

# Sociodemographic Drivers Of Reconstructive Care Following Mohs Micrographic Surgery

Gadiraju, Goutam K. BS; Gao, Renee. BS; Malek, Andrew J. BS; Zhang, Yibin B. BA; Shen, Yizhuo MMSc; Yang, Alan Z. MD, MSc; Broyles, Justin M. MD, MPH

Brigham and Women's Hospital, Department of Plastic and Reconstructive Surgery



## Background

- Mohs Micrographic Surgery (MMS) is used widely in treating skin cancers in sensitive areas.
- Reconstruction is typically performed by MMS or plastic and reconstructive surgeons (PRS).
- MMS have performed a growing share in recent years<sup>1</sup>, but little is known regarding factors that drive PRS referrals across the following characteristics:
  - Sociodemographic
  - Oncologic and Procedural Data
  - Financials and Reimbursement Data

## Objectives

- Identify factors that drive PRS referrals after MMS.
- Analyze reimbursements to assess economic influences and impacts of insurance status on referral patterns.

## Methods

- The Massachusetts All-Payer Claims Database (APCD) was queried for claims data for patients who underwent MMS for head and neck cancer between 2016-2020.
- We included patients who were treated for a single episode of MMS during the study period.
- Primary Outcome: PRS Referral after MMS.

## Results

- 70,308** total patients were included.
- PRS referrals consistently declined, from 9.1% of all MMS in 2016 to 6.4% in 2020.
- Patients who were referred to PRS were more frequently **female** and **younger**.
- MMS within the Boston Metro Area (BMA)** (Norfolk/Plymouth/Suffolk county) reduced odds of PRS Referral (OR 0.731).
- Public Insurance** status increased odds of PRS referral (OR 1.08).

| Cohort Characteristics           | Overall (N = 70,308) |  | Mohs Recon (N = 65218) |        | PRS Recon (N = 5090) |       | P-Value |
|----------------------------------|----------------------|--|------------------------|--------|----------------------|-------|---------|
| Age at Mohs, mean (sd)           | 69.84 (12.60)        |  | 70.02 (12.54)          |        | 67.60 (13.05)        |       | < 0.001 |
| Sex (n, %)                       |                      |  |                        |        |                      |       |         |
| Female                           | 33228                |  | 30374                  | 91.41% | 2854                 | 8.59% | < 0.001 |
| Male                             | 37069                |  | 34835                  | 93.97% | 2234                 | 6.03% |         |
| Insurance Status (n, %)          |                      |  |                        |        |                      |       |         |
| Public Insurance                 | 21401                |  | 19884                  | 92.91% | 1517                 | 7.09% | 0.481   |
| Private Insurance                | 48907                |  | 45334                  | 92.69% | 3537                 | 7.23% |         |
| Location of MMS Procedure (n, %) |                      |  |                        |        |                      |       |         |
| BMA                              | 27247                |  | 25400                  | 93.22% | 1847                 | 6.78% | 0.012   |
| Other                            | 34391                |  | 31882                  | 92.70% | 2509                 | 7.30% |         |

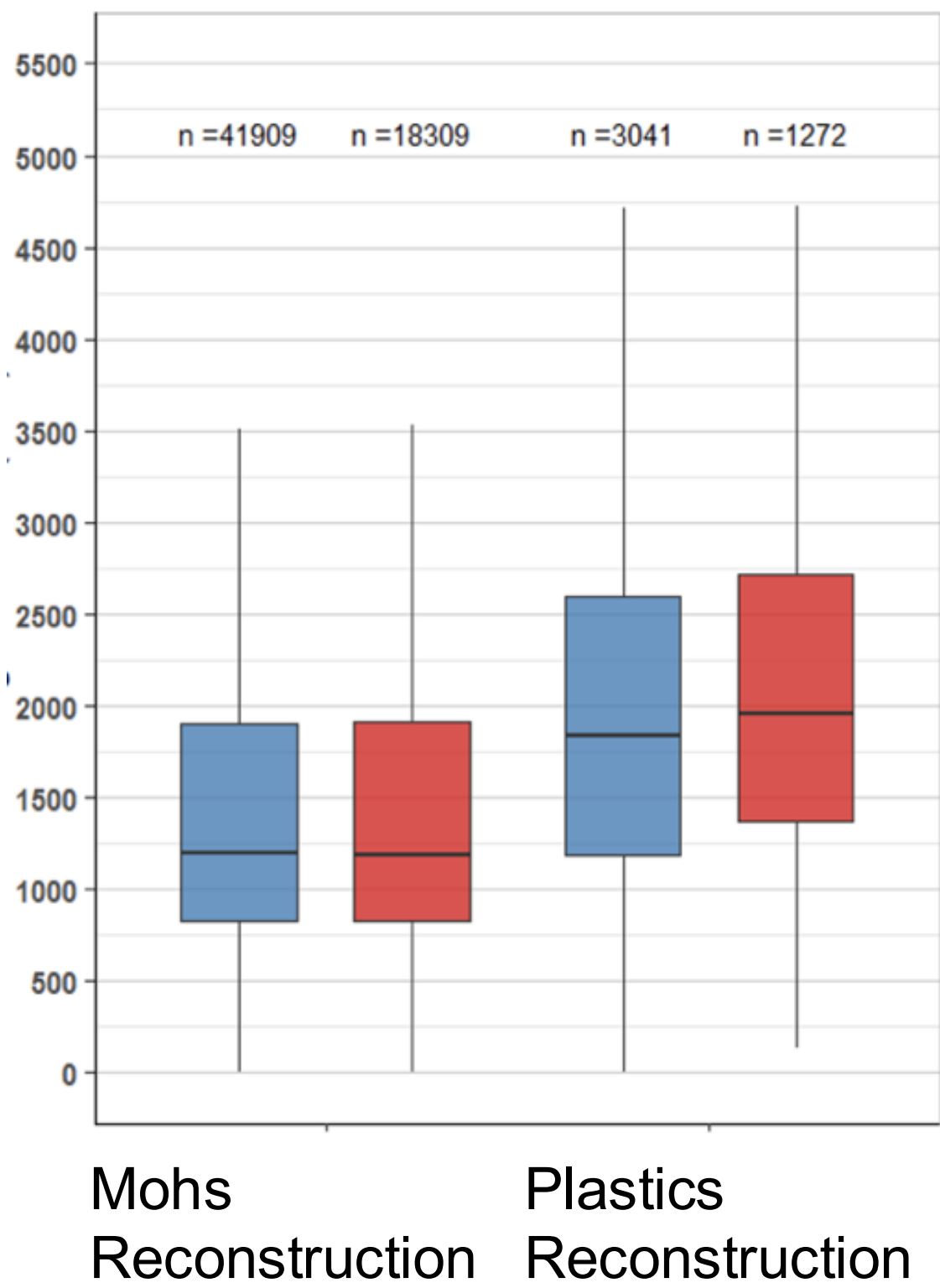
| Multivariable Regression for PRS Referral | OR     | 95% CI         | P-Value |
|-------------------------------------------|--------|----------------|---------|
| Tumor Type                                |        |                |         |
| Melanoma or MIS                           | 1.771  | (1.135, 2.648) | 0.008   |
| Other: BCC, SCC, Carcinoma in situ        | ---    | ---            | ---     |
| Tumor Location                            |        |                |         |
| Eyelid                                    | 10.399 | (9.154, 11.83) | < 0.001 |
| Nose                                      | 2.889  | (2.578, 3.246) | < 0.001 |
| Lip                                       | 2.175  | (1.855, 2.550) | < 0.001 |
| Ear                                       | 1.283  | (1.092, 1.504) | 0.002   |
| Other/Unspec. Face                        | 1.285  | (1.147, 1.443) | < 0.001 |
| Overlapping sites of the face             | 0.935  | (0.052, 4.464) | 0.94    |
| Scalp and Neck                            | ---    | ---            | ---     |
| Age                                       |        |                |         |
| Age per 10 years                          | 0.870  | (0.850, 0.891) | < 0.001 |
| Gender                                    |        |                |         |
| Female                                    | 1.250  | (1.179, 1.330) | < 0.001 |
| Other                                     | 0.001  | (NA, 5658)     | 0.9178  |
| Male                                      | ---    | ---            | ---     |
| Insurance                                 |        |                |         |
| Public                                    | 1.080  | (1.015, 1.159) | 0.016   |
| Private                                   | ---    | ---            | ---     |
| Mohs Physician Location                   |        |                |         |
| BMA: Norfolk/Plymouth/Suffolk             | 0.731  | (0.686, 0.778) | < 0.001 |
| Other                                     | ---    | ---            | ---     |

## References

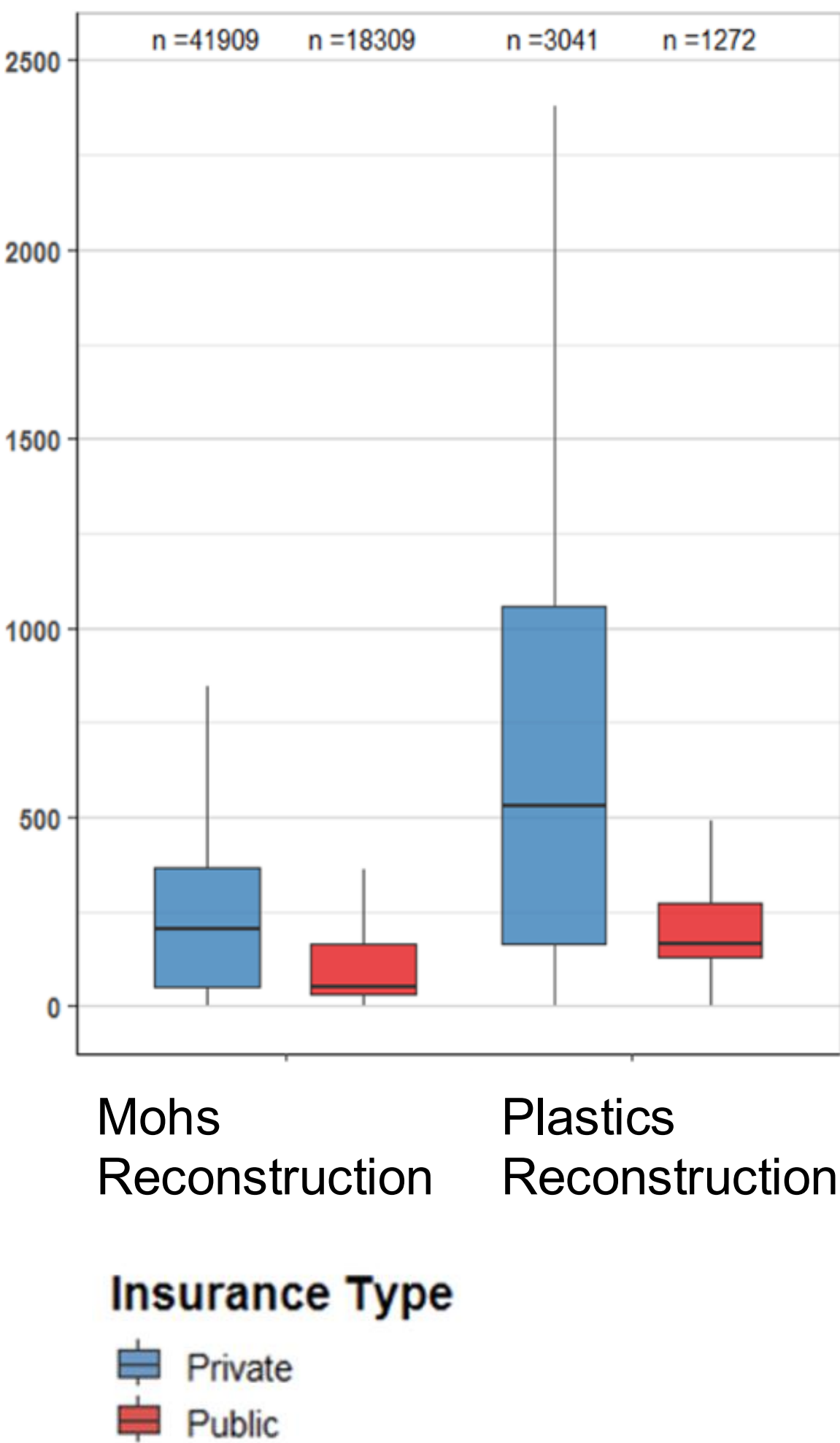
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## Reimbursement Data

Charged Amount (USD)



Reimbursement Amount (USD)



## Conclusions

- Certain patient characteristics** (female sex, younger age) and **oncologic variables** (tumor locations of the eyelid, nose, or lips; melanoma and MIS) **demonstrated higher odds of PRS referrals**.
- Public insurance** (e.g. Medicare/Medicaid) **increased the odds of PRS referral**.
- Physician reimbursements demonstrate **significant disparities between charges and payments** for both MMS surgeons and PRS.
- Median reconstructive **payments from private insurers were greater for both MMS (\$194.32) and PRS (\$231.48)** compared to public (\$53.57, \$169.61).
- These findings should be considered in the context of declining reimbursements<sup>2</sup> and implementations of alternative reimbursement models, e.g. the **Merit-Based Incentive Payment System (MIPS)**
- Future investigations on comparative reconstructive outcomes of MMS and PRS are warranted to better understand relationships between quality and cost in relation to referral patterns.

## MMS Procedures and PRS Referrals by county in Massachusetts

