Tools for thinking in health

Lena Mamykina, Ph.D.
Department of Biomedical Informatics,
Columbia University
The opportunity
The goal

- Informing decisions (treatment/self-management/policy):
  - Reflection – beyond the reach of individual
  - Decision-support – think alert fatigue
  - Need for evidence and validated approaches
  - Hybrid solutions – decision support but with full transparency and preserving control and autonomy
    - Hypothesis generation
    - Experimentation and validation with n=1 trials
The challenges

- How – analytics
  - Machine learning requires large dense population-level datasets
  - Individual-level data is sparse, irregular, potentially biased, non-stationary
  - Opportunity for computational modeling to generate continuous data streams (good for analysis and for prediction)
The challenges

- How – type of engagement
  - Cost ➔ Motivation
- Human conversation is the most natural way of engagement
- Automated health coaches (Alexa?)
- In-the-moment decision support
  - When is the best time for me to exercise today?
The challenges

- Impact
  - Continuing focus on an individual
  - Can we use data to change the system?
    - Community level data aggregation
    - Health activism