The Great Challenges (and Opportunities) of Today’s Research
Science isn’t broken
“It’s just a hell a lot harder than we give it credit for”

“answering even a simple scientific question requires lots of choices that can shape the results. This doesn’t mean that science is unreliable. It just means that it’s more challenging than we sometimes give it credit for.”
Research is Increasingly Collaborative

“Bright lines in this map of scientific collaborations between 2005 and 2009 show many joint publications.”

... and Increasingly Big

CERN: High-Energy Physics Data $>100$PB

EBI: Sequence Data $>20$PB

Entire Data created by all of us $>ZB = 1$millionPB
Research Data and Computing Become Increasingly Complex and Inter-connected

Collaborate Across Disciplines → Combine Multiple Data Sets → Need Multiple Skills
How does Harvard help you today?
Training on Research Programming

- R
- Python
- STATA
- GIS

Research Computing and Data Science Facilitators

- **HMS**
  - 6 research consultants

- **FAS (sciences)**
  - 6 research consultants

- **IQSS (social sciences)**
  - 3.5 research consultants

- **HBS**
  - 7 research consultants

Research Computing Facilities @Harvard

- **HMS Orchestra**
  - Cores: 6,500
  - Storage: 27PB

- **FAS Odyssey**
  - Cores: 60,000
  - Storage: 26PB

- **IQSS RCE**
  - Cores: 1,704
  - Storage: 100TB

- **HBS Research Grid**
  - Cores: 384
  - Storage: 150TB