

Outcome classification

- Stratification of surgical outcomes in trigeminal neuralgia using multimodal data
- Comparative analysis of facial nerve outcomes in petroclival versus posterior petrous meningioma surgery: A systematic review and meta-analysis of 2884 patients
- Final Fusion Strategies in Early-Onset Scoliosis: Does Implant Density Make a Difference After Magnetically Controlled Growing Rod Treatment?
- Development of an Exercise Rehabilitation Functional Group for Individualized Exercise After Lumbar Spine Surgery
- Postacute Discharge Destination and Major Adverse Cardiovascular Events Among Patients With Intracerebral Hemorrhage
- Optimizing outcomes in intracranial ependymoma: a contemporary review
- Predictive Factors Affecting the Need for Mechanical Ventilation in Acute Traumatic Cervical Spinal Cord Injury
- Hospital frailty risk score in predicting outcomes after simultaneous colon and liver resection for colorectal cancer liver metastasis in older adults: Evidence from the Nationwide Inpatient Sample 2015-2018

Outcome classification refers to the process of categorizing or **labeling** results, consequences, or **outputs** based on predefined **criteria**. It is widely used in various domains, such as healthcare, finance, machine learning, and business analytics. The classification is typically based on predefined categories, which can be binary (e.g., success vs. failure), multi-class (e.g., mild, moderate, severe), or continuous (e.g., risk scores).

Examples of Outcome Classification Healthcare

Patient **Recovery**: Full recovery, partial recovery, no improvement.

Disease Prediction: Low risk, moderate risk, high risk.

Surgical Outcome: Successful, complications, failure.

Finance

Loan Approval: Approved, rejected, pending.

Investment Performance: Profit, loss, break-even.

Machine Learning & AI

Sentiment Analysis: Positive, negative, neutral.

Fraud Detection: Fraudulent, non-fraudulent.

Business & Performance Metrics

Customer Satisfaction: Satisfied, neutral, dissatisfied.

Product Success: High demand, average demand, low demand.

Methods for Outcome Classification

Rule-Based Classification: Using set rules to categorize outcomes (e.g., If $X > 50$, classify as “high”).

Statistical Methods: Logistic regression, decision trees, random forests.

Machine Learning: Neural networks, support vector machines (SVM), deep learning.

Natural Language Processing (NLP): Text-based classification using sentiment analysis or topic modeling.

Patient-reported outcome.

There are four different archetypes of patient **outcomes** that have been described:

expected **successes**, unexpected **failures**, unexpected successes, and expected failures ¹⁾.

Types of interest

Outcomes can be observed in the short term, medium term, and long term.

Short-term outcome

Medium-term outcome

Long-term outcome

Clinical outcome

Functional outcome

Neurological outcome

Neuropsychological outcome

Main outcomes

The main outcomes are the essential outcomes for decision-making and are those that would form the basis of a ‘Summary of findings’ table. ‘Summary of findings’ tables provide key information about the amount of evidence for important comparisons and outcomes, the quality of the evidence, and the magnitude of effect

There should be no more than seven main outcomes, which should generally not include surrogate or interim outcomes. They should not be chosen based on any anticipated or observed magnitude of effect or because they are likely to have been addressed in the studies to be reviewed.

Primary outcomes

Primary outcomes for the review should be identified from among the main outcomes. Primary outcomes are the outcomes that would be expected to be analysed should the review identify relevant studies, and conclusions about the effects of the interventions under review will be based

largely on these outcomes. There should in general, be no more than three primary outcomes, and they should include at least one desirable and at least one undesirable outcome (to assess beneficial and adverse effects, respectively).

Secondary outcomes

Main outcomes not selected as primary outcomes would be expected to be listed as secondary outcomes. In addition, secondary outcomes may include a limited number of additional outcomes the review intends to address. These may be specific to only some comparisons in the review. For example, laboratory tests and other surrogate measures may not be considered as main outcomes as they are less important than clinical endpoints in informing decisions, but they may help explain effect or determine intervention integrity.

The urgent need for outcomes research was highlighted in the early 1980s, when researchers discovered that “geography is destiny.”

see [Scores](#)

see [Idiopathic normal pressure hydrocephalus outcome](#).

1)

Bohnen JD, Chang ADC, Lillemoe KD. Reconceiving the Morbidity and Mortality Conference in an Era of Big Data. Ann Surg. 2016;263(5):2015-2017. doi:10.1097/SLA.0000000000001508.

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