- Income elasticity of Demand

Taxes

- Taxes on seller
  - Messes with the supply curve
    - $ amount increases, but we aren't so sure what amount of quantity increases or decreases
    - Buyers pay the new price where the demand curve intersects where the tax-supply curve
    - Price buyers pay - tax= Price buyers pay
    - Taxes act as a supply shifter
      - Buyers pay more & sellers aren't getting as much money
      - Taxes shrink the market
- Taxes on buyers (e.g. sales tax)
  - Messes with the demand curve
    - Shifts quantity demanded down, & the demand curve to the left
    - Where the new demand curve intersects with the supply curve, that's what the supplier/seller gets
  - What the buyer actually pays is where the new Quantity demanded taxed intersects the original demand curve
- Tax wedge in the market with consumer surplus & producer surplus
  - CS is area of triangle created by price buyers actually pay to the demand curve
  - PS is area of triangle created by price sellers pay to the supply curve

Subsidy

- Subsidy on sellers
  - Lowering price for supply raises quantity supplied
- Subsidy on buyers
  - Lowering price for buyer raises quantity supplied
- The price for a buyer is on the opposite end of the subsidy wedge from the price for the seller, lying on the demand curve and the supply curve, respectively

Externalities

- People in mkt don't consider people outside the mkt
- Making self-interested decisions has positive & negative externalities
  - e.g. education=positive, smoking=negative
- Negative externalities
  - Within the market, supply=Private cost & demand= private value
  - External cost raises prvt cost curve creating the social cost curve
    - Social cost=ext. cost + Pvt. Cost
    - To get from the market quantity to the social quantity, a tax wedge is placed
      - The tax must be exactly equal to the external cost
- Positive externalities
  - Benefit to society
  - External benefit rises prvt value curve (demand curve)
    - Social value= external benefit + prvt value
    - To get from the market quantity to the social quantity, a subsidy wedge is placed
      - Subsidy must be exactly equal to the external benefit

Review of types of goods

- Rival in consumption (one person's use of good diminish others' use) & Excludable (can prevent someone from using good)
- Private goods (food, cars)
  - Rival consumption & excludable
- Common resources (fish in the ocean, oil pools)
  - Rival consumption, but not excludable

$\sigma = \sqrt{\sigma^2}$

$= \sqrt{\frac{\Sigma i(xi - E(x))^2}{n}}$

e.g.

From above where E(x)=3

$\sigma^2 = (2-3)^2(0.25) + (3-3)^2(0.5) + (4-3)^2(0.25)$

= 0.5

$\sigma = \sqrt{0.5} = 0.707$

Risk Pooling

Risk- a state in which multiple outcomes are possible & the likelihood of each possible outcome is known or can be estimated

The higher the chance of an adverse event happening, the higher the expected costs or losses

The lower the chance of an adverse event happening, the lower the expected costs or losses

Focus on expected value of all costs/losses averaged over everyone is group/pool & variability

--> predictability

e.g. Individual losses- expected value & variability

Suppose a stroke may occur with probability 0.01 & would cost $50,000 to treat

Goal: calculate E(costs) var(costs) std dev(costs)

x=cost due to stroke

x= either stroke or no stroke, $50,000 or $0

p= 0.01

p= 1-.01=0.99 0.99

E(x)= μ= xbar= average health cost= 50,000(.01) + 0(0.99)= $500

On average, individual is paying $500

But individual will never pay that since either you have a stroke or not

You don't pay the average from the whole population

Var(x)= σ^2= Σ(x-xbar)squared pi= (50,000-500)squared(0.01)+(0-500) squared(0.99)

= 20250000+247500=24,750,000

Var(x)= 24,750,000 dollars squared

Std dev(x)= σ= square root of 24,750,000=$4,974.94

Insurance- costs/losses to insurance

Health insurance company's costs depend on the avg level of annual claims

Insurance co. cares about:

Expected value of AVG claim

Variability of AVG claim

AVG claim lowers health care costs because it decreases the variability

Lots of variability is bad

What we know from Statistics

Variability decreases proportionally with # of people enrolled in plan/group/pool

Variability means variance

Var(E(x))=var(xbar)= σ^2/n= var(x)/n

Std dev(E(x))= std dev(xbar)= σ/n

E(xbar)= E(x)=μ

So avg value of x for the group will be the same as the avg for individuals

e.g.

Same example of as above