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The Economic Impact of COVID-19: Rebuilding the Las Vegas Economy

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THE ECONOMIC IMPACT OF COVID-19: REBUILDING THE LAS VEGAS ECONOMY

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Abstract

This study analyzes the recent trends of monthly visitors to the Las Vegas-Paradise-Henderson, NV metropolitan statistical area (MSA) for the first five months of 2020. In addition, six scenarios for the seven-month period of June through December 2020 estimate the net loss of visitors to Southern Nevada and the impact for the state economy in terms of employment, income, the total value added (contribution to Gross State Product), output sales, and state and local tax revenues. The counter-factual scenario – projecting the regional economy if no COVID-19 outbreak occurred – serves as a baseline scenario that allows measurement of the net economic losses from a significantly reduced number of visitors to Las Vegas due to the coronavirus pandemic. Finally, this study proposes three forecasted recovery paths for the tourism industry in Las Vegas, in terms of the number of predicted visitors for future years.

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I. Introduction

Since the outbreak of COVID-19 in Wuhan, China in December 2019, U.S. and foreign government travel restrictions have slowed the flow of international travelers and goods and services across countries and regions. Until mid-March of 2020, the highly contagious respiratory illness caused by a novel coronavirus was concentrated primarily in a few countries, such as China, Italy, Iran, and South Korea. By mid-March the number of confirmed cases in the United States was less than 1,000; however, by mid-September, the total number of confirmed cases in the U.S. surpassed 6.8 million with over 200,000 deaths.

The State of Nevada reported its first case on March 5th in Las Vegas and the patient was a man in his 50s who traveled from Washington state. A week later on March 12th, Governor Steve Sisolak declared a State of Emergency,¹ due to growing concerns of COVID-19 in Nevada. In an effort to mitigate public health concerns over the growing COVID-19 risk, Governor Sisolak ordered the shutdown of non-essential businesses including all casinos in Nevada on March 17th. Until the State of Nevada reopened these businesses on June 4th, most casinos and resorts and hotels with casinos remained shut down for at least 80 days.

By September 16th, the total number of confirmed cases in Nevada, reached 74,248 with 1,494 deaths from the virus. Clark County, home to nearly 2.3 million Nevadans, has maintained the highest share of the confirmed cases within the state:(85.0% with 63,077 patients and 1,298 deaths, by September 16th, 2020).

Even with the reopening of casinos following Nevada's Phase 2 Reopening Plan, only 87.9% of casino hotels and resorts had reopened by mid-July. However, the State's Phase 2 Reopening Plan mandates 50% of the maximum capacity of facilities, social distancing within resorts, and wearing masks. Nevada continues to experience significant numbers of new COVID-19 cases, much like other Sun Belt states including California, Arizona, Texas, and Florida. Despite reopening, casinos and resorts are expected to face a significant decrease in the number of visitors and a sluggish economic recovery from the complete shutdown that occurred during April and May of 2020.

II. Trends in the Tourism Industry of the Las Vegas Metro in 2020

After the recovery from the Great Recession of 2008, the average annual growth of visitors to Las Vegas through 2019 was 1.69%. This study utilizes the average annual growth over the 10-year recovery period of 2009-2019. In the first two months of 2020, with no impact from COVID-19, the Las Vegas Metro saw the number of visitors increase by 3.90% in January and 4.45% in February compared to the same months in 2019. The average growth in the number of visitors to Las Vegas for the first two months of 2020 was 4.20%, much higher than the annualized average growth of 1.69% experienced in prior years.

As illustrated in Table 1, the first column assumes a 'No COVID-19' scenario with 1.69% annual growths for all the months except for the first two months with the observed visitations (in green), while the other columns in the table assume a significantly decreased number of visitors from the

previous year (Scenario 1 through Scenario 6). This study develops six scenarios for the number of visitors to Las Vegas in 2020, from the worst case (Scenario 1) with a 65% decrease in annual visitors compared to the number of visitors in 2019, to the best case (Scenario 6) with only a 25% decrease in visitors compared to 2019.

Table 1: Monthly Number of Visitor Scenarios for Year 2020

Month	No COVID-19	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Jan*	3,545,100	3,545,100	3,545,100	3,545,100	3,545,100	3,545,100	3,545,100
Feb*	3,333,200	3,333,200	3,333,200	3,333,200	3,333,200	3,333,200	3,333,200
Mar*	3,742,831	1,531,100	1,531,100	1,531,100	1,531,100	1,531,100	1,531,100
Apr*	3,585,813	106,900	106,900	106,900	106,900	106,900	106,900
May*	3,736,757	151,300	151,300	151,300	151,300	151,301	151,302
June*	3,652,022	354,595	550,967	718,714	1,062,896	1,077,153	1,677,900
July*	3,731,493	784,892	1,313,565	1,835,884	1,991,046	2,201,186	3,714,013
Aug**	3,623,270	1,065,100	1,065,100	1,065,100	1,065,100	1,065,100	1,065,100
Sep**	3,518,895	1,438,000	1,438,000	1,438,000	1,438,000	1,438,000	1,438,000
Oct**	3,713,473	750,784	1,180,745	1,610,707	2,040,668	2,470,629	4,190,474
Nov**	3,553,214	729,156	1,146,732	1,564,307	1,981,883	2,399,458	4,069,760
Dec**	3,508,569	769,475	1,210,140	1,650,806	2,091,471	2,532,136	4,294,797
Annual Total	43,244,637	14,883,400	17,009,600	19,135,800	21,262,000	23,388,201	31,893,002
% Change from 2019	1.69% ↑	65% ↓	60% ↓	55% ↓	50% ↓	45% ↓	25% ↓

* Observed Month | **Forecasted based on the annual change

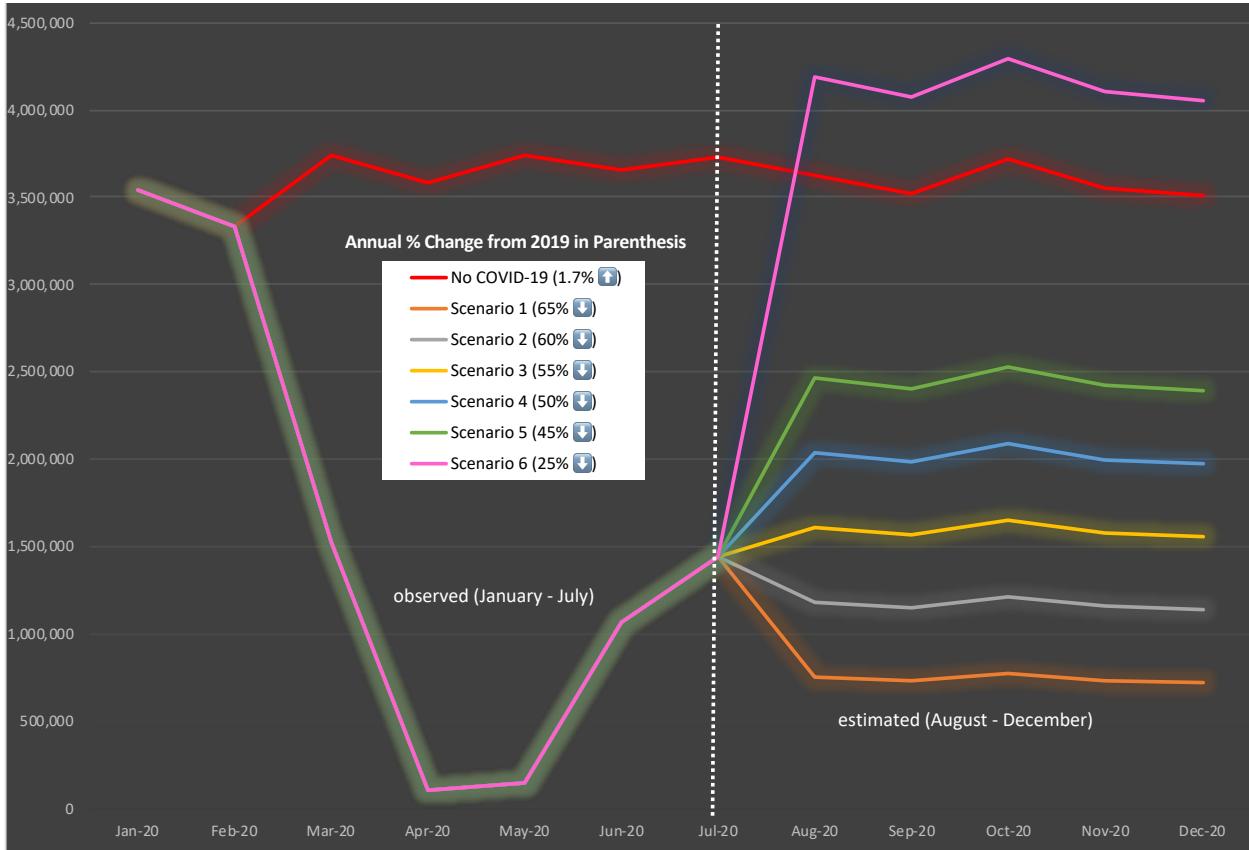
If Las Vegas had no shock on the tourism industry from COVID-19 and the number of visitors continues to grow at 1.69%, the total number of visitors to Las Vegas would reach over 43 million (43,244,637) in 2020, compared to 42,524,000 visitors in 2019. Unfortunately, the unexpected massive shock from the global pandemic of COVID-19 significantly reduced the number of travelers to Las Vegas. In March of 2020, the number of visitors dropped by nearly 60%, followed by 97% and 96% decreases in April and May, respectively, compared to the matching months in 2019. The number of monthly visitors in June and July picked up to 30% and 39% of the monthly visitors in 2019, respectively. Monthly drop from the previous year was 70% in June and 61% in July with the reopening of resorts and casinos. For the months from August to December, Las Vegas is expected to have continuously increasing number of visitors; however, in the absence of a vaccine for COVID-19, people are still hesitant to travel and many of the meetings and conventions planned for Las Vegas in 2020 and early 2021 are canceled; in particular, the Consumer Electronic Show, CES, and the National Finals Rodeo, NFR, have each announced cancellation of their upcoming convention activities in Las Vegas.

As shown in Figure 1, the number of visitors in the coming months (August through December) is expected to recover, more rapidly in August and September as a result of the lagged demand and

vacation season: but with a slow down again in Fall months, influenced by the persistent uncertainty associated with the COVID-19 pandemic across the U.S. and in other countries.

Approximately 30% of visitors to Las Vegas come from California and Arizona. However, recent trends in California and Arizona include a resurgence in COVID-19 cases. Reverse business closures, and heightened travel restrictions, are likely to reduce visitation to Las Vegas. With the assumption of slowing COVID-19 spread across the U.S. and the possible development of a COVID-19 vaccine toward the end of 2020, the number of visitations to Las Vegas could increase gradually from September to December. The red line in Figure 1 is a counter-factual scenario with no COVID-19 pandemic, while Scenario 6 (pink line) assumes a highly unrealistic monthly recovery showing the second half of 2020 with no impact from COVID-19. More realistic monthly recovery scenarios are found in Scenarios 1 through 5.

**Figure 1: Monthly Visitor Volume Recovery Scenario for 2020
(Number of Visitors to Las Vegas)**



III. Economic Impact of Visitors to Las Vegas Without COVID-19 (baseline scenario)

The number of visitors to Las Vegas in 2020 was expected to have reached over 43.2 million (43,244,637, to be exact) without the negative shock from COVID-19. Based on the most recent visitor

profile study by the Las Vegas Convention and Visitors Authority (LVCVA), the expected per visitor spending in 2020 could have reached \$1,019.85; this estimate includes both gaming and non-gaming spending such as lodging, food & beverage, local transportation, shopping, shows & entertainment, and sightseeing. As a result, the overall annual output sales in the 2020 baseline scenario projects to \$44.1 billion (\$44,103,073,403, to be exact).

Using IMPLAN’s Social Accounting Matrix (SAM) model,² this study estimates the economic impact for this counter-factual scenario without the negative shock from the COVID-19 pandemic. The statewide economic impact is summarized in Table 2 and the top 15 industries with the largest impacts are included in Tables 3, 4, 5, and 6.

Table 2: Economic Impact Summary for Baseline Scenario (no COVID-19 shock)

Impact Type	Employment	Labor Income	Total Value Added	Output Sales
Direct Impact	436,310	\$15,351,858,700	\$28,243,123,646	\$44,103,075,403
Indirect Impact	80,996	\$4,006,930,743	\$7,735,447,661	\$13,075,504,899
Induced Impact	106,376	\$4,699,944,777	\$9,412,678,975	\$15,615,854,594
Total Impact	623,682	\$24,058,734,219	\$45,391,250,281	\$72,794,434,896
Multiplier	1.429	1.567	1.607	1.651

The direct output sales generated in the 16 tourism activity sectors based on the visitor spending patterns is estimated at \$44,103,075,403. These sales create and/or retain 436,310 jobs directly in the 16 tourism activity sectors and \$15,351,858,700 in salaries for workers in the same tourism sectors. The direct contribution to Gross State Product (GSP) of Nevada is \$28,243,123,646, which is approximately equivalent to 15.3% of the forecasted GSP, or \$184.9 billion in Nevada without COVID-19 shocks.

The demand for tourism-related services by Las Vegas visitors creates ripple effects for other industrial activities in the State of Nevada through “multipliers.” The multipliers noted in Table 2 show the magnitude of ripple effects of visitors’ spending (demand) in tourism sectors composed of two parts: indirect and induced impacts. Indirect impact is calculated through an analysis of the supply chain of the study area (in this case, Nevada) to fulfill the increased demand of tourism services generated by visitors to Las Vegas. The induced impact is driven by the increased demand for local employees in both direct and indirect sectors, also known as income impact.

The total output sales with the output multiplier of 1.651 could have reached \$72.8 billion, indicating that every \$1,000 of spending by visitors to Las Vegas generates an additional \$651 of sales in the State of Nevada. Likewise, the total value added (contribution to GSP) increases to \$45.4 billion with a multiplier of 1.607. In other words, every \$1,000 increase of Total Value Added (TVA) caused by the direct spending of visitors creates an additional \$607 of TVA to Nevada’s economy. With the estimated employment multiplier of 1.429, every 1,000 direct jobs in the 16 tourism sectors generates an additional 429 jobs either among suppliers (indirect employment) and other industries that benefitted from the increased income of local workers (induced employment). Tables 3, 4, 5, and 6 summarize the top 15 sectors with the largest impact from the baseline scenarios without negative shocks from COVID-19.

The sectors highlighted in Tables 3, 4, 5, and 6 are among the 16 tourism-related sectors that have a direct impact. Other sectors receive multiplier effects through growth in supply chain and/or income effects; the sectors mainly with the ripple effects are:

- Real Estate
- Owner-occupied dwellings
- Services to buildings
- Wholesale trade
- Management of companies and enterprises
- Monetary authorities and depository credit intermediation
- Hospitals
- Offices of physicians

**Table 3: Top 15 Nevada Industry Sectors with the Largest Output Sales
for Baseline Scenario (no COVID-19 shock)**

IMPLAN Sector Code	Sector Description	Total Output Sales*
499	Hotels and motels, including casino hotels	\$15,626,440,306
502	Limited-service restaurants	\$7,555,308,067
501	Full-service restaurants	\$6,059,540,964
496	Other amusement and recreation industries	\$3,505,631,826
503	All other food and drinking places	\$3,410,488,461
440	Real estate	\$3,371,586,042
495	Gambling industries (except casino hotels)	\$3,049,918,139
408	Air transportation	\$2,591,079,587
441	Owner-occupied dwellings	\$2,024,309,245
403	Retail - Clothing and clothing accessories stores	\$1,413,564,544
461	Management of companies and enterprises	\$1,328,852,968
395	Wholesale trade	\$1,122,163,701
412	Transit and ground passenger transportation	\$1,106,229,193
414	Scenic and sightseeing transportation & support activities for transportation	\$1,064,239,737
405	Retail - General merchandise stores	\$900,304,519

* Total output sales include direct, indirect, and induced impact through multiplier effects

Table 4: Top 15 Nevada Industry Sectors with the Largest Total Value Added for Baseline Scenario (no COVID-19 shock)

IMPLAN Sector Code	Sector Description	Total Value Added*
499	Hotels and motels, including casino hotels	\$10,291,996,796
502	Limited-service restaurants	\$4,831,095,358
501	Full-service restaurants	\$3,758,380,440
503	All other food and drinking places	\$2,589,156,825
440	Real estate	\$2,257,118,673
496	Other amusement and recreation industries	\$1,934,301,399
495	Gambling industries (except casino hotels)	\$1,754,388,829
408	Air transportation	\$1,578,273,278
441	Owner-occupied dwellings	\$1,312,519,437
403	Retail - Clothing and clothing accessories stores	\$956,502,267
461	Management of companies and enterprises	\$848,312,690
412	Transit and ground passenger transportation	\$763,590,926
395	Wholesale trade	\$721,841,707
405	Retail - General merchandise stores	\$637,007,574
433	Monetary authorities and depository credit intermediation	\$544,572,686

* Total value added includes direct, indirect, and induced impact through multiplier effects

Table 5: Top 15 Nevada Industry Sectors with the Largest Employment for Baseline Scenario (no COVID-19 shock)

IMPLAN Sector Code	Sector Description	Total Employment*
499	Hotels and motels, including casino hotels	120,562
501	Full-service restaurants	94,685
502	Limited-service restaurants	72,892
496	Other amusement and recreation industries	57,591
503	All other food and drinking places	44,503
440	Real estate	18,396
495	Gambling industries (except casino hotels)	16,962
403	Retail - Clothing and clothing accessories stores	14,105
412	Transit and ground passenger transportation	11,149
405	Retail - General merchandise stores	10,945
400	Retail - Food and beverage stores	9,323
468	Services to buildings	7,130
414	Scenic and sightseeing transportation & support activities for transportation	6,484
395	Wholesale trade	4,960
461	Management of companies and enterprises	4,931

* Total employment includes direct, indirect, and induced impact through multiplier effects.

Table 6: Top 15 Nevada Industry Sectors with the Largest Labor Income for Baseline Scenario (no COVID-19 shock)

IMPLAN Sector Code	Sector Description	Total Labor Income
499	Hotels and motels, including casino hotels	\$6,200,103,219
501	Full-service restaurants	\$2,845,927,213
502	Limited-service restaurants	\$1,432,714,383
503	All other food and drinking places	\$1,422,503,307
496	Other amusement and recreation industries	\$1,294,421,886
495	Gambling industries (except casino hotels)	\$790,831,254
461	Management of companies and enterprises	\$685,406,560
408	Air transportation	\$523,742,355
403	Retail - Clothing and clothing accessories stores	\$439,701,842
414	Scenic and sightseeing transportation & support activities for transportation	\$389,639,430
482	Hospitals	\$386,414,593
395	Wholesale trade	\$372,817,900
475	Offices of physicians	\$355,688,161
412	Transit and ground passenger transportation	\$342,910,636
405	Retail - General merchandise stores	\$334,425,967

* Total labor income includes direct, indirect, and induced impact through multiplier effects.

This study estimates economic impacts for all six scenarios shown summarized in Table 1 and shown in Figure 1. Each scenario assumes different visitation losses compared to the annual visitor volume observed in 2019. The following section summarizes the net losses of economic impact due to the various scenarios of visitor reduction from COVID-19 in 2020.

IV. Net Loss of Economic Impact Resulting from Decreased Visitation Due to COVID-19

In contrast to the economic impact of the baseline scenario estimated in the previous section, all six scenarios in Table 7 consider negative shocks on the tourism industry resulting from the COVID-19 pandemic and estimate net losses in employment, income, TVA, and output sales in the State of Nevada due to significant reduction in visitor volumes to Las Vegas.

This study estimates economic impacts for each of the six scenarios (presented in Table 7) and subtracts the estimated impacts from the baseline scenario impact (presented in Table 2) to measure the net losses (presented in Table 8). The economic impact of the six scenarios is summarized in Table 7, where the economic impact shows the statewide impact for the 2020 calendar year with total impact including direct, indirect, and induced impacts.

Table 7: Total Statewide Economic Impact for 6 Scenarios (with COVID-19 impact)

Total Economic Impact	Employment	Labor Income	Total Value Added	Output Sales
Scenario 1 (65% ↓ in Visitor Volume)	214,651	\$8,280,235,137	\$15,622,194,503	\$25,053,480,872
Scenario 2 (60% ↓ in Visitor Volume)	245,316	\$9,463,125,857	\$17,853,936,547	\$28,632,549,370
Scenario 3 (55% ↓ in Visitor Volume)	275,980	\$10,646,016,589	\$20,085,678,615	\$32,211,618,042
Scenario 4 (50% ↓ in Visitor Volume)	306,644	\$11,828,907,320	\$22,317,420,681	\$35,790,686,709
Scenario 5 (45% ↓ in Visitor Volume)	337,309	\$13,011,798,054	\$24,549,162,752	\$39,369,755,384
Scenario 6 (25% ↓ in Visitor Volume)	468,171	\$17,314,493,258	\$32,952,189,504	\$53,459,710,685
Baseline Scenario (no COVID-19)	623,682	\$24,058,734,219	\$45,391,250,281	\$72,794,434,896

Based on the worst-case scenario (scenario 1 with a 65% decrease in annual visitor volume), total output sales are only \$25.1 billion compared to \$72.8 billion for the baseline scenario. In Scenario 1, total employment is only 214,651 jobs, in contrast to 623,382 jobs in the baseline scenario; this represents a decrease of 66 percent.

Under the best-case scenario (Scenario 6 with only a 25% decrease in visitor volume), total output sales are estimated at \$53.5 billion and 468,171 jobs on the tourism sectors. Net losses for each scenario are summarized in Table 8 below with the detailed sources of net losses in economic impact (direct, indirect, and induced).

Under Scenario 1 (a 65% loss of visitors to Las Vegas), the direct job losses from the 16 tourism sectors are estimated to be 286,146 jobs, approximately 20.2% of total nonfarm jobs which excludes the farm workers in the State of Nevada. When considering the multiplier effects, the total job losses in Scenario 1 would be 409,031 jobs, or roughly 28.8% of total nonfarm jobs in Nevada. With the reduction, the contribution of Las Vegas' tourism-related activities to the total GSP would shrink by 10.0%, whereas the overall contribution to GSP would decrease by 16.1% of the total GSP when including the multiplier effects.

The most optimistic recovery scenario (Scenario 6 with only a 25% reduction in visitor volume), estimates jobs losses in Nevada that would reach 7.5% of total nonfarm jobs in the 16 tourism sectors, whereas the overall job losses in Nevada would reach to 11% of the total jobs with multiplier effects. GSP losses in this best-case scenario are estimated to be the net loss of 4.2% directly from the 16 tourism sectors, while the statewide GSP loss across all industries would be 6.7% of total GSP in 2020. Among the six scenarios, Scenario 2, 3, 4, and 5 appear more realistic when compared to the two extreme scenarios (Scenario 1 and 6). Scenario 5 (a 45% decrease in visitor volume for 2020) may be the most realistic scenario among these possibilities.

Table 8: Net Losses of Economic Impact resulting from Decreased Visitation to Las Vegas due to COVID-19

Scenario	Loss Sources	Employment	Labor Income	Total Value Added	Output Sales
Scenario 1 (65% ↓ in Visitor Volume)	Direct	286,146	\$10,068,247,407	\$18,522,757,535	\$28,924,228,866
	Indirect	53,120	\$2,627,875,285	\$5,073,157,744	\$8,575,340,671
	Induced	69,765	\$3,082,376,391	\$6,173,140,499	\$10,241,384,486
	Total	409,031	\$15,778,499,083	\$29,769,055,778	\$47,740,954,024
Scenario 2 (60% ↓ in Visitor Volume)	Direct	264,694	\$9,313,445,793	\$17,134,133,804	\$26,755,822,370
	Indirect	49,138	\$2,430,867,374	\$4,692,830,636	\$7,932,460,105
	Induced	64,534	\$2,851,295,195	\$5,710,349,294	\$9,473,603,051
	Total	378,366	\$14,595,608,363	\$27,537,313,734	\$44,161,885,526
Scenario 3 (55% ↓ in Visitor Volume)	Direct	243,242	\$8,558,644,180	\$15,745,510,074	\$24,587,415,741
	Indirect	45,155	\$2,233,859,453	\$4,312,503,508	\$7,289,579,506
	Induced	59,304	\$2,620,213,998	\$5,247,558,084	\$8,705,821,608
	Total	347,702	\$13,412,717,630	\$25,305,571,666	\$40,582,816,854
Scenario 4 (50% ↓ in Visitor Volume)	Direct	221,790	\$7,803,842,567	\$14,356,886,345	\$22,419,009,114
	Indirect	41,173	\$2,036,851,532	\$3,932,176,381	\$6,646,698,907
	Induced	54,074	\$2,389,132,800	\$4,784,766,874	\$7,938,040,166
	Total	317,038	\$12,229,826,899	\$23,073,829,600	\$37,003,748,187
Scenario 5 (45% ↓ in Visitor Volume)	Direct	200,338	\$7,049,040,953	\$12,968,262,614	\$20,250,602,483
	Indirect	37,191	\$1,839,843,610	\$3,551,849,252	\$6,003,818,307
	Induced	48,844	\$2,158,051,602	\$4,321,975,663	\$7,170,258,722
	Total	286,373	\$11,046,936,166	\$20,842,087,529	\$33,424,679,512
Scenario 6 (25% ↓ in Visitor Volume)	Direct	105,634	\$4,362,254,346	\$7,715,807,892	\$11,576,975,965
	Indirect	19,633	\$1,008,690,255	\$1,994,071,452	\$3,272,974,224
	Induced	30,245	\$1,373,296,361	\$2,729,181,432	\$4,484,774,022
	Total	155,511	\$6,744,240,962	\$12,439,060,777	\$19,334,724,211

V. Tax Revenue Impact of Visitors to Las Vegas Without COVID-19 (baseline scenario)

2020 projections for Las Vegas, in a “non-COVID-19” environment, forecast over 43.2 million annual visitors, a number included in the baseline scenario. In this scenario the total expected tax revenue for state and local governments in Nevada would reach \$5,726,428,226 as shown in Table 9.

Tax revenue can be categorized into three sources: direct (all 16 tourism sectors), indirect (supplier industries for the 16 tourism sectors) and induced (industrial sectors that serve the demand from increases in local incomes). Out of the total tax revenue for state and local governments of Nevada,

71.6% (\$4,102,487,237) comes from direct impact, followed by 18.4% (\$1,055,872,964) from induced impact, and less than 1% from indirect impact. For federal tax revenue, the total revenue would be \$6,437,448,431, including \$4,114,455,188 (63.9%) from direct impact, followed by \$1,245,861,471 (19.4%) from induced impact and \$1,077,170,772 (16.7%) from indirect impact. Without the negative shock from COVID-19, the combined total tax revenue for state, local, and the federal government from visitor spending in Las Vegas, would be over \$12.2 billion. The estimated multiplier shows that every \$1,000 in state and local tax revenue from the 16 tourism sectors (direct impact) would generate an additional \$396 in state and local tax revenue from ripple effects (indirect and induced impacts). Tax revenue collected from suppliers to the 16 tourism sectors would be \$138 and \$258 from industrial sectors boosted by income change.

Table 9: Tax Revenue Summary for Baseline Scenario (no COVID-19 shock)

Impact Type	State & Local Tax Revenue*	Federal Tax Revenue	Total Tax Revenue
Direct Impact	\$4,102,487,237	\$4,114,455,188	\$8,216,942,425
Indirect Impact	\$568,068,025	\$1,077,170,772	\$1,645,238,797
Induced Impact	\$1,055,872,964	\$1,245,861,471	\$2,301,734,435
Total Impact	\$5,726,428,226	\$6,437,487,431	\$12,163,915,657
Multiplier	1.396	1.565	1.480

* Total combined tax revenue for State of Nevada, Clark County, and other local governments in Clark County

VI. Net Loss of Tax Revenue Resulting from Decreased Visitation Due to COVID-19

For the six different scenarios with decreased visitor volume due to COVID-19 during 2020, tax revenue impact is estimated into two parts: state and local tax revenue, and federal tax revenue. The total tax revenue impacts for six scenarios are summarized in Table 10. With the largest reduction in visitors in Scenario 1 (65% decrease in visitor volume), the estimated total tax revenue is the smallest, \$4,186,424,823, while in Scenario 6 (25% decrease in visitor volume) with the mildest decrease in visitor volume at 25%, the total tax revenue would be \$8,970,910,099. For the former, the state and local tax revenue would decrease to \$1,970,850,642 from the tax revenue in the baseline scenario, \$5,726,428,226, a loss of 65.6 percent. However, the reduction in State and local tax revenue can be minimized in Scenario 6 and it would be reduced to \$4,223,251,239.

Table 10: Total Statewide Tax Revenue Impact for 6 Scenarios (with COVID-19 shock)

Total Tax Revenue Impact	State & Local Tax Revenue	Federal Tax Revenue	Total Tax Revenue
Scenario 1 (65% ↓ in Visitor Volume)	\$1,970,850,642	\$2,215,574,181	\$4,186,424,823
Scenario 2 (60% ↓ in Visitor Volume)	\$2,252,400,718	\$2,532,084,746	\$4,784,485,464
Scenario 3 (55% ↓ in Visitor Volume)	\$2,533,950,780	\$2,848,595,393	\$5,382,546,173
Scenario 4 (50% ↓ in Visitor Volume)	\$2,815,500,873	\$3,165,105,958	\$5,980,606,831
Scenario 5 (45% ↓ in Visitor Volume)	\$3,097,050,936	\$3,481,616,542	\$6,578,667,478
Scenario 6 (25% ↓ in Visitor Volume)	\$4,223,251,239	\$4,747,658,860	\$8,970,910,099
Baseline Scenario (no COVID-19)	\$5,726,428,226	\$6,437,487,431	\$12,163,915,657

Net loss in total tax revenue for the six scenarios can be measured by subtracting the estimated tax revenue from the tax revenue in the baseline scenario (see Table 11). The total loss of state and local tax revenue in Nevada ranges from \$1,503,176,987 (Scenario 6) to \$3,755,577,584 (Scenario 1) depending on the magnitude of decline in visitors to Las Vegas. The estimated tax revenue loss for the State of Nevada and other local governments, especially Clark County, would significantly impact the fiscal health of state and local governments in the current and upcoming years. The net loss in federal tax revenue is higher for all scenarios ranging from \$1,689,828,571 (Scenario 6) to \$4,221,913,250 (Scenario 1). The total tax loss would be \$3,193,005,558 in Scenario 6 with the minimum visitor decline; \$7,977,490,834 in Scenario 1 (the maximum decrease in visitors).

Table 11: Net Loss in Total Tax Revenue for 6 Scenarios (with COVID-19 shock)

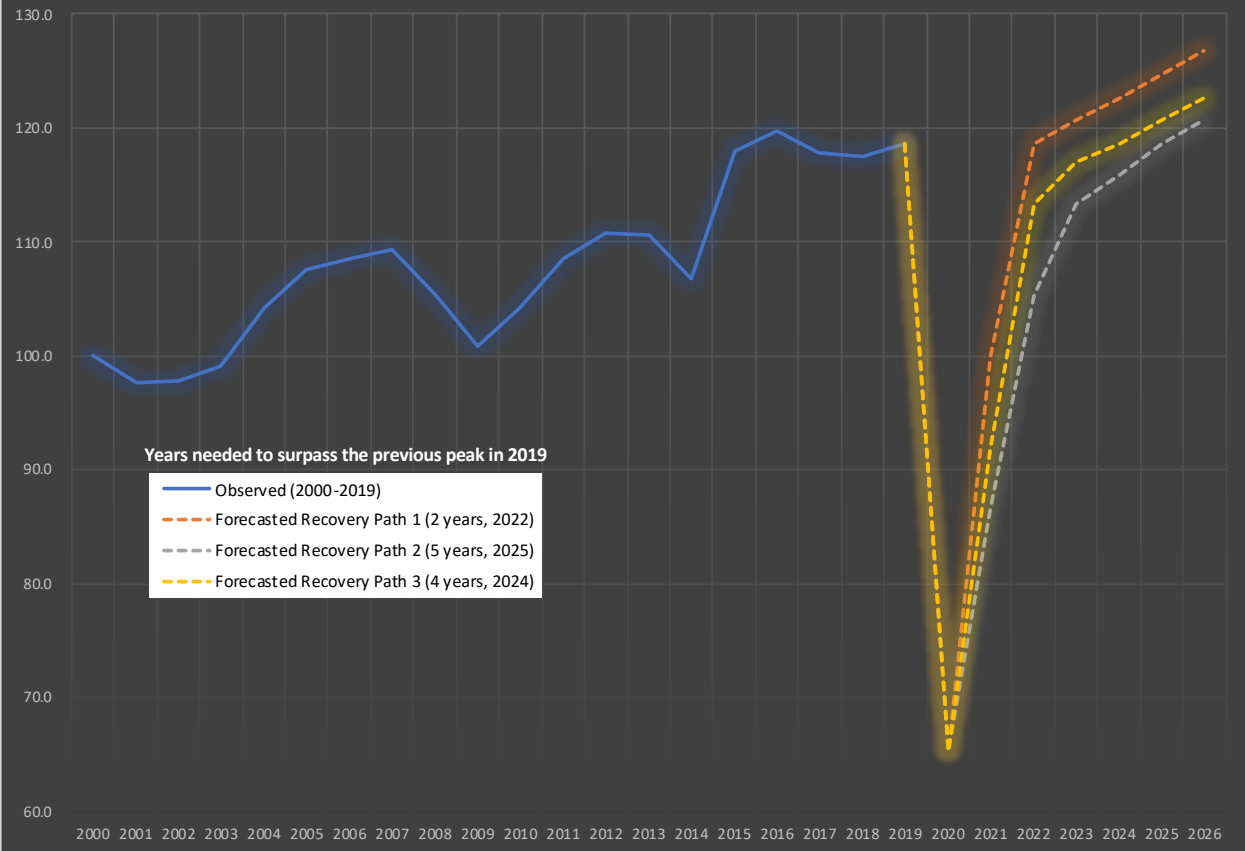
Total Tax Revenue Impact	State & Local Tax Revenue	Federal Tax Revenue	Total Tax Revenue
Scenario 1 (65% ↓ in Visitor Volume)	\$3,755,577,584	\$4,221,913,250	\$7,977,490,834
Scenario 2 (60% ↓ in Visitor Volume)	\$3,474,027,508	\$3,905,402,685	\$7,379,430,193
Scenario 3 (55% ↓ in Visitor Volume)	\$3,192,477,446	\$3,588,892,038	\$6,781,369,484
Scenario 4 (50% ↓ in Visitor Volume)	\$2,910,927,353	\$3,272,381,473	\$6,183,308,826
Scenario 5 (45% ↓ in Visitor Volume)	\$2,629,377,290	\$2,955,870,889	\$5,585,248,179
Scenario 6 (25% ↓ in Visitor Volume)	\$1,503,176,987	\$1,689,828,571	\$3,193,005,558

VII. Long-Term Recovery Scenario After COVID-19

Among the six scenarios developed for variations in visitor numbers for the 5 months (August to December 2020), Scenario 5 with 45% losses in annual visitor volume is the mid-point of the two extreme scenarios, (Scenario 1 with 65% of visitor losses, and Scenario 6 with 25% of a visitor decline). With a rapid recovery in visitor volume in the upcoming years, the loss to Nevada’s economy including job and income losses, losses in value-added income, output sales, and tax revenue can be minimized.

To develop three different long-term recovery paths, this study chooses Scenario 5 with 45% annual visitor loss as a base scenario for the predicted annual visitation to Las Vegas in 2020. By setting the annual visitor volume observed in 2000 at 100, the annual visitor volume index describes how the visitor volume fluctuates over the 26-year study period (2000-2026). What conditions would allow Las Vegas to rebound quickly from the decrease in visitors due to the COVID-19 pandemic in the first half of 2020? Figure 2 describes the three possible recovery paths based on the visitor volume index between 2020 and 2026.

Figure 2: Annual Visitor Volume Index for 2020-2026 (Visitor Volume in 2000 =100)



Since 2000, the Las Vegas tourism industry experienced two distinctive declines in visitors: (1) the aftermath of the 9/11 terrorist attack in 2001 and (2) the effect of the Great Recession of 2008. As found in Figure 2, visitor volume did not reach previous totals until 2003-2004, denoting that the recovery from 9/11 took 2-3 years, while it was not until 2013-2014 that visitor volume rose to previous peak of 2007, illustrating that the recovery from the Great Recession of 2008 took 6-7 years.

The visitor decrease from 9/11 was unexpected and significantly slowed the influx of visitors to Las Vegas due to security concerns and uncertainty; however, it did not last long as uncertainty regarding air travel and security concerns faded. A similar circumstance to 9/11 was seen in 2017 immediately following the 1 October mass shooting in Las Vegas, which slightly reduced the rate of visitation to Las Vegas from 2017 to 2018.

The Great Recession of 2008, with its massive economic shock to the subprime mortgage market and the collapsing housing market, lasted longer and produced massive job and income losses worldwide. Due to the sluggish recovery in the worldwide economy after the Great Recession, people cut their travel budgets significantly and Las Vegas suffered from a massive decrease in demand.

In some ways, the COVID-19 pandemic is a hybrid of these two types of demand shocks. It is unexpected and at the same time, much larger than the economic downturn from the Great Recession of 2008. A new and unique contributor to the significant visitor decline associated with the COVID-19 pandemic are travel restrictions imposed by the U.S. government and many foreign nations that largely discourage and/or prevent people from traveling to Las Vegas.

There are variables that would significantly alter any economic recovery path for Las Vegas. The creation and distribution of a vaccine for COVID-19 could enhance economic recovery efforts. Similarly, any outbreak of COVID-19 cases, particularly ones that would identify Las Vegas as a “hot spot” for transmission of the virus, could significantly delay any economic recovery efforts. Any lengthy delays in the development of a vaccine, extending the inability of visitors to travel to Las Vegas for additional months (or years) will continue to weaken the tourism economy. In addition, any national or international policies that reduce travel demand to Las Vegas in the coming months and years can delay economic recovery efforts.

Among the three recovery paths presented in Figure 2, recovery path 1 follows the post-9/11 V-shaped quick recovery path. This enables Las Vegas to surpass the previous visitor volume peak reached in 2019 by the year 2022. Based on this quick recovery path, it will take 2 years to fully recover back to the previous peak and Las Vegas is expected to grow continuously with increasing demand from visitors. On the other end of the spectrum, recovery path 2 puts Las Vegas into a sluggish but steady recovery, similar to the recovery path after the Great Recession of 2008. This path will require at least 5 years for Las Vegas to surpass the previous peak in 2019; however, Las Vegas does continue to grow after it reaches the 2019 peak in the year 2025. The hybrid of these two recovery paths, and labeled as recovery path 2, would allow Las Vegas to regain its previous peak in 4 years, by the year 2024, and grow continuously afterward.

VI. Conclusion

Local, regional, state, and federal economic development policies will largely determine the economic recovery path for Las Vegas. The Las Vegas region, home to approximately three-quarters of Nevada’s population and one of the more diverse regions in the nation, remains overlooked by state economic development policy. Efforts through 2019 largely supported economic development in sparsely populated and largely white Storey County, home to the Reno-Tahoe Industrial Complex. Recent efforts by Governor Steve Sisolak to address economic development policy in Nevada offer promise that Las Vegas may receive its fair share of state assets, as essential step to build a sustainable economy.

Southern Nevada possesses a unique opportunity to stimulate the diversity of its regional economy, one that over-relies on its global tourism and gaming industry. Leaders should be prepared to

implement significant public-private partnerships in the healthcare sector, following the elimination of COVID-19 health and economic concerns that now discourage many potential visitors to Las Vegas from other states and foreign countries.

State and local government leaders can collaborate with the gaming and tourism industry in Southern Nevada to regain the confidence of potential visitors from other places. Following local and state guidelines for public health safety associated with COVID-19, the gaming and tourism industry in Southern Nevada will be able to rebuild the image of Las Vegas as a safe destination with many tourism activities for potential visitors.

During the early part of recovery, the share of visitors from nearby states will be larger than the previous years since travelers tend to avoid air travel due to public health concerns. This can be an opportunity for Las Vegas to strengthen its ties with regional audiences. Las Vegas is located in the Southwest Megapolitan Cluster that links the three metropolitan statistical areas of Southern California, Las Vegas, and the Sun Corridor in Arizona as defined by Nelson and Lang.³ Among the 10 U.S. megapolitan clusters, the Southwest Megapolitan Triangle is the fastest growing such region and has strengthened the economic cohesion of these metros through the expanded flows of tourists and other economic assets. Nevada and Las Vegas leaders should work closely to revitalize the flow of people and goods within the Southwest Triangle.

The long-term economic recovery of the Las Vegas metro is crucial for the fiscal health of the entire State of Nevada. For the last several years, Las Vegas has enjoyed unparalleled success in diversifying within the gaming and tourism sectors. The emergence of the NHL expansion franchise, Vegas Golden Knights, and the NFL relocation of the Raiders from Oakland to Las Vegas add new tax opportunities to the live entertainment economy. Just as T-Mobile Arena – home of the Vegas Golden Knights – rose to the status of top grossing arena in the world within 2 years of opening doors,⁴ Allegiant Stadium will soon serve as Las Vegas’s premier venue for mega events. In a post-COVID environment, Allegiant Stadium will allow Las Vegas to facilitate even larger concerts, and an array of national and international sporting events. In addition, the UNLV Rebel football team will play its home games in this state-of-the-art facility. Allegiant Stadium fills a missing piece of the Las Vegas economy; it will generate live entertainment revenues previously unattainable due to its guest capacity, deluxe amenities, and new events that can finally be hosted in the entertainment capital of the world.

As Las Vegas and Nevada face the public health and economic calamity brought about by the COVID-19 pandemic, the recent live entertainment infrastructure investments can serve as the foundation for future growth in the gaming, tourism, and entertainment industry. Las Vegas has proven itself to be a global innovator, capable of quick economic recovery and rapid growth. With careful, sustained investment, Las Vegas can continue its global leadership in gaming and tourism and develop a sustainable, diversified economy for the future.

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¹ For the detail about the State of Emergency, visit the following link, [http://gov.nv.gov/News/Emergency_Orders/2020/2020-03-12 - COVID-19 Declaration of Emergency/](http://gov.nv.gov/News/Emergency_Orders/2020/2020-03-12_-_COVID-19_Declaration_of_Emergency/)

² For more information on the IMPLAN modeling process, visit IMPLAN.com

³ Nelson, A. C. & Lang, R. E. (2011). *Megapolitan America: A new vision for understanding America's metropolitan geography*. Chicago, IL: American Planning Association, Planners Press.

⁴ Snel, Alan. (2019, March 6). World's top grossing arena for 12-month period? T-Mobile Arena of Las Vegas. *LVSportsBiz.com*. <https://lvsportsbiz.com/2019/03/06/worlds-top-grossing-arena-for-12-month-period-t-mobile-arena-of-las-vegas/>

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