Geographic Variation in Medicare Fee-for-Service Utilization of Interventional Pain Procedures: A National State-Level and MAC Jurisdiction Analysis

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Where you live determines your **access** to interventional pain care. Utilization **varies 13.6-fold across states** and **2.3-fold across Medicare Administrative Contractor jurisdictions**

Introduction

- **Medicare Administrative Contractors (MACs)** issue Local Coverage Determinations (LCDs) governing reimbursement for these procedures in the absence of national coverage determinations
- Leads to regulatory framework that may drive regional **utilization heterogeneity.**

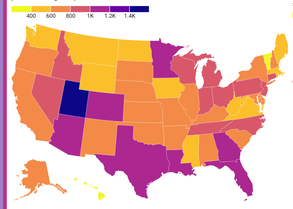
Methods

- Secondary analysis of the CMS Medicare Physician and Other Practitioners by Geography and Service public use file.
- Thirty-two HCPCS codes were assigned to four categories: **epidural** and adhesiolysis procedures (10 codes), **facet** joint and sacroiliac joint interventions including radiofrequency ablation (12 codes), **neuromodulation** including spinal cord stimulation and peripheral nerve stimulation (7 codes), and other **nerve blocks** and trigger point injections (3 codes).
- State-level utilization **rates per 100,000 FFS beneficiaries** were calculated using CMS Program Statistics Original Medicare enrollment as the denominator, **excluding Medicare Advantage enrollees.**

Results – State Variance

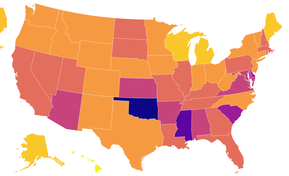
Interventional Pain Provider Supply by State, Providers per 100,000 FFS Medicare Beneficiaries

Number of Medicare providers billing at least one of 32 interventional pain procedure codes per 100,000 FFS beneficiaries, by state. Note: counts include all billing specialties and overcount providers billing multiple codes.

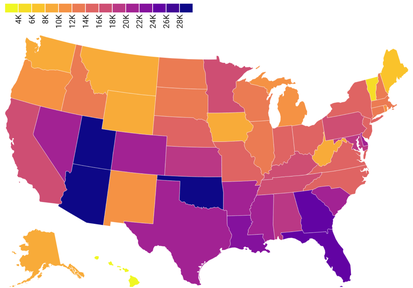


Practice Intensity by State, Interventional Pain Procedures per Provider

Provider counts include all Medicare providers billing ≥1 procedure code, including occasional billers across specialties, likely underestimating volume among dedicated interventional pain specialists. Higher values indicate greater procedures per provider. Procedure volume correlated strongly with total utilization (Spearman ρ=0.721, p<0.001).

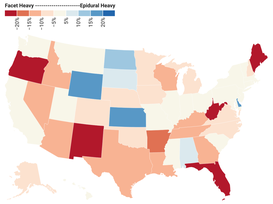


Interventional Pain Procedure Utilization Rate per 100,000 FFS Medicare Beneficiaries, by State

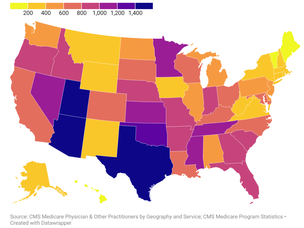


Relative Epidural and Facet/SI Procedure Predominance by State

Calculated as state epidural utilization rate minus facet/SI utilization rate per 100,000 FFS beneficiaries. Positive values (cooler colors) indicate epidural-predominant states; negative values (warmer colors) indicate facet/SI-predominant states.

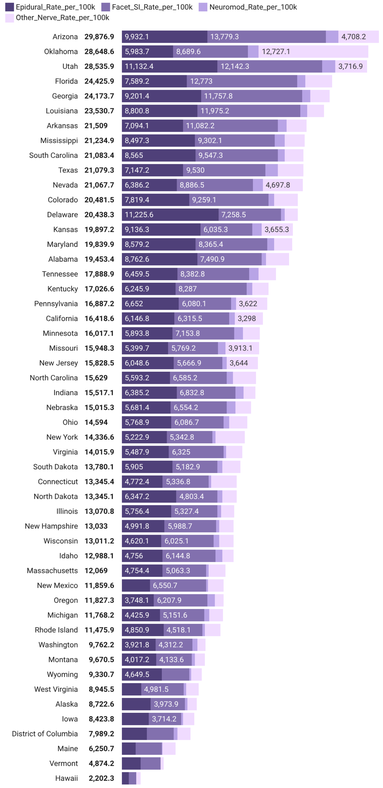


Neuromodulation Utilization Rate per 100,000 FFS Medicare Beneficiaries, by State



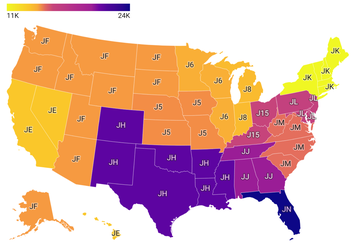
Geographic Variation in Interventional Pain Procedure Utilization by Category

Rate per 100,000 FFS Medicare beneficiaries



Results – MAC Variance

Interventional Pain Procedure Utilization Rate per 100,000 FFS Medicare Beneficiaries, by Medicare Administrative Contractor (MAC)

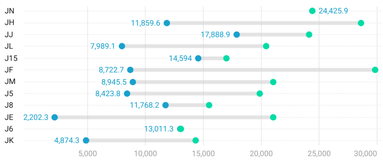


MAC Jurisdiction Summary

MAC	Contractor	States (n)	Mean Rate /100k	Relative to National
JN	First Coast	1	24,426	56
JH	Novitas	7	21,192	35
JJ	Palmetto GBA	3	20,505	31
JL	Novitas	5	16,197	4
J15	CGS	2	15,810	1
JM	Palmetto GBA	4	14,919	−5
J5	WPS	4	14,821	−5
JF	Noridian	10	14,784	−6
J6	NGS	3	14,033	−10
J8	WPS	2	13,643	−13
JE	Noridian	3	13,230	−15
JK	NGS	7	10,769	−31

Interventional Pain Utilization by MAC Jurisdiction: Mean Rate and Within-Jurisdiction Range

Rate per 100,000 FFS Medicare beneficiaries.



Each row shows one MAC jurisdiction's mean utilization rate and the range from the lowest to highest state within that jurisdiction. Wide ranges indicate heterogeneous utilization despite shared Local Coverage Determination (LCD) policy, suggesting factors beyond MAC jurisdiction, such as state-level practice culture or provider intensity, contribute to geographic variation.

Created with Datawrapper

Discussion/Conclusion

- Substantial geographic variation exists in Medicare FFS interventional pain utilization, with a **13.6-fold state-level** and **2.3-fold MAC jurisdiction-level** difference nationally
- **Both** practice **intensity** (rho=0.721) and provider **density** (rho=0.653) **correlated** with state **utilization** rates, with intensity showing a modestly stronger association
- Neuromodulation utilization showed the greatest relative inter-state variation, ranging from 15.1 to 1,544.3 per 100k FFS beneficiaries (102-fold difference)
- JK jurisdiction (NGS - New England and New York) demonstrated the **lowest utilization nationally**, consistent with more restrictive regional LCD policies illustrating potential access disparities for Medicare beneficiaries in these states

References

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