

The Case of the Disappearing Bone Scan – A Study of the CMS Database from 2013-2020



Kyle Brandon, MD¹ (R3 Diagnostic Radiology Resident), Rutger Gunther, MD¹ (Nuclear Medicine Fellow), Nathan McWhorter, DO¹ (Nuclear Medicine Radiologist),
Kevin Banks, MD¹ (Nuclear Medicine Radiologist)

¹Department of Radiology, Brooke Army Medical Center, Fort Sam Houston, TX 78261

Disclosures/Disclaimer

- I have no relevant disclosures
- The views expressed herein are those of the author(s) and do not necessarily reflect the official policy or position of the Defense Health Agency, Brooke Army Medical Center, the Department of Defense, nor any agencies under the U.S. Government.

Introduction

- Anecdotally, many physicians and technologists in nuclear medicine have noticed a decline in the volume of bone scans being performed
- The purpose of this systematic review was to assess this potential trend methodically

Methods

- The Medicare Physician and Other Practitioners by Provider and Service datasets from 2013-2020 were utilized.¹
- This data is gathered from CMS administrative claims of Medicare Part B beneficiaries
- Medicare is the largest single purchaser of health care in the U.S., comprising 21% of national healthcare expenditures.²
- Medicare Part B is the component that covers most outpatient services and made up 46% of overall Medicare payments in 2018, totaling \$300B.³

Methods

- Dataset was queried by year for all NM bone scan CPT codes (78300-78315)
- Analyzed by provider type, volume of studies, and workload based on relative value units (RVU)
- Mann-Kendall Test performed for statistical analysis

Results

- Statistically significant decrease in volume of bone scans performed in the U.S. with a 33% from 2013 to 2019.
- 19% decline in 2020 alone.
- Decrease seen across all CPT codes, and evenly across nuclear medicine, radiology, and other providers.
 - With the exception of bone SPECT (CPT Code 78320)
- Billing providers decreased from just under 8,000 in 2013 to around 5,000 in 2020 (37%).
 - Relatively stable ratio of bone scans per provider (42-44)

FIGURE 1: Summary of NM BS volume per year by CPT code, number of billing providers, and average number of exams per provider.

Number of Exams									
YEAR	2013	2014	2015	2016	2017	2018	2019	2020	p-value
78300	4,082	3,556	2,889	2,363	1,928	1,354	1,503	878	0.06
78305	986	711	710	641	529	532	469	240	0.04
78306	285,932	266,848	260,547	254,505	244,578	236,351	229,568	190,854	<0.001
78315	46,941	41,804	38,146	35,777	33,435	31,127	28,376	18,179	<0.001
TOTAL	337,941	312,919	302,292	293,286	280,470	269,364	259,916	210,151	<0.001
NPIs	7,943	7,470	7,113	6,800	6,475	6,221	5,906	5,007	<0.001
#/NPI	42.5	41.9	42.5	43.1	43.3	43.3	44	42	

FIGURE 2: Graph of decline bone scan exam volume by CPT code.

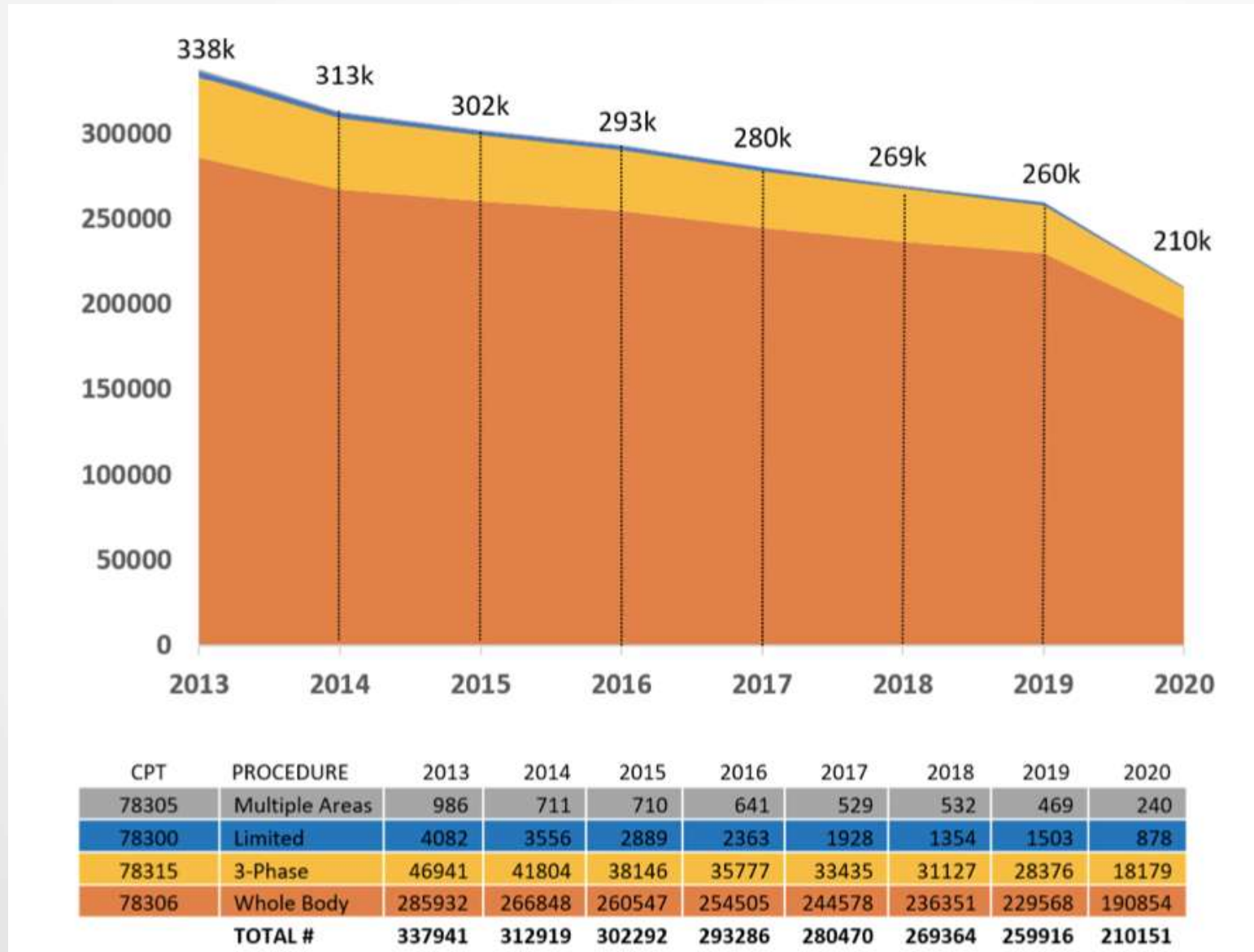


FIGURE 3: Graph of decline bone scan exam volume by provider specialty.

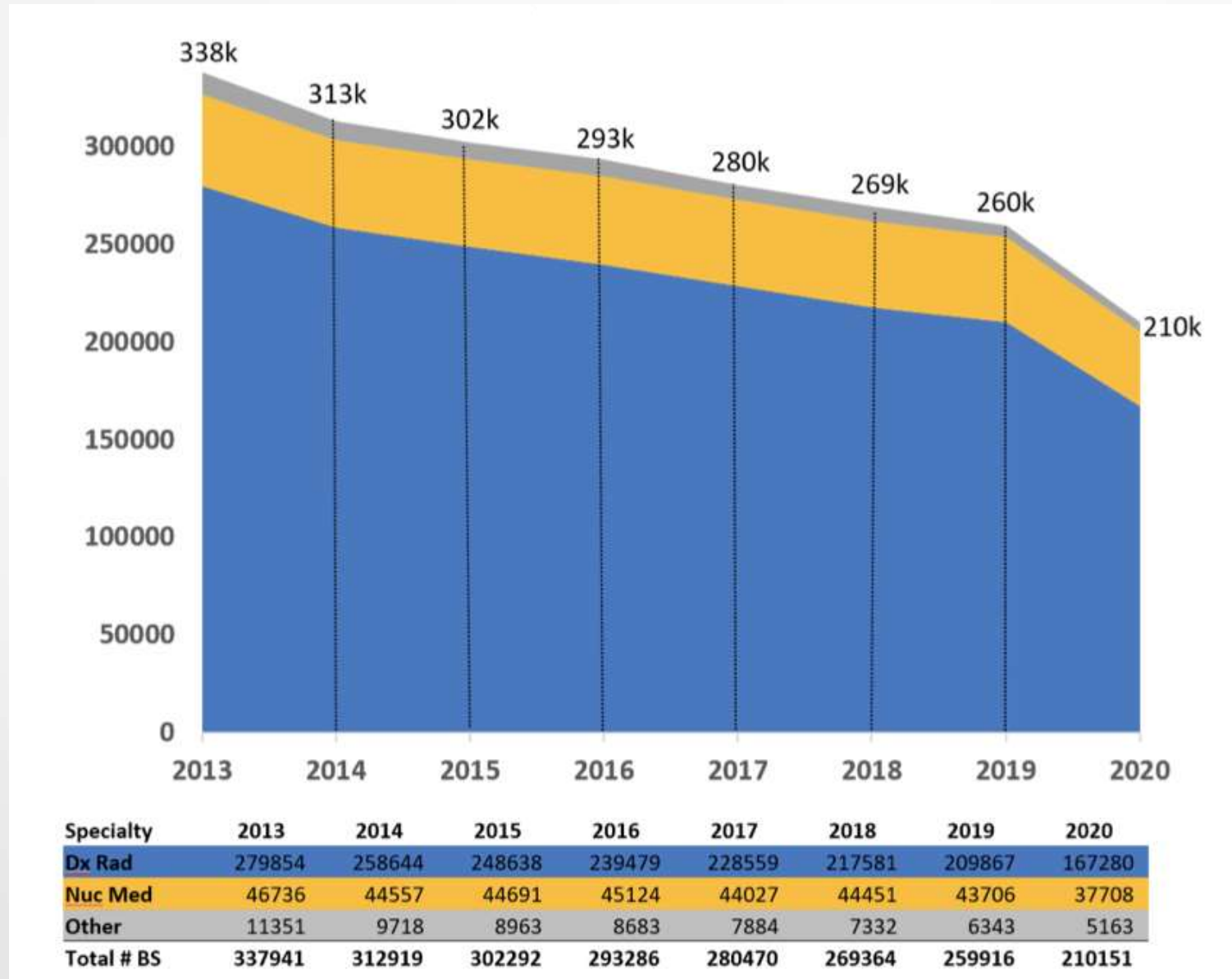
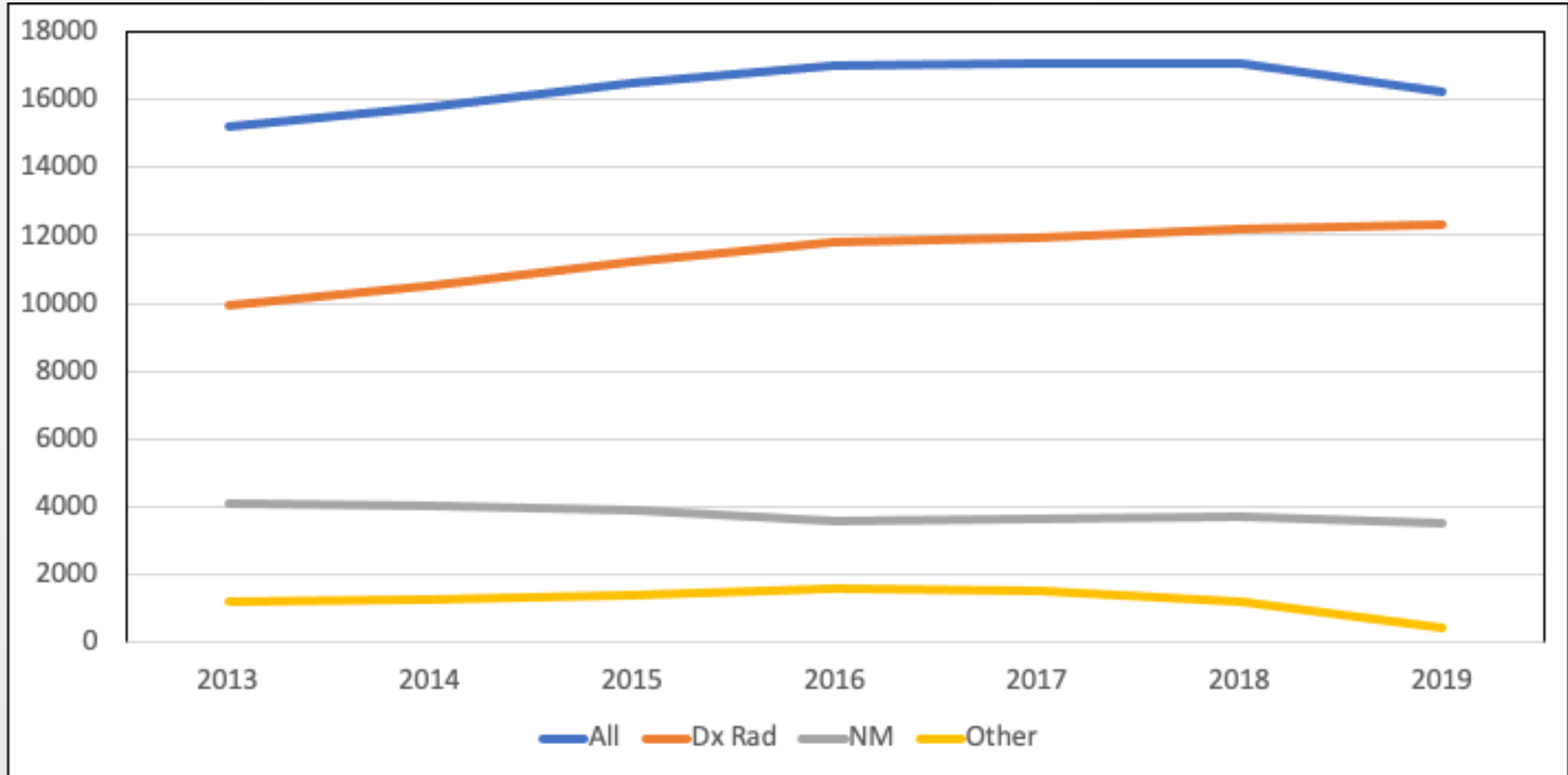


FIGURE 4: Bone SPECT volume by provider type and year (78320).



	2013	2014	2015	2016	2017	2018	2019
All	15220	15771	16515	17023	17094	17095	16211
Dx Rad	9943	10494	11239	11820	11934	12209	12305
NM	4071	4038	3894	3595	3655	3719	3481
Other	1206	1239	1382	1608	1505	1167	425

Discussion

- Clearly the use of bone scintigraphy has seen a consistent decline since 2013.
- Decline further amplified by the COVID-19 pandemic in 2020.
- These findings may reflect change in practice due to competing modalities such as MRI and CT.
- Growth of PET/CT and its utility for the detection of osseous metastases is likely playing a role

References

1. Centers for Medicare & Medicaid Services. (2022, December to 2023, January). Data.CMS.gov. Medicare Physician & Other Practitioners – by Provider and Service. <https://data.cms.gov/provider-summary-by-type-of-service/medicare-physician-other-practitioners/medicare-physician-other-practitioners-by-provider-and-service/data>
2. Centers for Medicare & Medicaid Services. (2022, December to 2023, January). CMS.gov. NHE Fact Sheet. <https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/nhe-fact-sheet>
3. Cubanski J, Neuman T, and Freed M. The Facts on Medicare Spending and Financing. . Kaiser Family Foundation. (2022, December to 2023, January). <https://www.kff.org/medicare/issue-brief/the-facts-on-medicare-spending-and-financing/>