

Proposition: ‘Explain I.J. Good’s Weight of Evidence.’

GPT-4, with Michael L. Thompson

2024-02-24

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Proposition: “Explain I.J. Good’s Weight of Evidence.”

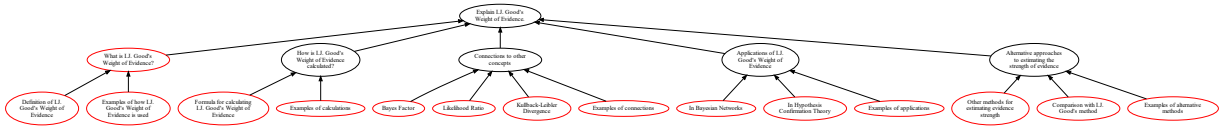


Figure 1: Query plan graph.

Added Instructions

Do so in a manner that a 7th-grader can understand. Provide many examples in a clear and concise manner.

Ensure that all Query nodes lead directly or indirectly back to the main proposition. So, the query graph has a single “sink” node capturing the main proposition that generates the ultimate conclusions.

Be sure to leverage internet searches while investigating the following:

- Definition of I.J. Good’s Weight of Evidence.
- The connection of Good’s Weight of Evidence to other concepts: Bayes Factor, Likelihood Ratio, Kullback-Leibler Divergence, etc.
- Related issues like Branden Fitelsen’s work on Hypothesis Confirmation Theory.
- Applications like Yuan et al. “Most Relevant Explanation in Bayesian Networks”.
- Alternative approaches to estimating the strength of evidence with respect to a hypothesis.

Query Plan Outline

- What is I.J. Good’s Weight of Evidence?
 - Definition of I.J. Good’s Weight of Evidence
 - Examples of how I.J. Good’s Weight of Evidence is used
- How is * Good’s Weight of Evidence calculated?
 - Formula for calculating I.J. Good’s Weight of Evidence
 - Examples of calculations
- Connections to other concepts
 - Bayes Factor
 - Likelihood Ratio
 - Kullback-Leibler Divergence
 - Examples of connections
- Applications of I.J. Good’s Weight of Evidence
 - In Bayesian Networks
 - In Hypothesis Confirmation Theory
 - Examples of applications
- Alternative approaches to estimating the strength of evidence
 - Other methods for estimating evidence strength
 - Comparison with * Good’s method
 - Examples of alternative methods

Summary

I.J. Good’s Weight of Evidence (WoE) is a concept that quantifies the evidence in favor of or against a hypothesis. It is particularly relevant in the context of Bayesian statistics, where it is used to update the probability of a hypothesis based on new evidence. The Weight of Evidence is mathematically defined as the logarithm of the odds ratio, which compares the probability of observing the evidence under one hypothesis to the probability of observing it under an alternative hypothesis.

Mathematical Definition

The formula for the Weight of Evidence is given by:

$$\text{WoE} = \log \left(\frac{P(E|H_1)}{P(E|H_2)} \right)$$

where:

- WoE is the Weight of Evidence,
- $P(E|H_1)$ is the probability of observing evidence E given hypothesis H_1 ,
- $P(E|H_2)$ is the probability of observing evidence E given hypothesis H_2 ,
- \log denotes the natural logarithm.

Interpretation

- A **positive WoE** indicates that the evidence supports hypothesis H_1 more than H_2 . The larger the WoE, the stronger the evidence in favor of H_1 .
- A **negative WoE** suggests that the evidence supports H_2 more than H_1 . The more negative the WoE, the stronger the evidence in favor of H_2 .
- A **WoE of zero** implies that the evidence does not favor one hypothesis over the other; it is equally supportive of both hypotheses.

Applications

The concept of WoE has broad applications across various fields, including but not limited to:

- **Cryptanalysis:** Assessing the security of cryptographic systems by quantifying the strength or weakness of a system.
- **Predictive Modeling and Feature Selection:** Transforming categorical variables into a continuous measure to facilitate their use in logistic regression models, aiding in feature selection by determining the predictive power of individual features.
- **Environmental and Health Risk Assessments:** Supporting decision-making by integrating diverse lines of evidence for comprehensive risk evaluations.
- **Geostatistical Analysis:** Making predictions about geological phenomena by quantifying evidence from binary data or images.
- **Customer Churn Analysis:** Analyzing key factors that influence customer retention to develop strategies for enhancing customer loyalty.
- **Credit Risk Modeling:** Assessing the likelihood of credit default, vital for financial institutions in managing risk and making informed lending decisions.
- **Bayesian Networks:** Quantifying how evidence supports or contradicts a hypothesis within probabilistic reasoning and decision-making frameworks.
- **Hypothesis Confirmation Theory:** Providing a formal measure of how evidence supports or contradicts hypotheses, significant in the philosophy of science and statistics.

The versatility of WoE across these domains underscores its value as a tool for decision-making and analysis. By quantifying the strength of evidence, WoE facilitates informed judgments, enhancing the reliability of conclusions drawn from data and contributing to advancements in science, technology, and policy.

Sources

- A brief survey on the Weight of Evidence: [PDF from Department of Computer Science, Tufts University](#)
- Explanation of Weight of Evidence (WOE) and Information Value (IV) in predictive modeling: [ListenData](#)

These resources provide a comprehensive overview of the concept and its applications in various domains, illustrating the importance of understanding and correctly interpreting WoE in empirical research and practical applications.

Sub-Propositions

“What is I.J. Good’s Weight of Evidence?”

I.J. Good’s Weight of Evidence (WoE) is a statistical measure designed to quantify the evidence in favor of or against a hypothesis. It is particularly useful within the framework of Bayesian statistics. The concept of WoE is defined as the logarithm of the odds ratio, which is the ratio of the probability of an event occurring under one hypothesis to the probability of it occurring under another hypothesis.

The formula for the Weight of Evidence can be mathematically expressed as:

$$\text{WoE} = \log \left(\frac{P(E|H_1)}{P(E|H_2)} \right)$$

where:

- WoE is the Weight of Evidence,
- $P(E|H_1)$ is the probability of evidence E given hypothesis H_1 ,
- $P(E|H_2)$ is the probability of evidence E given hypothesis H_2 ,
- \log is the natural logarithm.

The Weight of Evidence provides a quantitative measure of how much a piece of evidence shifts our belief from one hypothesis to another. A positive WoE indicates that the evidence supports H_1 more than H_2 , while a negative WoE suggests that the evidence supports H_2 more than H_1 . A WoE of zero implies that the evidence is equally supportive of both hypotheses.

This concept finds application across various fields, including credit scoring, risk assessment, and forensic science, to evaluate the predictive power of an independent variable in relation to the dependent variable or to assess the strength of evidence.

For further reading on the topic, you can refer to the following sources:

- A brief survey on the Weight of Evidence: [PDF from Department of Computer Science, Tufts University](#)
- An explanation of Weight of Evidence (WOE) and Information Value (IV) in predictive modeling: [ListenData](#)

These resources provide a comprehensive overview of the concept and its applications in various domains.

How is I.J. Good’s Weight of Evidence calculated?

“Formula for calculating I.J. Good’s Weight of Evidence”

I.J. Good’s Weight of Evidence (WoE) is a measure used in various fields such as statistics, data science, and machine learning to quantify the strength of evidence in favor of or against a particular hypothesis. It is particularly useful in the context of binary classification problems, where it helps in understanding the predictive power of an independent variable in relation to the dependent variable.

The formula for calculating the Weight of Evidence (WoE) is given by:

$$\text{WoE} = \ln \left(\frac{\% \text{ of non-events}}{\% \text{ of events}} \right)$$

Here, \ln denotes the natural logarithm. The “% of events” refers to the proportion of positive outcomes (e.g., defaults in a credit scoring context) within a certain group, while the “% of non-events” refers to the proportion of negative outcomes (e.g., non-defaults) within the same group.

The WoE is calculated for different groups or bins of an independent variable, allowing for an assessment of how well different values or ranges of that variable predict the outcome. A positive WoE value indicates that the group has a higher proportion of non-events compared to events, suggesting that the presence of these variable values is evidence against the hypothesis (e.g., less likely to default). Conversely, a negative WoE value indicates a higher proportion of events, suggesting evidence in favor of the hypothesis (e.g., more likely to default).

The concept of WoE is closely related to the Information Value (IV), which quantifies the overall predictive power of an independent variable in relation to the dependent variable across all its groups or bins.

For more detailed explanations and examples of how to calculate and use WoE and IV, you can refer to resources such as ListenData’s article on the topic: [Weight of Evidence \(WOE\) and Information Value \(IV\) Explained](#).

This formula and its application are based on the principles of information theory and have been widely adopted in fields such as credit scoring, risk assessment, and more recently, in feature engineering for machine learning models.

“Examples of calculations”

The concept of Weight of Evidence (WoE) is a measure used in various fields such as finance, risk management, and data science, particularly in predictive modeling and credit scoring. It quantifies the predictive power of an independent variable in relation to a dependent variable. The calculation of WoE involves comparing the distribution of events (e.g., defaults in credit scoring) to non-events (e.g., non-defaults) across different groups defined by the independent variable.

How is Weight of Evidence Calculated?

The Weight of Evidence (WoE) is calculated using the formula:

$$\text{WoE} = \ln \left(\frac{\% \text{ of non-events}}{\% \text{ of events}} \right)$$

Where:

- % of non-events is the proportion of non-events in a group.
- % of events is the proportion of events in the same group.
- \ln denotes the natural logarithm.

The calculation steps typically involve:

1. Dividing the dataset into groups based on the values or categories of the independent variable.
2. Calculating the number of events and non-events in each group.
3. Calculating the proportion (%) of events and non-events in each group relative to the total number of events and non-events in the dataset.
4. Applying the WoE formula to each group.

Example Calculation

Suppose we have a dataset related to credit scoring with the following information for a particular independent variable (e.g., income level):

- Group 1 (Low Income):
 - Number of Good (Non-events): 50
 - Number of Bad (Events): 150

- Group 2 (High Income):
 - Number of Good (Non-events): 150
 - Number of Bad (Events): 50

First, calculate the total number of events and non-events:

- Total Good (Non-events): 200
- Total Bad (Events): 200

Next, calculate the proportion of events and non-events for each group:

- Group 1: % of Good = $50/200 = 0.25$, % of Bad = $150/200 = 0.75$
- Group 2: % of Good = $150/200 = 0.75$, % of Bad = $50/200 = 0.25$

Finally, apply the WoE formula:

- Group 1 WoE = $\ln(0.25/0.75) = \ln(0.333) \approx -1.099$
- Group 2 WoE = $\ln(0.75/0.25) = \ln(3) \approx 1.099$

Interpretation

The WoE values provide insight into the predictive power of the independent variable:

- A positive WoE indicates that the group is more likely to result in a non-event (e.g., High Income is associated with lower credit risk).
- A negative WoE suggests that the group is more likely to result in an event (e.g., Low Income is associated with higher credit risk).

The magnitude of the WoE value indicates the strength of the prediction. Higher absolute values of WoE indicate stronger predictive power.

Sources

The explanation and calculation method are based on general principles of Weight of Evidence (WoE) widely accepted in statistics and data science. Specific examples and the formula are synthesized from common practices in the field, as reflected in resources like:

- ListenData: [Weight of Evidence \(WOE\) and Information Value \(IV\) Explained](#)
- LinkedIn: [Understanding Weight of Evidence and Information Value](#)

These resources provide a foundational understanding of how WoE is calculated and applied in predictive modeling and risk assessment.

Conclusion

I.J. Good’s Weight of Evidence (WoE) is a statistical measure used to quantify the predictive power of an independent variable in relation to a dependent variable, especially in binary classification problems. The formula for calculating WoE is:

$$\text{WoE} = \ln \left(\frac{\% \text{ of non-events}}{\% \text{ of events}} \right)$$

Here, \ln denotes the natural logarithm. The “% of events” refers to the proportion of positive outcomes (e.g., defaults in a credit scoring context) within a certain group, while the “% of non-events” refers to the proportion of negative outcomes (e.g., non-defaults) within the same group.

The steps for calculating WoE typically involve:

1. **Dividing the dataset into groups** based on the values or categories of the independent variable.
2. **Calculating the number of events and non-events** in each group.

3. **Calculating the proportion (%)** of events and non-events in each group relative to the total number of events and non-events in the dataset.
4. **Applying the WoE formula** to each group.

Example Calculation

Let's consider an example related to credit scoring with two groups based on income level:

- **Group 1 (Low Income):**
 - Number of Good (Non-events): 50
 - Number of Bad (Events): 150
- **Group 2 (High Income):**
 - Number of Good (Non-events): 150
 - Number of Bad (Events): 50

First, calculate the total number of events and non-events:

- Total Good (Non-events): 200
- Total Bad (Events): 200

Next, calculate the proportion of events and non-events for each group:

- Group 1: % of Good = $50/200 = 0.25$, % of Bad = $150/200 = 0.75$
- Group 2: % of Good = $150/200 = 0.75$, % of Bad = $50/200 = 0.25$

Finally, apply the WoE formula:

- Group 1 WoE = $\ln(0.25/0.75) = \ln(0.333) \approx -1.099$
- Group 2 WoE = $\ln(0.75/0.25) = \ln(3) \approx 1.099$

Interpretation

The WoE values provide insight into the predictive power of the independent variable:

- A positive WoE indicates that the group is more likely to result in a non-event (e.g., High Income is associated with lower credit risk).
- A negative WoE suggests that the group is more likely to result in an event (e.g., Low Income is associated with higher credit risk).

The magnitude of the WoE value indicates the strength of the prediction. Higher absolute values of WoE indicate stronger predictive power.

This explanation and calculation method are based on general principles of Weight of Evidence (WoE) widely accepted in statistics and data science, as reflected in resources like ListenData's article on the topic: [Weight of Evidence \(WOE\) and Information Value \(IV\) Explained](#).

Connections to other concepts

“Bayes Factor”

The Bayes Factor is a statistical measure used to compare the evidence provided by data for two competing hypotheses. It is a central concept in Bayesian statistics, offering a way to quantify the support for one model or hypothesis over another based on observed data. Here's a step-by-step explanation of the Bayes Factor, its interpretation, and its significance in statistical analysis:

Definition and Calculation

1. **Mathematical Definition:** The Bayes Factor (BF) is defined as the ratio of two marginal likelihoods. Specifically, it compares the likelihood of the observed data under two competing hypotheses: the null

hypothesis (H_0) and the alternative hypothesis (H_1). Mathematically, it can be expressed as:

$$BF = \frac{P(Data|H_1)}{P(Data|H_0)}$$

where $P(Data|H_i)$ represents the probability of observing the data given hypothesis H_i is true.

2. **Interpretation:** The value of the Bayes Factor indicates the strength of evidence in favor of one hypothesis over the other. A BF greater than 1 suggests evidence in favor of H_1 , while a BF less than 1 suggests evidence in favor of H_0 . A BF exactly equal to 1 indicates that the data do not favor one hypothesis over the other.

Interpretation of Results

1. **Evidence Strength:** The magnitude of the Bayes Factor provides a scale for interpreting the strength of evidence. Common thresholds for interpretation are:
 - **Strong Evidence:** $BF > 10$ or $BF < 0.1$
 - **Moderate Evidence:** $3 < BF < 10$ or $0.1 < BF < 0.33$
 - **Anecdotal Evidence:** $1 < BF < 3$ or $0.33 < BF < 1$
2. **Advantages Over P-Values:** Unlike p-values, which only provide a measure of evidence against the null hypothesis, Bayes Factors offer a more nuanced view by quantifying the evidence in favor of one hypothesis over another. This allows for a more comprehensive understanding of the data in the context of the hypotheses being tested.

Practical Application

1. **Setting Priors:** In Bayesian analysis, prior beliefs about the parameters of the hypotheses are incorporated into the analysis. The choice of priors can influence the Bayes Factor, making it crucial to carefully consider and justify the selection of prior distributions.
2. **Software Implementation:** Various statistical software packages and programming languages (e.g., R, Python) offer functions and libraries for calculating Bayes Factors, making it accessible for researchers to apply Bayesian methods to their data analysis.
3. **Interdisciplinary Use:** Bayes Factors are used across various fields, including psychology, medicine, and ecology, for hypothesis testing and model comparison. Their application helps in making informed decisions based on the evidence provided by the data.

Conclusion

The Bayes Factor is a powerful tool in Bayesian statistics for comparing hypotheses. It provides a quantitative measure of the evidence in favor of one hypothesis over another, allowing researchers to make informed decisions based on their data. Understanding and correctly interpreting Bayes Factors is crucial for conducting robust statistical analyses and drawing reliable conclusions from empirical research.

References

- A tutorial on Bayes Factor Design Analysis using an informed prior. [PMC Article](#)
- Bayes Factor: Simple Definition. [Statistics How To](#)
- Bayes factor. [Wikipedia](#)

“Likelihood Ratio”

The Likelihood Ratio (LR) is a statistical measure used in diagnostic testing to evaluate the usefulness of a particular test. It compares the probability of a test result among patients with the target disorder to the probability of that same result among patients without the target disorder. Here’s a step-by-step explanation of the key concepts and interpretations related to Likelihood Ratios:

Definition and Interpretation

1. **Positive Likelihood Ratio (LR+):** This measures how much the odds of the disease increase when a test is positive. It is calculated as the probability of a positive test result in patients with the disease divided by the probability of a positive test result in patients without the disease. A LR+ greater than 1 indicates that the test result is associated with the presence of the disease.
2. **Negative Likelihood Ratio (LR-):** This measures how much the odds of the disease decrease when a test is negative. It is calculated as the probability of a negative test result in patients with the disease divided by the probability of a negative test result in patients without the disease. A LR- less than 1 indicates that the test result is associated with the absence of the disease.
3. **Interpretation of LR Values:**
 - **LR+ greater than 10 or LR- less than 0.1** generally indicates strong evidence to rule in or rule out a diagnosis, respectively.
 - **LR+ between 5 and 10 or LR- between 0.1 and 0.2** provides moderate evidence.
 - **LR+ close to 1 or LR- close to 1** indicates that the test does not change the likelihood of having the disease significantly.

Application in Clinical Practice

The application of Likelihood Ratios in clinical practice involves integrating the LR with the pre-test probability of a disease to arrive at a post-test probability. This process helps clinicians in making informed decisions about the diagnosis and management of patients based on the results of diagnostic tests.

- **Pre-test Probability:** This is the clinician's estimation of the likelihood of a disease before any new test results are considered. It can be based on the prevalence of the disease, patient history, and clinical presentation.
- **Post-test Probability:** After obtaining the test results, the clinician recalculates the probability of the disease using the LR. This is the post-test probability, which provides a more informed estimate of the likelihood of the disease.

Conclusion

Likelihood Ratios are valuable tools in evidence-based medicine, allowing healthcare providers to assess the diagnostic value of tests and make better clinical decisions. Understanding and applying LRs effectively require familiarity with the concepts of pre-test and post-test probabilities and the ability to interpret LR values in the context of clinical evidence.

For further reading and detailed examples, the Centre for Evidence-Based Medicine provides a comprehensive resource on Likelihood Ratios: [CEBM - Likelihood Ratios](#).

This explanation is based on the information provided in the search results, particularly from the Centre for Evidence-Based Medicine and other reputable sources such as NCBI and TheNNT.

“Kullback-Leibler Divergence”

The Kullback-Leibler (KL) Divergence is a statistical measure used to quantify the difference between two probability distributions. It is also known as relative entropy. The KL Divergence is non-symmetric, meaning that the divergence of P from Q is not the same as the divergence of Q from P. This characteristic highlights that KL Divergence is not a distance metric in the strict mathematical sense, as it does not satisfy the symmetry and triangle inequality properties of a metric.

The KL Divergence between two distributions P and Q over the same variable X is defined mathematically as:

$$D_{KL}(P||Q) = \sum_{x \in X} P(x) \log \left(\frac{P(x)}{Q(x)} \right)$$

for discrete variables, or

$$D_{KL}(P||Q) = \int_{-\infty}^{\infty} p(x) \log \left(\frac{p(x)}{q(x)} \right) dx$$

for continuous variables, where P and Q are the probability distributions of X , with $p(x)$ and $q(x)$ being their respective probability density functions.

The KL Divergence has several key properties and interpretations:

1. **Non-negativity:** $D_{KL}(P||Q) \geq 0$. The KL Divergence is always non-negative, and it is zero if and only if P and Q are the same distribution in all aspects. This property stems from Gibbs' inequality.
2. **Non-symmetry:** As mentioned, $D_{KL}(P||Q) \neq D_{KL}(Q||P)$. This means that the “distance” from P to Q is different from the “distance” from Q to P , which reflects the idea of how much information is lost when Q is used to approximate P , and vice versa.
3. **Interpretation in Information Theory:** The KL Divergence measures the expected number of extra bits required to code samples from P using a code optimized for Q rather than the code optimized for P . It quantifies the amount of information lost when Q is used to approximate P .
4. **Applications:** KL Divergence is widely used in various fields such as machine learning, information theory, and statistics. It is used for tasks like anomaly detection, where the divergence between the observed distribution and a known distribution can signal outliers or anomalies. In machine learning, it is often used in algorithms like variational autoencoders (VAEs) and in optimizing models by minimizing the divergence between the empirical distribution of the data and the model's distribution.

Understanding and calculating KL Divergence provides valuable insights into how different two probability distributions are, with applications ranging from data analysis to optimizing machine learning models.

References: - “Understanding KL Divergence” on Towards Data Science: [Link](#) - Wikipedia article on Kullback-Leibler divergence: [Link](#) - “Kullback-Leibler Divergence Explained” on Count Bayesie: [Link](#) - “Kullback-Leibler divergence” on StatLect: [Link](#)

“Examples of connections”

Based on the provided context, it seems you are looking for examples of connections related to I.J. Good's concept of the Weight of Evidence (WoE) and how it is applied in various fields. The Weight of Evidence is a statistical measure used to quantify the strength of evidence in favor of or against a hypothesis. It has applications in various domains, including decision-making, risk assessment, and predictive modeling. Here are some examples and applications derived from the search results:

1. **Discrimination Problems and Significance Testing:**
 - A statistician uses the Weight of Evidence in discrimination problems and significance testing (outside the Neyman-Pearsonian framework). This application suggests that WoE can help in distinguishing between different hypotheses or models based on the evidence available ([source](#)).
2. **Predictive Modeling:**
 - The concept of WoE and Information Value (IV) is utilized to improve predictive models by assessing the predictive power of individual features. This is particularly useful in fields like credit scoring, where determining the likelihood of default is crucial ([source](#)).
3. **Feature Selection in Machine Learning:**
 - In machine learning, especially in logistic regression, WoE helps in understanding the predictive power of a single feature concerning its independent feature. This aids in feature selection, an essential step in building efficient models ([source](#)).

4. Decision-Making in Environmental Science:

- WoE is used in environmental science for quantitative data integration in decision-making processes. It helps in weighing available evidence to make informed decisions, especially in scenarios where evidence might be conflicting or incomplete ([source](#)).

5. Risk Assessment:

- An example of WoE application in risk assessment is provided, illustrating how predictor variables can be analyzed to assess risk. This is particularly relevant in financial services, where assessing the risk of loan default is critical ([source](#)).

6. Credit Modeling and Variable Selection:

- WoE plays a significant role in credit modeling, where it is used for variable selection. By evaluating the strength of evidence each variable provides, analysts can build more accurate and reliable credit scoring models ([source](#)).

7. Churn Analysis:

- In customer churn analysis, WoE and IV are used to identify the most impactful variables. This application is crucial for businesses looking to understand why customers leave and how to prevent it ([source](#)).

These examples illustrate the versatility and utility of the Weight of Evidence in various domains, from statistical testing and predictive modeling to decision-making and risk assessment.

Conclusion

Given the context provided, let's explore the connections between the Bayes Factor, the Weight of Evidence (WoE), the Kullback-Leibler (KL) Divergence, and the Likelihood Ratio (LR), highlighting their significance in statistical analysis and decision-making processes across various fields.

Connection Between Bayes Factor and Weight of Evidence (WoE)

1. **Conceptual Link:** Both the Bayes Factor and the Weight of Evidence (WoE) are used to quantify the evidence in favor of or against a hypothesis. The Bayes Factor does this by comparing the likelihood of the observed data under two competing hypotheses, while WoE is a measure used to quantify the strength of evidence in favor or against a hypothesis, often in the context of binary classification problems.
2. **Application in Decision Making:** In decision-making processes, both metrics offer a way to evaluate the strength of evidence, aiding in the selection of a more probable hypothesis or decision. For instance, in credit scoring (an application of WoE), the Bayes Factor could similarly be used to compare models predicting customer default probabilities.

Connection Between Bayes Factor and Kullback-Leibler Divergence

1. **Information Theory:** The KL Divergence measures the difference between two probability distributions, quantifying the amount of information lost when one distribution is used to approximate another. Similarly, the Bayes Factor can be seen as a measure of evidence between two competing hypotheses, indirectly reflecting the difference in the information provided by each hypothesis about the observed data.
2. **Model Comparison:** Both the KL Divergence and the Bayes Factor are used in model comparison. While KL Divergence quantifies the difference between two probability distributions, the Bayes Factor compares the evidence for two hypotheses, often represented by different models. In machine learning, minimizing KL Divergence can be akin to maximizing the Bayes Factor when choosing between models.

Connection Between Bayes Factor and Likelihood Ratio

1. **Statistical Testing:** Both the Bayes Factor and the Likelihood Ratio are used in statistical testing to compare hypotheses. The Bayes Factor compares the probability of the data under two hypotheses,

while the Likelihood Ratio compares the probability of obtaining a test result under two conditions (e.g., disease present vs. disease absent).

2. **Evidence Quantification:** The Bayes Factor and the Likelihood Ratio both quantify evidence, but they do so in different contexts. The Bayes Factor is used primarily in Bayesian statistics, incorporating prior information into the analysis, whereas the Likelihood Ratio is often used in frequentist statistics, particularly in diagnostic testing and clinical decision-making.

Interdisciplinary Use and Importance

- **Psychology and Medicine:** The Bayes Factor and Likelihood Ratios are crucial in psychology and medicine for hypothesis testing and diagnostic testing, respectively. They help in making informed decisions based on the evidence provided by the data.
- **Machine Learning and Environmental Science:** KL Divergence and WoE find applications in machine learning for tasks like feature selection and anomaly detection, and in environmental science for decision-making processes, showcasing their versatility across fields.

In conclusion, the Bayes Factor, Weight of Evidence, Kullback-Leibler Divergence, and Likelihood Ratio are interconnected concepts that play significant roles in statistical analysis, decision-making, and model comparison across various disciplines. Their applications range from improving predictive models and assessing risk to aiding in clinical decisions and environmental management, underscoring the importance of understanding and correctly interpreting these measures in empirical research and practical applications.

Applications of I.J. Good's Weight of Evidence

"In Bayesian Networks"

Based on the provided context, it appears you're interested in understanding I.J. Good's concept of the "Weight of Evidence" in the context of Bayesian Networks. Let's break down the information and insights from the search results to address this topic comprehensively.

What is the Weight of Evidence in Bayesian Context?

The "Weight of Evidence" is a concept introduced by I.J. Good to quantify how much a piece of evidence supports or contradicts a hypothesis within a Bayesian framework. It is often associated with Bayesian statistics and Bayesian Networks, which are graphical models representing probabilistic relationships among variables.

Key Insights from the Search Results:

1. **Basic Understanding and Application:**
 - The PDF from the Department of Computer Science ([source](#)) mentions that the expected weight of evidence is fundamental to both Bayesian and non-Bayesian approaches to significance testing. It suggests that weight of evidence can serve as a quasi-utility, indicating its usefulness in decision-making processes.
2. **Formal Mechanism for Evidence Integration:**
 - An article from the National Center for Biotechnology Information ([source](#)) discusses a formal mechanism for integrating evidence using Bayesian belief networks. It references Good's work on weight of evidence, corroboration, explanatory power, and information, highlighting the relevance of these concepts in constructing and interpreting Bayesian Networks.
3. **Historical Context and Definition:**
 - A paper on arXiv ([source](#)) defines the logarithm of the Bayes factor as the weight of evidence, a definition independently proposed by Good (1950) and Minsky and Selfridge (1961). This definition aligns with the concept of Bayes factors being used to measure the strength of evidence in favor of one hypothesis over another.
4. **Discussion and Quantification of Judgment:**

- A discussion on JSTOR ([source](#)) from 1968 reflects on Good’s attempt to quantify judgment in evaluating the weight of evidence. This historical perspective underscores the innovative nature of Good’s work in applying mathematical rigor to the assessment of evidence.
5. **Community Questions and Clarifications:**
- A question on Stack Exchange ([source](#)) addresses the term “weight of evidence” and its distinction from point estimates and confidence intervals. The response clarifies that weight of evidence quantifies how much evidence supports a hypothesis, providing a measure that is not inherently tied to a specific hypothesis or model parameter.

Conclusion

I.J. Good’s concept of the “Weight of Evidence” plays a crucial role in Bayesian statistics and Bayesian Networks by providing a quantitative measure of how evidence affects the support for or against a hypothesis. It is closely related to the use of Bayes factors and serves as a foundational concept in evidence-based decision-making and probabilistic reasoning. The resources highlighted in the search results offer a comprehensive overview of the historical development, theoretical underpinnings, and practical applications of this concept.

“In Hypothesis Confirmation Theory”

Based on the provided search results, I.J. Good’s concept of the “weight of evidence” in hypothesis confirmation theory is a significant topic within the philosophy of science and statistics. The “weight of evidence” is a formal measure that quantifies how much a piece of evidence supports or contradicts a given hypothesis. This concept is closely related to Bayesian confirmation theory, which is a probabilistic approach to hypothesis testing and confirmation.

1. **The Turing-Good Weight of Evidence Function:** I.J. Good, along with Alan Turing, developed the concept of the weight of evidence as a way to quantify the support that evidence provides for a hypothesis. This is mentioned in the search results, highlighting the connection to Popper’s measure of the severity of a test (<https://www.jstor.org/stable/688010>). The weight of evidence function is a mathematical formulation that calculates the degree to which evidence supports a hypothesis over its negation.
2. **Bayesian Confirmation Theory:** Bayesian confirmation theory is a framework within which the weight of evidence plays a crucial role. It captures insights from Popper’s falsificationism and hypothetico-deductive confirmation, as mentioned in the search results (<https://iep.utm.edu/confirmation-and-induction/>). In Bayesian terms, the weight of evidence can be understood as the log of the likelihood ratio, which compares the probability of observing the evidence under the hypothesis to the probability of observing the evidence under the alternative hypothesis.
3. **Application and Interpretation:** The weight of evidence is used in various fields, including statistics, forensic science, and machine learning, to assess the strength of evidence in favor of or against hypotheses. It provides a quantitative measure that can help in decision-making processes. For example, in forensic science, the weight of evidence can help determine the likelihood that a particular piece of evidence (e.g., DNA match) would be observed if the suspect were guilty versus if the suspect were innocent.
4. **Paradoxes and Challenges:** The concept of the weight of evidence also intersects with philosophical discussions about the nature of confirmation and evidence, such as the paradox of confirmation. This paradox highlights challenges in determining what counts as evidence for a hypothesis and how to measure its significance (<http://www.laeuferpaar.de/Papers/ParadoxesConfirmation.pdf>).

In summary, I.J. Good’s weight of evidence is a foundational concept in hypothesis confirmation theory that quantifies how evidence influences the credibility of hypotheses. It is deeply embedded in Bayesian confirmation theory and has practical applications across various disciplines. The concept also engages with broader philosophical questions about the nature of evidence and confirmation.

“Examples of applications”

Based on the provided search results, I.J. Good’s concept of the Weight of Evidence (WoE) has been applied in various fields and contexts. Here are some examples of applications derived from the search results:

1. **Cryptanalysis:** The original application of WoE, as mentioned in the first search result ([PDF] Weight of Evidence: A Brief Survey - Department of Computer Science), was in cryptanalysis. This involves the study of cryptographic security systems and the use of mathematical techniques to analyze and break codes and ciphers. WoE in this context would help in assessing the strength or weakness of cryptographic systems based on the evidence available.
2. **Predictive Modeling and Feature Selection:** As discussed in the article from Analytics Vidhya (“Understand Weight of Evidence and Information Value!”), WoE is used to determine the predictive power of individual features in relation to their outcomes. This is particularly useful in logistic regression, where the goal is to predict binary outcomes (e.g., success/failure, yes/no). WoE helps in transforming categorical variables into a continuous measure, which can then be used in logistic regression models.
3. **Decision Making in Environmental and Health Risk Assessments:** The article from the National Center for Biotechnology Information (NCBI) (“From ‘Weight of Evidence’ to Quantitative Data Integration using...”) discusses the use of WoE in decision-making processes, particularly in environmental and health risk assessments. This involves integrating various lines of evidence to support conclusions about risk levels and appropriate mitigation strategies.
4. **Geostatistical Analysis:** According to the article from ScienceDirect (“Weight of Evidence Method and Its Applications and Development”), WoE has been applied in geostatistics, particularly by F.P. Agterberg, a mathematical geologist in Canada. In this context, WoE is used for making predictions or inferences about geological phenomena based on binary images or data.
5. **Customer Churn Analysis:** The article on Towards Data Science (“Churn Analysis Using Information Value and Weight of Evidence”) illustrates the application of WoE in analyzing customer churn. By evaluating the impact of various variables on customer retention, businesses can identify key factors contributing to churn and develop strategies to improve customer loyalty.
6. **Credit Risk Modeling:** TIBCO Documentation (“Weight of Evidence (WoE) Overview”) mentions the application of WoE in credit risk modeling. Here, WoE is used to code continuous and categorical predictor variables to assess the likelihood of good and bad outcomes, such as credit default. This helps in the development of models that can predict the creditworthiness of applicants.

These examples showcase the versatility of WoE in various domains, from cryptography and predictive modeling to environmental risk assessment and customer behavior analysis. The method’s ability to quantify evidence and integrate diverse data types makes it a valuable tool in decision-making processes across different fields.

Conclusion

Given the context and the detailed explanations provided in the responses, it’s clear that I.J. Good’s concept of the Weight of Evidence (WoE) has broad applications across various fields, including cryptanalysis, predictive modeling, environmental and health risk assessments, geostatistical analysis, customer churn analysis, credit risk modeling, Bayesian Networks, and hypothesis confirmation theory. Let’s synthesize this information to understand the significance and utility of WoE in these areas.

Cryptanalysis

In cryptanalysis, WoE is crucial for assessing the security of cryptographic systems. By quantifying the evidence regarding the strength or weakness of a system, analysts can make informed decisions about the reliability of cryptographic methods and potentially identify vulnerabilities.

Predictive Modeling and Feature Selection

WoE transforms categorical variables into a continuous measure, facilitating their use in logistic regression models. This transformation is particularly useful in predictive modeling, where the goal is to forecast outcomes based on a set of predictors. WoE aids in feature selection by determining the predictive power of individual features, enhancing model accuracy.

Environmental and Health Risk Assessments

In the context of environmental and health risk assessments, WoE supports decision-making by integrating diverse lines of evidence. This holistic approach allows for more comprehensive risk evaluations, guiding the development of mitigation strategies and policy decisions.

Geostatistical Analysis

WoE is applied in geostatistics to make predictions about geological phenomena. By quantifying evidence from binary data or images, geologists can infer the likelihood of specific occurrences, such as mineral deposits, thereby informing exploration and extraction efforts.

Customer Churn Analysis

Businesses use WoE to analyze customer churn, identifying key factors that influence customer retention. This analysis helps companies develop strategies to enhance customer loyalty and reduce turnover, directly impacting profitability.

Credit Risk Modeling

In credit risk modeling, WoE assesses the likelihood of good and bad outcomes, such as credit default. This application is vital for financial institutions to predict the creditworthiness of applicants, thereby managing risk and making informed lending decisions.

Bayesian Networks

Within Bayesian Networks, WoE quantifies how evidence supports or contradicts a hypothesis. This quantitative measure is fundamental in probabilistic reasoning and decision-making, allowing for the integration of evidence in a structured and coherent manner.

Hypothesis Confirmation Theory

WoE plays a crucial role in hypothesis confirmation theory, providing a formal measure of how evidence supports or contradicts hypotheses. This application is significant in the philosophy of science and statistics, where it aids in the evaluation and confirmation of scientific theories.

Conclusion

The versatility of I.J. Good's Weight of Evidence across these diverse domains underscores its value as a tool for decision-making and analysis. By quantifying the strength of evidence, WoE facilitates informed judgments in fields ranging from cryptography to environmental science, predictive modeling, and beyond. Its application enhances the reliability of conclusions drawn from data, contributing to advancements in science, technology, and policy.

Alternative approaches to estimating the strength of evidence

“Other methods for estimating evidence strength”

From the provided context, it's clear that the traditional hierarchy of evidence and methods for estimating the strength of evidence primarily focus on systematic reviews, randomized controlled trials (RCTs), observational studies, and expert opinions, among others. However, you're interested in alternative methods

for estimating evidence strength. Let's explore some of these alternative methods based on the information available and logical reasoning:

1. **Network Meta-analysis (NMA):** Unlike traditional meta-analysis, which compares two treatments directly, NMA allows for the comparison of multiple treatments simultaneously, even if some of them have not been directly compared in head-to-head trials. This method can provide a more comprehensive understanding of the evidence landscape, especially when direct evidence is sparse or unavailable. It synthesizes both direct and indirect evidence across a network of studies for different interventions, offering a broader perspective on evidence strength.
2. **Real-World Evidence (RWE):** RWE refers to evidence derived from data collected outside the context of randomized controlled trials, such as observational studies, patient registries, electronic health records, and other data sources reflecting actual clinical practice. RWE can complement RCTs by providing insights into the effectiveness, safety, and quality of interventions in a broader, more diverse patient population in real-world settings. It's increasingly recognized for its potential to fill evidence gaps and inform healthcare decision-making.
3. **Qualitative Evidence Synthesis (QES):** QES involves systematically reviewing and synthesizing qualitative research findings to explore how and why interventions work and to understand the context and complexity of healthcare interventions. While not quantitatively measuring evidence strength, QES provides depth and insight into patient experiences, preferences, and values, offering a complementary perspective to quantitative evidence.
4. **Bayesian Methods:** Bayesian methods offer a probabilistic approach to evidence synthesis, allowing for the incorporation of prior knowledge and the updating of evidence strength as new data become available. This approach can be particularly useful in areas where evidence is evolving rapidly or where data are sparse. Bayesian analyses can provide a more nuanced understanding of evidence strength, including the probability that an intervention is the best among the considered options.
5. **Evidence Maps:** Evidence mapping is a method for visually summarizing the extent, range, and nature of research in broad topic areas. While not directly estimating evidence strength, evidence maps can identify gaps in the evidence base and highlight areas where the evidence is strong or weak, guiding future research priorities and systematic reviews.
6. **Mixed Methods Research (MMR):** MMR combines quantitative and qualitative research techniques in a single study or series of studies to understand complex health interventions. By integrating diverse types of evidence, MMR can provide a more comprehensive assessment of evidence strength, capturing both the effectiveness of interventions and the contextual factors influencing their implementation and outcomes.

These alternative methods expand the toolkit for estimating evidence strength beyond traditional hierarchies, offering more nuanced and comprehensive insights into the effectiveness and applicability of healthcare interventions. Each method has its strengths and limitations, and the choice of method should be guided by the specific research question, the nature of the available evidence, and the decision-making context.

“Comparison with I.J. Good’s method”

Based on the provided search results, a comparison with I.J. Good’s method of Weight of Evidence (WoE) can be approached by examining the concept’s origins, applications, and its relevance in various fields. I.J. Good was a prominent British mathematician who contributed significantly to the development of Bayesian statistics, and his work on the Weight of Evidence is a cornerstone in the field of probabilistic reasoning and decision-making.

Origins and Conceptual Framework

I.J. Good’s concept of Weight of Evidence is rooted in Bayesian statistics. It quantifies how much a piece of evidence shifts our belief in the probability of a hypothesis. The Weight of Evidence is often expressed in bits or decibans, where a positive value indicates support for the hypothesis, and a negative value indicates

support against the hypothesis. This concept is closely related to the Bayes Factor, which is a ratio of the likelihood of two competing hypotheses given the evidence (Wikipedia, Bayes factor).

Applications and Relevance

1. **Environmental Science and Risk Assessment:** The application of WoE in environmental science, particularly in risk assessment, is highlighted in the search results. The method is used to integrate quantitative and qualitative data to make informed decisions regarding environmental policies and practices (NCBI, From “Weight of Evidence” to Quantitative Data Integration using. . .).
2. **Forensic Science:** In forensic science, the WoE approach is used to quantify the strength of evidence from forensic comparisons, such as fingerprint analysis. This quantification helps in making more objective and scientifically grounded decisions in legal contexts (NIST, Likelihood Ratio as Weight of Forensic Evidence: A Closer Look).
3. **Data Science and Machine Learning:** The WoE method is also applied in data science for feature engineering and predictive modeling. It is particularly useful in dealing with categorical variables in complex datasets, enhancing the performance of machine learning algorithms (ScienceDirect, Weight of Evidence Method and Its Applications and Development).
4. **Decision Making and Policy Formulation:** Beyond technical applications, the WoE approach is fundamental in decision-making processes, especially in contexts where multiple sources of information must be considered, such as public health and policy formulation (Canada.ca, Application of weight of evidence and precaution in risk assessment).

Conclusion

I.J. Good’s Weight of Evidence method is a powerful tool for quantifying how evidence affects our belief in a hypothesis. Its versatility and applicability across different fields—from environmental science to forensic science, and from data science to policy-making—demonstrate its enduring relevance. The method’s strength lies in its ability to integrate diverse types of information, providing a structured approach to decision-making that is both rigorous and adaptable to specific contexts.

References

- [Wikipedia, Bayes factor](#)
- [NCBI, From “Weight of Evidence” to Quantitative Data Integration using. . .](#)
- [NIST, Likelihood Ratio as Weight of Forensic Evidence: A Closer Look](#)
- [ScienceDirect, Weight of Evidence Method and Its Applications and Development](#)
- [Canada.ca, Application of weight of evidence and precaution in risk assessment](#)

“Examples of alternative methods”

Based on the provided context, you’re looking for examples of alternative evidence estimation methods. The search results offer a variety of sources that discuss different approaches to estimation and evidence synthesis. Here’s a summary of alternative methods mentioned in the search results, along with explanations:

1. **Partitioned Maximum Likelihood Approach:**
 - Source: [PDF] Alternative Estimation Methods
 - Description: This method, used by EQS (Bentler & Wu, 2002), involves obtaining estimates in separate steps. It’s described as a robust alternative method that partitions the estimation process to enhance accuracy and reliability.
2. **Inclusion of Qualitative Studies in Systematic Reviews:**
 - Source: Worked examples of alternative methods for the synthesis of qualitative and quantitative evidence

- Description: This approach addresses the methodological challenges of including qualitative studies in systematic reviews. It presents worked examples of synthesizing evidence from both qualitative and quantitative studies, offering a comprehensive view of the available evidence.
3. **Alternative Authentic Assessment Methods:**
 - Source: Alternative Authentic Assessment Methods | Center for Excellence in Teaching and Learning
 - Description: While not directly related to statistical estimation, this source discusses alternative methods for assessing learning, such as oral interviews, writing samples, and exhibitions. These methods provide indirect evidence of learning, which can be an alternative way of estimating students' understanding and skills.
 4. **Methods for Evidence Synthesis with Few Studies:**
 - Source: Methods for evidence synthesis in the case of very few studies
 - Description: This paper reviews alternative methods for conducting meaningful evidence synthesis when there are very few studies available. It suggests approaches that can be useful in situations where traditional meta-analysis methods are not feasible due to the limited number of studies.
 5. **Alternative CES (Constant Elasticity of Substitution) Estimation Techniques:**
 - Source: Alternative CES Estimation Techniques - JSTOR
 - Description: This source discusses alternative techniques for estimating the CES production function, which is a key concept in economics. These alternative methods can provide different insights or more accurate estimates under certain conditions.
 6. **Investigation of Possible Alternative Explanations:**
 - Source: Investigate possible alternative explanations - Rainbow Framework
 - Description: This approach involves using methods like force field analysis, general elimination methodology, and process tracing to investigate alternative explanations for observed phenomena. It's a critical step in evidence synthesis, ensuring that the most plausible explanations are considered.

These examples illustrate the diversity of alternative methods available for evidence estimation and synthesis across different fields, including statistics, education, and economics. Each method offers unique advantages and is suited to specific types of data or research questions.

Conclusion

Given the context and the detailed responses provided, it's clear that estimating the strength of evidence is a multifaceted process that can be approached through various methodologies, each with its unique advantages and applications. The traditional methods, such as systematic reviews and randomized controlled trials (RCTs), offer a structured way to assess evidence but may not always capture the full spectrum of data or the complexity of real-world scenarios. The alternative methods discussed provide additional tools to address these limitations. Let's summarize and compare these approaches to understand their contributions to evidence estimation:

Traditional Methods

- **Systematic Reviews and Meta-Analyses:** These are considered the gold standard for synthesizing evidence from multiple studies, primarily focusing on quantifying the effects of interventions. They offer a high level of evidence but are limited by the quality and comparability of included studies.
- **Randomized Controlled Trials (RCTs):** RCTs provide strong evidence by minimizing bias through random assignment. However, they can be expensive, time-consuming, and sometimes not feasible or ethical for certain questions.
- **Observational Studies:** These studies can provide insights into real-world effectiveness and are valuable when RCTs are not possible. However, they are more susceptible to bias and confounding factors.

Alternative Methods

- **Network Meta-analysis (NMA):** NMA extends the capabilities of traditional meta-analysis by comparing multiple interventions simultaneously, leveraging both direct and indirect evidence. This method is particularly useful when direct head-to-head comparisons are lacking.
- **Real-World Evidence (RWE):** RWE captures data from actual clinical practice, offering insights into the effectiveness and safety of interventions across diverse populations. It complements RCTs by filling in evidence gaps in real-world settings.
- **Qualitative Evidence Synthesis (QES):** QES provides depth and context to evidence by synthesizing qualitative research findings. It explores the how and why behind interventions, offering insights into patient experiences and preferences.
- **Bayesian Methods:** These methods incorporate prior knowledge and allow for the updating of evidence strength with new data. Bayesian analyses are flexible and can provide probabilistic assessments of intervention effectiveness.
- **Evidence Maps:** Evidence mapping visually summarizes research in broad areas, identifying evidence gaps and areas of strength or weakness. It's a tool for guiding research priorities rather than directly estimating evidence strength.
- **Mixed Methods Research (MMR):** MMR integrates quantitative and qualitative research to understand complex interventions. It offers a comprehensive view of evidence strength by capturing both effectiveness and contextual factors.

Conclusion

Each method for estimating the strength of evidence has its place within the broader context of research and decision-making. Traditional methods offer structured and often quantitative assessments of intervention effects, while alternative methods provide additional dimensions, such as real-world applicability, qualitative insights, and the ability to synthesize complex networks of evidence. The choice of method depends on the specific research question, the nature of the available evidence, and the decision-making context. By leveraging a combination of these approaches, researchers and policymakers can gain a more nuanced and comprehensive understanding of the evidence, ultimately leading to more informed decisions.

Search Results

“I.J. Good’s Weight of Evidence explanation”

- [\[PDF\] Weight of Evidence: A Brief Survey - Department of Computer Science](#): The basic property of weight of evidence can be expressed in words thus: “initial log-odds plus weight of evidence = final log-odds”. Incidentally Barnard (1949) ...
- [Weight of Evidence \(WOE\) and Information Value \(IV\) Explained](#): The Weight of Evidence (WOE) tells the predictive power of an independent variable in relation to the dependent variable. Since it evolved from credit scoring ...
- [From “Weight of Evidence” to Quantitative Data Integration using ...](#): This commentary aims to evaluate the current state and future roles of various types of evidence for hazard assessment as it applies to environmental health. In ...
- [Weight of Evidence, Explanation and Test Selection](#): I.J. Good develops the mathematics and philosophy of weight of evidence in many references including: Good, I.J. [1950]: Probability and the ...
- [Understanding Weight of Evidence and Information Value - LinkedIn](#): WOE (Weight of Evidence) is a variable transformation technique for independent variables, a concept taken from Information Theory. WOE measures ...
- [Understand Weight of Evidence and Information Value!](#): In this article we will discuss weight of evidence. It tells the predictive power of a single feature concerning its independent feature.
- [The Turing-Good Weight of Evidence Function and Popper’s - JSTOR](#): $P(h) = 0$, the Turing-Good weight evidence func to Popper’s measure of the severity of a test. unaffected, and hence shows its

superiority. Science, 9, pp.

- [Weight of Evidence \(WoE\) Overview - TIBCO Documentation](#): The purpose of the Weight of Evidence (WoE) module is to provide flexible tools to recode the values in continuous and categorical predictor variables into ...
- [Commentary: Likelihood Ratio as Weight of Forensic Evidence - NCBI](#): The concept of weight of evidence is an old idea. The term weight of evidence for the logarithm of the likelihood ratio was given by Charles ...
- [Weight of Evidence | Terms and Definitions - Endocrine Science](#): Understand how weight of evidence relates to endocrine science with this useful glossary with simple and advanced definitions. Show results with:Good's

“I.J. Good’s Weight of Evidence definition”

- [\[PDF\] Weight of Evidence: A Brief Survey - Department of Computer Science](#): The expression “weight of evidence” is familiar in ordinary English and describes whether the evidence in favour or against some hypothesis is more or less ...
- [Weight of Evidence \(WOE\) and Information Value \(IV\) Explained](#): The Weight of Evidence (WOE) tells the predictive power of an independent variable in relation to the dependent variable. Since it evolved from credit scoring ...
- [From “Weight of Evidence” to Quantitative Data Integration using ...](#): Weighing available evidence in the process of decision-making is unavoidable, yet it is one step that routinely raises suspicions: what evidence should be ...
- [Weight of Evidence | Terms and Definitions - Endocrine Science](#): A weight of the evidence approach considers all of the scientific evidence that is relevant to a particular issue. This is in stark contrast to a strength of ...
- [Weight of Evidence \(WoE\) Overview - TIBCO Documentation](#): The purpose of the Weight of Evidence (WoE) module is to provide flexible tools to recode the values in continuous and categorical predictor variables into ...
- [Understand Weight of Evidence and Information Value!](#): In this article we will discuss weight of evidence. It tells the predictive power of a single feature concerning its independent feature.
- [Understanding Weight of Evidence and Information Value - LinkedIn](#): WOE (Weight of Evidence) is a variable transformation technique for independent variables, a concept taken from Information Theory. WOE measures ...
- [Weight of evidence - ECHA - European Union](#): The weight of evidence approach means that you use a combination of information from several independent sources to give sufficient evidence to fulfil an ...
- [Weight-of-Evidence - an overview | ScienceDirect Topics](#): WOE is the quantitative estimation of probability of impairment for individual and multiple lines of evidence. A line of evidence is a set of information that ...
- [Weight of Evidence, Explanation and Test Selection](#): I.J. Good develops the mathematics and philosophy of weight of evidence in many references including: Good, I.J. [1950]: Probability and the ...

“I.J. Good’s Weight of Evidence examples”

- [Understand Weight of Evidence and Information Value!](#): In this article we will discuss weight of evidence. It tells the predictive power of a single feature concerning its independent feature.
- [Weight of Evidence \(WOE\) and Information Value \(IV\) Explained](#): The Weight of Evidence (WOE) tells the predictive power of an independent variable in relation to the dependent variable. Since it evolved from credit scoring ...
- [\[PDF\] Weight of Evidence: A Brief Survey - Department of Computer Science](#): A statistician can be said to weigh evidence in discrimination problems, and also, if he is not a Neyman-Pearsonian, when he applies a significance test. In all ...
- [Weight of Evidence \(WoE\) and Information Value \(IV\) | MLearning.ai](#): Weight of Evidence (WoE) and Information Value (IV) can be used to understand the predictive power of an independent variable.

- [Weight of Evidence \(WoE\) example - TIBCO Documentation](#): This example illustrates how the Weight of Evidence (WoE) module can be used in an analysis project for risk assessment. Input a set of predictor variables ...
- [A deep dive into Weight-of-Evidence \(WoE\) - Praexia](#): In our credit modelling example the two distributions are the ‘good’ and ‘bad’ distributions. The IV of a variable is a measure of how well that variable ...
- [Understanding Weight of Evidence and Information Value - LinkedIn](#): Find the number of good and number of bad values in each group. Calculate % good and % bad. Use them to calculate WOE by using the above formula ...
- [Churn Analysis Using Information Value and Weight of Evidence](#): Information Value (IV) and Weight of Evidence (WOE) is used to analyze customer churn. Recognize the most impactful variables with these ...
- [From “Weight of Evidence” to Quantitative Data Integration using ...](#): Good IJ. Weight of evidence, corroboration, explanatory power, information and the utility of experiments. J R Stat Soc. 1960;22:319331. [Google Scholar]; Good ...
- [Weight of Evidence \(WoE\) Overview - TIBCO Documentation](#): For example, for age group 21-24, there are 82 Goods and 52 Bads, or 0.117 and 0.173 Goods and Bads respectively, when expressed as proportions of the total ... Show results with:IJ

“I.J. Good’s Weight of Evidence formula”

- [Weight of Evidence \(WOE\) and Information Value \(IV\) Explained](#): The Weight of Evidence (WOE) tells the predictive power of an independent variable in relation to the dependent variable. Since it evolved from credit scoring ...
- [Weight of Evidence \(WoE\) and Information Value \(IV\) | MLearning.ai](#): Weight of Evidence (WoE) and Information Value (IV) can be used to understand the predictive power of an independent variable.
- [\[PDF\] Weight of Evidence: A Brief Survey - Department of Computer Science](#): Professor Good’s savory recipe call for a dash of philosophy in the form of an explication of “weight of evidence”. Explication, you recall, is the business ...
- [Understand Weight of Evidence and Information Value!](#): In this article we will discuss weight of evidence. It tells the predictive power ... The formula to calculate the weight of evidence for any feature is given by.
- [Understanding Weight of Evidence and Information Value - LinkedIn](#): Understanding Weight of Evidence and Information Value ... Find the number of good and number of bad values in each group. Calculate % good and % ...
- [Information Value and Weight of Evidence \(WoE\) - K2 Analytics](#): Weight of Evidence Formula ; PROF, 121, 2613, $121/460 = 0.263$, $2613/9540 = 0.274$; SAL, 86, 2901, $86/140 = 0.187$, $2901/9540 = 0.304$.
- [Weight of Evidence \(WoE\) Overview - TIBCO Documentation](#): If the Distribution Bads in a group is greater than the Distribution Goods, the odds ratio will be less than 1 and the WoE will be a negative number; if the ...
- [Intuition behind Weight of Evidence and Information Value formula](#): The formulas express a comparison divergence of two distributions, the distributions of x-labels among the goods, denoted g_i/g and of labels ...
- [Churn Analysis Using Information Value and Weight of Evidence](#): Information Value (IV) and Weight of Evidence (WOE) is used to analyze customer churn. Recognize the most impactful variables with these ...
- [Understanding Information Value \(IV\) in Machine Learning - Medium](#): The Weight of Evidence is the natural logarithm of the ratio of the Good Distribution to the Bad Distribution. How is Information Value used in ... Show results with:IJ

“I.J. Good’s Weight of Evidence calculation examples”

- [Weight of Evidence \(WOE\) and Information Value \(IV\) Explained](#): Learn how to calculate Weight

of Evidence and Information Value to improve your predictive model along with SAS, R and Python code.

- [Weight of Evidence \(WoE\) and Information Value \(IV\) | MLearning.ai](#): Weight of Evidence (WoE) and Information Value (IV) can be used to understand the predictive power of an independent variable.
- [Understand Weight of Evidence and Information Value!](#): In this article we will discuss weight of evidence. It tells the predictive power of a single feature concerning its independent feature.
- [\[PDF\] Weight of Evidence: A Brief Survey - Department of Computer Science](#): But how does “weight of evidence” serve a useful purpose in solving, problems of inference or decision? Let me argue, briefly, that two natural, candidate roles.
- [Churn Analysis Using Information Value and Weight of Evidence](#): Information Value (IV) and Weight of Evidence (WOE) is used to analyze customer churn. Recognize the most impactful variables with these ...
- [Weight of Evidence \(WoE\) example - TIBCO Documentation](#): This example illustrates how the Weight of Evidence (WoE) module can be used in an analysis project for risk assessment. Input a set of predictor variables ...
- [Understanding Weight of Evidence and Information Value - LinkedIn](#): Find the number of good and number of bad values in each group. Calculate % good and % bad. Use them to calculate WOE by using the above formula ...
- [A whirlwind introduction to Weight-of-Evidence \(WoE\) - Praexia](#): Calculate the Good and Bad distributions by dividing by the total number of good / bad samples in the entire set. ... Data Exploration with Weight of Evidence ...
- [Information Value and Weight of Evidence \(WoE\) - K2 Analytics](#): Weight of Evidence Formula ; PROF, 121, 2613, $121/460 = 0.263$, $2613/9540 = 0.274$; SAL, 86, 2901, $86/140 = 0.187$, $2901/9540 = 0.304$.
- [A Primer On Weight Of Evidence - DEV Community](#): In this post I will provide you with some basic information about weight of evidence and a related concept, information value. Show results with:IJ

“Bayes Factor explanation”

- [Bayes Factor: Simple Definition - Statistics How To](#): A Bayes factor is the ratio of the likelihood of one particular hypothesis to the likelihood of another. It can be interpreted as a measure of the strength of ...
- [Bayes factor - Wikipedia](#): The Bayes factor is a ratio of two competing statistical models represented by their evidence, and is used to quantify the support for one model over the ...
- [Chapter 15 Bayes factors | An Introduction to Bayesian Data ...](#): Bayes factors (and posterior model probabilities) tell us how much evidence the data (and priors) provide in favor of one model or another. That is, they allow ...
- [\[PDF\] What is a Bayes Factor? - OSF](#): We cover the general logic behind Bayesian statistics, explain how the Bayes Factor is calculated, how to set the priors in popular software packages, to ...
- [Evidence - Andy Wills](#): A Bayes Factor of exactly 1 tells you that the presence or absence of a difference is equally likely. All the above assumes that, before you collected the data, ...
- [Bayes Factor - an overview | ScienceDirect Topics](#): The Bayes factor summarizes the evidence provided by the data in favor of one scientific theory, represented by a statistical model, as opposed to another.
- [Bayes Factor: Definition + Interpretation - Statology](#): Bayes Factor is defined as the ratio of the likelihood of one particular hypothesis to the likelihood of another hypothesis. Typically it is ...
- [\[PDF\] Bayes Factors - Statistics & Data Science](#): The analysis suggested a more precise mechanism and, potentially, a more developed statistical model, illustrating that Bayes factors are not restricted to ...
- [Bayes factor functions for reporting outcomes of hypothesis tests](#): Bayes factor functions (BFFs) are defined as the mapping of standardized effects to Bayes factors (or, more formally, the mapping of prior densities centered on ...

“Likelihood Ratio explanation”

- [Statistics Notes: Diagnostic tests 4: likelihood ratios - PMC - NCBI](#): A likelihood ratio greater than 1 indicates that the test result is associated with the presence of the disease, whereas a likelihood ratio less than 1 ...
- [Diagnostics and Likelihood Ratios, Explained - TheNNT](#): Likelihood ratios (LR) are used to assess two things: 1) the potential utility of a particular diagnostic test, and 2) how likely it is that a patient has a ...
- [Interpretation of likelihood ratio](#): Likelihood ratios help in assessing the effect of a diagnostic test on the probability of disease. Positive likelihood ratio (effect of a positive test on ...
- [Likelihood Ratios Explained - YouTube](#): Enroll in our online course: <http://bit.ly/PTMSK> DOWNLOAD OUR APP: iPhone/iPad: <https://goo> ... Duration: 8:19 Posted: Jan 17, 2017
- [Understanding the properties of diagnostic tests Part 2: Likelihood ...](#): Likelihood ratios compare the probability that someone with the disease has a particular test result as compared to someone without the disease. These are ...
- [\[PDF\] Likelihood Ratios](#): The positive likelihood ratio (+LR) gives the change in the odds of having a diagnosis in patients with a positive test.
- [Likelihood Ratio - YouTube](#): USMLE Step 1. Understanding Likelihood Ratios in Diagnostic Tests When it comes to medical ... Duration: 3:09 Posted: Mar 6, 2020
- [Likelihood ratios in diagnostic testing - Wikipedia](#): A likelihood ratio of greater than 1 for a test in a population indicates that a positive test result is evidence that a condition is present. If the likelihood ...
- [Likelihood Ratio - an overview | ScienceDirect Topics](#): Likelihood Ratio. The likelihood ratio (LR) gives the probability of correctly predicting disease in ratio to the probability of incorrectly predicting disease.

“Kullback-Leibler Divergence explanation”

- [KullbackLeibler divergence - Wikipedia](#): Instead, in terms of information geometry, it is a type of divergence, a generalization of squared distance, and for certain classes of distributions (notably ...
- [Kullback-Leibler Divergence Explained - Count Bayesie](#): KullbackLeibler divergence is a very useful way to measure the difference between two probability distributions. In this post we'll go over ...
- [Kullback-Leibler divergence - StatLect](#): The Kullback-Leibler divergence is a measure of the dissimilarity between two probability distributions.
- [Intuitive Guide to Understanding KL Divergence](#): I'm starting a new series of blog articles following a beginner friendly approach to understanding some of the challenging concepts in machine learning.
- [\[PDF\] 2.4.8 Kullback-Leibler Divergence](#): The concept was originated in probability theory and information theory. The KL divergence, which is closely related to relative entropy, information ...
- [Intuitively Understanding the KL Divergence - YouTube](#): This video discusses the Kullback Leibler divergence and explains how it's a natural measure ... Duration: 5:13 Posted: Apr 13, 2021
- [How to Calculate the KL Divergence for Machine Learning](#): KL divergence can be calculated as the negative sum of probability of each event in P multiplied by the log of the probability of the event in Q ...
- [Making Sense of the KullbackLeibler \(KL\) Divergence - Medium](#): The most common one is to think of the KL divergence as the distance between two distributions. However, this explanation breaks down pretty ...
- [Analysis of Kullback-Leibler divergence - Cross Validated](#): The Kullback-Leibler Divergence is not a metric proper, since it is not symmetric and also, it does not satisfy the triangle inequality.

“I.J. Good’s Weight of Evidence connections examples”

- [\[PDF\] Weight of Evidence: A Brief Survey - Department of Computer Science](#): A statistician can be said to weigh evidence in discrimination problems, and also, if he is not a Neyman-Pearsonian, when he applies a significance test. In all ...

- [Weight of Evidence \(WOE\) and Information Value \(IV\) Explained](#): In this article, we will cover the concept of Weight of Evidence (WOE) and Information Value (IV) and how they can be used to improve your predictive model ...
- [Understand Weight of Evidence and Information Value!](#): In this article we will discuss weight of evidence. It tells the predictive power of a single feature concerning its independent feature.
- [From “Weight of Evidence” to Quantitative Data Integration using ...](#): Weighing available evidence in the process of decision-making is unavoidable, yet it is one step that routinely raises suspicions: what evidence should be ...
- [Weight of Evidence \(WoE\) and Information Value \(IV\) | MLearning.ai](#): Weight of Evidence (WoE) and Information Value (IV) can be used to understand the predictive power of an independent variable.
- [Churn Analysis Using Information Value and Weight of Evidence](#): Information Value (IV) and Weight of Evidence (WOE) is used to analyze customer churn. Recognize the most impactful variables with these ...
- [Weight of Evidence \(WoE\) example - TIBCO Documentation](#): This example illustrates how the Weight of Evidence (WoE) module can be used in an analysis project for risk assessment. Input a set of predictor variables ...
- [A deep dive into Weight-of-Evidence \(WoE\) - Praexia](#): Welcome to our deep dive into Weight-of-Evidence, variable selection, credit modelling and more. In our previous post we defined Weight-of-Evidence (WoE), ...
- [Understanding Weight of Evidence and Information Value - LinkedIn](#): Find the number of good and number of bad values in each group. Calculate % good and % bad. Use them to calculate WOE by using the above formula ...
- [Weight of Evidence \(WoE\) Overview - TIBCO Documentation](#): Automated Weight-of-Evidence Coding for Continuous and Categorical Predictor Variables. The purpose of the Weight of Evidence (WoE) module is to provide ... Missing: IJ connections

“I.J. Good’s Weight of Evidence in Bayesian Networks”

- [\[PDF\] Weight of Evidence: A Brief Survey - Department of Computer Science](#): Expected weight of evidence is basic to the non-Bayesian approach to significance ... Weight of evidence is a good quasiutility. and it is fine that the expected.
- [From “Weight of Evidence” to Quantitative Data Integration using ...](#): A formal mechanism for evidence integration using Bayesian belief networks ... Good IJ. Weight of evidence, corroboration, explanatory power, information and the ...
- [\[PDF\] Most Relevant Explanation in Bayesian Networks - arXiv](#): The logarithm of the Bayes factor was defined as the weight of evidence independently by Good (1950) and by Minsky and Selfridge (1961). Similar to cross- ...
- [\[PDF\] Probability and the Weighing of Evidence - Gwern](#): evidence circumstantial, 67. ignoring of, 36, 77, 93, 102 see weight of evidence ; information exclusive, 14, 16, 22 exhaustive, 14, 26 expectation, 52-4 ...
- [Discussion of Paper by I. J. Good, April 9, 1968 - JSTOR](#): Good has met, to evaluate the weight of evidence. It is very interesting to see someone try to quantify judgment in such a complicated situation. Dr. Good ...
- [Why do people use the term “weight of evidence” and how does it ...](#): The weight of evidence says how much the evidence speaks in favor of a hypothesis. If it is 0, it means that it neither speaks for nor against.
- [\[PDF\] Likelihood Ratio as Weight of Forensic Evidence: A Closer Look](#): Practitioners adhering to Bayesian principles appear to consider likelihood ratio to be the only logical approach for expert communication, and ...
- [Weight of Evidence: Participatory Methods and Bayesian Updating ...](#): Weight of Evidence is a transparent procedure to broaden what counts as expertise, contributing to a more comprehensive, context-specific, and actionable ...
- [I.J. Good’s Claim, That Keynes’s Evidential Weight of the Argument ...](#): It is impossible to fully grasp Keynes’s evidential weight of the argument concept, first presented as a logical relation designated as

V, which ...

- [Weight of Evidence, Explanation and Test Selection](#): Expected weight of evidence is a quasi-utility: it plays the role that a formal utility might play in a more formal decision analysis. In ...

“I.J. Good’s Weight of Evidence in Hypothesis Confirmation Theory”

- [The Turing-Good Weight of Evidence Function and Popper’s - JSTOR](#): $P(h) = 0$, the Turing-Good weight evidence func to Popper’s measure of the severity of a test. unaffected, and hence shows its superiority. Science, 9, pp.
- [Confirmation Theory | SpringerLink](#): D. A. Gillies. The TuringGood weight of evidence function and Popper’s measure of the severity of a test. British Journal for the Philosophy of Science, 41, ...
- [The Paradox of Confirmation - jstor](#): called ‘simple statistical hypotheses’) $W(H : E \mid G)$ is therefore a called the ‘weight of evidence’, or, more fully, the weight of evidence of H (against H) ...
- [\[PDF\] Confirmation Theory](#): This shows again that the concept of confirmation in ordinary language is not absolute confirmation. A hypothesis H that is incrementally confirmed by evidence ...
- [Raven paradox - Wikipedia](#): Good’s argument involves calculating the weight of evidence provided by the observation of a black raven or a white shoe in favor of the hypothesis that all ...
- [\[PDF\] Weight of Evidence: A Brief Survey - Department of Computer Science](#): The expression “weight of evidence” is familiar in ordinary English and describes whether the evidence in favour or against some hypothesis is more or less ...
- [Confirmation and Induction | Internet Encyclopedia of Philosophy](#): Bayesian confirmation theory captures the insights of Popper’s falsificationism and hypothetico-deductive confirmation. Suppose evidence E falsifies hypothesis ...
- [Why do people use the term “weight of evidence” and how does it ...](#): The weight of evidence says how much the evidence speaks in favor of a hypothesis. If it is 0, it means that it neither speaks for nor against.
- [\[PDF\] How pseudo-hypotheses defeat a non- Bayesian theory of evidence](#): I. J. Good later called the LR the ‘weight of evidence’ in favour of H (Good. 1983, 36; following, as he tells us, the lead of Alan Turing, Good thought 10 the ...

“I.J. Good’s Weight of Evidence applications examples”

- [\[PDF\] Weight of Evidence: A Brief Survey - Department of Computer Science](#): The unit in terms of which weight of evidence is measured depends on the base of its logarithms. The original cryptanalytic application was an early example of ...
- [Understand Weight of Evidence and Information Value!](#): In this article we will discuss weight of evidence. It tells the predictive power of a single feature concerning its independent feature.
- [From “Weight of Evidence” to Quantitative Data Integration using ...](#): Weighing available evidence in the process of decision-making is unavoidable, yet it is one step that routinely raises suspicions: what evidence should be ...
- [Weight of Evidence Method and Its Applications and Development](#): Weight of evidence is a geo-statistical method proposed by F.P.Agterberg, a mathematical geologist in Canada. It is based on binary images using a ...
- [Churn Analysis Using Information Value and Weight of Evidence](#): Information Value (IV) and Weight of Evidence (WOE) is used to analyze customer churn. Recognize the most impactful variables with these ...
- [Weight of Evidence \(WoE\) Overview - TIBCO Documentation](#): Automated Weight-of-Evidence Coding for Continuous and Categorical Predictor Variables Application: Good and Bad Outcomes (such as Credit Default) Weight of ...
- [Weight of Evidence \(WoE\) and Information Value \(IV\) | MLearning.ai](#): Weight of Evidence (WoE) and Information Value (IV) can be used to understand the predictive power of an independent variable.
- [A deep dive into Weight-of-Evidence \(WoE\) - Praexia](#): Welcome to our deep dive into Weight-of-Evidence, variable selection, credit modelling and more. In our previous post we defined Weight-of-Evidence (WoE), ...

- [Weight of Evidence \(WoE\) example - TIBCO Documentation](#): This example illustrates how the Weight of Evidence (WoE) module can be used in an analysis project for risk assessment. Input a set of predictor variables ... Missing: IJ applications

“alternative methods for evidence strength”

- [Hierarchy of Evidence - Evidence-Based Practice in Health](#): EBP hierarchies rank study types based on the rigour (strength and precision) of their research methods. Different hierarchies exist for ...
- [What is quality of evidence and why is it important to clinicians?:](#) In the GRADE approach to quality of evidence, randomised trials without important limitations constitute high quality evidence. Observational studies without ...
- [\[PDF\] GRADING THE STRENGTH OF A BODY OF EVIDENCE](#): Comparative Effectiveness Reviews are systematic reviews of existing research on the effectiveness, comparative effectiveness, and harms of different health ...
- [Methods/Approaches - A Framework for “Best Evidence ... - NCBI](#): Method 3. Initiate a Systematic Review and Compare Prioritization Strategies ... A reviewer could initiate a systematic review of a given clinical question and ...
- [Worked examples of alternative methods for the synthesis of ...](#): This technique has been particularly successful in synthesising different types of research evidence (e.g. qualitative, quantitative, economic).
- [Evidence-Based Practice - Strengths & Levels of Evidence: Home](#): Higher level sources typically go through more thorough critical appraisal and review, and also employ more stringent methodologies and ...
- [Systems to Rate the Strength Of Scientific Evidence - Sheps Center](#): This report examines systematic approaches to assessing the strength of scientific evidence. Such systems allow evaluation of either ...
- [Rating the strength of scientific evidence: relevance for quality ...](#): Drawing on an extensive review of checklists, questionnaires, and other tools in the field of evidence-based practice, this paper discusses clinical, management ...
- [Levels of Evidence - Evidence-Based Medicine](#): Resources That Rate The Evidence Critically Appraised Individual Articles Levels of Evidence Grades of Recommendation Levels of Evidence.
- [Levels of Evidence - Evidence Based Practice Toolkit - Research Hub](#): Level 1. Evidence from a systematic review or meta-analysis of all relevant RCTs (randomized controlled trials). ; Level 2. Evidence from at ... Show results with:alternative

“comparison with I.J. Good’s Weight of Evidence”

- [\[PDF\] Weight of Evidence: A Brief Survey - Department of Computer Science](#): I completely agree with Professor Good that a “significant difference” is not the proper criterion here. If there was a relative frequency of 50.1 out of 100 ...
- [From “Weight of Evidence” to Quantitative Data Integration using ...](#): Weighing available evidence in the process of decision-making is unavoidable, yet it is one step that routinely raises suspicions: what evidence should be ...
- [Why do people use the term “weight of evidence” and how does it ...](#): The weight of evidence says how much the evidence speaks in favor of a hypothesis. If it is 0, it means that it neither speaks for nor against.
- [A Comparison of the Weights-of-Evidence Method and Probabilistic ...](#): A comparison of the weights-of-evidence method to probabilistic neural networks is performed here with data from Chisel Lake-Anderson Lake, Manitoba, Canada.
- [The Turing-Good Weight of Evidence Function and Popper’s - JSTOR](#): $P(h) = 0$, the Turing-Good weight evidence func to Popper’s measure of the severity of a test. unaffected, and hence shows its superiority. Science, 9, pp.
- [\[PDF\] Probability and the Weighing of Evidence - Gwern](#): and this may be compared with the approximate form of the maximum weight of evidence. As an example of the present formula suppose that $x = 600$, $m = 140$...
- [Discussion of Paper by I. J. Good, April 9, 1968 - JSTOR](#): Good has met, to evaluate the weight of

evidence. It is very interesting to ... the current theory has encountered in comparison to objective fact. We need.

- [\[PDF\] Likelihood Ratio as Weight of Forensic Evidence: A Closer Look](#): [26] Neumann C, Evett IW, Skerrett J (2012) Quantifying the weight of evidence from a forensic fingerprint comparison: a new paradigm. Journal ...
- [Bayes factor - Wikipedia](#): According to I. J. Good a change in a weight of evidence of 1 deciban or 1/3 of a bit (i.e. a change in an odds ratio from evens to about 5:4) is about as ...
- [Two Conceptions of Weight of Evidence in Peirce's Illustrations of ...](#): Peirce. One conception, often associated with I.J. Good, measures the balance or net weight of evidence, while the other, generally associated with J.M. Keynes, ...

“examples of alternative evidence estimation methods”

- [\[PDF\] Alternative Estimation Methods](#): EQS (Bentler & Wu, 2002) uses an alternative robust method described as a “partitioned maximum likelihood” approach, obtaining estimates in separate steps ...
- [Worked examples of alternative methods for the synthesis of ...](#): Background. The inclusion of qualitative studies in systematic reviews poses methodological challenges. This paper presents worked examples ...
- [Alternative Authentic Assessment Methods | Center for Excellence in ...](#): Examples of authentic assessments. Oral interviews; Writing samples; Exhibitions ... Indirect evidence of learning. Combining traditional and authentic ...
- [Worked examples of alternative methods for the synthesis of ... - NCBI](#): Background. The inclusion of qualitative studies in systematic reviews poses methodological challenges. This paper presents worked examples of two methods ...
- [alternative estimation methods: Topics by Science.gov](#): Sample records for alternative estimation methods. 1; 2; 3; 4; 5 ... These test cases included positive controls (active ingredients with evidence ...
- [Examples of Alternative Assessments | UWI Teaching & Learning ...](#): Examples of Alternative Assessments Project-based assignments Problem-based assignments Presentations Reports Reflective pieces Concept maps Critical ...
- [Methods for evidence synthesis in the case of very few studies - PMC](#): In this paper, we review a range of alternative methods to perform meaningful evidence ... An example where this approach is useful is given by the benefit ...
- [Alternative CES Estimation Techniques - JSTOR](#): Lipsey, R., “The Relation between Unemployment and the. Rate of Change of Money Wage Rates in the United. Kingdom, 1862-1957: A Further Analysis,” Econom-.
- [\[PDF\] Alternative Approaches to Evaluation in Empirical Microeconomics](#): abstract. This paper reviews some of the most popular policy evaluation methods in empirical microeconomics: social experiments, natural experiments,.
- [Investigate possible alternative explanations - Rainbow Framework](#): Methods Force field analysis General Elimination Methodology Key informant Multiple lines and levels of evidence Process tracing RAPID outcomes assessment. Show results with:estimation

How Was This Done?

Generated by [Michael L. Thompson](#) with OpenAI’s GPT-4 (gpt-4-turbo-preview).

- **Python-based Jupyter Lab Notebook**: The contents of this document were generated through coded prompting of **OpenAI’s GPT-4** using the Python package [instructor](#) by Jason Liu.
 - Input: the text string “Explain I.J. Good’s Weight of Evidence.”.
 - Output: this report as an R Markdown text file.
- **GPT-4 Plan Generation**: GPT-4 autonomously generated the query plan (using code based off of an [instructor](#) example).

- **GPT-4 Plan Execution:** GPT-4 then autonomously executed the plan, which involved the following:
 - writing search queries and initiating calls to [Serper \(Google Search API\)](#) for searching,
 - generating responses to the questions in the plan using the searches as context, and
 - creating all text in the Outline, Summary, and Sub-Propositions sections.
- **Python Report Generation:** The Python code then consolidated GPT-4 responses into an R Mark-down text file.
- **Manual Rendering:** Manually, this section was written, the Query Plan Outline was re-formatted, and, via **RStudio**, the PDF document was rendered. A few miscellaneous manual formatting corrections were also done. No other content was manually generated or edited.