TODAY'S SUBJECT Risk Aversion DATE

- Risk Aversion

→ Setup:

* Focus on monetary prizes/outcomes
  $X = [0, M] \subseteq \mathbb{R}$ i.e. any amount between 0 and M.
* How to represent a lottery:
  (i) If only finitely many outcomes have positive probability we can label them as $x_1, x_2, \ldots, x_n \in [0, M]$ and write
  $$p = (p_1, x_1; p_2, x_2; \ldots; p_n, x_n)$$

→ Expected Utility Function:

* Bernoulli utility function $u(\cdot)$ over outcomes X
* Assume $u(\cdot)$ is increasing in x, continuous, and twice differentiable.
* Expected utility function $U(\cdot)$ over prospects F
  $$U(F) = E_F(u) = \int_{x \in [0,M]} u(x)\, dF(x)$$
* Can also write using $f(x) = dF(x)/dx$ as
  $$U(F) = \int_{x \in [0,M]} u(x) f(x)\, dx$$

→ Definition 1: δ_x = degenerate lottery that gives the monetary prize x w/ probability 1.

→ Definition 1a: A decision-maker (DM) is (strictly) risk averse if, for all non-degenerate lotteries F w/ expected value
$$E_F = \int_{x \in [0,M]} x\, dF(x)$$
the DM prefers δ_{E_F} over F (the DM would prefer the expected value for sure over the lottery)