RETHINKING PLANNING IN A DIGITAL MARKETPLACE:
IMPLICATIONS OF E-COMMERCE FOR LAND USE POLICY IN TORONTO

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ABSTRACT

The intention of the Growth Plan for the Greater Golden Horseshoe is to create a planning framework that achieves complete communities and a thriving economy. However, there is minimal direction for municipalities planning for retail development to realize these goals. This is problematic, as e-commerce is disrupting the retail industry and is transforming the commercial and industrial real estate that support it. This paper examines e-commerce growth over the past thirteen years in Canada and demonstrates how this is prompting changes in both land markets through two case studies. Case studies identify implications that e-commerce will create for land use policy in Toronto moving forward. Recommendations presented to address these implications prompt upper levels of government to collect data to inform decision making at the municipal level. Recommendations for the City of Toronto are aimed at relaxing land use policies to create a strategy to facilitate efficient goods movement.

Key words: E-commerce; Land Use Policy; Toronto, Canada

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Introduction

To create a planning framework that will foster complete communities, a thriving economy, and achieve social and environmental sustainability, the Ontario Government released the newest iteration of the Growth Plan for the Greater Golden Horseshoe in May 2017. The plan governs land use and dictates how and where municipalities must grow (Growth Plan, 2017). Although one of the primary goals of this policy framework is achieving complete communities, there is minimal direction for planning retail development, which is an integral part of complete communities. This lack of direction has resulted in an un-coordinated approach to retail planning across the region and undermines the role of retail in achieving the goals of the Growth Plan. This is problematic, as e-commerce is disrupting the retail industry and is transforming the commercial and industrial real estate that support it. This presents further implications for creating land use policies that support planning for retail development in Toronto.

When the Growth Plan was enacted a decade ago e-commerce in the Canadian retail landscape was a new phenomenon (Waters and Yuen, 2014). Rapid growth has occurred in the online shopping segment since, which has prompted a transformation of the industry as shoppers are moving more of their purchases online (Canada Post, 2016). Projections suggest that online sales in Canada will continue to increase at a 15% year-over-year growth rate as the offline counterpart projects single-digit growth (KPMG, 2017). Industry experts believe this will result in a decline in demand for traditional bricks and mortar retail and will threaten the absorption of net new retail space in Toronto (TO Core, 2015). The growth trajectory of both online and offline sales raises questions about how this shift will affect commercial land use policies in Toronto. It should also prompt planners to recognize potential implications of this trend and inform a

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strategy to adjust land use policies to achieve growth management goals. Online sales are also transforming traditional supply chain structures that support retailing as consumers demand next- or same day deliveries.

The structure of the retail supply chain is changing in parallel with e-commerce growth. Consumers choose to receive products via home delivery, in-store pick-up, or a parcel pick-up point rather than visiting a store which has altered the mobility of products during the last mile. Distribution channels are transforming to accommodate changes during the last mile as retailers increasingly offer next or same day delivery. As a result, there has been greater demand for industrial space close to major population centres that can accommodate urban warehousing and e-fulfillment centres (CBRE Limited, 2017). This demand will affect the desired form, function, and location of industrial space. In turn, this will present implications for industrial land use planning policy moving forward.

This paper asks the question, "How will e-commerce change the form and function of Toronto and what potential implications does this present for land use planning policy moving forward?" This question is answered through examining e-commerce growth in Canada and the impact that this growth will have on both urban logistics and bricks and mortar retail in Toronto. The discussion that follows offers two case studies that highlight potential implications for commercial and industrial land use policy currently in force. Finally, recommendations directed to the federal, provincial and municipal tiers of government are presented for planners to consider adopting to prepare land use policy for the changes that e-commerce will create.

Method Statement

This report uses a multi-method approach to demonstrate how e-commerce growth will create implications for planning in Toronto. An analysis of the Growth Plan for the Greater Golden Horseshoe (2017) gives an understanding of the regulatory framework for retail planning that municipalities must work within. The focus of this analysis is to gauge whether the direction that the province provides in terms of guiding retail development is adequate. It is established that the direction provided by the province is not sufficiently guiding the planning of retail development in the Greater Golden Horseshoe.

The policy analysis conducted at the Provincial level is followed by an analysis of online sales growth at the Canada-wide level from 2005 to 2017. This analysis demonstrates the growth trajectory of e-commerce at a macro-level and gives growth projections for this segment moving forward. Data used to complete the analysis is publically provided by Statistics Canada under the "Canadian Internet use survey, electronic commerce, electronic orders, for Canada and regions". This data set records online sales growth between 2005 and 2016. A comparison of online sales growth between Canada and Ontario shows that they follow the same growth trajectory.

The analysis displays e-commerce growth from 2016 to 2017 using a new data series released by Statistics Canada as part of the Monthly Retail Trade Survey. Statistics Canada began to track online sales growth monthly rather than yearly starting in January 2016 as a share of total sales. The reason for this being that "it has become increasingly important to track this variable on a more frequent basis" (Statistics Canada Analysis Brief, 2016). Unfortunately, this detailed data is only available at the country level of geography which limits the ability of this

report to understand trends in Toronto. Market reports accompany the analysis to give projections for future e-commerce growth to confirm the findings and give them context.

Following the analysis is a section that speaks to how online sales growth is transforming the retail supply chain and how this impacts goods distribution in Toronto. The focus of this section is to show how the last mile delivery is changing urban logistics and the demands that this places on industrial real estate. A review of academic literature and market reports is included to demonstrate how e-commerce is transforming the design of logistic networks and how land use policy can help or hinder this design. Reports released by the Toronto Region Board of Trade highlight the importance of efficient goods movement to support the economic competitiveness of the region and underline the importance of goods movement to achieve growth management goals. Retail and industrial real estate market reports from brokerages that have been seeing changes in these land markets point to e-commerce being a significant factor contributing to these changes.

The discussion section of the report highlights the potential land use implications that e-commerce will create. This is demonstrated through two case studies. The first case study speaks to why Sears Canada filed for bankruptcy and the amount of space these store closures left behind. This case study uses annual reports and legal documents filed via SEDAR to provide all of the figures and reasons for bankruptcy. The second case study highlights several trends occurring in retail logistics to accommodate last mile delivery and how this is impacting the form and function of Toronto. This case study uses news articles and market reports to provide an understanding of new delivery fulfillment approaches.

The analysis of e-commerce growth and the discussion inform a set of recommendations that intend to address the potential land use implications pinpointed in the case studies. Recommendations are directed to officials at the federal, provincial, and municipal tiers of government. These are centered on improving data collection, providing mechanisms that give further guidance for retail planning, and changing land use policy to accommodate e-commerce.

The Importance of Retail Development for Growth Management

The Province of Ontario enacts legislation to manage growth and govern how municipalities can develop. Policies embedded in this legislation come in the form of the Provincial Policy Statement and a series of land use plans, which are: The Greenbelt Plan (2017), The Oak Ridges Moraine Plan (2017), The Niagara Escarpment Plan (2017), and The Growth Plan for the Greater Golden Horseshoe (2017). The earlier iterations of these plans were part of a coordinated land use planning review that began in 2015, overseen by former Toronto Mayor David Crombie. The review gathered feedback to update the plans and align them to work in tandem to achieve the goal of developing vibrant and sustainable communities that can satisfy the daily needs of people throughout an entire lifetime (Ministry of Municipal Affairs and Housing, 2017). A unified goal of these Provincial plans is to create complete communities. Many of the policies in place to achieve this goal are enforced via the Growth Plan.

The primary goal of the Growth Plan is to create a policy framework that supports achieving "complete communities, a thriving economy, a clean and healthy environment, and social equity" (Growth Plan, 2017). Policies in the Growth Plan aim to achieve these growth objectives through setting both population and employment targets that every municipality must reach by a specified time. Each municipality applies these targets to urban growth centres and settlement areas to better align transportation and land use planning to make use of existing infrastructure and to manage growth effectively. Concentrating development in strategic growth areas allows for the co-location of mixed land uses to create nodes that accommodate forecasted growth within complete communities. To achieve this, municipalities must zone land appropriately. The Growth Plan states that municipalities should encourage mixing retail and

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services with other land uses to support achieving complete communities (Growth Plan Section 2.2.5.11). Although, retail is a land use that underpins complete communities and there is little direction to guide municipalities planning for retail development.

The Growth Plan defines complete communities as mixed-use neighborhoods that allow residents to easily access most of the necessities for daily living. This means that municipalities must integrate an appropriate mix of jobs, stores and services in these areas along with a variety of housing and transportation options for residents to access (Growth Plan, 2017). Although stores and services are needed for complete communities there is no guidance to give municipalities an idea of how to appropriately mix these with other uses. No targets exist to allow municipalities to understand whether the required amount of retail space that is under construction will satisfy the daily needs of incoming populations. Despite this lack of direction, upper- and single tier municipalities are bound to direct development in a way that delivers an urban form that achieves complete communities. Managing retail growth at the municipal level becomes increasingly difficult as there is no ratio that guides how much retail space is necessary to mix with other land uses to achieve complete communities.

To understand how to manage growth to achieve complete communities' policymakers at the provincial tier of government should study retail development patterns of the past. The retail landscape in the Greater Golden Horseshoe has gone through dramatic changes since the 1950s so it is important to understand this evolution to inform an effective growth management approach. Through studying how the retail landscape has evolved over the years, policymakers will understand how this history has impacted the built form and spatial configuration of retail growth in the Greater Golden Horseshoe. Currently, Growth Plan policies that guide retail

development do not consider the historical growth patterns of the industry across the Greater Golden Horseshoe. In 2009, a study conducted by the Neptis Foundation demonstrated that the policies enacted in the earlier iteration of the Growth Plan were not in-line with spatial growth structure of the retail landscape (Buliung and Hernandez, 2009). This statement continues to hold true in the updated iteration of the Growth Plan. There is still a focus on creating compact, complete communities that are supported by mixed land uses, walkability, and transit connectivity despite the sprawled growth pattern of retail in the last couple of decades.

Retail is the most unstable and rapidly changing land use as space productivity is contingent on shifts in demographics, economic and market trends, along with smaller considerations like changing fashion (TO Core, 2015). In the 1990s, the retail landscape in Canada began to change in structure as power centres began to dominate the development of retail real estate. This spurred the formation of power nodes in suburban and exurban areas (Buliung and Hernandez, 2009). In the Greater Toronto Area, the robust growth of power retail in these suburban areas has resulted in a retail landscape where large-format, big-box stores are highly scattered and accessible principally by automobile (Buliung and Hernandez, 2009). Typically, these areas are disconnected from the existing transit network. Power retail centres are primarily standalone developments found on large tracts of land close to 400-series highways, such as the Highway 400 and Highway 7 node (Buliung and Hernandez, 2009). This has resulted in a decentralized and scattered spatial structure for power retailing that does not necessarily align with the Urban Growth Centres in the Growth Plan. These areas are not accessible by transit and do not contribute to the goal of complete communities.

By overlaying the locations of Urban Growth Centres with travel patterns of consumers visiting power centres and enclosed malls in the GTA, the Neptis Foundation study found that "traffic flows to power centres and malls are concentrating a few kilometres away from the planned Urban Growth Centres" (Buliung and Hernandez, 2009, 16). In presenting these findings, the study shows that planning processes that govern commercial development have encouraged consumers to travel to outside areas selected for intensification to accommodate daily needs.

This example highlights that the format that dominated retail from the 1990s until now is working against the goals of the Growth Plan. Without the Provincial direction and planning tools to ensure that retail is successfully integrated into the urban fabric to promote complete communities, it is increasingly difficult for municipalities to manage growth and develop land use policy that can achieve this objective. Realizing this objective becomes increasingly difficult in a time where e-retailing is growing at a rapid rate and transforming physical retail space needs.

E-retailing will add another dimension of complexity to an already volatile land use category. It is imperative that land use policies look forward to achieve the Provincial objectives outlined in the Growth Plan. To do this, planners must identify the potential implications that e-commerce will create for land use planning policy. The first step begins with developing an understanding of e-commerce growth and the factors that are driving this growth. Once this understanding is established it is then crucial to determine how this growth is impacting the spatial form of cities and the land uses that govern this form. This will allow planners to pinpoint land use policies that will potentially present implications for successful retail development that support achieving complete communities. Through uncovering these potential implications, planners can strengthen the municipal land use planning approach to retail and industrial

development. The following section examines the growth of e-commerce at a national scale and

points to potential trends occurring in the commercial and industrial land markets that have likely

been driven by e-commerce.

Understanding the Growth of E-commerce in Canada

Conventionally, retail transactions took place inside 'bricks and mortar' stores and involved face-to-face interactions between sellers and consumers. Although there were previously a handful of retailers that had a mail-order service available like Eatons and Sears, the main mode of sales was through physical interaction. These interactions occurred in shopping centres post 1960, and within big box and power retail formats after 1990 (Yeates and Hernandez, 2016). The retail process has changed significantly since the 1990s especially as increasing sales occur online within the digital marketplace. Canadians now more than ever before are buying products online. This has been reshaping many aspects of the retail industry and the amount and type of space that the industry demands.

When compared to other G20 nations the e-commerce segment in Canada has taken longer to materialize. However, in recent years online sales have been growing rapidly and are projected to continue this trajectory (KPMG, 2017). By 2019, projections estimate that nine percent of the overall retail market in Canada will be made up of online sales, accounting for $60 billion in sales annually (KPMG, 2017). Between 2016 and 2019, this will represent a 15% year-over-year growth (KPMG, 2017). This rapid and steady growth in the e-commerce segment can be attributed to the development of mobile technology and the internet of things being integrated into the rhythm of everyday living. The online marketplace allows customers to shop from anywhere and offers a convenient alternative to driving to a shopping centre or walking down a high street. This convenience factor is increasing the share of total sales that e-commerce comprises and is also prompting stronger year-over-year growth in online sales, which is a more accurate indicator of how e-commerce has evolved over the years.

From 2005 to 2017, according to figures provided by Statistics Canada CANISM Table 358-0156, there has been an average 16% year-over-year growth in the value of online sales (Statistics Canada, 2018). At the same time, from 2005 to 2012, the average number of orders per person annually has risen from 7.2 to 12.6, meaning that each online shopper is purchasing nearly double the number of items online during this period (Statistics Canada, 2018). This historical data set showcases the performance of online sales from the point in time that e-commerce was starting to emerge as a common retail channel, through to today where the internet of things has weaved the digital world into everyday living. This suggests that the rapid implementation of digital technologies will accelerate the growth of e-commerce, which may undermine the part that store-based retailing plays in the Canadian landscape (Yeates and Hernandez, 2016). As the growth of sales in online retailing continue to take place, there is a larger shopper base that is moving purchases online, who are buying online what they previously bought in-store.
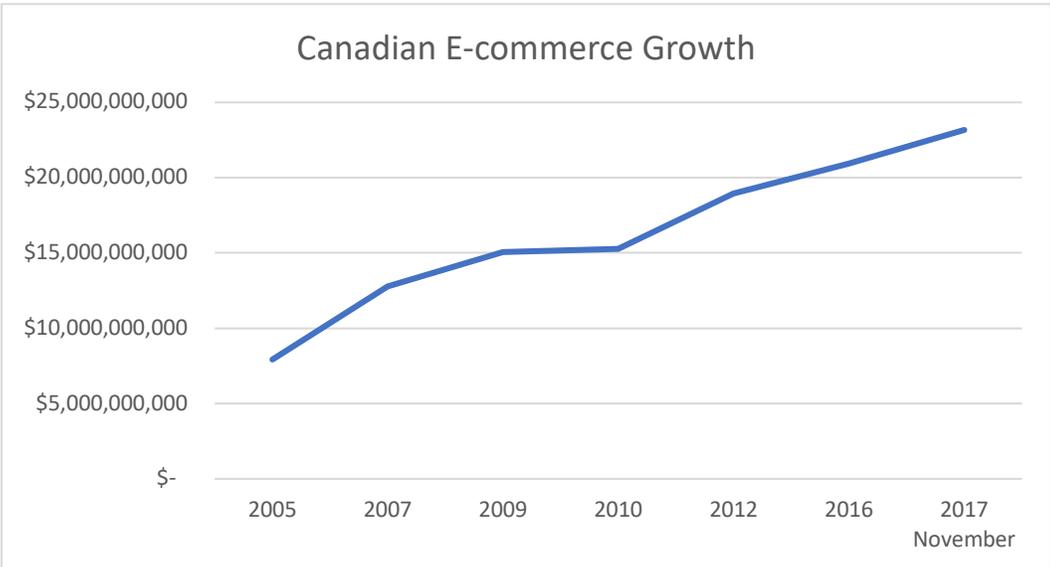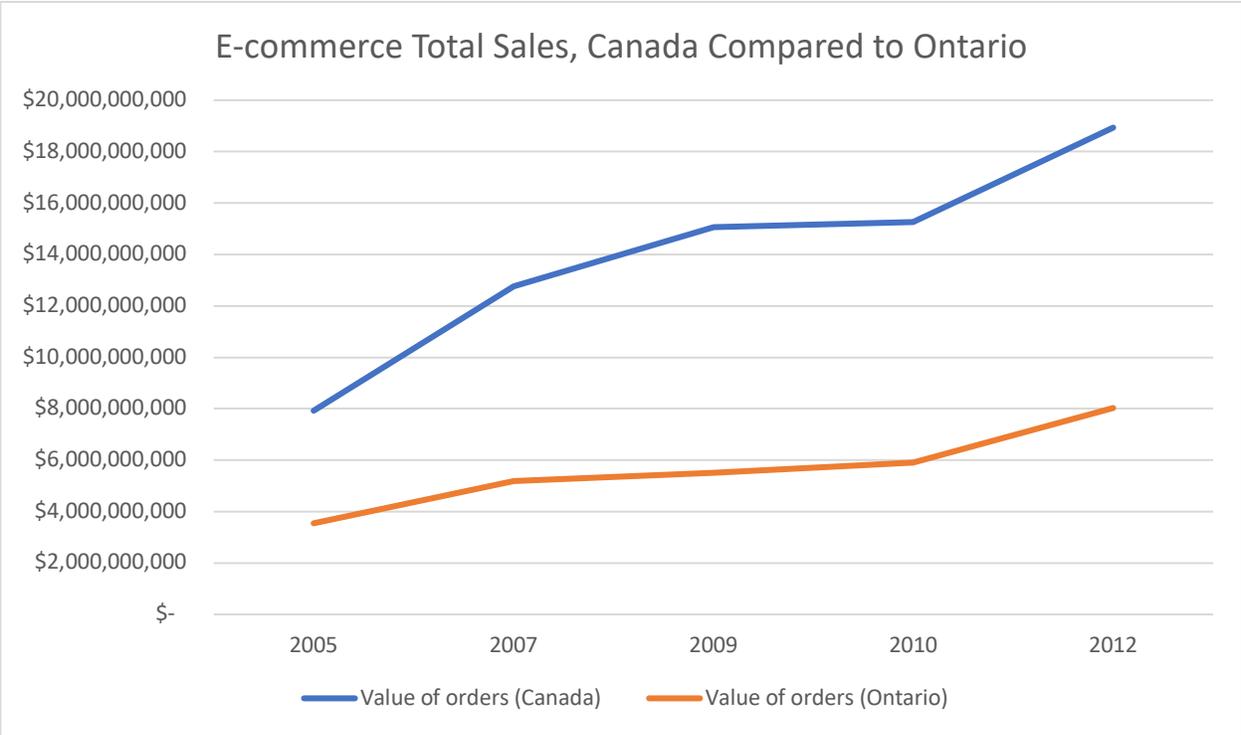

Figure 1: Canadian E-Commerce Growth
Source: Statistics Canada

In a survey administered by Canada Post, behaviors and opinions of some 5,000 shoppers in Canada were collected to shed light on the shopping preferences of people who will drive the growth e-commerce moving forward. The survey found that eight in ten people shop online, with one in four shoppers spending more online than in-store (Canada Post, 2016). The range of items that these people have been buying online have been expanding gradually (Canada Post, 2016). Recently, items that are high-value and groceries are being bought online, which conventionally were purchases reserved for in-store (Canada Post, 2016). The impetus to shop online stems from the ability to compare products and their prices in one place, while having the luxury of being able to shop from anywhere, anytime. This convenience factor has resulted in a 2% growth within bricks and mortar sales in 2016, and 15% growth in online retail sales during the same period (Canada Post, 2016). And thirty six percent of these consumers plan to make additional online purchases in the following year (Canada Post, 2016). Although these are findings from only one survey it is telling in that people who are shopping online currently plan to continue doing so in a more substantial way. Although the data available at the national level is particularly expressive about the trajectory of e-retailing on a macro-scale it is difficult to understand how online sales are impacting Canada at the city level.

Statistics Canada does not currently collect data at the Census Division level of geography that would show the growth of online sales in Toronto. This is problematic as the market context at the Census Division level is necessary to understand how e-commerce is impacting the retail industry in particular cities and economic regions. If this data were available it could be juxtaposed with retail space vacancy statistics and allow municipalities to determine extent to which the demand for retail space is changing as a result of online sales. In turn, this would

provide a basis for the municipality to establish a suitable ratio of retail space per capita to support the population entering growth areas.

The value of orders purchased online in Ontario grew by an average of 18% per year between 2005 and 2012 (126% over a 7-year period), with the average amount spent on orders per person annually also growing by a total of 27% during the same period (Statistics Canada, 2018). This consistent trend between both the provincial and national scale demonstrates the similarities of these two markets. Given that Ontario makes up a 38% share of the total population in Canada (Census Profile, 2016), this suggests that Ontario is playing a significant role in driving the national trend of increasing online sales. To confirm this suggestion, it is apparent that 42% of the total Canadian value in online sales occurred in Ontario in 2012. Therefore, during this time the share of online sales was proportionate to the share of population in Ontario (Statistics Canada, 2018). Unfortunately, the new data series that measures online sales as a ratio of total sales, as part of the Monthly Retail Trade Survey, is only available at the national level.

Figure 2: E-Commerce Growth, Canada vs Ontario
Source: Statistics Canada

Data collection began in January of 2016 and is reported monthly. Before this point in time, Statistics Canada measured online sales by Canadian retailers annually and not as a percentage of total sales. The impetus to collect this data on a monthly bases stems from the statistical belief that "it has become increasingly important to track this variable on a more frequent basis" (Retail E-commerce in Canada Analysis in Brief, 2016, 3). It is likely that this is the case given the significant increase in the amount of goods and services that retailers now offer online. Statistics Canada has difficulty collecting this data at the provincial level as "most retailers are either unable report their online sales by province or have very different methods of allocating online sales to their establishments across Canada" (Retail E-commerce in Canada Analysis in Brief, 2016, 4). Moving forward, Statistics Canada will explore methods for measuring online sales by province via the Annual Retail Trade Survey and are investigating the possibility

of publishing an account of online sales by industry (Retail E-commerce in Canada Analysis in Brief, 2016, 4). These new data sets are promising, however, the impact of e-commerce on particular cities is difficult to measure, given the high-level geography that data is collected at.

E-retail growth in both Ontario and Canada has been driving a change in retail logistics given the shift in how consumers receive purchased products via the digital marketplace. The growing demand to have products delivered the same- or next-day to either a home address, pick-up point or parcel locker is prompting a parallel progression in the number of business-to-consumer deliveries experienced in the Toronto region (Toronto Region Board of Trade, 2018). The business to consumer (B2C) model has placed an increasing importance on the last mile delivery, which has been altering the logistics industry and driving investment in industrial leasing activity (CBRE Limited, 2017).

The emergence of the B2C delivery model is altering the mobility patterns of products and the order of operations experienced between retail distribution channels. As a result, the conventional supply chain network that supported retail in the past is undergoing a restructuring as the number of e-commerce sales continues to account for a larger share of total sales. This supply chain reorganization is prompting a parallel shift in urban logistics in the city, which presents complex challenges in terms of city design, land use planning and transportation networks.

The Impact of the Last Mile Delivery on Urban Logistics and Goods Distribution

Industrial land use planning policy in Toronto has had a significant impact on governing where warehousing and logistics facilities are able locate. This has spatially situated a chain of logistics zones on the fringe of the urban area. These logistics zones influence the context of facility location and significantly impact logistics business involvement through dictating the location and type of facilities permitted (Allen et al., 2012; Ruesch et al., 2012). Public policy decisions being made at both the provincial and municipal level can either hinder or enhance how logistics businesses are able to operate, which ultimately controls the flow of goods into and within the city. Former and current land use policies have resulted in the distribution network that Toronto utilizes for goods movement on a daily basis. This network has affected infrastructure investments related to freight distribution and the economic health of the region. Given that land use planning policies directly influence the effectiveness of distribution networks, they also play a part in controlling the congestion of goods movement within the city. This directly impacts the economic competitiveness of the greater region.

Starting in early 2017, the Toronto Region Board of Trade (the Board) released the Movement of Goods Series. The series consists of a string of reports that speak to the economic impact of the goods movement on the Toronto-Waterloo Innovation Corridor. Barriers to efficient goods movement in the region has been identified as one of the primary items to address on the agenda moving forward (Toronto Region Board of Trade, 2017). The reports demonstrate that, "Wholesale and retail, transportation and warehousing, construction and primary industries contribute 1.4 million direct jobs and $171 billion in annual GDP – one-third of the Regions total" (Toronto Region Board of Trade, 2017, 3). The intention of the reports is to

inform a multi-modal goods movement strategy for the region; the goal is to design an efficient

distribution network that will underpin a thriving, sustainable economy. The Board has a vision

to make Toronto "one of the most competitive and sought-after business regions in the world"

by the year 2020 (Toronto Region Board of Trade, 2017). The vision will be supported by a

strategy that will ameliorate the congested transportation network as this increases the cost of

doing business and hampers the economic competitiveness of the region.

The Board estimated that the cost of doing business in the Greater Toronto and Hamilton

Area alone is inflated by $6 billion per year because of traffic congestion (Toronto Region Board

of Trade, 2017). Looking forward, the projected growth of 110,000 residents in the region

annually will add to the more than $3 billion of goods moving on the regions roads every day

(Toronto Region Board of Trade, 2017). This will perpetuate added costs of doing business if the

traffic congestion issue is not addressed. A significant and growing issue around the last mile

delivery is identified as a point in the distribution process that is one of the shifting features of

goods movement. The last mile of the delivery is often completed by a smaller sized vehicle that

brings products into dense urban areas, given the difficulty for larger trucks to navigate this

context. Challenges around the last mile delivery have been growing in recent years. A factor that

has contributed to these challenges is the rapid growth of online commerce and the business to

consumer delivery model that underpins the digital marketplace.

The "last mile" is defined as the segment in the supply chain where goods are delivered

to their final destination. This can be a retail outlet or manufacturing plant, and in the context of

the B2C model, a resident's doorstep, pick-up point or parcel locker (Janjevic and Ndiaye, 2014).

The B2C model skips the step in the traditional supply chain of bringing the finished good to a

physical store where the product is purchased by someone shopping in that store. Rather, the good is purchased online. Following this, it goes directly from the producer to a distribution facility and then it is delivered to its final destination. The changing mobility patterns that result from this shifting supply chain are significant given that each individual product is delivered to a destination rather than as a bulk shipment of products going to one store location.

Not only are supply chains shifting to accommodate the flux of e-commerce B2C deliveries, online retailers are increasingly giving customers the option to receive products immediately which has significantly impacted warehouse demand (Urban Land Institute, 2017). Achieving a distribution network that can deliver a product the same day is pushing logistics providers to locate last mile distribution space closer to the customer. Typically, this is a 10 to 30-minute drive to the products final destination (Urban Land Institute, 2017). This has been transforming the form and location of warehousing that logistics companies are demanding.

To accommodate these evolving needs, e-commerce vendors are seeking multi-storey industrial facilities that range between 20,000 and 70,000 square feet (Urban Land Institute, 2017). This size of warehouse is on the smaller floorplate size in terms of industrial buildings and is in urban areas. As a result, the urban industrial building typology has become increasingly important to accommodate the last mile delivery process. Although there may be a need for more regional distribution centres, smaller urban logistics warehouses will increasingly perform the last mile of the delivery process (Deloitte, 2014). As e-commerce growth continues, urban warehousing will play a larger part in the overall retail distribution process as this allows the distributor to cut costs associated with this last mile segment of the supply chain.

The emergence of e-commerce has already begun to change distribution activity. This ought to prompt planners to think about the repercussions on land use for both retail and industrial property types. The increasing importance of the last mile is integral to the B2C model, not only to speed up delivery times to urban markets, but also because this is the most expensive part of the supply chain to fulfill. In their Canada Industrial Report, CBRE Limited highlights that the last mile delivery of the distribution process "accounts for up to 75% of the total supply chain cost", therefore prompting the need for localized distribution centres (2016). In line with the Urban Land Institute, CBRE has identified that a solution to inflated costs associated with last mile delivery is to deploy localized distribution centres. Where the professional opinion differs however is the ideal size of these centres. CBRE has noted that in Toronto and Vancouver, these "distribution spaces between 50,000 and 200,000 square feet and 5.0-15km from the urban core" have been utilized to provide same day delivery to customers located in the urban market (CBRE, 2017). The report does mention however that the typical spaces for localized distribution warehouses are between 50,000 and 100,000 square feet (CBRE, 2017), which is more on pace with the Urban Land Institute definition of a localized warehouse. In terms of land use planning, the location and controls placed on industrial property must be tailored to accommodate the needs of online commerce in a way that does not negatively impact sensitive uses and traffic congestion in the inner city.

The current land use framework creates potential implications to implement urban warehousing in Toronto. Industrial space that is close to the city centre is being rezoned as either Regeneration Areas or Mixed-Use Areas, which reduces the net supply of land that can accommodate urban warehousing. Areas that have undergone these zoning changes in Toronto

are the intersections of King and Spadina and King and Parliament, which were exclusively districts that accommodated manufacturing prior to the 1970s (Martin Prosperity Institute, 2010). Shortly thereafter, in the 1970s, these manufacturing operations moved outside of the downtown core which left the remaining industrial space derelict and underutilized for many years. Industrial areas lacked investment as rigid land use restrictions constrained the abandoned factories from being repurposed (Martin Prosperity Institute, 2010).

In 1996, the City of Toronto rezoned these areas as Regeneration Areas to permit "residential, live/work spaces, retail, commercial, entertainment, and light industrial" (Martin Prosperity Institute, 2010). Although light industrial uses permit warehousing, there are no mechanisms in the secondary plans that retain these uses in any capacity as Regeneration Areas have relaxed permissions to spur investment in the area. This allows the private industry to transfer land that can accommodate urban warehousing to more lucrative uses like residential with relative ease.

Rezoning these former industrial areas to Regeneration Areas is an ideal approach to bring investment to the area. It has been successful at bringing a mix of land uses to both the King Spadina and King Parliament intersections. The flexibility of uses permitted within Regeneration Areas has stimulated the market and in turn has made the area attractive. The redevelopment approach in these areas preserves the industrial character and brings vibrancy to the streets. The point that is being made is that light industrial uses in Regeneration Area should be protected as it seems that, looking forward, these uses will still be required to accommodate the shifts that are taking place in the retail landscape. This is a cautionary reminder that industrial

uses close to city centres will be necessary in the future, and that planners should rethink the current rezoning approach that has conventionally applied to industrial land in the urban core.

As cities continue to transition from an industrial to knowledge economy a shared planning response has been to rezone industrial space close to city centres to uses that are more applicable to the emerging economy. These uses include Mixed-Use, Regeneration Area or Office. This decision assumes that industrial lands situated in the core are not necessary for the purpose that they were originally intended for given the decline of the industrial manufacturing economy. However, before converting this land to other uses, planners must understand that this industrial land should be used to accommodate urban warehousing as e-commerce continues to expand. It is also important to differentiate the nuances of the form and function of urban warehousing when compared to the regional distribution centre.

Warehousing facilities that are located on industrial lands on Toronto's' urban fringe are typically regional distribution centres that are 300,000 square feet or larger, with 30-foot clear heights (CBRE, 2017). These facilities underpin the goods movement network in Toronto and as such they are located near transportation infrastructure and intermodal yards. Regional distribution centres serve larger areas when compared to their localized urban counterpart and function differently as the market that each warehouse accommodates is distinct. The urban warehouse does not accommodate the same volume of shipments as the regional centre. Rather, the function of the urban warehouse focuses on receiving and delivering products quickly to satisfy same or next day deliveries to make use of the expensive space they occupy in the urban centre. Deliveries to these distribution centres occur on a more frequent basis than the regional centre which impacts traffic congestion, mobility and city function. In turn, this creates complex

urban challenges rooted in land use that ought to be proactively addressed for the most helpful outcome.

In the early stages of online shopping, many of the transportation-related studies that were completed in the context of e-commerce were focused on passenger transport rather than physical distribution (Hesse, 2002). However, much of the current urban goods distribution literature focuses on pinpointing and resolving challenges associated with network design (Cardenas et al., 2017). The literature found that the most expensive and challenging segment of the supply chain for retailers is the last mile delivery or first mile pickup which on average account for up to 28% of total transport costs (Goodman, 2005). This inflated cost associated with doing business online has been prompting retailers and organizations involved in the digital marketplace to find solutions to reduce the overall cost of delivering products to the consumer. A cited solution for cutting these costs and making distribution networks more efficient involves deploying a series of micro-consolidation platforms that are situated near the final destination (Cardenas et al., 2017).

To address the adverse repercussions that online deliveries have on urban planning and city function, a study conducted in France examined the spatial development of the city's pick-up point network. The study analyzed strategies that operators use for urban and suburban areas to satisfy the significant demand for delivery services to end consumers. It was found that both automated parcel stations and pick-up points are integral features of the e-commerce retailing strategy as this solution satisfies consumer demands and optimizes parcel distribution (Morganti et al., 2014). The growth of e-commerce in Europe started earlier than in Canada. Logistics operations have evolved more rapidly since 2005 and it is therefore a more developed research

topic. However, it has still barely been studied (Morganti et al., 2014) despite all the challenges that e-commerce presents for customers receiving deliveries.

One of the primary challenges of delivering products bought online to a home address is the requirement for the customer to be at home to sign for a parcel (Wong, 2014). If people are not home, this prompts the delivery service to bring the product back to a facility, forcing the customer to come pick the item up later. Pick-up point networks solve this challenge as they are comprised of lock boxes that are accessible 24 hours a day. Lock boxes are situated in places of frequent use, like shopping centres, gas stations and train stations to offer flexible pick up times (Morganti et al., 2014). It was confirmed that these pick-up point networks have intensified in recent years. This was demonstrated in the pick-up point strategy study conducted in France mentioned earlier.

The study found that the number of pick up points in France grew from 10,900 to 18,200 which is an increase of 67% between 2008 and 2012 (Morganti et al., 2014). The strategy to properly situate these facilities begins by dividing the city into a series of macro zones that constitute broad service areas. Following this, zoning of each facility is distributed based on "catchment areas". Catchment areas are used to gauge the projected flow of parcels and to understand the capacity of each pick-up point to allocate an appropriate number of points in the network (Morganti et al., 2014). As well, the strategy involves positioning pick up points in areas that have high population densities and proximity to transportation networks to maximize the efficiency of nodes in the network. The overarching finding in this study was that pick-up points make the B2C model less costly for both retailers and consumers and reduce the risk of a missed delivery (Morganti et al., 2014). The paper recommends that further research is conducted to

understand the freight and passenger trip generation that e-commerce creates to help model urban logistics and better integrate e-commerce.

The former sections of this report have given an insight into the provincial policy framework that municipal retail planning must work within and the role of retail in achieving growth management objectives. It has also given an understanding of e-commerce growth at the national level, which has informed this section that highlights how shifting supply chains are impacting urban logistics and city function. The following is a discussion section highlighting two case studies that demonstrate how e-commerce has been impacting both bricks and mortar retail and distribution methods in the Greater Toronto Area and North America more broadly.

Discussion

Case Study Analysis

Case studies presented in this section are intended to demonstrate the impact that e-commerce is having on bricks and mortar retail, and to give an insight into the new delivery fulfillment facilities that are being built in urban areas to accommodate e-commerce. The first case study provides an account of Sears Canada filing for bankruptcy in 2017, a brief summary of why this occurred, and the amount of space that these store closures left behind. The second case study showcases new distribution formats that are necessary to satisfy the business to consumer model that e-commerce is built on. This is displayed though the deployment of Penguin Pick Up Points by SmartCentres, the arrival of Amazons new urban fulfillment centre model and through the new Canada Post pilot facility that was built in Richmond Hill, Ontario. Both case studies will highlight the implications that planners must confront moving forward to ensure the successful integration of e-commerce into the urban fabric of Toronto.

Case 1: The Demise of Sears Canada

Since the early 1950s Sears Canada has played an integral role in the Canadian retail landscape with stores in every province (FTI Consulting, 2017). In April 2017, Sears Canada operated 161 owned and leased stores, distribution centres and warehouses, a network of 62 Sears Hometown store dealers, and 514 direct-purchase pick up counters that were independently owned, with 191 pick up counters within other Sears Canada locations (FTI Consulting, 2017). It was estimated that at this time the company employed 17,000 people across Canada, with assets that had a book value of $658 million and a real estate portfolio valued at $233 million (FTI Consulting, 2017). Each of the 95 full line department stores ranged from 30,000 to 300,000 square feet in

size, with gross corporate store locations totalling approximately 19.7 million square feet (Superior Court of Justice, 2017). The sheer volume and value of stores and associated facilities owned and operated by Sears Canada showcases the magnitude of space that they once occupied.

Starting in 2012, Sears Canada had been experiencing losses from operating activities, with their total revenue decreasing by 16.9% between 2015 and 2016, representing a loss nearly $500 million for this period (Sears Canada Annual Report, 2016, 20). From 2012 to 2014, the Company had experienced declining sales, and from 2014 to 2016 Sears Canada had experienced net losses (Wong Affidavit, 2017). In 2012, Sears Canada undertook a number of property sales and store closures to eliminate unprofitable locations as these were no longer required (Wong Affidavit, 2017). This was the beginning of the many restructurings that the company undergone because of negative cash flows.

During the time of negative cash flows the Company had gone through a series of attempts to restructure the organization. These restructurings were centred on "leveraging technology to transform from a bricks and mortar retail platform to an e-commerce retailer with supporting stores" (Superior Court of Justice, 2017, 26). As part of this platform, Sears Canada launched an innovation hub named the Initium Commerce Lab to design and deploy a modernized technology platform to underpin the newly crafted company vision of becoming an e-commerce retailer (Superior Court of Justice, 2017, 27). To fund the development of the innovation hub and e-commerce platform, Sears Canada monetized an assortment of real estate assets (Superior Court of Justice, 2017). This was done by selecting underperforming stores and

closing them. Through these liquidations, the Company was able to put together an online platform that was destined to re-ignite the productivity of the organization.

In November 2016, Sears Canada launched their e-commerce platform nationally. However, the initial transition to this new website was problematic in that the company experienced extreme technical difficulties (Wong Affidavit, 2017). To address these technical difficulties Sears Canada entered an agreement with CGI in Q2 of 2016. Sears Canada believed that this third-party vendor could help update its technology infrastructure to improve efficiency and cut costs (Wong Affidavit, 2017). In total, Sears Canada invested roughly $15.6 million into the Initium initiative and continued to experience challenges launching the new website (Sears Canada Annual Report, 2016). At the same time, the Company was trying to improve the productivity of their bricks and mortar stores as many locations continued to underperform.

After countless attempts to restructure and reinvent their company Sears Canada announced that it could no longer transform its business without liquidating additional real estate assets. Negative net losses were attributed to sales declines in all product categories, a decrease in catalogues, and challenges experienced launching new e-commerce platform (Sears Canada Annual Report, 2016). Sears Canada failed to recover after continued assets were liquidated.

On June 22, 2017, Billy Wong, the Executive Vice-President and Chief Financial Officer of Sears Canada, filed an Affidavit to the Supreme Court of Justice to demonstrate the financial struggle experienced by the Company. This statement of facts supported the application of Sears Canada to seek financial relief under the Companies' Creditors Arrangement Act, R.S.C. 1985, c. C-36, to provide bankruptcy protection. Without relief provided by the Canadian government,

Sears Canada ran the risk of filing for bankruptcy. After being declined relief by the Supreme Court of Canada, Sears Canada ended up filing for bankruptcy later that year.

On October 17, 2017, Sears Canada obtained an order from the Ontario Superior Court of Justice that allowed them to liquidate the remaining 82 stores across Canada, which included 74 department stores and 8 Sears Homes stores (Sears Canada, 2017). This left behind the 19.7 million square feet of space that Sears Canada occupied in April of 2017 vacant, and all the 17,000 employees out of work across Canada. This case study demonstrates the severe repercussions that e-commerce may continue to prompt, and the vacant space that these large retailers will leave behind if and when they close their doors.

Implications for Planning

Sears Canadas failing e-commerce platform was one of the primary factors that caused the company to file for bankruptcy. The amount of space that was left vacant as a result of Sears Canada closing its doors is substantial. The primary question that planners must address is: How can this space be repurposed, and what land use interventions must be relaxed to stimulate investment in these instances? Rigid regulations hinder the ability of these sites to be repurposed quickly. This threatens the vibrancy of the communities where these vacant sites exist. Planners must question the amount of retail space that is necessary per capita in a time where e-commerce is impacting the industry and consumers are moving more of their purchases online.

The implication that follows is understanding what the ideal retail space per capita in a digital age is and whether these sites should remain zoned for retail uses. E-commerce growth ought to prompt planners to think about whether vacant sites left behind by closed retailers

should be re-invented. These sites can potentially accommodate the logistic demands that the business to consumer model places on current infrastructure. Rigid regulations often restrict the ability to repurpose these vacant sites. This is problematic as vacant stores give areas a run down, derelict presence. Like the Regeneration Areas zone, the same relaxed permissions can apply on vacant retail sites to foster the ability to implement flex uses. A policy intervention is necessary given the built form and unit size in the case of the department store format.

In the case of retailers that utilize the department store format, it is apparent that the massive floorplates supporting this built form make it increasingly difficult to find a tenant that could fill a space that large. Floorplates of 30,000 to 300,000 square feet in size are tailored to accommodate a market that is becoming increasingly dated. It might be worth considering allowing for these floorplates to be broken up into a series of smaller spaces that are less challenging to fill so that these spaces can be revived.

Department stores like Sears Canada are auto-oriented meaning that they are in areas that are not accessible by transit. Given that from the 90s until today power retailing dominated the Canadian retail landscape (Buliung and Hernandez, 2009). This suggests that most of retail space that has come on stream during this time is located in areas not serviced by transit. This is an implication as all the provincial and municipal policy direction for retail stipulates that retail development is not directed to areas supported by transit, so redeveloping these sites as retail does not fit within the current policy framework.

Case 2: Showcasing How E-commerce is Stimulating New Fulfillment Approaches

The delivery demands that the business to consumer model create for retailers has begun to change the types of facilities that support their supply chains. This case study intends to identify the main types of these facilities and their characteristics and to build an understanding of the potential implications that they present for land use planning moving forward. The first of these facilities is pick-up points, which have begun to transform retail logistics.

In 2014, SmartCentres, which is the biggest developer and operator of shopping centres throughout Canada, announced that they would be launching a new service to satisfy emerging retailing needs called Penguin Pick-Up (Market Wired, 2014). The President and CEO of SmartCentres acknowledged that online shopping has begun to play an integral role in the overall shopping experience of the future (Market Wired, 2014). This Penguin Pick Up strategy allows their organization to be an active player in this future moving forward (Market Wired, 2014). The end goal of this strategy is to provide a comprehensive network of pick up points for consumers to utilize and acquire the products that they have purchased online. This would provide customers with a convenient, easy and free way to receive their goods. Each of the pick-up points will be placed within a SmartCentre shopping centre location to give people the option to pick up their deliveries at their convenience as these facilities are intended to have long operating hours.

The pilot program for the Penguin Pick-Up was implemented in the Greater Toronto Area in late 2014. Based on SmartCentres market demand projections for these facilities, the plan is to roll out the Penguin Pick Up network in more than 250 SmartCentre locations across Canada (Market Wired, 2014). After registering online, customers are able to have their online purchases from any retailer delivered to a Penguin Pick-Up location of their choice. Upon delivery, they will

be alerted by email, text or voice mail that the product is ready for pick up. The customers' order is then placed into their vehicle without them having to get out, making this exchange extremely easy for shoppers. This drive-thru format is intended to bring additional consumers to the bricks and mortar retail as traffic to stores have been dropping (Globe and Mail, 2014).

As part of their network, Penguin Pick-Up is also planning to provide customers with the option to access deliveries via a parcel locker. These lockers are added locations that are accessible 24 hours per day and situated outside of SmartCentre locations. The main impetus for this pick-up point network is to cut costs for consumers, and to ameliorate issues around the last mile connectivity. Last mile connectivity has been cited as an underlying issue for both retailers and consumers (Market Wired, 2014). In January 2017, there were 52 Penguin Pick-Up locations in six provinces situated largely in metropolitan areas (Canadian Grocer, 2017). Along with the emergence of pick up points in Canada, there has also been pilot projects that are bringing forward fresh facility formats to accommodate the growth of e-commerce.

Canada Post through a pilot project designed and developed a postal facility that accommodates the needs of the digital age to make its service more helpful for Canadians shopping online. In 2015, Canada Post opened its first test store in Richmond Hill, a suburb of Toronto, that is coined to be a "parcel pick-up centre". The parcel pick-up centre is a potential model for how their post offices might look in the future. Within the facility is a built-in drive-thru that intends to serve as an outlet to pick up packages. This model is similar to the Penguin Pick-Up idea in that consumers do not have to get out of their vehicle to receive a package. It is a quick and easy solution to pick up parcels.

In addition to the drive-thru, the Canada Post facility has a series of self-serve kiosks that are open 24 hours per day, seven days per week that allow people to pick up or send their packages with ease (CBC News, 2015). This is an automated shipping centre where customers are able to return products that they purchased online and are not satisfied with (Canada Post Magazine, 2016). The reverse logistics of returning items has been identified as a major challenge to online shopping. The automated shipping centre is a solution for this issue that will continue to be experienced as e-commerce grows. The facility also has change rooms for online shoppers to try on the products that they have bought. This will prompt more shoppers to buy clothes online as they are able to return the product immediately. In addition, along with these new facility formats and pick-up point locations, quicker delivery times are on the agenda of companies that operate in e-commerce circles. This has been prompting new warehouse formats in urban areas.

In 2014, the e-commerce monster Amazon launched its Prime Now service. The platform allows customers to place orders and receive their product two hours after they press the buy button, with the option of choosing to have products delivered within an hour (TIME, 2015). The company previously offered two-day delivery, which is more in-line with the conventional delivery times that are offered by the majority of delivery services. However, to gain a market advantage and provide customers with convenience Amazon decided to be bold and offer nearly instantaneous delivery. To be able to offer a service that delivers parcels in this short time, Amazon could not rely on its conventional warehousing approach, so they began to implement their urban warehouse model. These urban warehouses are fulfillment centres solely dedicated to serving customers who need to receive parcels on ultra-fast timelines. One of the select

locations where Amazon first offered its two-hour delivery service as part of the Prime application was in Manhattan, New York.

One of the urban fulfillment centres that allowed Amazon to fulfill two-hour delivery requirements is in Midtown Manhattan, located on 7 West 34th Street across from the Empire State Building (CNET, 2015). The warehouse is located within a mixed-use building that has retail uses at grade and office atop, with the warehouse totaling a square footage of 50,000 square feet, situated on the fifth floor (CNET, 2015). This is small when compared to Amazons standard 1 million square foot warehouse (CNET, 2015). Amazon chose to position the warehouse in the middle of Manhattan as this is a central location that allows them to deliver packages to all of Manhattan and Brooklyn rapidly. Amazon personnel completing deliveries for the Prime service can walk, bike, bus, subway, and drive vans to deliver orders, making it a simple delivery strategy. The volume of the two-hour orders have been increasing dramatically since the service was first offered, indicating that consumers are demanding rapid deliveries. This will drive the expansion of this service.

Implications for Planning

Currently, Penguin Pick-Up has a total of 73 locations that online shoppers can use throughout the country, with this number planned to more than double over the next few years (Penguin Pick-Up, 2018). Given that SmartCentres is co-locating most of these facilities within their current power centres, these particular pick-up points do not pose any significant implications for land use planning moving forward. By design, these areas accommodate trucks for loading and unloading, and heavy traffic. However, many of the parcel locker and Penguin Pick-Up locations that SmartCentres has implemented are outside of power centres in the city of Toronto. These

parcel lockers are typically situated within Commercial Residential Zones. It is likely that as other

logistics companies enter this space, pick-up points will begin to emerge throughout the entire

city of Toronto in an uncoordinated fashion.

If the volume of pick-up points increase rapidly without any policy direction, this could

become problematic given that these areas typically do not permit space for loading and

unloading in the front of the building (40.10.90.10), where customers would pick-up their parcels.

Further, curb space is not currently available for delivery trucks to satisfy deliveries as many of

these locations accommodate on street parking for passenger vehicles. This presents implications

in terms of managing curbside operations. Curb space ought to be available for trucks making

deliveries to reduce traffic congestion and to provide safety to cyclists and pedestrians.

As for the urban warehousing strategy deployed by Amazon, there are several potential

land use implications in the context of the City of Toronto zoning by-law. Currently, there are no

mechanisms within Secondary Plans to preserve industrial uses within Regeneration Areas. The

space required to accommodate urban warehousing facilities and e-fulfillment centres are only

permitted in the Light Industrial, Employment Industrial and Employment Heavy Industrial zone

categories. If there are no mechanisms within Regeneration Areas to preserve these light

industrial uses, there may not be sufficient space to accommodate urban warehousing

demanded by the logistics market moving forward.

The urban warehouse that Amazon situated in Midtown Manhattan is in an office tower

that has retail at grade, therefore it is a mixed-use building. In Toronto, the zoning by-law does

not currently permit industrial uses to mix with other land uses as zoning is intended to separate

industrial operations from more sensitive land uses. This type of facility requires an industrial use

to mix with other uses. Given that many of the urban warehousing formats are utilizing robots, electronics and people to assemble and fulfill deliveries, the pollution and potentially harmful attributes of the traditional industrial tenants are not present. The City should consider allowing e-fulfillment centres and urban warehousing to mix with sensitive uses if they utilize technology to fulfill orders. This would allow retailers to accommodate the warehousing demands that e-commerce will create in Toronto's urban area.

Work Done to Date Around Urban Freight Logistics in Toronto

In November 2017, the Pembina Institute published an article which highlighted that Toronto is North Americas fourth most populous city. However, there is no plan or strategy for goods movement (Pembina Institute, 2017). Since 2014, the Pembina Institute has advocated that the City of Toronto "should develop an urban freight strategy to prioritize policies and programs that can reduce environmental impacts and improve the efficiency of deliveries in the city" (Pembina Institute, 2014, 8). Within this proposed strategy, Pembina recommended that the crucial policies to include would allow for "off-peak deliveries, better on-street parking for truck loading, and sharing traffic data to support freight ITS applications" (Pembina Institute, 2014, 8). Much of the work done around urban freight to date has been completed by or on behalf of Metrolinx.

In 2011, Metrolinx released their first GTHA Urban Freight Study. The study was compiled to provide an insight into the condition of freight infrastructure in the region, identify challenges that are impacting urban freight, and offer actions to enhance urban freight capacity and efficiency. In the report, under Strategic Direction 4, Enhancing Planning & Development, Action 10 advocates for developing freight supportive land use guidelines, and Action 13 cautions to plan and protect complimentary land uses near major freight hubs (Metrolinx, 2011). Both of these actions underline that the region must have an improved approach to integrating land use planning and freight transport so that development is connected to the correct networks (Metrolinx, 2011). Metrolinx has suggested there are land use conflicts between freight and residential activities largely because freight needs are often overlooked in the residential development process. This report mentions the need to align freight operations with land use policies, there is no mention of the impact that e-commerce will have on urban freight moving

forward. Their more recent publication assembled by David Kriger consulting on behalf of Metrolinx speaks to how the rapid growth of e-commerce will pose implications for urban goods movement.

The Urban Goods Movement Report highlights that the demands that e-commerce places on urban freight will surely present challenges for the movement of urban goods in the future (Metrolinx, 2016). The report suggests that there will be more single orders which will prompt a higher frequency of deliveries and that shopping trips of customers may be reduced (Metrolinx, 2016). In turn, more customers will be ordering products to pick up points (Metrolinx, 2016). The report noted that the future impact of e-commerce is unknown and that much of the conversation around the topic is speculative. Nonetheless, as a region, we should prepare for changes that are coming as the urban goods movement network in Toronto will be impacted. The question is around the intensity of this impact. Following this report, the City of Toronto put forward a proposal for a Freight and Goods Movement Strategy Framework.

In October 2017, a Report for Action to the Public Works and Infrastructure Committee was submitted from the General Manager of Transportation Services at the City of Toronto. The report summarizes factors that must be considered for a strong Freight and Goods Movement Strategy for Toronto. In the opening of the report it is stated that efficient goods movement is integral to the continued economic health and competitiveness of Toronto, and that the unparalleled growth is "evidenced on our streets by everyday traffic congestion and increased demands on curb space attributable to the rise of e-commerce and associated delivery systems" (City of Toronto Report for Action, 2017,1). The primary goal of the strategy is to "address the unique challenges with goods movement and loading on Toronto's street network" (City of

Toronto Report for Action, 2017,4). This report showcases that the City of Toronto has acknowledged that e-commerce is impacting urban mobility and that a strategy is necessary to address these challenges. A budget of approximately $700,000 has been submitted to be considered in the 2018-2027 Capital Budget and Plan for Transportation Services for the 2018 budget process (City of Toronto Report for Action, 2017). This strategy will build on the work being done by the Toronto Region Board of Trade and the work of the Pembina Institute, and will consider how land use can be better integrated with transportation moving forward.

Planning Recommendations to Prepare for E-Commerce Growth

The following recommendations are put forward so that public policy at the national, provincial and municipal levels proactively prepare for the changes that e-commerce growth will create. Online sales growth has already begun to alter the form and function of cities and this will continue to be the case moving forward in Canada. This is validated by the projections provided by KPMG, and the beliefs of the retail industry at large.

Policy recommendations are divided, as jurisdictional boundaries impact the scope of influence that each tier of government has. On a municipal level to accompany the policy recommendations are potential infrastructure investments that the City of Toronto ought to implement. These infrastructure investments will allow the city to prepare for and understand how the mobility of products is impacting city function. The goal of these recommendations is to create a policy environment that makes it simple for businesses to implement changes as e-commerce rapidly changes their industry. The focus is to ensure that Toronto continues to build on the economic competitiveness that defines the region. Changes that are resulting from technological disruption are occurring faster than policies tend to move, so cultivating an environment that will help rather than hinder e-commerce ought to be the goal.

Recommendations for the Canadian Government

Improving Data Collection to Inform Decision Making

1. **Statistics Canada ought to collect data for the Monthly Retail Trade Survey at finer levels of geography to pinpoint what cities e-commerce is impacting, and the intensity of this impact, to inform strategic directions to address this.**

   Currently, Statistics Canada only collects data on a monthly basis that demonstrates e-commerce sales as a share of total sales at the national level. Collection at the Census Metropolitan Area or Census Division level would provide an understanding of which cities and economic regions are being impacted by e-commerce. Collecting this data and overlaying it with data collected on net new retail space at the provincial level (see Recommendation 3) would demonstrate an understanding of how e-commerce growth is impacting the need for retail space in certain areas. All the inputs for this data would remain the same, but rather then data going into one pool (Canada-wide), it would be parsed out by Census Metropolitan Area. This will ultimately inform growth management strategies across the country.

2. **As part of the census program, Statistics Canada ought to implement a large-scale Commodity Flow Survey to map out product flow patterns by economic industry for metropolitan areas, with an emphasis on e-commerce.**

   To echo the recommendation put forward by the Toronto Region Board of Trade in their report released in February 2018, Statistics Canada should consider implementing a survey that is comparable to the Commodity Flow Survey in the United States (Toronto Region Board of Trade, 2018). This large-scale survey allows researchers to map the mobility flows of commodities by economic industry for metropolitan areas. The

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Commodity Flow Survey is possible through a partnership between the Census Bureau and Bureau of Transportation Statistics and is administered every five years (U.S Census Bureau, 2018). The survey collects data about the value, weight, and mode of transportation of shipped commodities. Commodities are separated by industry into manufacturing, mining, wholesale and selected retail and services. It is recommended that retail is a primary consideration in this survey. Retail should be parsed into e-commerce and physical store segments.

Recommendations for the Ontario Government

Collecting Data and Providing Modelling to Guide Municipal Retail Planning

3. **The Province of Ontario should require that municipalities submit data that quantify the amount of net new retail space being developed within and outside urban growth centres as part of the Growth Plans newly introduced Performance Reporting System. This will provide an understanding of if retail development is aligned with population and employment growth, and whether the amount of retail space is growing or declining in the Greater Golden Horseshoe.**

   Given that the current Growth Plan does not take into consideration retail development patterns of the past, it would be useful to collect metrics that measure the intensity of retail development or decline within and outside of urban centres. This would demonstrate how retail space is growing in relation to population and employment growth, and the pace of this growth. This data would inform a retail space per capita ratio that would help municipalities understand how much retail space is needed in a built environment that is increasingly affected by e-commerce. The province is already crafting a performance indicator reporting program to understand if municipalities are meeting their employment and population targets and the retail space data collection would be a valuable addition to this reporting. This will ultimately provide a mechanism to guide retail

development to have a more comprehensive approach to achieving the objective of

fostering complete communities.

4. **The Province of Ontario should, from conducting an analysis on the information gathered from retail space metrics in recommendation 3, develop a ratio that quantifies current retail space per capita for each urban growth centre to project an ideal retail space per capita ratio to 2041.**

Creating a current retail space per capita ratio for each of the urban centres listed in the

Growth Plan for the Greater Golden Horseshoe would allow the province to understand

how much retail space is necessary at present to accommodate the needs of the

population. Knowing this ratio would allow for a modelling exercise to be completed that

factors in the potential impact of e-commerce on bricks and mortar retail. This would

inform a retail space per capita ratio for the growth horizon. In turn, municipalities would

understand if they should build more retail space or retrofit existing space to

accommodate the needs of incoming population. This ratio is not suggested to be a target

but rather a guiding tool as the amount of retail space necessary to accommodate

population growth moving forward is unknown.

Recommendations for the City of Toronto

Adjusting Land Use Regulations to Accommodate E-commerce Growth

5. **Permit light industrial uses that are utilized to accommodate e-commerce to be mixed with other uses, such as office or retail to allow for the urban warehousing typology to be implemented into the urban form of Toronto.**

   As mentioned in the case studies, Amazons urban warehousing typology is integrated into buildings that have a mix of uses that are in the urban core to deliver products within a two-hour window. Prime real estate that allows for this to happen is often already built out as there is a high demand for this space. Therefore, it is imperative that land use permits urban light industrial uses that will accommodate e-fulfillment centres and urban warehousing in mixed use buildings. If these warehouses utilize electronics and robotics to conduct internal operations, then the negative health repercussions of conventional industrial land uses are less of a concern.

6. **Permit off-peak deliveries within the urban area to allow trucks to make deliveries during the night time to ameliorate traffic congestion and allow efficient goods movement within the urban core.**

   Throughout the city, several businesses rely on curbside delivery to accommodate their needs (Toronto Region Board of Trade, 2018). This causes complications and inefficiencies in terms of curbside management. To better plan for truck needs at the local level, the City of Toronto should allow for off peak deliveries as delivering goods during peak periods contributes to urban congestion, delayed delivery schedules and parking tickets for delivery trucks. By-laws at the city level should be supportive of receivers needs through providing the ability to utilize off peak deliveries. Currently, in many parts of the

city off peak deliveries are not permitted. In turn, this hinders the economic competitiveness of the region.

7. **Implement flexible land uses for retail space being developed in mixed use buildings, to permit short term leases to allow for pop-up retailing, and to permit e-fulfillment centres to operate in these spaces.**

    If retailers continue to close bricks and mortar stores as a result of underperformance, or if net new retail space being built is not absorbed, it would be advantageous to permit flexible uses to encourage a multitude of tenants to occupy these spaces. Permitting urban warehousing or e-fulfillment centres in these spaces would allow for these facilities to be built as the lack of industrial land supply in the urban core may not be sufficient to accommodate these needs.

8. **Create an Urban Freight Initiative or Strategy that is intended to address challenges experienced with "last mile delivery". This would include creating delivery windows for curb space management, devising a strategy for off peak deliveries and noise management, permitting larger sized trucks into the urban area during off peak hours to accommodate urban warehousing, among other actions that are deemed necessary by the Transportation Department at the City.**

    In September 2015, the New York City Department of Transportation released an Urban Freight Initiatives report that contains strategies to address challenges around last-mile delivery to support New York's economic competitiveness (New York Department of Transportation, 2015). As part of this, the city has implemented an off-peak deliveries program, created delivery windows on truck routes and aligned this with their select bus service routes. The truck route system has also been enhanced, among other actions. Overall, this has contributed to making curb space available for delivery trucks and has reduced congestion in the core, made streets safer, and has allowed the city to collect data to model freight travel patterns within the urban area. Toronto should look to the

strategy implemented in New York to inform the City-wide Freight and Goods Movement

Strategy that is being submitted for consideration as part of the 2018-2027 Capital

Budget.

Infrastructure Investment Recommendation for City of Toronto

9. **Integrate a Smart Logistics Network into the City of Toronto to model travel patterns and understand how the current network impacts efficiency of goods movement in the region. This would allow transportation planners to pinpoint problematic locations in the network. This would include installing a fibre optic network throughout the city to be able to collect this data and align traffic operations with freight travel patterns.**

Concluding Remarks

It is imperative that municipalities across the province understand the potential implications that e-commerce will create for planning to inform a proactive land use framework that can achieve growth management goals. Achieving complete communities and a thriving economy requires that all levels of government work together to provide the necessary data to understand the impact of e-commerce. The upper levels of government have the power to equip municipalities with the planning tools to accompany this data to ensure this impact is a positive one. E-commerce will affect the form and function of cities across the country, so the planning recommendations in this report will help several municipalities. It is expected that metropolitan areas with high population densities experiencing significant growth and traffic congestion will be hit the hardest. In Ontario, Toronto drives both population and employment growth and is already experiencing severe traffic congestion. It is therefore an ideal city to implement an innovative land use framework to set the example for municipalities across the Greater Golden Horseshoe and ensure that growth management goals are attainable. Moving forward, Toronto must execute an urban freight strategy that is underpinned by relaxed land use controls to prepare for e-commerce. Changes in cities tend to move quicker than policies do in a digital world, so it is important that planners are proactive and have the correct land use framework in place to prepare for these changes.

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