

Has the Volume and Variability of Procedures Reported by Fellows in ACGME-Accredited Musculoskeletal Oncology Fellowship Programs Changed Over Time?

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Introduction

National societies have been concerned that the increasing number of orthopaedic oncologists, coupled with a limited number of patients with bone and soft tissue sarcomas in the country, may have led to an unintended impact on the training spectrum and/or exposure of orthopaedic oncology fellows-in-training over time.

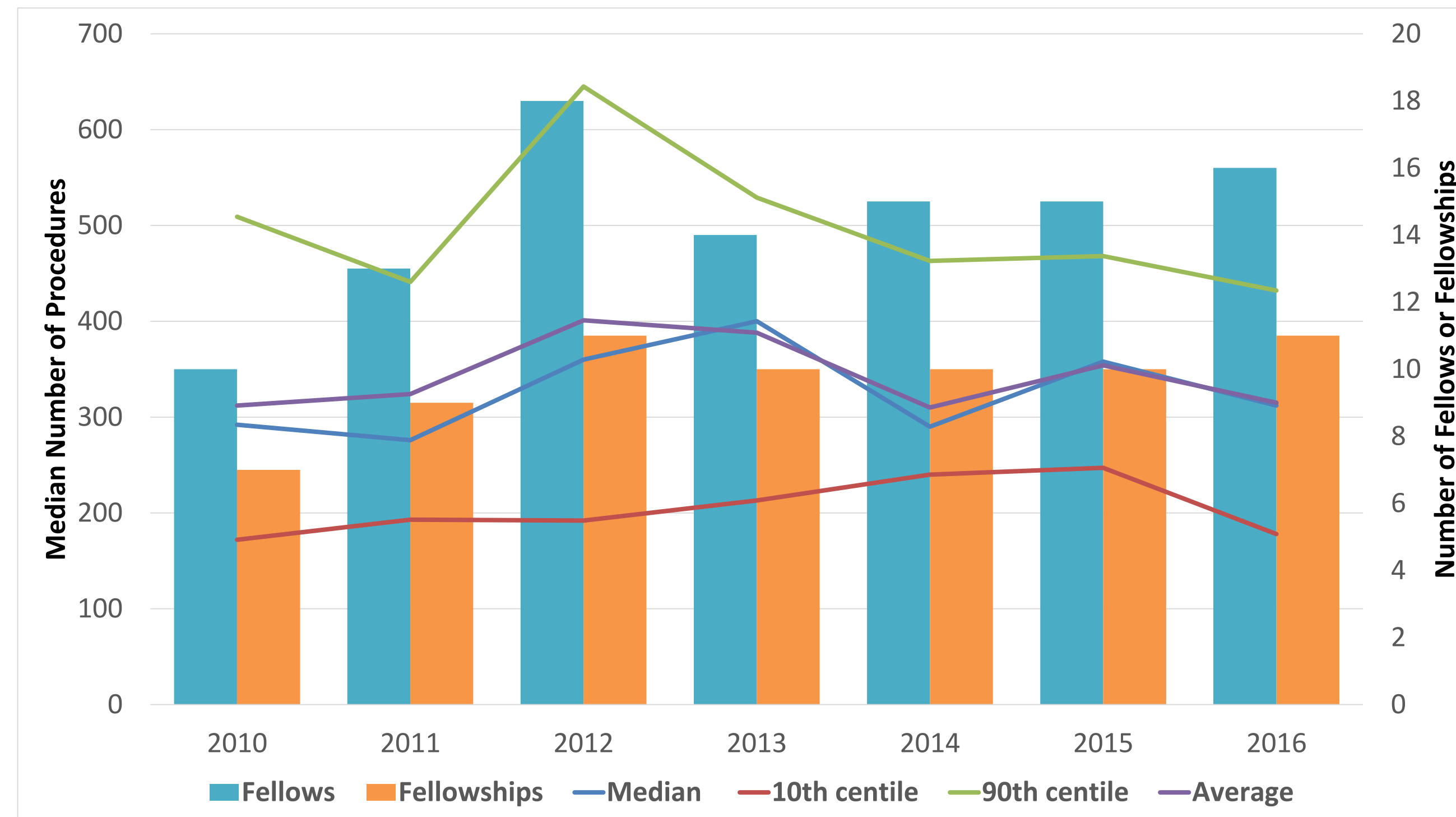
Questions

- Has the median surgical procedure volume per fellow changed over time?
- How much variability in procedural volume exists between fellows, based on the most recent (2017) Accreditation Council on Graduate Medical Education (ACGME) procedure log data?
- What proportion of fellows are meeting the minimum procedure volume thresholds, as recommended by the Musculoskeletal Tumor Society (MSTS)?

Materials and Methods

- **2010 to 2017 ACGME Fellowship Case Logs**
- The 2010 to 2016 anatomic site-based procedure log data were used to evaluate fellows' overall and location-specific median operative volume.
- The 2017 categorized procedure log data were used to assess variability in procedure volume between the lowest (10th percentile) and highest (90th percentile) of all fellows.
- We compared the MSTS minimum procedure volume standards against the number of procedures performed by fellows across the 10th, 30th, 50th (median), 70th, and 90th percentiles in 2017 alone.

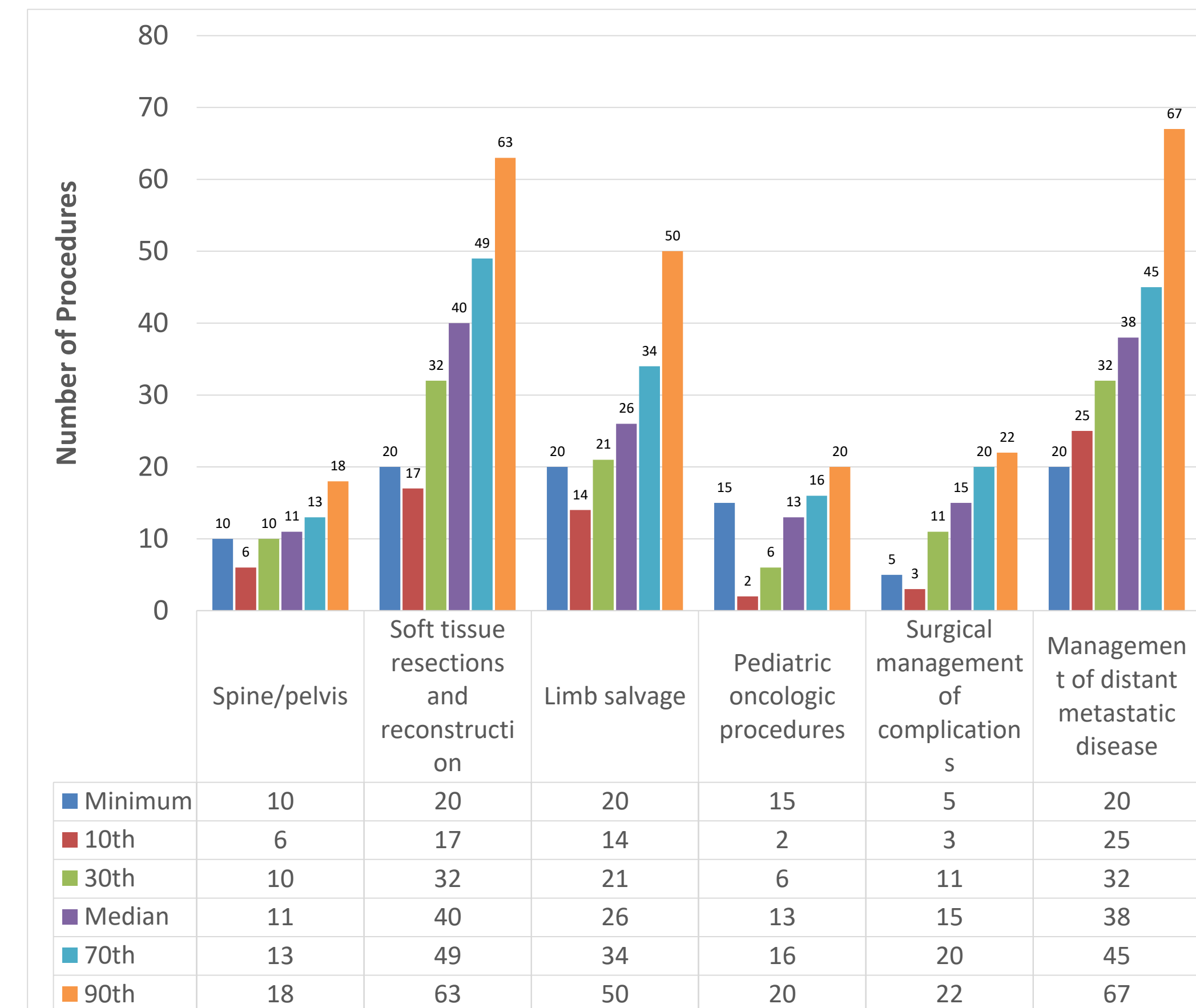
Figure 1: This graph shows the number of fellows, fellowships, and median procedure volume from 2010 to 2016.



Results

- There was **no change in the median procedural volume per fellow** from 2010 (292 procedures [range 131 to 634]) to 2017 (312 procedures [range 174 to 479]); $p = 0.58$).
- There was considerable variability in procedural volume between the lowest (10th) centile and highest (90th) centile of fellows across programs: **pediatric oncologic procedures (10-fold difference)**, **surgical management of complications from limb-salvage surgery (sevenfold difference)**, **soft-tissue resections or reconstructions (fourfold difference)**, **bone sarcoma resections or limb-salvage surgery (fourfold difference)**, and **spine, sacrum, and pelvis procedures (threefold difference)**.
- For the spine and pelvis (minimum = 10 procedures), **fellows in the lowest 10th centile performed only six procedures**.
- For patients with bone sarcomas or limb salvages (minimum = 20 procedures), **fellows in the lowest 10th centile performed only 14 procedures**.
- For pediatric patients with oncologic conditions (minimum = 15 procedures), **fellows in the 50th centile (13 procedures) and below failed to meet the thresholds**.

Figure 2: This graph shows the number of procedures performed by fellows across all centiles in 2017, compared with the minimum defined procedure volume standard.



Conclusions

- Despite an increasing number of fellowships, the median number of procedures performed by musculoskeletal oncology fellows has not changed over time.
- However, a variability in the types of procedures performed by ACGME-accredited oncology fellows exists, with a number of fellows reporting procedure numbers that do not meet the recommended minimum threshold before completing their training.