



Orthopaedic Surgery in Palau – A Quantitative Assessment to Support Capacity-Building

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Background

- Palau, an island nation in Micronesia, is a **medically underserved area with no full-time orthopaedic surgeons**
- Orthopaedic diagnoses** in Palau remain among the three most common reasons for **costly off-island medical referral**

Objectives

- The purpose of this study was to **assess the prevalence of orthopaedic conditions** in Palau and **quantify referral spending** to inform interventions to **build orthopaedic surgery capacity**

Methods

- Data was collected from **Belau National Hospital's electronic health record (EHR)** and from the **Palau Medical Referral Committee (MRC) reports**
- All encounters with orthopaedic diagnoses in the EHR between **November 2022 and July 2023** and all orthopaedic referrals between **October 2018 and June 2023** (fiscal year 2019-2023) were included
- Results were reported descriptively

EHR Results

- In eight months of EHR data, there were **1,235 patients** with orthopaedic diagnoses, totaling **1,762 encounters**

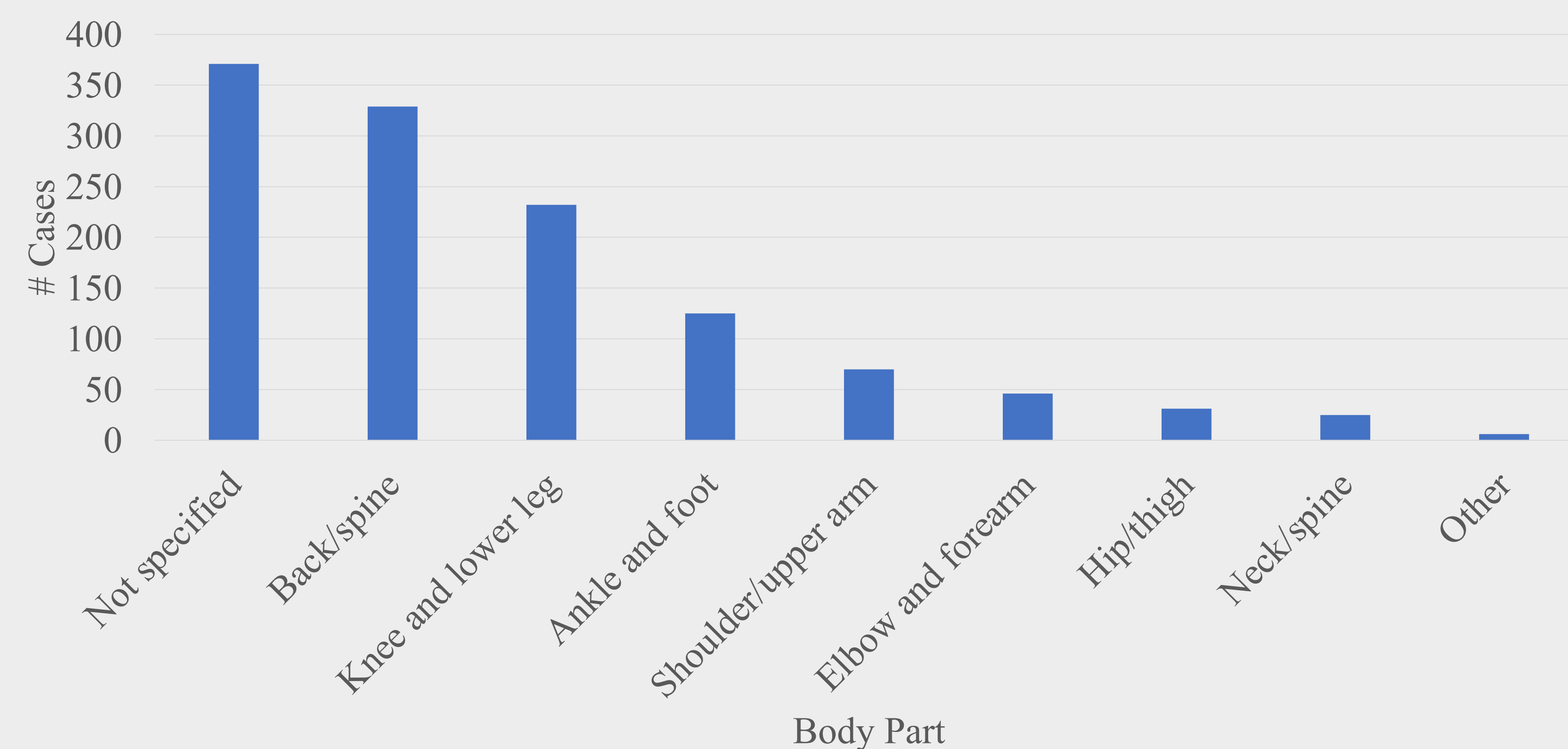


Figure 1: Number of cases by body part.

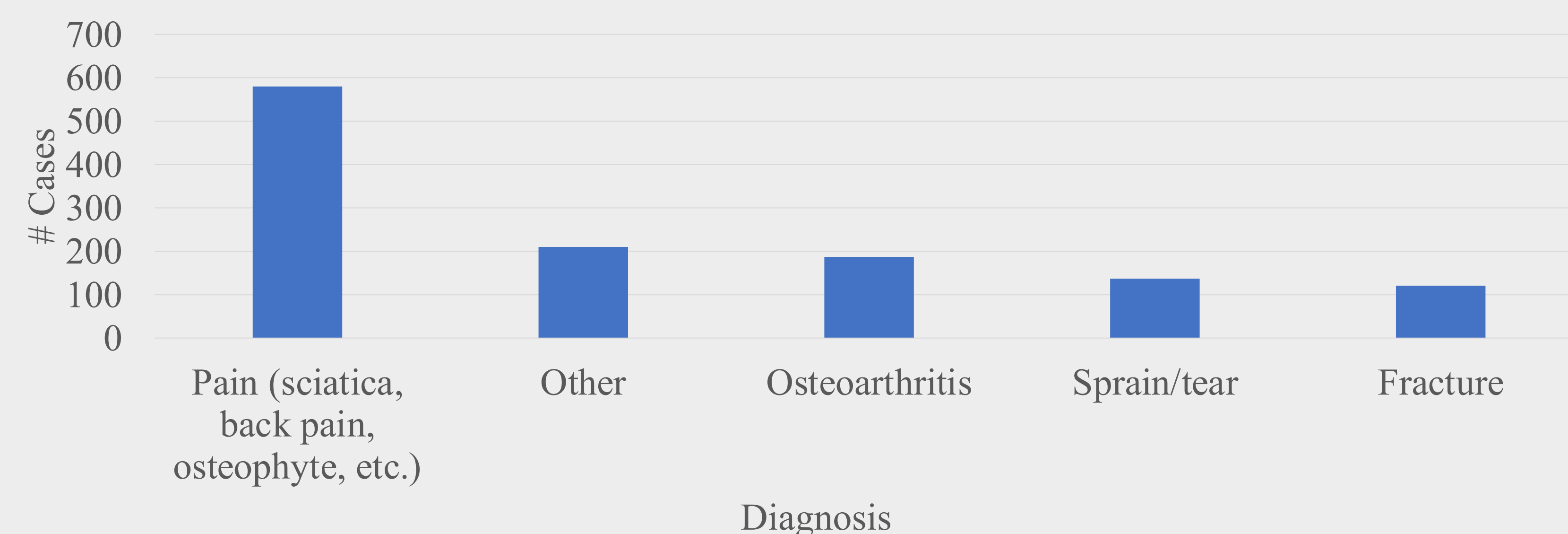


Figure 2: Number of cases by diagnosis.

MRC Results

Year	# Cases	Cost
2019	54	\$ 599,146.00
2020	31	\$ 421,024.20
2021	13	\$ 180,735.60
2022	12	\$ 153,226.90
2023*	30	\$ 191,935.80
Total	140	\$ 1,546,068.50

Table 1: Number of referred cases and total cost per fiscal year. *Only part of the 2023 fiscal year was included (Oct 2022 to July 2023).

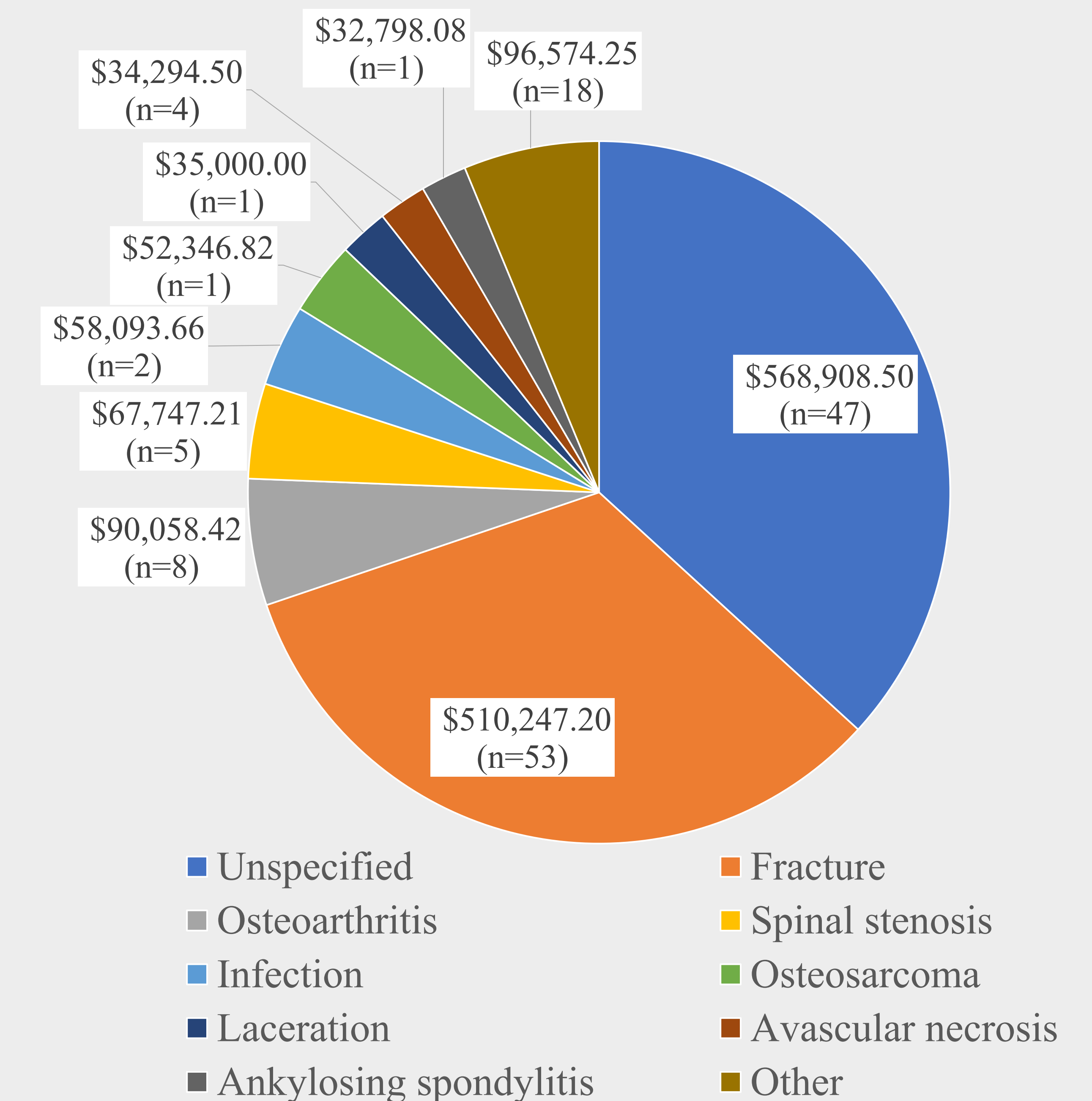


Figure 3: Sum of costs by diagnosis (n=number of cases).

- \$1,546,068.50** was spent on orthopaedic referrals between October 2018 and June 2023
- Fracture** was by far the **most common reason for referral**, with **53 cases** totaling **\$510,247.20**
- Displaced fractures** were the most commonly specified type of fracture (**n=14, \$104,008.20**)
- 22 of 53** fracture cases specified **open vs. closed fracture**
 - There were **6 open fractures** specified, with a mean of **nearly 20 days** between referral approval and departure date
- The **hip, knee, and spine** were the **most common body parts** affected among referral patients
- Nearly all the **unspecified cases** were from the **2019 fiscal year**, while recent records provide more detail
- Annual cost per procedure** has **decreased since 2020** due to changes in referral site utilization

Discussion

- Quality of care** may be **improved for the greatest number of patients** through capacity-building efforts targeting **pain, osteoarthritis, and sprain/tear management**
- Initiatives to **improve fracture management** have the **greatest potential to decrease referral spending**, followed by **osteoarthritis and spinal stenosis management**
- Quantitative review of referrals highlights potential **quality improvement initiatives**, such as efforts to ensure timely **antibiotic administration, stabilization, and incision and drainage** while waiting for off-island transfer

Future Directions

- Further research capturing **current patient management techniques** in Palau may further **inform capacity-building interventions** to **improve quality of care** and **reduce referral spending**
- Continuous assessment** of EHR and MRC data may allow for **assessment of capacity-building initiatives** and **highlight additional opportunities** for capacity-building
- Similar quantitative analyses** may be utilized to inform orthopaedic surgery **capacity-building initiatives** in other **Pacific Islands** or **medically underserved areas**