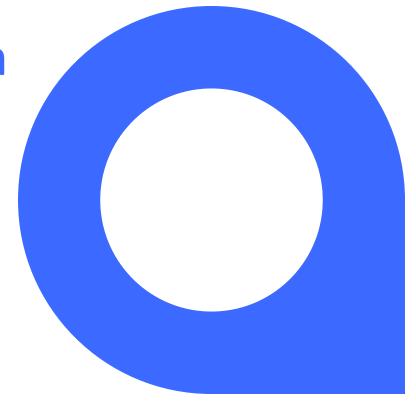


Actuaries Institute.

Driving Value-Based Care in Private Health Insurance

Insight Actuaries
June 2025



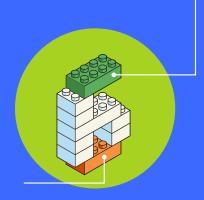


Why should "Value" be a strategic objective

Outcomes refer to measuring the clinically relevant and important factors for a procedure.

They are defined as:

"Measuring the health results that matter for a patient's condition, over the care cycle."



Costs are related to the care cycle and linked to the patient's initial interaction and subsequent recovery journey.

This includes the "total costs of care for a patient's condition over the care cycle."

PRO



Patient-Reported Outcomes

Information on the patient, told by the patient without interpretation

PROM



Patient-Reported Outcomes Measures

Validated instrument or tool used to collect data from the patient

PRO-PM

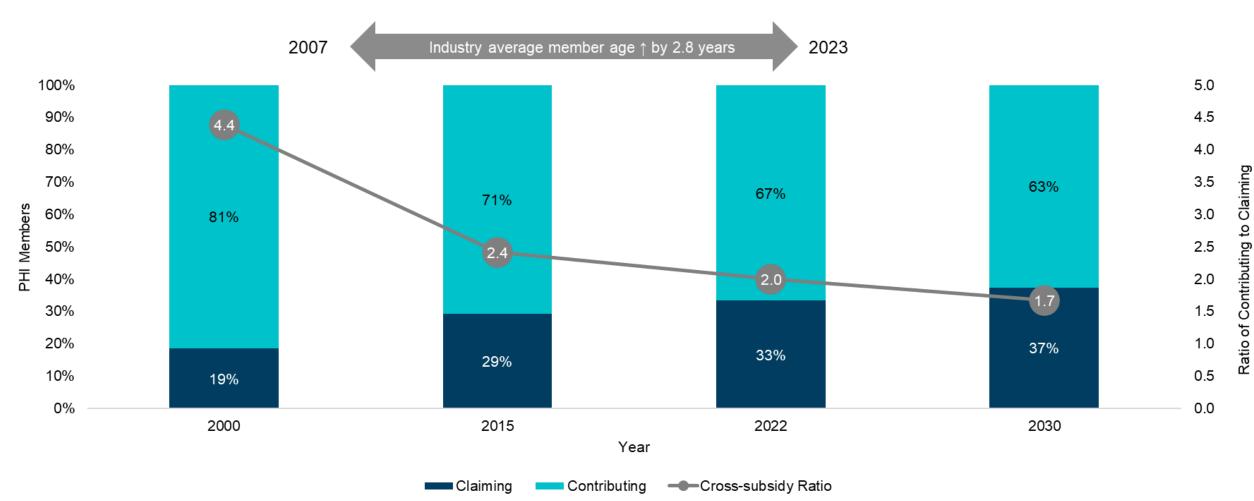


Patient-Reported
Outcomes

Aggregating information from patients into a reliable way to quantify performance

"Build a market where healthcare service providers can trade on the value of the services they offer." M. Porter

Why should "Value" be a strategic objective



Source: Insight & https://www.phinsights.org/

GREAT HEALTHCARE



Good doctors

Providing good and effective healthcare to their patients.



Thriving hospitals

Investing and delivering quality and cutting-edge health services.

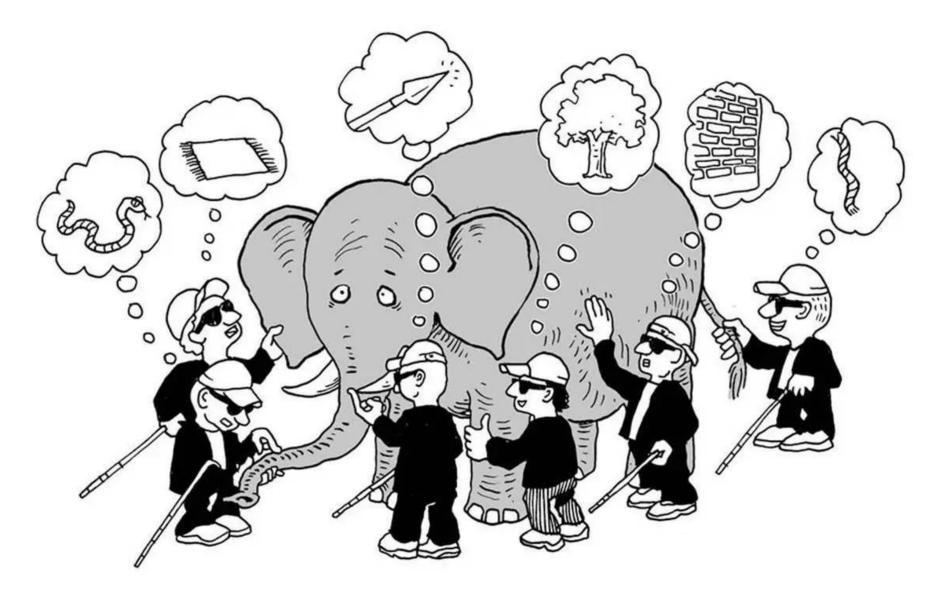


Effective funders

Supporting access, development and measurement

is a derived good from a healthy system with engaged and represented patients

Why do we struggle to define it?







Clinically-defined measurement tool

Automated and guided patient interactions



Advanced AI tools and Analytical Techniques:

Reak time access to Voice of the Patient data portal



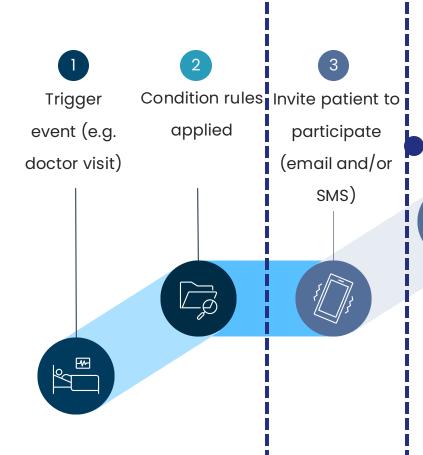
ICHOM
(nowledge Parts

Knowledge Partner

Integration of benchmarking and performance measures.

Multidimensional data analysis

Interaction Pathway











Results, Comparison and Benchmarking

Results

captured

The Role of VoP







FOR HEALTH FUNDS An independent framework for patient feedback, making it possible to independently measure the value of healthcare services.



FOR HOSPITALS An important resource to help strengthen transparency, foster development, improve | systems and patient centricity.



FOR PATIENTS By collecting the most important perspectives, the platform helps to ensure patients are at the centre of the care journey.

All contributing to a constantly evolving healthcare system















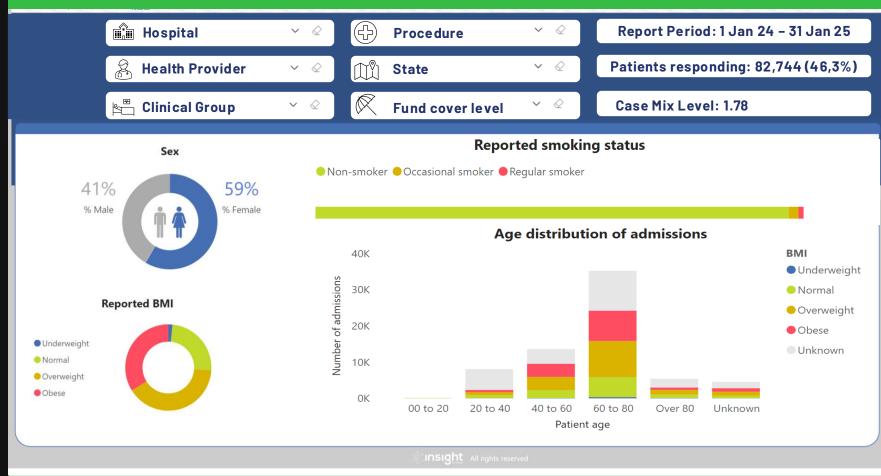


Latrobe





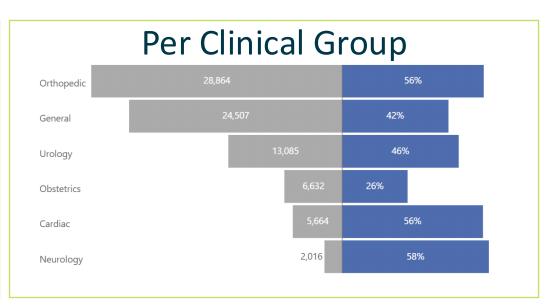
VOICE OF THE PATIENT PATIENT OVERVIEW

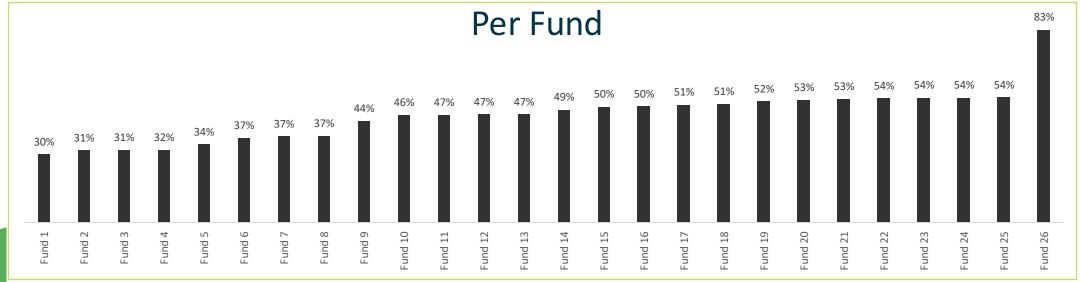


Responses Rates

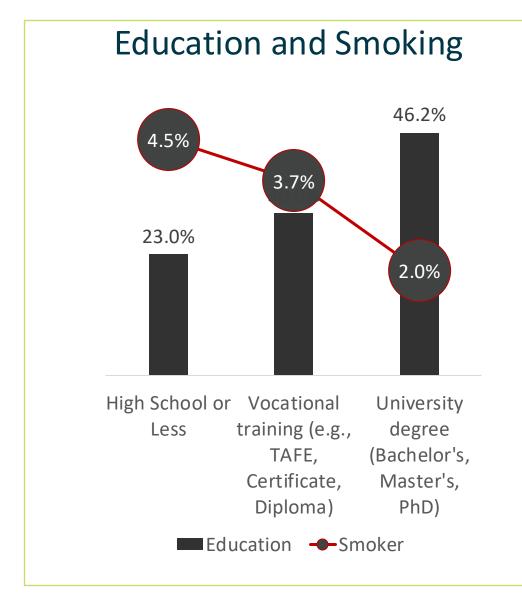
Overall

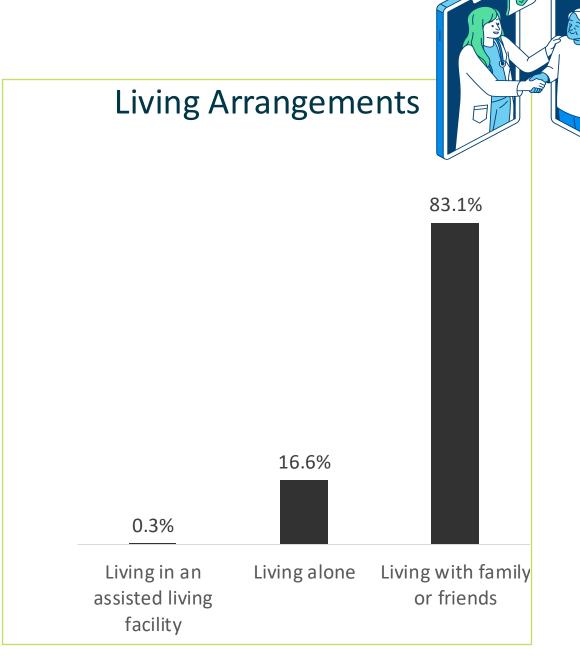
46.1%





Social Determinants







Patient Reported Experience Measures



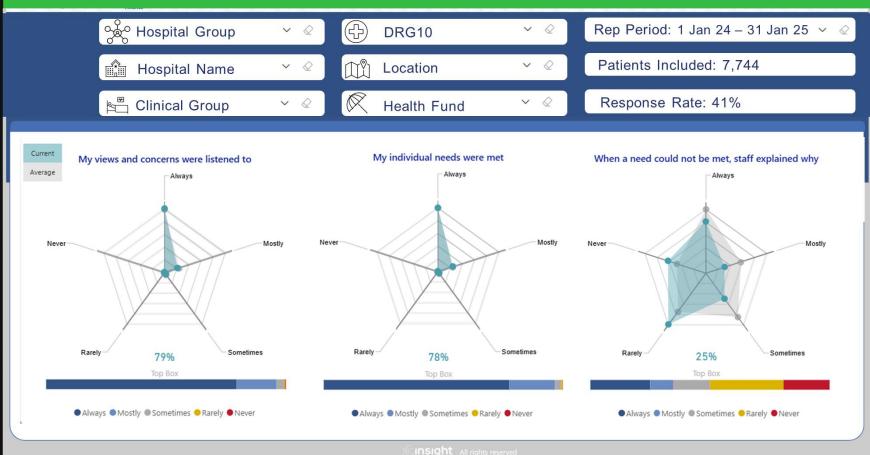
PREMS reflect what your members have said about the care they received from their perspective. They reflect the experiences that patients have while they are in a hospital that matter clinically. PREMS impact the overall perceived value of the care and have also been linked to long-term health outcomes and risk factors like readmissions, recovery, and revisions.





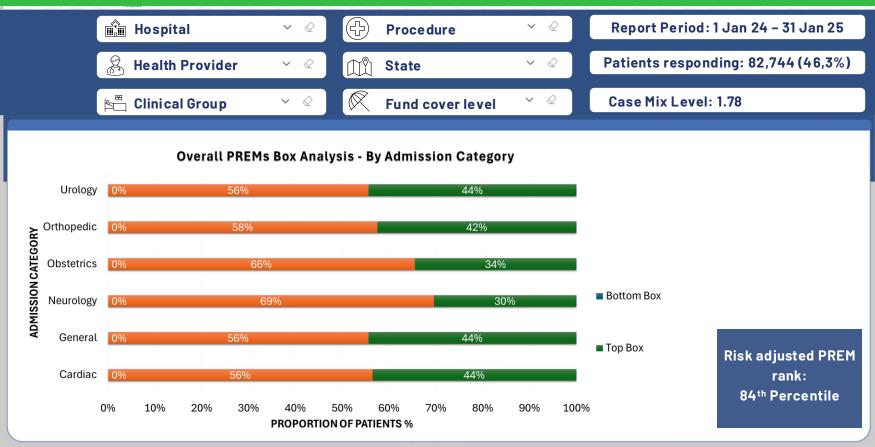
VOICE OF THE PATIENT PATIENT OVERVIEW







VOICE OF THE PATIENT PREMS



insight All rights reserved



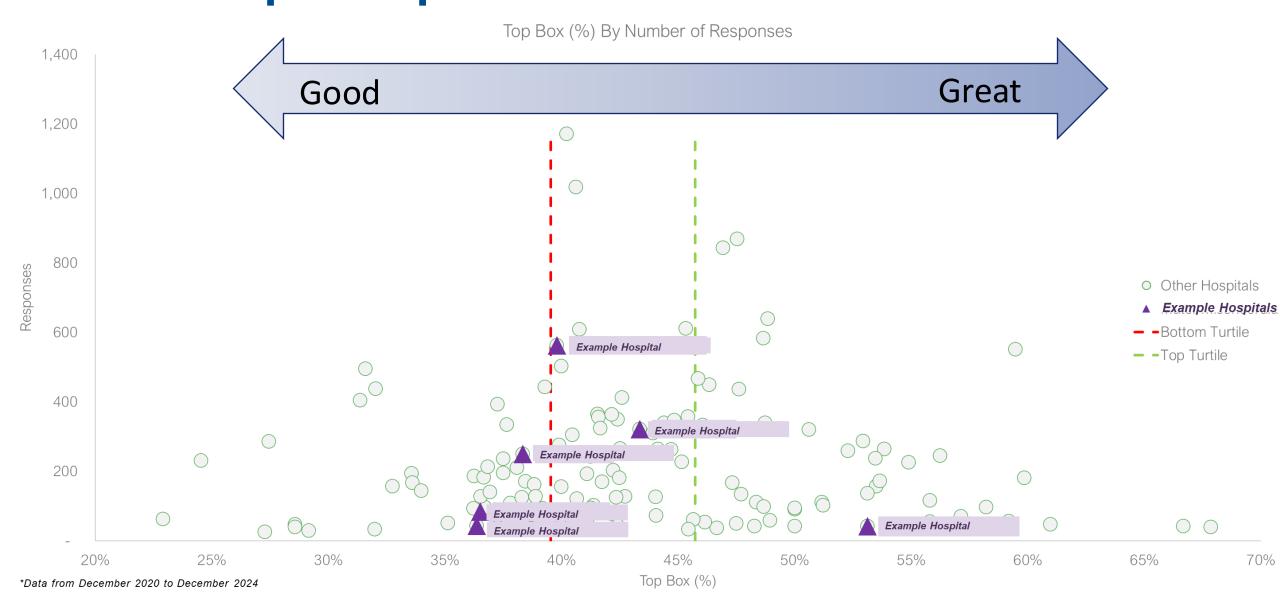
VOICE OF THE PATIENT PREMS



Insight All rights reserved

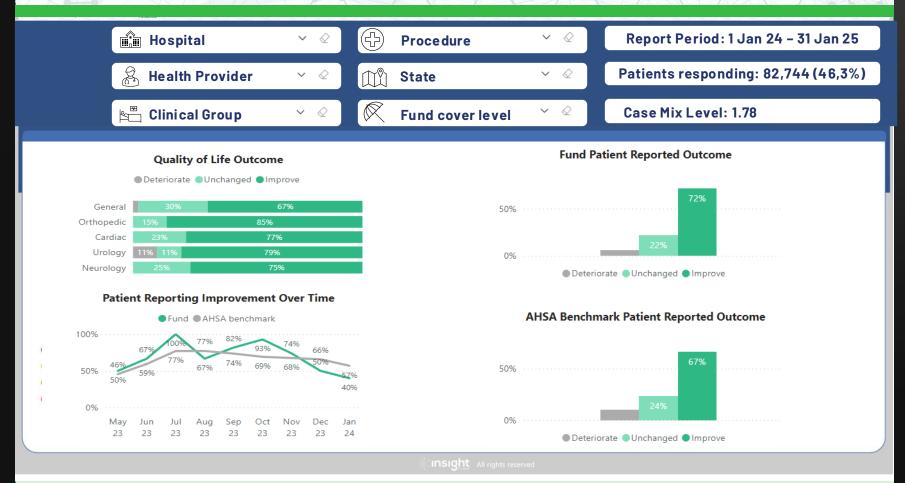
Peer Group Comparison- ORTHOPAEDICS







VOICE OF THE PATIENT PROMS





VOICE OF THE PATIENT PROMS

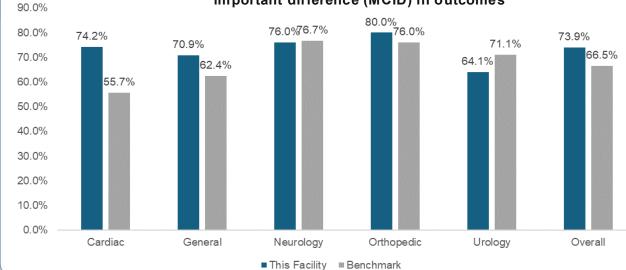




VOICE OF THE PATIENT PROMS



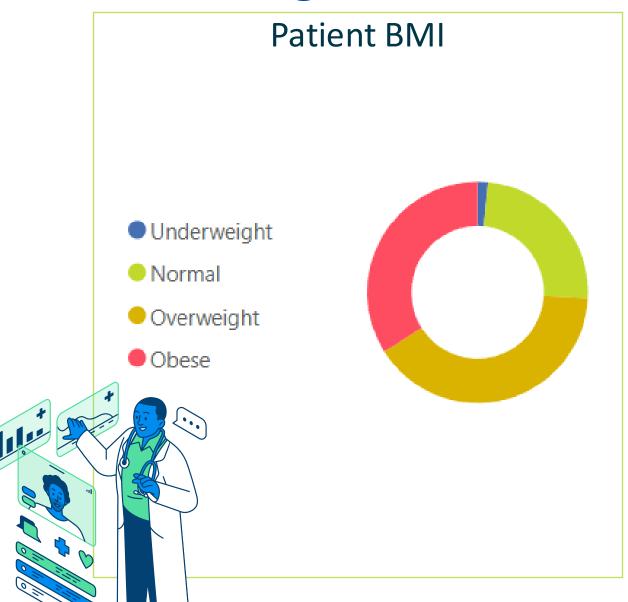
The proportion of patients achieving an improvement comparable to a minimum clinically important difference (MCID) in outcomes

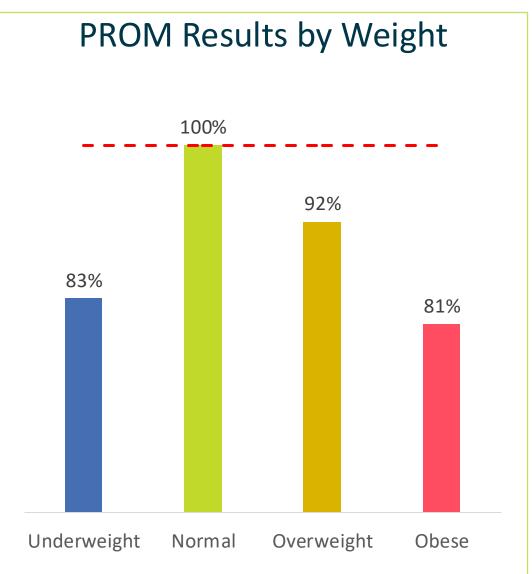


The Minimal Clinically
Important Difference (MCID) is
the smallest change in a
treatment outcome that a
patient would identify as
important. It represents the
threshold at which an
intervention is perceived to
have a meaningful impact on
a patient's health, symptoms,
or quality of life.

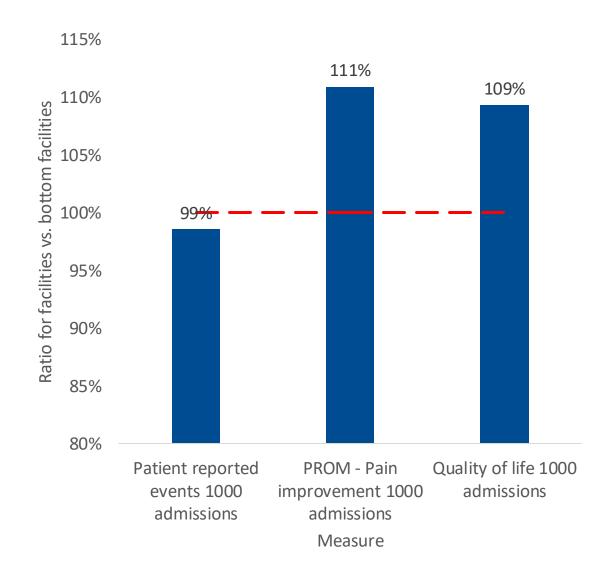
Insight All rights reserved

Patient Weight and PROMS





Knee Replacements Outcomes vs PREM Scores



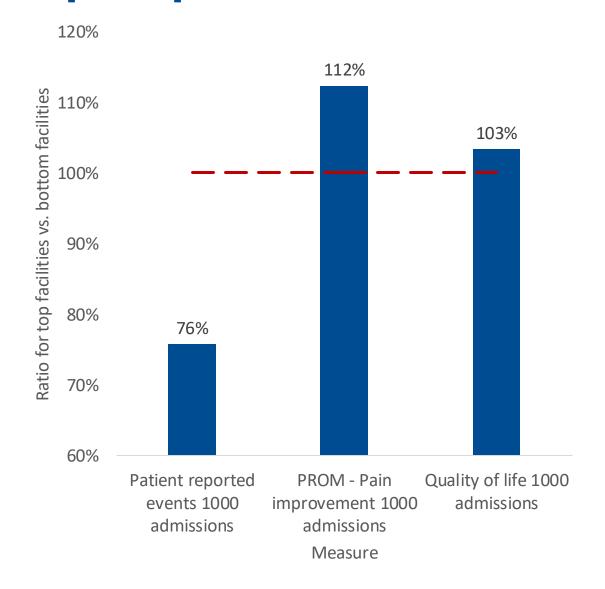
The results for knee replacements without major complexity, reflected as ratios of the top 10% hospitals to the lower scoring hospitals, demonstrate the importance of precise measurement in patient care.

The top-performing hospitals show a nearly equal patient-reported event ratio of 99%, indicating a similar rate of adverse events as the lower scoring hospitals.

For pain improvement, the top hospitals outperform the lower scoring hospitals with a 111% ratio

The quality-of-life improvements also show a notable difference, with the top performing hospitals achieving a 109% ratio compared to the lower scoring hospitals

Hip Replacements Outcomes vs PREM Scores



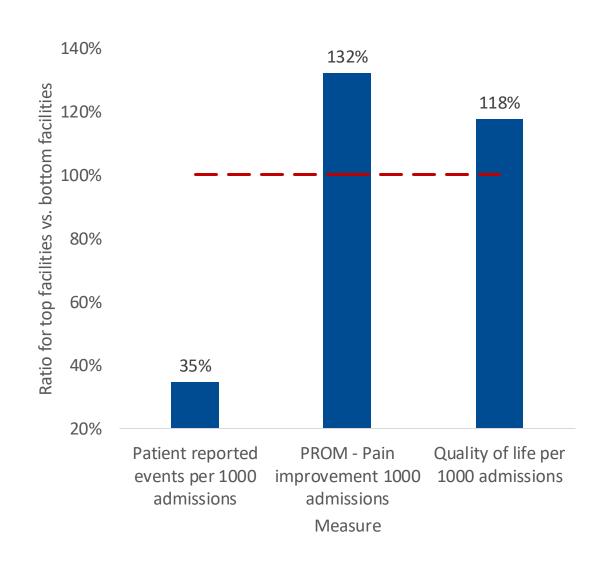
The results for knee replacements without major complexity, reflected as ratios of the top 10% hospitals to the lower scoring hospitals, demonstrate the importance of precise measurement in patient care.

The top-performing hospitals report a 76% ratio for patient-reported events per 1000 admissions

For PROMs related to pain improvement, the top 10% of hospitals achieve a 112% ratio

The quality-of-life measures also highlight a positive difference, with the top-rated hospitals achieving a 103% ratio

Hernia Procedures Outcomes vs PREM Scores



The results for knee replacements without major complexity, reflected as ratios of the top 10% hospitals to the lower scoring hospitals, demonstrate the importance of precise measurement in patient care.

The top-performing hospitals report a 35% ratio for patient-reported events per 1000 admissions

For PROMs related to pain improvement, the top 10% of hospitals achieve a 132% ratio

For the quality-of-life measures, the top performing hospitals achieve a 118% ratio, reflecting better overall patient well-being.

As Actuaries, How Can We Use Our Skillset to Enhance Value-Based Care?

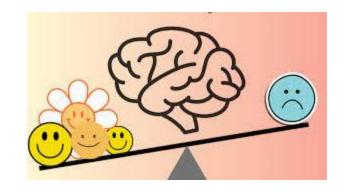
AI & Machine Learning Applications in Voice of the Patient

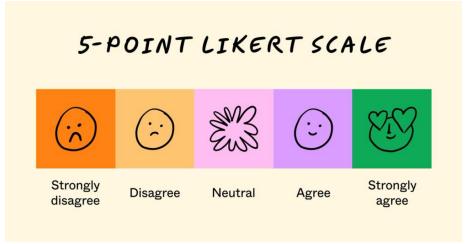


Why PREMs/PROMs Alone Aren't Enough

Key Limitations of Traditional VBC Metrics

- Bias Positive skew towards higher scores
- Numeric scales lack granularity, nuance & tone
- Manual review of unstructured data is slow and inconsistent



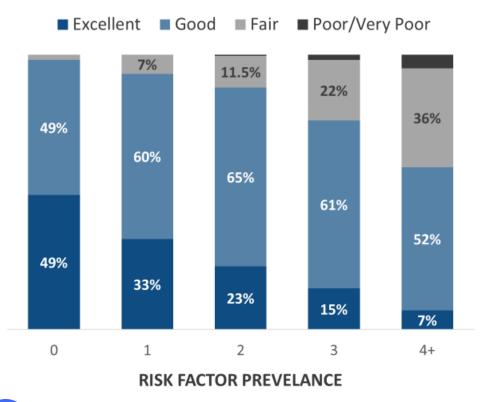


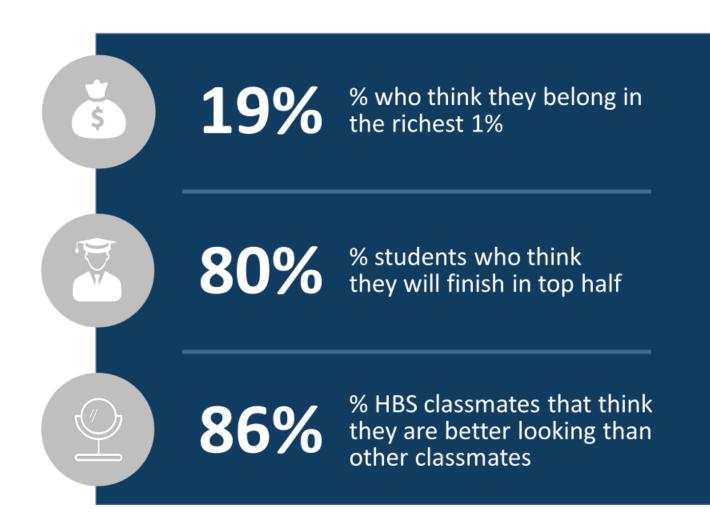




Example of how Bias impacts health data when scored

Individuals have a high perception of their state of health







Natural Language Processing (NLP)



What is NLP?

 A branch of AI that teaches computers to read and understand human language

Why It Matters?

- Transforms unstructured patient feedback into structured insights
- Enables large-scale analysis of free-text comments in real time

Key Capabilities

- Sentiment Detection: Labels free text as positive, negative
- Entity Recognition: For example, parts of speech or specific contextual terms within text



How NLP enhances our understanding of patient feedback

1

Bias: NLP mines unstructured data to surface true patient sentiment beyond numeric PREM/PROM measures.

2

Loss of Nuance: NLP analyses language tone and context, capturing emotions and subtext that numeric scales miss.

3

Scalability & Consistency: NLP automates large-scale text processing, eliminating the need for slow, inconsistent manual review.



NLP (Sentiment Analysis) Pipeline

Unstructured Data

Free-text
 patient
 feedback from
 the VoP
 platform



Data **Preprocessing**

- Clean the text
- Convert text into a sequence of interpretable data



Sentiment Model

- RoBERTa model
- Based on Google's BERT model trained on a corpus of 3.3 billion words.



Communicating Results

- Interactive Power BI dashboard
- Word Clouds



Communicating Results & Key Themes



Feedback

All Doctors medical staff and Physio including meals were of high standard Including equipment used for home delivered to my home address

All facilities are very clean. Meal service was superb. Help with showering was always available when asked for. Physios were very good in helping me to get mobile.

Negative Sentiment



Feedback

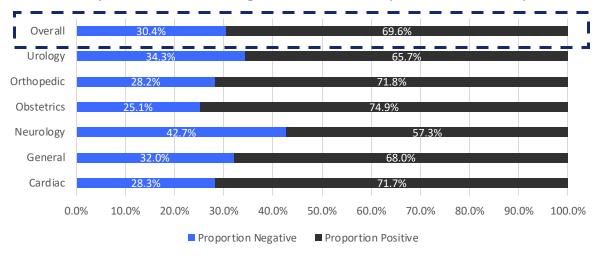
A double knee replacement is extremely painful and I don't think enough research has gone into pain management.we are all different I think pain management should be handled on a individuals needs.

a few complications after procedure didn't help but very average care provided. staff too busy. lots of higher need patients to attend to



Insights Enabled by NLP

Proportion Positive/Negative Sentiment By Treatment Group



Over **two-thirds** of patients expressed **positive sentiment** in their free-text feedback.

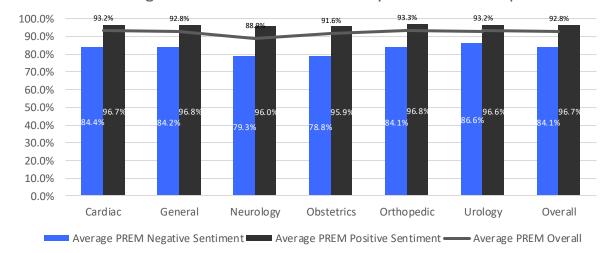




Patients with positive sentiment have an average PREM score

12.6% higher than those with negative sentiment.

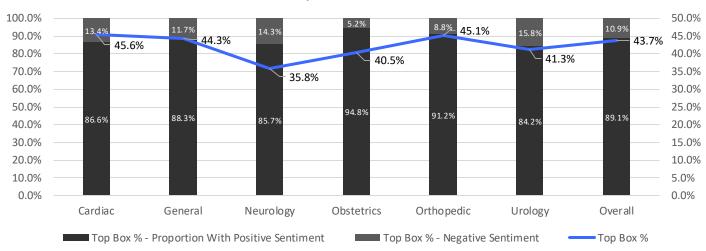
Average PREM Score Vs Sentiment By Treatment Group





Insights Enabled by NLP

PREM Top Box % vs Sentiment





9 out of 10 patients with a Top Box Overall PREM score also expressed positive sentiment



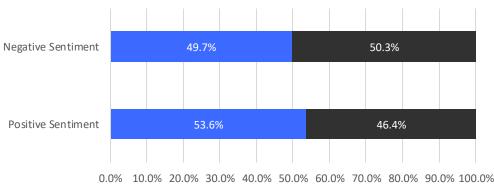
Patients with positive sentiment were 4

percentage points more likely to

achieve a Minimal Clinically Important Difference (MCID) in their PROMs compared to those with negative sentiment.



Proportion Patients Improved PROM (MCID) By Sentiment



■ Improved ■ Did Not Improve

Looking Ahead – Al Agents





Actuaries Institute.



Actuaries Institute.

Thank you

Actuaries Institute actuaries.asn.au