

Cost and Utilization Analysis of Operating Room Instruments in Plastic and Reconstructive Surgery

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Background

Right-sized surgical trays reduce operative costs and waste in the OR.^{1,2} We sought to assess current opinions of surgical instrument utilization in common plastic surgery procedures.

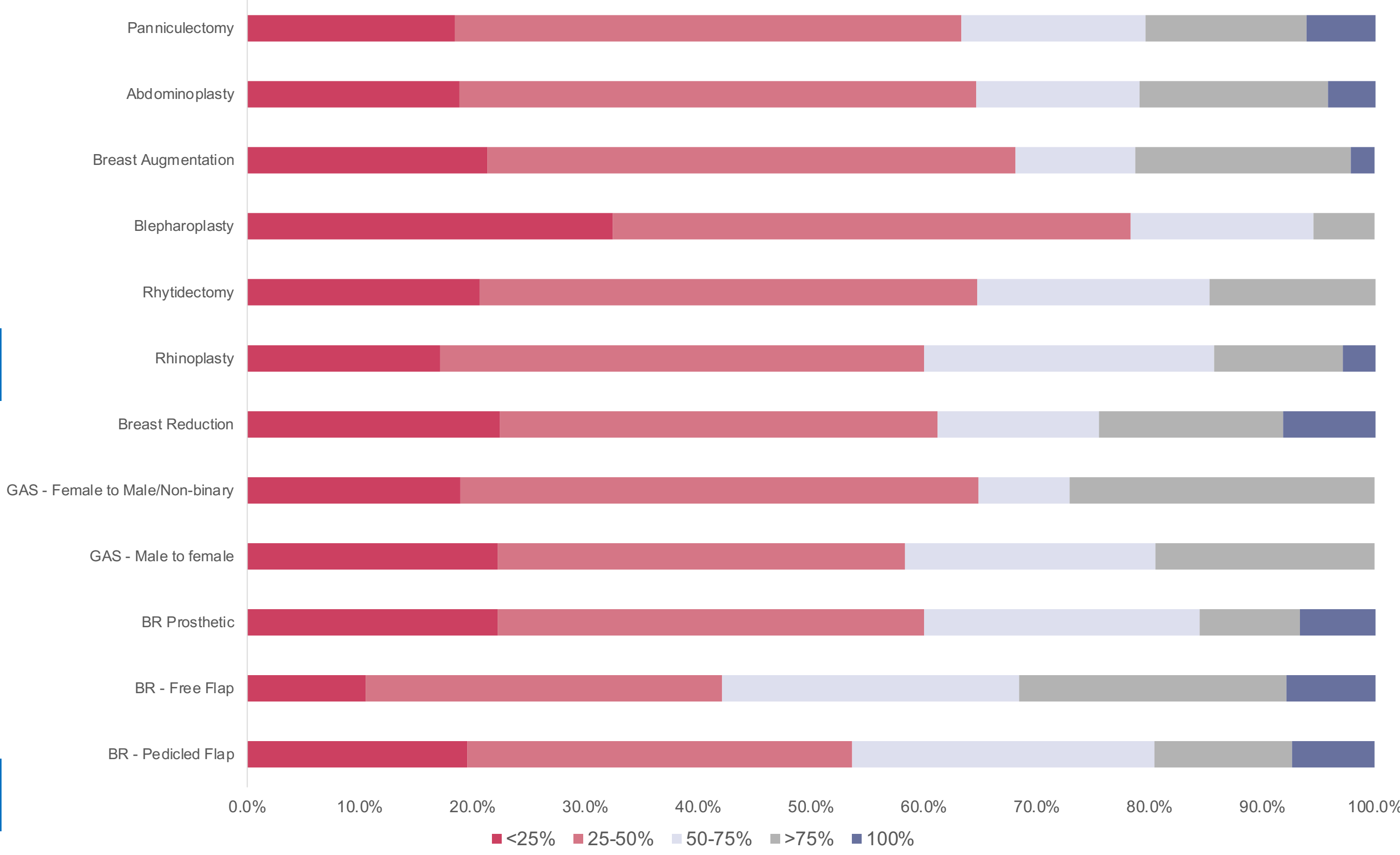
Methods

Surgeons, residents, and operative staff at four academic hospitals were surveyed using an anonymous, online questionnaire from March to September 2023. Questions explored instrument utilization in breast reconstruction, body contouring, aesthetic and gender affirming surgery.

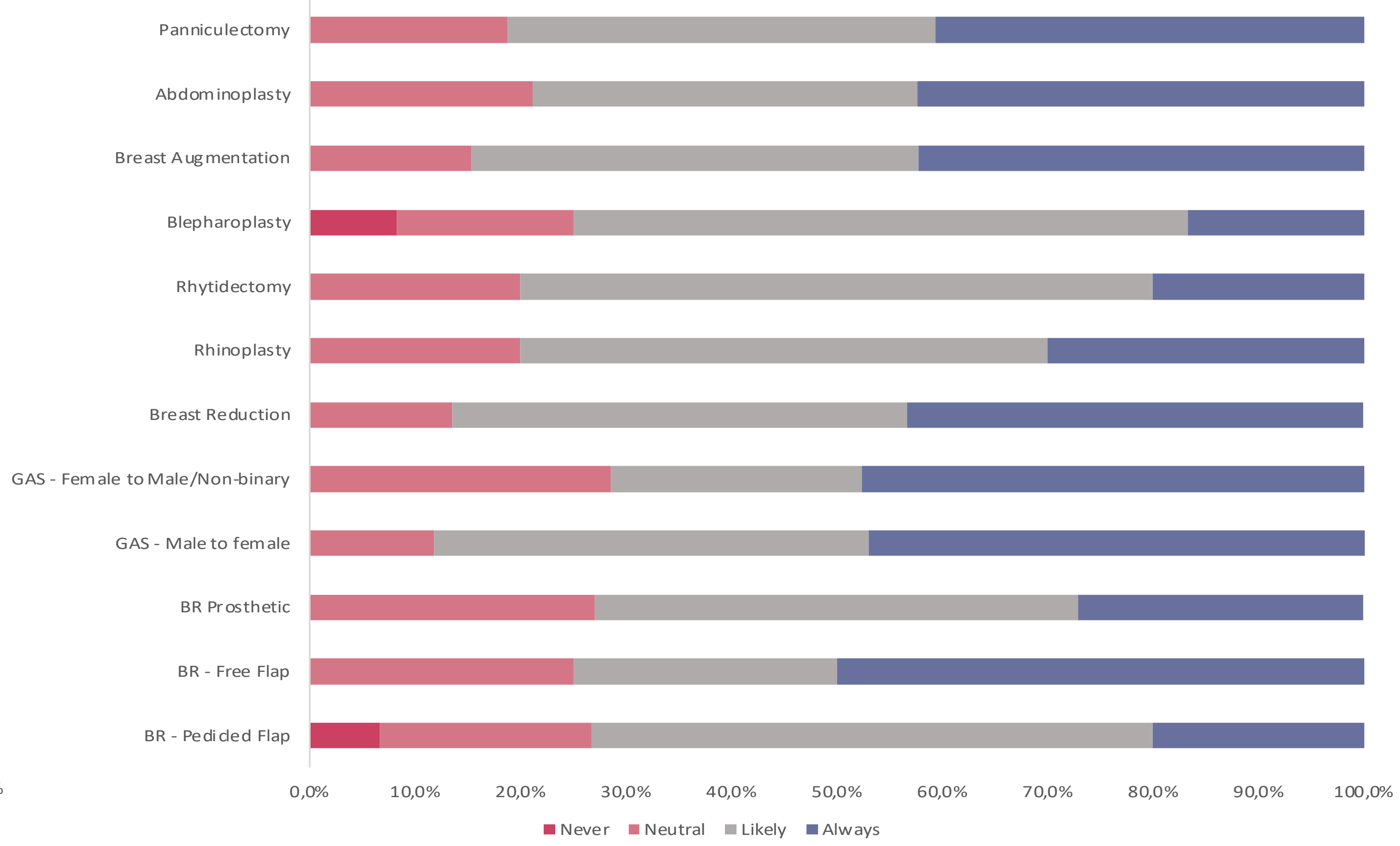
Demographics

Characteristic	Overall
Total <i>n</i> (%)	65 (100)
Age mean (SD)	41.1 (12.6)
Race <i>n</i> (%)	
White	27 (41.5)
African American	5 (7.7)
Asian	12 (18.5)
Multiple	19 (29.2)
Other	2 (3.1)
Ethnicity <i>n</i> (%)	
Non-Hispanic	57 (87.7)
Hispanic	4 (6.2)
Not reported	4 (6.2)
Profession <i>n</i> (%)	
Attending Surgeon	14 (21.5)
Physician Fellow	4 (6.2)
Resident Physician	15 (23.1)
Physician Assistant	4 (6.2)
Registered Nurse	19 (29.2)
Scrub Tech	5 (7.7)
Not reported	4 (6.2)
Years of practice mean (SD)	10.6 (11.2)
Years of practice <i>n</i> (%)	
<10 years	40 (65.6)
≥ 10 years	21 (34.4)
Location of practice <i>n</i> (%)	
Beth Israel Deaconess Medical Center	24 (36.9)
Lahey Hospital and Medical Center	16 (24.6)
New York University Langone Health	12 (18.5)
Montefiore Medical Center	9 (13.8)
Not reported	4 (6.2)
Practice Environment <i>n</i> (%)	
Academic / Tertiary Hospital	49 (75.4)
Ambulatory Surgical Center	12 (18.5)
Not reported	4 (6.2)

What percent of opened instruments are used per case?



Would you recommend a “right-sized” tray?



What are your thoughts on adopting "right-sized" surgical trays?

	BR – Pedicled Flap	BR – Free Flap	BR – Prosthetic	GAS – Male to Female	GAS – Female to Male/Non-binary	Breast Reduction	Rhinoplasty	Rhytidectomy	Blepharoplasty	Breast Augmentation	Abdominoplasty	Panniculectomy
How do you think the overall instrument reprocessing cost per case would be affected?												
Greatly increase (%)	7%	10%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%
Moderately increase (%)	7%	5%	11%	6%	5%	5%	5%	0%	0%	0%	3%	3%
Stay the same (%)	13%	15%	23%	35%	43%	11%	10%	20%	18%	16%	18%	16%
Moderately decrease (%)	67%	60%	49%	41%	38%	60%	60%	80%	73%	68%	58%	63%
Greatly decrease (%)	7%	10%	17%	18%	14%	24%	20%	0%	9%	16%	21%	19%
How do you think that the use of these trays would impact usage of peel-pack instruments?												
Greatly increase (%)	0%	5%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%
Moderately increase (%)	47%	25%	14%	18%	14%	16%	25%	60%	18%	16%	18%	15%
Stay the same (%)	13%	20%	37%	47%	57%	30%	20%	20%	46%	28%	33%	31%
Moderately decrease (%)	27%	45%	37%	24%	29%	49%	40%	20%	36%	52%	39%	47%
Greatly decrease (%)	13%	5%	11%	12%	0%	5%	10%	0%	0%	4%	9%	6%
How do you think that the use of these trays would impact the rate of additional tray opening?												
Greatly increase (%)	7%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%
Moderately increase (%)	7%	25%	17%	18%	14%	11%	15%	40%	9%	8%	12%	9%
Stay the same (%)	27%	15%	29%	47%	57%	30%	25%	20%	55%	28%	33%	31%
Moderately decrease (%)	47%	50%	49%	24%	24%	51%	35%	40%	36%	60%	42%	50%
Greatly decrease (%)	13%	10%	6%	12%	5%	8%	20%	0%	0%	4%	12%	9%
Given these risks, how do you think the overall instrument reprocessing cost per case would be affected?												
Greatly increase (%)	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%
Moderately increase (%)	27%	10%	11%	12%	5%	3%	5%	0%	0%	4%	6%	6%
Stay the same (%)	0%	15%	20%	29%	43%	14%	20%	40%	18%	20%	18%	19%
Moderately decrease (%)	73%	65%	54%	41%	38%	62%	55%	60%	73%	64%	55%	53%
Greatly decrease (%)	0%	10%	14%	18%	14%	22%	15%	0%	9%	12%	21%	22%

Results

Out of 65 respondents, 40 completed surveys (response rate, 61%), **half** were surgeons and residents, and **a third** were in practice for ≥10 years. **Over half** of respondents indicated that <50% of opened instruments are utilized per case, except in autologous free flap breast reconstruction. **More than two-thirds** of respondents would either ‘always’ recommend right-sized trays or are ‘likely’ to. Even when considering ramifications of right-sizing, **two-thirds** of respondents indicated that overall instrument reprocessing costs would either moderately or greatly decrease if right-sized trays were used. **Half** of respondents believe use of peel-pack instruments will stay the same or increase, yet **more than two-thirds** believe additional tray opening will moderately to greatly decrease.

Conclusions

Findings suggest plastic surgery staff are cognizant of unused resources and support right-sizing for common plastic surgery procedures, placing emphasis on need to implement sustainable methodologies to optimize operative efficiency.

References

- Dorante, MI, Barron, SL, Jones, L, Freniere, B, Guo, L. Utilization Fraction of Reduction Mammoplasty Instrument Sets: Cost Savings and Efficiency Opportunities. Ann Plast Surg. PMID: 36752537
- Wood, BC, Konchan, S, Gay, S, Rath, S, Deshpande, V, Knowles, M. Data Analysis of Plastic Surgery Instrument Trays Yields Significant Cost Savings and Efficiency Gains. Ann Plast Surg. PMID: 34100825