HOW MUCH DOES IT COST THE HEALTHCARE SYSTEM TO MANAGE A PERSON PRESENTING WITH A MUSCULOSKELETAL DISORDER TO THE EMERGENCY DEPARTMENT?

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MEET THE RESEARCH TEAM

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CONFLICTS OF INTEREST

All members of the research team declare they have no competing interests.

01. **BACKGROUND AND OBJECTIVES**
Why are these costs important?

02. **APPROACH**
Cost study based on RCT data

03. **RESULTS**
How much does it really cost?

04. **CONCLUSION**
Why is this helpful?

MUSCULOSKELETAL DISORDERS (MSKDS)

- Pain
- Limitation in
  - Mobility
  - Dexterity
  - Function
- 1.7 billions people globally

[WHO, 2021]

[Canva]

ECONOMIC BURDEN OF ILLNESS – MSKDS (2010)

- **8.7 billions** $CAD/year
  - 6.7 billions in direct costs
  - 2.0 billions in indirect costs
- 6.7% of all healthcare costs
- **One of the six** most costly health conditions

[Canva]

EMERGENCY DEPARTMENT

“main point of entry [...] and preferred resource when primary care services are not available”

- No affiliation with primary care
- Inability to see a MD in <2 days

[Roberge et al., 2007]

Up to 25% of all emergency department visits

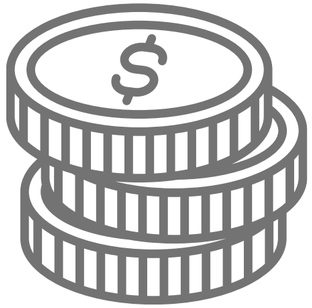
[BMUS, 2013; Bird et al., 2016]

[Canva]

Measure the costs of the care processes administered to patients presenting with a minor MSKD in a Canadian academic ED

OUR OBJECTIVE

APPROACH



Cost study

Randomized clinical trial data

[Gagnon et al., 2021]

#NCT4009369

<u>Interventions</u>

Physician alone

OR

Physiotherapist + Physician

APPROACH

- 78 participants
- ED of the CHU de Québec – Université Laval

Inclusion

- Disorder or pain of musculoskeletal origin (peripheral or vertebral)
- Aged between 18 and 80 years old
- P3, P4, or P5 Triage Category (Canadian Triage and Acuity Scale)
- Capacity to understand French and respond to oral or written questionnaires

TIME-DRIVEN ACTIVITY-BASED COSTING

Costing method where time invested with a patient determines care costs.

Step 1: Map the care pathway of interest

Step 2: Estimate the time required for each process

Step 3: Calculate the unit cost for each 1) resource, 2) consumable, and 3) overhead

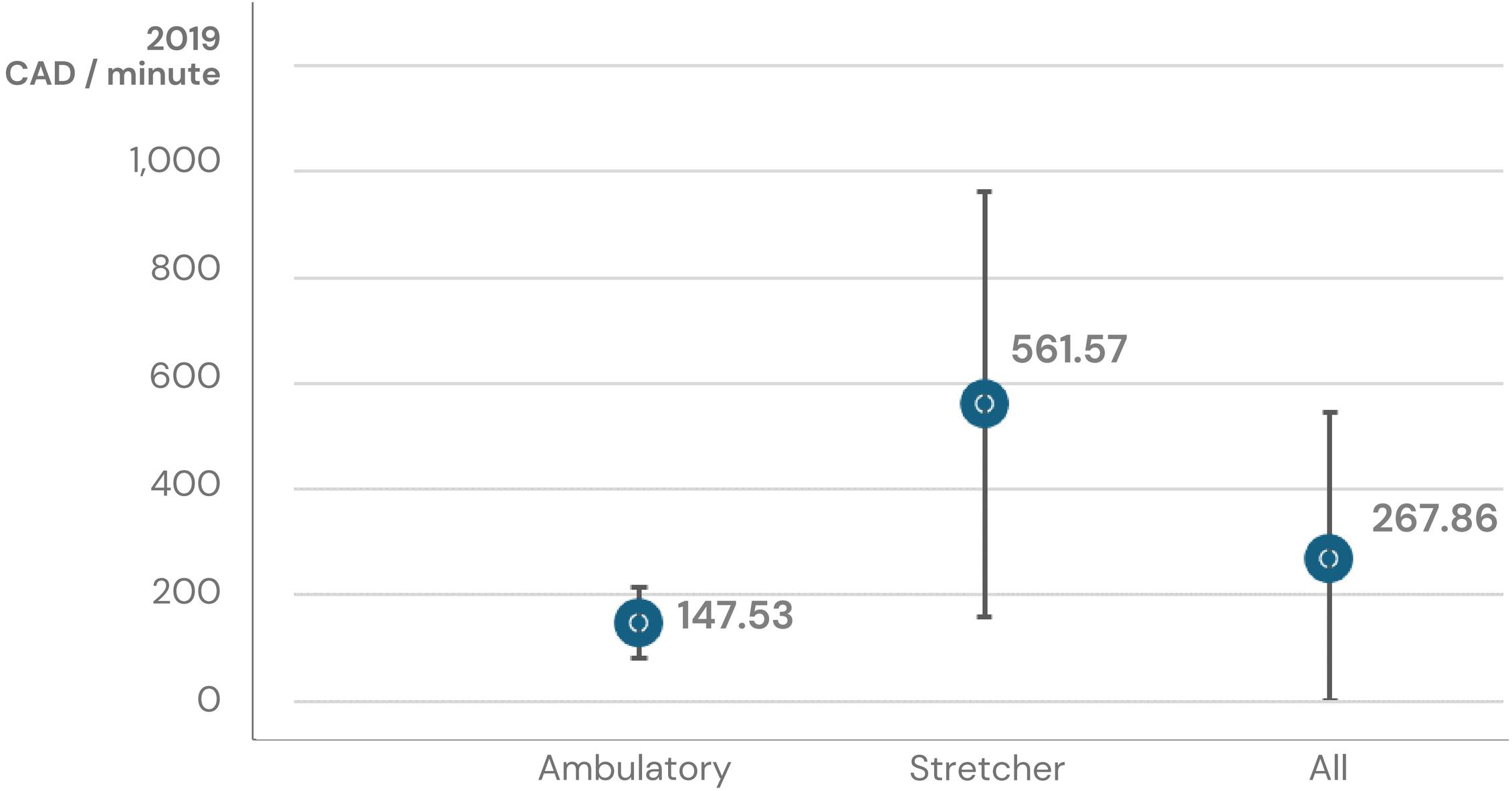
Step 4: Calculate the costs incurred during the patient's care pathway

RESULTS

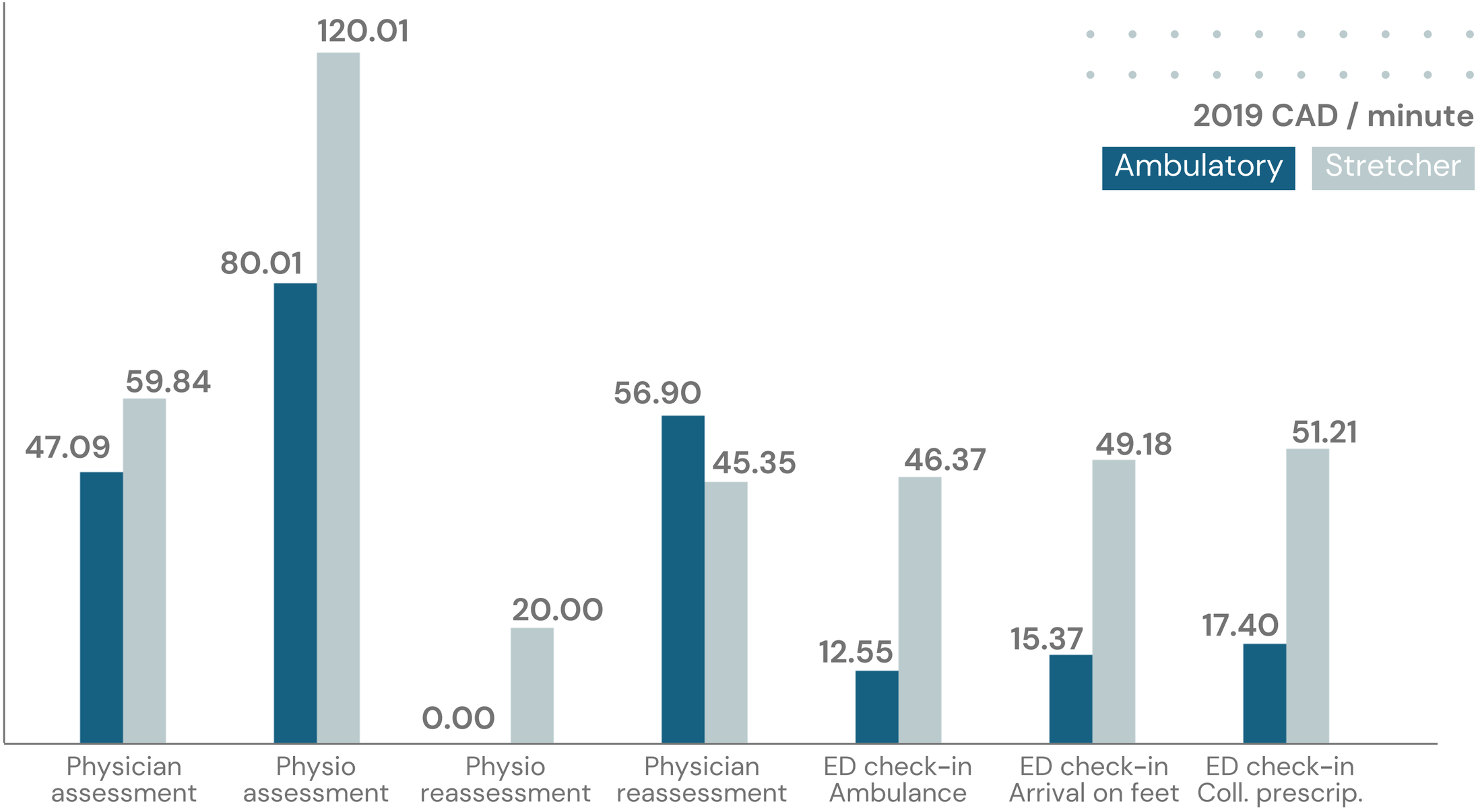
- 165 different ED care processes
- Costs varied considerably by type and profession

Human resources	Equipment	Consumables	Imaging
Overhead	Splinting and walking aids	Care processes	Cost of ED visit

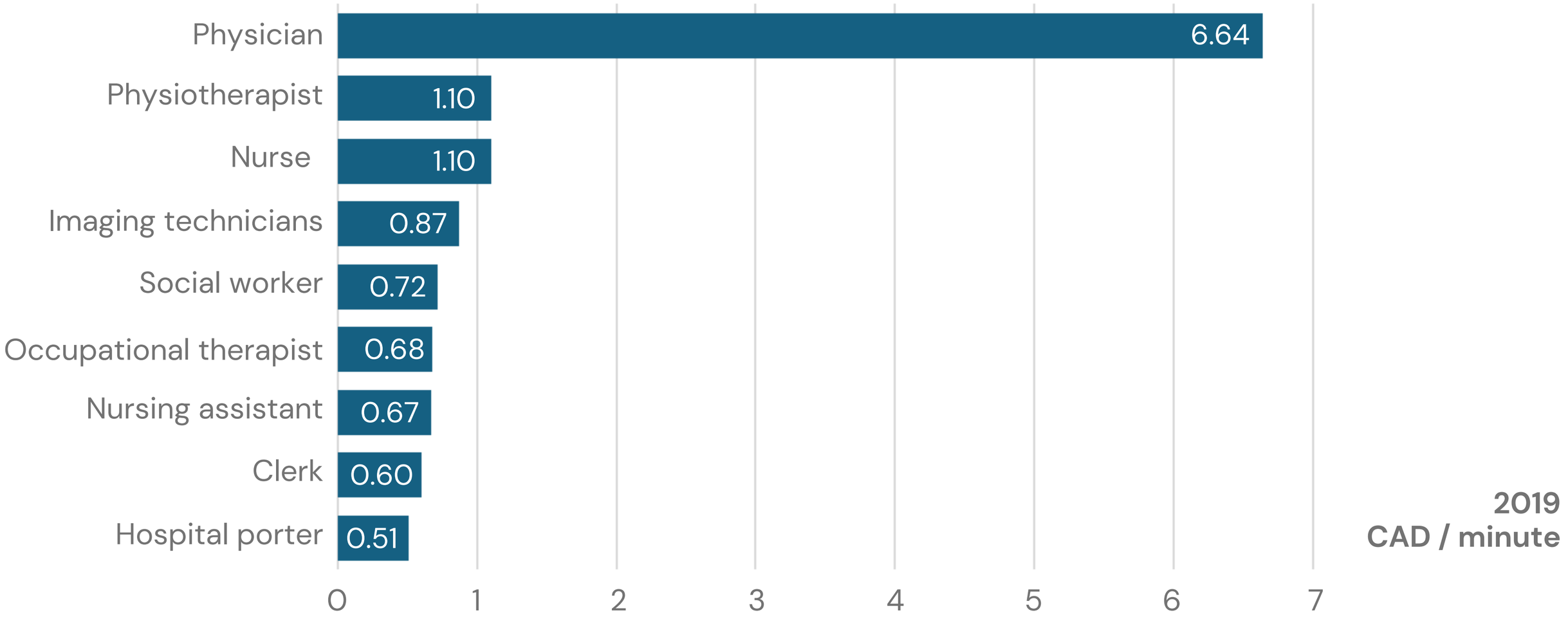
MEAN COST – ED VISIT



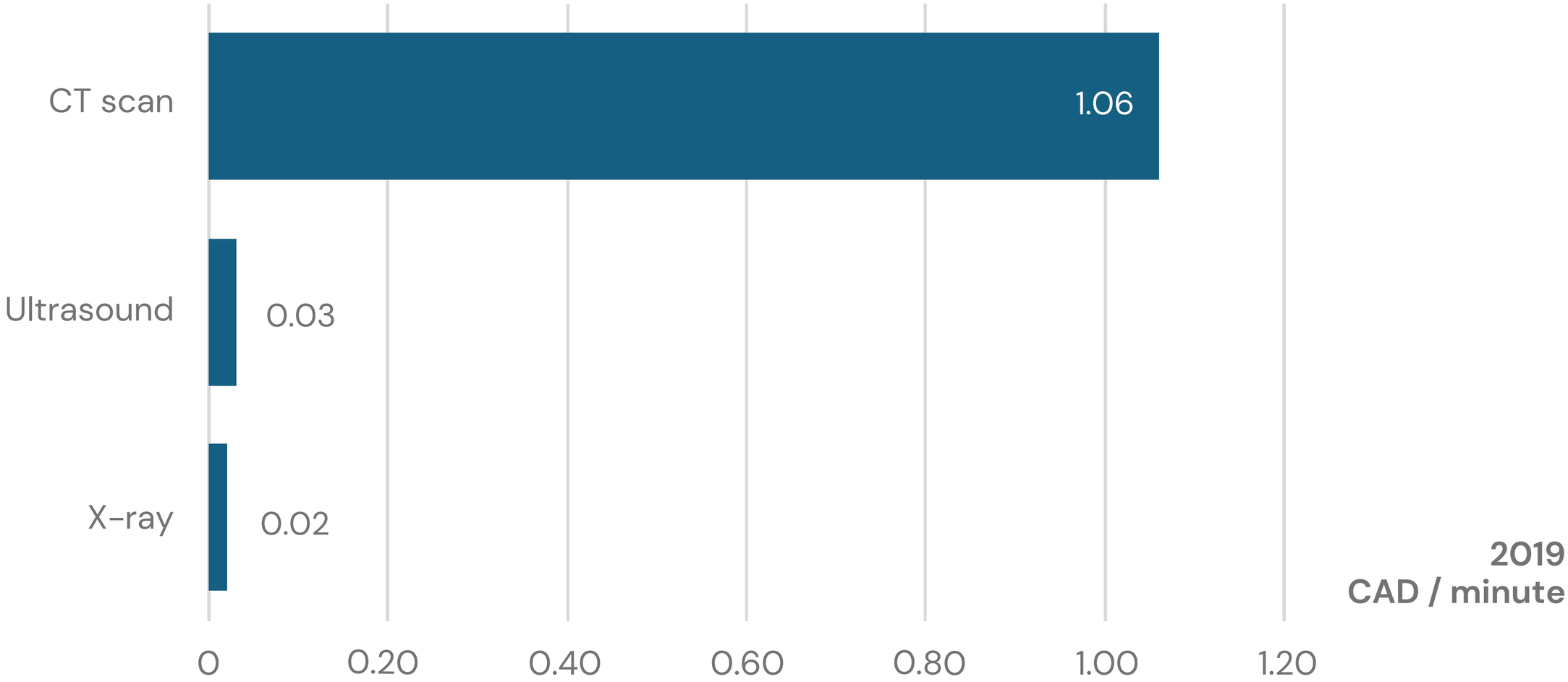
ED ASSESSMENT



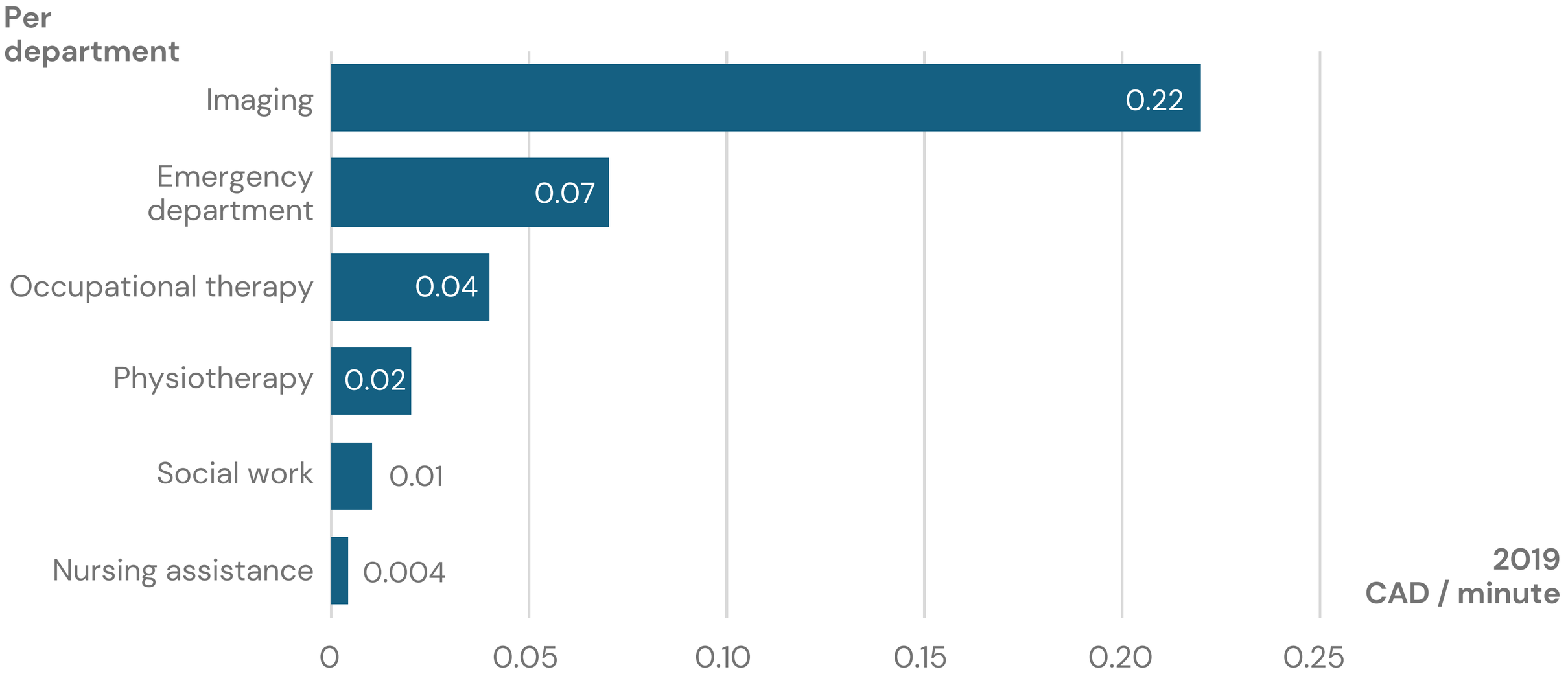
HUMAN RESOURCES



EQUIPMENT

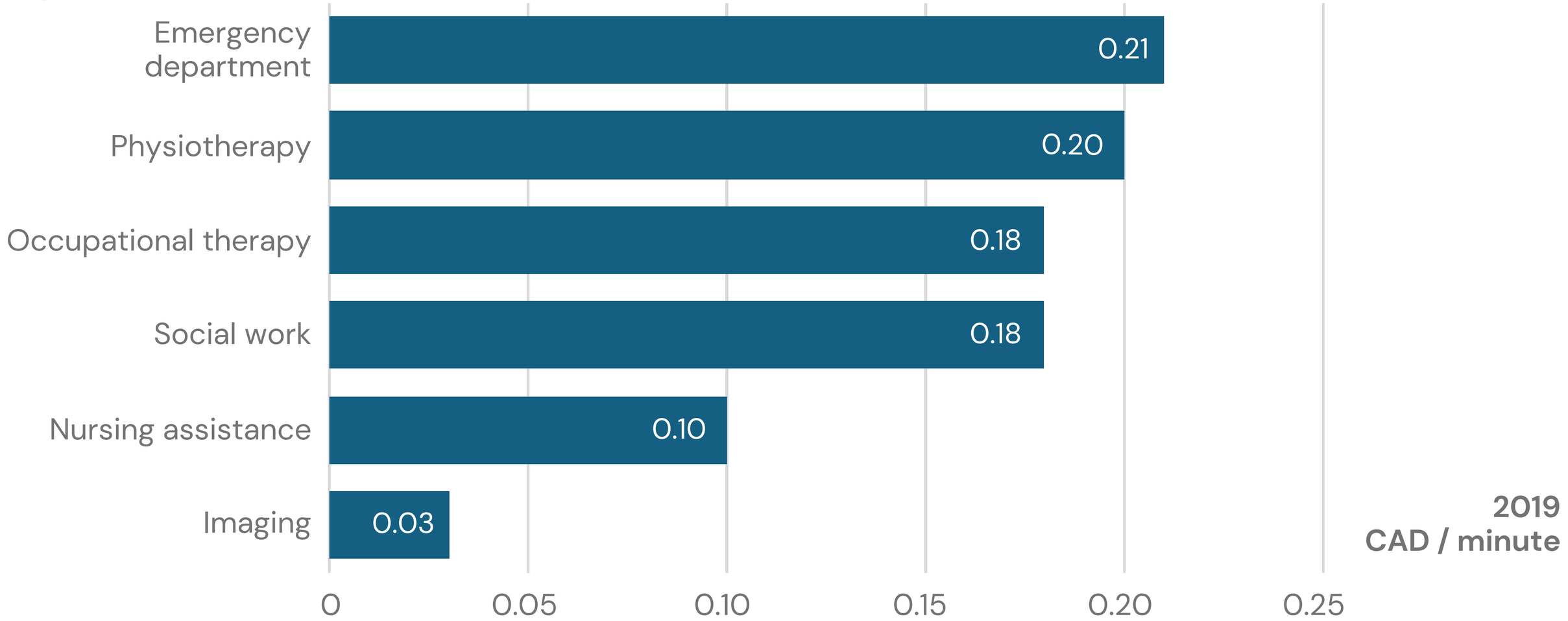

CT scan
1.06
Ultrasound
0.03
X-ray
0.02
0
0.20
0.40
0.60
0.80
1.00
1.20
2019
CAD / minute

CONSUMABLES

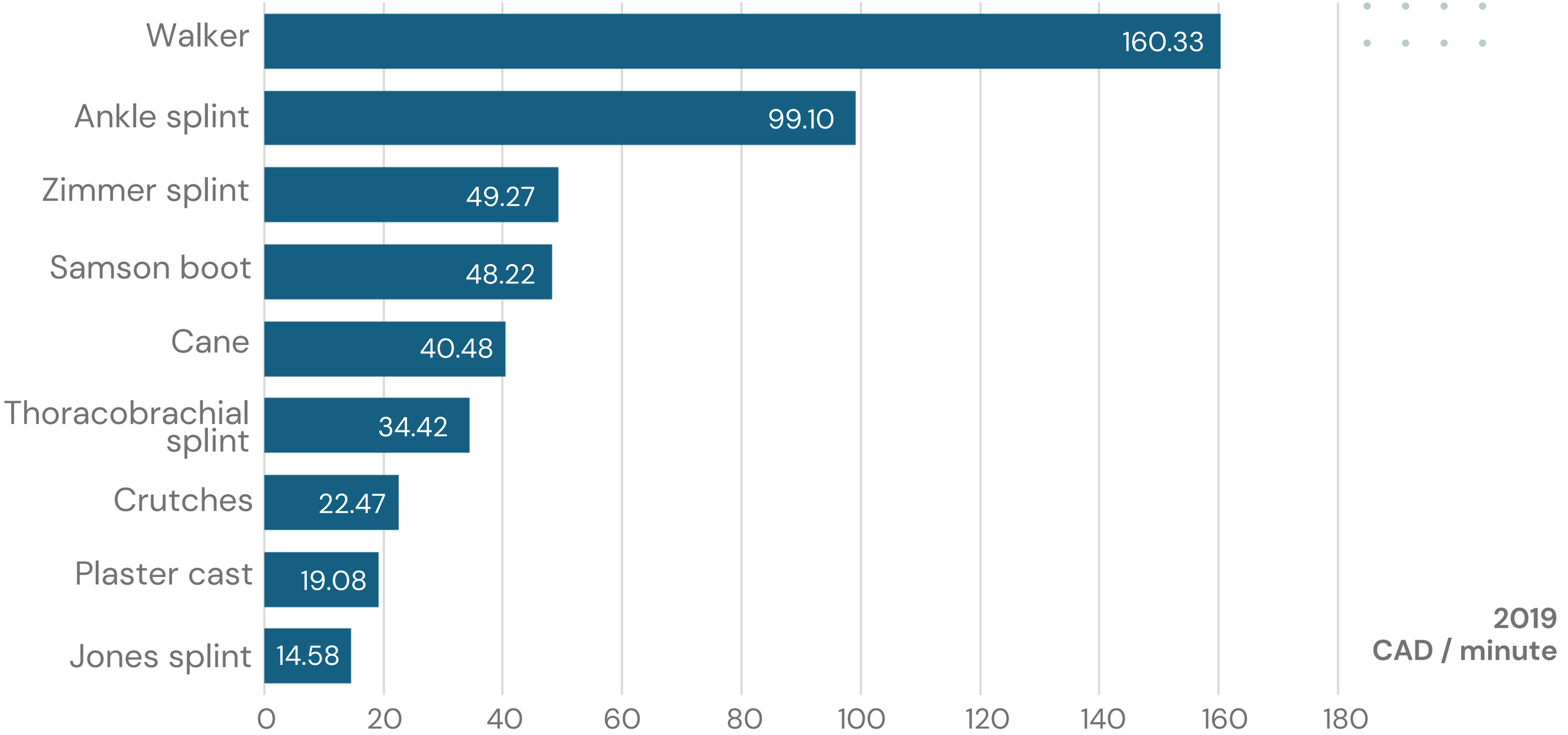


OVERHEAD

Per department



SPLINTING AND WALKIND AIDS



DISCUSSION

High variability in costs

- No standardization of care pathways
- Great variability between individuals

Limits

- Process duration is standardized
- Severity of MSKDs is standardized

Ambulatory vs stretcher

- Same resources
- Differences in the duration of care processes

Strengths

- Costing method adapted by healthcare professionals
- Good external validity

PERSPECTIVES

Better understanding of

- Overall costs of managing MSKDs
- Care pathways / processes used

Value of care

- Every intervention received was included
- Do all interventions add value?

We must consider

- **Effectiveness beyond costs**
- **Overall efficiency**

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- Dr Simon Berthelot
- Study participants
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THANK YOU

Any question?

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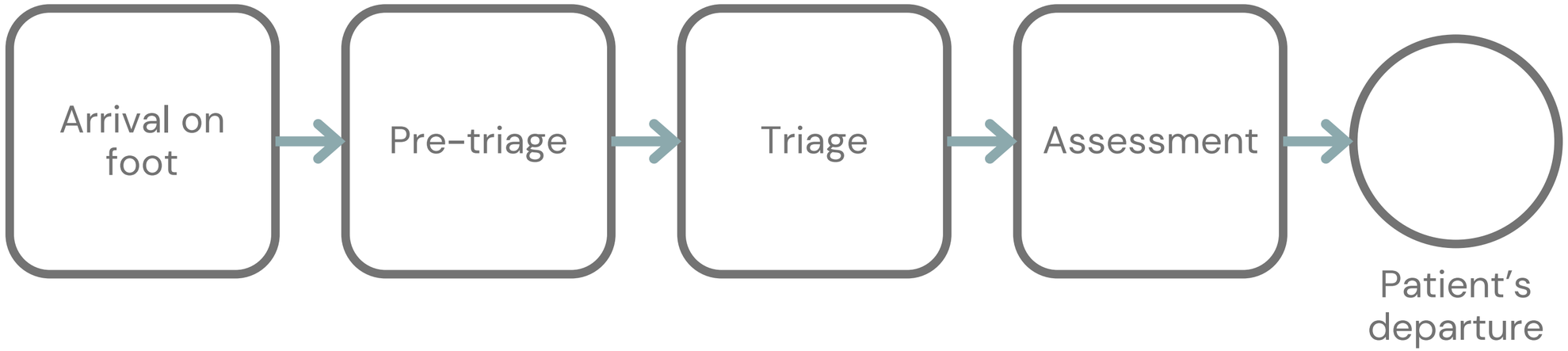
ResearchGate

Linkedin

TIME-DRIVEN ACTIVITY-BASED COSTING

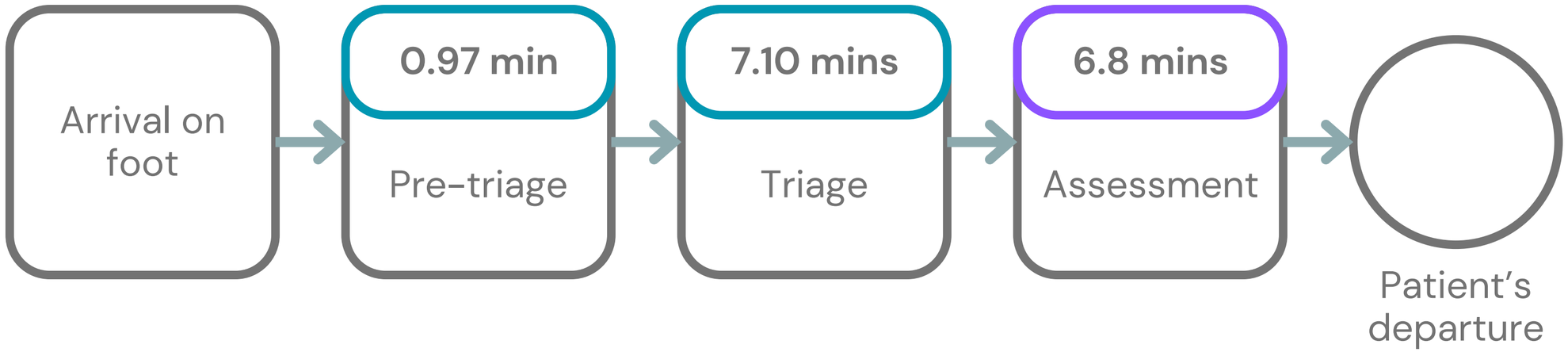
Costing method where time invested with a patient determines care costs.

Step 1: Map the care pathway of interest



TIME-DRIVEN ACTIVITY-BASED COSTING

Step 2: Estimate the time required for each process



Legend:

Nurse

Physician

TIME-DRIVEN ACTIVITY-BASED COSTING

Step 3: Calculate the unit cost for each 1) resource, 2) consumable, and 3) overheads

$$\text{Unit cost nurse} = \frac{\text{Annual nursing expenses}}{\text{Minutes available annually for patient care}} = \$1.10 / \text{min}$$

$$\text{Unit cost consumables} = \frac{\text{Annual expenses on consumables}}{\text{Minutes available annually by all staff for patient care}} = \$0.08 / \text{min}$$

$$\text{Unit cost overheads} = \frac{\text{Emergency department overheads}}{\text{Minutes available annually by all staff for patient care}} = \$0.21 / \text{min}$$

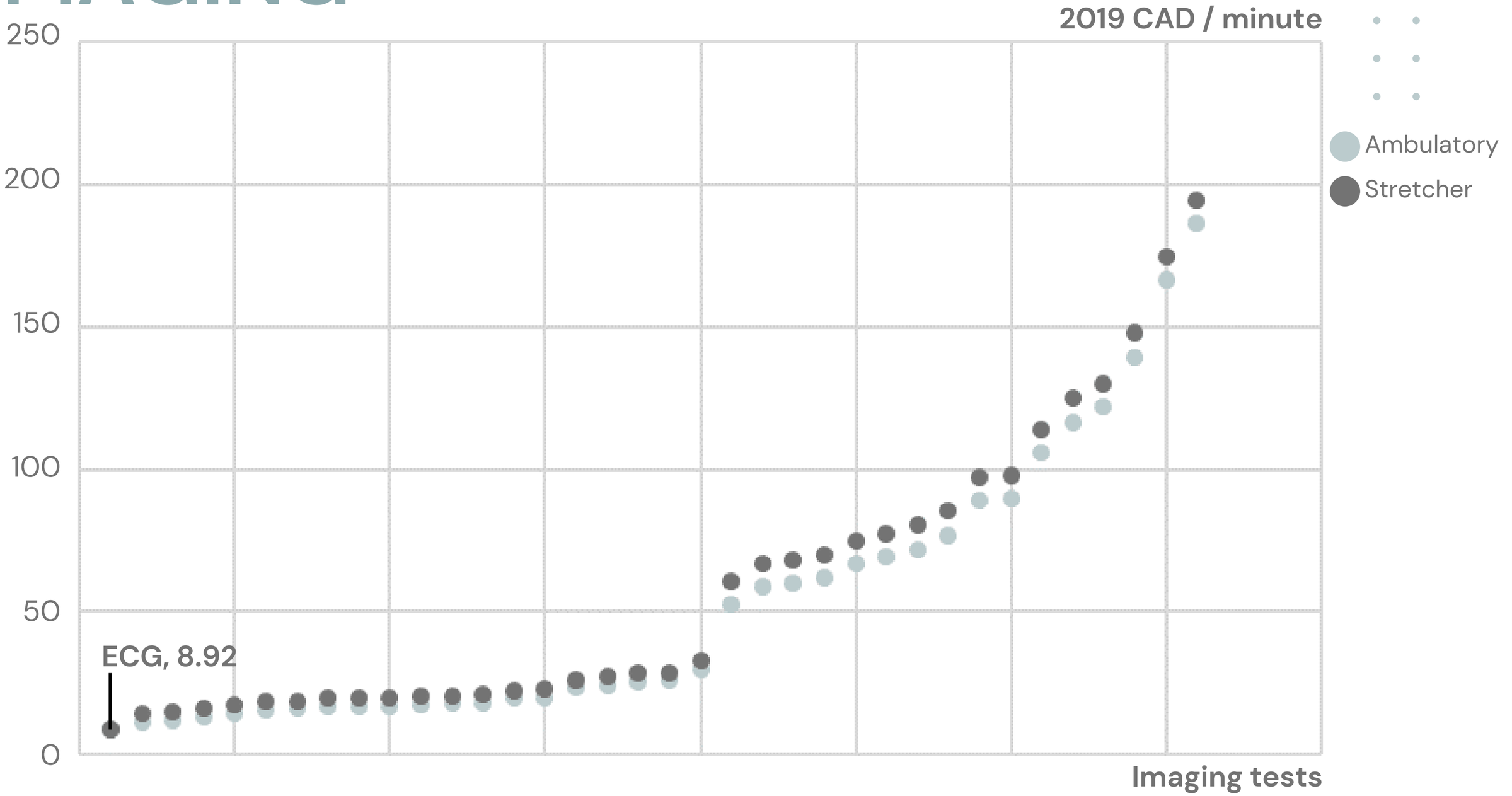
TIME-DRIVEN ACTIVITY-BASED COSTING

Step 4: Calculate the costs incurred during the patient's care pathway

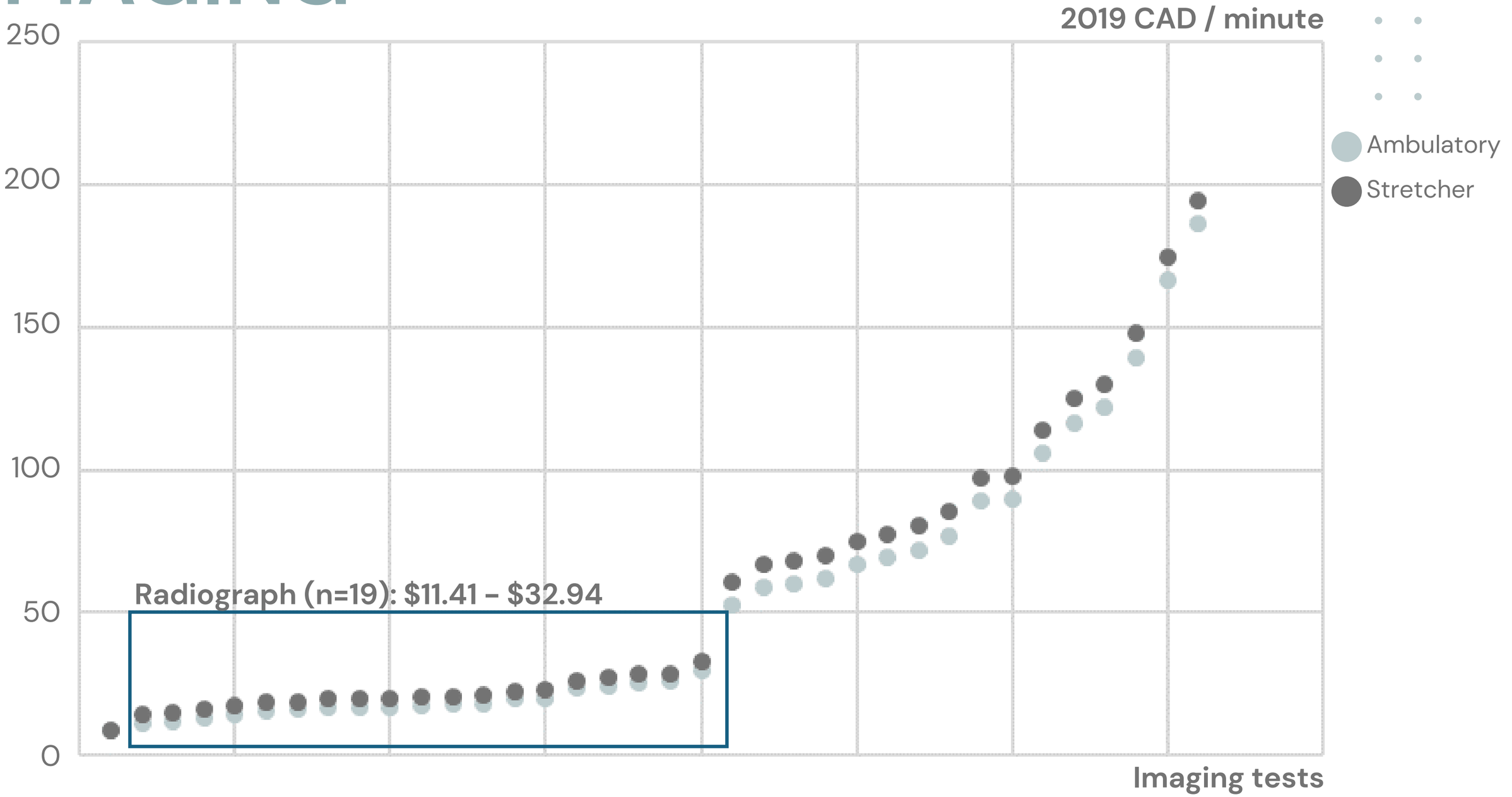
- Composite unit cost of the nurse = $1.10 + $0.08 + $0.21 = **$1.38 / minute**
- Estimated time required for triage = **7.1 minutes**

Cost of triaging a MSKD patient in the ED = $1.38 x 7.1 minutes = **CAD $9.82**

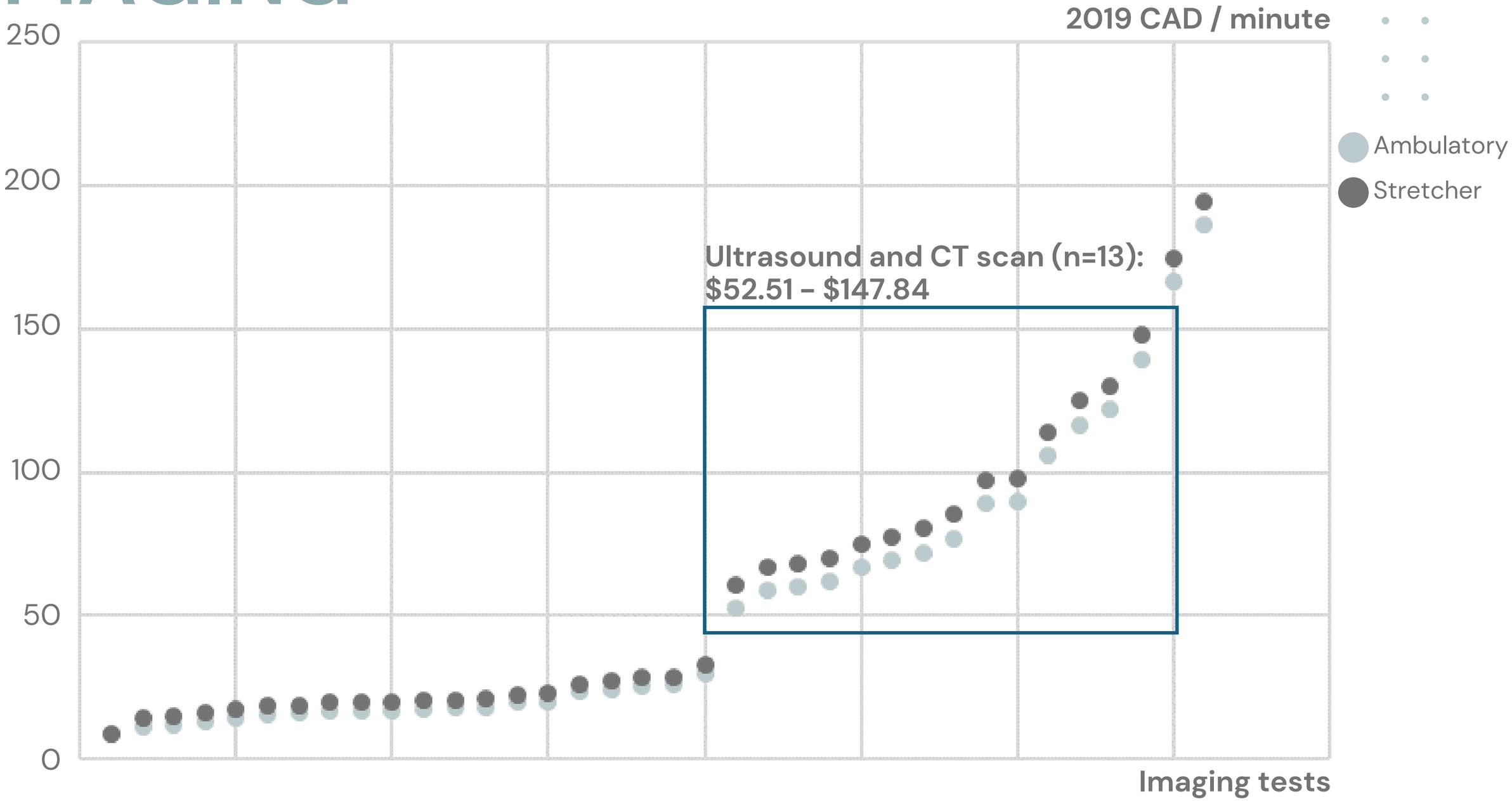
IMAGING


2019 CAD / minute
250
200
150
100
50
0
ECG, 8.92
Imaging tests
Ambulatory
Stretcher

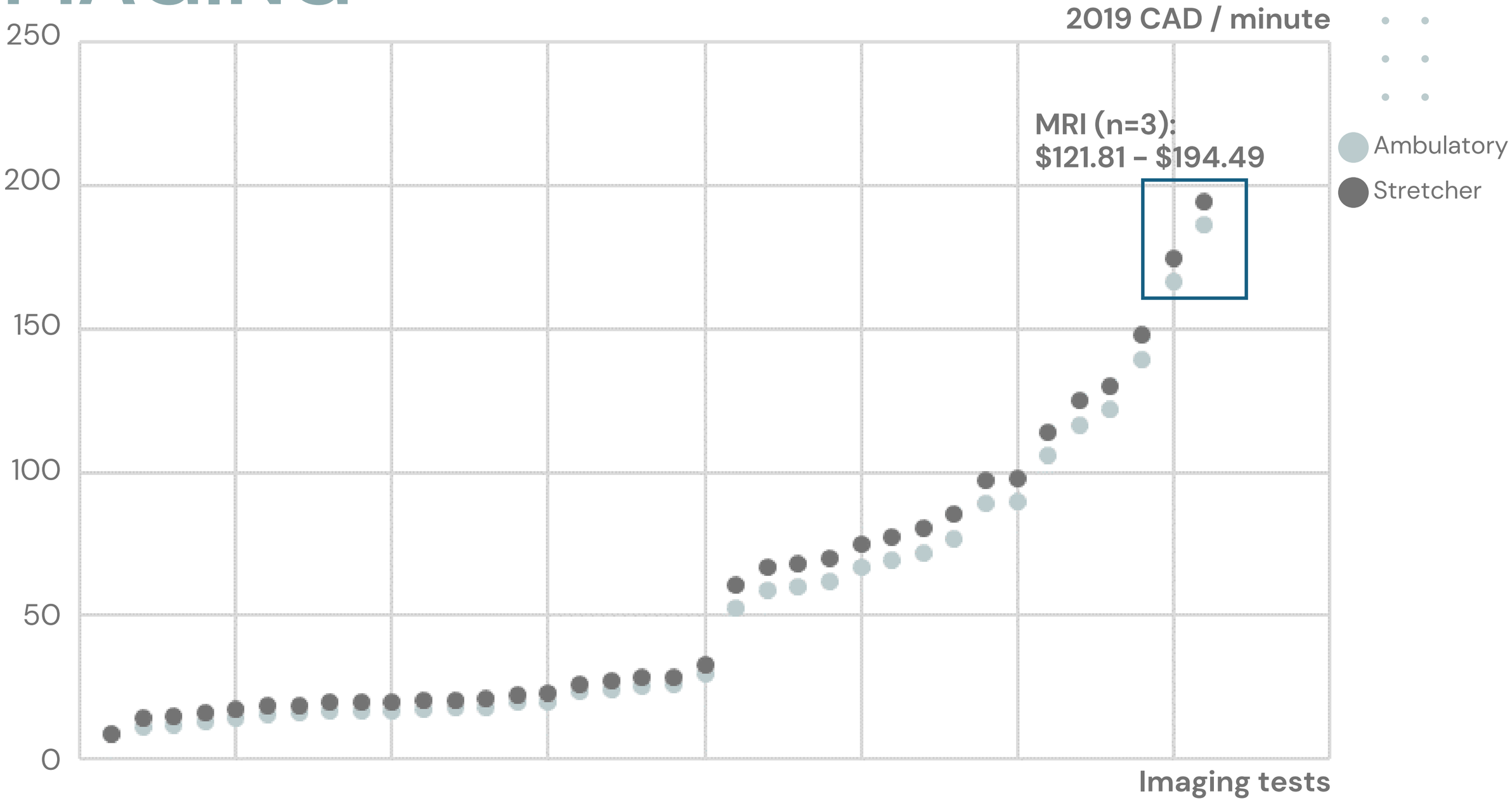
IMAGING


2019 CAD / minute
250
200
150
100
50
0
Ambulatory
Stretcher
Radiograph (n=19): $11.41 – $32.94
Imaging tests

IMAGING


2019 CAD / minute
250
200
150
100
50
0
Ultrasound and CT scan (n=13):
$52.51 – $147.84
Ambulatory
Stretcher
Imaging tests

IMAGING


2019 CAD / minute
250
200
150
100
50
0
MRI (n=3):
$121.81 – $194.49
Ambulatory
Stretcher
Imaging tests