



# REDUCING MEDICARE COSTS

*by Migrating Volume from  
Hospital Outpatient Departments  
to Ambulatory Surgery Centers*

**ASCA** Ambulatory Surgery  
Center Association

**KING**  
HEALTH  
CONSULTING LLC

## Acknowledgments

Jing Xu, PhD, senior research associate, Lane Koenig, PhD, president, Julia Sheriff, research assistant, Elizabeth Hamlett, research associate, all from KNG Health Consulting, conducted the data analysis presented in this report and composed the Data & Methods and Results sections. Alex Taira, regulatory policy and research manager for ASCA, contributed additional secondary research and writing.

---

---

# Table of Contents

---

I.	<a href="#"><u>EXECUTIVE SUMMARY</u></a>	4
II.	<a href="#"><u>INTRODUCTION &amp; BACKGROUND</u></a>	5
III.	<a href="#"><u>DATA &amp; METHODS</u></a>	7
IV.	<a href="#"><u>RESULTS</u></a>	8
V.	<a href="#"><u>DISCUSSION</u></a>	11
VI.	<a href="#"><u>REFERENCES</u></a>	16
VII.	<a href="#"><u>APPENDIX A: FULL METHODOLOGY</u></a>	17
VIII.	<a href="#"><u>APPENDIX B: TABLES</u></a>	20

---

# I. Executive Summary

## **Background:**

More than 5,800 Medicare-certified ambulatory surgery centers (ASC) provide outpatient services to Medicare beneficiaries. On average, Medicare pays ASCs one-half of hospital outpatient department (HOPD) rates for the same procedures, meaning that every time a procedure for a Medicare beneficiary is performed in an ASC instead of an HOPD, the Medicare program saves money. This report seeks to update estimates of those savings to the Medicare program for the period 2011 to 2018 and project those savings for 2019 through 2028.

## **Methods:**

We used Medicare claims and other publicly available data to examine the volume of procedures performed at ASCs, compare the payment rates of HOPDs and ASCs, and develop assumptions on future growth. We estimated historical and potential future savings by (1) estimating spending using HOPD payment rates instead of ASC payment rates and (2) comparing this “hypothetical” aggregate spending to actual ASC spending. We also estimated potential future savings for total knee arthroplasty (TKA) using outpatient migration of partial knee arthroplasty (PKA) as a model.

## **Results:**

During the eight-year period from 2011 to 2018, the total Medicare savings generated by ASCs was \$28.7 billion. During the 10-year period from 2019 to 2028, projected total Medicare savings generated by ASCs is estimated to be \$73.4 billion. The ASC share of TKA and knee mosaicplasty is estimated to increase from 13.4 percent in 2020 to 18 percent in 2028, growing at 3.7 percent annually. If the growth rate of outpatient TKA matches growth previously seen in PKA, ASC savings would be \$2.95 billion from 2020 to 2028 for this one procedure alone.

## **Conclusion:**

ASCs continue to offer substantial savings to the Medicare program. Much of the program savings since 2011 is attributable to a stable group of high-volume procedures, namely cataract surgery and colonoscopies. Policymakers should be wary of the growing payment disparity between ASCs and HOPDs that may discourage additional shifting of Medicare services to ASCs and should prioritize policies that incentivize safe migration of eligible procedures to the ASC setting to achieve maximum program savings.

---

---

## II. Introduction & Background

This report examines ambulatory surgery centers (ASC) and their impact on Medicare spending. ASCs are medical facilities that provide same-day surgical, diagnostic and preventive services. The first ASC opened in 1970, and today more than 5,800 Medicare-certified ASCs provide care throughout the nation. Over time, medical advances and new technologies—including minimally invasive surgical techniques and improved anesthesia—have allowed a wide range of surgical procedures to be performed safely in ASCs. Today, ASCs perform many of the same procedures as hospital outpatient departments (HOPD) with greater efficiency and without the costly overhead expenses often associated with hospitals. Medicare currently reimburses HOPDs, on average, twice as much as ASCs performing the same procedures. This means that Medicare spends less every time a procedure is performed in an ASC instead of an HOPD.

As of 2018, ASCs perform roughly 6.8 million vital surgical, diagnostic and preventive procedures for Medicare beneficiaries each year. These include 75 percent of beneficiary cataract removals and 50 percent of colonoscopies. ASCs perform well over 100,000 colorectal cancer screenings per year, contributing to the decades-long decline in colorectal cancer incidence and mortality.<sup>1</sup>

### **2013 Analysis of Medicare Cost Savings Tied to ASCs**

In 2013, the Ambulatory Surgery Center Association (ASCA) and researchers at the University of California-Berkeley analyzed Medicare data to determine how much money ASCs had saved the program in recent years. They found that from 2008 to 2011, ASCs reduced costs to the Medicare program and its beneficiaries by \$7.5 billion, including \$2.3 billion in 2011 alone. The analysis also included six scenarios that projected future savings, with each scenario assuming different changes in outpatient volume and ASC share of outpatient procedure growth. The authors concluded that the future savings potential attributable to ASCs for the Medicare program was considerable, even under the most conservative assumptions. In the most generous scenario, in which both total volume and ASC share of Medicare procedures increased, ASCs were projected to save Medicare \$57.6 billion from 2013 to 2022.

The 2013 analysis made it clear that shifting Medicare patient cases to ASCs should be a priority for policymakers, as doing so provides savings to the program, and lower copays and deductibles to beneficiaries, without any reduction in care quality. At that time, the savings potential of ASCs was far from guaranteed as certain elements of Medicare payment policy were actively disincentivizing care in ASCs. For example, Medicare payments to ASCs were updated annually using an inflation factor separate than that used to update payments to hospitals. This discrepancy meant that the payment gap between ASCs and HOPDs widened over time, deterring the migration of care to the lower cost setting. While the Centers for Medicare & Medicaid Services (CMS) has temporarily addressed this inflation update discrepancy, the change has not been made permanent and other payment policy issues persist that continue to widen the gap between ASC and hospital reimbursement.

---

## Trends in Outpatient Surgery

Despite the wide range of services available at ASCs, a small number of procedures have historically represented a large percentage of surgical volume performed on Medicare beneficiaries. For example, cataract removal with intraocular lens insertion (Healthcare Common Procedure Coding System [HCPCS] 66984) and upper gastrointestinal procedure with biopsy (HCPCS 43239) have been the top two most common codes performed at ASCs on Medicare beneficiaries since at least 2008.<sup>2</sup> According to the Medicare Payment Advisory Commission (MedPAC), just 28 procedures accounted for 75 percent of all Medicare volume at ASCs in 2018.<sup>3</sup>

**Healthcare analysts project that 85 percent of all healthcare procedures will be performed outpatient by 2028, due in large part to advances in specialties like orthopedics, cardiology and spine, which are still overwhelmingly performed on an inpatient basis.**

Recent advancements in surgical technique and technology have created opportunities for new medical specialties to move procedures to the outpatient setting. Healthcare intelligence firm Sg2 projects that 85 percent of all healthcare procedures will be performed outpatient by 2028,<sup>4</sup> due in large part to advances in specialties like orthopedics, cardiology and spine, which are still overwhelmingly performed on an inpatient basis. CMS tends to be more conservative than private payers in approving procedures for outpatient reimbursement due to the higher-risk nature of its beneficiary pool. In 2019, however, the agency finalized proposals allowing new complex procedures, including coronary interventions and total knee replacements, to be reimbursed in ASCs. The extent to which these procedures, and others like them, shift to the ASC setting will strongly influence the amount of savings the Medicare program and its beneficiaries will realize in coming years.

## Research Question

This analysis seeks to update the 2013 study *Medicare Cost Savings Tied to Ambulatory Surgery Centers*. By analyzing claims data in the period 2011 to 2018, we can determine real savings achieved by the Medicare program due to surgical and diagnostic procedures having been performed in ASCs rather than HOPDs. The report also seeks to project future savings that could be achieved from 2019 to 2028 by applying growth rates for surgical volume and ASC market share for major Current Procedural Terminology (CPT) code ranges. Finally, the report examines total knee arthroplasty (TKA) (HCPCS 27447) and knee mosaicplasty (HCPCS 29867) and offers projections of annual future savings attributable to these procedures migrating to the ASC space in the period 2020 to 2028.

---

---

## III. Data & Methods

*The complete list of data sources and full methodology can be found in Appendix A.*

### Data Sources

We used Medicare fee-for-service (FFS) claims files to identify procedure-level paid amounts, outpatient procedure volumes and the share of outpatient procedures performed at ASCs. Future growth in the Medicare population was estimated using census data, the Medicare Board of Trustees Annual Report and CMS-reported Medicare Advantage (MA) penetration rates. CMS Addendum B and ASC Addendum AA were used to determine baseline payment rates.

### Past Savings

For each year from 2011 to 2018, we estimated ASC savings for each procedure by comparing the average HOPD claims paid amount with the average ASC payment. By using the real claims paid amount, rather than the reimbursement rates, we accounted for the complexity of the Medicare ASC and HOPD payment systems (particularly, their bundled payment structures).

### Future Savings

The projection of future ASC savings incorporated assumptions regarding growth and composition of the Medicare enrollee population. Using 2011 to 2018 data, we calculated annual growth rates in the outpatient volume per enrollee and the ASC share for each HCPCS code range. Using 2018 outpatient volume as a baseline, we applied HCPCS-level annual growth rates to project future outpatient volume and ASC share. The baseline outpatient volume per enrollee was stratified by age, gender and race to match our population projections. Using 2018 Medicare payments as a baseline, we calculated payment rates for future years, taking into account recent changes in regulatory policy regarding inflationary update factors.<sup>5</sup> For each procedure, the savings was estimated using the difference between the HOPD and ASC payments.

### Future Savings for Orthopedic Surgery

We estimated potential future savings from increased ASC volume of total knee arthroplasty (TKA) (HCPCS 27447) and knee mosaicplasty (HCPCS 29867), which were added to the ASC Covered Procedures List (CPL) in CY 2020.<sup>6</sup> Based on clinical similarities, we used growth of partial knee arthroplasty (PKA) (HCPCS 27446) in past years to develop assumptions regarding the growth of outpatient volume and ASC share for TKA and knee mosaicplasty.

We projected TKA and knee mosaicplasty outpatient volume for future years by applying the annual growth rate of PKA volume from 2012 to 2018 (30 percent) to baseline 2018 TKA and knee mosaicplasty volume. We assumed a baseline ASC share for TKA and knee mosaicplasty equal to the ASC share for PKA in 2012 (13.4 percent) and applied an annual growth rate of 3.7 percent to estimate the ASC share for future years. Since TKA and knee mosaicplasty procedures in ASCs might have more restrictive clinical selection criteria than PKA, we modeled growth rates of outpatient volume at 100 percent, 75 percent, 50 percent and 25 percent of the PKA growth rate and calculated the ASC savings for each of these scenarios. We compared HOPD and ASC payment rates to project savings due to ASCs.

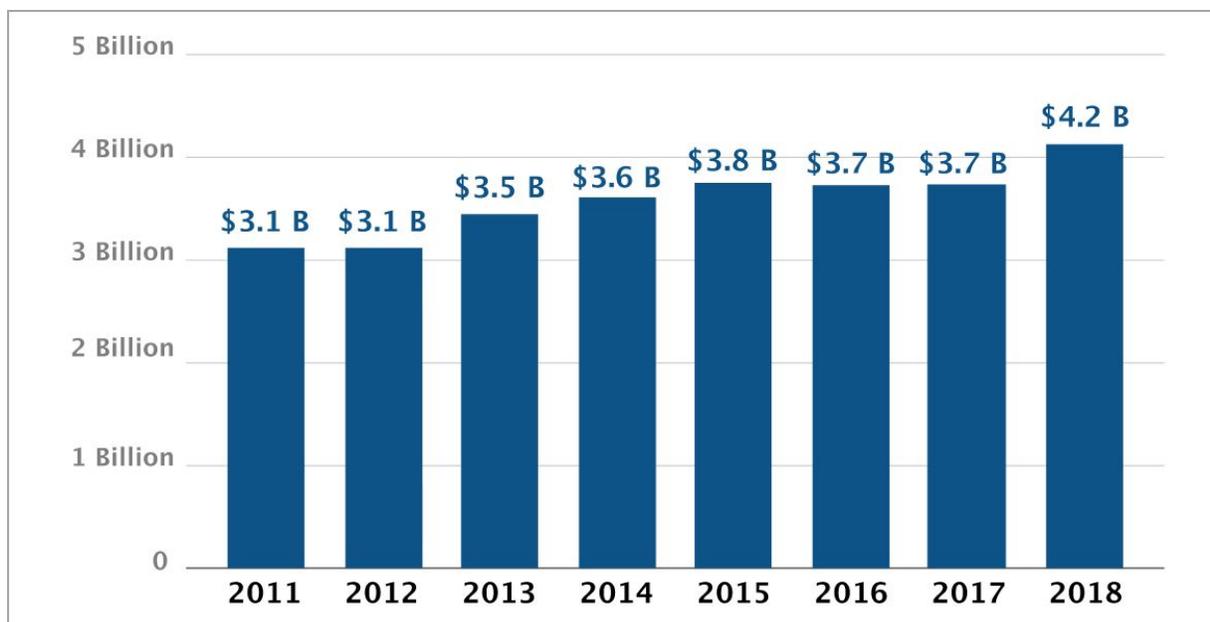
---

## IV. Results

### Past Savings (Appendix B - Table 1)

During the eight-year period from 2011 to 2018, the total FFS Medicare savings generated by ASCs was \$28.7 billion. The savings per year increased from \$3.1 billion in 2011 to \$4.2 billion in 2018. The increased savings resulted from the growth of the total number of ASC procedures, as well as the widening gap between HOPD and ASC payment rates. After seeing a slight decrease in annual savings attributable to ASCs in 2016 and 2017, savings increased considerably in 2018 likely due to high overall growth of outpatient Medicare volume.

GRAPH 1:  
TOTAL PAST SAVINGS

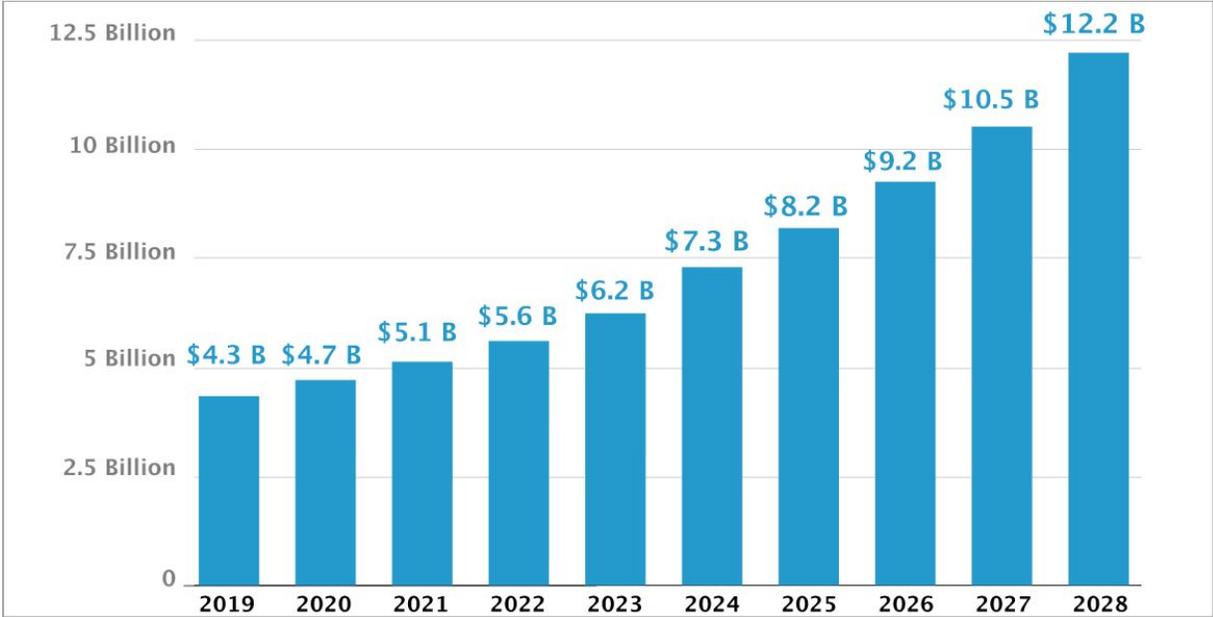


The surgical category with the most Medicare savings was eye and ocular adnexa surgery, which accounted for approximately 40 percent of the ASC savings each year. Four specialties each accounted for more than \$3 billion in total savings in the period 2011 to 2018. Those specialties were eye and ocular adnexa, digestive system, nervous system and musculoskeletal surgeries.

**Future Savings** (Appendix B - Table 2)

During the 10-year period from 2019 to 2028, the total FFS Medicare savings generated by ASCs is projected to be \$73.4 billion. Much of the increase in savings relative to the 2011 to 2018 timeframe can be attributed to the sizeable projected growth in annual outpatient volumes and, therefore, larger Medicare spending on outpatient services in general. Savings due to ASCs is projected to increase each year, rising from \$4.3 billion in 2019 to \$12.2 billion in 2028, with an average growth rate of 10.9 percent annually.

GRAPH 2:  
TOTAL FUTURE SAVINGS

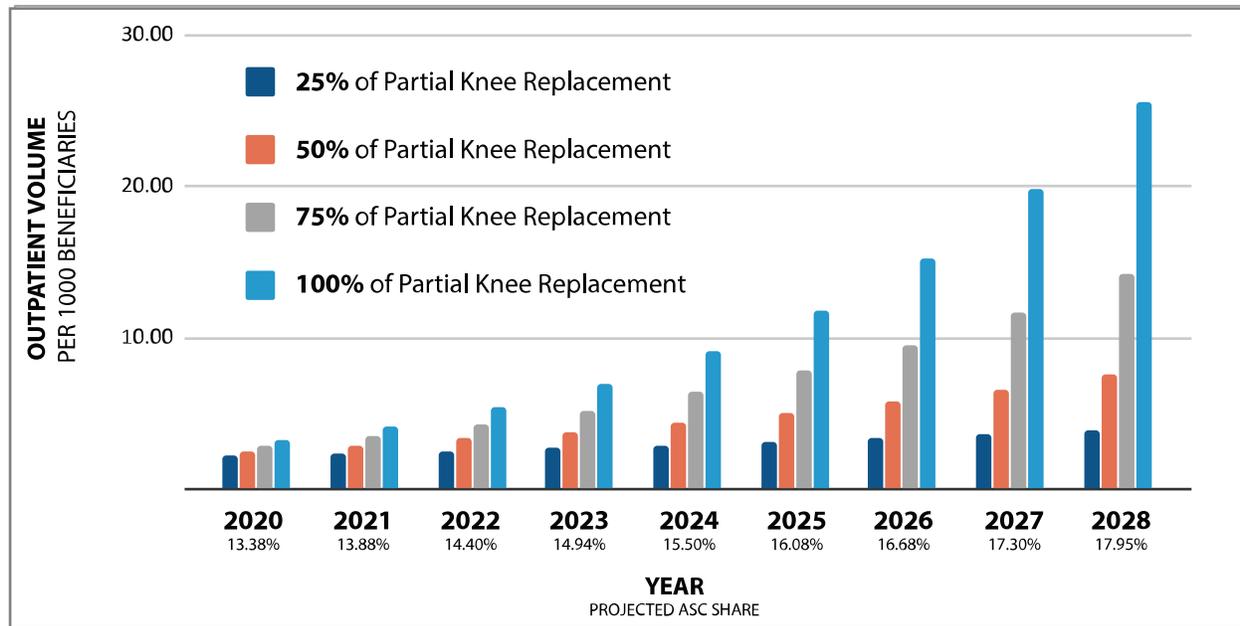


Savings generated by eye and ocular adnexa surgery would account for more than 30 percent of the total ASC savings each year. The surgical categories with the highest growth rates of ASC savings would be endocrine system and cardiovascular surgeries, with average annual growth rate in savings of 45.5 percent and 35.4 percent respectively. By 2028, five surgical specialties are each projected to save Medicare more than \$1 billion per year due to performance in ASCs. Those specialties are eye and ocular adnexa, cardiovascular, nervous system, digestive system and musculoskeletal surgeries.

**Future Savings for Orthopedic Surgery (Appendix B - Table 3)**

By assumption, the ASC share of TKA and knee mosaicplasty would increase from 13.4 percent in 2020 to 18.0 percent in 2028, growing at 3.7 percent annually. Assuming the outpatient volume of TKA and knee mosaicplasty would increase by 30 percent annually (the same growth rate of PKA from 2012 to 2018), the outpatient volume of TKA and knee mosaicplasty would increase from 3.2 per 1,000 beneficiaries in 2020 to 25.6 per 1,000 beneficiaries in 2028. The total FFS ASC savings from 2020 to 2028 would be \$2.95 billion. Under a more conservative assumption that the growth rate of the outpatient volume TKA and knee mosaicplasty would be 75 percent, 50 percent or 25 percent that of PKA, the total FFS savings attributable to ASCs from 2020 to 2028 would be \$1.8 billion, \$1.1 billion or \$0.7 billion, respectively. These savings are in addition to the \$73.4 billion projected above.

GRAPH 3:  
**PROJECTION OF SAVINGS BY TOTAL KNEE REPLACEMENT (HOPD VS. ASC)**



---

## V. Discussion

The Medicare program covered 61.2 million Americans in 2019, and policymakers will face difficult financial considerations if the program is to remain solvent in the decades to come. While the Supplementary Medical Insurance (SMI) Trust Fund, which covers Medicare Parts B and D, is expected to be adequately financed in the short term, Part B expenditures have significantly outpaced gross domestic product (GDP) growth and will continue to do so. Annual Part B payments to hospitals alone, which increased by \$29.5 billion from 2010 to 2019, are expected to grow by \$79.1 billion from 2020 to 2029.<sup>7</sup>

The findings of this analysis make it clear that ASCs provide considerable savings to the Medicare program, even as the types of procedures performed in ASCs have remained relatively stagnant over the past decade. Absent any major policy changes, ASCs are already expected to provide more than \$10 billion in annual savings to Medicare by 2027. Policymakers can further offset the expected growth in Part B payments to hospitals by prioritizing payment policies that encourage the migration of procedures to the lower-cost ASC setting.

### Medicare Payment Policy Changes

The growing disparity between reimbursement rates for HOPDs and ASCs creates a financial disincentive to perform cases in the lower-cost setting at the expense of patients, taxpayers and the Medicare program. Whereas ASCs were once paid approximately 85 percent of the HOPD rate, they are currently paid on average one-half of what hospitals are paid for the same procedures.<sup>8</sup> In recent years, CMS has signaled a willingness to address this issue and enact policies designed to encourage procedure migration to ASCs. The CY 2019 Hospital Outpatient Prospective Payment System (OPPS) and Ambulatory Surgical Center Payment System final rule contained two such policy changes.

Until 2019, annual inflationary updates to the ASC payment system were made using the Consumer Price Index for All Urban Consumers (CPI-U). The CPI-U tracks price changes in a sampling of consumer goods, of which only 9 percent have any relation to healthcare. In contrast, HOPD payments are updated using the hospital market basket index, which tracks prices for such surgery-related expenses as health worker wages and medical equipment and supplies. As consumer prices historically inflated more slowly than medical goods, ASCs received smaller annual updates despite having cost structures roughly aligned with HOPDs.

The 2019 OPPS/ASC final rule instituted a five-year trial period (2019–2023) during which ASC payments will be updated using the hospital market basket while CMS gathers data to make a permanent policy determination. Our analysis assumes that ASC payments move back to updates based on the CPI-U after the trial period ends. However, any policy that further widens the disparity between ASC and HOPD payments will cause the Medicare program to incur costs by disincentivizing procedures to migrate to the lower-cost setting. CMS could permanently align the update indices to ensure that ASC reimbursements do not continue to fall relative to HOPDs.

---

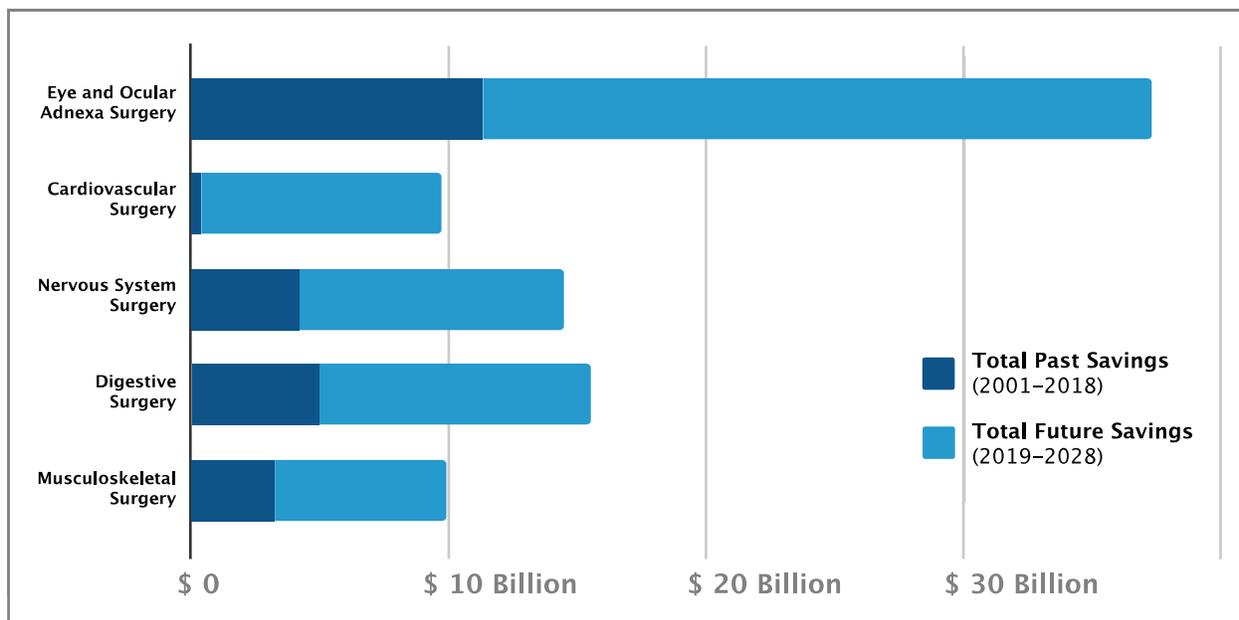
The 2019 OPPS/ASC final rule also made changes to Medicare payments for surgical devices used at ASCs. Until 2015, CMS fully contemplated the device cost in the ASC reimbursement rate only if the device cost was at least 50 percent of the total cost of the procedure when performed in the HOPD setting. Such procedures were deemed “device-intensive.” However, the 50 percent threshold meant that only a handful of procedures (75 procedures in 2014) qualified for device-intensive status. This made procedures with high device costs impractical to perform in the ASC setting as the facility would be forced to incorporate the device cost into its already reduced payment relative to the HOPD. In 2015, CMS reduced the threshold for device-intensive status to 40 percent, resulting in 61 additional codes receiving device-intensive status. CMS further dropped the threshold to 30 percent in 2019, qualifying an additional 128 procedures for device-intensive status. Ensuring adequate payment for surgical devices is necessary for incentivizing procedure migration to the ASC, especially for those specialties primed for future growth. Of the 128 newly added device-intensive procedures in 2019, 85 were musculoskeletal and 14 were cardiovascular—two specialties projected to provide more than \$1 billion each in annual savings to the Medicare program by 2028.

### Looking Ahead: Migration of New Specialties

Other than total knee arthroplasty and knee mosaicplasty, this analysis does not contemplate savings for procedures that were approved for ASC payment after 2018 or which may be approved by CMS in future years. However, it does project which specialties will meaningfully increase program savings in future years. Endocrine and cardiovascular procedures, in particular, are expected to experience greater than 1,000 percent growth in savings over the next 10 years.

GRAPH 4:

COMPARISON OF TOTAL PAST AND FUTURE MEDICARE SAVINGS BY CPT GROUP



A good example of an endocrine surgical procedure that could provide substantial savings in the next 10 years is parathyroidectomy (HCPCS 60500). Although Medicare approved the procedure for ASC payment in 2014, HOPDs still perform more than 96 percent of the Medicare volume annually. Having the procedure performed in an ASC instead of a hospital offers significant savings to beneficiaries since the beneficiary copayment for a

parathyroidectomy in an ASC is currently \$521 less than the HOPD copayment.<sup>9</sup> Migration of this procedure to ASCs also offers substantial savings for the Medicare program, but the current payment disparity—ASCs receive 46 percent of the HOPD rate—currently discourages movement. Bolstering the ASC payment rate, as well as approving additional endocrine surgical procedures such as thyroidectomies (HCPCS 60252) for ASC payment, would likely encourage cases migrating to the ASC setting and increase program savings.

The high projected savings tied to the performance of cardiovascular procedures in ASCs aligns with recent payment policy changes. In 2018, CMS finalized a change to allow certain “surgery-like” procedures outside of the surgical CPT code range (10000 through 69999) to be added to the ASC Covered Procedures List (CPL). Most commenters, including major specialty organizations such as the American College of Cardiology (ACC) and the Society for Cardiovascular Angiography & Intervention (SCAI), supported the change.<sup>10</sup> The result was 17 cardiac catheterization procedures added to the CPL in 2019, followed by six codes related to percutaneous coronary intervention (PCI) added in 2020. In the CY 2020 OPPS/ASC final rule, CMS estimated that moving just 5 percent of coronary interventions from HOPDs to ASCs would save \$20 million in program payments and \$5 million in beneficiary copayments.<sup>11</sup> In comments supporting the proposal to allow PCIs in ASCs, ACC noted that many cardiovascular interventions involve the use of devices and expressed concern that “the ASC payment rate for these procedures may be insufficient to cover the costs of these procedures.”<sup>12</sup> In a position statement outlining protocols for PCIs in ASCs, SCAI also noted that low ASC reimbursement rates might not allow facilities to participate in registries that would offer important quality feedback.<sup>13</sup> Neither the cardiac catheterization nor PCI procedures were contemplated in the savings projections of this report, but they clearly have the potential to increase the already considerable savings projected for cardiovascular procedures. HOPDs currently perform roughly 130,000 PCIs per year on Medicare beneficiaries at a payment rate 75 percent higher than the ASC rate.<sup>14</sup>

**Even excluding orthopedic procedures like TKA, THA and other orthopedic procedures that might be approved in the future, musculoskeletal surgeries performed in ASCs are expected to save Medicare more than \$1 billion per year by 2028.**

While endocrine and cardiovascular surgeries may be the specialties with the largest increases in projected savings, orthopedic surgery has undoubtedly been the most discussed specialty for future migration to ASCs. CMS’ addition of TKA to the ASC CPL in 2020 was met with some contention, and the savings projection reflects conservative estimates based on the migration pattern of PKA. CMS has proposed to add total hip arthroplasty (THA) to the ASC CPL in 2021, and research suggests that, with careful patient selection, THA can be performed at ASCs with no increased risk of complications compared to HOPDs.<sup>15</sup> Even excluding TKA, THA and other orthopedic procedures that might be approved for payment in future years, musculoskeletal surgeries performed in ASCs are expected to save Medicare more than \$1 billion per year by 2028. This number could likely be magnitudes higher if even a small portion of procedures migrate to the ASC setting. HOPDs performed more than 53,000 TKAs in 2018 (the first year of eligibility for payment), which CMS reports was roughly 25 percent of all Medicare TKAs.<sup>16</sup>

## Strengths and Limitations

This analysis has several strengths. Whereas the previous analysis calculated savings using average reimbursement rates as identified in Addendum B (for HOPDs) or the ASC Addenda, our analysis calculated average payments at the HCPCS level based on claims paid amounts. This approach is more accurate and accounts for differences in the two payment systems. Future projections incorporated HCPCS-specific assumptions on the growth of outpatient volume and ASC share for increased accuracy. We stratified the baseline volume for each HCPCS code by age, gender and race to more accurately match variations in the population groups as projected by census data and the Medicare Board of Trustees. Finally, we consider PKA to be a strong proxy as part of the TKA growth projection. The decision to use PKA was made after consulting a group of clinical subject matter experts, and we offer conservative savings scenarios in the event that TKA and knee mosaicplasty volume growth is lower than has been seen for PKA.

This analysis is not without limitations. From a broad perspective, we define savings by considering any procedure done in an ASC rather than an HOPD as having saved the Medicare program money via the reduced reimbursement rates in ASCs. We did not examine inpatient Medicare services and attempt to separate out savings due to procedure volume that is shifting from inpatient to outpatient sites of service.

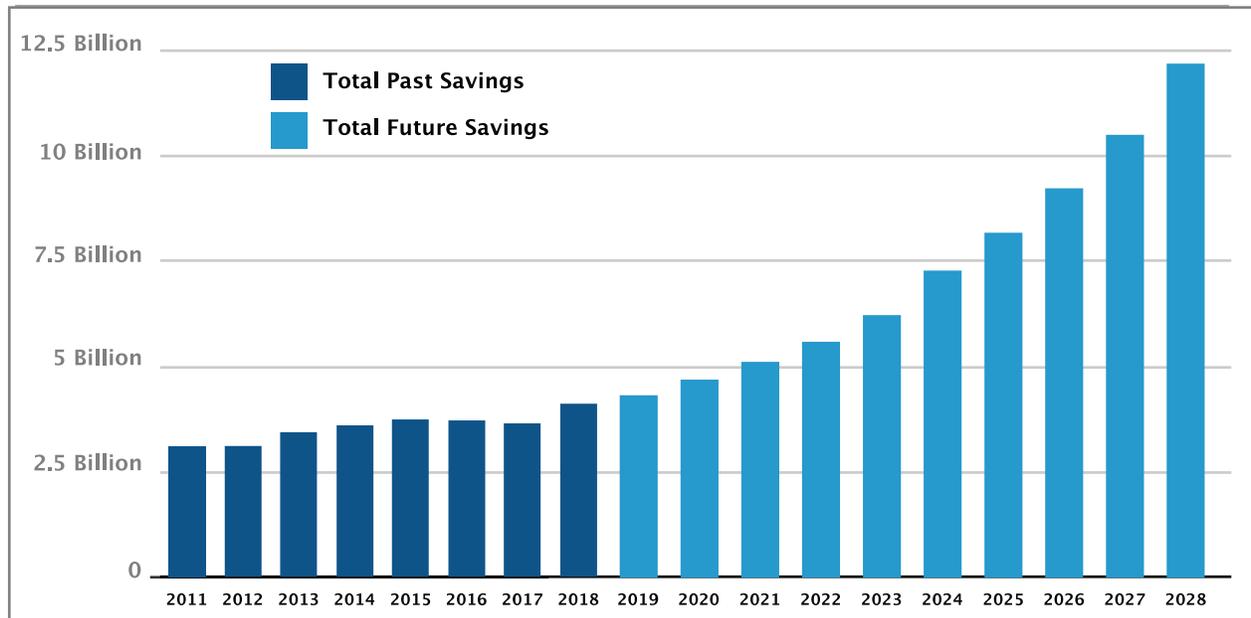
The future savings projections are calculated by extending the HCPCS-level average annual exponential growth rate seen in the period 2011 to 2018. Reliance on a historical growth rate may overstate savings potential, particularly in codes that have experienced high recent growth in volume. The analysis also projects savings through 2028 for several category III CPT codes. These codes could have a substantially different savings impact once they are converted to category I status. Finally, the analysis also does not take into account codes that have been approved for ASC payment after 2018, other than TKA and knee mosaicplasty. This excludes some cardiovascular codes in particular that will likely contribute significantly to program savings attributable to ASCs in the coming decade.

---

## Conclusions

ASCs continue to offer substantial savings to the Medicare program. Annual savings due to procedures performed in ASCs rather than HOPDs are estimated at more than \$3 billion per year since 2011. This finding confirms the projections of the 2013 study *Medicare Cost Savings Tied to Ambulatory Surgery Centers*. Much of the program savings since 2011 is attributable to a stable group of high-volume procedures, namely cataract surgery and colonoscopies.

GRAPH 5:  
TOTAL MEDICARE SAVINGS AND PROJECTED SAVINGS (BY YEAR)



Medicare savings due to ASCs in the period 2019 to 2028 is projected at \$73.4 billion, driven by growing specialties such as endocrine, cardiovascular and orthopedic surgery. Even absent additional payment policies targeted at moving eligible cases in these specialties to the ASC setting, the general movement of procedures away from inpatient hospitals should provide considerable program savings. Policymakers should be wary of the growing payment disparity between ASCs and HOPDs and prioritize policies that incentivize safe migration of eligible procedures to the ASC setting.

## VI. References

1. American Cancer Society. (2017). Colorectal Cancer Facts & Figures 2017-2019 [PDF]. <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/colorectal-cancer-facts-and-figures/colorectal-cancer-facts-and-figures-2017-2019.pdf>
2. MedPAC. (2015). Ambulatory surgical center services [PDF]. <http://medpac.gov/docs/default-source/reports/chapter-5-ambulatory-surgical-center-services-march-2015-report-pdf>
3. MedPAC. (2020). Ambulatory surgical center services [PDF]. [http://www.medpac.gov/docs/default-source/reports/mar20\\_medpac\\_ch5\\_sec.pdf](http://www.medpac.gov/docs/default-source/reports/mar20_medpac_ch5_sec.pdf)
4. Olderog, A., Slama, L. (2018). Predicting Health Care Utilization Over the Decade. Presented at the 2018 Evolution of Surgery Summit, Washington DC. <https://www.ascassociation.org/2018-sg2-report>
5. Medicare Learning Network. (2020 March). Ambulatory Surgical Center Payment System [PDF]. *Centers for Medicare & Medicaid Services*. <https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/Downloads/AmbSurgCtrFeePymtFctsh508-09.pdf>
6. Centers for Medicare & Medicaid Services. (2019, November 1). *CY 2020 Medicare Hospital Outpatient Prospective Payment System and Ambulatory Surgical Center Payment System Final Rule (CMS-1717-FC) Fact Sheet*. CMS Newsroom. <https://www.cms.gov/newsroom/fact-sheets/cy-2020-medicare-hospital-outpatient-prospective-payment-system-and-ambulatory-surgical-center-0>
7. The Boards of Trustees for Medicare. (2020). 2020 Annual Report of the Boards of Trustees (Report No. 55). Retrieved from <https://www.cms.gov/files/document/2020-medicare-trustees-report.pdf>
8. Ambulatory Surgery Center Association. (2019, September 27). Comments submitted in response to proposed revisions to the Medicare ambulatory surgical center payment system for CY 2020 [PDF]. <https://www.ascassociation.org/HigherLogic/System/DownloadDocumentFile.ashx>
9. *Procedure Price Lookup, code: 60500*. Medicare.gov. <https://www.medicare.gov/procedure-price-lookup/cost/60500>
10. American College of Cardiology. (2018, November 2). *CMS Releases 2019 Hospital Outpatient Prospective Payment System Final Rule*. <https://www.acc.org/latest-in-cardiology/articles/2018/11/02/13/43/cms-releases-2019-hospital-outpatient-prospective-payment-system-final-rule>
11. CMS-1717-FC, 42 CFR Parts 405, 410, 412, 414, 416, 419, 486 (2019). <https://s3.amazonaws.com/public-inspection.federalregister.gov/2019-24138.pdf>
12. American College of Cardiology. (2019, September 27). Comments submitted in response to CY 2020 proposed changes to hospital outpatient prospective payment and ambulatory surgical center payment systems [PDF]. <https://www.acc.org/~media/Non-Clinical/Files-PDFs-Excel-MS-Word-etc/Latest%20in%20Cardiology/Advocacy%20and%20Policy/ACCtoCMSCY2020ProposedOPPSRuleFINALLetter9272019.pdf>
13. Box LC, Blankenship JC, Henry TD, et al. SCAI position statement on the performance of percutaneous coronary intervention in ambulatory surgical centers. *Catheter Cardiovasc Interv*. 2020;1–9. <https://doi.org/10.1002/ccd.28991>
14. *Procedure Price Lookup, code: 92928*. Medicare.gov. <https://www.medicare.gov/procedure-price-lookup/cost/92928>
15. Sershon RA, McDonald III JF, Ho H, Goyal N, Hamilton WG. Outpatient Total Hip Arthroplasty Performed at an Ambulatory Surgery Center versus Hospital Outpatient Setting: Complications, Revisions, and Readmissions, *The Journal of Arthroplasty* (2019). [https://www.arthroplastyjournal.org/article/S0883-5403\(19\)30716-8/fulltext](https://www.arthroplastyjournal.org/article/S0883-5403(19)30716-8/fulltext)
16. CMS-5529-P, 42 CFR Part 510 (2020). <https://s3.amazonaws.com/public-inspection.federalregister.gov/2020-03434.pdf>

# Appendix A: Full Methodology

## Data Sources

We used Medicare claims and other publicly available data to examine the volume of procedures performed at ASCs, compare the payment rates of HOPDs and ASCs, and develop assumptions on future growth. Specifically, we used the following data sources to complete the study:

- 2011–2018 5 percent Carrier Standard Analytic Files (SAF)
- 2011–2018 5 percent Outpatient SAFs
- 2011–2018 Denominator Files
- 2018 100 percent Inpatient SAF
- 2017 U.S Census Bureau National Population Projections Datasets<sup>1</sup>
- 2018 American Community Survey<sup>2</sup>
- 2019 Medicare Board of Trustees Annual Report<sup>3</sup>
- Medicare Advantage Penetration Rate from the Centers for Medicare & Medicaid Services (CMS)<sup>4</sup>
- 2008–2018 Physician/Supplier Procedure Summary (PSPS)<sup>5</sup>
- ASC Payment Rates – Addenda<sup>6</sup>
- OPPS Payment Addendum B<sup>7</sup>

## Past Savings

For each year from 2011 to 2018, we estimate ASC savings for each procedure among fee-for-service (FFS) enrollees as:

$$ASC\ Savings_{year} = ASC\ Vol\ per\ Procedure_{year} * Average\ ASC\ Savings\ per\ Procedure_{year}$$

We limited the analysis to FFS beneficiaries that received one of the Medicare-approved ASC Healthcare Common Procedure Coding System (HCPCS) codes. For each year from 2011 to 2018, total ASC volume was calculated using identified ASC procedures from the Carrier SAF. We used the 2011–2018 Outpatient SAFs to identify HOPD claims. We took Medicare payments for each HCPCS procedure at the line/revenue level and obtained the average payment for each HCPCS code for ASCs and HOPDs. By using the claims paid amount, we accounted for the complexity of the Medicare ASC and HOPD prospective payment systems (particularly, their bundled payment structures). For each procedure, we estimated the savings using the year-specific difference between the average HOPD payment and the average ASC payment. In addition to HCPCS-level analysis, we aggregated the savings to broader CPT categories.<sup>8</sup>

## Future Savings

In general, we projected future ASC savings for each procedure as:

$$ASC\ Savings_{year} = FFS\ Enrollees_{year} * ASC\ Vol\ per\ FFS\ Enrollee_{year} * Average\ ASC\ Savings\ per\ Procedure_{year}$$

Where:

$$FFS\ Enrollees_{year} = Medicare\ Enrollees_{year} * (1 - Medicare\ Advantage\ Penetration\ Rate_{year})$$

$$ASC\ Vol\ per\ FFS\ Enrollee_{year} = (Outpatient\ Vol_{year} / FFS\ Enrollees_{year}) * ASC\ Share_{year}$$

The projection of ASC savings required assumptions regarding Medicare Advantage (MA) penetration rates, the growth of outpatient surgical volume per enrollee and the growth of the ASC share of outpatient surgeries. For MA penetration rates, we calculated county-level five-year moving averages of MA penetration growth rates using data from CMS. We also projected the number of Medicare beneficiaries by age, gender and race by linking census projections and the American Community Survey. The estimation was adjusted to match the number of Medicare beneficiaries predicted by the Medicare Board of Trustees Annual Report at the national level for 2019–2028.

To inform the assumptions regarding the growth of outpatient surgical volume per enrollee and the ASC share of outpatient surgeries, we obtained the volume of services performed at ASCs and HOPDs (collectively referred to as outpatient volume) and the number of FFS enrollees for 2011 to 2018. We examined the outpatient volume per enrollee and the ASC share for each HCPCS category. We calculated the yearly growth rate as an average annual exponential growth rate using 2011 to 2018 data. We used 2018 outpatient volume per enrollee and the ASC share for each HCPCS code as a baseline and applied the HCPCS-level annual growth rate to project for future years. We stratified baseline outpatient volume per enrollee by age, gender and race to match our population projections. For HCPCS codes without data in 2011, we applied CPT category-level annual growth rate to obtain the projections. We limited the future ASC share for each HCPCS category to between 0.5 percent and 87.5 percent.<sup>9</sup>

As in the analysis of estimating past savings, we obtained the average Medicare payments for each HCPCS procedure at the line/revenue level for ASCs and HOPDs. We used the Medicare payments in 2018 as the baseline. To address the recent change in regulatory policy,<sup>10</sup> we updated both ASC and HOPD payments using the hospital market basket index from 2019 through 2023. After 2023, we updated ASC payments by the Consumer Price Index for All Urban Consumers (CPI-U)<sup>11</sup> and HOPD payments by the hospital market basket.<sup>12</sup> For each procedure, the savings was estimated using the difference between the HOPD and ASC payments.

## Future Savings for Orthopedic Surgery

In CY 2020, CMS added a series of procedures to the list of Medicare-covered surgical procedures in ASCs, including total knee arthroplasty (TKA) (HCPCS 27447) and knee mosaicplasty (HCPCS 29867).<sup>13</sup> We estimated potential future savings from increased ASC volume of TKA and knee mosaicplasty as:

$$ASC\ Savings_{year} = FFS\ Enrollees_{year} * (Outpatient\ Vol_{year} / FFS\ Enrollees_{year}) * ASC\ Share_{year} * Average\ ASC\ Savings\ per\ Procedure_{year}$$

Based on clinical similarities, we used growth of partial knee arthroplasty (PKA) (HCPCS 27446) in past years to aid in the development of assumptions regarding the growth of outpatient volume and ASC share for TKA and mosaicplasty. PKA was first approved for Medicare beneficiaries in the ASC setting in 2008. After examining the PKA outpatient volume and ASC share from 2008 to 2018 in PSPS files, we found that the ASC share of PKA fluctuated between 2008 and 2012 and the growth of the ASC share stabilized after 2012. From 2012 to 2018, the annual growth rate of the ASC share was about 3.7 percent. The annual growth rate of outpatient volume per enrollee was about 30 percent.

For TKA and knee mosaicplasty, we used 2018 outpatient volume as a baseline (1.82 per 1,000 enrollees) and used the annual growth rate of PKA volume from 2012 to 2018 (30 percent) to project TKA and knee mosaicplasty outpatient volume for future years. Since TKA and knee mosaicplasty procedures in ASCs might have more restrictive clinical selection criteria than PKA, we modeled growth rates of TKA and knee mosaicplasty outpatient volume at 100 percent, 75 percent, 50 percent and 25 percent of the PKA growth rate and calculated the ASC savings for each of these scenarios. We assumed the baseline ASC share in 2020 for TKA and knee mosaicplasty was 13.4 percent, which was the same as the ASC share for PKA in 2012, and applied an annual growth rate of 3.7 percent to estimate the ASC share for future years.

We compared HOPD and ASC payment rates to estimate savings due to ASCs. The average savings per procedure was calculated using the HOPD reimbursement rate from Addendum B and the ASC reimbursement rate in ASC Addendum AA. As for other procedures in ASCs, we updated the payments for future years using the hospital market basket index and the CPI-U.

---

## Sources

1. US Census Bureau National Population Projections 2017-2060: <https://census.gov/data/datasets/2017/demo/popproj/2017-popproj.html>
  2. American Community Survey: <https://www.census.gov/programs-surveys/acs>
  3. Medicare Trustees Reports: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/TrusteesReports>
  4. Medicare Advantage State/County Penetration: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MCRAAdvPartDEnrolData/MA-State-County-Penetration>
  5. Physician/Supplier Procedure Summary: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Physician-Supplier-Procedure-Summary>
  6. ASC Payment Rates – Addenda: [https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ASCPayment/11\\_Addenda\\_Updates](https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ASCPayment/11_Addenda_Updates)
  7. OPSS Payment Rates – Addendum B: <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalOutpatientPPS/Addendum-A-and-Addendum-B-Updates>
  8. CPT Codes: <https://coder.aapc.com/cpt-codes>
  9. The range was developed based on the lowest and highest 1 percentile of ASC share among all the HCPCS codes in 2018.
  10. MLN Booklet: ASC Payment System: <https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/Downloads/AmbSurgCtrFeeypmftcst508-09TextOnly.pdf>
  11. CMS National Health Expenditure Projections: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected>
  12. CMS Market Basket Data: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MedicareProgramRatesStats/MarketBasketData>
  13. 2020 OPSS/ASC Final Rule Fact Sheet: <https://www.cms.gov/newsroom/fact-sheets/cy-2020-medicare-hospital-outpatient-prospective-payment-system-and-ambulatory-surgical-center-0>
-

## Appendix B: Tables

TABLE 1:  
TOTAL PAST SAVINGS BY CPT\* GROUP

CPT Group	HCPCS Range	2011	2012	2013	2014	2015	2016	2017	2018	TOTAL SAVINGS 2011-2018
Eye and Ocular Adnexa Surgery	65091-68899	\$1,253,182,382	\$1,259,699,995	\$1,379,659,071	\$1,424,647,283	\$1,445,342,097	\$1,415,069,890	\$1,512,788,258	\$1,645,052,466	<b>\$11,335,441,442</b>
Digestive Surgery	40490-49999	\$526,712,015	\$520,429,643	\$573,639,445	\$606,376,407	\$649,594,061	\$626,323,533	\$659,086,188	\$737,352,860	<b>\$4,899,514,152</b>
Nervous System Surgery	61000-64999	\$410,009,509	\$426,624,544	\$493,514,424	\$534,785,576	\$560,298,322	\$595,803,876	\$553,121,067	\$583,941,071	<b>\$4,158,098,390</b>
Musculoskeletal Surgery	20100-29999	\$404,632,463	\$393,618,777	\$431,914,477	\$432,385,609	\$439,719,042	\$397,065,100	\$355,701,513	\$408,692,726	<b>\$3,263,729,706</b>
Integumentary Surgery	10030-19499	\$194,436,881	\$199,094,735	\$190,169,512	\$188,019,231	\$195,424,663	\$212,541,646	\$158,883,797	\$160,444,553	<b>\$1,499,015,017</b>
Urinary Surgery	50010-53899	\$104,742,833	\$104,829,062	\$112,002,408	\$124,313,618	\$130,480,345	\$129,895,395	\$136,144,097	\$152,549,833	<b>\$994,957,591</b>
Cardiovascular Surgery	33016-37799	\$24,189,339	\$22,946,665	\$26,057,455	\$29,730,854	\$32,951,875	\$32,205,988	\$59,486,412	\$143,317,511	<b>\$370,886,100</b>
Other CPT	Other	\$72,299,789	\$78,178,387	\$92,294,456	\$102,333,249	\$106,566,169	\$116,570,741	\$106,537,621	\$126,187,015	<b>\$800,967,426</b>
Respiratory Surgery	30000-32999	\$82,769,496	\$83,343,929	\$97,330,532	\$109,974,930	\$111,588,616	\$103,411,731	\$38,569,504	\$62,608,976	<b>\$689,597,715</b>
Category III Codes	0042T-0593T	\$5,925,144	\$6,058,713	\$19,633,311	\$20,184,450	\$36,406,819	\$55,525,468	\$35,542,103	\$59,196,917	<b>\$238,472,925</b>
Male Genital Surgery	54000-55899	\$20,781,466	\$17,723,117	\$19,196,119	\$19,127,583	\$23,757,039	\$24,244,362	\$29,358,187	\$32,434,979	<b>\$186,622,853</b>
Hemic and Lymphatic Surgery	38100-38999	\$3,454,156	\$3,424,308	\$4,336,867	\$4,476,874	\$6,519,399	\$3,496,759	\$14,286,666	\$13,640,842	<b>\$53,635,871</b>
Female Genital Surgery	56405-58999	\$14,095,624	\$11,239,451	\$12,373,317	\$11,770,394	\$11,047,765	\$8,251,300	\$10,096,796	\$11,111,836	<b>\$89,986,483</b>
Auditory Surgery	69000-69979	\$10,865,102	\$10,731,478	\$10,579,818	\$13,269,254	\$13,446,864	\$12,525,179	\$7,647,921	\$10,375,748	<b>\$89,441,364</b>
Endocrine System Surgery	60000-60699	\$276,511	\$529,236	\$597,015	\$1,290,707	\$1,628,701	\$2,398,455	\$2,377,660	\$2,867,463	<b>\$11,965,748</b>
Other Surgery	10004-69990	\$87,952	\$88,550	\$41,453	\$91,680	\$136,730	\$176,388	\$259,136	\$141,802	<b>\$1,023,691</b>
Maternity Care and Delivery Surgery	59000-59899	\$34,207	\$124,701	\$116,968	\$97,365	\$32,216	\$162,590	\$0	\$127,695	<b>\$695,741</b>
Fine Needle Aspiration Biopsy Surgery	10004-10021	\$6,293	\$5,212	\$10,995	\$7,953	\$17,745	\$21,520	\$8,507	\$24,218	<b>\$102,443</b>
<b>TOTAL SAVINGS:</b>		<b>\$3,128,501,162</b>	<b>\$3,138,690,503</b>	<b>\$3,463,467,644</b>	<b>\$3,622,883,018</b>	<b>\$3,764,958,465</b>	<b>\$3,735,689,923</b>	<b>\$3,679,895,434</b>	<b>\$4,150,068,509</b>	<b>\$28,684,154,658</b>

\*Current Procedural Terminology

**TABLE 2:  
TOTAL FUTURE SAVINGS BY CPT\* GROUP**

CPT Group	HCPCS Range	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	TOTAL SAVINGS 2019-2028
Eye and Ocular Adnexa Surgery	65091-68899	\$1,765,073,005	\$1,874,318,404	\$2,015,005,088	\$2,172,047,119	\$2,340,526,466	\$2,601,878,074	\$2,837,095,316	\$3,111,038,529	\$3,438,595,312	\$3,844,938,226	<b>\$26,000,515,539</b>
Cardiovascular Surgery	33016-37799	\$162,515,200	\$215,252,028	\$291,922,176	\$400,968,300	\$552,195,982	\$828,151,559	\$1,086,917,738	\$1,421,113,678	\$1,871,799,411	\$2,474,836,357	<b>\$9,305,672,429</b>
Nervous System Surgery	61000-64999	\$609,084,961	\$653,284,652	\$713,271,675	\$784,505,262	\$869,252,920	\$1,070,089,528	\$1,192,122,407	\$1,304,146,652	\$1,431,825,546	\$1,630,795,740	<b>\$10,258,379,344</b>
Digestive Surgery	40490-49999	\$754,129,254	\$795,636,027	\$850,302,996	\$906,789,447	\$967,909,133	\$1,067,324,514	\$1,150,109,067	\$1,242,898,949	\$1,349,586,533	\$1,475,865,210	<b>\$10,560,551,128</b>
Musculoskeletal Surgery	20100-29999	\$401,752,116	\$434,509,939	\$477,106,085	\$522,884,759	\$575,423,186	\$663,385,948	\$740,566,138	\$828,225,422	\$927,599,434	\$1,037,939,961	<b>\$6,609,392,987</b>
Category III Codes	0042T-0593T	\$79,270,691	\$99,177,171	\$125,168,056	\$157,518,405	\$197,420,318	\$262,752,429	\$331,870,194	\$418,073,630	\$525,476,755	\$658,968,462	<b>\$2,855,696,111</b>
Other CPT	Other	\$132,769,836	\$142,403,805	\$154,513,295	\$166,793,830	\$180,040,749	\$201,155,068	\$218,258,519	\$236,487,759	\$255,813,386	\$276,139,473	<b>\$1,964,375,719</b>
Urinary Surgery	50010-53899	\$155,044,145	\$160,911,261	\$169,199,594	\$178,541,635	\$188,250,281	\$204,237,837	\$216,783,871	\$230,208,722	\$244,594,585	\$259,907,542	<b>\$2,007,679,473</b>
Integumentary Surgery	10030-19499	\$162,999,493	\$168,190,671	\$175,803,428	\$183,837,614	\$192,301,436	\$206,500,275	\$217,583,995	\$229,269,095	\$241,623,553	\$254,831,203	<b>\$2,032,940,763</b>
Endocrine System Surgery	60000-60699	\$3,425,804	\$4,821,886	\$6,919,839	\$9,951,463	\$14,395,661	\$21,470,837	\$31,467,916	\$46,247,671	\$68,053,858	\$99,812,490	<b>\$306,567,425</b>
Respiratory Surgery	30000-32999	\$55,990,996	\$55,854,862	\$56,524,205	\$56,991,930	\$57,661,144	\$60,583,667	\$62,093,570	\$63,788,473	\$65,654,583	\$67,673,785	<b>\$602,817,215</b>
Male Genital Surgery	54000-55899	\$32,097,781	\$33,524,935	\$35,427,646	\$37,257,407	\$39,191,004	\$42,447,322	\$44,943,305	\$47,525,239	\$50,192,288	\$52,913,918	<b>\$415,520,846</b>
Hemic and Lymphatic Surgery	38100-38999	\$14,235,906	\$15,182,945	\$16,390,310	\$17,652,278	\$18,999,887	\$20,698,539	\$22,327,230	\$24,068,373	\$25,909,376	\$27,832,810	<b>\$203,297,654</b>
Auditory Surgery	69000-69979	\$8,787,470	\$9,328,131	\$10,057,160	\$10,878,972	\$11,785,741	\$13,732,115	\$15,118,251	\$16,666,332	\$18,399,351	\$20,337,694	<b>\$135,091,216</b>
Female Genital Surgery	56405-58999	\$10,027,697	\$10,157,640	\$10,432,734	\$10,647,695	\$10,893,303	\$11,601,449	\$11,971,897	\$12,333,514	\$12,702,627	\$13,069,012	<b>\$113,837,570</b>
Other Surgery	10004-69990	\$167,874	\$173,732	\$182,352	\$191,652	\$201,533	\$213,185	\$224,986	\$237,543	\$250,690	\$264,059	<b>\$2,107,606</b>
Maternity Care and Delivery Surgery	59000-59899	\$102,928	\$111,262	\$121,930	\$133,438	\$146,317	\$164,929	\$181,494	\$200,125	\$221,122	\$244,604	<b>\$1,628,150</b>
Fine Needle Aspiration Biopsy Surgery	10004-10021	\$10,092	\$10,533	\$11,112	\$11,438	\$11,843	\$12,312	\$12,773	\$13,226	\$13,649	\$14,040	<b>\$121,018</b>
<b>TOTAL SAVINGS:</b>		<b>\$4,347,485,249</b>	<b>\$4,672,849,885</b>	<b>\$5,108,359,681</b>	<b>\$5,617,602,643</b>	<b>\$6,216,606,906</b>	<b>\$7,276,399,585</b>	<b>\$8,179,648,669</b>	<b>\$9,232,542,931</b>	<b>\$10,528,312,058</b>	<b>\$12,196,384,585</b>	<b>\$73,376,192,192</b>

\*Current Procedural Terminology

TABLE 3:

**PROJECTION OF SAVINGS BY TOTAL KNEE REPLACEMENT (HOPD vs. ASC)***Assumed growth rate for outpatient volume per 1,000 beneficiaries compared to partial knee replacement*

	2020	2021	2022	2023	2024	2025	2026	2027	2028	<b>Total Savings 2020-2028</b>
<b>Projected ASC Share</b>	13.38%	13.88%	14.40%	14.94%	15.50%	16.08%	16.68%	17.30%	17.95%	
<b><i>The same as partial knee replacement</i></b>										
<b>Outpatient Volume per 1,000 Beneficiaries</b>	3.19	4.16	5.40	7.01	9.09	11.80	15.30	19.81	25.61	
<b>TOTAL SAVINGS:</b>	<b>\$55,007,355</b>	<b>\$78,565,642</b>	<b>\$111,580,138</b>	<b>\$158,313,381</b>	<b>\$204,152,936</b>	<b>\$282,382,941</b>	<b>\$389,428,604</b>	<b>\$690,665,543</b>	<b>\$981,531,388</b>	<b>\$2,951,627,929</b>
<b><i>75% that of partial knee replacement</i></b>										
<b>Outpatient Volume per 1,000 Beneficiaries</b>	2.84	3.48	4.26	5.21	6.37	7.80	9.53	11.63	14.17	
<b>TOTAL SAVINGS:</b>	<b>\$48,864,894</b>	<b>\$65,780,468</b>	<b>\$88,052,013</b>	<b>\$117,749,242</b>	<b>\$143,114,693</b>	<b>\$186,575,730</b>	<b>\$242,511,669</b>	<b>\$405,378,471</b>	<b>\$542,981,686</b>	<b>\$1,841,008,866</b>
<b><i>50% that of partial knee replacement</i></b>										
<b>Outpatient Volume per 1,000 Beneficiaries</b>	2.50	2.88	3.31	3.80	4.37	5.02	5.76	6.60	7.55	
<b>TOTAL SAVINGS:</b>	<b>\$43,085,984</b>	<b>\$54,463,500</b>	<b>\$68,456,927</b>	<b>\$85,961,851</b>	<b>\$98,107,315</b>	<b>\$120,099,678</b>	<b>\$146,584,774</b>	<b>\$230,084,005</b>	<b>\$289,387,959</b>	<b>\$1,136,231,992</b>
<b><i>25% that of partial knee replacement</i></b>										
<b>Outpatient Volume per 1,000 Beneficiaries</b>	2.19	2.36	2.53	2.72	2.92	3.14	3.37	3.61	3.86	
<b>TOTAL SAVINGS:</b>	<b>\$37,670,625</b>	<b>\$44,525,188</b>	<b>\$52,330,035</b>	<b>\$61,443,053</b>	<b>\$65,569,493</b>	<b>\$75,054,318</b>	<b>\$85,655,668</b>	<b>\$125,714,994</b>	<b>\$147,847,680</b>	<b>\$695,811,054</b>