863 | 70.8% | 265.1 | 58.9% | 7,047 | 47.6% | 90,861 | 89.9% | 1,050.9 | 89.4% | 3,126 | 35.4% | 44,529 | 86.0% |
| | Total | 9,404 | 100.0% | 30,885 | 100.0% | 450.5 | 100.0% | 14,817 | 100.0% | 101,041 | 100.0% | 1,176.2 | 100.0% | 8,823 | 100.0% | 51,768 | 100.0% |
| All Year | Quads w claims <3 | 39,892 | 82.9% | 46,621 | 33.5% | 850.2 | 44.5% | 7,770 | 52.4% | 10,180 | 10.1% | 125.2 | 10.7% | 29,126 | 67.4% | 36,757 | 13.7% |
| | Quads w claims >=3 | 8,229 | 17.1% | 92,513 | 66.5% | 1,060.9 | 55.5% | 7,047 | 47.6% | 90,861 | 89.9% | 1,050.9 | 89.4% | 14,111 | 32.6% | 232,622 | 86.4% |
| | Total | 48,121 | 100.0% | 139,134 | 100.0% | 1,911.1 | 100.0% | 14,817 | 100.0% | 101,041 | 100.0% | 1,176.2 | 100.0% | 43,237 | 100.0% | 269,379 | 100.0% |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014 and MEDPAR's Colorado Medicare Fee-For-Service claims for January 2014-December 2014.

NOTES Quads are defined as a combination of hospital-health plan-year-procedural groups in our sample. The table provides information about the size distribution of quads in terms of their number of claims and spending. All spending values have been inflation adjusted to 2014 dollars using the BLS All Items Consumer Price Index.

Appendix Table 6. Quads by Contract for Algorithm

| Year | Analysis Sample: Private Health Plans | | | | | | Validation Sample: Medicare FFS | | | | | | Validation Sample: Medicaid FFS | | | | | |
|-------|---------------------------------------|--------------------|---|-------|----------|---------------------|---------------------------------|--------------------|---|-------|----------|----------------------|---------------------------------|--------------------|---|-------|----------|---------------------|
| | Total Quads | Classifiable Quads | Contract Type (% of classifiable quads) | | | | Total Quads | Classifiable Quads | Contract Type (% of classifiable quads) | | | | Total Quads | Classifiable Quads | Contract Type (% of classifiable quads) | | | |
| | | | Dis-count | Fixed | Per Diem | Tie -Not Classified | | | Dis-count | Fixed | Per Diem | Tie - Not Classified | | | Dis-count | Fixed | Per Diem | Tie -Not Classified |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
| 2009 | 7,945 | 1,143 | 54.1 | 13.0 | 30.2 | 2.8 | - | - | - | - | - | - | 6,280 | 1,986 | 7.6 | 84.0 | 7.8 | 0.6 |
| 2010 | 7,297 | 1,054 | 51.8 | 15.5 | 31.1 | 1.6 | - | - | - | - | - | - | 6,747 | 2,149 | 9.0 | 83.2 | 6.8 | 1.0 |
| 2011 | 7,340 | 1,256 | 48.2 | 22.8 | 26.6 | 2.5 | - | - | - | - | - | - | 7,001 | 2,239 | 8.8 | 82.8 | 7.6 | 0.7 |
| 2012 | 7,816 | 1,463 | 45.5 | 24.3 | 27.7 | 2.6 | - | - | - | - | - | - | 7,152 | 2,304 | 10.4 | 81.9 | 6.8 | 1.0 |
| 2013 | 8,319 | 1,576 | 40.7 | 27.2 | 30.0 | 2.0 | - | - | - | - | - | - | 7,234 | 2,307 | 12.1 | 79.4 | 7.3 | 1.1 |
| 2014 | 9,404 | 1,737 | 36.0 | 33.2 | 28.8 | 2.0 | 14,817 | 7,047 | 4.9 | 86.4 | 7.6 | 1.1 | 8,823 | 3,126 | 18.6 | 71.0 | 9.6 | 0.8 |
| Total | 48,121 | 8,229 | 45.0 | 23.8 | 29.0 | 2.2 | 14,817 | 7,047 | 4.9 | 86.4 | 7.6 | 1.1 | 43,237 | 14,111 | 11.6 | 79.7 | 7.8 | 0.9 |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014 and MEDPAR's Colorado Medicare Fee-For-Service claims for January 2014-December 2014.

NOTES Quads are defined as a combination of hospital-health plan-year-procedural groups in our sample.

Appendix Table 7-a. Claims by Contract Type Excluding Quads with Fewer than 4 Claims

| Year | Analysis Sample: Private Health Plans | | | | | | Validation Sample: Medicare FFS | | | | | | Validation Sample: Medicaid FFS | | | | | |
|-------|---------------------------------------|-----------------------------------|---|-------|-------------|-------------------------|---------------------------------|-----------------------------------|---|-------|-------------|-------------------------|---------------------------------|-----------------------------------|---|-------|-------------|-------------------------|
| | Total Claims (1000s) | Classifiable Claims (1000s) | Contract Type (% of classifiable claims) | | | | Total Claims (1000s) | Classifiable Claims (1000s) | Contract Type (% of classifiable claims) | | | | Total Claims (1000s) | Classifiable Claims (1000s) | Contract Type (% of classifiable claims) | | | |
| | | | Dis- count | Fixed | Per Diem | Tie - Not Classified | | | Dis- count | Fixed | Per Diem | Tie - Not Classified | | | Dis- count | Fixed | Per Diem | Tie - Not Classified |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
| 2009 | 16.3 | 7.1 | 54.5 | 11.6 | 33.1 | 0.8 | - | - | - | - | - | - | 42.3 | 35.4 | 11.5 | 84.2 | 4.2 | 0.1 |
| 2010 | 14.4 | 5.9 | 53.3 | 12.5 | 33.8 | 0.5 | - | - | - | - | - | - | 44.1 | 36.6 | 11.7 | 84.5 | 3.8 | 0.1 |
| 2011 | 19.5 | 11.3 | 49.7 | 28.5 | 21.5 | 0.4 | - | - | - | - | - | - | 43.5 | 35.6 | 14.3 | 80.5 | 5.2 | 0.0 |
| 2012 | 27.9 | 19.2 | 47.2 | 30.7 | 21.6 | 0.6 | - | - | - | - | - | - | 43.3 | 35.2 | 12.4 | 83.5 | 3.9 | 0.2 |
| 2013 | 30.2 | 20.9 | 40.0 | 38.7 | 21.2 | 0.1 | - | - | - | - | - | - | 44.4 | 36.3 | 17.6 | 79.3 | 3.0 | 0.1 |
| 2014 | 30.9 | 20.3 | 27.8 | 44.9 | 27.1 | 0.2 | 101.0 | 86.6 | 5.4 | 89.6 | 4.9 | 0.1 | 51.8 | 42.1 | 18.2 | 74.0 | 7.8 | 0.1 |
| Total | 139.1 | 84.8 | 42.1 | 32.9 | 24.6 | 0.4 | 101.0 | 86.6 | 5.4 | 89.6 | 4.9 | 0.1 | 269.4 | 221.3 | 14.4 | 80.8 | 4.8 | 0.1 |

Appendix Table 7-b. Spending by Contract Type Excluding Quads with Fewer than 4 Claims

| Year | Analysis Sample: Private Health Plans | | | | | | Validation Sample: Medicare FFS | | | | | | Validation Sample: Medicaid FFS | | | | | |
|-------|--|---|---|-------|-------------|-------------------------|--|---|---|-------|-------------|-------------------------|--|---|---|-------|-------------|-------------------------|
| | Total Spending (millions, \$) | Classifiable Spending (millions,\$) | <u>Contract Type (% of classifiable spending)</u> | | | | Total Spending (millions, \$) | Classifiable Spending (millions,\$) | <u>Contract Type (% of classifiable spending)</u> | | | | Total Spending (millions, \$) | Classifiable Spending (millions,\$) | <u>Contract Type (% of classifiable spending)</u> | | | |
| | | | Dis- count | Fixed | Per Diem | Tie - Not Classified | | | Dis- count | Fixed | Per Diem | Tie - Not Classified | | | Dis- count | Fixed | Per Diem | Tie - Not Classified |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
| 2009 | 210.8 | 70.3 | 67.4 | 12.5 | 19.4 | 0.7 | - | - | - | - | - | - | 213.2 | 162.0 | 10.7 | 84.0 | 5.2 | 0.0 |
| 2010 | 205.9 | 64.1 | 66.0 | 14.5 | 19.0 | 0.5 | - | - | - | - | - | - | 214.5 | 163.2 | 10.5 | 84.4 | 4.9 | 0.2 |
| 2011 | 262.8 | 116.5 | 46.3 | 39.9 | 13.3 | 0.5 | - | - | - | - | - | - | 211.9 | 157.2 | 11.7 | 81.1 | 7.1 | 0.0 |
| 2012 | 359.9 | 203.4 | 40.8 | 45.4 | 13.2 | 0.6 | - | - | - | - | - | - | 211.7 | 153.4 | 13.0 | 82.2 | 4.6 | 0.2 |
| 2013 | 421.2 | 240.3 | 35.7 | 48.4 | 15.7 | 0.2 | - | - | - | - | - | - | 222.0 | 161.5 | 17.1 | 78.6 | 4.2 | 0.1 |
| 2014 | 450.5 | 237.6 | 26.5 | 56.0 | 17.2 | 0.3 | 1,176.2 | 997.7 | 7.8 | 86.9 | 5.2 | 0.1 | 276.4 | 209.0 | 18.7 | 72.9 | 8.4 | 0.1 |
| Total | 1,911.1 | 932.3 | 40.3 | 43.6 | 15.7 | 0.4 | 1,176.2 | 997.7 | 7.8 | 86.9 | 5.2 | 0.1 | 1,349.8 | 1,006.4 | 13.9 | 80.2 | 5.9 | 0.1 |

Appendix Table 7-c. Quads by Contract Type Excluding Quads with Fewer than 4 Claims

| Year | Analysis Sample: Private Health Plans | | | | | | Validation Sample: Medicare FFS | | | | | | Validation Sample: Medicaid FFS | | | | | |
|-------|---------------------------------------|--------------------|---|-------|----------|----------------------|---------------------------------|--------------------|---|-------|----------|----------------------|---------------------------------|--------------------|---|-------|----------|----------------------|
| | Total Quads | Classifiable Quads | Contract Type (% of classifiable quads) | | | | Total Quads | Classifiable Quads | Contract Type (% of classifiable quads) | | | | Total Quads | Classifiable Quads | Contract Type (% of classifiable quads) | | | |
| | | | Dis-count | Fixed | Per Diem | Tie - Not Classified | | | Dis-count | Fixed | Per Diem | Tie - Not Classified | | | Dis-count | Fixed | Per Diem | Tie - Not Classified |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
| 2009 | 7,945 | 736 | 53.3 | 13.6 | 31.5 | 1.6 | - | - | - | - | - | - | 6,280 | 1,460 | 6.7 | 85.7 | 7.3 | 0.3 |
| 2010 | 7,297 | 656 | 51.8 | 13.9 | 33.4 | 0.9 | - | - | - | - | - | - | 6,747 | 1,573 | 8.1 | 86.1 | 5.3 | 0.5 |
| 2011 | 7,340 | 846 | 47.3 | 24.9 | 26.8 | 1.0 | - | - | - | - | - | - | 7,001 | 1,625 | 7.9 | 85.7 | 6.2 | 0.3 |
| 2012 | 7,816 | 1,046 | 45.3 | 25.2 | 27.3 | 2.1 | - | - | - | - | - | - | 7,152 | 1,651 | 9.2 | 84.1 | 6.1 | 0.6 |
| 2013 | 8,319 | 1,138 | 40.5 | 28.8 | 30.1 | 0.5 | - | - | - | - | - | - | 7,234 | 1,690 | 11.9 | 81.7 | 6.0 | 0.5 |
| 2014 | 9,404 | 1,225 | 34.9 | 34.9 | 29.4 | 0.7 | 14,817 | 5,630 | 4.9 | 88.2 | 6.5 | 0.4 | 8,823 | 2,326 | 17.5 | 73.5 | 8.7 | 0.3 |
| Total | 48,121 | 5,647 | 44.2 | 25.2 | 29.5 | 1.1 | 14,817 | 5,630 | 4.9 | 88.2 | 6.5 | 0.4 | 43,237 | 10,325 | 10.8 | 82.1 | 6.7 | 0.4 |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014 and MEDPAR's Colorado Medicare Fee-For-Service claims for January 2014-December 2014.

NOTES Classifiable claims and spending indicate that they are from quads with at least 4 claims. The percentages denote the fraction of claims, spending or quads our algorithm classifies as discounted charge, fixed rate, per diem, or (in case of a tie among CVs) not classified. All spending values have been inflation adjusted to 2014 dollars using the BLS All Items Consumer Price Index.

Appendix Table 8-a. Claims by Contract Type Excluding One Payer

| Year | Analysis Sample: Private Health Plans | | | | | |
|-------|---------------------------------------|---------------------------------------|--|--------------|-----------------|-----------------------------|
| | Total Claims (in thousands) | Classifiable Claims (in thousands) | Contract Type (% of classifiable claims) | | | |
| | (1) | (2) | Discount (3) | Fixed (4) | Per Diem (5) | Tie - Not Classified (6) |
| 2009 | 16.3 | 8.4 | 54.6% | 11.6% | 32.3% | 1.4% |
| 2010 | 14.4 | 7.1 | 53.0% | 13.4% | 32.7% | 0.9% |
| 2011 | 12.7 | 6.4 | 51.0% | 12.9% | 34.6% | 1.5% |
| 2012 | 12.9 | 6.6 | 50.3% | 13.2% | 35.3% | 1.3% |
| 2013 | 14.8 | 8.0 | 45.9% | 15.0% | 38.2% | 1.0% |
| 2014 | 19.5 | 11.5 | 40.8% | 23.4% | 34.9% | 0.9% |
| Total | 90.5 | 48.0 | 48.5% | 15.7% | 34.7% | 1.1% |

Appendix Table 8-b. Spending by Contract Type Excluding One Payer

| Year | Analysis Sample: Private Health Plans | | | | | |
|-------|--|---|--|--------------|-----------------|-----------------------------|
| | Total Spending (in millions of dollars) | Classifiable Spending (in millions of dollars) | Contract Type (% of classifiable spending) | | | |
| | (1) | (2) | Discount (3) | Fixed (4) | Per Diem (5) | Tie - Not Classified (6) |
| 2009 | 210.8 | 89.8 | 68.9% | 11.4% | 18.3% | 1.4% |
| 2010 | 205.9 | 82.2 | 65.1% | 15.5% | 18.7% | 0.7% |
| 2011 | 182.6 | 70.8 | 59.8% | 17.8% | 20.8% | 1.6% |
| 2012 | 185.1 | 71.5 | 58.8% | 17.3% | 22.6% | 1.3% |
| 2013 | 226.3 | 95.9 | 56.9% | 17.6% | 24.3% | 1.3% |
| 2014 | 302.1 | 139.2 | 46.0% | 31.7% | 21.3% | 1.0% |
| Total | 1,312.9 | 549.5 | 58.0% | 19.8% | 21.0% | 1.2% |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014.

NOTES Classifiable claims and spending indicate that they are from quads with at least 3 claims, which is a requirement of our algorithm, as described in the methods section. Among classifiable quads, the percentages denote the fraction of claims or spending our algorithm classifies as discounted charge, fixed rate, per diem, or (in case of a tie among CVs) not classified. All spending values have been inflation adjusted to 2014 dollars using the BLS All Items Consumer Price Index.

Appendix Table 9-a. Claims by Contract Type using Algorithm with Bounds

| Year | Analysis Sample: Private Health Plans | | | | | | Validation Sample: Medicare FFS | | | | | | Validation Sample: Medicaid FFS | | | | | |
|-------|---------------------------------------|-----------------------------|--|-------|----------|----------------------|---------------------------------|-----------------------------|--|-------|----------|----------------------|---------------------------------|-----------------------------|--|-------|----------|----------------------|
| | Total Claims (1000s) | Classifiable Claims (1000s) | Contract Type (% of classifiable claims) | | | | Total Claims (1000s) | Classifiable Claims (1000s) | Contract Type (% of classifiable claims) | | | | Total Claims (1000s) | Classifiable Claims (1000s) | Contract Type (% of classifiable claims) | | | |
| | | | Dis-count | Fixed | Per Diem | Tie - Not Classified | | | Dis-count | Fixed | Per Diem | Tie - Not Classified | | | Dis-count | Fixed | Per Diem | Tie - Not Classified |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
| 2009 | 16.3 | 8.4 | 28.1 | 5.4 | 8.4 | 58.0 | - | - | - | - | - | - | 42.3 | 37.0 | 0.6 | 19.5 | 0.3 | 79.5 |
| 2010 | 14.4 | 7.1 | 32.3 | 6.4 | 13.8 | 47.6 | - | - | - | - | - | - | 44.1 | 38.3 | 1.5 | 20.5 | 0.3 | 77.7 |
| 2011 | 19.5 | 12.5 | 28.9 | 22.1 | 9.6 | 39.4 | - | - | - | - | - | - | 43.5 | 37.5 | 1.2 | 19.8 | 0.4 | 78.6 |
| 2012 | 27.9 | 20.5 | 32.6 | 19.7 | 7.9 | 39.8 | - | - | - | - | - | - | 43.3 | 37.2 | 2.1 | 26.5 | 0.5 | 70.9 |
| 2013 | 30.2 | 22.2 | 13.1 | 20.0 | 8.2 | 58.7 | - | - | - | - | - | - | 44.4 | 38.2 | 4.5 | 24.0 | 0.6 | 70.9 |
| 2014 | 30.9 | 21.9 | 10.9 | 28.5 | 14.0 | 46.6 | 101.0 | 90.9 | 2.2 | 51.0 | 2.3 | 44.5 | 51.8 | 44.5 | 6.2 | 18.9 | 0.9 | 74.0 |
| Total | 139.1 | 92.5 | 21.8 | 19.9 | 10.2 | 48.1 | 101.0 | 90.9 | 2.2 | 51.0 | 2.3 | 44.5 | 269.4 | 232.6 | 2.8 | 21.5 | 0.5 | 75.2 |

Appendix Table 9-b. Spending by Contract Type using Algorithm with Bounds

| Year | Analysis Sample: Private Health Plans | | | | | | Validation Sample: Medicare FFS | | | | | | Validation Sample: Medicaid FFS | | | | | |
|-------|---------------------------------------|-------------------------------------|--|-------|----------|----------------------|---------------------------------|-------------------------------------|--|-------|----------|----------------------|---------------------------------|-------------------------------------|--|-------|----------|----------------------|
| | Total Spending (millions, \$) | Classifiable Spending (millions,\$) | Contract Type (% of classifiable spending) | | | | Total Spending (millions, \$) | Classifiable Spending (millions,\$) | Contract Type (% of classifiable spending) | | | | Total Spending (millions, \$) | Classifiable Spending (millions,\$) | Contract Type (% of classifiable spending) | | | |
| | | | Dis-count | Fixed | Per Diem | Tie - Not Classified | | | Dis-count | Fixed | Per Diem | Tie - Not Classified | | | Dis-count | Fixed | Per Diem | Tie - Not Classified |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
| 2009 | 210.8 | 89.8 | 40.3 | 6.6 | 4.2 | 48.9 | - | - | - | - | - | - | 213.2 | 173.5 | 0.9 | 20.5 | 0.4 | 78.2 |
| 2010 | 205.9 | 82.2 | 43.6 | 7.2 | 8.0 | 41.2 | - | - | - | - | - | - | 214.5 | 174.0 | 1.9 | 21.6 | 0.4 | 76.1 |
| 2011 | 262.8 | 136.4 | 33.4 | 29.6 | 5.7 | 31.3 | - | - | - | - | - | - | 211.9 | 169.2 | 1.8 | 21.9 | 0.6 | 75.8 |
| 2012 | 359.9 | 223.7 | 29.7 | 26.5 | 5.0 | 38.7 | - | - | - | - | - | - | 211.7 | 167.4 | 2.8 | 28.0 | 0.7 | 68.6 |
| 2013 | 421.2 | 263.6 | 17.9 | 22.9 | 5.3 | 53.9 | - | - | - | - | - | - | 222.0 | 174.5 | 4.7 | 25.7 | 0.8 | 68.8 |
| 2014 | 450.5 | 265.1 | 14.6 | 34.2 | 8.4 | 42.8 | 1,176.2 | 1,050.9 | 4.4 | 46.3 | 2.0 | 47.4 | 276.4 | 225.9 | 7.1 | 20.2 | 1.5 | 71.2 |
| Total | 1,911.1 | 1,060.9 | 25.4 | 24.8 | 6.2 | 43.6 | 1,176.2 | 1,050.9 | 4.4 | 46.3 | 2.0 | 47.4 | 1,349.8 | 1,084.6 | 3.4 | 22.8 | 0.8 | 73.0 |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014 and MEDPAR's Colorado Medicare Fee-For-Service claims for January 2014-December 2014.

NOTES Classification with bounds are based on additional requirements that the minimum CV within the quad must be: (1) less than 0.05 and, (2) at least 0.05 less than the next closest CV. Classifiable claims and spending indicate that they are from quads with at least 3 claims, which is a requirement of our algorithm, as described in the methods section. All spending values have been inflation adjusted to 2014 dollars using the BLS All Items Consumer Price Index.

Appendix Table 10. Sensitivity Analyses Using Different Values of Bounds

| Gap between two smallest CVs | Minimum CV | % Classification | | | |
|------------------------------|------------|------------------|-------|---------|----------------------|
| | | Discount | Fixed | PerDiem | Tie - Not Classified |
| N/A | N/A | 42.5 | 31.9 | 24.9 | 0.7 |
| 0.01 | N/A | 42.5 | 31.9 | 24.9 | 0.8 |
| 0.05 | N/A | 42.4 | 31.9 | 24.8 | 0.9 |
| 0.10 | N/A | 42.2 | 31.6 | 24.6 | 1.6 |
| N/A | 0.01 | 11.0 | 9.8 | 4.2 | 75.0 |
| N/A | 0.05 | 22.0 | 19.9 | 10.2 | 48.0 |
| N/A | 0.10 | 29.8 | 26.1 | 18.5 | 25.6 |
| 0.01 | 0.01 | 11.0 | 9.8 | 4.2 | 75.1 |
| 0.01 | 0.05 | 21.9 | 19.9 | 10.2 | 48.0 |
| 0.01 | 0.10 | 29.8 | 26.1 | 18.5 | 25.6 |
| 0.02 | 0.01 | 11.0 | 9.8 | 4.2 | 75.1 |
| 0.02 | 0.05 | 21.9 | 19.9 | 10.2 | 48.0 |
| 0.02 | 0.10 | 29.8 | 26.1 | 18.5 | 25.7 |
| 0.03 | 0.01 | 11.0 | 9.8 | 4.2 | 75.1 |
| 0.03 | 0.05 | 21.9 | 19.9 | 10.2 | 48.1 |
| 0.03 | 0.10 | 29.8 | 26.1 | 18.5 | 25.7 |
| 0.04 | 0.01 | 11.0 | 9.8 | 4.2 | 75.1 |
| 0.04 | 0.05 | 21.9 | 19.9 | 10.2 | 48.1 |
| 0.04 | 0.10 | 29.7 | 26.1 | 18.5 | 25.7 |
| 0.05 | 0.01 | 10.9 | 9.8 | 4.2 | 75.1 |
| 0.05 | 0.05 | 21.8 | 19.9 | 10.2 | 48.1 |
| 0.05 | 0.10 | 29.7 | 26.1 | 18.5 | 25.8 |
| 0.06 | 0.01 | 10.9 | 9.8 | 4.2 | 75.2 |
| 0.06 | 0.05 | 21.8 | 19.9 | 10.1 | 48.2 |
| 0.06 | 0.10 | 29.7 | 26.1 | 18.4 | 25.8 |
| 0.07 | 0.01 | 10.9 | 9.8 | 4.2 | 75.2 |
| 0.07 | 0.05 | 21.8 | 19.9 | 10.1 | 48.3 |

| | | | | | |
|------|------|------|------|------|------|
| 0.07 | 0.10 | 29.6 | 26.0 | 18.4 | 25.9 |
| 0.08 | 0.01 | 10.9 | 9.8 | 4.2 | 75.2 |
| 0.08 | 0.05 | 21.8 | 19.9 | 10.1 | 48.3 |
| 0.08 | 0.10 | 29.6 | 26.0 | 18.4 | 26.0 |
| 0.09 | 0.01 | 10.9 | 9.7 | 4.2 | 75.3 |
| 0.09 | 0.05 | 21.7 | 19.8 | 10.0 | 48.4 |
| 0.09 | 0.10 | 29.6 | 26.0 | 18.3 | 26.2 |
| 0.10 | 0.01 | 10.9 | 9.7 | 4.2 | 75.3 |
| 0.10 | 0.05 | 21.7 | 19.8 | 10.0 | 48.5 |
| 0.10 | 0.10 | 29.5 | 25.9 | 18.3 | 26.3 |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014.

NOTES Classification with bounds is based on the additional requirements that the minimum CV within the quad must be (1) sufficiently small and (2) sufficiently different from the next smallest CV. This table provides different combinations of these requirements.

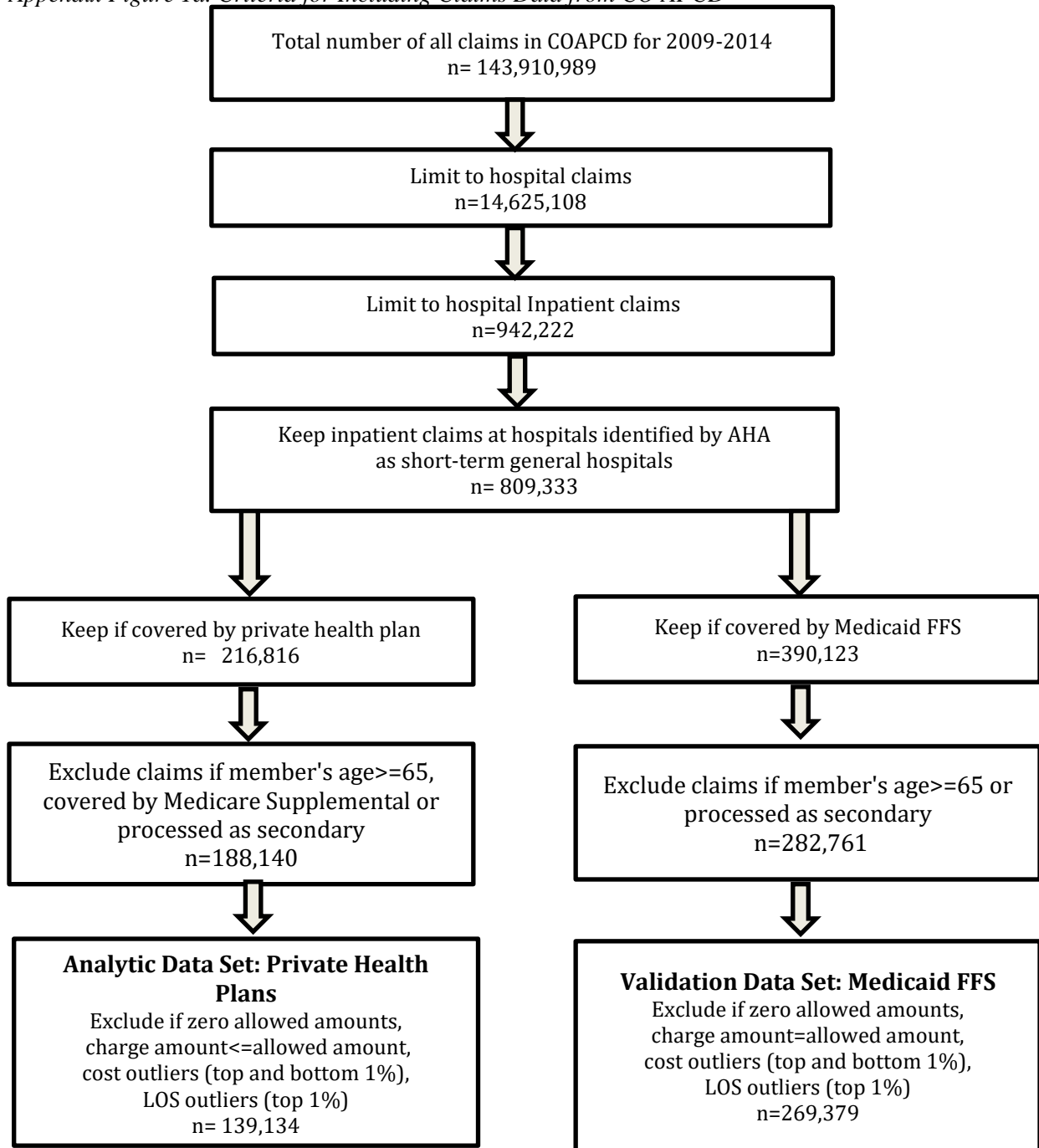
Appendix Table 11. Quantification Exercises to Explore the Role of Special Payment Provisions in Medicare FFS

| Analysis | Validation Sample: Medicare FFS | | | | | | | | | | | | | | | | | |
|----------|---------------------------------|---------------------------------------|---|-------|-------------|-------------------------|----------------------------|-----------------------------------|--|-------|-------------|-------------------------|----------------|-----------------------|--|-------|-------------|-------------------------|
| | Total Spending (mil, \$) | Classifiable Spending (mil, \$) | Contract Type (% of classifiable spending) | | | | Total Claims (1000s) | Classifiable Claims (1000s) | Contract Type (% of classifiable claims) | | | | Total Quads | Classifiable Quads | Contract Type (% of classifiable quads) | | | |
| | | | Dis- count | Fixed | Per Diem | Tie - Not Classified | | | Dis- count | Fixed | Per Diem | Tie - Not Classified | | | Dis- count | Fixed | Per Diem | Tie - Not Classified |
| | | | | | | | | | | | | | | | | | | |
| (7) | (8) | (9) | (10) | (11) | (12) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | |
| Main | 1,176.2 | 1,050.9 | 7.8 | 86.3 | 5.7 | 0.2 | 101.0 | 90.9 | 5.3 | 89.1 | 5.3 | 0.3 | 14,817 | 7,047 | 4.9 | 86.4 | 7.6 | 1.1 |
| Add'l 1 | 1,143.8 | 1,022.5 | 1.4 | 93.2 | 5.2 | 0.2 | 101.0 | 90.9 | 1.6 | 93.2 | 4.9 | 0.3 | 14,817 | 7,047 | 1.3 | 90.9 | 6.7 | 1.1 |
| Add'l 2 | 1,109.7 | 1,001.3 | 1.5 | 95.2 | 3.2 | 0.2 | 97.2 | 88.5 | 1.6 | 95.8 | 2.4 | 0.3 | 13,260 | 6,665 | 1.3 | 96.1 | 1.6 | 1.0 |
| Add'l 3 | 1,063.7 | 955.4 | 0.5 | 98.6 | 0.6 | 0.2 | 93.6 | 84.9 | 0.3 | 99.1 | 0.3 | 0.3 | 13,198 | 6,610 | 0.9 | 97.0 | 1.1 | 1.0 |
| Add'l 4 | 34.1 | 21.1 | 0.5 | 0.3 | 98.3 | 0.9 | 3.8 | 2.4 | 0.5 | 0.3 | 97.9 | 1.3 | 1,557 | 382 | 1.1 | 0.5 | 95.8 | 2.6 |

SOURCE Authors' analysis of CO APCD data for January 2009-December 2014.

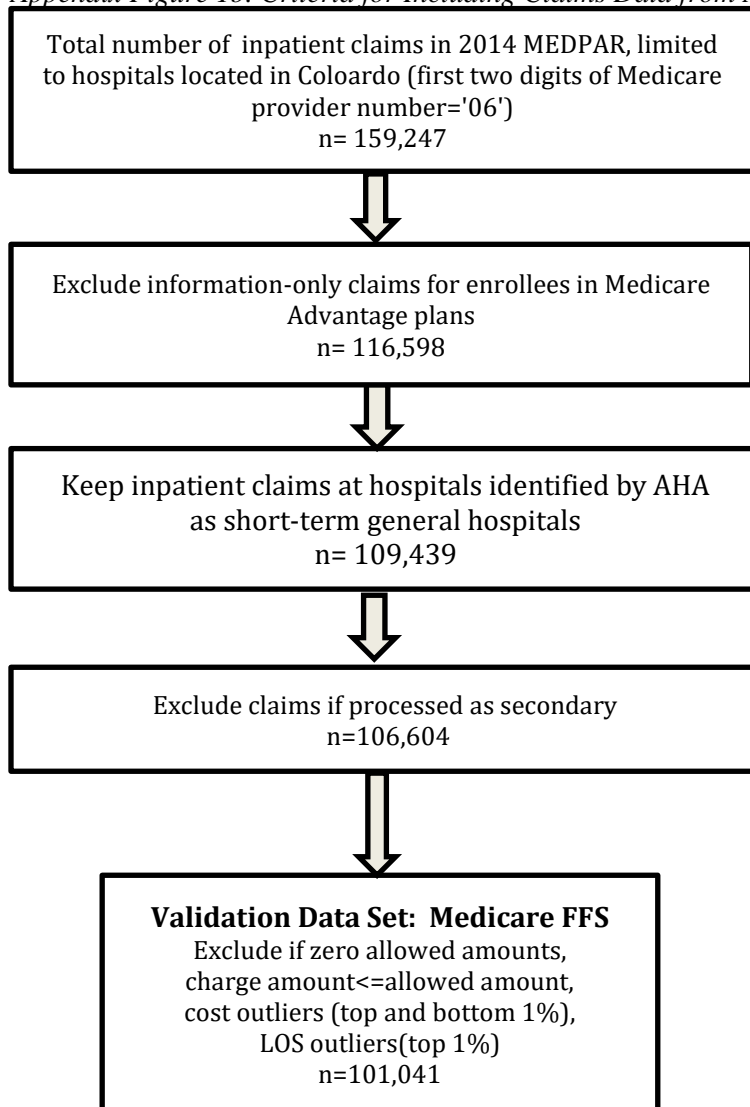
NOTES Main Analysis corresponds to the main Medicare FFS result of paper. Additional Analysis 1 uses the same Medicare FFS sample as the main analysis but use DRG_PRICE as the payment variable instead of the Allowed Amount (thus showing how much of the “misclassification” of discounted charges is because of outlier payments). Additional Analysis 2 also uses DRG_PRICE as the payment variable, but now also omits CAHs (thus showing how much of the “misclassification” of discounted charges is because of CAHs). Additional Analysis 3 is the same as AA2, but now also omits special units (thus showing how much of the “misclassification” is because of special unit claims, such as rehabilitation and psychiatric claims). Additional Analysis 4 is the inverse of AA2, keeping only CAHs and using DRG_PRICE (thus showing you how CAHs are paid).

Appendix Figure 1a. Criteria for Including Claims Data from CO APCD



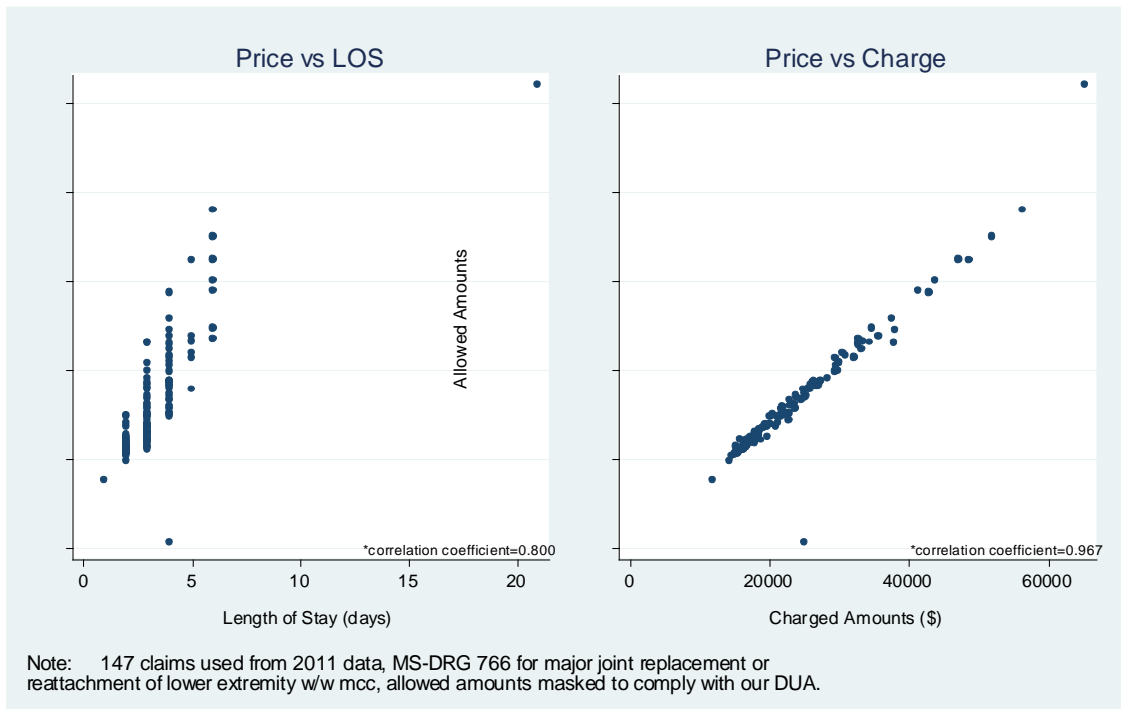
SOURCE Authors' analysis of CO APCD data for January 2009-December 2014.

Appendix Figure 1b. Criteria for Including Claims Data from Medicare FFS

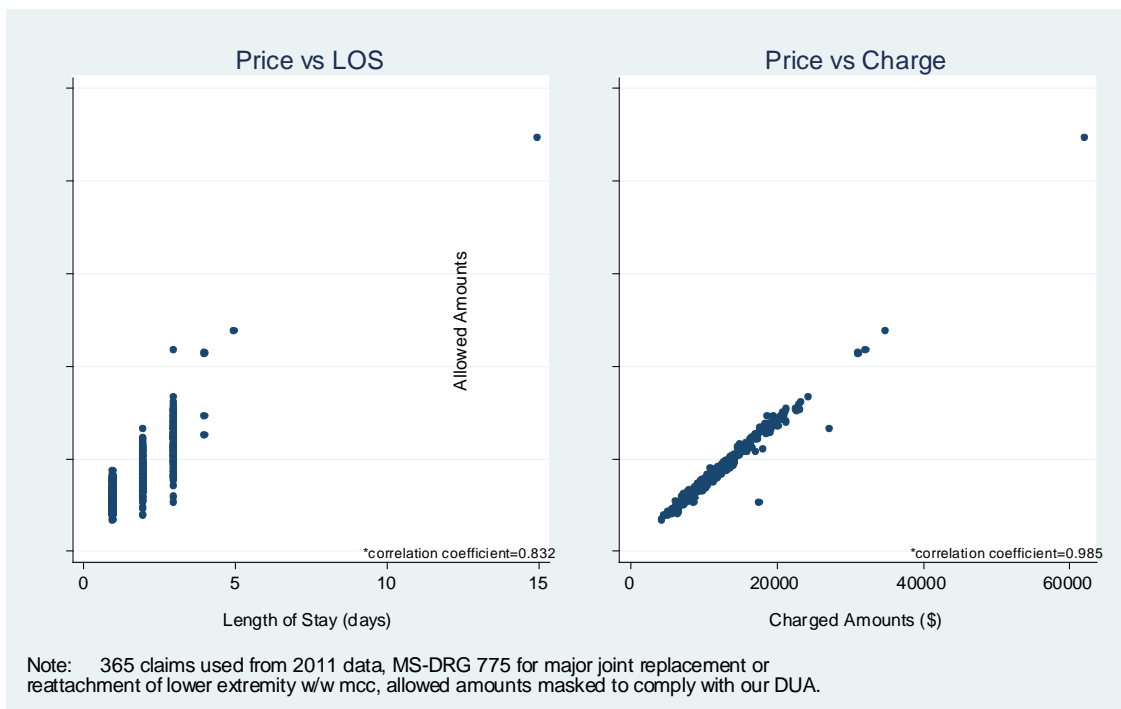


SOURCE Authors' analysis of MEDPAR's Colorado Medicare Fee-For-Service claims for January 2014-December 2014.

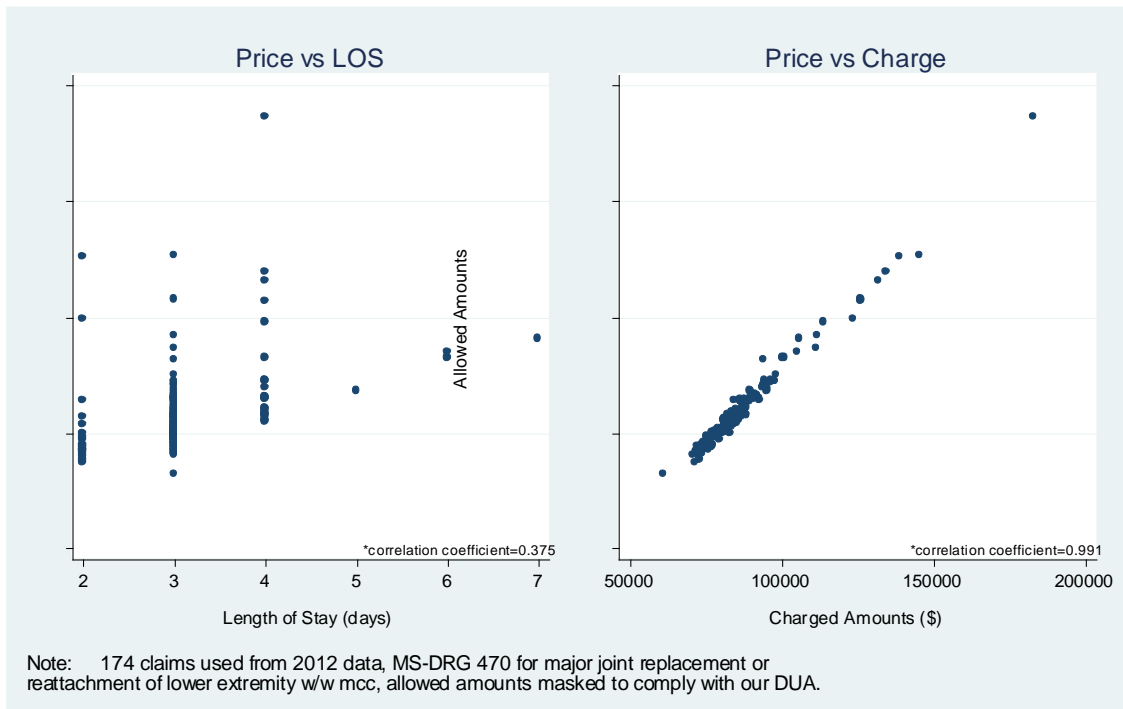
Appendix Figure 2-a. Discounted Charge Contract-Example 1



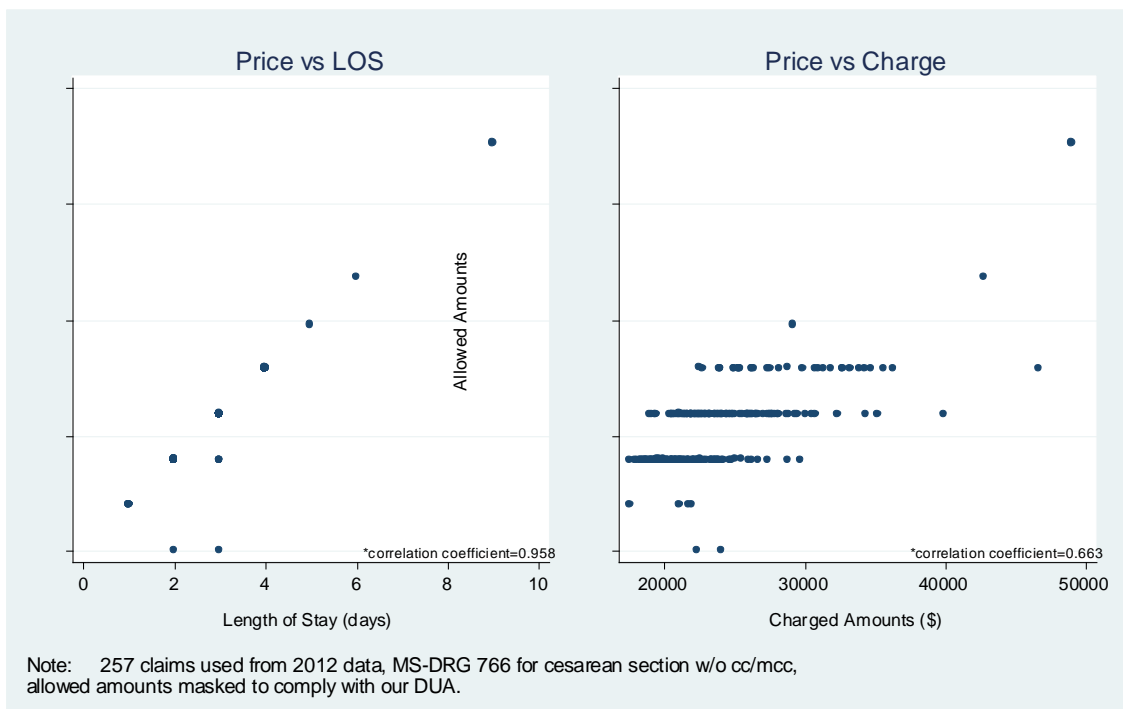
Appendix Figure 2-b. Discounted Charge Contract-Example 2



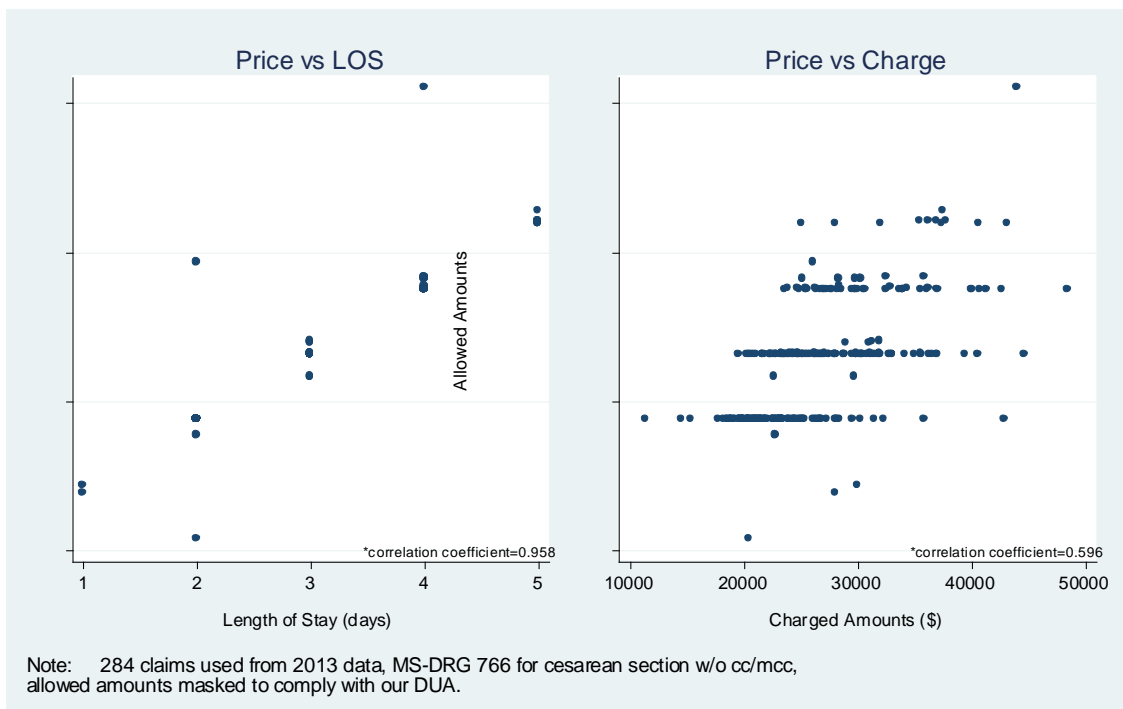
Appendix Figure 2-c. Discounted Charge Contract-Example 3



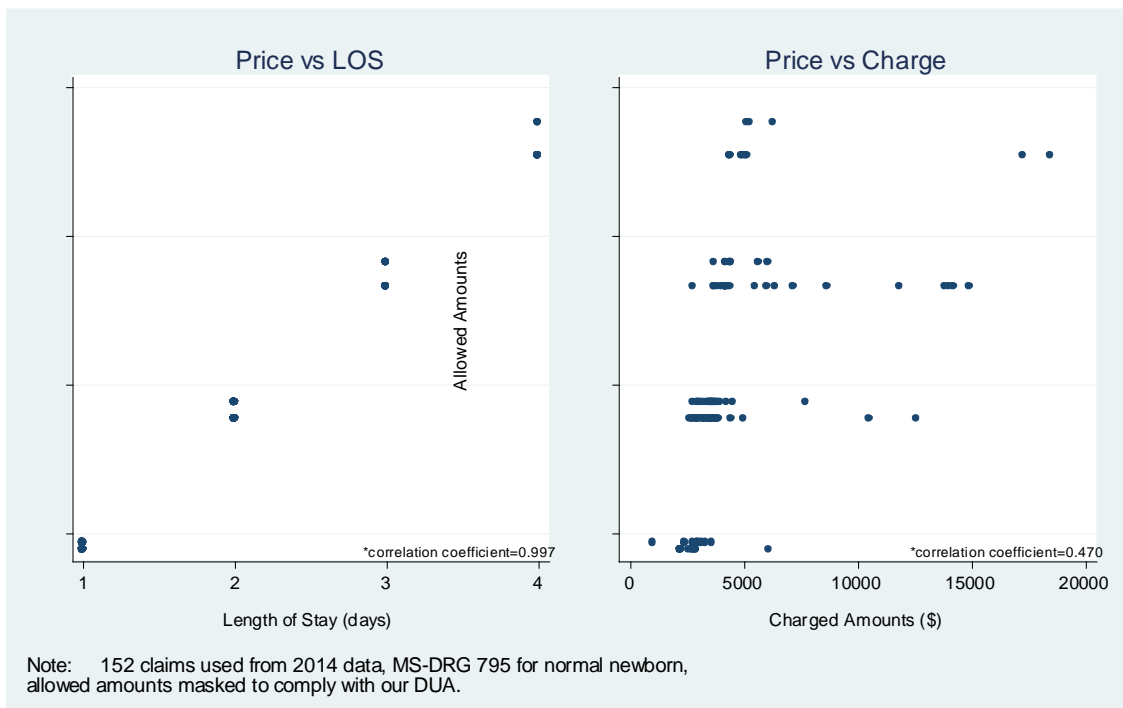
Appendix Figure 3-a. Per Diem Contract-Example 1



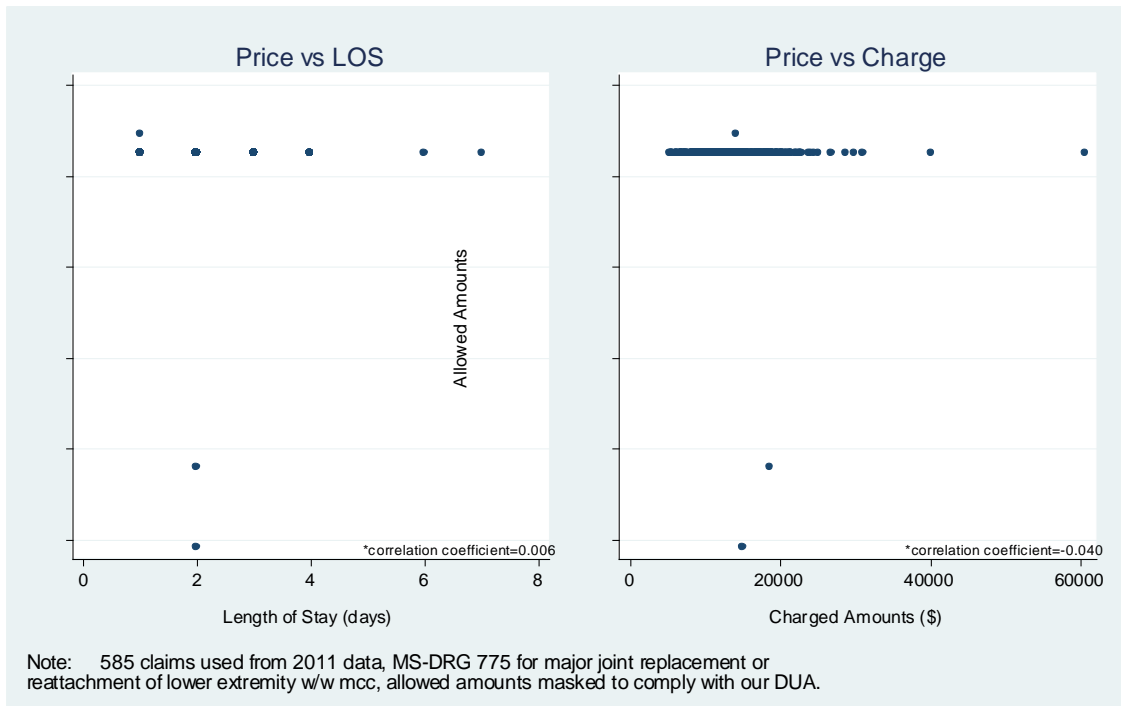
Appendix Figure 3-b. Per Diem Contract-Example 2



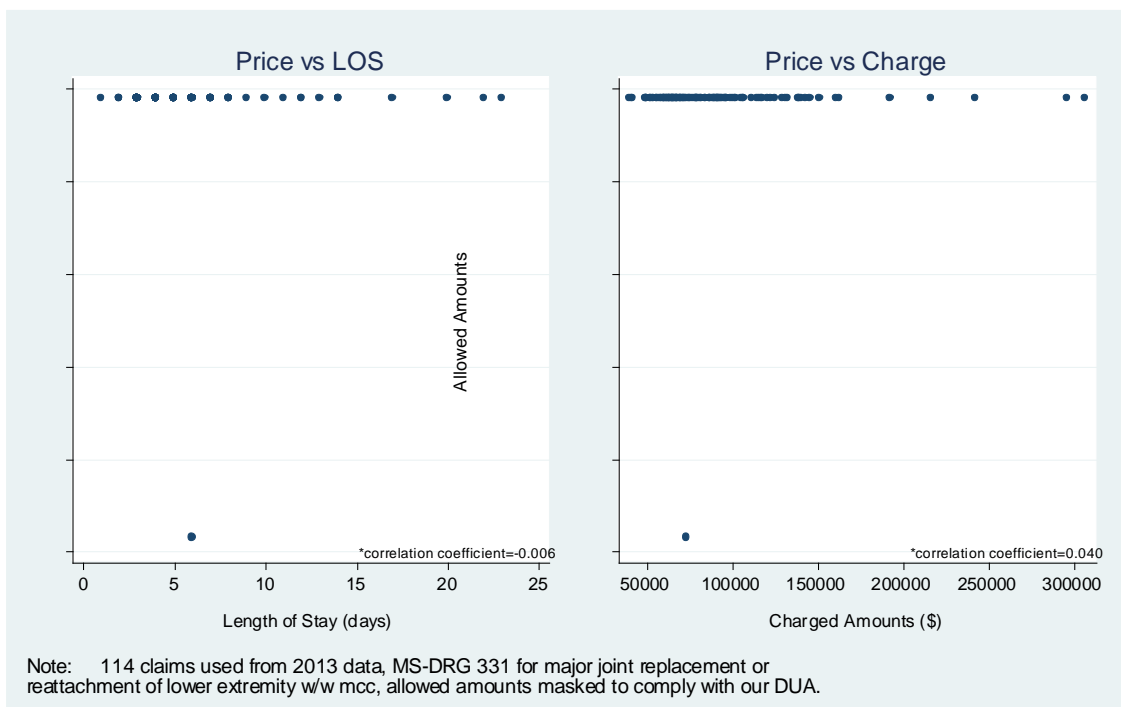
Appendix Figure 3-c. Per Diem Contract-Example 3



Appendix Figure 4-a. Fixed Rate Contract-Example 1



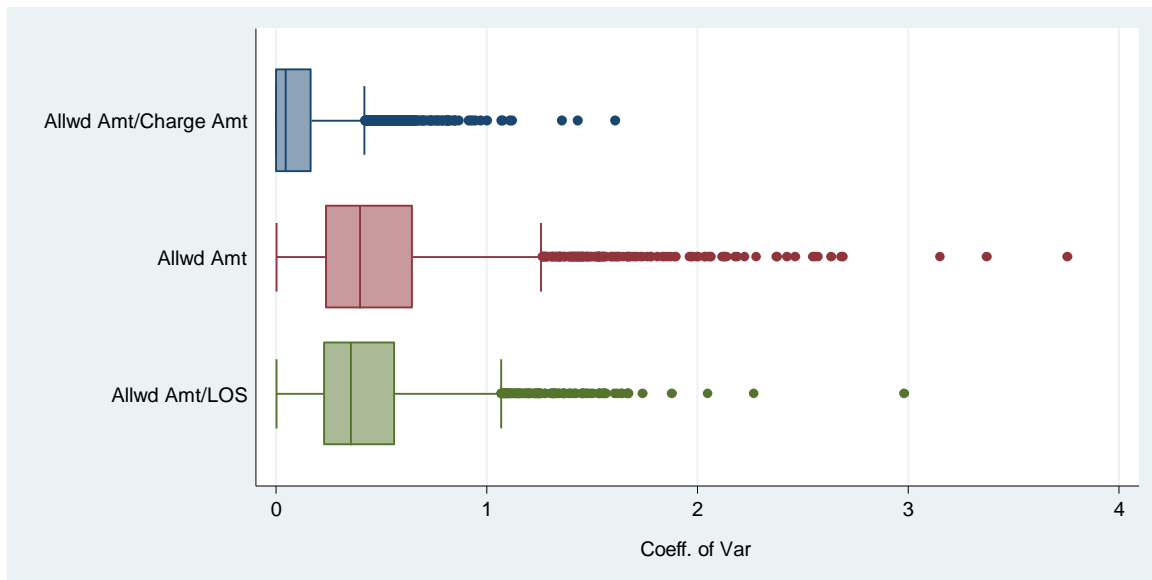
Appendix Figure 4-b. Fixed Rate Contract-Example 2



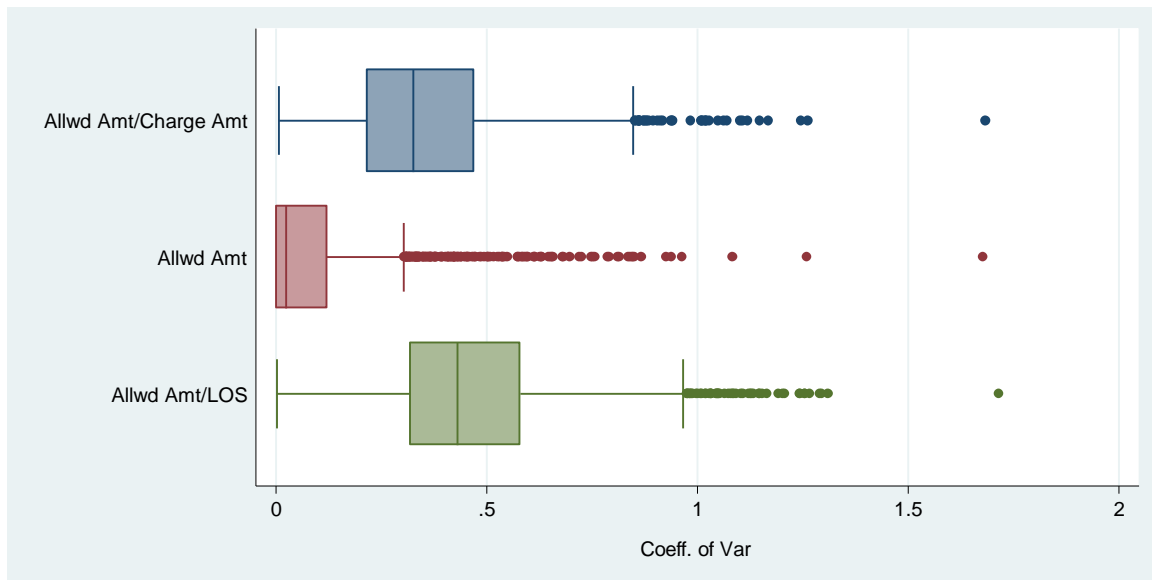
Appendix Figure 4-c. Fixed Rate Contract-Example 3



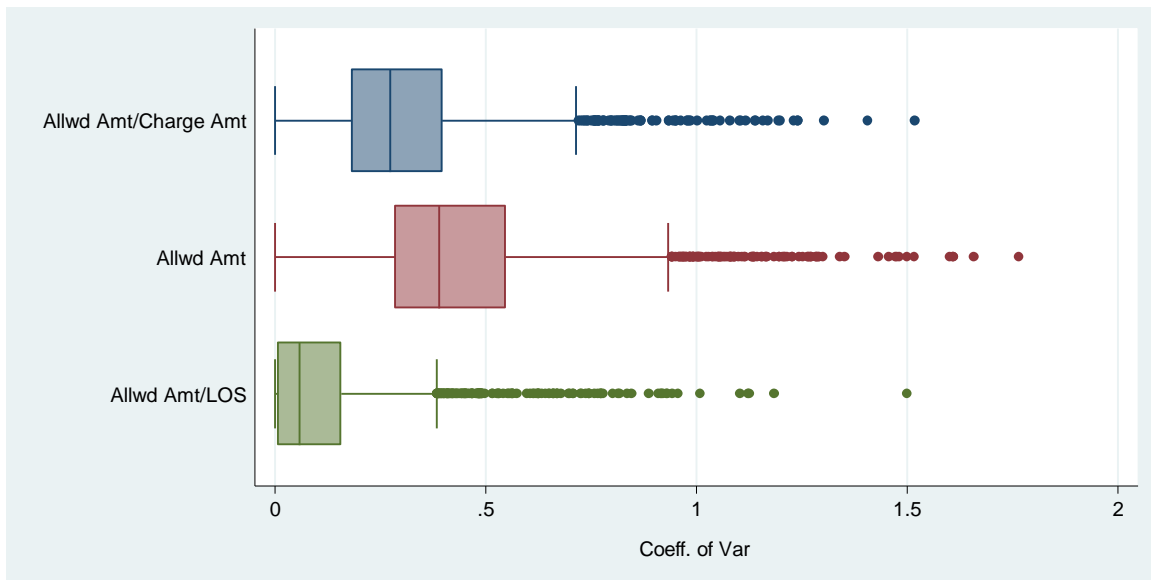
Appendix Figure 5-a. Distribution of CV for Discounted Charge Contracts



Appendix Figure 5-b. Distribution of CV for Fixed Rate Contracts



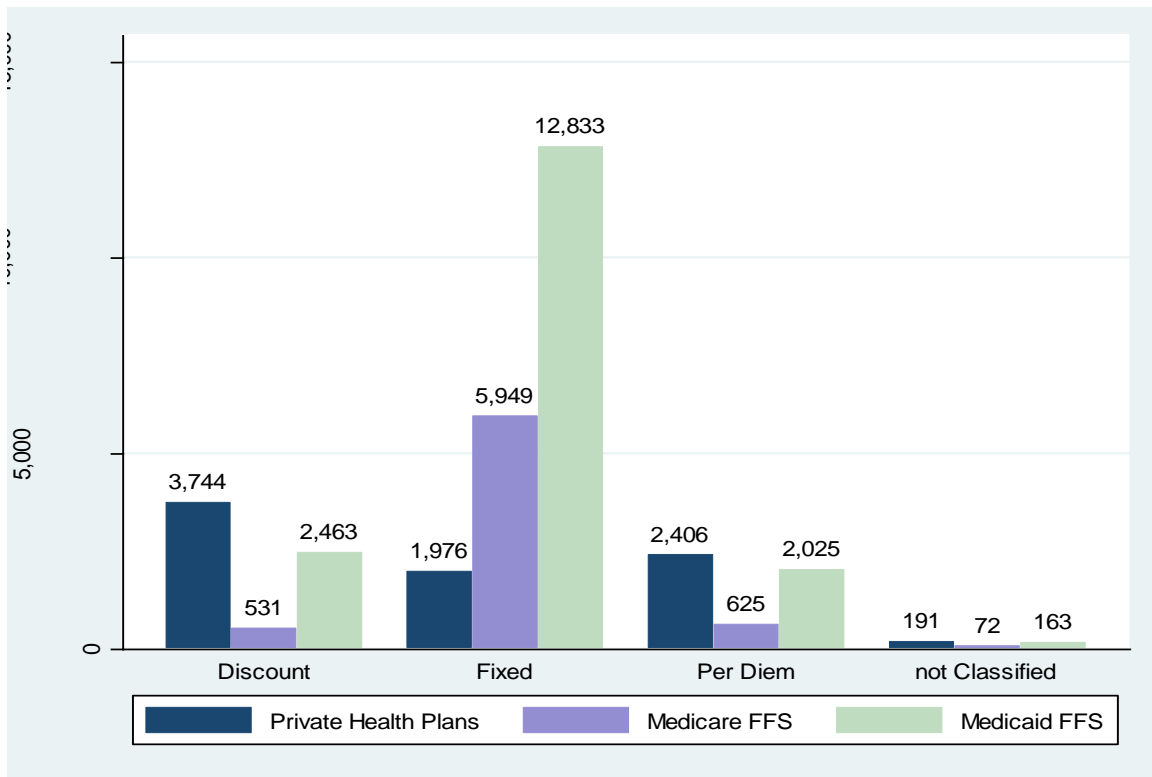
Appendix Figure 5-c. Distribution of CV for Per Diem Contracts



SOURCE Authors' analysis of CO APCD data for January 2009-December 2014.

NOTES These figures show box-and-whisker plots of CVs for all three empirical constructs, depending on whether the quad was ultimately classified as discounted charge, fixed rate, or per diem.

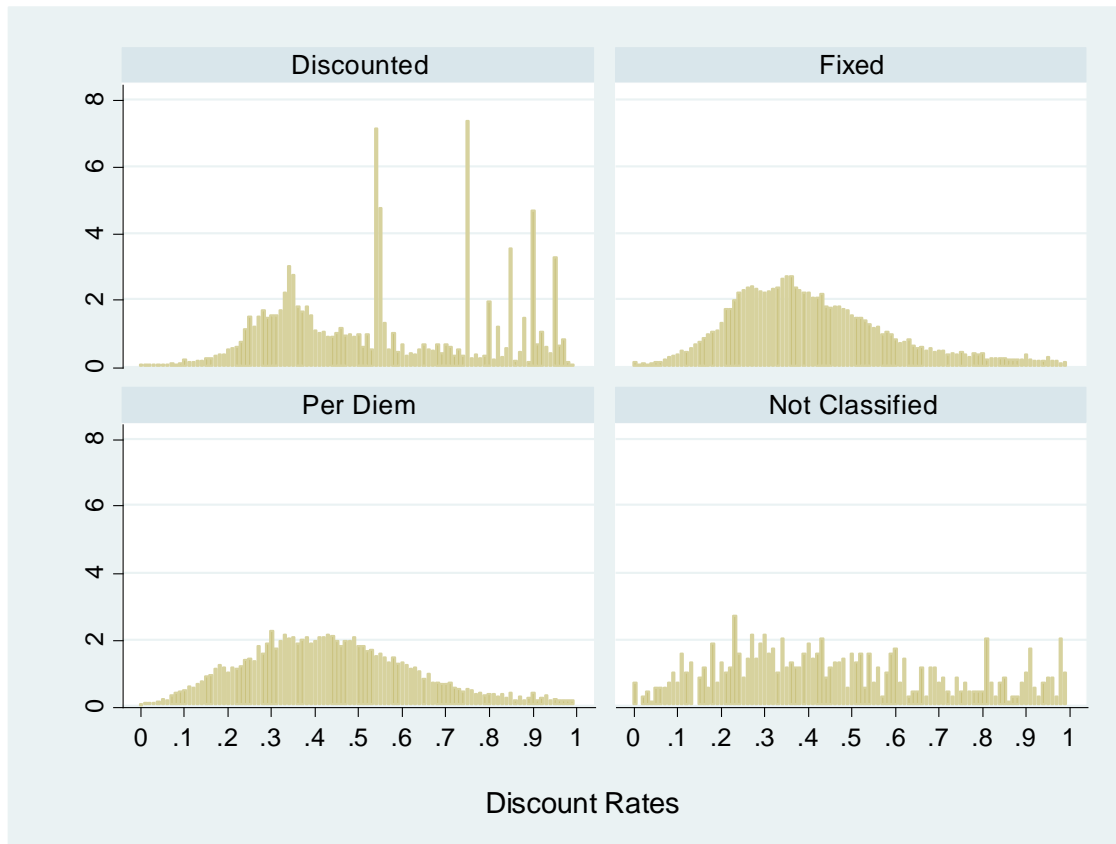
Appendix Figure 6. Results from Algorithm by Quads



SOURCE Authors' analysis of CO APCD data for January 2009-December 2014 and MEDPAR's Colorado Medicare Fee-For-Service claims for January 2014-December 2014.

NOTES Quads are defined as a combination of hospital-health plan-year-procedural groups in our sample. This figure represents the number of quads within each contract type identified using the algorithm outlined in the methods section.

Appendix Figure 7. Distribution of Discount Rates by Contract Type in Private Health Plans



SOURCE Authors' analysis of CO APCD data for January 2009-December 2014.

NOTES The discount rate is calculated at the ratio of the allowed amount to the charge amount. Claims are classified as discounted, per diem, fixed rate, or not classified by the algorithm outlined in the methods section.