

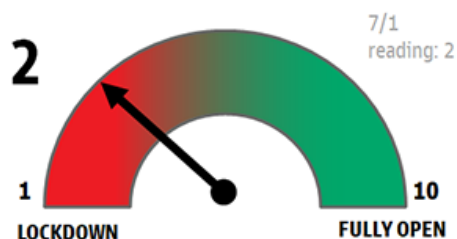
**Note:** The following is a redacted version of the original report published July 8, 2020 [20 pgs].

## Measuring the Reopening of America

# The GS US Reopening Scale: Composite score declines continue for second straight week (Week of July 8)

### GS US Reopening Scale

Week of 7/8



**New this week: Reopening scores decline in aggregate for the second straight week as COVID-19 cases remain elevated and states continue to roll-back reopening plans. We update our state by state analysis which shows dining and mobility metrics reversing course in states like Georgia, Florida, Arizona, and Texas.**

In week 10 of the *Measuring the Reopening of America* series, we see

the second straight week of reversal in the rate of progress towards normalization across the aggregation of data covering “Stay at Home” (food delivery, eCommerce, streaming media, grocery sales, etc.) and “Back to Normal” (commuting, box office, travel, etc.) categories. While things continue to vary widely on a state-to-state basis, as we update in detail within, high frequency data across a number of micro data points has begun to reflect shifting consumer behavior and more restrictive policies in some states with increasing COVID-19 cases.

**Heath P. Terry, CFA**  
+1(212)357-1849 | heath.terry@gs.com  
Goldman Sachs & Co. LLC

**Noah Poponak, CFA**  
+1(212)357-0954 | noah.poponak@gs.com  
Goldman Sachs & Co. LLC

**Jason English**  
+1(212)902-3293 | jason.english@gs.com  
Goldman Sachs & Co. LLC

**Alexandra Walvis, CFA**  
+1(212)357-6283 | alexandra.walvis@gs.com  
Goldman Sachs & Co. LLC

**Catherine O'Brien**  
+1(212)357-8285 | catherine.m.obrien@gs.com  
Goldman Sachs & Co. LLC

**Katherine Fogertey**  
+1(212)902-6473 | katherine.fogertey@gs.com  
Goldman Sachs & Co. LLC

**Mark Delaney, CFA**  
+1(212)357-0535 | mark.delaney@gs.com  
Goldman Sachs & Co. LLC

**Jerry Revich, CFA**  
+1(212)902-4116 | jerry.revich@gs.com  
Goldman Sachs & Co. LLC

**Susan Maklari**  
+1(212)357-3906 | susan.maklari@gs.com  
Goldman Sachs & Co. LLC

**Jordan Alliger**  
+1(212)357-4913 | jordan.alliger@gs.com  
Goldman Sachs & Co. LLC

**Kate Wang**  
+1(212)902-7929 | kate.wang@gs.com  
Goldman Sachs & Co. LLC

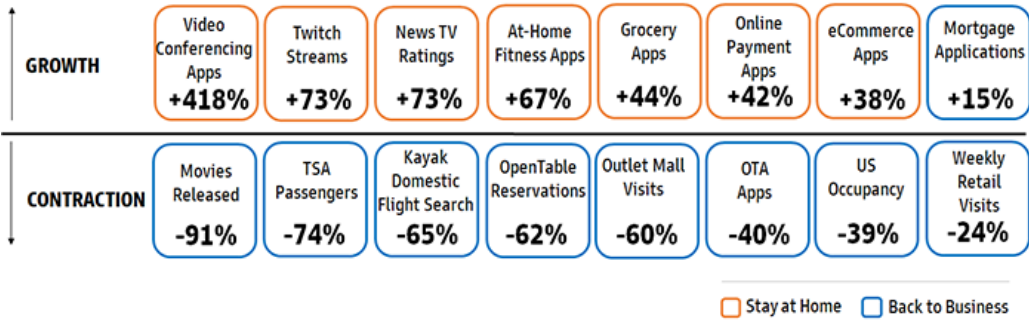
**Adam Hotchkiss**  
+1(212)902-3941 | adam.hotchkiss@gs.com  
Goldman Sachs & Co. LLC

**Ankit Prasad**  
+1(212)934-6394 | ankit.prasad@gs.com  
Goldman Sachs India SPL

**Stephen Grambling, CFA**  
+1(212)902-7832 | stephen.grambling@gs.com  
Goldman Sachs & Co. LLC

Goldman Sachs does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. For Reg AC certification and other important disclosures, see the Disclosure Appendix, or go to [www.gs.com/research/hedge.html](http://www.gs.com/research/hedge.html). Analysts employed by non-US affiliates are not registered/qualified as research analysts with FINRA in the U.S.

**Exhibit 1: Reopening at a glance: Back-to-business segments see declines, stay-at-home see mixed results**  
% change y/y for week ending July 5



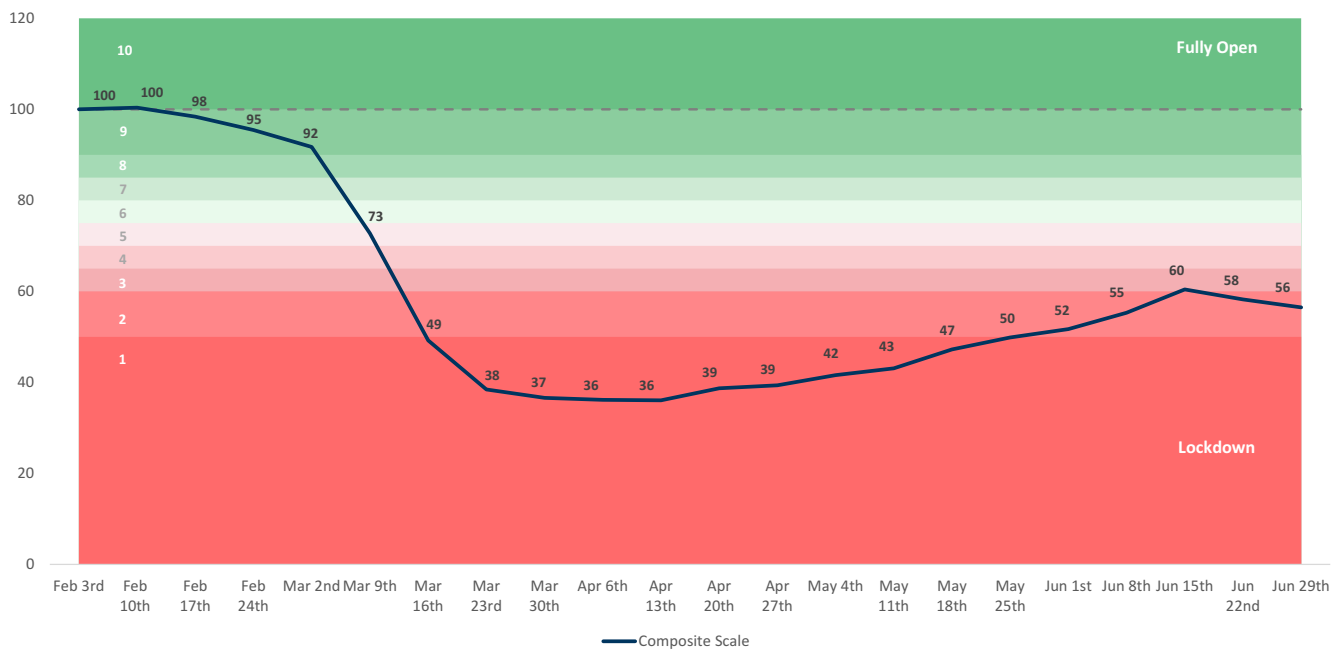
This exhibit summarizes data from sources listed in Exhibits 7, 8 and 9.

Source: Goldman Sachs Global Investment Research

The Composite Score that underlies the Reopening Scale declined for the second straight week in a reversal of the steady improvement we’ve seen over the prior 10 weeks, ([Exhibit 2](#)) losing another 2 points to reach 56 (vs. 58 and 60 in the prior two weeks, respectively). Our GS US Reopening Scale remains a ‘2’ this week reflecting this regression.

To determine the position of the scale (1-10) we calculate growth or decline in each category relative to a pre-Crisis baseline (week of Feb 3rd), and equal-weight each category into our Composite Scale ([Exhibit 11](#)). From there, we assign a Reopening score reflecting these quantitative inputs ([Exhibit 10](#)). As progress towards reopening continues, we expect that will show up in the Reopening Scale moving higher.

**Exhibit 2: Our Composite Scale shows a continued reversal in trends this week after nine straight weeks of improvement**  
 Date on x-axis represents first day of week measured



This exhibit summarizes data from sources listed in Exhibits 7, 8 and 9. Modest historical revisions as we refine included data sets and account for minor data revisions.

Source: Goldman Sachs Global Investment Research

## Key Findings

Our read across of these data sources still largely describes a landscape we’re all very familiar with: lots of eCommerce deliveries, streaming media, and video chats taking the place of concerts, travel, and time at the office. While that picture remains mostly one sided in the data ([Exhibit 4](#)), with a larger number of cities and states moving further into their reopening, the trends are becoming more varied, particularly this week, with red slipping onto the “Stay at Home” heatmap and green on to “Back to Normal.” Measures of Business Activity, which tend to be available on a more delayed basis, are

beginning to show more mixed trends as categories like housing and machinery show signs of improvement.

This week, we update our state-specific data for states that were among the first to reopen, New York as one of the last and the national average. As virus cases surge in many 'early states', we see reversals in consumer recovery across mobility, dining and more.

## Highlights

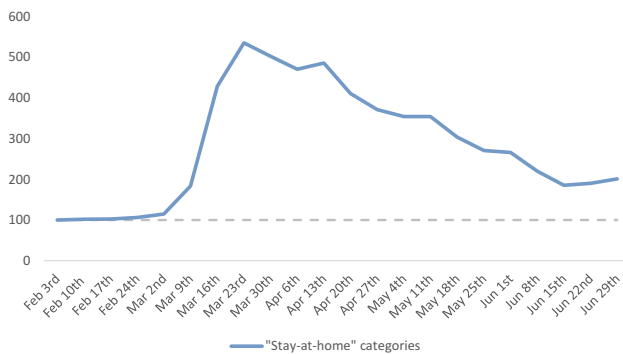
- **Retailers sound more cautious on reopening progress as the virus resurges in several states and sales recovery stalls.** Macy's and Capri Holdings reported earnings last week, and Macy's noted that sales recovery has stalled at -35% y/y, where it is expected to remain through the rest of the year. The company highlighted that Texas, Arizona and Florida in particular have seen weakening sales, calling out a 15% drop in Texas productivity in the past two weeks. In addition, urban areas and cities are underperforming in part due to the lack of tourist spending, while rural stores are doing better. On categories, management called out beauty, soft home, as well as active and casual apparel as strong, while dress up categories such as dresses, suits and dress shirts have been weak. Capri Holdings, a global luxury fashion group, also pointed to longer dated sales pressure as tourist headwinds could persist through early 2021.
- Last night, **United backtracked on August flight additions it had announced last week due to declining demand to destinations with rising cases of COVID-19 and to destinations with recently implemented two-week quarantine requirements.** The company now expects August system capacity to decline 65% year-over-year vs. its July 1st announcement that August system capacity would be down a lesser 60%. While a step back from last week's planned capacity additions, August capacity cuts represent a sequential improvement from July capacity -75% and June capacity -88%. The company noted that August flight additions would include outdoor recreation destinations where demand has improved as it is relatively easier to social distance in these locations. Management highlighted new flights to Aspen, Colorado; Bangor, Maine; Bozeman, Montana; Jackson Hole, Wyoming; and Hawaii, in addition to select international destinations. United also stated in last night's release that capacity through year-end 2020 is expected to be in line with August levels. Per the schedule data, this implies that September to December capacity will decline ~60% y/y each month.
- **Machinery capacity utilization has recovered to prior year levels in June across industrial end markets.** Construction equipment operating rates in June were down just 1% from last year's levels – a sharp improvement after bottoming at -14%/y/y in April, suggesting virtually all the equipment that was parked due to COVID shut-downs has effectively been put back to work. We have seen a similar improvement in used equipment inventories as well. In Truck Machinery, spot market demand growth has outstripped supply growth for the second consecutive month, with spot capacity utilization improving by 12% y/y. As a result, spot market pricing was up 16% in June from May levels, and is now tracking -5% y/y compared to -13% in May. Farm equipment capacity utilization has improved as well, as reflected

by used tractors being put back to work; dealer inventories of used tractors were down 14% y/y in June further improving from -12% in May.

- Shake Shack provided a 2Q business update related to COVID-19 that shows divergent trends across geographies.** The company reported SSS of -39% for week-ending 7/1, which includes a wide range of results: NYC -58%, Midwest -42%, West -35%, Southeast -32%, and West -24%. Shake Shack's SSS trends are 4% better in total versus results reported for w/e 4/29; however, NYC (+2%) and Midwest (-1%) regions showed only moderate improvement or deceleration, versus better results in the Midwest (+6%), Southeast (+7%), and Northeast (+11%).
 

**OpenTable seated-diner data also show a gap in regional performance,** with states in the Midwest (-47%) and Northeast (-51%) performing better than those in the Northwest/Mid-Atlantic (-67%), South (-63%), West (-62%), and US total (-60%). Notably, the **delta between seated-diners in restaurants that have re-opened in California, Florida, and Texas (-50%; 6/29-7/5) continues to widen versus the US total (-45%; 6/29-7/5).**

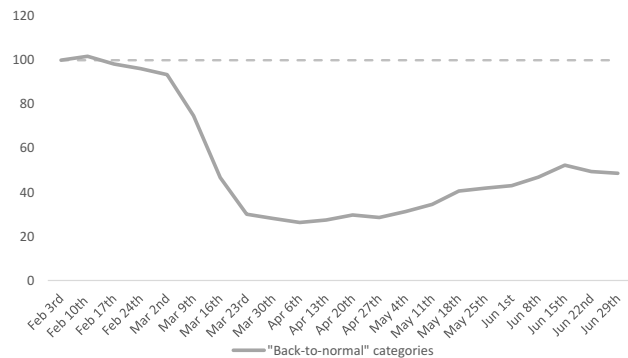
**Exhibit 3: Stay Home categories reaccelerate as states reverse course on reopening**  
Date on x-axis represents first day of week measured



This exhibit summarizes data from sources listed in Exhibits 7, 8 and 9.

Source: Goldman Sachs Global Investment Research

**Exhibit 4: Back to Normal categories on average down 51% from February levels, but up 23pts from trough**  
Date on x-axis represents first day of week measured



This exhibit summarizes data from sources listed in Exhibits 7, 8 and 9.

Source: Goldman Sachs Global Investment Research

**This week, we update our initial state reopening data** that tracks several states that have reopened on the early side, including Georgia, Texas, Arizona, Colorado and Florida, as well as New York, one of the last states to reopen. We add AllTheRooms weekly data to gauge alternative accommodation lodging demand, and Kayak search trends to measure consumer interest in air travel. As the virus surges in several 'early states' and states backtrack on reopening, metrics show that consumer behavior towards normalcy has correspondingly halted or reversed. On the other hand, New York and Colorado, states that were slower to recover, are still showing signs of steady progress.

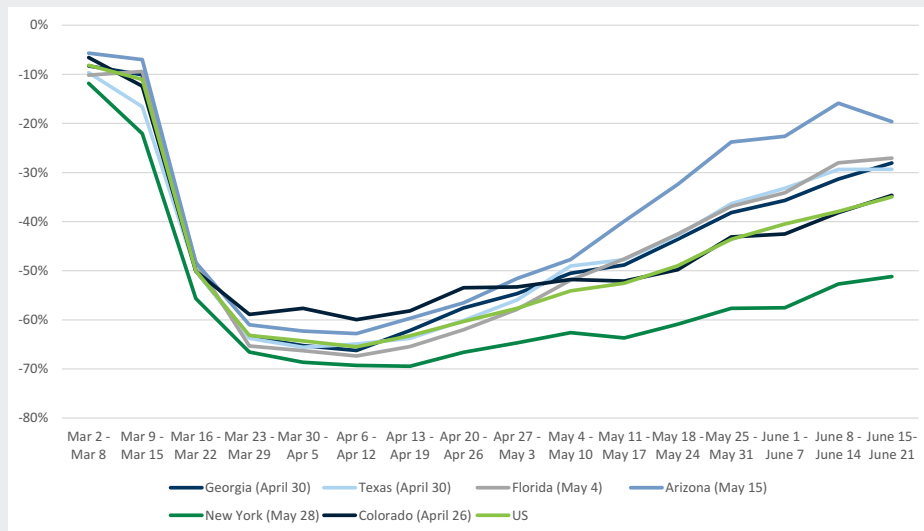
Among the reopening categories that we track, flight search interest has been the first to show trend reversals in all states and on a national level, suggesting that people's forward planning schedules for air travel are on hold as they hesitate to book tickets in this environment. OpenTable seated diners also saw steep declines in Georgia, Texas and Arizona (nationally declined 2pts) in the week of June 22-28 after

many weeks of continuous improvement. For example, Arizona declined to -56% y/y, down from -47% y/y in the prior week, as Arizona rolled back its reopening and ordered bars, gyms, clubs and water parks to close on June 30th. Mobility data to retail and recreation locations also show declines, reaching -18% y/y in Texas compared to a steady -13% y/y in the month before. In contrast, alternative accommodations (as shown by AllTheRooms data) appear to be recovering steadily in most states as people prefer to travel to suburban locations by car.

New York and Colorado, although mostly steadily improving, are also seeing delayed reopening measures as virus cases surge in other states. In New York, both STR and AllTheRooms lodging data ticked downwards recently showing weakening demand, although there also seems to be a clear preference for alternative accommodations. We expect states' reopening to continue to be closely related to the number of new virus cases and to differ by state in line with new guidelines.

**Exhibit 5: Metrics show states stabilizing or reversing the course of reopening, particularly in Arizona, Texas and Florida**

Select states reopening metric averages



Source: Data compiled by Goldman Sachs Global Investment Research

**Exhibit 6: State reopening metrics by category of consumer behavior**

State (Stay-at-home expiration)	Category	Metric	Time Period													Source
			Mar 30 - Apr 6	Apr 6 - Apr 12	Apr 13 - Apr 19	Apr 20 - Apr 26	Apr 27 - May 3	May 4 - May 10	May 11 - May 17	May 18 - May 24	May 25 - May 31	June 1 - June 7	June 8 - June 14	June 15 - June 21	June 22 - June 28	
Georgia (April 30)	Mobility	Google COVID-19 Community Mobility Reports	-38%	-42%	-35%	-33%	-24%	-19%	-18%	-16%	-17%	-12%	-12%	-10%	-12%	Google
	Flight Interest	Kayak Search Traffic	-80%	-76%	-74%	-68%	-65%	-62%	-61%	-53%	-53%	-50%	-37%	-36%	-46%	Kayak
	Dining	OpenTable Seated Diners	-100%	-100%	-100%	-100%	-98%	-94%	-89%	-82%	-75%	-71%	-65%	-51%	-58%	OpenTable
	Lodging	Atlanta RevPAR	-81%	-85%	-78%	-77%	-75%	-72%	-73%	-68%	-54%	-64%	-63%	-60%	-55%	STR
	Consumer Spend	AllTheRooms RevPAR	-62%	-62%	-56%	-52%	-46%	-41%	-35%	-29%	-17%	-6%	-3%	-1%	7%	AllTheRooms
Average	Consumer Spend	% Change	-39%	-33%	-31%	-16%	-21%	-17%	-14%	-13%	-12%	-8%	-7%	-5%	Opportunity Insights	
Average	Consumer Spend	% Change	-65%	-66%	-62%	-58%	-55%	-51%	-49%	-44%	-38%	-36%	-31%	-28%	-33%	
Colorado (April 26)	Mobility	Google COVID-19 Community Mobility Reports	-45%	-46%	-46%	-39%	-32%	-28%	-28%	-23%	-21%	-17%	-15%	-13%	-12%	Google
	Flight Interest	Kayak Search Traffic	-77%	-76%	-70%	-70%	-66%	-63%	-63%	-59%	-59%	-56%	-44%	-48%	-53%	Kayak
	Dining	OpenTable Seated Diners	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-85%	-70%	-62%	-47%	OpenTable
	Lodging	Denver RevPAR	-85%	-88%	-85%	-82%	-83%	-83%	-82%	-80%	-74%	-77%	-78%	-76%	-74%	STR
	Consumer Spend	AllTheRooms RevPAR	-2%	-16%	-13%	-1%	-14%	-17%	-18%	-21%	-6%	-27%	-22%	-13%	-5%	AllTheRooms
Average	Consumer Spend	% Change	-58%	-60%	-58%	-53%	-53%	-52%	-52%	-50%	-43%	-43%	-38%	-35%	-38%	Opportunity Insights
Texas (April 30)	Mobility	Google COVID-19 Community Mobility Reports	-41%	-42%	-36%	-34%	-29%	-22%	-22%	-17%	-17%	-13%	-13%	-13%	-18%	Google
	Flight Interest	Kayak Search Traffic	-80%	-79%	-74%	-71%	-65%	-61%	-60%	-55%	-53%	-51%	-40%	-49%	-57%	Kayak
	Dining	OpenTable Seated Diners	-100%	-100%	-100%	-100%	-95%	-89%	-80%	-70%	-60%	-55%	-53%	-44%	-59%	OpenTable
	Lodging	Dallas RevPAR	-81%	-84%	-80%	-78%	-79%	-75%	-76%	-74%	-61%	-64%	-65%	-67%	-59%	STR
	Consumer Spend	AllTheRooms RevPAR	-62%	-64%	-65%	-58%	-49%	-36%	-33%	-27%	-13%	-7%	3%	3%	3%	AllTheRooms
Average	Consumer Spend	% Change	-38%	-21%	-27%	-20%	-19%	-14%	-15%	-14%	-14%	-9%	-8%	-8%	-38%	Opportunity Insights
Average	Consumer Spend	% Change	-66%	-67%	-64%	-60%	-56%	-49%	-48%	-43%	-36%	-33%	-29%	-29%	-38%	
Florida (May 4)	Mobility	Google COVID-19 Community Mobility Reports	-45%	-50%	-46%	-44%	-39%	-33%	-31%	-27%	-26%	-24%	-21%	-20%	-23%	Google
	Flight Interest	Kayak Search Traffic	-80%	-79%	-70%	-65%	-58%	-49%	-49%	-43%	-44%	-39%	-28%	-42%	-57%	Kayak
	Dining	OpenTable Seated Diners	-100%	-100%	-100%	-100%	-100%	-91%	-83%	-73%	-62%	-58%	-51%	-41%	-51%	OpenTable
	Lodging	Average RevPAR	-89%	-90%	-89%	-88%	-85%	-82%	-77%	-76%	-66%	-69%	-64%	-61%	-58%	STR
	Consumer Spend	AllTheRooms RevPAR	-58%	-58%	-65%	-59%	-51%	-45%	-33%	-28%	-16%	-7%	3%	5%	6%	AllTheRooms
Average	Consumer Spend	% Change	-26%	-28%	-23%	-16%	-15%	-11%	-13%	-9%	-8%	-8%	-3%	-3%	-37%	Opportunity Insights
Average	Consumer Spend	% Change	-66%	-67%	-65%	-62%	-58%	-52%	-48%	-43%	-37%	-34%	-28%	-27%	-37%	
Arizona (May 15)	Mobility	Google COVID-19 Community Mobility Reports	-38%	-41%	-36%	-35%	-32%	-29%	-25%	-19%	-21%	-19%	-18%	-20%	-22%	Google
	Flight Interest	Kayak Search Traffic	-72%	-69%	-61%	-57%	-52%	-45%	-42%	-35%	-37%	-35%	-26%	-39%	-50%	Kayak
	Dining	OpenTable Seated Diners	-100%	-100%	-100%	-100%	-100%	-100%	-76%	-67%	-55%	-52%	-47%	-47%	-56%	OpenTable
	Lodging	Phoenix RevPAR	-55%	-46%	-43%	-42%	-41%	-35%	-27%	-26%	-16%	-11%	-9%	-8%	-5%	STR
	Consumer Spend	AllTheRooms RevPAR	-52%	-51%	-48%	-42%	-26%	-18%	-5%	1%	21%	29%	42%	34%	36%	AllTheRooms
Average	Consumer Spend	% Change	-27%	-30%	-31%	-23%	-21%	-19%	-19%	-15%	-13%	-13%	-12%	-10%	-25%	Opportunity Insights
Average	Consumer Spend	% Change	-62%	-63%	-60%	-57%	-52%	-46%	-40%	-32%	-24%	-23%	-16%	-20%	-25%	
New York (May 28)	Mobility	Google COVID-19 Community Mobility Reports	-56%	-63%	-63%	-61%	-55%	-52%	-49%	-45%	-44%	-41%	-36%	-32%	-29%	Google
	Flight Interest	Kayak Search Traffic	-84%	-84%	-83%	-83%	-81%	-78%	-79%	-77%	-76%	-74%	-67%	-70%	-76%	Kayak
	Dining	OpenTable Seated Diners	-100%	-100%	-100%	-100%	-100%	-100%	-99%	-99%	-99%	-99%	-95%	-90%	-85%	OpenTable
	Lodging	New York RevPAR	-89%	-88%	-84%	-78%	-78%	-78%	-81%	-78%	-72%	-77%	-75%	-77%	-78%	STR
	Consumer Spend	AllTheRooms RevPAR	-48%	-46%	-55%	-54%	-52%	-50%	-54%	-50%	-40%	-40%	-32%	-33%	-36%	AllTheRooms
Average	Consumer Spend	% Change	-35%	-34%	-32%	-24%	-22%	-18%	-20%	-16%	-15%	-14%	-12%	-8%	-60%	Opportunity Insights
Average	Consumer Spend	% Change	-69%	-69%	-69%	-67%	-65%	-63%	-64%	-61%	-58%	-58%	-53%	-51%	-60%	
US	Mobility	Google COVID-19 Community Mobility Reports	-42%	-46%	-42%	-40%	-34%	-30%	-29%	-24%	-23%	-19%	-16%	-14%	-15%	Google
	Flight Interest	Kayak Search Traffic	-78%	-78%	-73%	-72%	-69%	-65%	-60%	-60%	-56%	-46%	-52%	-56%	-65%	Kayak
	Dining	OpenTable Seated Diners	-100%	-100%	-100%	-100%	-100%	-98%	-95%	-90%	-84%	-79%	-71%	-60%	-82%	OpenTable
	Lodging	RevPAR	-82%	-84%	-79%	-78%	-77%	-74%	-70%	-62%	-62%	-65%	-63%	-60%	-57%	STR
	Consumer Spend	AllTheRooms RevPAR	-53%	-50%	-65%	-60%	-46%	-41%	-40%	-36%	-24%	-22%	-16%	-12%	-9%	AllTheRooms
Average	Consumer Spend	% Change	-31%	-30%	-30%	-22%	-20%	-16%	-17%	-14%	-13%	-12%	-10%	-8%	-41%	Opportunity Insights
Average	Consumer Spend	% Change	-64%	-65%	-63%	-60%	-56%	-54%	-53%	-49%	-44%	-40%	-36%	-35%	-41%	

Source for Google Community Mobility data: Google LLC "Google COVID-19 Community Mobility Reports". <https://www.google.com/covid19/mobility/> Accessed: 3rd July 2020

Source: Google, Kayak, OpenTable, STR, AllTheRooms, Opportunity Insights

**Weekly Trends**

**Stay Home**

While it is no surprise that services like Netflix, Amazon and Zoom are in high demand during a time when many states are implementing shelter-in-home policies, we track data across a number of sources and verticals to understand the extent to which different categories are being impacted.

This week, stay-at-home categories saw mixed performance. eCommerce and grocery app download growth decelerated to +38% y/y and +44%, respectively, after weeks of acceleration. Similarly, \$/store for our stay-at-home basket, including food and alcohol, has slowed to +21% y/y, compared to +25% and +32% in the two prior weeks. News TV ratings have re-accelerated this week to +73% y/y (compared to +53% last week), while online streaming and food delivery apps remain near flat y/y on average. On the other hand, at-home fitness app downloads have accelerated to +67% y/y, up from +33% and +22% in the two prior weeks. Video conferencing app download growth has also reached >+400% y/y

after several weeks of slowdown in late June. Venmo, Square Cash and Zelle app downloads also continue to accelerate this week as digital transactions take share from cash ones.

**Exhibit 7: “Stay at Home” metrics moderating after the initial surge for these categories during lockdowns and sheltering in place**  
Feb 9 - Apr 12 excluded for presentation purposes; see prior reports for data

Basket	Sector	Company/App	Metric	yy % change, unless otherwise noted												Source		
				Feb 3 - Feb 9	Apr 13 - Apr 19	Apr 20 - Apr 26	Apr 27 - May 3	May 4 - May 10	May 11 - May 17	May 18 - May 24	May 25 - May 31	June 1 - June 7	June 8 - June 14	June 15 - June 21	June 22 - June 28		June 29 - July 5	
Stay at Home	eCommerce	US App Downloads	US App Downloads	0%	124%	114%	113%	117%	122%	140%	83%	82%	74%	59%	38%	Sensor Tower		
			Flour	-48%	369%	266%	181%	162%	124%	110%	80%	70%	62%	69%	74%	44%	Sensor Tower	
	Groceries	Household cleaning compounds	\$store	US App Downloads	-2%	42%	141%	114%	99%	89%	79%	56%	46%	31%	44%	30%	Catalina	
				Flour	4%	62%	87%	54%	52%	49%	46%	26%	20%	35%	43%	40%	33%	Catalina
				Alcohol	3%	17%	40%	36%	44%	35%	29%	26%	29%	21%	32%	23%	15%	Catalina
				Staples	0%	1%	28%	15%	18%	14%	14%	12%	12%	8%	18%	11%	12%	Catalina
	Online Media	US App Downloads (m/m change)	US App Downloads	1%	9%	51%	32%	31%	26%	25%	21%	19%	14%	25%	16%	17%	Sensor Tower	
			US App Downloads	-46%	-35%	-42%	-35%	-26%	-23%	-12%	-14%	-27%	-17%	-15%	1%	138%	Sensor Tower	
	News TV	Ratings	CNN	1%	31%	32%	27%	17%	33%	37%	17%	3%	2%	-4%	6%	-4%	Sensor Tower	
			Fox News Channel	-5%	137%	135%	97%	84%	110%	64%	217%	279%	143%	122%	117%	116%	Nielsen	
			MSNBC	4%	68%	69%	44%	27%	41%	25%	85%	35%	54%	44%	31%	35%	Nielsen	
	Online Gaming	Total Hours Watched	Stream	-16%	37%	58%	22%	16%	46%	25%	72%	92%	57%	11%	74%	Sully Gnome		
			Users	11%	102%				80%					73%		33%	Steam website	
	Food Delivery	Consumer Spend	Users	9%	53%	54%	50%	46%	47%	46%	40%	39%	34%	35%	32%	33%	Sensor Tower	
			iOS app downloads	24%	30%	35%	33%	25%	28%	19%	3%	0%	1%	-8%	0%	4%	Facteus	
	Video Chat Apps	US App Downloads	US App Downloads	11%	111%	70%	96%	81%	93%	95%	85%	57%	62%	101%	63%	5%	1%	Sensor Tower
US App Downloads			-27%	64%	48%	38%	39%	28%	13%	-5%	-3%	-8%	-8%	5%	1%	Sensor Tower		
US App Downloads			-1%	293%	281%	289%	231%	177%	169%	143%	72%	61%	22%	33%	67%	Sensor Tower		
Online Payment Apps	US App Downloads	US App Downloads	-12%	1962%	1485%	1277%	1234%	1253%	938%	774%	784%	552%	362%	392%	418%	Sensor Tower		
		US App Downloads	16%	92%	56%	57%	62%	58%	71%	58%	68%	62%	37%	35%	42%	Sensor Tower		

Source: Sources in exhibit, compiled by Goldman Sachs Global Investment Research

### Stay home category updates

- On July 6 Uber announced an agreement to acquire Postmates in an all-stock transaction for approximately \$2.65bn. The transaction is expected to close in Q1 2021. Management expects the proposed business combination to drive significant efficiency and cost savings. Uber is targeting ~\$200mn in annual run rate synergies 1 year after the deal closes (due 1Q21).
- Disney Plus’s surge in app downloads over the July 4th long weekend was boosted by its release of the filmed version of Hamilton on Broadway, which was available on July 3rd.

### Back to Normal

The “Back to Normal” category includes some of the most heavily impacted consumer segments, including commuting, dining and all aspects of travel.

Back-to-normal categories continue to see negative to little progress on the path to recovery as several states reverse reopening measures. Commute app downloads remain the same as last week (-28% y/y), as do Google Mobility data for transit and workplace locations. Several retail metrics have declined, including weekly visits which were down 24% y/y (compared to -20% and -17% in the two prior weeks) and outlet mall visits down 60% (compared to -49% in the previous week). In contrast, TSA passenger volume has recovered to -74% y/y, improving 4pts, while US occupancy recovered to -39% y/y in the week of June 22nd, improving 3pts, potentially due to increased traveling over the long weekend. However, forward booking metrics, including flight search volume and OTA app downloads, saw deterioration last week. International travel remains depressed at -96% y/y for the number of passengers arriving at the top 5 US airports as most international travel restrictions remain in place.



**Exhibit 8: "Back to Normal" metrics seeing signs of recovery, though mostly still down y/y**

Feb 9 - Apr 12 excluded for presentation purposes; see prior reports for data

Basket	Sector	Company/App	Metric	Y% change, unless otherwise noted																	Source
				Feb 3 - Feb 9	Apr 13 - Apr 19	Apr 20 - Apr 26	Apr 27 - May 3	May 4 - May 10	May 11 - May 17	May 18 - May 24	May 25 - May 31	June 1 - June 7	June 8 - June 14	June 15 - June 21	June 22 - June 28	June 29 - July 5					
Back to Normal	Gym Attendance		US App Downloads	42%	-81%	-83%	-85%	-85%	-89%	-50%	-54%	-53%	-30%	-40%	-36%	-43%		Sensor Tower			
			US App Downloads	-18%	-59%	-56%	-52%	-39%	-23%	-23%	-20%	-20%	-27%	-33%	-28%	-28%		EIA			
	Commuting	Google COVID-19 Community Mobility Reports	Gas Demand	1%	-44%	-36%	-32%	-19%	-28%	-23%	-20%	-20%	-21%	-9%	-10%		Google				
			Transit % change from baseline		-50%	-48%	-43%	-42%	-40%	-37%	-39%	-33%	-30%	-28%	-27%		Google				
	Box Office		Workplaces % change from baseline		-45%	-44%	-42%	-41%	-39%	-36%	-45%	-20%	-20%	-30%		Google					
			US Top 10 Gross	27%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%		Box Office Mojo				
	Sports TV	ESPN	Ratings	Movies Released	22%	-98%	-98%	-99%	-98%	-95%	-98%	-95%	-94%	-92%	-89%	-91%		Box Office Mojo			
				NBCSN	-28%	-87%	-89%	-92%	-88%	-87%	-75%	-80%	-24%	-43%	84%	-15%	-75%		Nielsen		
	Dining	OpenTable		FB1	15%	-25%	-34%	-43%	-46%	-25%	31%	33%	-59%	-48%	-63%	-66%					
				Seated diners		-100%	-100%	-100%	-98%	-95%	-90%	-84%	-78%	-71%	-60%	-62%	-62%		OpenTable		
	Retail			Weekly Visits	-8%	-48%	-45%	-43%	-40%	-38%	-35%	-33%	-29%	-24%	-17%	-20%	-24%		ShopperTrak RCT Corporation		
				Outlet Malls Weekly Visits	-8%	-100%	-100%	-99%	-95%	-90%	-82%	-72%	-63%	-49%	-49%	-60%		ShopperTrak RCT Corporation			
				Beauty Aids \$/store	0%	-24%	-13%	-21%	-2%	-9%	-9%	-11%	-15%	-12%	-8%	-15%	-14%				
				Shaving \$/store	-8%	-8%	0%	-5%	5%	-3%	-1%	-3%	-7%	-8%	0%	0%	-8%		Catalina		
	Department stores		Consumer spend	Deodorants \$/store	2%	-19%	-19%	-18%	-12%	-15%	-11%	-9%	-6%	-8%	-5%	-7%	2%				
						-42%	-47%	-39%	-42%	-30%	-15%	-9%	-3%	4%	30%	15%		Facteus			
	Retail and Recreation	Google COVID-19 Community Mobility Reports		% change from baseline		-42%	-40%	-34%	-30%	-29%	-24%	-23%	-19%	-16%	-14%	-15%		Google			
				Amusement Parks		-71%	-87%	-80%	-82%	-83%	-86%	-82%	-77%	-69%	-69%	-68%		Facteus			
	Airlines	Kayak	Domestic flight search volume	Tourist Attractions		-86%	-78%	-51%	-56%	-59%	-53%	-48%	-34%	-27%	-18%	-26%		Facteus			
				TSA checkpoints		-96%	-95%	-94%	-93%	-91%	-89%	-87%	-85%	-82%	-78%	-74%		TSA			
	Lodging	Hilton	Google Search Traffic	Consumer spend		-89%	-88%	-84%	-82%	-79%	-76%	-72%	-63%	-62%	-63%		Facteus				
				Top 5 US Airports (Int Passenger Arrival)	-1%	-99%	-99%	-99%	-99%	-99%	-98%	-98%	-98%	-97%	-95%	-95%		GS Economics Team			
	Live Events	Marriott	US App Downloads	US Occupancy	-1%	-73%	-72%	-69%	-65%	-65%	-60%	-60%	-56%	-46%	-52%	-56%	-65%		Kayak		
US ADR				1%	-64%	-62%	-59%	-56%	-54%	-50%	-43%	-40%	-40%	-42%	-39%		STR				
Card Payments	Mastercard	US Switched Volume	US ADR	1%	-42%	-43%	-44%	-42%	-42%	-40%	-33%	-38%	-34%	-32%	-29%		STR				
					-7%	-55%	-51%	-43%	-45%	-47%	-40%	-38%	-28%	-27%	-30%	-35%		Google			
Live Events		US App Downloads	US Occupancy	-12%	-75%	-74%	-76%	-69%	-68%	-63%	-61%	-56%	-53%	-52%	-52%	-51%					
					-88%	-92%	-93%	-88%	-88%	-80%	-80%	-46%	-43%	-32%	-37%	-34%	-40%		Sensor Tower		
Card Payments	Mastercard	US Switched Volume	US Occupancy	37%	-67%	-66%	-65%	-61%	-59%	-46%	-46%	-43%	-32%	-37%	-34%	-40%					
					-26%	-15%	-12%	-6%	-6%	-3%	-1%	-1%	3%	5%			Company data				

Source for Google Community Mobility data: Google LLC "Google COVID-19 Community Mobility Reports". <https://www.google.com/covid19/mobility/> Accessed: <3rd July 2020>; Google search data from Google Trends

Source: Sources in exhibit, compiled by Goldman Sachs Global Investment Research

**Back to normal category updates**

- Expedia updated business trends this week, and reported y/y that declines in gross bookings (excluding cancellations) moderated to -45% in June, compared to -85% in the second half of March and in April. Additionally, the company noted that Vrbo, Expedia's alternative accommodation business, has been the biggest driver of improved booking trends with significant y/y growth in May and June.
- California vehicle miles driven (VMT) declined in early July at almost -20% week-over-week after recovering over the course of May and June from the initial lockdown in mid-March.

**Business Activities**

As air travel demand has been recovering steadily over the past few weeks, airlines are correspondingly adjusting supply, with North American airline forward schedules now at -64% y/y, compared to -77% y/y in the two prior weeks, while the number of passenger aircraft in service recovers to -33% y/y, up from -38% in the week before. However, there are signs (e.g. United Airlines) that companies could be re-adjusting supply as demand to areas with high virus case counts decline. On the housing side, Redfin reported that luxury home prices (defined to be the top 5% of homes based on market value) have dropped 2.3% this spring, but the latest data show that they are starting to rebound. Initially, these houses had taken a bigger hit from the pandemic than the rest of the housing market, where sales were -30% y/y in the 12 weeks ending June 14. Elective procedures were back down to -33% y/y in the week ending June 28, after having recovered to -25% in the prior week.

**Exhibit 9: Business Activity metrics recovering to reflect the economic impact of the crisis**

Feb 3 - April 19 excluded for presentation purposes; see prior notes for data

Basket	Sector	Company/App	Metric	y/y % change, unless otherwise noted												Source
				Apr 20 - Apr 26	Apr 27 - May 3	May 4 - May 10	May 11 - May 17	May 18 - May 24	May 25 - May 31	June 1 - June 7	June 8 - June 14	June 15 - June 21	June 22 - June 28	June 29 - July 5		
Business Activity	Industrial consumer		TSA passenger throughput	-95%	-94%	-93%	-91%	-89%	-87%	-85%	-82%	-80%	-78%	-74%	TSA	
			N.A. Airline forward schedules (1 month out)	-65%	-61%	-61%	-66%	-72%	-75%	-76%	-77%	-77%	-77%	-64%	OAG	
			Actual air traffic growth	-94%												IATA
	Autos	3M	Passenger aircraft in service	-59%	59%	-57%	-55%	-55%	-51%	-49%	-45%	-41%	-38%	-33%	Company data	
			Monthly sales (organic)	-12%											EIA	
			US Refinery Utilization %	-26%	-24%	-22%	-25%	-22%	-22%	-22%	-21%	-21%	-20%		Wards	
	Industrial housing		Auto SAAR	-48%			-30%					-24%			EIA	
			Domestic ethanol blending	-37%	-35%	-30%	28%	-25%	-23%	-20%	-16%	-13%			EIA	
			Google Search Traffic	-21%	-10%	-6%	-4%	-4%	-5%	-8%	1%	4%	-1%	2%	Google	
	Online Real Estate	Redfin	Mortgage Applications	-20%	-19%	-9%	-2%	8%	17%	12%	20%	17%	15%		Mortgage Bankers Association	
			Single-Family Housing Permits (NSA)	-16%			-18%								Census Bureau	
			New Home For-Sale Inventory (Months of Supply, SAAR)	10%											Census Bureau	
			Existing Home For-Sale Inventory (Months of Supply, SAAR)	-7%			7%								National Association of Realtors (NAR)	
			New Home Prices (Median)	-11%			2%								Census Bureau	
			Existing Home Prices (Median)	7%			2%								NAR	
			New Home Sales (Units, SAAR)	-13%			13%								Census Bureau	
			Existing Home Sales (Units, SAAR)	-17%			-27%								NAR	
			Purchase Loan Rate Lock Activity	-17%	-15%	-8%	0%	18%	19%	21%	65%	17%			AEI	
			Texas cement shipments	4%			-2%								Texas Comptroller	
	Online Real Estate	Thumbtack	Home-buying demand	-15%		6%	17%		22%	25%		33%	30%	Refin		
			Customer Projects on Home Construction	21%										Thumbtack		
			Customer Projects on Moving	-29%										Thumbtack		
	Industrial equipment	Sandhills Global	Caterpillar Retail sales	-27%			-36%							Company data		
			Boeing New aircraft orders	(108)			(9)							Company data		
			Komtrax Komtrax operating hours	-14%			-15%					-1%		Komtrax		
	Industrial trade	Michelin	Used construction equipment inventories	8%			3%				1%			Sandhills Global		
			North America replacement tire volumes	-7%			-22%							Company data		
			Weekly rail economically sensitive carloads (US rails)	-20%	-18%	-19%	-19%	-16%	-15%	-14%	-12%	-10%	-11%	AAR		
	Multi-Industry	Fastenal	Weekly rail intermodal carloads (US rails)	-16%	-14%	-16%	-14%	-11%	-11%	-10%	-7%	-4%	-5%	AAR		
			Truck spot pricing	-17%	-16%	-13%	-8%	-9%	-8%	-10%	-3%	3%	8%	Truckstop		
DAT load to van ratio			0.99	1.23	1.48	1.73	2.04	2.78	2.66	2.90	3.58	4.34	3.76	DAT		
Power & Utilities	Emerson Electric	Truck Load Availability Index (2014=100)	50	59	73	85	88	106	116	141	165	139	Truckstop			
		Cass freight index	-23%			-24%								CASS		
		*Big 3* west coast ports inbound loaded containers	-7%			-14%								Port data		
Personal Health	Emerson Electric	Daily sales	7%			15%							Company data			
		T3M underlying monthly orders	-10%										Company data			
		Dental offices at 50%+ of normal	4%		15%		38%		58%		74%		ADA			
Advertising	Facebook / Instagram	Elective procedures (% baseline)	84%	78%	69%	45%	36%	47%	27%	25%	33%		IQVIA			
		Branded Nrx volumes (mn)	2.7	2.7	2.8	2.8	2.8	2.6	2.9	3.0	3.0	3.0	IQVIA			
		Generic Nrx volumes (mn)	35	35	36	36	36	33	38	39	39	38	IQVIA			
Advertising	Facebook / Instagram	Electricity Demand Growth YoY	-4%	-9%	-6%	-7%	-10%	-6%	-1%	4%	-4%	-3%	EEl			
		Cost per 1,000 Impressions	35%	24%	24%	22%	16%	2%	9%	9%	10%	2%	Gupta Media			

Google search data from Google Trends

Source: Sources in exhibit, Goldman Sachs Global Investment Research

**Business Activities category updates**

- June US auto sales were reported on 7/1 and came in at 13.1mn at a seasonally adjusted annualized rate, down 24% y/y but up 8% m/m. We believe that the combination of less severe shelter in place restrictions in some coastal states in June vs May, improved housing data, pent-up demand, and consumer interest in outdoor activities, have all contributed to improved new car sales off the bottom.
- Transport data continues to show improvement, with rail data continuing to look more positive than the 20%+ declines seen through much of the quarter. Intermodal also continues to improve – a key barometer of not only domestic trade, but global imports as well. Truck spot rates move positive on the back of demand still on upswing from possible April/May bottoms.
- Our latest channel checks suggest home sales in California remain generally sluggish, especially in higher cost, coastal cities. Private builders we spoke to noted weaker demand in the Bay Area while Sacramento, the Central Valley and other outlying areas are seeing increased interest from younger buyers. Trends are similar in the south, with the Inland Empire outperforming coastal MSAs. Inventory, however, remains limited and private builders are holding prices and limiting incentives as they focus on margins over volume. Given the extended entitlement and development times, larger builders are also selectively re-engaging in land deals to ensure they can meet longer-term demand. In our view, these findings suggest the nascent recovery California saw in late 2019 and early 2020 (following weakness for much of last year) is likely to be stalled for the foreseeable future. Reflecting this, mortgage rate locks for the week ended July 3 rose 50% here versus 60+% gains in

Florida, Georgia, and North Carolina and compared to an increase of 44% in New York. That said, New Jersey and Connecticut rose 78% and 62%, respectively, largely driven by buyers seeking the suburbs over urban areas.

## The GS Reopening Scale

To look at all of these metrics in aggregate and quantify where consumers are on the path to economic recovery, we created a composite scale that is based on the inverse average of growth in all the sectors within “Stay at Home” categories and the normal average of “Back to Normal” categories relative to the week of February 3rd, reflecting where the consumer is between the two categories. We index a value of 100 to consumer activity in the week of February 3rd, before the impact of COVID-19 in the US, and the minimum value that the composite scale has reached is 36. We then translate the composite scale onto a GS reopening scale of 1-10 ([Exhibit 10](#)), where values less than or equal to 50 represent a 1 and a return to Feb 3rd levels would represent a 10.

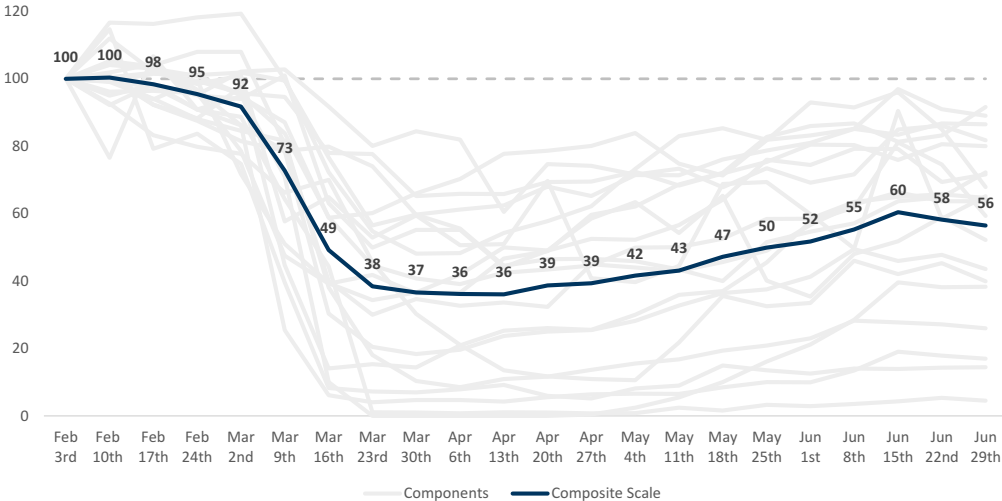
The GS US reopening scale, based on the trajectory of the Composite Scale ([Exhibit 11](#)), first reached 1 in the week of March 16th, where it remained for 10 weeks, indicating that consumers were still at the trough of impacts from COVID-19. This week our composite score of 56, though still supporting a Reopening scale of ‘2,’ is below the score of 58 we saw last week. We expect that as states continue to reopen for business these metrics will recover more meaningfully, bringing the scale to higher levels over time, though recent spikes in COVID-19 cases and associated state government actions may limit or reverse the pace of reopening. We would expect the recovery to a 10 to still take a number of months, during which period the “Stay at Home” category will show significantly slower growth, while the “Back to Normal” category will likely moderate declines as people resume daily activities of dining, commuting and travel, among others.

**Exhibit 10: Composite scale to Reopening Scale**

Composite Scale	Reopening Scale
100+	10
91-99	9
86-90	8
81-85	7
76-80	6
71-75	5
66-70	4
61-65	3
51-60	2
≤50	1

Source: Goldman Sachs Global Investment Research

**Exhibit 11: Composite Scale, Feb. 3 - June 29th**  
Date on x-axis represents first day of week measured



This exhibit summarizes data from sources listed in Exhibits 7, 8 and 9.

Source: Goldman Sachs Global Investment Research

# Disclosure Appendix

## Reg AC

We, Heath P. Terry, CFA, Noah Poponak, CFA and Jason English, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

## GS Factor Profile

The Goldman Sachs Factor Profile provides investment context for a stock by comparing key attributes to the market (i.e. our coverage universe) and its sector peers. The four key attributes depicted are: Growth, Financial Returns, Multiple (e.g. valuation) and Integrated (a composite of Growth, Financial Returns and Multiple). Growth, Financial Returns and Multiple are calculated by using normalized ranks for specific metrics for each stock. The normalized ranks for the metrics are then averaged and converted into percentiles for the relevant attribute. The precise calculation of each metric may vary depending on the fiscal year, industry and region, but the standard approach is as follows:

**Growth** is based on a stock's forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. **Financial Returns** is based on a stock's forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. **Multiple** is based on a stock's forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACF) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The **Integrated** percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

Financial Returns and Multiple use the Goldman Sachs analyst forecasts at the fiscal year-end at least three quarters in the future. Growth uses inputs for the fiscal year at least seven quarters in the future compared with the year at least three quarters in the future (on a per-share basis for all metrics).

For a more detailed description of how we calculate the GS Factor Profile, please contact your GS representative.

## M&A Rank

Across our global coverage, we examine stocks using an M&A framework, considering both qualitative factors and quantitative factors (which may vary across sectors and regions) to incorporate the potential that certain companies could be acquired. We then assign a M&A rank as a means of scoring companies under our rated coverage from 1 to 3, with 1 representing high (30%-50%) probability of the company becoming an acquisition target, 2 representing medium (15%-30%) probability and 3 representing low (0%-15%) probability. For companies ranked 1 or 2, in line with our standard departmental guidelines we incorporate an M&A component into our target price. M&A rank of 3 is considered immaterial and therefore does not factor into our price target, and may or may not be discussed in research.

## Quantum

Quantum is Goldman Sachs' proprietary database providing access to detailed financial statement histories, forecasts and ratios. It can be used for in-depth analysis of a single company, or to make comparisons between companies in different sectors and markets.

## Disclosures

### Distribution of ratings/investment banking relationships

Goldman Sachs Investment Research global Equity coverage universe

	Rating Distribution			Investment Banking Relationships		
	Buy	Hold	Sell	Buy	Hold	Sell
Global	46%	39%	15%	65%	57%	52%

As of April 9, 2020, Goldman Sachs Global Investment Research had investment ratings on 3,023 equity securities. Goldman Sachs assigns stocks as Buys and Sells on various regional Investment Lists; stocks not so assigned are deemed Neutral. Such assignments equate to Buy, Hold and Sell for the purposes of the above disclosure required by the FINRA Rules. See 'Ratings, Coverage Universe and related definitions' below. The Investment Banking Relationships chart reflects the percentage of subject companies within each rating category for whom Goldman Sachs has provided investment banking services within the previous twelve months.

## Regulatory disclosures

### Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage. **Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst's area of coverage. **Non-U.S. Analysts:** Non-U.S. analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with subject company, public appearances and trading securities held by the analysts.

**Distribution of ratings:** See the distribution of ratings disclosure above. **Price chart:** See the price chart, with changes of ratings and price targets in prior periods, above, or, if with respect to multiple companies which are the subject of this report, on the Goldman Sachs website at <https://www.gs.com/research/hedge.html>.

## Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. **Australia:** Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for “wholesale clients” within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of the Global Investment Research Division of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client’s objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client’s own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs’ Australian Sell-Side Research Independence Policy Statement are available at: <https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>. **Brazil:** Disclosure information in relation to CVM Instruction 598 is available at <https://www.gs.com/worldwide/brazil/area/gir/index.html>. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Instruction 598, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. **Canada:** Goldman Sachs Canada Inc. is an affiliate of The Goldman Sachs Group Inc. and therefore is included in the company specific disclosures relating to Goldman Sachs (as defined above). Goldman Sachs Canada Inc. has approved of, and agreed to take responsibility for, this research report in Canada if and to the extent that Goldman Sachs Canada Inc. disseminates this research report to its clients. **Hong Kong:** Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. **India:** Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 951-A, Rational House, Appasaheb Marathe Marg, Prabhadevi, Mumbai 400 025, India, Corporate Identity Number U7140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. **Japan:** See below. **Korea:** This research, and any access to it, is intended only for “professional investors” within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. **New Zealand:** Goldman Sachs New Zealand Limited and its affiliates are neither “registered banks” nor “deposit takers” (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for “wholesale clients” (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: <https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>. **Russia:** Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. **Singapore:** Further information on the covered companies referred to in this research may be obtained from Goldman Sachs (Singapore) Pte. (Company Number: 198602165W). **Taiwan:** This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. **United Kingdom:** Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

**European Union:** Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council with regard to regulatory technical standards for the technical arrangements for objective presentation of investment recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at <https://www.gs.com/disclosures/europeanpolicy.html> which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

**Japan:** Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan and Type II Financial Instruments Firms Association. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

## Ratings, coverage universe and related definitions

**Buy (B), Neutral (N), Sell (S)** -Analysts recommend stocks as Buys or Sells for inclusion on various regional Investment Lists. Being assigned a Buy or Sell on an Investment List is determined by a stock’s total return potential relative to its coverage universe. Any stock not assigned as a Buy or a Sell on an Investment List with an active rating (i.e., a stock that is not Rating Suspended, Not Rated, Coverage Suspended or Not Covered), is deemed Neutral. Each region’s Investment Review Committee manages Regional Conviction lists, which represent investment recommendations focused on the size of the total return potential and/or the likelihood of the realization of the return across their respective areas of coverage. The addition or removal of stocks from such Conviction lists do not represent a change in the analysts’ investment rating for such stocks.

**Total return potential** represents the upside or downside differential between the current share price and the price target, including all paid or anticipated dividends, expected during the time horizon associated with the price target. Price targets are required for all covered stocks. The total return potential, price target and associated time horizon are stated in each report adding or reiterating an Investment List membership.

**Coverage Universe:** A list of all stocks in each coverage universe is available by primary analyst, stock and coverage universe at <https://www.gs.com/research/hedge.html>.

**Not Rated (NR).** The investment rating and target price have been removed pursuant to Goldman Sachs policy when Goldman Sachs is acting in an advisory capacity in a merger or strategic transaction involving this company and in certain other circumstances. **Rating Suspended (RS).** Goldman Sachs Research has suspended the investment rating and price target for this stock, because there is not a sufficient fundamental basis for determining, or there are legal, regulatory or policy constraints around publishing, an investment rating or target. The previous investment rating and price target, if any, are no longer in effect for this stock and should not be relied upon. **Coverage Suspended (CS).** Goldman Sachs has suspended coverage of this company. **Not Covered (NC).** Goldman Sachs does not cover this company. **Not Available or Not Applicable (NA).** The information is not available for display or is not applicable. **Not Meaningful (NM).** The information is not meaningful and is therefore excluded.

## Global product; distributing entities

The Global Investment Research Division of Goldman Sachs produces and distributes research products for clients of Goldman Sachs on a global basis.



Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Ombudsman Goldman Sachs Brasil: 0800 727 5764 and / or [ouvidoriagoldmansachs@gs.com](mailto:ouvidoriagoldmansachs@gs.com). Available Weekdays (except holidays), from 9am to 6pm. Ouvidoria Goldman Sachs Brasil: 0800 727 5764 e/ou [ouvidoriagoldmansachs@gs.com](mailto:ouvidoriagoldmansachs@gs.com). Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; in Canada by either Goldman Sachs Canada Inc. or Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom and European Union.

**European Union:** Goldman Sachs International authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority, has approved this research in connection with its distribution in the European Union and United Kingdom.

## General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are as of the date hereof and are subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by our Global Investment Research Division. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (<https://www.sipc.org>).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and principal trading desks that reflect opinions that are contrary to the opinions expressed in this research. Our asset management area, principal trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

The analysts named in this report may have from time to time discussed with our clients, including Goldman Sachs salespersons and traders, or may discuss in this report, trading strategies that reference catalysts or events that may have a near-term impact on the market price of the equity securities discussed in this report, which impact may be directionally counter to the analyst's published price target expectations for such stocks. Any such trading strategies are distinct from and do not affect the analyst's fundamental equity rating for such stocks, which rating reflects a stock's return potential relative to its coverage universe as described herein.

We and our affiliates, officers, directors, and employees, excluding equity and credit analysts, will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at <https://www.theocc.com/about/publications/character-risks.jsp> and [https://www.fiadocumentation.org/fia/regulatory-disclosures\\_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018](https://www.fiadocumentation.org/fia/regulatory-disclosures_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018). Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

**Differing Levels of Service provided by Global Investment Research:** The level and types of services provided to you by the Global Investment Research division of GS may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to <https://research.gs.com>.

Disclosure information is also available at <https://www.gs.com/research/hedge.html> or from Research Compliance, 200 West Street, New York, NY 10282.

© 2020 Goldman Sachs.

**No part of this material may be (i) copied, photocopied or duplicated in any form by any means or (ii) redistributed without the prior written consent of The Goldman Sachs Group, Inc.**