PitchBook

EMERGING TECH RESEARCH

Mobility Tech

Q2 2021 VC update

Report preview

The full report is available through the PitchBook Platform.

Contents

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Q2 2021 timeline

VC EXITS

April 13, 2021
Mobility and fintech platform **Grab** agrees to go public in the world's largest SPAC merger, which values the company at $39.6 billion.

NEWS

May 17, 2021
Electric vehicle manufacturer **Canoo** (NASDAQ: GOEV) announces that it is under investigation by the Securities and Exchange Commission (SEC), thus becoming the third SPAC-listed EV startup to disclose a federal probe.

NEWS

May 19, 2021
Ford (NYSE: F) reveals the all-electric F-150 Lightning will debut at a price of just $40,000, thereby undercutting startup rivals **Lordstown Motors** (NASDAQ: RIDE) and **Rivian**.

Apr 1 | May 1 | Jun 1 | Jun 30

VC EXIT

April 15, 2021
TuSimple (NASDAQ: TSP), developer of autonomous truck technology, raises $1.35 billion and becomes the first self-driving company to go public, thus setting the stage for several other autonomous truck SPAC debuts.

VC DEAL

April 15, 2021
Cruise Automation, developer of autonomous driving technology, raises $2.8 billion from **General Motors** (NYSE: GM), **Honda** (NYSE: HMC), **Microsoft** (NASDAQ: MSFT), and **Walmart** (NYSE: WMT).

VC DEAL

June 16, 2021
Waymo, developer of autonomous driving technology, raises $2.5 billion from **Magna** (NYSE: MGA), **AutoNation** (NYSE: AN), Silver Lake, Perry Creek, Mubadala Capital, Andreessen Horowitz, Fidelity, Canada Pension Plan, Temasek Holdings, Tiger Global, and **Alphabet** (NASDAQ: GOOGL).

Q2 VC DEAL SUMMARY

324
total deals

$23.1B
total raised

YTD VC DEAL SUMMARY

652
total deals

$48.7B
total raised

Mobility tech VC ecosystem market map

Click to view the interactive market map on the PitchBook Platform.

Market map is a representative overview of privately held providers in each segment and excludes companies merging with SPACs.

Autonomous driving software

- Full stack
- Perception software
- Teleoperation
- Localization/mapping
- Simulation/dev tools

Autonomous driving hardware

- Lidar
- Radar
- Cameras
- V2X
- Processors

Electric vehicles

- Consumer BEVs
- Commercial BEVs
- BEV motors & powertrains
- Hydrogen EVs
- Batteries, battery tech & materials
- EV charging

Fleet management & connectivity

- Fleet management
- Connectivity & data management
- Auto cybersecurity
- Passenger safety
- Parking

Mobility tech VC ecosystem market map

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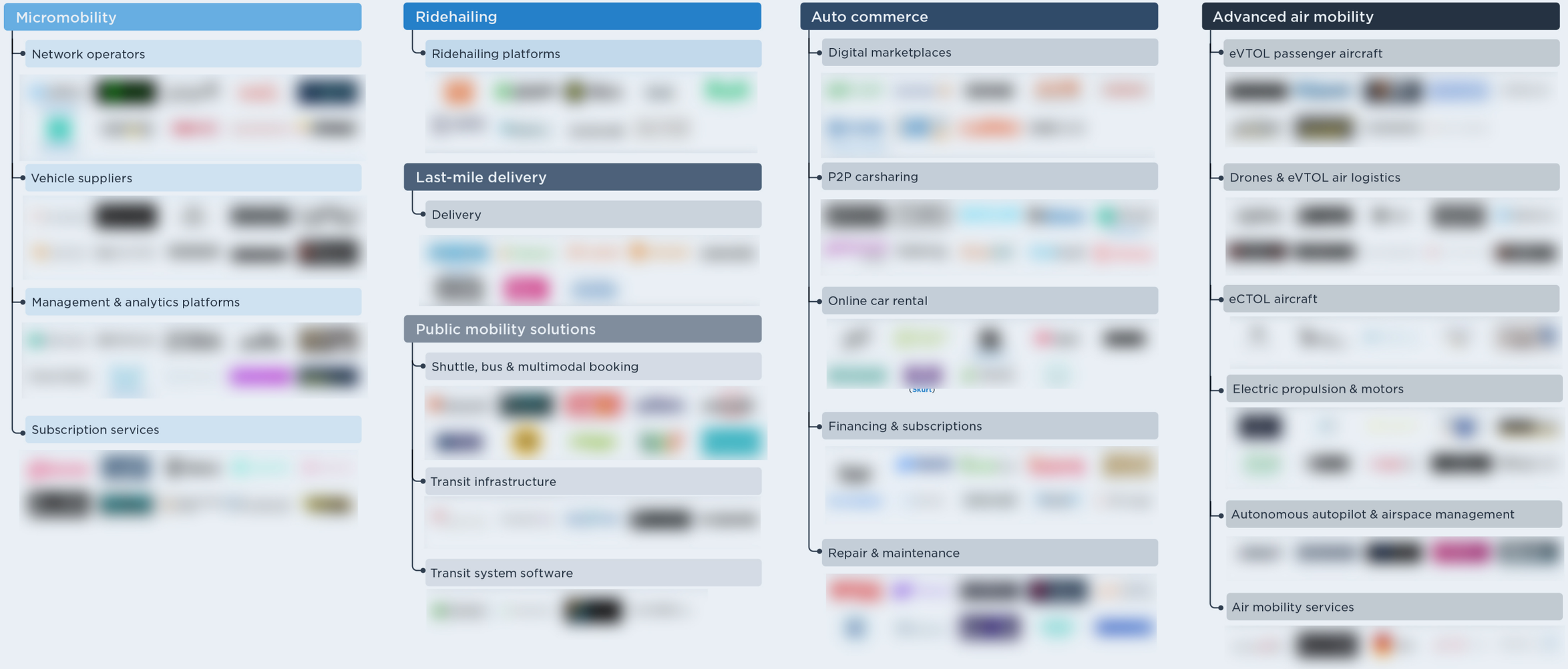


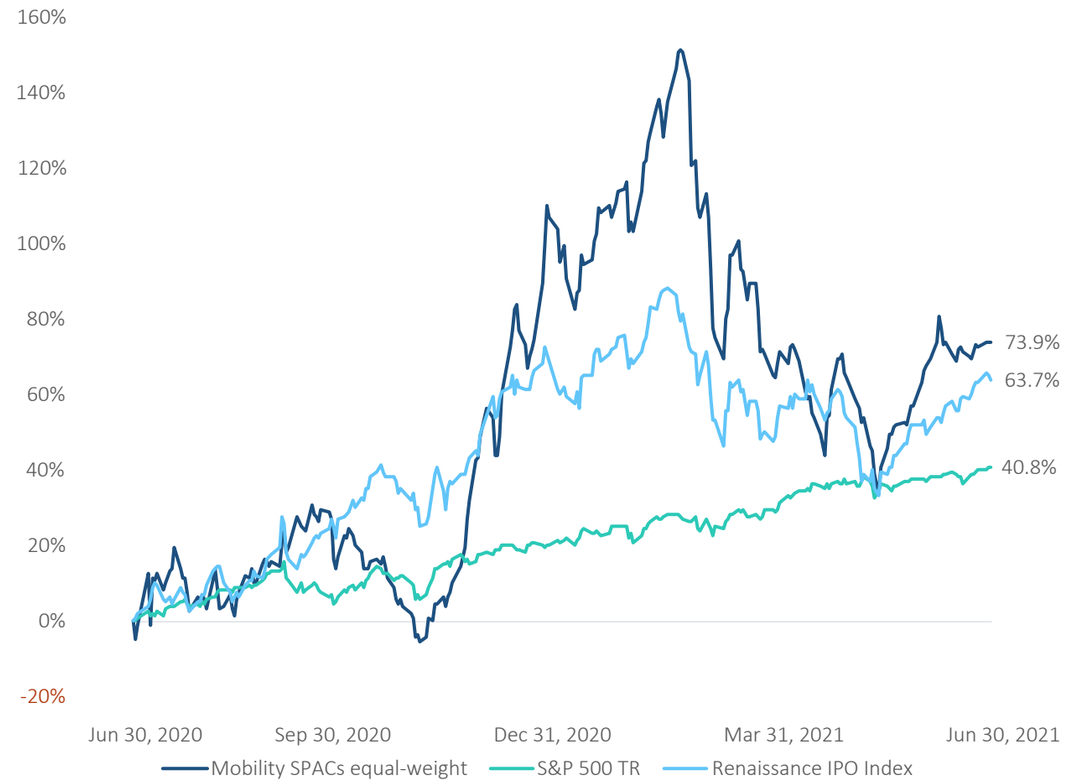
VC activity

VC investment strong even as mobility SPACs underperform.

Our EV/Mobility SPAC Price Change Index recorded a 99.4% return in H2 2020, which far outpaces the S&P 500's total return of 21.4% over the same period. However, the market pulled back in H1 2021, during which the EV/Mobility Price Change Index recorded a -9.0% loss—significantly underperforming the S&P 500's gain of 15.3% over the same period. Several newly public mobility startups have hit snags. In early 2021, the stocks of **Romeo Power** (NYSE: RMO) and **Lordstown Motors** plummeted after management cut guidance. **AEye**, which is currently merging with a SPAC, cut its valuation by 24.0% ahead of the deal closure, citing market conditions. Finally, EV manufacturers **Nikola** (NASDAQ: NKLA), **Lordstown**, and **Canoo** are all facing federal investigations.

Although public market volatility is affecting public mobility companies, it has not constrained the investment boom in private mobility startups. In fact, because in the current market environment, successfully exiting no longer necessitates successfully commercializing, private market investment in mobility startups has only intensified.

Figure 2. EV/MOBILITY SPAC PRICE CHANGE INDEX



Source: PitchBook | Geography: Global
*Note: Please refer to **EV/Mobility SPAC Handbook** for methodology.*

VC ACTIVITY

Figure 10.

Key mobility tech early-stage VC deals

COMPANY	CLOSE DATE	SEGMENT	CATEGORY	STAGE	DEAL SIZE ($M)*	LEAD INVESTOR(S)
Didi Autonomous Driving	May 31, 2021	Autonomous driving	Full stack	Early-stage VC	$300.0	Guangzhou Automobile, GAC Capital
Flink	June 4, 2021	Last-mile delivery	Delivery	Series A	$243.3	Mubadala Capital-Ventures, Bond Capital (San Francisco), Prosus
Zhidian Automobile	June 15, 2021	EVs	Commercial BEVs	Series A	$156.1	Henglu Asset
Dott	April 20, 2021	Micromobility	Network operators	Series B	$85.0	Sofina
Waabi	June 8, 2021	Autonomous driving	Simulation/development tools, other autonomous driving	Series A	$82.7	Khosla Ventures
Innovusion	May 11, 2021	Autonomous driving	Lidar	Series B	$64.0	Temasek Holdings
Flexcar	June 29, 2021	Auto commerce	Online car rental	Series B	$60.3	VentureFriends, Uni.Fund, Seaya Ventures
GO Sharing	April 22, 2021	Micromobility	Network operators	Early-stage VC	$59.4	Opportunity Partners (Netherlands)
Alto	June 28, 2021	Ridehailing	Ridehailing platforms	Series B	$45.0	Goff Capital Partners, Tuesday Capital
Breton Technology	April 27, 2021	EVs, autonomous driving	Commercial BEVs, other autonomous driving	Early-stage VC	$38.2	Ordos Group, Puchao Capital, Zhiming Capital

Source: PitchBook | Geography: Global | *As of June 30, 2021

Teleoperation startups

Teleoperation, or the remote monitoring and control of vehicles, is becoming more prominent as vehicles become increasingly autonomous. In situations such as construction zones or severe weather conditions, wherein autonomous vehicles become stuck or unable to drive autonomously, teleoperators can remotely take over and safely guide the vehicle.

Even as VC investment in autonomous driving soars—with a record $11.1 billion invested in H1 2021—investment in teleoperations-focused startups has been relatively limited, with just $16.8 million invested in the same timeframe. So far, the slow rollout of robotaxi services has constrained the teleoperations industry, as autonomous driving companies face challenges in solving the operating design domain (ODD) of dense urban areas. As we outline in our recent analyst note **Robotaxis and the Road to Profitability**, robotaxi companies must expand to densely populated cities to be profitable at scale. However, these cities are the most challenging ODDs for robotaxis to navigate. As such, several teleoperations startups have been acquired or pivoted from monitoring cars to monitoring industrial robots.

Remotely operated mobility services could set the stage for telecommunications companies to take a more prominent role in the future of mobility, as reliable, low-latency networks will be critical for enabling remote operation. We anticipate global carriers such as **AT&T** (NYSE: T), **Verizon** (NYSE: VZ), and **NTT** (TKS: 9432) will seek to leverage their 5G networks to enable mobility services.

Figure 15.

Key teleoperation startups

COMPANY	VC RAISED TO DATE ($M)	LAST VALUATION ($M)*
Phantom Auto	$22.0	N/A
Ottopia	$12.0	$7.1
Scotty Labs	$8.8	$16.1
Formant	$6.0	$10.5
DriveU.auto	$4.0	N/A
Cambrian Intelligence	N/A	$1.3
Halo	N/A	N/A
REMNAV	N/A	N/A
Formation	N/A	N/A

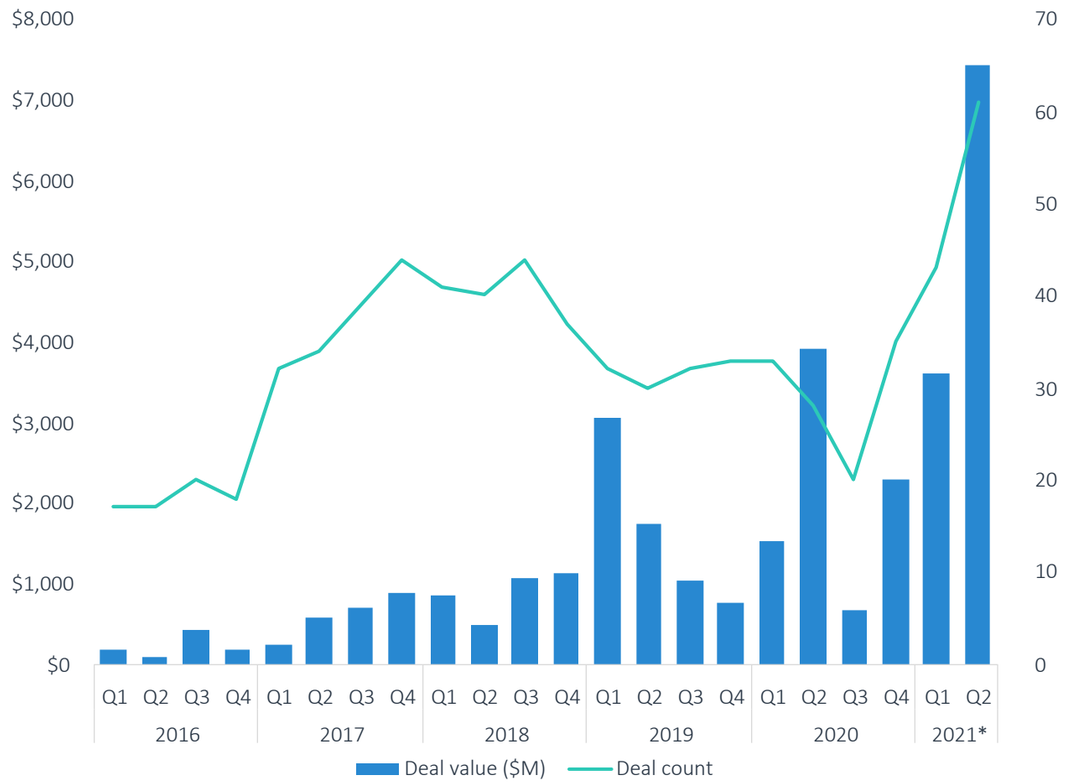
Source: PitchBook | Geography: Global | *As of June 30, 2021

TELEOPERATION STARTUPS

In one such partnership, startup **Halo** recently announced a pilot with **T-Mobile** (NASDAQ: TMUS) to enable remotely operated on-demand carshares. Through the pilot, electric cars ordered through the **Halo** app are piloted by remote operators and delivered directly to consumers. The vehicles are fitted with cameras, radar, and ultrasonic sensors and integrated with **T-Mobile**'s 5G network for low-latency remote operation, with automatic emergency braking as a failsafe.

Remotely operated carshares could disrupt the dynamics of the mobility industry by offering the convenience of on-demand ridehailing with the flexibility of carsharing. As the cars would be remotely operated only between trips, driving costs could be reduced to 10% to 20% of those of ridehailing. Additionally, **Halo**'s approach is highly scalable and avoids the immense capital expense, complexity, and timeline uncertainty of developing and commercializing robotaxis. At scale, **Halo** expects to generate a contribution margin of 35% to 60%. Over the long term, the startup plans to further expand margins by automating relatively simple tasks such as highway driving and navigating slow, bumper-to-bumper traffic.

Figure 16. AUTONOMOUS DRIVING VC DEAL ACTIVITY



Source: PitchBook | Geography: Global | *As of June 30, 2021

SELECT COMPANY HIGHLIGHT | RECURRENT

RECURRENT

Founded
2020

Employees
14

Total raised
$3.5M

Last financing
Raised $3.2M in a seed round

Last financing valuation
N/A

Lead investors:
Wireframe Ventures, Vulcan Capital, Prelude Ventures, Powerhouse Ventures, Union Bay Partners, Ascend.vc, Pioneer Square Labs, AAA Washington

Overview

Recurrent provides independent, **CARFAX**-like reports on the health of used electric car batteries to dealerships and consumers. By leveraging a data-sharing fleet of over 5,000 electric vehicles, **Recurrent** has developed a machine learning model to statistically predict battery health and range for used EVs on sale at dealerships. **Recurrent** currently works with over 25 dealers in the US and monetizes through a monthly subscription.

The battery health and range of used EVs can vary drastically. For example, the range of a 10-year-old EV driven and stored in suboptimal conditions can be more than 50% lower than when it was new. While internal combustion engine (ICE) vehicles are priced primarily on mileage, driving and storage conditions are more relevant for EVs. As no existing solution on the market can assess these conditions, used EV buyers are often gambling on the battery health of the vehicle they purchase.

Recurrent straddles two crucial mobility trends: electrification and the digitization of auto commerce. As electric cars become more widespread and consumers increasingly buy cars online, independent battery reports could add value to both buyers and sellers as a key measure of price discovery.

Leadership

Co-founder & CEO: Scott Case
Co-founder & CTO: Kyle Rippey

Financing history

In November 2020, the company raised $3.2 million of seed funding in a deal led by Wireframe Ventures. Vulcan Capital, Prelude Ventures, Powerhouse Ventures, Union Bay Partners, Ascend.vc, Pioneer Square Labs, and AAA Washington also participated in the round. The funds will be used for continued product development and to invest in the data science powering the reports. In June 2020, the company raised $300,000 of venture funding in the form of convertible notes from Pioneer Square Labs. The notes were subsequently converted into equity.

About PitchBook Emerging Tech Research

Independent, objective, and timely market intel

As the private markets continue to grow in complexity and competition, it's essential for investors to understand the industries, sectors and companies driving the asset class.

Our Emerging Tech Research provides detailed analysis of nascent tech sectors so you can better navigate the changing markets you operate in—and pursue new opportunities with confidence.

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