The Statewide Economic Impact of the University of New Mexico

November 2023

THE UNIVERSITY OF NEW MEXICO

Acknowledgements

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Executive Summary

The University of New Mexico (UNM) is one of New Mexico's most valuable economic assets. Comprised of the Albuquerque main campus and Health Sciences Center (HSC), Sandoval Regional Medical Center (SRMC) in Rio Rancho, and branch campuses in Taos, Valencia County, Los Alamos, and Gallup, UNM enhances workforce productivity, attracts revenue and investment, and drives economic growth statewide.

UNM's quantifiable economic impact has four major components: university operations, student expenditures, alumni human capital, and technologic innovation and transfer. Together, these components accounted for 47,053 jobs, $1.9 billion in labor income, and $5.2 billion in economic output in 2022.

Operations

UNM's operational expenditures totaled $3.4 billion in academic year 2022. That year, UNM employed over 16,000 faculty and staff and paid roughly $2 billion in wages, salaries, and benefits. UNM's 2022 non-labor operational expenditures exceeded $1.4 billion.

Spending by UNM generates a net positive economic impact when funds originating outside the state are spent in New Mexico. Roughly half of UNM's operational spending meets both these criteria. As these monies are re-spent within the New Mexico economy by UNM's suppliers and employees, they stimulate additional economic activity resulting in further increases in employment, wages, and productivity. When these multiplier effects are accounted for, the total economic impact of UNM operations is 32,098 jobs, $1.8 billion in labor income, and $2.8 billion in economic output.

Student Spending

Over 23,000 full and part-time students attended UNM in 2022. Eighty-two percent of students enrolled during the 2022 academic year were New Mexico residents. Net spending (spending not otherwise counted as revenue to UNM) by the school's 4,204 non-resident students totaled $62.7 million, supporting 979 full and part-time jobs, $27.4 million in labor income, and $93.5 million in economic output.

Alumni Human Capital

As the state's flagship university and home to New Mexico's only school of law and public school of medicine, UNM provides state businesses and institutions with a highly skilled professional workforce and serves as the training ground for New Mexico's political, business, and community leaders. Over 114,800 UNM alumni currently reside in New Mexico. The education they obtained at UNM enhances their economic productivity and increases their earning capacity. In 2022, working-age UNM alumni who resided in New Mexico earned roughly $3 billion more than they would have had they not graduated from college. Approximately 34 percent of these funds were reinvested in the New Mexico economy as purchases from local businesses, institutions, and households, resulting in an induced economic impact of $2.2 billion in additional economic activity and 13,545 additional job-years.

Research, Innovation and Technology Transfer

UNM contributes to the innovation economy through basic and applied research, the translation of research into economically viable and socially relevant innovation, and support for the entrepreneurs who bring new technologies to market. Research universities like UNM power the innovation economy by fortifying the nation's knowledge workforce and by advancing technology. The University of New Mexico is among the nation's top research institutions and is the only university in the state to be classified 'R1' by the Carnegie Commission on Higher Education. This prestigious designation is reserved for U.S. doctoral universities with very highest levels of research activity.

UNM faculty, staff, and students conduct cutting-edge research across a spectrum of disciplines, attracting over $511 million in contract and grant funding in 2022. UNM's technology-transfer and economic-development organization, UNM Rainforest Innovations, fosters innovation and entrepreneurship by helping UNM researchers commercialize their inventions. In 2022, New Mexico based startups affiliated with UNM Rainforest Innovations employed roughly 274 New Mexicans, paid an estimated $21.6 million in wages and salaries and generated $39.1 million in total output. The additional economic activity stimulated by these new firms resulted in a total of 431 jobs, $29.4 million in labor income and $64.2 million in economic output.

This analysis captures UNM's quantifiable contribution to the New Mexico economy, but it is not a comprehensive inventory of the many ways UNM supports the states' economic growth and prosperity. Numerous entities throughout UNM help make New Mexico a great place to live, work, and do business through a vast array of initiatives including internships, community engagement, support for the disadvantaged and disenfranchised, civic engagement, and expanded access to arts and culture, to name just a few. Furthermore, education enhances human capital in ways that don't show up as higher earnings for individual graduates. Societal benefits of education include improvements in health, enhanced social cohesion, increased civic engagement, and lower crime rates, all of which are important but difficult to measure and monetize.

Introduction

The University of New Mexico (UNM) benefits the New Mexico economy in a variety of important ways. Comprised of the main campus and Health Sciences Center in Albuquerque, Sandoval Regional Medical Center in Rio Rancho, and branch campuses in Taos, Valencia County, Los Alamos, and Gallup, UNM enhances workforce productivity, improves quality of life, stimulates innovation, and drives economic growth statewide. This report quantifies, to the greatest extent possible, UNM's impact on the New Mexico economy in academic year 2022.

This report is an update of the 2020 Statewide Economic Impact of the University of New Mexico, which was released in August 2021. Neither this study nor its predecessor is directly comparable to earlier studies of UNM's economic impact conducted by the UNM Bureau of Business and Economic Research in 2004 and 2011 or to previous studies of New Mexico State University's economic impact. These studies, although similar, differ in a variety of ways, including the types of economic impacts estimated, the time period(s) assessed, the models and data sources used, and some underlying assumptions.

UNM Background

With over 16,000 faculty and staff and a $2 billion payroll, UNM is one of New Mexico's major employers.

Table 1   UNM Employment, all campuses, 2022*

	Staff	Faculty	Total
Main Campus	2,993	1,124	4,117
Health Sciences Center	2,594	1,298	3,892
Gallup Branch Campus	79	60	139
Los Alamos Branch Campus	40	14	54
Taos Branch Campus	93	30	123
Valencia Branch Campus	101	36	137
UNM Hospitals	6,424	n/a	6,424
Sandoval Regional Medical Center	602	n/a	602
UNM Medical Group	680	n/a	680
UNM Continuing Ed.	193	n/a	193
Total	**13,719**	**2,562**	**16,281**

*Includes temporary and part-time employees
Sources: UNM Office of Institutional Analytics, UNM Medical Group, and UNM Hospitals

Economic Impact

UNM's quantifiable economic impact has four major components: university operations, student expenditures, alumni productivity, and technology transfer. Together these components account for 47,053 jobs, $1.9 billion in annual labor income, and $5.2 billion in economic output. Each component of economic impact is addressed separately in the following sections. Each impact estimate employs a different methodology, although all rely, to some degree, on Input-Output (I-O) analysis utilizing the IMPLAN® modeling system. Specific data and methodologies are described in the individual sections.

Table 2   UNM Economic Impact Summary Results

	Employment (Job years)	Labor Income ($ millions)	Output ($ millions)
UNM Operations	32,098	$1,196.90	$2,831.3
Student Spending	979	$27.4	$93.5
Alumni Income	13,545	$616.9	$2,195.7
Technology Transfer	431	$29.4	$64.2
Total	**47,053**	**$1,871**	**$5,185**

I-O Modeling with IMPLAN®

The IMPLAN® modeling system was used to estimate the impact of UNM operations on the New Mexico economy. IMPLAN® is a widely used software package and database for estimating regional economic impacts[1] using input-output (I-O) analysis. I-O analysis is based on the premise that regional economies are composed of interconnected households, industries, and institutions. These sectors purchase output from each other and supply inputs to each other in a complex web of interdependencies. A significant change to one sector will therefore impact the many other sectors to which it is connected.

In an I-O model, the initial economic change is called the "direct" effect. As the initial change travels outward through the regional economy it produces "indirect" and "induced" effects. Multipliers represent the mathematical relationship between the initial change in one sector of the economy and the changes in employment, income, and productivity it catalyzes in other sectors.

Direct effects represent the initial change to the industry in question.

Indirect effects result when the industries that supply the industry in question respond to the change in demand.

Induced effects reflect changes in local spending that result from income changes in the directly and indirectly affected industry sectors.

In this report, economic impact is estimated using an export-base methodology wherein only expenditures funded with revenue originating outside the state are considered to have a net positive impact on the state economy. As such, state and local funding, including appropriations and contracts, are assumed to have a no *net* impact on the state economy because, if they did not go to the university, they would likely be spent elsewhere in New Mexico and generate similar benefits. Conversely, federal revenue is considered to originate entirely out-of-state.

In order to generate a positive net economic impact, UNM revenue derived from sources outside New Mexico must be spent inside New Mexico. UNM expenditures of federal and other out-of-state funds on employee compensation, locally produced goods and services, and construction therefore generate direct economic impact. Indirect impacts are the jobs and economic activity created by businesses in UNM's supply chain when they produce goods and services for UNM. Induced impacts result when employees of UNM and its suppliers use their wages and salaries to purchase goods and services in the regional economy.

The output of the IMPLAN® model is expressed in employment, labor income, and output. Employment includes all full-time, part-time, and temporary jobs created by or as a result of UNM. Employment is expressed in single years of employment or "job years." Labor income includes all forms of employment compensation including employee wages, salaries and benefits as well as income received by sole proprietors of small businesses. Output is a measure of total sales or receipts and can be interpreted, in this context, as net contributions to gross state product.

University Operations

In academic year 2022, UNM made over $3.4 billion in operational expenditures. As noted earlier, university operations have a net positive impact on the New Mexico economy when they are funded by revenue that originates outside the state. Roughly half of UNM's annual revenue, about $1.9 billion, comes from out-of-state sources including tuition and fees paid by non-residents, federal grants, and payments by Medicare, Medicaid, and other federal payors for clinical services provided by UNM Hospitals, SRMC, and UNM Medical Group.

Figure 1   UNM 2022 Revenue by Source
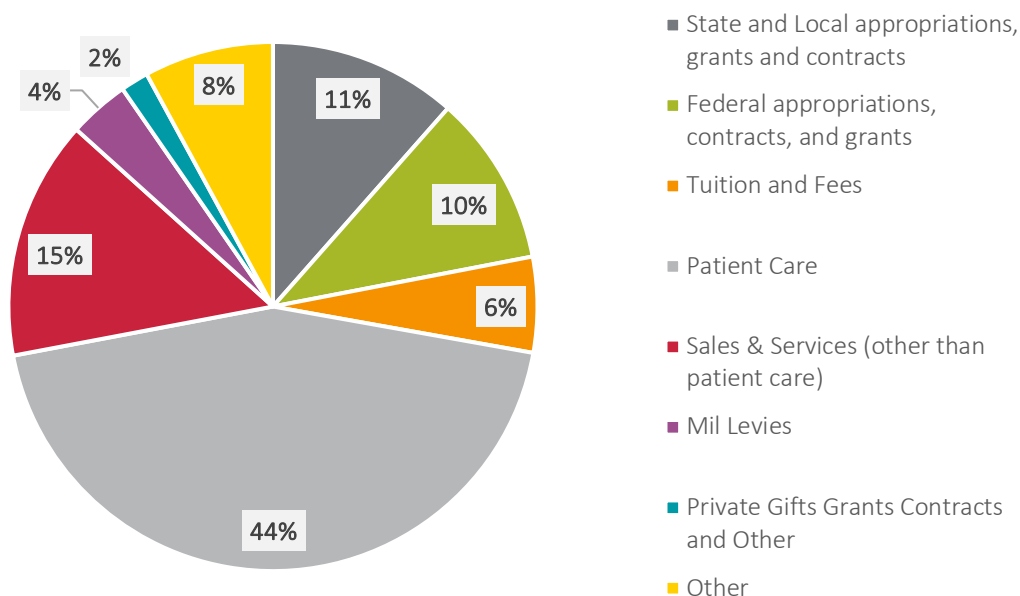
Source: University of New Mexico - Consolidated Total Operations Current Funds. Statements of Revenues, Expenses and Changes in Net Position for the twelve months ended June 30, 2022

1.1 Revenue

Clinical services provided by UNM Hospitals, Sandoval Regional Medical Center (SRMC) and UNM Medical Group made up the single largest share of UNM's revenue in 2022 (44%). Sales and services were the second largest component of UNM revenue.

Figure 1 shows 2022 UNM revenue by source. Payments from Medicare, Medicaid, the Indian Health Service, the Veterans Administration and other primarily federal sources made up 63 percent of net patient revenue from UNM Hospital, UNM Behavioral Health services, and SRMC and 50 percent of net patient revenue from UNM Medical Group. Thus, the majority UNM's clinical services revenue originates outside New Mexico.

 Tuition and fees, including scholarships and grants, constituted 5.8 percent of UNM's 2022 revenue. That year, 18 percent of UNM students were non-residents. Although non-resident tuition rates are considerably higher than in-state rates, a large percentage of non-residents pay in-state tuition, thus, the share of tuition and fees paid by non-residents was assumed to be proportional to their share of the overall student body.

Table 3 shows UNM operations revenue and the share of revenue derived from out-of-state sources. Overall, 48 percent of UNM's 2022 operating revenue was derived from sources outside New Mexico. When spent in New Mexico, this externally sourced revenue produces a positive net economic impact.

Table 3   UNM 2022 Operating Revenue ($ millions)

|	Revenue	Percent From Outside NM	External Source Revenue
Tuition & Fees	$212.10	17%	$36.06
State Appropriations	$349.20	10%	$34.92
Federal Grants & Contracts	$380.00	100%	$380.01
Clinical Services	$1,606.40	63%	$1,012.03
Mil Levies	$134.50	0%	$0.00
State & Local Grants & Contracts	$69.00	10%	$6.90
Private Gifts, Grants & Contracts	$62.00	86%	$53.32
Sales & Services (non-patient care)	$532.00	17%	$90.44
Other	$287.80	48%	$138.15
Total	**$3,633.00**	**48%**	**$1,751.83**

Note: Bond proceeds are not included in revenue.

Source: University of New Mexico - Consolidated Total Operations Current Funds. Statements of Revenues, Expenses and Changes in Net Position for the twelve months ended June 30, 2022

1.2 Expenditure

UNM's 2022 consolidated operational expenditures totaled over $3.4 billion. Employee compensation and benefits accounted for the majority of spending. In addition to educational services, UNM's expenditures support the provision of research and development services, student services such as the Student Health Center and recreational facilities, and auxiliary operations, such as bookstores, residence halls, and cafeterias.

Figure 2   2022 UNM Operations Spending
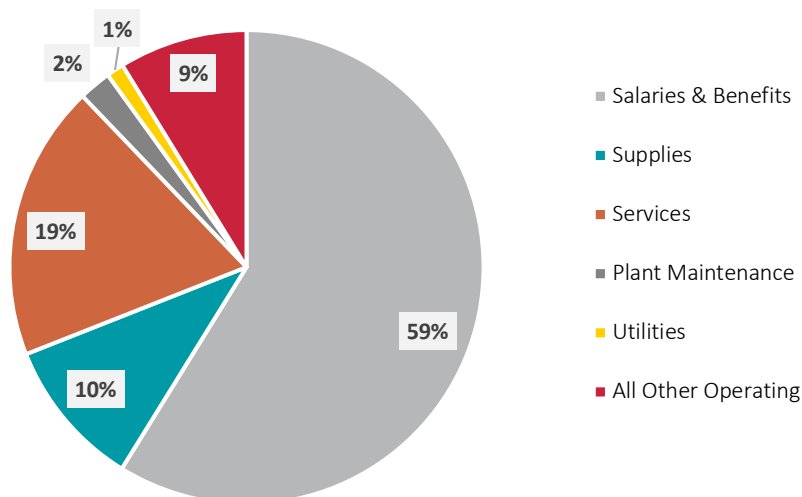
Source: University of New Mexico - Consolidated Total Operations Current Funds. Statements of Revenues, Expenses and Changes in Net Position for the twelve months ended June 30, 2022

Table 4 shows the spending used to calculate the economic impact of UNM operations displayed by functional expense category. 'Public Service,' which includes clinical operations,

accounts for over two-thirds of expenditures. Clinical operations include all the patient care activities of the HSC campus and off-campus facilities including UNM Hospitals, SRMC, and UNM Medical Group operations as well as medical residents training at UNM hospitals. Instruction and research are UNM's second and third largest expense categories respectively, each accounting for 7.4 percent of total expenditures in 2022.

Table 4	UNM 2022 Expenditures by Functional Expense Category ($ thousands)							
	Compensation	Supplies	Services	Plant Maintenance	Utilities	All Other Operating	Capital	Total
Instruction	$228,353	$5,018	$5,497	$1,462	$255	$12,748	$60	$253,393
Research	$130,163	$12,785	$17,858	$4,370	$794	$86,036	$386	$252,392
Public Service*	$1,231,109	$300,614	$561,876	$31,781	$1,108	$90,841	$62,622	$2,279,952
Academic Support	$40,255	$1,302	$3,789	$554	$1	$1,573	$256	$47,728
Student Services	$22,378	$907	$2,664	$276	$0	$4,209	$0	$30,434
Institutional Support	$54,498	$2,447	$6,680	$1,744	$1	$6,006	$15	$71,391
Plant	$71,820	$10,937	$17,563	$29,189	$34,155	$24,497	$5,140	$193,301
Student Aid	$6,653	$606	$470	$61	$3	$23,711	$34	$31,538
Student Activities	$4,938	$1,207	$711	$990	$136	$1,019	$0	$9,002
Intercollegiate Athletics	$12,705	$2,064	$3,621	$346	$618	$12,034	$0	$31,386
Auxiliary Enterprises	$13,047	$1,338	$3,917	$2,284	$2,119	$13,634	$0	$36,339
All Other	$145,124	$624	$2,910	$570	$247	$16,105	$0	$165,580
Total	$1,961,043	$339,847	$627,556	$73,626	$39,436	$292,413	$68,513	$3,402,434

*Includes clinical services
Source: UNM Financial Services

1.3 Methodology

The economic impact of UNM operations was measured by entering the share of UNM's 2022 spending that occurred in New Mexico and was funded by sources external to New Mexico into a model of the New Mexico economy and observing the effect those expenditures had on households, institutions, and other industrial sectors.

IMPLAN® was used to create the model of the New Mexico economy. In order to accurately capture the interplay between UNM expenditures and other components of the state economy, UNM's 2022 spending was distributed across the corresponding industrial sectors within the IMPLAN® model. This allocation process linked UNM's expenditures to the economic multipliers specific to each industrial activity.

1.4 Results

UNM's 2022 operational expenditures contributed $2.8 billion in net economic output and

supported 32,098 jobs providing over $1.2 billion in income to New Mexico workers and small business owners. Consistent with the export-base methodology described earlier, only expenditures made in New Mexico with funds originating outside New Mexico were counted in the estimation of UNM's economic impact. Employee compensation and construction spending were counted as 100 percent in-state, while payments for goods and services supplied by out-of-state vendors were excluded. Depreciation and debt service payments were also excluded from calculations of net economic impact.

Table 5   Economic Impact of University Operations, 2022 ($ millions)

Impact Type	Employment	Labor Income	Output
Direct	26,180	$921.12	$1,759.62
Indirect	1,999	$87.32	$420.26
Induced	3,919	$188.46	$651.39
Total Impact	**32,098**	**$1,196.90**	**$2,831.27**

Student Expenditures

Over 23,000 full-time and part-time students attended UNM in Spring 2022. Eighty-two percent of students enrolled during the 2021-2022 school year were New Mexico residents. Net spending by the university's 4,204 international and out-of-state students totaled $62.7 million, supporting 979 full-and part-time jobs, $27.4 million in labor income, and $93.5 million in economic output.

2.1 Data

Students from outside New Mexico made up 18 percent of UNM's 2022 full-time student body. Spending by students who have temporarily moved to New Mexico to attend UNM has a positive impact on the New Mexico economy. Conversely, spending by students who lived in New Mexico prior to attending UNM is not counted toward net economic impact because it is assumed that in the absence of UNM those expenditures would still have been made in New Mexico.

Table 6 shows estimated annual expenditures by traditional, full-time UNM students. It is important to note that the values for tuition and fees assume no financial aid. Most UNM students have some form of financial aid and thus average actual expenditures for both tuition and fees for both resident and non-resident students are considerably lower than those presented in the table.

Table 6   2022 Estimated Average UNM Student Costs

Estimated Costs	Resident	Non-Resident
Tuition & Fees	$11,126	$34,045
Room & Board - Traditional	$10,350	$10,350
Books & Supplies	$1,330	$1,330
Transportation	$2,220	$2,220
Miscellaneous	$2,488	$2,488
Total	**$27,514**	**$50,433**

Full time
Source: UNM Office of Admissions. https://admissions.unm.edu/costs-financial-aid/index.html

2.2 Methodology

To estimate the economic impact of non-resident student expenditures, the number of out-of-state and international students was multiplied by an estimate of per capita student expenditures. To avoid double counting, tuition, fees and student spending at establishments owned or operated by the university such as the bookstore and residence halls were excluded from estimated student expenditures. Similarly, an estimate of income earned by non-resident students employed by UNM was also subtracted from non-resident student expenditures because these funds have already been counted in university operations spending. Student spending, net of tuition and fees, is assumed to average $16,388 annually, or $68.9 million for 4,204 international and out-of-state students. Subtracting 18 percent of UNM revenue from housing, food, and bookstores and 18 percent of salaries paid to UNM student employees yields $62.7 million in net non-resident student spending (**Table 7**).   This amount is distributed across the corresponding IMPLAN® industrial sectors. For retail purchases (books, supplies, some food, and "miscellaneous") only the retail margin (47%) is counted as an in-state expenditure.

Table 7   2022 Net UNM Non-Resident Student Spending ($million)

Housing	$21.79
Food	$17.83
Books & Supplies	$5.09
Transportation	$8.50
Miscellaneous	$9.52
Total	**$62.74**

Source: Author calculations and UNM Office of Admissions

2.3 Results

Model results are shown in **Table 8**. In 2022, spending by non-resident UNM students supported 979 full and part-time jobs, $27.4 million in labor income, and $93.5 million in economic output.

Table 8   Economic Impact of Student Expenditure ($ millions)

Impact Type	Employment	Labor Income	Output
Direct	748.7	$18.2	$62.7
Indirect	113.5	$4.6	$16.0
Induced	117	$4.7	$14.8
Total	**979**	**$27.4**	**$93.5**

Alumni Human Capital

Higher education is an investment in human capital. UNM graduates who stay in New Mexico contribute to the state economy through their enhanced workforce productivity. Increased labor productivity translates into higher earnings for UNM alumni and more productive capital translates into higher income for businesses that employ UNM alumni.

Despite the state's many attributes, New Mexico has difficulty attracting and retaining talent. In recent decades, population growth has stalled and the state has experienced net out-migration of young adults. Reversing the "brain drain" is critical to growing the state economy. Attending college in New Mexico increases the likelihood of settling in New Mexico after graduation.[2] UNM supports the state's long-term economic health by providing high-achieving New Mexico students access to high-quality, affordable higher education without leaving New Mexico.

There is a strong and well-documented relationship between higher levels of educational attainment and higher earnings.[3] Studies have also shown that that the impact of a college education on earnings is roughly equivalent to the differential in earnings between college-educated and high school-educated workers.[4]

Higher-incomes also enable college graduates to purchase more goods and services than their less-educated peers.[5] When those goods and services are produced locally, the additional spending has a positive impact on the local economy. Because income is positively correlated with educational attainment, the local economic impact of the increased human capital attributable to a UNM education can be measured by comparing spending on locally produced goods and services by college-educated New Mexicans to spending on locally produced goods and services by New Mexico adults who graduated high school but did not attend college.

3.1 Data

UNM has over 200,000 living alumni. Fifty-eight percent, or about 114,800 alums, have a New Mexico home address.[6] The economic impact estimate presented here assumes a 40-year working life and thus considers only alumni who graduated in 1983 or later. Ninety percent (103,399) of the UNM alumni currently residing in New Mexico graduated between 1983 and 2022.

Table 9 shows average 2021 income by educational attainment for New Mexico workforce participants ages 25 through 64, as well as the difference between average income at each level of educational attainment; the average income of adults with just a high school diploma; and the present value of the income differential between high school and college graduates over a 40-year working life.

In 2021, a New Mexico worker with no education beyond a regular high school diploma had average income of $37,614. Bachelor's degree holders, in contrast, had average income of $65,799, a difference of $28,185 or 75 percent.[7] Over 40 years of employment, the increment to income resulting from a bachelor's degree would total $1.13 million and have a present value of $651,491.[8] The present value of the lifetime incremental income from a professional degree like an MD or JD is roughly $2.6 million (**Table 9**).

Table 9   Income by Educational Attainment, NM Labor Force Participants Ages 25 through 64, 2021

	Average Annual Income	Incremental Income from Additional Education	
		Income Differential	Present Value (40-Yr Career)
High school diploma or equiv.	$37,614	$0	$0
Some college, <1 year	$43,964	$6,349	$146,763
1+ years of college, no degree	$43,025	$5,410	$125,060
Associate's degree	$44,782	$7,167	$165,669
Bachelor's degree	$65,799	$28,185	$651,491
Master's degree	$78,275	$40,660	$939,857
Professional degree	$149,671	$112,057	$2.6 MM
Doctoral degree	$118,744	$81,130	$1.9 MM

Source: 2021 American Community Survey New Mexico Public Use Microdata and author calculations

Figure 3 shows UNM alumni with a 2023 New Mexico address by highest degree attained and graduation year.

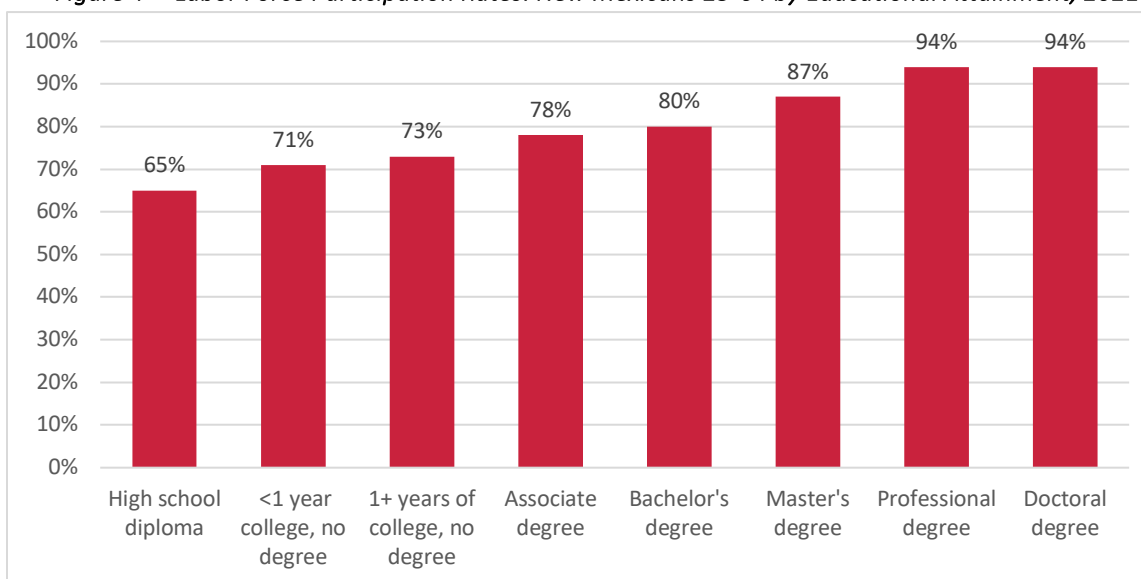*Figure 3   UNM Alumni Residing in New Mexico by Highest Degree and Year of Graduation*
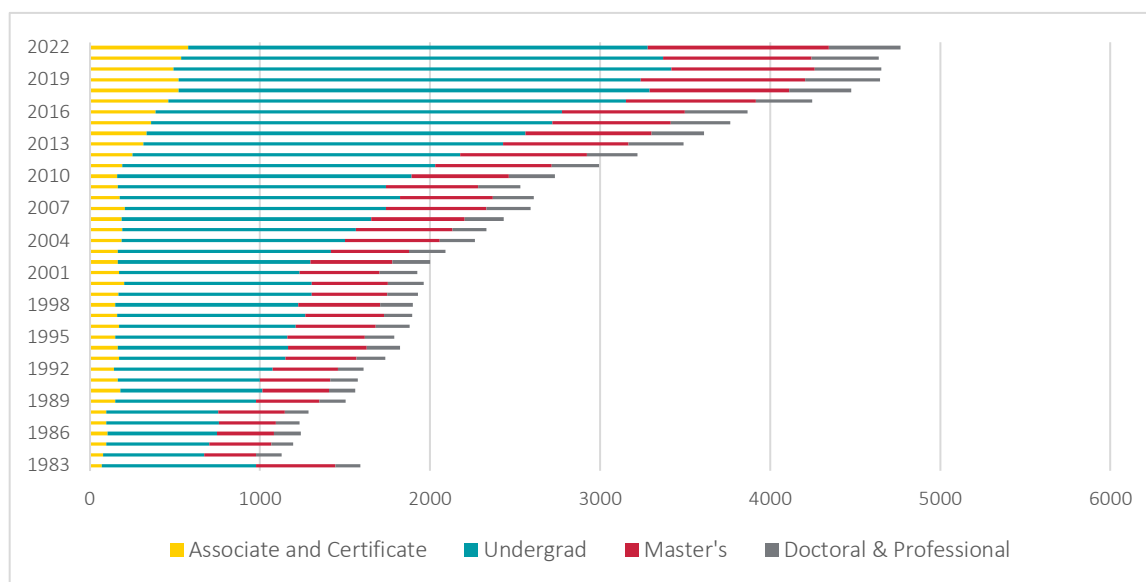
Source: UNM Foundation

College graduates are more likely than non-graduates to participate in the labor force.[9] **Figure 4** shows 2021 labor force participation rates for New Mexicans ages 25 through 64 by highest level of education. Eighty percent of working-age bachelor's degree holders are in the labor force compared to 65 percent of New Mexicans with a high school diploma or equivalent.

Figure 4   Labor Force Participation Rates: New Mexicans 25-64 by Educational Attainment, 2021

Source: U.S. Census 2021 1-Year American Community Survey

Each year, UNM alumni residing in New Mexico earn roughly $3 billion more than they would with just a high school diploma (**Table 10**).

Table 10   NM Residents Awarded a UNM Degree 1983-2022: Income Increase from UNM Education

Highest degree attained	UNM Alumni	Alumni Workforce Participation	Incremental to Annual Income from Education	Total Additional Annual Income
Associates & certificate	9,560	78%	$7,167	$53.4 MM
Undergraduate degree	61,058	80%	$28,185	$1.4 B
Master's degree	22,969	87%	$40,660	$812.5 MM
Professional degree	997	94%	$112,057	$105 MM
Doctoral degree	8,815	94%	$81,130	$672.3 MM
Total	**103,399**	**75%**		**$3.0 B**

Source: UNM Foundation, U.S. Census 2021 5-Year American Community Survey, and author calculations

Economists refer to the share of household income devoted to the purchase of goods and services as the "marginal propensity to consume" (MPC). The U.S. Bureau of Labor Statistics' Consumer Expenditure Survey (CES) collects data on the spending patterns of households in the U.S. Data from the CES can be parsed by household characteristics such as region, income, and education. CES data for households in the western U.S. were used to estimate the marginal propensity to consume for New Mexicans at different levels of income and education.[10] Because the present analysis is concerned with the share of consumption spending that remains in the New Mexico economy, the data were further parsed to identify the subset of purchases most likely to be made locally. For purposes of this analysis, the share of income devoted to consumption of locally produced goods and services is referred to as the "marginal propensity to consume - local" (MPC-L). To estimate the MPC-L, the goods and services included in the CES were categorized as "local" or "non-local." Housing, healthcare, utilities, personal services, property maintenance, and restaurant expenditures were assumed to be entirely local, whereas most goods, including food for consumption at home, clothing, vehicles, gasoline, medical

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equipment, and drugs, as well as some services, such as insurance, were assumed to be produced outside New Mexico.[11,12] These percentages were applied to the additional income, net of federal payroll taxes, attributable to higher education. Calculations and the resulting estimate of total in-state spending are presented in **Table 11**.

Additional spending by UNM graduates on locally produced goods and services totaled roughly $863.3 million in 2022. UNM alumni residing in New Mexico spent an additional $215.6 million on state and local taxes, which were recycled into the local economy through government expenditures on public services. The annual increment to in-state spending attributable to UNM degrees therefore totaled $1.08 billion in 2022.

Table 11   Additional Annual Local Spending by UNM Graduates by Highest Degree Earned ($ Millions)

| Highest Degree Attained	MPC-L	Additional Annual Local Spending	State & Local Taxes	Total NM Spending
Associates & certificate	43%	$19.5	$3.8	$23.3
Undergraduate degree	34%	$397.9	$98.3	$496.2
Master's degree	33%	$227.9	$58.0	$285.9
Professional degree	33%	$29.5	$7.5	$37.0
Doctoral degree	33%	$188.6	$48.0	$236.6
Total	**34%**	**$863.3**	**$215.6**	**$1,079**

Source: UNM Foundation, US Census American Community Survey, and author calculations

The skills UNM graduates bring to the labor force make New Mexico businesses more productive. The specific knowledge that alumni obtain through higher education enhance the performance of the businesses they work for. This effect is captured in the higher wages commanded by university graduates and the higher incomes of in-state business owners. Skilled labor also acts as a complement to improved technologies and other forms of non-labor business capital. Thus, employers of UNM alumni generate higher profits as a result of the increased productivity of their capital assets.

Figure 5 shows the sector of employment for the 11,956 members of the 2014-15 UNM graduating class who stayed in New Mexico. The health services sector employs the single largest share of UNM graduates, followed by education services, and professional services.

Figure 5   2014-15 UNM Graduates Working in New Mexico, by Sector of Employment
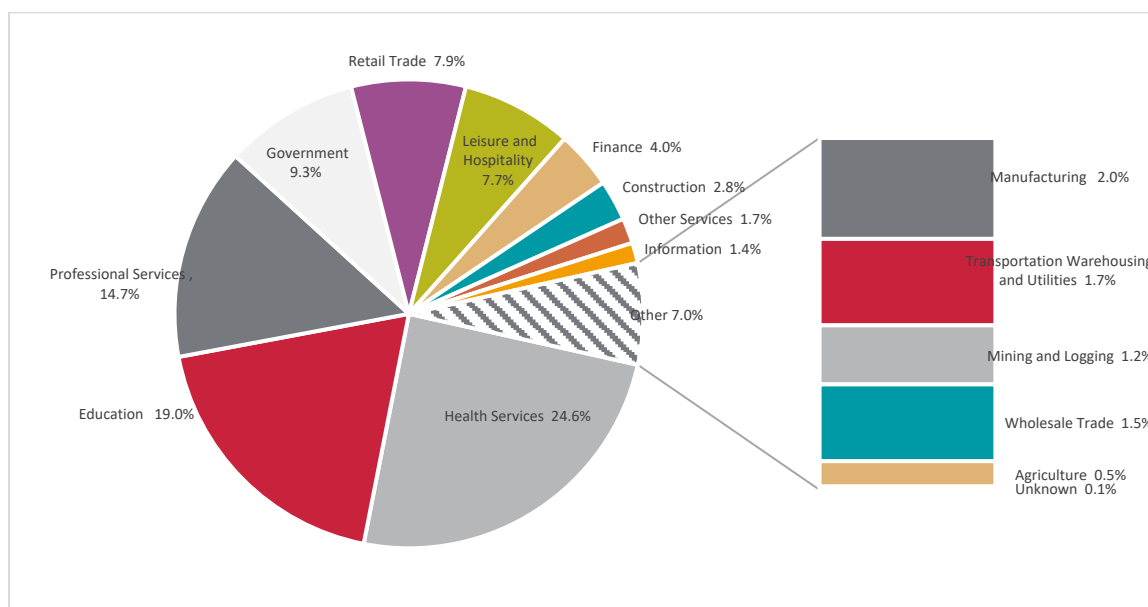
Source: UNM Office of Institutional Analytics

3.2 Methodology

A college degree increases lifetime earnings potential. The UNM alumni that live and work in New Mexico impact the state economy by spending approximately $863.3 million on locally produced goods and services. When UNM alumni use the additional money they have earned as a result of attending college to make purchases from New Mexico vendors they create induced economic impacts. To model these impacts in IMPLAN®, the additional income attributable to higher education was allocated to New Mexico households and the model was configured to assume that 34 percent of income was spent on locally produced goods and services and 8.4 percent was devoted to state and local taxes. Additional local spending by UNM alumni and the induced impacts generated by that spending are presented in **Table 12**.

Table 12   Economic Impact of UNM Alumni Human Capital ($ Millions)

Employment	Labor Income	Output
13,545	$616.9	$2,195.7

Research, Innovation and Entrepreneurship

UNM contributes to the innovation economy by conducting basic and applied research, translating research into economically viable and socially relevant innovation, and by supporting the entrepreneurs who bring new technologies to market.

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Research

Scientific research is the first step in the development of transformational technologies. Research spending is part of UNM's operational spending and thus its economic impact is already captured in the estimate of UNM's operational economic impact presented earlier in this report. However, because research is critical both to UNM's institutional mission and to the innovation that drives economic growth,[13] this section highlights the specific ways research contributes to UNM's economic impact.

Research universities like UNM power the innovation economy by fortifying the nation's knowledge workforce and by generating new technologies. The University of New Mexico is among the nation's top research institutions and is the only university in the state to be classified 'R1' by the Carnegie Commission on Higher Education. This prestigious designation is reserved for U.S. doctoral universities with very highest levels of research activity.[14]

Research on UNM's main and branch campuses is overseen by the Vice President for Research.[15] At the Health Sciences Center, research is overseen by the HSC Office of Research.[16] In academic year 2022, UNM main and branch campuses employed 326 active principal investigators across 808 externally funded research initiatives.[17] The UNM Health Sciences Center (HSC) is New Mexico's only academic medical center. In additional to delivery exceptional healthcare services, the HSC seeks to meet New Mexico's diverse and pressing health needs by conducting cutting

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UNM Health Sciences Center Research Centers, Institutes & Networks

Clinical & Translational Science Center
Comprehensive Cancer Center
Center for Infectious Disease and Immunity

Prevention Research Center
UNM Pediatric Clinical Trials
Spatio Temporal Modeling Center (STMC)

Signature Research Programs

Brain and Behavioral Health
Cardiovascular & Metabolic Disease
Infectious Diseases & Immunity
Child Health Research
Environmental Health Sciences

Other Centers, Institutes & Networks

Center on Aging
Center for Development & Disability
Center for Disaster Medicine
Center for Healthcare Equity in Kidney Disease (CHEK-D)
Facility for Advanced Cell Engineering (FACE)
Illuminating the Druggable Genome Knowledge Management Center
Institute for Ethics

Extramurally Funded Centers & Institutes

Brain Vascular Malformation Consortium
Center for Molecular Discovery
Diabetes Prevention & Outcomes Center
Fetal Alcohol Deficits Center
Interdisciplinary HPV Prevention Center

Center for Forensic Imaging
Center for Memory and Aging
Center for Native American Health
Institute for Resilience, Health and Justice

Source: https://hsc.unm.edu/research/centers-programs/

edge research. At any given time, the HSC manages over 300 clinical trials and 900 major research projects.

UNM Grand Challenges

President Garnett S. Stokes launched The University of New Mexico Grand Challenges initiative in 2018. The interdisciplinary initiative was designed to tackle the most critical challenges facing New Mexico. Already, Grand Challenges teams have achieved many of the program's goals, including greater cross-disciplinary collaborations, community engagement, and increased extramural funding. An initial investment by UNM of $2.1M leveraged over $50M in external research funding for programs directly connected to Grand Challenges. In 2022, the Grand Challenges program was re-imagined to more broadly engage faculty, researchers, staff, and students from across UNM; foster collaboration and team research; provide researchers with structured support and training; and continue building UNM's research capacity.[18]

> **UNM Main Campus Research Centers and Institutes**
>
> Bureau of Business and Economic Research (BBER)
> Center for Advanced Research Computing (CARC)
> Center on Alcohol, Substance Use, and Addictions (CASAA)
> Center for High Technology Materials (CHTM)
> Center for Micro Engineered Materials (CMEM)
> Established Program to Stimulate Competitive Research (EPSCoR)
> Geospatial and Population Studies (GPS)
> Land Grant Studies Program (LGSP)
> Southwest Hispanic Research Institute (SHRI)

In 2022, 10 new Grand Challenge teams were selected, each focusing on a different statewide imperative: STEM Education, Sustainable Space Research, Data Literacy, Child Health, Just Energy Transition, Housing Justice, Basic Needs, Indigenous Child Development, Mental Health, and Culturally Responsive Literacy. The teams, comprised of UNM faculty, staff, post-docs and graduate students, were selected through a competitive application process and represent all UNM campuses.
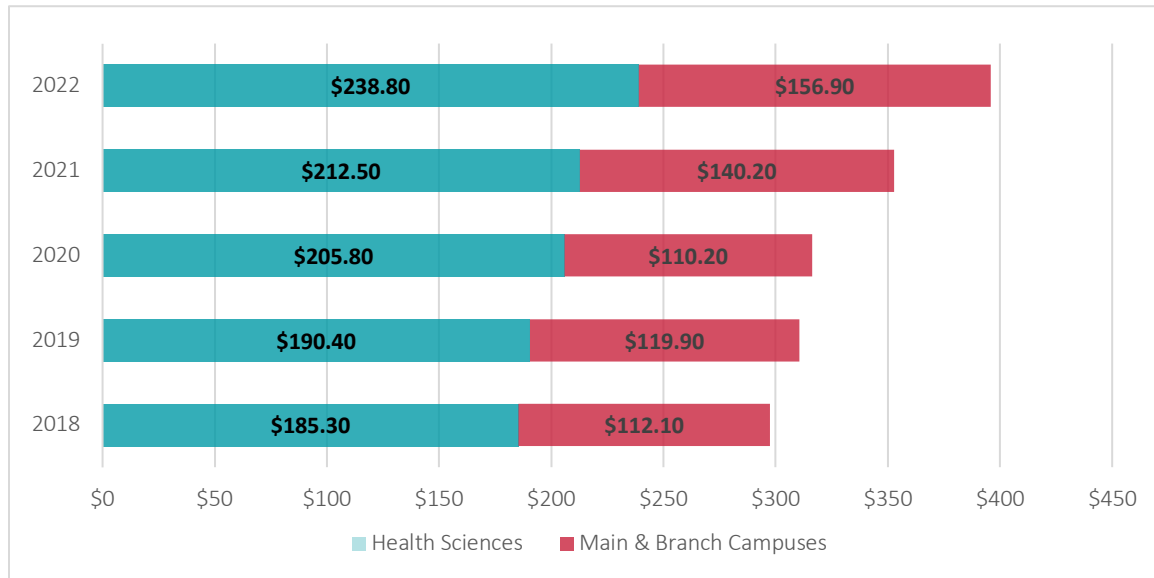
Figure 6   UNM Research Awards 2018 - 2022
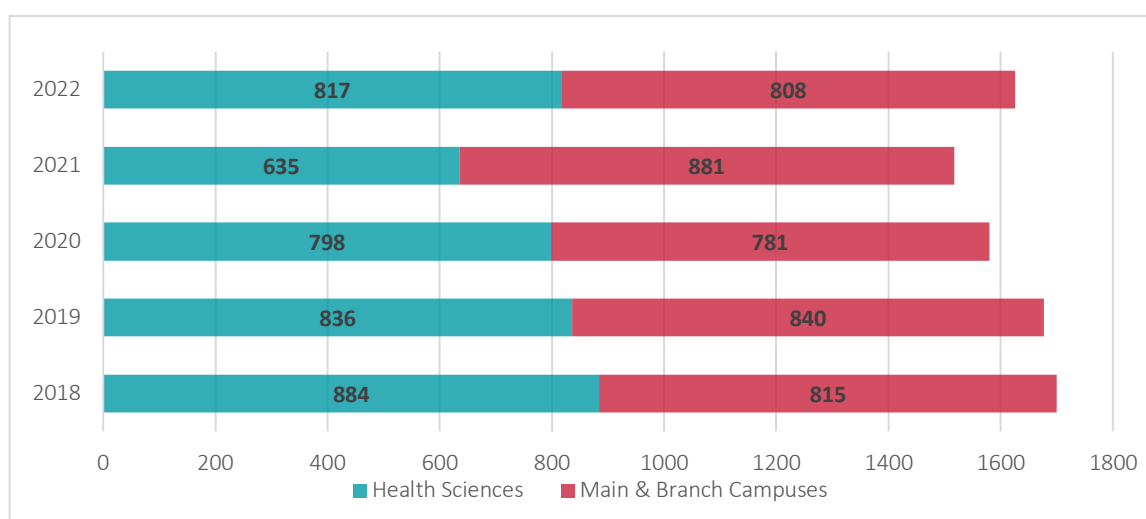
Source: UNM Office of the Vice President for Research

Figure 7 shows total award amounts. The 1,625 external funding awards received by UNM researchers in 2022 totaled $395.7 million.

Figure 7   UNM Research Award Amounts 2018 -2022 ($ Millions)

Source: UNM Office of the Vice President for Research

Two-thirds of funding for research originates outside New Mexico and thus generates a net increase in economic activity when it is spent in New Mexico and circulates through the New Mexico economy. **Figure 8** shows UNM research spending by academic discipline and funding source.

*Figure 8   UNM Research Spending by Funding Source, SY 2022*
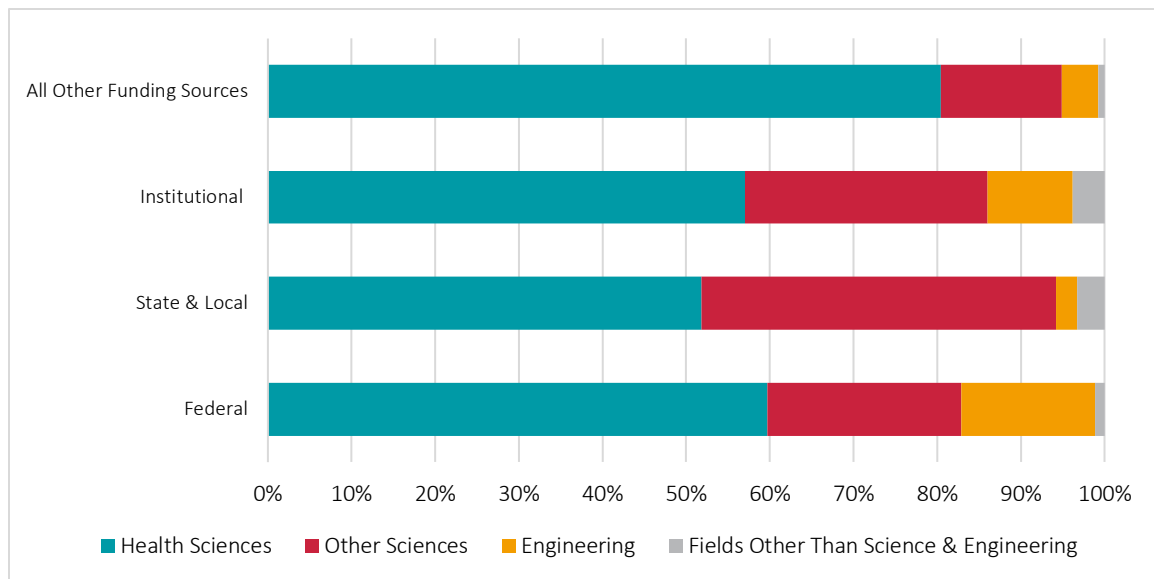
Source: UNM Office of the Vice President for Research

Research is also critical to UNM's academic mission. Learning how to conduct laboratory and field research is a key component of graduate and advanced undergraduate education in science and engineering fields. The research awards secured by UNM researchers provide important research and employment opportunities to graduate students and post-doctoral students.

Postdoctoral researchers (or "postdocs") are individuals who have received PhDs and are advancing their research skills and professional qualifications by conducting research under the guidance of more senior academic researchers at a host institution. Post-doctoral appointments are typically funded with resources external to the university. Postdocs are essential contributors to many UNM research initiatives. They contribute to the scholarly mission of the university by publishing and presenting their research in academic journals and at professional symposia. **Figure 9** shows UNM post-docs by field and year from 2012 through 2021.

Figure 9   UNM Post Doctorates in Science, Engineering, and Health Sciences
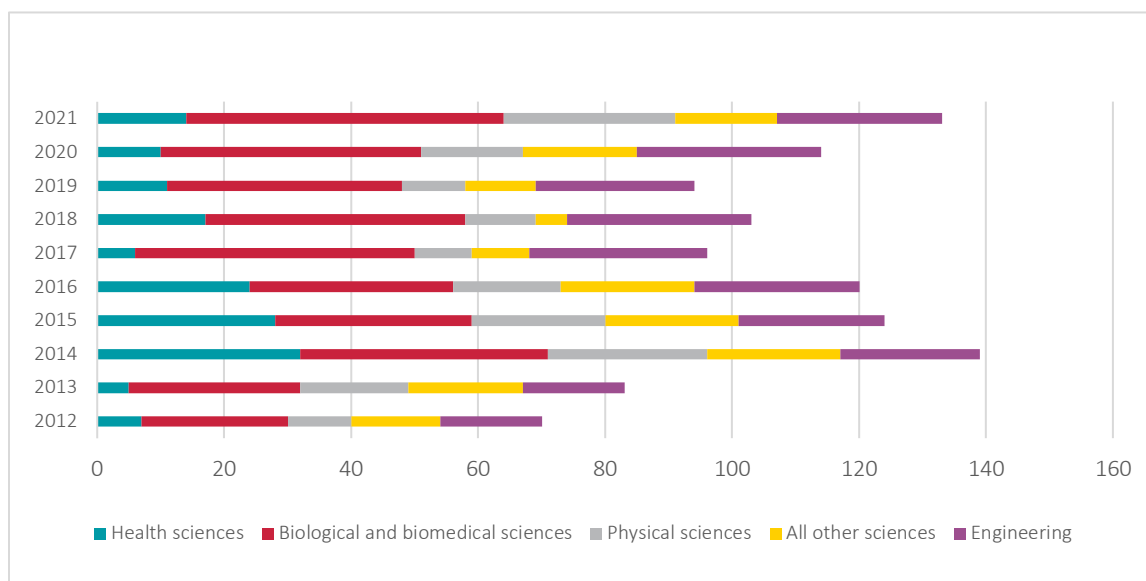
Source: National Center for Science and Engineering Statistics, Survey of Graduate Students and Post doctorates in Science and Engineering.

Innovation and Entrepreneurship

UNM fosters entrepreneurship and innovation in a wide variety of ways including courses, conferences, technical assistance, and support for business development. A full accounting of these activities is well beyond the scope of this report. Instead, this section describes some of UNM's more prominent business development programs and initiatives. These efforts strengthen

and diversify New Mexico's economy by launching new businesses, supporting existing businesses and/or by cultivating a robust innovation ecosystem.

Technology Transfer

Technology transfer is the movement of discoveries and knowledge from the research institutions where they originate to the commercial marketplace. University technology transfer offices license intellectual property developed by university researchers to companies that seek to develop and produce the technology for specific applications. Commercialization of technologies developed at UNM helps create jobs through new startups and product sales, and may give rise to new industries or industrial clusters.
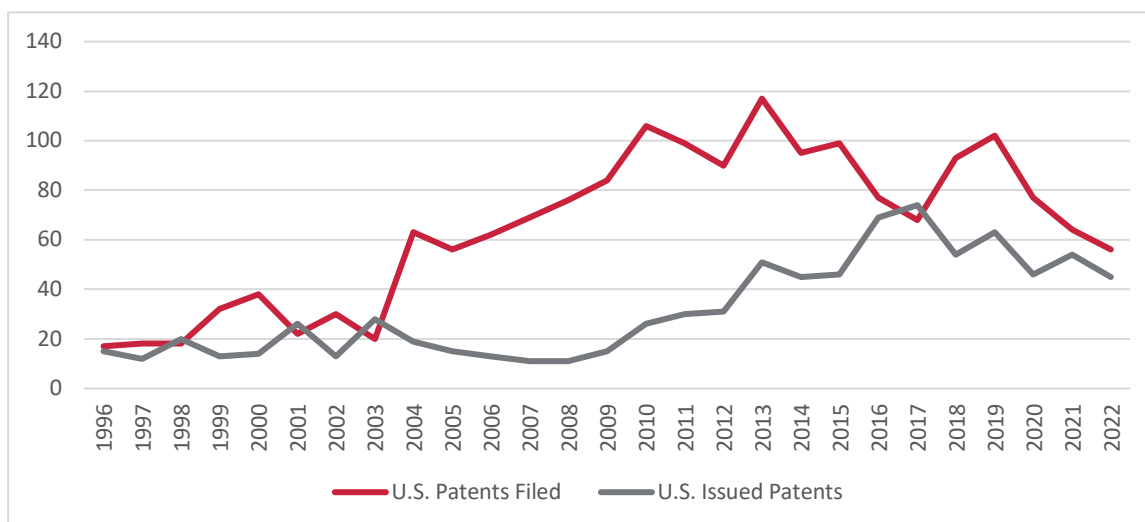
UNM Rainforest Innovations

UNM Rainforest Innovations is a nonprofit corporation formed to protect and commercialize technologies invented at UNM. UNM Rainforest Innovations files patents, identifies licensing opportunities and facilitates the formation of startup companies. As the technology transfer and economic development organization of New Mexico's flagship research university, Rainforest Innovations is a core component of New Mexico's innovation ecosystem and an economic driver of high-tech industry.

Key metrics for each step in the technology transfer process are depicted in **Table 13**. Disclosure of an invention to UNM Rainforest Innovations is the first step UNM inventors take toward commercialization. In 2022, UNM inventors disclosed 94 technologies to UNM Rainforest Innovations.

The protection of intellectual property rights encourages innovation and makes technology transfer possible. In this second crucial phase of technology transfer, Rainforest Innovations files patent applications and facilitates other forms of I.P. protection, such as copyright and trademark. In 2022, Rainforest Innovations filed 56 patent applications. That year, 45 patents were issued for UNM Rainforest technologies (**Table 13**).

Figure 10   UNM Rainforest Innovations Patents Filed and Issued 1997-2022

Source: UNM Rainforest Innovations

UNM Rainforest Innovations helps inventors market their technologies by preparing the necessary documentation, identifying potential customers, and advertising that the technology is available for licensing. UNM Rainforest Innovations entered into 47 option or licensing agreements in 2022 (**Table 13**).

*Table 13   UNM Rainforest Innovations Key Metrics 2007-2022*

Fiscal Year	Disclosures	U.S. Patents Filed	U.S. Issued Patents	Option/License Agreements	Startup Companies	Revenue
2022	94	56	45	41	8	$6,336,075
2021	81	64	54	43	6	$55,733,707
2020	127	77	46	47	4	$53,830,466
2019	125	102	63	53	11	$1,954,033
2018	107	93	54	52	11	$2,091,491
2017	114	68	74	58	12	$2,050,437
2016	102	77	69	54	12	$2,550,697
2015	125	99	46	50	9	$2,729,547
2014	119	95	45	56	9	$1,718,949
2013	138	117	51	63	9	$2,189,442
2012	124	90	31	46	7	$2,922,575
2011	110	99	30	36	5	$3,333,218
2010	122	106	26	36	5	$3,976,373
2009	113	84	15	38	8	$1,069,389
2008	112	76	11	21	6	$834,076
2007	85	69	11	25	8	$938,308

Source: UNM Rainforest Innovations

UNM Rainforest Innovations supports the formation of startup companies by connecting UNM inventors with entrepreneurs, venture capitalists, and other potential investors. The Joseph L. Cecchi Venture Lab (CVL), Rainforest Innovations' business incubator program, helps New Mexico startups with access to shared office facilities, business services, mentoring, advice, and support in locating specialized facilities and laboratories.[19] The CVL also collaborates with faculty inventors, entrepreneurs, and UNM business students to perform market research and advance business opportunities for technologies developed at UNM. UNM Rainforest Innovations currently has 92 active startup companies, 49 (53%) of which are located in New Mexico. UNM Rainforest Innovations supported the creation of 8 startups in 2022.

Figure 11   UNM Rainforest Innovations Startups 1997-2022
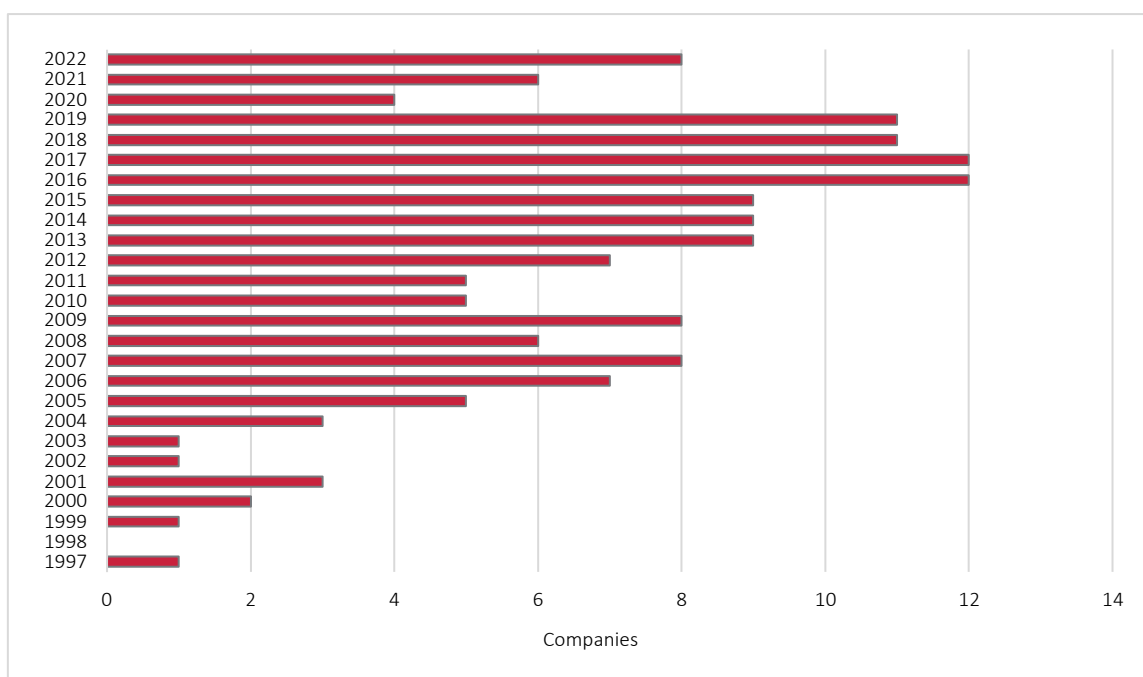
Source: UNM Rainforest Innovations.

In 2014, the UNM Bureau of Business and Economic Research (BBER) estimated that the 23 startups that were then affiliated with Rainforest Innovations and headquartered in New Mexico were responsible for creating 83 direct jobs, $3.5 million in sales, $5.9 million in labor income, and for drawing $17 million in venture capital funding into New Mexico.[20]

Between 2014 and 2023, the number of New Mexico-based startups affiliated with Rainforest Innovations increased by 113 percent, growing from 23 to 49. In June 2021 and July 2023, UNM Rainforest Innovations surveyed their New Mexico-based startups about their revenue, employment, and purchases from New Mexico vendors. The estimate of Rainforest Innovations' 2022 economic impact presented in **Table 14** draws upon responses to the 2021 and 2023 surveys, augmented by data from the 2014 BBER report. These data were combined and distributed across the IMPLAN® industrial sectors occupied by UNM Rainforest Innovations startups active in 2022. IMPLAN® model results indicate that in 2022 UNM Rainforest-affiliated startups created or stimulated the creation of 431 New Mexico jobs that paid $29.4 million in wages and salaries and generated $64.2 million in total output.

Table 14   Economic Impact of UNM Rainforest Innovations Startups ($ millions)

Impact Type	Employment	Labor Income	Output ($ millions)
Direct	274	$21.6	$39.1
Indirect	61	$3.2	$9.0
Induced	97	$4.6	$16.1
Total	**431**	**$29.4**	**$64.2**

Source: IMPLAN® and author calculations based on Rainforest Innovations survey and estimates from UNM Bureau of Business and Economic Research STC.UNM: The Impact of Startup Companies. June 2014.

Innovate ABQ

Innovate ABQ is a nonprofit, multi-institutional, public-private partnership managed by UNM Rainforest Innovations in partnership with Lobo Development Corporation.[21] Innovate ABQ was established to develop a 7-acre innovation district in downtown Albuquerque to foster economic development and job creation in New Mexico. The Lobo Rainforest Building, which houses UNM Rainforest Innovations, the Cecchi Venture Lab, Sandia National Laboratory's tech engagement office, and engineering firm General Atomics, is an initiative of Innovate ABQ. CNM's FUSE Makerspace, a facility providing affordable access to design, prototype, and manufacturing tools as well as a collaborative, creative working environment is adjacent to the Rainforest Building and is another Innovate ABQ partner.

Innovation Academy

The Innovation Academy (IA) brings students and other community members from diverse backgrounds together to develop new ideas and craft solutions to real-world problems. The Academy offers students interested in entrepreneurship opportunities for hands-on experiential learning through courses, trainings, and sponsored events such as the Rainforest Pitch Competition in which students pitch to a live audience in a bid to win seed funding for their proposed venture and the UNM Tech Navigator Challenge, which pairs student teams with mentors to create commercialization plans for existing technologies.

UNM was a National Science foundation (NSF) I-Corps™ site from 2017 through 2022 and is now a member of the I-Corps Hub West.[22] The I-Corps™ Hub West seeks to train innovation leaders and commercialize technology by helping academic entrepreneurs bring their technologies to market. UNM's I-Corps™ program, which is administered by the Innovation Academy and UNM Rainforest Innovations, uses experiential education to foster innovation among faculty and students, promote regional coordination and linkages within the innovation ecosystem, and develop a national innovation network. The program offers seed funding to teams consisting of an academic lead (typically a UNM faculty or staff member), an entrepreneurial lead (a UNM student or post-doc), and an external industry mentor provided by the I-Corps program, to explore commercialization and prototyping.

In the summer of 2021, the Innovation Academy became part of UNM's Anderson School of Management. Since Fall of 2021, the Innovation Academy has engaged with over 2,000 students across 88 different majors, more than 400 of whom have received academic credit for the work they have done to start a business. Participating students have also received $581,200 in seed funding from the Innovation Academy and $2.8 million from outside investors.[23]

Pitch Deck Competition

The Pitch Deck Competition is an early-stage pitch competition that brings together teams of university entrepreneurs from all over New Mexico. To participate, teams must be led by a student at a New Mexico college or university and have an early stage business model. Participants compete for cash prizes and are exposed to potential investors. Since 2019, pitch deck competitors have been awarded over $60,000 and received investments totaling more than $4.5 million.

New Mexico Rainforest EDA University Center

The New Mexico Rainforest EDA University Center (UC), a collaborative project of UNM Rainforest Innovations and Innovation Academy, focuses on supporting high-growth entrepreneurs and providing training and technical assistance to communities throughout New Mexico, with a special focus on the five communities that host the UNM main and branch campuses (Albuquerque, Taos, Los Alamos, Gallup, and Valencia County). The UC coordinates monthly seminars, provides mentorship, holds entrepreneur office hours, sponsors an entrepreneurial training and certificate program, offers courses such as the New Mexico Business Recovery Course, and coordinates the UNM Rainforest Forum which provides support to UNM on economic development matters.

Over 50 recorded seminars are available from the Rainforest EDA University Center. Since 2019, over 1000 unique clients statewide have participated in the UC program and 120 participants have received 8 or more hours of technical assistance.

Rainforest Accelerator

The Rainforest Accelerator helps teams of university inventors venture outside of their laboratories and into the marketplace where they can learn first-hand about entrepreneurship as they go through the market discovery process for their innovation. The program offers entrepreneurial training, mentoring and seed funding to selected UNM teams of faculty and students.

UNM Co-Investment Fund

The UNM Co-Investment Fund enables UNM Rainforest Innovations to co-invest with investment firms (such as angel groups and venture capital funds) in UNM startup companies. UNM Rainforest Innovations administers the Fund, which invests only in UNM startups. Investments must be matched 1:1 by a venture capital fund or an angel group. The Co-Investment Fund Committee reviews and approves requests for funding based on extensive criteria for business success. The fund has invested in 19 startup companies to date.

Tribal Entrepreneurship

The New Mexico Tribal Entrepreneurship Enhancement Program[24] builds off of the New Mexico Rainforest EDA University Center Program to expand entrepreneurial training in rural New Mexico, focusing in on tribal and coal-impacted communities throughout the state. It is funded by an $800,000 Economic Development Administration (EDA) American Rescue Plan Economic Adjustment Assistance grant.[25]

The New Mexico Tribal Entrepreneurship Enhancement Program aims to:

⇒ Expand opportunity, build wealth and drive job growth by supporting entrepreneurship in tribal communities throughout New Mexico, particularly those effected by recent coal mine closures.
⇒ Partner with tribal liaisons to provide entrepreneurial training to rural residents and link rural entrepreneurs to the resources available in New Mexico's urban areas.
⇒ Determine needs and reduce barriers to entrepreneurship within tribal communities.
⇒ Tell the story of the "Entrepreneur's Journey" through videos and podcasts featuring successful Native American entrepreneurs from New Mexico.
⇒ Spearhead "Entrepreneurial Connection" events to highlight tribal entrepreneurs and their companies and provide networking opportunities.

UNM Small Business Institute

The UNM Small Business Institute (SBI) is a mentorship program that pairs teams of students from UNM's Anderson School of Management with local businesses to guide strategic planning, financial analyses, and marketing research. More than 700 small businesses of all types have consulted with the SBI since the program's inception.

Study Limitations

This study has addressed four of the major ways in which UNM contributes to the New Mexico economy; but it is far from a comprehensive inventory of UNM's beneficial economic impacts. Some economic effects, both positive and negative, were excluded from the analysis due to a lack of data.

Tourism, for example, has a net positive impact on the New Mexico economy because it draws new money into the state. Attractions such as performances at Popejoy Hall, lectures, art exhibits, academic conferences, and athletic events help attract out-of-state visitors to New Mexico, as do annual events such as homecoming, graduation, and orientation. Unfortunately, this potentially significant source of economic stimulus is extremely difficult to quantify with the data currently available.

Similarly, the community service activities of numerous entities throughout UNM add tremendous value to the New Mexico economy. However, there is currently no centralized inventory of such activities at UNM. In addition, because "community service" encompasses a broad array of initiatives, activities, and partnerships, -- from adult literacy and community health to low cost legal clinics and civic engagement -- there is no uniform or consistent way to estimate its impact.

Furthermore, education enhances human capital in ways that may not directly manifest in higher earnings.[26] Education in general has been shown to benefit society by improving health

outcomes,[27] enhancing social cohesion, increasing civic engagement, and reducing crime.[28] Educated workers can also enhance the productivity of their less educated colleagues.[29] The omission of spillover benefits from enhanced human capital created by higher education reduces the estimate of economic impact.

This study also does not fully address counterfactual outcomes. In impact analysis, counterfactuals are what would have happened if the event being analyzed had not occurred.[30] By quantifying UNM's contribution to workforce productivity and the revenue it attracts from outside the state, this analysis has, in a broad sense, answered the question, "What would the New Mexico economy be like if UNM did not exist?" However, it does not fully dissect all the possible ramifications of UNM's absence. For example, it is reasonable to assume that if UNM did not exist, some of the UNM alumni currently living and working in New Mexico would have obtained a comparable education at another New Mexico university or would have temporarily left the state to obtain their degree(s). Adjusting for this counterfactual outcome would require not counting the incremental labor income generated by these alumni toward UNM's economic impact. With data currently available, there is no way to estimate the percentage of UNM students who would seek out comparable educational alternatives if UNM did not exist. Thus, this adjustment is not made.

A similar adjustment could be made on the opposite side of the ledger to account for the UNM tuition and fees currently paid by New Mexico residents, that, in the absence of UNM, would be lost to New Mexico because these students attended out-of-state schools.

Finally, results are not adjusted for the importation of skilled labor that would likely occur if UNM did not exist and was consequently unable to supply New Mexico employers with qualified workers. Faced with a deficit of skilled labor, New Mexico businesses would likely recruit some workers from outside the state. There are no statistics upon which to base an estimate of this effect.

Conclusion

UNM is one of New Mexico's most valuable economic assets. UNM's contribution to the New Mexico economy takes a variety of forms including direct expenditures on goods, services, and payroll, enhanced workforce productivity, and technology transfer. In all, the state's flagship university is responsible for roughly $5.2 billion in economic output and over 47,000 New Mexico jobs each year.

End Notes

[1]IMPLAN® model 2021 Data, using inputs provided by the user and IMPLAN Group LLC, IMPLAN System (data and software), 16905 Northcross Dr., Suite 120, Huntersville, NC 28078 www.IMPLAN.com.

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[3] Card, D. (1999). The Causal Effect of Education on Earnings. Handbook of Labor Economics. 3. 1801-1863. 10.1016/S1573-4463(99)03011-4.

[4] Rothwell, J. (2015) What colleges do for local economies: A direct measure based on consumption. November 17, 2015. Retrieved from: https://www.brookings.edu/research/what-colleges-do-for-local-economies-a-direct-measure-based-on-consumption/

[5] Rothwell, J. (2015)

[6] University of New Mexico Alumni Relations Office, June, 2023

[7] U.S. Census Bureau. American Community Survey 2021 5-yr New Mexico Public Use Micro-Sample

[8] Assumes a 3 percent annual discount rate.

[9] Brundage, V. (2017) Profile Of The Labor Force By Educational Attainment. U.S. Bureau of Labor Statistics. Retrieved from: https://www.bls.gov/spotlight/2017/educational-attainment-of-the-labor-force/pdf/educational-attainment-of-the-labor-force.pdf

[10] U.S. Bureau of Labor Statistics. Consumer Expenditure Survey. 2016 Annual Tables https://www.bls.gov/cex/tables.htm

[11] This approach follows the methodology in Rothwell, J. What colleges do for local economies: A direct measure based on consumption. Brookings Institution. November 17, 2015

[12] This simplifying assumption likely produces an underestimate of local spending and thus a more conservative economic impact estimate because many goods and services assumed to be produced entirely outside New Mexico have a small local component.

[13] Romer, P.M., 1990. Endogenous technological change. Journal of Political Economy 98 (5), 71–102. Retrieved from: https://www.jstor.org/stable/2937632

[14] The Carnegie Classification® is the leading framework for classifying U.S. institutions of higher education. The framework was first published by the Carnegie Commission on Higher Education in 1973 and is now updated every 3 years to reflect changes among colleges and universities. See: Carnegie Classifications of Institutions of Higher Education. Retrieved from: https://carnegieclassifications.acenet.edu

[15] https://research.unm.edu/ovpr

[16] https://hsc.unm.edu/research/about/

[17] https://research.unm.edu/#block-factoid

[18] https://grandchallenges.unm.edu/

[19] https://innovations.unm.edu/cvl

[20] UNM Bureau of Business And Economic Research. STC.UNM: The Impact of Startup Companies. June 2014.

[21] Lobo Development Corporation is A UNM Regent-owned, nonprofit corporation created under the University Research Park and Economic Development Act, for the purpose of facilitating non-traditional real estate development by way of collaborative and innovative approaches, which advance the goals of University of New Mexico. See: https://www.lobodevelopmentcorp.com/overview

[22] https://www.icorpshubwest.org/about

[23] University of New Mexico Innovation Academy. Impact Report Fall 2021-2023. Retrieved from: https://online.pubhtml5.com/rtnq/ombz/#p=1

[24] https://innovations.unm.edu/tribal-entrepreneurship/

[25] https://innovations.unm.edu/2022/04/08/unm-rainforest-innovations-receives-800k-eda-american-rescue-plan-grant-to-support-training-programs-for-new-mexico-tribal-entrepreneurship-project/

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