

MEDICINE USE DATASET

CONTENT

The Medicine use dataset contain 1066 rows of patients that are subdivided into two:

- Adults who had appointment with healthcare professionals through video or phone calls
- Households with children, where a child had an appointment with healthcare professionals through video or phone calls

TABLE

1. **Indicator:** Refers to the patients
2. **Group:** Refers to the sub-division of the patients
3. **Phase:** In telemedicine, a "phase" typically refers to a specific stage or period of a telemedicine program or study. Telemedicine initiatives often involve several phases, such as planning, implementation, data collection, analysis, and assessment. Each phase represents a distinct step in the process of establishing, evaluating, and improving telemedicine services.
4. **Low CL (Confidence Level):** Confidence level, often denoted as CL, is a statistical measure used to express the level of certainty associated with a confidence interval. In the context of telemedicine, if you hear "low confidence level," it means that there is a lower degree of certainty in the statistical estimate or result being discussed. For example, a low confidence level might indicate that the data collected during a telemedicine study has a higher degree of variability and uncertainty.
5. **High CL (Confidence Level):** On the other hand, a "high confidence level" indicates a greater degree of certainty in the statistical estimate or result. This suggests that the data collected during a telemedicine study has less variability and is more reliable.
6. **Confidence Interval:** A confidence interval (CI) is a range of values around a point estimate that is likely to contain the true population parameter with a certain level of confidence. For instance, if you have a confidence interval of 95% for a telemedicine study's outcome, it means that you're 95% confident that the true parameter lies within that interval. Widening the interval increases confidence but reduces precision.
7. **Patient Satisfaction:** Patients often appreciate the flexibility and convenience of telemedicine, leading to higher levels of patient satisfaction.
8. **Value:** In the context of telemedicine, "value" typically refers to the benefits and outcomes that are achieved through the use of telemedicine services. It encompasses the positive impact on patients, healthcare providers, and the healthcare system as a whole.

INSIGHTS:

Phase Analysis:

- Analyse how different phases of medicine development (early, middle, late) impact patient satisfaction outcomes.
- Determine if patient satisfaction tends to increase as a medicine progresses through different phases.

Patient Satisfaction:

- Explore the distribution of patient satisfaction outcomes (low, satisfaction, high) across different indicators.
- Identify factors that correlate with higher patient satisfaction levels, such as specific medicine characteristics or phases.

Confidence Interval Estimation:

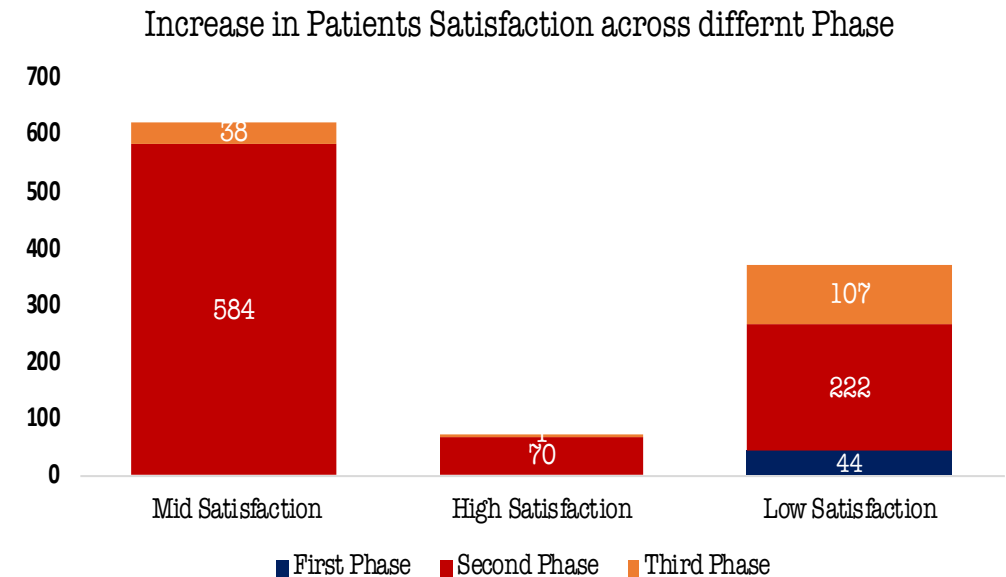
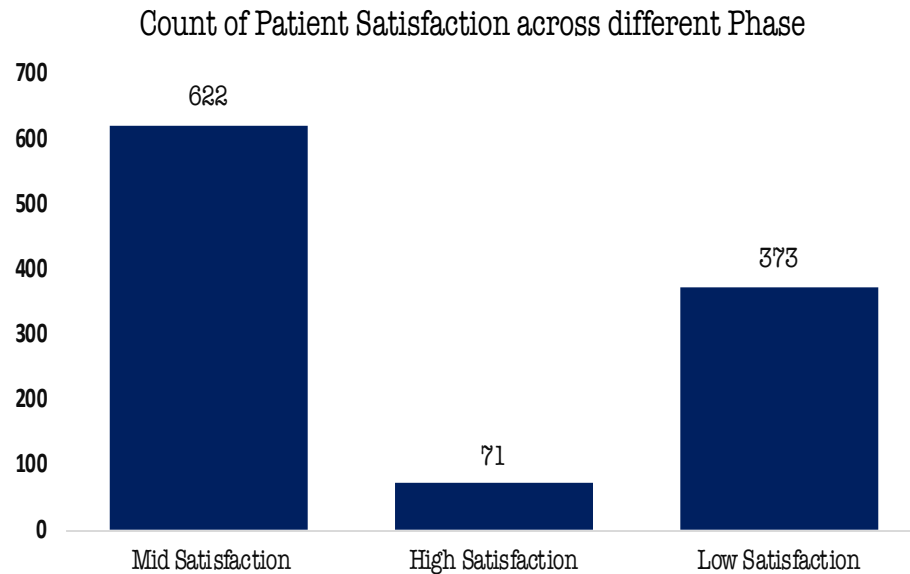
- Assess the precision of your data by analysing confidence intervals. Narrower intervals indicate more reliable estimates.
- Compare confidence intervals across different time periods or phases to see if there are variations in the data's reliability

Time Period Subgroup Analysis:

- Analyse how patient satisfaction outcomes change over time periods. Are there trends or patterns in patient satisfaction over time?
- Examine patient satisfaction outcomes within different subgroups (e.g. ,based on age, gender, medical history).

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Phase Analysis Reveals Progress:

My first discovery was the compelling relationship between the development phase of medicines and patient satisfaction. Visualizing the data revealed an intriguing trend: patient satisfaction tended to increase as medicines advanced through different phases. This insight suggested that as treatments matured and evolved, they became more aligned with patient needs and expectations.

Causes

Communication Issues:

1. Poor communication between healthcare providers and patients can lead to misunderstandings, confusion, and frustration.
2. Patients may feel that their concerns are not heard or addressed adequately.

Recommendation

Optimize Medicine Development Phases:

Health professionals should consider allocating more resources and attention to phases associated with higher satisfaction.

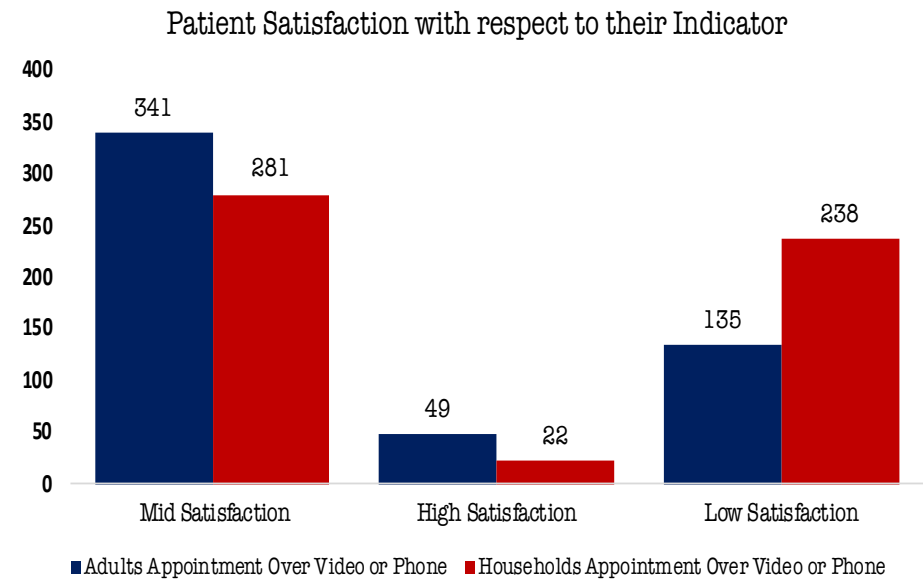
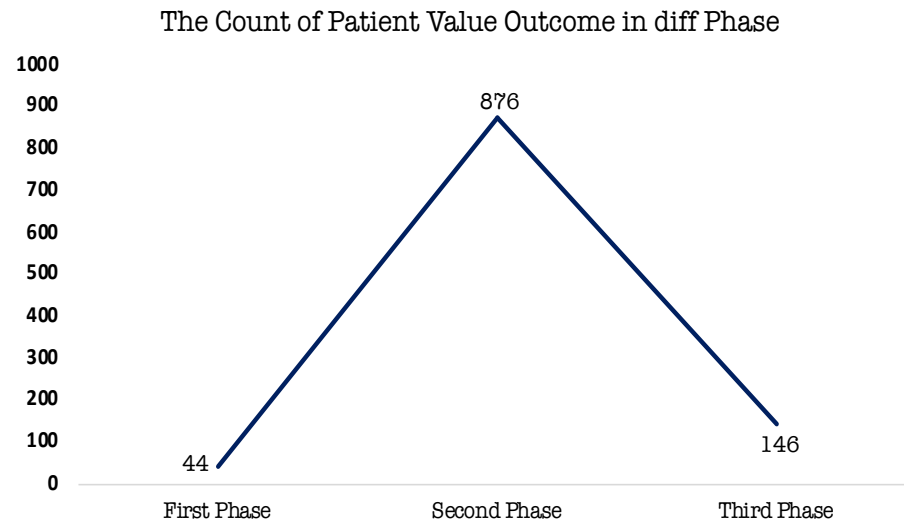
Solution

Enhance Communication:

1. Train healthcare staff, including doctors, nurses, and administrative personnel, in effective communication skills.
2. Encourage active listening, empathy, and clear explanations of medical conditions and treatment plans.
3. Provide interpreters or translation services for patients with language barriers.
4. Implement efficient scheduling and appointment systems to minimize waiting times.
5. Communicate delays to patients and offer alternatives, such as rescheduling or notifying them when their appointment is running late.

Patient Satisfaction:

- Explore the distribution of patient satisfaction outcomes (low, satisfaction, high) across different indicators subgroups.
- Identify factors that correlate with higher patient satisfaction levels, such as specific medicine characteristics or phases.



Targeted Patient Satisfaction Improvement:

Health professionals should consider implementing targeted interventions or improvements to address their patients specific needs.

Causes

Treatment Outcomes:

1. If a patient's health does not improve as expected or if they experience adverse effects from treatment, they may express dissatisfaction.
2. Unmet expectations regarding treatment outcomes can be a cause of dissatisfaction.

Perceived Lack of Empathy and Compassion:

1. Patients often value healthcare providers who show empathy and compassion.
2. A perceived lack of empathy can lead to feelings of neglect or insensitivity.

Billing and Financial Concerns:

1. Complex or unexpected billing issues can be a source of frustration for patients.
2. Lack of transparency in healthcare costs can lead to dissatisfaction.

How to handle the Situation

Monitor Treatment Outcomes:

1. Regularly evaluate treatment outcomes and patient progress.
2. Discuss treatment expectations with patients and involve them in setting realistic goals.

Improve Empathy and Compassion:

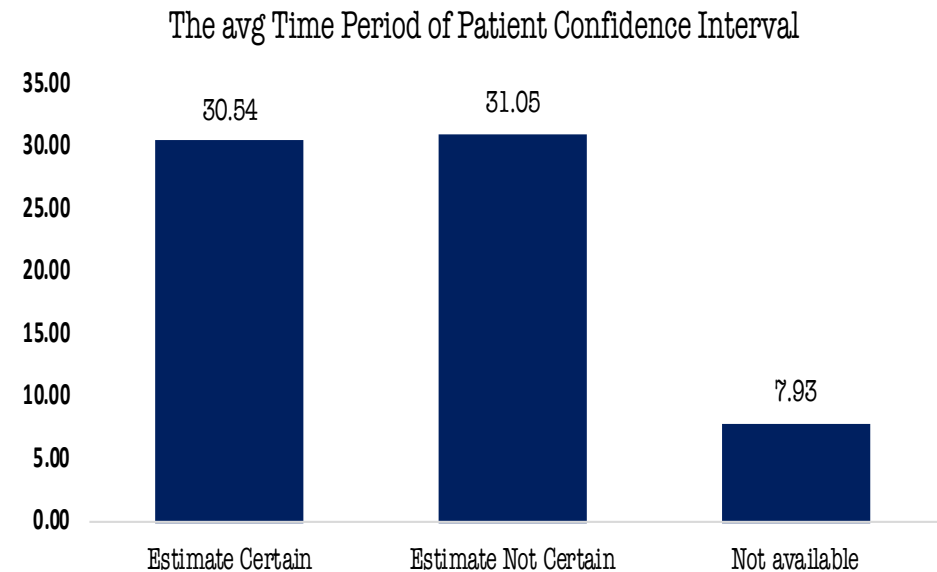
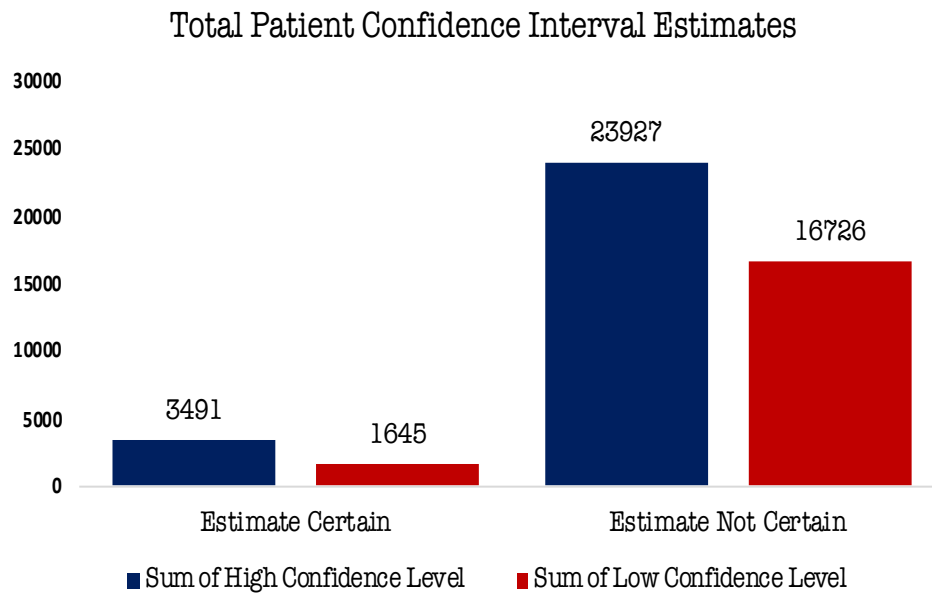
1. Foster a culture of empathy and compassion among healthcare providers.
2. Encourage staff to take the time to address patients' emotional needs, fears, and concerns.

Enhance Billing Transparency:

1. Improve billing transparency by providing clear, itemized bills.
2. Offer financial counselling and assistance programs for patients with financial difficulties.

Confidence Interval Estimation:

- Assess the precision of your data by analysing confidence intervals. Narrower intervals indicate more reliable estimates.
- Compare confidence intervals across different time periods to see if there are variations in the data's reliability



I noticed the uncertainty of confidence interval estimation for patients tends to be very high, due to low confidence level.

A low confidence level indicates that the results obtained from the data are less reliable and more uncertain. Several factors could contribute to this higher degree of variability and uncertainty in the collected data:

Causes

Measurement Error: In telemedicine studies, the accuracy and reliability of data collection tools and methods can vary. Errors in measuring health parameters or patient-reported outcomes can introduce uncertainty into the data.

Data Quality: If the data collected during telemedicine encounters are of low quality or incomplete, it can lead to uncertainty in the analysis. Technical issues, such as poor video or audio quality, can also affect data reliability.

External Factors: External events or circumstances, such as changes in healthcare policies, public health crises (e.g., COVID-19), or other unforeseen factors, can introduce unexpected variability and uncertainty into the study.

To address these issues and improve the confidence level in telemedicine studies, researchers must carefully design their studies, consider potential sources of variability, and implement strategies to minimize bias and error. Additionally, increasing the sample size, using standardized measurement tools, and conducting rigorous data quality checks can help enhance the reliability of the findings.

To address the issue of low confidence in a telemedicine study due to data variability and uncertainty, you can implement several solutions:

Standardize Data Collection: Use standardized protocols, tools, and questionnaires for data collection. This minimizes measurement error and ensures consistency across participants.

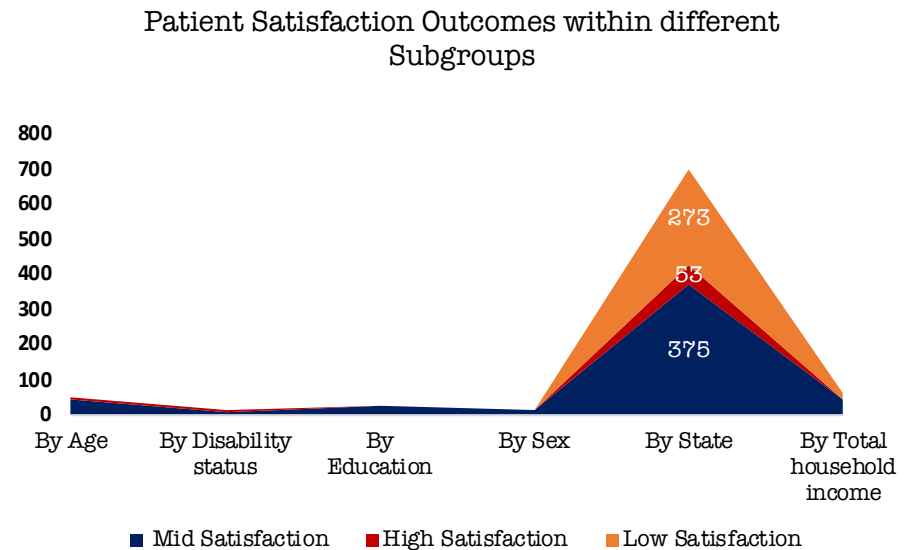
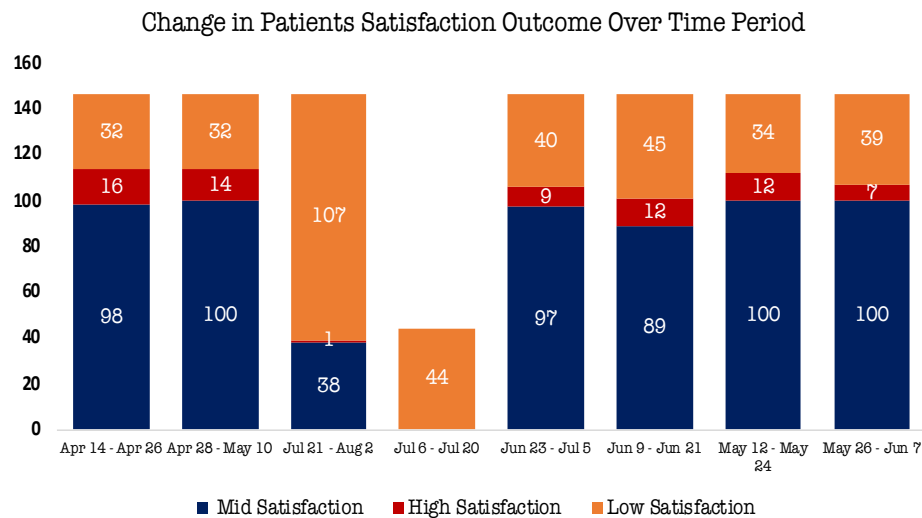
Quality Assurance: Implement quality control measures to monitor data collection. Regularly check for data accuracy, completeness, and consistency. Address any issues promptly.

Expert Consultation: Consult with experts in the field to ensure that your study design and data collection methods are robust and reliable.

Data Monitoring Committees: Consider establishing an independent data monitoring committee to review study progress and data quality periodically.

Time Period Subgroup Analysis:

- Analyse how patient satisfaction outcomes change overtime periods. Are there trends or patterns in patient satisfaction over time?
- Examine patient satisfaction outcomes within different subgroups (e.g. based on age, gender, medical history).



Most of the the over time period of patients outcomes falls in the mid satisfaction expect for July that has a change in satisfaction. And also I noticed that majority of this patients satisfactions are likely grouped by their states (United states). Other patients that are grouped by either age, disability etc are likely facing racism, poor communication level, healthcare not paying attention to their healths.

Lack of Involvement in Decision-Making:

1. Patients who feel excluded from treatment decisions or are not provided with sufficient information about their condition may express dissatisfaction.
2. Involving patients in their care decisions is important for their satisfaction.

Facility and Environment:

1. A poorly maintained or uncomfortable healthcare environment can negatively impact patient satisfaction.
2. Patients may feel uneasy or unsafe in such settings.

Perceived Lack of Competence:

1. Patients expect healthcare providers to be competent and knowledgeable.
2. A perception of incompetence or errors in care can erode confidence and lead to dissatisfaction.

Cultural and Language Barriers:

1. Language barriers and cultural insensitivity can hinder effective communication and lead to dissatisfaction among diverse patient populations.

Long Wait Times:

1. Extended waiting times in healthcare facilities can be a significant source of dissatisfaction.
2. Patients may perceive long wait times as a sign of inefficiency or lack of respect for their time.

Addressing low patient satisfaction in healthcare requires a multifaceted approach aimed at improving the overall patient experience. Here are steps and strategies to help address and mitigate the causes of low patient satisfaction:

Enhance Communication:

1. Train healthcare staff, including doctors, nurses, and administrative personnel, in effective communication skills.
2. Encourage active listening, empathy, and clear explanations of medical conditions and treatment plans.
3. Provide interpreters or translation services for patients with language barriers.

Reduce Wait Times:

1. Implement efficient scheduling and appointment systems to minimize waiting times.
2. Communicate delays to patients and offer alternatives, such as rescheduling or notifying them when their appointment is running late.

Improve Empathy and Compassion:

1. Foster a culture of empathy and compassion among healthcare providers.
2. Encourage staff to take the time to address patients' emotional needs, fears, and concerns.

Involve Patients in Decision-Making:

1. Educate patients about their conditions and treatment options.
2. Encourage shared decision-making, where patients are active participants in choosing their treatment plans.

Improving patient satisfaction is an ongoing process that requires commitment from healthcare organizations and their staff. Regularly assess the effectiveness of your efforts and make adjustments as needed to meet the evolving needs and expectations of your patients. By prioritizing patient-centered care and actively addressing the causes of low satisfaction, healthcare providers can create a more positive and fulfilling healthcare experience for their patients.