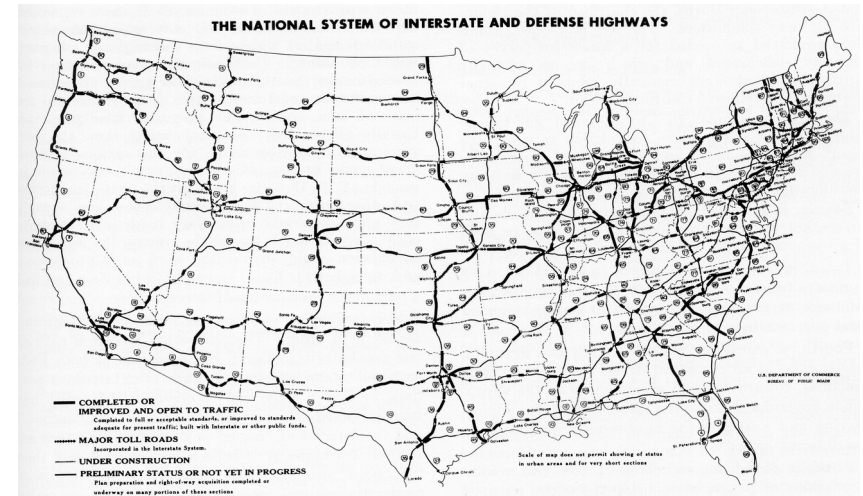


Jason Sauppe

Broad Interests:

- Theoretical Computer Science
 - Data structures and algorithms
- Operations Research
 - Optimization, Analytics



- The Science of Better
<http://www.scienceofbetter.org/>
- INFORMS
<https://www.informs.org/About-INFORMS>

$$\begin{aligned} & \min \sum_{(i,j) \in A} c_{ij} x_{ij} \\ \text{s.t.} \quad & \sum_{j: (i,j) \in A} x_{ij} - \sum_{j: (j,i) \in A} x_{ji} = b_i \quad \forall i \in N \\ & x_{ij} \geq l_{ij} \quad \forall (i,j) \in A \\ & x_{ij} \leq u_{ij} \quad \forall (i,j) \in A \end{aligned}$$

Past Projects

Election Analytics

Election Analytics @ Illinois

★ Home ★ Details Trends Methodology FAQ Mentions Contact Donate

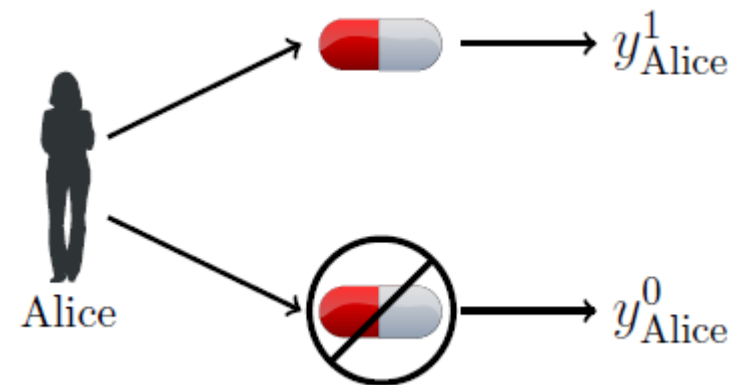


Welcome to Election Analytics

Election Analytics tracks and analyzes polling data to forecast who will win the United States Presidency and which party will secure control of the United States Senate. Without any political commentary or partisan opinion, Election Analytics delivers the facts in a simple, concise format. Election Analytics, a student run STEM (Science, Technology, Engineering, and Mathematics) learning laboratory, uses Bayesian statistics and operations research methodologies to make sense of the daily stream of polling data reported in the [national media](#). Election Analytics provides a snapshot of the current state of the election, forecasting the outcome if the election was held today. Available since 2008, Election Analytics provides a full history of its performance.

<http://electionanalytics.cs.illinois.edu>

BOSS



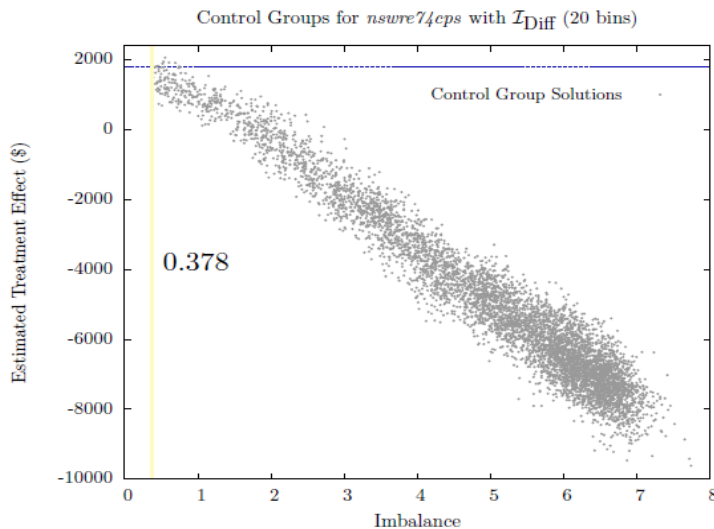
$$\begin{aligned} \min \quad & \sum_{i \in \mathcal{P}} \sum_{j \in B_i} z_{ij} \\ \text{s.t.} \quad & \sum_{c \in C} v_c = k \end{aligned}$$

$$\begin{aligned} \left(\frac{1}{k} \sum_{c \in C \cap B_{ij}} v_c \right) - \frac{|T \cap B_{ij}|}{|T|} &\leq z_{ij} & \forall i \in \mathcal{P}, j \in B_i \\ \frac{|T \cap B_{ij}|}{|T|} - \left(\frac{1}{k} \sum_{c \in C \cap B_{ij}} v_c \right) &\leq z_{ij} & \forall i \in \mathcal{P}, j \in B_i \\ v_c &\in \{0, 1\} & \forall c \in C \\ z_{ij} &\geq 0 & \forall i \in \mathcal{P}, j \in B_i \end{aligned}$$

Future Research

BOSS Extensions

- Alternate Imbalance measures
- Optimizing over big datasets
- Multiple treatments



Applied Optimization

- Modeling
- Implementation
- Improving algorithms

