FIRMS AND MARKETS II

MPA 612: Economy, Society, and Public Policy

February 27, 2019

Fill out your reading report on Learning Suite

PLAN FOR TODAY

Scale, location, networks, and time

Stone cold sober chocolate milk

elasticities of demand

Paperclips: 29,999,999,999,999,900,000,000,000,000,000,000,000,000,000,000,000

Make Paperclip

Manufacturing

Clips per Second: 0
Unused Clips: 29999.80 sexdecillion

Factories: 3.38 nonillion

Wire Production

Available Matter: 0 g
(0 g per sec)
Acquired Matter: 0 g
(0 g per sec)
Wire: 0 inches
(0 inches per sec)

Harvester Drones: 6.76 nonillion
Wire Drones: 6.76 nonillion

Space Exploration

100.000000000000% of universe explored

Launch Probe
Cost: 100.00 quadrillion clips

Launched: 5.00 thousand
Descendents: 2.03 decillion

Computational Resources

Swarm Gifts: 44
Processors 1467
Memory 300

Operations: 300,000 / 300,000
Creativity: 550,027

Swarm Computing

Drones: 13.52 nonillion
Status: Active
Next gift in 3 seconds

Work ———————●————— Think

Quantum Computing

■ ■ ■ ■

Compute

Projects

Threnody for the Heroes of Eckmuhl 4
(190,000 creat, 19,000 yomi)
Gain 10,000 honor

So We Offer You Exile
To a new world where you will continue to live
with meaning and purpose. And leave the shreds
of this world to us...

Strategic Modeling GREEDY Run

Round 56

		RANDOM	
		attack	decay
TIT FOR TAT	attack	4,4	8,8
	decay	8,8	1,1

Yomi: 55,594

New Tournament   AutoTourney ON

Cost: 16,000 ops

Combat

Lutzen 5

Scale = 265 octillion:1

Honor: 57,247

Von Neumann Probe Design

Trust: 48 / 48 (50 Max)

< > Speed: 7
< > Exploration: 6
< > Self-Replication: 12
< > Hazard Remediation: 10
< > Factory Production: 1

SCALE, LOCATION, NETWORKS, AND TIME

SIZE AND LOCATION

Economies of scale

Cost to make stuff goes down as you make more stuff

Economies of agglomeration

Cost to make stuff goes down as you clump together

Network effects

Cost to make stuff goes down when everyone uses your stuff

ECONOMIES OF SCALE

If you double the inputs, you get more than double the outputs

If you {{increase}} the inputs, you get more than {{that increase in}} the outputs

SCALE, LOCATION, NETWORK, OR NOTHING?

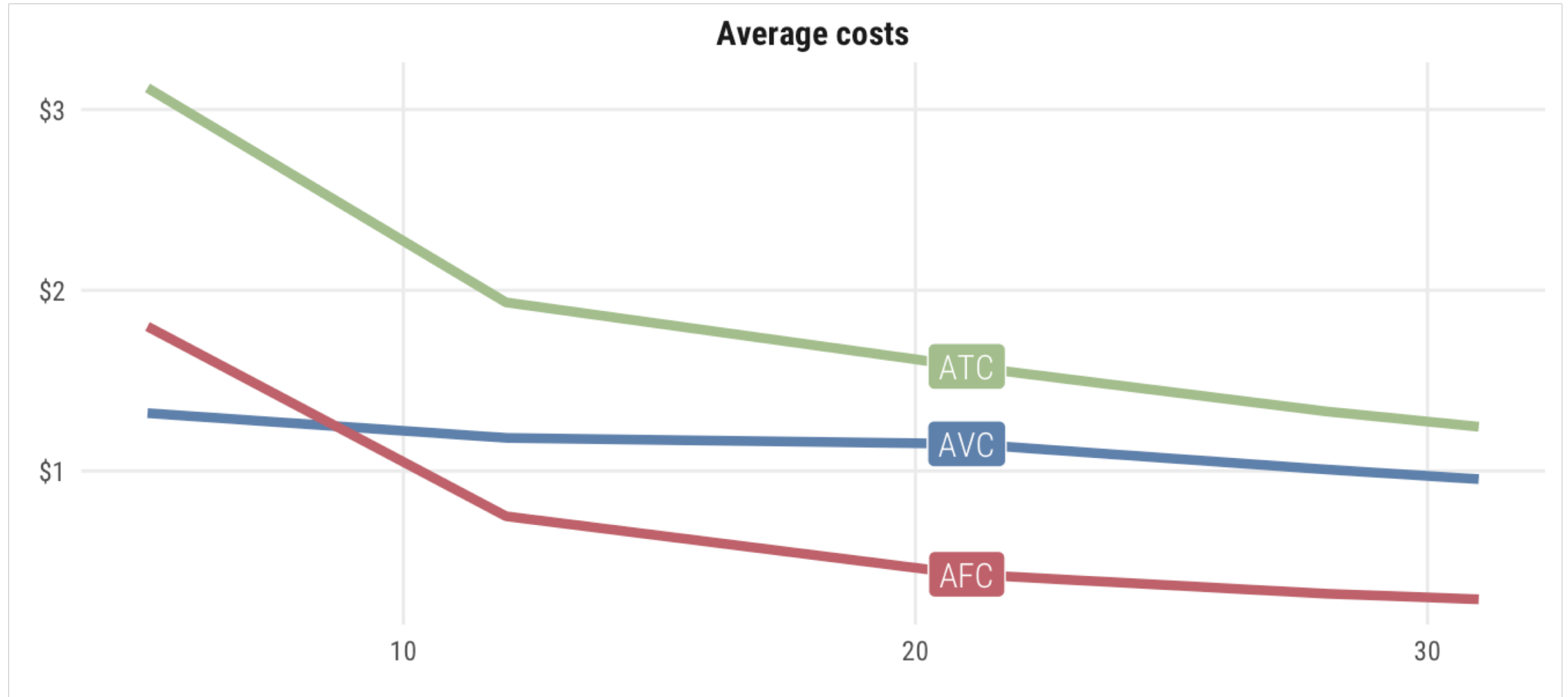eBay and PayPal

QWERTY and Dvorak keyboards

Doubling a recipe

Walmart's distribution network

Costco

Henry Ford's assembly line

Rural Chinese moving to cities
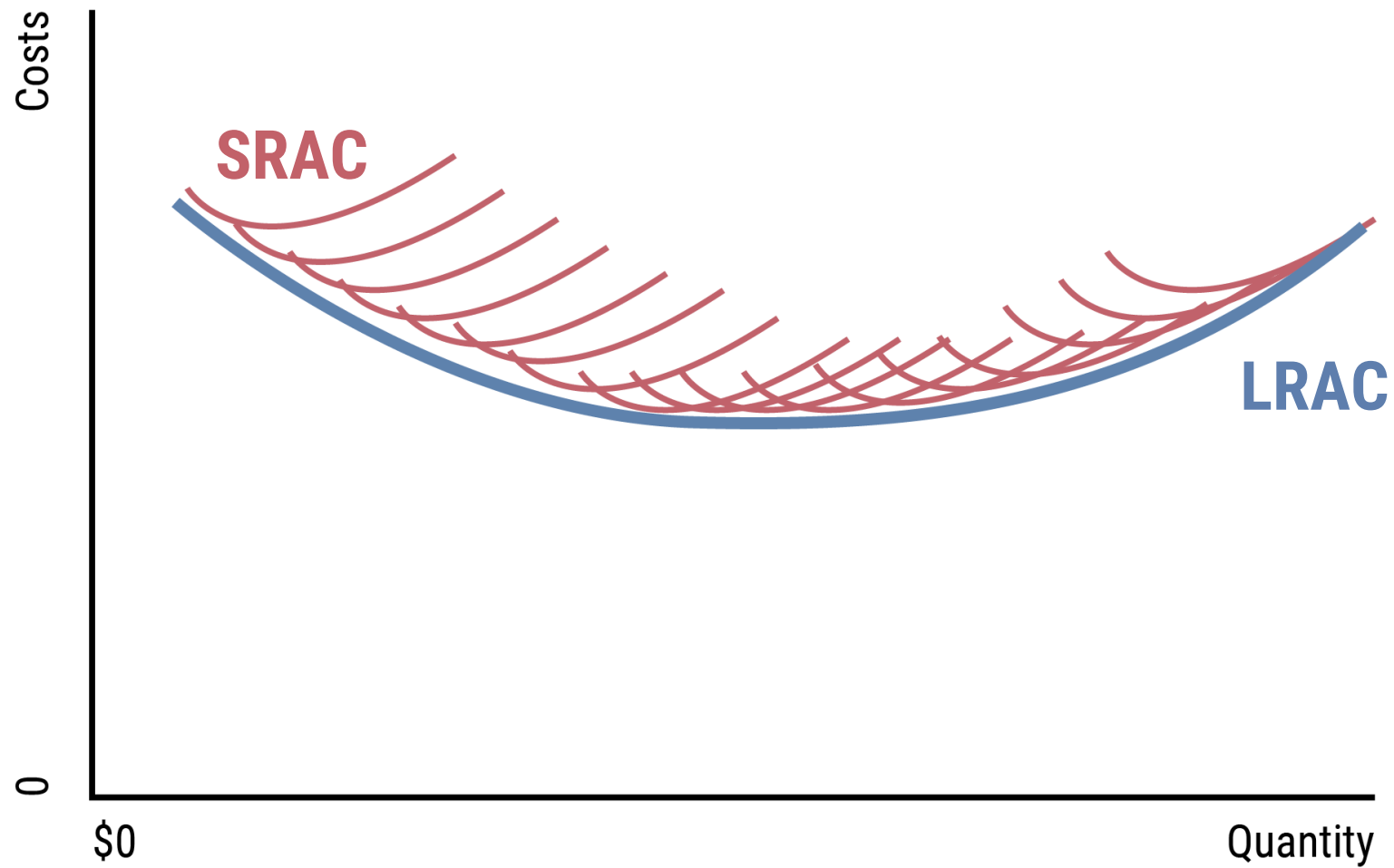
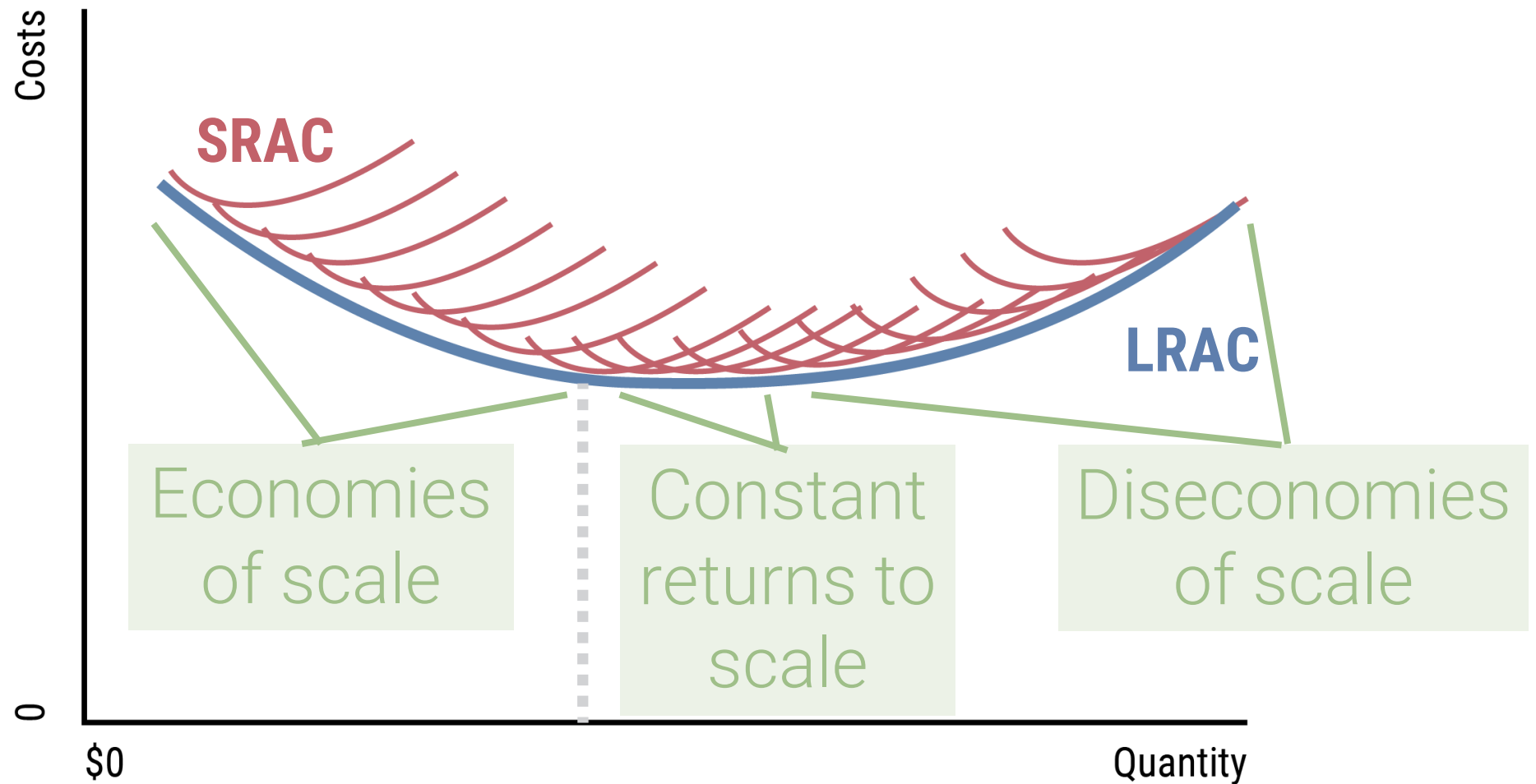# AVERAGE COSTS AND SCALE

Average costs

AVERAGE COSTS AND SCALE

TIME AND SCALE

TIME AND SCALE

STONE COLD SOBER CHOCOLATE MILK

NO. 1 STONE COLD SOBER
20 STRAIGHT YEARS

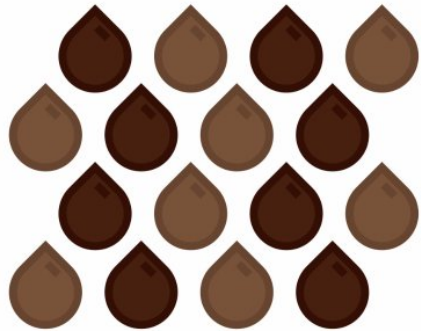RAISE A GLASS OF CHOCOLATE MILK IN CELEBRATION!

CHOCOLATE MILK RECIPE

DATES BACK TO 1948. BYU CREAMERY STILL IMPORTS FROM THE ORIGINAL MANUFACTURER IN SWITZERLAND.

2,143,344

OZ OF CHOCOLATE MILK AVAILABLE ON CAMPUS AT ANY GIVEN TIME.

308,786

BOTTLES OF CHOCOLATE MILK SOLD LAST YEAR.

5 MILLION GALLONS

CONSUMED IN THE LAST 20 YEARS—ENOUGH TO FILL THREE FOOTBALL-FIELD-SIZED POOLS AT A DEPTH OF 4 FEET.

BYU

Excel time!

ELASTICITIES OF DEMAND

ELASTICITY AND RESPONSIVENESS

$$\varepsilon = -\frac{\%\text{ change in demand}}{\%\text{ change in price}} \qquad \varepsilon = -\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

% change in demand that follows a 1% change in price

Q ↑ P ↓
or
Q ↓ P ↑

ε = 2: "If price increases by 10%, quantity decreases by 20%"

ε = 0.5: "If price increases by 10%, quantity decreases by 5%"

$\epsilon = \infty$ = Perfectly elastic
Any change in price moves quantity to 0
Identical goods
Two vending machines

$\epsilon > 1$ = Elastic
Changes in price change the quantity a lot
Goods with substitutes
Diet Coke

$\epsilon = 1$ = Unit elastic
Changes in price change the quantity the same

$\epsilon < 1$ = Inelastic
Changes in price change the quantity a little
Goods with few substitutes
AIDS medicine

$\epsilon = 0$ = Perfectly inelastic
Changes in price do nothing to the quantity
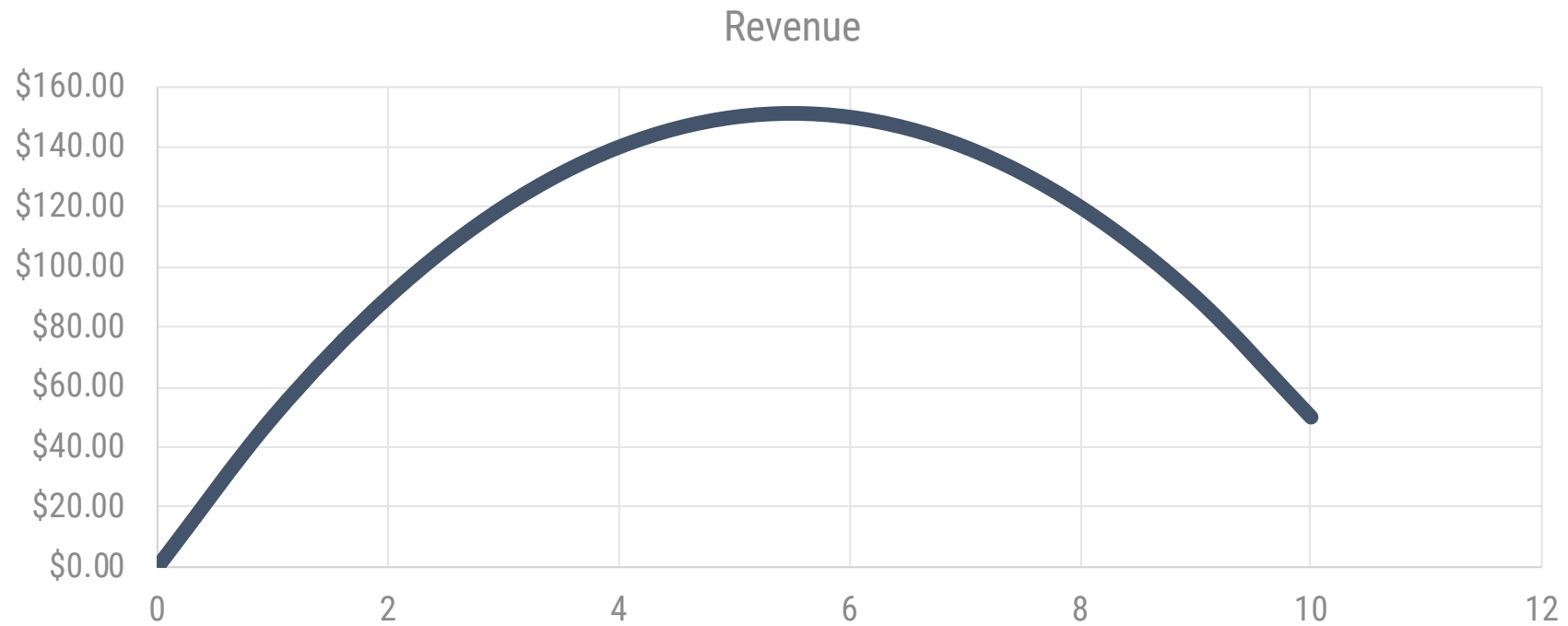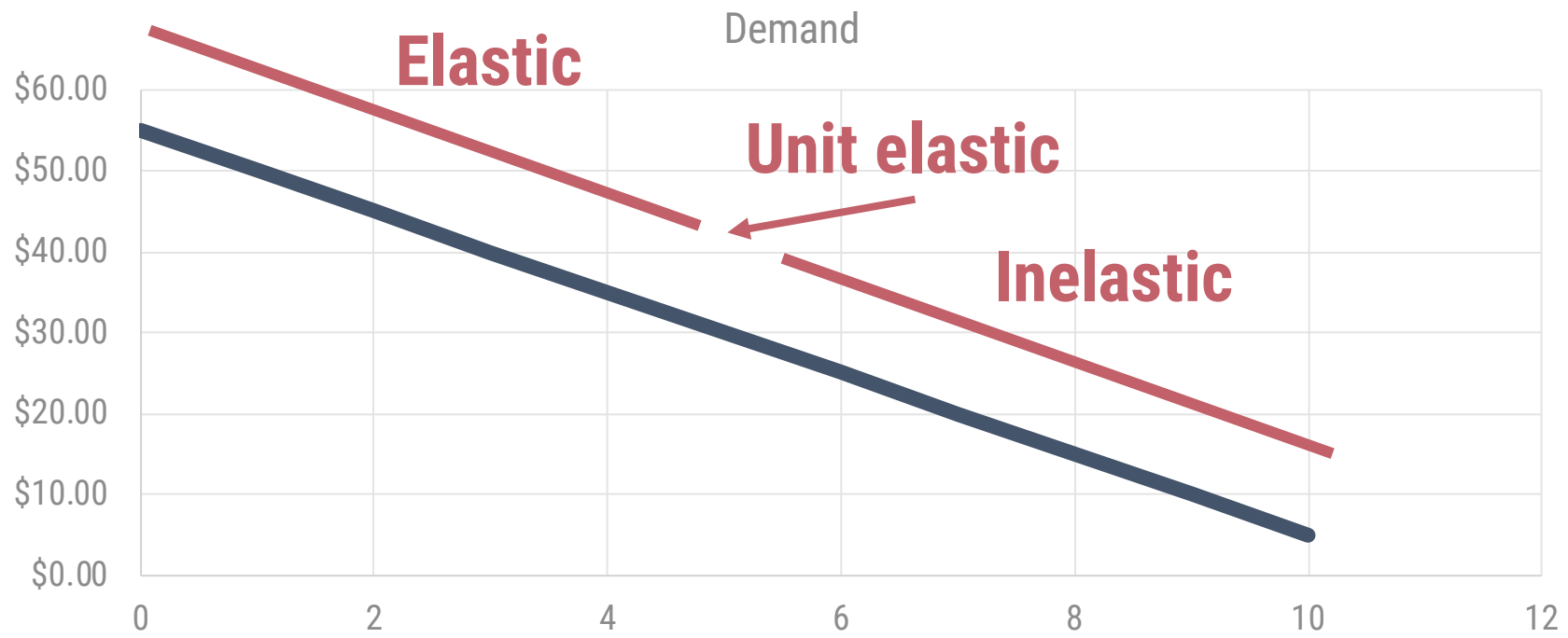Survival goods
Water in the desert

🚨 **WARNING** 🚨

Elasticities are not the same as the demand curve

A linear demand curve has lots of elasticities!

Excel time!

WHY DO ELASTICITIES MATTER IN PA?

Taxing things changes their prices

Changing prices changes quantities

Taxing elastic goods will make quantities go down a lot and decrease tax revenues

Taxing inelastic goods will make quantities go down slightly and not hurt revenues

Rent, surplus, and gains from trade

Supply and demand

Market power and natural monopolies