DATA TO POLICY PROJECT

Using real data to solve real problems
INSPIRATION

Giving students a constructive voice to respond to police shootings

DATA TO POLICY PROJECT

Want your voice to be heard and make a difference? Want to get course credit while you do it?

Hack a problem, crunch the numbers, and pitch your ideas to people in government and law enforcement, all the while getting the credits you need to graduate.

This year’s focus is on Denver Policing. Teams engage issues in police practices, crime patterns, or information collection to improve policing. Enroll in a participating course, or form a team on your own.

library.auraria.edu/data-to-policy
2017-2018:
- Policing
  - Patterns in Crime
  - Policing Practices
  - Information Collection

2018-2019:
- Policing
  - Affordable Housing

2019-onward:
- Public Data for Public Good
PANELS AND SYMPOSIUMS

Photo: Matt Mariner
Optimized Allocation of Police Officers in Denver County

Authors: Alexa Desautels, Christina Ebene, Anna Gibala, Joshua Luginbill

Abstract
Police presence is known to be a key factor in reducing violent crime in an area. However, the question of where officers should be placed, and in what quantity, is one of the most important in law enforcement. In this work, we propose an integer-linear programming formulation for the optimization of police officer allocation across crime districts in Denver County. The allocation takes into account the population, budget, number of officers, and violent crime data for Denver County from 2014. Moreover, we demonstrate how our model can be affected by changes to the budget and number of officers employed.

Objective
- Objective Function with Constraints

\[ \text{Maximize } \sum_{i=1}^{N} s_i \times x_i \]

The number of officers assigned to district \( i \) is \( x_i \leq N \).

\[ f_i \leq x_i \leq h_i \]

The number of officers assigned to district \( i \) should be between \( f_i \) and \( h_i \).

\[ c_i x_i \leq b_i \]

The cost of officers assigned to district \( i \) is \( c_i x_i \leq b_i \).

Methods
Given the violent crime data for 2014, we propose to optimize the allocation of police officers across crime districts. We considered a certain number of officers to distribute, taking into account violent crime data to allocate more officers to districts where more violent crime occurred. The allocation is constrained by an "ideal number" of officers that each district would like to receive and a budget for each district. Additionally, each district must receive a minimum number of officers mandated by its crime risk and to maintain basic public safety.

Results
Below are the results of our model using data from 2014.

<table>
<thead>
<tr>
<th>District</th>
<th>Total Budget</th>
<th>Total Violent Crime</th>
<th>Ideal Number of Officers</th>
<th>Allocated Officers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10,000,000</td>
<td>5,000</td>
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<td>17,000,000</td>
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<td>1200</td>
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</table>

Policy Recommendations
Below are the results of our model when budget is increased to an "ideal".

<table>
<thead>
<tr>
<th>District</th>
<th>Total Budget</th>
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</tbody>
</table>

References
- City and Denver Police Department/Police Analysis Unit County of Denver, Denver, 2016.
- Michael B. Hancock, City and County of Denver Mayor’s Budget, 2016.

"POLICING PRACTICES" WINNING TEAM
Alexa Desautels
Christina Ebene
Anna Gibala
Joshua Luginbill
• Data!

• Government/Community questions

• Student analysis & policy work can contribute to local government

• Bridge between students and employers
INTERDISCIPLINARY VISION

Real-world context for learning

STEM students think about Policy

Policy students get comfortable with STEM
DATA TO POLICY WEBSITE

https://library.auraria.edu/d2pproject
D2P RESOURCES

Policy Practitioner Opportunities!

- Videos
- Guest lecture
- Mentor

Get Data
Access a spreadsheet for suggested data resources that can contribute to your project. Pursue other sources on your own to supplement as you’d like, but please cite any data you use in your analysis.

Get Context
Data analysis is highly susceptible to misinterpretation and misuse. Relationships between communities of color, law enforcement, and housing policies have a complex and often contentious history.

D2P has compiled a list of resources to help provide some background on these relationships to help deepen understanding of the issues being addressed by D2P projects.

Get Links
These websites will provide useful background, data and/or tools for your projects.

Get Links
HOW TO GET INVOLVED

• Attend the symposium!
  
  Dec. 4th
  
  9am at the Lawrence Street Center’s Terrace Room

• Volunteer as a judge for the symposium

• Submit questions

• Be a video star! (Or just visit a class)

• Mentor a promising project
CONTACT - D2P COMMITTEE

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Matt Mariner   matthew.mariner@ucdenver.edu Community liaison
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