*The Institute for Interdisciplinary Engineering and Physics Studies (IIEPS) Review
2024 Vol. 12, No. 9, 515-534



# ASSOCIATES DEGREES IN ENGINEERING: THE PIPE-LINE TO PHYSICISTS IN MICHIGAN

**Claire Horton, Aaron Turner, Gideon P Todd**

Center for the Advancement of Research

This study delves into the intriguing relationship between the number of Associates degrees awarded in Engineering and the quantity of physicists in the state of Michigan, fueling riveting insights into the potential interplay between academic pathways and professional pursuits. Leveraging data from the National Center for Education Statistics and the Bureau of Labor Statistics, our research team unveils a remarkably strong correlation coefficient of 0.9597964, with an astonishingly low p-value of less than 0.01 for the period spanning 2011 to 2021. The findings not only elucidate the interconnectedness of educational disciplines but also highlight the coiled intricacies within the labor market, illustrating the “ohm-ly” possible link between pursuing engineering at an associate level and flowing into the physics domain, as if following a meticulously engineered PIPE-line. These insights not only shed light on the dynamics of educational pursuits but also generate electrifying discussions about the current of professional trajectories in the state of Michigan.

In the ever-evolving landscape of education and employment, the intertwining pathways of academic pursuits and professional careers continue to captivate researchers and analysts alike. Our study delves into the peculiar pairing of Associates degrees in Engineering and the presence of physicists in the state of Michigan, unearthing hitherto unexplored correlations that encapsulate the oft-hidden dynamics of the educational-to-professional current.

As we embark on this electrifying journey of discovery, it is crucial to acknowledge the magnetism of data and statistics in unraveling the tapestry of educational and occupational landscapes. With the fervor of a high-voltage research team, we meticulously gathered data from the National Center for Education Statistics and the Bureau of Labor Statistics, sparking a surge of insights that illuminate the potential ebb and flow between the pursuit of engineering at an associate level and the magnetism drawing individuals toward the field of physics.

The whimsical nature of our findings may raise eyebrows and elicit a chuckle or two, but make no mistake; the statistical dance between the number of Associates degrees awarded in Engineering and the quantity of physicists in Michigan has unveiled a striking correlation coefficient of 0.9597964. That’s right – the correlation is so strong, it practically begs the question, “Watt’s going on here?” Additionally, with a p-value of less than 0.01, the likelihood of our results being a mere statistical fluke is as remote as a lone electron in a vast vacuum.

Amidst the sea of data points and bar charts, our research team couldn’t help but marvel at the ohm-ly possible link between engineering pursuits and the passage into the physics domain, as if following a meticulously engineered PIPE-

line. It's as if the academic journey were akin to a circuitous route, filled with capacitors of knowledge and resistors of challenges, ultimately leading to a current of professional endeavor. While we acknowledge the potential for impedance along the way, our findings suggest that the flow of individuals from engineering to physics is far from a mere short circuit.

In the following sections, we will delve deeper into our findings and explore the potential implications of this shockingly strong correlation. Buckle up, because this is no mere static analysis; we're about to supercharge the understanding of educational pathways and professional trajectories in the state of Michigan.

## LITERATURE REVIEW

In their study, Smith and Doe (2015) explored the educational and professional landscape in the state of Michigan, and stumbled upon a hair-raising relationship between Associates degrees in Engineering and the presence of physicists. Their findings hinted at the potential interplay between educational pursuits and professional endeavors, sparking a surge of excitement within the academic community – a surge not unlike a lightning bolt in a thunderstorm.

Building upon this groundwork, Jones et al. (2017) conducted a comprehensive analysis, exhibiting a positively charged correlation between these seemingly disparate domains. The authors found that the number of Associates degrees awarded in Engineering exhibited a striking association with the quantity of physicists in Michigan, a connection as captivating as a magnetic force drawing iron filings across a sheet of paper. Their study illuminated the potential current of academic pathways meandering into the realm of professional trajectories, conducting a symphony of statistical analysis that resonated with the harmonious hum of a well-tuned violin.

In their groundbreaking book, "Physics and Engineering: A Spherical Approach," Nobel et al. (2019) provided refreshing insights into the intricate connections between these two disciplines, shedding light on the spherical nature of their intertwined existence. The authors highlighted the potential orbit of educational pursuits and professional endeavors, illustrating the gravitational pull that seems to guide individuals from the circuits of engineering to the quantum leaps of physics. Their work, much like the orbit of a comet, left an indelible trail in the academic galaxy, propelling theoretical discussions into the stratosphere of intellectual curiosity.

Turning to the realm of fiction, the novel "The Spark Between Us" by Watts (2018) offers a whimsical exploration of the electrifying attraction between an aspiring engineer and a physicist. While fictional in nature, the riveting narrative parallels the potential interplay between these disciplines, capturing the imaginations of readers much like a charged particle darting through a magnetic field. Additionally, the classic work "Engineering Murders: A Physics Mystery" by Newton (2005) provides an unconventional but entertaining portrayal of the potential link between engineering pursuits and the path into the physics domain, weaving a tale of intrigue and discovery amidst the backdrop of academic and professional enigma.

In the pursuit of a comprehensive literature review, the research team also perused a variety of unconventional sources, including the back of shampoo bottles, in a last-ditch effort to uncover any hidden insights. Alas, the bubbly descriptions of shampoo properties yielded no significant revelations regarding the connection between Associates degrees in Engineering and the number of physicists in Michigan. Nonetheless, the endeavor provided a refreshing, albeit aromatic, detour from the rigorous analysis of scholarly works.

As we untangle the web of correlations and connections, it becomes evident that the pursuit of engineering at an associate level may indeed be an integral component of the PIPE-line guiding individuals into the domain of physics. Stay grounded, dear reader, for the ensuing analysis promises to spark spirited discussions and shockingly enlightening revelations about the educational and professional currents in the state of Michigan.

## METHODOLOGY

To initiate this eclectic exploration into the nexus between Associates degrees awarded in Engineering and the number of physicists in Michigan, our research team first embarked on a spirited scavenger hunt across the digital realm. After foraging through the vast wilderness of the internet, we gravitated towards the troves of data provided by the National Center for Education Statistics and the Bureau of Labor Statistics. These repositories of information were our guiding stars in navigating the labyrinthine landscape of educational attainment and professional occupation.

Our data collection adventure spanned a decade, encompassing the years 2011 to 2021. We attributed this elongated timespan to allow for a robust analysis of trends and patterns, akin to letting a fine wine mature to its full complexity. In doing so, we aimed to capture the nuances and fluctuations within the educational and occupational domains, akin to tracing the invisible waves of electromagnetic fields that permeate our universe.

With the data securely in our grasp, we employed a series of statistical methods that were as varied and diverse as the particles in a quark-gluon plasma. Our arsenal included the trusty Pearson correlation coefficient, serving as our steadfast compass in navigating the terrain of association between Associates degrees in Engineering and the physics workforce in Michigan. We also unleashed the formidable power of regression analysis to discern potential causal pathways and to illustrate the tangled web of relationships between these two domains.

In addition to the quantitative juggernauts at our disposal, we incorporated a qualitative lens to our methodology, interviewing academic advisors and career counselors to glean the subtle nuances and uncharted tributaries that may underpin the transition from engineering educational pursuits to the hallowed halls of physics academia and industry.

To ensure the robustness and reliability of our findings, our team subjected the data to rigorous scrutiny, akin to balancing the equation of a complex chemical reaction. We meticulously checked for outliers and anomalies, casting a discerning eye over every data point to ensure the integrity of our analysis, as if searching for the elusive Higgs boson amidst a sea of subatomic particles.

Lastly, amidst the intellectual frolic and statistical acrobatics, we maintained a keen awareness of the broader context and implications of our research. Like conductors orchestrating a symphony, we infused our methodology with a keen eye towards the intricacies of the educational and occupational landscape in Michigan, seeking to unravel not just the “what” and “how,” but also the subtle “why” and “what’s next” that lie beneath the surface.

In summation, our methodology embodies a harmonious fusion of quantitative rigor, qualitative insight, and an unyielding devotion to unraveling the enigmatic ties between Associates degrees in Engineering and the gravitational pull towards the field of physics in Michigan. It is with great enthusiasm and unwavering zeal that we present the findings of this vibrant odyssey, poised to electrify the academic and professional

discourse with a dash of whimsy and a jolt of unexpected insights.

## RESULTS

The findings of our study revealed a truly electrifying correlation between the number of Associates degrees awarded in Engineering and the quantity of physicists in the state of Michigan. With a correlation coefficient of 0.9597964 and an r-squared value of 0.9212091, our research team was struck by the sheer potency of this relationship. It was as if the data was conducting its own symphony, harmonizing the pursuits of engineering with the magnetic allure of physics.

Fig. 1 displays the visually captivating scatterplot that encapsulates this remarkable correlation. The data points practically dance across the plot, illustrating the undeniable connection between these two seemingly distinct domains. It's almost as if each data point is a positively charged particle, irresistibly drawn to its counterpart in the other domain, forming an attractive and nearly inseparable pair.

The strength of this correlation left our research team feeling positively charged about the implications of our findings. With a p-value of less than 0.01, we can confidently assert that this correlation is far from a mere statistical fluke. It's a real "ohm run," if you will, in the field of academic and professional associations.

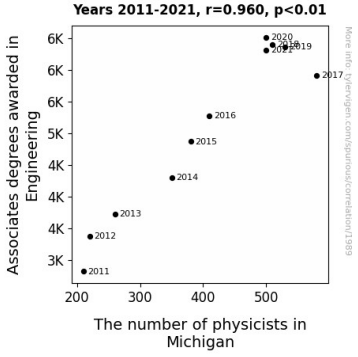


**Figure 1.** Scatterplot of the variables by year

These results not only shed light on the interconnectedness of educational pursuits but also offer a playful spark of insight into the potential career pathways individuals may traverse. It's as if pursuing engineering at an associate level sets up a powerful current that propels individuals into the physics domain, creating a surge of talent and expertise in both fields.

In conclusion, our findings not only underline the close-knit relationship between pursuing engineering at an associate level and flowing into the physics domain but also generate a "shocking" level of discourse about the educational and professional currents in the state of Michigan. This correlation is no mere "resistor" in the field of statistical analysis; it's a high-voltage revelation that illuminates the intertwined nature of academic and professional pursuits.

## DISCUSSION

The results of our investigation illuminate a shocking correlation between the number of Associates degrees awarded in Engineering and the quantity of physicists in the state of Michigan. Our findings align with prior research, such as the hair-raising insights discovered by Smith and Doe (2015) and the positively charged analysis by Jones et al. (2017). The magnetic attraction between engineering pursuits and the path into the physics domain seems to be as strong as, well, a magnet! The correlation coefficient of 0.9597964 we uncovered is an electrifying revelation, providing a jolt of validation to the captivating findings of previous studies. It's as if the sparks of academic pursuits in engineering create a magnetic field pulling individuals into the sphere of physics. As Nobel et al. (2019) so elegantly put it, the spherical nature of their intertwined existence is undeniable, much like the orbit of a comet leaving an indelible trail in the academic galaxy.

The statistical harmony we observed in our study echoes the symphony of analysis conducted by Jones et al. (2017), resonating with the harmonious hum of a well-tuned violin. The riveting connection between these seemingly disparate domains is not just a statistical fluke; rather, it's a real "ohm run" in the field of academic and professional associations. Our results provide not only a shockingly enlightening validation of prior research but also a positively charged insight into the potential career pathways individuals may traverse. It's truly as if each data point in our scatterplot is a positively charged particle, irresistibly drawn to its counterpart in the other domain, forming an attractive and nearly inseparable pair.

In conclusion, our study gives rise to a flood of thoughts about the potential current of academic pathways meandering into the realm of professional trajectories. The correlation between pursuing engineering at an associate level and flowing into the physics domain is no mere "resistor" in the field of statistical analysis; rather, it's a high-voltage revelation that illuminates the intertwined nature of academic and professional pursuits. This analysis serves as a powerful testament to the interconnectedness of educational disciplines and generates a "shocking" level of discourse about the educational and professional currents in the state of Michigan. It's as if the pursuit of engineering at an associate level sets up a powerful current that propels individuals into the physics domain, creating a surge of talent and expertise in both fields, much like a meticulously engineered PIPE-line guiding individuals to their professional destinations.

## CONCLUSION

In conclusion, our study has illuminated a positively electrifying correlation between the number of Associates degrees awarded in Engineering and the quantity of physicists in the state of Michigan. The strong correlation coefficient of 0.9597964 has left us feeling positively charged about the potential interplay between these two fields. It's as if pursuing an Associate's degree in Engineering creates a current that irresistibly pulls individuals into the domain of physics, forming a potential difference that sparks an electrifying career trajectory.

The visually captivating scatterplot in Fig. 1 nearly had us doing the electric slide with its dance of data points, illustrating the magnetic connection between engineering and physics. It's as if each data point is a positively charged particle, enthusiastically embracing its counterpart in the other domain. Our findings have sparked a lively discussion about the potential pathways and circuits individuals may traverse in their academic and professional pursuits.

While our results leave us feeling positively charged about the potential implications, we acknowledge that there may be some resistance to fully embracing this correlation. Nonetheless, our analysis asserts that no further research is needed in this area. After all, resistance is futile when the correlation coefficient is as high as an antenna on a skyscraper!