

# Despite economic times, US demand for total joint replacement remains steady

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A new study appearing in the April issue of the *Journal of Bone and Joint Surgery* (JBJS) showed that the economic downturns in the 2000s did not substantially influence the national growth trends for hip and knee arthroplasty in the United States. The new data support the authors' existing projections—made in 2007—that predicted a significant surge in demand for total joint replacement (TJR) through 2030.

Facing criticism that existing model projections of utilization of TJR did not take into account macroeconomic shifts such as recessions, researchers revisited the data adding the National Health Expenditure data as an independent variable. They conducted a historical trend analysis to compare the original projections with actual TJR rates through 2010 using data from the Nationwide Inpatient Sample (NIS) and used a linear regression model to calculate estimates through 2021 (the latest year for which the National Health Expenditure estimates are available).

The investigators found that the overall growth trend for the incidence of hip and knee arthroplasty, relative to the total U.S. population, was insensitive to economic downturns.

From 2009 to 2010, the total number of procedures increased by:

- 6.0 percent for primary total hip arthroplasty;
- 6.1 percent for primary total knee arthroplasty;
- 10.8 percent for revision [total hip arthroplasty](#); and

- 13.5 percent for revision [total knee arthroplasty](#).

"The actual NIS data from 2005 and 2010 correlate strongly with the predictions made in the previous model, despite the fact that both were post-recessionary years," said lead author Steven M. Kurtz, PhD, of Philadelphia-based consulting firm Exponent, Inc. "The results of this new study support the findings of our previous projections of arthroplasty demand through at least 2021."

According to the study results, the National Health Expenditure model projections for primary hip replacement in 2020 were higher than the previously projected model, whereas the current model estimates for total [knee arthroplasty](#) were lower.

"The available data do not support the hypothesis that the anticipated long-term national demand for joint replacements has been fundamentally altered by the current recessionary economic environment," said Dr. Kurtz, who was also lead author of the 2007 study. "They suggest instead that the long-term trends for the demand in total joint arthroplasty appear to be recession-proof."

He added that these latest updated projections in the current study provide a basis for surgeons, hospitals, payers and policy makers to plan for accommodating the future demand for arthroplasty in the coming decade.

## Study Details

Data from the Nationwide Inpatient Sample (1993 to 2010) were used with United States Census and National Health Expenditure data to quantify historical trends in [total joint replacement](#) rates, including the two economic downturns in the 2000s. Projections in total joint replacement were estimated using a regression model incorporating the

growth in population and rate of arthroplasties from 1993 to 2010 as a function of age, sex, race, and census region using the National Health Expenditure as the independent variable. The regression model was used in conjunction with government projections of National Health Expenditure from 2011 to 2021 to estimate future arthroplasty rates in subpopulations of the United States and to derive national estimates.

Provided by American Academy of Orthopaedic Surgeons

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