

Online Retail Shopping before and during the COVID-19 Pandemic across Age cohorts: Insights from Sweden

John Magnus Roos, Lena Hansson and Johan Hagberg

Abstract

This paper compares online retail shopping in Sweden before and after the COVID-19 outbreak and how it evolved for clothes and groceries during the first year of the COVID-19 pandemic in different age cohorts. Based on a series of surveys conducted before and during the first year of the pandemic, the findings show increased frequencies of online shopping in all age cohorts for both clothes and groceries. Although the pandemic triggered consumption displacement from shopping in physical stores to shopping online, crowding out between consumer groups in online grocery shopping during the initial year of the pandemic indicates that the trend may have been slowed by limited capacity among retailers.

Keywords:

COVID-19, Online shopping, e-shopping, retailing, Age cohorts.

John Magnus Roos, Ph.D., is a Senior Lecturer and Researcher in Marketing and Psychology at the School of Business, Economics, and Law of the University of Gothenburg, Sweden, at the Department of Social Psychology of the University of Skövde, Sweden, and at the Department of Business Administration and Textile Management of the University of Borås, Sweden.

Lena Hansson, Ph.D., is a Senior Lecturer in Marketing at the Centre for Retailing at the School of Business, Economics, and Law of the University of Gothenburg, Sweden.

Johan Hagberg is a Professor of Marketing at the Centre for Retailing at the School of Business, Economics, and Law of the University of Gothenburg, Sweden.

1. Introduction

In prompting significant parts of societies worldwide to shut down, the spread of COVID-19 accelerated the transition of retail shopping from physical to online stores (Kantar, 2020; OECD, 2020). Although that development was visible at the global level, national and local differences arose as well, typically depending on the pandemic's intensity, the type of restrictions enforced by authorities, and the specific features of the retail industry from place to place. Added to that, the pandemic has had different implications for different retail categories as well as for different consumer groups.

In stark contrast to most other European countries, Sweden did not experience a general lockdown during the COVID-19 pandemic (Bergman et al., 2020; Hale et al., 2020). Nevertheless, measures were implemented by the Public Health Agency of Sweden and the government, along with general public recommendations for diminishing the spread of the virus in society (Public Health Agency of Sweden, 2021a). Some of those recommendations—to stay at home when sick and/or experiencing symptoms, to work from home when possible, to teach and learn at a distance, and, more broadly, to socially distance and avoid crowded places—noticeably affected consumers' shopping behavior. Although physical stores in Sweden generally remained open throughout the pandemic, and although retailers took various measures to limit the spread of infection, many of them experienced drops in visitors at stores and in sales. However, these effects varied from one retail sector to the next. For example, clothing stores experienced significant declines throughout 2020, while grocery stores experienced significant increases (The Swedish Food Retailers Federation, 2021a; Swedish Trade Federation, 2021). In both of those retail categories, a shift from shopping in physical stores to shopping online was also observed. Indeed, throughout 2020, the overall market share of online retail grew significantly (PostNord, 2021).

The adoption of online retail shopping has differed not only between nations and between retail categories before and during the COVID-19 pandemic but also between various consumer groups in recent years. Considering those trends, researchers have examined how consumers who vary according to a range of demographic variables have adopted online shopping in different ways and to different degrees (e.g., Morganosky & Cude, 2000; Trocchia & Janda, 2000; McCloskey, 2006; Reisenwitz et al., 2007; Lian & Yen, 2014). Over time, whereas large differences were initially identified, online retail shopping has since spread more evenly among different consumer groups, even if some important differences remain. Before the COVID-19 pandemic, shopping online in Sweden was a relatively frequent activity among younger consumers (Hagberg, 2019), and although older consumers shopped online less frequently, a large share of them regularly used the Internet for various other activities (The Swedish Internet Foundation, 2019). However, evidence gathered since the COVID-19 outbreak suggests that older consumers increasingly started to shop online, not least in the face of certain restrictions that affected their age group in particular. Thus, COVID-19 can be regarded as an external event that served to “trigger,” so to speak (Hand et al., 2009; Elms et al., 2016; Van Droogenbroeck & Van Hove, 2020), the phenomenon of consumption displacement (Hall et al., 2020) in the frequency of online shopping in certain retail categories and among consumers in different age cohorts.

In our research, we aimed to compare online shopping in Sweden before and after the COVID-19 outbreak and to examine its evolution over the course of 2020, the first year of the pandemic. In two studies, we analyzed how the frequency of online shopping, both in general and in the retail categories of groceries and clothes, shifted among consumers grouped according to age. In Study 1, we conducted three surveys to compare online shopping in differ-

ent retail categories among consumers in different age cohorts before and after the COVID-19 outbreak. In Study 2, we conducted a series of nine surveys at different time points throughout the COVID-19 pandemic. On the whole, the findings indicate changes in shopping frequencies between age cohorts before and after the outbreak as well as throughout the pandemic. Although the COVID-19 pandemic thus indeed seems to have triggered behavior change and consumption displacement, the findings also indicate a crowding-out effect in online grocery shopping, which increased among older consumers while decreasing among younger ones, possibly due to a lack of capacity and availability.

The paper is structured as follows. In Section 2, we review the literature addressing online shopping, with a particular focus on its frequency among consumers, the age of those consumers, behaviors and habits in online shopping, and the phenomenon of consumption displacement. In Section 3, we describe and justify the methods and materials used in the two studies, after which we present and discuss the findings of each in Section 4. In conclusion, we discuss our research's limitations and provide suggestions for future studies in Section 5.

2. Literature review

In the past three decades, online shopping has gradually increased both in absolute terms and in its share of total retail sales. In that time, it has also shifted from attracting a limited range of consumer groups seeking items in certain retail categories to becoming viable for the majority of consumers seeking products in the full spectrum of retail offerings (Laudon & Traver, 2021). Early on in that period, researchers identified differences between age cohorts concerning how many in their ranks shopped online and at what frequency, and in the years that followed, research on online shopping began to take age into consideration (e.g., Morganosky & Cude, 2000; Trocchia & Janda, 2000; McCloskey, 2006; Reisenwitz et al., 2007). However, as online shopping has since expanded, age-based differences in the behavior have partly leveled, with a roughly even spread among consumers across stages of life. Although some differences persist between age cohorts in their share of online shoppers and frequency of shopping online (e.g., Lian & Yen, 2014; Roos & Kazemi, 2022), research has indicated that prior experience with online shopping now matters more than age in explaining online shopping behaviors (Hernández et al., 2011). Thus, to quote Hernández et al. (2011, p. 127), “Once individuals attain the status of experienced e-shoppers, their behavior is similar, independently of their age.”

Research has also indicated that younger consumers have not only higher motivation to shop online but also lower barriers than older consumers, for whom the chief barriers relate to value, risk, and tradition (Lian & Yen, 2014). Although a variety of those drivers and barriers have been shown to relate to products, product assortments, relationships with others, and overall shopping experience (e.g., Helm et al., 2020), the extent to which they occur and with what outcomes for channel preference may be affected by different *triggers*—that is, events that change circumstances for individuals regarding their behaviors such as online shopping (Cialdini, 2001). For example, because such barriers and drivers are likely to have shifted in favor of online shopping during the COVID-19 pandemic, the pandemic may have acted as a trigger for certain consumption behaviors, including online shopping.

In our case, *triggers* refer to any situational factors that may incite the use of online shopping (Hand et al., 2009; Elms et al., 2016). According to Hand et al. (2009), situational factors are important triggers particularly for starting to shop for groceries online and for stopping the behavior (cf. Elms et al., 2016). In their research, examples of situational factors included moving to a new house, changing jobs or work situations, emerging health conditions, becom-

ing a parent, and even shifting life when older children have moved out. Albeit profoundly different experiences, those triggers commonly share particular associations with certain stages of life. In the case of online shopping, triggers have also been considered in terms of factors associated with particular retail channels. Such factors have been found to not only be different but also sometimes be similar across different channels, including traditional shopping (i.e., factors of personalization, stock, convenience), desktop only (i.e., price, stock, and convenience), mobile only (i.e., convenience and price), or buying online for pickup in a physical store (i.e., price, stock, convenience) (Marmol & Fernandez, 2019). Taken together, triggers have thus far been examined from the perspective of life stage (e.g., Hand et al., 2009; Elms et al., 2016) and according to particular factors related to retail channels, including price (e.g., Marmol & Fernandez, 2019).

However, the COVID-19 pandemic, as an external event in which both the life stage and characteristics of retail channels displace patterns of consumption, may constitute another form of trigger. In our studies, we drew from the work of Hall et al. (2020), who have defined *consumption displacement* as “the shift in consumption that occurs when consumers experience a change in the availability of goods, services and amenities to which they are accustomed as the result of an external event” (p. 3). With reference to research before their own, those authors have provided several examples of such external events that influence consumption behaviors, including earthquakes (Ballantine et al., 2014), hurricanes (Larson & Shin, 2018), and, of course, pandemics such as COVID-19 (Pantano et al., 2020). Such displacement may result from changes in the availability of supply and/or demand and may affect where, when, what, why, and how consumption occurs (Hall et al., 2020)—for example, due to restrictions in mobility and physical access to facilities or the availability of goods due to hoarding by other consumers (Roos et al., 2020). In our studies, we investigated a particular form of displacement – “crowding out.” Although also a term in economics, we use *crowding out* to mean potential shifts between consumer groups in the use of online shopping that may derive from the limited capacity of the retail channel as other consumer groups adopt and increasingly use it. Crowding out relates to the unavailability of “slots,” so to speak, for picking, packing, and transporting goods. In that sense, it is the online equivalent of crowds in physical stores.

However, the durability of consumption displacement—that is, the extent to which the triggered displacements become permanent practices (cf. Elms et al., 2016)—is another factor at play. On the one hand, it has been argued that once triggers cease to exist, consumers can be expected to return to their previous habits (e.g., Hand et al., 2009). On the other, as argued by Hernández et al. (2011), prior experience matters more than socioeconomic variables in the behavior of shopping online, meaning that the adoption of online shopping is often a better predictor of future online shopping than socioeconomic variables. Therefore, investigating the extent to which the COVID-19 pandemic, as a trigger, is likely to make consumption displacements permanent has particular value for the debate about durability. However, the durability in the present study is limited to the first year of COVID-19.

Thus, the research questions were:

- i. How did the frequency of online retail shopping change in general and for clothes and groceries in particular during the first period after the outbreak of COVID-19 (i.e. until the end of June 2020) with regard to the age of consumers?
- ii. How did online shopping in general and for clothes and groceries in particular change among different age cohorts across different phases during the first year (i.e. April – December 2020) of the COVID-19 pandemic?

To the best of our knowledge, no previous study has investigated online shopping in relation to age cohorts during the pandemic, which is interesting since old age was pointed out as a risk factor early on and people above 70 years of age were therefore recommended to stay at home, which included not visiting physical stores.

3. Materials and methods

This paper draws from two studies, both conducted with a series of surveys containing items about online shopping in general and for clothes and groceries in particular. Addressing the first research question, Study 1 drew from two surveys conducted before the COVID-19 outbreak (i.e., in 2018 and 2019) and a survey conducted during the COVID-19 pandemic (i.e., in 2020). Meanwhile, addressing the second research question, Study 2 consisted of nine surveys also conducted during the COVID-19 pandemic, specifically from April to December 2020. In both studies, we formed four age cohorts of respondents: 18–29-year-olds, 30–49-year-olds, 50–64-year-olds, and 65–85-year-olds.

Two retail categories: Clothes and groceries

As in most parts of the world, online retailing in Sweden has grown steadily in the past three decades, in terms of the number of consumers shopping online, frequencies of online shopping per consumer, and the amount of money spent on online shopping (Roos, 2019). The big breakthrough, however, took place in 2020 when many consumers replaced physical stores with online shopping (PostNord, 2021). In total, online shopping in Sweden increased by 40% in 2020, while total consumption declined by 4.7% (SCB, 2021).

As elsewhere, major differences in online retail exist among retail categories in Sweden, with clothing and groceries as representative cases of the divergence. Clothing, for example, has ranked among the categories with the greatest share of online sales, with a 20% of all clothes sales in 2019 (PostNord, 2020a; 2021). The category of groceries, by contrast, had one of the smallest shares of online retail sales in 2019 – only 2% (PostNord, 2021; The Swedish Food Retailers Federation, 2021a). The two categories also differ in terms of product characteristics and logistics. Whereas clothes have long been a traditional mail-order category, one of the products with logistically favorable characteristics and that most people purchase infrequently, groceries are often more complex to handle logistically due to temperate zones, as well as picking and packing, but also purchased more frequently. Last, during the first year of the COVID-19 pandemic, the two retail categories have dovetailed even further in terms of sales. For clothing, industry statistics show an overall decline of 19.5% in retail sales from 2019 to 2020 (Swedish Trade Federation, 2021). Despite the overall decline in clothes, online sales of clothes increased by 16% in 2020, representing 30% of all clothes sales in 2020 (PostNord, 2021). Industry statistics for grocery indicate 7.6% growth from 2019 to 2020, with in-store sales climbing by 5.2% and online sales skyrocketing by 94.5% (The Swedish Food Retailers Federation, 2021a; PostNord, 2021). Despite the fast growth of online sales of groceries in 2020, the share was still only 4% of all grocery sales in 2020.

Sample and procedure

Study 1

Study 1 consisted of three surveys conducted as part of the Swedish national SOM surveys: two conducted in 2018 and 2019 before the COVID-19 pandemic and a similar one conducted in 2020 during the pandemic (see Falk, 2020; Sandelin, 2020; Weissenbilder, 2019 for methodological details on the SOM surveys). The surveys conducted in 2018 and 2019 were used as a baseline for comparison with the 2020 survey. For the latter survey, a questionnaire was mailed to 5,827 Swedish citizens, all 18 to 85 years old, randomly selected to represent the Swedish population in terms of age, gender, and residential area. During data collection, from April 14 to June 28, 2020, they were all invited to answer the questionnaire by mail or online; 33.4% of the respondents completed the survey online. Of the 2,501 total respondents (response rate: 42.3%), 1,351 were women, and 1,150 were men, all with an average age of 54 years. By age group, 274 were 18–29 years old, 724 were 30–49 years old, 665 were 50–64 years old, and 838 were 65–85 years old.

Similar procedures were followed in collecting data during the 2020 survey and the baseline surveys, which contained identical questionnaire items regarding online shopping. During the national SOM survey in 2019, used as a baseline for general online shopping ($N = 7,875$), data were collected from September 9 to December 15, 2019. Ultimately, 16.6% of the respondents answered the 2019 survey online (Falk, 2020). By comparison, during the national SOM survey in 2018, used not only as a baseline for general online shopping ($N = 8,488$) but also for online grocery shopping ($N = 1,715$) and online clothes shopping ($N = 1,720$), data were collected from September 17, 2018, to January 21, 2019. A similar share of respondents (16.5%) answered the 2018 survey online as well (Weissenbilder, 2019).

Study 2

A group of 1,874 members of a Qualtrics web panel, selected to represent the Swedish population regarding age, gender, and residential area, were invited to complete one of nine surveys conducted from April 24 to December 6, 2020. The respondents were equally distributed across the time points measured by the nine surveys. A reliability check was performed to identify unserious respondents, and 63 respondents were ultimately excluded due to unreasonably fast responses or unreliable responses (i.e., had not used the Internet in the past month). Of the 1,811 respondents included in the analyses, 899 were women, and 912 were men, all with a mean age of 48 years. By age group, 310 participants were aged 18–29 years, 595 aged 30–49 years, 464 aged 50–64 years, and 442 aged 65–85 years.

Measures and analyses

Study 1

Online shopping was measured as general online shopping and category-specific online shopping. On the one hand, general online shopping was measured with the question “How often during the past 12 months have you bought or ordered goods or services online?” to which respondents replied by indicating their frequency of shopping on a 7-point Likert scale varying from 1 (*never*) to 7 (*daily*). On the other, category-specific online shopping was measured in the categories of clothing and groceries but with the same scale used for general online shopping. The question for online clothes shopping was “How often during the past 12 months have you bought or ordered clothes online?” ($N = 2,336$), whereas the question for online grocery shopping was “How often during the past 12 months have you bought or ordered groceries or meal kit delivery online?” ($N = 2,333$). The respondents were divided into two groups: people who

shopped online at least once a month and people who shopped less frequently. Regarding the use of ordinal scales for online shopping behaviors, we conducted chi-square tests to compare changes in online shopping before and during the COVID-19 pandemic.

Study 2

Online shopping was measured as general online shopping and category-specific online shopping. On the one hand, general online shopping was measured with “How often during the past month (i.e., 30 days) have you bought or ordered goods or services online?” to which respondents replied by indicating their frequency of shopping on a 5-point Likert scale, ranging from 1 (*never*) to 5 (*daily*). On the other hand, category-specific online shopping was measured for clothes and groceries but with the same scale used for general online shopping. Whereas the question for online clothes shopping was “How often during the past month (i.e., 30 days) have you bought or ordered clothes online?” ($N = 1,811$), the question for online grocery shopping was “How often during the past month (i.e., 30 days) have you bought or ordered groceries or meal kit delivery online?” ($N = 1,811$). As in Study 1, the respondents were divided into two groups: people who shopped online at least once a month and people who shopped less frequently. Trend analysis was based on descriptive statistics.

The fieldwork in relation to the COVID-19 pandemic in Sweden

Like most countries, Sweden has been significantly affected by the COVID-19 pandemic. Following the first case of COVID-19 in Sweden, confirmed on January 31, 2020, and the World Health Organization’s declaration of COVID-19 as a pandemic on March 11, a rising number of infections were identified. Unlike many other countries in Europe, however, Sweden did not impose a general lockdown at the time and, as a result, received ongoing international media coverage for its unusual approach. Although Swedish society generally remained free from such lockdowns during the pandemic, several recommendations and restrictions were implemented and changed since March 11, including general advice to stay at home when sick, to avoid unnecessary travel, and to observe restrictions in the number of people gathered in the same place (Ludvigsson, 2020).

During spring 2020, Sweden’s highly limited capacity to test for COVID-19 infections implied certain priorities for whom could be tested. As a consequence, the number of infections remained highly uncertain, which has since complicated comparing the rate of infections throughout the pandemic, particularly once testing capacity rose in the fall of 2020. Although the Public Health Agency of Sweden has regularly published statistics on the incidence of identified COVID-19 infections, the Agency considers the measurement to be less reliable regarding the pandemic’s development than statistics on new intensive care unit (ICU) cases. Thus, in Figure 1, we present data about ICU cases in terms of when the surveys were conducted in order to quantitatively describe the pandemic’s status in Sweden at each time point (e.g., “1:1” refers to Study 1, first survey).

As shown in Figure 1, the number of ICU cases in Sweden began to spike in March 2020, the same month when several new recommendations and restrictions began to be enforced. The number of cases peaked in April, followed by a gradual decline in May and a more rapid decrease in June. During the summer, the pandemic’s situation in Sweden seemed to have stabilized, and the number of ICU cases remained relatively low until late October. In October 2020, however, the number of cases began to rise again, and when cases continued rising even more rapidly in November, a series of new recommendations and restrictions entered into force.

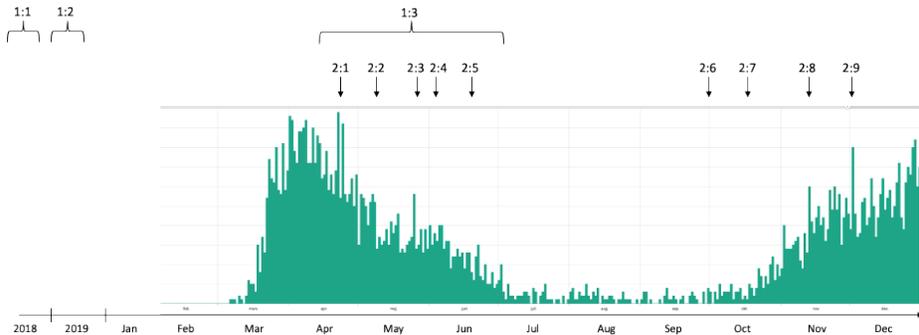


Figure 1. Intensive care unit (ICU) cases of COVID-19 in Sweden (Source: Public Health Agency of Sweden, 2021c) at different time points in Study 1 (i.e., three surveys) and Study 2 (i.e., nine surveys).

Throughout the pandemic in Sweden, recommendations and restrictions somewhat differed for various age cohorts. Because age was identified to be a prominent risk factor for COVID-19 following its outbreak, as reflected in the number of deaths among older adults, especially in elderly care units, the Public Health Agency of Sweden and the Swedish government initiated a specific recommendation on March 16, 2020, for people more than 70 years old to limit their social contact. Regarded as a risk group, people more than 70 years old were also urged to avoid crowds on public transportation, in stores, and in public spaces. On March 17, the government instructed Sweden’s colleges, universities, and high schools to commence distance learning, and beginning on April 1, working from home was recommended, whenever possible, for the working population in general. After the summer break, high schools, colleges, and universities were reopened as long as social distancing could be ensured. During the fall, although the same general guidelines remained in place, the particular recommendation for people more than 70 years old was discontinued on October 22, shortly before what has been dubbed “a second wave” started in Sweden. Thus, throughout the pandemic, Sweden’s recommendations and restrictions varied from age group to age group, which merits consideration in analyzing the frequency of online shopping.

4. Findings

This section presents the findings of the studies in two sections, each focused on one of the two research questions. First, we report findings regarding how online shopping changed during the COVID-19 pandemic in general and in the retail categories of groceries and clothing from age group to age group. Second, we report findings concerning the development of online shopping during the pandemic in different age cohorts. All of the findings are contextualized and discussed in relation to the general and specific restrictions implemented in Sweden and the spread of COVID-19 there.

How has the frequency of online retail shopping in general and for clothes and groceries in particular changed since the COVID-19 outbreak with regard to the age of consumers?

The proportion of the Swedish population that reported shopping online at least once a month was significantly higher ($p < .001$) in 2020 during the COVID-19 pandemic than in 2018 and 2019. A chi-square test for independence indicated a significant association between general online shopping in 2019 and during the pandemic, $\chi^2(1, n = 10,187) = 20.44, p < .001, \phi = .045$, and between 2018 and COVID-19, $\chi^2(1, n = 10,800) = 27.89, p < .001, \phi = .051$, but not

between 2018 and 2019, $\chi^2(1, n = 16,363) = 1.15, p = .283, \phi = .009$. Thus, the comparative analysis suggests that shifts in online shopping were due to the COVID-19 pandemic, not pre-existing trends.

In all age cohorts except the youngest (i.e., 18–29-year-olds), the frequency of online shopping has risen during the pandemic (Figure 2).

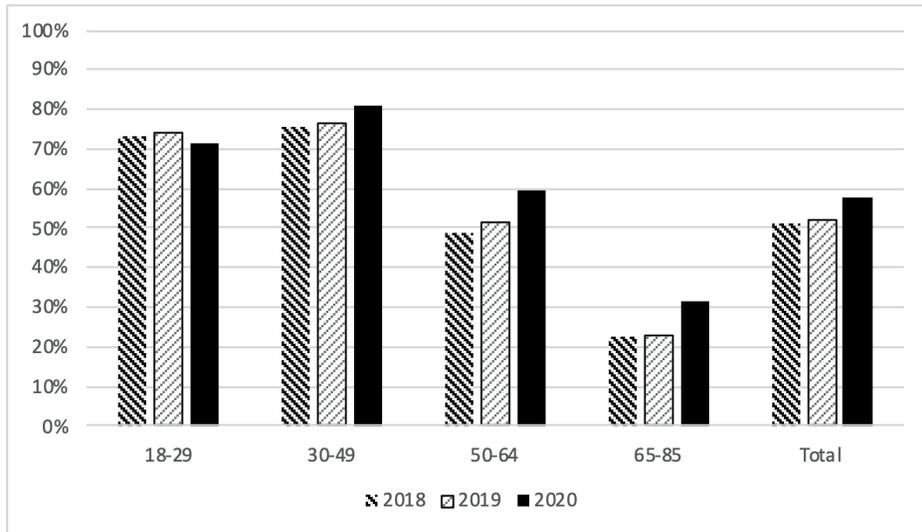


Figure 2. The share of people in different age cohorts who has shopped online at least once a month in 2018, 2019, and 2020.

A chi-square test for independence indicated a significant association between general online shopping in 2019 and during the pandemic for the 30–49-year-olds, $\chi^2(1, n = 437) = .020, p = .888, \phi = .015$; for the 50–64-year-olds, $\chi^2(1, n = 2,696) = 11.341, p = .001, \phi = .066$; and for the 65–85-year-olds, $\chi^2(1, n = 336) = 23.841, p < .001, \phi = .085$. Although 18–29-year-olds showed a decrease in online shopping during the pandemic (Figure 2), it remains statistically unclear whether they shopped online less frequently than before the pandemic because the chi-square test for independence indicated no significant association between general online shopping in 2019 and during the pandemic, $\chi^2(1, n = 1,237) = .453, p = .501, \phi = -.021$. Thus, general online shopping has increased during the pandemic, with a significant effect ($p < .05$) that increases with age, and has risen the most in the oldest age group.

The increase in general online shopping can be explained by public fear of COVID-19 infection, along with the general recommendations and restrictions enforced in Sweden since COVID-19’s outbreak in order to limit the spread of infection when it intensified in mid-March 2020 (see Figure 1). However, during the first wave of COVID-19, younger individuals were not considered to be at risk of serious illness if infected, contrary to older ones, because age stood out as a risk factor early on (Public Health Agency of Sweden, 2021b). That difference is reflected in the result that the youngest consumers (i.e., 18–29-year-olds) did not increase their frequency of general online shopping whatsoever whereas the oldest ones (i.e., 65–85-year-olds) increased their frequency the most.

Concerning online clothes shopping in particular, the COVID-19 pandemic had a significant effect ($p < .05$) in all age cohorts and overall (Figure 3).

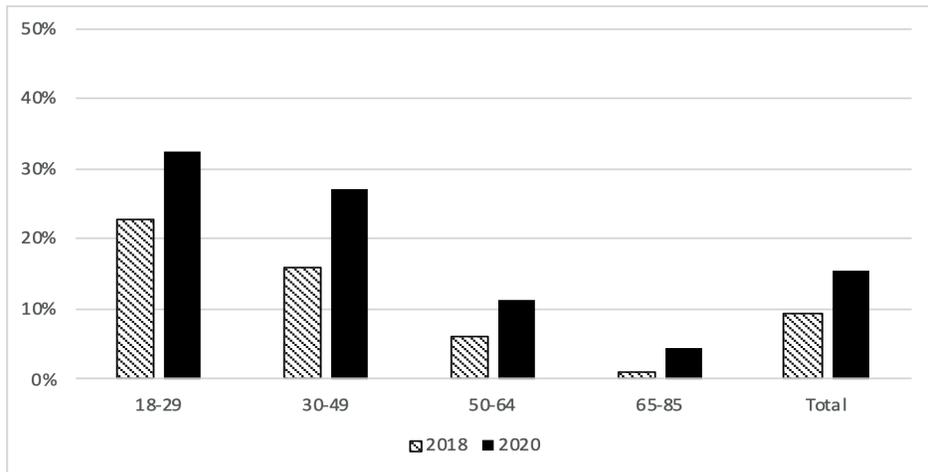


Figure 3. The share of people in different age cohorts who have shopped for clothes online at least once a month in 2018 and 2020.

A chi-square test for independence representing all respondents indicated a significant association between online clothes shopping before and after the COVID-19 outbreak among all age cohorts, $\chi^2 (1, n = 4,056) = 34.87, p < .001, \phi = .093$; among the 18–29-year-olds, $\chi^2 (1, n = 438) = 4.41, p = .036, \phi = .105$; among the 30–49-year-olds, $\chi^2 (1, n = 1,160) = 20.03, p < .001, \phi = .133$; among the 50–64-year-olds, $\chi^2 (1, n = 1,083) = 7.88, p = .003, \phi = .089$; and among the 65–85-year-olds, $\chi^2 (1, n = 1,375) = 12.23, p < .001, \phi = .099$. The changes in the frequency of online clothes shopping during the pandemic seem to have been slightly greater among the two youngest age cohorts than the two oldest ones.

Thus, for online clothes shopping, the trend was the opposite of what occurred for online shopping in general. The greater frequency of online clothes shopping among the youngest age group before and after the outbreak of COVID-19 aligns with past findings indicating that young consumers are more interested in fashion and buy clothes more frequently than old ones (Holmberg et al., 2009). Even so, consumers more than 50 years old have also significantly increased how often they shop for clothes online. Thus, clothes were purchased more frequently online in Sweden due to the ongoing pandemic as consumers in all age cohorts seem to have complied with the mentioned recommendations and restrictions.

A chi-square test for independence representing all respondents indicated a significant association between online grocery shopping before and after the COVID-19 outbreak among all age cohorts, $\chi^2 (1, n = 4,048) = 30.90, p < .001, \phi = .088$. By comparison, concerning online grocery shopping in particular (Figure 4), the effects ($p < .05$) of COVID-19 varied more between the age cohorts than for both clothes and general online shopping.

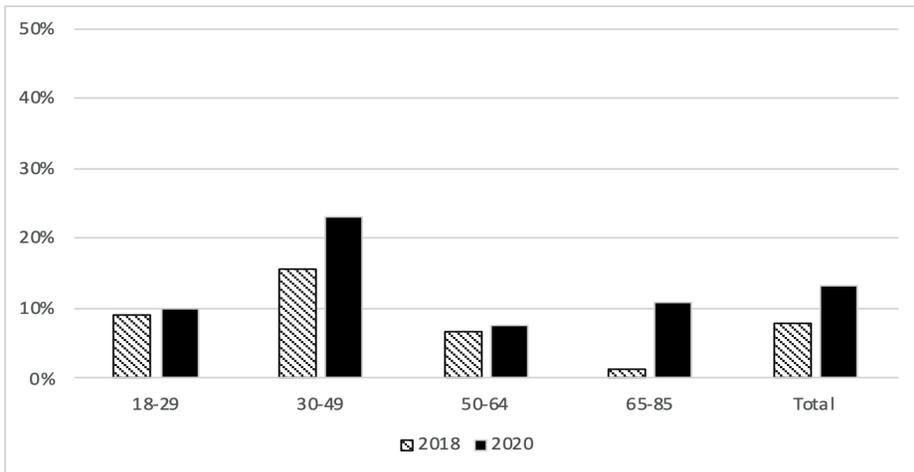


Figure 4. The share of people in different age cohorts who have shopped for groceries online at least once a month in 2018 and 2020.

A chi-square test for independence showed no significant association between online grocery shopping before and after COVID-19’s outbreak among the 18–29-year-olds, $\chi^2 (1, n = 437) = .020, p = .888, \phi = .015$; and among the 50–64-year-olds, $\chi^2 (1, n = 1,082) = 0.300, p = .584, \phi = .020$. However, the test indicated a significant association between online grocery shopping before and after the outbreak among the 30–49-year-olds, $\chi^2 (1, n = 1,160) = 9.744, p = .002, \phi = .094$; and among the 65–85-year-olds, $\chi^2 (1, n = 1369) = 47.05, p < .001, \phi = .188$. Thus, the 18–29-year-olds and 50–64-year-olds do not seem to have significantly increased their frequency of online grocery shopping after the outbreak, unlike both the 30–49-year-olds and 65–85-year-olds. Moreover, the frequency differed the most between those two latter age cohorts before the pandemic, when consumers aged 30–49 years old purchased groceries online more often than the other groups, whereas 65–85-year-olds did so the least. After the outbreak of COVID-19, however, 65–85-year-olds became the age group with the second-highest frequency of shopping online for groceries (Figure 4).

The COVID-19 pandemic thus seems to have altered not only grocery shopping but also general online shopping for 65–85-year-olds more than any other age group. Those trends may relate to the introduction of specific recommendations in mid-March for people more than 70 years old to stay at home, avoid unnecessary contact with others, and keep away from potentially crowded places, including physical retail stores. Those recommendations may also explain why consumers 65–85 years old increased their frequency of online clothes shopping, even if they had less interest in fashion and purchase clothes less frequently than younger consumers.

Younger age cohorts were more likely to shop online during the pandemic because they already shopped online more frequently before COVID-19’s outbreak and thus generally had more prior experience with the behavior (Helm et al., 2020). Older consumers, by contrast, typically avoided online shopping before the pandemic due to barriers such as low value, high financial risk, and a strong tradition of making purchases in person (Lian & Yen, 2014). However, that tendency partly shifted with the outbreak of COVID-19. Hence, these barriers may at least partly explain why the increase was not even higher among the oldest respondents, given that age was identified early on as a risk factor for serious illness from COVID-19 infection and that

consumers 70 years old and older were encouraged to comply with special restrictions (Public Health Agency of Sweden, 2021b). Shopping for groceries in physical stores is an established habit particularly among older consumers, which explains why 50–64-year-olds largely continued visiting grocery stores instead of shopping online and were not as restricted by COVID-19 recommendations as consumers 65 years old and older. At the same time, 30–49-year-olds, who have generally purchased groceries online more frequently than other age cohorts, further increased their share during the COVID-19 pandemic, likely because they belong to the working share of the population, which has generally been advised to work from home, and their children have had to stay home and be taught at a distance. Nevertheless, because Sweden did not impose lockdowns during the pandemic, consumers were not forced to shop online, and thus consumers of all ages were able to visit physical stores.

In all, the outbreak of COVID-19 can be considered to have worked as a trigger (Hand et al., 2009; Elms et al., 2016) for consumers in different age cohorts to change their shopping behavior, namely to adopt online shopping in an ongoing situation marked by the general spread of COVID-19 and in which complying with new restrictions and recommendations was encouraged. Nevertheless, the question remains as to whether the changes were temporary or have persisted across the different phases of the pandemic, as examined next.

How has online shopping in general and for clothes and groceries in particular changed among different age cohorts across the phases of the COVID-19 pandemic?

As shown in Figure 5, and similar to the findings of Study 1, the share of 65–85-year-olds who have shopped online during the COVID-19 pandemic was less than that in all other age cohorts. However, over the course of the first year of the pandemic, that difference evened out, and at the final time point, Time Point 9 (i.e., early December), the share of 65–85-year-olds who had made at least one online purchase in the previous month was similar to that in all other age cohorts. Such uniformity indicates that the COVID-19 pandemic triggered consumption displacements within the oldest age group in particular.

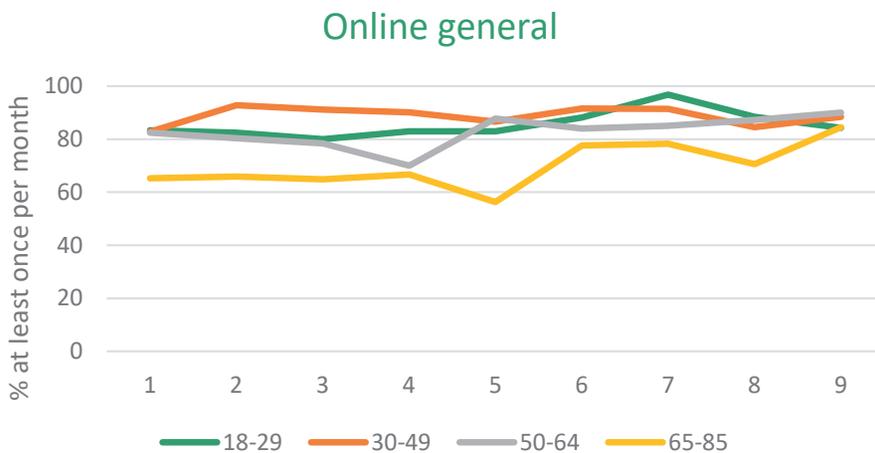


Figure 5. The share of people in different age cohorts who have shopped online in the last month across the nine time points during the pandemic (cf. time points in Figure 1).

Since the outbreak, the share of that age group that engaged in online shopping remained stable until Time Point 4 (i.e., early June), when a decrease occurred, followed by a steep rise

between Time Point 5 (i.e., mid-June) and Time Point 6 (i.e., late September to early October). Because the special recommendation for people more than 70 years old had been enforced since mid-March, they had likely complied with the recommendation and begun to make purchases online before Time Point 1 (i.e., late April). Although they seem to have resumed their habit of visiting physical stores by May, they increased their frequency of online shopping after the summer above and beyond what it was in May.

However, the share of people who had shopped online during the pandemic also fluctuated, which suggests that when the pandemic's status shifted, so did online shopping behavior. Within all age cohorts but the oldest, the share of people who shopped online was already relatively high at the outset of the pandemic and thus did not change to the same extent as among the oldest respondents. Among 50–64-year-olds, the share decreased from Time Point 1 (i.e., late April), and since Time Point 3 (i.e., late May), it showed a reverse trend relative to the oldest age group, such that when 65–85-year-olds increased their frequency of online purchases, the slightly younger group decreased theirs, and vice versa. The youngest group showed less fluctuation across the time points despite a higher rate increase from Time Point 5 (i.e., mid-June) to Time Point 7 (i.e., mid-October), after which its share diminished relative to that of all other age cohorts, which increased their respective shares of online purchasing between Time Point 7 and Time Point 9 (i.e., late November to early December) when the second wave of COVID-19 struck Sweden. That trend is somewhat remarkable, for the spread of COVID-19 was particularly high in the youngest group during that wave; nevertheless, arguably because they were not viewed as being at risk throughout the pandemic, they were less compliant in following the general recommendations and restrictions. The 30–49-year-olds, by comparison, who had the greatest share of online purchases in general, was the only age group that increased its share between Time Point 1 (i.e., late April) and Time Point 2 (i.e., early May), followed by a decrease until Time Point 5 (i.e., mid-June). From Time Point 6 (i.e., late September to early October) to Time Point 9 (i.e., late November to early December), that age group mirrored the trends of the oldest age group but with less fluctuation. The initial increase may be explained by the fact that beginning in April 2020, working remotely was recommended.

As the trend lines in Figure 6 illustrate, all age cohorts exhibited increasing shares of online clothing purchases during the first year of the COVID-19 pandemic. At the same time, such purchases fluctuated across the nine time points both within and between the different groups. However, whereas online shopping frequencies evened out between the groups for online shopping in general (Figure 5), age-based differences persisted for the shopping of clothes. Thus, online clothes shopping continued at a high level but with major differences between age cohorts.

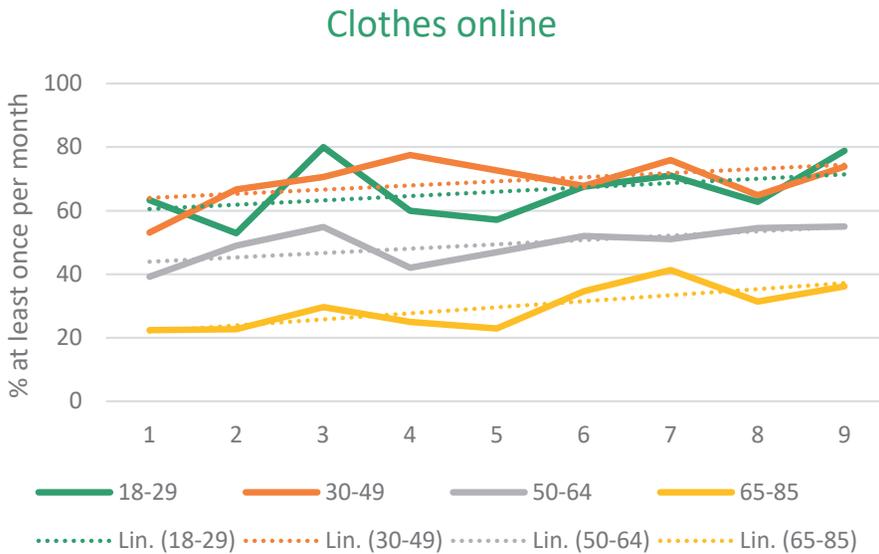


Figure 6. The share of people in different age cohorts who have shopped for clothes online in the last month across the nine time points during the pandemic (cf. time points in Figure 1).

Whereas the youngest and oldest age cohorts followed the same waves of rises and falls in the frequency of online purchases but at different levels and depths, the 30–49-year-olds diverged the most from the other age cohorts between Time Point 2 (i.e., early May) and Time Point 6 (i.e., late September to early October). By comparison, the 50–64-year-olds seemed to follow a straighter line except between Time Point 2 and Time Point 4 (i.e., early June), when their share first rose and fell along with the younger and oldest age cohorts. Although the spread of COVID-19 decelerated in late April 2020, because the general recommendations remained in place, online clothing purchases among 65–85-year-olds continued to increase until Time Point 3 (i.e., late May), when the shares in all age cohorts seem to have decreased since the beginning of May. By then, the youngest age group had already exhibited another decrease in share, which occurred in late April. The increase between Time Point 5 (i.e., mid-June) and Time Point 6, in all age cohorts but the 30–49-year-olds, is more difficult to explain as a decline during the summer would have been expected. However, pent-up need for clothes could explain the increase; if people of all ages expected the pandemic to have ended by late summer when it in fact did not, they may have opted to purchase new clothes online. Before then, by contrast, they may have maintained their existing wardrobes in the hope that the virus would disappear, at which point they could return to shopping in physical stores. Although online grocery shopping exhibited greater variation across the different periods than online shopping for clothes (Figure 7), the differences in the level of shares between the age cohorts were less pronounced.

Nevertheless, variation across the age cohorts in general warrants attention. Whereas the shares of the youngest groups who purchased groceries online seem to have remained nearly identical during the pandemic, with a marginal downward trend among 18–29-year-olds, the oldest age cohorts increased their shares over time, as the trend lines in Figure 7 show. Thus, differences between the age cohorts sustained but partly evened out during the pandemic.

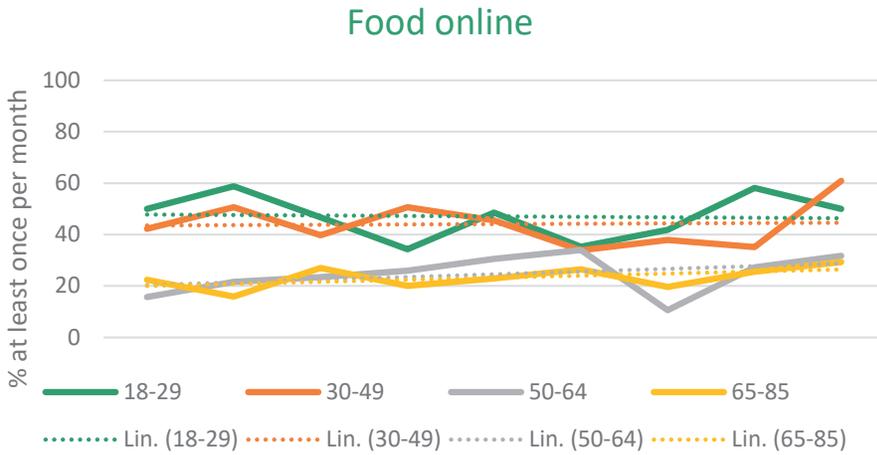


Figure 7. The share of people in different age cohorts who have shopped for groceries online in the last month across the nine time points during the pandemic (cf. time points in Figure 1).

Furthermore, reversed relationships can be detected between the different age cohorts across different time points. Those trends are illustrated in Figure 8, which aggregates the two youngest age cohorts with the two oldest ones.

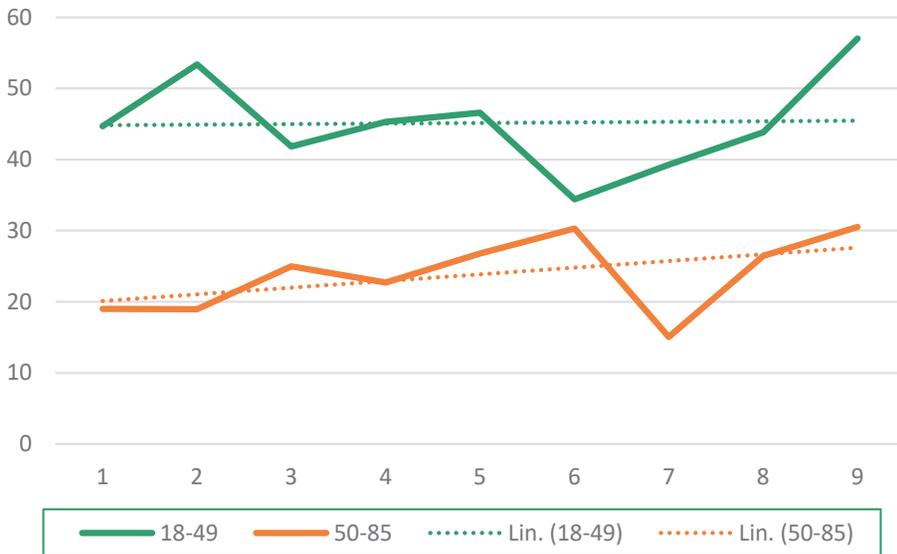


Figure 8. The share of people in the two younger and two older age cohorts who have shopped for groceries online in the last month across the nine time points during the pandemic (cf. time points in Figure 1).

When the two older age cohorts (i.e., 50–85-year-olds) increased their share of online grocery shopping, the younger age cohorts (i.e., 18–49-year-olds) decreased theirs, and vice versa. That dynamic implies that when older consumers began to shop more online, it negatively influenced the possibility of their younger counterparts continuing to do so. On the contrary, when the older age cohorts reduced their share of online shopping, the younger ones resumed their

dominance. However, the increased share among 18–49-year-olds at Time Point 2 (i.e., early May) relative to the share of older consumers, which remained stable, indicates that the older groups may have already adopted online grocery shopping before Time Point 1 (i.e., late April). After all, they were identified as an at-risk group and advised to comply with special recommendations early on during the pandemic. The younger age cohorts, on the contrary, may have modified their behavior only when the risk of becoming infected had extended to society at large. Beyond that, the decreased share of online grocery shopping among older consumers at Time Point 7 (i.e., mid-October) reflects the end of Sweden's special recommendation for people 70 years old or older in October. When the second wave arose shortly thereafter, however, the older groups resumed making their purchases online, namely in late October and continuing until early December (i.e., at Time Points 8 and 9). Since the second wave (i.e., Time Points 7, 8 and 9) online grocery shopping increased for both age cohorts in Figure 8, which indicates that the reversed relationship at least temporary disappeared, perhaps due to media reports on risks for long-term effects and new mutations with severe effects also for younger age cohorts. Overall, older age cohorts in Sweden intensified their online grocery shopping over the course of the COVID-19 pandemic, whereas the younger ones demonstrated more stable behavior, as shown by the trend lines in Figure 8.

As the results show, the shares of online shopping in general and for the specific retail categories of clothing and groceries fluctuated across the nine time points during the COVID-19 pandemic and both within and between the different age cohorts. When it comes to the online purchase of clothes, the increase was clearly greatest among 65–85-year-olds (see the trend lines in Figure 6). For grocery shopping, however, the share of online shoppers in the older age cohorts rose during the pandemic but slightly diminished in the younger groups (see the trend lines in Figure 7). Even so, those differences in the level of shares between the age cohorts for groceries were less than for clothes.

As Hand et al. (2009) have shown, fluctuations in consumers' long-term behavior due to a trigger—for example, the COVID-19 pandemic—will inevitably diminish or even disappear once the influence of the trigger recedes, at which point consumers can be expected to resume their pre-existing habits. That effect may especially apply to older consumers, who tend to have less experience with online shopping and who habitually purchase products, including clothes and groceries, in physical stores. In Figure 8, that effect is reflected in the decreased share of online shoppers among 50–85-year-olds between Time Point 6 (i.e., late September to early October) and Time Point 7 (i.e., mid-October). However, the trend lines in Figures 6 and 7 show an increase in online grocery and clothes shopping across the time points. Taken together, the trends indicate that the older age cohorts changed their behavior and that those behaviors began becoming more habitual after the summer, as reflected in the increased share of online purchases made by the group at that time. It may have also stemmed from COVID-19's effects as the pandemic persisted and the government thus persisted in reminding Swedish citizens to continue following the recommendations and restrictions throughout the first year of COVID-19.

When it comes to online grocery shopping, the findings indicate a crowding out effect between the younger and older age cohorts until Time Point 7 (Figure 8), especially between 65–85-year-olds and 30–49-year-olds (Figure 7). When a higher share of the oldest age group was shopping online, the share of 30–49-year-olds shopping online decreased. To be sure, the group of 30–49-year-olds, both before and during the COVID-19 pandemic, purchased groceries online more frequently than any other group. However, when retailers could not meet normal

service demands upon the outbreak of COVID-19 and as demand continued to rise throughout the pandemic, 30–49-year-olds may have turned to physical stores instead, perhaps because they were not nearly at the same risk as older adults. Early on during the pandemic in Sweden, several reports emerged concerning grocery retailers' lack of capacity to accommodate the increase in online orders (e.g. PostNord, 2020b), as also observed in other countries (cf. Danenberg et al., 2020). Although that trend may have contributed to crowding out effects early during the pandemic, the later time points in our research reveal a parallel increase among the younger and older age cohorts, which suggests that grocery retailers increasingly overcome such setbacks in capacity and that crowding out effects consequently diminished. Perhaps this was also due to younger people becoming more afraid of COVID-19 and that the initial recommendations for the elderly were also directed to younger people over time.

5. Conclusions

Exploring online shopping in Sweden during the first year of the COVID-19 pandemic, this paper has addressed two research questions. The first question is, how has the frequency of online retail shopping changed in general and for clothes and groceries in particular after the outbreak of COVID-19 (i.e. until the end of June 2020) with regard to the age cohorts of consumers? Overall, regular online shopping, measured as the share of people who shop online at least once a month, increased during the COVID-19 pandemic compared with previous years. However, that general increase was largely due to the increase in online shoppers 30 years old or older. Scrutinizing two retail categories—clothing and groceries—provides additional insights into those trends. For clothes, the share of online consumers increased in all age cohorts during the first period after the outbreak of COVID-19. As for groceries, increases in the age group that makes online monthly purchases most frequently, 30–49-year-olds, and the group that used to make monthly purchases online least frequently, 65–85-year-olds, was particularly pronounced. Among 18–29-year-olds and 50–64-year-olds, by contrast, the increases were more modest. In all, online shopping frequencies increased in Sweden during the first period of COVID-19, but with variation between different age cohorts and between different retail categories. Thus, our findings suggest that COVID-19 has indeed been a trigger for increased shopping online in Sweden (Hand et al., 2009; Elms et al., 2016) and that consumption displacement (Hall et al., 2020) from physical shopping to online shopping has occurred, but also that the online shopping has been influenced in different ways across age cohorts.

The second question is, how has online shopping in general and for clothes and groceries in particular changed among different age cohorts across the phases of the COVID-19 pandemic in 2020? As presented in our findings, the share of online shoppers fluctuated throughout the pandemic depending on the pandemic's course. The findings also indicate a gradual increase in the share of people shopping more frequently online but that when the situation changed, a large number of consumers made online purchases less frequently and presumably returned to their pre-existing habit of shopping in physical stores. Our findings additionally show shifts during the pandemic between the different age cohorts and within the two categories explored. Along with a general consumption displacement (Hall et al., 2020) from physical shopping to online shopping, a “crowding out” effect seems to have occurred, in the sense that increases in the share of people shopping online in some age cohorts coincided with parallel decreases in others. That dynamic may stem from retailers' lack of capacity to process consumers' orders and consumers' lack of available slots for pickup or delivery and/or result from more altruistic motives among consumers in other age cohorts to yield to people in other

age cohorts considered to have a greater need due to certain restrictions or risks. Nevertheless, as our findings indicate, some consumers tend to return to their established practices when situations once altered seem to have returned to normal, which aligns with the findings of Hand et al. (2009). A challenge for grocery retailers in particular is thus not to lose consumers who are their most loyal online customers under more normal circumstances (i.e., in younger age cohorts) and to prevent that temporary lack of capacity discourages them from purchasing groceries online (cf. Dannenberg et al., 2020).

Although it is not possible to relate the actual sales statistics (SCB, 2021) to different age cohorts, it can be used as triangulation to check the reliability of the self-reported data presented here. We can confirm that the self-reported frequencies of all three measures of online shopping in both studies increased over time, which corresponds to the development of actual sales (SCB, 2021). The contribution of the present study is however that it can distinguish different age cohorts regarding online shopping during the first year of the pandemic. From this analysis, we consider two findings particularly interesting to highlight. Firstly, that online-shopping of clothes increased in all age cohorts during 2020, despite the fact that the clothing industry as a whole declined remarkably during the same period. Secondly, elderly consumers seem to have crowded out younger consumers regarding online shopping of groceries during the first year of the pandemic. Online grocery shopping increased enormously among the oldest age group (65-85) during the pandemic's initial stage - the second most frequent age group regarding online grocery shopping (Figure 4). Apparently, understanding online shopping during the first year of the pandemic is not possible without considering different age cohorts and retail categories.

Practical implications

Our findings have two main implications for retailers. First, the increase in online shopping among all age cohorts shows that also those with less experience, i.e., the elderly, will shop online when they are triggered to do so, in this case by the Covid-19 pandemic. Although some might return to their previous habit of shopping in other channels when the situation changes, some will continue to shop online also after the pandemic. For retailers, it is important to cater to this new consumer group that might have different requirements of assortment, service, and delivery than younger consumers. Second, younger and more frequent online shoppers of groceries before the pandemic seem to have decreased their share at some points during the pandemic. Thus, they turned to other retail channels as new and elderly consumers started shopping online and contesting services and deliveries. To enable future growth, it is vital for retailers to be able to care for the new consumers, but also to secure the capacity to be able to cater to the existing ones.

Limitations and future research

The results of this study must be discussed in light of its limitations. Firstly, and perhaps most seriously, we estimate actual behavior through self-reported behaviors. Although stability in the methodology justifies comparisons over time, there is an overall risk of cognitive distortions and socially desirable answers (Baumeister et al., 2007). We recommend future researchers to rely less on self-reported answers and instead measure actual online shopping behavior. We especially suggest that the self-estimated frequencies in these studies should be compared to real sale statistics across age cohorts in order to further investigate if elderly consumers were crowding out younger consumers during the first year of the COVID-19 pandemic.

Secondly, the two studies are complementary but not entirely comparable. The questionnaire in Study 1 asked how often the respondent had shopped online during the last 12 months. Thus, the responses also captured the period before COVID-19 and therefore may have underestimated COVID-19's effect on the frequency of online shopping. We also assumed that web panel respondents in Study 2 were more digitally savvy than individuals who responded via mail (i.e. most respondents in Study 1) and therefore also shop online more often than the other participants. Although that assumption implies an overestimation of the online frequencies observed in Study 2, it likely did not influence the analysis of trends, for overestimation is presumably constant over time.

Thirdly, under normal circumstances, seasonal differences occur in online shopping, including declines in the product categories of clothing and groceries during the summer when consumers deviate from their normal behavior (e.g., travel on vacation). Such shifts suggest that changes between different months should be interpreted with some caution, particularly in light of the COVID-19 pandemic, when such fluctuations have been especially difficult to assess.

Fourthly, in comparing data from the 2020 survey with data from the 2018 and 2019 surveys, one might expect growth in the frequency of general online shopping as well as in online grocery and clothes shopping regardless of the COVID-19 pandemic (Roos, 2019). Although causality cannot be confirmed with any certainty, online retail shopping did show growth of 15% in 2018 and 13% in 2019 compared with the previous year (PostNord, 2020a), and the corresponding figures were 13% and 12% for clothes and 27% and 22% for groceries. Thus, the data analyzed need to be attributed not only to the COVID-19 pandemic but also to underlying growth. It is nevertheless reasonable to assume that the pandemic played a great role in the trends observed. It is also worth noting that the estimated growth for online retail shopping in general for 2020 was 11% while the actual growth reached 40% (PostNord, 2021).

Fifthly, as previously discussed, our first measurement in Study 2 was in late April 2020, while the WHO declared that COVID-19 was a global pandemic already on March 11, 2020. It would of course have been preferable to measure online shopping since the very beginning of the pandemic.

Finally, as mentioned in the introduction, the analysis of the durability of the consumption displacement is limited to the first year of COVID-19. Since the data was collected in 2020, it is possible to follow the development during 2021 and 2022. For 2021, industry statistics show a further 20% growth for online shopping in general, but with a negative growth of -1.2% for the last quarter in comparison with 2020 (PostNord, 2022a).

Regarding clothes, online sales grew by 17% in 2021 and 3% during the first quarter of 2022. Although total sales of clothes are not back at the same level as before the pandemic (PostNord, 2022a).

Regarding online grocery, the Food Retail Index shows high sales (over 100% growth) for the first quarter of 2021, followed by a dramatic decline (compared to the previous year) for the last three quarters of 2021 and the first two quarters of 2022 (The Swedish Food Retailers Federation, 2021b; 2022). Overall, more consumers shopped groceries in-store during 2021 compared to 2020, but not to the same extent as in 2019. This illustrates that the pandemic effects have diminished and that consumers have returned to previous habits, and thus that the switching behavior triggered by COVID-19 was rather temporary than permanent (PostNord, 2022a; Public Health Agency of Sweden, 2021d). However, the same report (PostNord, 2022a) also indicates the opposite - that some older consumers have positive experiences from

online shopping and therefore continue to shop online. As it seems, more long-term analyzes of online shopping during COVID-19 are needed before we can declare permanent behavior changes, especially in relation to different age cohorts. In addition to the threat of COVID-19, we suggest that these analyzes also include customer satisfaction with online shopping during COVID-19. It is also notable that the general retail development during 2021 and 2022 not only has been affected by COVID-19, but also by increased inflation and prices, uncertain economies, and war (PostNord, 2022b). Such external factors were more stable in 2020.

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