Who should teach it and how to teach? — Statistical education in Japan

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Abstract:

Refereing to GAISE project in US, 2003, we empasis that the education of statistics need a experiance of case study and it differs from mathematics.
Statistics is based on mathematical foundations and further application or exploiting notions are important.

Keyword:

Cobb Report
GAISE

GAISE

Statistical Education in US curriculum and evaluation GAISE project: (Guidelines for Assessment and Instruction in Statistical Education)

Recent Japanese Education

- (1) Contents are decresing or deleted in High school or in elementary school

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- (2) Synthetic or Overall study in elementary school are innovated
- (3) Revise Guidance of teaching by Central Ministry of Education in Japan, JSPS(Jananese Society of Promotion for Science)

Some data in Japan –

Nagasaki University of Medicine(Prof. Y.Shibata)
Medical statistics:

- (1) Data scaling, expression in figure
- (2) Definition of probability, conditional probability, Bayes theorem
- (3) Mean and variance etc of distribution
- (4) Sampling of data, statistical data, Likeyhood
- (5) Fundamental notion of Estimation theory
- (6) Hypothesis testing
- (7) Inference of mean value, ratio
- (8) Independence of test, Curve fitting, Chi square
- (9) Scattering plot, Coefficient of relation
- (10) Simple regression analysis

History: US

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1957 Sputonik Shock

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Statistics

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Statistics
(1) Emphasis considereing statistical thinking
(2) Data or Phenomenon are important and decrease the theoretical treatment
(3) Promote an active study

2003 GAISE

2003 GAISE
(Guidelines for Assessment and Instruction in Statistical Education) project

2003 GAISE
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prek-12 group – under high school student

2003 GAISE
(Guidelines for Assessment and Instruction in Statistical Education) project
prek-12 group – under high school student college group – Intorductionary statistic course in college Three objects and six recommendation
* Refer Dr.Utts paper

GAISE report2003 teaches:

- (1) Not teach a technic to solve problems, but to get an understanding of fundamental notion, idea, concept.

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- (1) Not teach a technic to solve problems, but to get an understanding of fundamental notion, idea, concept.
- (2) Experience in success or disappointment. Try to condier a statistical problem and recognize solutions.
- (3) Not to induce a formally problem. In college education, it should be teached a fundamental notion of probability, dispersion or distribution. Success story or case of applied in mistake, error should be explaind in a text book.

Issue for further education;

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- (a) There may be no objection but who tell me the content, how can I get these information?

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- (a) There may be no objection but who tell me the content, how can I get these information?
- (b) How should we train or nourish young teachers of statistics? There are not so many teachers in college who can have experience a case study of statistical problems. To train only math-teachers are in sufficinency.

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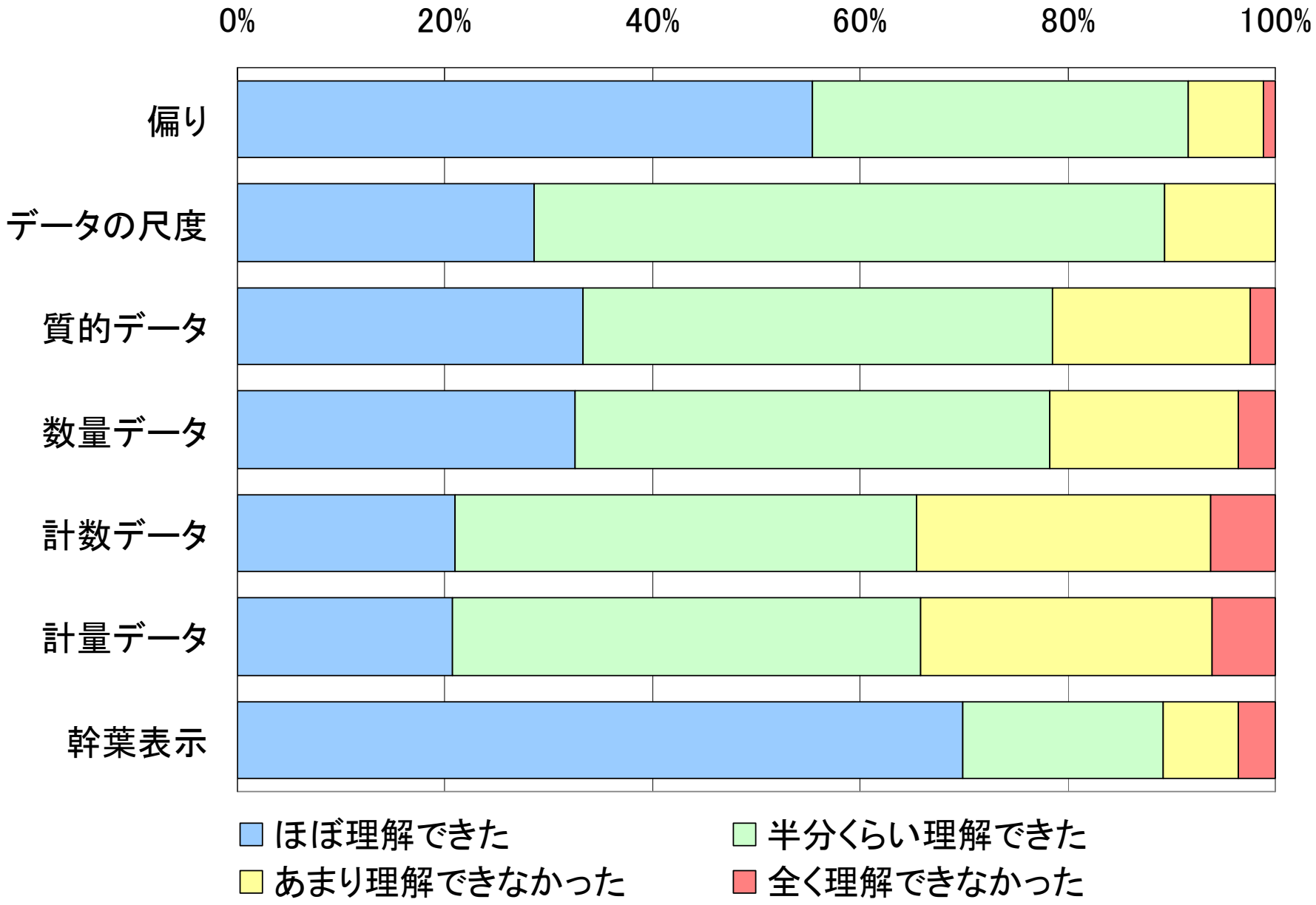
- (a) There may be no objection but who tell me the content, how can I get these information?
- (b) How should we train or nourish young teachers of statistics? There are not so many teachers in college who can have experience a case study of statistical problems. To train only math-teachers are in sufficinency.
- (c) Recognize a math teacher from a statistical one and the cooperation is necessary to join up a group work.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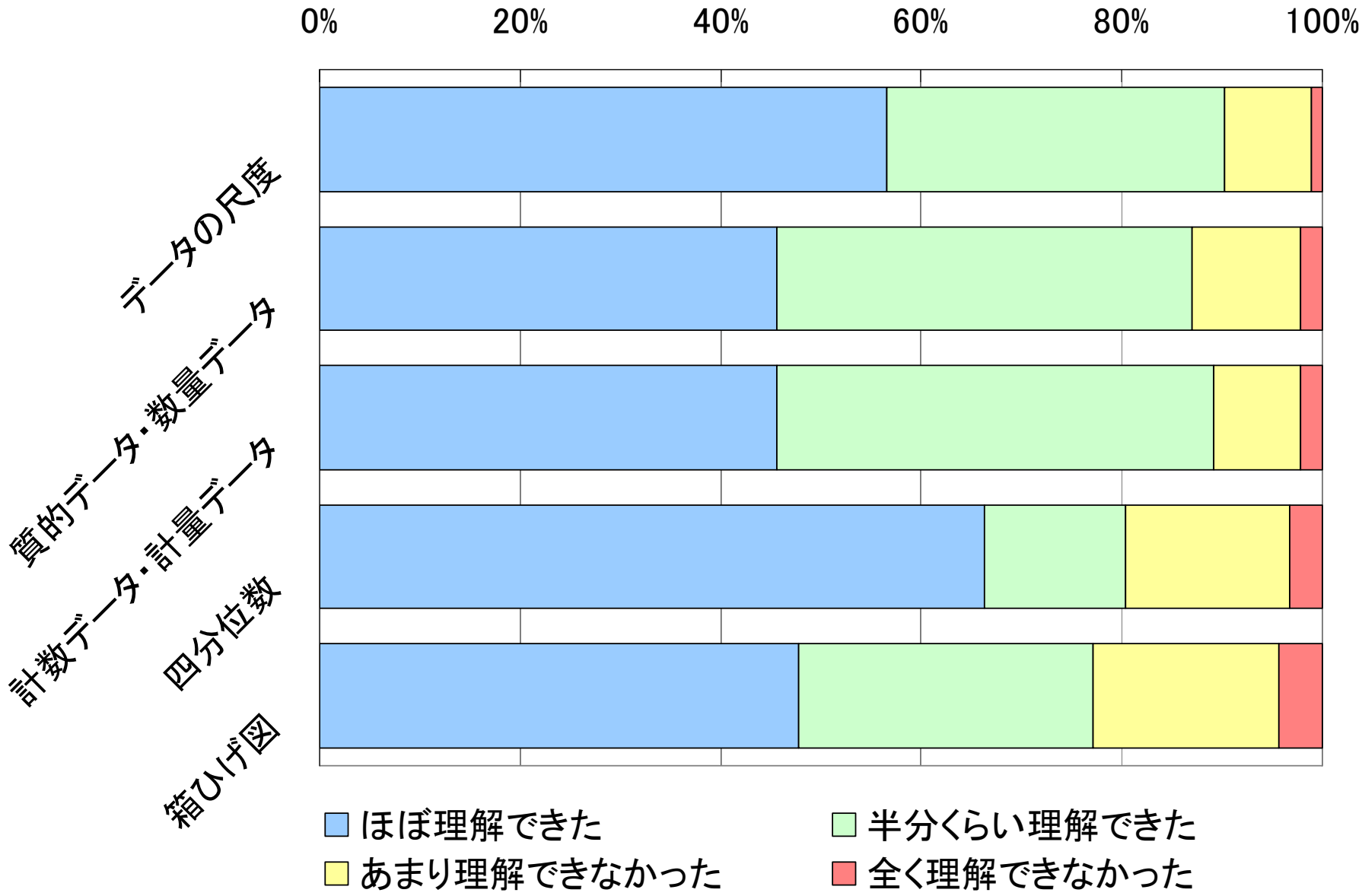
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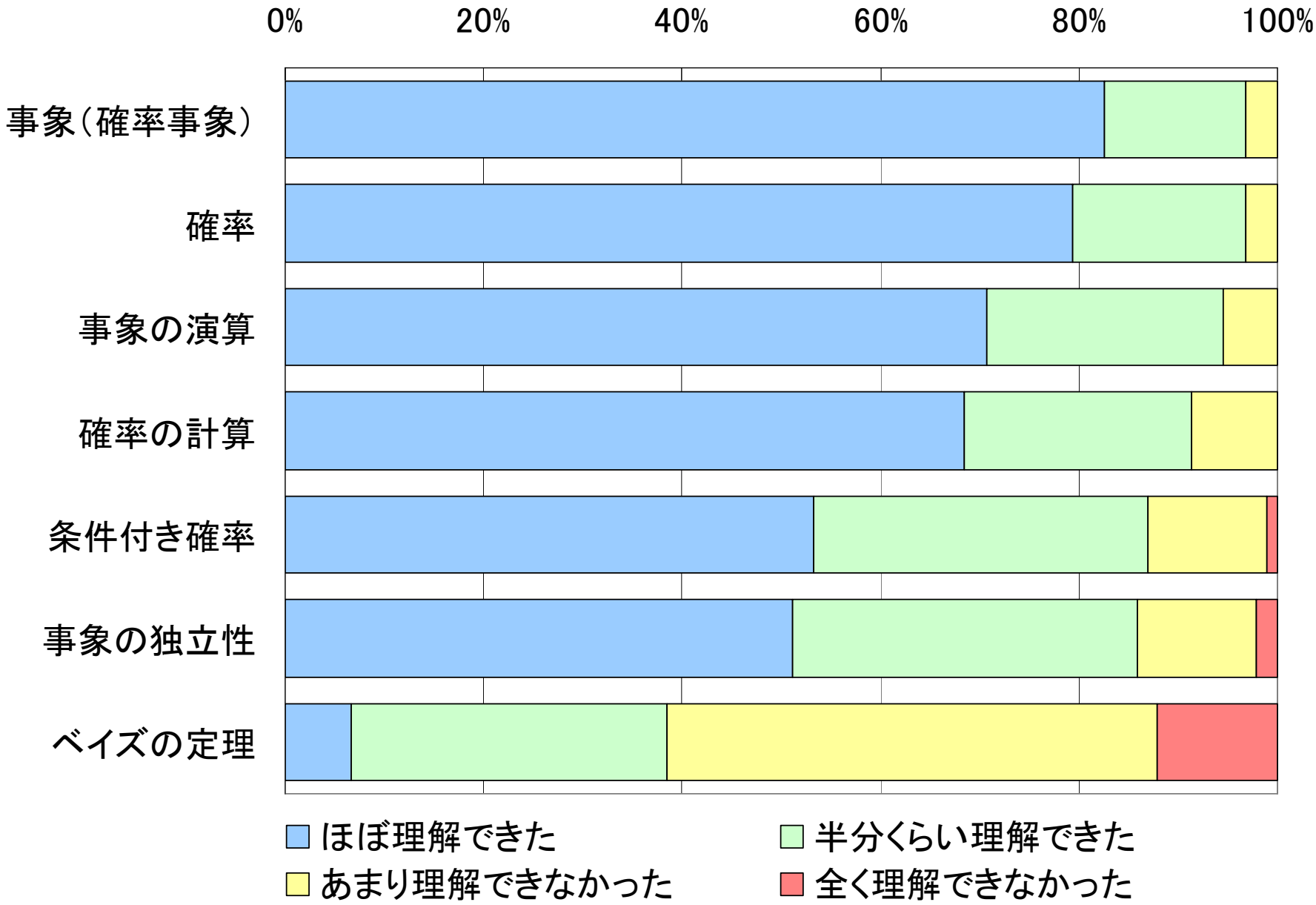
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事象（確率事象）
確率
事象の演算
確率の計算
条件付き確率
事象の独立性
ベイズの定理
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半分くらい理解できた
あまり理解できなかった
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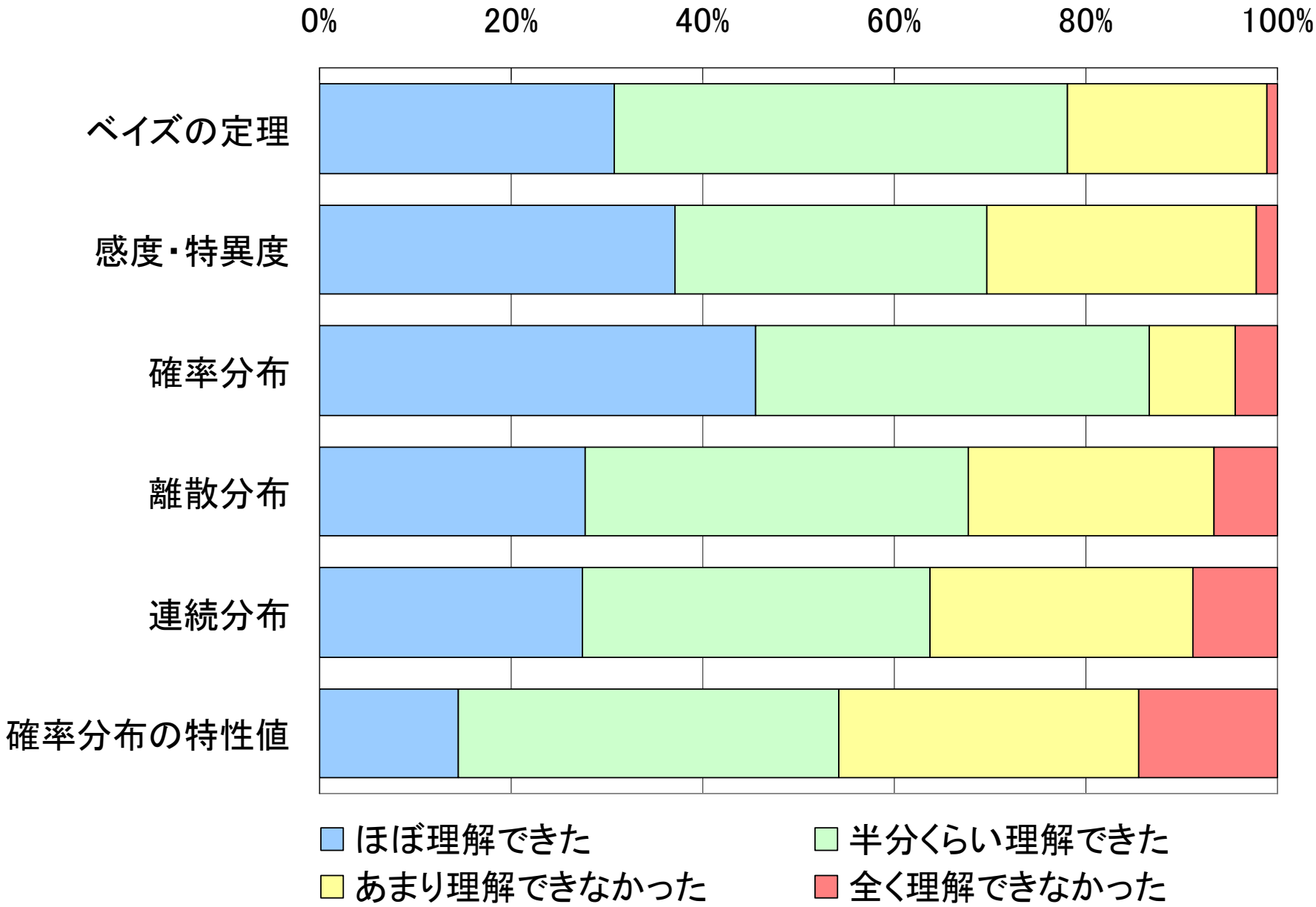
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感度・特異度
確率分布
離散分布
連続分布
確率分布の特性値
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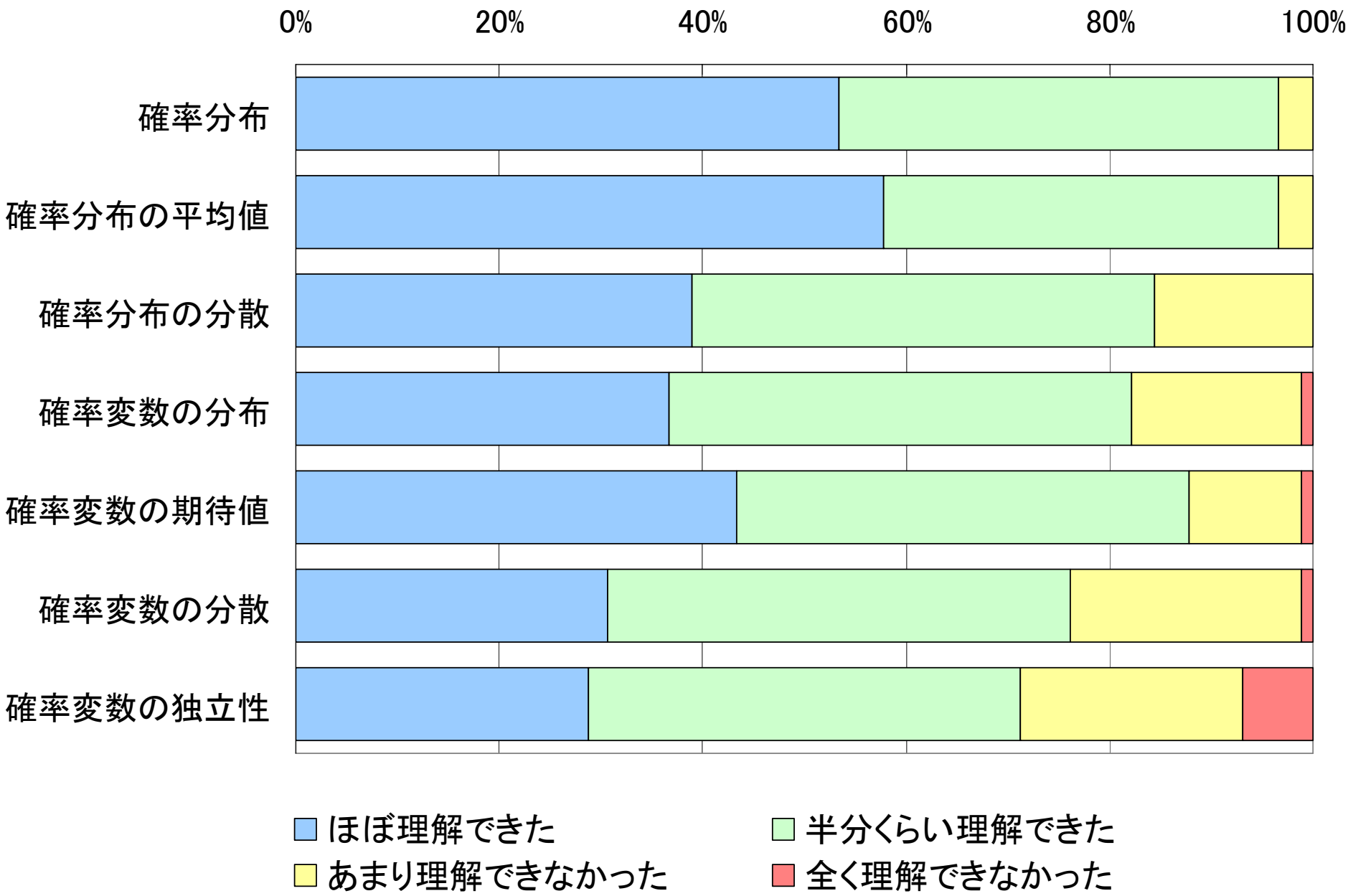
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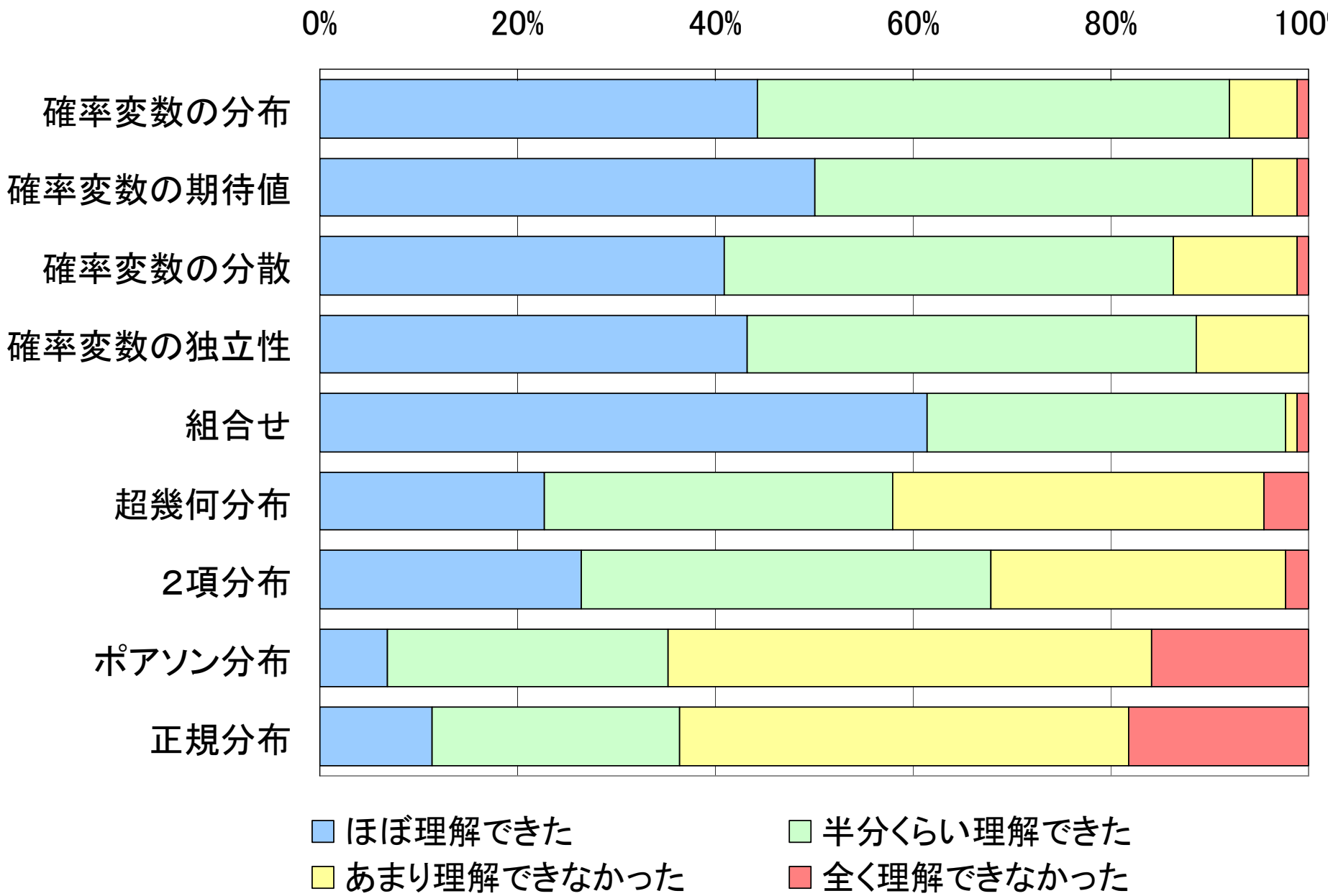
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確率変数の期待値
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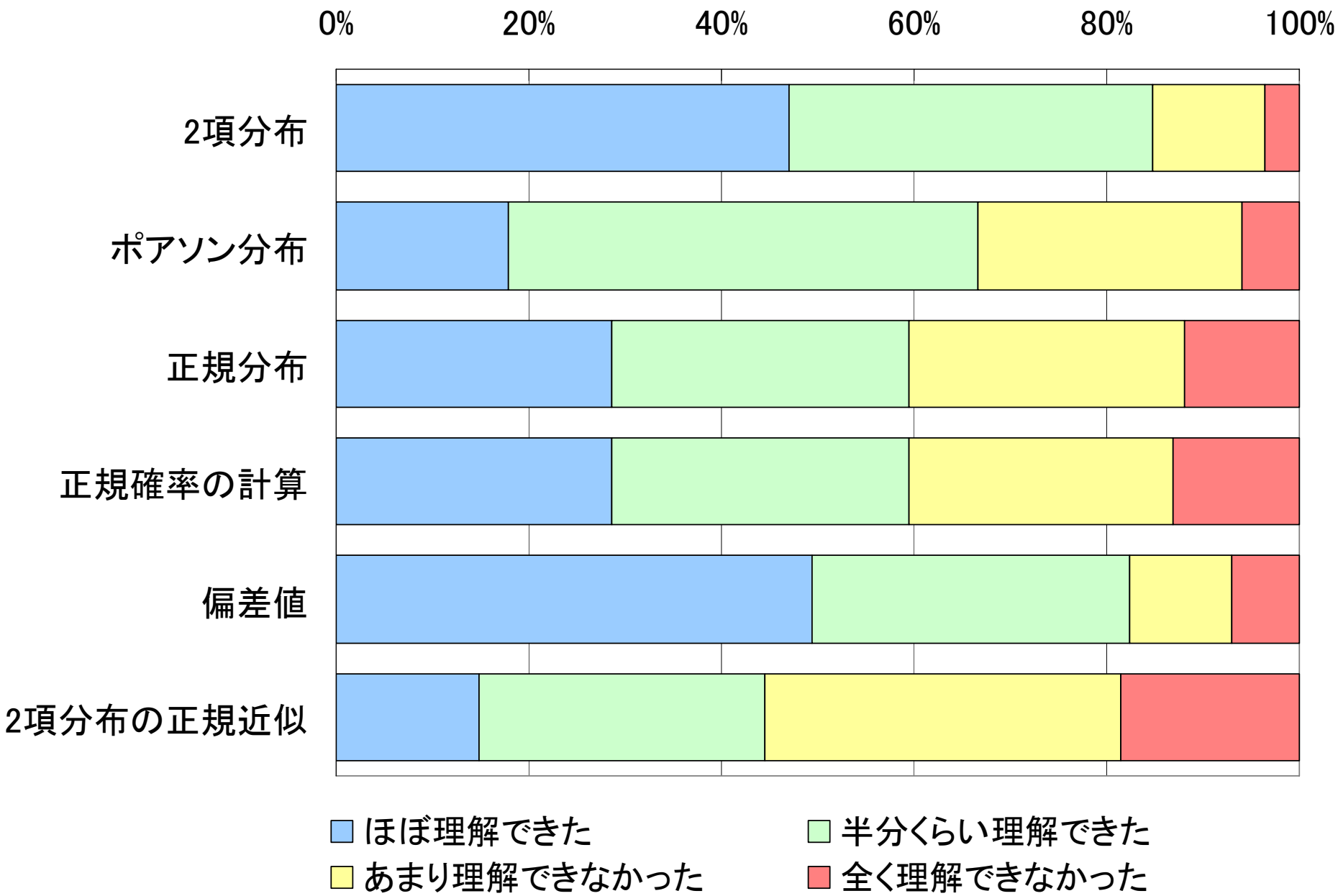
確率変数の独立性
組合せ
超幾何分布
2項分布
ポアソン分布
正規分布
ほぼ理解できた
半分くらい理解できた
あまり理解できなかった
全く理解できなかった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2項分布
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正規分布
正規確率の計算
偏差値
2項分布の正規近似
ほぼ理解できた
半分くらい理解できた
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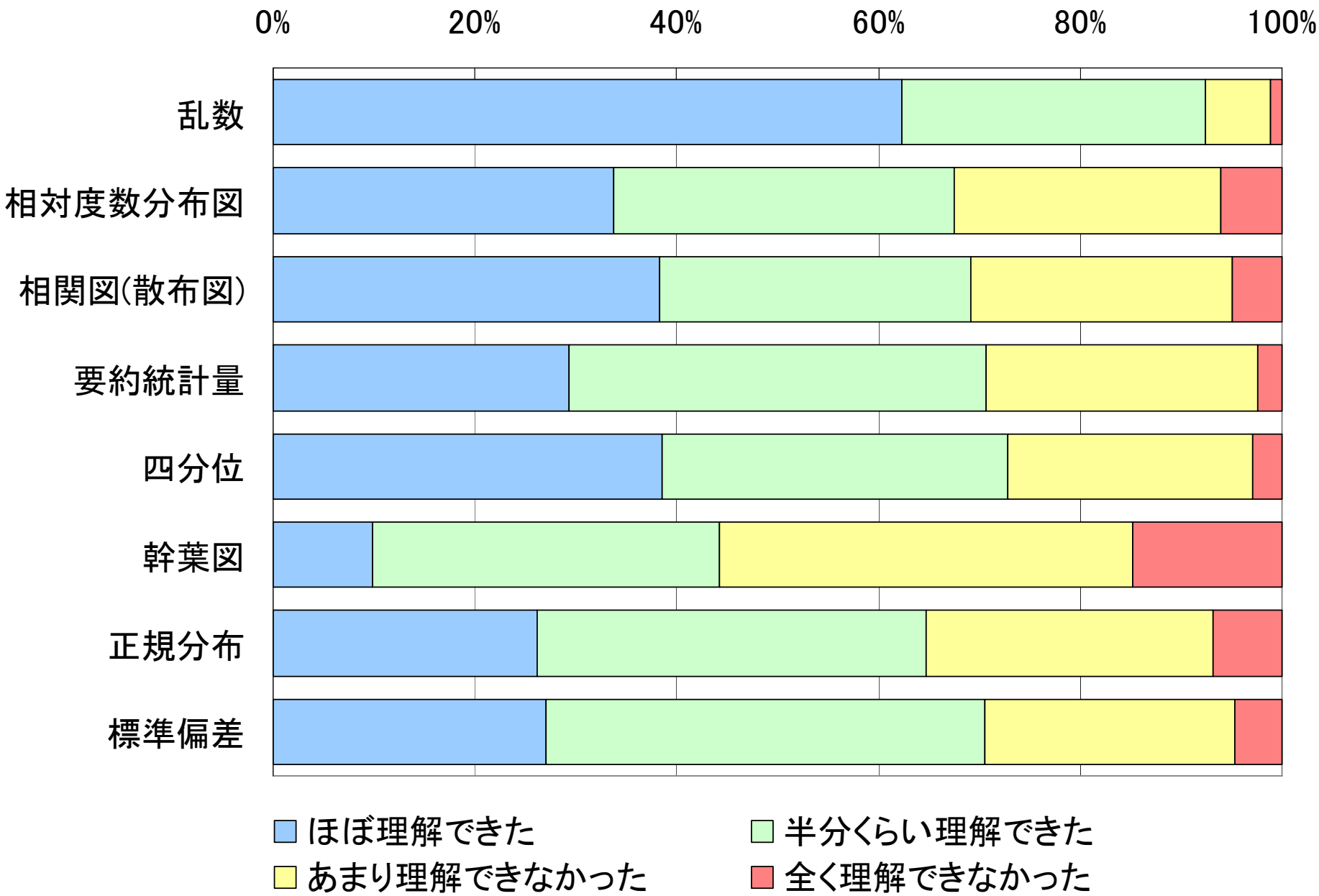
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四分位
幹葉図
正規分布
標準偏差
ほぼ理解できた
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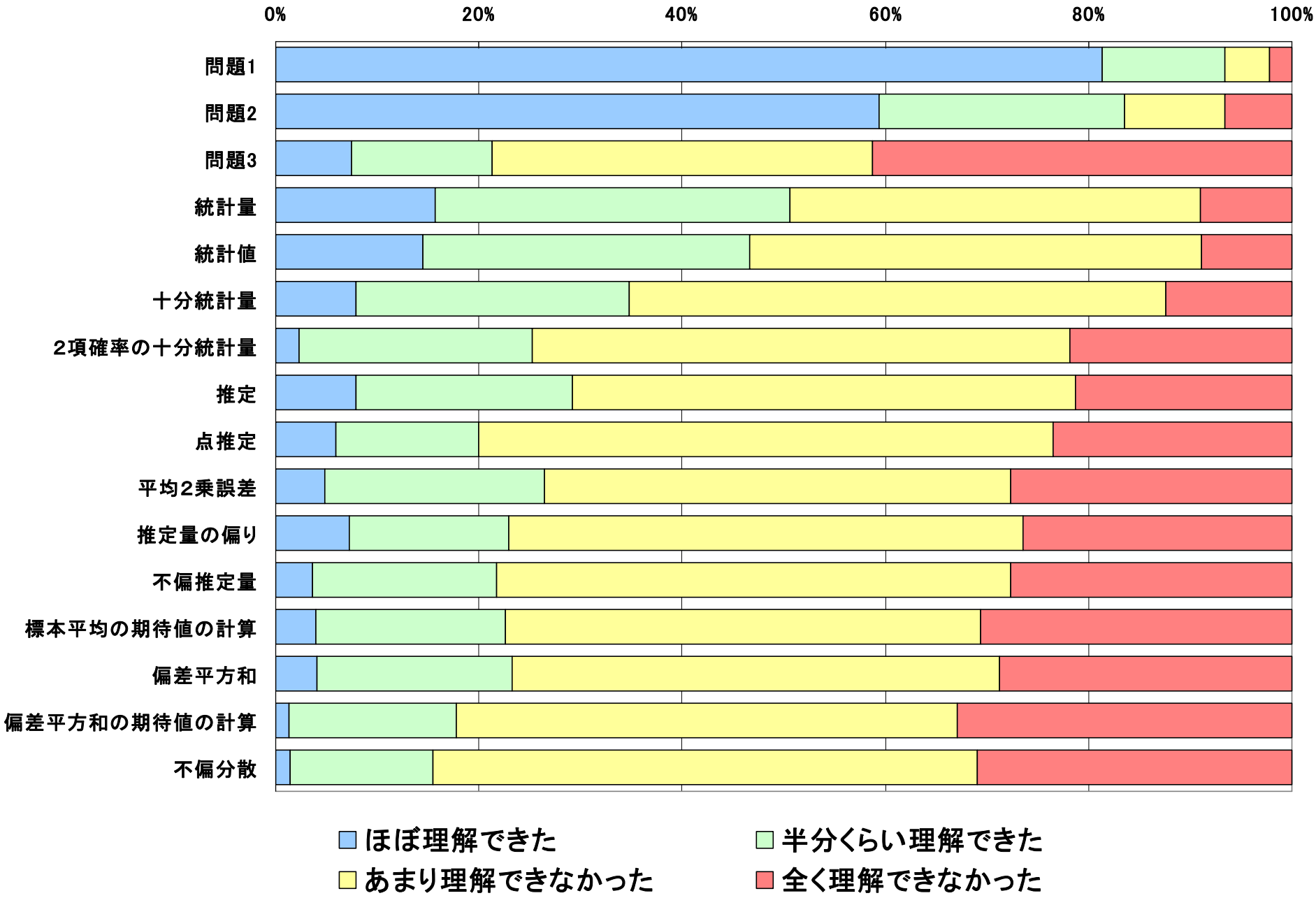
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2項確率の十分統計量
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点推定
平均2乗誤差
推定量の偏り
不偏推定量
標本平均の期待値の計算
偏差平方和
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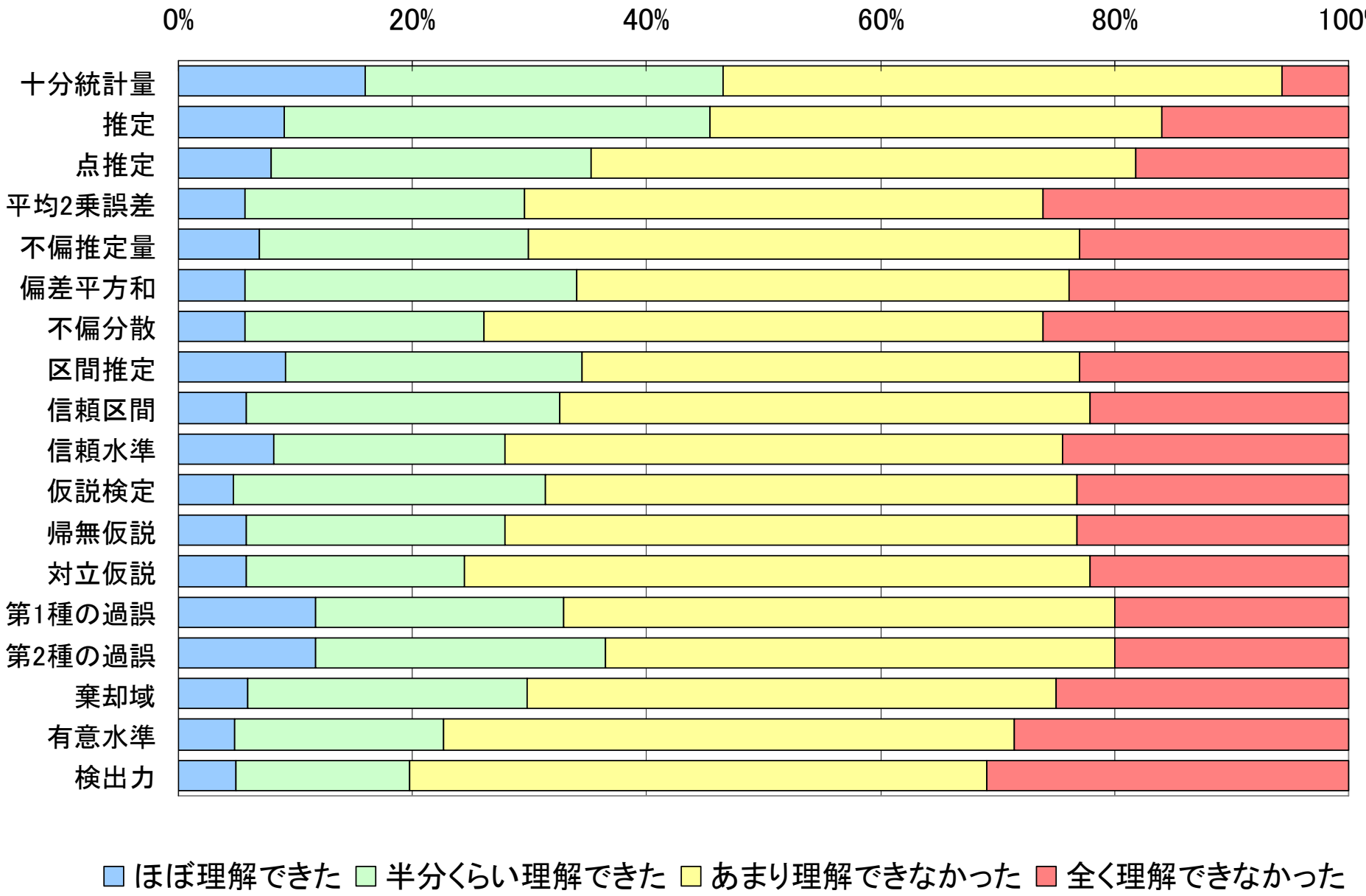
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帰無仮説
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第2種の過誤
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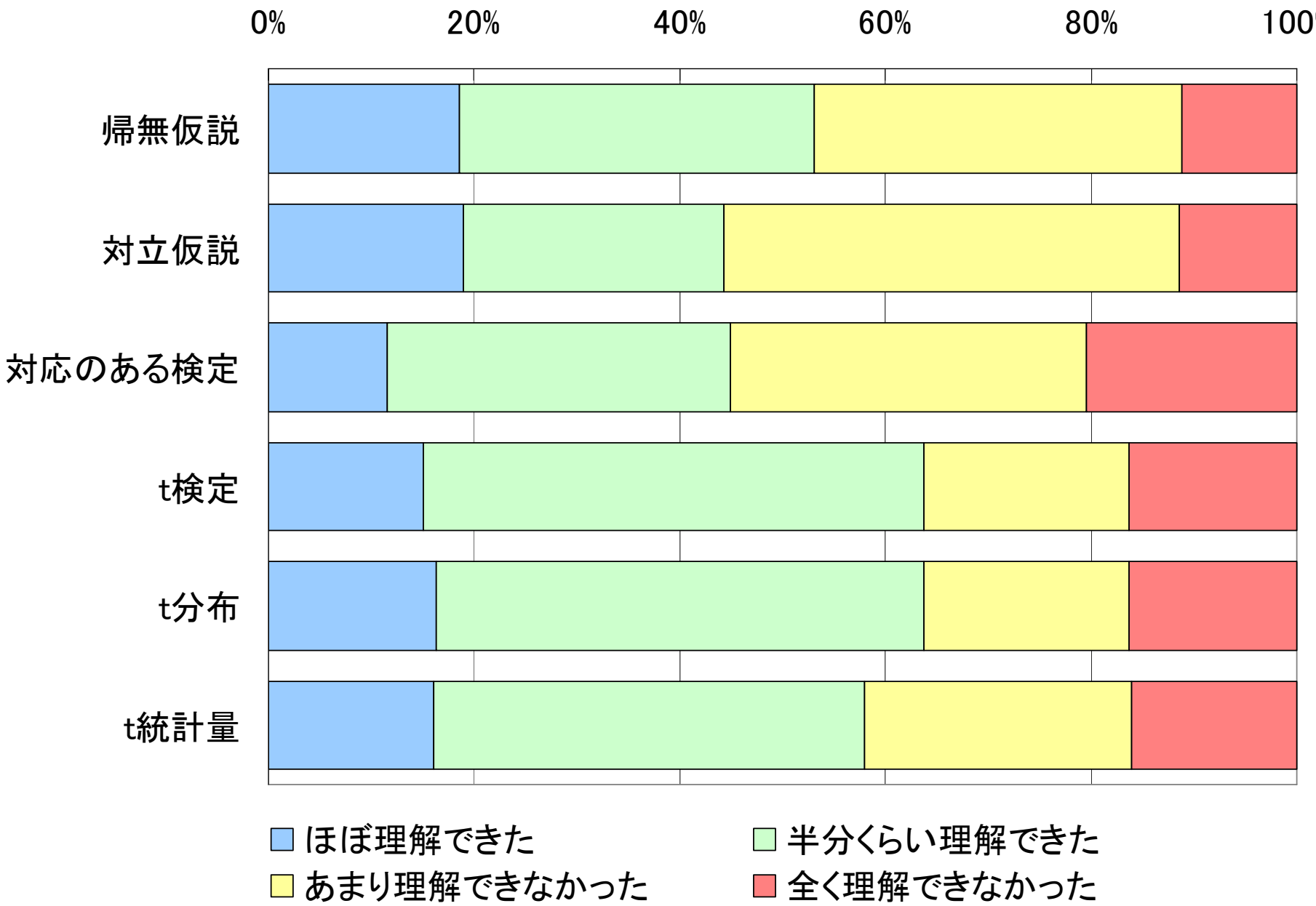
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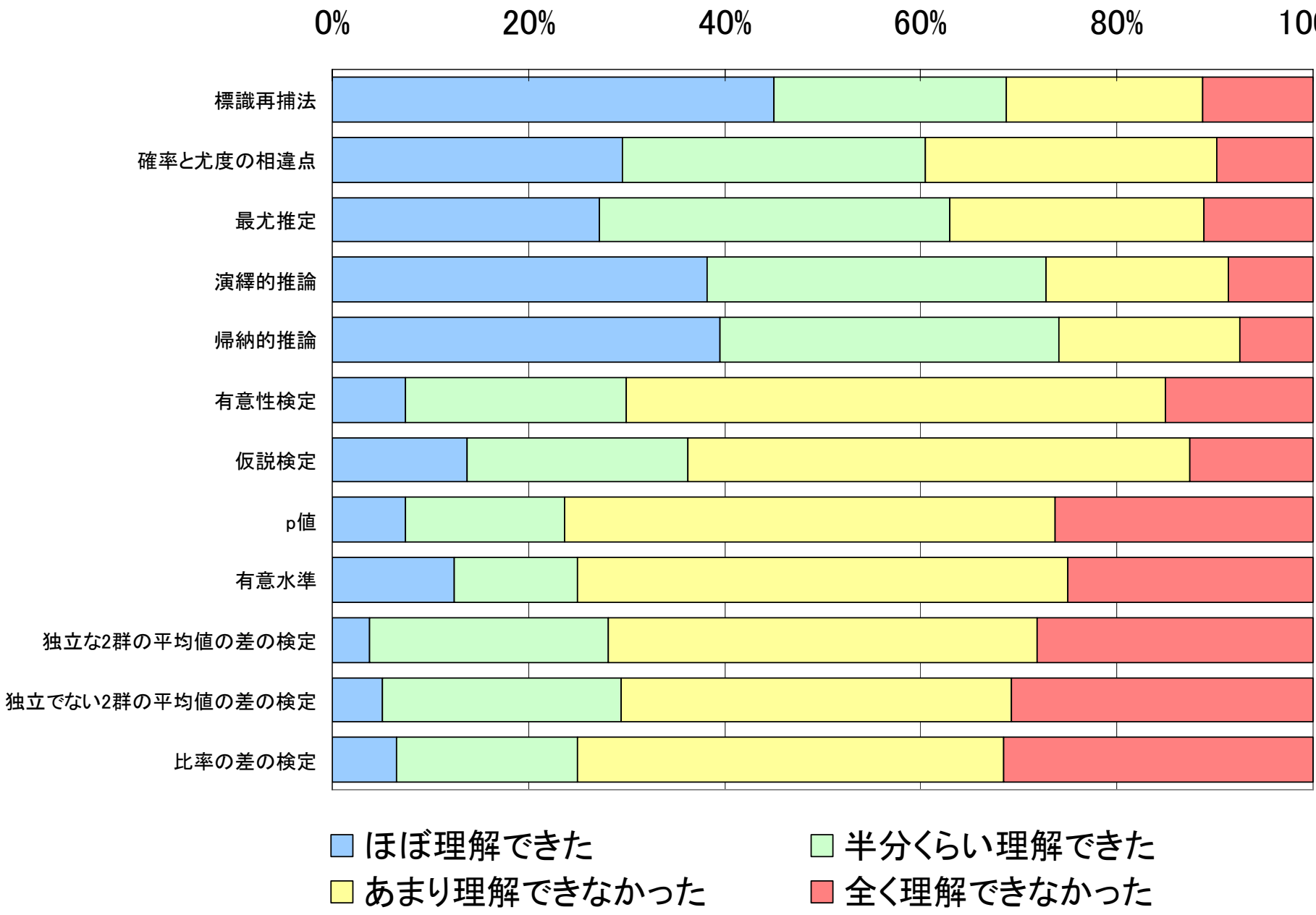
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標識再捕法
確率と尤度の相違点
最尤推定
演繹的推論
帰納的推論
有意性検定
仮説検定
p値
有意水準
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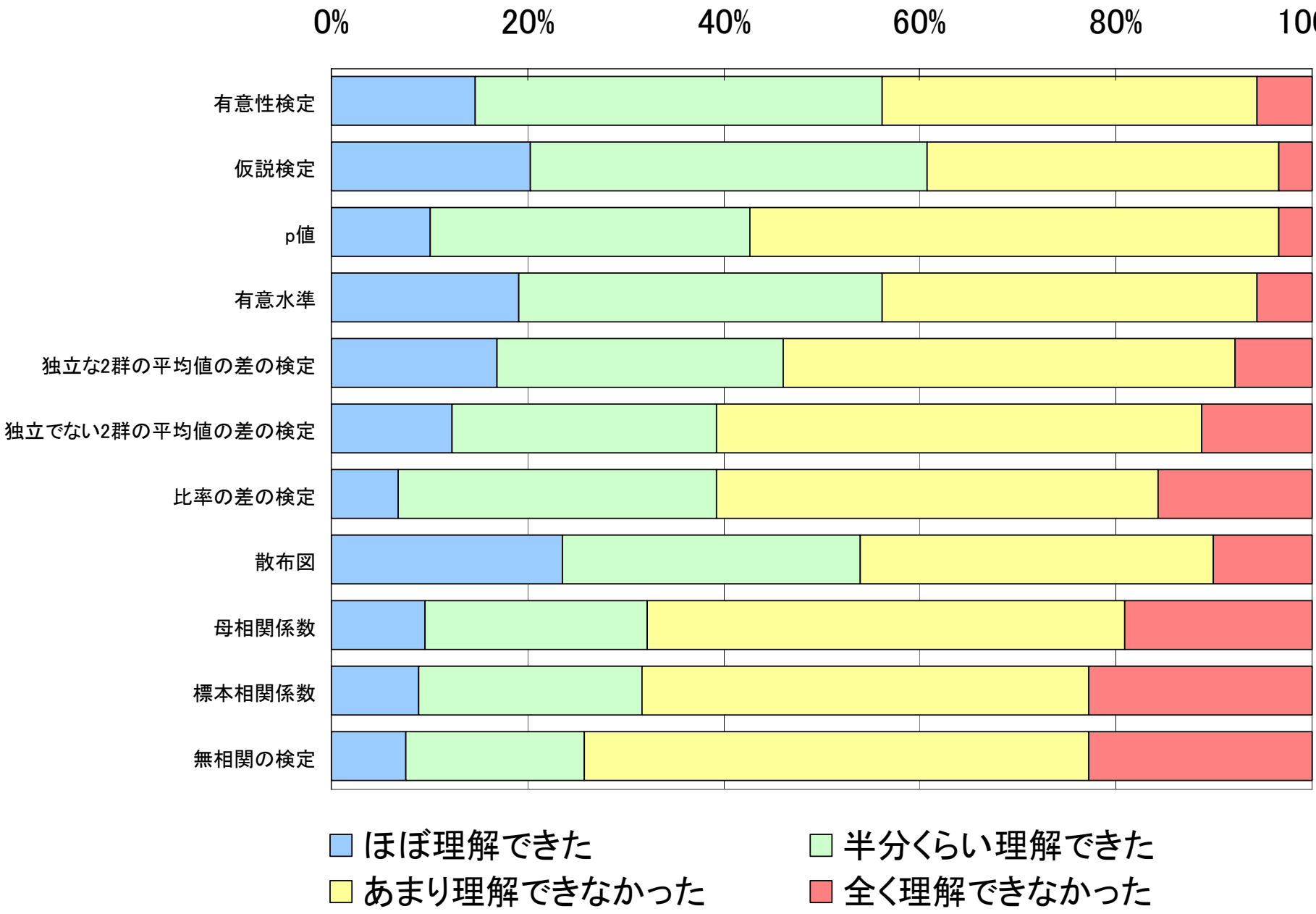
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標本相関係数
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