

Using Microeconomic Spending Traits to Inform Trends in Utilization of Cosmetic Procedures by Race and Ethnicity

Ben S. Rhee, BA*
 John Pham, BS*
 Joshua R. Tanzer, PhD, MS†
 Jodi S. Charvis, MS‡
 Lauren O. Roussel, MD§

Background: Cosmetic plastic surgery in the United States is underutilized by African American and Hispanic populations compared with their White and Asian counterparts. This study evaluated whether microeconomic spending traits as a representation of financial stability can inform trends in cosmetic procedure volumes by racial group.

Methods: Annual volumes for the top five cosmetic surgical and cosmetic minimally invasive procedures by racial/ethnic group from 2012 to 2020 were collected from the American Society of Plastic Surgeons' annual reports. Factor analysis was used to calculate inflexible and flexible consumer spending by racial/ethnic groupings from the US Bureau of Labor Statistics' consumer expenditure data. All four factors were calculated across US Bureau of Labor Statistics-defined racial/ethnic groupings and standardized so they could be interpreted relative to each other.

Results: Compared with the other groupings, the White/Asian/other grouping spent significantly more on average for inflexible consumer spending ($P = 0.0097$), flexible consumer spending ($P < 0.0001$), cosmetic surgical procedures ($P < 0.0001$), and cosmetic minimally invasive procedures ($P = 0.0006$). In contrast, African American people spent significantly less on average for all four factors (all $P < 0.01$). For Hispanic people, values were significantly less on average for flexible consumer spending ($P = 0.0023$), cosmetic surgical procedures ($P < 0.0001$), and cosmetic minimally invasive procedures ($P = 0.0002$).

Conclusions: This study demonstrates that inflexible and flexible consumer spending follow trends in utilization of cosmetic surgical and minimally invasive procedures by racial/ethnic groups. These microeconomic spending inequities may help further contextualize the racial/ethnic variation in access to cosmetic surgery. (*Plast Reconstr Surg Glob Open* 2024; 12:e5963; doi: [10.1097/GOX.0000000000005963](https://doi.org/10.1097/GOX.0000000000005963); Published online 5 July 2024.)

INTRODUCTION

Cosmetic procedures have grown in popularity from 2000 to 2020; the total number of cosmetic procedures increased from 6,748,610 to 15,595,955, representing a 131% net positive change.¹ Despite this rising popularity

and demand over the past 20 years, racial and ethnic disparities are still pervasive among consumers of both surgical and minimally invasive procedures. For instance, although African American people constituted 13.6% of the United States population in 2020, they comprised only 6% of breast augmentation, 5% of rhinoplasty, 3% of blepharoplasty, and 7% of abdominoplasty cases in the same year.^{1,2} Likewise, Hispanic people constituted 18.9% of the United States population in 2020, but comprised only 7% of botulinum toxin type A, 10% of soft tissue filler, 13% of chemical peel, and 8% of laser hair removal procedures in the same year.^{1,2} Differences in cultural norms regarding body modification or beautification, inadequate representation of minorities in cosmetic surgery social media posts, a lack of racially concordant surgeons, and lower household income have all been attributed to the underrepresentation of racial and ethnic minorities

From *The Warren Alpert Medical School of Brown University; Providence, R.I.; †Lifespan Biostatistics, Epidemiology, Research Design, and Informatics Core, Rhode Island Hospital; Providence, R.I.; ‡University of Rhode Island; Providence, R.I.; and §Division of Plastic Surgery, The Warren Alpert Medical School of Brown University; Providence, R.I.

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in cosmetic surgery.³⁻⁶ Understanding factors that guide minority groups' decision to receive cosmetic plastic surgery is important because these communities are using aesthetic surgery in an increasing fashion.⁶

Recently, more attention has been turned to how external economic factors influence patients' decision to undergo cosmetic procedures because aesthetic surgery can be viewed as a commodity, with certain costs borne by the individual. Studies have established a positive correlation between certain macroeconomic factors, such as gross domestic product and consumer price index, and plastic surgery procedural volume.^{7,8} Notably, these studies did not stratify patients by demographic factors. Additionally, the use of gross domestic product and consumer price index as markers of national average levels of financial stability does not directly take into account variability in individual or microeconomic spending habits, particularly with regard to flexible and inflexible consumer spending. Certain inflexible costs such as mortgages, car payments, and medical expenditures must be paid before consumers can shop for goods with flexible or adjustable expenditures such as clothing, entertainment, and cosmetic surgery. While African American and Hispanic populations have lower household incomes compared with White and Asian racial ethnic background communities, their underrepresentation in cosmetic surgery utilization may be further compounded by differences in flexible and inflexible consumer spending.⁹ Thus, analyzing microeconomic factors as markers of financial stability may provide greater insight into the disparities prevalent in cosmetic surgery across racial and ethnic groups.

Accordingly, the goal of our study was to understand how differences in individual financial stability may act as a barrier to seeking cosmetic surgery. Our hypothesis was that relative to people who identify as White and Asian racial ethnic background, people who identify as African American or Hispanic will experience worse financial stability, as demonstrated by lower levels of inflexible and flexible consumer spending. Because of this relatively lower financial stability, we hypothesized that African American and Hispanic people will seek relatively fewer cosmetic procedures than people identifying as White and Asian racial or ethnic background.

MATERIALS AND METHODS

Databases

Annual volumes for the top five cosmetic surgical procedures (breast augmentation, rhinoplasty, blepharoplasty, liposuction, and abdominoplasty) and top five cosmetic minimally invasive procedures (botulinum toxin type A, soft tissue fillers, chemical peel, laser hair removal, and microdermabrasion) by racial/ethnic group from 2012 to 2020 were collected from the American Society of Plastic Surgeons' (ASPS) annual reports on plastic surgery statistics.¹ The top five cosmetic surgical and minimally invasive procedures were selected for analysis, as these procedure volume figures were stratified by race/ethnicity

Takeaways

Question: How does consumer spending relate to cosmetic procedure utilization by race/ethnicity?

Findings: African American and Hispanic patients tend to spend less on consumer expenditures and have relatively fewer procedures done compared with their White and Asian counterparts.

Meaning: These findings highlight the racial/ethnic variation in access to cosmetic surgery from a microeconomics standpoint, as well as raise the potential value of making cosmetic procedures more affordable to increase access in an equitable manner.

starting in 2012. To quantify microeconomic spending traits, consumer expenditure and income data stratified by race/ethnicity from the U. S. Bureau of Labor Statistics (BLS) for 2012 to 2020 was used for calculation of inflexible and flexible consumer spending. Due to availability across datasets, we compared the following three racial/ethnic groupings: White/Asian/other, African American, and Hispanic.

Statistical Analysis

The goal of this analysis was to determine if microeconomic spending traits as a proxy of financial stability follow trends in cosmetic surgery utilization stratified by race/ethnicity. We defined two microeconomic spending traits: inflexible and flexible consumer spending. For flexible spending, we selected entertainment expenditures from BLS data as a proxy. Entertainment is not necessary for daily living, so it is conceptually relevant to flexible spending. Additionally, a preliminary dynamic factor analysis indicated that this single trait showed common variation with other categories of flexible spending in BLS' consumer expenditure data (entertainment: loading = 0.55, $P = 0.0117$; other BLS flexible categories included in preliminary analysis: posttax income, additional insurance coverage, cash contributions to retirement). This meant that within the BLS data on all consumer spending, the expenditure variable "entertainment" serves as a highly representative proxy for flexible consumer spending. For inflexible spending, we selected as proxies the following: food and medical services. These were selected because they show clear relevance to unavoidable consumer costs and were also supported as highly representative proxies for inflexible consumer spending by preliminary dynamic factor analysis (food: loading = 0.36, $P = 0.0330$; medical services: loading = 0.56, $P = 0.0034$; other BLS inflexible categories included in preliminary analysis: pretax income, housing expenses, other healthcare expenses).

Average levels in both types of consumer spending, cosmetic surgical procedure volume, and minimally invasive procedure volume were calculated and standardized across the three racial/ethnic groupings (with United States racial/ethnic population volumes accounted for) so they could be interpreted relative to each other, with larger numbers indicating a larger mean difference. Changes over time of all four factors were also calculated

Table 1. Factors/Traits Used in Study and Breakdown of Combined Categories

Factor/Trait	Categories
Inflexible consumer spending	Food Medical services
Flexible consumer spending	Entertainment
Cosmetic surgical procedure volume	Breast augmentation Rhinoplasty Blepharoplasty Liposuction Abdominoplasty
Minimally invasive procedure volume	Botulinum toxin type A Soft tissue fillers Chemical peel Laser hair removal Microdermabrasion

and standardized to evaluate whether the average level of these traits was increasing or decreasing from 2012 to 2020. All variables/traits, as well as their breakdown of combined categories, used in this study have been summarized in Table 1.

RESULTS

Table 2 summarizes the standardized, average levels of the spending traits by racial/ethnic groupings. compared with the other groupings, the White/Asian/other grouping spent significantly more on average for inflexible consumer spending (estimate = 1.33, $P = 0.0097$), flexible consumer spending (4.38, $P < 0.0001$), cosmetic surgical procedures (6.36, $P < 0.0001$), and cosmetic minimally invasive procedures (2.58, $P = 0.0006$). In contrast, African American people spent significantly less on average for inflexible consumer spending (-2.95, $P = 0.0069$), flexible consumer spending (-6.32, $P < 0.0001$), cosmetic surgical procedures (-10.04, $P < 0.0001$), and cosmetic minimally

invasive procedures (-6.31, $P = 0.0003$). For Hispanic people, values were significantly less on average for flexible consumer spending (-2.68, $P = 0.0023$), cosmetic surgical procedures (- 6.86, $P < 0.0001$), and cosmetic minimally invasive procedures (- 5.11, $P = 0.0002$).

Table 3 summarizes the standardized values of change over time (interpreted as a correlation coefficient), from 2012 to 2020, of the average levels of the spending traits by racial/ethnic groupings. For the White/Asian/Other grouping, there was no significant association in change over time of average levels of inflexible spending ($P = 0.0903$), cosmetic surgical procedures ($P = 0.7634$), and cosmetic minimally invasive procedures ($P = 0.1345$). There was a significantly positive increase in average level of flexible spending over time (0.43, $P = 0.0284$). For the African American group, no significant association in change over time was found for flexible spending ($P = 0.320$), cosmetic surgical procedure utilization ($P = 0.0520$), or cosmetic minimally invasive procedure utilization ($P = 0.2324$). There was a significantly positive increase in average level of inflexible spending over time (0.26, $P = 0.0375$). There was no significant association in change over time for all four spending traits in the Hispanic group (inflexible spending, $P = 0.1348$; flexible spending, $P = 0.0890$; cosmetic surgical procedure volume, $P = 0.9970$; cosmetic minimally invasive procedure volume, $P = 0.6018$).

DISCUSSION

We sought to characterize average levels and change over time for microeconomic spending traits (inflexible consumer spending, flexible consumer spending) and cosmetic procedure utilization (cosmetic surgical procedure volume, cosmetic minimally invasive procedure volume) by race/ethnicity. We found that White and Asian people tend to spend more on both types of consumer

Table 2. Average Levels of Inflexible/Flexible Consumer Spending and Cosmetic Surgical/Minimally Invasive Procedure Volumes by Race/Ethnicity

Statistic	Inflexible Spending	Flexible Spending	Cosmetic Surgical Procedure Volume	Cosmetic Minimally Invasive Procedure Volume
White/Asian/Other				
Estimate	1.33	4.38	6.36	2.58
SE	0.50	0.88	1.04	0.72
Z	2.65	4.96	6.13	3.58
P	0.0097	< 0.0001	< 0.0001	0.0006
African American				
Estimate	-2.95	-6.32	-10.04	-6.31
SE	1.06	1.15	1.68	1.68
Z	-2.78	-5.52	-5.97	-3.77
P	0.0069	< 0.0001	< 0.0001	0.0003
Hispanic				
Estimate	0.65	-2.68	-6.86	-5.11
SE	0.48	0.85	1.12	1.31
Z	1.35	-3.16	-6.11	-3.89
P	0.1805	0.0023	< 0.0001	0.0002

Note: Values are standardized. A significant difference in “average level” represents that the racial/ethnic group and financial trait specified in the column is on average higher or lower relative to the other groups.

Table 3. Change Over Time of Inflexible/Flexible Consumer Spending and Cosmetic Surgical/Minimally Invasive Procedure Volumes by Race/Ethnicity from 2012 to 2020

Statistic	Inflexible Spending	Flexible Spending	Cosmetic Surgical Procedure Volume	Cosmetic Minimally Invasive Procedure Volume
White/Asian/Other				
Estimate	0.23	0.43	0.03	-0.14
SE	0.14	0.19	0.09	0.09
Z	1.72	2.23	0.30	-1.51
P	0.0903	0.0284	0.7634	0.1345
African American				
Estimate	0.26	0.19	-0.21	-0.14
SE	0.12	0.19	0.11	0.12
Z	2.12	1.00	-1.97	-1.20
P	0.0375	0.320	0.0520	0.2324
Hispanic				
Estimate	0.23	0.35	0.00	-0.06
SE	0.15	0.20	0.10	0.11
Z	1.51	1.72	0.00	-0.52
P	0.1348	0.0890	0.9970	0.6018

Note: Values are standardized. A significant association in “change over time” represents that the average level of spending trait was increasing or decreasing from 2012 to 2020; the estimate, or magnitude of change, can be interpreted like a correlation coefficient.

spending and both types of cosmetic procedures than their African American and Hispanic counterparts. There have been no significant changes over time in volume of either type of cosmetic procedure across all racial/ethnic groups, indicating that even if the raw volume numbers are increasing for minority groups over time, for instance, they are still underutilizing procedures compared with their White/Asian counterparts.

Our findings indicate that for all three racial/ethnic groupings, not only does consumer spending as a proxy of financial stability follow trends in cosmetic procedure utilization, but there are disparities in procedure volume, in which those with less personal consumer expenditures underutilize cosmetic surgery. Although this trend concordance between consumer spending and cosmetic procedure utilization makes intuitive sense, it has not been explicitly evaluated previously to our knowledge. To note, there are several representations of financial stability and prowess, and not all of them correlate with level of cosmetic procedure utilization. For instance, in their survey study on factors affecting patient motivation to pursue cosmetic surgery and selection of a plastic surgeon, Ligh et al found that annual income status did not hinder minority patients’ decision to undergo cosmetic surgery.⁵ In their analysis of patient utilization patterns in academic cosmetic surgery practices using the 2018 Nationwide Ambulatory Surgery Sample database, Moore et al noted that breast augmentation rates were higher among low-income patients compared with their high-income counterparts.¹⁰ Thus, it appears that income levels do not always correlate with cosmetic procedure utilization. However, we believe our interpretation of financial stability/prowess as inflexible/flexible consumer spending provides greater real-world value because it hones in on the aspect of personal finances that deals with actual spending on goods and services, which include cosmetic surgery utilization.

Broader financial representations, like annual income, are not always directly correlated with personal expenditure budgets because each consumer has differing allocations of spending and saving in his or her financial schema.

The trend concordance between consumer spending and cosmetic procedure utilization must also be interpreted as one piece of a larger, more nuanced explanation for racial/ethnic disparities in cosmetic surgery consumption, as there are factors other than financial means that may influence a patient’s decision to undergo cosmetic surgery. Sociocultural attitudes toward body modification and beautification can encourage or hinder an individual’s utilization of such procedures. Swami and Hendrikse found that among female undergraduates attending a British university, White students were more likely to have favorable attitudes toward cosmetic surgery and more willing to consider it for themselves, whereas Asian and African Caribbean students were less willing to consider it based on greater cultural mistrust and ethnic identity.³ Data aggregation from marketing analysis on cosmetic surgery attitudes and preferences in Western and Asian countries revealed that compared with those of Western cultural background, Asian candidates for cosmetic surgery were more likely to pursue transformative procedures to confer improvements in social status or competitive edge in the workplace by achieving a beauty archetype concordant with their cultural definitions of beauty.¹¹ Although tying these sociocultural attitudes to cosmetic surgery utilization is certainly complex and requires a great degree of nuance, it is important to consider these factors as salient influences on a patient’s decision to utilize cosmetic procedures, regardless of their financial or expenditure situation.

Disparity in utilization of cosmetic procedures may also be affected by procedure preferences by race/ethnicity and the cost of these procedures. For invasive cosmetic surgical procedures, liposuction, and abdominoplasty are more popular among African American and Hispanic patients,

whereas there is a greater bias toward blepharoplasty and rhinoplasty for Asian American patients. In general, these invasive procedures cost several thousand dollars and can include considerable variation in surgeon fees, representing potential cost barriers that gatekeep certain procedures deemed more coveted based on race-specific beauty and societal standards.¹ Desire for provider race concordance may also act as another barrier for cosmetic procedure utilization among minority groups. Ligh et al found that African American patients were more willing than their White counterparts to travel greater distances to see a cosmetic surgeon who shared the same ethnicity/race.⁵ However, African American people are significantly underrepresented in the plastic surgeon and resident workforce.¹² This lack of surgeon diversity can be a major hurdle for minority patients who feel greater comfort in receiving cosmetic procedures by a race-concordant physician and ultimately deter them from undergoing surgery even when they have secured the finances to do so.

Given the trend concordance between inflexible/flexible consumer spending and cosmetic procedure utilization, making these procedures more affordable could increase utilization in a more equitable fashion across race/ethnicity lines. For instance, plastic surgeons can offer payment plans or financing options to help patients spread out the cost of a procedure over time or offer discounts to make certain procedures more accessible. Some cosmetic surgical procedures have noninvasive alternatives that are less costly and require less recovery time, such as freezing/heating techniques for removing fat without requiring the patient to go under the knife. Patients may not know the full extent to which they can discount and finance their procedure costs—thus, practicing cosmetic surgeons should be encouraged to advertise affordable deals more robustly. Lowering the cost of procedures may potentially increase patient interest and demand, thus acting as a potent incentive for surgeons looking to grow their business. However, patient safety and equitable procedure outcomes should always be prioritized so as not to compromise quality of care due to too-low costs.

Finally, increasing accessibility of these procedures while maintaining and emphasizing a high standard of quality care and patient safety can help counter the rising tide of cosmetic surgery tourism and its associated potential dangers. Although the greater affordability and shorter waiting times of procedures abroad are garnering expanding American patient interest and utilization, the higher frequency of complications and disruptions in continuity of care represent detriments to the patients and burden to American plastic surgeons who are faced with fixing these complications back home.^{13,14} Even if it may not be feasible to lower cosmetic surgery prices in the United States to rates overseas due to domestic factors such as stringent standards of quality care, comprehensive patient aftercare, and strong malpractice laws, it is essential for interested patients to consider that the burden of travel arrangements, consultation fees, and potential postoperative complications are additional stressors and can decrease the appeal of surgery abroad. In addition to being aware of these considerations, prospective

consumers and the public should also be educated about the importance of prioritizing safety in cosmetic tourism while considering cost savings. For instance, they should engage with international plastic surgeons who are board-certified in the field to receive the highest quality of care abroad. Board certification is not legally required to perform plastic surgery procedures in many countries, and not all of them have their own established plastic surgery medical board. Prospective consumers may not be aware of these nuances in specialty training, which further augments exposure to discrepancies in quality care abroad.

Dissemination of knowledge on these additional considerations may be especially crucial for cosmetic patients of minority backgrounds: although the current literature on cosmetic tourism utilization lacks comprehensiveness, existing studies indicate that minority patients may be disproportionately facing the negative effects of cosmetic tourism. For instance, a systemic review of studies that examined complications of patients receiving postoperative care in the United States after cosmetic surgery abroad found that most patients were female individuals and Hispanic, and often required prolonged treatment periods greater than two months with high rates of hospitalization.¹⁵ Hence, increased accessibility of cosmetic procedures in the United States can also help mitigate the inequitable burden of postoperative complications due to cosmetic surgery tourism.

Limitations

This study has several limitations. ASPS procedural statistics are extrapolated from survey responses, so the plastic surgery statistics used in this study do not represent absolute numbers, but rather projections. Due to the racial/ethnic breakdown of procedure volume for select procedures by ASPS' annual reports, we could only evaluate the top five cosmetic surgical and top five cosmetic minimally invasive procedures. This analysis therefore does not speak for all cosmetic procedures, although it takes into account the ones with highest volume. We did not examine trends in personal consumer expenditures and cosmetic procedure utilization by other demographic factors, such as age and gender. These factors can further inform access to cosmetic surgery by sociodemographic variables and how they may interrelate to one another. Due to dataset limitations, we were not able to compare consumer personal expenditures and cosmetic utilization across race/ethnic groups within the same income level. The availability of this stratification would provide a more nuanced analysis of the association between personal consumer expenditures and cosmetic procedure utilization, as well as help determine the extent to which economic status alone influences differences in utilization. Finally, the study did not analyze other forms of microeconomic spending traits apart from personal consumer expenditures. Future studies should expand analysis into additional personal spending factors.

CONCLUSIONS

This study demonstrates that inflexible and flexible consumer spending follow trends in utilization of

cosmetic surgical and minimally invasive procedures by racial/ethnic groups, with African American and Hispanic people tending to spend less on consumer expenditures and having fewer cosmetic procedures done compared with their White and Asian counterparts. To our knowledge, this is the first study that correlates cosmetic procedure volume with microeconomic spending traits stratified by race/ethnicity. The microeconomic spending inequities found in this study may help further contextualize the racial/ethnic variation in access to cosmetic surgery, as well as highlight the potential value of making cosmetic procedures more affordable to increase access in an equitable manner.

Ben S. Rhee, BA

The Warren Alpert Medical School of Brown University
Mailbox G-9467
222 Richmond Street
Providence, RI 02903
E-mail: ben_rhee@brown.edu

DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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