

# Delivery Technologies Are Reshaping the Grocery Industry

Shift to cooking could be a short order, but grocery delivery likely to thrive

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## Key takeaways

- While restaurant delivery and eating out has been taking a share of consumer food consumption for years, traditional grocery consumption has grown faster in the wake of the pandemic.
- Shelter-in-place orders have catalyzed grocery delivery, and grocers are making more investments in delivery infrastructure to meet current demand and defend market share as restaurants gradually reopen.
- Several technologies have emerged that are helping reshape the grocery landscape and fuel the shift toward grocery delivery.
- The current landscape could drive more VC investment and M&A opportunities, with several IPO-stage startups as potential consolidators

## Executive summary

The coronavirus pandemic has reversed the long trend of declining grocery consumption relative to eating out. While grocery sales had generally been losing share to restaurants, restaurant closures and sheltering in place have driven consumers back to the grocery store. This trend is also being driven by modern delivery infrastructure that is allowing more grocery stores and other food vendors to sell via delivery apps, as consumers choose to stay home to avoid exposing themselves to the pandemic.

Although life is returning to a degree of normalcy and restaurant business is improving, we believe the consumer shift to online grocery delivery will be a persistent, not temporary, trend. We expect to see increased long-term investment in the online grocery technology space, which will, in turn, improve the customer experience, leading to additional adoption.

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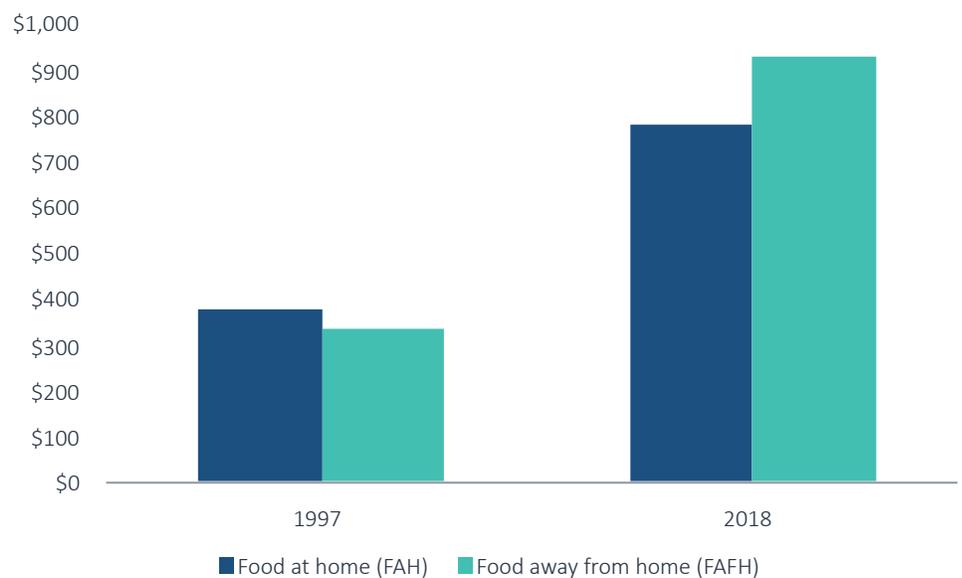
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Grocery stores that have traditionally lacked ecommerce capabilities are now finding it necessary to invest in digital distribution channels. Consumers shopping for groceries online are driving investment into new technologies and distribution models, such as dark grocery stores, ghost kitchens, warehouse and inventory technology, digital checkout and curbside pickup. For grocers who are already selling online, new partnerships and enabling infrastructure are helping companies increase capacity and efficiency and provide a seamless customer experience. This is creating opportunities for startups and incumbent delivery service providers focused on the evolving grocery ecosystem.

### Grocery has been losing share to restaurants

The pandemic appears to have reversed a long-term trend of grocery losing share to restaurants. According to the USDA, consumer spending on “food at home,” or FAH, which includes grocery stores, convenience stores, warehouse clubs and home grocery delivery, represented 52.9% of total food expenditures in 1997, while “food away from home” (FAFH), which includes food from restaurants, drinking establishments, hotels and vending, made up the other 47.1%.<sup>1</sup> By 2018, FAH’s share had fallen to 45.6%, reflecting structural consumer trends in favor of eating out more, including urbanization, decreased kitchen sizes and emerging food technologies. While grocery delivery has been slowly expanding in recent years, we believe it still only represents 4.9% of the total grocery market and has largely cannibalized in-store grocery sales rather than drive new growth.

#### Food expenditures (\$B)



Source: USDA | Geography: US

1: “Nominal Food and Alcohol Expenditures, with Taxes and Tips, for All Purchasers,” USDA Economic Research Service, August 2018

## Pandemic accelerating grocery delivery demand

The pandemic has reversed this trend as restaurants have been closed (or restricted to takeout and delivery) and consumers have shifted more food-consumption spending to groceries. According to Federal Reserve Economic Data, or FRED, US grocery sales surged 29% month over month in March, while restaurant sales plunged 22%.<sup>2</sup> Although the trend may only be temporary until restaurants can fully reopen, we expect grocery stores will continue to invest in more sophisticated delivery and pickup technology to help maintain market share as the economy begins to recover.

We believe much of the influx in grocery demand has been directed at online grocery delivery or curbside pickup, as consumers comply with shelter-in-place orders or prefer to social distance. Additionally, job loss could be a factor driving consumers to opt for lower-cost grocery items as opposed to restaurant takeout. Although some grocery providers charge fees or inflate prices for delivery, other providers, such as Amazon and Walmart, offer pickup and delivery services at rates similar to in-store shopping.

## Online grocery delivery & pickup sales in 2020



Source: Brick Meets Click | Geography: US

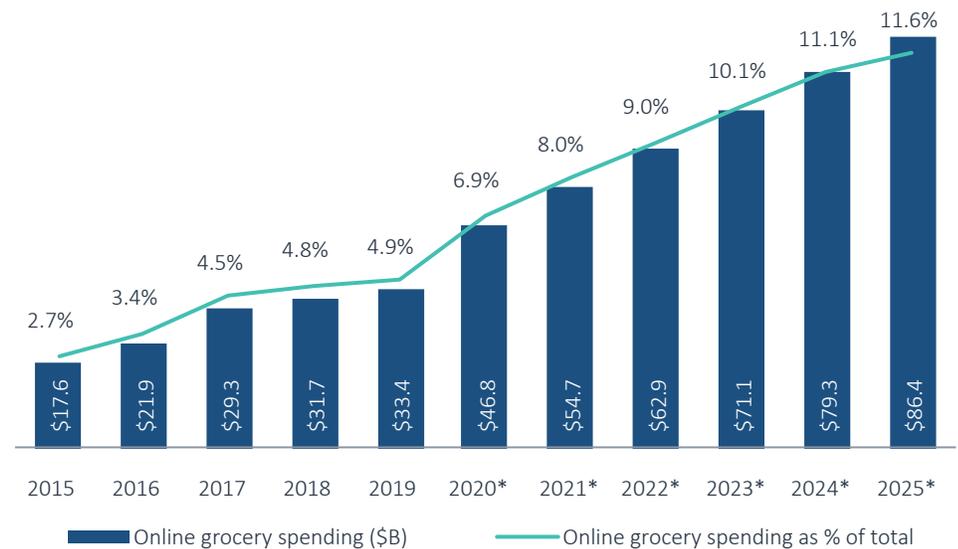
The growth of online grocery can be seen in April and May industry data. According to research firm Brick Meets Click, online grocery sales for home delivery and pickup reached \$6.6 billion in May, up 65% from \$4 billion in March.<sup>3</sup> This growth is being driven by higher adoption rates (the customer base grew 8.9% since March), as well as an increase in order frequency and average order size. Online orders reached 73.5 million in May, up 56.7% from March, as casual customers have ordered more frequently. Additionally, the

2: "Retail Sales: Restaurants and Other Eating Places," Federal Reserve Bank of St. Louis

3: "U.S. Online Grocery Continues to Set New Records - \$6.6B in Sales for May 2020," Brick Meets Click, David Bishop, May 28, 2020

average order size reached \$90, up 9.8% from March. Order-size increases can be attributed to both larger orders and an increase in prices stemming from product shortages caused by customer hoarding and supply chain disruptions. While online grocery delivery has surged since the pandemic, we believe it was a growing trend prior to the crisis as well. According to a March survey conducted by Coresight Research, respondents bought an average of five grocery categories online, compared to the 4.4-category average in 2019.<sup>4</sup> This indicates that consumers were already becoming more comfortable with online ordering as a channel for everyday grocery shopping. Coresight Research predicts US online grocery sales will grow around 40% year over year in 2020, reaching \$46.8 billion, or 6.9% of the total grocery market.<sup>5</sup> This compares to only 6% growth in 2019 when the segment represented about 4.9% of the overall grocery market.

### Past and projected online grocery consumer spending



Source: IBIS and PitchBook | Geography: Global

Given the low penetration rate of grocery delivery, we believe this industry could see significant growth over the next several years. As consumers adapt to the pandemic, we believe investment in ecommerce technology will accelerate online grocery sales as a percentage of total grocery. However, the growth of grocery overall (and FAH) will likely moderate as spending on groceries and restaurants equalizes.

4: "Discounters See the Biggest Surge in Online Grocery Shoppers," Coresight Research, Dan Berthiaume, May 6, 2020

5: "US Online Grocery Survey 2020: Many More Shoppers Buying More Categories from More Retailers," Coresight Research, May 6, 2020

## The emerging grocery tech ecosystem

As grocery delivery and pickup become increasingly mainstream, digital distribution channels are likely to become more strategically important to grocery stores, especially those that currently lack ecommerce capabilities. New business models, such as “dark stores,” could become more critical. At the same time, several startups have emerged that cater to emerging opportunities in ecommerce and delivery enablement, such as curbside pickup technology and automated checkout. We also see derivative investment opportunities across the food delivery ecosystem, including ridesharing companies pivoting to delivery, warehousing automation technology and emerging autonomous vehicle use cases.

## Ecommerce and delivery enablement

Ecommerce and delivery enablement providers help grocers establish an online ordering portal that can be accessed directly or integrated with other grocery delivery aggregators. One of the most well-known third-party grocery delivery providers is Instacart, which has raised \$2.17 billion in VC funding and just recently added \$225 million in VC funding to its shopping cart, raising its valuation to \$13.7 billion—a jump from its \$7.9 billion value in late 2018. Instacart provides grocers with a robust customer ordering platform, a large customer base and a vast courier network. Instacart focuses primarily on delivery and partners with some of the largest grocery chains in the US. Other service providers offer ecommerce suites that cater to the varying needs of independent grocers. Mercato provides a variety of services, from a courier network to white-label order management software. In March, as the impact of the pandemic set in, the company announced it was deploying a rapid onboarding process to help grocers add ecommerce services. It has also recently partnered with data analytics company SPINS to allow consumers to filter products in more detail, improving the online shopping experience. Lastly, the delivery management platform Bringg recently launched a new BringgNow product that provides smaller grocers with a last-mile delivery management platform.<sup>6</sup>

## Automated checkout

Aside from ramping up fulfillment capabilities, grocery stores are implementing technologies that enable contactless interactions that are faster than traditional methods while helping ensure social distancing. Amazon pioneered cashier-less technologies and automated checkout processes in the grocery space with its Go stores, launched in 2018. Amazon relies on a combination of near field communication (NFC) sensors, AI and computer vision technologies to track items as customers pick them up and then charge the payment automatically when they leave the store. The company has since begun selling its cashier-less technology to other retailers. Microsoft and Walmart are co-developing a proprietary cashier-less technology that has yet to see commercialization. However, several smaller tech companies have made significant strides in developing rival cashier-less solutions. Zippin, which has

<sup>6</sup>: “Bringg Announces Free BringgNow Solution Enabling Businesses to Immediately Launch and Scale Delivery Services,” Cision PR Newswire, March 25, 2020

raised roughly \$15 million in venture funding, develops cashier-less technology to retrofit existing retailers and has launched two stores. Standard Cognition, which has one store and recently acquired competitor Checkout Technologies, has raised over \$97 million in venture funding. Other providers use mobile software or shopping-cart hardware in place of cameras and sensors. Shopic, which raised a \$7.6 million series A, is developing both such technologies. We expect to see increased adoption of this technology as costs decline and the technology becomes mainstream.

With elevated concern for employee and customer safety, some stores have begun implementing virtual lines, or queue management, to control in-store visitors. Instead of risking exposure by forcing customers to wait in a line to enter the store, virtual lines allow customers to safely remain in their vehicles or at a distance until it is their turn to enter. One company, Waitwhile, has partnered with a growing list of retailers to offer virtual line management services. Restaurant reservation platform OpenTable has launched a virtual line service for grocery stores to help control crowds.<sup>7</sup> Although this technology is likely to thrive during social distancing, its need may ultimately be short-lived, and the barriers to entry appear to be low.

### Curbside pickup

Outside of the store, grocers are implementing advanced technologies to make curbside pickup safer and more seamless for the customer. Geofencing uses a customer's mobile phone GPS to signal to the merchant when a customer is nearby. Walmart and Target have used geofencing capabilities in customer apps for several years. Lowes Foods recently adopted Radius Networks' FlyBuy Pickup solution to eliminate customer wait time.<sup>8</sup> Several other retailers, including Albertsons, have adopted the location platform built by Glympse to add visibility to the order pickup process.

Another solution that has been available for years is license plate recognition (LPR) technology. Amazon has used this technology at AmazonFresh Pickup locations for years to notify employees when a customer arrives. Although this technology has seen minimal adoption due to privacy concerns, retailers such as KFC have explored using it.<sup>9</sup> Other startups developing LPR technology include 5thru and Cyclops Technologies.

### Dark stores

One way incumbent grocers are responding to increased delivery demand is by creating local distribution centers, or "dark stores," to fulfill online orders. Amazon has offered this service for several years in a minimal capacity with two AmazonFresh Pickup locations in Seattle. Most brick and mortar grocers fulfill online and pickup orders out of existing retail locations. Although this strategy minimizes inventory requirements for retailers, it also creates

7: "OpenTable Offers Reserved Shopping Times, Virtual Lines," Specialty Food News, April 16, 2020

8: "Lowes Foods Adopts FlyBuy Curbside Pickup Technology," Grocery Dive, Lauren Stine, January 10, 2020

9: "KFC Exploring McDonald's-Like Drive-Thru Automation," Restaurant News, Nancy Luna, October 28, 2019

fulfillment challenges as stores are traditionally designed for a different customer experience, relative to the speed and efficiency needs of digital grocery pickers. Other complications include the risk that a traditional shopper may purchase items in-store before an online order picker can get to them.

Amazon was in the process of building out several Amazon-branded grocery stores in Los Angeles when the pandemic hit and has converted one location to a dark store exclusively to fulfill Whole Foods Market online orders. The firm has also recently transformed at least six other new and existing Whole Foods locations into delivery-only dark stores—although this may just be temporary until cities reopen.<sup>10</sup> The dark-store conversions have mainly occurred in neighborhoods near universities or offices, where foot traffic has been reduced. Other dark-store conversions include Kroger, which has converted one Cincinnati location to a pickup-only dark store on a pilot basis;<sup>11</sup> Giant Eagle; and Stop & Shop.

Aside from temporary benefits related to the health crisis, dark stores offer several operational benefits that can help optimize and streamline grocery store management. For example, shelf placement issues disappear as grocers stock items to maximize barcode scanning and order fulfillment. Dark store grocers can also implement warehouse robotics and automation, and do not need checkout or other customer service staff.

### Picking automation

As grocers invest more heavily in delivery infrastructure, opportunities should arise for robots and autonomous technologies focused on warehousing operations. Dark stores and other grocery distribution hubs could eventually start to resemble small grocery fulfillment warehouses that can be run as “microfulfillment” centers. We anticipate automated technologies, which are primarily used in warehousing and fulfillment applications, will be repurposed for dark grocery stores to reduce labor costs and ensure social distancing in the workplace. We are already seeing the first signs of this trend with angel-backed Alert Innovation applying its automated picking and storage technology to grocery stores. The company has partnered with Walmart in a pilot program. On similar lines, in June 2020, Kroger announced it would be building three robot-powered fulfillment centers in partnership with Ocado. Automated microfulfillment center provider Takeoff Technologies has partnerships with Albertsons and Ahold Delhaize.

We expect additional partnerships between grocers and startups in the automated warehousing space. Attractive candidates include RightHand Robotics, which has developed a robotic arm to pick and place physical goods at warehouses. GreyOrange has developed scalable and modular robot systems used to transport, store and pick goods in warehouses. Realtime Robotics has invented a processor that can react to obstacles intercepting robotic motion plans without being bogged down by wading through a conventional decision tree.

10: “Whole Foods Continues to Open Online-Only ‘Dark’ Stores,” Grocery Dive, Jeff Wells, May 14, 2020

11: “Kroger Converts Store to Pickup-Only Service,” Grocery Dive, Jeff Wells, March 26, 2020

### Rideshare providers focus on delivery

Ridesharing companies are also pivoting to address the growing demand for food and grocery delivery, which can help offset ridership declines and potentially drive an additional long-term growth channel. For example, Uber Eats cited 89% YoY gross bookings growth in April. This requires investing in in-app delivery functionality, partnering with food and grocery vendors and attracting users. The trend is likely to drive M&A opportunities as well, with Uber's acquisition of Cornershop, a Latin American grocery delivery app, and Just Eat Takeaway's agreement to buy GrubHub.

In March 2020, Didi Chuxing launched a food delivery service in more than 20 cities, with a renewed focus on groceries and convenience items. In early April, Didi also entered the \$133 billion Japanese restaurant market by offering heavily discounted food delivery services. While investors had been less supportive of the company's efforts to enter the food delivery market in the past, we have heard anecdotally that this pressure has eased in the current environment.

### Autonomous delivery on the rise

Prior to the COVID-19 crisis, investors and management teams primarily viewed autonomous delivery as a means to reduce costs. The pandemic has revealed new use cases related to health concerns as well as service continuity for existing vendors. Startups exposed to this trend include autonomous robot providers Nuro, Starship and Refraction AI; automated delivery van providers Gatik.AI and Arrival; and drone companies such as Zipline, Flytrex and Flirtey. We already see evidence of increased investment in autonomous technology. Alphabet-backed autonomous vehicle company Waymo raised a \$3.0 billion round in May, and Zoox is reportedly in the final stages of a potential \$1+ billion acquisition by Amazon.

Robotaxis could also pivot to delivery services. Many of the modular electric vehicle platforms offered or conceptualized by these startups, such as Canoo and Zoox, could presumably be used to shuttle groceries as well as people.

Autonomous delivery pilots underway include the partnership between CVS and Nuro for prescription deliveries in Houston. CVS has also partnered with UPS Flight Forward, a drone-focused subsidiary of UPS that has partnered with drone startup Matternet to deliver medical supplies to retirement communities in Florida. Zipline has begun leveraging its drone delivery technology, previously used in Africa, to provide PPE and essential medical supplies to US hospitals.

### Investment opportunities grow, although regulation poses risks

We expect the pandemic to catalyze the food and grocery delivery opportunity, driving more M&A and VC activity. As shown, VC activity in online grocery startups peaked in 2018, and several startups in the space may present active acquisition targets or be primed for new funding rounds. We expect winners in the field to include DoorDash, Uber Eats, Instacart and Postmates, as well as Chinese online grocery and food delivery apps Dada-JD Daojia, Meituan and Ele.me. Each of these companies is likely to pursue consolidation opportunities. Regulation could limit growth and M&A for food delivery companies.

## Online grocer VC activity



Source: PitchBook | Geography: Global  
\*As of June 9, 2020

Platforms such as GrubHub are facing scrutiny over restaurant fees that can range from 10% to 40% of gross transactions, according to restaurant owners. Lawmakers across the country have proposed capping these fees to the 10-15% range, which would likely put pressure on growth and margins. Additionally, we expect lawmakers will continue to pass legislation limiting the use of contract workers, another threat to margins to the extent drivers receive more pay. Antitrust concerns could hamper consolidation in the space. For example, the chair of the House of Representative's Antitrust Subcommittee opposed a proposed Uber/GrubHub deal, arguing that it represents a form of pandemic profiteering. Antitrust concerns likely weighed in on Uber ceding the GrubHub deal to Europe's Just Eat Takeaway.

Longer term, we believe consolidation will be necessary for the online food delivery industry to achieve sustainable margins. Food delivery has historically been a structurally low-margin industry as services are relatively commoditized and undifferentiated. Customer incentives intended to expand market share further pressure profitability. For example, Uber Eats has a take-rate below its corporate average, reflecting the heavy use of incentives. Similarly, Grubhub has experienced a generally decreasing operating margin over the past three years due to increased marketing spend and competitive pressure from companies such as DoorDash and Uber Eats. While the market for food delivery is large, increased competitive pressure may impede margin expansion, limiting returns for investors. In our view, Uber losing Grubhub to a European competitor could be a setback for improved margins in the North American online food-delivery industry. Grubhub had been on the decline because cash available to invest in expansion was limited, and that has been to the benefit of both Uber and DoorDash. A well-funded outside competitor gaining a foothold in the North American market could cut into Uber and DoorDash's growth plans and potentially put downward pressure on pricing and margins in the space, delaying the industry's path to profitability.

## Recent grocery delivery M&amp;A activity

| COMPANY    | ACQUIRER          | CLOSE DATE       |
|------------|-------------------|------------------|
| GrubHub    | Just Eat Takeaway | Reported/ongoing |
| Deliv      | Target            | May 2020         |
| Cornershop | Uber              | October 2019     |
| Caviar     | DoorDash          | August 2019      |

Source: PitchBook

## Notable VC deals from online grocers

| COMPANY                   | DEAL SIZE (\$M) | CLOSE DATE | POST-MONEY VALUATION (\$M)* | STAGE        |
|---------------------------|-----------------|------------|-----------------------------|--------------|
| Buymie                    | \$8.87          | June 14    | N/A                         | Early VC     |
| Mercato (Internet retail) | \$9.25          | June 12    | N/A                         | Later VC     |
| Instacart                 | \$225.00        | June 11    | \$13,700.00                 | Later VC     |
| La Belle Vie              | \$12.61         | May 28     | N/A                         | Series A     |
| Milkbasket                | \$5.50          | May 13     | N/A                         | Series B1    |
| Kurly                     | \$164.00        | May 4      | \$794.00                    | Series E     |
| Cheetah                   | \$36.00         | April 28   | N/A                         | Series B     |
| BigBasket                 | \$60.00         | April 9    | N/A                         | Later VC     |
| Weee!                     | \$50.00         | March 30   | \$150.00                    | Series B     |
| Bella & Bona              | \$2.50          | March 20   | \$17.50                     | Angel & seed |

Source: PitchBook  
\*As of June 9, 2020

## Notable online grocer and enablement-tech VC deals

| COMPANY               | DEAL SIZE (\$M) | CLOSE DATE        | POST-MONEY VALUATION (\$M)* | STAGE          | SUBSECTOR           |
|-----------------------|-----------------|-------------------|-----------------------------|----------------|---------------------|
| Canoo                 | \$1,000         | March 13, 2018    | N/A                         | Early-stage VC | Autonomous vehicles |
| Nuro                  | \$940           | February 11, 2019 | \$2,700                     | Series B       | Autonomous vehicles |
| Instacart             | \$871           | June 11, 2020     | \$13,700                    | Late-stage VC  | Ecommerce           |
| Meituan               | \$700           | January 20, 2015  | \$7,000                     | Series D       | Ecommerce           |
| DoorDash              | \$700           | November 13, 2019 | \$13,000                    | Series G       | Ecommerce           |
| Didi Chuxing          | \$600           | July 25, 2019     | N/A                         | Corporate      | Ecommerce           |
| Dada-JD Daojia        | \$500           | August 9, 2018    | N/A                         | Corporate      | Ecommerce           |
| Zoox                  | \$200           | October 22, 2019  | N/A                         | Series C       | Autonomous vehicles |
| Zipline               | \$190           | May 17, 2019      | \$1,320                     | Series D       | Autonomous vehicles |
| GreyOrange            | \$140           | September 6, 2018 | N/A                         | Series C       | Microfulfillment    |
| Postmates             | \$100           | February 8, 2019  | \$1,850                     | Series F       | Ecommerce           |
| Standard Cognition    | \$35            | July 25, 2019     | \$535                       | Series B       | Automated checkout  |
| Bringg                | \$30            | April 7, 2020     | N/A                         | Series D       | Ecommerce           |
| TakeOff               | \$25            | September 1, 2019 | \$500                       | Series C       | Microfulfillment    |
| RightHand Robotics    | \$23            | December 17, 2018 | \$88                        | Series B       | Microfulfillment    |
| Cornershop            | \$21            | April 26, 2017    | N/A                         | Series B       | Ecommerce           |
| Flirtey               | \$16            | January 19, 2017  | N/A                         | Series A       | Autonomous vehicles |
| Radius Networks       | \$15            | August 2, 2019    | N/A                         | Series A       | Curbside pickup     |
| Zippin                | \$12            | October 29, 2019  | \$37                        | Series A       | Automated checkout  |
| Realtime Robotics     | \$12            | October 16, 2019  | N/A                         | Series A       | Microfulfillment    |
| Shopic                | \$8             | May 14, 2020      | N/a                         | Series A       | Automated checkout  |
| Flytrex               | \$8             | January 8, 2019   | \$24                        | Late-stage VC  | Autonomous vehicles |
| Matternet             | \$6             | January 14, 2020  | \$96                        | Series A2      | Autonomous vehicles |
| Glympse               | \$5             | July 22, 2019     | N/A                         | Late-stage VC  | Curbside pickup     |
| Refraction AI         | \$3             | January 1, 2019   | N/A                         | Early-stage VC | Autonomous vehicles |
| CheckOut Technologies | \$1             | August 30, 2018   | N/A                         | Seed           | Automated checkout  |
| Arrival               | N/A             | January 29, 2020  | N/A                         | Early-stage VC | Autonomous vehicles |
| Farmstead             | N/A             | March 1, 2020     | N/A                         | Early-stage VC | Ecommerce           |
| Gatik                 | N/A             | February 25, 2020 | N/A                         | Series A       | Autonomous vehicles |
| Alert Innovation      | N/A             | August 1, 2016    | N/A                         | Angel          | Microfulfillment    |

Source: PitchBook  
\*As of June 9, 2020