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IZA DP No. 17638

From Startup to Success: Using Gen Z Entrepreneurs to Teach Economics

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ABSTRACT

From Startup to Success: Using Gen Z Entrepreneurs to Teach Economics

This paper builds upon the work of McCaffrey (2016) who explores how economics can enhance entrepreneurship education. We extended the work of McCaffrey in two distinct ways. First, we emphasize the economic understanding every private enterprise needs to be successful. Second, we developed teaching guides which feature three successful Gen Z entrepreneurs – Max Hayden, Mikaila Ulmer, and Alexandr Wang. Their stories embody business acumen and the entrepreneurial ability necessary to succeed in a rapidly changing world. The lessons build upon the work of Milovanska-Farrington et al. (2023) and DeWind et al. (2023) who illustrate foundation-level economic concepts in an engaging way that resonates with Gen Z students.

JEL Classification: A20, A21

Keywords: entrepreneurs, principles of economics, private enterprise, Gen Z, Max Hayden, Mikaila Ulmer, Alexandr Wang

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I. Introduction

Data from 2023 show that 93% of Gen Z have taken some steps toward building their own small business, 84% consider small business ownership as a viable career path, with 75% of these individuals wanting to become entrepreneurs.[1] Given this interest of Gen Z in entrepreneurship and the positive impact of entrepreneurship on individuals, businesses, society and countries (Minniti et al. 2008; Van Praag et al. 2007; Doran et al. 2018), it is important for economic educators to explain the origins of ideas that allow students to seize entrepreneurial opportunities in the future.

Regrettably, entrepreneurship is largely ignored in economics education. Kent and Rushing (1999) found that entrepreneurial education was mostly absent from principles of economics textbooks. Phipps et al. (2012) reinforced the findings of Kent and Rushing, noting that introductory economics textbooks continue, for the most part, to lack comprehensive coverage of entrepreneurship. To help address this issue, McCaffrey attempts to bridge the gap between entrepreneurship education and economics by providing a list of undergraduate readings that can be used to teach entrepreneurial lessons using an economic framework. We build on the work of McCaffrey and show how studying economics can help entrepreneurs make better business decisions. However, we have selected an approach more suitable for Gen Z.

Milovanska-Farrington et al. (2023) present case studies of three female Gen Z entrepreneurs: Kylie Jenner, Olivia Dunne and Olivia Rodrigo; while DeWind et al. (2023) focus on Taylor Swift and MrBeast, two of the most recognizable and popular celebrities in the world. We extend their analysis by using case studies of three tech-savvy Gen Z entrepreneurs, Max Hayden, Mikaila Ulmer and Alexandr Wang, who started their own businesses from humble beginnings and established million-dollar businesses. Max mastered the art of arbitrage during COVID-19. Mikaila created her own brand of lemonade: “Me & the Bees Lemonade” at the age of 11. Alexandr is the founder of Scale AI, AI-powered, data-centric technology that helps companies improve and analyze data to train machine-learning algorithms. Their business success provides real life lessons that resonate with students.

II. Literature Review

Connecting with students in an ever-changing world is an ongoing challenge that all educators face. The current intake of high school and college-level students are predominantly Gen Z, born between 1997 and 2012. The learning preferences and lifestyles of Gen Z students are different from previous generations of students. While the millennial generation embraced traditional pop culture mediums like film, music and television, social media platforms such as YouTube and TikTok are the favored streaming and content channels for Gen Z. According to the Pew Research Center, 93% of teens surveyed said they use YouTube, making it the dominant media platform for Gen Z. TikTok (63%), Snapchat (60%) and Instagram (59%) are the other platforms enjoyed by the majority of teenagers.[2] Gen Z overwhelmingly prefers user-generated

[1] What Gen Z Entrepreneurs Want, *Forbes* and Gen Z: the most entrepreneurial generation in history, *Leaders.com*

[2] https://www.pewresearch.org/internet/2023/12/11/teens-social-media-and-technology-2023/

content, followed by music/podcasts, gaming, and only then the TV.[3] Given the change in lifestyles, it is time for educators to evolve from a mindset of teaching millennials about economics to focusing on Gen Z students (Carrasco-Gallego 2017).

The overwhelming majority of studies over the past decade have focused on ways to use pop culture to illustrate economic concepts via traditional mediums including music (Geerling et al. 2021; Ben Abdesslem 2022); film and television shows (Geerling 2012; Mateer 2012; Wooten 2018). A new strand of research in economics education is emerging, one which focuses on popular celebrities and influencers among Gen Z (DeWind et al. 2023; Geerling et al. 2023; Milovanska-Farrington et al. 2023). Incorporating Gen Z backstories into economic education aligns with the call from Carrasco-Gallego (2017) for educators to evolve their teaching practices to focus on Gen Z students.

III. Meet Three Gen Z Entrepreneurs

In this section, we present the stories of three Gen Z entrepreneurs, describe the key economic concepts that instructors could illustrate through these stories, and specify the learning objectives of each activity. Then, in an Appendix at the end of this article, we provide links to media clips that introduce students to each entrepreneur and their business, a teaching guide that includes a summary of their backstory, instructions for use, questions that could be used as a form of summative assessment, and an activity to reinforce the lessons students have learned.

To evaluate students' understanding of the concepts emphasized in the story of each entrepreneur, instructors lead a class discussion as described in the instructions in the teaching guides in the Appendix, do the class activity and ask students to answer the assessment questions offered in the Assessment section of each guide. To implement the activities in an economics classroom, instructors only need to be able to show a video to the class and have access to a whiteboard and markers.

A. Max Hayden

The story of Max Hayden provides an example of arbitrage, a nearly simultaneous purchase and sale of goods in different markets. Students will learn how entrepreneurs like Max can make a profit from arbitrage and will appreciate the importance of entrepreneurial ability in choosing what goods to buy and sell.

Max Hayden began reselling products (like candies and spinners) when he was in middle school, but his business really took off during COVID-19 in 2020 when he engaged in retail arbitrage. The health crisis triggered shortages of a variety of products, disrupting entire industries and frustrating consumers. It also created opportunities in the resale market, enabling Max and other entrepreneurs to make a significant profit by reselling scarce items on Amazon, Facebook, and other online markets.

[3] https://www.fastcompany.com/90929341/older-millennials-vs-gen-z-streaming-tv-likes#:~:text=Gen%20Z%20

Max got his start buying gaming consoles. He bought and resold PlayStation and Xbox machines for as much as $1,100—more than double their $500 sticker prices.[4] This helped Max learn real-life business skills, exploring the aisles at Walmart to find price inconsistencies on items such as swimming pools, patio heaters and Pokémon trading cards.

Max needed accurate price information, so he opened an account on the Amazon store. He also utilized Discord message board groups to learn which store items were in short supply and where he could locate them. As his sales grew, he turned the family garage into a storage facility. Using a laptop, tape and printer, Max made almost $2 million in sales, earning a profit of over $100,000 – while helping to reduce pricing inefficiencies in the market by connecting the consumers in need to the item they wanted. Eventually, Max leased space at a storage facility to help keep his marginal costs low.

Many resellers were criticized during COVID-19 for attempting to resell essential medical equipment. Max intentionally avoided those items and focused on reselling luxury goods rather than necessities. Max is currently studying Business Analytics at Rutgers University.

The teaching guide for Max Hayden provided in Appendix A.1 highlights the following **economic concepts**: arbitrage, supply, demand, shortages, market clearing price, and scale. After completing the exercise, students will be able to:

- Explain what arbitrage is to someone unfamiliar with the concept.
- Understand how it is possible to make profit from arbitrage.
- Understand how economic concepts of supply and demand are integral to arbitrage.
- Understand the role that entrepreneurial ability plays in identifying what to buy and sell.
- Understand why businesses must scale their operations as they grow.

B. Mikaila Ulmer

While many children sell lemonade, Mikaila's entrepreneurial spirit turned the idea into a business. She used her great-grandmother's recipe for homemade flaxseed lemonade and added honey to improve the flavor and make the lemonade sweeter. Her story offers a real-world example of the importance of product differentiation and knowing what makes a business different in a monopolistically competitive market.

In 2009, at the age of five, Mikaila started selling her lemonade outside her home in Austin, Texas. Instead of saving or spending her profits, Mikaila donated a percentage to organizations dedicated to protecting honeybee colonies.

She established her own brand of lemonade, "Me & the Bees Lemonade," when she was 11. She went on *Shark Tank* the same year and successfully pitched her idea to the sharks. Mikaila accepted a deal with Daymond John ($60,000 for a 25% stake in her

[4] Teen brought in millions selling stuff on Amazon during the pandemic

company).[5] The exposure on *Shark Tank* provided Mikaila with the opportunity to sell her brand nationally. Whole Foods signed her for $11 million. Over 1500 stores sell her products today.[6]

As the popularity of "Me & the Bees Lemonade" began to grow, so did its product lineup. Mikaila added new lemonade flavors: Prickly Pear, Ginger, Iced Tea, and Mint. The important lesson to learn here is the need to continually differentiate your product to grow sales. Mikaila has also diversified her product lineup by adding beeswax lip balms and other branded merchandise from "Me & the Bees Lemonade"'s online store. Mikaila also authored a memoir "Bee Fearless: Dream Like a Kid" that provides readers with helpful tips on pursuing their own ventures. These initiatives have resulted in sales of over $1 million annually. "Me & the Bees Lemonade" has made Mikaila a millionaire a couple of times over.

The teaching guide for Mikaila Ulmer provided in Appendix A.2 is relevant to a discussion of the following **economic concepts**: product differentiation, monopolistic competition, profit, intellectual property, brand, and expansion. After completing the exercise, students will be able to:

- Understand the concept of product differentiation.
- Determine the market structure a business operates in based on its characteristics.
- Understand why it is important for businesses to build a strong brand.

C. Alexandr Wang

Technologically savvy, entrepreneurial, and inspired by AI, Alexandr Wang co-founded Scale-AI, an AI-powered, data-centric technology that helps companies improve and analyze data to train machine-learning algorithms. His entrepreneurial spirit and work helped him become the world's youngest self-made billionaire in 2022 at the age of 24. More importantly, the story of Alexandr and Scale AI is an excellent illustration of how technological advancements could impact costs, efficiency, and firms' ability to outperform competitors. Students will have the opportunity to discuss how technological advancements change supply, as well as the production possibilities frontier. They will also learn how artificial intelligence could augment human potential.

Alexandr Wang was born in 1997. As a kid, he participated in national math and coding competitions. As his skills advanced, he began to work as a software engineer for Addepar in 2014. From 2014 to 2016, Alexandr was the tech lead for Quora. He also spent time as an algorithm developer at Hudson River Trading.[7] He dropped out of MIT in 2016 to devote himself to Scale AI, whom he co-founded with Lucy Gao, who he worked with at Quora.

[5] https://news.microsoft.com/features/preteen-powerhouse-meet-12-year-old-ceo-bee-ambassador-mikaila-ulmer/
[6] https://www.businessinsider.com/how-to-gain-competitive-edge-strong-story-customer-service-research-2020-9
[7] https://www.businessinsider.com/alexandr-wang-scale-ai-power-list-2024

Scale AI uses both software and human workers to label, or tag, the vast troves of text, images and video data. This powerful technology enables companies to analyze raw data faster than human analysts. This provides cost-savings opportunities and prospects in understanding existing data more clearly. For example, Scale AI can analyze satellite images faster than humans, providing real-time information that military units need to react faster to geopolitical conflicts.[8] The same is true in business, where firms receive data on sales, expenses, inventories and other critical information but cannot sort through the data and analyze it as quickly as AI can. Therefore, firms using AI gain a competitive advantage over firms that process their information less efficiently. Understanding Scale AI's central role in the information age, Alexandr noted: "Our goal is to help them unlock the potential of the data and supercharge their businesses with AI."[9]

Alexandr also has a message for the complacency/fear that many people have when it comes to AI and America's ability to become the dominant player in AI. After a trip to China in 2018, he became outspoken about the threat posed by China's AI ambitions: "It dawned on me that this technology had become really, really critical for how the future of our world is going to play out," adding, "I think it's really important that not just ourselves, but as many AI companies as possible, are working to help bridge the gap."[10]

The teaching guide for Alexandr Wang provided in Appendix A.3 helps students understand the following **economic concepts**: opportunity cost, factors of production, production possibilities frontier, supply and demand model, equilibrium price, equilibrium quantity, elasticity, and total revenue. After completing the exercise, students will be able to:

- Recognize examples of factors of production.
- Analyze how a technological advancement changes the production possibilities frontier.
- Apply the supply and demand model to identify the effect of technological change on supply.

IV. Conclusion

This paper builds on the work of McCaffrey (2016) who laments the lack of coverage in economics of the role of entrepreneurship and suggests a list of readings to engage students. While McCaffrey's approach is well-intentioned and will resonate with dedicated students, it is not the way most of Gen Z learns. It is widely accepted that the learning preferences and lifestyles of Gen Z students are different from previous generations of students. They have grown up with YouTube, Instagram, TikTok, smartphones and the internet. The ongoing challenge for educators is to adapt their teaching materials to respond to Gen Z. This paper is part of a new strand of research in economics education which focuses on the celebrities and influencers among Gen Z (DeWind et al. 2023; Geerling et al. 2023; Milovanska-Farrington et al. 2023). It goes

[8] https://time.com/collection/time100-ai/6310631/alexandr-wang/
[9] https://www.prestigeonline.com/sg/people/alexandr-wang-is-worlds-youngest-self-made-billionaire/
[10] https://time.com/collection/time100-ai/6310631/alexandr-wang/

beyond this frontier of celebrities and Gen Z influencers by using three prominent and successful Gen Z entrepreneurs, to give students a relevant set of teaching guides.

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Appendix: Gen Z Entrepreneurs in the Classroom: Teaching Guides

A.1: Max Hayden: This 16-Year-Old's Company Brought in Millions Buying from Walmart and Reselling on Amazon

Clip: https://criticalcommons.org/view?m=TGcP7MJxG

Backstory: Teen brought in millions selling stuff on Amazon during the pandemic (cnbc.com)

Clip Length: 6 minutes, 37 minutes

Introduction:

Show the video to the class.

- Max researches what products to buy from the multiple groups on Discord where resellers share tips on what products to target and which retailers might still have a hot item in stock. He also spends hours every day researching which products are reselling for significantly more than their retail prices, whether it's on Discord or studying the data Amazon Marketplace provides to its sellers.
- As Max scaled his business, he had to do two things. First, he hired two high school friends to work for him. He paid them each $15 an hour to help with bookkeeping, packaging, and fulfilling orders. Second, he had to find additional space to store the products he was reselling, so he decided to split a commercial warehouse nearby by sharing the rent with other resellers.
- Here is a quote from Max: "I'm really just taking advantage of the market where the market drives the prices and the demand". If you could use only one word to describe Max's quote, what word would you choose?

Key Definition:

- **Arbitrage** – is the nearly simultaneous purchase and sale of goods in different markets in order to profit from price discrepancies.

Assessment:

1. Max notices that swimming pools are selling for $300 at Walmart. He buys 10 pools in March and stores them in a warehouse for 3 months at a cost of $50 per pool. In June, he sold the pools on Amazon for $600 with a cost of shipping equal to $75 per pool. How much profit does Max make?

Answer: For each pool, his costs are $300 (purchase price) + $50 (storage fee) + $75 (shipping fee) = $425 per pool. His revenue per pool is $600, so he earns ($600 - $425) x 10 = $1,750 in profit.

2. Which of the following statements best describes how Max operates?

a. He buys and holds goods for a long time to maximize his profits.

b. He lines up buyers first and then shops for the goods they want.

c. He purchases goods on layaway and claims them later if they are selling at a high price.

d. He buys the goods upfront and hopes to realize a profit by making a quick sale.

Answer: For arbitrage to work, the entrepreneur must strike quickly. Max Does this by buying products that are oversupplied in one part of the market and delivers those products to places where those products are undersupplied.

3. Max developed his business acumen in middle school by selling what product?

a. Magic cards

b. Fidget spinners

c. Homemade fudge

d. Non-Fungible Tokens (NFTs)

Answer: Fidget spinners were all the rage for a few months several years ago.

4. Time permitting, have your students complete this arbitrage exercise.

A.2: Mikaila Ulmer: From a bee sting to a multi-million-dollar business "Me & the Bees Lemonade"

Clip: https://criticalcommons.org/view?m=rm5sAZUAX

Backstory: https://www.capitalism.com/mikaila-ulmer/ and https://www.meandthebees.com/pages/about-us

Clip Length: 1 minutes, 38 seconds

Introduction:

- Show the video to the class.
- Mikaila Ulmer is an American entrepreneur born in 1999. She got stung by a bee twice in one week when she was four. She read about bees, their importance for pollination, and how the world would be affected if there were no bees.
- Traditional lemonade is made with sugar, lemons and citric acid. Mikhaila started a lemonade stand where she began to sell lemonade using a recipe for flaxseed, fresh-fruit lemonade from her great grandmother that she modified to add honey. Why did Mikaila modify the traditional lemonade recipe? Encourage students to think about how sellers differentiate their product. Answers might refer to differences in taste, quality, environmental impact and price.
- Discuss the various market structures (perfect competition, monopolistic competition, oligopoly, and monopoly), and ask students to explain how we categorize each market structure.
- Mikaila had to change the name of her business from “Be Sweet Lemonade” to “Me & the Bees Lemonade” because of copyright issues. Ask students why intellectual property is protected and the impact this has on entrepreneurship and economic growth.
- Mikaila also got a deal from *Shark Tank* ($60,000 for 25% of her company). You can watch a story about this here. Most of your students will be familiar with the concept of the show: aspiring entrepreneurs from around the world pitch their business models to a panel of investors and try to persuade them to invest money in their deal business. Start a discussion with your students about the importance of funding for entrepreneurship.

Key Definition:

- **Product differentiation** – the attempt to distinguish a good or service from other similar goods and services available in the market.

Assessment:

1. How did Mikaila differentiate her lemonade from her mainstream rivals?

Answer: Mikaila used a recipe for flaxseed, fresh-fruit lemonade from her great grandmother that she modified to add honey.

2. Which market structure (perfect competition, monopolistic competition, oligopoly, or monopoly) best describes the market Mikaila operates in?

Answer: The market for lemonade has the characteristics of a monopolistically competitive market: many sellers, differentiated products, free entry and exit.

3. Mikaila donates 10% of her profits to charities to save the bees.[11] If she sells 70 glasses of lemonade at $4 each at a lemonade stand on any given day, and it costs her $1 to make a glass, how much would Mikaila donate to charities that day?

a. $280.

b. $70.

c. $21.

d. $3.

Answer: The profit is the difference between total revenue (TR) and total cost (TC). Mikaila's TR is 70*$4 = $280, and her TC is 70*$1 = $70. The profit she makes that day is $280 - $70 = $210. She donates 10% of the profit, that is, 10%*$210 = $21.

4. Patents and copyright law:

a. are natural barriers.

b. create more competition.

c. mean more varieties of goods and services at different price levels.

d. assure inventors that no one will sell their ideas.

5. Whole Foods bought Mikaila's brand for $11 million. You can read more about the purchase here. How did she transform her brand of lemonade from a store outside her home in Austin, Texas, to a multi-million dollar business?

a. Mikaila pitched "Me & The Bees Lemonade" to investors on *Shark Tank*. One of the sharks, Daymond John, invested $60,000 for a 25% stake of her company.

b. Mikaila's appearance on *Shark Tank* helped raise her national profile and other investors tipped in over $800,000 for a stake in her company.

c. Mikaila's brand of lemonade resonates with people who are environmentally conscious consumers: she donates a percentage of her profits to organizations dedicated to protecting honey bee colonies.

d. All of the above.

6. Have your students play the Pitch It Game.

This interactive game will allow you to simulate the banter found on Shark Tank.

[11] https://www.beeculture.com/catch-buzz-bees-lemonade-founder-mikaila-ulmer-named-time-magazines-30-influential-teens-2017/

A.3: Alexandr Wang: Inspired by AI, he dropped out of college and became the youngest self-made billionaire at the age of 24

Clip: https://criticalcommons.org/view?m=o2YgQyYgF

Backstory: https://time.com/collection/time100-ai/6310631/alexandr-wang/

Clip Length: 6 minutes, 51 seconds

Introduction:

- Show the video to the class.
- Alexandr Wang, born in 1997, is the founder of Scale AI, AI-powered, data-centric technology that helps companies improve and analyze data to train machine-learning algorithms. It has already been used extensively in the automobile and health industries: from exploring the possibility of having easy, unlimited, eco-friendly cars, to analyzing patients' cases before they get to a doctor. Scale AI's customers include Toyota, Meta, Microsoft, PayPal, and others.
- Alexandr grew up in a small town in New Mexico, the son of Chinese immigrants who worked as physicists. He had always been curious to learn more. He left high school after his junior year to go to California to work as a software engineer. After being inspired by AI, he went to MIT for a year, but dropped out to start Scale AI in 2016.
- Before Wang created Scale AI, he read an essay by Paul Graham on how to come up with startup ideas. Graham's advice was to "live in the future, then build what's missing." In an interview, Wang has said that at that time he had "a jillion other ideas, like, maybe we should help people get doctors".[12] Ask students what they think Alexandr's opportunity cost of launching Scale AI has been.
- In an interview in which Wang has provided pieces of advice for young entrepreneurs, he has said that they should be authentic and have a "special thing that you [they] can offer".[13] Ask students why it is important to offer something "special" and "authentic" to customers. Discuss the importance of product differentiation.
- Alexandr Wang became the youngest self-made billionaire at the age of 24.[14] Ask students which factors contributed most to his success as an entrepreneur.

Key Definition:

[12] https://www.bizshakalaka.com/strategy-how-23-year-old-alexandr-wang-built-scale-ai-into-a-1-billion-company-in-less-than-3-years/

[13] https://www.businessofbusiness.com/articles/scale-ai-machine-learning-startup-alexandr-wang/

[14] https://time.com/collection/time100-ai/6310631/alexandr-wang/

- **Technological advancement** – technological progress; occurs when new technology, methods or knowledge are discovered to improve production.

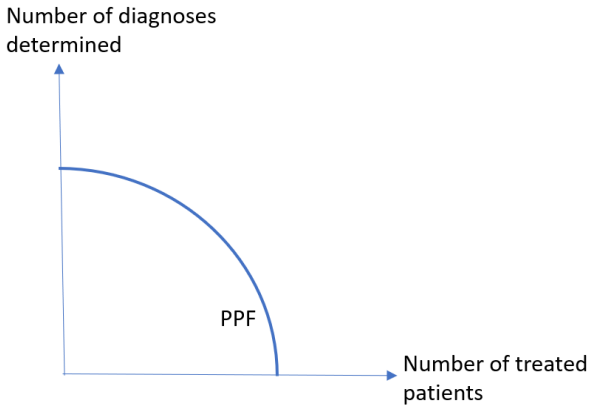
Assessment:

1. Scale AI utilizes software and human workers to label text, image and video data. You can read more here. Which two factors of production are software and workers examples of?

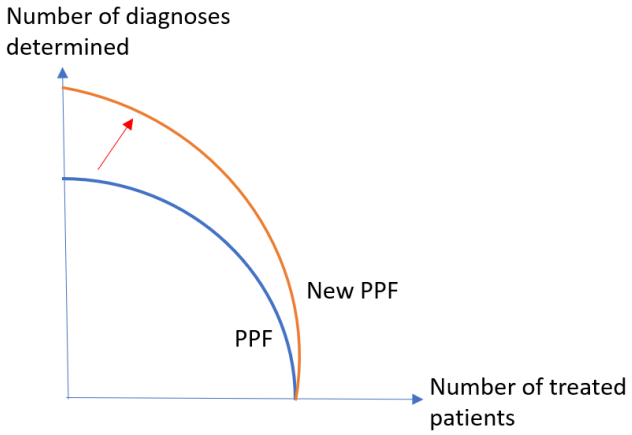
a. **Physical capital and labor.**
b. Human capital and labor.
c. Physical capital and natural resources.
d. A natural resource and human capital.

Answer: Software is an example of physical capital, while human workers are labor.

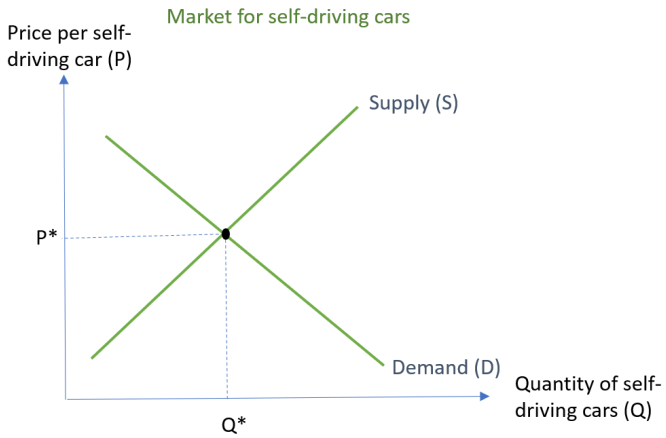
2. Consider the healthcare industry. Doctors in a medical facility spend time analyzing patients' cases to determine patients' diagnoses and spend time treating patients. The following graph shows the production possibilities frontier (PPF) for this medical facility, with the number of patients treated on the horizontal axis, and the number of diagnoses determined on the vertical axis. Suppose that the medical facility adopts Scale AI to diagnose more efficiently and effectively. How does this technological advancement change the PPF? Show the effect on the graph below.



Answer: The new technology allows the medical group to diagnose patients more efficiently. Therefore, the PPF rotates as shown below.

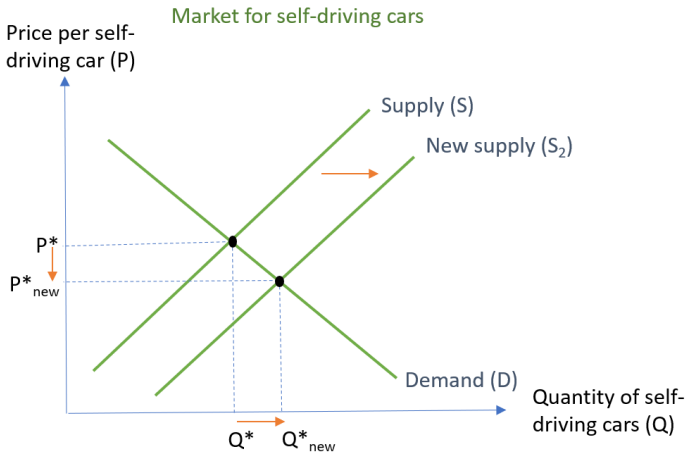


3. For Voyage, a company that makes self-driving cars, high-quality data is essential for meeting development timelines and delivering an outstanding autonomous riding experience. Voyage has started to utilize Scale AI to create large volumes of such high-quality data.[15] What is the effect of this advancement on the market for self-driving cars? The following graph shows the supply and demand curves for self-driving cars. Use the graph to show the effect you identified above. What is the effect on the equilibrium price and quantity of self-driving cars?



Answer: The utilization of Scale AI facilitates self-driving car production and makes it less costly. As the costs of production decrease, the supply of self-driving cars increases. Graphically, the supply curve for self-driving cars shifts to the right. As a result, the equilibrium price of self-driving cars decreases, while the equilibrium quantity increases. The effect is shown on the following graph.

[15] https://scale.com/customers/voyage



4.Which of the following customers is likely to have the most relatively elastic demand for Scale AI's technology?

a. Flexport, a company that has to process critical logistics documents quickly and efficiently.

b. A food truck that sells tacos, pizzas and ice-cream at large events.

c. Vistapath, a company that could significantly improve patient experience through AI.

d. Pietra, a company that would like to enhance the images of its e-commerce products.

Answer: The food truck is likely to be the most price sensitive. In fact, Flexport, Vistapath and Pietra are all customers of Scale AI, so their demand for its services would be less price sensitive.

5. To reinforce the understanding that students have about the PPF, we recommend this short Kahoot! Quiz.