Income for Information

Measuring the Value of Time

Inspiration: Us
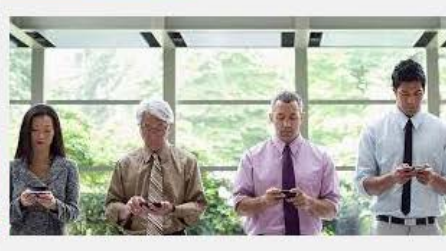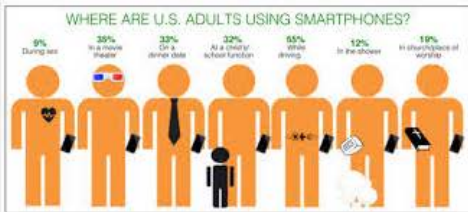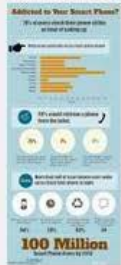
Choices, Tradeoffs, and Time

I wake up early (for once), my choices are:
- A. Be first at work (raise?)
- B. Make an awesome breakfast (yum!)
- C. Ride bike to work (health++)
- D. Play Candy Crush on phone (uhh…)

Apart from our best intentions, we make implicit choices with our time that reveal our personal value of the time we spend.

The Ultimate Resource
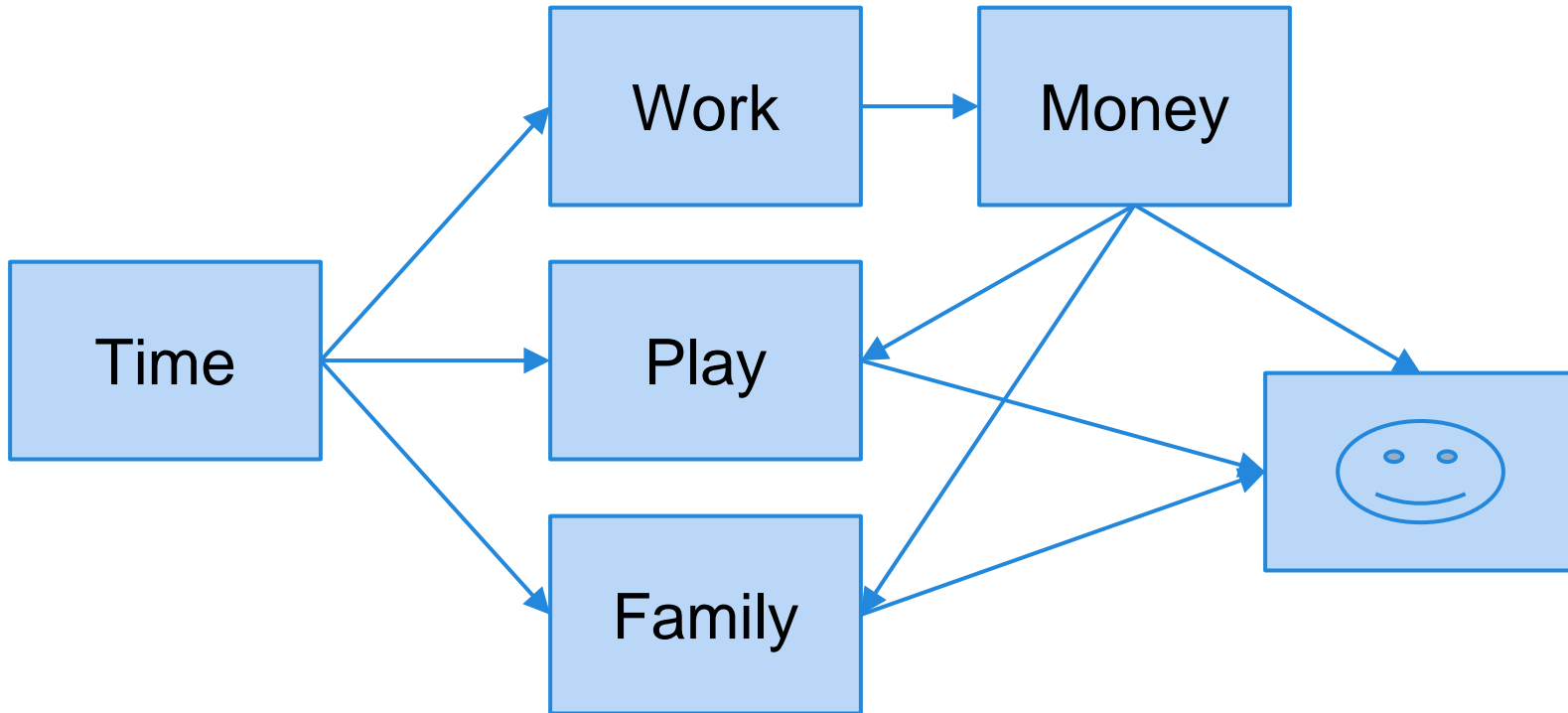
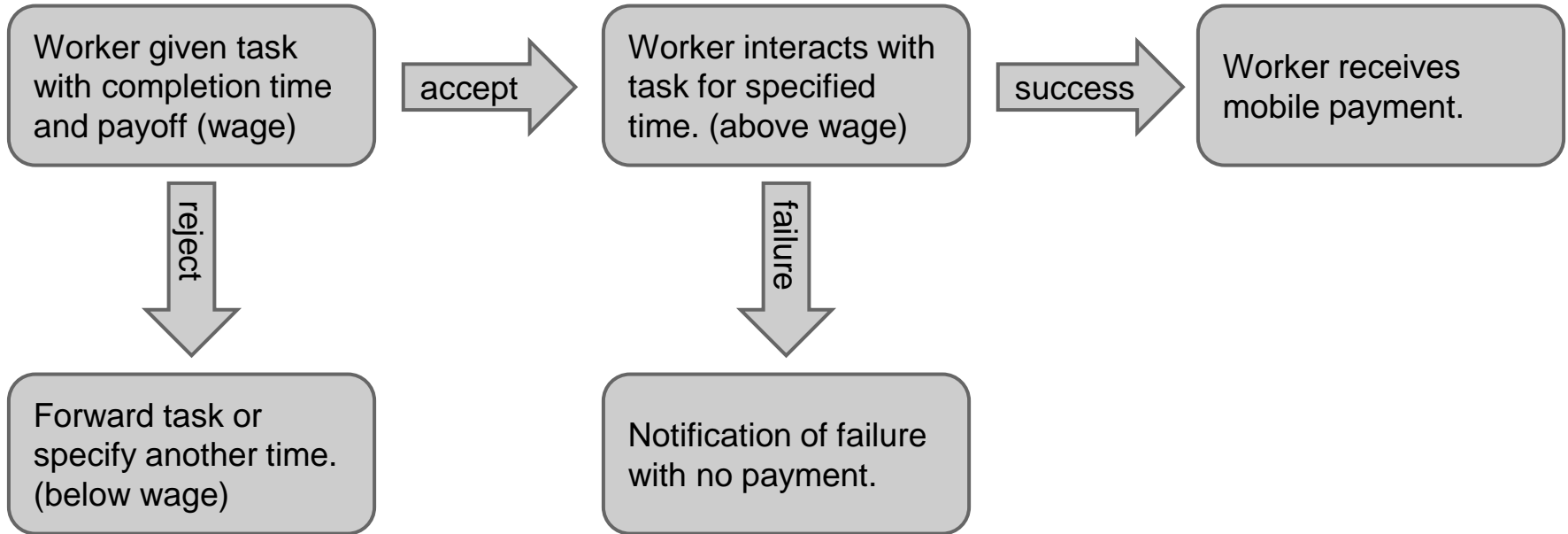# Value of Time: Reservation Wage

In labor economics, the **reservation wage** is the lowest wage rate at which a worker would be willing to accept a particular type of job.

Why is this important to development?

- Potential source of temporally and spatially precise measure of welfare
- Policy/Intervention timing
- Understanding
  - labor markets
  - time-use
  - costs of interventions
  - social value

Incentivized Mobile Tasks

Worker given task with completion time and payoff (wage)

accept →

Worker interacts with task for specified time. (above wage)

success →

Worker receives mobile payment.

reject ↓

failure ↓

Forward task or specify another time. (below wage)

Notification of failure with no payment.

Procedure

1. Start with a prior on each mobile users reservation wage, w_0, based on known characteristics
2. Sample proposed reservation wage w' from a normal distribution with mean w_0 and fairly high variance
3. Propose task to randomly selected user u, at (reasonable) randomly selected time t, with above randomly selected reservation wage w'
4. Collect accept (w<w') or reject (w>w') for user u at time t
5. Calculate new posterior with new information
6. Rinse, lather, repeat.

Discrete Choice Model

Probability of response is dependent on utility, which is a function of p (payment), c (cost/time), and characteristics **X**.

$$P(U_{ij}-U_{i0}|p,c,X) = P(Y_{ij}=1|p,c,X) = 1/[1+\exp(U_{i0}-U_{ij})]$$

How w=p/c (wage) varies in **X** is most interesting.

Covariates in X

How does reservation wage vary by:
- age/gender
- location (urban, rural, proximity to transport)
- time of day/day of week/month/season
- education
- occupation
- household size

First Stage: Response

- Want to determine if we can see variation in response rate with variation in wage.
- Partnered with GeoPoll who performs paid mobile surveys for Kenya (and many others).
- Currently running a project with them to vary payment and track responses. Data in the pipeline.
- Drawback: Participants are not a representative sample.

Second Stage: Hardware + Panel Data

Sample from an existing, representative panel.
- Covariates already exist
- Useful for panel data
- Needs a custom solution:

Pros and Cons

Kool-aid

- Provides income and work for task recipient.
- Provides information for sponsoring organization (private, public, academic).
- Much more cost efficient than hiring enumerators and doing in-person surveys.
- Uniform, automated, and scalable collection.
- Global reachability.

Reality check

- Can only reach mobile phone owners.
- Literacy, language or wealth bias.
- Cannot verify survey taker characteristics.
- Technology use barriers.
- Reporting Bias?
- Sample Bias.
- Need a lot of data to nail down certain covariates.

Questions