Preliminary Investigation on Single Package Delivery Fees (PI-0327)

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Executive Summary

Background:

Since the onset of the COVID-19 pandemic, e-commerce retailers such as Amazon and E-Bay have seen an explosion in sales and profits. By extension, society has also seen an increase in customers purchasing multiple orders of single packages that are dropped off by multiple vehicles to the same location. This puts substantially more wear and tear on transportation infrastructure, raises maintenance costs and shortens forecasted lifespans of equipment than consolidated trips. Caltrans District 11 and the San Diego Association of Governments (SANDAG) have thus raised the following question: what can be done to lower the impact of increased purchases on the total quantity of Vehicle Miles Traveled (VMT) by delivery vehicles?

The subject of this literature review is to explore options to reduce the total VMT impact on infrastructure for instances of single package deliveries to a location. One such idea proposed was to impose a fee on corporations should a customer partake in single package ordering behavior which would be subsequently passed to the consumer and impact their decision-making process when ordering goods. This would ideally both incentivize consolidating delivery trips to only multiple package instances as well as lowering the total amount of VMT.

The following pages include literature that pertains to both the feasibility of single package delivery fees as well as documents detailing the environmental impact of last mile buyer to consumer commerce activities as well as other potential policy directions to consider and current tactics other organizations have implemented to mitigate the problem.

Summary of Findings

Single Package Delivery Fee

While there is no literature found during this search showing attempts for the exact use case proposed by the panel, there is a policy put in place by the state of Colorado that could provide insight into potential outcomes and impacts. This differs from the Single Package Delivery Fee (SPDF) as Colorado's implementation was a statewide flat fee applied to all deliveries regardless of the total number of packages being received or channel the purchase was made through ("The Colorado Retail Delivery Fee: An update two months after launch"). This was intended to supplement losses from lower incoming gas tax revenue brought about by the adoption of hybrid and electric vehicles ("The Colorado Retail Delivery Fee: An update two months after launch"). Importantly, there has been a significant backlash by both upstream retailers who lack the infrastructure in their tax processing software to implement the new fee for processing and from downstream consumers who are irked to see another fee on their purchases, among other concerns. Given the targeted specificity of the proposed policy, however, there might be potential for less pushback from providers and consumers, though this is not guaranteed.

More recently, and seemingly inspired by Colorado's initiative, other states are considering implementing their own delivery fees and similar voices raise concerns like those relating to the Colorado fee ("More states eye retail delivery fee"). These problems also revolve around the difficulty implementing the fee and general consumer pushback upon seeing the fee listed or being contacted about collecting a separate fee.

In terms of specific sources listed below, particular attention should be paid to the article "Application of a Tax to E-Commerce Deliveries in Barcelona" (page 7 in this document), as it directly addresses the economic impact of a Pigouvian tax on e-commerce demand that appears similar to the panel's proposed fee. For the uninitiated, a Pigouvian tax is a tax imposed on those market transactions which create negative externalities, or additional costs, that are subsequently borne by individuals not directly involved in the transaction. Further, it analyzes the subsequent impact on environmental externalities in a city that is roughly comparable in population (Barcelona, Spain) to San Diego. As such these results might be of most interest to the panel when making their decision.

Additionally, H.R. 644, the Trade Facilitation and Trade Enforcement Act of 2015, section 922 suggests that there may be potential legal challenges due to the permanent codification of the Internet Tax Freedom Act of 1998. This section states that "This bill amends the Internet Tax Freedom Act to make permanent the ban on state and local: (1) taxation of Internet access, and (2) multiple or discriminatory taxes on electronic commerce." The literature discovered during the PI regarding this topic is contained under the header "Internet Tax Freedom Act, H.R. 644 and related articles" in the section "Detailed Headings".

Environmental Impact of E-Commerce in the Last Mile for Delivery

As a part of this literature review DRISI has also reviewed the environmental impact of e-commerce and last mile delivery, with general findings listed below and applicable sources listed further down in the document.

- Generally, e-commerce is better for the environment than individuals driving to the retail shop in many cases ("Citywide Impacts of E-Commerce: Does Parcel Delivery Travel Outweigh Household Shopping Travel Reductions?"). Though exceptions do exist, as highlighted in ("The impact of multiitem shopping"). In this case, a customer would complete shopping at multiple stores on a single driving trip at a location such as a shopping mall so long as that trip involved four or more stores. Additionally, a study by (Not All E-commerce Emits Equally) posits that the cause of decreased externalities may be due to other research only considering a car-centric lifestyle and might be ignoring more current changes in consumer behavior, so the matter appears far from settled.
- While better for the environment than traditional retail, the fact remains that Last Mile Delivery is the most inefficient and most polluting portion of the e-commerce supply chain. This is due to a combination of factors including the exponential complexity of increasingly larger numbers of destinations on a given delivery route as well as complicating factors such as missed deliveries and returns of items.

Alternative Policies to Reduce VMT Produced by Last Mile

There are also potential alternative policies to the SPDF. For example, targeting a fee toward express shipping across all retailers and delivery avenues rather than single package delivery for e-commerce retailers. While the initial proposed policy may have an impact on total VMT and lower environmental impact, it may not target the root cause of the issue. That being the consumer wanting their package as soon as possible, which necessitates sending out partially loaded trucks that could provide better efficiencies if instead loaded to capacity before being sent out to complete their delivery route ("Same-day versus next-day delivery: Which is more sustainable?").

In fact, there is substantial research available highlighting the damage that express shipping does to the environment due to the increase in total vehicles on the road combined with increased wear and tear of available transportation infrastructure, which may warrant further investigation with respect to the SPDF. Importantly, and as highlighted by the article ("Application of a Tax to E-Commerce Deliveries in Barcelona"), if implemented correctly it can have the desired Pigouvian effect on a consumer's buying decision.

However, there are a few key considerations that the panel may want to consider prior to implementation.

- Companies currently charge extra for same day delivery as they recognize it is less efficient than traditional delivery schedules ("Same-day versus next-day delivery: Which is more sustainable?"). This surcharge factors in the additional expense and profit lost from a partially full truck that would have otherwise been used to deliver more packages on a more efficient route.
- Next day deliveries are more efficient and environmentally friendly while also only adding a small amount of lag time for the end consumer ("Same-day versus next-day delivery: Which is more sustainable?")

In the case of the panel's proposal and the alternative presented here, there is the possibility that whichever policy pursued may also create unintended consequences resulting in additional VMT from customers who determine it is better to drive to the store rather than wait until tomorrow for delivery. This may increase the total quantity of negative externalities produced and be at odds with the goal of reducing them.

Urban Consolidation Centers

Another concept that may be of interest is the Urban Consolidation Centers (UCC), which is a government sponsored entity that specializes on efficiently filling the last mile delivery role. The general idea is that retailers would ship all their goods to this central location who would then efficiently distribute the goods to delivery vehicles and complete the last mile of delivery to the customer's doorstep. This would, in theory, produce lower quantities of VMT and GHG emissions by not shipping partial vehicle loads to the end consumer. Though this policy may be substantially more costly in terms of initial financial investment than the fee discussed above.

Gaps in Findings

As previously mentioned, given the specificity of the proposed Single Package Delivery Fee this PI has not uncovered studies or other documentation evaluating something this narrowly defined.

However, sources provided are substantially similar and are a good analogue for the panel's consideration.

Next Steps

As the Colorado Delivery Tax highlighted in ("About the Retail Delivery Fee", N.D.) is similar to the proposed SPDF policy, it might be wise to reach out to the Colorado Department of Revenue to gather further information and insights about their implementation.

It may also be prudent to reach out to a researcher and conduct a study to estimate the optimal cost of the fee to create the most effective and efficient result for the policy.

Detailed Findings

Most Useful Sources

Colorado Delivery Fee

About the Retail Delivery Fee, N.A., Colorado Department of Revenue, Undated
https://tax.colorado.gov/retail-delivery-fee

Official documentation describing Colorado's retail delivery fee that is imposed on transports carrying at least one piece of tangible personal property. Initially designed so that the fee must be clearly listed on the invoice and must be passed on to consumers and not absorbed by retailers. Included within near the bottom is a frequently asked question section that provides more specific information relating to specific cases and concerns posed by outside parties.

The Colorado Retail Delivery Fee: An update two months after launch, N.A., The Sales Tax Institute, August 2022 https://www.salestaxinstitute.com/resources/the-colorado-retail-delivery-fee-an-update-two-months-after-launch

The implementation of the Colorado Retail Delivery Fee (CRDF) has caused confusion, frustration, and irritation among retailers, tax professionals, and tax software companies. Despite being just 27 cents, the fee has generated intense debate for a myriad of reasons. Of primary concern is that implementing the fee has posed challenges for businesses related to incompatibility with existing tax software and a requirement to list the charge as separate and distinct on invoices. Moreover, some businesses are questioning if they need to pass the fee on to customers or if they can pay it themselves to spare themselves the potential customer backlash. It is possible that, similar to the Colorado delivery fee, the proposed single package fee might face similar resistance in the state of California due to the complexity of the CA tax code and business operation standards/laws.

The article offers clarification on what constitutes retail for the purposes of the Colorado law. As defined: "A "retail" transaction is not limited to what is commonly thought of as a retailer but rather includes any sale that isn't for resale or otherwise exempt. If an order has anything taxable that is tangible, the fee applies!"

More states eye retail delivery fee, Roger Russell, Accounting Today, April 2023
https://www.accountingtoday.com/news/more-states-eye-retail-delivery-fee

Summary:

In an effort to address the environmental impact of increased online sales and deliveries, the state of Colorado implemented a retail delivery fee in 2022. This decision was made in response to the decrease in gas tax revenue seen as a result of the adoption of electric and hybrid vehicles, which has created a budget shortfall for transportation infrastructure in the state. This fee is collected by retailers from their customers and is then submitted to the Colorado Department of Revenue. More recently, Minnesota and New York have been considering implementing similar fees.

Of note, the retail delivery fee in Colorado has faced criticism from businesses due to the complexities associated with reporting and invoicing requirements. To provide relief for small

businesses, Colorado is considering exempting those with annual retail sales below $500,000 from this fee. These retail delivery fees are seen as a potential solution for states grappling with declining motor fuel tax revenue as more people switch to electric and hybrid vehicles.

Colorado Retail Delivery Fee, Amazon, Undated
https://www.amazon.com/gp/help/customer/display.html?nodeId=GHY2HYVQF8MKXJH4

Amazon's explanation to customers regarding the fee. This may be of interest to the panel as Amazon is one of the largest e-commerce firms in the world.

Delivery fee no longer applies to small businesses, companies laud changes, Luige Del Puerto, Colorado Politics, May 2023
https://www.coloradopolitics.com/news/retail-delivery-fee-exemption-small-business/article_4b47421c-ee95-11ed-b148-033cef9d5707.html
Due to the confusion and frustration created by the delivery fee, Colorado has simplified the requirements and created exemptions for small businesses who are not subject to the fee. They also have reversed a change that would have mandated companies to both list the fee clearly on the invoice and forbade them from paying the fee in the customer's stead.

New online delivery fee in New York City would be 'negligible', Gale Cole, Avalara, April 2023
https://www.avalara.com/blog/en/north-america/2023/04/new-york-city-online-delivery-fee.html

Summary:

New York, taking inspiration from Colorado's retail delivery fee is heavily considering implementing a similar fee for goods entering New York City through NYC Senate Bill S5895. As the warehouses used for last mile delivery are both large and generate a lot of heavy traffic, the city is hoping that this will allow for the reconstitution of their aging rail and cargo ship infrastructure. Similar to the case of Colorado, concerns are raised regarding the implementation of the fee as retailers lack the means to easily implement it on their backend financial systems. The article also discusses how legislators intend for it to be different from Colorado's, improving and iterating upon the idea instead of simply copying it.

There is also a bill being considered that would impose the delivery fee across the state of New York, not just the city, under the title of SB 3009.

Application of a Tax to E-Commerce Deliveries in Barcelona Genis Majoral, Francesc Gasparín, Sergi Saurí(2021). Transportation Research Record, 2675(10), 642–655.
https://journals.sagepub.com/doi/10.1177/03611981211012412?icid=int.sj-abstract.similar-articles.5

From the Abstract: "The number of e-commerce transactions is increasing worldwide. Deliveries of goods purchased online generate externalities throughout the whole supply chain and, particularly, the increasing concern about the last-mile distribution of goods. The escalating presence of vans in cities contributes to poor air quality, climate change, noise, and congestion. So far, the majority of solutions to address this issue are based on the supply side, such as electric vans, optimizing the routing and pick-up-points, and so forth. Even in other transport

sectors, pricing solutions are well known, yet they have not been extended to e-commerce delivery. This paper aims to propose an environmental tax falling on the demand side and equaling the externalities from this activity. The analysis has been particularized for the case of Barcelona. A cost–benefit analysis to assess the impact of such a tax has been carried out. When revenue collection is reinvested in the logistics sector, and for subsidizing electric distribution vehicles, the results indicate that the levying of the tax can generate positive outcomes."

Special attention should be paid to this article, as it directly addresses the economic impact of a Pigouvian tax on e-commerce demand and the subsequent reduction of externalities in a city that is roughly comparable in population (Barcelona, Spain) to San Diego. As such these results might be of most interest to the panel when making their decision.

Pennsylvania Ponders Package Fee to Pay for Roads, Bridges, Sarah Cassi, Transport Topics, https://www.ttnews.com/articles/pennsylvania-ponders-package-fee-pay-roads-bridges
Summary:

Officials in Pennsylvania are considering implementing a delivery fee or tax on online purchases to address the state's transportation funding challenges. The fee, referred to as an "e-commerce convenience fee," aims to shift the cost burden from users to beneficiaries of the transportation system. The proposal suggests a flat fee per box, starting at 25 cents and potentially increasing to $1. Exemptions for certain items like prescriptions or food deliveries are being considered. The fee is expected to generate significant revenue, estimated at $196.4 million in 2021-22, increasing to $263.6 million by 2025-26 for a 25-cent fee. The highest proposed fee of $1 could generate $785.8 million in 2021-22 and reach $1 billion annually by 2025-26.

Environmental Impacts of E-Commerce and Last Mile Delivery:

Sustainability SI: Logistics Cost and Environmental Impact Analyses of Urban Delivery Consolidation Strategies, Jane Lin, Qin Chen, Network and Special Economics, March 2016
https://link.springer.com/article/10.1007/s11067-014-9235-9

From the Abstract:

Among new, innovative city logistics strategies, urban delivery consolidation has received increasing academic and practical attention mostly in Europe and Japan. It is believed to bring cost savings and environmental benefits with the right setting. This paper demonstrates an alternative modeling framework to examine, from the strategic planning perspective, the effectiveness of urban delivery consolidation in terms of monetary logistics cost, energy consumption and PM2.5 emissions with respect to a number of operational (e.g., rent cost, customer demand) and policy factors (e.g., commercial vehicle size restriction in city centers). The framework consists of two key modeling components: the Continuous Approximation (CA) method to model urban delivery (the so-called last-mile delivery) and the Motor Vehicle Emission Simulator (MOVES by the U.S. Environmental Protection Agency) to estimate the energy consumption and PM2.5 emissions associated with the logistics activities. It is found that the potential logistics and environmental benefits of UCC could come from either improving the utilization of the vehicle capacity through consolidation, or shifting the more expensive storage cost from customers in the city center to the less expensive UCC rent cost—due to a less

centralized location and/or government subsidy or other cost sharing mechanisms—outside of the city center. However, UCC could achieve those benefits compared to non- consolidation strategies only under certain conditions, for example when there is an economy of scale or high customer density (i.e., high shipping volume) in the service area. The paper discusses in detailed under what assumptions and conditions UCC could work. Study limitations and future work are also presented.

Citywide Impacts of E-Commerce: Does Parcel Delivery Travel Outweigh Household Shopping Travel Reductions?, Monique Stinson, Annesha Enam, Amy Moore, Joshua Auld, United States Department of Energy Office of Scientific and Technical Information, September 2019 https://www.osti.gov/servlets/purl/1579195

From the Abstract:

"E-commerce has facilitated online ordering of goods by households in recent years. This technological advancement has disrupted shopping related transportation. While the National Household Travel Survey (NHTS [1]) finds that household shopping frequency has declined in the last 10-20 years, deliveries by parcel delivery trucks and vans [2] have increased. However, the net effect of these phenomena on overall trip making, vehicle-miles traveled (VMT) and fuel consumption has not been quantified. From a regional planning perspective, understanding the net effect is important for informing city policies--for example, in regards to land use and transportation planning. The objective of this research is to address this gap. In this study, the net regional impact of e-commerce on transportation and fuel consumption is evaluated. The approach relies on a powerful, agent-based modeling framework (POLARIS [3]) that models decisions made by individual household and commercial agents. E-commerce demand is modeled for each household using a bilevel multinomial probit structure that evaluates e-commerce participation and ordering frequency. Last-mile delivery tours were constructed using GIS-based tools and information from a major parcel delivery company [4]. After integrating the resulting supply and demand models with all other passenger and commercial traffic within POLARIS, a traffic simulation was performed and subsequently VMT and energy consumption were analyzed. The study finds that while e-commerce has generated an increase in parcel truck delivery trips, the net effect of e-commerce is a reduction in VMT and fuel consumption due major reductions in these quantities via shopping trip reductions. "

Environmental sustainability in B2C e-commerce: The impact of multiitem shopping, Chiara Siragusa, Riccardo Mangiaracina, Angela Tumino, Proceedings of the Hamburg International Conference of Logistics (HICL), Vol. 30, 2020
https://www.econstor.eu/handle/10419/228946

From the abstract: "This study investigates the environmental sustainability of multi-item shopping in the context of B2C e-commerce. It evaluates the CO2e emissions of online and offline shopping processes across major industries, considering both single purchases and multiple purchases from different stores. The findings show that, for a specific industry, e-commerce generally has lower emissions compared to offline shopping for the same purchase. However, when customers make purchases from multiple physical stores during a single shopping trip, the results are reversed. The study's unique contribution lies in its multi-item

approach, offering valuable insights into the environmental sustainability of purchasing processes, particularly from a logistics perspective."

A review of the environmental implications of B2C e-commerce: a logistics perspective, Riccardo Mangiaracina, Gino Marchet, Sara Perott, Angela Tumino, International Journal of Physical Distribution & Logistics Management, July 2015
https://www.emerald.com/insight/content/doi/10.1108/IJPDLM-06-2014-0133/full/html

From the Abstract:

"Given the importance of logistics operations in business-to-consumer (B2C) e-commerce and growing interest in the related environmental effects, the purpose of this paper is to offer an up-to-date literature review on the topic of B2C e-commerce environmental sustainability, specifically from a logistics perspective. The research found that there is a growing interest in sustainability issues. In the last 14 years, the focus has progressively shifted from the mere identification of the wide-ranging environmental effects of e-commerce to the need for a quantitative evaluation of their impact, although much remains to be done in this regard. Some industries, such as books and grocery, have largely been addressed, however, promising sectors in the e-commerce field, such as clothing and consumer electronics, have only been considered to a certain degree. Moreover, despite the emerging role of multichannel strategies, the environmental implications of the related logistics activities have not yet been studied in detail."

In terms of content of interest, starting on page 16 in the PDF (or 580 on the document itself), the authors discuss their findings on the environmental impact of last mile delivery and corresponding vehicle carbon emissions.

Internet Tax Freedom Act, H.R. 644 and related articles:

The Internet Tax Freedom Act and Federal Pre-emption, Congressional Research Services, October 2021 https://crsreports.congress.gov/product/pdf/IF/IF11947
From the Article:

"Congress enacted the Internet Tax Freedom Act to establish a moratorium on the imposition of state and local taxes that would interfere with the free flow of interstate commerce over the internet. The permanent Internet Tax Freedom Act (ITFA), 47 U.S.C. §151 note, preempts state and local governments from levying (1) taxes on internet access and (2) multiple and discriminatory taxes on electronic commerce. State court lawsuits challenging state and local taxes under the ITFA indicate that courts have narrowly interpreted the ITFA's preemption provisions.

This In Focus summarizes the ITFA's legislative history and major preemption provisions and discusses ITFA jurisprudence."

Internet Tax Freedom Act in Brief, Jeffrey Stupak, Congressional Research Services, April 2016

https://sgp.fas.org/crs/misc/R43772.pdf

This document provides an overview of the Internet Tax Freedom Act as well as several pertinent court cases that have shaped it over the years.

H.R.644 - Trade Facilitation and Trade Enforcement Act of 2015, 114th United States Congress, 2015
https://www.congress.gov/bill/114th-congress/house-bill/644/text

This legislation codifies into permanent statute the Internet Tax Freedom Act of 1998, which initially only provided a temporary moratorium on potential taxes of this nature prior to HR 644 being passed.

The Internet Tax Freedom Act at 25, Andrew Appleby, Walter Hellerstein, The University of Georga School of Law, January 2023

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4346851

This document provides an overview of the history of the Internet Tax Freedom Act of 1998. Importantly, it discusses the court's opinion on the argument between what constitutes a "fee" as compared to a "tax" on page 13 of the document. The text of which is below.

Page 13: "In Cox Communications Hampton Roads LLC v. City of Norfolk,89 Cox challenged the application of Norfolk's BPOL tax to its gross receipts from providing internet access services. In resisting the challenge, the city contended, among other things, that Norfolk's levy was a "fee" rather than a "tax" as defined by ITFA because "it is a charge for the specific privilege that entitles Cox to operate its personal and business services business within Norfolk's municipal boundaries."

"In a thoughtful opinion that canvassed a large body of case law addressing the tax-versus-fee distinction in a variety of contexts, the court rejected the city's contention: Whether viewed within the confines of the ITFA's statutory language or in terms of the well-established definitions of "tax" and "fee," the Court holds . . . that the BPOL Tax as applied to the gross receipts on Cox's internet access services is a tax and not a fee. . . . [T]he tax applies to "[e]very person engaging in the city in any business, trade, profession, occupation or calling." Nowhere does the City claim that it uses the BPOL Tax funds for anything other than general governmental purposes."

While the case itself is related to the taxation of internet access, the discussion and ruling of the tax-vs-fee argument may possibly be relevant given e-commerce protections are part of the Internet Tax Freedom Act of 1998.

Other

In a World without Borders: The Impact of Taxes on Internet Commerce, Austan Goolsbee, The Quarterly Journal of Economics, 2000
http://www.jstor.org/stable/2587003

From the Abstract:

"The rapid rise in sales over the Internet and the fact that most Internet buyers pay no sales tax has ignited a considerable debate over taxes and the Internet. This paper uses new data on the

purchase decisions of approximately 25,000 online users to examine the effect of local sales taxes on Internet commerce. The results suggest that, controlling for observable characteristics, people living in high sales taxes locations are significantly more likely to buy online. The results are quite robust and cannot be explained by unobserved technological sophistication, shopping costs, or other alternative explanations. The magnitudes in the paper suggest that applying existing sales taxes to Internet commerce might reduce the number of online buyers by up to 24 percent. "

While the fee proposed is not a tax as defined, it will likely result in a decrease in sales for e-commerce sites by some meaningful quantity

AWS last mile solution for faster delivery, lower costs, and a better customer experience, Chen Wu, Manuel Baeuml, Amazon, March 2023 https://aws.amazon.com/blogs/supply-chain/aws-last-mile-solution-for-faster-delivery-lower-costs-and-a-better-customer-experience/

This article highlights Amazon's new last mile routing technology that it is making available to third party sellers. What makes this unique is it utilizes machine learning and AI to solve the Traveling Salesman problem to determine the most efficient route to take when presented with a large range of stops and destinations. This is a novel approach as it applies findings and techniques from the field of Computer Science to solve the Last Mile problem. It goes into detail on the functionality and use cases for sellers and might be helpful when trying to understand the current approaches to solving the last mile problem for minimal VMT and efficiency of routes/fuel consumption

New York Bill Proposes Staggering $3 Delivery Fee for NYC Destined Purchases, Lisa Civitella, April 2023 https://www.libertasunlimited.com/tax-insights-from-the-experts/new-york-city-delivery-fee-online-retailer-transaction

This article describes how New York City is considering a potential $3 delivery fee in order to help finance its ailing transportation program. It appears that this would be different from the $.25 cent fee mentioned in other sources. The bill in question is AB B6008.

Taxing Amazon, Doordash and Uber deliveries gains steam https://pluribusnews.com/news-and-events/taxing-amazon-doordash-and-uber-deliveries-gains-steam/

Lawmakers in several states, including Minnesota and New York, are considering implementing fees or taxes on door-to-door delivery services as a new source of transportation revenue due to declining gas tax revenues. These fees, referred to as "delivery fees" or "doorstep taxes," aim to generate funds for transportation projects and address the impact of increased online deliveries on congestion, infrastructure, and the environment. The proposed fees vary, such as a 75-cent fee on deliveries in Minnesota and a 25-cent fee on deliveries in New York City. Exemptions for certain items like groceries and medicine are being considered. The fees have faced opposition from business groups and industry representatives, who argue that they will negatively impact families and businesses, affect driver earnings, and contribute to inflation. Supporters argue that the fees can help cut carbon emissions and provide revenue for transportation needs. The trend of delivery-based fees is expected to continue in other states, raising concerns and debates among lawmakers and industry groups.

Other Useful Sources

Price Partitioning on the Internet, Lan Xia, Kent Monroe, Journal of Interactive Marketing, 2004 https://www.sciencedirect.com/science/article/pii/S109499680470119X

From the Abstract: "The Internet provides managers with opportunities to monitor and manage their pricing strategies and tactics with minimum costs. Partitioning the total product sale price into a base price and various surcharges, such as shipping and handling, taxes, and other fees, is one way to manage price structures online. Using three experiments, our research shows that appropriate online price partitioning may enhance consumers' purchase intentions, perceived value, and price satisfaction, and reduce further information search intentions. The effect of price partitioning is due to both consumers' insufficiently adjusting for the surcharge and the clarity of the price structure provided. **However, when multiple surcharges are added to partition the price further, these positive effects may decline leading to an inverted "U" shape function of partitioning on price perceptions.** Finally, the amount and the way the surcharges are presented are important factors to consider when designing an effective price partitioning structure"

What's relevant here is that customers are sensitive to changes in surcharge price when ordering online, which this fee would effectively function as.

Can taxes shape an industry? evidence from the implementation of the "Amazon tax" Brian Baugh, Itzhak Ben-David, Hoonsuk Park, National Bureau of Economic Research April 2014 https://www.nber.org/papers/w20052

From the Abstract:

"For years, online retailers have maintained a price advantage over brick-and-mortar retailers by not collecting sales tax at the time of sale. Recently, several states have required that online retailer Amazon collect sales tax during checkout. Using transaction-level data, we document that households living in these states reduced Amazon purchases by 9.4% after sales tax laws were implemented, implying elasticities ranging from –1.2 to –1.4. The effect is more pronounced for large purchases, for which we estimate a reduction of 29.1% in purchases, corresponding to an elasticity of –3.9. Studying competitors in the electronics field, we detect some evidence of substitution toward competing retailers."

Over 50% of diners would switch delivery providers if fees rose, study shows, Alicia Kelso, Restaurant Dive, March 2022, https://www.restaurantdive.com/news/over-50-of-diners-would-switch-delivery-providers-if-fees-rose-study-show/619806/

Summary:

The general idea here is that delivery services that specialize in food service are highly sensitive to any increase in delivery fees. While not a direct analogue for the proposed fee/tax on Amazon and other such e-tailers, it does provide perspective on demand elasticity for certain types of deliverable goods. By extension, however, the decrease in demand for this sort of deliverable good does necessarily decrease the impact of VMT on transportation infrastructure.

Identification of factors that influence the delivery fee pricing of on-demand delivery services, Leise Kelli De Oliveira, Carine Aragão de Mello1, Cheyenne Mariana de Oliveira Carneiro, Tatiane Eugênia Remígio da Costa, Gracielle Gonçalves Ferreira de Araújo, Maria Leonor Alves Maia, Frontiers, December 2022
https://www.frontiersin.org/articles/10.3389/ffutr.2022.1031021/full

Summary:

This study focuses on highlighting existing factors that are determinants of delivery fee pricing. It finds that the price varies greatly depending on what good in particular a customer ordered. Moreover, price increases are also seen in each case as the total distance for delivery is increased. While not strictly related to the proposed policy change, it is useful in helping policymakers get a better understanding of the preexisting determinants of demand pricing.

An Empirical Study of the Impact of Nonlinear Shipping and Handling Fees on Purchase Incidence and Expenditure Decisions, Michael Lewis, Vishal Singh and Scott Fay, Marketing Science, February 2006 https://www.jstor.org/stable/40057024

From the Abstract:

Shipping-fee schedules are an important but under researched element of the marketing mix for direct marketers. This paper provides an empirical study on the impact of shipping and handling charges on consumer- purchasing behavior. Using a database from an online retailer that has experimented with a wide variety of shipping-fee schedules, we investigate the impact of shipping charges on order incidence and order size. We use an ordered probability model that is generalized to account for the effects of nonlinear and discontinuous shipping fees on purchasing decisions, and to accommodate heterogeneity in response parameters. Results show that consumers are very sensitive to shipping charges and that shipping fees influence order incidence and basket size. Promotions such as free shipping and free shipping for orders that exceed some size threshold are found to be very effective in generating additional sales. However, the lost revenues from shipping and the lack of response by several segments are substantial enough to render such promotions unprofitable to the retailer. Heterogeneity across consumers also suggests interesting opportunities for the retailer to customize the shipping and other marketing-mix promotion offerings.

Modeling the dynamics of fragmented vs. consolidated last-mile e-commerce deliveries via an agent-based model
Giovanni Calabrò, Michela Le Pira, Nadia Giuffrida, Martina Fazio, Giuseppe Inturri, Matteo Ignaccolo, Transportation Research Procedia, 2022
https://www.sciencedirect.com/science/article/pii/S2352146522001478

From the Abstract:

"This paper proposes a new agent-based model (ABM) to explore different scenarios of e-commerce urban deliveries, comparing door-to-door deliveries with consolidation-based strategies. The ABM reproduces operation under different demand patterns and include the possible matching of customer systematic trips and collection/delivery points with small detour from the scheduled trip.

Several variables of the model can be changed in a parametric simulation environment, allowing to infer the level of convenience of consolidation strategies for the different actors involved. The model provides indicators able to take into account customer and logistics operator perspectives, and the impact of the service on the community. Results can give useful information to understand how to manage growing on-demand urban deliveries and to measure the impact of freight transport on city sustainability."

Consolidation in Urban Logistics: What Could We Learn from Past Experiences and Economy Theory? Claire Borsenberger, Topics in Regulatory Economics and Policy 2018

https://link.springer.com/chapter/10.1007/978-3-030-02937-1_7

Source from Abstract:

"Issues related to sustainable urban or city logistics, i.e., the movement of goods within cities, are not new. However, attention on last mile delivery inside cities is growing and all different types of stakeholders are seeking solutions to optimize it. Promoting co-opetition between last-mile service providers and the use of mutualized infrastructures (buildings, vehicles, and so on) could be an efficient solution. To be successful such cooperative schemes must result from voluntary agreements between stakeholders resulting from a "meeting of minds". Nevertheless, public authorities have an active role to play in order to put in place a favorable playing field by for instance, granting stakeholders antitrust immunity or giving specific rights to operators who collectively manage an UCC or by providing them well-placed premises where flows could be consolidated."

Impacts of information technology and urbanization on less-than-truckload freight flows in China: An analysis considering spatial effects, Linglin Ni, Xiaokun (Cara) Wang, Dapeng Zhang, Transportation Research Part A: Policy and Practice, 2016
https://www.sciencedirect.com/science/article/pii/S0965856416301288

Source from Abstract:

Understanding the relationship between socioeconomic factors and the Less-than-Truckload (LTL) freight flows is important for transportation planners and policy makers. This paper explores the impacts of information technology, urbanization on LTL freight flows by using a spatial autocorrelation model with freight flow data from a leading LTL company in China. The results show that all IT variables and urbanization variables have positive effects on freight flows. Distance, as expected, is negatively correlated with the freight flow volume. The application of the spatial autocorrelation model further shows that origin dependence, destination dependence and OD dependence are all significant, justifying the consideration of spatial interdependence. Finally, policy implications are discussed based on the estimated results. These findings shed light on the impacts of internet and urbanization on freight transportation, and contribute to the design of freight policies and the development of the LTL industry.

Assessing the Evolution of Urban Planning and Last Mile Delivery in the Era of E-commerce, Tiziana Campisi, Antonio Russo, Socrates Basbas, Ioannis Politis, Giovanni Tesoriere, Confrence on Sustainable Urban Mobility, 2022
https://link.springer.com/chapter/10.1007/978-3-031-23721-8_101

Source from Abstract:

"In general, the concept of last mile delivery in logistics and transport refers to the actual goods' delivery to the receiver, which can take place at a pre-defined place (home, work, etc.) or by click & collect. Last mile logistics' management has gained great importance due to the increasing complexity of supply chains and the highly dynamic nature of today's logistics ecosystem. The rise of e-commerce has exposed the intertemporal weaknesses of last mail delivery and highlighted new ones. Ignoring or underestimating these aspects can compromise a company's competitiveness and survival. The combination of last mile delivery's true needs with the necessity for less polluted and congested urban areas, leads to the consideration that radical and innovative changes are required. Electric transport vehicles (bicycles, scooters, vans, light and soon enough medium and heavy commercial vehicles) represent an aspect of the natural evolution for logistic systems. An increasingly attentive to environmental impacts, capable of responding to the challenges of increasingly smart, livable and sustainable cities logistic system, leads to the spread of the logistics concept's cycle and therefore the usage of environmentally friendly vehicles such as bicycles, cargo bikes and scooters to deliver goods, especially in urban centers. This work aims at defining an exemplified methodology for the selection and proper planning by service operators and local authorities of last-mile logistics modal forms in different urban contexts, promoting the concept of decarbonization in accordance with the Paris Agreement and the dissemination and drafting of increasingly "performing" sustainable mobility urban plans."

Same-day versus next-day delivery: Which is more sustainable? Jay Sackos, Freightwaves, June 2021
https://www.freightwaves.com/news/same-day-versus-next-day-delivery-which-is-more-sustainable#:~:text=Fewer%20product%20returns%20mean%20less,runs%20throughout%20a%20particular%20route

This article provides an analysis on the environmental impacts of same day vs next day shipping. They explain that, due to the additional time for consolidation of loads and logistic services, next-day delivery is more environmentally friendly, as it involves a well-mapped delivery route. In turn, this reduces carbon emissions since providers are able to better plan delivery routes, which leads to greater efficiency overall.

Not All E-commerce Emits Equally: Systematic Quantitative Review of Online and Store Purchases' Carbon Footprint, Heleen Buldeo Rai, Sabrina Touami, Laetitia Dablanc, ACS Publications, December 2022
https://pubs.acs.org/doi/abs/10.1021/acs.est.2c00299

Source from Abstract:

"Although it has been studied extensively throughout the past 20 years, the environmental impact of e-commerce can still be considered a controversial subject. Particularly for those wondering whether online shopping constitutes a more environmentally friendly alternative to traditional store-based shopping, evidence can be found that quantitatively supports affirmative as well as opposing claims. Findings differ widely because the contexts and assumptions of the studies from which they are drawn differ widely as well. To advance our understanding of this question and inform actions that can actually reduce the environmental impact of shopping, we carried out a systematic quantitative review of environmental impact assessments that compares the carbon footprint of online and store purchases. Based on over twenty scientific studies, we compiled a dataset of 244 purchases, their estimated carbon footprint and information on the contextual, distribution, behavioral, and geographical conditions on which the calculations are based. We conclude from the reviewed studies that online purchases generally generate a lower carbon footprint than store purchases, but only in the case of car-dependent lifestyles, and possibly only because the studies largely overlook transformations in consumer behavior and in the consumption landscape."

Least Useful Sources

Identification of factors that influence the delivery fee pricing of on-demand delivery services, Leise Kelli Oliveira, Carine Aragão de Mello, Cheyenne Mariana De Oliveira Carneiro, Tatiane Eugênia Remígio da Costa, Frontiers in Future Transportation, December 2022

https://www.researchgate.net/publication/366250721_Identification_of_factors_that_influence_the_delivery_fee_pricing_of_on-demand_delivery_services

Source from Abstract:

"The use of on-demand delivery services increased in Brazil during the COVID-19 pandemic, mainly by requests for ready meals. While consumers appreciate convenience, the delivery fee is a decisive factor in the purchase process. However, the delivery fee pricing strategy of on-demand delivery service platforms has not been discussed in the literature. Thus, this study aims to analyze the factors that influence the delivery fee pricing of on-demand delivery services and explores the impact of delivery fee strategies on the remuneration of couriers. We collected data from three leading on-demand delivery service platforms regarding product type, order price, service fee, delivery fee, order day, order time, waiting time, and distance. As a result, our database comprises 1,440 orders in 12 Brazilian municipalities. A linear regression model was estimated to identify the factors influencing the delivery fee pricing considering different product types. Findings showed that product type has a diverse effect on delivery fee pricing. Moreover, distance, regardless of the product type, positively influences the delivery fee. The delivery fee of the ready meals is affected by the service fee, waiting time, order day, and order time. Furthermore, the waiting time and order day affect the delivery fee of supermarket and bakery products and beverages. Finally, the delivery fee of medical products is influenced by order day and time. Findings can be helpful for the pricing strategy of on-demand delivery services."

E-commerce and Parcel Delivery: Environmental Policy with Green Consumers, Claire Borsenberger, Helmuth Cremer, Denis Joram, Jean-Marie Lozachmeur, Estelle Malavolti, opics

in Regulatory Economics and Policy, 2023
https://link.springer.com/chapter/10.1007/978-3-031-25362-1_15

Summary from Abstract:

We study how consumers' environmental awareness (CEA) affects the design of environmental policy in the e-commerce sector. We also examine if there is a need for regulation requiring delivery operators to reveal their emissions. We consider a model with two retailers who sell a differentiated product and two parcel delivery operators. Delivery generates CO2 emissions which create a global externality. We assume that less polluting technologies are more costly. We consider different scenarios reflecting the type of competition and the vertical structure of the industry. CEA mitigates the inefficiency of the equilibrium by bringing the level of emissions closer to its optimal level. This efficiency-enhancing effect of CEA also affects the design of emissions taxes, which leads to an amended Pigouvian rule. Under perfect competition, the tax is reduced by exactly the level of CEA expressed in monetary terms. Under imperfect competition, the adjustment exceeds this level.

Analytical Modeling Framework to Assess the Economic and Environmental Impacts of Residential Deliveries, and Evaluate Sustainable Last-Mile Strategies, Miguel Jaller, Anmol Pahwa, UC Davis: National Center for Sustainable Transportation, March 2020

https://escholarship.org/uc/item/4143j4pr

Summary from Abstract:

In the last decade, e-commerce has grown substantially, increasing business-to-business, business-to-consumer, and consumer-to-consumer transactions. While this has brought prosperity for the e-retailers, the ever-increasing consumer demand has brought more trucks to the residential areas, bringing along externalities such as congestion, air and noise pollution, and energy consumption. To cope with this, different logistics strategies such as the introduction of micro-hubs, alternative delivery points, and use of cargo bikes and zero emission vehicles for the last mile have been introduced and, in some cases, implemented as well. This project, hence, aims to develop an analytical framework to model urban last mile delivery. In particular, this study will build upon the previously developed econometric behavior models that capture e-commerce demand. Then, based on continuous approximation techniques, the authors will model the last-mile delivery operations. And finally, using the cost-based sustainability assessment model (developed in this study), the authors will estimate the economic and environmental impacts of residential deliveries under different city logistics strategies.

The environmental impact of fast shipping ecommerce in inbound logistics operations: A case study in Mexico, Andrés Muñoz-Villamizar , Josué C. Velázquez-Martínez, Perla Haro , Ana Ferrer , Roger Mariño, February 2021
https://www.sciencedirect.com/science/article/abs/pii/S0959652620354469

Summary from Abstract

Consumer demand for short delivery windows has driven companies to compete for faster shipping to clients. Recently, Amazon and Walmart along with other major companies have started offering same-day delivery. That translates into not using full truckload capacities,

requiring more frequent dispatch, and in turn, increases transportation cost. However, inefficient routes are not only more expensive for the shipper but they are also more carbon-intensive. In this context, and from an operative level, we analyze the environmental impact of inbound logistics caused by fast shipping. We create a discrete-event simulation model to understand and compare the effect that certain parameters (i.e., delivery windows, inventory management policies, truck type) have on sustainability inbound logistics. We validate this model with the largest retailer in Mexico in order to analyze how sustainable fast shipping actually is and how to reduce its environmental impact. Results from the simulation model show that fast shipping produces significantly higher CO2 emissions since it imposes a challenge for cargo consolidation. We found that fast-shipping increases both total CO2 emissions and costs up to 15% and 68%, respectively.

The Impact of E-Commerce-Related Last-Mile Logistics on Cities: A Systematic Literature Review , Marta Viu-Roig , Eduard Alvarez-Palau , Sustainable Last Mile Logistics, August 2020 https://www.mdpi.com/2071-1050/12/16/6492

Summary from Abstract

E-commerce-related last-mile logistics have a great impact on cities. Recent years have seen sustained growth in e-commerce in most developed countries, a trend that has only been reinforced by the COVID-19 pandemic. The perceived impact of this phenomenon varies depending upon the perspective of the players involved: individual members of the public, companies, or the public administrations. Tackling the issue from these perspectives, the goal of this article is to explore the kinds of impact this phenomenon has and will have. We use as the basis for their classification the so-called triple bottom line (TBL) of sustainability, encompassing people, planet, and profit; we complement this with the impact classification used by the European Science Foundation's impact assessment working group. After performing a systematic review of the literature following PRISMA guidelines, our results show that, albeit to different degrees, the four impact dimensions analyzed (economic, social, environmental, and technological) have only received incipient coverage in the existing literature. Given its ever-growing importance, we believe that greater attention needs to be paid to this phenomenon, especially with regard to those aspects having the greatest impact upon urban systems and the different stakeholders involved. Only in this way can the public policies needed to mitigate these externalities be properly implemented.