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The Cost of Convenience

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Abstract

The introduction of tech-enabled homebound living has created an environment for most people to become lazy and order everything from the convenience of their home. This started based on the delivery of milk and water to people's doorstep, but with the introduction of computers and phones, this Food Delivery concept can be applied to almost everything. Today, we continue to see how this new technology is affecting the people that have become accustomed to this homebound lifestyle thanks to COVID-19. The significance of this topic is to see how people are evolving with the addition of new technological options and becoming lethargic in their daily lives growing a couch economy. This has even caused the FDA to get involved due to the bad circumstances. It has led to them spending more money, becoming more unhealthy, and producing more hazardous products into the environment.

1. Introduction

In 1995, the very first home delivery system revolutionized the path of home-based technology, introducing efficient communication and unprecedented convenience. Since then, the growth of homebound, on-demand services has skyrocketed to great heights. Even in 1995, the internet was a wild creature; with many unfamiliar with its past and even more uncertain of its future, it was a challenge to even design such a novel system. Nevertheless, its creators understood that the future of technology relies on the elements of comfort and convenience. At the turn of the century, it was clear that a new revolution was taking place, and home-based systems were at the forefront of the change. Since then, it can still be said that home-based services are leading the pack in terms of modern technology. While much emphasis is placed on the impact of food delivery services, it is equally pertinent to understand how homebound living has evolved as a whole. From delivering cars to ingredients, there is a seemingly non-existent

limit when it comes to the possibilities of on-demand services. However, this rapid growth of convenient services comes with a myriad of strings attached.

The COVID-19 pandemic in 2020 exemplified the importance of this specific type of technology, but in its wake, the consequences have proven to be much less optimistic. Moreover, since 2020, many people have realized that perhaps homebound living is a much more preferable lifestyle compared to pre-pandemic conditions. Businesses have also come to the same compelling conclusion. But when choosing this type of lifestyle, it is important to consider *all* the moving pieces that shift in tandem with the individual and combined elements of our society today. What exactly this would mean for our future will be elaborated in this paper. With the growing presence of tech-enabled homebound services comes many conveniences, but also a series of complex consequences across areas of health, economy, and environment. This paper will analyze what accelerated reliance on homebound lifestyles indicates for our future across dimensions of wellness, business, and ecology.

2. Motivation

The motivation for this research comes from our group having friends and family using these homebound technological apps every day. While we don't use these apps often, the people close to us have been using them for years and we were curious about its impact compared to those who do not use such delivery services. When brainstorming ideas for this term paper, we wanted a wider selection of research and found out that people even had their gas delivered to their homes. While researching this further, we also noticed how the delivery of gas is affecting people's health, the economy, and the environment, leading us to the topic of the effect of different delivery services on health, the economy, and the environment as a whole.

3. The Evolution of On-demand Delivery Services

Even before the COVID-19 pandemic in 2020, on-demand delivery services were relatively popular. However, this global event forced our physical world to move our lives to a completely virtual one, a change for which the consequences we see until today. During the pandemic, previously in-person services needed to be moved to the virtual world, and soon patients could visit their doctors, students could attend classes, and parents could shop for groceries–all from the comfort of their own homes. However today, the world is much more different than during the pandemic; The threat of disease is much less critical, and almost everything can resume as it was before the pandemic.

Unfortunately, it is not that simple. With the establishment of a new, flourishing, virtual world came a myriad of opportunities to work from home, shop from home, create a business from home, get entertainment at home, and the list goes on and on. Interestingly enough, despite the pandemic coming to an end, its services are far from gone as "the increased desire of consumers to enjoy food at home and self-protect during the pandemic era is enhancing this popularity and generating new consumption patterns for continued use" (Shah 1). This means that today, consumers are expecting these virtual services to continue updating and stay running because they are not ready to give up the crucial aspect of convenience. The table below depicting Instacart's–an American delivery company–quarterly income is a prime example of the lasting impact of the pandemic.

Year	Users (mm)
2017	3.3
2018	4.3
2019	5.5
2020	9.6
2021	11.1
2022	13.7

4. What is the impact of on-demand delivery services on health?

The pandemic demonstrated the crucial role that delivery services play in contemporary life. But alongside the conveniences lie unintended health consequences from this reliance which are now becoming apparent.

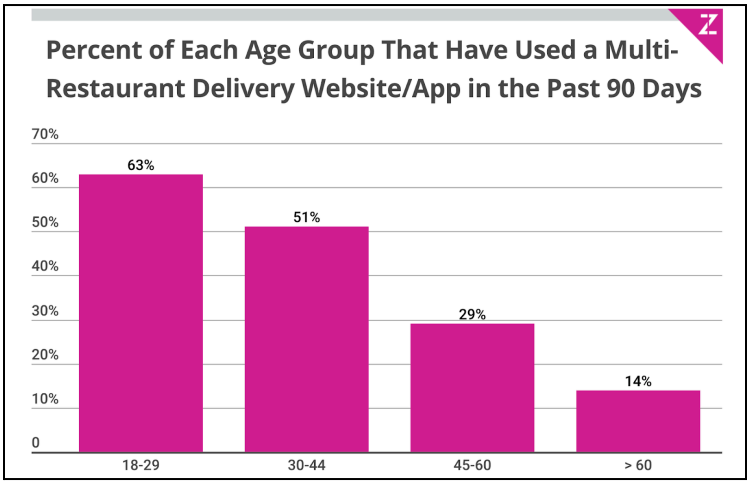
a. Food Delivery Habits in the United States

On the surface, there seems to be no problem with allowing the continued use of these services, and an article on *Food Delivery Apps and the Negative Health Impacts for Americans* from the National Library of Medicine concludes that " there is currently no research to support how digital food ordering affects health and wellness on an individual level or from a public health perspective in the U.S" (Stephens 1). However, upon a closer inspection of online food delivery habits and reported in the same article, it is mentioned that "reports from the most frequently used platforms highlight that American consumers' top ordered foods include a cheeseburger and fries, pizzas, nachos, cheesecake, baby back pork rib, chicken and waffle sliders, etc.," (Stephens 1). It is no secret that America has had a long-standing problem with obesity rates nationwide, and food delivery services allow individuals to order almost anything they want at any time.

Moreover, according to an article on the adoption of mobile food ordering during the COVID-19 pandemic, "indulgence is the degree to which people seek to regulate their urges and impulses to satisfy themselves. Society is based on leisure and relaxation when it has high indulgence rates" (Shah 1). Of course, it is normal to indulge in cravings once in a while, however, with modern technology allowing indulgence to be omnipresent at the click of a button, it becomes much harder to resist these urges and maintain a healthy lifestyle.

b. Drive to Utilize Food Delivery Services

What is especially concerning about these health implications is that the youth seem to be the most prominent users of food delivery systems, as evidenced by the bar graph below.



Unfortunately, most young adults aged 18-29 are college students or minimum-wage workers that lack the time and money to create regular healthy, balanced meals. Once more, the convenience of home deliveries surpasses the need to maintain a healthy diet. With convenience comes a price because according to the same article on the negative health impacts of food deliveries, "the frequency of eating food from outside of the home is positively associated with a high body mass index" (Stephens 1). This implies that even though there is no direct causation in matters between food delivery services and individuals' health, there is definitely a concerning correlation under the surface.

c. Biological Contribution Towards Delivery Habits & Subsequent Impact

Other than the subliminal but serious impact of food delivery services on health, there is not much research on the impact of delivery services like Amazon, Instacart, Carvana, etc.

Nevertheless, there is still material for discourse as these services bring to mind several questions, the most pressing one being that of authenticity. Circling the internet community are memes galore of customers purchasing a certain product and receiving something completely different, but people continue to use these services. The reason for this continued behavior is a term mentioned frequently in this paper: convenience. In a study conducted in 2022 on the continuance of online shopping after the pandemic, the glaring theme that individuals prioritize regardless of gender, regardless of nationality, is convenience.

Diving a little deeper into the psychology of convenience shows that "the brain's fundamental drive is to minimize energy expenditure and maximize rewards" (Bilash 1). Another good term for this is *the path of least resistance*. Summarized from an article by psychologist Rashi Bilash, when a person chooses convenience, the brain lets out a burst of dopamine, which is also known as the "feel-good" neurotransmitter. Over time, this biological reaction makes the person more likely to choose the convenient option in the future. At the biological level, this behavior is not concerning, however, it is also important to consider what could be the long-term effects of these delivery systems and the convenience they offer. A growing number of people prefer to live and work at home and do not go outside on a regular basis because they simply do not have to. This behavior can lead to physical health issues such as Vitamin D deficiency, high blood pressure, and even coronary heart disease as well as mental health issues such as stress, anxiety, and depression.

d. Current and Potential Legislation & Policies

As lawmakers consider sustainability regulations for delivery, some health advocates have called for similar safeguards around public nutrition and wellness. Several cities now require food delivery apps to clearly display calorie counts for ordered meals to inform choices

(Lupkin). However, companies resist further labeling mandates that could discourage orders, like marking high-sodium items associated with conditions like heart disease. The FDA recently announced plans to enhance traceability requirements in the wake of foodborne illness outbreaks linked to contaminated takeout and meal kits (FDA). However, reporting on food transit and handling processes remains limited. As home delivery expands market share, oversight measures balancing public health against industry growth present complex tradeoffs needing resolution.

e. Public Perception of Delivery Services and its Impact on Health

Surveys indicate shifting opinions around the health impacts enabled by home delivery's convenience. A 2021 poll showed that 43% of frequent app users reported weight gain from reliance on takeout over home cooking (Smith et al.). While 53% were satisfied with current diet quality, nearly 60% still expressed interest in accessing nutritional information like calories, processing additives, and ingredient sourcing in apps to support their wellness goals (Mordor Intelligence). However, consumers also value speed and price alongside health when ordering delivered meals.

Transparency without judgment can help better align public priorities on preventative care with personalized realities of relying upon delivery. Looking ahead, continued engagement between health researchers, policymakers, and food delivery industry providers can help optimize future public health outcomes as tech-enabled home eating persists. Broad epidemiological studies analyzing population-level healthcare patterns alongside meal delivery service usage growth can further chart correlations around risks for conditions like obesity, diabetes, and hypertension (Thakur). Personalized meal planning tools might also be integrated into leading delivery platforms, incorporating individual and household health factors like medical history and biometric data to promote more balanced nutrition tailored to users' needs.

Some health-tech startups are already testing and producing prescription programs where doctors can literally "order" customized healthy grocery delivery suited to an individual patient's health profile and needs (Oberai). As the home ecosystem further enabled by food delivery continues evolving, data science interventions and personalized preventative care measures should be responsibly leveraged by companies and care providers alike to more holistically understand and uphold both individual and public welfare.

5. Relationship Between Home Delivery Services and the Economy

As on-demand home delivery alters how goods and services reach consumers, it also disrupts traditional economic channels and norms. There are both advantages and drawbacks to this shifting retail model and its impacts on communities.

a. Economic Opportunities and Drawbacks of Home Delivery Services

The advantages of these home delivery services are that they provide jobs for the unemployed and generate income from luxury homeowners. Another benefit of having delivery services is that “globalized companies [can] use the internet to access people and their digital devices, which are available almost always and everywhere”. Modern advancement in delivery technology has created a market where customers can find the product the industry is trying to sell and allow vendors to cater to a wider, even global audience (Stüver 13).

Some disadvantages of using these delivery services include people losing an extreme amount of money even when they are not able to afford these services. According to an article by Aroic Zion, “This is a puzzle not easily solved. Restaurants are likely to lose business if they don’t align with one or more delivery services. At the same time, however, their profitability may either take a hit due to the high fees imposed by such services; or alternatively, the restaurant may have excess capacity that can be leveraged. One thing is certain. Many restaurants will be

forced to reconsider their business models." This can cause less frequent small restaurant owners making it significantly easier for big chains to take over streets. This results in a loss of the culture around certain areas and less equal money flow to people who live around the area, which could potentially show an increase in low-paying jobs from bigger chains creating a monopoly of big names in the food industry.

b. Current and Potential Legislation & Policies

The rapid expansion of app-based delivery services has disrupted traditional retail and dining industries, raising complex policy issues around economic impact. Multiple jurisdictions have capped commission fees [and] services can charge restaurants struggling with thin margins (Seattle Office of Labor Standards). However, delivery apps counter caps could significantly limit their operations. Progressive cities are also considering designating gig couriers as employees entitled to minimum wage and healthcare benefits rather than independent contractors. However, companies heavily contest characterizing flexible work as formal employment.

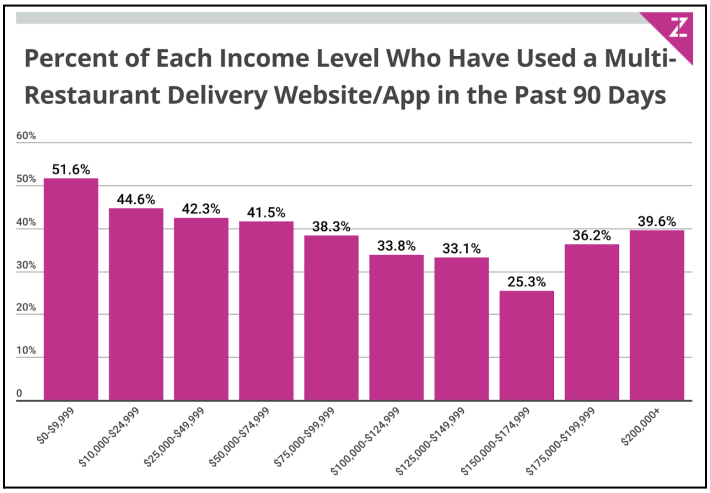
Delivery sales taxes have additionally received updated guidance as technology disrupts conventions. While customers generally assume online fees include sales tax, ambiguity around nexus responsibilities for third-party apps has enabled tax avoidance (Zarroli). New legislation aims to clearly assign collection duties, which digital facilitators continue lobbying against despite brick-and-mortar competitors facing established obligations. More comprehensive policies might institute new digital services taxes prorated on area revenue.

As home delivery expands, attendant economic policy issues require a balanced understanding of complex tradeoffs. Supporting traditional community businesses must be weighed against nurturing efficiency from emerging platforms. Managing tax obligations depends on the

technical application as technology shifts commerce conventions. Ongoing dialogue and data-driven assessment are essential for optimized legislative outcomes.

c. Public Opinion

Research from Statista, an online platform that specializes in data gathering and visualization, shows that lower-income groups rely more on meal delivery platforms contrasting common narratives around the apps as catering mostly to higher-disposable income households.



However, it aligns with concerns around delivery further enabling food desert dynamics in underserved neighborhoods while impacting traditional dining establishments. Despite larger overall order volumes coming from lower-income users, some community groups argue apps still prioritize affluent areas for launchpad subsidies over equitably addressing nutritional needs where delivery fees pose cost barriers. Additionally, small eateries frequent in modest-income urban districts highlight insufficient volume partially due to apps meeting resident demand.

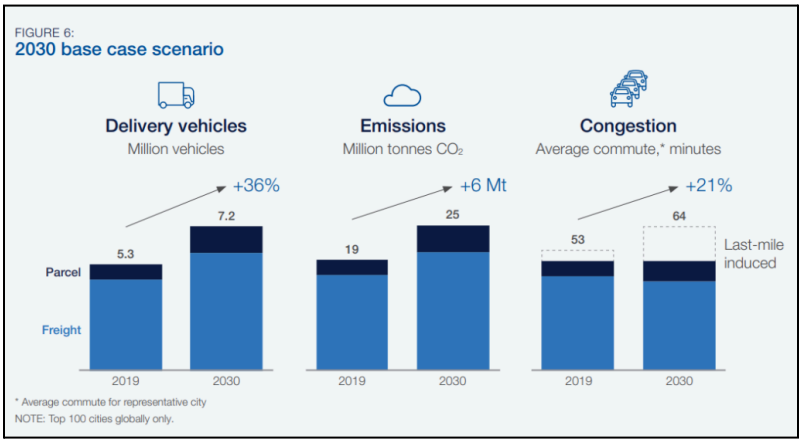
The updated econometric data revealing the sector's current skew toward lower-income consumers connected to complaints apps have disrupted community food access in already underserved areas. More broadly, this also relates to debates around tech companies benefiting from infrastructure and density in regions dealing with economic inequality. In terms of public policy, these insights regarding the economics and demographics of delivery demand could allow

tailored approaches to balancing constituent interests. It underlines the complexity of calibrating proposals addressing interrelated issues like sales tax, sustainability initiatives, and labor standards against this evolving and ethnically diverse segment.

6. Relationship Between Home Delivery Services and the Economy

Industry forecasts predict continued rapid growth in tech-enabled delivery services. According to research from Statista, the online food delivery market is projected to grow at over 9% annually, reaching over $200 billion globally by 2026 (Statista 2023). As delivery platforms like Uber Eats and DoorDash expand, the fees they charge restaurants are likely to increase as well. With thin profit margins, restaurants may struggle to absorb escalating fees, forcing many local eateries to partner with delivery platforms out of necessity or face going out of business. Already, a survey by the National Restaurant Association found that 90% of restaurants use delivery aggregators like Uber Eats and GrubHub, despite 75% of those respondents viewing commissions charged by the platforms as too high (Popper 2021). Thus delivery platforms appear poised to increase their domination of the restaurant industry going forward.

7. Examining Effects of Home Delivery Services on the Environment



The environmental impact of the rapid rise in app-based home delivery services has garnered increasing research attention. A 2019 lifecycle analysis published in Resources,

Conservation, and Recycling compared grocery delivery emissions to consumers driving to purchase food themselves. It estimated that while the Instacart model could reduce emissions by as much as two-thirds due to consolidated trips, real-world grocery delivery emissions are likely 25% higher per household (Hewitt, et al. 15). However, a shift towards electric vehicles or e-bikes for delivery could considerably reduce carbon footprint as services scale up.

On the commercial side, a 2021 supply chain deep dive found meal kit services to have a larger carbon footprint than grocery ingredients, producing 2-7 lbs more in CO2 emissions per meal (Anastasio and Davis 1). Extensive packaging to avoid food waste was a major factor, in addition to inefficient distribution routes. However, companies like Blue Apron counter that their simplified recipes still cut household food waste by up to 20%. More data is needed to weigh these possible benefits against verifiable impacts.

a. Advantages and Disadvantages

Home delivery offers clear household conveniences but uncertain ecological tradeoffs. A 2020 survey showed that 60% of consumers opt for home delivery due to the amount of time it saves, while only 19% cited environmental impact as a consideration (Agarwal, et al.). Modeling suggests optimized routing algorithms and appropriate-sized electric vehicles could dramatically increase efficiency and cut emissions compared to personal car trips (Li, et al. 4). However, critics argue unchecked growth of on-demand services fuels wasteful impulse purchases and needless packaging (Cecere). Legislative intervention may be required to ensure home delivery sustainability. Companies would likely pass costs of compliance to consumers, testing true demand. Transparency around supply chain impacts could better inform public consumption.

b. Current and Potential Legislation & Policies

Lawmakers have proposed various measures to regulate environmental externalities from home delivery's rapid expansion. Major cities like San Francisco and New York are considering

bans on single-use containers and utensils with app-based meal orders to cut waste (San Francisco Department of the Environment). Others plan congestion pricing fees in high-traffic urban areas that could impact delivery vehicles. Industry groups argue that targeted bans and fees unduly burden small restaurants relying on delivery to stay afloat after COVID-19 closures (Millman). A comprehensive national policy would provide more consistency for providers. Proposed platform accountability laws would require transparency into workforce practices, cybersecurity, and environmental impacts from tech companies. However, progress has stalled due to intensive lobbying. More data and public pressure may be required before legislators prioritize the ecological impact of home delivery in policymaking.

c. Public Perception of Delivery Services and its Impact on the Environment

Shifting consumer opinions around the environmental sustainability of delivery is becoming a growing leverage point for progress. 70% of consumers now report considering climate impact with their online shipping decisions (Siragusa 1). However specific awareness remains divided; a 2021 survey showed only 20% of customers believed delivery apps are inherently better for the environment than personal trips (Siragusa 2). But 56% would willingly buy more online if packages arrived via electric fleets (Bloomberg).

Targeted policy and advocacy engagement with customers indeed demonstrates promise as 54% of consumers want gas-powered delivery vehicles transitioned to electric, with 40% willing to pay a small premium for e-bike or EV shipment. So, while convenience still currently overrides environmental factors for most at checkout, purchase choices can shift with sustainability marketing. Customer eco-consciousness around deliveries presents a foundation for emissions accountability through measures like carbon labeling and incentives supporting climate-friendly providers.

d. Future of Relationship Between Home Delivery Services and the Environment

Looking towards the future, a realization of the environmental potential of home delivery relies on further innovation and investment. Researchers estimate routing algorithms using real-time data could reduce delivery miles in congested areas by nearly 20% (Akhavan-Rezai, Shaaban, and El-Tantawy). Machine learning for demand forecasting and load optimization would further improve efficiency. Transitioning to lower-emission vehicles also offers major gains; analysis shows electrification could eliminate 95% of lifecycle carbon emissions from delivery (Lopez). Tech companies are additionally testing autonomous robots and aerial drones offering door-to-door freight with minimal direct emissions besides renewable electricity. However, labs still face challenges around load sizes, range, safety, and regulation (World Economic Forum). In the interim growth period, thoughtful policymaking and consumer education remain essential to ensure this future sustainable potential is eventually achieved.

8. Conclusion

Ultimately, home delivery services have been around for about two decades causing people to become susceptible to making detrimental decisions to the health of themselves, the economy of where they live, and the environment around them. Reviewing the effects of frequently using these homebound services can put people at risk of weight gain, which can also lead to several other health problems. Using different platforms that promote diets and meal plans can fix this situation, however, the market for these homebound services has been focused on unhealthy fast food or quick harmful products. This kind of decision-making from the market is what is driving the consumers to overlook the environmental damages that are a result of a huge population constantly using these platforms. Since the consumers are human they can and will make decisions that will give them what they want in the quickest amount of time, which means these impulsive decisions will produce harm to the environment as the products need to

be made quicker with quality assurance. Areas around the users may also be affected by the use of these platforms driving smaller companies to go under due to the accessibility of the delivery services and not wanting to pay the fee to join the platforms. While using these delivery services creates comfort in our lives, we must use this in moderation to benefit from the service and reduce the harm resulting from the platforms.

9. Future of Tech Homebound Living

As we head into the future, delivery services will continue to advance but so will the problems associated with them. Smaller businesses will eventually have to submit to paying fees to allow people to get their food delivered, or run out of business. People will get more unhealthy, raising the rate of obesity in many countries that allow the services, and users will become antisocial as they have no need to interact with anyone outside of their home. When countries use some new technological innovation to deliver what consumers want, such as drones, they might be able to reduce pollution emissions. Innovative service-enhancing communities can be improved, rather than disrupted, through concerted efforts by industry leaders, lawmakers, and consumers. As society moves towards its full potential, there is a choice between convenience that enables progress, or convenience that undermines it.

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