

Automated Injury Coding

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www.bls.gov

Rise of the Machine

Ken Jennings	Watson	Brad Rutter
\$24,000	\$77,147	\$21,600

Survey of Occupational Injuries and Illnesses (SOII)

- 300,000 cases per year
- Text narratives for:
 - ▶ Occupation
 - ▶ Injury/Illness Circumstances

Example Case

Job title: janitor

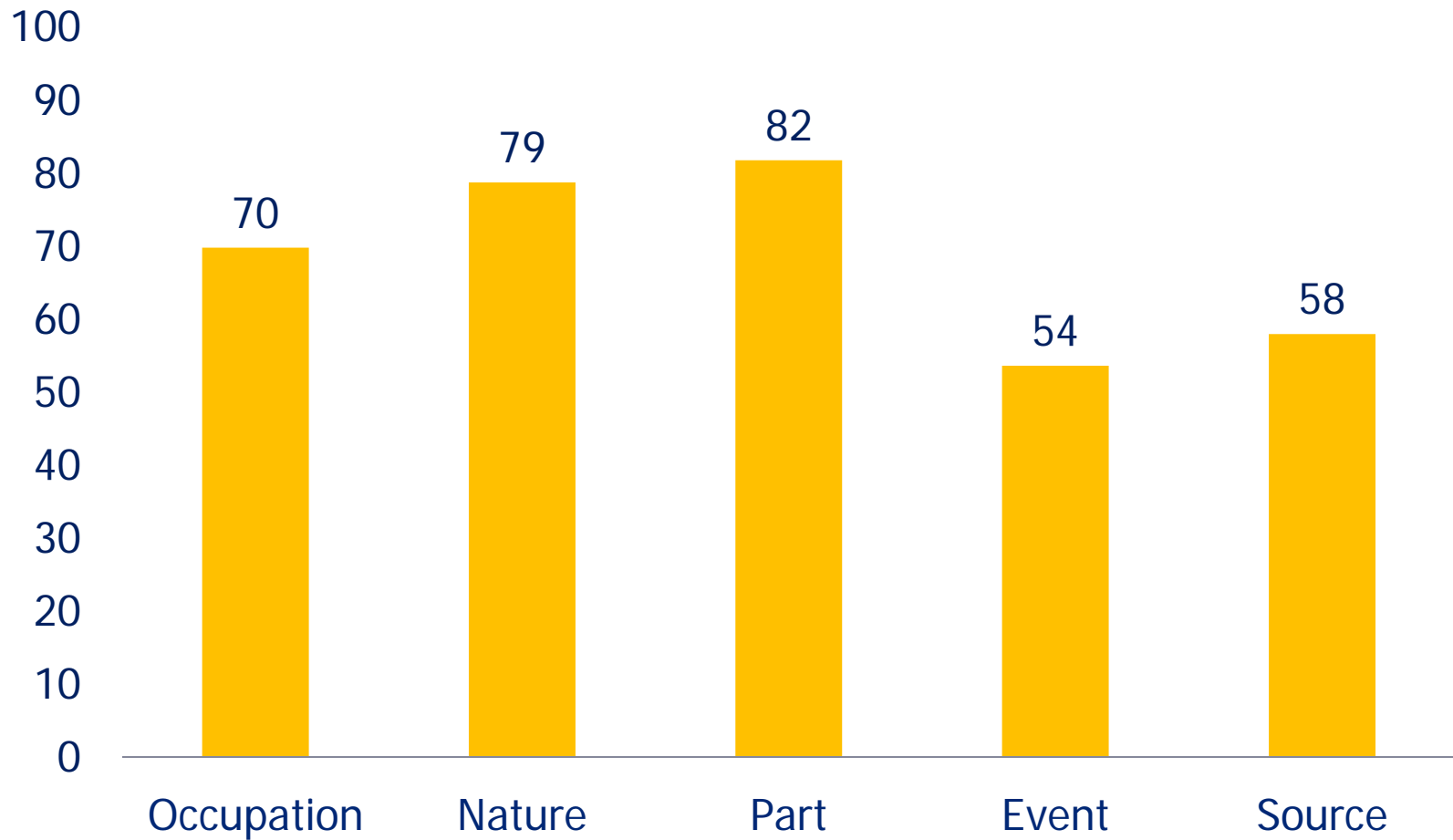
What was the employee doing just before the incident?
mopping floor in gym

What happened?
slipped on wet floor and fell

What part of the body was affected?
fractured right arm

What object directly harmed the employee?
wet floor

Average Agreement



Artificial Intelligence

- 2 Approaches
 - ▶ Rules
 - ▶ Machine learning

Machine Learning

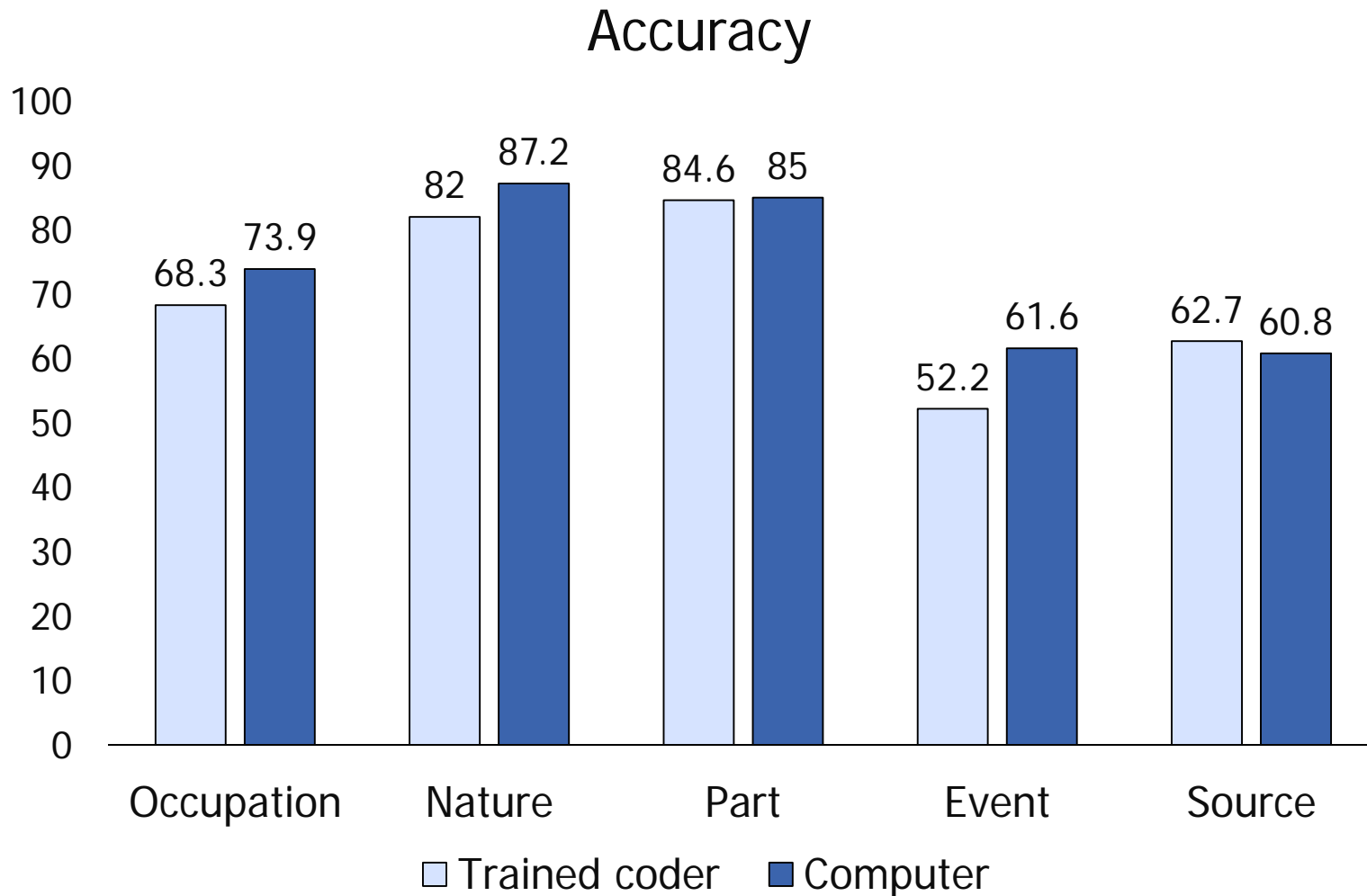
- 3 Steps

1. Select feature representation
2. Select model
3. Fit model to data

Autocode

- Job title: teacher assistant
- Plug into model
 - ▶ $P(\text{code}=A) = .01$
 - ▶ $P(\text{code}=B) = .14$
 - ▶ $P(\text{code}=C) = .85 \leftarrow$

People & Computer



Assisted Review

- Identify suspicious codes
- Focus review

Autocode the Easy Stuff

- Census does this already
- At ~99% accuracy we can autocode:
 - ▶ Occupation (20%)
 - ▶ Nature (30%)
 - ▶ Part (15%)

Suggested Codes

Occupation

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suggested codes
49-3023 Automotive Service Technicians
49-3021 Automotive body and Related Repairers
49-9099 Installation, Maintenance, and Repair

all codes
11-1011 Chief Executives
11-1021 General and Operations Managers
11-1031 Legislators
11-2011 Auditing and Promotions Managers

Contact Information

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