Review of Colorado and United States Economy Based on April Employment Data



cber.co Colorado-based Business and Economic Research Prepared May 25, 2020

Overview

There is limited data that measures the day-to-day or weekly impact of the COVID-19 crisis on the economy. The data may accurately describe activity one to three months ago, but it may not reflect the changes that have occurred in the past week or two. This short analysis reviews the most recent release of U.S. and Colorado employment data and other metrics that foretell employment and economic changes in the weeks ahead.

Labor Data

- Real GDP Projections -- United States
- Initial and Continuing Unemployment Claims United States and Colorado
- Number of Unemployed and Unemployment Rate United States and Colorado
- Employment United States and Colorado

Other Key Metrics

- Major Indices
- Production and Income
- Sampling of Other Key Metrics

Closing Comments

Real GDP Forecast

United States

On May 13th, the Conference Board provided a scenario of three forecasts for real GDP growth in the United States. They all show a severe downturn in real GDP in Q2 2020. Depending on the scenario, it could take at least 18 months for the return of real GDP to the Q4 2019 level.

Forecasts for U.S. Real GDP Growth The Conference Board

The Conference Board provides a monthly forecast of the U.S. economy. The centerpiece is the forecast of real GDP growth and its components (C+I+G+X). The TCB May forecast included three scenarios for real GDP growth described below. Table I includes the U-Shape forecast and other key metrics.

Table I - Conference Board 2020 US Real GDP Growth – May 13, 2020							
	Q1 2020	Q2 2020	Q3 2020	Q4 2020	2018	2019	2020
Real GDP	- 4.8%	- 44.5%	24.4%	18.9%	2.9%	2.3%	- 7.2%
Personal Consumption	- 7.6%	- 54.2%	36.3%	15.5%	3.0%	2.6%	-10.0%
Residential Investment	21.0%	- 25.0%	- 7.0%	11.0%	-1.5%	-1.5%	0.7%
Nonresidential Investment	- 8.6%	- 20.8%	- 2.4%	8.6%	6.4%	2.1%	- 6.9%
Total Government Spending	0.7%	4.0%	4.0%	4.0%	1.7%	2.3%	2.7%
Exports	- 8.7%	- 35.1%	11.1%	9.0%	3.0%	0.0%	- 8.0%
Real Disposable Income	0.5%	-18.0%	5.0%	12.0%	4.0%	2.9%	-1.6%
Unemployment Rate	3.8%	16.0%	13.6%	10.8%	3.9%	3.7%	11.1%
CPI Inflation	1.2%	- 2.0%	0.0%	1.0%	2.4%	1.8%	0.8%

Source: The Conference Board and cber.co.

V-Shape

The V-shape is the riskiest scenario because it assumes the greatest risk of opening too soon. There is a sharp contraction in Q2 with a solid recovery in Q3. This scenario projects the change in real GDP in 2020 will be -4.0%. Real GDP will return to the December 2019 level in Q2 2021.

U-Shape

The health aspect of the recovery will be managed with less risk in the U-shape. As a result, growth with begin in the second half of Q3. Real GDP growth for 2020 will be -7.2%. Real GDP will return to the December 2019 level in the second half of 2021 or the first half of 2022.

W-Shape

The W-shape begins with a rapid recovery, but there will be a resurgence of COVID-19 cases in Q3 or Q4. Real GDP growth for 2020 will be -6.1%. Real GDP will return to the 2019 level in 2022.

Source: The Conference Board, https://www.conference-board.org/publications/Economic-Forecast-US, cber.co.

Unemployment Initial and Continuing Claims

United States and Colorado

At the outset of the crisis, unemployment initial claims were the primary source of timely employment data. The claims numbers estimated how fast and severe U.S. and Colorado employment was declining on a weekly basis. As the number of initial claims have decreased, it will be important to pay more attention to the number of continuing claims (People filing new claims plus people looking for work less people who have found jobs).

Initial Unemployment Claims United States Seasonally Adjusted 2019 to Current

8,000,000	United States Initial Unemployment Claims	
7,000,000		
6,000,000	The good news is the number of weekly initial claims is declining. The bad news is the last reported number of weekly initial claims (5/16) was over 2,000,000. Prior to mid-	
5,000,000	March 2020 there were roughly 200,000 initial claims on a weekly basis.	
4,000,000		
3,000,000		
2,000,000		
1,000,000		
0 +	010 Max 2010 Max 2010 Max 2010 Max 2010 Max 2010 Max 2010	
Jan-2	019 Mar-2019 May-2019 Jul-2019 Sep-2019 Nov-2019 Jan-2020 Mar-2	020 May-2020

Source: FRED, Department of Labor, SA, cber.co.

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Initial Unemployment Claims Colorado Not Seasonally Adjusted

110,000		Colorado Initia	al Unemployment C	Claims			
100,000							
90,000		e number of weekly initi					A
80,000		of weekly initial claims of weekly initial claims		000. Prior to mid-M	larch		<u> </u>
70,000							<u> </u>
60,000						N	
50,000						/N	
40,000							
30,000							
20,000							
10,000						/	
0 Jan-2019	Mar-2019 May-2019	Jul-2019	Sep-2019	Nov-2019	Jan-2020	Mar-2020	May-2020

Source: FRED, Department of Labor, NSA, cber.co.

Colorado-based Business and Economic Research https://doi.org/10.1011/j.com/10011/j.com/10.1011/j.com/10.1011/j.com/10.1011/j.com/10011/j.co

Continuing Unemployment Claims United States Seasonally Adjusted 2019 to Current

26,000,000			United States C	ontinuing Unemp	loyment Claims			
24,000,000								/
22,000,000		The good n	ews is the numbe	r of weekly continu	ing claims is increa	asing at a decreas	sing	— [_]
20,000,000				t reported number	,	• • • •	as	
18,000,000			•	-March 2020 there	0, , ,			
16,000,000				nen the data for cor reflect lower values	0			
14,000,000			re added to payro					
12,000,000				-				<u> </u>
10,000,000								
8,000,000							/	
6,000,000								
4,000,000							/	
2,000,000								
0	1	1	1	1	1		1	
Jan-2019	Mar-2019	May-2019	Jul-2019	Sep-2019	Nov-2019	Jan-2020	Mar-2020	May-2020

Source: FRED, Department of Labor, SA, cber.co.

Continuing Unemployment Claims Colorado Not Seasonally Adjusted

270,000			Co	olorado Continui	ng Unemployment	Claims			
270,000									/
240,000									
210,000		•			tinuing claims is inc wed the four week	•	rate		
180,000		additior	n to the weekly data	a). The bad news i	s the last reported r 000. Prior to mid-Ma	number of weekly	iahly		
150,000		30,000	continuing claims of	on a weekly basis.	When the data for of the second secon	continuing claims is	• •		
120,000			off and workers w						
90,000									
60,000									
30,000									
0 Jan-	-2019	Mar-2019	May-2019	Jul-2019	Sep-2019	Nov-2019	Jan-2020	Mar-2020	May-2020

Source: FRED, Department of Labor, NSA, cber.co.

Number of Unemployed and Unemployment Rate and Labor Force Participation Rate

United States and Colorado

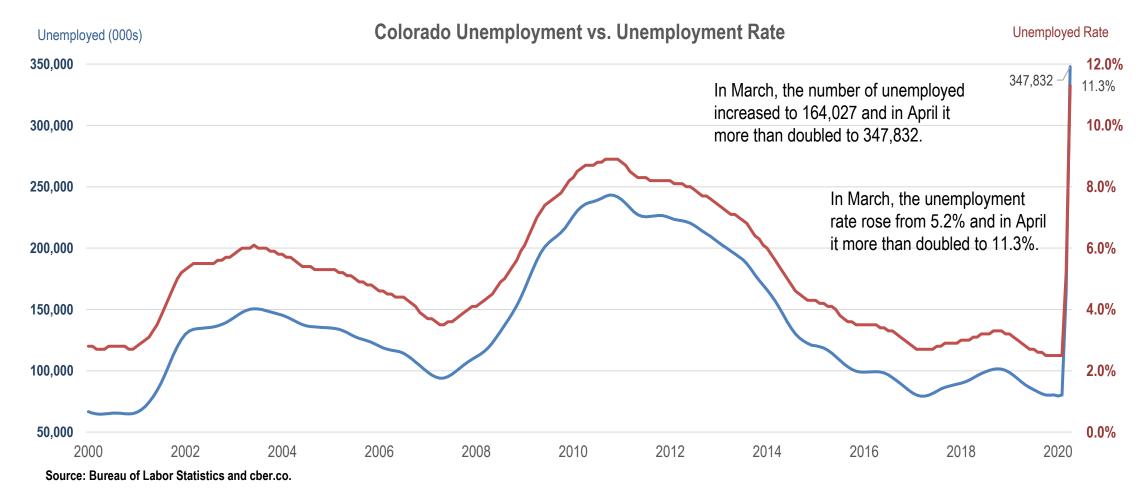
In April, the unemployment rate for the United States jumped to 14.7%. The unemployment rate increased to 11.3% in Colorado. Both rates were well above the peak for the Great Recession. Given the lockdown and rapid increase in unemployment rates, it stands to reason the labor force participation rate dropped significantly. In a shuttered economy, people are not actively looking for work because there are few jobs available.

U.S. Unemployment and Unemployment Rate

Jnemployed (000s)		U.S	. Unemploy	ment vs. Un	employmen	t Rate			Unemployed Rat
4,000					In Marah that	aumhor of un	malayad		23,078 -
2,000					. ,	ed to 7.1 millio	on and in April i	t	14.7
0,000					increased to 2				12
8,000							In March, the u rate (red) rose	from 3.5% to	
6,000							4.4%. In April,	it rose to 14.7	7% 9.0
4,000				m	m				
2,000	~~~~				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	hay -			6.0
0,000	A					h	~		
8,000	- m						ny m		3.0
6,000			~					- m	m
4,000	0004	0000	0000	0040	0040	0014	0040	0040	0.0
2000 2002	2004	2006	2008	2010	2012	2014	2016	2018	2020

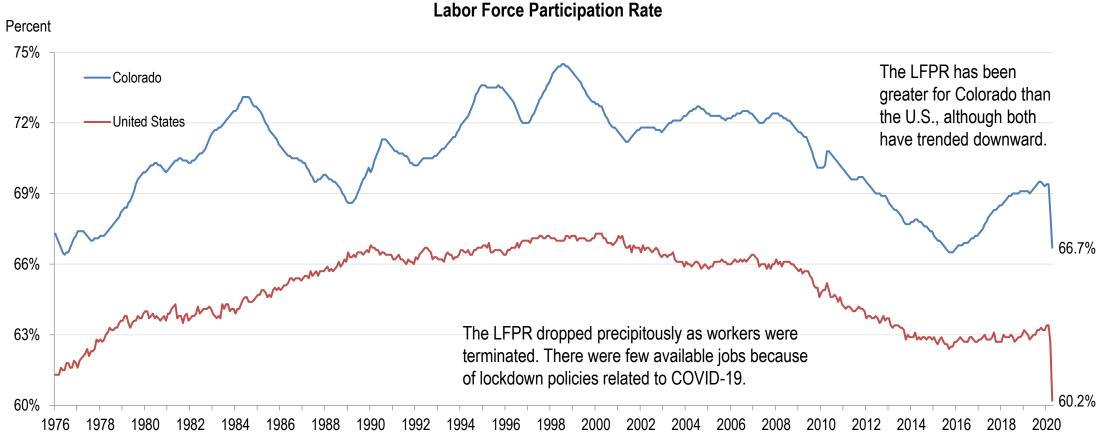
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Colorado Unemployment and Unemployment Rate



Labor Force Participation Rate (LFPR)

United States and Colorado

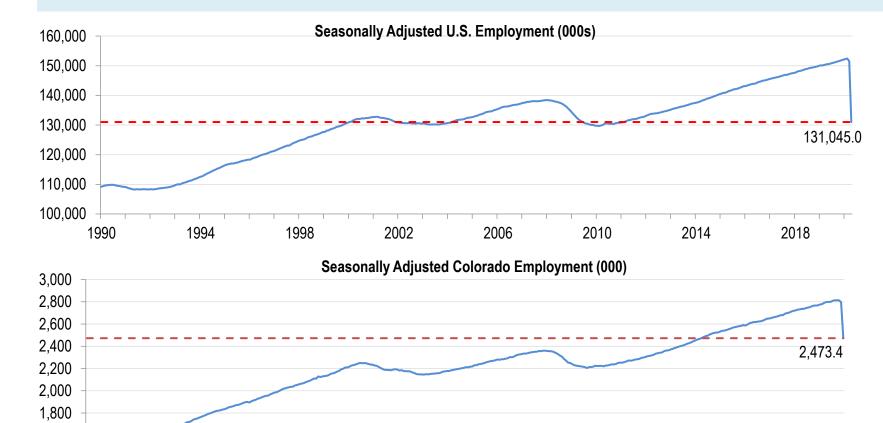


Source: FRED, BLS, cber.co.



Both the United States and Colorado showed unprecedented wage and salary employment declines between February and April of this year. For that period, there were 21.4 million fewer employees in the United States and 340,000 fewer workers in Colorado. U.S. total employment has returned to pre-2000 levels, despite the fact the United States population has increased by more than 50 million people this century. The downturn has touched all 50 states and most sectors of the economy. There is nowhere to hide!

Seasonally Adjusted Wage and Salary Employment Seasonally Adjusted



2006

2010

2014

2018

2002

United States

U.S. seasonally adjusted wage and salary employment was 131.0 million (red line) in April. It fell by 21.4 million between February and April. The last time it was consistently below 131.0 million was prior to January 2000.

Colorado

Colorado seasonally adjusted wage and salary employment was just under 2.5 million (red line) in April. It declined by 340,000 between February and April. The last time it was this low was in Q3 2014.

1998

1994

Source: Bureau of Labor Statistics and cber.co.

1,600 1.400

1990

Change in U.S. Employment by Sector Employment Losses Between February and April 2020

Change in Seasonally Adjusted Employment (000s) Between February and April 2020

Accommodation and food services Retail trade Health care and social assistance Administrative and waste services Manufacturing Arts, entertainment, and recreation Other services Construction	-6,803.8 Slightly more than 16.7 mi 21.4 million lost jobs were seven sectors. These sect account for approximately the decline in employment	in the top ors 78% of	.0 -1,621.8 -1,364.0 -1,348.0 -1,305.0 -1,008.0
Local government Transportation and warehousing Professional and technical services Educational services Wholesale trade Financial activities Information State government Management of companies and enterprises Mining and logging Utilities Federal -7,0	000 -6,500 -6,000 -5,500 -5,000 -4,5	In March, U.S. employment declined by 881,400 and in April it fell by almost 20.6 million. For these two months, only the federal governmen added jobs, related to the 2020 Census.	-365.7 -265.0

Change in U.S. Employment February 2020 vs. April 2020

The amount of the decline in U.S. wage and salary employment between April 2020 and February 2020 (21.4 million) is similar to the total employment of the following 24 states.

Wyoming	Montana	Idaho	Nevada
Vermont	Rhode Island	District of Columbia	Kansas
Alaska	Maine	New Mexico	lowa
North Dakota	Hawaii	Nebraska	Utah
South Dakota	New Hampshire	Mississippi	Connecticut
Delaware	West Virginia	Arkansas	Oklahoma

Change in Colorado Employment by Sector Employment Losses Between February and April

Accommodation and Food Services -128.2 Health Care and Social Assistance -40.3 -32.2 Arts, Entertainment, and Recreation Slightly more than 288,000 of the 340,000 lost jobs were in Retail Trade -31.3 Other Services the top seven sectors. This is approximately 85% of the -22.5 Administrative and Support Services -19.9 decline in employment. Colorado has a higher Construction -13.6 concentration in the top seven sectors than the U.S. Manufacturing -11 Local Government -10.9 Transportation and Warehousing -8.9 **Educational Services** -6.4 In March, Colorado employment declined by 16,500 and in **Financial Activities** -5 Wholesale Trade April it fell by 323,500. For this two month period, utilities -4.7 Professional, Scientific, and Technical Services -2.9 employment was flat; the federal government and -2.6 Management of Companies and Enterprises information added 300 jobs each and the state government -1.1 Mining and Logging added 900 jobs. Utilities 0 Federal Government 0.3 Information 0.3 State Government 0.9 -130 -120 -90 -80 -70 -60 -50 -30 -20 -10 -110 -100 -40 0 10

Change in Seasonally Adjusted Employment (000s) Between February and April 2020

Source: Bureau of Labor Statistics, cber.co. Colorado-based Business and Economic Research https:cber.co

Change in Colorado Employment February 2020 vs. April 2020

The amount of the decline in Colorado wage and salary employment between April 2020 and February 2020 (340,000) is similar to the total employment of the Boulder MSA plus the Grand Junction MSA plus the Pueblo MSA.

The amount of the decline in Colorado employment between April 2020 and February 2020 (340,000) is greater than the employment for each of the following states: Wyoming (288,500), Vermont (314,000), and Alaska (329,800).

Percent Change in Employment by Sector Colorado vs. United States

Percent Change in Employment April 2	020 vs. Febru	ary 2020
Sector	Colorado	United States
Total Nonfarm	-12.1%	-14.0%
Arts, entertainment, and recreation	-53.9%	-54.5%
Accommodation and food services	-44.9%	-47.3%
Other services	-19.5%	-22.0%
Administrative and waste services	-12.1%	-17.3%
Retail trade	-11.6%	-13.7%
Construction	-7.6%	-13.2%
Educational services	-14.3%	-12.9%
Manufacturing	-7.3%	-10.6%
Transportation and warehousing	-9.8%	-10.4%
Health care and social assistance	-13.1%	-10.4%
Information	0.4%	-8.9%
Mining and logging	-4.0%	-8.0%
Wholesale trade	-4.2%	-6.2%
Professional and technical services	-1.2%	-5.6%
Local government	-4.0%	-5.5%
State government	0.7%	-4.3%
Management of companies and enterprises	-6.0%	-3.3%
Financial activities	-2.9%	-3.0%
Utilities	0.0%	-0.5%
Federal government	0.6%	0.7%

The overall change in employment for the U.S between April 2020 and February 2020 was -14.0% compared to -12.1% for Colorado.

The change in employment was negative for every U.S. sector except federal government. The change in Colorado employment was positive for four sectors (highlighted in green).

The change in U.S. employment was lower for 16 of the 20 sectors and lower for only four Colorado sectors (highlighted in light red). This suggests the following:

- Colorado may be lagging the U.S. in entering the recession.
- Colorado may be outperforming the U.S because of the diversification or mix of Colorado's industries.
- The Colorado employment data produced by the Bureau of Labor Statistics may be subject to greater downward revisions in future months.
- Some industries such as mining and retail may have incurred structural losses in 2019.

Percent Change in State Wage and Salary Employment April 2020 vs. February 2020

14.2%.

All states have been affected by the COVID-19 crisis. Because they have a different mix of industries and policies, the impact on employment has been different.

Between February and April 2020

employment in the United States decreased by 14.2%. There were 31 states and the District of Columbia (green) that decreased at a rate less than 14.2% and 19 states (red) that decreased at a rate greater than

There are 85.2 million employees in the states with the lower rates of decline. Employment in those states declined by

employees in the states with the higher rates of decline. Employment in those

10.0 million. There are 66.8 million

states decreased by 11.6 million.

Percent Change in Employment Less than 14.0%

	oril vs. oruary -11.6% -11.8% -11.8%
1 Oklahoma -8.5% 17 Missouri	-11.6% -11.8%
	-11.8%
2 Wyoming -8.6% 18 Iowa	
	-11.8%
3 District of Columbia -8.7% 19 New Mexico	11.070
4 Arkansas -8.7% 20 Colorado	-12.1%
5 South Dakota -8.8% 21 Tennessee	-12.3%
6 Utah -8.9% 22 Florida	-12.8%
7 Nebraska -9.0% 23 Montana	-12.9%
8 Kansas -9.9% 24 West Virginia	-12.9%
9 North Dakota -10.0% 25 Minnesota	-13.0%
10 Virginia -10.1% 26 South Carolina	-13.2%
11 Arizona -10.4% 27 North Carolina	-13.4%
12 Alabama -10.5% 28 Illinois	-13.4%
13 Texas -10.7% 29 Maryland	-13.6%
14 Mississippi -10.8% 30 Oregon	-13.6%
15 Idaho -10.9% 31 Indiana	-13.7%
16 Georgia -11.3% 32 Louisiana	-13.7%

Percent Change in Employment Greater than 14.0%

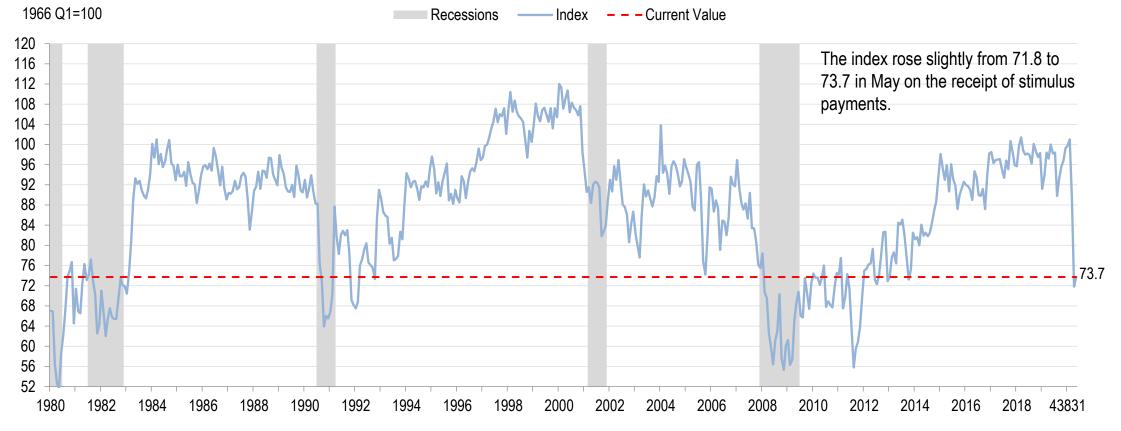
		April vs.
Rank	State	February
33	California	-14.5%
34	Alaska	-14.5%
35	Wisconsin	-15.5%
36	Washington	-15.7%
37	Ohio	-15.8%
38	Kentucky	-15.9%
39	Maine	-16.6%
40	Connecticut	-17.0%
41	New Hampshire	-17.1%
42	Delaware	-17.3%
43	Pennsylvania	-17.9%
44	Massachusetts	-18.0%
45	Nevada	-18.7%
46	Hawaii	-19.1%
47	Rhode Island	-19.4%
48	New Jersey	-19.6%
49	New York	-19.8%
50	Vermont	-20.8%
51	Michigan	-23.5%

Major Indices

Consumer Sentiment Index, NFIB Small Business Optimism Index, and ISM PMI and NMI Indices

There are many indices that show the impact of the economic crisis in the United States. Consumer and small business indices indicate the economy is in a recession. Industrial production and the ISM indices for manufacturers and non-manufacturers tell the same story.

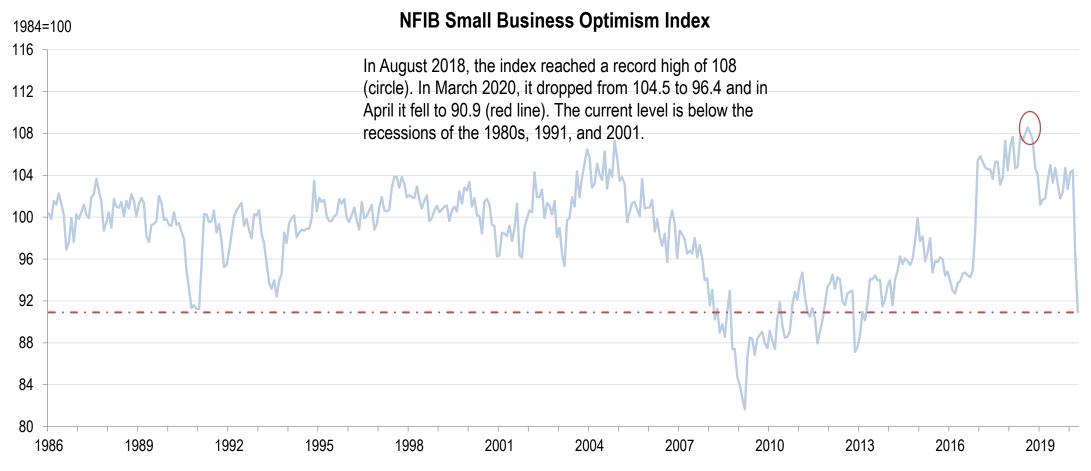
Consumer Sentiment Index University of Michigan



Michigan Consumer Sentiment Index

Source: University of Michigan, cber.co.

NFIB Small Business Optimism Index

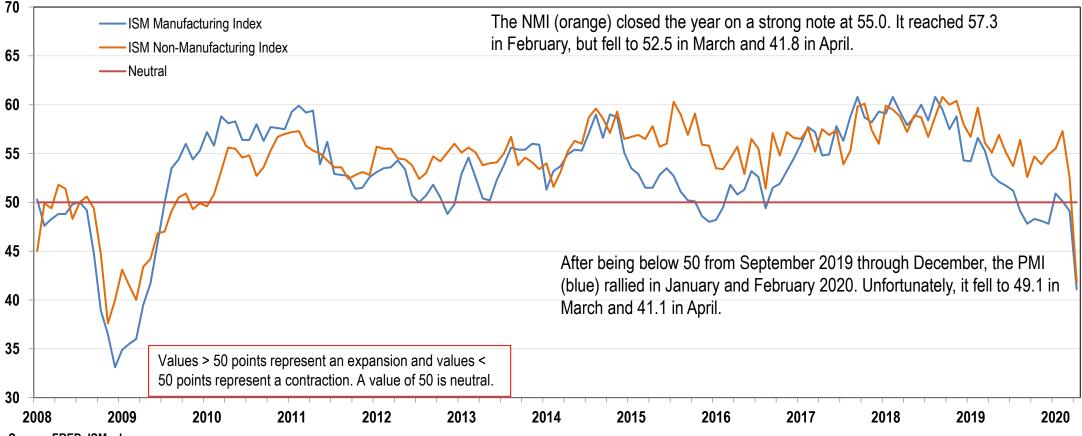


Source: NFIB, cber.co. Index 1984=100

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ISM PMI Composite Indices Manufacturing vs. Non-manufacturing

ISM Manufacturing (PMI) vs. Non-Manufacturing (NMI) Composite Indices



Source: FRED, ISM, cber.co

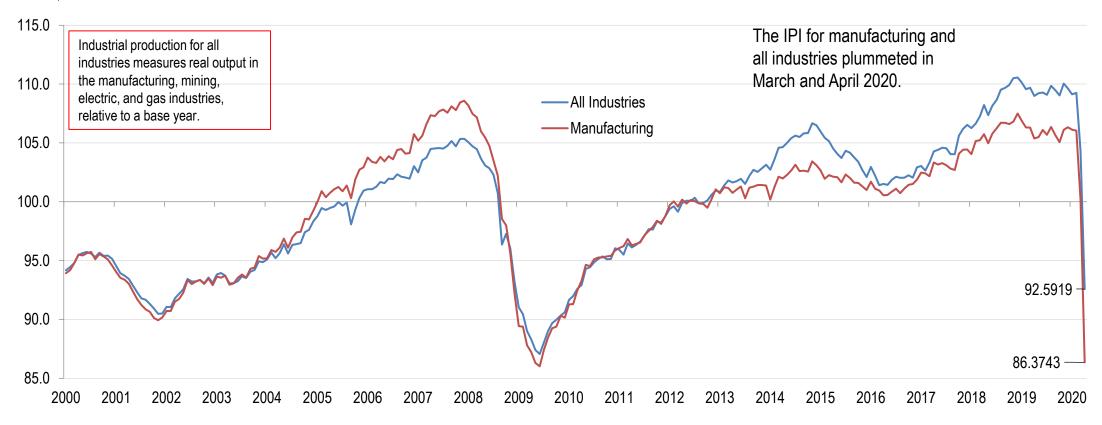
Production and Income

Industrial Production and Change in Real Disposable Personal Income

Industrial production for March and April declined significantly. Real DPI is available only through March. The decline in March is expected to continue into April. Businesses will have less money to invest and consumers will have less discretionary income.

Industrial Production Index All Industries and Manufacturing

Industrial Production, All Industries and Manufacturing

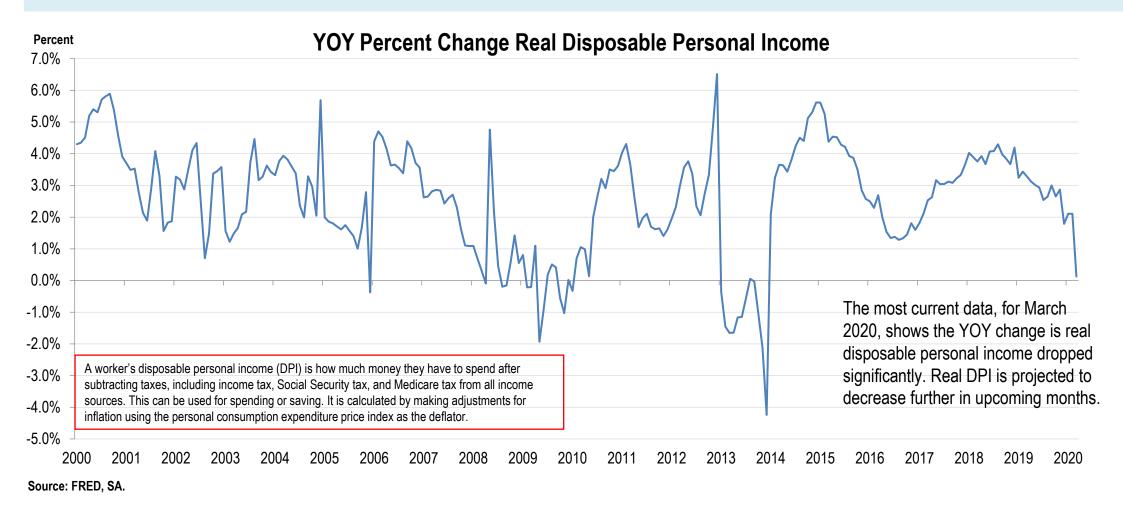


Source: FRED, Federal Reserve, SA, cber.co.

Index, 2012 = 100

Real Disposable Personal Income

Percent Change Prior Year



Sampling of Other Key Metrics

U.S. Light Truck and Auto Sales, Advanced Retail Sales, S&P 500 Index, WTI Crude Oil Prices and Colorado Oil Production

This section includes additional metrics that illustrate the state of the economy. Auto and retail sales have fallen off the cliff, although a few segments of retail, such as groceries, are doing better than most. The S&P Index fell 34%, but it has rebounded. The lower demand for oil has caused prices to decrease. A surplus has developed with has caused oil production in Colorado to taper off.

U.S. Auto and Light Truck (ALT) Sales Monthly (Annualized Rate Millions)

22.0		On a monthly basis, 2019 sales were in the range of 16.5 to 17.3 million, SAAR. Annual sales for 2020 were projected to be down slightly to 16.8
20.0		million, in part because of strong competition from the used car market. March, sales plummeted to 11.4 million and they fell to 8.6 in April.
8.0	At the trough of the recession, February	
6.0	2009, sales dropped to 9.0 million units.	
4.0	\sim	Unit sales have been consistent
2.0		for the past five years: 2019 17.0 million
0.0		2018 17.3 million 2017 17.1 million 2010 17.5 million
0.0	\bigvee	2016 17.5 million 2015 17.4 million

Source: FRED, Federal Reserve Bank of St. Louis, Seasonally Adjusted Annualized Rates (SAAR), cber.co.

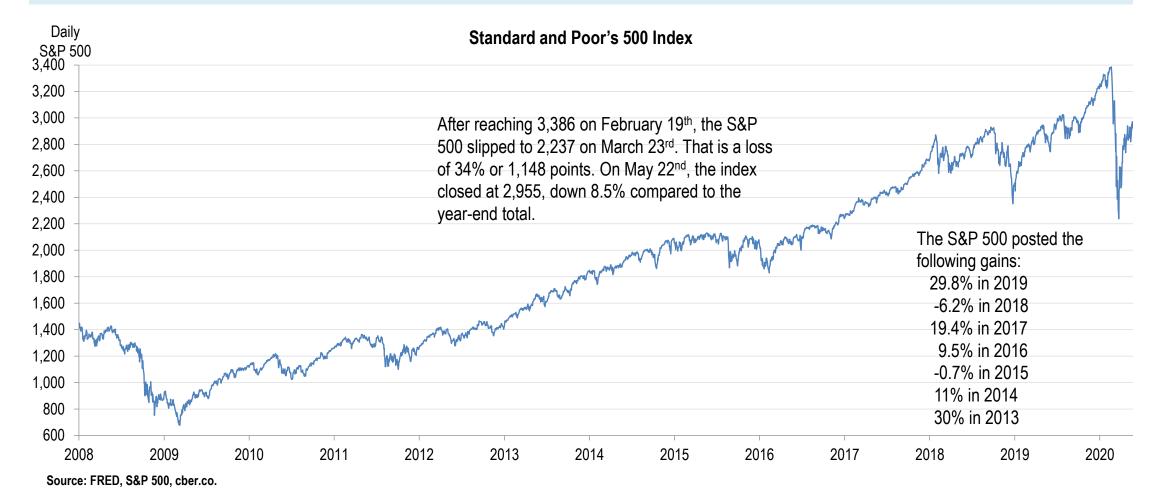
Cumulative Advance Retail, Excluding Food Services Sales Monthly

Millions		United Sta	ates Cumulati	ve Advance R	Retail, Excludir	ng Food Servi	ces Sales						
7,000,000	00 /0 / 11												
6,500,000 -	2019 retail sales were 3.4% greater than 2018. They were projected to increase												
6,000,000 -	at a slightly slower rate, 3.3%, in 2020. After two strong months, sales weakened in March and April. YTD sales are down 2.96%. +4.6% vs. 2017							+3.4% vs. 2018	-3.0% vs. 2019 (XTD				
5,500,000 -													
5,000,000	+4.8%	+3.8%	+3.9% vs. 2013	+1.9% vs. 2014	+2.5% vs. 2015	vs. 2016			(YTD after				
,500,000 🕂	vs. 2011	vs. 2012							four months)				
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·	1	2	3	4	5	6	7	8	9				

Source: U.S. Census Bureau, FRED, cber.co.

Note: Data is in descending order with December at the top and January at the bottom, not adjusted for inflation.

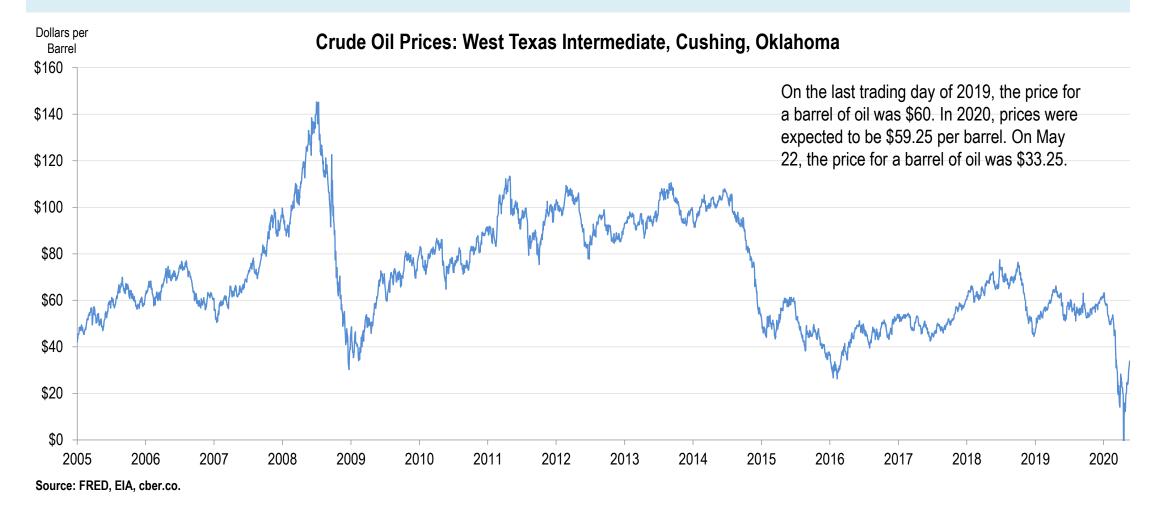
Standard and Poor's 500 Index



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Crude Oil Prices

West Texas Intermediate



Colorado Field Production of Crude Oil 2011 to 2020 (Thousand Barrels)

Thousand Barrels	Colorado Crude Oil Production										
8,000					15,63	30					
6,000	Colorado's production of crude oil reached		14,818								
5,000	record levels in 2015, despite the drop in the										
	price of oil. In 2016, rig count was down, but										
4,000	production remained strong, albeit at a slightly										
3,000	lower level than 2015.										
2,000),233	11,075	P							
1,000	1	\sim \sim \sim 9,70)7	/							
0,000			\sim								
9,000	— Monthly Production 7,963		× \/								
3,000	Average Monthly Production		•	()							
,000			New records for production were set in 2017 and 2018,								
5,000	5,519	even as the p	even as the price per barrel increased. There was record								
5,000		production ag	ain in 2019. Produ	uction is trending	g downward						
	3,289 4,135	in 2020.									
,000	3,203										
,000 -	/ -										
.,000	1 Jan-12 Jan-13 Jan-14 Jan-1	5 Jan-16	Jan-17	Jan-18	Jan-19	Jan-					

Summary

Closing Comments

During March and April, the economies of the United States and all 50 states have deteriorated significantly. No states and very few industries have been spared. There is no place to hide!

Comments About the U.S. Economy

- The opening of the economy from the lockdown will be a short-term event that will extend into the summer. The actual recovery will take much longer and require individuals and public and private leaders to be strong, disciplined, innovative, and resilient.
- From a health perspective the virus is being managed as best as possible given the available information. The health and safety of American citizens will continue to be a factor in the speed of the economic recovery.
- A critical factor in determining the shape of the recovery (U, V, W, L, Swoosh) is the ability and willingness of the consumer to spend. Consumers account for about two-thirds of the country's GDP.
- Personal consumption directly supports businesses and indirectly supports state and local governments through taxes associated with ownership of property and consumption of goods and services.

- To that point, the economic health of state and local governments is critical because they provide necessary services such as education, safety, maintenance, recreation, and utilities.
- It is tragic when companies go out of business, but that is the Darwinian part of recessions that allow economies to grow and become stronger. Companies and organizations must adapt and innovate to remain relevant.
- There have been a variety of losses associated with the lockdown. It is essential that individuals and public and private leaders work to regain the loss of human capital, i.e. the personal and professional relationships, the personal trust in the system, and the faith in mankind.

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ABOUT THE AUTHOR

Gary Horvath has produced annual employment forecasts of the state economy for over 30 years. They have been supplemented by monthly economic updates and indices that track economic performance over the short term. In addition, he has directed three statewide analyses that included reviews of all 64 county economies.

Horvath was the principal investigator for a state and federally funded project to prepare a nanotechnology roadmap for Colorado. As well, he was a co-founder of the Colorado Photonics Industry Association, a trade group for Colorado's Photonics cluster. Horvath has been an active board member of the group since its inception.

Horvath has also served on the Board of Directors for the Economic Development Council of Colorado, Northwest Denver Business Partnership, Adams County Economic Development, and Broomfield Economic Development Corporation. Horvath has also been the chair of the photonics/electronics committee in the Governor's Office of Economic Development and International Trade early stage and proof of concept grant program.