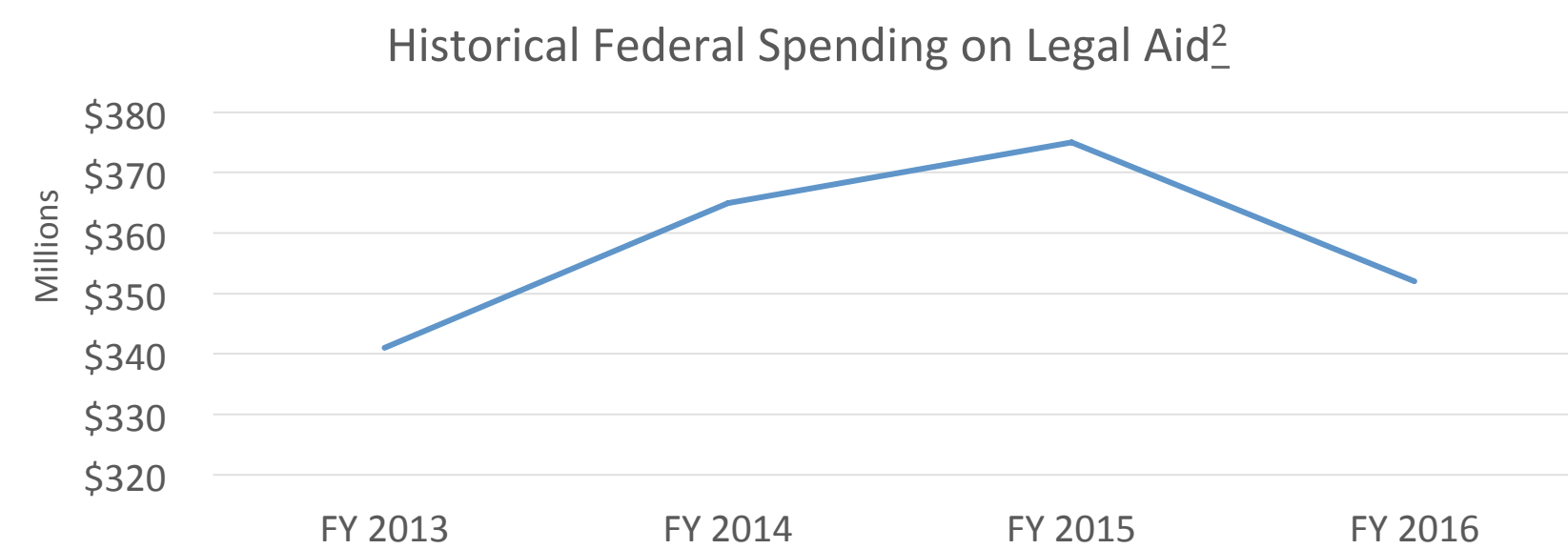


NEED & INDUSTRIAL RELEVANCE

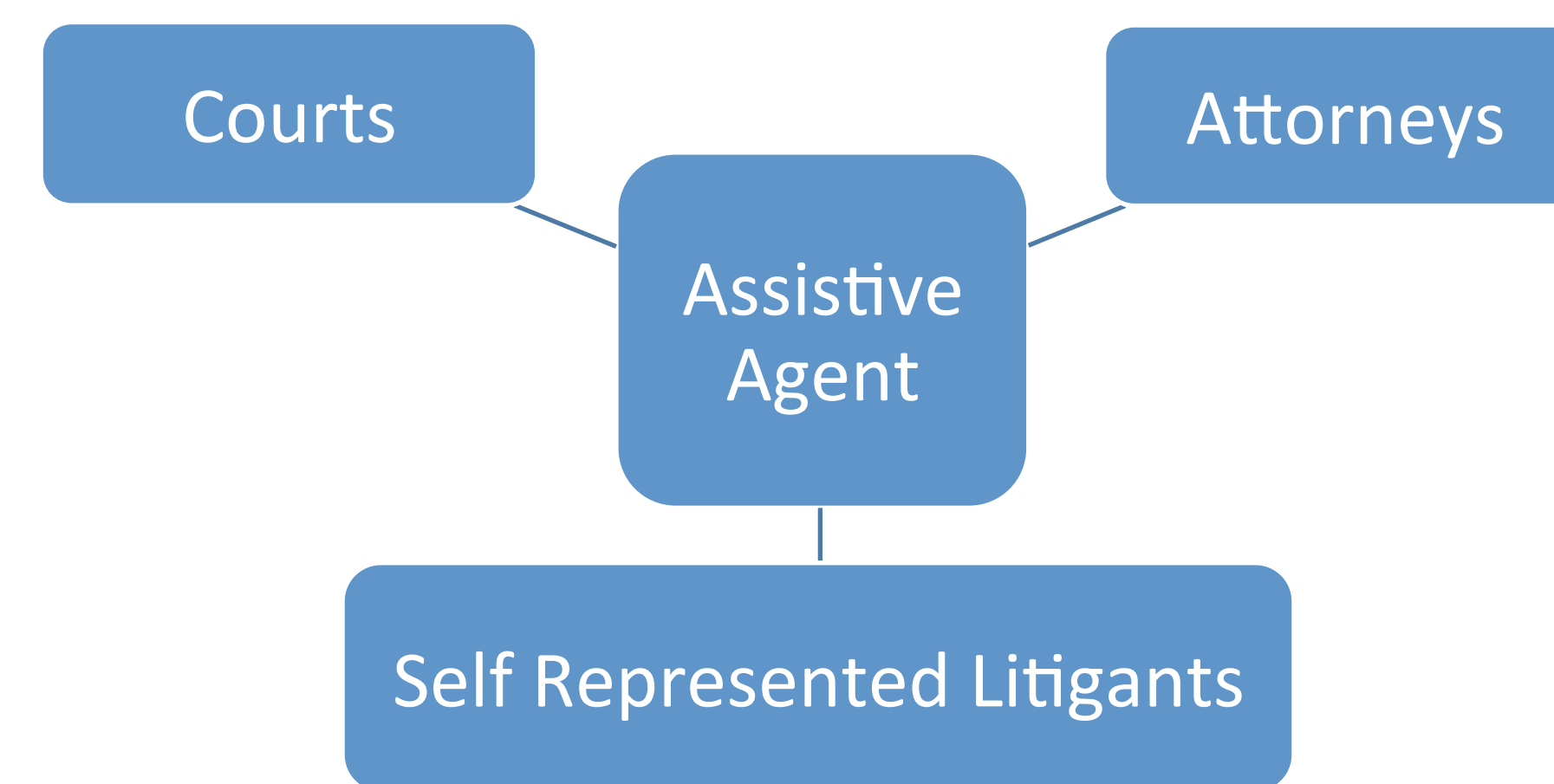
- In America today fewer than one in five low-income individuals have access to the legal help they need.¹
- Many individuals become self-represented litigants (SRLs) and achieve poor outcomes as a result.
- Federal spending on legal aid would need to increase from \$300M to \$1.6B to resolve these issues.¹



1. Documenting The Justice Gap In America. Legal Services Corporation. 2009
2. Legal Services Corporation Funding (www.lsc.gov/lsc-funding)

PROJECT GOALS

- Meet legal needs without increasing federal spending.
- Provide helpful and personalized assistance to SRLs.
- Optimize the matching of SRLs with attorneys and courts.

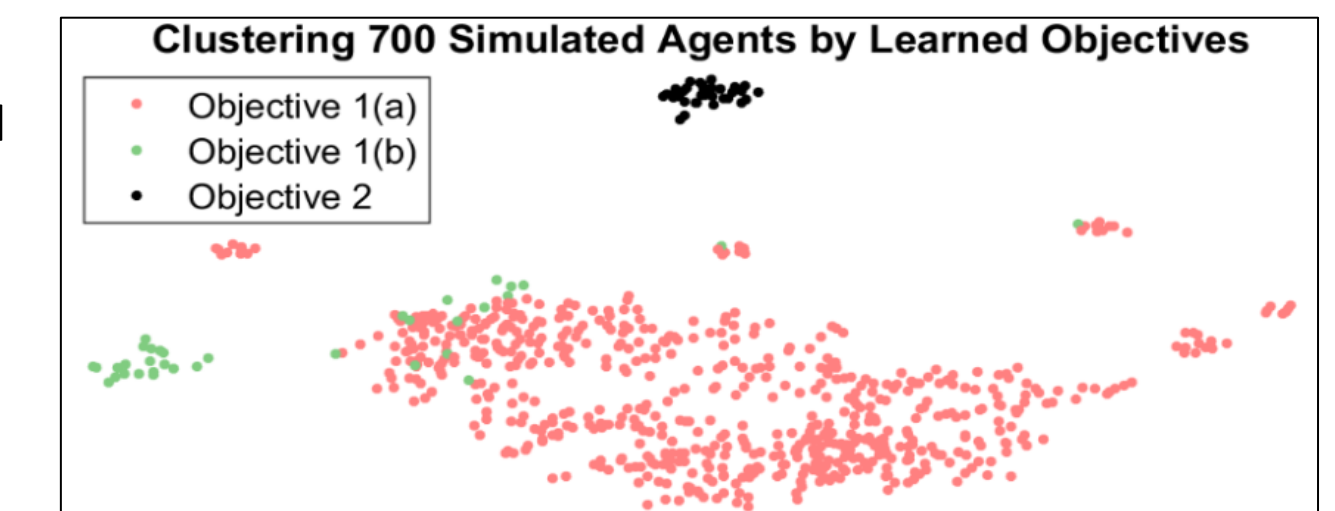


OBJECTIVES

- Advance digital assistants for SRL legal services .
- Apply theory of Markov decision processes (MDPs) and reinforcement learning (RL) to knowledge services.
- Extend current research to identify an SRL's objectives and needs (Rewards) based on their behaviors (Policy).



Analysis of objectives learned from simulated behavior. Here we see groups 1(a) and 1(b) begin to look similar despite different behaviors above.



APPROACH (RESEARCH METHODS)

- Hypothesis:** Capturing an SRL's objectives is key to personalized *process insights, improved attorney-litigant matching* and *smart recommendations*.
- Data:** Currently using synthetic data from an agent-based simulation. Working to acquire natural SRL data.
- Analysis:** An MDP is designed to model system dynamics. Using the MDP, agents are viewed as reinforcement learners with recoverable objectives.
- Current Results:** Using Inverse RL (IRL) we have extracted agent objectives and shown that these objectives explain observed agent behavior.
- Planned Extensions:** State features most important to explaining given SRL objectives will be discovered and experiments will be designed to show this importance.

DELIVERABLES/OUTCOMES

- A framework for inferring explanatory SRL rewards.
- An MDP model for the SRL process.
- Source code used to infer SRL objectives.
- Submission of work to the 2018 Technology Initiative Grants (TIG) Conference.

IMPACT

- Increased access to legal services for SRLs.
- Measurable improvement in legal outcomes for SRLs.
- Advancements in using MDPs to model human systems.
- Demonstrated use of IRL to infer human objectives.
- New business for attorneys through litigant matching.
- Decreased pressure on court system.