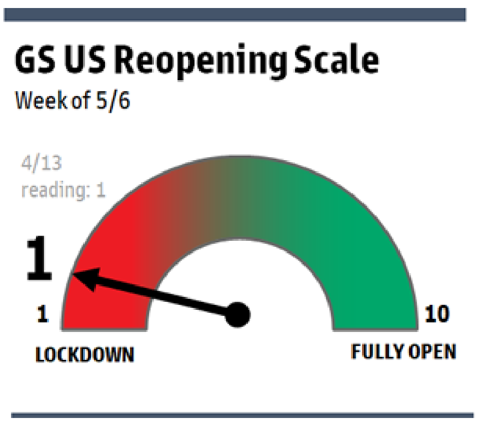
Note: The following is a redacted version of the original report published May 7, 2020 [18 pgs].

Measuring the Reopening of America

Introducing the GS US Reopening Scale: Starting at 1 (Week of May 6)



As cities and states across the U.S. begin to reopen at different paces and with different processes in place, we're introducing a new weekly series that will attempt to provide tools to measure the pace this reopening is happening by looking at a wide range of data from "Stay at Home" (food delivery, eCommerce, streaming media, grocery sales, etc.) to "Back to Normal" (commuting, box office, travel, etc.) and business activity (freight, housing, equipment sales, etc). While there is economic data being used for this purpose (see *Measuring the Impact of Lockdowns and Social Distancing on Global GDP*), we look to a broader set of high frequency sources (app downloads, point of sale, restaurant reservations, etc). We expect to expand and refine these data sets over the course of the coming weeks as more data becomes available and the profile of the reopening evolves.

Exhibit 1: Reopening at a glance: Back-to-business segments still deep in contraction, stay at home growing strong

% change yoy for week ending April 26

GROWTH	Video Chat Apps +1485%	Home Fitness Apps +288%	Grocery Apps +214%	eCommerce Apps +116%	HH Cleaning Products +88%	Delivery Apps +49%	Streaming Apps +32%	TV News Ratings +29%
CONTRACTION	OpenTable Reservations -100%	Movie Releases -98%	Airfare Spend -89%	Travel Apps -66%	Lodging Occupancy -62%	Rideshare Apps -60%	Weekly Retail Visits -45%	Mortgage Applications -20%

Stay at Home | Back to Business

This exhibit summarizes data from sources listed in Exhibit 5, 6 and 7.

Source: Goldman Sachs Global Investment Research

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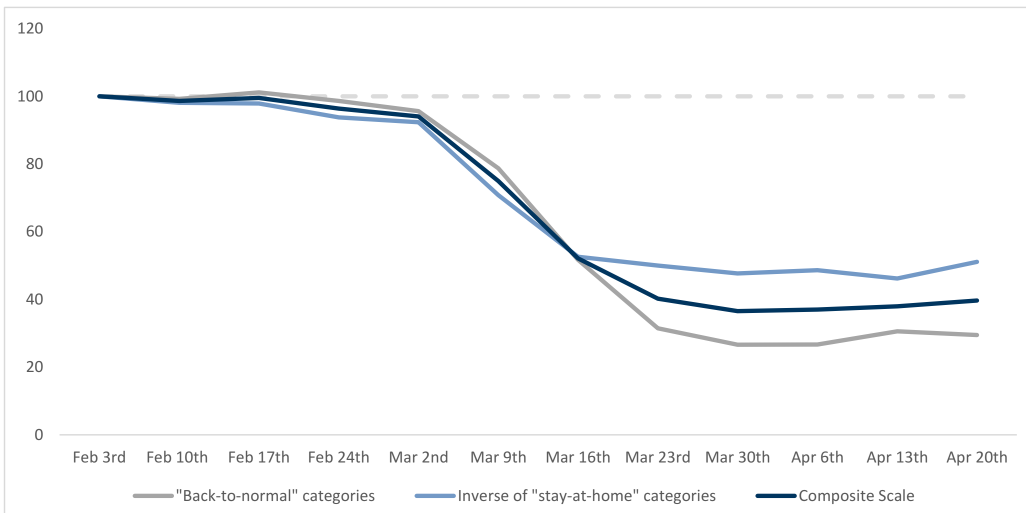
Aggregating this data, we create the Reopening Scale, an attempt to quantify where the balance of the scale sits between "Stay at Home", the state we currently find ourselves in, and "Back to Normal", relative to a benchmark that we chose as Feb 3rd. To determine the position of the scale (1-10) we calculate growth or decline in each category relative to pre-Crisis levels, and equal-weight each category into our Composite Scale (Exhibit 9). From there, we assign a Reopening score reflecting these quantitative inputs (Exhibit 8). No surprise, the scale currently reads "1", as all of the "Stay at Home" categories (Exhibit 5) have increased dramatically over recent weeks and "Back to Normal" categories (Exhibit 6) have declined materially, with many down 90%+. Similarly, many of the business activity categories (Exhibit 7), which we see as somewhat independent of the other two categories given businesses' ability to adapt, are currently mostly lower. As progress toward reopening begins, we expect that will show up in the Reopening Scale moving higher and plan to monitor that progress here.

Exhibit 2: Our Composite Scale shows that consumers are still near the trough of impacts from COVID-19



This exhibit summarizes data from sources listed in Exhibit 5, 6 and 7.

Source: Goldman Sachs Global Investment Research

Key Findings

Our initial read across these data sources describe a landscape we're all very familiar with: lots of eCommerce deliveries, streaming media, and video chats taking the place of commuting, travel, and trips to the store. While that picture is still very one sided in the data (Exhibit 4), with cities and states beginning to look for ways to reopen, we expect to see the scale shifting higher over time, showing less "Stay at Home" activity and more signs of "Back to Normal".

Highlights

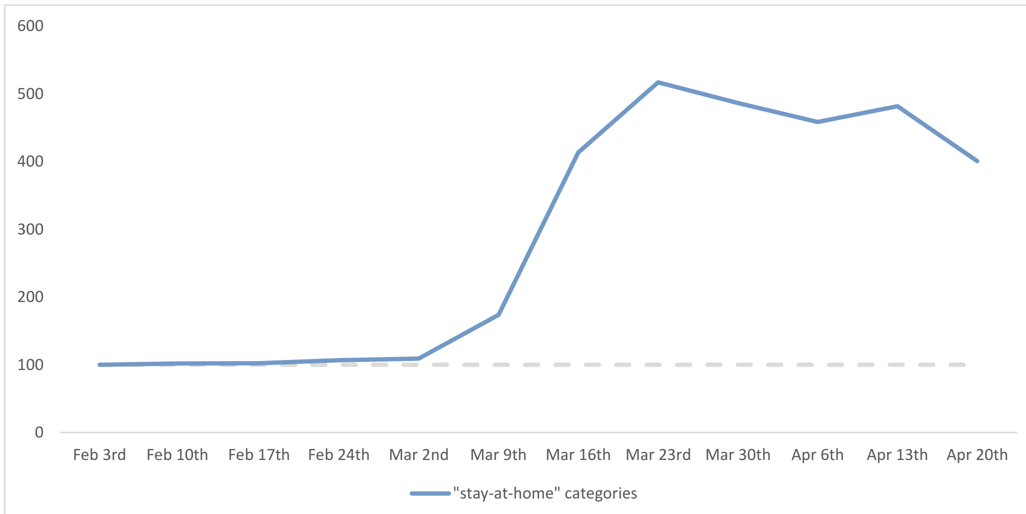
- **eCommerce adoption is accelerating through the end of April after averaging**

>65% y/y growth in app downloads for each week in the month. We chose companies including Amazon, Walmart, Target, Ebay, Wayfair and Etsy to represent this category, although there are many others also benefiting from higher demand. We think this adoption is significant and sustainable. For example, **Wayfair saw 90% growth in April accelerating through the period** as people focus on home decoration and improvement while relying on the convenience of having bulky furniture shipped to the door.

- **The grocery category is up broadly but split between products that are benefiting in this environment (flour, cleaning products, alcohol) versus those that are not (beauty aids, shaving, deodorant).** The **$ spend per store on flour peaked at +250% y/y at the end of March** when people stocked up in anticipation of a lockdown, while **deodorant spending was down 20% last week**. We expect these categories to trend back towards normal levels as businesses reopen and people begin spend more time outside of the household.
- **Within Industrials,** we are evaluating **(1) the Industrial consumer:** where we monitor air travel, auto sales and ethanol blending which is a measure of gas consumption; **(2) Industrial housing:** where we follow mortgage applications, new & existing home sales and prices, state permitting activity and cement shipments, all of which should indicate house shopping and construction activity; **(3) Industrial equipment:** including Boeing aircraft orders, CAT retail sales and industrial distributor sales; and **(4) Industrial trade:** including what is carried by rail and truck and what is coming through major ports. Across all four categories, including across nearly each singular metric, the data has deteriorated sequentially each month through the year thus far, with no major positive second derivatives yet. We believe the consumer and housing related data could improve first, as stay-at-home orders are lifted; while equipment and trade could recover after consumer and housing, given the longer cycle nature of the economic activity.
- **Travel** is clearly one of the most heavily impacted sectors, and we focus on the most representative companies in airlines, lodging and OTAs. Air travel domestically, as represented by **TSA checkpoint passengers, was down 95% y/y last week** and **international passenger arrival from the top 5 US airports was down 99%** this past week. Notably, extended stay companies, which we did not include in our lodging data, actually saw growth during this period as an option for people sheltering in place.
- **There are some small, early signs that life is resuming some form of normalcy.** While all commuting metrics in our data set have fallen since February, including **gas demand declining ~50% in the latter half of March and first week of April, and Starbucks app downloads trending similarly**, gas demand has improved this past week to -36% from a trough of -48% y/y. Google Community Mobility Reports are also showing workplace and transit movements down roughly 50% at the trough, although there are small upticks in the most recent weeks, indicating an increase in general mobility as some states begin to reopen.
- **Restaurant traffic, as measured by the number of seated diners on OpenTable, is slowly picking back up in recent days from -100% since the end of March.**

Overall dollar sales at restaurants, meanwhile, have improved from a -60%+ run rate in late March to -40% in early May as take-out and delivery orders increase in the wake of stimulus check disbursement. Similarly, we have seen spend tick-up across retail concepts that remain open (e.g., discount stores, wholesales clubs, etc.). We expect these small signs of recovery to continue as the country gradually reopens and consumers resume their daily activities.

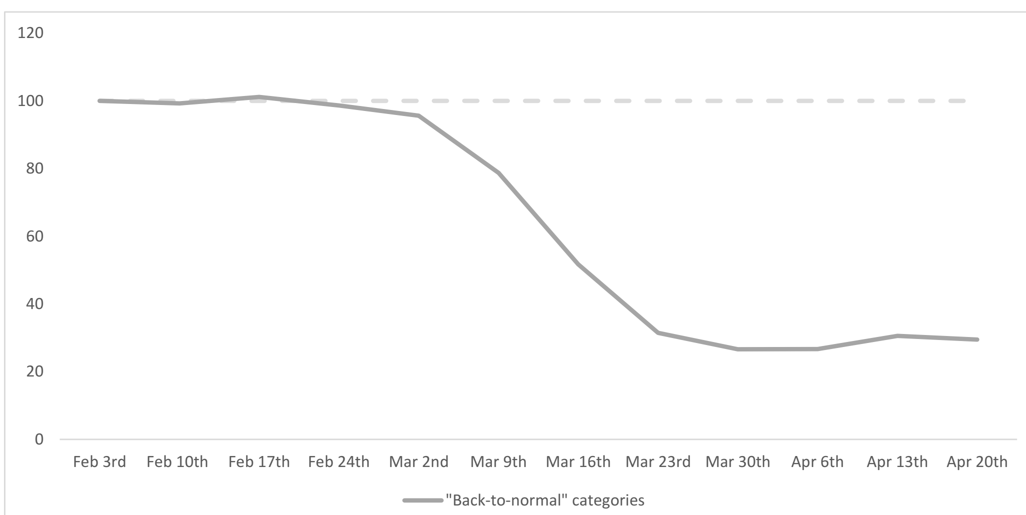
Exhibit 3: Stay Home categories still near peak level



This exhibit summarizes data from sources listed in Exhibit 5, 6 and 7.

Source: Goldman Sachs Global Investment Research

Exhibit 4: Back to Normal categories on average down 70% from February levels



This exhibit summarizes data from sources listed in Exhibit 5, 6 and 7.

Source: Goldman Sachs Global Investment Research

Weekly Trends

Stay Home

While it is no surprise that companies like Netflix, Zoom and Amazon are in high demand during a time when many states are implementing shelter-in-home policies, we collect and track data across a number of sources and verticals to understand the extent to which different categories are being impacted. In our "Stay at Home" scale, demand surges are most prominent for Video chat apps with weekly downloads growth up ~1700% y/y on average in April. Grocery apps including Walmart Grocery, Kroger and Instacart have seen 314% y/y app download growth in the same period of time, while dollars per store spent on flour, household cleaning compounds and alcohol grew 50% y/y on average. At the same time, online gaming engagement continues to increase, with the number of hours of Twitch streams doubling in April y/y to reach ~1.8bn.

Many of these categories saw the highest growth rates in the second half of March/first half of April when lockdowns in the US began, including news TV such as CNBC which saw ratings grow 60-70% y/y in the latter half of March as people tuned in to hear daily updates on COVID-19. We expect elevated demand into the summer months for this basket of "Stay at Home" metrics, although many of them are already seeing more moderated growth in the most recent 2 weeks.

Exhibit 5: "Stay at Home" metrics surging reflect demand for these categories during lockdowns and sheltering in place

Basket	Sector	Company/App	Metric	y/y % change, unless otherwise noted												Source
				Feb 3 - Feb 9	Feb 10 - Feb 16	Feb 17 - Feb 23	Feb 24 - Mar 1	Mar 2 - Mar 8	Mar 9 - Mar 15	Mar 16 - Mar 22	Mar 23 - Mar 29	Mar 30 - Apr 5	Apr 6 - Apr 12	Apr 13 - Apr 19	Apr 20 - Apr 26	
Stay home	eCommerce	Amazon	US App Downloads	-8%	-18%	-14%	-2%	-1%	2%	4%	19%	25%	35%	91%	59%	Sensor Tower
		Walmart Shopping		-24%	4%	-5%	11%	13%	29%	37%	33%	61%	60%	91%	89%	
		Target		11%	-4%	4%	6%	34%	115%	88%	114%	187%	212%	150%	182%	
		Ebay		9%	19%	5%	21%	21%	-6%	6%	-3%	32%	46%	86%	69%	
		Wayfair		-10%	8%	-6%	7%	12%	18%	10%	29%	38%	30%	130%	130%	
		Etsy		19%	20%	22%	15%	14%	2%	3%	13%	58%	93%	193%	164%	
	Groceries	Walmart Groceries		-14%	-7%	-19%	-22%	-9%	126%	242%	249%	402%	337%	161%	42%	
		Instacart		8%	24%	0%	1%	22%	130%	378%	572%	798%	824%	444%	347%	
		Costco		124%	128%	157%	130%	186%	428%	489%	466%	524%	485%	576%	396%	
		Kroger		12%	24%	16%	12%	-13%	20%	83%	114%	166%	174%	86%	70%	
		Flour	$/store	-2%	0%	-1%	8%	17%	150%	247%	143%	142%	125%	42%	143%	Catalina
		Household cleaning compounds		4%	6%	6%	34%	168%	284%	158%	92%	81%	70%	62%	88%	
		Alcohol		2%	3%	6%	8%	5%	11%	37%	74%	30%	42%	45%	17%	
		Staples		0%	0%	0%	1%	10%	67%	79%	19%	22%	28%	1%	29%	
		Food		1%	1%	0%	2%	9%	85%	114%	38%	40%	47%	9%	51%	
	Online Media	Netflix	US App Downloads	-20%	-16%	-12%	-3%	-3%	6%	30%	40%	36%	41%	37%	37%	Sensor Tower
		Disney+	US App Downloads (m/m change)	-46%	-41%	-34%	-23%	-25%	6%	103%	74%	65%	32%	-35%	-42%	
		Hulu	US App Downloads	11%	7%	5%	9%	-2%	-14%	14%	12%	-10%	-1%	13%	15%	
		Amazon Prime Video		12%	10%	6%	8%	6%	11%	60%	67%	49%	35%	43%	45%	
	News TV	CNN	Ratings	12%	7%	18%	31%	-5%	36%	42%	58%	57%	43%	107%	38%	Nielsen
		Fox News Channel		75%	11%	16%	8%	11%	18%	14%	6%	-10%	7%	37%	10%	
		MSNBC		22%	12%	19%	16%	9%	21%	42%	47%	49%	50%	75%	39%	
	Online Gaming	Twitch Streams	Total Hours Watched	11%				29%				100%				Sully Gnome
		Steam	Users	8%	9%	11%	14%	12%	17%	38%	48%	55%	52%	55%	53%	Stream website
			IOS app downloads	24%	23%	16%	21%	18%	17%	57%	62%	50%	39%	30%	35%	Sensor Tower
			Consumer Spend						21%	63%	51%	95%	102%	111%	70%	Facteus
	Food Delivery	Grubhub	US App Downloads	-38%	-39%	-40%	-31%	-27%	-35%	10%	16%	33%	40%	86%	77%	Sensor Tower
		UberEats		-22%	-10%	-15%	-22%	-35%	-38%	2%	14%	11%	12%	17%	13%	
		Doordash		-30%	-24%	-31%	-22%	-22%	-27%	25%	50%	49%	62%	105%	71%	
		Dominos		-20%	-13%	-19%	-20%	-7%	-13%	24%	100%	33%	11%	50%	35%	
	At-home Fitness	Peloton		65%	57%	118%	111%	51%	70%	804%	818%	541%	431%	470%	500%	
		Map My Run		-18%	-14%	2%	8%	16%	-6%	67%	112%	133%	156%	140%	155%	
		Nike Training Club		0%	-4%	-33%	-24%	-20%	-22%	252%	435%	582%	378%	304%	335%	
		Yoga | Down Dog		-33%	-30%	-33%	-20%	-24%	577%	1798%	1176%	1514%	723%	359%	321%	
		Workout for Women		-18%	-13%	-15%	-12%	-14%	-8%	107%	190%	182%	184%	191%	131%	
	Video Chat Apps	Zoom		33%	24%	15%	38%	66%	707%	2956%	3936%	3238%	3061%	3422%	2978%	
		Skype		-22%	-18%	-19%	-22%	-19%	31%	330%	357%	279%	230%	192%	155%	
		Houseparty		-47%	-47%	-43%	-44%	-41%	-2%	713%	1928%	1787%	2002%	2272%	1322%	

Source: Sources in exhibit, Goldman Sachs Global Investment Research

Stay home category updates

- Verizon management noted that their Consumer segment saw some change in activity over the last two weeks as government stimulus checks came in, including a greater inflow of payments and some early signs of increased retail volumes (gross adds and upgrades).
- Target management suggested that there was a significant pick up in the home category in the beginning of April as people adjusted to more home cooked meals.
- PayPal saw a 135% y/y increase in net new active accounts as holdouts in the

digitization of money were forced to find alternatives to cash.

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. The Google Global mobility report suggests that both transit and workplace movement trends are down roughly 50% from the baseline (roughly similar to the 40%+ decline in gasoline demand), while most box office and dining metrics are down 100%, since movie theaters and restaurants were some of the first places to be shut down. Beauty product sales are also suffering sharp declines and sales of deodorants at grocery stores have now fallen double-digits for four consecutive weeks as people shelter at home. On the travel side, TSA checkpoint passenger count has been down >90% y/y since the second half of March, with the number of passengers in the US falling to 750K in the week of April 20, 2020, compared to >16 million in the same week in 2019. US occupancy rates continue to be down 62% y/y in the week of April 20th, though rates are off lows of -70% in the first week of April.

Exhibit 6: "Back to Normal" metrics are down significantly, although starting to see small signs of recovery

Basket	Sector	Company/App	Metric	y/y % change, unless otherwise noted												Source
				Feb 3 - Feb 9	Feb 10 - Feb 16	Feb 17 - Feb 23	Feb 24 - Mar 1	Mar 2 - Mar 8	Mar 9 - Mar 15	Mar 16 - Mar 22	Mar 23 - Mar 29	Mar 30 - Apr 5	Apr 6 - Apr 12	Apr 13 - Apr 19	Apr 20 - Apr 26	
Back to normal	Gym Attendance	Planet Fitness	US App Downloads	69%	78%	69%	55%	49%	34%	156%	-33%	-57%	-22%	92%	19%	Sensor Tower
		Crunch Fitness		55%	72%	51%	58%	59%	24%	-22%	-80%	-86%	-88%	-90%	-92%	
		Anytime Fitness		20%	10%	-9%	-10%	-25%	-13%	67%	-16%	-50%	-77%	-84%	-85%	
		Classpass		63%	52%	45%	36%	46%	1%	-68%	-55%	-64%	-63%	-78%	-82%	
	Commuting	Uber		-15%	-17%	-11%	-14%	-20%	-32%	-56%	-70%	-71%	-72%	-64%	-63%	
		Lyft		-11%	-2%	4%	2%	-8%	-27%	-56%	-70%	-70%	-72%	-65%	-62%	
		Waze		-40%	-18%	-12%	-10%	-15%	-28%	-57%	-63%	-70%	-69%	-66%	-56%	
			Gas Demand	1%	1%	1%	1%	3%	3%	-3%	-27%	-48%	-46%	-44%	-36%	EIA
		Google Community Mobility Reports	Transit % change from baseline			1%	4%	3%	-6%	-33%	-48%	-50%	-52%	-50%	-48%	Google
		Google Community Mobility Reports	Workplaces % change from baseline			-2%	3%	3%	-3%	-29%	-42%	-46%	-49%	-45%	-44%	Google
		Starbucks	US App Downloads	-6%	37%	20%	25%	51%	-7%	-31%	-50%	-54%	-50%	-40%	-41%	Sensor Tower
	Box Office		US Top 10 Gross	27%	-19%	26%	-21%	-10%	-54%	-68%	-100%	-100%	-100%	-100%	-100%	Box Office Mojo
			Movies Released	-22%	-24%	-8%	6%	-9%	-15%	-42%	-98%	-98%	-98%	-98%	-98%	Box Office Mojo
	Sports TV	ESPN	Ratings	16%	21%	-4%	-9%	11%	28%	-38%	14%	15%	18%	8%	11%	Nielsen
		NBCSN		-18%	576%	1428%	588%	-27%	-14%	-29%	-2%	-28%	-2%	11%	-8%	
		FS1		45%	31%	29%	16%	14%	36%	27%	10%	22%	46%	60%	78%	
	Dining	OpenTable	Seated diners			2%	1%	-5%	-29%	-90%	-100%	-100%	-100%	-100%	-100%	OpenTable
	Retail		Weekly Visits	-8%	-6%	-7%	-8%	-7%	-15%	-33%	-49%	-49%	-49%	-48%	-45%	ShopperTrak RCT Corporation
			Beauty Aids $/store	0%	-8%	-5%	-7%	-8%	-5%	-12%	-28%	-40%	-29%	-21%	-24%	Catalina
			Shaving $/store	-4%	-6%	-8%	-2%	-4%	1%	10%	11%	-10%	-2%	-4%	-7%	
			Deodorants $/store	7%	2%	5%	2%	3%	9%	39%	39%	-10%	-13%	-13%	-19%	
		Department stores	Consumer spend						-27%	-66%	-67%	-64%	-61%	-42%	-47%	Facteus
	Retail and Recreation	Google Community Mobility Reports	% change from baseline			4%	8%	8%	2%	-28%	-42%	-42%	-46%	-42%	-40%	Google
		Amusement Parks	Consumer Spend						-33%	-82%	-85%	-81%	-83%	-71%	-87%	Facteus
		Tourist Attractions	Consumer Spend						-27%	-70%	-83%	-73%	-73%	-86%	-76%	Facteus
	Airlines		TSA checkpoints					-12%	-29%	-69%	-90%	-94%	-96%	-96%	-95%	TSA
		United Airlines	Consumer spend						-43%	-79%	-88%	-92%	-94%	-94%	-92%	Facteus
		Alaska Airlines							-57%	-81%	-89%	-92%	-94%	-90%	-85%	
			Top 5 US Airports (Int Passenger Arrival)	-1%	-2%	-3%	-6%	-14%	-23%	-41%	-76%	-95%	-98%	-99%	-99%	GS Economics Team
	Lodging		US Occupancy	-1%	0%	-2%	-2%	-7%	-24%	-56%	-67%	-69%	-70%	-64%	-62%	STR
			US ADR	1%	1%	1%	2%	-5%	-11%	-30%	-39%	-42%	-46%	-42%	-43%	STR
		Hilton	Google Search Traffic	-7%	1%	0%	-7%	-3%	-14%	-38%	-55%	-60%	-60%	-56%	-56%	Google
		Marriott		-12%	-6%	-6%	-9%	-22%	-31%	-51%	-69%	-74%	-76%	-75%	-74%	
	Online Travel	Expedia	US App Downloads	64%	55%	42%	46%	36%	48%	-46%	-67%	-72%	-70%	-65%	-65%	Sensor Tower
		Booking.com		13%	9%	-8%	-9%	-14%	-30%	-66%	-75%	-79%	-79%	-73%	-73%	
		TripAdvisor		35%	51%	46%	24%	14%	6%	-63%	-75%	-73%	-71%	-64%	-60%	

Source: Sources in exhibit, Goldman Sachs Global Investment Research

Back to normal category updates

- Some of the most anticipated movies are expected to release later in the year, with the exception of Mulan: Wonder Woman (8/12 release), Black Widow (11/6), Top Gun Maverick (12/23), Mulan (7/24), No Time to Die (Bond) (11/25).
- While Opentable data indicates reservations are down 100% y/y for the country, early restaurant reopenings in select cities like Atlanta, Tampa and Dallas show diner declines of 80-97% y/y versus 100% in the rest of the country. Restaurants are reopening with modified hours and with significantly lower density than before, seating 25%-50% of the tables with many keeping bars closed to allow for social distancing.
- United Airlines noted that searches for spring break 2021 exceeded searches for spring break 2020 at this time last year, indicating pent-up demand, although they do

not expect many of those to turn into real bookings until the virus is sufficiently contained.

Business Activities

Business activities have also been heavily impacted by COVID-19, including real estate and industrial trade. Mortgage applications were down over 30% y/y for the first three weeks of April as real estate transactions and home constructions also slow. Homebuilders reported an approximate 50% decline in order rates for April, with local economies that are more reliant on travel and tourism (i.e. Las Vegas) down 60+% while areas of the Southeast and Texas are off ~25%. Encouragingly, activity at the end of April had more than doubled off the lows seen earlier in the month as consumers look to take advantage of historically low mortgage rates. As peoples' mobility continues to be restricted across a number of states, auto sales and ethanol blending are both down y/y, though we expect these activities to resume fairly quickly as restrictions begin to be lifted and consumer demand recovers. On the equipment side, there has been no recovery yet in Boeing aircraft orders or CAT retail sales, though we expect both could start to move off the bottom over the next few months.

Exhibit 7: Business Activity metrics are also falling to reflect the economic impact of the crisis

Basket	Sector	Company/App	Metric	y/y % change, unless otherwise noted												Source
				Feb 3 - Feb 9	Feb 10 - Feb 16	Feb 17 - Feb 23	Feb 24 - Mar 1	Mar 2 - Mar 8	Mar 9 - Mar 15	Mar 16 - Mar 22	Mar 23 - Mar 29	Mar 30 - Apr 5	Apr 6 - Apr 12	Apr 13 - Apr 19	Apr 20 - Apr 26	
Business Activity	Industrial consumer		TSA passenger throughput					-12%	-29%	-69%	-90%	-94%	-96%	-96%	-95%	TSA
			N.A. Airline forward schedules (1 month out)	-1%				-27%				-65%				OAG
			Actual air traffic growth	-14%				-53%								IATA
			Passenger aircraft in service	-2%	-4%	-4%	-5%	-7%	-10%	-33%	-53%	-59%	-61%	-61%	-59%	Cirium
		3M	Monthly sales									down mid-teens				Company data
	Autos		Auto SAAR	1%				-34%				-48%				Wards
			Domestic ethanol blending	1%	1%	1%	3%	3%	-3%	-27%	-48%	-46%	-44%	-37%	-35%	EIA
			Google Search Traffic	-3%	7.7%	1%	1%	-3%	-9%	-28%	-26%	-29%	-27%	-28%	-21%	Google
	Industrial housing		Mortgage Applications	17%	11%	11%	11%	12%	11%	-11%	-23%	-33%	-35%	-31%	-20%	Mortgage Bankers Associates
			State Permits	23%				13%								Census Bureau
			New Home For-Sale Inventory (Months of Supply, SAAR)	-15%				10%								Census Bureau
			Existing Home For-Sale Inventory (Months of Supply, SAAR)	-14%				-13%								National Association of Realtors (NAR)
			New Home Prices (Median)	3%				3%								Census Bureau
			Existing Home Prices (Median)	8%				8%								NAR
			New Home Sales (Units, SAAR)	11%				-10%								Census Bureau
			Existing Home Sales (Units, SAAR)	7%				1%								NAR
			Texas cement shipments	8%				3%								
	Online Real Estate	Redfin	Homes Sold	13%	4%	7%	0%	14%	-2%	8%	-27%	-12%				Redfin
		Thumbtack	Customer Projects on Home Construction					3%	0%	-27%	-36%	-28%	-22%			Thumbtack
		Thumbtack	Customer Projects on Moving					-5%	-13%	-22%	-34%	-40%	-43%			Thumbtack
	Industrial equipment	Caterpillar	Retail sales	-11%				-17%								Company data
		Boeing	New aircraft orders	(28)				(137)								Company data
			US industrial distributor sales (avg.)	2%				1%								Company data
		Michelin	North America replacement tire volumes	-6%				1%								Company data
	Industrial trade		Weekly rail economically sensitive carloads (US rails)	-6%	-6%	-3%	-9%	-8%	-6%	-9%	-15%	-16%	-21%	-21%	-20%	AAR
			Weekly rail intermodal carloads (US rails)	-9%	-8%	-6%	-12%	-14%	-9%	-11%	-14%	-16%	-20%	-19%	-16%	AAR
			Truck spot pricing	-8%	-7%	-6%	-6%	0%	9%	10%	4%	-9%	-14%	-18%		Truckstop
			DAT load to van ratio	1.85				2.89				0.99				DAT
			Cass freight index	-8%				-9%								CASS
			"Big 3" west coast ports inbound loaded containers	-19%				-16%								Port data
	Multi- Industry	FAST	Daily sales	5%				0%				7%				Company data
		MSM		-5%				-6%								Company data
		GWW		7%				9%								Company data

Source: Sources in exhibit, Goldman Sachs Global Investment Research

Business activity category updates

- Some recent rail carload data, while still sharply negative, is perhaps stabilizing. We look at data including Economically Sensitive Rail Carloads to assess the industrial economy, rail intermodal and West Coast Port data to get a sense for both global trade and the consumer economy and the Cass Shipment Index, DAT Load to Van Ratio, and Truckstop Spot Prices to ascertain general freight demand.

- Facebook noted on their Q1 earnings call that after an initial steep decrease in ad revenue in March, they have seen signs of stability reflected in the first three weeks of April.
- Building product companies saw sales off 30-35% YOY in April, as the strength seen in housing earlier this year comes through. With people staying home, Whirlpool reported April sales off 20-25%, with demand for secondary fridges and freezers (for home food storage) as well as small countertop appliances (i.e. stand mixers) rising, as people are increasingly cooking and baking at home.

The GS Reopening Scale

To look at all 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 37. We then translate the composite scale onto a GS reopening scale of 1-10 (Exhibit 8), where values below 50 represent a 1 and a return to Feb 3rd levels would represent a 10.

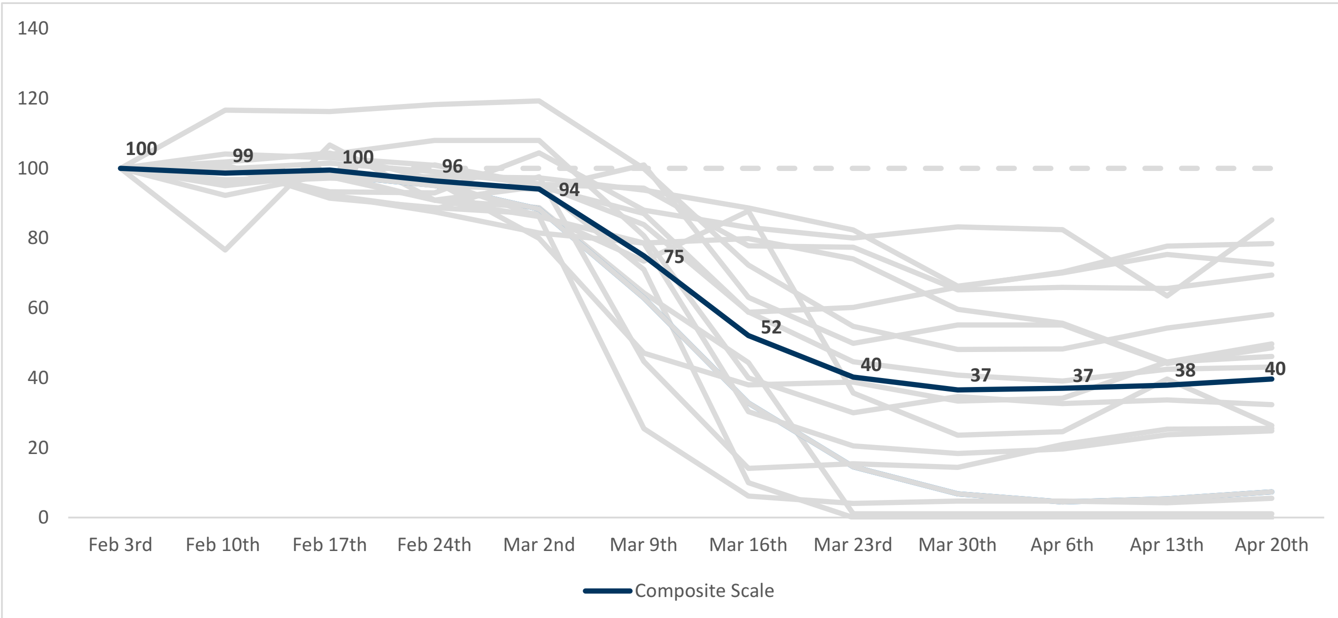
The GS reopening scale, based on the trajectory of the Composite Scale (Exhibit 9), first reached 1 in the week of March 23rd, where it has remained for the 5 weeks since, indicating that consumers are still at the trough of impacts from COVID-19. We expect that as states begin to reopen for business, these metrics will slowly begin to recover, bringing to scale back up. However, we would expect the recovery to a 10 to take at least 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 8: 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 9: Composite Scale, Feb. 3 - April 20



This exhibit summarizes data from sources listed in Exhibit 5, 6 and 7.

Source: Goldman Sachs Global Investment Research

We plan to update and refine this data weekly as a tool to measure the pace of reopening, measure consumer behavior and highlight sectors that may be benefiting or disproportionately impacted from the shape of that process.

Disclosure Appendix

Reg AC

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