

A Causal AI Suite for Decision-Making

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Causal Questions in Practice



- What is the impact of a marketing campaign?
- What are the drivers of customer churn?



- How do farmer practices effect soil carbon sequestration?
- Identifying retail demand factors for inventory planning
- Prioritizing maintenance to mitigate climate change effects



- Who doesn't benefit from a drug?
- What are long-term effects of a disease?
- How can AI models generalize across hospitals?

Design Principles

- Scaffolding causal analysis process for practitioners
 - Especially causal assumptions
- Separation of causal questions from algorithms and implementations
- Bridge across causal frameworks with common abstractions



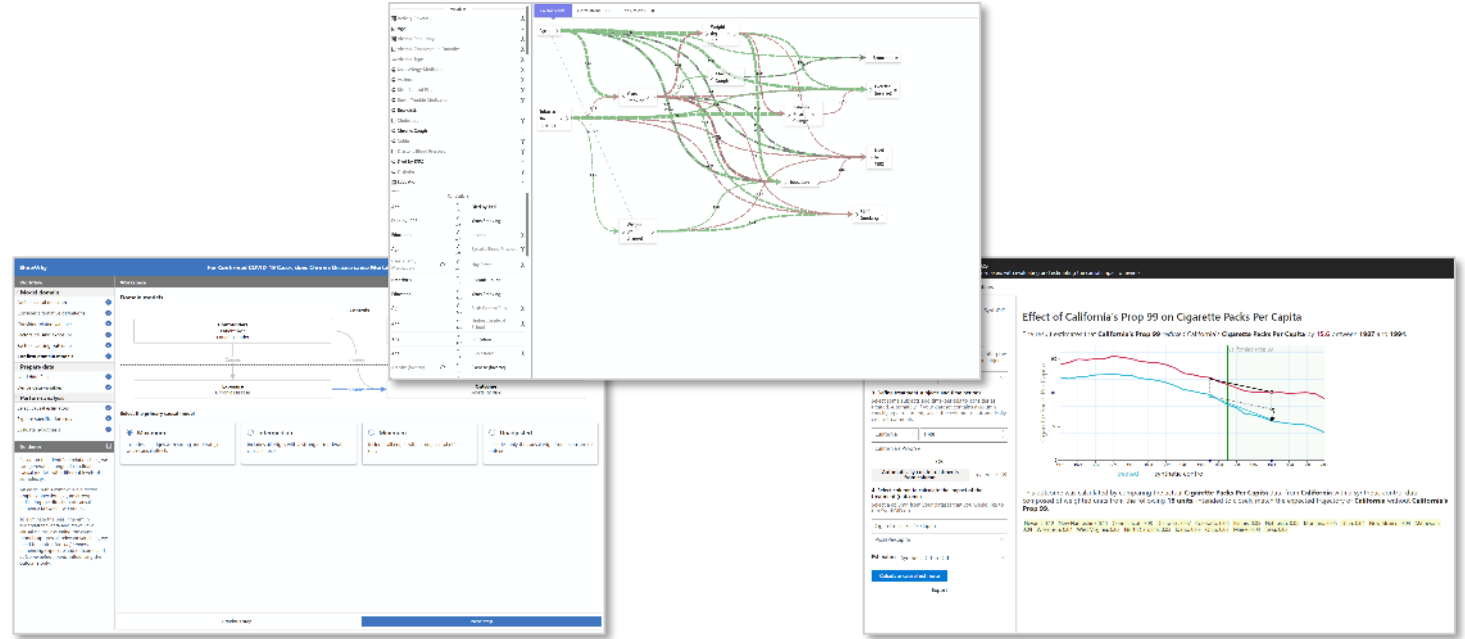
Causal AI Suite

DoWhy

EconML

Causica

ShowWhy



Discovery

Effect Inference
(identification & estimation)

Validation
&
Reporting



domain
knowledge



causal graph



causal effect



data



Research needs inspired from practical use

- Improved elicitation of domain knowledge
- Improved validation, refutation, and sensitivity analyses
- Improved support for unstructured and high-dimensional text and image data



Questions?

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Links:

- DoWhy/PyWhy: <https://pywhy.org/>
- EconML: <https://github.com/microsoft/econml>
- Causica: <https://github.com/microsoft/causica>
- ShowWhy: <https://github.com/microsoft/showwhy>

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