$ X W K R U V

This report was researched and written by Roland Stephen and J.R. Sullivan at the Center for Innovation Strategy and Policy, SRI International. Significant contributions were provided by John Restrepo and Hubert Hensen of RGE Economics, and William Brown, David Damore, and Robert Lang of Brookings Mountain West. The authors would like to acknowledge support provided by Bob Potts, Michael Brown, and the staff of Nevada's state government.

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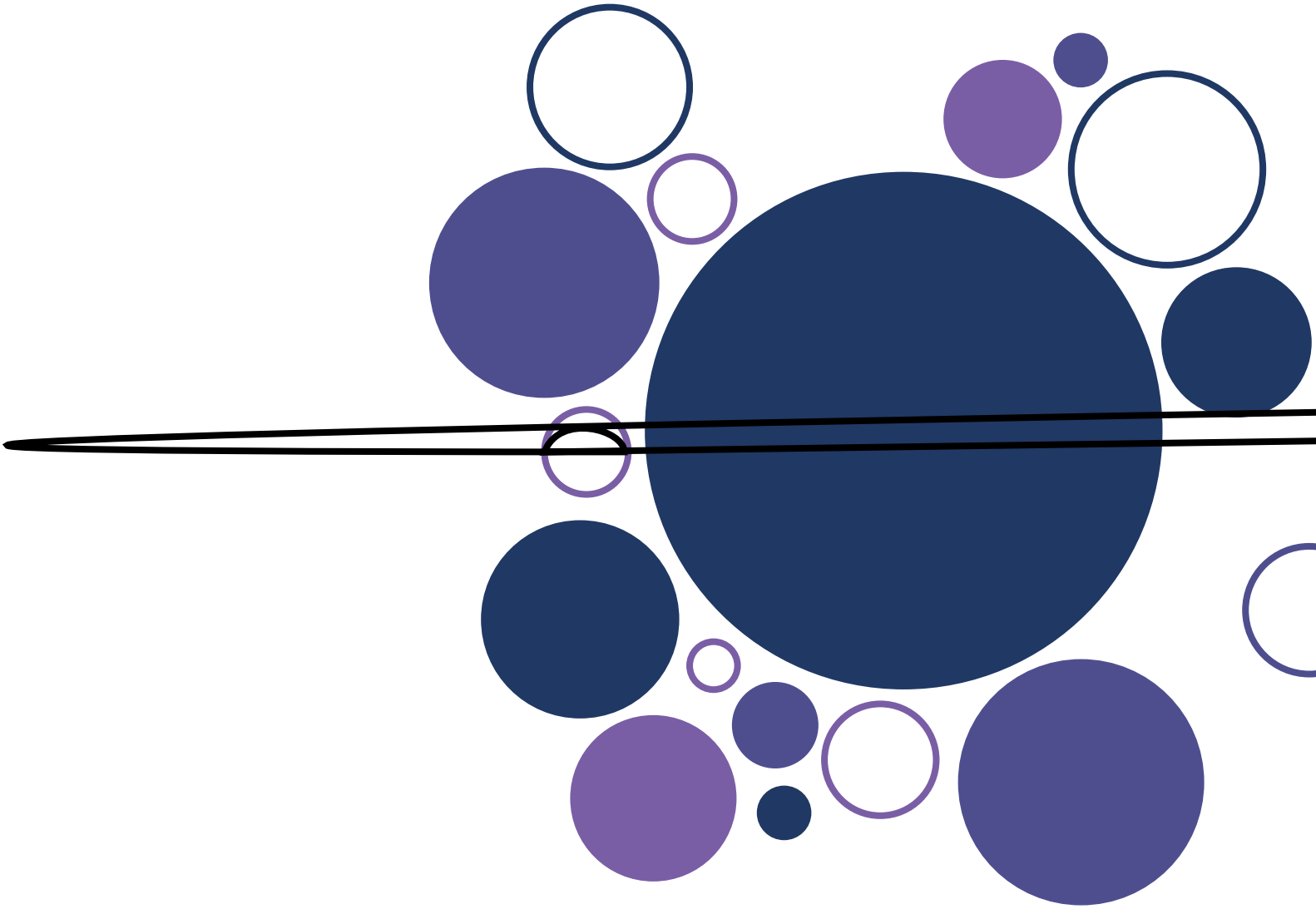
This report was developed by SRI International, based on research funded by the Governor's Office of Economic Development (GOED). The findings, conclusions, and any errors in the report are the sole responsibility of the authors. SRI International is a registered trademark.



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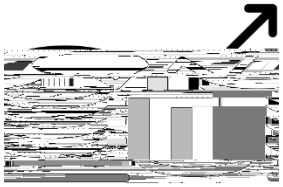
GOED has targeted a variety of coordination, information, and leadership challenges in order to accelerate immediate recovery



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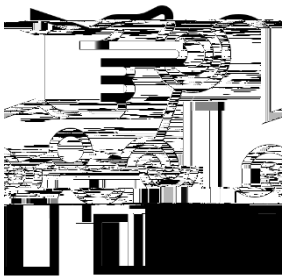

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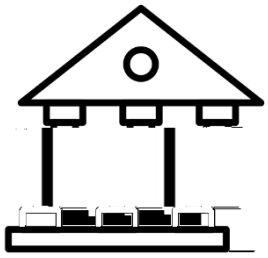
GOED works with stakeholders to pursue visionary policies that set Nevada apart for the future.

1 Develop New Approaches to Cluster Identification and Development

1 Integrate and Expand Capabilities between Northern and Southern Nevada

1 Remove Barriers tdncreasedHealthcareAccess across Nevada
2 Encourage Purposeful Residential Zoning and Development
3 Increase Engagement with Outdoors for Business and Leisure
4 Support Entrepreneurship in Digital Arts and Esports

Nevada will need to build or rebuild key financial and institutional capabilities and develop realistic statutory actions.



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In 2018, SRI International conducted a statewide assessment of Nevadaõs assets, examiningthose within the domains of the innovation ecosystem, economy, physical infrastructure, quality of life, governance, and

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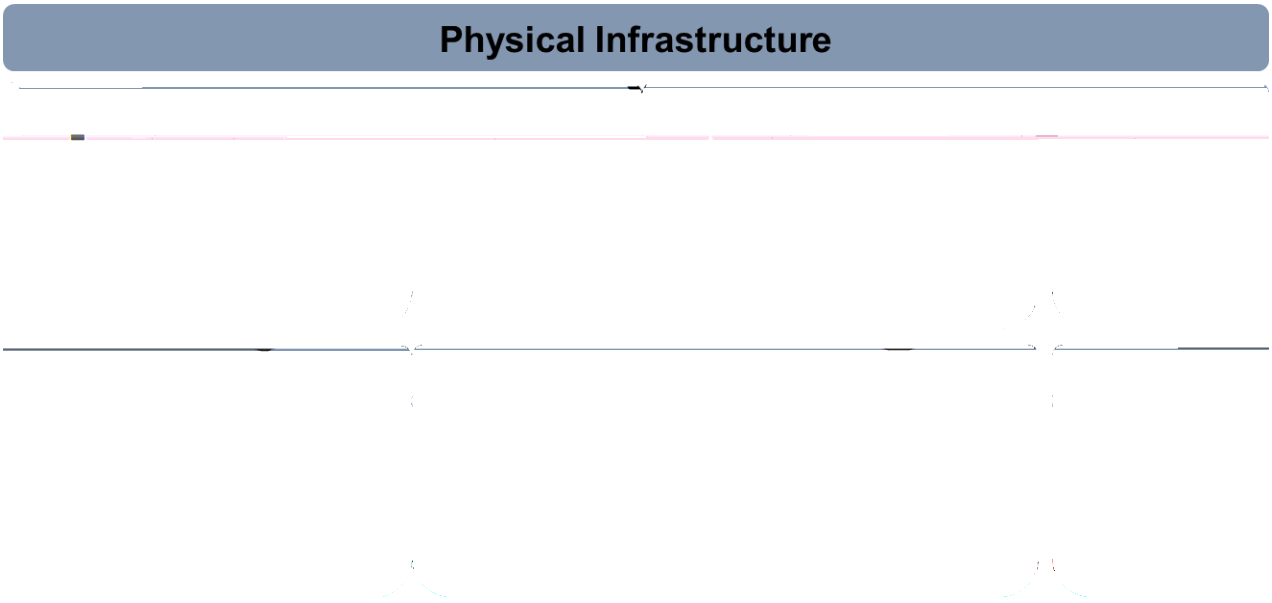

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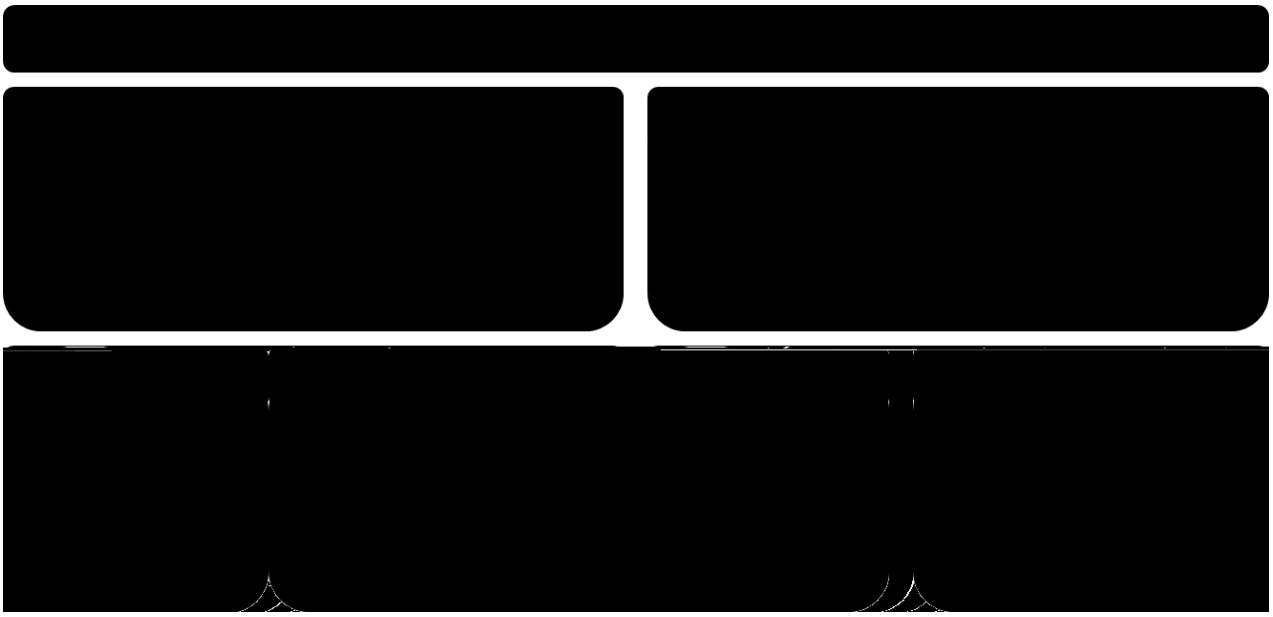

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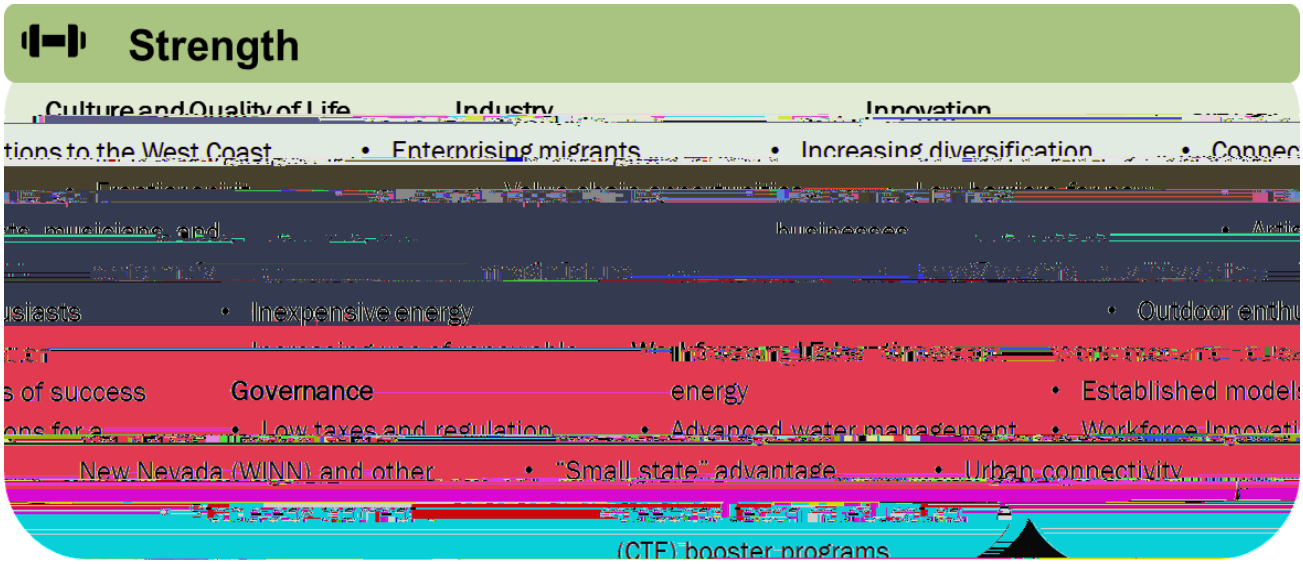
The SWOT analysis highlights sources of strength and weakness that may be addressed, opportunities to be realized, and dangers and difficulties to be avoided.



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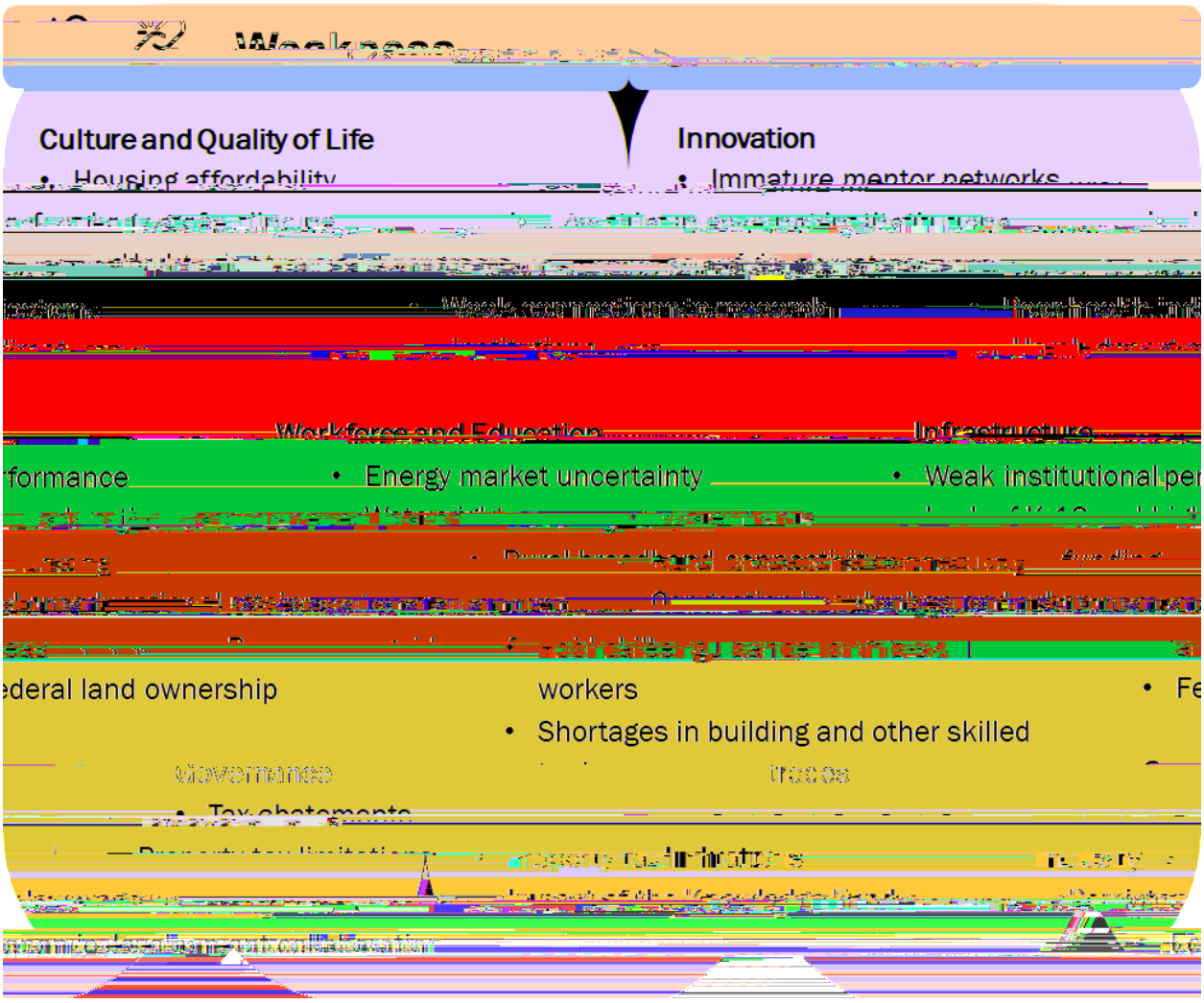

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The report that follows contains the following components:

- An economic forecast from RCG Economics on the situation expected for Nevadaõs GDP and employment in the fall of 2021 (subject to all the present uncertainties faced by Nevada and the country as a whole).
- A series of immediate actions, in which GOED plays a leadership role, to shelter and prepare for recovery key components of Nevadaõs economy. The particular focus is on òMain Streetó and small and medium sized businesses.
- A set of visionary strategies, firmly grounded in Nevadaõs underlying assets, that will accelerate the diversification of the stateõs economy and the transition towards technology intensive and skill intensive employment.
- An inventory of necessary capabilities that must be developed or upgraded in order to realize the vision of a diversified, innovative, and sustainable economy.

The report constitutes an agenda for the whole state, urban and rural, for which GOED plays a critical coordinating role. However, GOED operates only as a partner with other stakeholders, within each region and across the state. As the SWOT analysis above suggest

In short, GOEDwill target **immediate recovery** and **long-term resilience**. This plan, along with immediate and long-term efforts to recover and reimagine Nevadaôs economy, will be completed through collaborative efforts between

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The plan that follows is grounded in a high-level 12- to 24-month economic and fiscal analysis and projection for the state of Nevada and its two metropolitan statistical areas (MSAs) based on three economic/fiscal scenarios and projections: Best, Most Likely, and Worst Case. (Tables depicting these projections not included below are made available in Appendix D). Several datasets were utilized to generate the model's results, including:

- Total employment
- Initial unemployment claims
- Visitor volume
- Taxable retail sales
- U-3 (headline) unemployment rate and workforce participation rate
- Sales and use tax collections
- Aggregation of other relevant tax revenues

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In this section, RCG Economics presents and discusses its forecast results for this study's selected indicators. The discussion here is also focused on how the forecasts relate to the assumptions used

in their formulation (assumptions outlined below). For a deeper discussion of theTd <0003>i30313(s)7(s)-2(u)9(m
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RCGîs research. Additionally, the study discusses and compares the forecafereTd <0ultfagainTd 4nte0313(no)]TJ
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additional paycheck protection program dollars to small businesses and, at some point, large-scale infrastructure investments.[4] This would require the federal government to add several trillion dollars to the national debt but would likely protect the U.S. economy from a continued free-fall[5] and accelerate its recovery[6] from possibly decades to a few years. Such a scenario would also require the severity of COVID-19 in Fall and Winter 2020 to remain constant relative to the summer months. This will allow governments to continue to reopen the economy more fully and safely and lessen consumer fears and uncertainty about leaving their homes and self-quarantining. However, based on the experiences of New England in early 2020 and southern Brazil in mid-2020, this is not a given.

The Worst-Case scenario for the state assumes a series of negative events to happen. First, COVID-19 hospitalizations and deaths in the state would increase, such that the Las Vegas metropolitan area would potentially look like New York City in March 2020: almost overwhelmed by infections. This would likely trigger a second lockdown. It is suspected that this would also heighten fears relative to COVID-19 and lead to higher levels of sheltering in place, compounding the effects of a potential lockdown. The Worst-Case scenario also assumes a continued deadlock on Capitol Hill and no further enhanced federal unemployment insurance benefits to workers. The continued absence of these benefits would represent a significant loss of personal income and, therefore, potential GDP. On the positive side, a potential political stalemate of this order would be unlikely—even in an election year—should COVID-19 deaths spike nationwide. Other factors, such as the Paycheck Protection Program, were included in the scenario assumptions and are described in greater detn 0 g /TT1 11.04

March 17.[18] On March 17, Nevada Governor Steve Sisolak a

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The main goal of government policies thus far appears to be reducing or eliminating the spread of COVID-19 through public policy interventions until the availability of a safe and effective vaccine.[37] However, whether the state can attain this goal is questionable.

For example, contact tracing is a form of surveillance likely to face resistance in adoption. There are several methods of accomplishing this, but technology-based methods require residents to install an application on their phones. The app tracks all those who have come near another person with the app installed. When someone tests positive for a disease, the contact tracing app notifies any individual that came into proximity to that person. Ideally, persons notified will practice heightened social distancing for some time and get tested for the disease. However, contact tracing must be adopted by about 60% of a population to be effective. As of mid-April[38] their phones. The app te who have c

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, P P H G L D W H U G E Y U L W L Actively support by Nevada agency that is part of the flow down of federal funds. It will be necessary for all businesses, especially small- and medium-sized enterprises (SMEs), to receive guidance and advocacy assistance to secure the funding they need to keep employees on the roster. Capacity has been increased at the state's career centers to help

5	Identify gaps in support for minority- and woman-owned small businesses and opportunities to increase their establishment and growth.
6	Increase efforts to attract U.S. and foreign businesses to Nevada, particularly those in high-growth and technology-intensive industries.
7	Streamline and centralize the oversight of Nevadaôs small businesses, with clear direction for ancillary support organizations in preserving, establishing, and expanding Nevadaôs businesses.

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**, P P H G L D W H U G O E R Y H U ** GOED should play a leadership role in the transformation of occupational licensing constraints in critical areas, including the recognition of qualifications from other states. Based on real-time labor market data, GOED will support community colleges in recruiting and graduating students in areas of need. In spite of the general downturn, there will be sectors experiencing high demand that will need newly trained workers (including sectors beyond health services).

/ R Q J H U W H U P U H V L In order to accelerate workforce adjustment and preparation in critical areas, GOED should support the design of compressed health services curricula and other curricula for skills in short supply. The entire workforce pipeline should be reworked so that workers from hospitality can be fed into public health and other needed fields, with an emphasis on competencies and skills rather than formal credentials.

Specific areas of interest for GOED and supporting organizations could include:

1	Radically expand health services programs at all levels.
2	Integrate workforce programs with business needs.
3	Allow community colleges to develop accelerated training programs for employers continuing or resuming operations.
4	Broaden training providers to reach disadvantaged populations and apply new technologies through the Nevada State Library by leveraging Nevadaôs Education Stabilization Fund Reimagine Workforce Preparation (ESF-RWP) grant.
5	Protect funding streams for in-demand and growing occupations ô academic programs at Nevadaôs four-year institutions.
6	Accelerate the use of ôbadges,ó competence bundling, and credit aggregation in building workforce skills.
7	Provide incentives to U.S. citizens who work remotely to relocate to Nevada, as well as for startup founders doing all or most of their business online.

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society. In addition, GOED will give the Regional Development Authorities (RDAs) access to data from EMSI (see the bullet below).

Specific areas of interest for GOED and supporting organizations could include:

1	Integrate regional infrastructure initiatives within overall state financial and planning framework.
2	Provide access to real-time labor market Information using EMSI data via Nevada's regional development authorities.

Figure

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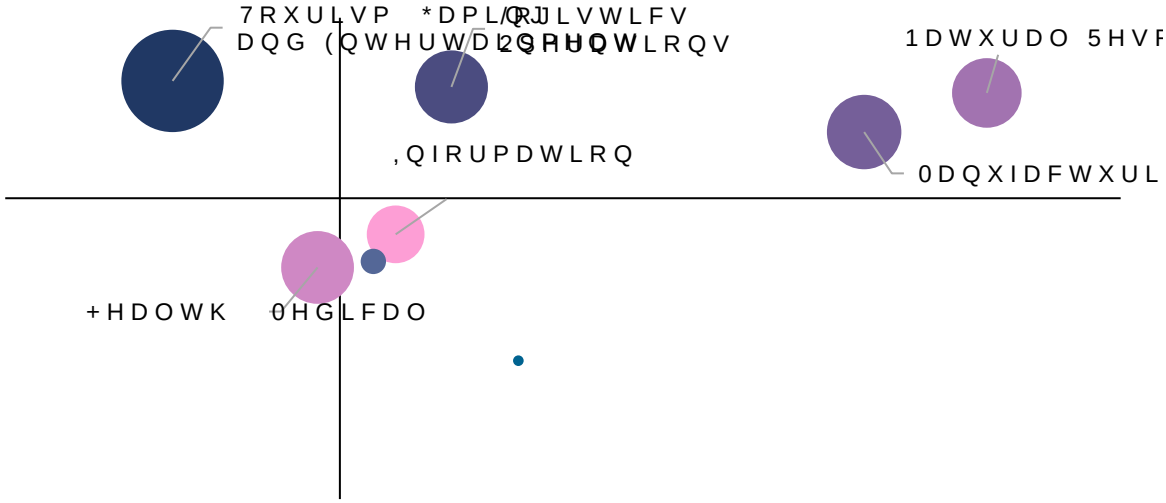
Figure 5 and Figure 6 below visualize the location quotient for selected industries and how they have changed between 2010 and 2019 in Northern and Southern Nevada, respectively. As shown, Northern Nevada has seen greater growth in new sectors, particularly Manufacturing and Logistics & Operations, that have worked to diversify the regionõs economy. In Southern Nevada, however, Tourism & Gaming continues to dominate the regionõs economy. While other sectors have grown over the last decade, they have yet to grow to resemble a significant portion of Southern Nevadaõs economy. This is likely a critical component of the comparatively lower impact of the pandemic recession in Northern Nevada than in Southern Nevada. However, the large number of industries that fall into the òemergingó category demonstrate that the region shows promise for future diversification efforts.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Nevada is geographically well situated between three vibrant economic partners: California, Arizona, and Utah. Each of these states exchanges people, goods, and ideas with Nevada. Despite having a population of just over 3 million, Nevada sits at the center of a trade region that exceeds 53 million residents, a region that exceeds in both population and GDP such nations as South Korea (pop. 51.8 million) and Spain (pop 47.3 million).

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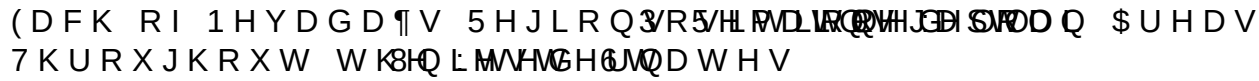
Figure9 below shows what Brookings Mountain West at UNLV terms òThe Three Nevadas.ó The three zones identified show the approximate area of economic interdependence that links Nevada to California, Arizona, and Utah. Las Vegas falls within a sphere that extends from California's Central Coast to the Mexican border with Arizona. Reno's economic sphere incorporates much of Northern California. Elko's shared economic space stretches across Utah to Colorado's Front Range.



Thesemegapolitan areas exhibit an economic integration either approaching or equal to what the U.S. Census Bureau defines as ìcombined statistical areasî (or CSAs). Being a CSA is significant in that it shows urban space has achieved high levels of economic integration centered on commuting patterns. Nevada is becoming more connected with its neighboring states via a myriad of economic functions. Tech transfers from the Bay Area to metro Reno have transformed Northern Nevada. Las Vegas shares a wide array of trade, patents, highway, air links, and now direct labor markets with California and Arizona. Gold mined in central Nevada is processed in Utah and often managed from Colorado. Nevada's most important economic opportunities lie1 e®iMτφא " o o ev k

The òreshoringó of production to the United States presents Nevada with the opportunity to grow its nascent advanced manufacturing sector while integrating further into the regional economy of the western United States. The low cost of doing business in the state makes it an attractive destination for manufacturers who want to invest and produce in the United States and export globally but do not want to pay the typical cost of doing business on the West Coast. Likewise, Nevada remains an attractive destination for the ònext-shoringó of the technology-

in the stateõs most urbanized county, the Clark County School District (CCSD) estimates that as many as 40% of students require assistance to gain adequate internet services.[55]

To help address these challenges, Attorney General Aaron Ford recently announced the launch of T-Mobileõs ôProject 10 Millionó to offer broadband access for educational needs. The program provides òqualifying

Data centers are a catalyst for a wide range of qualitative economic benefits and are attractive assets to Foreign Direct Investment (FDI) in related industries. Data centers and the wider digital ecosystem stimulate growth through knowledge spillovers. Tech-focused FDI is considered a major driver of knowledge spillover through labor mobility, market competition, and market transactions with local companies.

Power costs in Las Vegas, however, remain above average for comparative metro areas.[58] One way to address the comparatively higher power costs in Southern Nevada is to

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Mining has long been a significant component of Nevada's economy, and the discovery of large lithium deposits in Northern and Central Nevada positions the state to be a global leader in lithium production. Lithium plays a critical role in many new and emerging technologies, especially those concerned with energy storage for electric vehicles and electric grids. The mining of lithium provides a catalyst for Nevada to develop a new component of its mining industry that is intimately connected to the global value chains in technology development and production. Likewise, the processing of other critical materials and minerals beyond lithium that are key to U.S.-based technology production and development would position Nevada well within the nationhy

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connectivity, particularly via air travel, and how co

Specific areas of interest include:

Expand Opportunities for Residency Programs at Nevada's Hospitals. Reduce the shortage of medical professionals by recruiting newly graduated physicians to Nevada's hospitals.
Expand Broadband Access in Nevada's Rural and Frontier Communities. Based on Project ECHO, expand the capacity of health professionals to treat disease via telehealth
Address Low Medicaid Reimbursement Rates.[72] Encourage the establishment of more hospitals by raising reimbursement rates.
Join the Enhanced Licensure Compact. Eliminate barriers to mobility for medical professionals.

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Nevada's housing market has recovered significantly from the pain inflicted by the Great Recession. As the state has continued to attract new residents at a record pace, new construction of mostly single-family homes has risen to accommodate this growth. Home prices also rose as the state exited the recession. According to the Lied Center for Real Estate at UNLV, whereas the average new single-family home in Southern Nevada sold for around $300,000 in June 2014, the price had risen 35% to $463,000 in June 2020. A similar trend has been observed in the Reno-Sparks area, where the average new single-family home price rose 40% from $325,900 to $546,670 between June 2014 and June 2020.[73] There has clearly been a shift in builder preference for more lucrative, high-end homes in Nevada's two primary urban areas.

The increase in pricing of new single-family homes is fur-3(5o012.0 co-2(mpou-2(d [53(v)4(ed1(iny4(i6(T)-3(h)-i)1

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The COVID-19 pandemic has encouraged individuals to engage with their local and regional outdoor amenities. According to the U.S. Department of Agriculture Forest Service, this renewed attention in the American outdoors as a result of stay-at-home orders and restrictions on indoor entertainment is built upon a trend that has been growing in the United States since the late 1990s. On a national scale, outdoor recreation has grown to a $646 billion industry that directly employs more than six million people.[75]

While the ònrecreation economyó has long been present in Nevada, COVID-19 has reinvigorated interest in the stateõs outdoor assets. Prior to the pandemic, the Nevada outdoor recreation economy directly employed 87,000 workers, generating nearly $13 billion in consumer spending, $4 billion in wages and salaries, and over $1 billion in state and local tax revenue.[76] Nevada has taken steps to recognize the potential the outdoor recreation economy represents for the state, notably through the creation of the Nevada Division of Outdoor Recreation (NDOR) in 2019.[77]

Continued development of the stateõs outdoor recreation portfolio can increase the quality of life for residents of Nevadaõs urban areas by providing opportunities for outdoor exploration, while increasing economic opportunity for residents of Nevadaõs rural communities. Housed within the Department of Conservation and Natural Resources, NDOR will also ensure that the growth of this industry does not come at the expense of the health of Nevadaõs public lands.

Specific areas of interest include:

- **Expand the scope of the Statewide Comprehensive Outdoor Recreation Plan.** Coordinate outdoor recreation infrastructure planning and implementation with small business development in rural communities.

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Entertainment has been an integral component of Nevadaõs economy. As creative content has increasingly become digital and easier to consume without requiring individuals to travel to one particular destination, a shift toward becoming a hub for digital arts creation provides local creatives the opportunity to produce and share their works to a broader audience.

Entrepreneurship in the digital arts goes beyond the creation of digitized art. Indeed, emerging areas like game design are also a significant area of growth in Nevada, especially in Southern Nevada. The emergence of esports as the new frontier in gaming and digital entertainment will allow for a new class of digital artist. Access to resources, such as game design studios and equipment, will enable entrepreneurs in this space to hone their skills and develop industry-leading games

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In order to realize these

targeting tech commercialization, spin-out company formation, and monetization of IP from research institutions; it would also support the growth of entrepreneurial ecosystems (up to and including direct support of tech companies).

Such a fund could work in at least four ways:

Innovation Capacity Building: Grant funding for applied R&D infrastructure and projects at Nevada System of Higher Education (NSHE) (similar to Knowledge Fund projects). Emphasis on university/private industry partnerships.

Innovation Transfer: Grant funding for technology transfer projects at NSHE and private companies through Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) matching program. Focus on Technology Readiness Level (TRL) 3 – 6)

Innovation Acceleration: Grant funding to accelerate innovation for private early-stage Nevada tech companies to help them scale (best practice: USTAR TAP). Creation of acceleration and venture building programs through collaboration with outside organizations (e.g., Rainmaking – UNLV). Support for Entrepreneurial Service Organizations (ESOs) to include mentoring, networking, entrepreneurial training for private entity or university researcher.

Innovation Ventures Seed

the tax base in order to limit volatility in revenues and ensure that the base tracks future change in the economy.

Another element to consider in the state's system of taxation is to draw on regional economic activity to support local services and infrastructure investments. The concept of regional taxes is not new. In Nevada, any consideration of regional taxes must reflect the state's economic geography. Mining, to a large extent, takes place in rural Nevada, while gaming and live entertainment concentrate in Southern Nevada. The introduction of legalized cannabis generated new state and local tax revenue and also raised conversations about its geographic allocation.

Mining is treated as a regional tax, with a portion of revenues reserved for the localities where the resource is located. A similar carve out of the live entertainment tax to support local services and infrastructure, reflecting the concentration of industry and associated costs, would parallel the current tax arrangement for mining in rural Nevada.

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The sections below highlight governance, funding, and workforce development as it relates to the state's community college systems. Options are considered for reforms to integrate innovation and workforce assets to help grow and diversify the state's economy.

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Nevada's regional institutions need active, locally recruited advisory boards with representation from sector industries that are within the campuses' service areas. These boards will be able to work directly with leadership to develop and assess campus policies, priorities, and performance. Aligning these institutions with regional constituencies will position the campuses to develop partnerships with local industry and governments. Examples from across the country demonstrate the benefits for workforce development and economic diversification that result from locally focused college governance.

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The ideas presented below are designed to more effectively align resources to support the campuses' differing constituencies and missions, particularly as they relate to economic development.

Implemented in 2013, the current formula used to distribute operational funding to the teaching institutions places these colleges at a disadvantage as they compete against the universities for a finite resource. In order to address these shortcomings, the state should develop separate formulas for the universities and colleges that reflect these institutions' differing missions, service areas, and student needs. Resources should be dedicated to students who are Pell-grant eligible and first-generation attendees to support their onboarding, advising, and mentoring. Furthermore, credentials, certificates, and other competency-based curricula should be fully rewarded under the formula for workforce institutions.

The non-alignment between Nevada's colleges and the mix of degrees and certificates awarded also has implications for accessing federal resources. Truckee Meadows Community College (TMCC) most comports with the federal government's definition of a community college, although that was truer several years ago than today as the school expands its four-year programs. As a consequence, TMCC was the primary intake for federal workforce training funds during the Obama administration. Yet the campus serves a region with just 16% of the state's population. Out of the $2 billion in Trade

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Danielsen, Karen, A. Lang, E. Robert. 2016.

Stoker, Philip, Danya Rumore, Lindsay Romaniello, and Zacharia Levine. 2020.
. Journal of the American Planning Association 1-13.

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March 11: WHO declares a pandemic.
March 13: President Trump announces a national state of emergency.
March 15: Governor Sisolak issues Directive closing schools and nonessential government facilities as well as ordering essential government services to transition to online and phone services to the greatest extent possible
March 18: Governor Sisolak issues Directive 002 closing nonessential businesses statewide, including Strip resorts.
March 22: Governor Sisolak announces new COVID-19 response task force.

July 10: Governor Sisolak issues Directive 027, which reverts bars that serve food in counties with elevated levels of disease transmission to Phase 1 and again shutters bars that do not serve food
July 21: Clark County School District announces most classes will be held online to start the fall 2020 semester.[88]
July 28: Governor Sisolak issues Directive 028 to provide guidelines to county school districts on the reopening of schools
July 31: Governor Sisolak convenes a second special session of the Nevada Legislature to address several issues[89]

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Variable	Geography
Industry-Level GDP	Nevada
Taxable Retail Sales	Nevada, Clark County, Washoe County
Total Nonfarm Employment	Nevada, Las Vegas MSA, Reno-Sparks MSA
Unemployment Rate	Nevada, Las Vegas MSA, Reno-Sparks MSA
Unemployment Insurance Claims	Nevada
Visitor Volume	Nevada, Las Vegas MSA, Reno-Sparks MSA
Property Tax	Nevada, Local Government & School Districts
Room Tax	Nevada, Local Tourism, Clark County School District
Gaming Tax	Nevada, Clark County, Washoe County
Sales & Use Tax	Nevada, Clark County, Washoe County
Consolidated Tax	Nevada, Clark County, Washoe County
Modified Business Tax Collections	Nevada
Marijuana Tax Collections	Nevada

State	Fund	Funding Source	Funding Purpose	Value
Texas	Permanent School Fund	Sale of public lands	[redacted]	

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Regarding the tax estimates, because the distributions between the state and state levels are stable, and in some cases (see

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The Marijuana Taxes, the last collections estimated under the model discussed below, are expected to take hits similar to those of the MBT (by coincidence). In the Best Case, we expect a drop of about 4.2% compared to the No-Pandemic case. In the Most Likely scenario, that drop would be about 8.0% percent while in the Worst Case we estimate a 14.5% drop.

	Best Case	Most Likely	Wo194.57 587.5 10

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Modeling the economic situation relative to the pandemic is a difficult task. First, basic univariate methods are likely to fail because the pandemic presents an economic shift. Second, there are simply not enough data to forecast economic variables analytically in a multivariate model. There are several variables that are helpful to the model, but not enough post-pandemic observations to estimate the variables' coefficients with any certainty. Another complication is that psychological/behavioral and sociological effects are driving much of the response to the pandemic and associated economic outcomes. That makes it even more difficult to measure and predict. For this reason, RCG chose to take a less rigidly statistical approach to modeling economic outcome relative to the pandemic. The model is based on applying what we think are reasonable assumptions, backed by data and the economic and medical literature, relative to certain drivers that shift a baseline level of GDP. The purpose of this section is to describe these assumptions based on the sources cited throughout the study.

The model that drives the study's results has been performed in a series of steps. The first step defines the scenarios based on certain driver variables. Those variables are driven by assumptions that underlie three scenarios. Next, these variables are used to drive decreases to a baseline GDP forecast that assumes the pandemic never occurred. Finally, the finalized GDP forecast has been used to forecast various indicators of interest.

Based on the information discussed below, three scenarios were created for the Nevada eco4 Tf 175.54e<T Q q 0

this will speed vaccination relative to poorer nations. Another possible problem is that the global supply chain may not be up to the task of quickly distributing a vaccine worldwide. This could be an issue if U.S. firms are unsuccessful in their efforts to develop a vaccine.[98] Still, in light of these variables, according to USA Today's pandemic science panel, a vaccine should reach widespread attainability by mid-2021. However, according to Science, only about 50% of Americans plan to get the vaccine when it becomes available, with another 25% still unsure.[99]

Relative to the research discussed, in the Worst-Case scenario, RCG has assumed that no vaccine will be discovered before 2022, resulting in a prolonged economic emergency. In the Most Likely scenario, widespread availability of a vaccine in July 2021 is assumed. In the Best-Case scenario, availability will occur in April 2021.

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Phase effects refer to negative modifiers to GDP that will be caused by government-mandated business lockdowns. These lockdowns shutter businesses and effectively halt economic activity. They appear to help limit the spread of COVID-19.[100] RCG produced a timeline of the phased lockdowns based on Governor Sisolak's state of emergency directives. The governor has since stated th

due to low rates o

and Best-Case scenarios, UI funds amount to far more than the stimulus checks and, there is still so little information available about how all of these funds have been used. This assumption linking UI to the stimulus should offset changes in the saving rate.

In the case of the Paycheck Protection Program (ìPPPí) a program that dispenses loans meant to incentivize small businesses to keep their workers[123] those funds have not been included in the model explicitly. However, because RCG uses assumptions relative to the number of unemployed workers in the model, we did make implicit assumptions regarding the program.

There are several other provisions in the CARES Act. However, we assume that they will have relatively little effect on GDP. Furthermore, by definition, business-to-business transactions do not directly affect GDP.[124] Of course, these transactions do affect GDP indirectly. Still, we assume that there will be no major disruptions to business aside from those related to the pandemic.

Another limitation stemmed from lag effects caused by the economic crisis. For example, as spending declines, future revenues to the state and municipalities should decline as well. The secondary effects of these declines on future GDP is difficult to estimate in terms of both magnitude and timing and have not been included in the model.

The final major limitation is tourism, a major component of the Nevada economy, particularly Southern Nevada. The Great Recession showed that tourism demand in Las Vegas lags economic growth nationwide,[125] especially relative to California. Economic research suggests this is generally true for North America.[126] This lag effect is not included in the model explicitly, though it is considered relative to the modelís final UI claim levels in Q4 2021.

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As of this August, there was only one data point for state-level GDP available that included the pandemic with which to calibrate our model. For this reason, we have been able to obtain an estimate within a fraction of a percent of the actual Q1 2020 GDP estimate for Nevada. However, because our methodology is straightforward and contains two scenarios capturing the most extreme outcomes as well as a most likely scenario, we believe that the results provided herein represent a reasonable set of outcomes for Nevada GDP through 2021. Nevertheless, as more data come in, RCG could revisit the underlying assumptions and update the forecast. The Q2 2020 state-level GDP data are scheduled for release in early October 2020.[127]

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In addition to the forecast of real GDP, RCG has also produced projections for a set of economic and fiscal indicators for Nevada, the Las Vegas Metropolitan Statistical Area (MSA) and the Reno MSA. In this section, RCG describes the data and methodology used to develop these additional forecasts. A number of metrics were used to develop these forecasts, including tax collection and unemployment statistics, among others. A full list of the used metrics and their corresponding geographic availability (i.e., state, local, or jurisdictional) is available in Appendix A.

RCG has employed a single method to forecast the indicators to maintain conformity and consistency across the measures.[128] RCG used the ARIMA with Exogenous Input (ìARIMAXí) model.[129] This model forecasts an indicator based on its relationship with outside variables. In this case, RCG has used real GDP, as forecasted above, as the exogenous input.[130] We expect GDP to be a good explanatory variable because GDP is generally a function of various economic indicators. Therefore, it should move together with or inversely relative to those indicators. The model enables us to measure how

real GDP moves with each of the Indicators in the past, and then uses the real GDP forecast above to predict how the indicators should change over the forecast horizon.

In terms of the dates that have been analyzed and forecasted, a difference between this analysis and the above GDP forecast is that RCG forecasts the series starting with the most recent historical data rather than the last 2019 data point to improve forecasting results (i.e., fewer forecasted data points lead to more precision and accuracy).

A limitation of this model is that in certain cases, because of the extreme circumstances of the pandemic, economic data have been outside of typical ranges. With no historical data on these types of swings, the model may overweight or underweight these swings in some cases. However, this situation is unavoidable regardless of the model type and, furthermore, RCG is comfortable that the results are generally reasonable. A second limitation, that at times can compound with the previous limitation, is that because RCG used a single indicator as the exogenous input, the results of certain forecasts might not necessarily match the original assumptions.

Rather than run the model on each

and distributed, it is not feasible to separate them all by county. However, RCG has separated them locally to the extent practical. For taxable sales, we have produced forecasts for Clark and Washoe counties in addition to the state. The modified business tax (ìMBTî) is collected by the state and put into the stateís general fund. Therefore, while counties and municipalities benefit, they do so based on the many formulas that are used to distribute those funds. Regarding marijuana revenues (derived from a retail excise tax and a wholesale excise tax), we have performed an analysis at the state level only. Substate data have only been published for one year at the time of writing and it is not feasible to run an analysis on so few data, particularly when there are not enough data to perform the state-level analysis, as discussed above.

The SUT and CTX data are provided herein for each county as well as the state. RCG has analyzed these for Nevada, Clark County and Washoe County. Both taxes are comprised of several components. The SUT includes the state sales tax, the Local School Support Tax (ìLSSTî), Supplemental City-County Relief Tax (ìSCCRTî), Basic City-County Relief Tax (ìBCCRTî) and county-level option taxes. The CTX is comprised of the Liquor Tax, Cigarette Tax, Real Property Transfer Tax (ìRPTTî) and Government Services Tax (ìGSTî). RCG has summed the various taxes together for each geography to obtain the totals for the two taxes at each level. As a note, RPTT data are not broken down by county, so the county-level results do not include that tax. Certain SUTs are reported with CTX data. Those had to be separated. These data have been obtained from the Nevada Department of Taxationís (ìTaxationî) ìStatisticalî and ìConsolidated Taxî reports and aggregated by fiscal year and region.

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