

# Explaining the pricing of spine surgery

Mark Schuweiler, Amit Jain M.D. M.B.A., Lee Riley III M.D., Gerard Anderson PhD  
Johns Hopkins University School of Medicine, Baltimore, Maryland, USA

## BACKGROUND

- Price transparency and its enforcement are evolving, and patients gain increasing access to price data.
- “Shopping” for surgery locations or health plans may be influenced by these data.
- Newly available pricing data also offers the opportunity for inquiry about price variance.
- The link between posted prices and quality remains unknown.
- The question remains - what can these listed prices reveal?
- This study aimed to uncover variance in pricing and its potential relation to outcomes of spinal fusions.

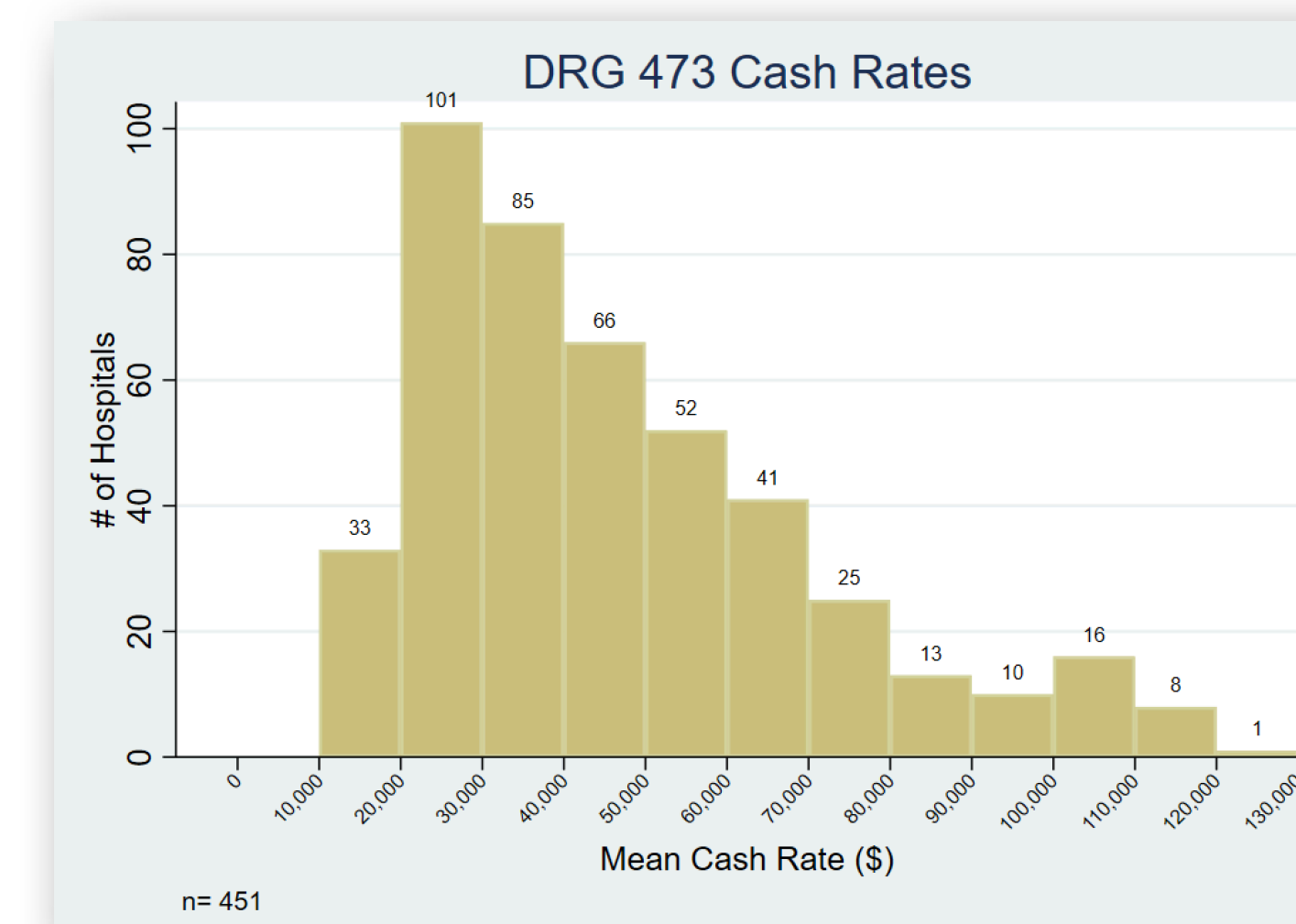
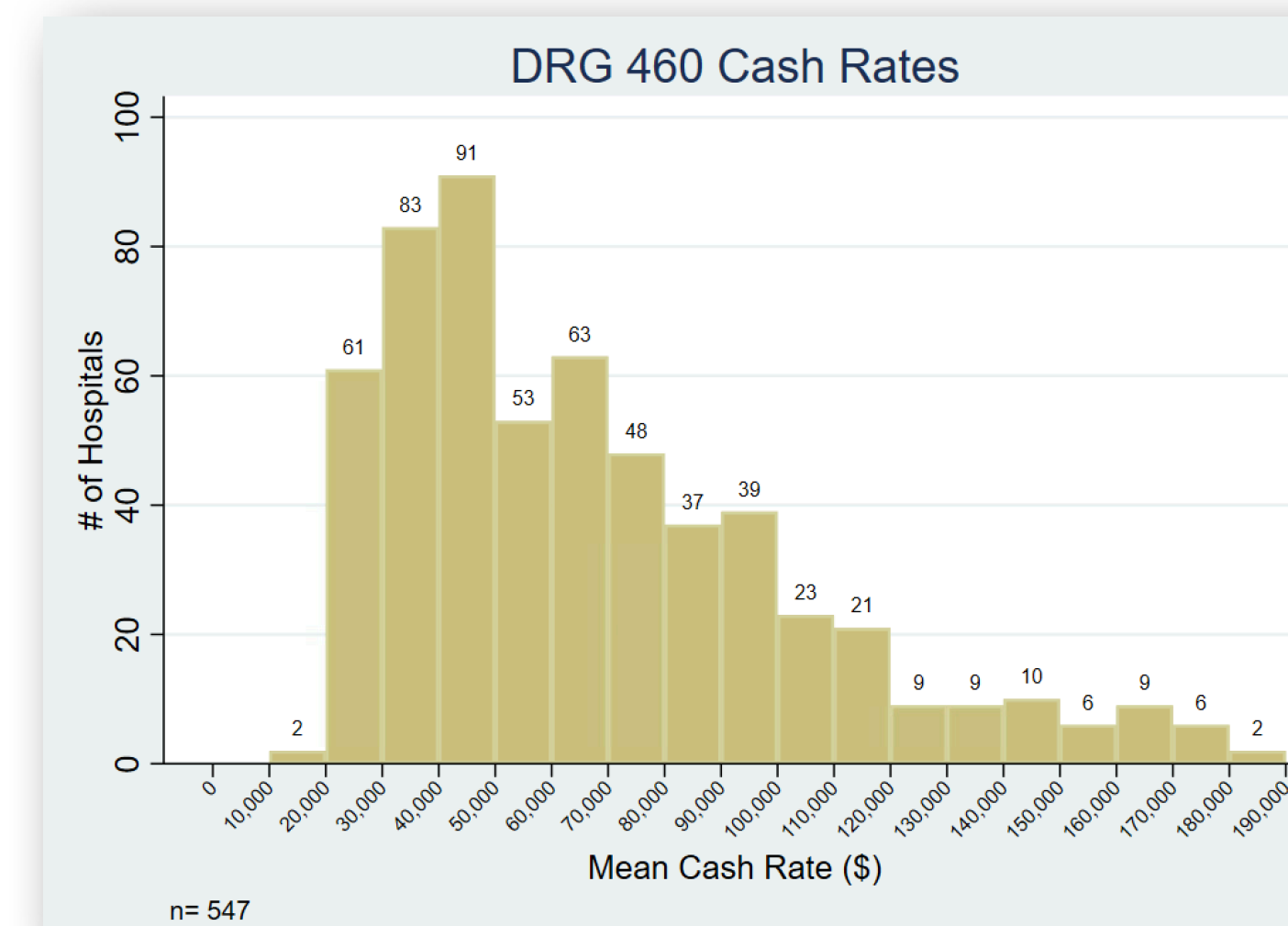
## STUDY OBJECTIVE

- Our study sought to characterize the pricing variance for the spinal fusion operations CMS mandates as “shoppable” (DRGs 460 and 473) and to understand how those prices correlate with surgery outcomes.

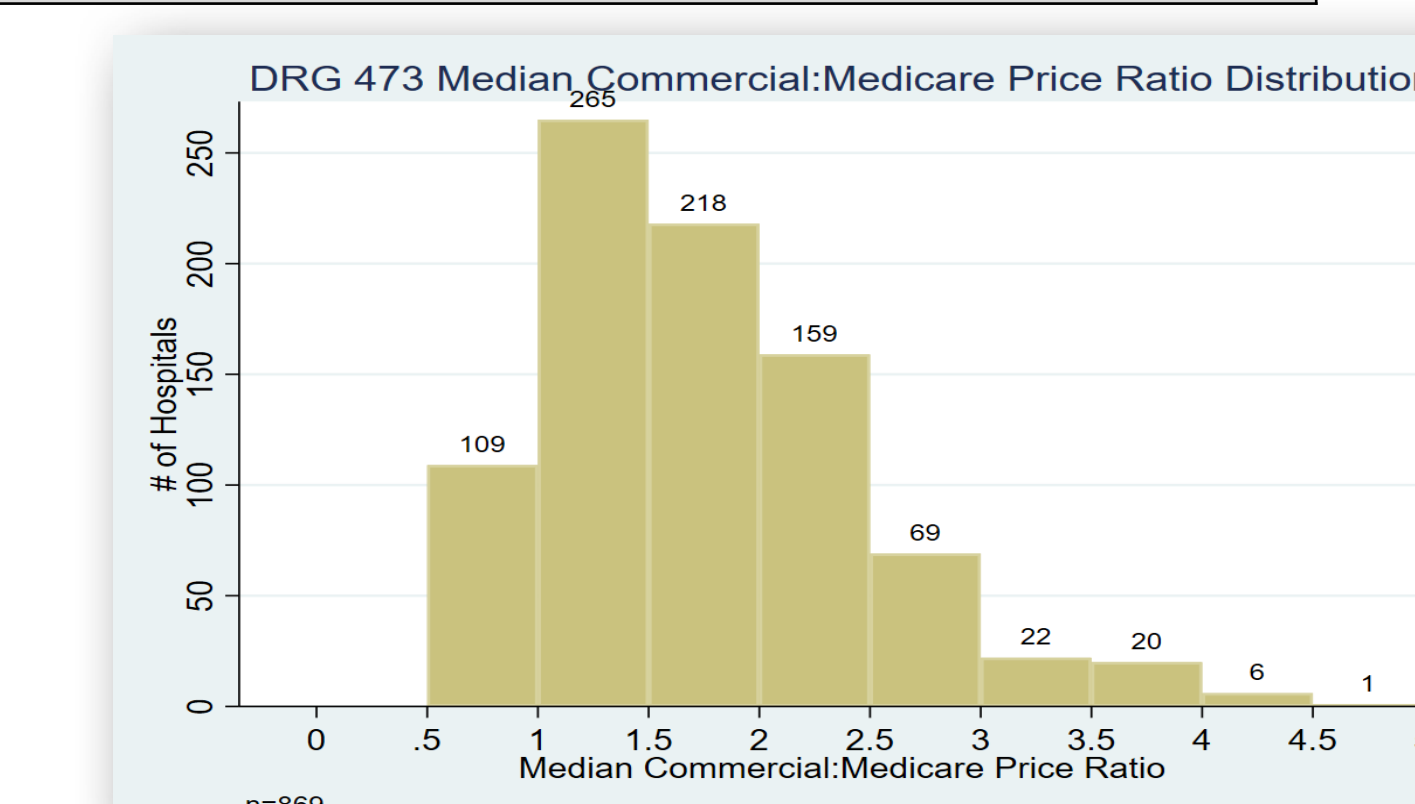
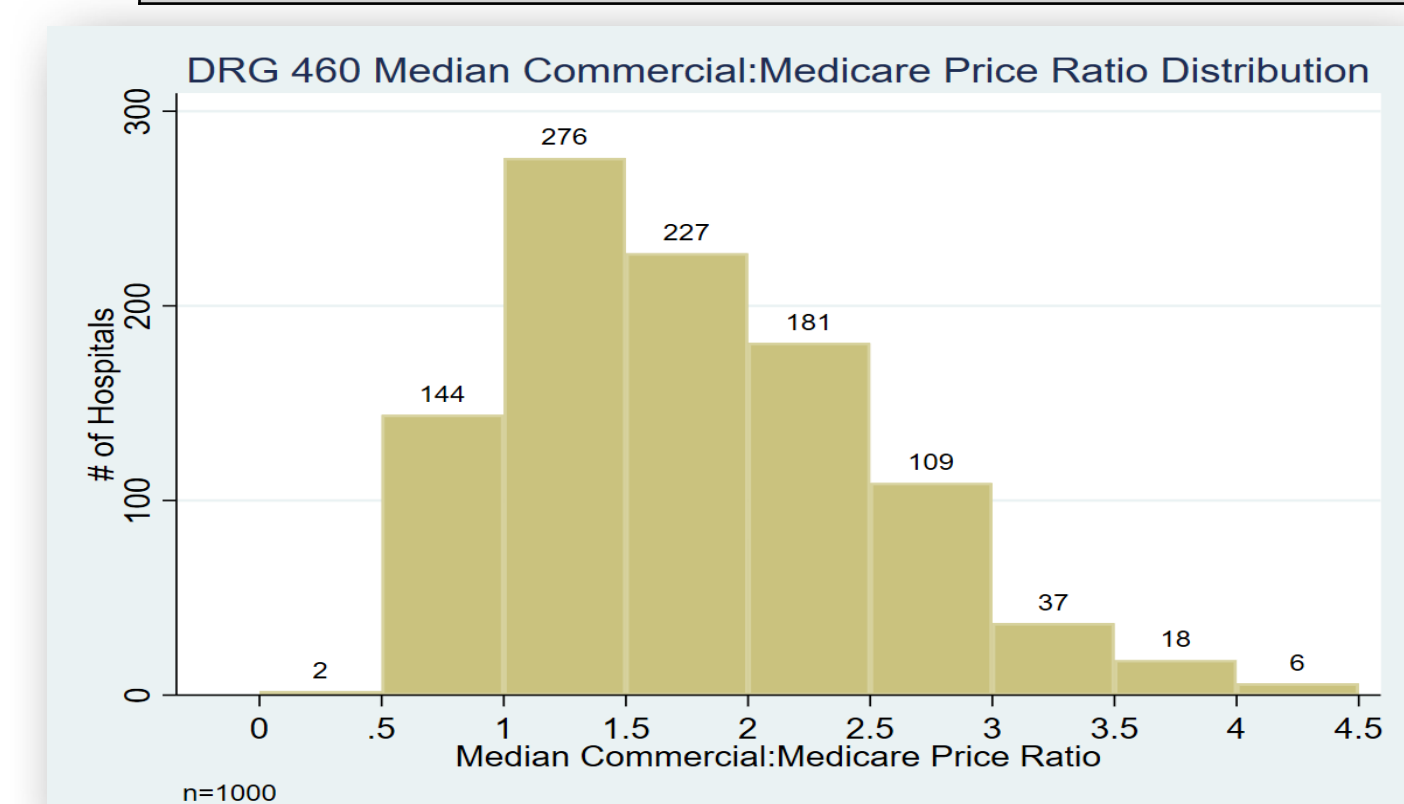
## METHODS

- Pricing data was sourced from the Turquoise Health research dataset.
- Medicare ID number was used to match pricing data to hospital characteristics in the 2021 American Hospital Association’s Annual Survey.
- Hospital outcomes were drawn from 2021 Medicare claims and were broken into perioperative and post-operative.
- ICD codes associated with perioperative spinal fusion complications were pulled from orthopedic literature.
- Claims with primary diagnosis codes of 460 or 473 were tabulated based on the presence of a perioperative complication in a secondary diagnosis not present on admission.
- Beneficiaries with primary diagnosis codes 460 or 473 were tracked over 30 days for readmission.

## RESULTS



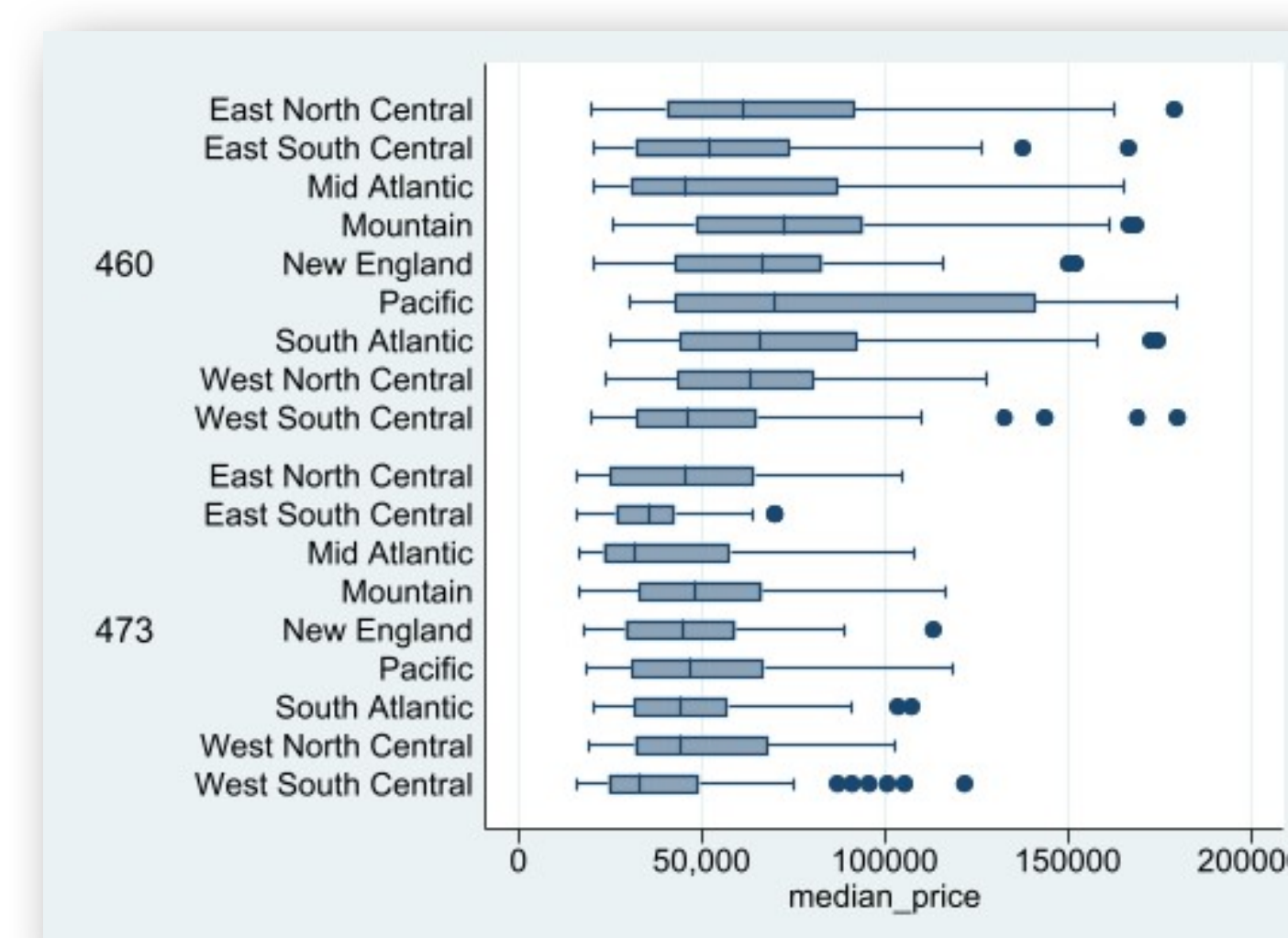
| DRG | Mean Cash Rate (# hospitals) | Range Cash Rate  | SD Cash Rate | Mean Negotiated Rate (# hospitals) | Range Negotiated Rate | SD Negotiated Rate | Mean Medicare Rate (# hospitals) | Range Medicare Rate | SD Medicare Rate |
|-----|------------------------------|------------------|--------------|------------------------------------|-----------------------|--------------------|----------------------------------|---------------------|------------------|
| 460 | \$67,090 (572)               | \$19,580-180,102 | \$36,058     | \$51,860 (1,108)                   | \$14,392 – 129,363    | \$21,579           | \$29,177 (1,145)                 | \$23,809-42,357     | \$4,138          |
| 473 | \$46,930 (451)               | \$15,918-121,763 | \$24,392     | \$33,259 (947)                     | \$9,710 - 85,562      | \$13,466           | \$19,189 (979)                   | \$15,468-27,889     | \$19,189         |



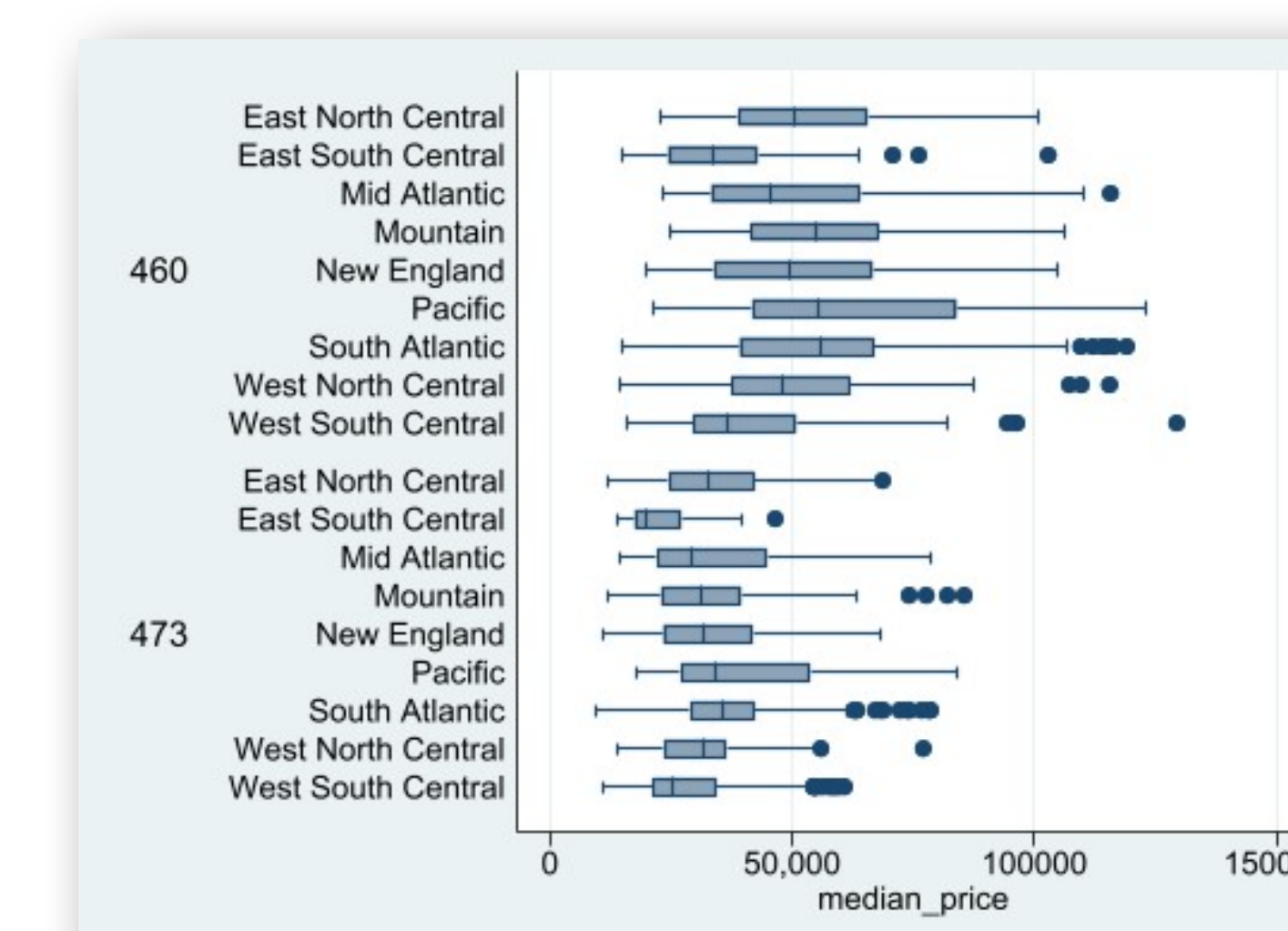
| DRG | Median Negotiated:Medicare (# hospitals) | Range Negotiated: Medicare | SD Negotiated: Medicare |
|-----|--|----------------------------|-------------------------|
| 460 | 1.65 (1,000)                             | .45-4.39                   | .73                     |

| DRG | Median Negotiated:Medicare (# hospitals) | Range Negotiated: Medicare | SD Negotiated: Medicare |
|-----|--|----------------------------|-------------------------|
| 473 | 1.62 (869)                               | 0.51-4.59                  | 0.71                    |

### Cash Price Regional Variance



### Negotiated Price Regional Variance



### DRG 473 - Cervical spinal fusion

| Lower cash rate associations                | Lower median commercial rate associations         |
|---|---|
| - Not-for-profit church ownership (p=0.046) | - Non-federal governmental ownership (p=0.004),   |
| - Other not-for-profit ownership (p=0.024)  | - Not-for-profit church operated (p=0.048)        |
|   | - Other not-for-profit ownership models (p=0.007) |

### DRG 460 - Spinal fusion except cervical

| Higher cash rate associations                       | Lower median commercial rate associations         |
|---|---|
| - Non-federal governmental ownership (p=0.019)      | - Non-federal governmental ownership (p=0.004)    |
| - For-profit corporation ownership (p=0.013)        | - Not-for-profit church operated (p=0.048)        |
| - Total annual inpatient surgical volume (p=0.029)  | - Other not-for-profit ownership models (p=0.007) |
| Lower cash rate associations                        |   |
| - Total annual outpatient surgical volume (p=0.026) |   |

## CONCLUSIONS

- Preliminary analysis suggests that pricing for spinal fusion may be associated with different forms of hospital ownership.
- Perioperative outcomes may not drive commercial price negotiations.
- A hospital’s total surgical volume may influence “shoppable” procedure pricing.
- Massive variation exists in both cash and negotiated pricing for spinal fusions.

## LIMITATIONS

- Pricing data is limited by hospital compliance with current CMS pricing disclosure regulations.
- Each DRG includes many different types of procedures.
- Outcomes were assessed only in the traditional Medicare population.

## IMPLICATIONS

- Market forces other than quality of care may more strongly influence procedure pricing.
- Massive variation exists in hospital spinal fusion prices.
- Further investigation is needed to uncover the factors associated with surgical pricing.