

# Demand for health and health care

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# Grossman's Model

Based on human capital theory – people invest in education and health like a firm invests in capital equipment

- ▶ People demand health for 2 reasons:
  - ▶ it increases productivity (work more, harder) – investment good (house)
  - ▶ it makes you feel better – consumption good (car)
- ▶ 2 ways to get health:
  - ▶ spend time improving health
  - ▶ medical care
- ▶ Education makes it easier to get health
- ▶ Health depreciates over time

# Plan

- ▶ Learn labor-leisure model to show how health is an investment (today)
- ▶ Learn Grossman model main equation to show how to choose optimal health (tomorrow)
- ▶ Use Grossman model equation to discuss model predictions

# Labor-Leisure Model

- ▶  $T$  = time endowment (say, 16 hours a day)
    - ▶  $T_H$  = improving health
    - ▶  $T_L$  = time lost to ill health
    - ▶  $T_W$  = working
    - ▶  $T_F$  = fun leisure
- $T = T_H + T_L + T_W + T_F = 16$
- ▶  $w$  = wage
  - ▶  $Y$  = total income =  $w * T_W$

# Labor-Leisure Model: Budget Constraint

- ▶ Defn: the limit on the consumption bundles (pizza and pepsi; money and leisure) that a consumer can afford
- ▶ x-axis = time; intercept =  $T - T_L$  (max amt of fun)
- ▶ y-axis = money; intercept =  $w * (T - T_L)$
- ▶ slope =  $-w$  (rise over run, if run=1, rise =  $-w$ ) – measures the rate at which consumers can trade one good for another

# Labor-Leisure Model: Budget Constraint

## Labor-Leisure Model: Indifference Curve

- ▶ Defn: shows consumption bundles that give the consumer the same level of satisfaction
- ▶ 4 properties
  - ▶ downward sloping if consumer likes both goods; if have to give up one, must get more of the other
  - ▶ bowed inward: because people are more willing to trade away goods of which they have a lot and less willing to trade away goods of which they have little
  - ▶ further from the origin is preferred to closer if consumer likes both goods
  - ▶ curves do not cross: can't have 2 levels of happiness from one bundle
- ▶ slope measures **marginal rate of substitution**, the rate at which a consumer is willing to trade one good for another

# Labor-Leisure Model: Indifference Curve

# Labor-Leisure Model: Optimal Choice

Consumer wants to be on highest indifference curve but within budget constraint – optimal point is tangent

- ▶ choose to work  $T_W$  and earn  $w * T_W$
- ▶ as a result, the rest of the non-sick time is for health improving activities and fun leisure

# Labor-Leisure Model: Optimal Choice

# How is health an investment?

Higher  $T_H$  leads to lower  $T_L$

# How is health an investment?

Higher  $T_H$  leads to higher wage