

The U.S. and Michigan Economic Outlook for 2020–2022: an Interim Update

*Jacob T. Burton, Gabriel M. Ehrlich, Donald Grimes, Daniil Manaenkov, Michael R. McWilliams, Wenting Song, and Aditi Thapar
University of Michigan*

The COVID-19 pandemic has caused substantial economic disruption since we released our regularly scheduled economic outlooks for the U.S. and Michigan economies in February. Those forecasts assumed that the pandemic would be contained in the United States with relatively limited disruption to the real economy. The fast-moving events of the past few weeks have invalidated that assumption, so we have produced an updated set of interim forecasts reflecting a revised set of assumptions.

We present two scenarios in this update. The first scenario assumes that the mitigation measures that have been taken to date are effective at slowing the spread of the disease relatively quickly, resulting in a sharp but short-lived contraction in economic activity; we call this the “effective mitigation scenario.” The second scenario assumes that the mitigation measures taken so far prove insufficient in the near term, resulting in severe financial stress and a larger and more prolonged contraction in economic activity; we call this the “prolonged fallout scenario.”

In a news conference on March 15th, Federal Reserve chairman Jerome Powell stated, “The economic outlook is evolving on a daily basis and it is depending on the spread of the

virus... That is not something that is knowable.”¹ The Federal Reserve accordingly cancelled the publication of its March quarterly economic forecast summary. We are not epidemiologists, and we agree with chair Powell that the course of the disease remains highly uncertain. We have also developed these scenarios quickly in order to share them with our readers promptly, so this forecast update does not adhere to our normal integrity standards.² In light of those considerations, this update is limited to a short textual summary of the most important elements of our two forecast scenarios. We have also included a limited set of tables summarizing the two scenarios’ implications for the U.S. and Michigan economies at the back of this document.

We have based much of our analysis of the COVID-19 pandemic’s impacts on the U.S. and Michigan economies on the Congressional Budget Office’s (CBO’s) 2005 study “[A Potential Influenza Pandemic: Possible Macroeconomic Effects and Policy Issues](#).” In both scenarios, we have assumed that the disease’s severity would be between that of the Spanish flu of 1918–19 and the milder pandemics of 1957 and 1968. In the effective mitigation scenario, we have assumed that the drastic nonpharmaceutical interventions (NPIs) currently being implemented across the country, such as quarantines and social distancing, will work quickly enough to allow for their discontinuation in a month or two, facilitating a quick economic rebound. In the prolonged fallout scenario, we have assumed that NPIs will have to remain in place substantially longer, causing contagion of the economic malaise into parts of the economy that have not been directly affected.

Standard economic modeling suggests that a pandemic acts as both a *negative supply shock* and a *negative demand shock* to the economy; see, for instance chapter 25 of Folland, Goodman, and Stano’s [The Economics of Health and Health Care](#), 7th ed. (Routledge 2016), for

¹ Howard Schneider, Lindsay Dunsmuir, and Ann Saphir, March 15, 2020. [Fed slashes rates, global central banks coordinate to cushion coronavirus blow](#), Reuters.

² For instance, our updated outlook for the Michigan economy does not incorporate the recent baseline revision to the state’s payroll employment figures nor the recently released preliminary job count for January, both of which offer little guidance to the relative impacts of Covid-19 on the Michigan economy.

a concise introduction. The pandemic's supply side effects on the economy include production stoppages; forced closures of many public places; cancellations of major sporting events, concerts, and other large gatherings; and lost work time from infections, quarantines, caregiving, and work site closures. We have assumed that infected workers who eventually recover from the disease will miss an average of 5 days of work in the effective mitigation scenario and 10 days of work in the prolonged fallout scenario. Production and supply chain disruptions from large-scale pandemic mitigation measures have the potential to greatly exceed those of the disease-driven supply effects.

We expect the pandemic's effects on the demand side of the economy to be large as well. We expect economic sectors that feature substantial social interaction, such as transportation and warehousing and accommodation and food services, to be most affected. We estimate that they will contract by approximately 20 percent in 2020q2 in the effective mitigation scenario, with monthly data expected to show deeper contraction at the peak. In the prolonged fallout scenario, these sectors contract by approximately 50 percent in the second quarter, although again the monthly data may show greater impacts. Several other sectors, including retail trade, will also see substantial reductions in demand. A small number of sectors will add modestly to GDP, most notably healthcare services, drug purchases, and food consumption at home.

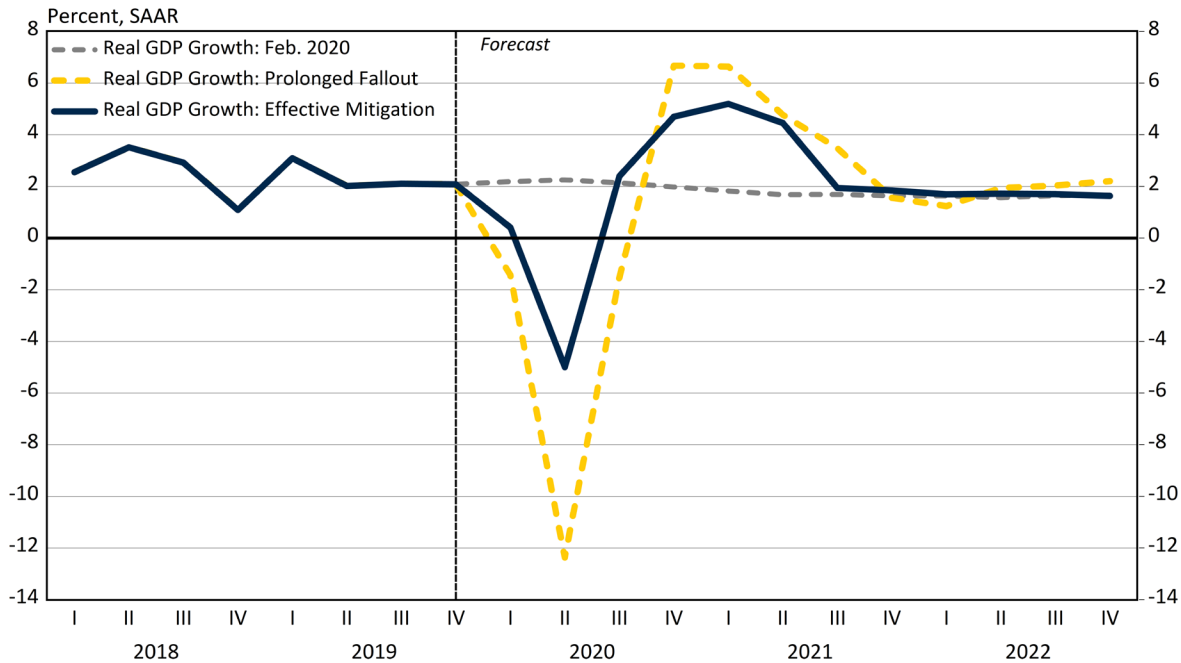
It is worth noting that very economically disruptive containment and mitigation measures may be an optimal response even to a less deadly virus in purely economic terms, because the lifetime discounted present value of output loss from preventable mortality is large. Of course, there are large non-economic benefits to these measures as well. Governments can and should help to spread the costs of the measures over time and across society to lessen the burden on the economically vulnerable.

Our two scenarios differ in the assumed policy reactions. Both scenarios feature federal funds rates near the zero lower bound and substantial quantitative easing. The prolonged fallout

scenario induces a heftier policy response, which includes large direct payments to households in the second and third quarters of 2020, large personal and corporate tax relief, a significant ramp-up in subsidies to private businesses most affected by the epidemic, and sizeable federal aid to states.

Figure 1 displays our forecast for quarterly real GDP growth through 2022 in our February outlook and our two updated scenarios. Real GDP growth in the second quarter of 2020 is negative 5 percent at an annual rate in our effective mitigation scenario and negative 12 percent in our prolonged fallout scenario. Real GDP returns to growth territory in the third quarter in the former scenario but contracts by an additional 1.5 percent annualized rate in the latter, with growth resuming in the fourth quarter. On an annual basis, real GDP growth in 2020 registers approximately 0.5 percent in the effective mitigation scenario and negative 1.8 percent in the prolonged fallout scenario, or roughly four percentage points lower than in our February outlook. Real GDP then grows by about 1.5 percentage points faster than in our February outlook in both updated scenarios until the second half of 2021, when the three projections stabilize at 2 percent growth. The level of real GDP in the effective mitigation scenario catches up to our previous forecast level by mid-2021, but in the prolonged fallout scenario it runs substantially below our previous forecast level throughout our forecast horizon.

Figure 1
Quarterly U.S. Real GDP Growth, 2018q1–2022q4
Updated Scenarios vs. February Forecast



Although as recently as the past week, we thought there was a reasonable chance that the U.S. economy could avoid a recession, we now expect an official recession to be declared in both of the scenarios we considered.³ Nonetheless, we do believe that it remains possible for events to unfold in a more positive direction than the two scenarios we have presented here. It is possible that wide-spread testing, if it can be implemented in the coming weeks, will reveal a large number of asymptomatic cases across all age ranges, reducing estimates of the disease's severity upon contraction. Such a turn of events would allow discontinuation of the most economically disruptive mitigation measures. If events unfold in a more positive direction than we currently foresee and the economy does manage to avoid a recession, we will be delighted to be mistaken in our recession call.

³ Recessions in the United States are declared by the National Bureau of Economic Research's [Business Cycle Dating Committee](#). Although a common rule of thumb is that a recession features two consecutive quarters of declining real GDP, the Committee does not require such an observation to declare a recession.

Figure 2 displays our forecast of Michigan’s quarterly payroll employment count in our two forecast scenarios and our previous February outlook. In the effective mitigation scenario, the state’s payroll employment count declines by approximately 155,000 jobs from the first to third quarters of 2020. In the prolonged fallout scenario, the decline is 400,000 jobs. Although in the former scenario, the state’s job count returns to its forecast path from our previous forecast by early 2022, it remains well below our previous expectations in the latter scenario.

Figure 2
Quarterly Michigan Payroll Employment, 2018q1–2022q4
Updated Scenarios vs. February Forecast

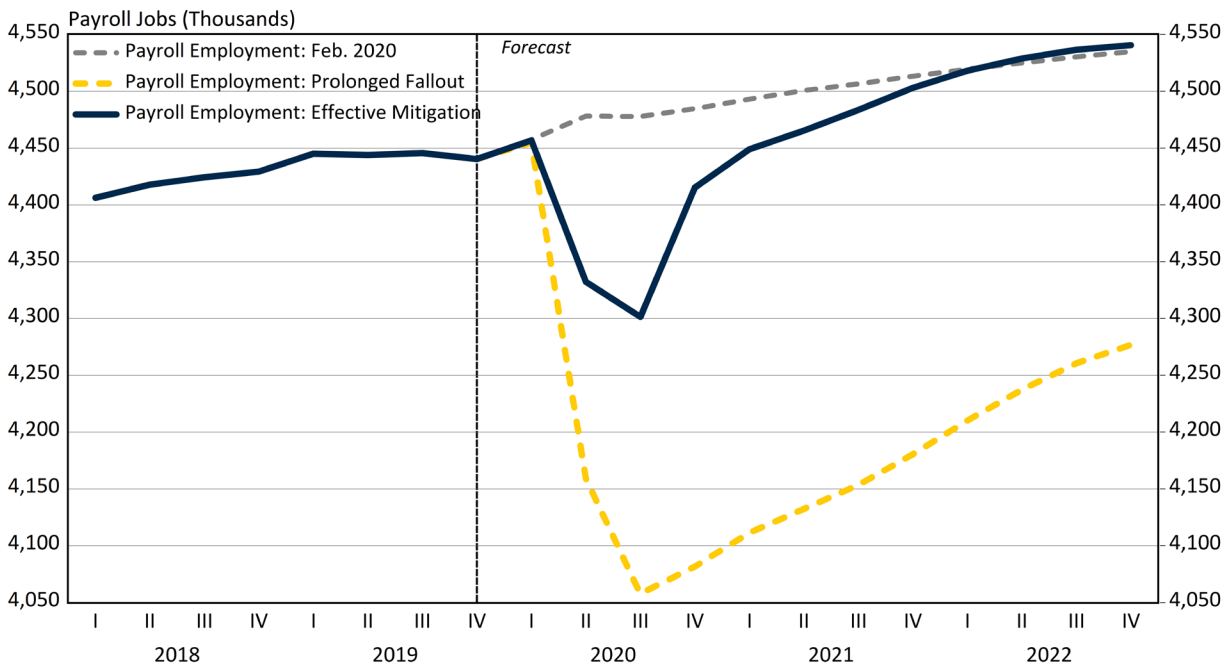
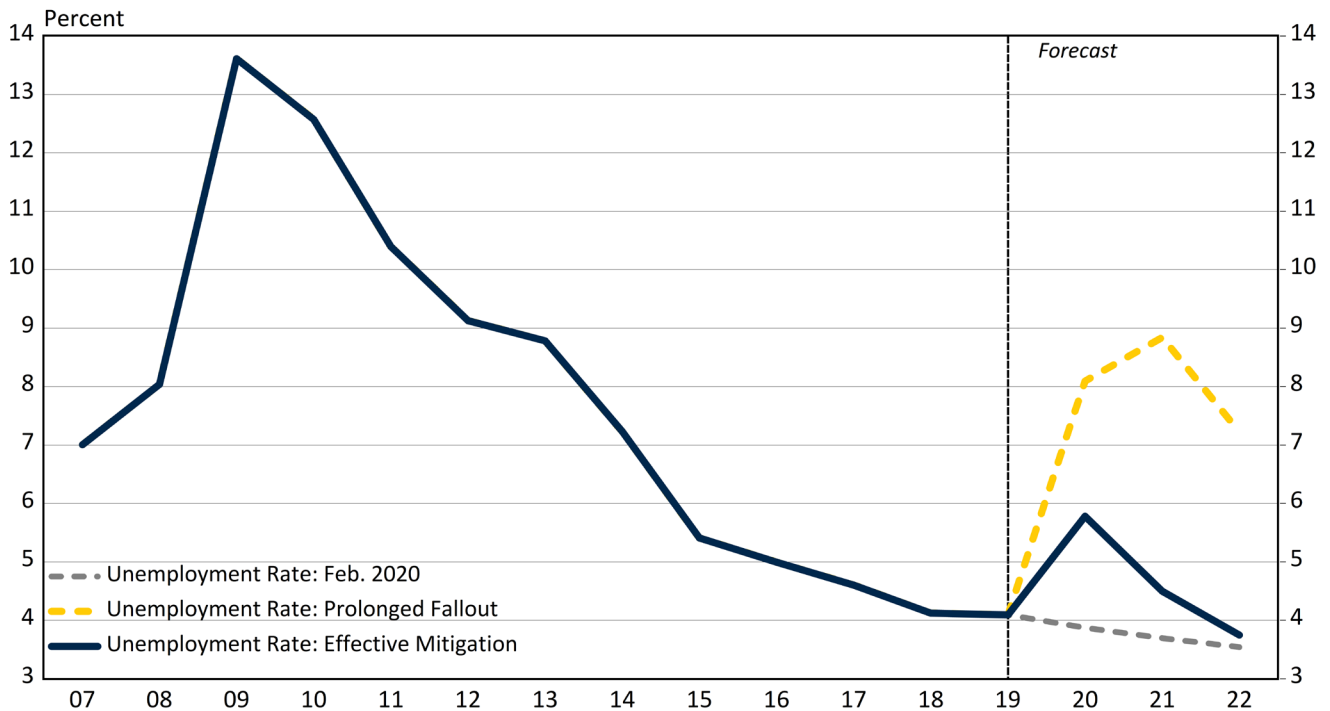


Figure 3 displays our forecast for Michigan’s unemployment rate on an annual basis in our two forecast scenarios and our previous February outlook. In the effective mitigation scenario, the state’s unemployment rate rises from 4.1 percent in 2019 to 5.8 percent in 2020, before declining back to 4.5 percent in 2021. In the prolonged fallout scenario, the state’s unemployment rate jumps to 8.1 percent in 2020 and 8.8 percent in 2021 before beginning to decline; it reaches a peak quarterly rate of 10.0 percent in the third quarter of 2020.

Figure 3
Annual Michigan Unemployment Rate, 2007–2022
Updated Scenarios vs. February Forecast



We would like to conclude this update by reiterating a few key points. First, the scenarios we have presented remain difficult to characterize in terms of likelihood. There is very limited economic information available, and the epidemiological situation is still evolving quickly. Second, protecting people’s lives at the expense of short-term economic pain is justified on public health grounds and by long-term economic logic. Third, it is imperative for the federal and state governments to mitigate the pandemic’s economic damage to vulnerable people’s livelihoods. In particular, the U.S. government is the only entity with the fiscal capacity to spread the economic burden across time and segments of society. Finally, we hope that our readers will exercise great care and remain in good health during these challenging times.

U.S. Economic Outlook for 2020-2022

RSQE Forecast, Interim Update
19 March 2020

I N D E X O F T A B L E S

Table 1: Gross Domestic Product in Chained Dollars—Effective Mitigation Scenario
Table 2: Gross Domestic Product in Chained Dollars—Prolonged Fallout Scenario

Forecast Based on MQEM
The Michigan Quarterly Econometric Model of the U.S. Economy

RSQE
Research Seminar in Quantitative Economics
The University of Michigan
Ann Arbor, Michigan 48109

Table 1
Gross Domestic Product in Chained Dollars—Effective Mitigation
(Billions of Chained (2012) Dollars, SAAR)

	Actual		Forecast							
	2019q4	2020q1	2020q2	2020q3	2020q4	2021q1	2021q2	2021q3	2021q4	2022q1
GDP	19219.77	19239.54	18994.42	19107.42	19328.24	19574.58	19789.09	19884.28	19975.52	20059.74
Consumption	13411.94	13375.93	13068.89	13274.72	13480.54	13682.02	13885.43	13967.09	14045.47	14118.74
Durables	1803.18	1820.81	1830.90	1851.91	1874.64	1899.16	1924.78	1949.21	1969.47	1985.82
Vehicles & Parts	548.61	550.71	545.12	546.88	552.18	559.58	567.34	573.39	576.14	575.51
Furn & HH Equipment	413.81	416.18	419.26	424.44	428.08	431.35	434.91	438.68	442.12	445.49
Rec Goods & Vehicles	590.16	599.69	611.76	624.71	637.18	649.52	662.24	675.58	689.11	703.34
Other	267.58	272.51	275.90	278.99	281.67	284.21	286.86	289.63	292.35	294.73
Nondurables	3036.02	3048.61	3095.11	3108.24	3122.24	3131.62	3141.06	3158.01	3174.85	3190.65
Food	996.47	1004.68	1023.72	1023.33	1022.50	1021.44	1020.35	1023.78	1027.20	1030.11
Clothing & Footwear	413.83	414.01	417.42	420.13	422.87	425.13	427.51	430.12	432.65	435.25
Gasoline & Oil	427.58	423.55	418.97	421.41	424.17	426.70	428.99	429.51	430.17	430.98
Fuel Oil & Coal	26.44	25.75	25.60	25.38	25.32	25.16	25.11	25.02	24.90	24.80
Other	1154.92	1161.87	1186.21	1194.82	1204.34	1210.47	1216.63	1226.41	1236.09	1245.14
Services	8630.89	8573.99	8243.24	8407.77	8570.36	8731.62	8893.90	8938.51	8983.09	9026.49
Private Investment	3362.96	3391.39	3412.30	3342.94	3368.91	3444.33	3499.97	3555.00	3594.91	3622.25
Nonresidential	2732.39	2731.72	2714.05	2701.99	2711.69	2752.60	2800.52	2849.37	2886.21	2910.38
Structures	496.16	487.48	477.88	468.29	460.81	457.03	458.35	462.27	466.31	470.18
Equipment	1259.95	1255.81	1237.27	1223.68	1230.34	1263.84	1296.61	1327.98	1347.62	1354.84
Info Processing	512.84	514.44	513.80	520.26	526.81	535.44	544.21	552.43	559.38	566.42
Industrial Equipment	236.83	234.76	233.82	234.00	234.02	234.60	236.45	238.96	241.68	244.17
New Vehicles	348.78	345.72	337.00	334.68	337.58	344.10	353.20	361.24	366.20	364.66
Other Equipment	177.38	177.58	171.16	156.70	155.10	171.61	183.55	195.04	199.94	200.63
Intellectual Property	989.25	1002.53	1013.21	1024.94	1037.26	1051.72	1067.92	1083.33	1097.38	1110.36
Residential	602.07	610.52	609.70	606.74	606.84	615.70	625.46	634.94	640.98	645.09
Priv Inventory Change	6.48	24.82	69.15	9.21	27.46	55.78	53.66	50.34	47.55	46.91
Farm	-11.13	-10.96	0.14	0.14	0.14	0.14	-1.71	-3.46	-4.96	-4.96
Nonfarm	15.21	35.78	69.00	9.07	27.32	55.64	55.37	53.79	52.51	51.87
Net Exports	-901.98	-891.94	-882.35	-918.04	-931.49	-963.99	-1013.00	-1062.90	-1095.98	-1115.55
Exports	2532.40	2538.55	2482.21	2480.72	2505.53	2539.29	2572.58	2592.17	2607.31	2618.06
Imports	3434.38	3430.49	3364.56	3398.76	3437.02	3503.27	3585.58	3655.07	3703.29	3733.61
Government Purchases	3332.39	3350.76	3380.60	3389.23	3392.81	3392.37	3391.20	3392.02	3393.62	3394.87
Federal	1295.66	1299.69	1310.20	1309.40	1310.74	1311.94	1312.18	1312.58	1312.66	1312.05
Defense	784.29	789.61	796.06	798.95	800.51	801.74	802.14	803.00	803.68	803.80
Nondefense	511.14	509.97	514.04	510.52	510.33	510.32	510.18	509.76	509.19	508.48
State & Local	2035.77	2049.98	2069.27	2078.55	2080.78	2079.20	2077.82	2078.24	2079.74	2081.54
ADDENDA										
Final Sales to Domestic Purchasers	20070.16	20063.04	19771.36	19969.56	20186.82	20435.60	20693.04	20832.04	20953.10	21054.55
Unemployment Rate (%)	3.53	3.62	4.09	4.39	4.32	4.06	3.67	3.39	3.23	3.17

Table 1
Gross Domestic Product in Chained Dollars—Effective Mitigation
(Billions of Chained (2012) Dollars, SAAR)

	Forecast			Calendar Years				Percent Changes		
	2022q2	2022q3	2022q4	2019	2020	2021	2022	2019-20	2020-21	2021-22
GDP	20145.47	20230.66	20312.72	19072.51	19167.41	19805.87	20187.15	0.50	3.33	1.93
Consumption	14194.61	14271.65	14348.56	13279.60	13300.02	13895.00	14233.39	0.15	4.47	2.44
Durables	2002.56	2019.31	2035.62	1765.66	1844.56	1935.66	2010.83	4.47	4.94	3.88
Vehicles & Parts	574.39	573.36	571.75	541.10	548.72	569.11	573.75	1.41	3.72	0.82
Furn & HH Equipment	449.55	453.36	456.95	406.20	421.99	436.76	451.34	3.89	3.50	3.34
Rec Goods & Vehicles	717.57	732.08	747.21	569.74	618.33	669.11	725.05	8.53	8.21	8.36
Other	297.44	300.14	302.91	263.51	277.27	288.26	298.81	5.22	3.96	3.66
Nondurables	3206.26	3222.88	3239.70	3005.49	3093.55	3151.39	3214.87	2.93	1.87	2.01
Food	1033.14	1036.20	1039.34	988.61	1018.56	1023.19	1034.70	3.03	0.45	1.12
Clothing & Footwear	437.51	440.26	442.86	407.21	418.61	428.85	438.97	2.80	2.45	2.36
Gasoline & Oil	431.52	432.45	433.41	424.06	422.03	428.84	432.09	-0.48	1.61	0.76
Fuel Oil & Coal	24.64	24.52	24.39	26.39	25.51	25.05	24.59	-3.30	-1.83	-1.84
Other	1254.44	1263.92	1273.60	1142.73	1186.81	1222.40	1259.28	3.86	3.00	3.02
Services	9072.23	9118.23	9164.27	8560.83	8448.84	8886.78	9095.30	-1.31	5.18	2.35
Private Investment	3640.53	3657.12	3670.36	3421.22	3378.88	3523.55	3647.56	-1.24	4.28	3.52
Nonresidential	2931.55	2950.47	2968.23	2749.79	2714.86	2822.17	2940.16	-1.27	3.95	4.18
Structures	473.50	475.93	477.02	516.84	473.61	460.99	474.16	-8.36	-2.66	2.86
Equipment	1361.55	1367.13	1372.23	1272.42	1236.77	1309.01	1363.94	-2.80	5.84	4.20
Info Processing	573.54	580.76	588.06	516.96	518.83	547.87	577.20	0.36	5.60	5.35
Industrial Equipment	246.36	248.23	249.81	240.98	234.15	237.92	247.14	-2.84	1.61	3.87
New Vehicles	363.89	363.12	361.98	350.45	338.74	356.19	363.41	-3.34	5.15	2.03
Other Equipment	200.34	199.36	198.59	179.85	165.13	187.54	199.73	-8.18	13.57	6.50
Intellectual Property	1121.44	1132.39	1144.25	971.06	1019.49	1075.09	1127.11	4.99	5.45	4.84
Residential	646.25	645.98	644.19	593.53	608.45	629.27	645.38	2.51	3.42	2.56
Priv Inventory Change	43.56	42.65	41.43	65.33	32.66	51.83	43.64	NA	NA	NA
Farm	-4.96	-4.96	-4.96	-11.92	-2.63	-2.50	-4.96	NA	NA	NA
Nonfarm	48.52	47.61	46.39	74.32	35.29	54.33	48.60	NA	NA	NA
Net Exports	-1125.53	-1136.90	-1148.28	-954.19	-905.96	-1033.97	-1131.56	NA	NA	NA
Exports	2628.06	2637.43	2646.77	2531.92	2501.75	2577.84	2632.58	-1.19	3.04	2.12
Imports	3753.59	3774.33	3795.06	3486.11	3407.71	3611.81	3764.15	-2.25	5.99	4.22
Government Purchases	3396.22	3398.72	3401.48	3299.36	3378.35	3392.30	3397.82	2.39	0.41	0.16
Federal	1311.62	1311.21	1310.88	1275.67	1307.51	1312.34	1311.44	2.50	0.37	-0.07
Defense	803.94	804.04	804.15	773.65	796.28	802.64	803.98	2.93	0.80	0.17
Nondefense	507.93	507.45	507.02	501.89	511.22	509.86	507.72	1.86	-0.26	-0.42
State & Local	2083.27	2086.10	2089.13	2022.50	2069.65	2078.75	2085.01	2.33	0.44	0.30
ADDENDA										
Final Sales to Domestic Purchasers	21152.18	21248.22	21341.40	19910.85	19997.70	20728.45	21199.09	0.44	3.65	2.27
Unemployment Rate (%)	3.16	3.15	3.13	3.66	4.10	3.59	3.15	NA	NA	NA

Table 2
Gross Domestic Product in Chained Dollars—Prolonged Fallout
(Billions of Chained (2012) Dollars, SAAR)

	Actual		Forecast							
	2019q4	2020q1	2020q2	2020q3	2020q4	2021q1	2021q2	2021q3	2021q4	2022q1
GDP	19219.77	19150.73	18528.79	18458.16	18758.58	19062.51	19285.86	19451.29	19526.46	19586.48
Consumption	13411.94	13293.08	12621.08	12838.92	13200.97	13507.90	13742.05	13922.44	14010.65	14066.78
Durables	1803.18	1817.11	1776.22	1748.58	1777.28	1805.22	1851.83	1888.64	1922.22	1934.32
Vehicles & Parts	548.61	547.48	518.51	496.47	496.52	498.35	517.00	528.30	536.93	534.95
Furn & HH Equipment	413.81	416.18	410.88	403.22	415.24	420.57	428.39	434.29	439.90	442.18
Rec Goods & Vehicles	590.16	599.69	599.53	605.96	621.25	639.78	655.62	672.20	689.11	699.98
Other	267.58	272.51	270.38	270.62	274.63	279.95	283.99	288.18	292.35	295.88
Nondurables	3036.02	3063.02	3166.03	3160.47	3155.62	3146.34	3149.91	3154.57	3171.46	3169.65
Food	996.47	1015.20	1076.54	1063.10	1049.11	1034.79	1028.00	1023.78	1027.20	1028.26
Clothing & Footwear	413.83	414.01	413.31	417.02	420.79	424.08	427.51	430.12	432.65	436.17
Gasoline & Oil	427.58	419.09	396.58	404.60	412.94	421.07	425.77	429.51	430.17	428.76
Fuel Oil & Coal	26.44	25.75	25.60	25.38	25.32	25.16	25.11	25.02	24.90	24.16
Other	1154.92	1168.24	1218.45	1219.25	1220.80	1218.76	1222.71	1226.41	1236.09	1231.86
Services	8630.89	8487.39	7808.00	8033.08	8350.25	8621.00	8801.49	8938.51	8983.09	9028.06
Private Investment	3362.96	3388.37	3364.42	3105.14	3058.32	3087.60	3144.47	3222.13	3276.69	3325.42
Nonresidential	2732.39	2728.73	2638.25	2538.86	2479.66	2480.24	2521.76	2569.45	2623.07	2664.32
Structures	496.16	487.44	468.72	443.77	422.29	407.02	401.78	401.31	405.10	411.38
Equipment	1259.95	1253.07	1176.89	1102.08	1064.06	1076.11	1114.97	1152.21	1189.49	1211.36
Info Processing	512.84	514.44	491.81	482.07	476.08	476.08	478.47	484.48	494.27	504.26
Industrial Equipment	236.83	234.68	228.75	223.26	217.38	213.41	212.55	213.88	217.16	220.97
New Vehicles	348.78	343.34	313.18	290.69	279.45	277.15	294.50	307.10	318.43	321.50
Other Equipment	177.38	177.58	161.84	130.51	118.17	134.86	150.74	165.35	176.82	182.42
Intellectual Property	989.25	1002.12	1003.97	1003.08	1004.17	1011.29	1022.93	1036.79	1051.67	1065.42
Residential	602.07	609.93	608.35	589.71	569.12	569.74	575.45	582.29	585.74	600.82
Priv Inventory Change	6.48	25.40	96.86	-60.30	-22.86	7.54	18.82	44.63	44.15	34.73
Farm	-11.13	-10.96	0.14	0.14	0.14	0.14	-1.71	-3.46	-4.96	-4.96
Nonfarm	15.21	36.36	96.72	-60.44	-23.00	7.40	20.52	48.09	49.11	39.69
Net Exports	-901.98	-898.80	-870.87	-854.87	-839.80	-847.18	-903.30	-988.99	-1051.28	-1083.92
Exports	2532.40	2518.50	2398.98	2338.63	2332.62	2382.74	2440.62	2475.99	2507.00	2530.56
Imports	3434.38	3417.30	3269.85	3193.50	3172.42	3229.92	3343.92	3464.99	3558.28	3614.49
Government Purchases	3332.39	3352.61	3395.34	3361.07	3344.86	3323.71	3302.49	3280.23	3262.34	3244.23
Federal	1295.66	1300.01	1312.91	1312.97	1315.86	1318.66	1320.34	1321.37	1310.93	1299.61
Defense	784.29	789.94	798.64	802.10	804.65	806.86	807.90	808.77	803.86	798.35
Nondefense	511.14	509.97	514.21	510.99	511.37	511.98	512.63	512.80	507.35	501.62
State & Local	2035.77	2051.50	2081.18	2047.28	2028.45	2004.86	1982.29	1959.38	1951.79	1944.84
ADDENDA										
Final Sales to Domestic Purchasers	20070.16	19979.13	19268.87	19332.52	19593.82	19878.05	20134.36	20343.06	20465.86	20559.16
Unemployment Rate (%)	3.53	3.74	4.83	5.78	5.91	5.65	5.22	4.75	4.50	4.45

Table 2
Gross Domestic Product in Chained Dollars—Prolonged Fallout
(Billions of Chained (2012) Dollars, SAAR)

	Forecast			Calendar Years				Percent Changes		
	2022q2	2022q3	2022q4	2019	2020	2021	2022	2019-20	2020-21	2021-22
GDP	19680.95	19779.95	19887.99	19072.51	18724.07	19331.53	19733.84	-1.83	3.24	2.08
Consumption	14136.43	14211.83	14290.78	13279.60	12988.51	13795.76	14176.45	-2.19	6.22	2.76
Durables	1952.65	1969.06	1984.74	1765.66	1779.80	1866.98	1960.19	0.80	4.90	4.99
Vehicles & Parts	535.55	534.41	531.65	541.10	514.74	520.14	534.14	-4.87	1.05	2.69
Furn & HH Equipment	446.83	451.46	456.25	406.20	411.38	430.79	449.18	1.27	4.72	4.27
Rec Goods & Vehicles	711.23	723.00	736.02	569.74	606.61	664.18	717.55	6.47	9.49	8.04
Other	299.92	303.77	307.76	263.51	272.04	286.12	301.83	3.24	5.18	5.49
Nondurables	3171.20	3177.97	3187.90	3005.49	3136.28	3155.57	3176.68	4.35	0.61	0.67
Food	1029.45	1030.73	1032.40	988.61	1050.99	1028.44	1030.21	6.31	-2.15	0.17
Clothing & Footwear	439.26	443.11	446.82	407.21	416.28	428.59	441.34	2.23	2.96	2.98
Gasoline & Oil	427.86	427.86	428.00	424.06	408.30	426.63	428.12	-3.72	4.49	0.35
Fuel Oil & Coal	23.65	23.38	23.18	26.39	25.51	25.05	23.59	-3.30	-1.83	-5.81
Other	1230.50	1232.41	1236.89	1142.73	1206.68	1225.99	1232.91	5.60	1.60	0.56
Services	9078.57	9131.39	9185.35	8560.83	8169.68	8836.02	9105.84	-4.57	8.16	3.05
Private Investment	3376.20	3426.23	3474.18	3421.22	3229.06	3182.73	3400.51	-5.62	-1.43	6.84
Nonresidential	2700.08	2734.31	2766.33	2749.79	2596.38	2548.63	2716.26	-5.58	-1.84	6.58
Structures	418.00	424.49	429.11	516.84	455.56	403.80	420.75	-11.86	-11.36	4.20
Equipment	1229.82	1247.13	1262.79	1272.42	1149.02	1133.20	1237.78	-9.70	-1.38	9.23
Info Processing	514.44	523.53	531.44	516.96	491.10	483.33	518.42	-5.00	-1.58	7.26
Industrial Equipment	224.94	229.03	233.06	240.98	226.02	214.25	227.00	-6.21	-5.21	5.95
New Vehicles	325.92	330.04	332.83	350.45	306.67	299.29	327.57	-12.49	-2.40	9.45
Other Equipment	183.43	184.34	186.00	179.85	147.03	156.94	184.05	-18.25	6.75	17.27
Intellectual Property	1076.39	1087.03	1099.22	971.06	1003.33	1030.67	1082.01	3.32	2.72	4.98
Residential	616.51	630.77	641.84	593.53	594.28	578.30	622.48	0.13	-2.69	7.64
Priv Inventory Change	32.22	32.28	36.57	65.33	9.77	28.78	33.95	NA	NA	NA
Farm	-4.96	-4.96	-4.96	-11.92	-2.63	-2.50	-4.96	NA	NA	NA
Nonfarm	37.18	37.24	41.53	74.32	12.41	31.28	38.91	NA	NA	NA
Net Exports	-1102.15	-1121.71	-1143.84	-954.19	-866.09	-947.69	-1112.91	NA	NA	NA
Exports	2548.88	2562.40	2574.19	2531.92	2397.18	2451.59	2554.01	-5.32	2.27	4.18
Imports	3651.03	3684.11	3718.03	3486.11	3263.27	3399.28	3666.91	-6.39	4.17	7.87
Government Purchases	3234.76	3226.49	3227.73	3299.36	3363.47	3292.19	3233.30	1.94	-2.12	-1.79
Federal	1288.18	1276.66	1273.77	1275.67	1310.44	1317.83	1284.56	2.73	0.56	-2.52
Defense	792.65	787.06	785.74	773.65	798.83	806.85	790.95	3.26	1.00	-1.97
Nondefense	495.96	490.11	488.56	501.89	511.64	511.19	494.06	1.94	-0.09	-3.35
State & Local	1946.46	1949.34	1953.32	2022.50	2052.10	1974.58	1948.49	1.46	-3.78	-1.32
ADDENDA										
Final Sales to Domestic Purchasers	20670.53	20785.66	20908.32	19910.85	19543.58	20205.33	20730.92	-1.84	3.39	2.60
Unemployment Rate (%)	4.45	4.43	4.38	3.66	5.07	5.03	4.43	NA	NA	NA

The Michigan Economic Outlook for 2020-2022

RSQE Forecast, Interim Update
19 March 2020

INDEX OF TABLES

- Table 1: Michigan Personal Income—Effective Mitigation Scenario
- Table 2: Employment in Michigan—Effective Mitigation Scenario
- Table 3: Michigan Personal Income—Prolonged Fallout Scenario
- Table 4: Employment in Michigan—Prolonged Fallout Scenario

Forecast Based on
The Econometric Model of the State of Michigan

RSQE
Research Seminar in Quantitative Economics
The University of Michigan
Ann Arbor, Michigan 48109

Table 1
Michigan Personal Income—Effective Mitigation
(Millions of Current Dollars, SAQR)

	Actual	Forecast									
	2019q4	2020q1	2020q2	2020q3	2020q4	2021q1	2021q2	2021q3	2021q4	2022q1	2022q2
Personal Income	128026.14	128491.10	126071.20	125494.80	127256.70	128855.70	130862.10	132557.20	134310.30	135734.50	137131.00
Wage and Salary	63175.75	63404.98	61766.14	61422.14	63450.65	64626.43	66165.74	67213.04	68333.53	69025.79	69831.88
Private	54874.67	55030.43	53236.99	52825.44	54844.73	55953.07	57422.60	58416.19	59477.57	60102.28	60840.93
Government	8301.08	8374.55	8529.15	8596.70	8605.93	8673.36	8743.14	8796.85	8855.95	8923.51	8990.95
Other Labor Income	15266.42	15340.64	14814.21	14559.10	14854.74	14961.74	15132.22	15225.82	15366.11	15450.93	15573.55
Proprietors' Income	8682.57	8692.72	8449.48	8433.90	8391.68	8477.85	8624.91	8768.68	8887.46	8986.44	9082.00
Property Income	23780.56	23677.70	22934.57	22607.80	22435.37	22555.34	22741.39	23109.29	23461.25	23778.99	24058.70
Transfer Payments	26751.04	27102.73	27516.20	27799.72	27790.29	28152.96	28337.93	28528.68	28709.55	29102.24	29303.12
Residence Adjustment	629.35	634.78	640.27	645.80	651.38	657.00	662.68	668.40	674.17	680.00	685.87
Less:											
Social Ins Contribution	10259.55	10362.45	10049.69	9973.69	10317.40	10575.57	10802.75	10956.68	11121.74	11289.92	11404.06
Less:											
Federal Pers Taxes	11698.03	11592.58	11254.43	11126.18	11346.78	10842.28	11055.35	11156.99	11324.68	11827.98	11981.04
Mich Withholding	2508.04	2562.42	2487.52	2489.92	2524.65	2610.00	2668.97	2731.60	2727.37	2795.02	2822.51
Equals:											
Disp Personal Income	113820.07	114336.10	112329.20	111878.70	113385.30	115403.50	117137.80	118668.60	120258.30	121111.50	122327.50
ADDENDA:											
Consumer Price Index											
Detroit 1982-84=100	238.86	238.90	237.37	237.83	238.89	240.51	242.02	243.09	244.00	244.90	245.95
Real Disposable Income											
Millions of 1982-84 \$	47650.77	47859.41	47323.10	47042.25	47463.46	47983.79	48400.59	48815.85	49285.36	49453.46	49735.93

Table 1
Michigan Personal Income—Effective Mitigation
(Millions of Current Dollars, SAQR)

	Forecast		Calendar Years					Percent Changes			
	2022q3	2022q4	2018	2019	2020	2021	2022	2018-19	2019-20	2020-21	2021-22
Personal Income	138274.80	139478.30	484029.84	503099.80	507313.80	526585.30	550618.60	3.94	0.84	3.80	4.56
Wage and Salary	70408.41	71029.96	240365.37	247413.99	250043.91	266338.74	280296.04	2.93	1.06	6.52	5.24
Private	61355.60	61915.13	208546.81	214637.49	215937.59	231269.43	244213.94	2.92	0.61	7.10	5.60
Government	9052.81	9114.83	31818.56	32776.50	34106.33	35069.30	36082.10	3.01	4.06	2.82	2.89
Other Labor Income	15655.69	15749.95	57885.98	59644.09	59568.69	60685.89	62430.11	3.04	-0.13	1.88	2.87
Proprietors' Income	9175.85	9259.88	32565.04	34002.16	33967.79	34758.89	36504.17	4.41	-0.10	2.33	5.02
Property Income	24311.15	24584.82	91960.76	94448.98	91655.44	91867.27	96733.66	2.71	-2.96	0.23	5.30
Transfer Payments	29513.93	29720.73	97776.34	105309.64	110208.94	113729.12	117640.02	7.70	4.65	3.19	3.44
Residence Adjustment	691.79	697.77	2367.80	2488.65	2572.22	2662.25	2755.43	5.10	3.36	3.50	3.50
Less:											
Social Ins Contribution	11482.05	11564.77	38891.44	40207.71	40703.23	43456.74	45740.80	3.38	1.23	6.76	5.26
Less:											
Federal Pers Taxes	12095.31	12200.36	44059.58	45838.30	45319.97	44379.30	48104.69	4.04	-1.13	-2.08	8.39
Mich Withholding	2865.98	2838.50	9595.03	10151.27	10064.50	10737.94	11322.00	5.80	-0.85	6.69	5.44
Equals:											
Disp Personal Income	123313.50	124439.50	430375.24	447110.23	451929.30	471468.20	491192.00	3.89	1.08	4.32	4.18
ADDENDA:											
Consumer Price Index											
Detroit 1982-84=100	247.07	248.16	232.26	235.47	238.25	242.41	246.52	1.38	1.18	1.75	1.70
Real Disposable Income											
Millions of 1982-84 \$	49911.29	50145.49	185294.89	189877.28	189688.22	194485.59	199246.17	2.47	-0.10	2.53	2.45

Table 2
 Employment in Michigan—Effective Mitigation
 (Thousands of Persons, Seasonally Adjusted)

	Actual		Forecast								
	2019q4	2020q1	2020q2	2020q3	2020q4	2021q1	2021q2	2021q3	2021q4	2022q1	2022q2
Total Employment	4759.55	4762.88	4639.97	4600.28	4702.39	4736.86	4750.62	4765.78	4782.42	4795.50	4805.30
Wage and Salary	4440.40	4456.88	4332.39	4301.40	4415.25	4448.94	4465.38	4483.65	4503.03	4518.10	4528.90
Private	3826.93	3842.88	3713.19	3682.25	3800.04	3833.01	3848.92	3867.66	3887.53	3902.35	3913.05
Nat. Res. & Mining	7.20	7.20	6.89	6.79	7.11	7.07	7.09	7.11	7.12	7.13	7.12
Construction	172.93	173.16	165.27	163.59	169.48	171.40	172.25	175.31	178.92	180.93	182.35
Manufacturing	620.90	633.00	605.92	600.27	626.28	628.95	632.42	636.02	639.36	640.96	641.92
Trans. Equipment	183.23	194.00	184.18	181.43	188.77	190.13	191.24	193.66	195.74	196.04	196.12
Other Mfg.	437.67	439.00	421.74	418.83	437.50	438.82	441.18	442.36	443.61	444.92	445.80
Trade, Trans. & Util.	795.60	796.00	746.88	738.66	784.10	787.33	788.69	791.68	795.93	798.96	801.37
Information	57.53	57.43	57.43	56.47	56.15	56.81	56.91	56.90	56.91	56.92	56.90
Financial Activities	225.67	226.00	224.81	223.98	225.84	227.28	228.16	228.99	229.97	230.66	231.00
Prof. & Bus. Serv.	660.40	661.95	649.46	633.54	637.43	656.28	663.57	667.70	671.49	674.54	676.86
Edu. & Health Serv.	672.07	672.79	680.35	683.68	679.00	681.71	682.47	684.51	685.73	687.75	689.26
Lesiure & Hospitality	445.93	446.50	415.06	414.40	446.31	448.27	449.61	451.43	453.61	455.51	457.05
Other Services	168.70	168.84	161.14	160.89	168.35	167.91	167.76	168.01	168.51	168.98	169.22
Government	613.47	614.00	619.19	619.15	615.22	615.92	616.46	615.99	615.50	615.75	615.85
Non Wage and Salary	319.15	306.00	307.59	298.89	287.13	287.92	285.24	282.13	279.39	277.40	276.40
Labor Force	4956.41	4962.00	4960.00	4961.00	4970.00	4978.59	4981.76	4984.32	4987.38	4990.20	4993.35
Unemployment	196.86	199.12	320.03	360.72	267.62	241.73	231.15	218.53	204.97	194.70	188.06
Unemployment Rate (%)	3.97	4.01	6.45	7.27	5.38	4.86	4.64	4.38	4.11	3.90	3.77
ADDENDA: U.S. DATA (Billions of chained 2012 \$, except where noted)											
Gross Domestic Prod	19219.77	19239.54	18994.42	19107.42	19328.24	19574.58	19789.09	19884.28	19975.52	20059.74	20145.47
Business Fixed Invest	2732.39	2731.72	2714.05	2701.99	2711.69	2752.60	2800.52	2849.37	2886.21	2910.38	2931.55
Gross Vehicle Product	544.58	575.81	554.46	546.70	551.99	563.78	579.50	592.66	600.49	597.37	594.28
Personal Cons Expend											
New Autos + Trucks	279.46	281.18	274.66	275.23	279.73	285.05	291.99	297.02	300.10	298.07	297.59
Light Vehicle Sales (mil)	16.72	16.67	16.11	15.98	16.11	16.31	16.62	16.83	16.93	16.77	16.71
Unemployment Rate (%)	3.53	3.62	4.09	4.39	4.32	4.06	3.67	3.39	3.23	3.17	3.16

Table 2
Employment in Michigan—Effective Mitigation
 (Thousands of Persons, Seasonally Adjusted)

	Forecast		Calendar Years					Percent Changes			
	2022q3	2022q4	2018	2019	2020	2021	2022	2018-19	2019-20	2020-21	2021-22
Total Employment	4812.49	4816.72	4698.46	4746.71	4676.38	4758.92	4807.50	1.03	-1.48	1.76	1.02
Wage and Salary	4536.55	4540.60	4419.43	4443.78	4376.48	4475.25	4531.04	0.55	-1.51	2.26	1.25
Private	3920.69	3924.63	3812.88	3833.45	3759.59	3859.28	3915.18	0.54	-1.93	2.65	1.45
Nat. Res. & Mining	7.12	7.11	7.19	7.19	7.00	7.10	7.12	0.00	-2.73	1.50	0.28
Construction	183.48	184.28	169.34	173.03	167.87	174.47	182.76	2.18	-2.98	3.93	4.75
Manufacturing	641.86	640.39	629.51	630.83	616.36	634.19	641.28	0.21	-2.29	2.89	1.12
Trans. Equipment	196.19	195.51	193.02	192.43	187.10	192.69	195.96	-0.31	-2.77	2.99	1.70
Other Mfg.	445.67	444.89	436.49	438.40	429.27	441.49	445.32	0.44	-2.08	2.85	0.87
Trade, Trans. & Util.	802.82	803.50	792.07	793.96	766.41	790.91	801.66	0.24	-3.47	3.20	1.36
Information	56.85	56.78	55.86	57.23	56.87	56.88	56.86	2.46	-0.63	0.02	-0.04
Financial Activities	231.16	231.21	218.89	223.28	225.16	228.60	231.01	2.00	0.84	1.53	1.05
Prof. & Bus. Serv.	678.55	679.75	660.24	662.08	645.59	664.76	677.43	0.28	-2.49	2.97	1.91
Edu. & Health Serv.	691.09	692.67	678.78	673.47	678.96	683.60	690.19	-0.78	0.81	0.68	0.96
Lesiure & Hospitality	458.38	459.44	434.43	442.86	430.57	450.73	457.60	1.94	-2.78	4.68	1.52
Other Services	169.39	169.49	166.55	169.51	164.80	168.04	169.27	1.78	-2.78	1.97	0.73
Government	615.86	615.97	606.55	610.33	616.89	615.97	615.86	0.62	1.07	-0.15	-0.02
Non Wage and Salary	275.94	276.11	279.03	302.92	299.90	283.67	276.46	8.56	-1.00	-5.41	-2.54
Labor Force	4996.23	4998.98	4900.59	4949.31	4963.25	4983.01	4994.69	0.99	0.28	0.40	0.23
Unemployment	183.74	182.26	202.13	202.60	286.87	224.09	187.19	0.23	41.60	-21.88	-16.47
Unemployment Rate (%)	3.68	3.65	4.12	4.09	5.78	4.50	3.75	NA	NA	NA	NA
ADDENDA: U.S. DATA (Billions of chained 2012 \$, except where noted)											
Gross Domestic Prod	20230.66	20312.72	18638.16	19072.51	19167.41	19805.87	20187.15	2.33	0.50	3.33	1.93
Business Fixed Invest	2950.47	2968.23	2692.30	2749.79	2714.86	2822.17	2940.16	2.14	-1.27	3.95	4.18
Gross Vehicle Product	592.60	590.96	559.15	557.68	557.24	584.11	593.80	-0.26	-0.08	4.82	1.66
Personal Cons Expend											
New Autos + Trucks	297.64	297.40	281.19	276.98	277.70	293.54	297.68	-1.50	0.26	5.71	1.41
Light Vehicle Sales (mil)	16.68	16.63	17.21	16.89	16.22	16.67	16.70	-1.88	-3.98	2.80	0.16
Unemployment Rate (%)	3.15	3.13	3.89	3.66	4.10	3.59	3.15	NA	NA	NA	NA

Table 3
Michigan Personal Income—Prolonged Fallout
(Millions of Current Dollars, SAQR)

	Actual		Forecast								
	2019q4	2020q1	2020q2	2020q3	2020q4	2021q1	2021q2	2021q3	2021q4	2022q1	2022q2
Personal Income	128026.14	128394.90	121519.00	118613.10	117890.80	117564.10	119745.00	121542.90	123414.40	124477.00	126194.30
Wage and Salary	63175.75	63307.17	57826.77	55946.17	55938.74	56144.97	57877.43	59110.59	60365.73	61250.94	62389.09
Private	54874.67	54932.64	49437.91	47542.93	47553.15	47687.31	49373.30	50578.76	51794.19	52629.08	53734.01
Government	8301.08	8374.53	8388.86	8403.24	8385.60	8457.66	8504.13	8531.82	8571.54	8621.86	8655.08
Other Labor Income	15266.42	15336.27	12965.99	12456.42	12296.85	12937.16	13140.81	13250.43	13411.67	14062.52	14273.58
Proprietors' Income	8682.57	8678.18	6608.39	6058.85	5740.69	5752.72	5874.77	6030.59	6167.79	6276.11	6384.47
Property Income	23780.56	23679.79	22466.57	21817.52	21498.57	21608.54	21823.48	22129.28	22469.76	22785.35	23046.46
Transfer Payments	26751.04	27105.55	27806.80	28242.29	28318.31	28627.72	28760.07	28911.25	29051.35	29400.61	29565.40
Residence Adjustment	629.35	634.78	640.27	645.80	651.38	657.00	662.68	668.40	674.17	680.00	685.87
Less:											
Social Ins Contribution	10259.55	10346.88	6795.75	6553.91	6553.77	8163.97	8394.27	8557.65	8726.07	9978.56	10150.53
Less:											
Federal Pers Taxes	11698.03	11583.44	10486.61	10062.08	9963.65	8552.23	8730.63	8781.35	8958.49	8880.91	9084.11
Mich Withholding	2508.04	2558.28	2321.44	2257.65	2212.13	2252.08	2319.66	2387.61	2395.13	2466.17	2508.27
Equals:											
Disp Personal Income	113820.07	114253.10	108711.00	106293.40	105715.00	106759.80	108694.70	110373.90	112060.80	113129.90	114602.00
ADDENDA:											
Consumer Price Index											
Detroit 1982-84=100	238.86	238.90	235.27	235.13	236.02	237.47	238.68	239.81	240.88	241.66	242.49
Real Disposable Income											
Millions of 1982-84 \$	47650.77	47824.67	46206.49	45206.82	44791.26	44957.55	45540.81	46026.37	46520.59	46813.01	47260.14

Table 3
Michigan Personal Income—Prolonged Fallout
(Millions of Current Dollars, SAQR)

	Forecast		Calendar Years					Percent Changes			
	2022q3	2022q4	2018	2019	2020	2021	2022	2018-19	2019-20	2020-21	2021-22
Personal Income	127550.20	128906.90	484029.84	503099.80	486417.80	482266.40	507128.40	3.94	-3.32	-0.85	5.16
Wage and Salary	63192.25	63974.97	240365.37	247413.99	233018.85	233498.72	250807.25	2.93	-5.82	0.21	7.41
Private	54502.49	55248.31	208546.81	214637.49	199466.63	199433.56	216113.89	2.92	-7.07	-0.02	8.36
Government	8689.77	8726.66	31818.56	32776.50	33552.23	34065.16	34693.37	3.01	2.37	1.53	1.84
Other Labor Income	14424.08	14568.83	57885.98	59644.09	53055.53	52740.07	57329.01	3.04	-11.05	-0.59	8.70
Proprietors' Income	6492.76	6591.46	32565.04	34002.16	27086.10	23825.86	25744.80	4.41	-20.34	-12.04	8.05
Property Income	23273.07	23530.14	91960.76	94448.98	89462.45	88031.06	92635.02	2.71	-5.28	-1.60	5.23
Transfer Payments	29746.76	29927.62	97776.34	105309.64	111472.95	115350.39	118640.39	7.70	5.85	3.48	2.85
Residence Adjustment	691.79	697.77	2367.80	2488.65	2572.22	2662.25	2755.43	5.10	3.36	3.50	3.50
Less:											
Social Ins Contribution	10270.52	10383.87	38891.44	40207.71	30250.31	33841.96	40783.48	3.38	-24.76	11.87	20.51
Less:											
Federal Pers Taxes	9156.64	9281.62	44059.58	45838.30	42095.78	35022.70	36403.28	4.04	-8.16	-16.80	3.94
Mich Withholding	2559.18	2543.97	9595.03	10151.27	9349.49	9354.47	10077.59	5.80	-7.90	0.05	7.73
Equals:											
Disp Personal Income	115834.40	117081.30	430375.24	447110.23	434972.50	437889.20	460647.60	3.89	-2.71	0.67	5.20
ADDENDA:											
Consumer Price Index											
Detroit 1982-84=100	243.17	243.75	232.26	235.47	236.33	239.21	242.77	1.38	0.37	1.22	1.49
Real Disposable Income											
Millions of 1982-84 \$	47634.69	48032.89	185294.89	189877.28	184029.24	183045.32	189740.73	2.47	-3.08	-0.53	3.66

Table 4
 Employment in Michigan—Prolonged Fallout
 (Thousands of Persons, Seasonally Adjusted)

	Actual		Forecast								
	2019q4	2020q1	2020q2	2020q3	2020q4	2021q1	2021q2	2021q3	2021q4	2022q1	2022q2
Total Employment	4759.55	4760.89	4490.37	4386.30	4393.04	4414.42	4428.44	4443.21	4465.32	4498.90	4530.98
Wage and Salary	4440.40	4454.89	4159.30	4057.84	4081.75	4111.31	4132.42	4153.46	4180.54	4210.26	4237.33
Private	3826.93	3840.89	3540.36	3439.93	3468.64	3498.33	3519.73	3542.32	3570.87	3601.31	3629.27
Nat. Res. & Mining	7.20	7.22	6.98	6.70	7.02	6.96	7.00	7.04	7.10	7.15	7.16
Construction	172.93	173.12	161.76	155.79	153.75	148.92	144.29	144.60	147.54	150.41	153.36
Manufacturing	620.90	631.00	571.15	552.55	560.10	562.43	565.77	569.28	576.46	583.80	589.69
Trans. Equipment	183.23	192.00	165.30	156.15	161.19	165.77	166.25	170.45	174.66	177.18	178.93
Other Mfg.	437.67	439.00	405.85	396.40	398.91	396.66	399.52	398.83	401.79	406.62	410.76
Trade, Trans. & Util.	795.60	796.00	711.09	693.88	706.16	713.56	717.66	724.23	733.68	743.90	753.05
Information	57.53	57.43	52.42	50.50	49.77	49.82	49.90	49.93	49.96	50.03	50.11
Financial Activities	225.67	226.00	213.69	210.98	210.74	210.90	210.89	211.07	212.02	213.28	214.45
Prof. & Bus. Serv.	660.40	661.93	619.99	570.85	561.74	572.70	584.56	595.10	599.95	604.57	609.55
Edu. & Health Serv.	672.07	672.79	675.34	675.28	675.91	676.62	677.37	678.15	678.96	680.07	681.07
Lesiure & Hospitality	445.93	446.50	374.52	370.60	386.12	396.65	401.83	402.95	404.91	407.26	409.54
Other Services	168.70	168.89	153.41	152.79	157.34	159.76	160.43	159.97	160.29	160.84	161.28
Government	613.47	614.00	618.94	617.92	613.11	612.97	612.69	611.14	609.67	608.95	608.07
Non Wage and Salary	319.15	306.00	331.08	328.46	311.29	303.11	296.02	289.75	284.78	288.64	293.65
Labor Force	4956.41	4962.00	4906.94	4876.35	4869.71	4870.09	4868.01	4866.42	4868.71	4879.33	4891.80
Unemployment	196.86	201.12	416.56	490.05	476.68	455.67	439.57	423.21	403.40	380.43	360.82
Unemployment Rate (%)	3.97	4.05	8.49	10.05	9.79	9.36	9.03	8.70	8.29	7.80	7.38
ADDENDA: U.S. DATA (Billions of chained 2012 \$, except where noted)											
Gross Domestic Prod	19219.77	19150.73	18528.79	18458.16	18758.58	19062.51	19285.86	19451.29	19526.46	19586.48	19680.95
Business Fixed Invest	2732.39	2728.73	2638.25	2538.86	2479.66	2480.24	2521.76	2569.45	2623.07	2664.32	2700.08
Gross Vehicle Product	544.58	572.14	509.55	464.97	450.26	450.27	485.66	510.63	530.77	535.75	540.63
Personal Cons Expend											
New Autos + Trucks	279.46	279.03	253.45	238.40	232.24	230.68	245.78	254.70	262.27	263.05	266.16
Light Vehicle Sales (mil)	16.72	16.53	14.83	13.78	13.32	13.15	13.92	14.35	14.70	14.69	14.82
Unemployment Rate (%)	3.53	3.74	4.83	5.78	5.91	5.65	5.22	4.75	4.50	4.45	4.45

Table 4
Employment in Michigan—Prolonged Fallout
 (Thousands of Persons, Seasonally Adjusted)

	Forecast		Calendar Years					Percent Changes			
	2022q3	2022q4	2018	2019	2020	2021	2022	2018-19	2019-20	2020-21	2021-22
Total Employment	4558.90	4578.95	4698.46	4746.71	4507.65	4437.85	4541.93	1.03	-5.04	-1.55	2.35
Wage and Salary	4260.61	4276.74	4419.43	4443.78	4188.44	4144.43	4246.24	0.55	-5.75	-1.05	2.46
Private	3653.55	3670.56	3812.88	3833.45	3572.45	3532.81	3638.67	0.54	-6.81	-1.11	3.00
Nat. Res. & Mining	7.16	7.15	7.19	7.19	6.98	7.03	7.16	0.00	-2.93	0.67	1.82
Construction	156.32	159.11	169.34	173.03	161.11	146.34	154.80	2.18	-6.89	-9.17	5.78
Manufacturing	594.41	596.76	629.51	630.83	578.70	568.48	591.16	0.21	-8.26	-1.77	3.99
Trans. Equipment	180.78	181.68	193.02	192.43	168.66	169.28	179.64	-0.31	-12.35	0.37	6.12
Other Mfg.	413.63	415.08	436.49	438.40	410.04	399.20	411.52	0.44	-6.47	-2.64	3.09
Trade, Trans. & Util.	760.40	764.37	792.07	793.96	726.78	722.28	755.43	0.24	-8.46	-0.62	4.59
Information	50.17	50.21	55.86	57.23	52.53	49.90	50.13	2.46	-8.22	-5.00	0.45
Financial Activities	215.48	216.31	218.89	223.28	215.35	211.22	214.88	2.00	-3.55	-1.92	1.73
Prof. & Bus. Serv.	614.18	618.17	660.24	662.08	603.63	588.08	611.62	0.28	-8.83	-2.58	4.00
Edu. & Health Serv.	682.22	683.32	678.78	673.47	674.83	677.77	681.67	-0.78	0.20	0.44	0.58
Lesiure & Hospitality	411.59	413.29	434.43	442.86	394.43	401.59	410.42	1.94	-10.93	1.81	2.20
Other Services	161.62	161.87	166.55	169.51	158.11	160.11	161.40	1.78	-6.73	1.27	0.81
Government	607.05	606.18	606.55	610.33	615.99	611.62	607.56	0.62	0.93	-0.71	-0.66
Non Wage and Salary	298.29	302.20	279.03	302.92	319.21	293.42	295.69	8.56	5.37	-8.08	0.78
Labor Force	4902.52	4909.51	4900.59	4949.31	4903.75	4868.31	4895.79	0.99	-0.92	-0.72	0.56
Unemployment	343.62	330.57	202.13	202.60	396.10	430.46	353.86	0.23	95.51	8.67	-17.80
Unemployment Rate (%)	7.01	6.73	4.12	4.09	8.10	8.84	7.23	NA	NA	NA	NA
ADDENDA: U.S. DATA (Billions of chained 2012 \$, except where noted)											
Gross Domestic Prod	19779.95	19887.99	18638.16	19072.51	18724.07	19331.53	19733.84	2.33	-1.83	3.24	2.08
Business Fixed Invest	2734.31	2766.33	2692.30	2749.79	2596.38	2548.63	2716.26	2.14	-5.58	-1.84	6.58
Gross Vehicle Product	546.02	549.59	559.15	557.68	499.23	494.33	543.00	-0.26	-10.48	-0.98	9.84
Personal Cons Expend											
New Autos + Trucks	269.48	271.65	281.19	276.98	250.78	248.36	267.58	-1.50	-9.46	-0.97	7.74
Light Vehicle Sales (mil)	14.98	15.07	17.21	16.89	14.61	14.03	14.89	-1.88	-13.48	-3.99	6.13
Unemployment Rate (%)	4.43	4.38	3.89	3.66	5.07	5.03	4.43	NA	NA	NA	NA