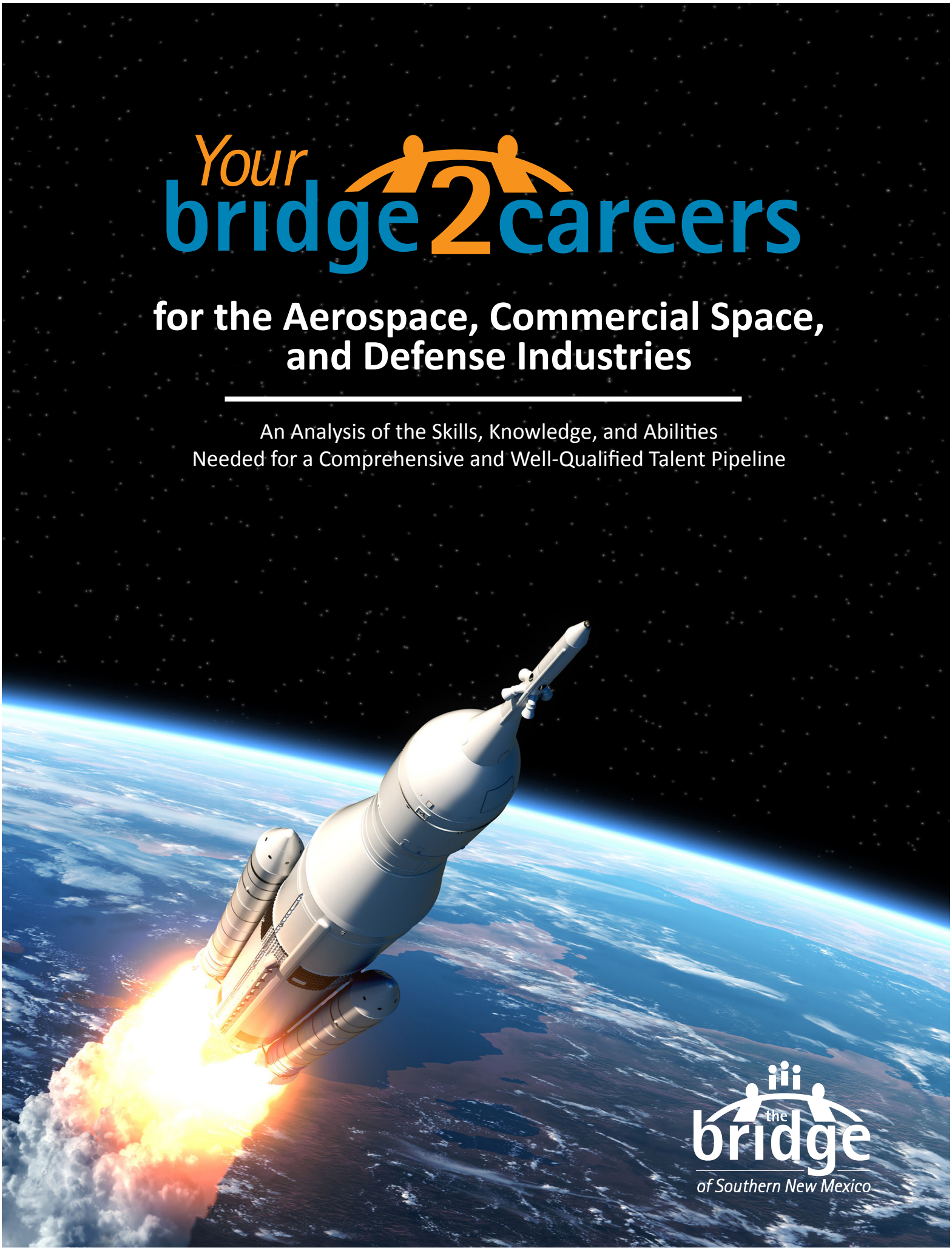
Your bridge 2 careers

for the Aerospace, Commercial Space, and Defense Industries

An Analysis of the Skills, Knowledge, and Abilities
Needed for a Comprehensive and Well-Qualified Talent Pipeline



the bridge of Southern New Mexico

AEROSPACE INDUSTRY ROUNDTABLE FUNDERS

Many thanks to the forward-looking funders who made this report possible!

Building the "Bridge" from Education to Opportunity in Doña Ana County's Aerospace, Space, and Defense Industries

INTRODUCTION

Doña Ana County is home to some of the greatest career opportunities in the Aerospace, Commercial Space, and Defense industries in New Mexico. White Sands Missile Range and Test Center, NASA, Spaceport America, Virgin Galactic, and other commercial space companies and their support contractors and vendors comprise a sizable portion of the workforce of the county and offer some of the highest paying jobs in the region.

In order to gain a clear understanding of the holistic talent needs of these employers, The Bridge of Southern New Mexico, in partnership with the Greater Las Cruces Chamber of Commerce, convened representatives of these employers to participate in an Industry Roundtable with two goals:

- Quantify the complex needs of their workforce today and tomorrow
- Explore innovative approaches to meeting those needs with local talent development assets, including K-12 districts, Doña Ana Community College, New Mexico State University, and the Workforce Connections system.

Participants in the Roundtable include:

- Co-Chair Joe Bullington with Jacobs Technology, for the prime test and facilities support contractor for the NASA White Sands Test Facility
- Co-Chair Mariette Mealor, Department of Defense Representative at White Sands Missile Range
- Guillermo Blacker of Spaceport America
- Lucas Woodruff of Virgin Galactic
- Mark Gaspers of Boeing
- Retired Gen. Eric Sanchez of the Physical Sciences Lab at New Mexico State University

Leveraging elements of the U.S. Chamber of Commerce's Talent Pipeline Management approach and the license for a survey tool shared with New Mexico State University, The Bridge conducted a survey of the Roundtable members and then distilled the data to create actionable intelligence.

What follows is a summary of the findings. Key challenges have surfaced that require further exploration and innovation to address:

- Federal mandates for candidate requirements may stifle innovation or alternate routes to qualification.
- The number of jobs requiring significant years of experience (ranging from 5-20 years) creates a chasm between what local colleges and universities can produce and the prospective talent that is already available in the region. This pipeline of talent requires strategic partnerships in order to reach outside of the county and into other regions and target audiences.

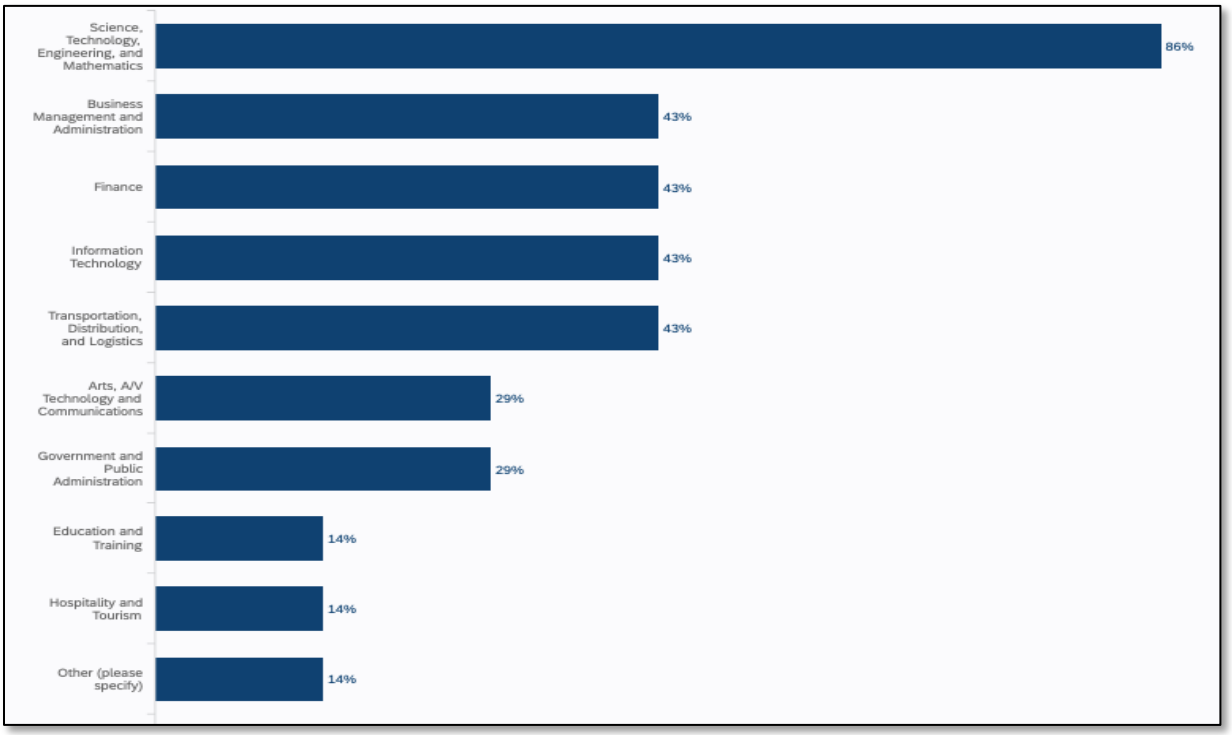
- A high percentage of jobs require security clearances, and, at this time, there is not an intentional effort to proactively identify and educate prospective candidates on what those requirements are.
- Work-based learning opportunities must be expanded to support greater access to students and contribute to work experience requirements for employers.

ABOUT THE EMPLOYERS AND THEIR JOBS

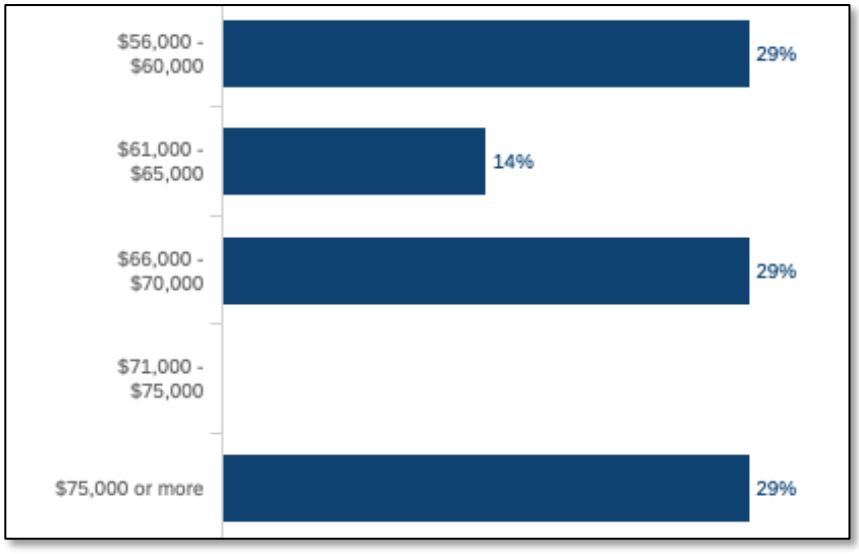
Roundtable members represent a workforce of more than 1,700 at the time of the survey and hire roughly 200 new employees per year, due primarily to turnover of retiring and resigning workers. The vast majority of new employees fall into the 26-35 age range. The hardest jobs to fill are those in the middle- and high-skilled range, especially those that require previous work experience, ranging from 5 to 20 years, depending upon the position.

Participants acknowledged they represent only about half of those employed in these industries. There are a host of other companies who run contracts at the White Sands sites, and there are small commercial space companies operating at Spaceport America. There may be as many as 2,000 more employed in this industry.

The holistic workforce needs of the Roundtable participants span a host of occupations**.**



Average salaries represent some of the highest paying jobs in the region.

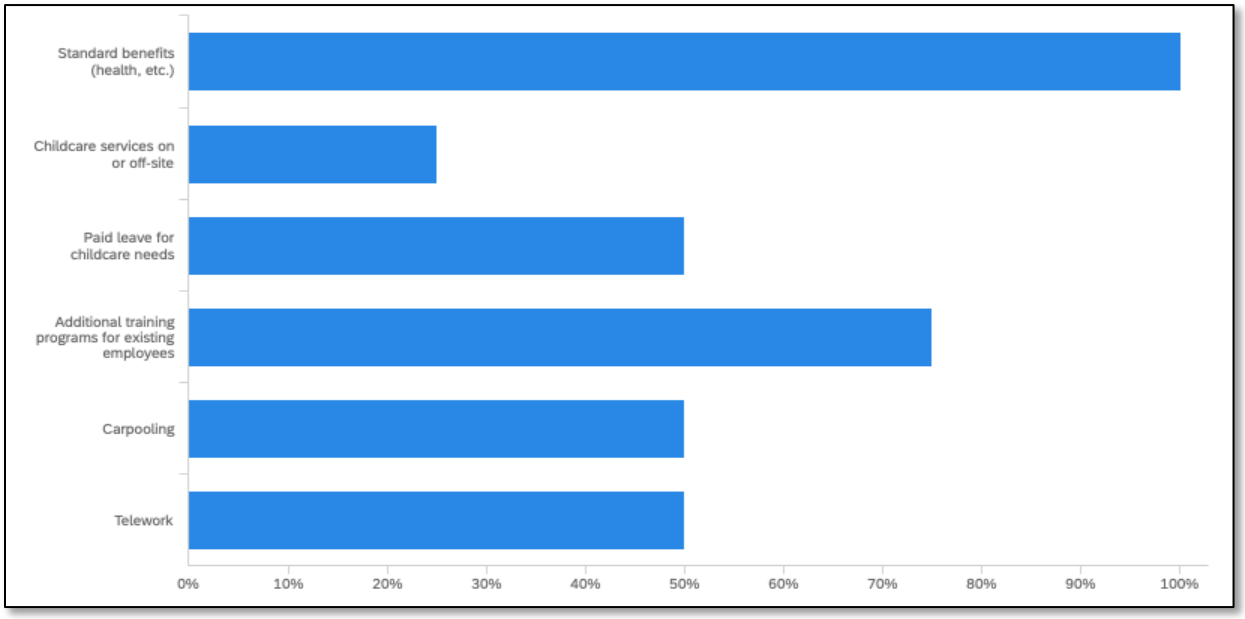


Roundtable participants acknowledged that the incomes are well above local median income. Joe Bullington noted that many jobs at NASA WSTF do pay substantially more than similar jobs in the region, because of the high level of education, training, and experience required for the work there.

However, they face competition from other employers inside and outside of the state, like Los Alamos National Labs, which can make hiring difficult. Eric Sanchez of PSL noted that research among human resources professionals indicates local pay scales for engineers and scientists is below other the national market average.

These industries offer some of the highest paying jobs in our region, but face competition from other employers in the state and nation.

These jobs, especially those with the Federal government, also provide benefits that are very helpful to individuals and families in the region.



Employers in this industry require virtually all candidates be US citizens. All have to have background checks, and drug tests are conducted before hiring and randomly after employment.

For Federal government jobs, 80% to 95% are required to hold security clearances to work on the sites. Spaceport and Virgin Galactic have little to no need for clearances. PSL is working to put in place a co-op program to assist students in obtaining security clearances, provide space for students to gain experience by working on industry defined projects, participate in a National Security seminar series, and make the students more marketable to our national laboratories, military bases, and industry.

Members were asked to identify their hardest to fill jobs by size of the workforce they represent. The most hard-to-fill jobs are primarily engineers:

- Experienced Test Engineers
- Senior Engineers
- Aerospace Engineers
- Technicians
- Software Engineers

Some of the hardest to fill jobs include:

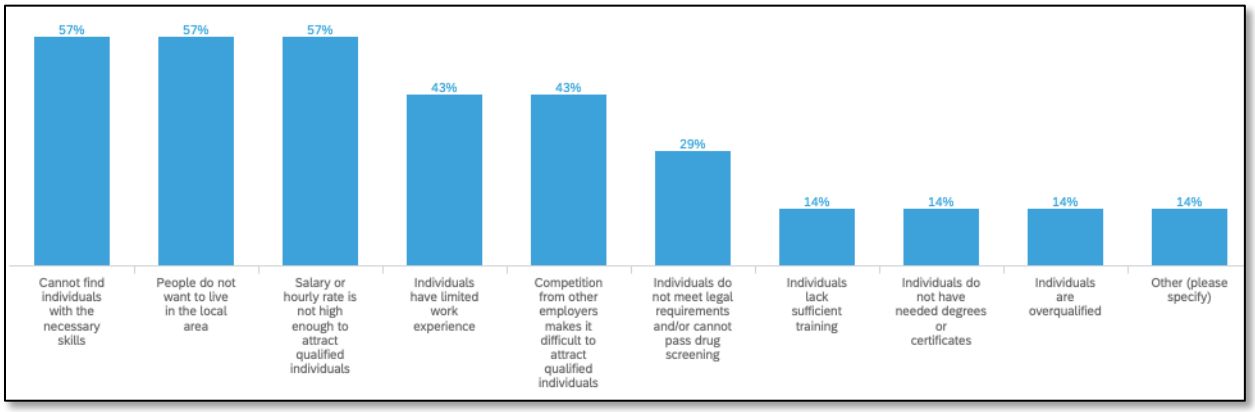
- Skilled Aerospace Technicians
- Senior Scientists
- Technicians
- Physicists
- Electrical Engineers

A few of their hard-to-fill jobs were for:

- Materials Science/Chemistry

- Airfield Maintenance Specialists
- Nuclear Engineers
- Software Developers

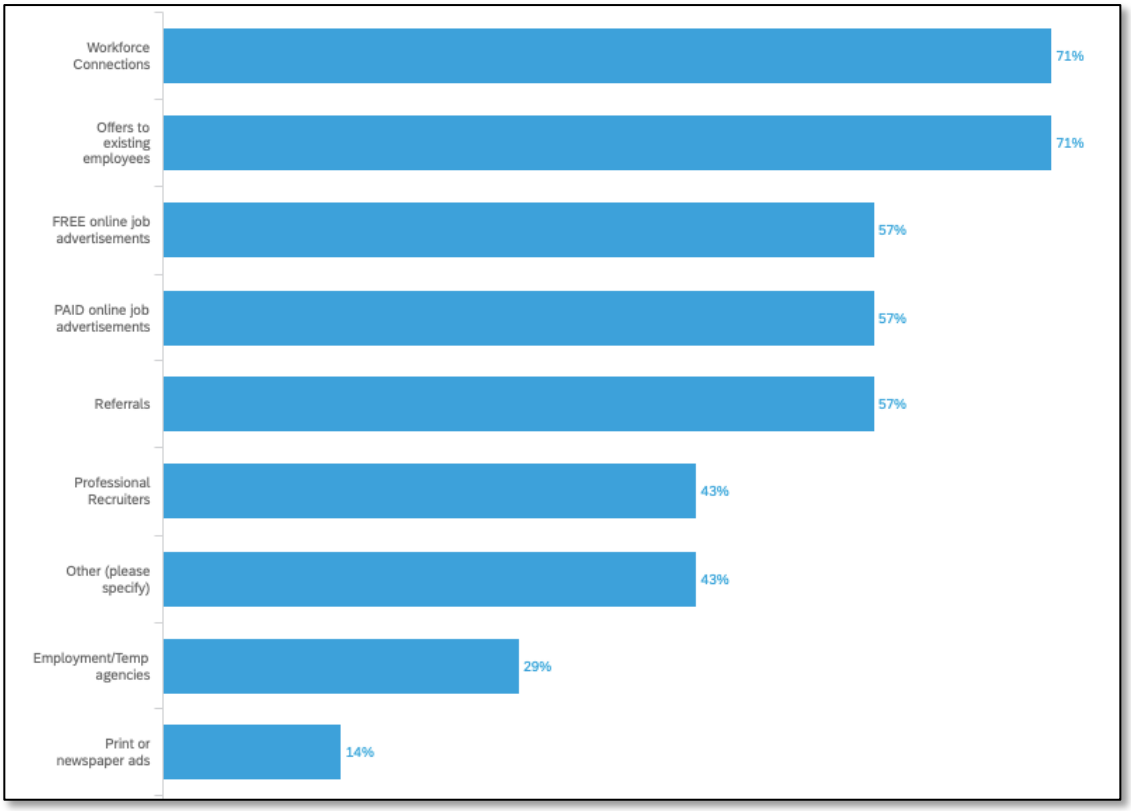
Roundtable members reported a host of reasons that jobs were hard to fill.



Lucas Woodruff of Virgin Galactic stated that their needs are for mid-level engineers (5-8 years of experience). In Virgin's operations in Mojave, CA, there's a rich ecosystem of engineers between other companies in similar lines of work. For NASA and Jacobs, Bullington noted the very specialized nature of the skills required for their workforce, like rocket engine testing, so some of the workforce will come from other NASA, DoD, or aerospace industry sites. The need to have people up-to-speed quickly is critical, as there really isn't time to teach them all the skills needed for the job. Their focus is to acclimatize new employers to how things are done within WSTF to prepare them for the work.

The need to have people up-to-speed quickly is critical, as there really isn't time to teach them all the skills needed for the job.

Employers currently use a number of ways to recruit and identify new talent. The alignment with Workforce Connections is especially notable. The USA Jobs website automatically "spiders" into the Department of Labor's database of jobs in Workforce Connections, so those connections happen automatically. Also notable is the importance of personal connections to employers in the industry, based on the number of hires made from existing employees and through referrals. Online job postings (free and paid) are heavily used, as well.



The relational aspect of the hiring process in this industry increases the value of relationship with secondary and post-secondary members of the educational continuum. Additionally, Workforce Connections can play a stronger role in looking across the statewide network of job seekers to identify potential candidates for open positions. This type of proactive partnership by Business Services staff members has been championed by New Mexico Department of Workforce Solutions Deputy Secretary Ricky Serna and can provide optimal employment opportunities to job seekers in the system.

THE SKILLS, KNOWLEDGE, AND ABILITIES NEEDED FOR SUCCESS

Roundtable members were able to very specifically quantify skills needed for the majority of jobs in their industry and the skills potential job candidates seem to have in five areas:

- Math
- Reading, Writing, and Language
- Employability
- Technology
- Digital Literacy

AT-A-GLANCE ELEGIBILITY REQUIREMENTS

Aerospace, Commercial Space, and Defense

Based on 80%-100% of employers' responses, here is a comprehensive picture of what New Mexico's True Talent needs to know, and be able to demonstrate, in order to enter the aerospace, commercial space, or defense industires.

Math:

- Adding and subtracting
- Multiplying and dividing
- Using fractions, decimals, and percentages
- Solving real-world math problems
- Interpreting negative numbers
- Calculating or using basic statistics
- Reading graphs or charts with numerical information
- Taking or interpreting measurements

Reading, Writing, and Language:

- Reading at a reasonable speed
- Applying information that is read
- Production of clear writing
- Correct spelling and grammar in writing and speaking
- Identifying main points from written content
- Assessing credibility of written content
- Generation of original content that is not plagiarized
- Editing self-written content
- Writing about a topic using supporting facts

Employability:

- Communication
- Enthusiasm and Attitude
- Problem Solving & Critical Thinking
- Self-Management
- Interpersonal Skills
- Initiative
- Professionalism
- Teamwork
- Cultural Competence

Technology:

- Using computer and computer programs
- Entering data
- Writing and responding to emails
- Using word processing and presentation programs
- Adapting to and learning new technology

Digital Literacy:

- Understanding online security risks
- Accessing information to troubleshoot problems with technology

The information gained presents a foundational set of skills needed for EVERY candidate in the industry. The power of this information provides a very clear picture of the well-prepared candidate, with 80% - 100% of employers responding. Simultaneously, it provides a compelling case for support of full integration between Career and Technical Education programs and core subject instructors at the secondary and post-secondary level.

The great news is that there was very little difference, or gaps, between employer needs and candidate qualifications in most areas. In fact, Bullington commented on the high quality of the graduates from NMSU, when they hire recent four-year-degreed graduates for entry-level positions.

It does seem that the local talent pipeline is, for the most part, well aligned to meeting the needs of the industry, but it is also significant to note the high number of experienced candidates needed, which would explain the absence of skill gaps. Not surprising, the larger gaps were found in employability skills and attitudes, which is an often-discussed topic in every industry nationally, not just locally.

Fortunately, the skill gaps are few, but provide educators and workforce programs a very targeted set of skills to weave into existing educational programming and jobs skills training programs:

- Problem solving and critical thinking
- Entering data
- Understanding online security risks
- Evaluating the credibility of digital sources

Roundtable members provided some context for their answers that shed light on the importance of the skills outside the obvious need for math skills. For Reading, Writing, and Language skills, they said:

> *Our engineers and other professionals do a lot of technical writing, including procedures, plans, reports, etc. Our technicians do some writing and need to be reasonably clear and proficient at reading, writing, and understanding technical and general documentation.*
>
> *Excellent writing skills are a must in our business, as engineers AND technicians are required to generate test reports for their customers*

Due to the testing missions of Army White Sands Missile Range and NASA White Sands Test Facility, Technology Skills are of critical importance to the workforce. Regardless of an individual's position, entering, manipulating, and reporting data is a core component of the work. Bullington stated that NASA is systematically converting from written notes on outcomes to entering the data digitally. Accuracy of data is of primary importance.

Roundtable members were able to list the programming languages most important to their work:

- C+ and C++ (3 members)
- Python
- PLC Ladder Logic
- LabView
- SQL

Additional job tasks were identified by the members, including:

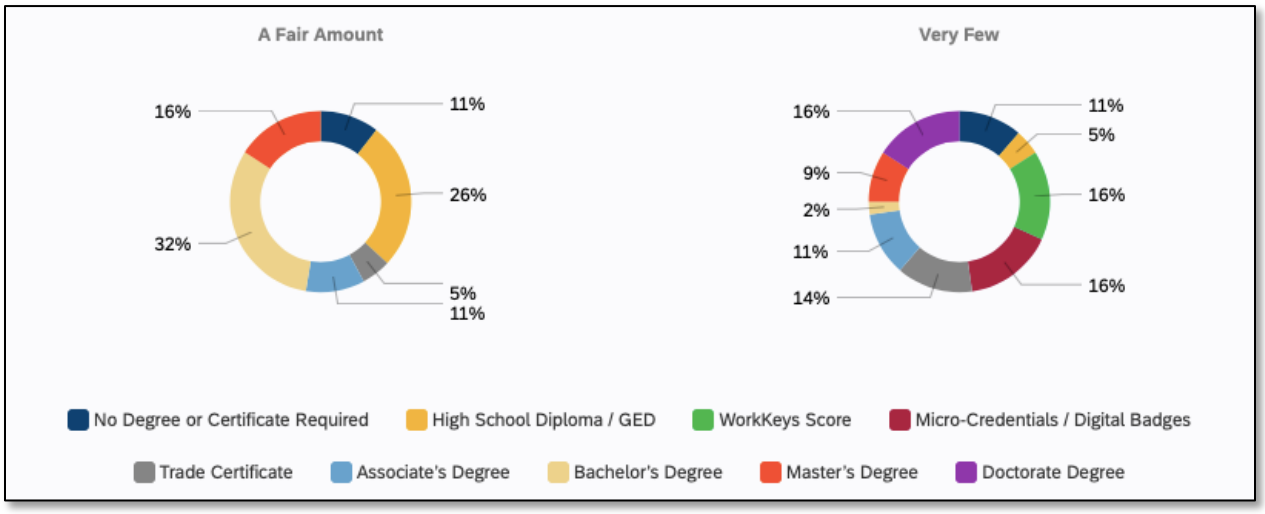
- Safety awareness and safe practices
- Interpreting data
- Ability to locate and process information quickly

To view all of the charts outlining the skills and gaps, as well as a ranking of those skills, please see the Appendix.

DEGREES, SKILLS, AND EXPERIENCE

Fully 83% of the Roundtable members view mastery of industry-specific skills as the greatest predictor of workforce success. Yet, specific degrees are minimum requirements for consideration for the majority of jobs.

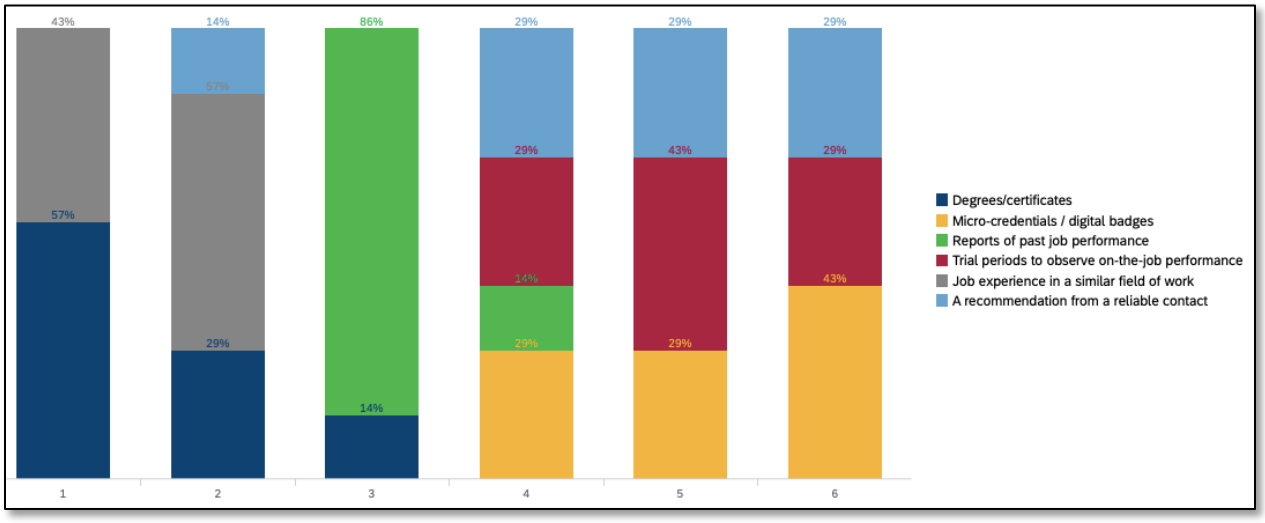
Following is a breakdown of jobs by various educational levels as qualifications based on how many jobs require those certifications/degrees.



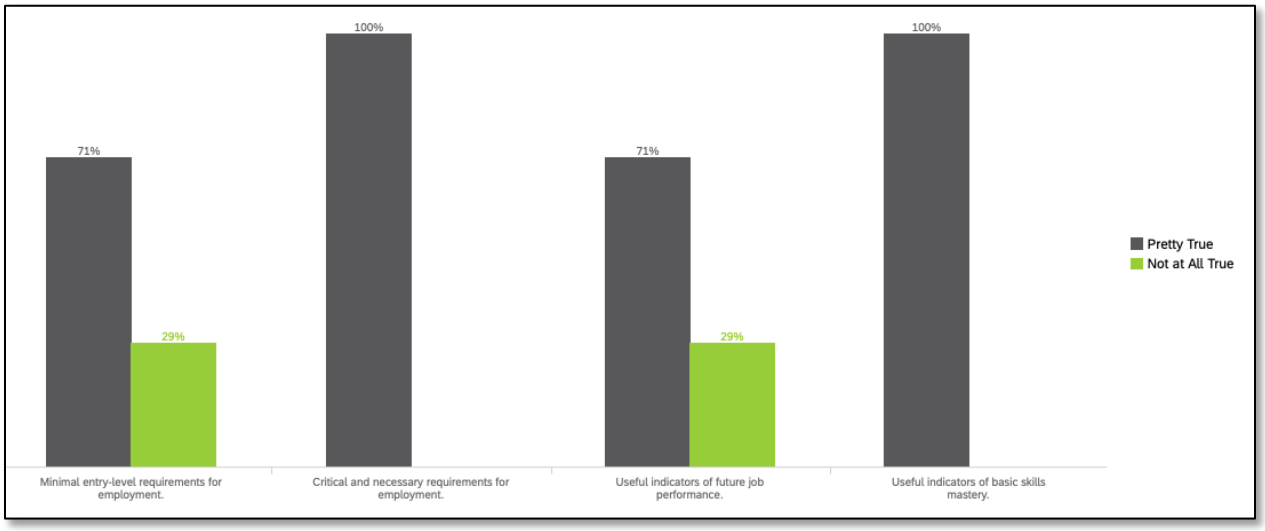
The industries have a surprising amount of jobs that require either no degree/certificate or high school diploma/GED. One member explained, “Degreed engineers/scientist define work and make analysis and perform reporting of results. Non-degreed technicians perform defined hands-on work.” Those with lower educational requirements, then, are primarily selected

based on previous experience and demonstration of skills. One member said, they also evaluate non-degreed positions through, "trade experience, military/first responder service, and attitude."

Following is a breakdown of rationale of how Roundtable members determine if someone has the necessary job-related skills, as ranked by order of importance. It's clear that employers don't place much value on trendy micro-credentials and digital badges or probationary hiring.



Additionally, members conveyed their perceptions of the relationship between degrees and candidate qualifications. Candidates with degrees are perceived as:



The Roundtable prioritized the degrees and certifications most needed for entry-level talent at each educational level. The list factors in the hospitality side of Virgin Galactic's operation when they begin to carry passengers into space.

- Most requested bachelor degrees
    - Mechanical Engineering
    - Electrical Engineering
    - Computer Engineering
    - Computer Scientist
    - Business Management/Accounting
    - Aerospace Engineer
    - Cyber Security
    - Physicist

- Most requested associate degrees include:
    - Electrical Engineering/Electronics Technology
    - Computer Information Technology
    - Engineering Technology
    - Mechanical Technology
    - Manufacturing Technology
    - Computer Assisted Design
    - Chemical Technician
    - Web Design
    - Water Technician
    - Applied Technology
    - Welding Technician
    - Hospitality

- Most requested trades and certificates:
    - Licensed electricians
    - Welding
    - Airframe and Powerplant
    - Electricians
    - Water System Operator
    - Emergency Medical Technician
    - Mechanic
    - Drafting
    - Heavy Equipment Operator/Commercial Driver's License
    - Pilots for manned and unmanned aerial vehicles
    - Hospitality

The top jobs that have no degree requirements do factor into considerations of previous experience:

- Logistics/Supply Chain-Materials Handler/Inventory Clear
- Administrative Assistants
- Facilities

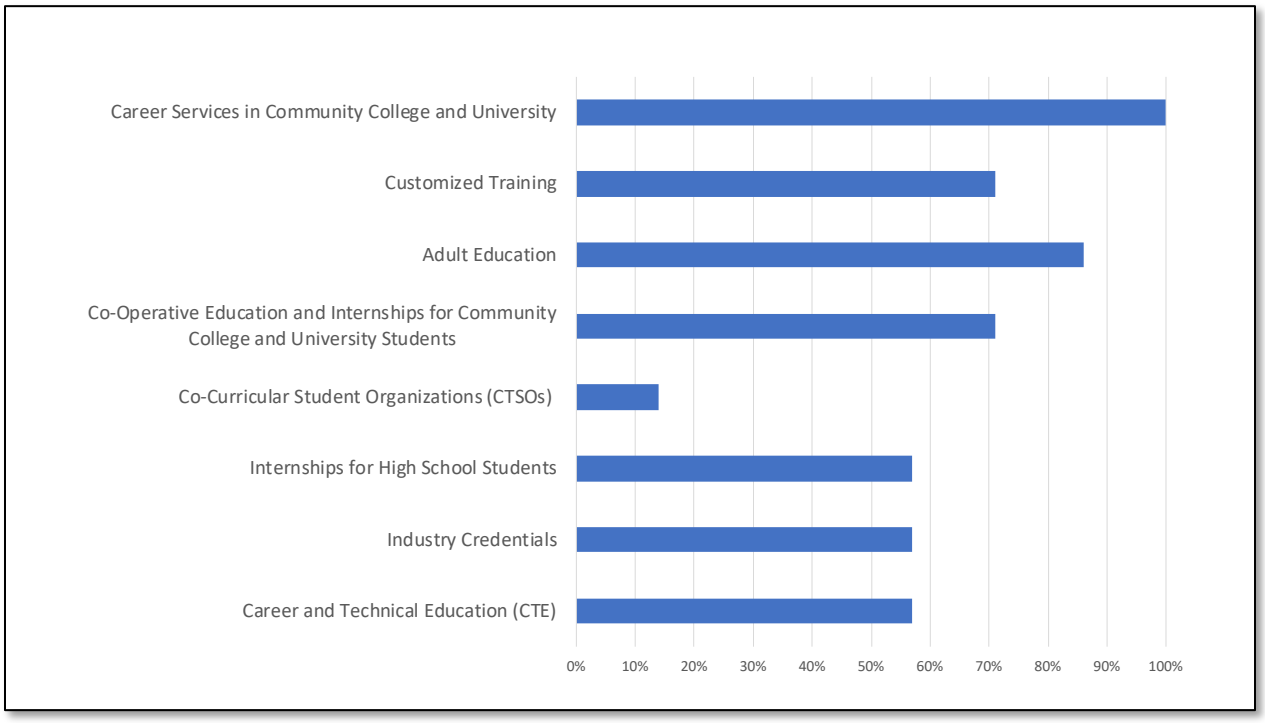
- Mechanical Technicians
- Electrical Technicians
- Chemical Technicians
- Computer Technicians
- Laborer
- Barista

STRENGTHENING THE TIES IN THE TALENT DEVELOPMENT CONTINUUM

Holistically, Doña Ana County has everything these industries need for the long-term cultivation of talent from Pre-K to high school to community college to university, with Workforce Connections having a role to play with those who are outside that pipeline (Opportunity Youth, low-skilled adults who would benefit from skilling up, others who face barriers to employment).

Having a much clearer picture now of the target, we can map the landscape of our talent continuum, identify and align assets, close gaps, and provide numerous on-ramps to education and off-ramps to employment to support the holistic preparation of local talent.

Critical to ensuring optimal alignment from education to employment is employers playing active roles in the cultivation and preparation of their talent. Currently, employers have fairly good awareness of various educational assets that can assist them in talent development and recruitment.



Specifically, Roundtable members indicated that are currently involved in a number of work-based learning opportunities for the preparation of their talent, including:

- Internships
- Apprenticeships
- Co-ops
- Job shadowing
- Developmental assignments
- Student jobs
- On-the-job training for existing employees

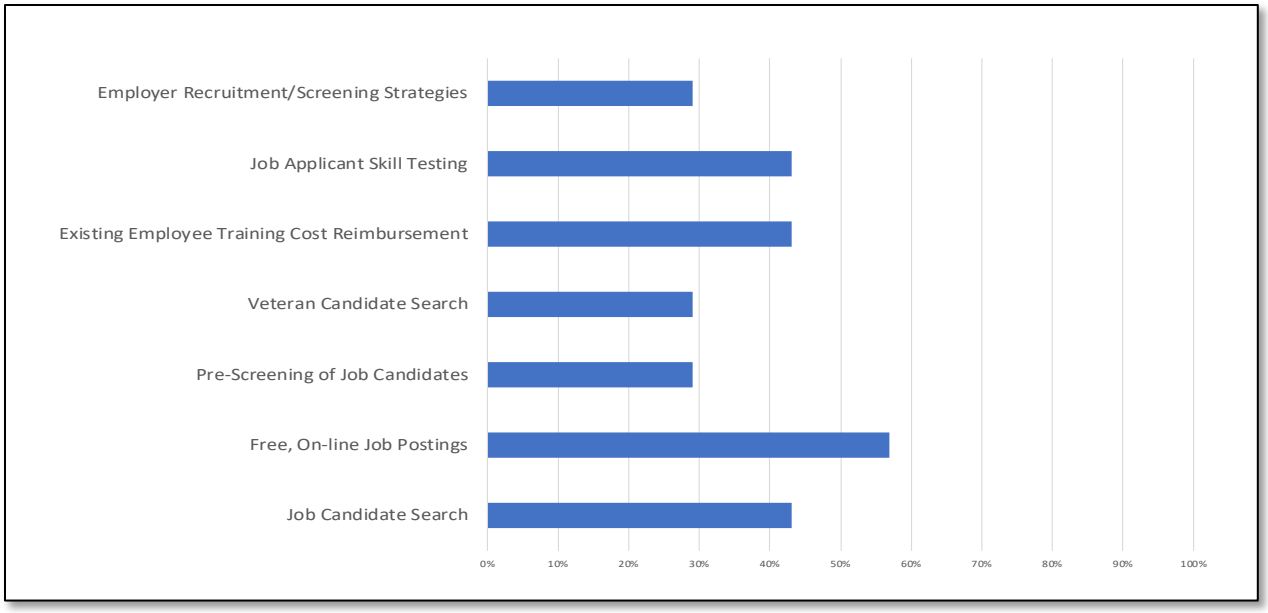
Internships are a subject requiring further discussion. Internships are a win-win for employer and intern. Some interns transition to full-time employment upon graduation, others have a work-based experience that enhances their resume. Bullington indicated that they do have 12-20 co-ops and interns working on the NASA site at any given time, and they do try to retain talented co-ops and interns as future employees. Some co-ops and interns benefit from the experience by pursuing employment elsewhere when incomes may be higher.

That said, it sounds like building a strong partnership with the new apprenticeship coordinator in the Southwest Workforce Board region would be an asset to draw upon. Apprenticeships are tied specifically to employment upon completion of the training. Businesses would benefit from the tax incentives offered to employers who establish apprenticeship programs, as an additional benefit. Literally any job can be considered for an apprenticeship.

A challenge to high school students who may wish to participate in in-school or summer internships is transportation and scheduling. Low-income students may not have transportation, but for those who do, the cost of gas can be a barrier. The Academic Career Experiences (ACE) program of LCPS doesn't offer students paid opportunities. Additionally, for LCPS and GISD students, the time it takes to travel to and from the site, in addition to the internship itself, doesn't align at all to the structure of the school day. Students pursuing college coursework through Dual Credit courses face similar challenges.

Of all educational programs, the survey revealed a lack of awareness of, and, therefore involvement in, Co-Curricular Student Organizations (CTSOs). This illustrates a gap that could be filled in partnership between the schools and NMSU's College of Engineering's leadership in Technical Skills America (TSA), a CTSO organization specifically targeting the types of skills needed by these industries.

Awareness of the Workforce Connection system's assets revealed a very different understanding among employers. While employers advertise jobs through Workforce Connections system, they are primarily unaware of the other resources that the system can offer to help them with job readiness, training, recruitment, and placement.



KEY OPPORTUNITIES FOR PARTNERSHIP AND INNOVATION

Growing and sustaining these industries here requires steady, consistent production of current and future talent. We have a much clearer picture now of what is needed. And, just like everything that makes Doña Ana County distinct, collaboration will be key to aligning people with opportunity to achieve full employment in these industries and maximize the opportunities for additional economic development efforts.

The path forward for supporting holistic workforce talent for these industries takes four paths:

- Raising Awareness
- Readiness
- Recruitment
- Retention

Success requires a community effort. Each partner in the continuum has a role to play. By targeting a few key actions, we can strengthen the pipeline at every level and grow our ability to fill the comprehensive workforce talent needs of the industry.

Raising Awareness

Right now, one of the greatest barriers between prospective workforce talent and the careers in the industries is simply awareness. Our youth and young adults are vastly unaware of the opportunities available to them in their own backyards to secure some of the most exciting, challenging, and meaningful careers in the nation. The lack of career exploration aligned to local industries throughout the K-12 system undermines early decisions students will make about career paths. Globally, students are generally unaware of 21st Century careers, according to a recent survey by the Organization for Economic Cooperation and Development. Locally, we can

bridge this awareness gap in partnership with parents, educators, counselors/advisors, and school leaders.

The Bridge started this effort by launching NewMexicoTrueTalent.org, a portal to connect students, parents, and teachers to information about connecting education to employment. The site includes videos, a career pathway for these industries, and career exploration software. The site has been promoted outside of schools, but systemic access to students has yet to be pursued by the area's three school districts. Professional development for teachers and advisors, as well as inclusion on parent and student school portals, will substantially help build awareness of these and other relevant careers in the region.

At a recent US Chamber event hosted for members of their Business Leads Elite Cohort, the systems change model championed by the Prosci, a global change management leader, provided the framework for facilitating systems change – be it for a global enterprise or a community. This model could help facilitate optimal awareness and access to these careers for our students. Prosci's ADKAR® model includes:

- Awareness of the Need for Change (Job opportunities)
- Desire to Support the Change (Demand for education to achieve these jobs)
- Knowledge of How to Change (Guidance to and navigation of connected courses throughout the pipeline)
- Ability to Demonstrate Skills and Behaviors (Assessment of interest, increased participation in relevant courses and pursuit of degrees)
- Reinforcement to Make Things Stick (Evaluation of the impact of this effort)

There is also a need for local "ambassadors" to careers in these industries. We need to identify and recruit local Las Cruces/Dona Ana County residents who navigated through the educational institutions here and now hold careers in this growing industry. Students specifically want to see, "someone who looks like me," who has achieved success in these career opportunities.

Readiness

Readiness is focused on growing the talent here now, knowing that they have the greatest likelihood of staying in the area. We have all of the educational assets in place, but educators will benefit from increased interaction and relationships with employers in these industries.

Elements of the five "ships" of work-based learning are already present. More intentional focus is needed through "leadership" from industry to guide educators on integration of core instruction, career exploration and relevance, Career and Technical Education in relevant fields, and mapping to higher degrees in high-value majors.

Supporting the robust nature of an ecosystem will require continuous education and professional development for teachers across the STEM/STEAM continuum. The NMSU Colleges of Education and Engineering are perfectly positioned to play this role. To strengthen their

efforts to build STEM teachers and provide professional development, they, too, need onsite visits to our local industry partners to see how instruction and application are aligned.

The Bridge will continue to play a role in facilitating and sponsoring teacher "externships" in which teachers in relevant fields spend a week with a Roundtable member learning about their work and what employees there need to be successful. However, the need for this kind of interaction is greater than one or two teachers can achieve. We need to work with our entire educator force to host on-site visits specifically targeted to K-12 and post-secondary educators (including advisors) to remove the lack of awareness of exactly what goes on at these nation-leading facilities. If we can build their awareness and excitement, they will carry that energy into the classroom for students.

There's also a need to boost the academic performance of students to ensure they don't give up on these careers early in their academic journey. Our proficiencies indicate only about 1 in 5 performs at grade level in math and science across the continuum. Would real-world application assist us in boosting academic objectives? The state of New Mexico is about to find that out. The NM Public Education Department is working with NS4ed to develop a holistic curriculum for math across K-12 that meaningfully connects application to instruction. New Mexico will be the first in the nation to do this holistically, which bodes well for the long-term STEM talent pipeline across the county and the state.

Further supporting learning experiences for students is a robust set of hands-on, after-school programming that begins as early as elementary school and seeks to support better outcomes in STEM subjects. The NMSU College of Education, under the direction of Dr. Susan Brown, and the NMSU College of Engineering, under the direction of Dr. Patricia Sullivan, have been doing this for years through their portfolio of programs. How can we reach more students with these programs? How do we expand integration into core instruction to facilitate much better outcomes in STEM subjects for students? Do we know the correlation between participation in these programs and proficiency outcomes?

Increasing work-based learning experiences for students through mentorship, internship, co-op and apprenticeship experiences has an enormous impact on the "bottom line" of industry partners who actively transition learning in these experiences to employment. Returns on investment include reducing the cost of training new employees, as internships are usually at no cost or below skilled-talent costs, helping to reduce the costs of turnover of employees, and benefiting from Workforce Connections tax incentives to participate in internship or apprenticeship programs through their system. The opportunity to groom and train future talent, along with intentional recruitment of that talent, can assist in fulfilling experience requirements of some Federal jobs, as well as customize the training of future workers. Early introduction to security clearances should be woven into these experiences to support students in securing these credentials as soon as possible upon graduation.

For high school students, internships in this industry are incredibly challenging, due to the physical locations of the sites. Innovative solutions, such as virtual internships are also growing in popularity, which would overcome the distance and transportation challenges students may face. Perhaps there is an opportunity to explore full days for internships and/or college coursework. Colleges are able to construct their students' schedules to support co-ops and internships. Is there an opportunity to modify their best practices? The pilot of a Blended Senior Year in Gadsden may help us think about reframing elements of the model to support work-based learning experiences.

For students at Dona Ana Community College and New Mexico State University, we need to further map the full set of opportunities at the mid-skill and high-skilled level. The high pay rate of jobs in this industry would make them a preferred target for those working to secure career certifications and two-year and four-year degrees. These students are far more likely to remain in the area, as well, ensuring longer-term retention rates. We need to identify the top certificates and degrees that would make candidates immediately employable. The Bridge will work with Roundtable members to map the landscape in order to prioritize top degrees and certifications.

Recruitment

The most difficult-to-fill jobs for our industry are those requiring years of experience. These mid-career professionals are either cannibalized from amongst existing employers or intentionally sought outside of the area. The need to strategically address this gap is actually of primary importance to the members.

To support and sustain a vibrant industry here, Las Cruces/Doña Ana County will need to expand beyond their borders to identify other sources of potential talent and intentionally work alongside its employers to recruit talent to the region.

The STEM Boomerang effort underway in Albuquerque provides us a model we can localize. STEM Boomerang focuses on outreach to University of New Mexico grads who have gone other places for work, have now acquired years of experience, and may be interested returning to New Mexico. Prospective candidates are already familiar with New Mexico. They may be in other cities where the cost of living is significantly higher, while the quality of life is lower. We should approach the leadership of NMSU to integrate this approach into their alumni outreach efforts. The university can position itself as a life-long partner to graduates' success by connecting them with some of the best career opportunities in these industries.

Bullington pointed out that there are additional benefits to candidates who locate to Las Cruces. Some mid-career professionals need to obtain higher degrees to advance their careers and earning power in the government's GS levels or contractor senior positions. NMSU provides the ideal set of graduate-level programs and research opportunities to support talent in achieving their goals.

Outreach efforts to alumni and others can be targeted to communities that have similar industries and assets. Prospective candidates currently come from:

- California
- Houston
- East Coast States
- Cape Canaveral area of Florida
- Huntsville, Alabama

Using the cost of living comparison calculator provided by the Mesilla Valley Economic Development Alliance, we can see the power of a dollar to go farther in Las Cruces. For example, a $60,000 salary in Las Cruces has the same earning power as $100,000 to Los Angeles and $55,347 here in comparison to $100,000 in Washington D.C.

For other communities, the income differences were less extreme, but the cost of housing was the distinguishing factor:

- Rent differences of $763 in Las Cruces vs. $1,247 in Houston, TX
- Home cost differences of $281,339 vs. $454,502 in Miami/Dade County, FL

Other factors like weather, outdoor recreation activities, absence of traffic and other assets of the community are important elements of a targeted outreach campaign to draw prospective candidates who are not familiar with the region.

There is a key element to support this vibrant infrastructure for recruitment – ownership of the function. There must be an organization/person who is tasked with supporting the recruitment function for these industries collectively. The breadth of opportunities is constantly growing and changing, especially as Virgin Galactic and other commercial space companies grow their operations at Spaceport America. NMSU is perfectly situated to play this role, especially in the context of its career services function.

The City of Las Cruces is also a key partner for attracting a talented workforce to the region. The Economic Development Department, which includes the Convention and Visitor's Bureau, can work hand-in-hand with the leadership of employers to support outreach to targeted markets, like those listed above. Marketing and social media campaigns to those markets would be very helpful in supporting the ongoing workforce needs of these industries.

MVEDA's outreach to sector-related employers through its economic development efforts is also a key partner in identifying "hot" or "declining" markets where potential talent may lie.

Retention

Talent retention can be maximized by leveraging the assets of the employers and the educational partners.

Bullington discussed a current example of employers seeing themselves as part of retention in the region. Jacobs frequently hires and trains employees who later become employed by NASA itself. It supports their work on the NASA contract, while presenting value-add to the contract.

The emerging private commercial space sector also presents the opportunity to strengthen the pipeline at all levels. Private companies and contractors may not face the same rigid standards for experiences required by the Federal employers. They also may not require the same security clearances.

There is value in working collectively and intentionally between employers to chart growth opportunities from entry-level to mid-career to senior-level career transitions. Not only does this benefit the overall industry, it creates an additional benefit for attracting talent to the region due to the diversity of opportunity available here.

NMSU provides the educational infrastructure to support professional growth across the industry. Through targeted trainings, research support, advanced degrees, and the assets of the Arrowhead Center, Las Cruces has as robust an ecosystem for this industry as any community.

CONCLUSION

The economic devastation wrought by the response to COVID 19 has upended the workforce challenges employers faced at the beginning of 2020. Previously, we were near full employment. Today, 20 million jobs have been lost, with more to come, as reopening the economy lingers.

It is in this unprecedented time that the Aerospace, Commercial Space, and Defense Industries of Dona Ana County press on with their collective efforts that lead the country and world. While workflows are slower during the quarantine, the demand of their work remains unchanged, as does their workforce needs.

We can and must align seamless pathways to employment opportunities at multiple levels in order to support an industry that generates millions in economic impact for our county and state each day. The benefits of strategically supporting these industries with well-qualified talent extend to all who live in the region, whether in the industry or not.

We now have a clearer map for that pipeline to align supply and demand of the workforce, in an effort modeled after the US Chamber of Commerce's Talent Pipeline Management model. Data-driven input aligned to the community's existing educational and workforce assets bridges awareness, knowledge, and skills gaps between those who live here and those who can work here in some of the most exciting, best-paying jobs in the region. These jobs provide not just wages, but highly-valued benefits for individuals and families for their economic self-sufficiency and wellbeing.

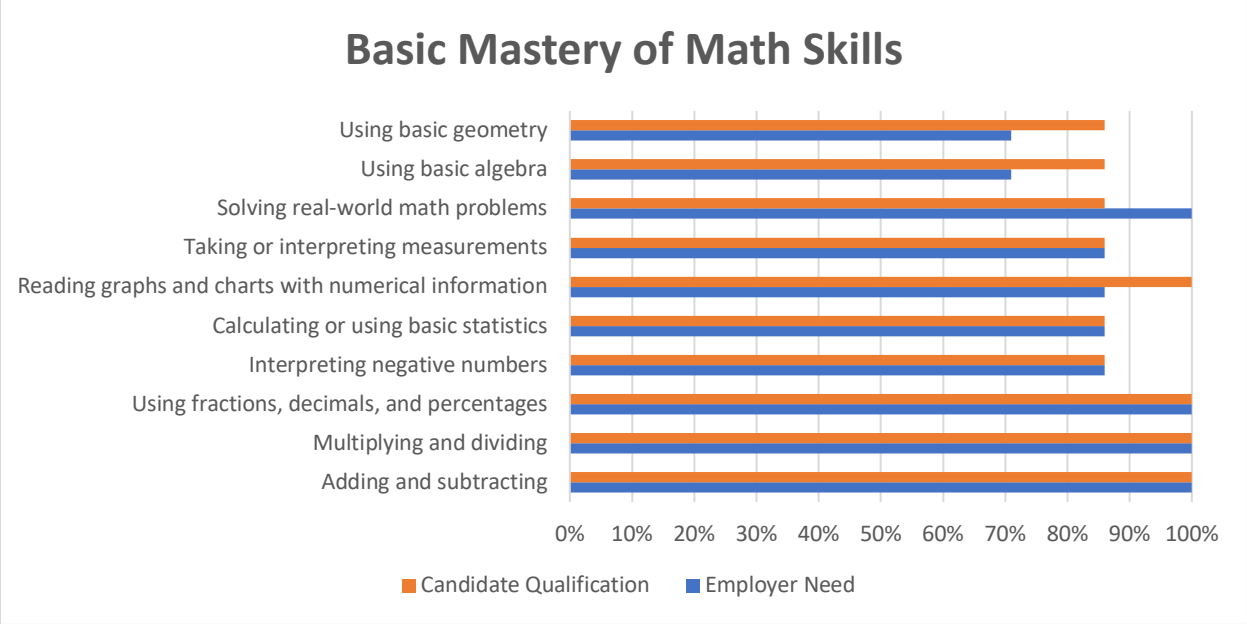
Opportunity will come as we pursue the actions recommended in this report. We will work with our partners to create actionable timelines for implementation and leverage their collective expertise innovate and collaborate even further.

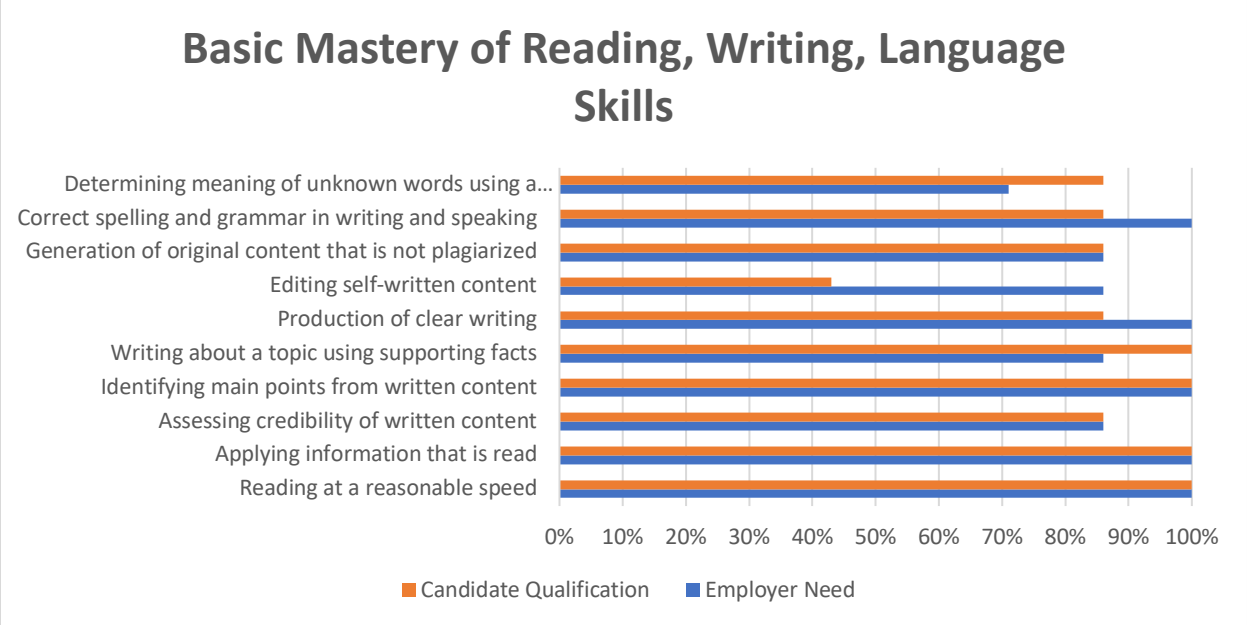
Together, we will create world-class New Mexico True Talent for this world-class industry sector.

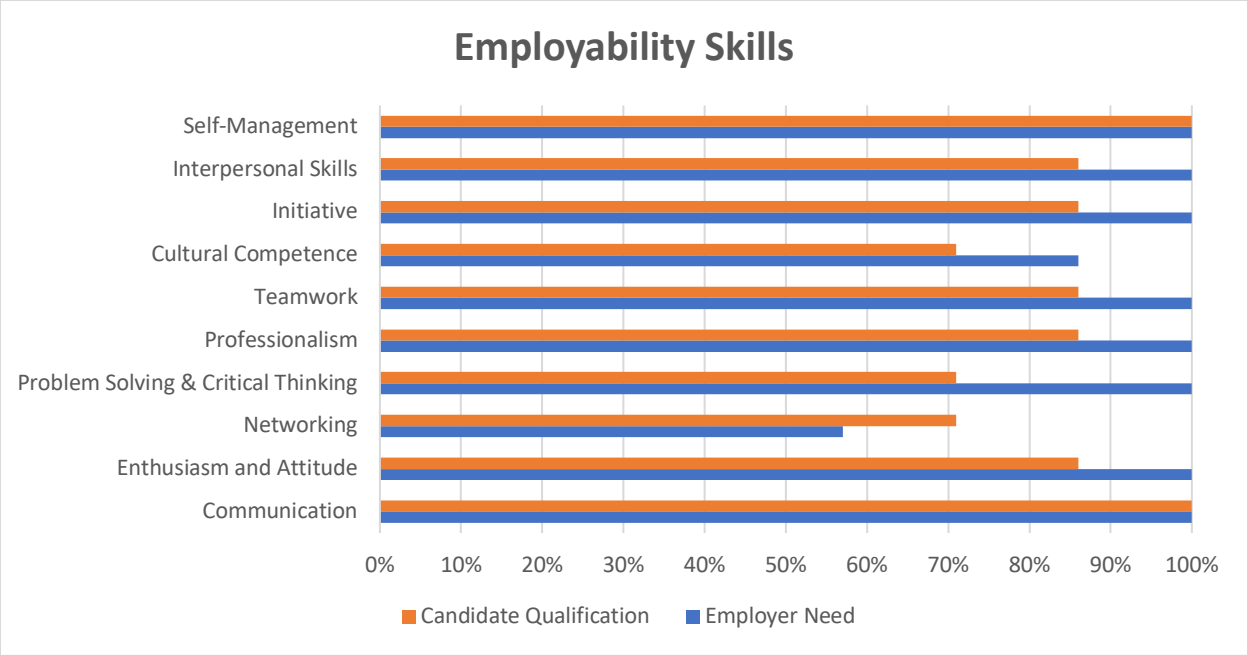
APPENDIX

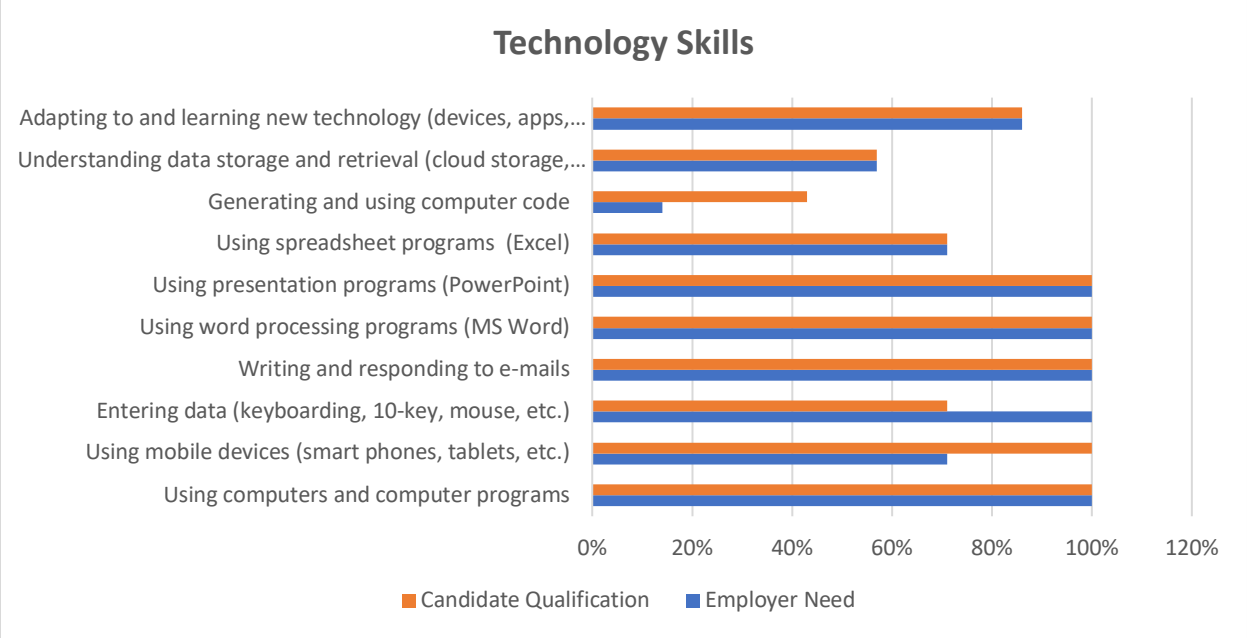
A. Industry Survey Skills Results

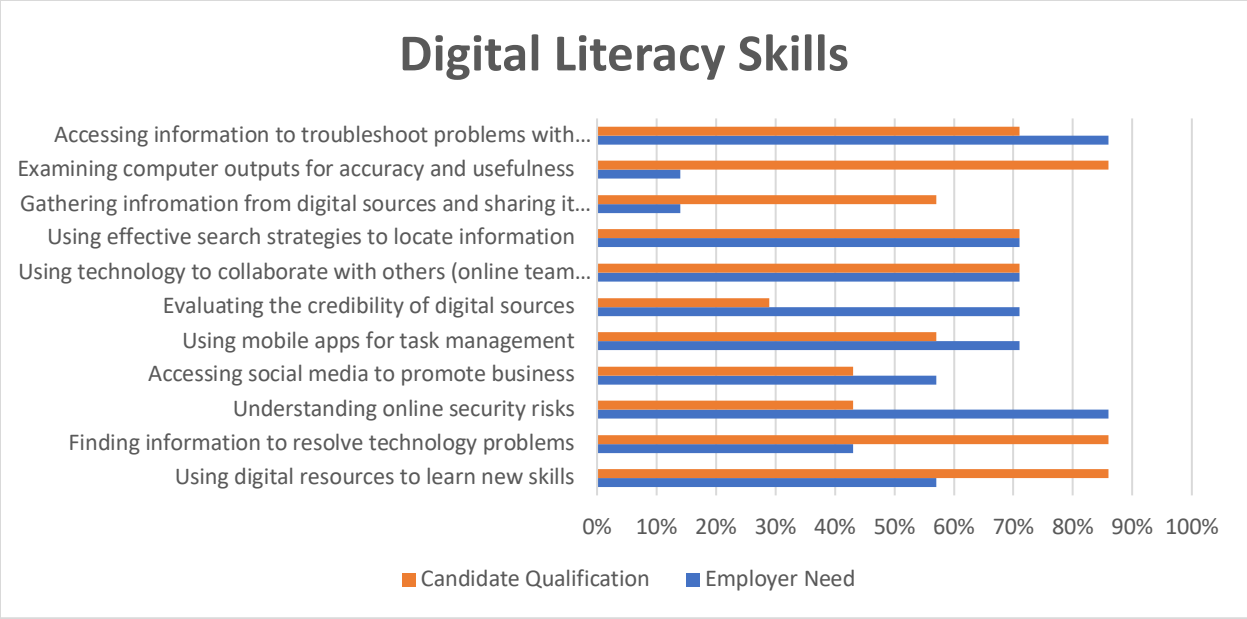
Following are the gap analyses for each of the five identified skill areas.






Employability Skills
Self-Management
Interpersonal Skills
Initiative
Cultural Competence
Teamwork
Professionalism
Problem Solving & Critical Thinking
Networking
Enthusiasm and Attitude
Communication
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Candidate Qualification
Employer Need


Technology Skills
Adapting to and learning new technology (devices, apps,...
Understanding data storage and retrieval (cloud storage,...
Generating and using computer code
Using spreadsheet programs (Excel)
Using presentation programs (PowerPoint)
Using word processing programs (MS Word)
Writing and responding to e-mails
Entering data (keyboarding, 10-key, mouse, etc.)
Using mobile devices (smart phones, tablets, etc.)
Using computers and computer programs
0%
20%
40%
60%
80%
100%
120%
Candidate Qualification
Employer Need


Digital Literacy Skills
Accessing information to troubleshoot problems with...
Examining computer outputs for accuracy and usefulness
Gathering infromation from digital sources and sharing it...
Using effective search strategies to locate information
Using technology to collaborate with others (online team...
Evaluating the credibility of digital sources
Using mobile apps for task management
Accessing social media to promote business
Understanding online security risks
Finding information to resolve technology problems
Using digital resources to learn new skills
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Candidate Qualification
Employer Need

B. Industry Workforce Analysis

Working in coordination with the Department of Workforce Solutions, the following low-, middle-, and high-skilled jobs were available as a snapshot of the real-time jobs in the region, as of August 29, 2019.

Aerospace, Space, and Defense Sector — Las Cruces MSA/Doña Ana County

Establishments in the Aerospace, Space, and Defense Industry include the following subsectors: Computer and Electronic Manufacturing (NAICS 334); Electrical Equipment and Appliance Manufacturing (NAICS 335); Space Research and Technology (NAICS 927); Professional, Scientific, and Technical Services (NAICS 541).

INDUSTRY INFORMATION

Number of Establishments	Average Weekly Wage*	Employment 2018*	Employment Change from 2017*	Wage Change from 2017*
424	$1,206.00	3944	+10 (0.25%)	-$31.50 (-2.61%)

Number of Establishments, Employment, Average Weekly Wage, and Location Quotient by Private Industry Subsector

	Establishments	Employment	Avrg. Weekly Wage	Location Quotient
Architectural and Engineering Services	88	1,316	$1,222	1.80
Specialized Design Services	4	7	$698	0.10
Computer Systems Design & Related Servic	75	658	$961	0.62
Management and Technical Consulting	43	219	$818	0.30
Scientific Research and Development Servic	14	264	$1,761	0.77
Space Research & Tech (Fed Gov. Ownershi	2	76	$2,175	8.24

INDUSTRY EMPLOYMENT PROJECTIONS

Current Employment (2016)	Projected Employment (2026)	Projected Employment Growth (2016-2026)
4,080	4,444	8.92%

ONLINE JOB POSTINGS (July 2019)

Total** Las Cruces MSA	Online Job Postings in Aerospace, Space, and Defense Sector	Las Cruces MSA	Southwestern Region	New Mexico
4,858		477	548	4,609

Employers with the most online job postings in this industry in the Las Cruces MSA (as of August 29, 2019)

Peraton Corporation (89); Raytheon (50); Lockheed Martin (43); General Dynamics (37); Virgin Galactic (19); CACI International (10); TRAX International (7); ASRC Federal (5); Booz Allen Hamilton (4); Northrop (2).

OCCUPATION INFORMATION

Most Common Occupations in Aerospace, Space, and Defense Sector*

Engineering Technicians (2.81%); Software Developers, Systems Software (2.38%); Architectural and Engineering Managers (2.04%); Mechanical Engineers (1.62%); Electrical Engineers (1.56%); Electromechanical Technicians (1.38%); Nuclear Engineers (1.31%); Computer Systems Analysts (1.28%); Software Developers (1.10%)

Wages, Typical Education, & Employment for Select Occupations **

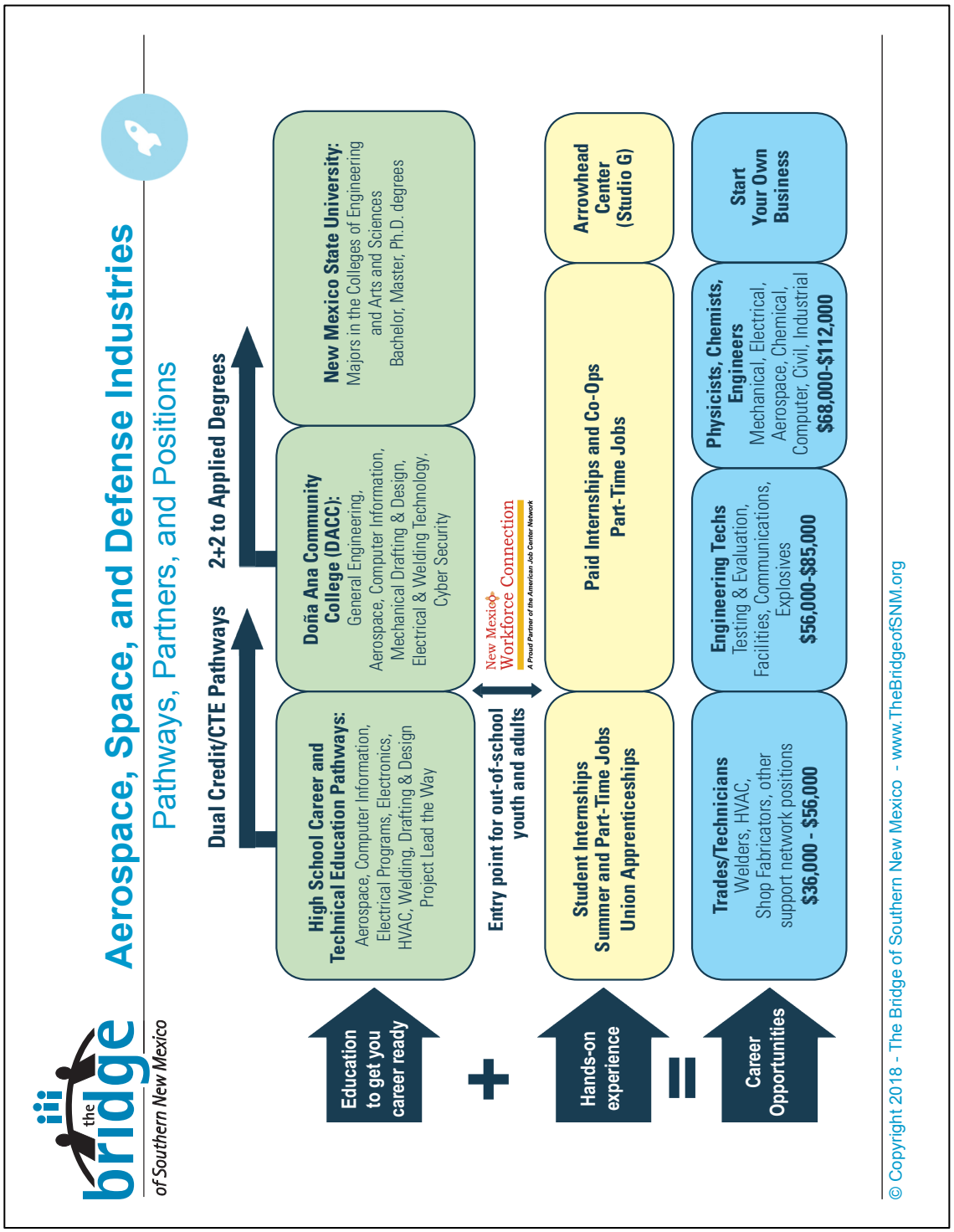
Occupation	Entry Wage	Median Wage	Typical Education Needed for Entry	Typical On-the-Job Training	Current Employment	Online Job Postings *(June 2019)*	Projected Annual Job Openings (to 2026)	Projected Employment Growth 2016 - 2026
All Occupations in the Las Cruces MSA	$19,570	$30,190			70,430	4,768	9,269	Stable
Inspectors, Testers, Sorters, Samplers, and Weig	$19,880	$31,930	High School Diploma or Eqv.	Moderate-term (<12 mos)	220	4	19	Declining
Computer Network Support Specialists	$33,860	$50,820	Associate's Degree	None	120	3	9	Stable
Electrical and Electronic Engineering Technician	$51,980	$73,450	Associate's Degree	None	320	19	22	Stable
Industrial Engineers	$55,250	$72,510	Bachelor's Degree	None	30	5	2	Stable
Aerospace Engineering and Operations Technici	$57,080*	$71,620*	Associate's Degree	None	200*	2	18*	Stable
Mechanical Engineers	$57,660	$85,600	Bachelor's Degree	None	90	5	8	Stable
Mechanical Engineering Technicians	$57,860*	$78,250*	Associate's Degree	None	110*	2	12*	Stable
Software Developers, Systems Software	$63,230	$89,930	Bachelor's Degree	None	420	2	28	Growing
Atmospheric and Space Scientists*	$63,630	$110,900	Bachelor's Degree	None	100	12	13	Growing
Aerospace Engineers	$66,440	$90,150	Bachelor's Degree	None	80	0	3	Stable
Computer Hardware Engineers	$69,520	$90,480	Bachelor's Degree	None	90	10*	6	Stable
Computer and Information Research Scientists	$69,740	$90,480	Master's Degree	None	70	10*	6	Stable
Electrical Engineers	$71,340	$94,130	Bachelor's Degree	None	120	4	7	Declining
Chemical Engineers *	$71,410	$104,290	Bachelor's Degree	None	100	3	8	Growing
Nuclear Engineers *	$104,690	$136,940	Bachelor's Degree	None	760	7	76	Growing
Physicists *	$112,260	$148,620	Doctoral or Professional	Long-term (12+ mos)	1770	10	177	Growing

All data are for the Las Cruces MSA in 2018 unless otherwise noted. * Data are statewide. ** Data are for all industries. *** Data not available. Projected Employment Growth Definitions: Declining: <0.0%; Stable: 0.0 - 11.9%; Growing: 12% or more. + Data are for Computer and Electronic Manufacturing (NAICS 334) and Professional, Scientific, and Technical Services (NAICS 541) only.

Sources: NMDWS ER&A; Typical education & on-the-job training: BLS Occupational Projections & Worker Characteristics (www.bls.gov/emp/tables/occupational-projections-and-characteristics.htm); Job vacancies: NM Workforce Connection Center

C. Workforce Talent Pathway

The Bridge of Southern New Mexico created this map of the comprehensive needs of the workforce in 2018 to show the optimal alignment between education, Workforce Solutions, employers, and current and future job seekers.



AEROSPACE INDUSTRY ROUNDTABLE

A Special Thank You

We are deeply grateful to the team of leaders who served on our Industry Roundtable. Their commitment of time, wisdom, experience, and their spirit of innovation provided us actionable intelligence to holistically prepare our New Mexico True Talent to be ready for some of the best jobs in our county. We look forward to our continued partnership!

JACOBS

WHITE SANDS MISSILE RANGE

SPACEPORTAMERICA®

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NASA

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BOEING

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