Are We Asking AI the Right Questions?

Upstream Universal Design Choices in Humanitarian Decision-Making

Guljannat Huseynli (*ghuse001@odu.edu*)*, Erika Frydenlund (*efrydenl@odu.edu*),* Terje Gjøsæter (*terje.gjosater@uia.no*)**

* *Virginia Modeling, Analysis & Simulation Center | Storymodelers | Old Dominion University, Norfolk, Virginia, USA*

** *CIEM – Centre for Integrated Emergency Management, Department of Information Systems | University of Agder, Kristiansand, Norway*

Before AI can prioritize a household, that household has to reach the system…

Household A

Could access the information

Completes intake steps

Enters candidate pool

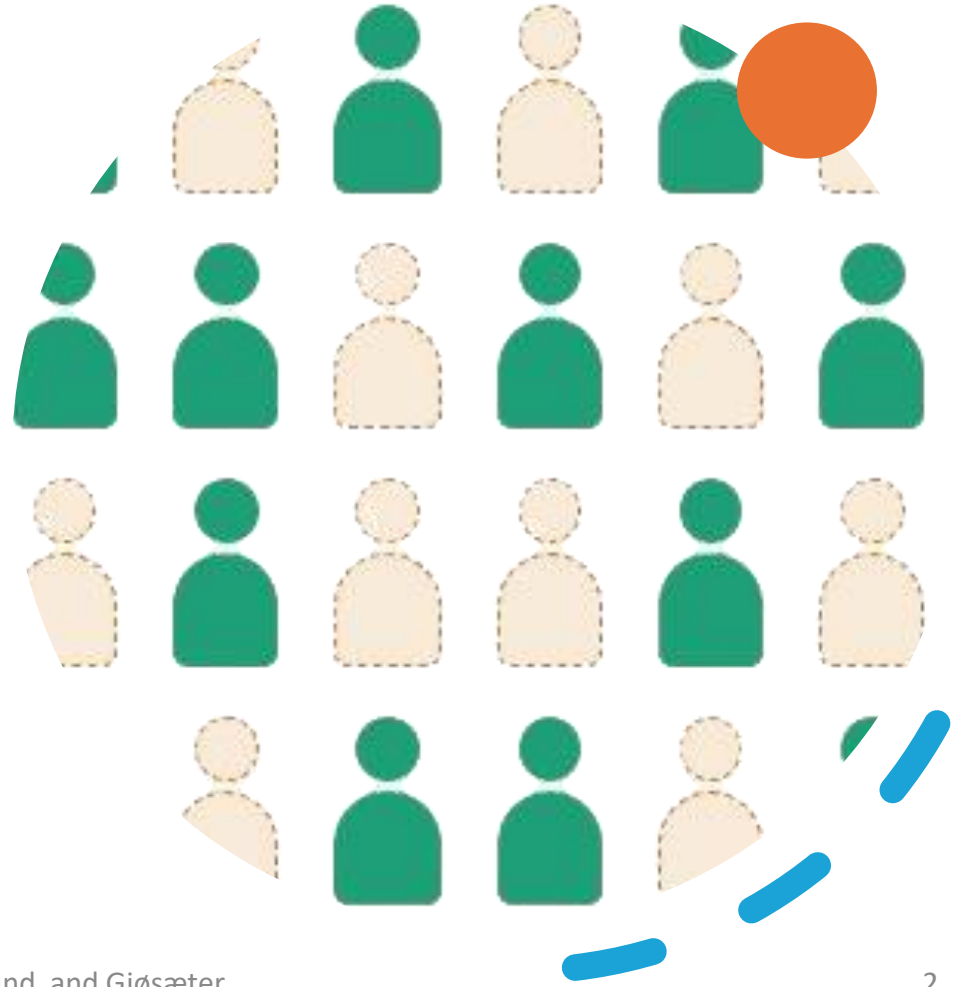
Household B

Could NOT access the information

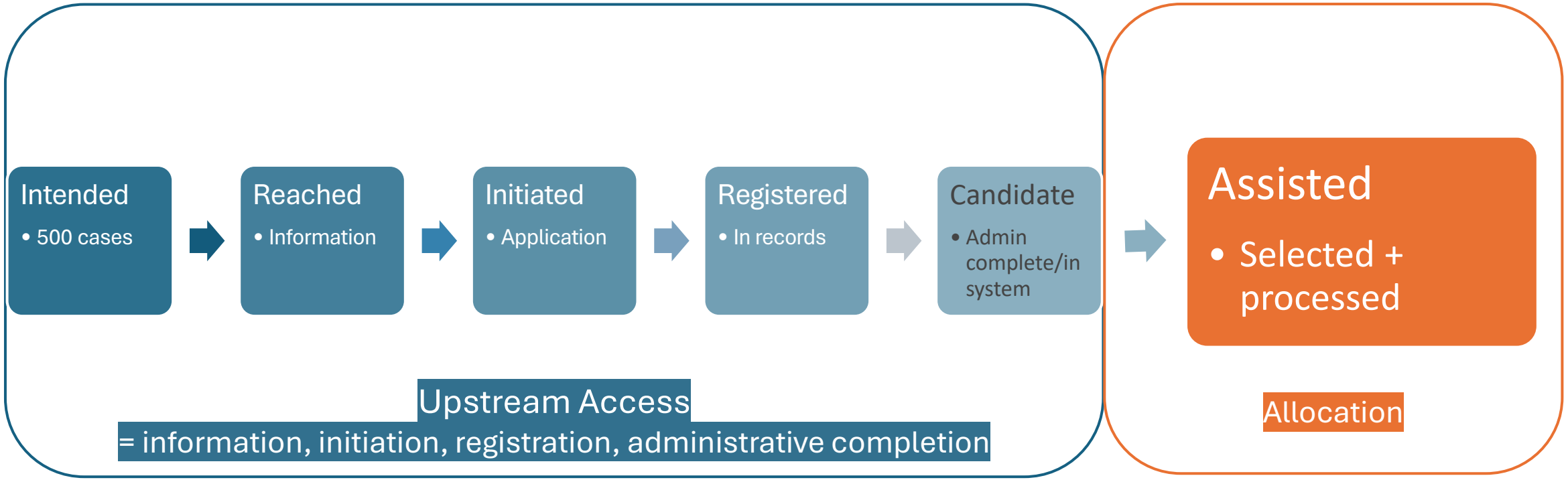
Misses a required intake steps

Remains outside candidate pool

Never reaches the ranking

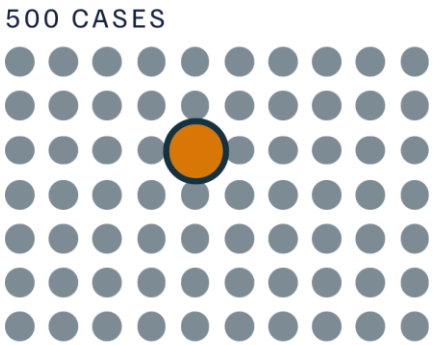


We separated entry into the system from allocation



Registration makes a household visible in institutional records. Candidate status makes it available for prioritization.

A controlled experiment with 500 synthetic household cases



ONE CASE

- Underlying need
- Vulnerability
- Access constraints
- Processing requirement

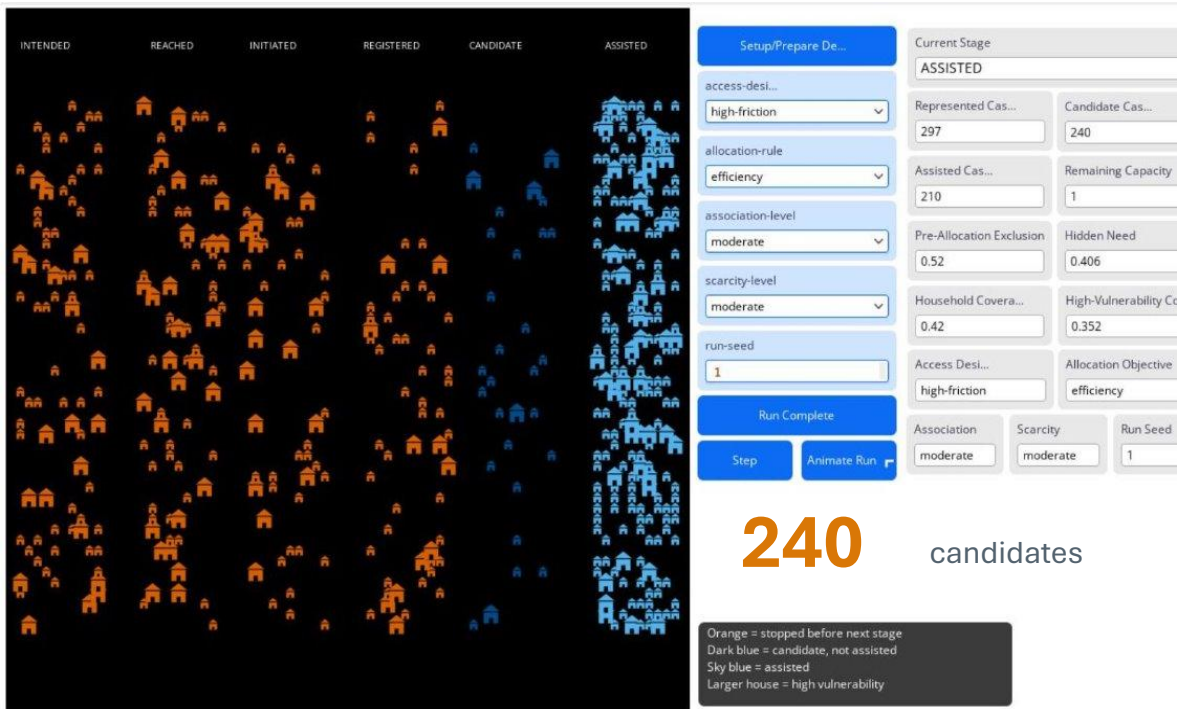
- Each has:
  - need
  - vulnerability
  - access constraints
  - processing requirement

Same households, different institutional conditions.

Knowing barriers exist is not the same as measuring their consequences

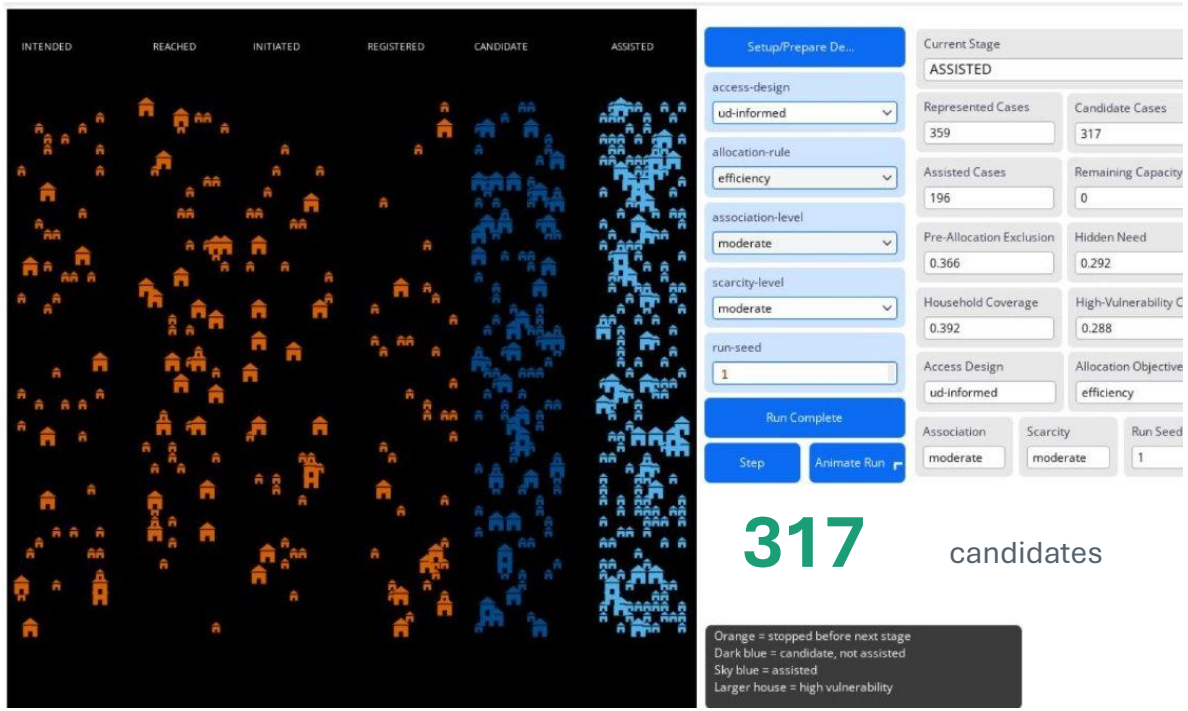
Same Households ≠ Same Conditions

High-friction access



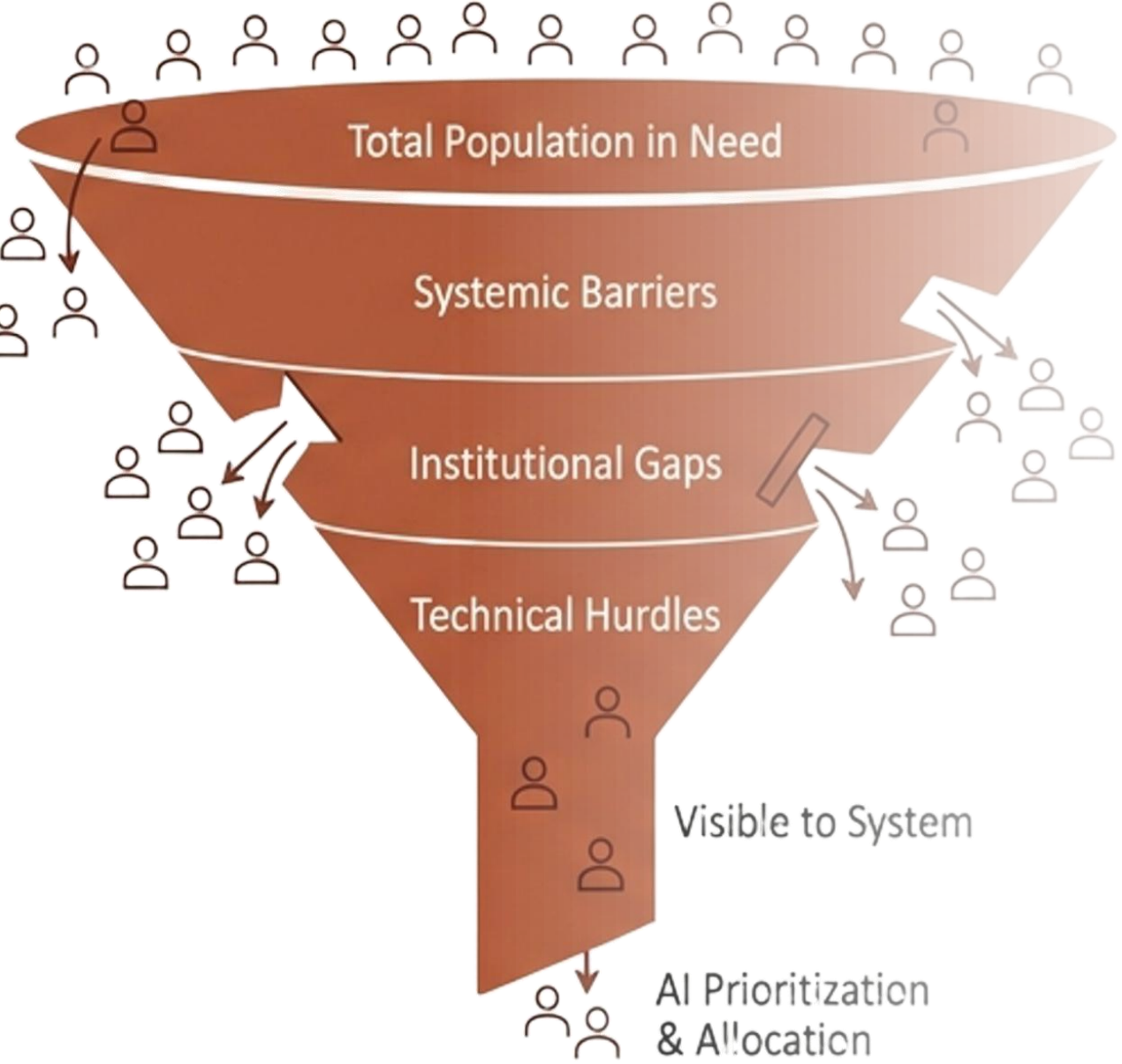
240 candidates

UD-informed access



317 candidates

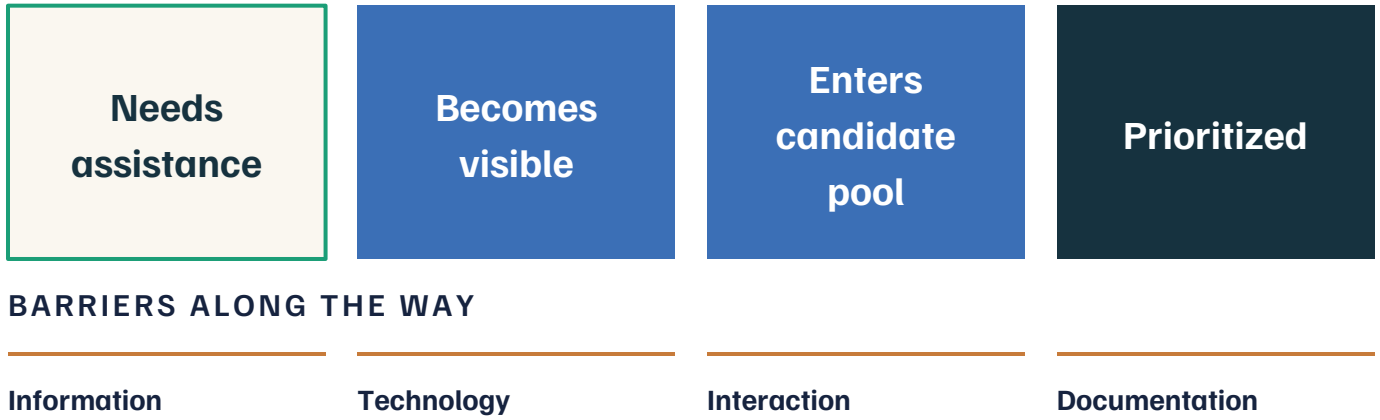
We vary four institutional conditions



We separated entry into the system from allocation.



Before AI can prioritize a household, that household has to reach the system



Allocation begins only after the candidate pool has been formed.

PRIOR RESEARCH EXAMPLE

In Togo's Novissi cash transfer, phone/SIM access, voter registration, awareness, and self-registration all preceded machine-learning targeting.

Access and allocation are two different governance problems

UPSTREAM

Access logic

Who becomes represented for aid consideration?

- Communication
- Interaction
- Digital access
- Documentation

CANDIDATE POOL



DOWNSTREAM

Allocation logic

How are candidates prioritized under scarcity?

- Efficiency
- Need
- Vulnerability
- Equity

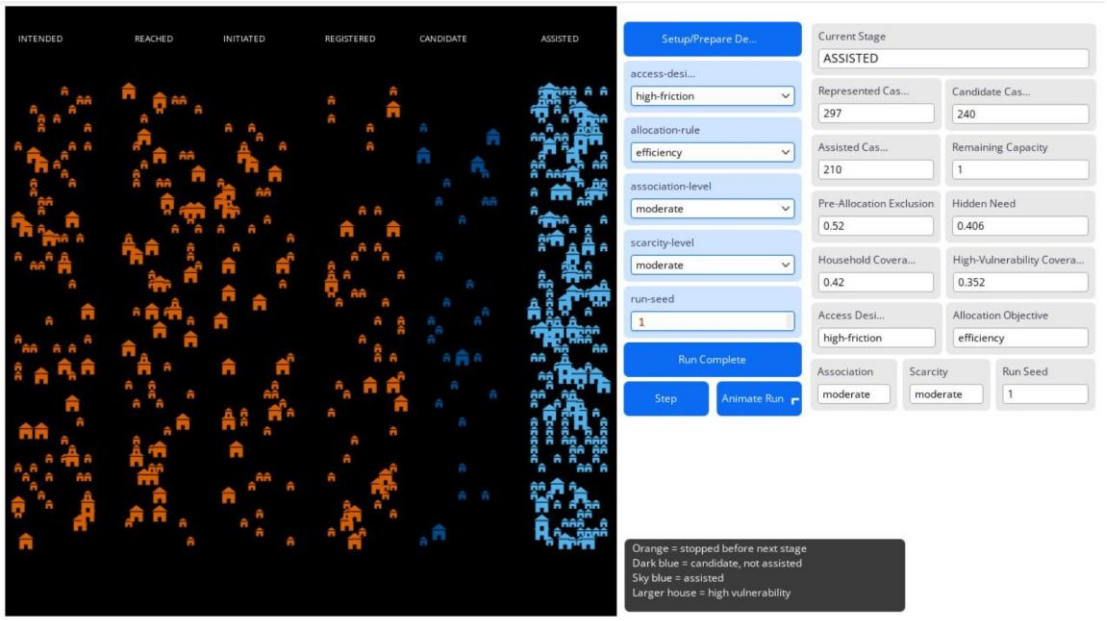
What happens when upstream access and downstream allocation interact?

How do access conditions and allocation objectives under limited organizational capacity shape who reaches consideration, who receives assistance, and whether highly vulnerable households are reached?

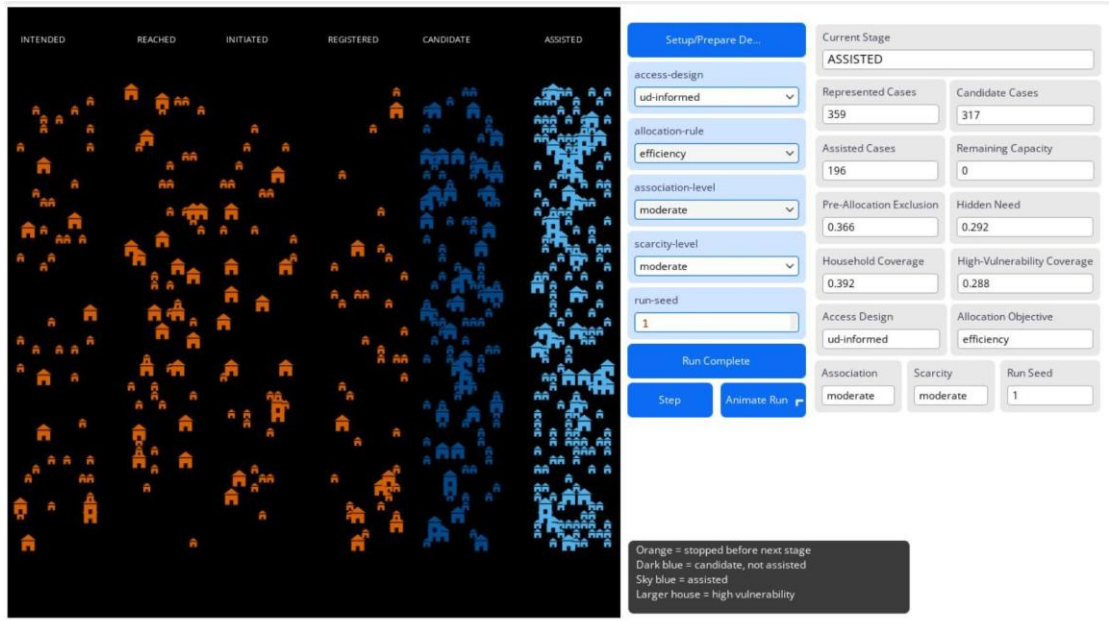
And does this change when access constraints are more concentrated among vulnerable households?

Same households. Different access conditions.

High-friction access



UD-informed access



Same population | same seed | same allocation rule | same capacity

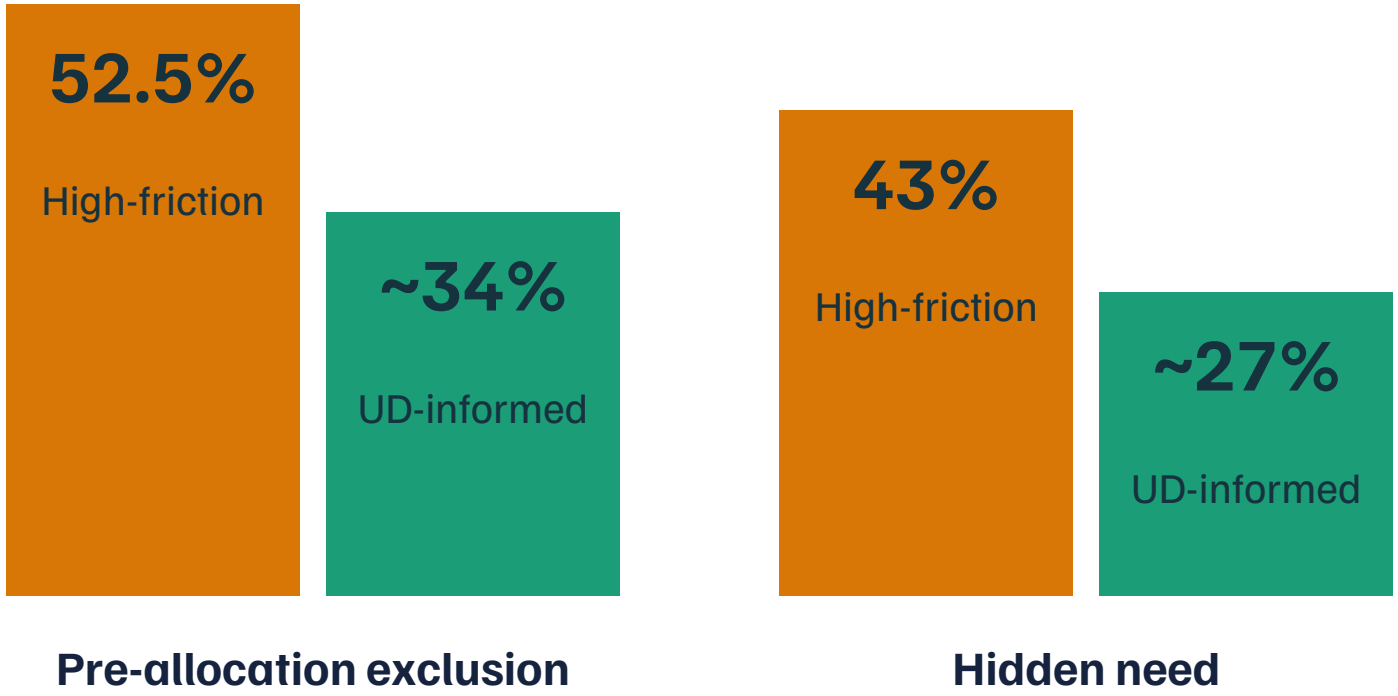
We vary four institutional conditions

- **Access** · High-friction / UD-informed
- **Allocation** · Throughput efficiency / Humanitarian priority
- **Organizational capacity** · 20% / 30% / 40%
- **Vulnerability-access association** · 0 / .15 / .30

36 conditions · 100 matched seeds · 3,600 runs

Access conditions substantially change who reaches consideration

EXCLUSION AND HIDDEN NEED BY ACCESS CONDITION (%)



≈ 90 additional households reached the candidate pool per 500 cases

Not necessarily assisted.

Allocation objectives change who receives assistance

THROUGHPUT EFFICIENCY

↑ overall household coverage

Humanitarian priority: 2–11 pp lower overall coverage

HUMANITARIAN PRIORITY

↑ high-vulnerability coverage

Humanitarian priority: 4–15 pp higher high-vulnerability coverage

Access determines who can benefit from downstream prioritization

+19.5 pp

High-vulnerability coverage · UD-informed access + humanitarian priority

Same organizational capacity

Evaluation should begin before the prioritization algorithm

Who is the intended population?

How does someone **enter** the system?

Where can communication, interaction, digital, or administrative requirements prevent progression?

What is the system asked to **optimize**?

Whose outcomes count when success is evaluated?

Evaluate the decision pipeline, not only the decision rule.

Scope of the model

Controlled comparison, not prediction

Synthetic population, not one calibrated humanitarian program

Experimental parameter settings

Focused on access and allocation, not physical aid delivery or the full humanitarian system



Are we asking AI the right questions?

Access shapes who reaches consideration.

Allocation shapes who is assisted once there.

Governance needs to examine both.

THANK YOU!

Could you share your feedback with us?

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