

## **Personalizing Causal Pathway Effects**

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The goal of personalized decision making is to map a unit's characteristics to an action tailored to maximize the expected outcome for that unit. Obtaining high-quality mappings of this type is the goal of the dynamic regime literature. In healthcare settings, optimizing policies with respect to a particular causal pathway may be of interest as well. For example, we may wish to maximize the chemical effect of a drug given data from an observational study where the chemical effect of the drug on the outcome is entangled with the indirect effect mediated by differential adherence. In such cases, we may wish to optimize the direct effect of a drug, while keeping the indirect effect to that of some reference treatment. We derive a variety of methods for learning high quality policies of this type from data, in a causal model corresponding to a longitudinal setting of practical importance. We illustrate our methods via a dataset of HIV patients undergoing therapy, gathered in the Nigerian PEPFAR program.