UNIVERSITY OF COLORADO BOULDER ***LEEDS SCHOOL OF BUSINESS***

COLORADO BUSINESS REVIEW

A publication of the Business Research Division
Volume 86, Number 1, 2020

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Forum Keynote Address

The Future of Energy

Anna Sernka

Energy keynote panelists Sarah Sandberg, DCP Midstream; Will Toor, Colorado Energy Office; Alice Jackson, Xcel Energy; and Chris Wright, Liberty Oilfield Services.

Opinions expressed by panelists reflect the most current market information available as of early December.

The energy industry is incredibly dynamic. Moderated by **Sarah Sandberg**, Senior Director of Public Affairs and Investor Relations at DCP Midstream, panelists remarked on how the industry is undergoing “unrelenting change.” This presents many opportunities and challenges in the realms of research and development, new policies, and public and market sentiment. Panelists shared a relatively optimistic view of the energy industry, which is largely shaped by technological breakthroughs and evolutions.

Alice Jackson, President of Xcel Energy–Colorado, discussed Xcel’s ambitious goals. Xcel ultimately plans to achieve a zero-carbon system by 2050, after reducing carbon emissions 80% by 2030 from their 2005 levels. Xcel’s residential customers in Colorado benefit from rates that are 38% below the national average, and commercial customers enjoy bills roughly 20% below the national average, which incentivizes

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FROM THE EDITOR

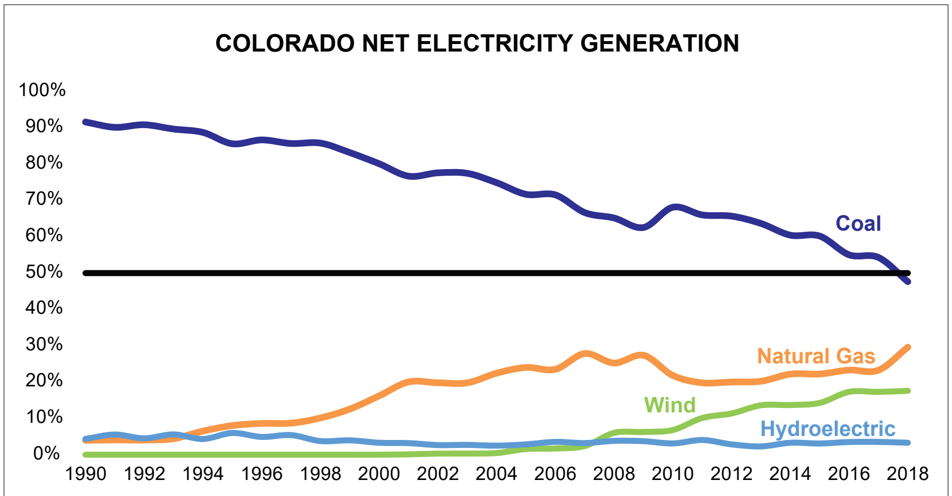
As highlighted at the 55th annual Colorado Business Economic Outlook Forum, Colorado's employment growth is expected to slow modestly in 2020 compared to 2019, although the state will still be in the top 10 states. The three industries projected to add the most jobs will be Professional and Business Services; Construction; and Education and Health Services.

The half-day event, held on December 9, featured an employment forecast for 13 industry sectors and a keynote panel discussion on the future of energy in Colorado. Three industry breakout sessions rounded out the afternoon.

Summaries of the day's proceedings are featured in this issue. For additional details, visit colorado.edu/business/brd.

Please contact me directly at 303-492-1147 with any comments or questions.

—Richard Wobbekind



Source: Energy Information Administration, Net Generation by State by Type of Producer by Energy Source.

businesses to move to Colorado and provide jobs. With this in mind, affordability and reliability are two major guardrails Xcel intends to keep in mind while achieving their goals. Adding more zero-carbon resources such as wind, solar, and battery storage, combined with the modification and retirement of some fossil-based units, will help Xcel make significant strides. However, technological advancements are still necessary for Xcel to achieve sustainability at such a large scale. According to Jackson, "the gap is the zero-carbon dispatchable resources. We're not a research and development organization, so we have to rely on the universities, the laboratories, and private entities to solve those problems."

Xcel Energy is not the only one in Colorado with the desire to disrupt the energy industry; the Colorado Energy Office also has bold climate action goals. **Will Toor**, Executive Director of the Colorado Energy Office, discussed the 100% renewable electricity generation by 2040 goal, which was initiated by Jared Polis when he was running for governor. Since taking office in January 2019, the Polis administration has passed 15 clean energy bills that impact a broad range of industries and stakeholders—utilities, transportation, renewables, and more. Notable legislation includes Senate Bill 236, which builds Xcel's energy targets into law and incorporates Tri-State Generation and Transmission Association, the second-largest utility provider in the state serving primarily rural communities, into the Public Utilities Commission. The political landscape for clean energy is influenced by technologies that make it cheaper to invest in new utilities, such as wind and solar, as opposed to continued operations of existing legacy coal plants. Other advancements, such as an 80% decline in battery prices since 2010 and a cost parody between electric and gas vehicles, provide further optimism for the future of the energy industry.

Chris Wright, CEO of Liberty Oilfield Services, took a step back from the current status of the energy industry and explored the energy transitions that have occurred over the past several thousand years. The arrival of agriculture 10,000 years ago brought the first major energy transition, where the human population exploded and cities formed. According to Wright, "everything we can think of in our written history arrived with the invention of agriculture." The second energy transition began around 200 years ago, and brought with it an increase in global human life expectancy from 35 to 72 years. It is not yet complete, Wright believes, as one billion people still lack access to electricity and millions die every year from air pollution. As nations shift from coal to natural gas to renewables, sustainability will have to be balanced with affordability. According to Wright, a move towards cleaner energy in places such as Germany and California inadvertently led to price increases, decreased reliability, and a fleeing of blue collar jobs. Energy advancements

Chris Wright shakes hands with a Forum attendee at the conclusion of the Energy Keynote Panel.

may disproportionately affect certain populations, and affordability is often the largest hurdle to large-scale change.

Wright also shared updates on Colorado's oil and natural gas production, which are both at all-time records. National production of oil and natural gas have also significantly increased, and the United States is currently a net exporter of both. These supply increases drive down global prices, which is especially life-enhancing for low-income individuals. In addition, abundant natural gas is speeding the drive to reduce greenhouse gas emissions in Colorado and beyond. Coal now contributes to less than half of Colorado's net electricity generation. While Colorado's economy benefits from the surplus in oil and natural gas, regulatory uncertainty and public scrutiny have never been higher in the state.

The energy industry has nuanced dependencies on many factors, including the political landscape, emerging technologies, the climate, public perception, and more. Because of this, the energy landscape will never be stagnant. Colorado is at a unique turning point in the sense that both public and private entities have taken serious strides to increase development of clean, affordable energy and accountability. The future is uncertain, but it holds promise for positive change.

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Summary of Forecast

Colorado Economy Will Grow in 2020 but at a Slower Rate

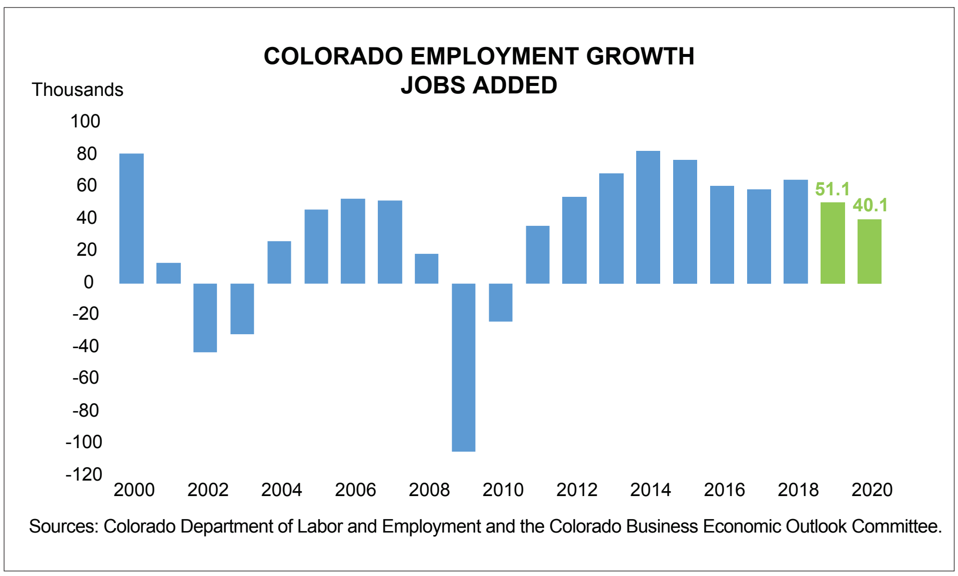
The Colorado Business Economic Outlook presented at the Grand Hyatt, December 9, 2019.

The following observations summarize the thoughts of the Colorado Business Economic Outlook committee members as of early December 2019.

Employment growth in 2019 is projected to close up 1.9%, or 51,100 jobs, reflecting a deceleration in growth. Colorado will continue to add jobs in 2020, extending employment gains to a 10th-consecutive year. Job growth will occur at the slowest pace of the current expansion. Constrained by slower industry growth and a shortage of workers, Colorado will add 40,100 workers in 2020, or growth of 1.4%.

In 2020, the three private-sector industries projected to add the most jobs are Professional and Business Services; Trade, Transportation, and Utilities; and Education and Health Services. The greatest pace of growth will be in Professional and Business Services; Construction; and Education and Health Services.

Agriculture—The Agriculture Sector has made a remarkable recovery in 2019, posting a 21% increase in net farm income, to $1.52 billion. The industry is expecting modest growth of 6% in 2020. Colorado has outperformed the nation in agriculture, primarily due to emphasis on beef production, which has maintained its value and grown in herd size, and corn, which has had a bountiful year and performed well compared to soybeans. Easing drought conditions also played a significant role in producing crops and feed for cattle.



Natural Resources and Mining—Following a 62% increase in 2018, the value of Colorado's oil production decreased 10%, to $9.9 billion, in 2019 due to softer pricing. In 2020, oil and gas should expect modest 5% growth. Overall, the value of Colorado's natural resources is estimated to be $17 billion in 2019. Industry employment is expected to remain nearly flat, at 0.4% growth in 2020. Compared to the rest of the nation, Colorado ranks 7th in petroleum liquids, 6th in wet natural gas, and 11th in coal production. Colorado is also a leading producer of renewable energy, including wind, solar, biomass, and hydroelectric energy sources.

Construction—The demand for housing units will remain stable in 2020, with continued strong in-migration totaling about 49,400. However, the supply of new homes will remain tight, with new single-family permits increasing 5% and new multifamily construction growing 3%. The value of residential construction is projected to remain relatively flat, at $9.9 billion in 2020. Summing residential with strong nonresidential values and major

Colorado Secretary of State, Jena Griswold, delivers opening remarks during the 2020 Outlook.

non-building (infrastructure) projects will bring the total value of construction to $19.1 billion in 2020. Labor constraints and unusually low interest rates will continue to influence the industry. Employment will increase 1.7% in 2020, or 3,000 jobs, to total 180,500.

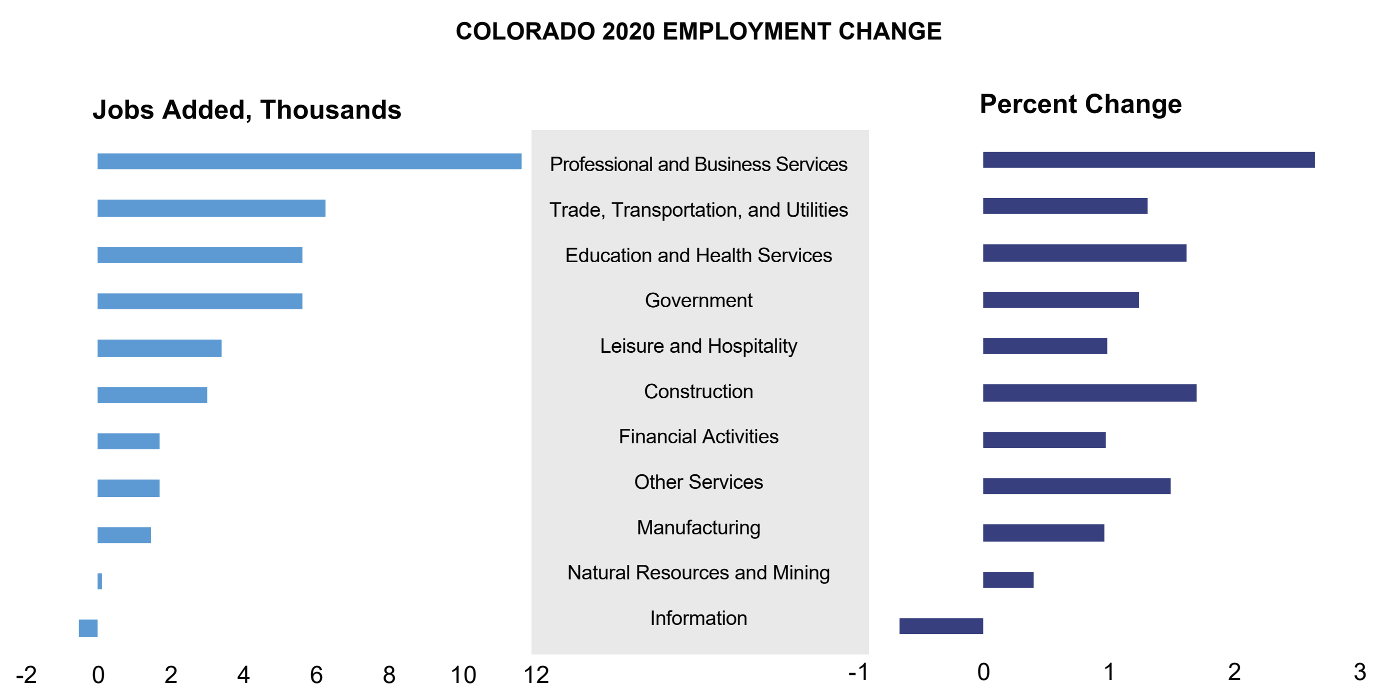
Manufacturing—Colorado's Manufacturing Sector is expected to expand for its 10th-consecutive year in 2020, benefited by strong growth in several subsectors. Employment growth is projected to increase 1,500 jobs, or 1%, in 2020, with gains in both durable and nondurable goods. The industry's strength in Colorado derives from the mix of subsectors, with comparative advantages in food products, beverages, chemical products, and transportation equipment. The industry also saw increased employment in cannabis production and a surge of machinery manufacturing in 2019. This sector is not without headwinds, however, and it experienced downward pressure from global trade tensions and tight labor markets. Through September 2019, exports from Colorado declined 4.1% according to data from the U.S. International Trade Administration. This includes significant declines from some of Colorado's key trading partners including Mexico and China.

Trade, Transportation, and Utilities—TTU employment is anticipated to increase by 1.3% to total 482,000 jobs in 2020, with trade (retail and wholesale) contributing the majority of industry growth. Retail sales are expected to decelerate, growing 3.5% in 2020. Denver International Airport reached its highest number of annual passengers in 2018 and saw growth in international traffic through United, Southwest, and Frontier. Overall, TTU is expected to add 6,300 jobs in 2020.

Information—The industry posted gains in 2019 on rebounding Telecom and Software Publishing sectors, while other sectors continued to struggle. Despite accelerating growth in recent years, the industry is expected to fall by 500 jobs in 2020.

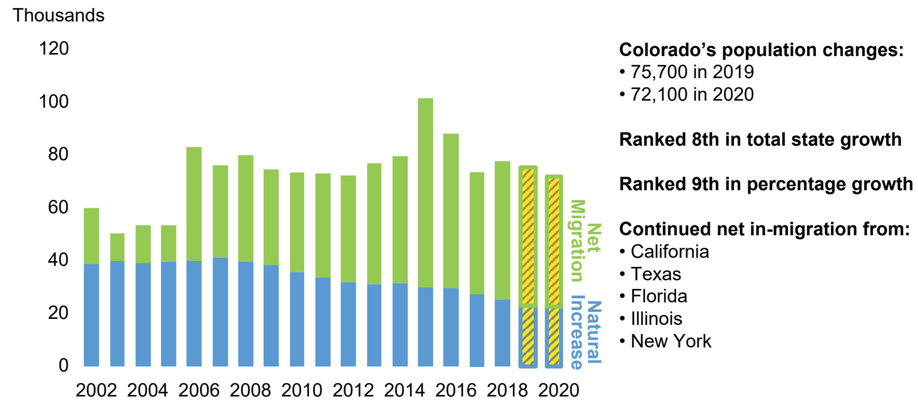
Financial Activities—Colorado's Financial Activities Sector is expected to grow for the eighth-consecutive year in 2020, adding 1,700 jobs to reach total employment of 174,700. Capital markets in 2019 have been characterized by uncertainty surrounding trade and monetary policy. Commercial real estate remains healthy, and residential real estate activity is likely to soften in 2020.

Professional and Business Services—The Professional and Business Services (PBS) Sector primarily provides services to other businesses (i.e., business-to-business). The sector is projected to post employment growth of 3.7% in 2019 and 2.6% in 2020,



Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committees.

COLORADO CHANGE IN POPULATION



Sources: Colorado Demography Office and the U.S. Census Bureau.

fueled by Colorado's skilled workforce, and driven by population and business growth, notably in tech.

Education and Health Services—The majority of sector employment is made up of health care professionals, representing 88% of industry employment. Increased access to health insurance and a growing, aging population will continue to lead to more health care jobs in the state. Private education and health care services are expected to continue their trend of modest growth, adding 6,500 and 5,600 jobs in 2019 and 2020, respectively.

Leisure and Hospitality—Cautious optimism prevails in tourism-related employment, which is expected to grow for the 11th-consecutive year in 2020. The state and the Denver Metro region continue to post record tourism numbers, and Colorado's ski industry maintains the greatest U.S. market share for snowsports visits. Momentum in Colorado's tourism industry is anticipated to slow through 2019 and 2020, with forecasted employment increases of 3,800 jobs and 3,400 jobs, respectively.

Government—Government employment within Colorado is expected to increase 1.2% in 2020, with gains in state and federal government. Federal employment will experience a temporary spike in 2020 in order to conduct the decennial census. At all levels of government, employee retention and hiring is suffering from stricter salary schedules and a tight labor market.

International Trade—Colorado exports declined 4.6% in 2019 year-to-date through September, but export growth is lagging the nation. Looking ahead to 2020, trade agreement negotiations, tariffs, and the strong dollar all pose risks to Colorado exports.

National and International

• U.S. output will continue to slow in 2020, with real GDP growth at 1.8% in 2020 compared to an estimated 2.3% in 2019.

• Personal consumption expenditures will grow at a moderate pace, tempered by slower employment growth and easing consumer confidence.

• In 2019, the Federal Reserve cut rates three times; it is generally believed that rates will remain flat through 2020, though this could change. Inflation is expected to remain just below the Fed target rate.

• Trade policy (i.e., tariffs), a tight labor market, uncertainty, and the 2020 election year pose risks to growth.

Colorado

• Despite slower growth, Colorado will still be in the top 10 states in 2020 for employment growth; wages will increase above the national average.

• Employment growth is projected in 10 of the 11 industries in 2020.

• Given that Professional and Business Services includes upstream engineering, design, and research activities, the strength of this sector bodes well for the state economy.

• Population growth will slow modestly in 2020. The state will still add an estimated 72,100 people, with 49,400 coming from net in-migration according to the State Demography Office.

• Affordable housing, wages, and infrastructure continue to be a concern for employees and employers.

• Colorado's skilled, educated workforce is credited with fueling industry growth among the state's tech sectors. Colorado retains a competitive advantage for attracting, recruiting, and retaining people and businesses, placing the state in the top 10 for economic growth nationally.

For more information on each industry sector, visit colorado.edu/business/brd.

COLORADO RANKING AMONG OTHER STATES

Metric	1-Year	3-Year	5-Year	10-Year
Real GDP Growth	6	3	5	6
Employment Growth	11	8	7	5
Population Growth	8	7	5	3
Personal Income Growth	4	1	9	2
PCPI Growth	10	2	18	N/A
PCPI	11	15	13	N/A
Average Annual Pay % Growth	5	5	8	13
Average Annual Pay	9	11	13	11
Unemployment Rate	5	4	7	29
Labor Force % Growth	24	2	3	3
LFPR	4	2	9	11
FHFA Home Price Index Growth	16	5	2	2

Data Sources: Bureau of Economic Analysis (2018), Bureau of Labor Statistics (01/19), U.S. Census Bureau (2018), Bureau of Labor Statistics (2019), Federal Housing Finance Agency All Transactions Index (Q1 2019), BRD calculations. Note: 3-year, 5-year, and 10-year are based on the compound annual growth rate.

Forum Breakout Session

Colorado's Dynamic Commercial Real Estate Sector Remains Robust

Jacob Dubbert

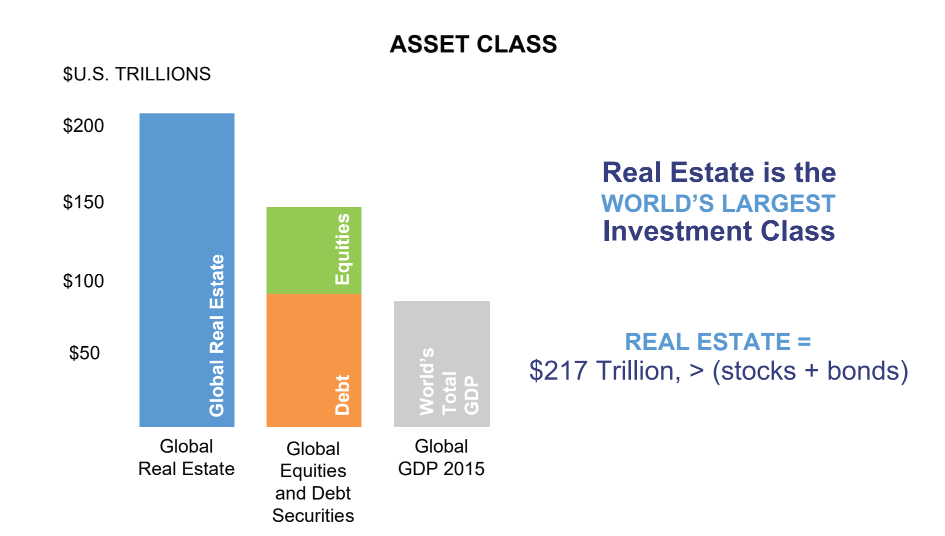
Real estate session panelists Katie Kruger, Denver Metro Commercial Association of REALTORS; Jamie Roupp, JLL; Ann Sperling, Trammell Crow Company; Dorit Fischer, NAI Shames Makovsky; and Michael Kercheval, CU Real Estate Center.

Opinions expressed by panelists reflect the most current market information available as of early December.

Real estate in Denver is characterized by various legacies and trends of the past and has exhibited constant change and progress over time. Being a major part of the everyday life of people, real estate evolves with shifting demographics, economic growth, and changing preferences. This dynamism influences the real estate market as investment follows these changing conditions in the market.

Michael Kercheval, director of the CU Real Estate Center, opened the panel discussing this interconnectedness and paved the way for a discussion exploring the risks, opportunities, and challenges in the commercial real estate sector in Colorado and the Denver metro area. Kercheval coordinated and co-moderated the forum breakout session with **Katie Kruger,** CEO of Denver Metro Commercial Association of REALTORS, and a panel of industry experts.

Real estate is the largest asset class in the world with over $200 trillion in value, according to Kercheval. It is also a major economic driver, with 15-20% of jobs being associated with real estate by some estimates, ranging from construction, property management, and asset management, to operations. The sector consists of real estate investment,



Source: Michael Kercheval, CU Real Estate Center.

which depends on investor demand and the supply of capital, and real estate as an asset, which depends on demand stemming from economic and population growth, and supply (which depends on land availability and cost, policy, materials cost, and labor costs). Kercheval stressed that it is very rare to have an equilibrium between the investment and asset markets of real estate, but they are interrelated at their core. Rents lead to values, values lead to pricing, and pricing leads to yields for investors.

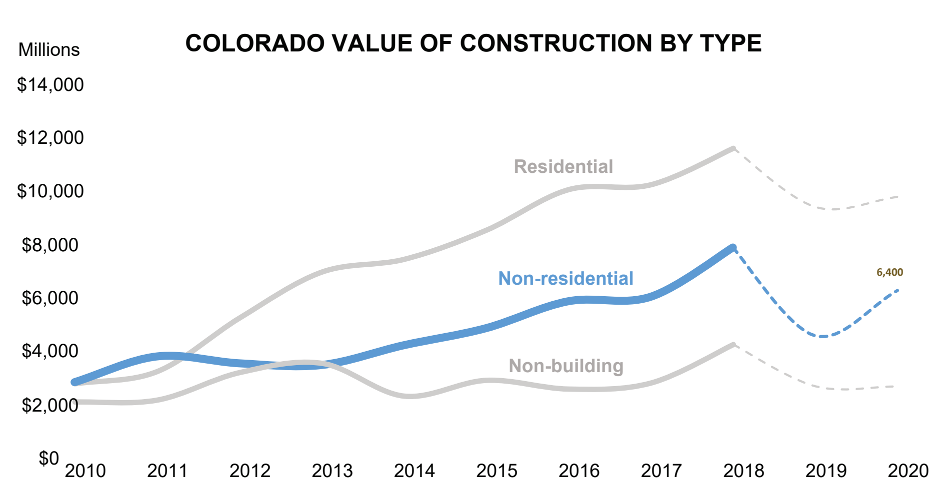
According to Kruger, the low unemployment rate, strong population growth, a highly educated population, and low tax rates make Colorado and attractive place for residents and businesses. The state has also done well in honing in on industries of the future, becoming an attractive place for the tech industry, an important location for distribution companies to establish their footprints as consumers' shopping preferences change, and a growing market for health and wellness establishments with the legalization of marijuana in the state.

Jamie Roupp, Managing Director at JLL, additionally highlighted the attractiveness of the Denver real estate market from an office perspective. Roupp explained that while most of the new development has occurred in the LoDo, Platt Street, and RiNo neighborhoods recently, growth is finally starting to expand outward to other areas. His institutional clients from out of state are coming to Denver, as the city is affordable relative to other gateway cities. However, Roupp explained that a key challenge for the city is maintaining this affordability while competing with other more affordable cities such as Dallas, Phoenix, and Salt Lake City.

Kruger presented a multitude of future real estate developments that exhibit how Denver's real estate markets are responding to the demand: the 16,000-acre real estate development around Denver International Airport (DIA) will bring industrial, retail, and office to the area; the National Western Center development, projected to open in 2022, is expected to attract 1.1 million new visitors to the state and 10,000 new jobs; and the redevelopment of the River Mile will add an additional 15 million square feet to the existing 63 million built square feet in downtown Denver, leading to more economic and job growth in the city.

Ann Sperling, Senior Director of the Trammell Crow Company, has been part of bringing this change to the Denver area. Driven by what is happening in local markets, the company focuses on office, industrial, retail, healthcare, and multifamily real estate. Over the last couple years, the company has won many awards and completed many projects, ranging from Crossroads Commerce Park, Riverview at 1700 Platte Street (BPX Energy headquarters), and the Amazon Robotics facility in Thornton. These projects have brought a wide range of businesses and many jobs, providing an example of the attractiveness of real estate in the Denver metro area.

From the perspective of investors, Denver has moved from a tertiary city to a primary city in only 15 years, according to Sperling. Institutional capital has been flowing into Denver in recent years, with 95% of the notable U.S. real estate investors either already investing in the city or looking to in the future. There



Sources: McGraw-Hill Construction Research and Analytics and the Colorado Business Economic Outlook Committee.

Real estate session panelist Katie Kruger, Denver Metro Commercial Association of REALTORS; and Jamie Roupp, JLL.

are large pricing differentials between the coastal real estate markets and Colorado's, making the state more affordable and creating an attractive place for investment. Sperling also noted that investors view Colorado's infrastructure as superior to others and are attracted to the state's tax-friendly policies. According to Sperling, the growth in assets in the office and industrial markets is expected to slow down, while multifamily will remain strong with capital still attracted to the city's demographics. **Dorit Fischer,** Broker with NAI Shames Makovsky, added that investors have been coming from out of state, feeling optimistic about the Denver market with its 5.4% vacancy rate and an absorption of 3,700 units in Q3 of this year. There were 24 multifamily sales in Q3 2019, and with sales currently at 55, total sales for 2019 are expected to be in line with the strong numbers last year. Despite what is often heard, Denver is not overbuilt, with rents increasing 4% this year and expected to continue, according to Fischer.

Fischer explained that state investment in major pieces of infrastructure has contributed to the boom and success of the real estate sector in Colorado, separating Denver from other cities. Moving Stapleton Airport has brought international businesses, and the transportation system has improved dramatically with more lines from RTD. Sun Valley, a future development funded by the largest grant the Denver Housing Authority has ever received, will develop 80 acres and spur massive investment in housing, retail, and jobs.

Sperling believes this infrastructure investment is sustainable going forward if we see the continued investment commitment seen during the previous cycles. There has been a unique collaboration between the city and private industry during this last expansion period, which have played a role in bringing large projects to the city, such as FasTracks from Union Station to Denver International Airport. According to Roupp, in-migration, the vibrancy of downtown, a great transportation network, and strong infrastructure have also led to the Denver metro area's success. He believes we are benefiting from the investments that have been made, but maintaining the important public-private partnerships is a necessity for future growth.

The Denver real estate market, despite its growth and success, faces many challenges and headwinds. Kruger explained that labor shortages, increasing material costs, rising land prices, and growth and rent control policy proposals could inhibit growth in the sector. The tight economy and labor market also pose a challenge, according to Roupp, as companies are holding off on making long-term hiring commitments because they are unsure of how many people they can, or will, hire. The real estate sector could also take a hit with 2020 being an election year, Sperling said, adding that "investors don't invest, sellers don't sell, and tenants don't lease during an election cycle."

The Colorado real estate sector wouldn't be immune to a future recession either. With investors' strong focus on land costs, construction costs, and rent, a recession would put pressure on all three, impacting the real estate market in many ways, according to Roupp. Land prices have increased substantially in the metro area, tenants are paying high rent to be in the city, and construction activity has slowed down, possibly creating an unattractive market for investors if rental rates become unachievable in the event of a downturn. Roupp believes that product classes with highly elastic rent, such as hotels, would be the most at risk. In addition, the panelists highlighted recent large increases in property taxes in the city, which get passed on to tenants, could become less affordable at some point and drive tenants out of the city. Sperling added that a lack of discipline on the supply side and on land prices could pose a problem in the event of a downturn.

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Forum Breakout Session

Credit Markets Make The World Go Around

James Donahue

Opinions expressed by panelists reflect the most current market information available as of early December.

During the 55th Annual Colorado Business Economic Outlook held in December, a panel of local leaders in the financial sector discussed their views on the capital markets. Moderated by **Ron New**, Managing Director at Worth Street LLC, the discussion centered around the ability of capital markets to provide the public with insights on the economy. Joining New were **Gregg Bell**, Partner and Co-Founder of A3 Financial Investments; **Lynn Paschen**, Senior Portfolio Manager at Charles Schwab Investment Management; and **Gibson Smith**, CIO and Founder of Smith Capital Investors. The panelists' backgrounds all focused on the world of credit, with New's background in the debt market, Bell's in structured credit, Paschen's in money markets, and Smith's in traditional corporate credit.

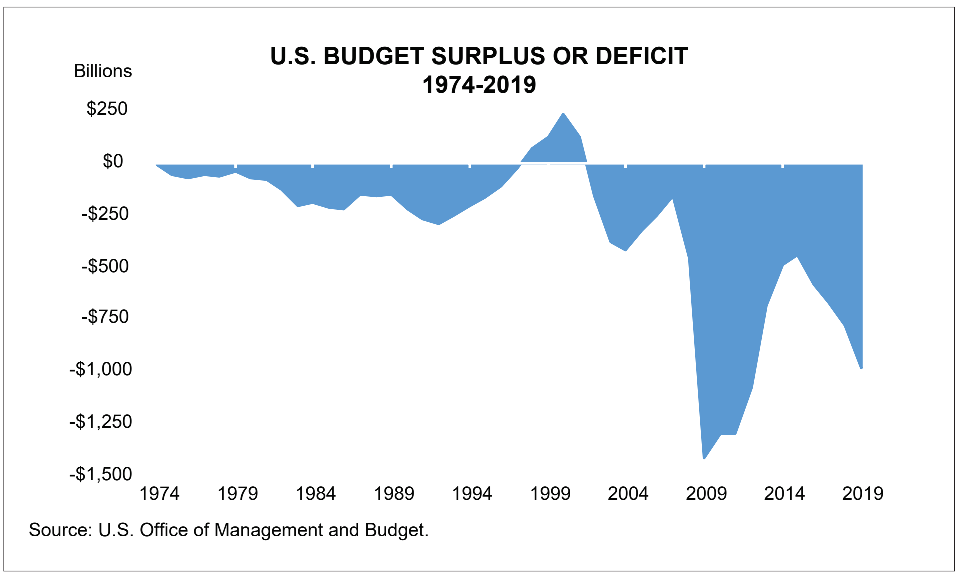
The panel opened with discussion of the importance of credit markets on the day-to-day lives of Americans. Bell asked the crowd, "Who here has popped the hood of their truck and looked at the engine in the last ninety days? Because that's really what we are doing here… credit is the engine of the economy." The credit market, which is over $100 trillion in size, ranges from basic consumer products (e.g. credit cards, student loans, and mortgages) to corporate products (e.g. loans, revolvers, and bonds). As such, most people in the world are impacted by the day-to-day fluctuations in the credit market despite only 8% of all Americans knowing what "fixed income" is, according to a report by BNY Mellon.

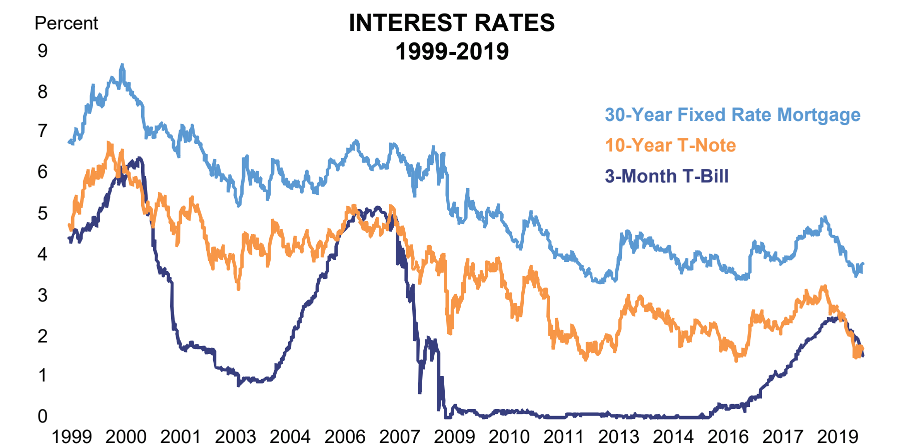
The conversation then shifted to monetary policy. With Paul Volcker's passing, the panelists discussed the former Chairman of the Federal Reserve's service during a challenging economic backdrop; Volcker's main task was wrangling extremely high inflation in the late 1970s and early 1980s. The panelists discussed Volcker's raising of the federal funds rate to over 20% in 1981. One of the benefits of Volcker's high-rate environment, in New's words, was more disciplined capital allocation: "[High borrowing rates] make the cost of capital very expensive, and I would

Attendees network at the 55th Annual Colorado Business Economic Outlook Forum.

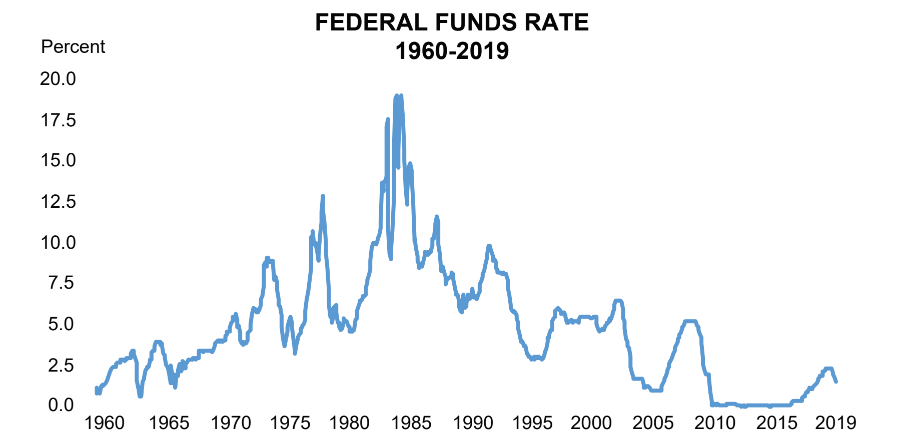
suggest that it brings a level of discipline to businesses because borrowing money is not cheap. You have to be more precise with how you manage things. And arguably, it raises the hurdle to have more sustainably profitable businesses as opposed to those that barely sustain themselves because they're able to borrow money very cheaply." The last decade of severely low rates has resulted in record levels of corporate debt, a stark contrast to the picture that New painted regarding the Volcker days.

Gone are the days of 20% rates, but not all rates are created equally. Paschen brought up the September spike in repurchase agreement rates that became





Sources: Board of Governors of the Federal Reserve System and Federal Reserve Board of Governors and Freddie Mac.



Source: Federal Reserve Bank of New York.

the subject of significant financial media coverage. A repurchase agreement, or repo, occurs when a borrowing party gets a loan, generally from a mutual fund, which it then pays back the following day. The lender, in this case a mutual fund, collateralizes this short-term exchange by holding an equivalent value in Treasury Bonds in the event that the transaction goes awry. This practice originally came about a century ago to aid the Federal Reserve in its short-term liquidity; however, investment banks have since implemented the use of repo as well. The repo market now channels more than $1 trillion in funds every single day. Paschen noted that the esoteric nature of the repo market leads to the topic being relatively underfollowed by the financial media. The last time repo rates became noteworthy news occurred during the financial crisis, when investment banks were practically unable to generate short-term liquidity by any means due to fears of their solvency. Paschen's diagnosis of the September issue was rooted in a technical headwind rather than a fundamental one: investment banks had ample treasury reserves to use as collateral for their short -term lending; however, mutual funds were unable to lend out cash with their typical ease due in large part to there being a tax payment deadline for many U.S. financial institutions on September 16, 2019, the eve of the rate spike. As such, the supply-demand imbalance caused repo rates to increase to 6% on September 17, 2019, despite the rates averaging 2.2% since early August.

Smith then went on to discuss the low interest rates seen in Europe and Japan and alluded to the existing $12 trillion of negative-yielding debt throughout the globe. For reference, when debt is negative-yielding, it means that a lender will receive less money than they provided to the borrower upon repayment of principal. Smith attributed the phenomenon to the regulatory environment, specifically in Europe where the practice of quantitative easing has become commonplace. Smith did mention his view that the overall market was highly complacent in the existing low-yield environment, making a correction plausible. According to Smith, "A small change in the regulatory environment will lead to a quick correction in the negative yields that exist in Europe. If we change the collateral requirements and the capitalization of banks, then we could see negative rates reverse quite quickly." Negative interest rates are tremendously damaging to risk-averse investors, namely pension funds, who hope to park their cash in safe vehicles that are now unable to generate any sort of positive return.

New made note of challenges currently seen within the national economy; the United States is in the longest-recorded economic expansion in history yet logged a trillion dollar budget deficit in 2018. Moreover, the low interest rate environment has penalized those who save while rewarding those who, in New's words, subscribe to "a culture of extreme risk taking." The massive disparity between gains seen in the equity markets and those seen in traditional savings accounts has arguably contributed to income inequality over the last decade. The panel ended on a more optimistic note, with Smith stating that the capital structure of large financial institutions is the best it has been in decades.

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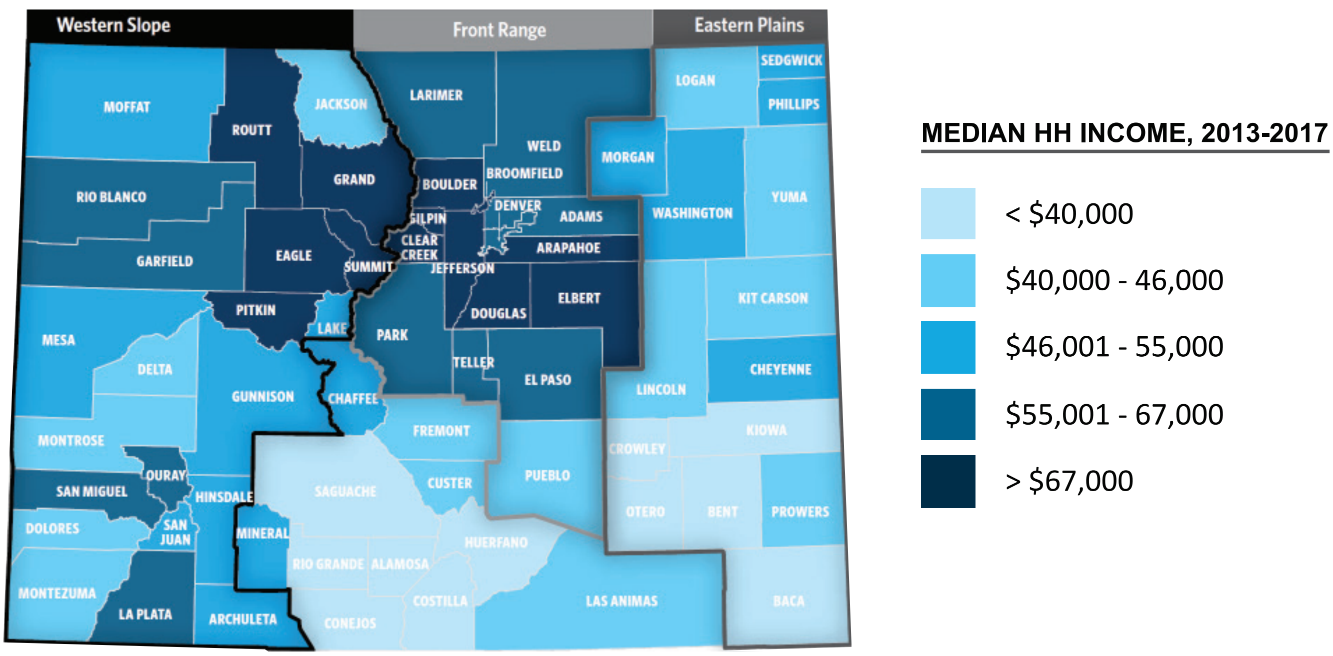
Forum Breakout Session

A Colorado Study of the Middle Class

Chad Fredrick

INCOME VARIANCE



Source: Colorado Department of Local Affairs, "Median Household Income," January 22, 2019, https://storage.googleapis.com/maps-static/MedianHouseholdIncome.pdf.

Every election cycle, candidates from both parties spend millions of dollars on advertising, meet with thousands of citizens, and participate in debates broadcasted to millions of voters, all claiming that they are the best candidate for the middle class. The concept of the middle class is fundamentally American, rooted in the opportunities for social mobility on which the United States was founded. In this panel, moderated by **Richard Wobbekind**, Executive Director for the Leeds School of Business Business Research Division (BRD), **Scott Wasserman** with the Bell Policy Center and **Salman Ahmed** with the Carnegie Endowment for International Peace, analyzed the middle class using complementary perspectives. Wasserman defined the middle class in terms of income and expenses, while Ahmed focused on the impact of U.S. foreign policy on the middle class.

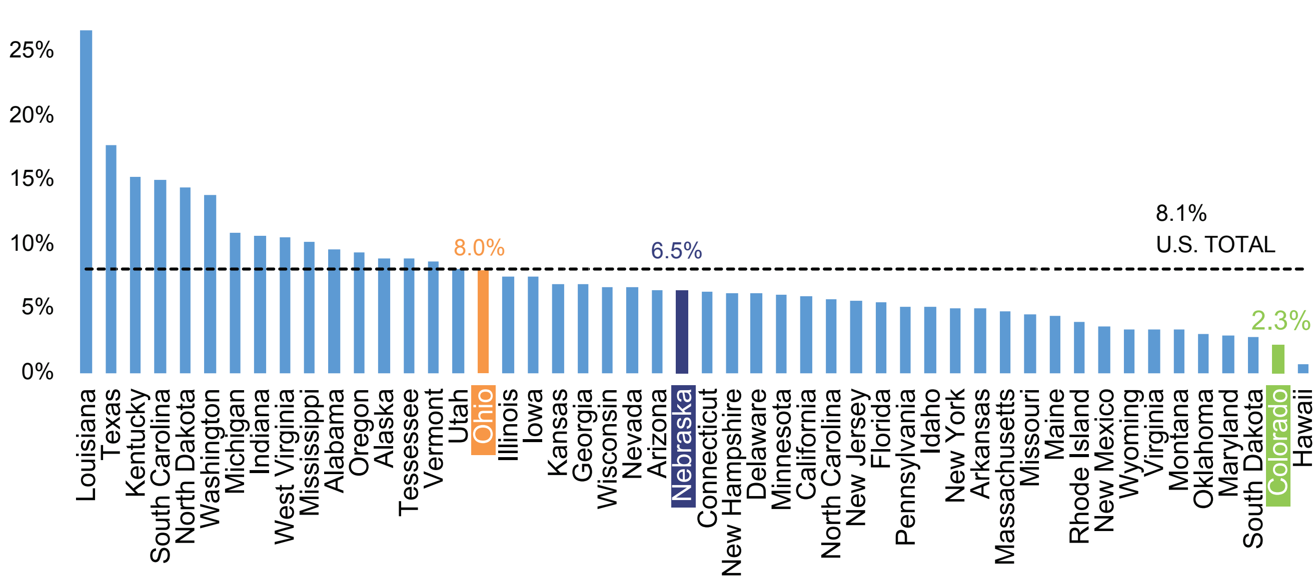
Often, perceptions of the middle class are at odds with definitions of the term, as the day-to-day lives of middle-class Americans vary widely. During his presentation, Scott Wasserman focused on defining the middle class in terms of income. Wasserman is the President of the Bell Policy Center, an organization which researches and builds legislation focused on advancing economic mobility in Colorado. Wasserman referenced the Self Sufficiency Standard, a measurement coined by the Colorado Center on Law & Policy, defined as the level of income required to support oneself without any public support.

Bell's income-based definition placed nearly half of Colorado families in the middle class, earning $81,045 to $210,910 per year, roughly 20% more than the previous research. Wasserman noted that audiences are often surprised to learn how high this income range is, as it excludes professions which historically have been thought to be middle class, such as teachers and many blue-collar workers. Bell concluded that two earners are essential to afford an aspirational middle-class lifestyle. Similar to the findings from the Carnegie Endowment, they found that the primary hurdle that families must overcome to enter the middle class are housing, childcare, and higher education.

In Colorado, the top 1% of wealthiest residents earn a minimum of $410,716 and an average of $1,101,214 in income each year. The average income of the remaining 99% is $54,809. From 2004 to 2016, the percent of Colorado workers employed in jobs paying below the federal poverty line was 13% and grew to 22%. In fact, 27% of Coloradans live below the self-sufficiency standard.

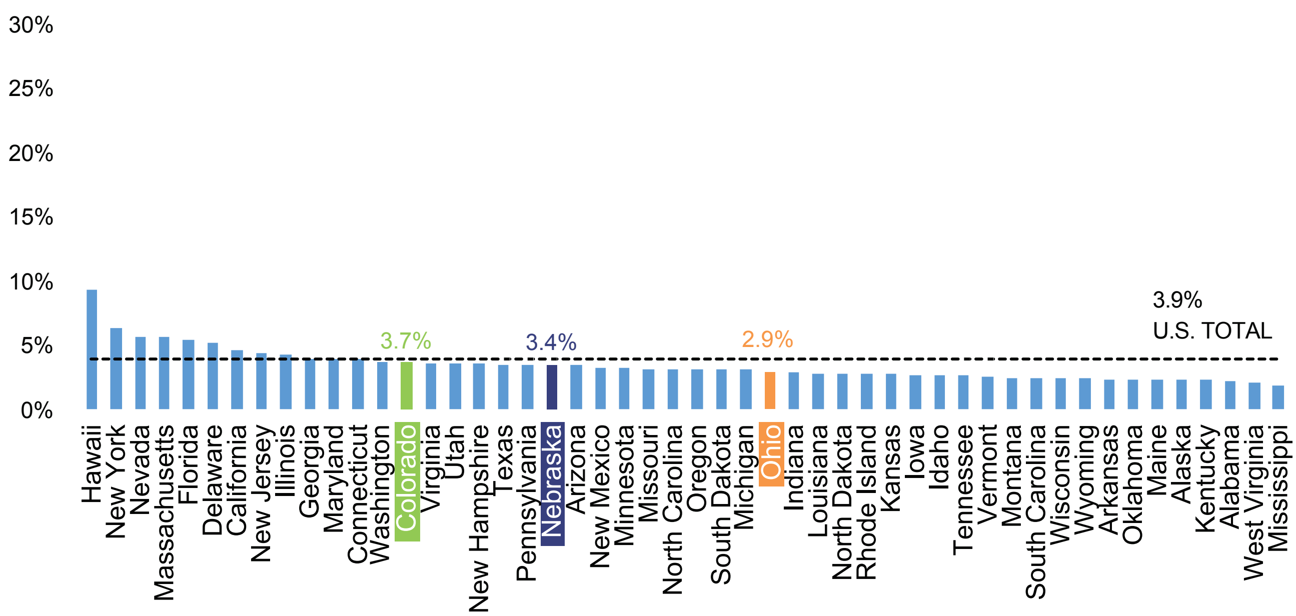
Wasserman follows this series of discomforting facts with optimism that solutions exist to making a middle-class lifestyle attainable. He recommends that policymakers recognize Colorado's paradox of leading the nation in many economic metrics, while the lives of residents are not improving at the same rate. He argues that it is impossible to recreate the economic situation during the post-World War II period, where the nation's competition abroad was

GOODS EXPORTS, 2018 (% OF GDP)



Sources: U.S. Census Bureau, USA Trade Online, data extracted May 10, 2019, https://usatrade.census.gov/and Bureau of Economic Analysis, "Regional Data: GDP by State, Current Dollars," 2018, data extracted;May 16, 2019, https://apps.bea.gov/iTable/iTable.cfm?isuri=1&reqid=70&step=1#isuri=1&reqid=70&step=1.

SERVICES EXPORTS, 2017 (% OF GDP)



Source: Nick Marchio and Joseph Parilla, "Export Monitor 2018," Brookings Institution, April 30, 2018.

Richard Wobbekind presents during the middle class breakout session.

erased and had to be rebuilt by American business with the Marshall Plan. The result was middle-class livelihoods for people who today, could never achieve the same social mobility. Additionally, political coalitions that set the U.S. up for thriving public investment in the New Deal era crumbled with the Civil Rights movement. The United States must adapt its view of the economy to ensure the success of the middle class in the future.

Salman Ahmed is a Senior Fellow with the Carnegie Endowment for International Peace, a foreign policy think tank centered in Washington, D.C. During his time in the nation's capital, Ahmed heard criticism from U.S. citizens on both the right and left that the country's position on foreign policy does not support the middle class. In an effort to understand Americans' beliefs on the middle class and how foreign policy affects them, Ahmed and his team launched a project to provide actionable solutions for federal policy makers.

Ahmed's team focused their research on three states, Colorado, Ohio and Nebraska, choosing each based on the contrasts in their citizens and economies to identify trends and patterns. His team chose Colorado due to its expansive and diverse economy which is a leader in national employment, income growth, and population growth. Ohio provided a stark contrast to Colorado, politically and economically, due to the ongoing effects of declines in Ohio's manufacturing sector. According to data from the Bureau of Labor Statistics, manufacturing total wages in Ohio have grown 15% from Q2 2014 to Q2 2019, compared to 23% in Colorado. Manufacturing employment in Ohio has grown 4%, compared to 10% in Colorado over the last 5 years, from June 2014 to June 2019. Nebraska represented a middle point between these two states, with economic data placing it similar to national averages for population growth, educational attainment, and manufacturing employment, with a population that is urbanizing.

Within these states, the Carnegie Endowment connected with universities to assist in understanding the states and conducting the research. In Colorado, Ahmed worked alongside Richard Wobbekind and Brian Lewandowski at the University of Colorado's Business Research Division due to their regional economic expertise and close relationships with local communities throughout the state. Together, they authored a report, *U.S. Foreign Policy for the Middle Class: Perspectives from Colorado* (https://carnegieendowment.org/files/USFP_Colorado_final_update.pdf).

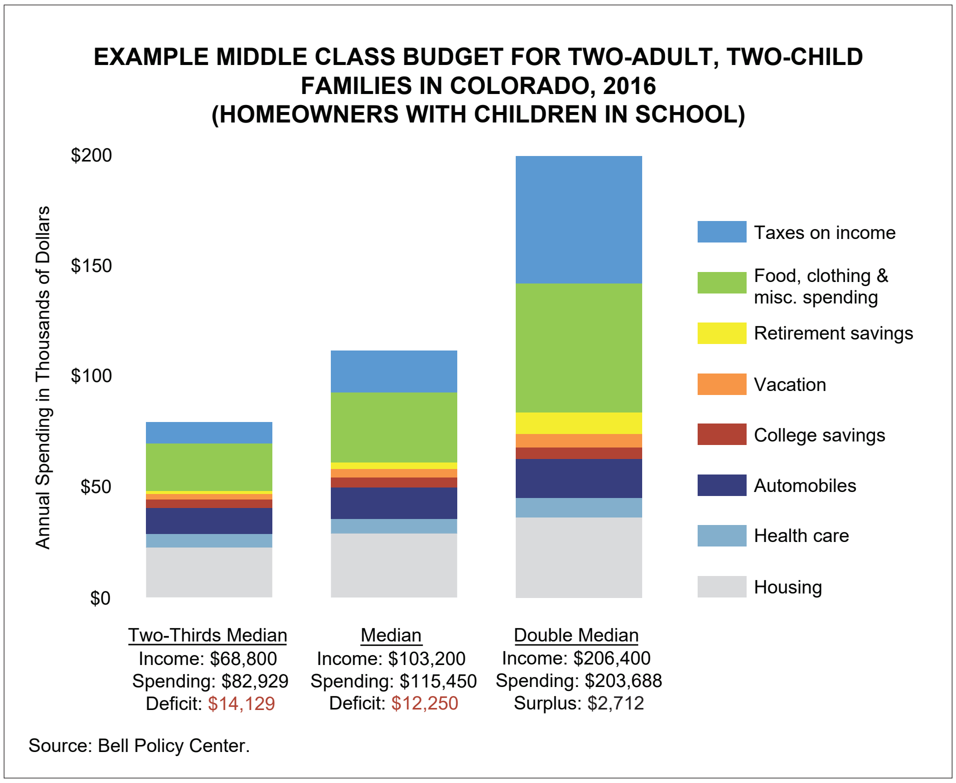
Quickly, Ahmed learned that to understand Colorado, one must understand the many different "Colorados" that exist, divided across educational, geographic, ethnic, and generational lines. Most of the economic growth in Colorado is concentrated along the Front Range, especially in the Denver, Boulder, Fort Collins, and Greeley metro areas. El Paso county has a large economy but is highly dependent on the federal defense spending each year. Boulder, on the other hand, is growing its services and technology industries.

In Colorado, the economy, having recovered from the Great Recession, is continuing to expand, yet the middle class is not feeling the benefits of the expansion equally throughout the state. Certain expenses have grown disproportionately faster than wages, including college, healthcare and housing, which have increased in costs by 85%, 70%, and 35%, respectively, since 2000. To compare, incomes for a family of four increased 24% between 2000 and 2016. Meanwhile, seven of Colorado's top ten occupations pay below middle-income wages, further increasing this divide.

Ahmed and the BRD traveled to ten of Colorado's 64 counties to conduct interviews with more than 125 individuals who are middle class, or employ members of the middle class. Based on these conversations, Ahmed and the research team were able to identify several trends among respondents, identifying Coloradans' most pressing issues as trade, defense spending, and climate change. Ahmed emphasized that most people measure the economy and their livelihoods based on the number of available jobs in the area.

Ahmed and the research team discovered that trade was mentioned by respondents most often. Across the nation, Americans agreed that in general, more trade is good. In Colorado specifically, respondents were surprised to learn that Colorado has the second lowest ratio of goods exports to GDP in the nation. Instead, half of Colorado's exports are services, ranking it higher in services exports to GDP.

Respondents' opinions on defense centered on the impact of federal spending on employment. In Colorado alone, there are an estimated 60,000



Department of Defense jobs, not including the population of veterans. Respondents in El Paso county, home to seven military bases, mentioned that diversifying the county's economy is vital, as citizens experience major economic shifts in a short period directly as a result of changes in the federal defense budget.

These shifts are not limited to those directly employed by the government, as they also include employment in manufacturing, construction, and research activities.

Finally, climate change was at the forefront of many respondents' minds. Coloradans have a unique interest in climate change, due to the outdoor and recreational culture of the state. Harm to the climate will have a significant impact on Colorado industries as a result. Colorado's extractive energy industries will face significant transformations in coming years as clean energy continues to become cheaper and more accessible. Outside of the natural resource industry, Xcel Energy has committed to their electricity generation becoming 100% carbon-free by 2050. In the Leisure and Hospitality sector, Colorado's 14 million skiers will certainly have to consider the effects of a warmer climate when planning their winter ski trips. Meanwhile, respondents in the state near higher concentrations of oil and gas production, such as Weld and La Plata counties, mentioned being positively impacted by the growth in oil and gas production. Outside of the industry, farmers receive royalties from oil rigs on their properties.

Audience inquiry took a deeper dive into the two panelists' presentations. A question about respondents' views on immigration led to Ahmed explaining that, economically, the response to immigration is positive, with business leaders decrying the need to import labor to fill jobs that Coloradans will not fill.

A question posed to Wasserman asked how Colorado's tax policy has responded to the needs of the middle class. Wasserman opines that Colorado has not raised enough revenue over the past several years during the economic expansion to fund publicly popular and necessary programs, including transportation and affordable higher education.

Both panelist's presentations centered on separating the myths from the truths about the middle class. With this goal in mind, both panelists are working to build a resurgence of America's middle class.

Chad Fredrick is a student research assistant with the BRD. He may be contacted at chad.fredrick@colorado.edu

Dean Sharon Matusik welcomes the audience at the 55th Colorado Business Economic Outlook Forum.

Cindy DiPersio (center) celebrates retirement with friends and colleagues in mid-December.

Cindy DiPersio, BRD Editor, Retiring

Richard Wobbekind

With mixed emotions I write to you about the retirement of one of our long-term Business Research Division (BRD) employees, Cindy DiPersio. Cindy has worked in BRD for the past 38 years. The last 31 of these years I have had the privilege of working directly with Cindy. We are extremely happy that she will be able to enjoy retirement in great mental and physical health, but sad to lose such an excellent colleague. Bring out the bucket list!

After visiting Colorado on vacation as a small child, Cindy announced to her parents that she wanted to live there. True to her word she moved to Colorado and joined the BRD shortly after graduating from college in Michigan.

Cindy has played an important role in our publications through the years. She is probably best known for her work on our annual Business Economic Outlook Forum. She worked on all facets of the outlook forum but is most well known for her work on the outlook booklet. Cindy has worked so diligently to ensure Leeds is putting out the best outlook book possible. It is a highly stressful project with a huge number of moving parts. At the end of the day we are on time, on budget, and have wide distribution both in print and online.

Cindy also edited this publication, the *Colorado Business Review,* our other quarterly releases, and all of our BRD project reports. In the past she has also edited for the Dean's office and has edited faculty research papers.

Those of you who have met Cindy know she is quite reserved and doesn't seek the limelight. For someone who is so reserved, Cindy is an incredible people person and develops deep, lasting relationships. Some of her closest friends are people who used to work at Leeds either as staff or as BRD interns.

Throughout her tenure, Cindy's professional and personal contributions to Leeds have been significant. While she will be missed and is leaving some big shoes to fill, we wish her nothing but the best on the next chapter of her life!

COLORADO BUSINESS REVIEW

Leeds School of Business
UNIVERSITY OF COLORADO **BOULDER**

The CBR is a quarterly publication of the Business Research Division at CU Boulder. Opinions and conclusions expressed in the CBR are those of the authors and are not endorsed by the BRD, the Leeds School of Business faculty, or the officials of CU.

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