

# Regional Economics

## Lecture 6

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# Outline of Lecture 6

- Economic Models
  - Individual choice
  - Individual choice of location
  - Firm choice
  - Firm choice of location
- Markets
  - Demand
  - Supply
- Markets and Efficiency

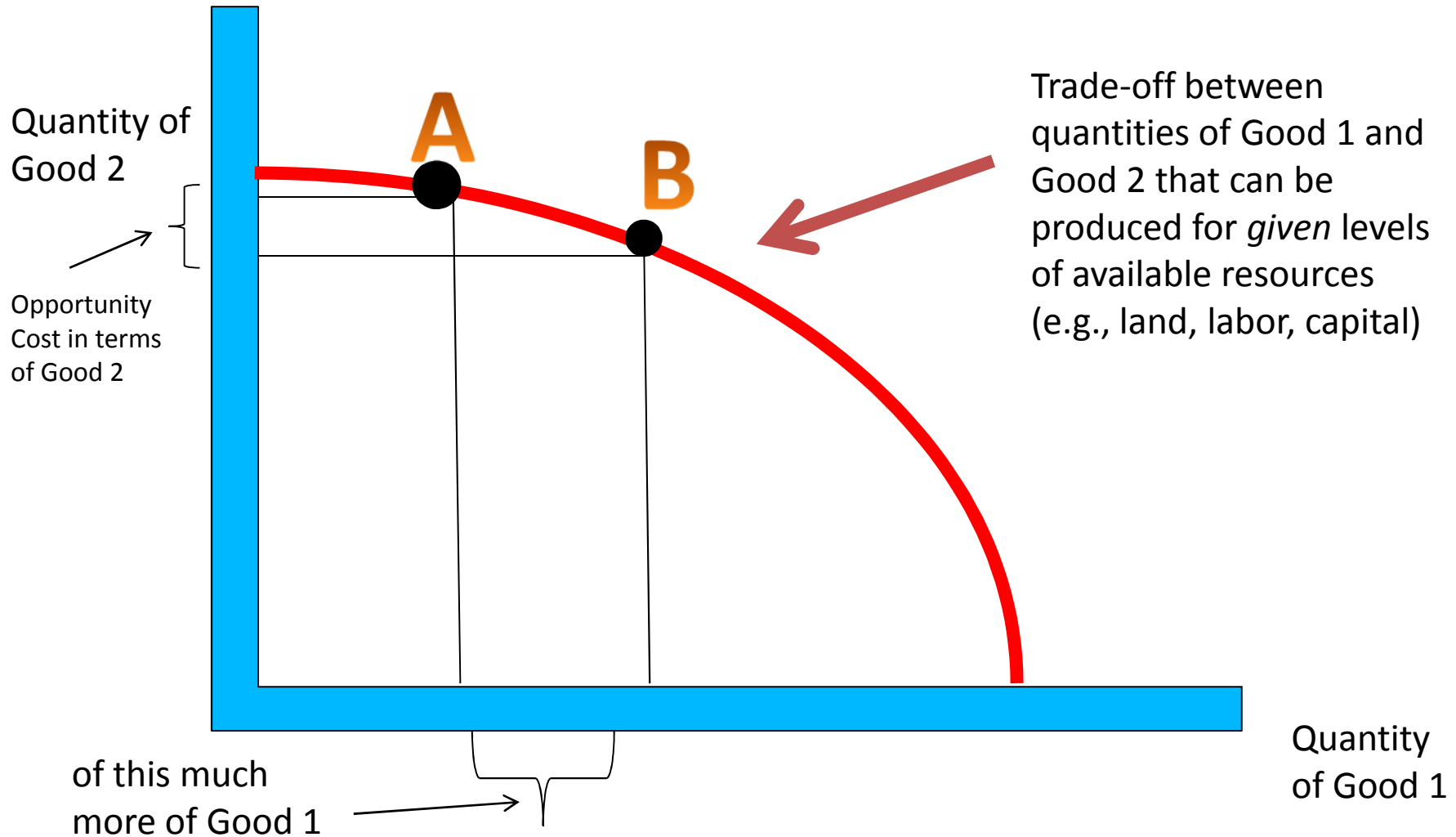
# Models or Theories

- Abstract representations (often algebraic or graphical) of hypothetical relationships among economic variables – like price, quantity of output produced, income, etc.
- Abstraction means that only the *essential* elements of reality are included
  - Why not include all elements?
  - tractability
  - Which elements are *essential*?
  - depends on vintage of the model and professional judgment

# How Economists View the World

- Fundamental Economic Concepts:
- Choice and Cost
  - Definition of Opportunity Cost: the value of the highest-valued alternative given up.
  - Examples of Opportunity Cost:
    - The cost of attending San Jose State University – pecuniary costs vs. non-pecuniary costs
    - The opportunity cost of urban land (see Detroit blog post and wiki) – the “highest and best use of land”
  - Illustration of Opportunity Cost – the PPF

# Illustrating Opportunity Cost The Production Possibilities Frontier



# Examples of Opportunity Cost in Regional Economics

- Discussion

# Economics of Individual Choice

- Economics is the study of the allocation of scarce resources in society.
- Economics is involved in:
  - individuals' decisions
    - how much time to devote to study for ECON 112
  - firms' decisions
    - how many permanent employees to have on the payroll next quarter
  - governments' decisions
    - how much money the CSU system will receive from the state budget next year

# Economics of Individual Choice

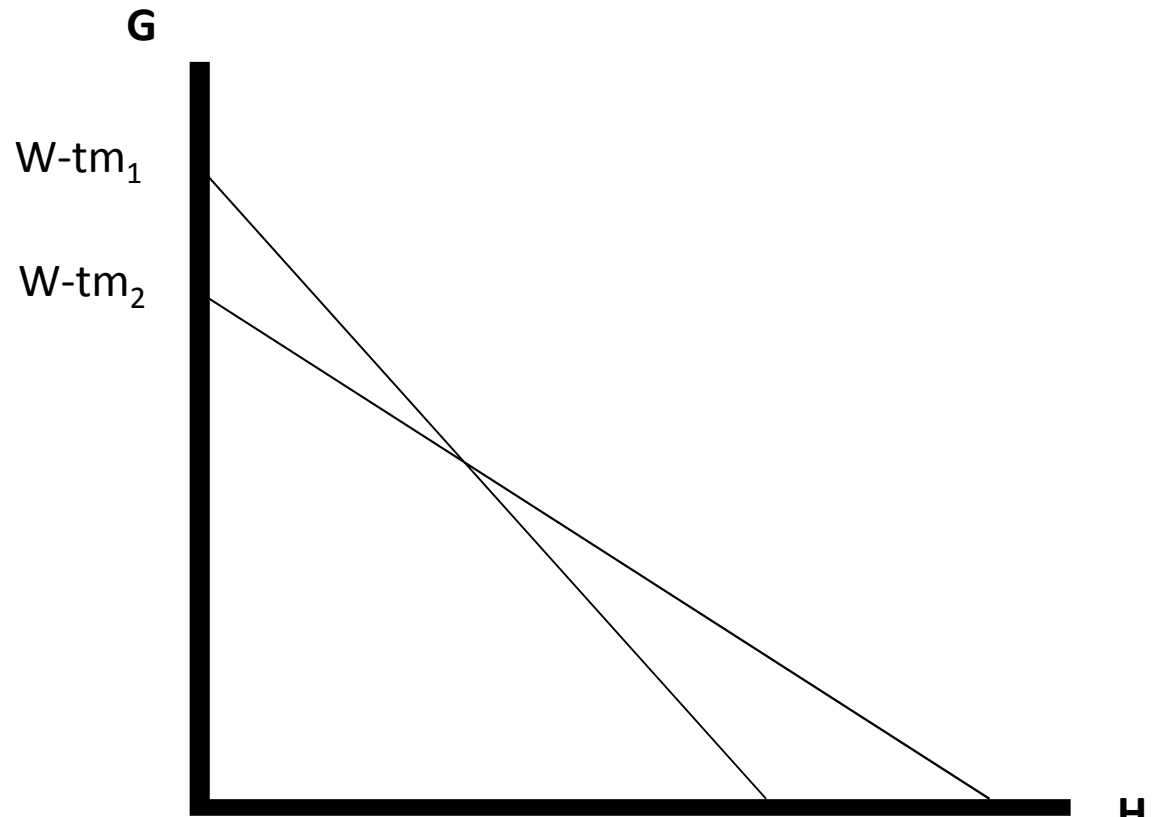
- Model: Constrained optimization
- Constraint (side condition):
  - something that must be satisfied to be valid; example – household budget constraint (which can include borrowing capacity)
- Optimization:
  - something that is the “best” is a specific sense of the term best – best from the perspective of a particular economic actor – e.g., a firm or an individual

# Household Choice of Location

Consider two locations,  $m_1$  and  $m_2$  from the CBD

What is the intercept on the horizontal axis of the line whose intercept on the vertical axis is  $W - tm_1$ ?

What is the intercept on the horizontal axis of the line whose intercept on the vertical axis is  $W - tm_2$ ?

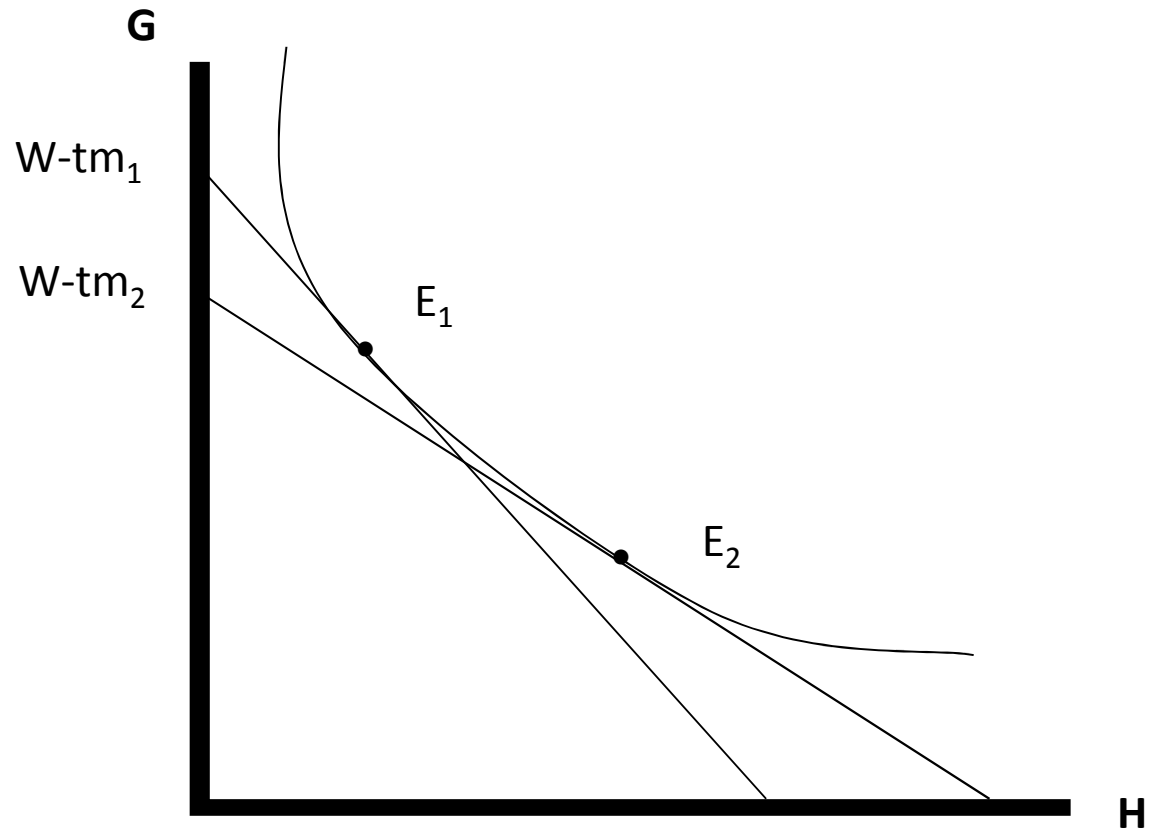


# Household Choice of Location

Consider a HH which is indifferent between locations  $m_1$  &  $m_2$  miles from CBD

At which location, 1 or 2, is more housing consumed?

At the location at which less housing is consumed how do HH "make up" for less housing?



# Economics of Individual Choice of Location: Examples

- Discussion

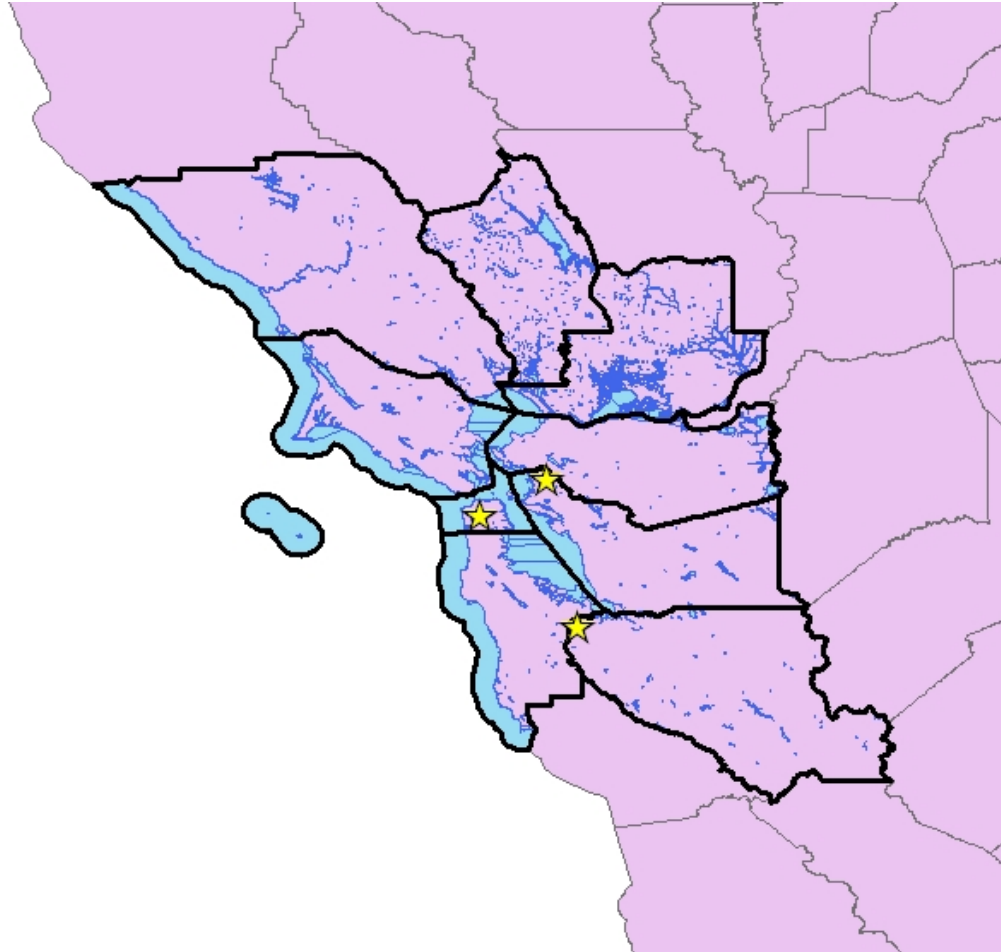
## FIRM LOCATION

From Pogodzinski and Kos, *Economic Development and GIS*

An Application of GIS to Workforce Development

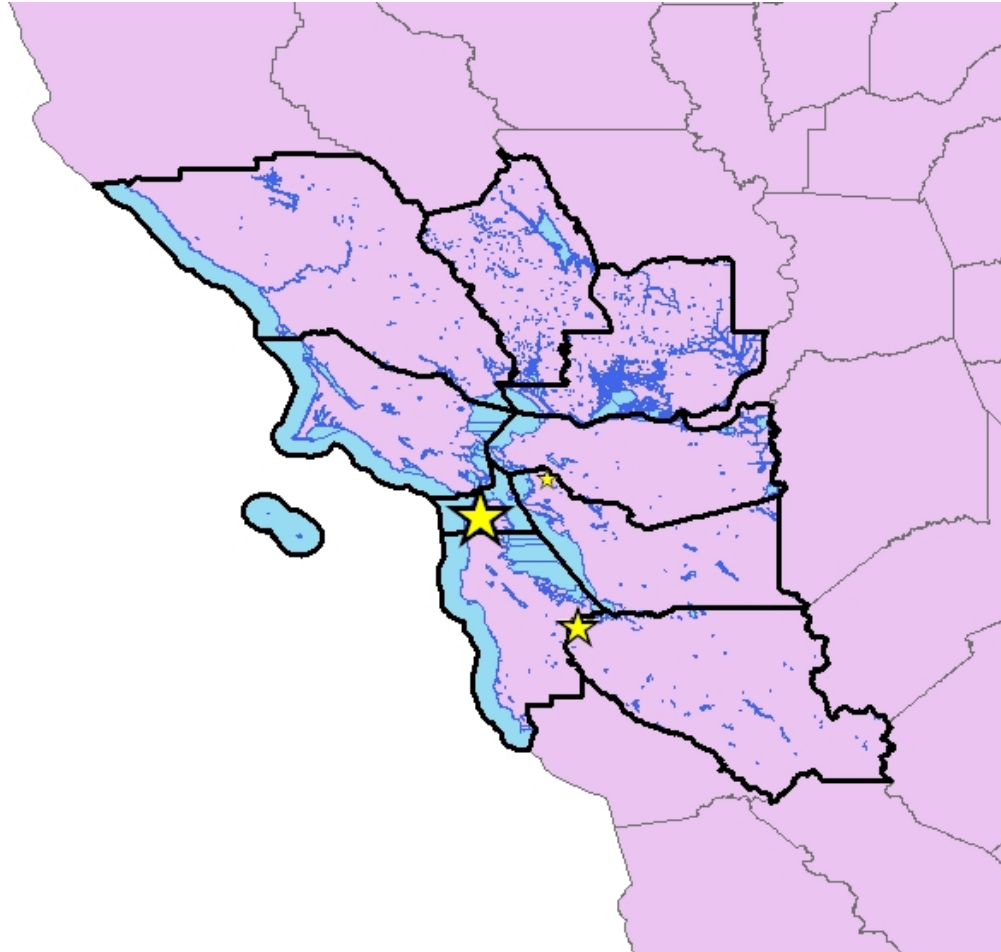
- **Biotech Firms in the Bay Area**
- **Official designation of “Bay Area” – members of ABAG**

# San Francisco Bay Area Three Research Universities

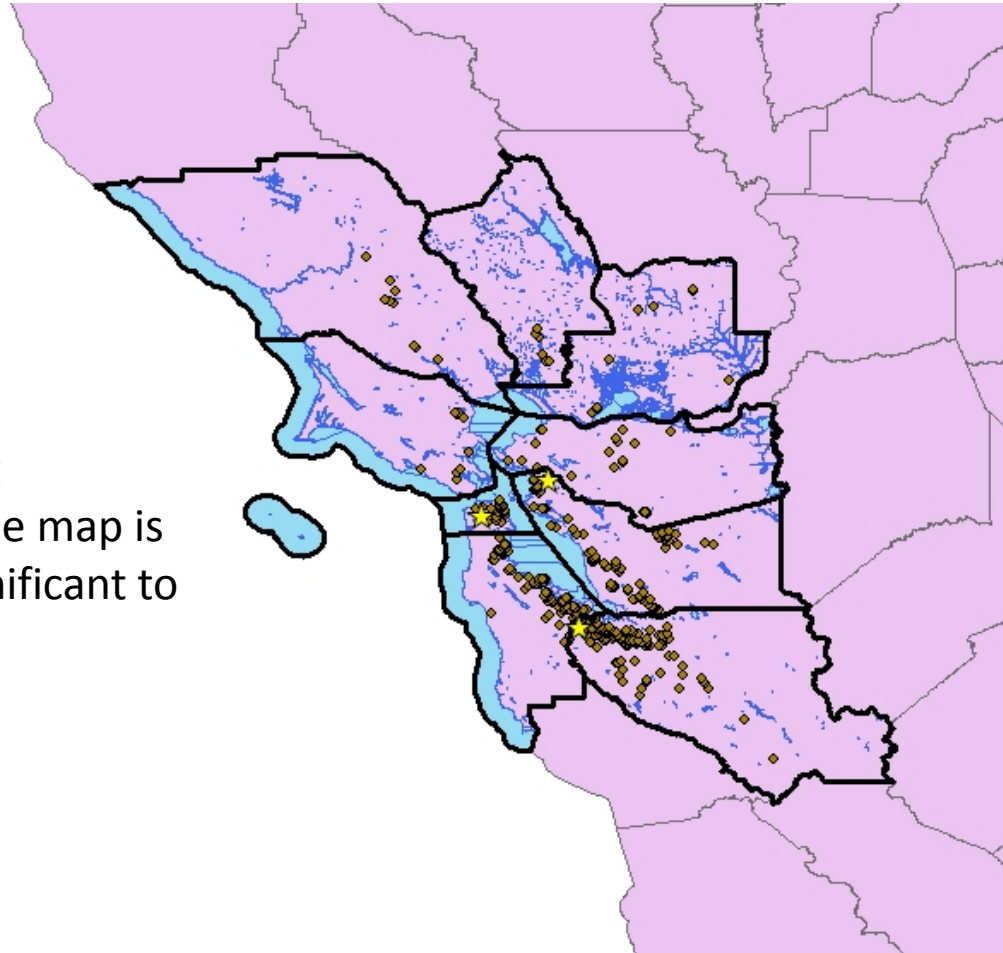


# Three Research Universities by Level of External Funding in Biology

Same as previous map, but we have altered the “symbology.”



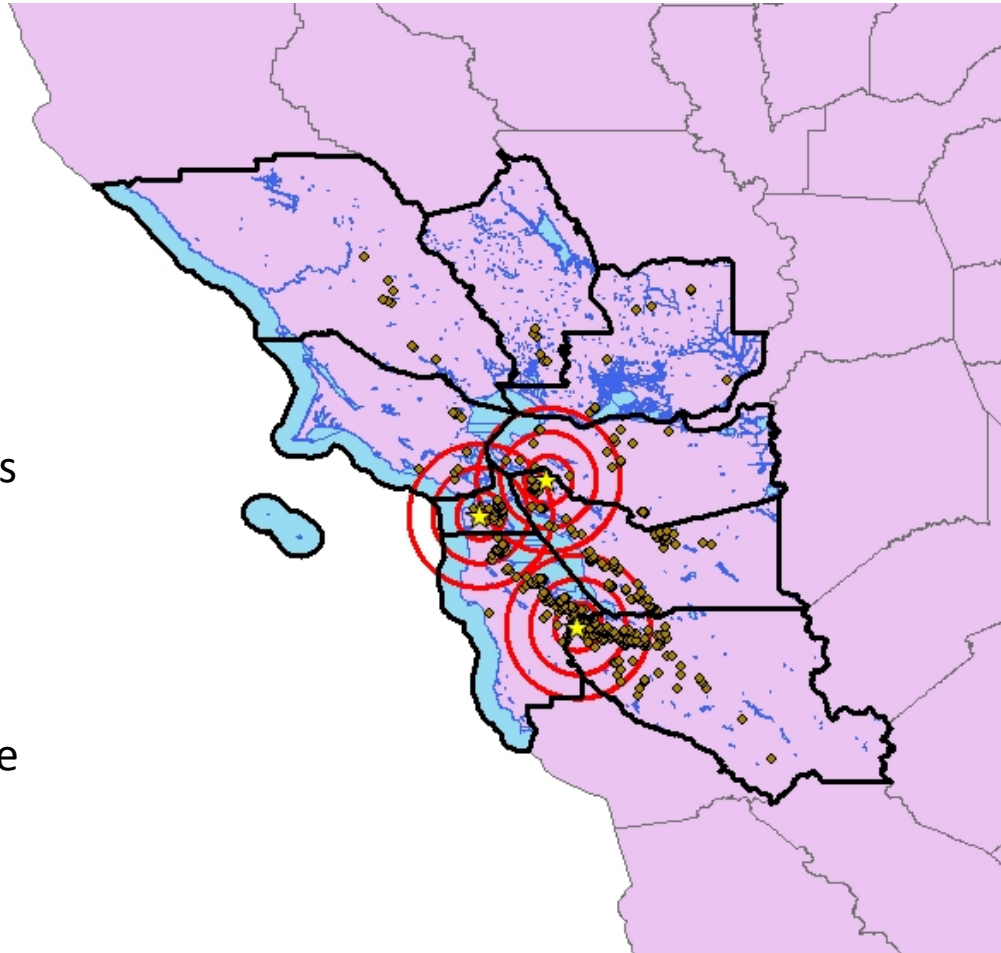
# Distribution of BayBio Member Firms in the SF Bay Area



What feature (not represented on the map is probably very significant to firm location?

# GIS has “Proximity Tools” – like *Buffers*

An example of the use of multi-ring buffers. In conjunction with other GIS tools, this can be used to generate statistics, like the number of firms a given distance from some point.

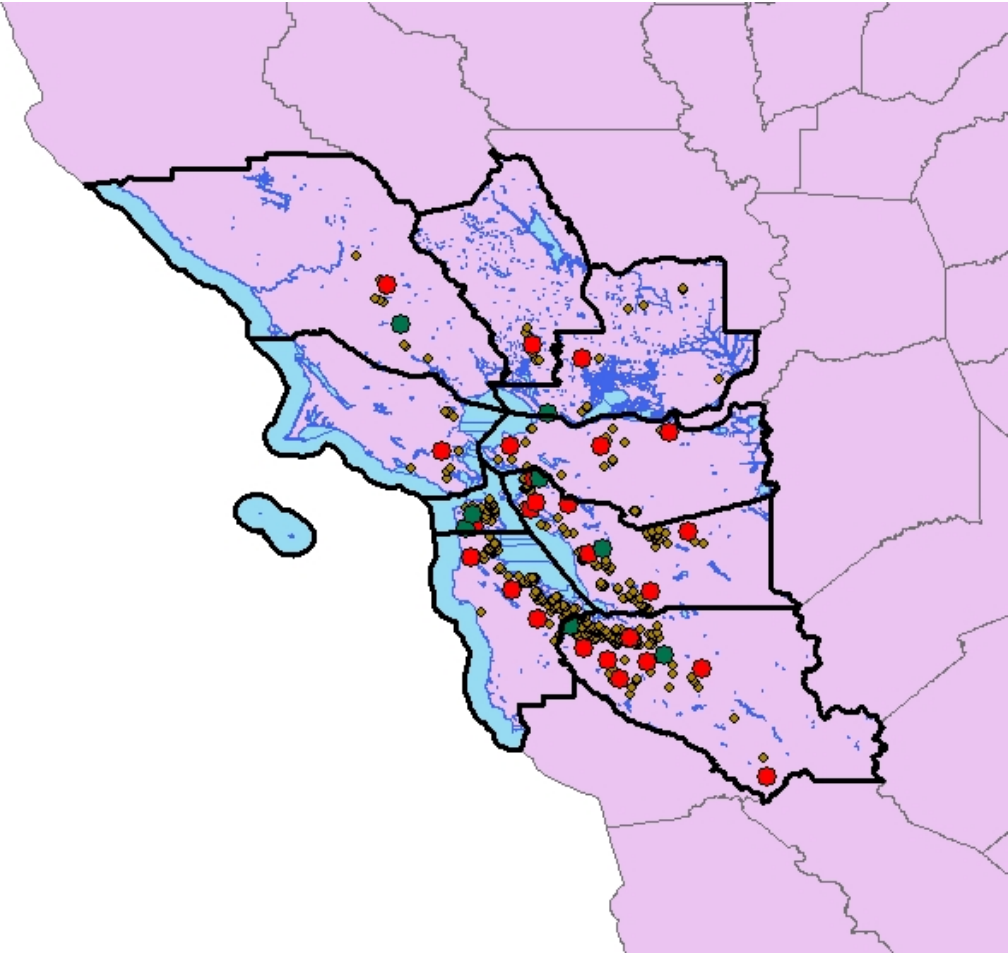


# Data Arising from Application of GIS Tools

## Number of Biotech firms at each distance

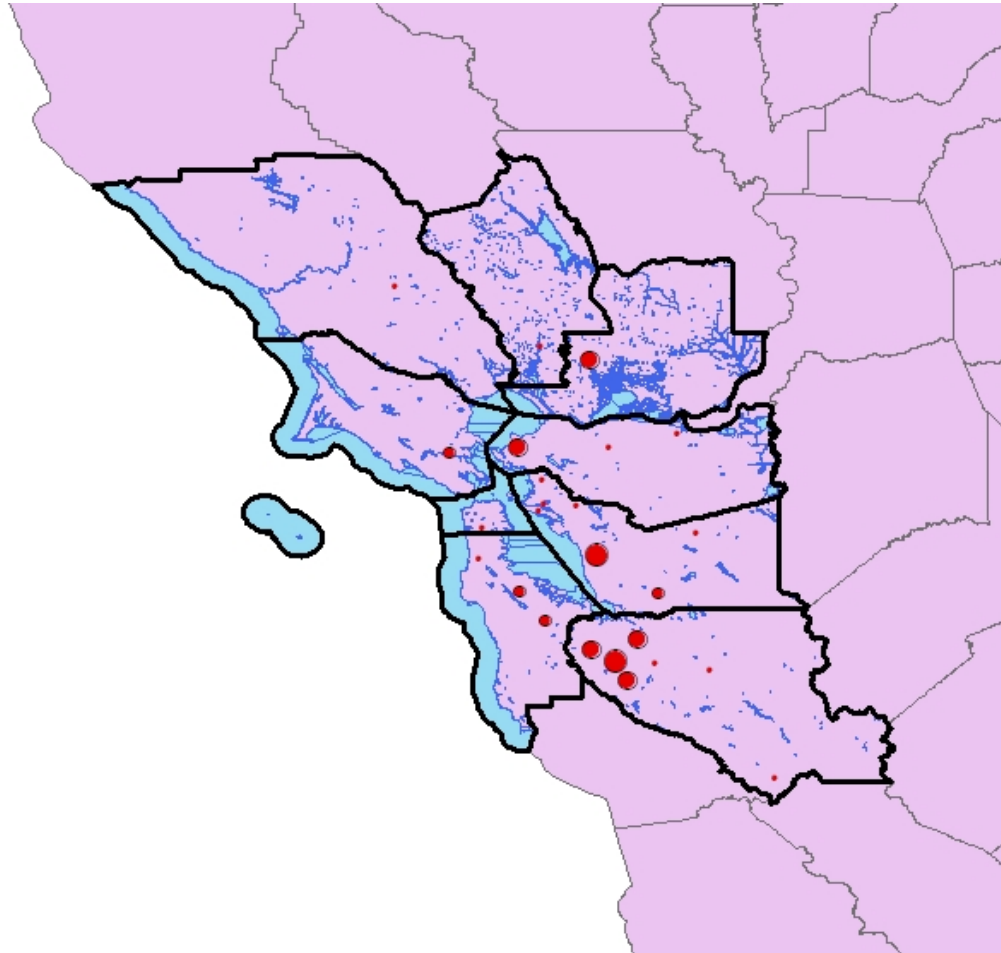
University	5mi	10mi	15mi
Stanford	87	176	289
UC-Berkeley	34	43	85
UC-San Francisco	32	91	137

# Public Degree Granting Institutions in the SF Bay Area

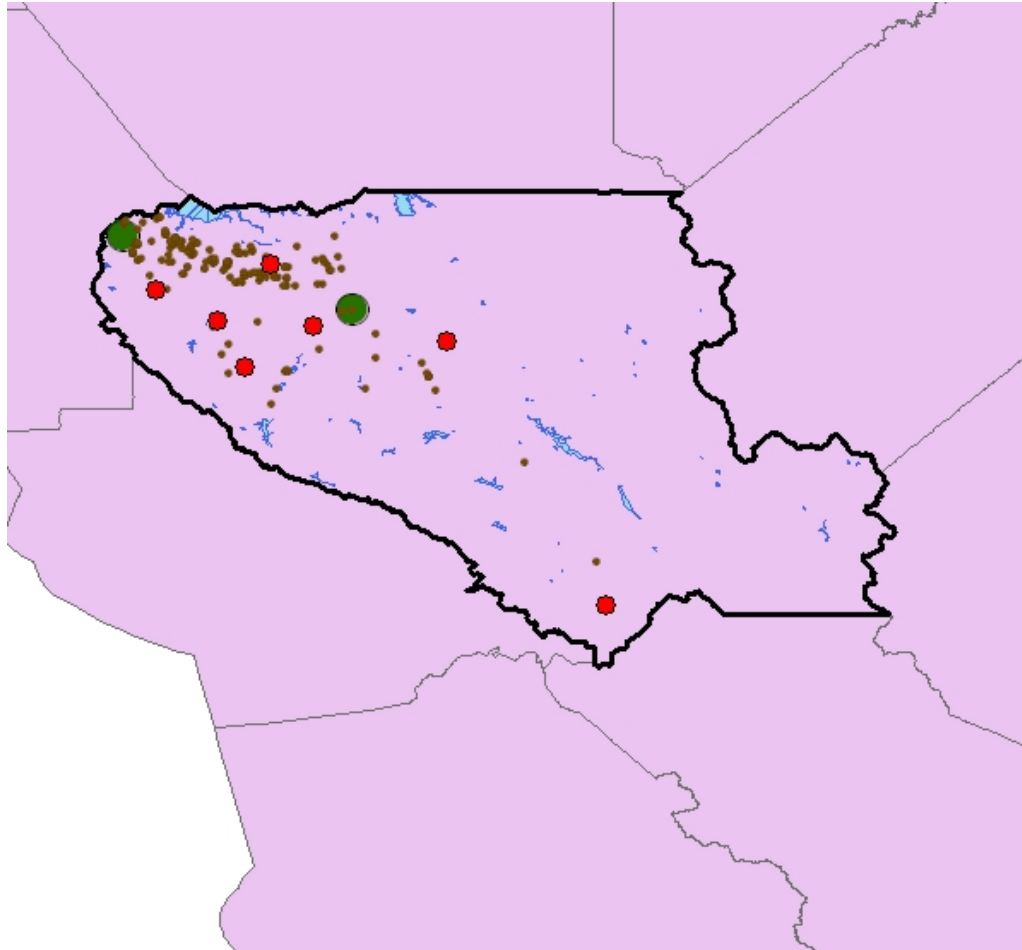


# Symbology in Action

**Relative  
Capacities of  
Public Two-Year  
Colleges in  
Generating AA  
Biology Degrees**

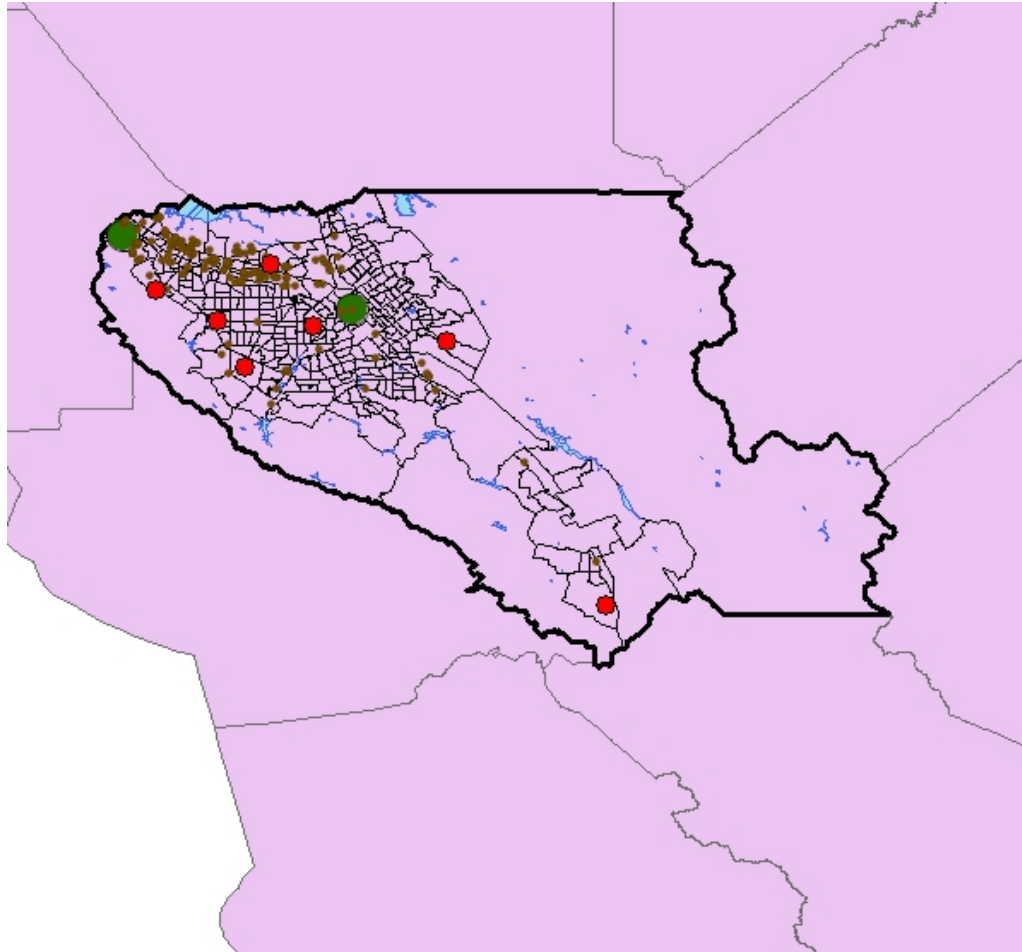


# Biotech Firms, AA- and BA-granting Institutions in Santa Clara County



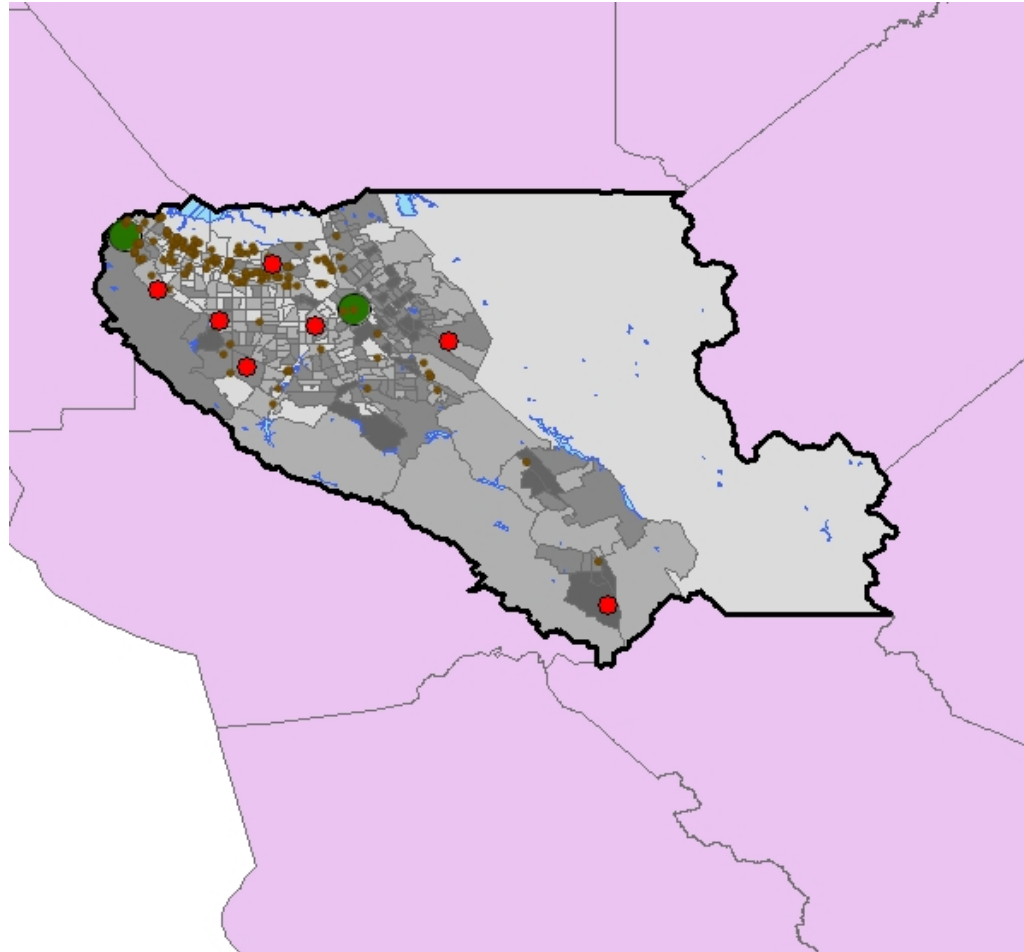
# Map Layers

Adding  
Census  
Tracts to  
previous  
map



# Symbology Can Be Tied to Demographic Data

Darker shaded areas correspond to greater number of “target population”



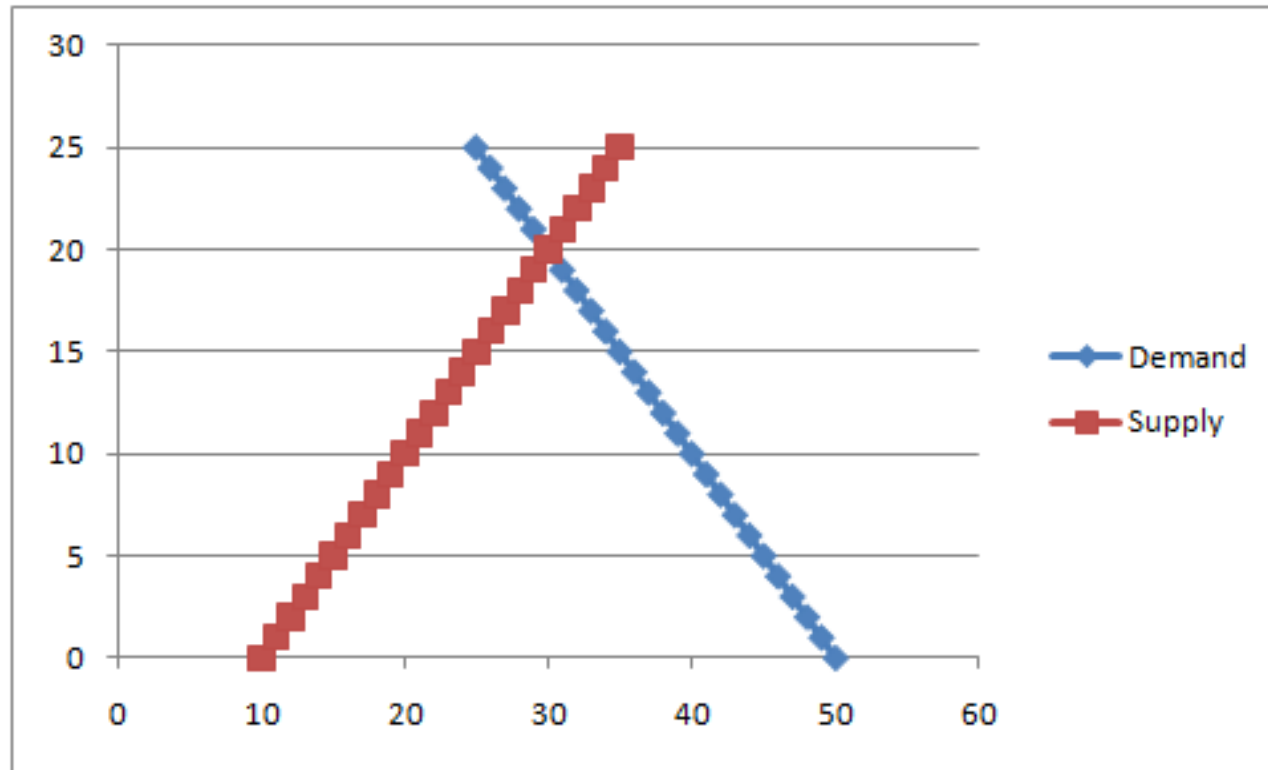
# Examples of Firm Location

- Discussion

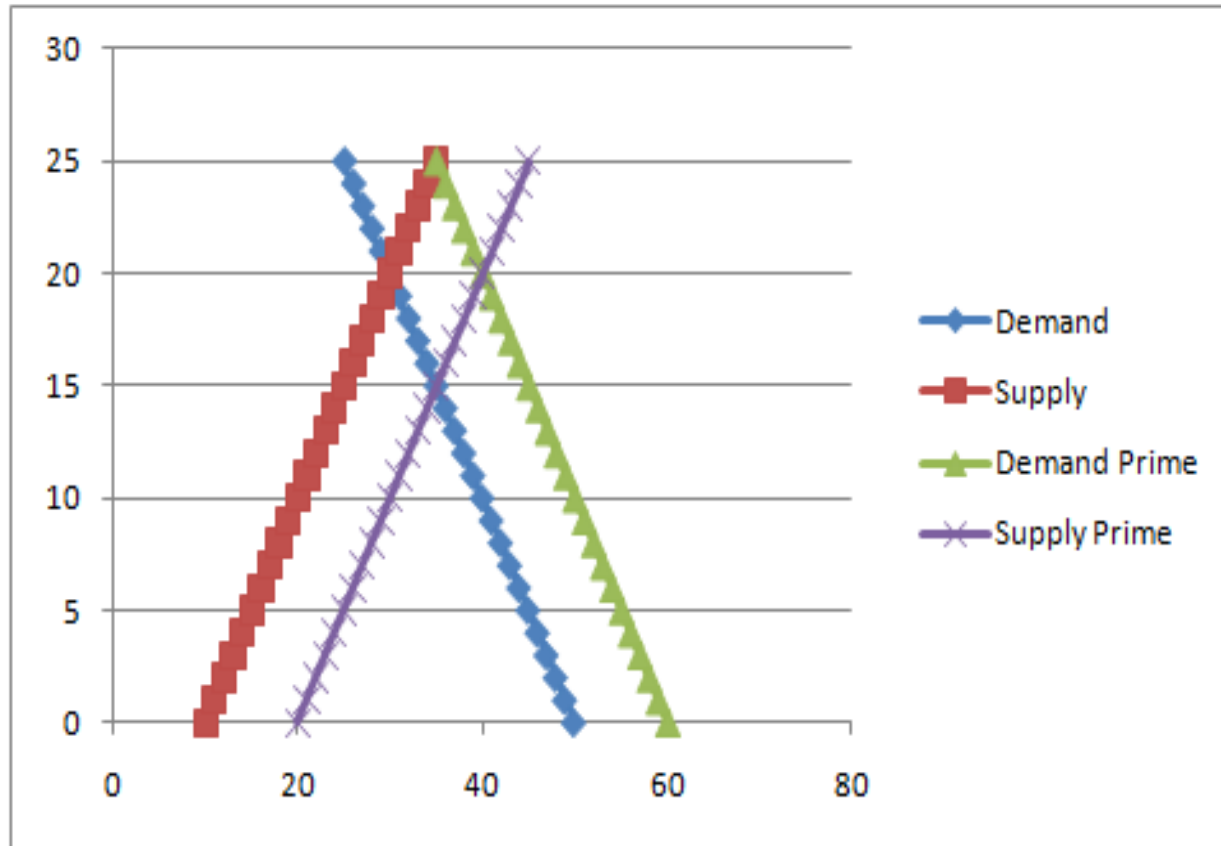
# Markets in Action: Supply and Demand

- **Market Demand (definition):**
- a relationship between a good's own price and the quantity of that good consumers desire and can afford, given income, other prices, tastes and preferences, expectations, etc.
- **Market Supply (definition):**
- a relationship between a good's own price and the quantity of that good an industry consisting of profit-maximizing firms desires to produce and can produce, given technology, other prices, expectations, etc.

# Supply and Demand



# Supply and Demand: Markets in Action



# Markets and Efficiency

- An efficient allocation of resources is an allocation such that there is no other feasible allocation that would make at least one person better off and all others no worse off.
- There are many efficient allocations (and also many allocations that are inefficient).
- First Welfare Theorem: markets sometimes achieve efficient allocations of resources.

# Markets and Efficiency

- Markets sometimes fail to achieve an efficient allocation of resources – this is called “market failure.”
- Causes of market failure include (but are not limited to):
  - externalities (spillover effects)
  - asymmetric information
  - market power