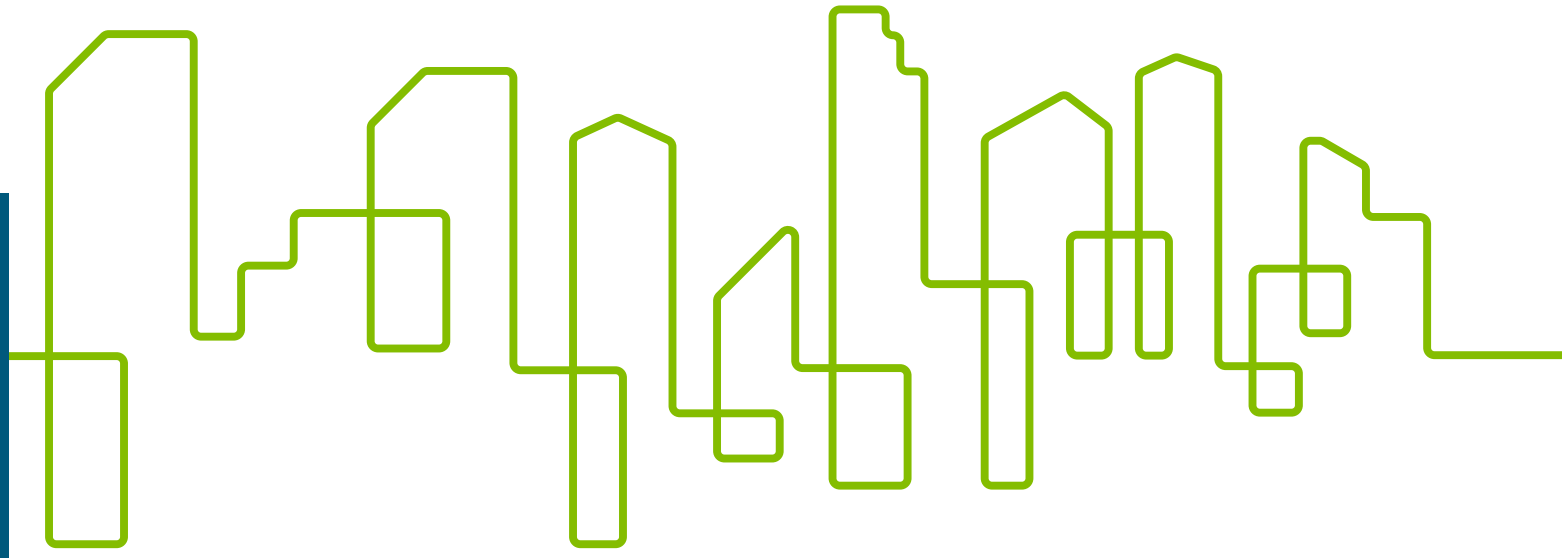
New Jersey Economic Development Authority

ECONOMIC IMPACT ASSESSMENT
TECHNOLOGY BUSINESS TAX CREDIT CERTIFICATE TRANSFER PROGRAM

2025



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Assessment Conducted by Econsult Solutions, Inc.

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ABOUT THE STUDY

Econsult Solutions, Inc. (ESI) is pleased to present this independent assessment of the New Jersey Business Tax Certificate Transfer (NOL) program, evaluating its reach and impact over the past 25 years. This analysis provides a comprehensive review of how the program has supported New Jersey's innovation economy by enabling growing technology and biotechnology firms to access critical capital through the sale of tax credits.

This report examines the program's effectiveness through three key dimensions:

- The current footprint of participating companies;
- The economic, employment, and tax revenue contributions of these companies to the state; and
- The long-term performance of these companies, including their survival rate and economic contributions, benchmarked against peer firms.

The findings highlight the program's role in driving economic activity, fostering job creation, and enhancing business sustainability. By providing vital financial support, the program has contributed to the resilience and growth of emerging companies in New Jersey's technology and biotech sectors.

This study was conducted through data gathering, analysis, and industry benchmarking to assess the program's outcomes. Our evaluation is based on standard economic methodologies, ensuring an impartial and data-driven assessment of the program's impact. The findings presented in this report reflect an independent evaluation of program outcomes over time.

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EXECUTIVE SUMMARY

PROGRAM OVERVIEW AND PURPOSE OF STUDY

Established in 1999, New Jersey's Business Tax Certificate Transfer (NOL) Program allows small-to-mid-sized unprofitable technology and biotechnology companies in New Jersey to monetize future tax benefits by selling net operating losses (NOLs) and research and development (R&D) tax credits. This mechanism provides immediate liquidity, enabling reinvestment into operations, research, talent acquisition, and growth initiatives.

The program aims to bolster the state's innovation economy by fostering company growth and resilience, contributing to broader economic benefits such as job creation, increased consumer spending, and tax revenue.

This study provides an in-depth evaluation of the program's impact. While the study does not establish direct causality between program participation and outcomes, it employs benchmarking methods to provide insights into the program's contributions. Observed differences in survival rates, economic activity, and job retention suggest that the program plays a meaningful role in supporting participating businesses.

Key Program Features:

- *Annual allocation of $75 million in transferable credits, with $15 million reserved for minority-owned, women-owned, or opportunity zone-based businesses.*
- *Participation criteria that focus on business size, industry, intellectual property, and health benefits provision.*
- *A history of supporting nearly 600 companies with $1.32 billion in its first 25 years, with an average utilization rate of 93 percent.*

> ***"If we had to do it again, we would choose New Jersey because of this program."***
> ***–Sameer Malhotra, CEO of TrueFort"***

Weehawken-based TrueFort, a leading cybersecurity company specializing in real-time application intelligence and lateral movement protection, credits New Jersey's NOL Program as a critical factor in its success. Founded in 2015 by former security and IT leaders from major financial institutions, TrueFort developed its innovative platform to address gaps in traditional security methods, leveraging machine learning and advanced behavioral analytics to provide solutions like Zero Trust Segmentation. "If we had to do it again, we would choose New Jersey because of this program," said Sameer Malhotra, CEO of TrueFort. By reinvesting NOL funds into R&D, product development, and go-to-market strategies, the company continues to drive innovation while showcasing New Jersey as a hub for emerging technology.

CURRENT FOOTPRINT OF PARTICIPATING COMPANIES

Research was conducted into the current operating status of 589 businesses that have been awarded credits within the program since 1999 using a combination of state business databases, program records, and acquisition tracking data. The goal was to assess the operational outcomes of these businesses and to understand their geographic distribution and economic impact within New Jersey.

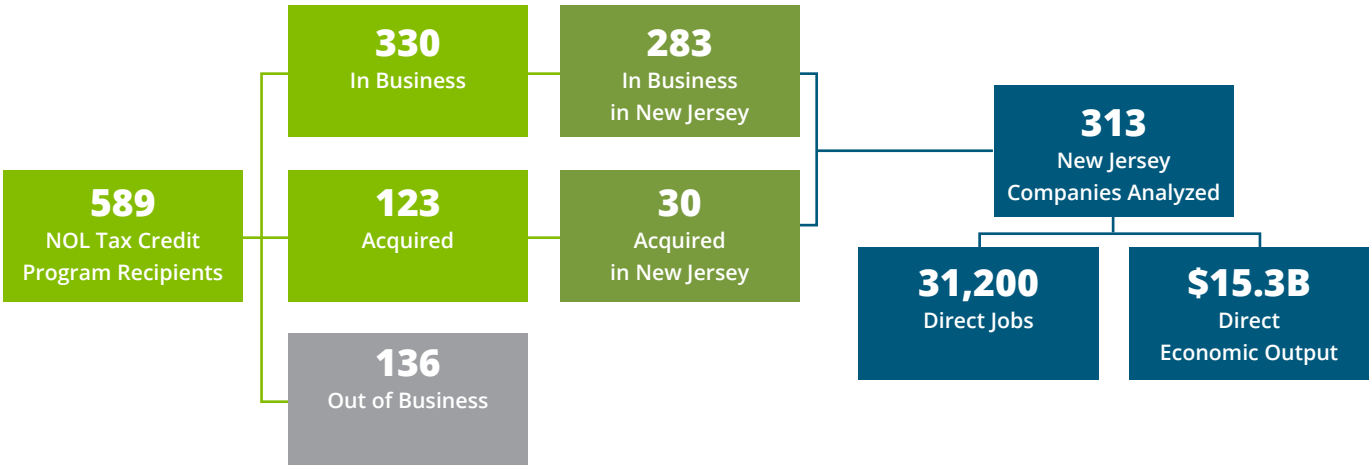
More than half of the 589 program recipients (313 companies) continue to operate in New Jersey as of 2024. This includes 283 companies that remain active independently and an additional 30 companies that have been acquired by other New Jersey-based entities.

The participating businesses still operating or acquired in New Jersey currently employ an estimated 31,200 New Jersey workers.

This employment footprint is estimated to produce $15.3 billion in direct output to the New Jersey economy annually.

CURRENT ECONOMIC IMPACT OF NOL PROGRAM RECIPIENTS (2024)

Fig. ES-1



Source: New Jersey Economic Development Authority (2024), Econsult Solutions, Inc. (2024), IMPLAN (2024)

CURRENT ECONOMIC AND TAX REVENUE IMPACTS

The economic impact of participating companies does not stop at their direct output. Economic impact estimates for participating companies are generated by utilizing input-output models to translate an initial amount of direct economic activity into the total amount of activity that it supports. This total impact includes multiple waves of spillover impacts from initial expenditures. Based on the employment footprint, location, and industry sectors of recipient companies, economic modeling is performed to estimate their total direct and indirect economic footprint within the state.

In addition to their direct output and employment, participating companies still operating within New Jersey produce additional waves of spillover activity through the supply chains ("indirect impacts") and through household spending supporting by the labor income they generate ("induced impacts"). This economic activity also increases key tax bases for the state, generating government revenues.

Economic modeling is conducted based on the employment footprint, location, and industry sectors of recipient companies to estimate their total direct and indirect economic footprint within the state.

Inclusive of spillover impacts NOL program supported companies are estimated to have generated in 2024:

$28.1 billion in economic impact within the New Jersey economy

87,800 jobs supported with annual employee compensation of $8.6 billion

$715 million in state tax revenue

CURRENT ECONOMIC IMPACT FROM OPERATIONS OF NOL PROGRAM PARTICIPANTS, 2024

	Direct	Indirect / Induced	Total Impact
Output ($B)	$15.3	$12.8	$28.1
Employment (jobs)	31,200	56,600	87,800
Employee Compensation ($B)	$4.3	$4.3	$8.6
State Tax Revenue ($M)	$360	$356	$715

Source: IMPLAN (2022), Econsult Solutions, Inc. (2024), New Jersey Department of the Treasury (2023)

"The NJEDA NOL program has been an invaluable resource for us, providing Oishii with the support needed to accelerate our R&D efforts and drive innovation in indoor vertical farming," said Brendan Somerville, Co-founder and COO at Oishii. "Thanks to their continued partnership, we've made significant strides in advancing sustainable technologies and raising the standard of fresh produce in America—all while creating a positive impact right here in New Jersey."

PERFORMANCE BENCHMARKS

Early and expansionary stage companies, regardless of their industry, face significant risks and challenges that contribute to high failure rates. For companies that are aiming to create a new scientific product or service, these challenges are particularly pronounced due to prohibitively high costs associated with cutting-edge research, development, testing, regulatory compliance, and market adoption. From the perspective of the state, supporting early stage firms at this critical period can yield benefits if these companies are more likely to survive and grow than their peers, results in additional employment, economic impact, and tax revenue as they go forward.

To evaluate the performance of NOL program participants relative to their peers, the analysis calculates an "expected lifespan" for each company with sufficient data, whether currently operating or no longer in business, within New Jersey. Data from the Bureau of Labor Statistics is used to benchmark participating companies against their peers based on data on the recipient industry and size as of the time of award, and longitudinal state and national data on business survival.

Though external factors such as market conditions, industry trends, and individual strategies also influence outcomes, these results suggest the program's potential role in enhancing business survival and economic contributions.

EXPECTED VS. ACTUAL SURVIVAL AND IMPACT (AS OF 2024)

	Actual	Expected	Net
Survival Rate (%)	72%	36%	36%
Employment (jobs)	31,200	12,800	18,400
Output ($B)	$28.1	$11.9	$16.2
State Tax Revenues ($M)	$715	$293	$422

Source: Bureau of Labor Statistics (2024), IMPLAN (2022), New Jersey Department of the Treasury (2023), Econsult Solutions, Inc. (2024)

The expected survival rate to 2024 for participating companies based on industry benchmarks was 36%, while the actual survival rate was 72%, doubling this benchmark.

Expected employment based on industry benchmarks was 12,800 compared to actual employment of 31,200, a net of an additional 18,400 (59% of the total).

Based on this employment proportion, $16.2 billion of the $28.1 billion in total economic impact generated in 2024 is estimated to be attributable to the overperformance of these companies.

This additional activity yields an estimated $422 million in additional state revenue.

25-Year Impact

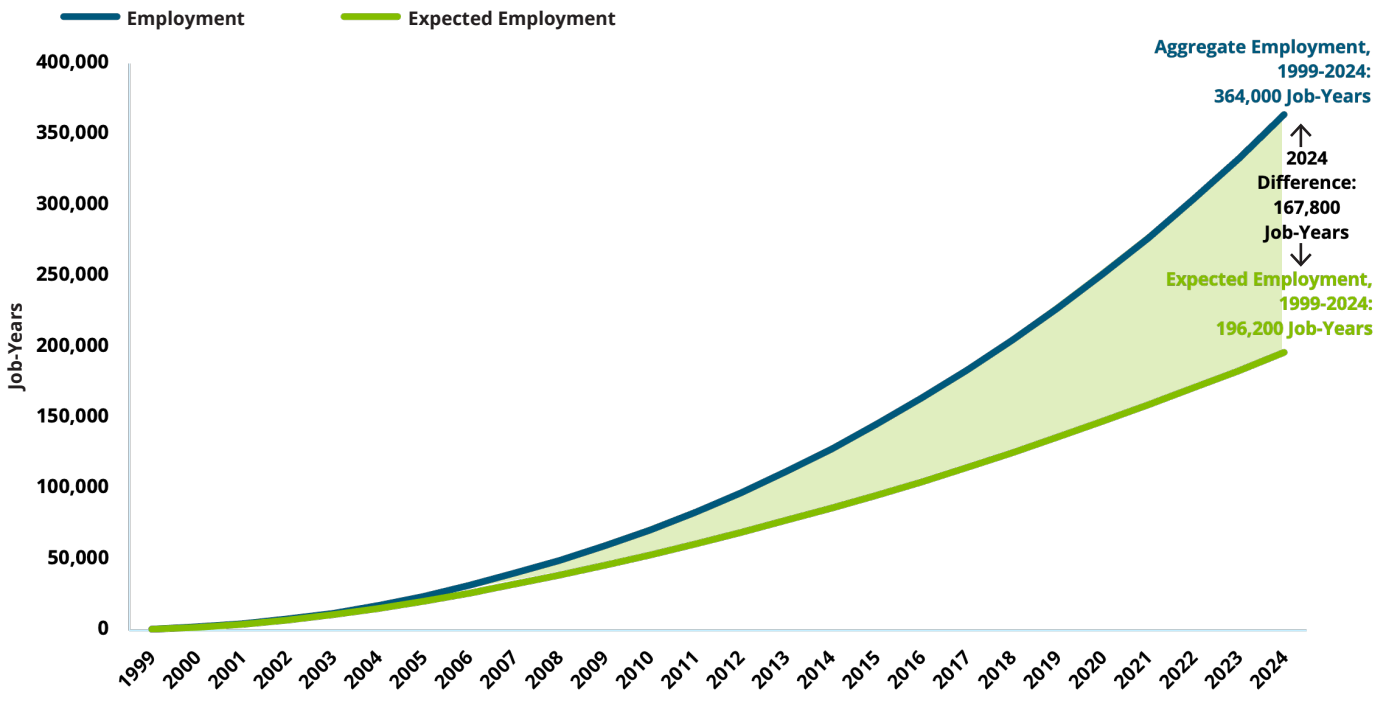
The calculation of expected and actual employment is extrapolated back to the initiation of the program in 1999 to estimate net impacts from state investment over the lifespan of the program.

By comparing firm survival rates and estimated employment growth trajectories to industry benchmarks, NOL program recipients have supported approximately 364,000 job-years of employment between 1999 and 2024.

This figure is 86 percent higher than the anticipated 196,200 job-years based on average survival rates and growth, resulting in a net gain of 167,800 job-years.[1]

BUSINESS SURVIVAL MODEL: CUMULATIVE EMPLOYMENT ABOVE EXPECTED FOR PARTICIPATING COMPANIES

Fig. ES-2



Source: Bureau of Labor Statistics (2024), Econsult Solutions, Inc. (2024), NJEDA (2024)

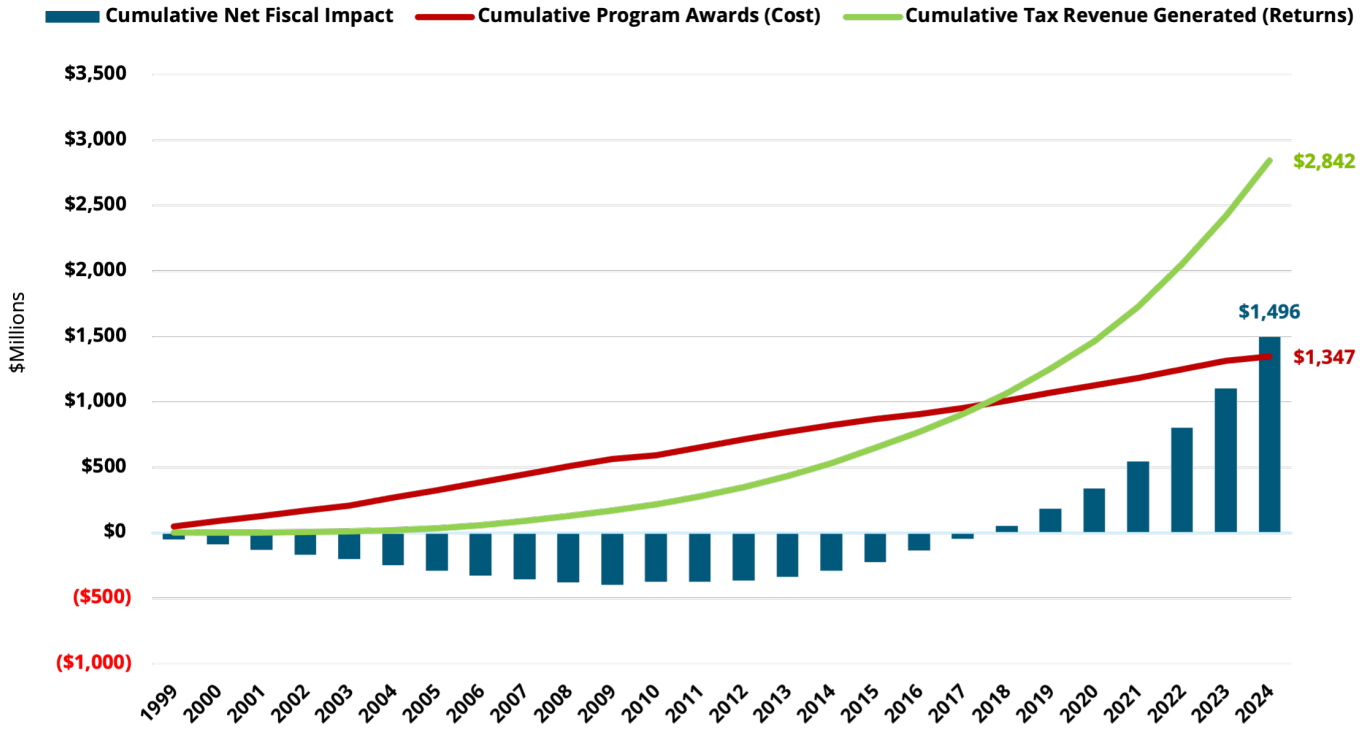
1 Job-years reflect a single year of full-time employment. When expressed over a multi-year time frame, these figures do not reflect a unique number of new positions created, as the same FTE position that exists for multiple years will count as multiple job-years. For example, an employment increase of 500 FTE job-years over ten years can also be expressed as 50 FTE jobs per year.

Over 25 years, New Jersey has invested $1.32 billion into the NOL program, yielding substantial economic and fiscal returns.[2] Initially, program costs exceeded returns, creating a fiscal deficit through 2009. However, as participating companies stabilized and expanded, tax revenues began surpassing costs in 2010, leading to cumulative positive returns by 2018. These results highlight the program's long-term value in fostering economic growth and generating fiscal benefits for the state.

Net economic activity driven by participating companies' overperformance in employment, has generated an estimated $2.84 billion in state tax revenues over the 1999-2024 period. This translates to over $2 in state tax revenue for every $1 of tax credit awarded.[3]

PROGRAM ROI, CUMULATIVE NET FISCAL IMPACT (NOMINAL $M)

Fig. ES-3



Source: Bureau of Labor Statistics (2024), Econsult Solutions, Inc. (2024), NJEDA (2024), IMPLAN (2024)

2 An additional $30 million in tax credit was disbursed in 2024. While all the 2024 company recipients were not included in this analysis, to be conservative, we do add this to the overall program cost.

3 Importantly, this study does not attempt to establish a direct causal relationship between program participation and outcomes such as economic performance or fiscal impact. The impact shown here is of the participating companies.

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PROGRAM OVERVIEW

Section 1

TECHNOLOGY BUSINESS TAX CERTIFICATION TRANSFER (NOL) PROGRAM

Established in 1999, the New Jersey Technology Business Tax Certificate Transfer Program enables unprofitable small-to-mid-sized technology ("tech") and biotechnology ("biotech") companies in New Jersey to convert future tax benefits into immediate revenue by selling their net operating losses (NOLs) and research and development (R&D) tax credits to profitable corporations. The program provides a mechanism for these businesses to monetize future NOL credits, with the intent of creating opportunities for reinvestment into their operations. The overarching goal is to support the development of the state's innovation economy and enhance economic outcomes, including job growth, within high-value sectors as well as other sectors that experience spillover benefits.

Currently, up to $75 million in transferable credits are available annually, with $15 million reserved for minority-owned, women-owned, or opportunity zone-based businesses. With an average utilization of 87 percent, nearly 600 companies have benefited since the program's inception, receiving an aggregate of $1.32 billion in credits.

Economically, the program is designed to deliver an immediate financial boost to companies, offering liquidity that may be reinvested into operations. Such reinvestment could support activities like research and development, talent acquisition, infrastructure expansion, and other growth-oriented initiatives. These actions may enhance the competitive position of participating companies. By foregoing some tax revenue to support these businesses, the state aims to lay the foundation for broader economic benefits, such as job creation, increased consumer spending, and contributions to the tax base through payroll and corporate taxes. While these benefits are plausible outcomes, they depend on the effective implementation of the program and other contributing factors.

To participate in the program, companies must meet the following eligibility requirements:

- *Meet the definition of biotechnology or technology business;*
- *Have a primary business activity that involves the provision of a scientific process, product, or service;*
- *Own or exclusively control Protected Proprietary Intellectual Property (PPIP);*
- *Have no net operating income for the past two years,*
- *Have fewer than 225 U.S. employees with at least one full-time employee physically working in New Jersey, and;*
- *Offer health benefits under a group health plan to full-time employees.*

If executed successfully, the program has the potential to position participating businesses for enhanced growth and resilience compared to their peers. By providing access to capital during the important growth phase in a company life cycle, the initiative can help companies navigate financial hurdles, seize market opportunities, and accelerate innovation. This competitive advantage not only supports individual business success but also strengthens the overall economic ecosystem by fostering a resilient and thriving innovation sector. The ripple effects can include higher rates of entrepreneurship, stronger supply chain linkages, and increased investment from external stakeholders attracted to a vibrant, growth-oriented business environment.

ORGANIZATION OF THE REPORT

Section 2
CURRENT FOOTPRINT OF PARTICIPATING COMPANIES
provides an overview of program participation, detailing award amounts and the variety of companies involved. It highlights the program's scope and the sectors it has supported across New Jersey.

Section 3
ECONOMIC IMPACT AND TAX REVENUES
examines the economic contributions of participating companies, such as job creation and overall economic output, and estimates associated tax revenues.

Section 4
PERFORMANCE BENCHMARKS AND PROGRAM IMPACT
evaluates survival rates of participating companies and considers the broader economic impact of the program, using benchmarks to inform program contribution.

Importantly, this study does not attempt to establish a direct causal relationship between program participation and outcomes such as economic performance or fiscal impact. Instead, it employs benchmarking methods to compare participating companies with similar firms. While these comparisons may highlight performance differences linked to the program, they should be interpreted as indirect indicators influenced by broader factors such as industry dynamics, macroeconomic trends, and company-specific strategies.

The observed differences in survival rates, economic activity, and job retention among participating companies, when compared to benchmarks, provide a meaningful measure of program performance. The program's distinguishing feature—awarding tax credits—appears to contribute to these outcomes. However, external factors also play a significant role, which must be taken into account when assessing the findings and the program's overall impact.

> ***"We are excited to participate in the NOL program, as having the ability to sell NOLs will improve cash flow and allow us to invest further in our technology," said Rajesh Saggi, CEO, Moblty. "We appreciate the State's progressive, proactive approach to helping emerging companies succeed."***
>
> Livingston-based Moblty is an enterprise software company that benefited under the NOL Program for the first time this year. The company has developed what has emerged as the leading shopper marketing software platform to help companies digitize their retail footprint. Moblty enhances the retail shopping experience when applied through its purposeful, measurable platform.
>
> *Source: Moblty press release (2017)*

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CURRENT FOOTPRINT OF PARTICIPATING COMPANIES

Section 2

This section examines the current status of these companies, exploring whether they remain in business, have been acquired, or are no longer operational, while also analyzing their geographic and industry distribution. **Of the 589 participants, 313 businesses remain active or have been acquired within the state, collectively supporting an estimated 31,200 jobs across sectors such as biotech, tech, professional services, healthcare, and manufacturing.** This analysis highlights the program's broad reach and its role in supporting economic activity across New Jersey.

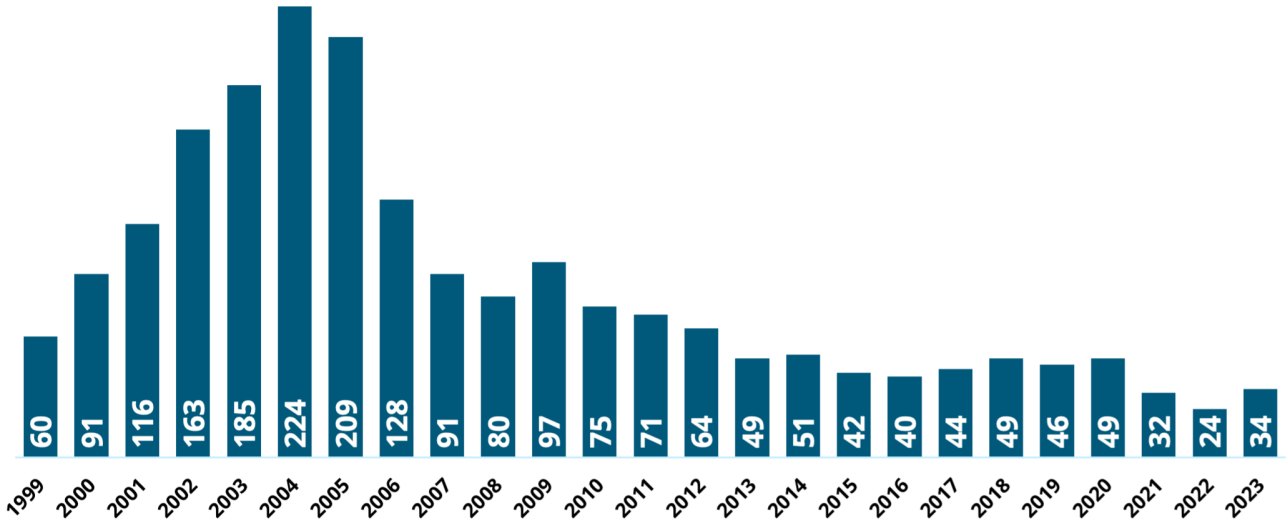
Over the program's history, average utilization has been 93 percent, highlighting sustained demand and effective allocation of available resources.

PROGRAM PARTICIPANTS

Since its inception in 1999, New Jersey's NOL tax credit program has supported 589 companies with approximately $1.32 billion in tax credits.[4] Figure 1 illustrates the number of companies participating in the program by year, with participation peaking between 2001 and 2006. During this period, over 100 companies benefited from the program annually, receiving an average award of approximately $300,000. Companies can receive multiple awards if they continue to meet program criteria and have not reached the lifetime awards limit, which accounts for the sum of program recipients by year exceeding the total number of unique participants.[5]

Fig. 1

PROGRAM RECIPIENTS BY YEAR, 1999-2023



Source: New Jersey Economic Development Authority

4 Included in this count are five companies that received their first award in 2024. Full data for 2024 is not available currently, however, these five companies are included in the analysis to follow. https://www.njeda.gov/njeda-to-open-applications-for-2024-nol-program/

5 There have been multiple programmatic changes over the program lifespan and these changes can impact participation.

The program's annual funding pool has varied over its 26 years of operations, reflecting changing economic priorities and adjustments. The program began with a $50 million pool in 1999, which was reduced to $40 million annually from 2000 to 2003 (see table on the right). In 2004, the pool increased to $60 million, remaining at this level through 2020, except for 2010, when it was temporarily reduced to $30 million due to budget constraints. During Governor Phil Murphy's term, funding expanded to $75 million in 2021, with $15 million allocated for minority-owned, women-owned, or opportunity zone-based businesses.

Utilization trends, depicted in Figure 2, demonstrate consistently high rates in the program's early years, with near 100 percent utilization from 1999 to 2009.[6] During the 2010s, utilization fluctuated, ranging from a low of 59 percent in 2016 to full utilization in 2018 and 2019. More recently, utilization ranged from 76 percent to 91 percent between 2021 and 2023, reflecting adjustments to the expanded funding pool. These trends highlight the program's periods of full capacity, and recent fluctuations as demand and participation levels evolved alongside funding changes.

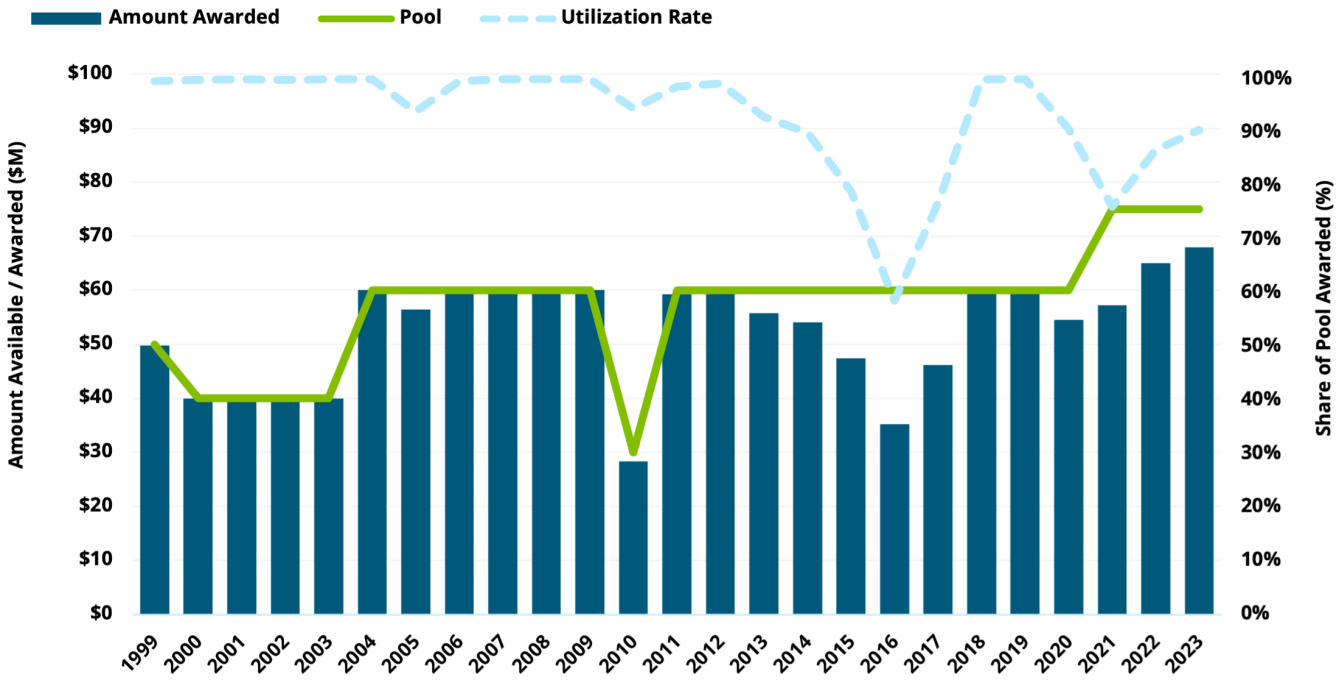
ANNUAL FUNDING POOL, NOL PROGRAM, 1999–2023

Program Year	Annual Funding
1999	$50M
2000–2002	$40M
2003–2009	$60M
2010	$30M
2020	$60M
2021 – 2023	$75M

Source: NJEDA (2024)

Fig. 2

NOL PROGRAM UTILIZATION ($M), 1999-2023



Source: New Jersey Economic Development Authority

6 Utilization is calculated by dividing the amount awarded by the total pool amount for a given year.

Current Company Status

The review of the current status of companies participating in the NOL Program was conducted using a combination of state business databases, program records, and acquisition tracking data. The goal of this analysis was to assess the operational outcomes of these businesses and understand their geographic distribution and economic impact within New Jersey.[7]

More than half of the program recipients continue to operate in New Jersey, either as independent businesses or through acquisition by New Jersey-based firms. These numbers suggest a strong in-state retention of businesses, contributing positively to local economic activity and employment.

In contrast, just under a quarter of program recipients have shifted operations outside of New Jersey, either continuing as independent businesses or through acquisition by out-of-state firms. This reflects the mobility of technology and biotech firms and the prevalence of cross-state acquisitions.

53% Operating in New Jersey
Out of the 589 program recipients, 283 companies remain active in New Jersey. An additional 30 companies have been acquired by New Jersey-based firms, bringing the total in-state presence to 313 companies.

24% Operating Outside of New Jersey
47 companies continue to operate independently outside of New Jersey. Additionally, 93 companies were acquired by firms based outside the state, resulting in a total of 140 companies associated with out-of-state operations.

23% Out of Business
A total of 136 companies have ceased operations, accounting for 23 percent of the total program recipients.

CURRENT OPERATING STATUS OF NOL PROGRAM RECIPIENTS

Status	Within New Jersey	Out of State	Total
In Business	283	47	330
Acquired	30*	93**	123
Out of Business	123	13	136
TOTAL	**436**	**153**	**589**

* For companies acquired by another New Jersey firm, employment size at acquisition was counted.
** Of the 93 businesses acquired by out-of-state companies, it is estimated that up to 8,300 jobs could be located in New Jersey. However, due to concerns about the reliability of this data, this employment was not included in the formal economic impact modeling but serves as an indicative measure of potential additional employment impacts.
Source: New Jersey Economic Development Authority (2024), Econsult Solutions, Inc. (2024)

EMPLOYMENT FOOTPRINT AND DISTRIBUTION

The 313 participating businesses still in operation or acquired in New Jersey represent a significant base of employment and economic activity within the state. The table below shows the distribution of participating businesses still in operation and the estimated current employment count by sector. The biotech sector, comprising 141 businesses, and the tech sector, with 172 businesses, represent all New Jersey-based in-business or acquired program participants. The tech sector leads in direct employment, supporting an estimated 18,500 jobs, followed by the biotech sector with approximately 12,700 jobs. Together, these participating firms in these sectors contribute over 31,200 jobs to the state's economy.

ACTIVE, NEW JERSEY NOL PROGRAM PARTICIPANTS BY INDUSTRY

Industry	# of Active / Acquired Firms	Out of State
Biotech	141	12,700
Tech	172	18,500
TOTAL	**313**	**31,200**

Source: New Jersey Economic Development Authority (2024), Econsult Solutions, Inc. (2024)

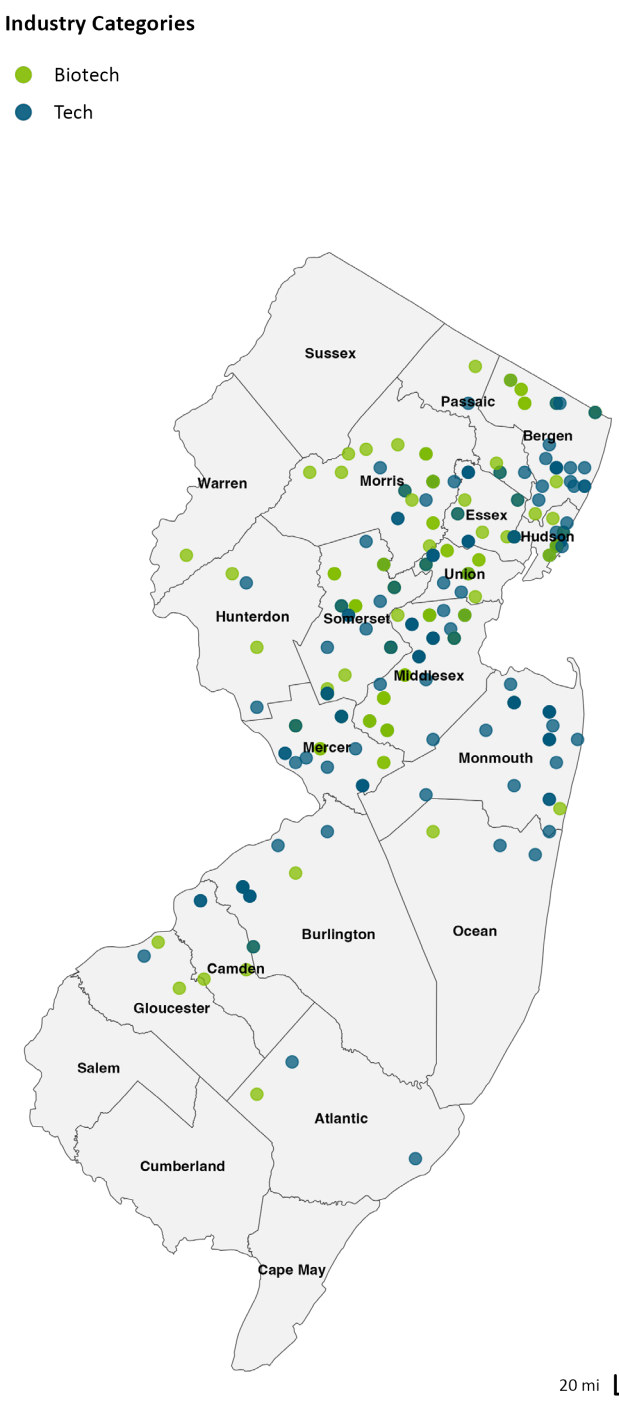
These companies collectively support an estimated statewide employment footprint of approximately 31,200 jobs, spanning industries and regions across the state.

7 A description of the full analysis process can be found in the Appendix.

Figure 3 (left) shows the distribution of NOL program participants and Figure 4 (right) shows the distribution of NOL program participants by direct employment.

DISTRIBUTION OF NOL PROGRAM PARTICIPANTS, 1999-2024

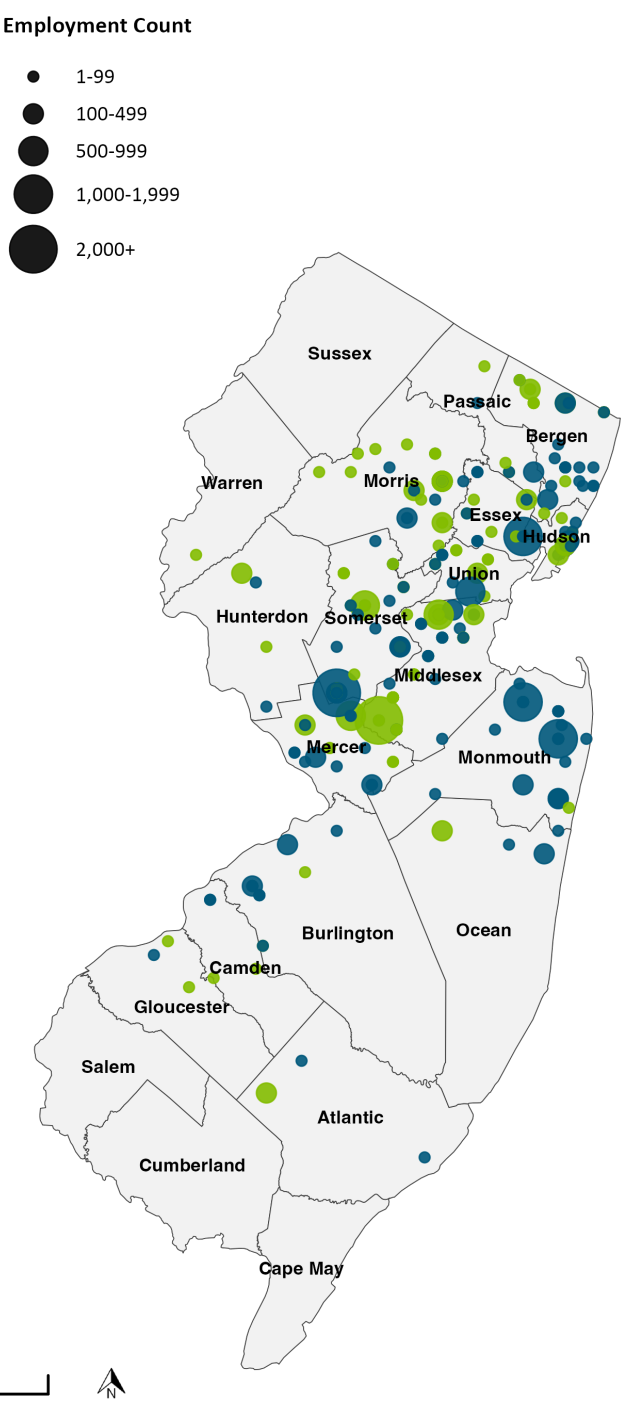
Fig. 3



Source: New Jersey Economic Development Authority (2024), Econsult Solutions, Inc. (2024)

DISTRIBUTION OF NOL PROGRAM PARTICIPANT DIRECT EMPLOYMENT, 1999-2024

Fig. 4



Source: New Jersey Economic Development Authority (2024), Econsult Solutions, Inc. (2024)

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CURRENT ECONOMIC & TAX REVENUE IMPACTS

Section 3

Each year, program recipients operating within New Jersey invest millions of dollars to sustain their workforce, maintain operations, and drive innovation through research and development. This spending encompasses employee compensation, procurement of goods and services, and other operational expenses that directly support the companies' activities.

The economic impact of this spending extends beyond the recipient companies, as it circulates throughout the state economy, creating ripple effects. These include indirect impacts, such as increased demand for suppliers and service providers, and induced impacts, such as heightened consumer spending driven by employee wages.

Quantifying these effects provides valuable insights into the broader economic contributions of program recipients. **The current annual economic impact of NOL program-supported companies within New Jersey is estimated at $28.1 billion**, approximately 87,800 jobs with $8.6 billion in employee compensation. It also generates an estimated $715 million in tax revenue for the State of New Jersey.

CURRENT DIRECT ACTIVITY OF PROGRAM PARTICIPANTS

The businesses supported by the NOL program create significant economic activity within New Jersey through direct, indirect, and induced impacts. The first step in assessing these impacts is to estimate the direct output associated with the employment levels of each company, classified by industry. In 2024, the 313 New Jersey-based program recipients employed approximately 31,200 individuals for an estimated $15.3 billion in direct economic activity (see table on the right).

IMPLAN is a widely used economic modeling system that combines input-output analysis with data on employment, industry structure, and regional economic dynamics. For this analysis, we began with a known employment figure, which IMPLAN then used to estimate direct economic activity. This calculation is based on IMPLAN's ratios of employment to output, derived from national and regional economic accounts, ensuring that the output aligns with the specific characteristics of the industry and geography in question.

NOL PROGRAM RECIPIENT DIRECT OUTPUT ($B)

	Establishments	Employment	Direct Output ($B)
Biotech	141	12,700	$5.6
Tech	172	18,500	$9.7
TOTAL	**313**	**31,200**	**$15.3**

Source: New Jersey Economic Development Authority (2024), Econsult Solutions, Inc. (2024)

CURRENT ECONOMIC IMPACT OF PARTICIPATING COMPANIES

Economic impact estimates for participating companies are generated by utilizing input-output models to translate an initial amount of direct economic activity into the total amount of activity that it supports. This total impact includes multiple waves of spillover impacts from initial expenditures. Based on the employment footprint, location, and industry sectors of recipient companies, economic modeling is performed to estimate their total direct and indirect economic footprint within the state.[8] Economic impacts are modeled using IMPLAN, an industry standard input-output model software program. Such models are designed to estimate two sets of spillover impacts from direct activity:

- **Indirect** impacts refer to expenditures made by suppliers and businesses that support the primary industry, such as service providers, vendors, and manufacturers (i.e. supply chain); and
- **Induced** impacts encompass the consumption of wages earned by direct and indirect employees as they spend their income on goods and services locally (i.e. labor income).

Together, these effects contribute to job creation, increased tax revenues, and the overall economic vitality of the state. This study estimates the total current economic impact associated with the $15.3 billion in direct annual activity at companies that have received funds through the NOL program and are operating today. ***The current annual economic impact of NOL program-supported companies within New Jersey is estimated at $28.1 billion, with approximately 87,800 jobs and $8.6 billion in employee compensation.***

The table on the right below shows the breakdown of direct impacts (from the participating companies) and indirect and induced impacts (from supply chain and labor income activity). Employee compensation is evenly distributed between direct and indirect impacts ($4.3 billion for each), though the majority of total jobs supported (65 percent) are through indirect and induced impacts. This distribution results from the high-paying nature of the direct jobs in the tech and biotech fields, which average nearly $140,000 in total employee compensation (wages plus benefits), while the indirect and induced jobs, which are spread through many sectors of the economy, average around $75,000 in employee compensation.

> ***"This program offered by the NJEDA provides Imunon with investor-friendly ways to finance its clinical development programs," said IMUNON's executive vice president and CFO Jeffrey W. Church. "The sale of more than $19 million of unused New Jersey NOLs over the past six years reflects the balance between the high cost of research and drug development and a focus on our shareholders. We extend thanks to the NJEDA for their efforts to foster continued investment and growth for businesses in New Jersey."***
>
> Imunon, a life sciences company based in Lawrence Township, Mercer County, creates proprietary immunology and DNA-based technology for difficult-to-treat conditions, creating medicines that harness the building blocks of life to work in harmony with the body's immune system. The company has utilized support from the NOL program every year since 2018.
>
> *Source: Imunon press release (2023)*

ANNUAL ECONOMIC IMPACT FROM OPERATIONS OF NOL PROGRAM PARTICIPANTS, 2024

Economic Impact	Direct	Indirect / Induced	Total
Biotech ($B)	$5.6	$4.0	$9.6
Tech ($B)	$9.7	$8.8	$18.5
Total Output ($B)	**$15.3**	**$12.8**	**$28.1**
Employment			
Biotech	8,900	16,800	25,700
Tech	22,300	39,800	62,100
Total Employment	**31,200**	**56,600**	**87,800**
Employee Compensation			
Biotech ($B)	$1.4	$1.3	$2.6
Tech ($B)	$2.9	$3.0	$6.0
Total Employee Compensation ($B)	**$4.3**	**$4.3**	**$8.6**

Source: IMPLAN (2022), Econsult Solutions, Inc. (2024)

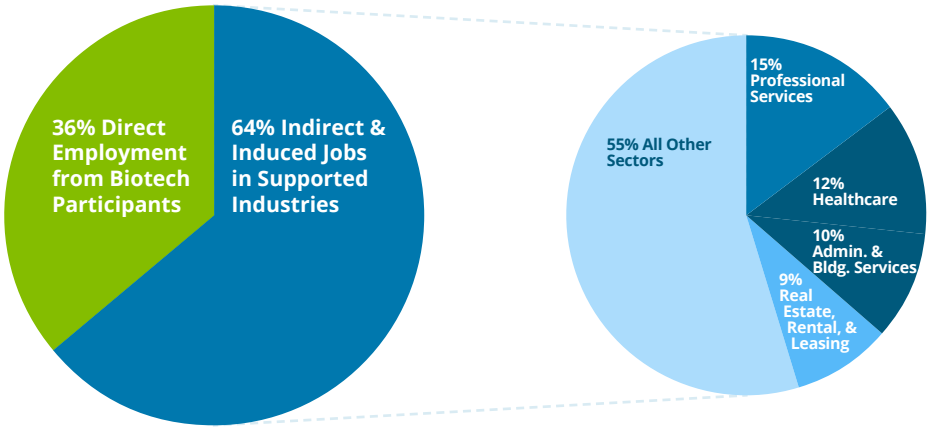
8 See Appendix for more methodological details.

Industry Distribution of the NOL Program's Economic Impact

The direct employment impacts of the NOL Program are distributed across both biotech and tech sectors, with ripple effects extending to various industries. Among biotech participants, 36 percent of jobs are directly in the sector, including research, development, and production roles. The remaining 64 percent are indirect or induced, benefiting industries like professional services (15 percent), health care (12 percent), administrative services (10 percent), and real estate (9 percent) (see Figure 5 below). For tech participants, 37 percent of jobs are directly tied to operations, while 63 percent are supported through indirect and induced impacts (see Figure 6 below).

Fig. 5

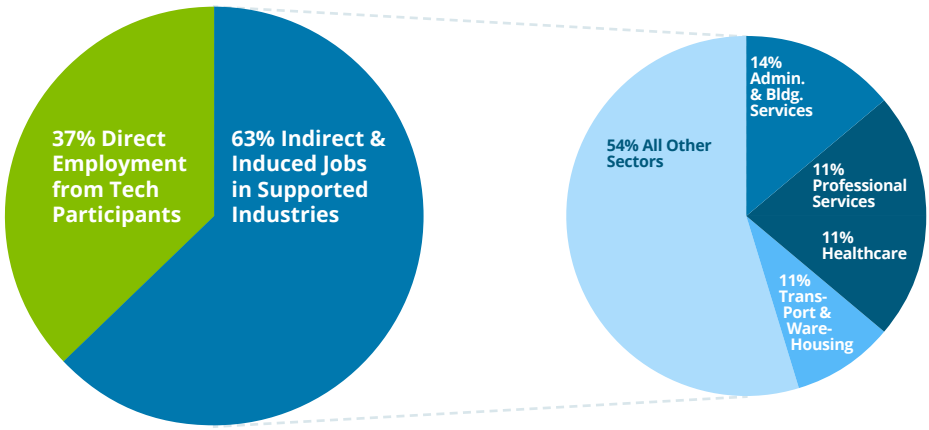
INDUSTRY DISTRIBUTION OF STATEWIDE EMPLOYMENT IMPACTS FROM OPERATIONS OF NOL PROGRAM BIOTECH PARTICIPANTS



Source: IMPLAN (2022), Econsult Solutions, Inc. (2024)

Fig. 6

INDUSTRY DISTRIBUTION OF STATEWIDE EMPLOYMENT IMPACTS FROM OPERATIONS OF NOL PROGRAM TECH PARTICIPANTS



Source: IMPLAN (2022), Econsult Solutions, Inc. (2024)

TAX REVENUE IMPACTS

This direct and spillover economic activity also generates significant tax revenue for state and local jurisdictions.[9] Direct tax revenues associated with the participating companies stem from several sources, including employment taxes (such as income and payroll taxes, generated by company employees), sales taxes (derived from the purchase of goods and services by the companies and their employees) and corporate business taxes (collected from the profits of participating companies).

In addition to these direct taxes, the indirect and induced economic activity generated by the presence of these firms in New Jersey also generates tax revenues. As direct spending on employees and on goods and services ripples through the state economy, indirect effects increase demand for suppliers and induced effects increase household spending. This cyclical flow of spending and re-spending generates additional taxable activity. This analysis develops a custom fiscal impact model based on the observed ratios between economic activity and tax collections (i.e. effective rates) reported by the State in its Comprehensive Annual Financial Reports.[10]

> ***"Lisata is thrilled to leverage the benefits of the NJ NOL program, which has provided the Company with critical non-dilutive funding for several years," said President and Chief Executive Officer of Lisata David J. Mazzo, PhD. "It has allowed us to translate net operating losses into strategic investments for our pipeline, without diluting ownership for our shareholders. This is a significant financial boost that fuels our ability to deliver potentially life-saving treatments to patients more quickly. We're grateful to the NJEDA for recognizing the potential of New Jersey's life science companies and for fostering innovation through programs like the NOL."***
>
> Clinical stage pharmaceutical company Lisata Therapeutics, based in Basking Ridge, Somerset County, is dedicated to the discovery, development, and commercialization of innovative therapies for the treatment of advanced solid tumors and other major diseases. In addition to receiving support from the NOL program since 2019, the company also received the NJEDA's Small Business Improvement Grant in 2023.
>
> *Source: Lisata Therapeutics press release (2023)*

The current direct, indirect, and induced economic activity attributable to recipients of the NOL program generates an ***estimated $715 million in taxes to the State of New Jersey annually***. As seen in the table below, the largest portion of these revenues come from state income taxes at $335 million, followed by sales tax ($274 million) and business taxes ($107 million). These impacts are closely divided between direct tax revenue impacts from the participating companies ($360 million) and tax revenue impacts from indirect and induced activities ($356 million).

Tax revenues generated by the economic activity from participating companies can be conceptualized as a form of return on the state's investment in the program, though this comparison is complex. One important factor is timing, with investments taking place at a point in time for each company and in annual increments across the portfolio and returns to the state taking place over the life of the program (and then into the future). Another important question is the contribution of the program to the success of these firms. Section 4 below uses performance benchmarks to shed light on the relative success of participating firms compared to similarly situated companies and uses this information to analyze the contribution of the NOL program to state tax revenues relative to the program cost.

ANNUAL STATE TAX REVENUE IMPACTS FROM OPERATIONS OF RECIPIENTS OF THE NOL PROGRAM

Tax Type	Direct	Indirect / Induced	Total Impact
Income Tax ($M)	$168	$167	$335
Sales Tax ($M)	$138	$136	$274
Corporate Business Tax ($M)	$54	$53	$107
Total Tax Revenue ($M)	**$360**	**$356**	**$715**

Source: New Jersey Department of the Treasury (2023), IMPLAN (2022), Econsult Solutions, Inc. (2024)

9 This tax revenue analysis focuses exclusively on state-level impacts and does not account for tax credit revenue received from companies that purchased the credits. Local impacts, such as property taxes, are also excluded due to their diffuse nature and limited measurability within the scope of this study.

10 See Appendix for more methodological details.

Bloqcube

Founded in July 2017 by Rama Rao, Bloqcube is a cutting-edge technology company revolutionizing clinical trial operations through its blockchain-based software. Combining Rao's extensive background in oncology drug development finance and his personal journey as a brain tumor survivor, Bloqcube addresses inefficiencies in clinical operations to reduce costs and accelerate timelines in an industry plagued by delays.

Bloqcube's flagship platform leverages blockchain to secure data, automate manual tasks, reduce vulnerability to ransomware attacks, and enhance transparency in decentralized clinical trials. Initial tests demonstrated significant efficiencies, with up to 50 percent time savings, paving the way for broader adoption. The company also champions inclusivity in clinical trials, aiming to expand participation beyond predominantly North American to reflect global diversity and FDA guidelines.

The COVID-19 pandemic posed unprecedented challenges for Bloqcube, halting clinical trials and straining operations. Amid these difficulties, the Net Operating Loss (NOL) program by the NJEDA provided critical support. In 2020, Bloqcube utilized the program to raise $60,000, which was instrumental in maintaining operations and covering marketing expenses during a funding dry spell. This financial bridge helped the company secure additional post-COVID investments totaling $400,000.

"The NOL program was a lifeline during one of our most challenging periods," Rao shared. "The clarity of the program rules and the exceptional support from brokers simplified the process, offering us a stamp of credibility that reassured our investors." However, Rao noted that the program's requirement for a minimum of five employees created barriers for lean startups and advocated for more flexible criteria.

Bloqcube's vision extends to scaling its decentralized platform to engage millions of global participants, furthering both equity and efficiency in drug development. Through partnerships and innovative technology, Bloqcube exemplifies the transformative potential of NJEDA initiatives in nurturing high-impact startups.

BioAegis Therapeutics

BioAegis Therapeutics, a clinical-stage biopharmaceutical company based in New Jersey, is advancing a new approach to immunotherapy by developing therapies centered around plasma gelsolin, a naturally occurring protein that regulates inflammation without suppressing the immune system. The company, founded in 2011, licensed its core technology from Harvard Medical School and has since worked to advance its lead indication—a treatment for acute respiratory distress syndrome (ARDS), currently in a Phase 2 clinical trial across 75 hospitals in 13 countries.

New Jersey's innovation-friendly business climate played a critical role in BioAegis's decision to establish operations in the state. "We looked at Connecticut, New York, and New Jersey, and ultimately chose New Jersey because of its very attractive incentives," said Valerie Ceva, Chief Operating Officer and co-founder. "Developing a biologic is incredibly capital-intensive … so anything that can monetize those operating losses now is a great benefit."

Beyond financial support, New Jersey's incentives also shape BioAegis's hiring and spending decisions. While the company operates with a lean full-time staff of 11, it intentionally prioritizes New Jersey-based contractors and vendors whenever possible. "Because of this program, we are always thinking about who's in New Jersey," explained Ceva. "If there are resources in New Jersey that are equivalent to those elsewhere, we will go for New Jersey because the incentives are always in the back of our minds."

With plans for expansion in the near future, BioAegis continues to benefit from New Jersey's support system for biotechnology companies. In addition to the NOL program, the company has participated in other state programs, including NJEDA's Angel Investor Tax Credit. As Ceva noted, "it wasn't just one program—it was the whole support system that brought us here and keeps us here."

Acuitive Technologies

Established in 2014, Acuitive Technologies is at the forefront of medical device innovation, specializing in orthopedic solutions. Founded by Dave Washburn and partners following the sale of a prior successful startup, the company is built upon decades of expertise in orthopedics and a commitment to advancing surgical outcomes. Acuitive's flagship technology, the citrate-based biomaterial CITREGEN®, is a resorbable polymer that supports natural tissue healing while reducing inflammation and scar tissue formation—addressing critical challenges in orthopedic surgeries.

Transitioning from research and development to commercialization, Acuitive faced significant hurdles, including scaling production and navigating the regulatory approval process for a first-of-its-kind material. During this pre-commercialization phase, the NOL program proved to be an indispensable resource. By monetizing tax losses through the program, Acuitive secured funds to construct its state-of- the-art ISO-certified manufacturing facility in Allendale, New Jersey, and to advance its FDA submissions. "The NOL program has been pivotal in enabling us to move at the pace required to bring groundbreaking technologies to market," shared Washburn. "Without it, we would have had to delay critical R&D milestones, which could have jeopardized our competitive edge."

Acuitive's journey exemplifies the program's role as a catalyst for innovation. Early NOL funding helped Acuitive develop its flagship products, including interference screws and suture anchors, which are distributed through a partnership with Stryker Corp. The company has since grown from four employees to a team of thirty and continues to invest in product development, including 3D-printed scaffolds for rotator cuff repair.

In addition to the NOL program, Acuitive has utilized NJEDA's Angel Investor Tax Credit Program to raise over $10 million in equity funding. The company also collaborates with local institutions like NJIT and Stevens Institute of Technology, hiring interns and fostering local talent.

Washburn emphasized the importance of awareness for programs like NOL: "This program accelerates growth for small businesses like ours, but many entrepreneurs aren't aware of it. Increased outreach could unlock more opportunities for startups across the state." By leveraging NJEDA resources, Acuitive Technologies continues to advance orthopedic innovation while contributing to New Jersey's economy through job creation and cutting-edge manufacturing.

Apprentice *[PENDING APPROVAL BY PARTICIPANT]*

Apprentice, a fast-growing life sciences technology company based in Jersey City, develops AI-powered manufacturing execution software to modernize and optimize pharmaceutical production. Founded in 2014 to address inefficiencies in drug manufacturing, the company has rapidly expanded, becoming a trusted partner for some of the most advanced therapies on the market. Today, Apprentice's platform supports the production of critical treatments, including all of Moderna's manufacturing, GLP-1 weight loss drugs, and cutting-edge CRISPR-based gene therapies.

New Jersey's strong biotech ecosystem played a crucial role in Apprentice's decision to establish and grow its business in the state. "For a startup like us, there was no better place to start the company because so many of the large pharma companies and specifically their manufacturing sites are here in the state," said Angelo Stracquatanio, CEO and co-founder. With a dense concentration of pharmaceutical firms, talent, and a business climate supportive of life sciences, New Jersey provided the ideal foundation for Apprentice's expansion.

When Apprentice first learned about the NOL program, its small scale made participation impractical. However, as the company expanded, NJEDA representatives remained in contact, and in 2023, Apprentice utilized the program for the first time during a critical period of economic uncertainty in the tech industry. "Having the NOL meant I could save close to 20 jobs," Stracquatanio recalled. "This wasn't just something that was helping drive higher profitability. This impacted actual people and their jobs."

Stracquatanio credited NJEDA staff with ensuring the program was accessible and impactful. "They were just extraordinary champions of us, both early and as we continue to grow." NJEDA's ongoing engagement helped Apprentice navigate the process and secure the funding when it was needed most.

Apprentice plans to continue utilizing the NOL program in future years as it scales operations. With its innovative technology, strong investor backing, and a supportive state ecosystem, the company is well-positioned to remain a leader in manufacturing solutions.

NJEDA

PERFORMANCE BENCHMARKS

Section 4

The intent of the NOL program is to support New Jersey companies with the potential to develop innovative technologies and products by providing them with access to much-needed capital during their early or expansionary phases of development. Small and early-stage companies experiencing a net operating loss are in a critical period where they are not yet profitable but may require significant resources to sustain operations, invest in research and development, and scale their businesses to achieve profitability. The program aims to serve as a financial buffer, helping to address capital constraints that could otherwise hinder their progress and threaten their viability.

While the success or failure of any business depends on many factors—such as market conditions, management decisions, and industry trends—the NOL program seeks to mitigate one of the most pressing challenges for early-stage companies: access to funding. By offering a mechanism to convert future tax benefits (through carryforward of losses into future years) into immediate revenue (through the sale of credits to firms that can use them immediately), the program provides these companies with a potentially key support during a pivotal stage in their lifecycle.

In this section, we will compare the performance of program recipients to industry benchmarks in terms of company survival and failure rates. To develop this comparison, data from the BLS on company failure rates by industry and location are used to develop a benchmark for the "expected" survival rates of program participants given their characteristics.

While performance relative to the baseline indicates the significant degree of success for participating companies, this research methodology cannot identify the cause of the observed performance differentials, and therefore cannot directly attribute the performance of participating companies to the NOL program.

Based on this analysis:

Throughout time, there has been an 86 percent survival rate among program participants. During 2024, program participants realized an average survival rate of 72 percent, approximately twice as high as the expected survival rate (36 percent).

Over the life of the program, net economic activity by participating companies over and above expected has generated an estimated tax impact of $2.84 billion (in nominal terms), compared to a cost of $1.35 billion, for a net fiscal impact of $1.45 billion. In other words, over the life of the program, for every $1 of tax credit provided corresponds with over $2 in additional state tax revenue generated by participating companies.

BUSINESS SURVIVAL

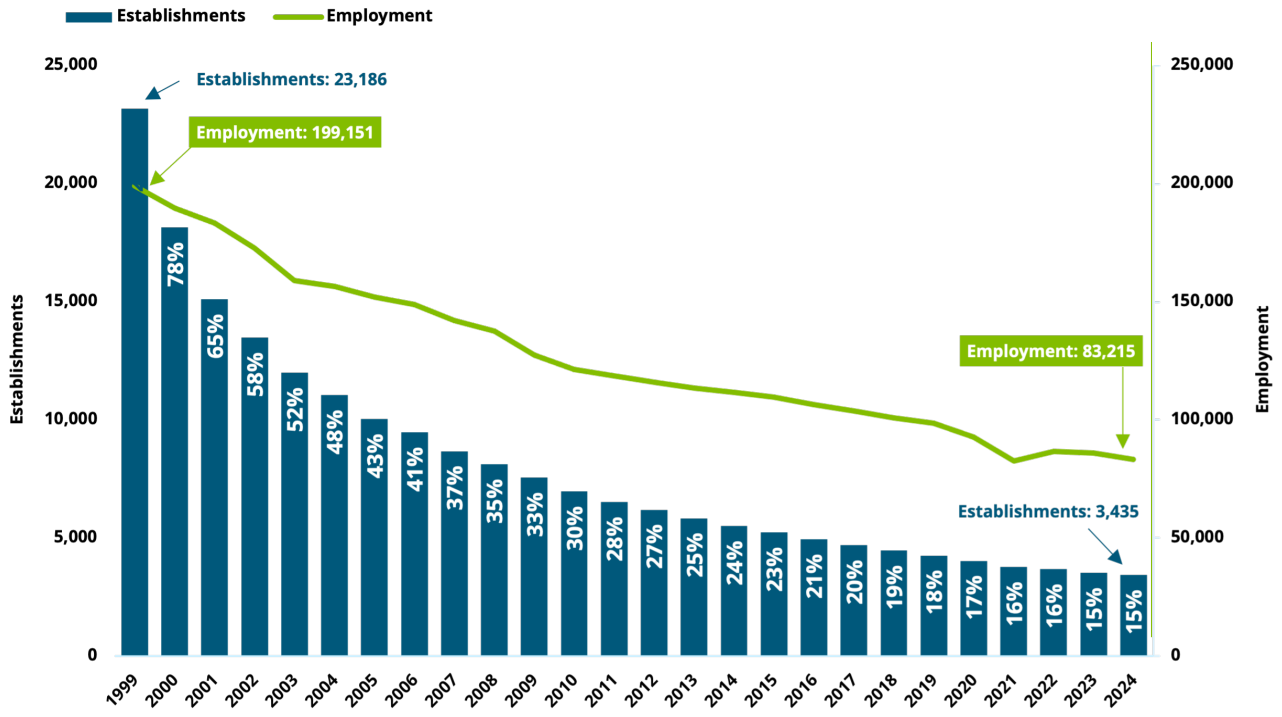
Early and expansionary stage companies, regardless of their industry, face significant risks and challenges that contribute to high failure rates. For companies that are aiming to create a new scientific product or service, these challenges are particularly pronounced due to prohibitively high costs associated with cutting-edge research, development, testing, regulatory compliance, and market adoption.

Data from the Bureau of Labor Statistics provides insight into business survival rates at the state level for businesses established from 1994 to the present. For example, businesses that started in New Jersey in 1999 have a survival rate of just 15 percent as of 2024. In other words, out of nearly 23,200 private-sector establishments that opened in New Jersey in 1999, fewer than 3,500 remain in operation today.

The approximately 23,200 business establishments accounted for approximately 200,000 jobs in 1999 (about 9 employees per establishment). Today, the remaining 3,500 businesses employ around 83,200 people (about 24 employees per establishment). While the surviving firms have grown in size, the attrition among these firms has decreased the total employment count associated with these businesses by more than half over the past three decades (see Figure 7). Over half (52 percent) of New Jersey businesses formed in 1999 closed within their first five years (by 2004), underscoring early-stage companies' challenges in achieving long-term viability.

Fig. 7

SURVIVAL RATES OF NEW JERSEY BUSINESSES OPENING IN 1999



Source: Bureau of Labor Statistics (2024)

Further, survival rates vary across industries, with biotech and technology companies often facing particularly steep challenges. These sectors are characterized by high startup costs, long development timelines, and significant regulatory hurdles. Additionally, the need for continuous innovation, the competitive nature of these industries, and the reliance on securing external funding further amplify the risks. The table on the right shows national data from the BLS on survival rates by industry for firms founded since 1994 in the key industries represented in the program.[11]

Survival rates also vary depending on geographic location. Based on BLS data by industry and year, survival rates for New Jersey firms are lower than the national average, with an average differential of about 4 percent.

INDUSTRY-SPECIFIC SURVIVAL RATES FOR ALL U.S. FIRMS, 1994-2023

Industry	NAICS Code	Ratio of Survival Rate to all Industry Average
Information	51	0.86: 1.00
Wholesale Trade	42	0.95: 1.00
Professional, Scientific, and Technical Services	54	0.96: 1.00
Manufacturing	31	1.09: 1.00

Source: Bureau of Labor Statistics (2024), Econsult Solutions, Inc. (2024)

"Participating in a program that will connect us with cash in a non-dilutive manner will have a positive impact on our company," said Citius Pharmaceuticals Co-Founder, CEO and Chairman Leonard Mazur. "As a serial entrepreneur, I know that the most successful businesses use every available resource to grow and scale. We are grateful to the NJEDA, and the State of New Jersey as a whole, for their commitment to emerging companies like ours."

Citius Pharmaceuticals is participating in the NOL Program for the first time this year. The Cranford-based biopharmaceutical company is focused on developing and commercializing critical care products with its diversified pipeline consisting of two late-stage assets. In May, Citius Pharmaceuticals announced it would expand the ongoing Phase 3 trial of its proprietary Mino-Lok therapy internationally. Mino-Lok is used to treat patients with catheter-related bloodstream infections. The Phase 3 trial of its oncology asset was completed at the end of 2021. Citius Pharmaceuticals expects to submit a biologics license application for this asset for the treatment of cutaneous T-cell lymphoma (CTCL) by the end of this year.

Source: Citius Pharmaceuticals press release (2022)

11 While the NOL program categorizes companies as either "biotech" or "tech," data from the Bureau of Labor Statistics is segmented by NAICS (North American Industry Classification System) industries. The NAICS industries shown in Figure 4.2 account for 95 percent of NOL program participant employment.

EXPECTED BUSINESS SURVIVAL RATES

To evaluate the performance of NOL program participants relative to their peers, the analysis calculates an "expected lifespan" for each company with sufficient data, whether currently operating or no longer in business, within New Jersey.[12] Among the 589 program participants, sufficient data was available for 308 firms (see table on the right).

The "expected lifespan" was determined using the Bureau of Labor Statistics' national, industry-specific survival rates, adjusted for the differential between national and New Jersey-specific survival trends. The analysis begins from the year each company first received an NOL credit.

Based on the modeled firms, the total expected survival rate in 2024 was calculated to be 36 percent. ***However, actual survival rates among NOL program participants were significantly higher across most industries, with an average survival rate of 72 percent.*** This indicates that, on average, program participants outperformed survival expectations by a considerable margin.

MODELED FIRMS COUNT AND DESCRIPTION OF EXCLUSIONS

Total Participants	**589**
Currently Located Outside of NJ	(153)
Founded Prior to 1994	(78)
Insufficient Data	(50)
Modeled Firms	**308**

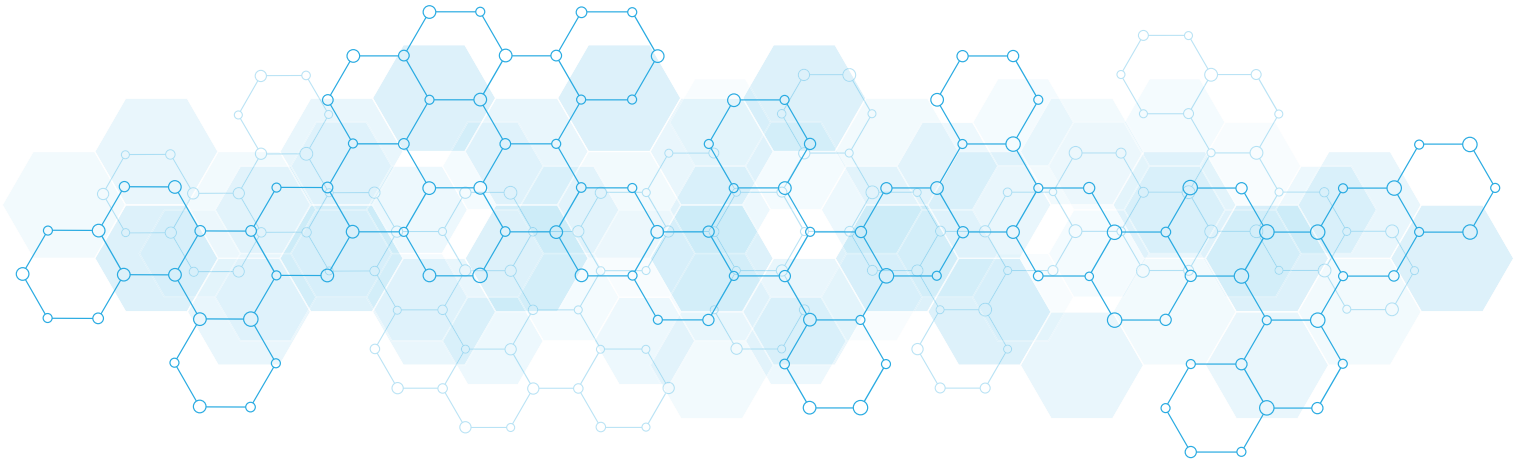
Source: Econsult Solutions, Inc. (2024)

The table below shows survival rates for participating companies by industry relative to the expected survival rate, as well as actual and expected employment as of 2024. The survival rates and employment outcomes for participating companies varied by industry, with biotech firms' actual survival at 79 percent compared to an expected 40 percent, and tech firms' actual survival at 67 percent compared to an expected 33 percent.

EXPECTED VS. ACTUAL SURVIVAL AND EMPLOYMENT BY INDUSTRY, 2024

Sector	Actual Survival (2024)	Expected Survival (2024)	Employment	Expected Employment	Net Employment	% Net
Biotech	79%	40%	8,900	5,200	3,700	42%
Tech	67%	33%	22,300	7,600	14,700	66%
TOTAL	**72%**	**36%**	**31,200**	**12,800**	**18,400**	**59%**

Source: Econsult Solutions, Inc. analysis of BLS Data (2024)



12 Survival data is available by industry at the national level, and by state overall but not by industry. Therefore, the methodology uses the national rate by industry, adjusted for the overall differential in National / NJ performance, as the benchmark for the companies in each industry.

The net employment generated by NOL program participants significantly exceeded projections across most industries. Overall, actual employment among participating firms totaled 31,200 jobs, compared to a projected employment level of 12,800 based on expected survival rates. **This resulted in a net employment gain of 18,400 jobs**, reflecting a 59 percent increase over projected levels.

While it is not possible to determine the exact attribution of the NOL program to participants' survival rates—given that many factors influence a business's success—analyzing the economic outcomes provides a framework for understanding its potential contribution. The program's participants significantly outperformed expected survival and employment levels, but correlation does not imply causation. External market conditions, industry-specific trends, and individual company strategies all play a role in these outcomes. The observed net economic impact relative to the benchmark success rates nevertheless serves as a useful reference point for evaluating the program's return on investment (ROI). Returning to the EIS calculation from Section 3, **the net employment impact for participating companies is $16.2 billion**, representing the scale of economic activity associated with this net activity.

NET ECONOMIC IMPACT OVER EXPECTED, 2024 ($M)

Sector	Total Economic Impact ($B)	Total Employment	Net Employment	% Net Employment	Net Economic Impact ($B)
Biotech	$9.6	8,900	3,700	42%	$4.0
Tech	$18.5	22,300	14,700	66%	$12.2
TOTAL	**$28.1**	**31,200**	**18,400**	**59%**	**$16.2**

Source: Bureau of Labor Statistics (2024), IMPLAN (2022), Econsult Solutions, Inc. (2024)

In the same manner, the net fiscal impact of this overperformance in survival can be estimated by apportioning 59 percent to the $715 million in current annual state tax revenue impacts estimated in Section 3. This results in an estimate of **$422 million in current annual state tax revenue associated with the overperformance in the survival rate of participating firms** (see table on the right).

NET STATE TAX REVENUE IMPACTS FROM OPERATIONS OF RECIPIENTS OF THE NOL PROGRAM

Tax Type	Total Fiscal Impact	Net Fiscal Impact
Income Tax ($M)	$335	$197
Sales Tax ($M)	$274	$162
Corporate Business Tax ($M)	$107	$63
Total Tax Revenue ($M)	**$715**	**$422**

Source: New Jersey Department of the Treasury (2023), IMPLAN (2022), Econsult Solutions, Inc. (2024)

NET IMPACT OVER PROGRAM DURATION

Difference in Expected Business Lifespan

The analysis above highlights the economic impact of businesses that have survived until today and are currently in operation. To understand the impact of participating companies over the life of the program, it is important to quantify not just the impact of their current status, but how their employment footprint in the years since their program award contributes to the state economy relative to the expected performance of the industry benchmarks. In addition, it is important to also consider the contributions (positive of negative) of businesses that are currently closed but may have survived longer (or shorter) than expected.

Analysis of the lifetime survival of program participants reveals that ***these businesses, on average, survived 5.7 years longer than their counterparts*** when compared to industry benchmarks provided by the Bureau of Labor Statistics. The table on the right provides a breakdown of the average lifespan difference by industry, the number of firms in each category, and the estimated total survival years. In total, program participants collectively experienced an estimated 1,753 additional years of business operations through 2024 relative to the expected lifespan based on industry averages.

This extended lifespan suggests that the program may have provided critical support in helping these businesses to grow and to continue their operations beyond the average duration expected for their industry. This additional time in turn enables these firms to generate more economic activity, contribute to employment, and deliver broader benefits to the New Jersey economy.

BUSINESS SURVIVAL MODEL: CALCULATING NET DIFFERENCE IN EXPECTED SURVIVAL YEARS

Industry	Average Lifespan Difference	Firms	Total Additional Survival Years
Biotech	5.4	130	700
Tech	6.0	177	1,053
TOTAL	**5.7**	**307**	**1,753**

Source: Bureau of Labor Statistics (2024), Econsult Solutions, Inc. (2024), NJEDA (2024)

Net Employment Impacts Over the Life of the Program

To assess the potential fiscal return to the state of the additional years of business operations for participating companies, it is necessary to estimate the additional "job years" of employment associated with their overperformance in survival relative to the benchmark. Limitations in data on employment growth for individual companies over time make this assessment challenging. This assessment implements the following method to provide an indicative estimate of the growth rate of NOL program participants over time, which in turn is then used to estimate fiscal impacts:

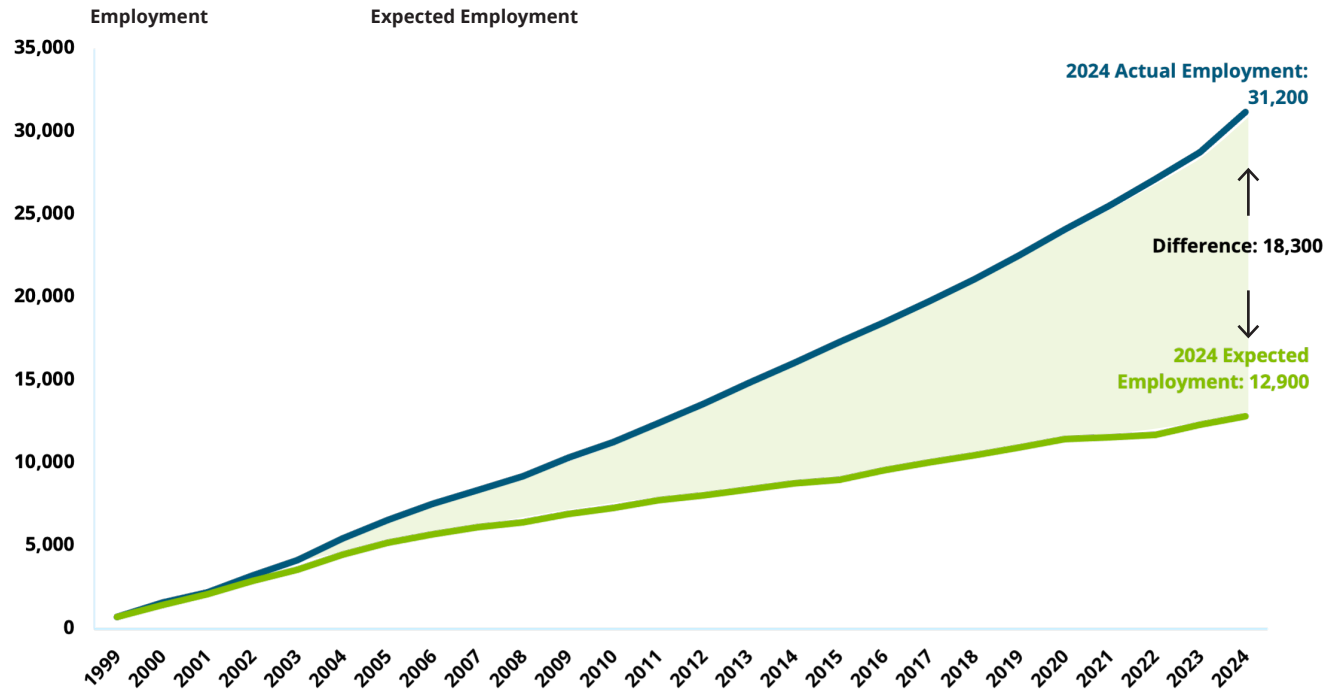
- **In-Business Participants:** Employment for in-business participants was estimated retrospectively using their projected 2024 employment figures. Current employment levels were extrapolated backward to a starting point based on the average business size of surviving firms at the time they received their first NOL credit.
- **Out-of-Business Participants:** For out-of-business participants without available employment data, employment was estimated using the average size of surviving businesses, based on Bureau of Labor Statistics (BLS) data. If employment data at the time of closure is available, these participants are modeled through the same process as in-business firms, with employment estimates reflecting the year they closed rather than as of 2024.

This dual approach accommodates the variability in data availability and allows for a more inclusive estimation of employment contributions over time.

To capture the "net new" employment impact of the program, the expected firm survival rate versus the actual survival rate for each company in the analysis is calculated on an annual basis. This approach aligns the estimated employment impact with the additional years of survival observed among program participants, as previously described. Average firm size data from the Bureau of Labor Statistics was used to model employment growth linearly over the firm's lifecycle. The analysis spans from the time of the award to either the firm's exit date (if out of business) or its current employment level. In 2024, estimated actual employment was 31,200 compared to an expected employment of 12,900 (see Figure 8 below).

BUSINESS SURVIVAL MODEL: NET ANNUAL EMPLOYMENT ABOVE EXPECTED FOR PARTICIPATING COMPANIES

Fig. 8



Source: Bureau of Labor Statistics (2024), Econsult Solutions, Inc. (2024), NJEDA (2024)

"New Jersey's transformation to a green economy, combined with our ability to access state resources like the NOL Program, has been extremely beneficial to our company," commented IoTecha Corp. CEO Oleg Logvinov. "We thank the NJEDA for its continued support and look forward to leveraging the funding announced today to further expand our activities in the state in the years ahead."

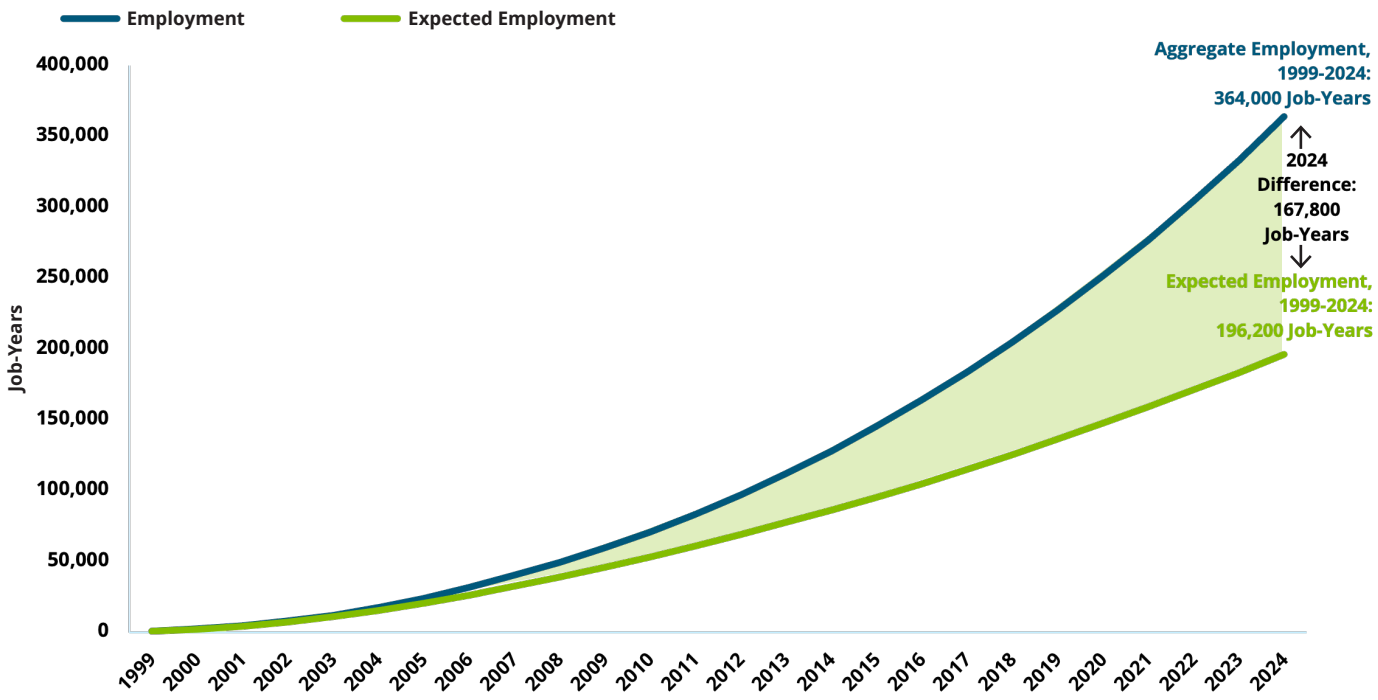
IoTecha Corp. is a Cranbury-based clean technology company that has developed an integrated smart charging platform, including hardware, software, and cloud-based services, for the electric vehicle charging infrastructure. The company, which was recently listed on venture-capital firm Tracxn's list of Top Electric Vehicle Startups, has benefited from the NOL Program twice in the past.

Source: IoTecha Corp. press release (2022)

In aggregate, it is estimated that over the past 25 years, NOL program recipients have survived and supported employment (364,000) roughly 86 percent higher than anticipated (196,200) compared to the survival rate and size of the 'average' New Jersey firm.[13] **This difference (167,800) in firm-year employment creates additional economic and fiscal impact above what would have been anticipated** (see Figure 9 below).

BUSINESS SURVIVAL MODEL: CUMULATIVE EMPLOYMENT ABOVE EXPECTED FOR PARTICIPATING COMPANIES

Fig. 9



Source: Bureau of Labor Statistics (2024), Econsult Solutions, Inc. (2024), NJEDA (2024)

"It's an exciting time for CytoSorbents as we work to positively impact critical care for patients worldwide," said CytoSorbents Chief Financial Officer Kathleen Bloch. "The funding that we have received from the NOL Program over the years has been instrumental in our global expansion and was vital to our decision, as a vertically integrated manufacturer, to stay in New Jersey. We greatly appreciate the NJEDA's ongoing support."

CytoSorbents Corporation (NASDAQ: CTSO), a Princeton medical device company focused on treating life-threatening conditions in the intensive care unit (ICU) and cardiac surgery with blood purification, has repeatedly benefited from the NOL Program. The company's flagship product, CytoSorb®, is approved in the European Union and distributed in 75 countries around the world to treat deadly inflammation common to many lethal conditions in the ICU, such as sepsis and infection, COVID-19, trauma, liver failure, and complications of open-heart surgery, by removing inflammatory toxins from the bloodstream. Just recently, CytoSorbents announced final ISO 13485 certification of its new state-of-the-art manufacturing facility at its headquarters in Princeton that has the capacity to support up to $400 million in sales.

Source: CytoSorbents press release (2022)

13 Job-years reflect a single year of full-time employment. When expressed over a multi-year time frame, these figures do not reflect a unique number of new positions created, as the same FTE position that exists for multiple years will count as multiple job-years. For example, an employment increase of 500 FTE job-years over ten years can also be expressed as 50 FTE jobs per year.

Net Fiscal Impact of Participants over the Life of the Program

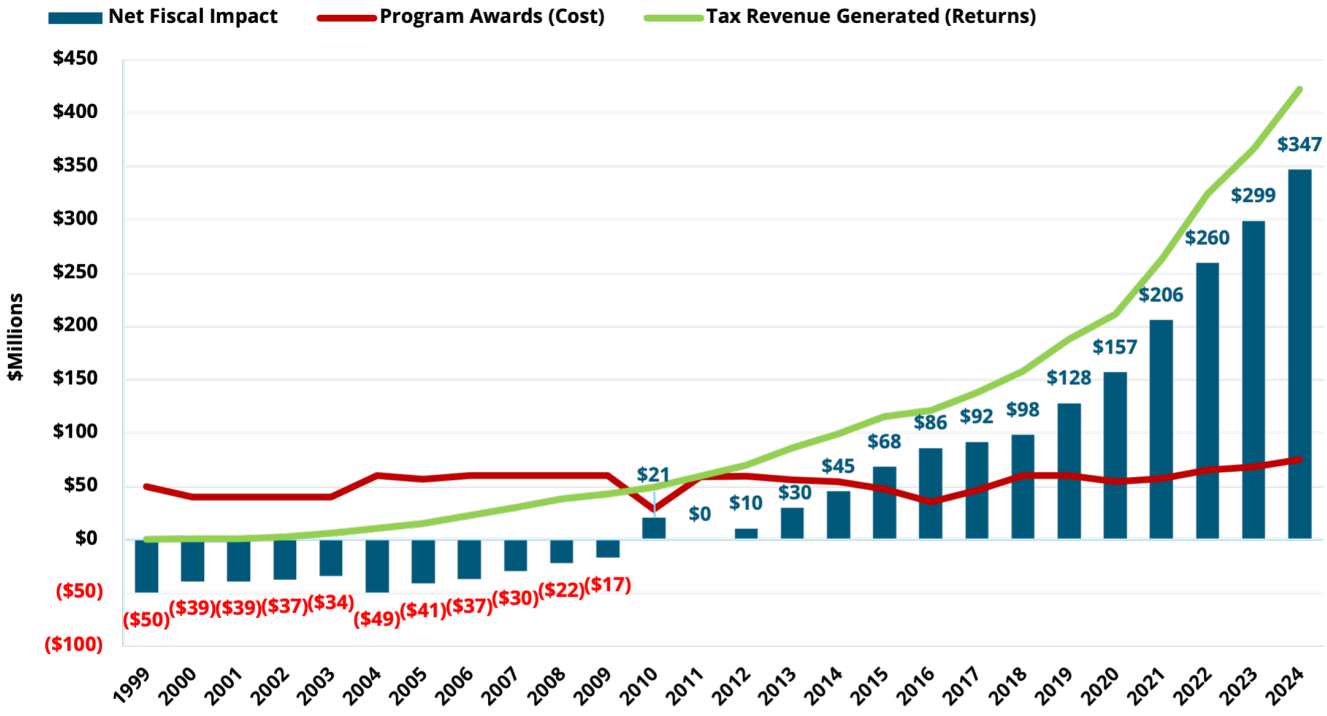
The State of New Jersey has invested nearly $1.32 billion (in nominal terms) into the NOL program over the last 25 years. To calculate the return on this investment, this analysis estimates the economic and fiscal impact of the difference in employment between the expected employment and actual employment (167,800 job years).

Figure 10 below depicts the annual program awards and estimated tax revenues from additional employment, while Figure 11, on the next page, shows these metrics in cumulative terms over the life of program. The program awards represent a cost to the state, in terms of tax revenues that would otherwise be collected absent the credits awarded, while the tax revenue generated represents additional state tax revenues collected due to the overperformance of participating companies relative to the benchmark. As noted throughout this study, this method does not evaluate or establish a causal relationship between this overperformance and participation in the program.

Annual estimates in Figure 10 show a significant difference in the shape of costs and returns. Businesses that survive beyond the early stages of the program continue to accumulate fiscal impact as they remain in operation and maintain employment of New Jersey workers. Over time, this compounding effect builds the tax revenue return associated with participating companies. Conversely, program costs have been relatively stable across the years. In the program's initial years, when participating companies have had limited time to grow, program costs surpass fiscal returns, creating a temporary fiscal deficit. As businesses stabilize and expand, their net fiscal impact grows, first surpassing the program awards cost in 2010 (the 12th year of the program).

Fig. 10

PROGRAM ROI, ANNUAL NET FISCAL IMPACT (NOMINAL $M)



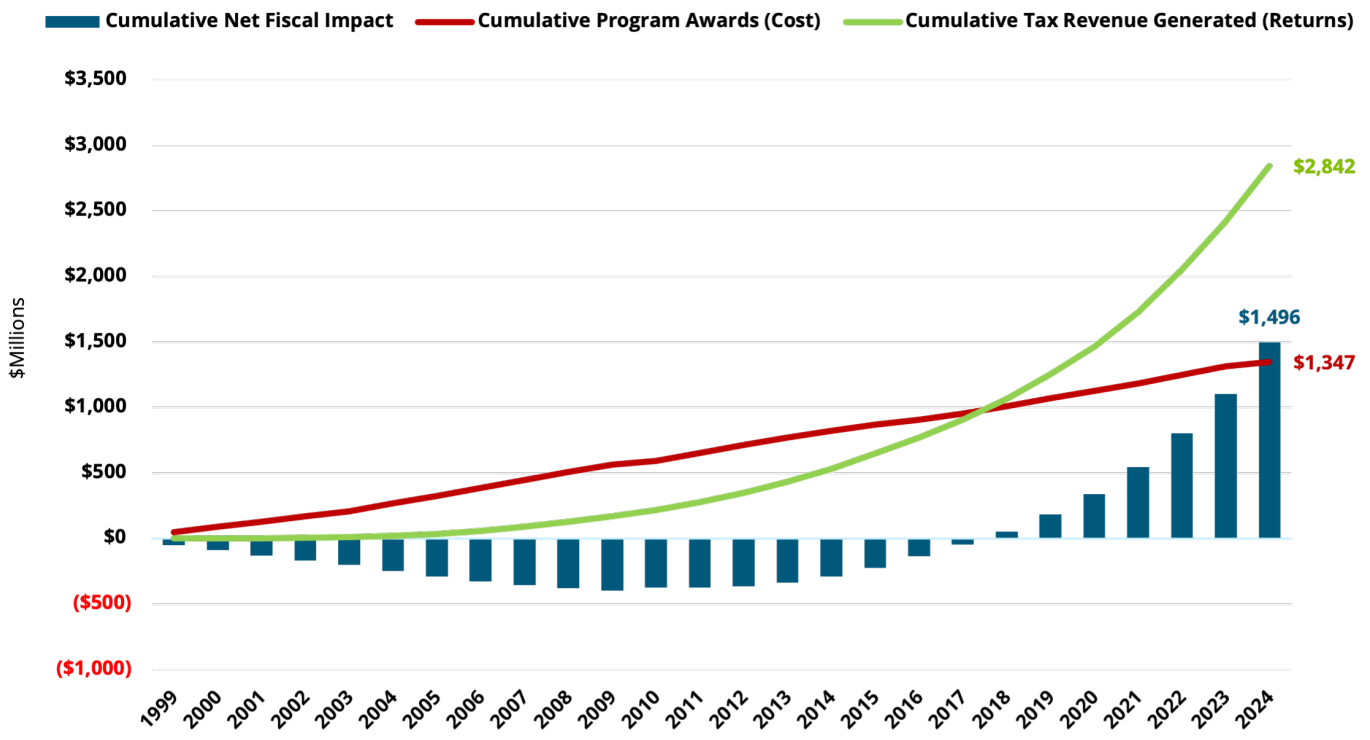
Source: Bureau of Labor Statistics (2024), Econsult Solutions, Inc. (2024), NJEDA (2024), IMPLAN (2024)

Cumulative estimates in Figure 11, below, shows the combined effect of this annual pattern. From 1999–2009, the cumulative fiscal deficit grows larger annually, as awards exceed tax revenue returns. This cumulative deficit is reduced each year from 2010-2017 through the net positive annual return. Starting in 2018, cumulative returns are positive, with net tax revenue from economic activity over and above the benchmark by participating companies exceeding the program awards.

Over the life of the program, net economic activity by participating companies over and above expected has generated an estimated tax impact of $2.84 billion (in nominal terms), compared to a cost of $1.35 billion, for a net fiscal impact of $1.45 billion. ***In other words, over the life of the program, for every $1 of tax credit provided corresponds with over $2 in additional state tax revenue generated by participating companies.***[14]

Fig. 11

PROGRAM ROI, CUMULATIVE NET FISCAL IMPACT (NOMINAL $M)



Source: Bureau of Labor Statistics (2024), Econsult Solutions, Inc. (2024), NJEDA (2024), IMPLAN (2024)

14 An additional $30 million in tax credits was disbursed in 2024. While the companies receiving credits in 2024 were not fully included in this analysis, this amount is conservatively added to the overall program cost. It is important to note that this analysis does not establish causality between the program and observed outcomes. Importantly, this study does not attempt to establish a direct causal relationship between program participation and outcomes such as economic performance or fiscal impact. The impact shown here is of the participating companies.

OTHER MEASURES OF IMPACT: ACQUIRED FIRMS

The NOL program has played an important role in supporting innovative companies in New Jersey, enabling them to develop groundbreaking technologies and attract significant investment. A strong indicator of the program's success is the acquisition of participating companies by larger industry leaders. These acquisitions not only validate the strength of the supported businesses but also highlight their important technological and economic contributions to New Jersey.

The NJEDA NOL program has helped foster innovation in New Jersey's vibrant biotechnology industry. Companies that participated in the program have gone on to develop transformative medical technologies and therapies, culminating in high-value acquisitions by major firms. Some examples of these acquisitions within the biotech industry include:

- **I-Stat Corp. – Acquired by Abbott Laboratories (2003, $300 Million)** Abbott's acquisition provided access to I-Stat's handheld blood analyzers, a breakthrough in bedside testing. This technology has since been used in high-profile events such as the 2018 Boston Marathon, where it enabled rapid blood analysis to ensure appropriate treatment for marathon participants.
- **Pharmacopeia Drug Discovery – Acquired by Ligand Pharmaceuticals (2008)** Ligand gained valuable drug discovery resources, additional pipeline assets, and NOL tax benefits, enhancing its portfolio and creating sustained shareholder value.
- **Medarex Inc. –** *Acquired by Bristol-Myers Squibb (2009, $2.4 Billion)* This acquisition strengthened Bristol-Myers Squibb's leadership in oncology and immunology through Medarex's antibody discovery platform and key therapies like ipilimumab. The deal expanded their biologics pipeline and added royalty-generating assets, creating long-term value.
- **Xenogen Biosciences –** *Acquired by Taconic Biosciences (2009)* Taconic expanded its offerings with genetically modified models and bioluminescent technologies, enabling advancements in oncology, metabolic disease research, and real-time imaging studies.
- **Provention Bio –** *Acquired by Sanofi Pasteur (2023)* Sanofi's acquisition brought TZIELD, a first-in-class therapy for delaying type 1 diabetes, into its core asset portfolio. This marks a significant advancement in addressing chronic disease management.

The NOL program has also supported companies that have contributed critical advancements in the technology sector. Companies acquired under this program have delivered innovative solutions in enterprise software, IoT, cloud-based communications, and cybersecurity, strengthening industries worldwide:

- **Navisys Inc. –** *Acquired by Accenture (2006)* Accenture leveraged Navisys' life insurance platform to enhance its business process outsourcing (BPO) services, modernizing policy administration and reducing insurers' operational costs.
- **Whale Communications –** *Acquired by Microsoft (2006)* Microsoft enhanced its secure remote access solutions with Whale's SSL VPN and application security technologies, improving data protection for businesses and integrating with Windows-based IT infrastructure.
- **uReach Technologies –** *Acquired by GENBAND (2014)* GENBAND expanded its cloud-based, mobile-first messaging portfolio, enabling global service providers to remain competitive against over-the-top (OTT) communication services.
- **MFormation Technologies –** *Acquired by Alcatel-Lucent (2015)* Alcatel-Lucent integrated MFormation's capabilities to develop a robust IoT platform, addressing critical data security challenges and advancing solutions for industries like healthcare and manufacturing.
- **CA Technologies –** *Acquired by Broadcom (2018*) Broadcom utilized CA's enterprise software solutions to manage 30 billion transactions daily, modernizing mission-critical applications and driving growth in the expanding enterprise computing market.

The NOL has supported companies in their growth and innovation in both the biotech and technology sectors. By supporting high-potential companies, the program has enabled advancements in healthcare, enterprise solutions, and secure communications. These acquisitions demonstrate how the NOL program helps companies achieve scalability, attract investment, and contribute to industry leadership.

APPENDIX

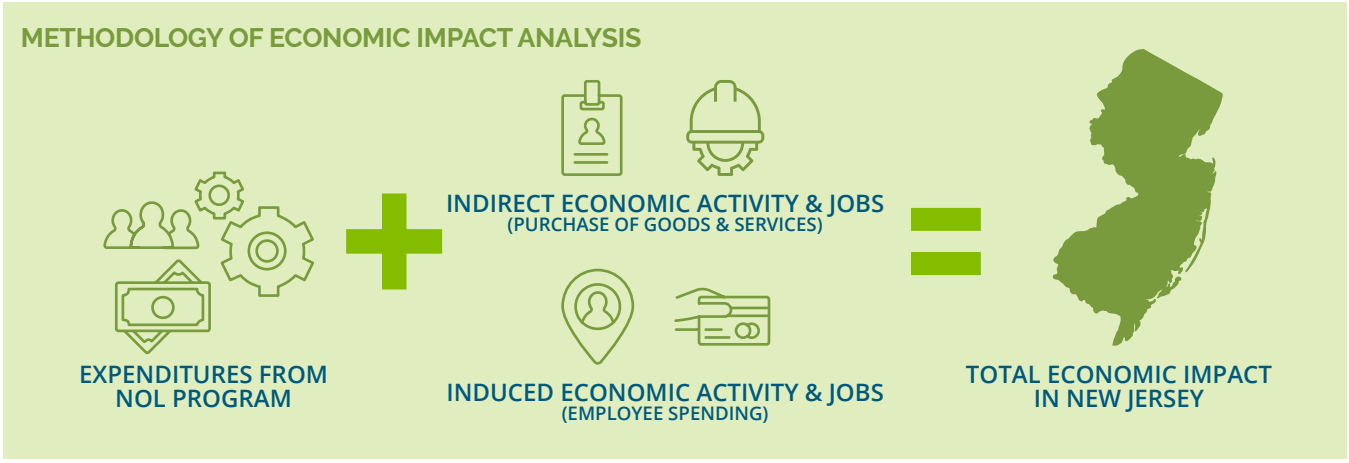
ECONOMIC AND FISCAL IMPACT METHODOLOGY

Net Employment Impacts over the Life of the Program

In an inter-connected economy, every direct dollar spent generates two spillover impacts:

- First, some amount of the proportion of that expenditure that goes to the purchase of goods and services gets circulated back into an economy when those goods and services are purchased from local businesses. This represents what is known as the indirect effect and reflects the fact that local purchases of goods and services support local businesses, who in turn require additional purchasing with their own set of vendors.
- Second, some amount of the proportion of that expenditure that goes to labor income gets circulated back into an economy when those employees spend some of their earnings on various goods and services. This represents what is known as the induced effect and reflects the fact that some of those goods and services will be purchased from local businesses, further stimulating the economy.

To model the impacts resulting from the direct expenditures of the state's benefit programs, ESI utilized IMPLAN's input/output modeling system to create an economic impact model. Utilizing an industry standard approach, IMPLAN's input/output modeling system allows users to assess the economic and job creation impacts of industry-based events and public policy changes within a county or its surrounding area. IMPLAN has developed a social accounting matrix (SAM) that accounts for the flow of commodities through economics. From this matrix, IMPLAN also determines the regional purchase coefficient (RPC), or the proportion of local supply that satisfies local demand. These values not only establish the types of goods and services supported by an industry or institution, but also the high level at which they are acquired locally. This assessment determines the multiplier basis for the local and regional models created in the IMPLAN modeling system. IMPLAN takes these multipliers and divides them into 546 industry categories in accordance with the North American Industrial Classification System (NAICS) codes.



ECONOMIC AND FISCAL IMPACT METHODOLOGY

CURRENT STATE TAX REVENUE IMPACTS FROM OPERATIONS OF BIOTECHNOLOGY RECIPIENTS OF THE NOL PROGRAM, 2024

Tax Type	Direct	Indirect / Induced	Total Impact
Income Tax ($M)	$52	$49	**$101**
Sales Tax ($M)	$54	$42	**$95**
Corporate Business Tax ($M)	$21	$16	**$37**
Total Tax Revenue ($M)	**$127**	**$107**	**$234**

Source: New Jersey Department of the Treasury (2023), IMPLAN (2022), Econsult Solutions, Inc. (2024)

CURRENT STATE TAX REVENUE IMPACTS FROM OPERATIONS OF TECHNOLOGY RECIPIENTS OF THE NOL PROGRAM, 2024

Tax Type	Direct	Indirect / Induced	Total Impact
Income Tax ($M)	$116	$118	**$233**
Sales Tax ($M)	$84	$94	**$178**
Corporate Business Tax ($M)	$33	$37	**$70**
Total Tax Revenue ($M)	**$233**	**$248**	**$482**

Source: New Jersey Department of the Treasury (2023), IMPLAN (2022), Econsult Solutions, Inc. (2024)

NJEDA BUSINESS SEARCH METHODOLOGY

To research the recipients of the NOL Program awards, various databases and platforms were utilized to gather information about business status, NAICS codes, total employment, addresses, years established, and sales volumes. Additionally, data about whether the business was small, minority-owned, or female-owned was included. Verification relied on the company's official website, specifically the "About Us" section or contact information.

If a business was not listed in the primary platforms, additional databases or press releases were consulted to verify its status. For businesses where the majority of data could not be found or if the company was out of business or acquired, further platforms were explored.

BUSINESS VERIFICATION AND RESEARCH METHODOLOGY

Category	Platform/Source	Purpose
Primary Business Research	Lightcast	Business status, NAICS codes, employment, address, sales volume, minority/female ownership.
	LinkedIn	Verify business presence, employee information, and address.
	Dun & Bradstreet	Comprehensive business profiles, financials, and operations data.
	Crunchbase	Verify startups and technology firms, funding status, and key personnel.
	Reference USA	Historical data on businesses, including closures and relocations.
Business Status Databases	NJ Treasury Business Name Search	Verify business registration and operational status within New Jersey.
	Pitchbook	Profile businesses with investment or acquisition history.
	Wayback Machine	Review historical versions of company websites for verification.
	Yahoo Finance	Verify announcements of acquisitions or closures.
Additional Resources	ZoomInfo	Find business location, contacts, and operational updates.
	All Biz	Explore business operations and financials, particularly smaller firms.
	Open Corporates	Verify legal business registration and global records.
	USPTO Patent Tracker	Check patent filings to verify innovation-driven businesses.
	SEC Filings	Review filings for financial and operational data on publicly listed companies.
	Google Maps	Verify physical locations and addresses of companies.

BUSINESS SURVIVAL EXPECTANCY METHODOLOGY

Illustrative Example: Business Survival Model

The table below illustrates how the business survival model works using three businesses that opened in 1994 and received their first NOL credit in 2000. By 2000, the survival rate for businesses that opened in 1994 was 47%. Starting from this point, the model applies survival probabilities year-by-year from the 2000 baseline.

For example:

- Business #1, which remains active as of 2024, exceeded its expected lifespan by 12.6 years.
- Business #2, which closed in 2020, outperformed its expected lifespan by 8.6 years.
- Business #3, which closed in 2004, fell short of its expected lifespan by -7.4 years.

The cumulative net difference in survival years reflects how individual companies compare to the expected baseline, providing insights into the program's potential impact on extending business longevity. This method highlights patterns of overperformance or underperformance in survival rates among program participants, offering a data-driven measure to understand the extent to which the NOL program may contribute to improved outcomes for recipient companies.

BUSINESS SURVIVAL MODEL: CALCULATING NET DIFFERENCE IN EXPECTED SURVIVAL YEARS

Year	1994 Business Opening	Expected Survival from NOL Credit Date (2000)	Business #1: Still Active	Net Difference	Business #2: Out of Business in 2020	Net Difference	Business #3: Out of Business in 2004	Net Difference
1994	100%							
1995	82%							
1996	72%							
1997	64%							
1998	56%							
1999	51%							
2000	47%	1.00	1	0.00	1	0.00	1	0.00
2001	42%	0.90	1	0.10	1	0.10	1	0.10
2002	39%	0.84	1	0.16	1	0.16	1	0.16
2003	36%	0.77	1	0.23	1	0.23	1	0.23
2004	34%	0.72	1	0.28	1	0.28	0	-0.72
2005	31%	0.67	1	0.33	1	0.33	0	-0.67
2006	30%	0.63	1	0.37	1	0.37	0	-0.63
2007	27%	0.59	1	0.41	1	0.41	0	-0.59
2008	26%	0.55	1	0.45	1	0.45	0	-0.55
2009	24%	0.52	1	0.48	1	0.48	0	-0.52
2010	23%	0.48	1	0.52	1	0.52	0	-0.48
2011	21%	0.46	1	0.54	1	0.54	0	-0.46
2012	20%	0.43	1	0.57	1	0.57	0	-0.43
2013	20%	0.42	1	0.58	1	0.58	0	-0.42
2014	18%	0.39	1	0.61	1	0.61	0	-0.39
2015	18%	0.37	1	0.63	1	0.63	0	-0.37
2016	17%	0.36	1	0.64	1	0.64	0	-0.36
2017	16%	0.34	1	0.66	1	0.66	0	-0.34
2018	15%	0.32	1	0.68	1	0.68	0	-0.32
2019	15%	0.31	1	0.69	1	0.69	0	-0.31
2020	14%	0.30	1	0.70	1	0.70	0	-0.30
2021	13%	0.27	1	0.73	0	-0.27	0	-0.27
2022	12%	0.27	1	0.73	0	-0.27	0	-0.27
2023	12%	0.25	1	0.75	0	-0.25	0	-0.25
2024	11%	0.24	1	0.76	0	-0.24	0	-0.24
		11.4	**24**	**12.6**	**20**	**8.6**	**3**	**-7.4**

Source: Bureau of Labor Statistics (2024), Econsult Solutions, Inc. (2024)

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