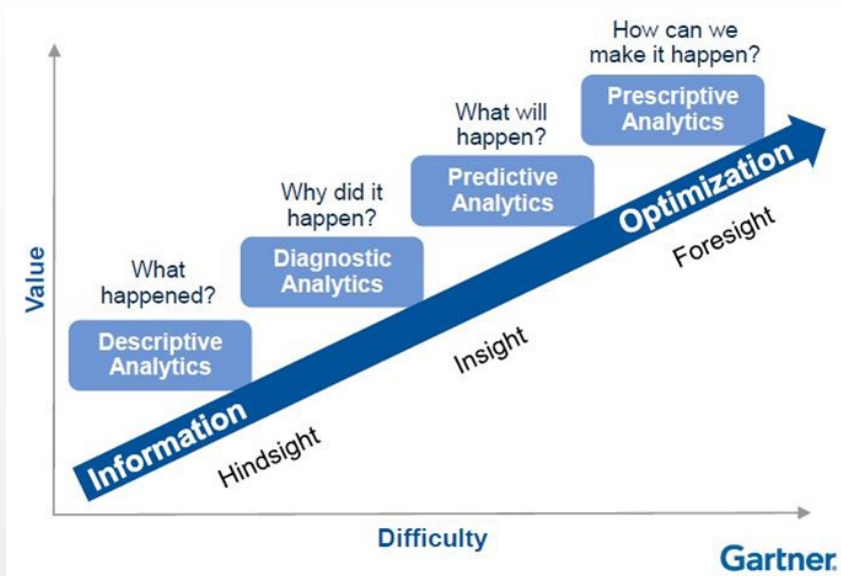




SIG: Predictive Analytics

Presenters: Nicolaas VanMeerten and Jenifer Doll

Definition



Predictive analytics is the use of data, statistical algorithms and machine-learning techniques to identify the likelihood of future outcomes based on historical data.

The Broad Impact of Predictive Analytics

- Credit Scoring
- Fraud Detection
- Marketing
- Political Campaigns
- Law Enforcement
- College Admissions
- Healthcare
- Transportation Systems
- Search Engines
- Social Networks

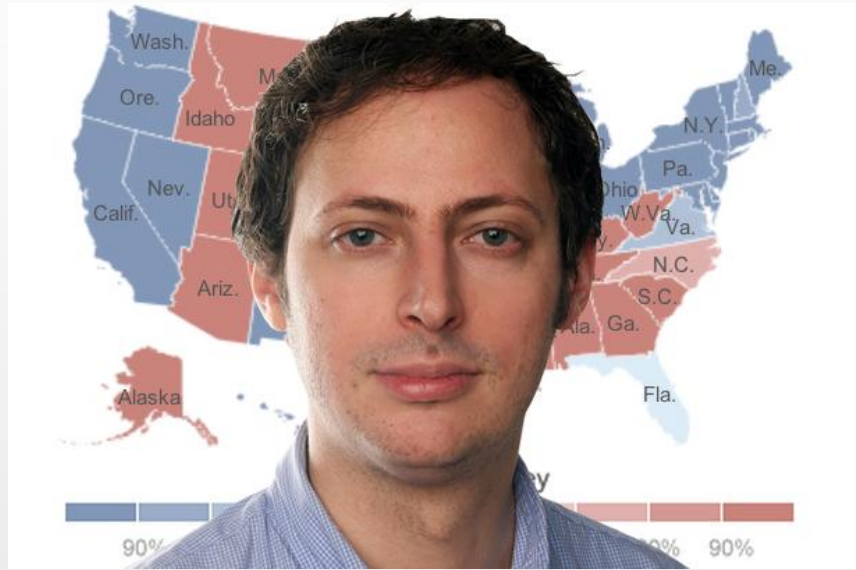


Your Thoughts?

- What applications do you see for predictive analytics in education?
- In your specific discipline, what would you like to be able to predict?



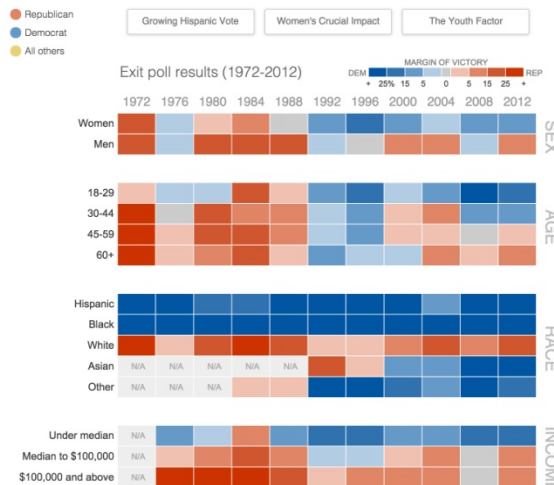
Predictive Analytics vs. Forecasting



Predictive Analytics vs. Forecasting

Decisive demographics

Democratic campaign strategists knew they had to win the support of three key groups: minorities (especially Hispanic voters), women and young voters in order to secure Barack Obama's re-election. Historically, key demographics have often played pivotal roles in presidential elections.



Forecasting involves analyzing *trends* in aggregate

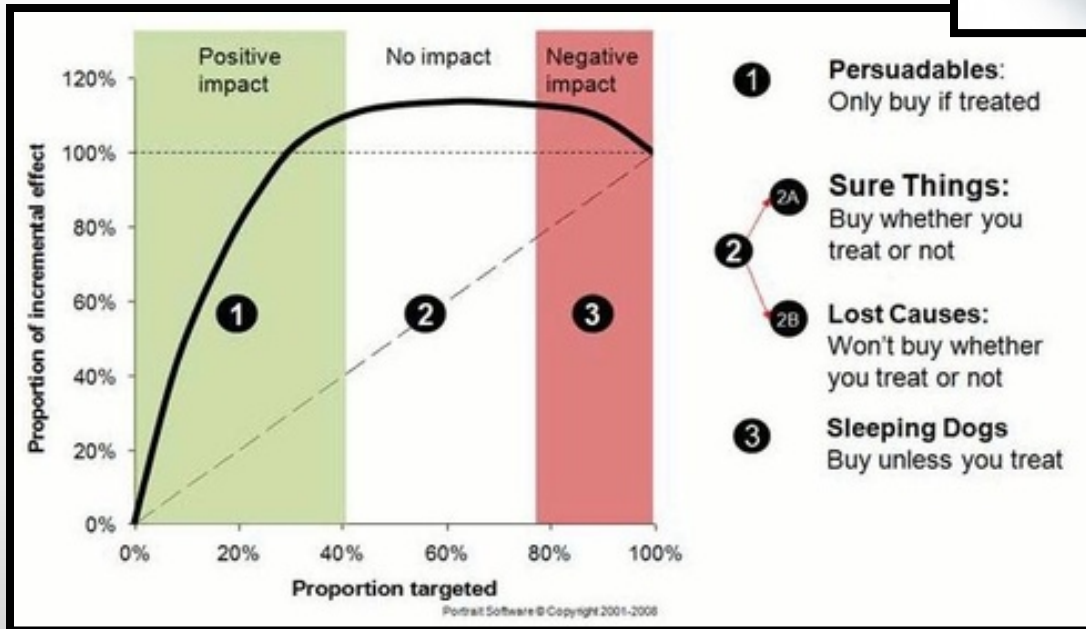
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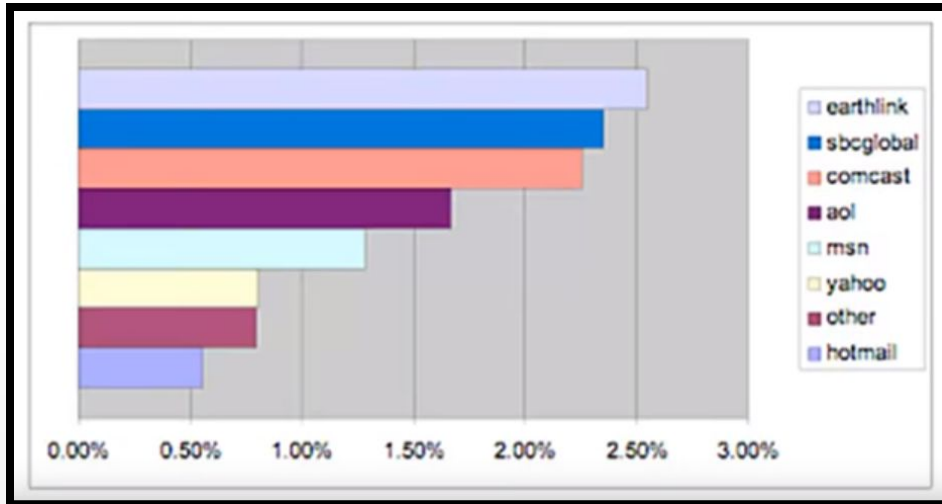


Predictive Analytics vs. Forecasting

Predictive Analytics
creates *models* of
behavior



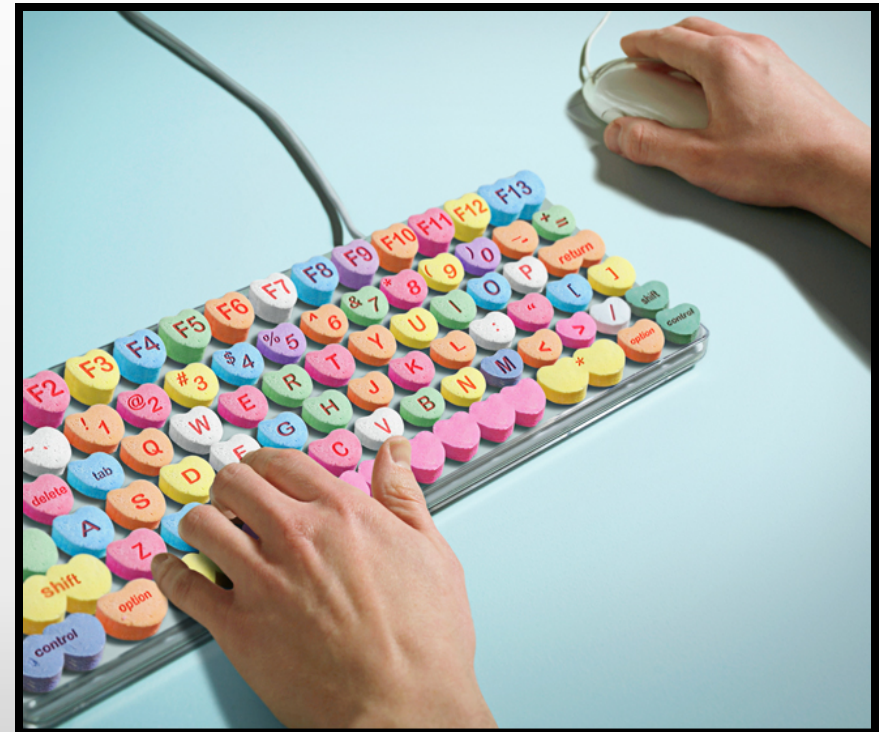
Correlations and Prediction



One marketing project found that user email domain corresponded to subscription acquisitions

There does not need to be a causal link between email domain and subscriptions in order for this information to be useful.

Interpretations can be made as to why this correlation exists, but the focus of the email marketing campaign is clear regardless.



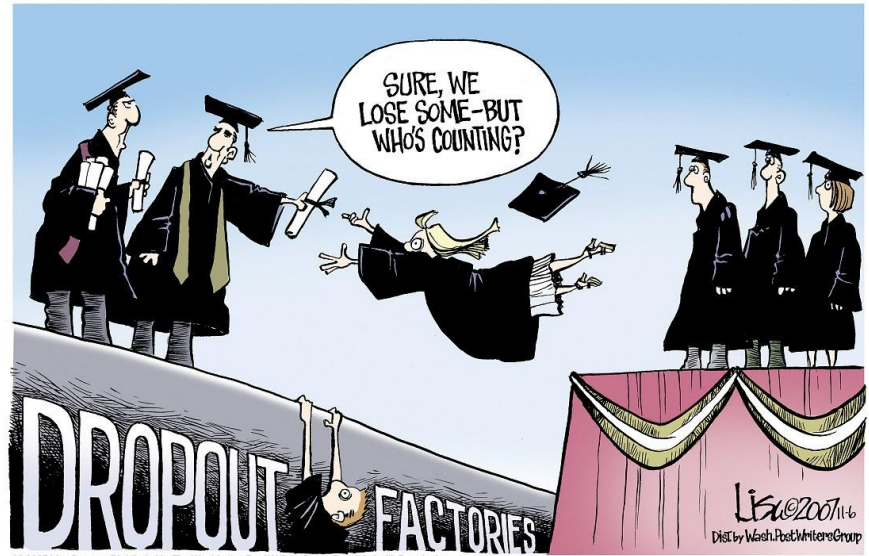
Training Data and Constructing Models

- Training data is analyzed to identify possible predictive relationships
- The next step is to build models which can make predications for new data points
- The correctness/incorrectness of these predictions can then inform the model to make it more effective

In Education



- Improving student performance
- Increasing student retention
- Managing enrollment more effectively
- Supporting institutional advancement
- Improving financial aid management
- Enhancing campus security



Example Goals:

- Self-generated Interventions
- Intelligent Recommendation Feedback
- Resource Allocation

Affective States and State Tests

The original question

Triangles ABC and DEF are congruent. The perimeter of triangle ABC is 23 inches. What is the length of side DF in triangle DEF?

[Request Help](#)

Type your answer below (mathematical expression):

[Submit Answer](#)

[Comment on Problem #4464](#)

1st scaffold

Which side of triangle ABC has the same length as side DF of triangle DEF?

A hint

Lets make sure you understand what corresponding sides are. In this picture the corresponding sides are marked. Does this help you?

[Request Help](#)

Select one:

AB

BC

AC

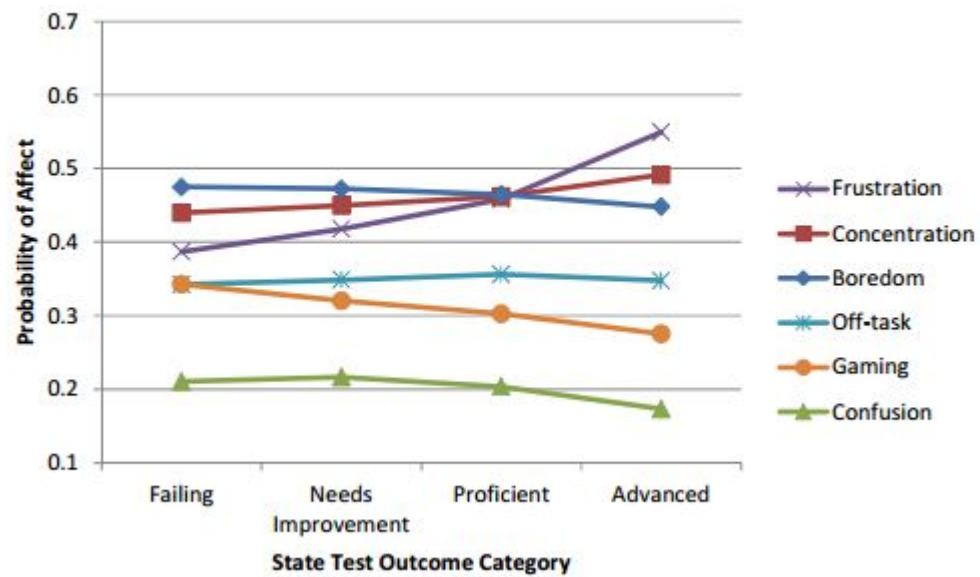
[Submit Answer](#)

A buggy message

Side AB corresponds to side DE of triangle DEF, not DF. Try again, please.

[Comment on Hint #2267](#)

Affect on Original Questions



Affective States and State Tests

The original question

Triangles ABC and DEF are congruent. The perimeter of triangle ABC is 23 inches. What is the length of side DF in triangle DEF?

[Request Help](#)

Type your answer below (mathematical expression):

[Submit Answer](#)

[Comment on Problem #4464](#)

A buggy message

Sorry, that is incorrect. Let's move on and figure out why!

1st scaffold

Which side of triangle ABC has the same length as side DF of triangle DEF?

[Request Help](#)

Lets make sure you understand what corresponding sides are. In this picture the corresponding sides are marked. Does this help you?

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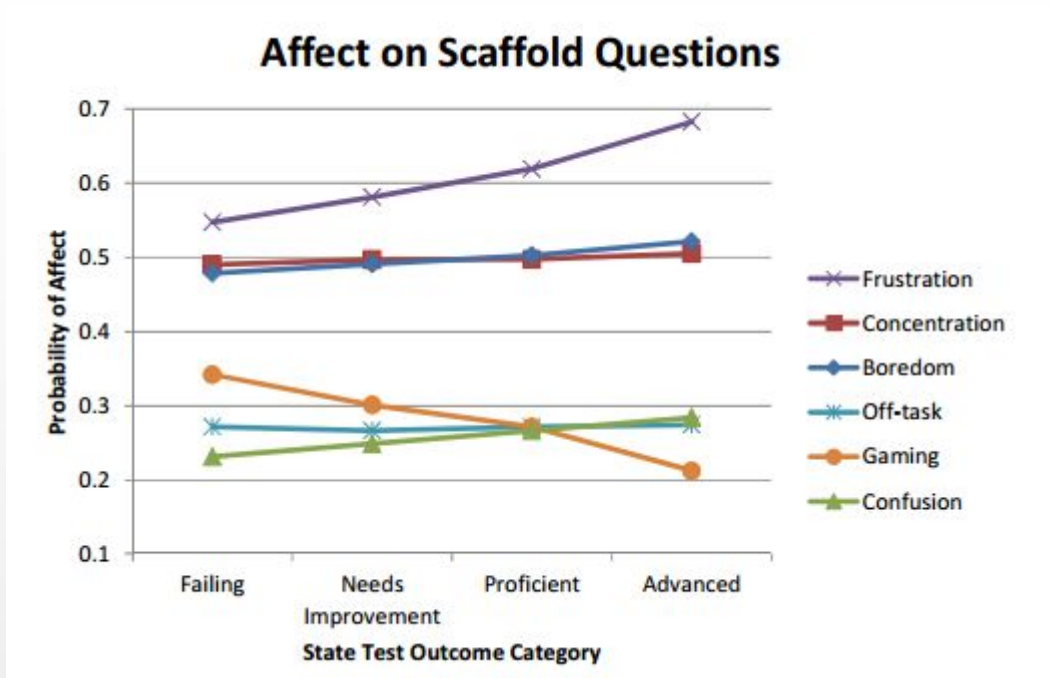
BC

AC

[Submit Answer](#)

[Comment on Hint #2267](#)

Side AB corresponds to side DE of triangle DEF, not DF. Try again, please.



Break and Activity



data
iku

Ethics

- Do students have a right to know exactly what data is being tracked and are they then entitled to the interpretations of what that data indicates about them based on the model in use?
- Does “knowing” something via predictive analytics entail an obligation to act on the knowledge?

