

Projected volume of primary and revision total joint replacement in the US 2030 to 2060

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Total joint replacement (TJR) is one of the most commonly performed, elective surgical procedures in the United States, and the volume of primary and revision TJR procedures has risen continuously in recent decades. A new study presented at the 2018 Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS) analyzed models to more accurately predict the future volume of TJA procedures in the U.S.

Total hip (THR) and [total knee replacement](#) (TKR) are clinically and cost-effective procedures for end-stage arthritis, which causes patients ongoing pain, limited function and diminished life quality. According to the National Inpatient Sample, in 2014 there were 370,770 total hip replacements and 680,150 total knee replacements.

Based on the linear regression model, this study showed that, overall, the volume of primary and revision TJR is significantly lower than studies that have used [exponential growth](#). Subpopulation prevalence was combined with census projects to predict national procedure volume for 2030 to 2060, followed by a pairwise correlation to assess consistency among models. As a result, these data findings can help guide health care economic policy and allocation of future resources to optimize the delivery of patient care.

"We were particularly interested in the predictions for TJR as the projected volume of procedures by 2030 and 2060 were very high," said Matthew Sloan, MD, orthopaedic resident at the University of

Pennsylvania and lead author of the study. "We went into our study thinking that the previously anticipated exponential growth among these procedures was not consistent with current trends, and it might be an overestimate."

Research findings include:

- By 2030, primary THR is projected to grow 171 percent and primary TKR is projected to grow by up to 189 percent, for a projected 635,000 and 1.28 million procedures, respectively.
- Similar gains are expected for revision THR and TKR, growing by 142 percent (72,000 procedures) and 190 percent (120,000 procedures), respectively.
- By 2060, primary THR is expected to reach 1.23 million (330 percent increase), primary TKR is expected to reach 2.60 million (382 percent increase), revision THR is expected to reach 110,000 (219 percent increase), and revision TKR is expected to reach 253,000 (400 percent increase).
- TKR [procedure](#) growth rate has been slowing between 2008-2014.

"These numbers are always changing," noted Dr. Sloan. "We will continue to look at new data as the numbers need to be constantly updated, especially if they are used to make predictions for future healthcare saving decisions, as the impact can be in the millions of dollars. It's imperative to provide policy makers with high-quality data to inform decisions that will affect patient access to orthopaedic care and the financial viability of elective orthopedic procedures."

In related research also presented at the 2018 AAOS Annual Meeting, Dr. Sloan and his team looked at the changing demographics in TJA in the U.S. from 2000 to 2014.

Research findings include:

- The mean age for primary total hips has declined significantly from 66.3 years to 64.9 and knees from 68 years to 65.9.
- Females continue to make up the majority of patients at 55-62%.
- Non-Hispanic whites comprise 80-86% of the TJR population followed by blacks (8-11%), Hispanics (3-6%) and Asians (less than 1%).
- The proportion of Non-Hispanic whites has been decreasing over time as the proportion of blacks has increased with minimal change among the proportion of Asians and Hispanics undergoing TJR procedures.
- Authors report that an improved understanding of this population is vital to mitigate risk factors and identify populations moving forward.

Provided by American Academy of Orthopaedic Surgeons

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