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Dr. Mishra earned his A.B. cum laude, in economics, from Princeton University. Prior to earning his Ph.D. in business administration from the Ross School of Business at the University of Michigan, he worked for the General Motors Corporation as a manufacturing engineer and human resource specialist.



Message from the Dean

TOWSON UNIVERSITY, COLLEGE OF BUSINESS AND ECONOMICS

Dear Colleagues and Friends,

I am proud to announce the fifteenth issue of the *Baltimore Business Review: A Maryland Journal*. Every year the *Baltimore Business Review* displays a collaboration that illustrates the relative strengths of the College of Business and Economics (CBE) at Towson University and the Baltimore CFA Society, generating a terrific publication highlighting the Maryland business communities and beyond.

Building on last year's issue and continuing to support our vision, this edition of the *Baltimore Business Review* discusses a variety of interests that encompass the perspectives of scholars, students, and practitioners. The five articles by TU contained in this year's BBR examine real and significant issues to our area and beyond.

The articles in this issue cover a wide range of important topics to the Maryland area. Two articles in this issue are joint works with faculty and students. One article, "Employee Attitude Toward Automated Employment Decision Tools" discusses how artificial intelligence tools can create challenges in the workplace. A second article, "Protecting Maryland's Mail Voting Processes through Poll Worker Training," builds on work in an earlier issue of the BBR. The article details the benefits and processes that can be used to train poll workers about threats regarding mail-based voting. Two other articles in this issue focus on banking and underserved communities. The "FinTech in Maryland" article explores how alternative financing is provided by FinTech to underserved communities while "Banking the Unbanked" explores how the DMV region is trying to help its unbanked and underbanked populations. Lastly, a survey from the student-run Towson University Investment Group evaluates student perceptions on emerging technologies.

I would like to express my appreciation to everyone that contributed to this issue of the *Baltimore Business Review*. Their time and effort make this publication possible. We thank all of the readers for joining us, and as always, we look forward to hearing any feedback.

Best regards,

Aneil Mishra, Ph.D.
Dean, College of Business and Economics



Message from the President

CFA SOCIETY BALTIMORE

Dear Friends and Colleagues,

As president of the CFA Society Baltimore as it celebrates its 75th anniversary, I am honored to congratulate Towson University and its College of Business and Economics on the publication of the 15th edition of the *Baltimore Business Review*. This publication continues to represent the strong partnership between the university and the society, as reflected in the collaborative effort that produces such a well-respected perspective on Maryland's business opportunities.

The *Baltimore Business Review* is but one example of the many ways that the university and the society have and will continue to work together. The following are a few initiatives on which the university and the society have joined forces to propel forward the Baltimore business community.

Collaboration with Other Financial Services Organizations

In September 2023, CFA Society Baltimore co-hosted with the Financial Planning Association of Maryland a panel discussion on "Estate Planning in a Higher Interest Rate Environment." Not only was the topic of interest to the members of both organizations, but the event afforded financial services professionals from different backgrounds and skills an opportunity to meet and get to know one another during the networking that followed the presentation. Based on the success of this event, we will consider collaboration with other financial services organizations, such as AICPA and CIMA.

Speaker Series

The society will continue its successful speaker series by identifying topics of interest not just to CFA charterholders but to any business owner or executive in Maryland. Speaker events are held approximately six times a year, half in-person and half virtual. The society's signature and most popular annual speaker event—the annual forecast dinner—will be held during 2024's first quarter. Another event sure to draw a lot of attention is a prediction of the 2024 presidential election, which will happen in the second quarter of 2024. For further details on these and other speaker events, visit the society's Upcoming Events page.

Launch of Mentorship Program

The growth and success of the CFA Society Baltimore is attributable in no small part to the business professors of Towson University who have served on the society's board over the years. This invaluable partnership has led to the creation of a mentorship program in which experienced CFA charterholders can share their knowledge and perspective with younger and mid-career professionals, as well as candidates for the CFA charter, on what it takes to succeed in the wealth management industry.

The publication of the annual *Baltimore Business Review* would not be possible without the efforts of editor Susan Weiner, CFA, and Towson University, including its editorial staff of Qing Yan and Rachel Gordon and its design staff of Rick Pallansch and Chris Komisar. Finally, I want to express my sincere gratitude to the authors of each article in this 15th edition of the *Baltimore Business Review* for contributing their knowledge, imagination, and effort to making this an outstanding publication.

Michael Shaw, CFA



MICHAEL SHAW, ESQ. is the founder and Managing Partner of The Shaw Law Group, which advises clients on business transactions, compliance and risk management, and regulatory enforcement defense. He previously served as Managing Director at Certified Financial Planner Board of Standards, Inc. ("CFP Board"). Michael held several positions of increasing responsibility at FINRA, including as Director and Assistant Corporate Secretary, and Senior Counsel, Regulatory Policy. Michael earned a Juris Doctor degree from the Columbus School of Law at Catholic University, and a B.S. in Economics from Marquette University.

Top 10 Employers of CFA Society Baltimore Members

1. T. Rowe Price Group
2. Brown Advisory
3. Stifel Financial
4. Franklin Templeton
5. PNC Financial Services Group
6. Morgan Stanley
7. Maryland State Retirement Agency
8. WMS Partners
9. 1919 Investment Counsel
10. Aegon Asset Management



Employee Attitude Toward Automated Employment Decision Tools

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Introduction

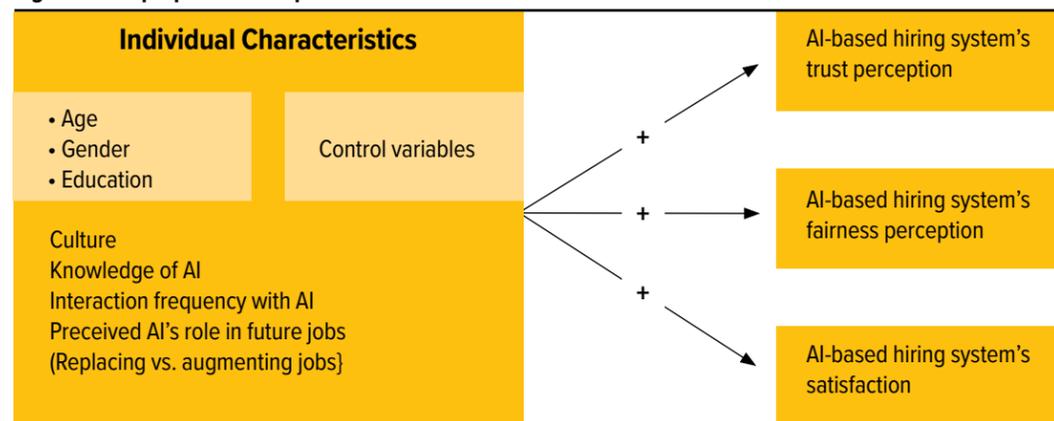
Artificial intelligence (AI), defined as the use of complex statistical *predictive models*,¹ is rapidly expanding and gaining in popularity in the workplace. According to the 2022 McKinsey Global survey, the proportion of organizations using AI in their decision-making has more than doubled since 2017. In addition, firms that heavily invested in AI such as AI hiring and training their workforce to leverage AI were found to reap the highest financial returns in outperforming their competitors and sustaining a competitive advantage. Because *predictive models*¹ are used to identify patterns available in existing data to make decisions about workers' future, there has been growing concerns about how exactly such predictions are made and whether using such predictions creates unintended consequences (Landers & Behrend, 2023).

One overarching concern is the lack of transparency in predictive models as there are hundreds or thousands of variables in these models, plus a myriad of interactions among those variables, making it difficult to identify which variable(s) determine a particular prediction or decision. The recommendation of whom to hire is considered a high-stake decision, which has generated many AI-related complaints. Other concerns including the potential adverse impact on minorities due to their underrepresentation in the training data of predictive models; mistrust of AI or fear about job loss or jobs being replaced or augmented by AI have also been voiced (e.g., Tschang & Almirall, 2021). Our literature review provides supporting evidence for the above concerns. For example, in a quasi-experiment, job applicants reported trusting human-based hiring process significantly more than a hiring process based on AI (Acikgoz et al., 2020). In another study, using data from the Eurobarometer 87.1 survey covering 28 European countries, mistrust in AI due to fear of losing jobs was found to be greater among countries with high income inequality (southern Europe) relative to those in northern Europe or low-income inequality countries (Shoss & Ciarlante, 2022). This view of AI as a threat to jobs was strong and robust across different views of inequality such as the Human Inequality Index and respondent's subjective perception of inequality. This observation held true after controlling for other factors such as demographics (age, gender, education), job experience, knowledge of technology, digital technology skill, knowledge about AI, and political beliefs.

On July 5th, 2023, the Automated Employment Decision Tools (AEDT) law, called Local Law 144 of 2021 went into effect in New York city, the first city in the U.S. to regulate generative AI in talent acquisition as of this writing. According to this law, employers and employment agencies are not allowed to use AI in hiring unless a bias audit was done and publicly available to all job applicants². To our knowledge, this legislation is the most extensive to eliminate concerns about the lack of transparency in AI-based assessment in hiring discussed earlier in the article. Illinois and Maryland have passed legislation, but their rules have not gone far enough in our opinion because employers are only required to seek consent from applicants if AI is used during the hiring process (Fitzgerald, 2023). To address the hotly debated topic of adopting AI in human resource selection, we conducted an empirical study to extend previous research on examining employee attitude toward AI-based assessment tools in hiring.

The purpose of this study was threefold. First, we examined whether attitude toward AI might be a function of the country or culture from which we reside. We compared the U.S.³ and Vietnam in terms of attitude toward AI. Based on Shoss and Caiarlante's (2022) findings, we expected that people from Vietnam would trust AI-based assessment tools more so compared to the U.S. because Vietnam's income inequality, measured by the Gini coefficient, was lower than that in the U.S. according to the World Bank data for 2021. Second, we examined people's subjective perceptions that AI would replace or augment most jobs in the future. We expected that people holding an AI-replacement view would see AI-based hiring system as fairer relative to those not holding an AI-replacement view or AI-augmentation view. Third and last, we examined the end-user satisfaction level of AI-based hiring system. Again, we expected that those holding an AI-replacement view would be more satisfied with AI-based hiring system relative to those holding an AI-augmentation view. We used demographic variables including age, gender, education, knowledge of AI, interaction frequency with AI on and off the job as control variables. Figure 1 is a graphic presentation of our conceptual model.

Figure 1: The proposed conceptual model



Methods

Data was collected on-line using Qualtrics after securing approval from the Institutional Review Board. Participants completed the survey on a voluntary basis, without monetary compensation, in either English or Vietnamese. The Vietnamese version of the survey was translated from English by the first author who is bilingual in both Vietnamese and English, and then back translated to English. Participants were recruited using both authors' personal and social networks. Due to missing data, the final sample size consists of 99 participants (62 from Vietnam and 37 from the U.S.), of whom 68.7% were female, 28.3% were male with 3% reported "other". The average age of participants was 32.49 ranging from 18 to 77 years old. Participants reported a high level of education with 49.5% having at least a bachelor's degree, 13.1% master's degree, with the remainder a high school diploma.

One multiple-choice question was written to measure participant knowledge of various definitions of AI found during our literature review. Specifically, AI is defined in three ways including as (a) any high-complexity statistical, or machine learning model used to predict individual cases (both continuous and discrete) with a higher level of accuracy than traditional statistical models; (b) technologies enabling computers to perform human-like cognitive tasks, including adaptive decision-making (e.g.,

Siri, Alexa); and (c) the creation of human-like intelligence in machines that are programed to think like humans and imitate intelligent human behaviors (e.g., chat GPT). Participants received 2 points for selecting "all of the above" as the correct answer to the AI knowledge question, 1 point for selecting one of the above three options, and zero points for selecting "none of the above".

We adapted McAllister (1995) 3-item scale to measure frequency interaction with AI on and off the job. Participants were asked to indicate how frequently they initiated, interacted with AI at work, and interacted informally or socially outside of work. Anchors ranged from 1 "never" to 5 "always". Cronbach's alpha for this variable was .84. Three items were written to measure the subjective perception of AI's role in future jobs. Sample items include "AI will replace most low-skilled jobs in the future". Anchors ranged from 1 "strongly disagree" to 5 "strongly agree". Cronbach's alpha for this variable was .72. Perception of trust in AI-based assessment in hiring was measured using 10-item scale in Feldkamp et al. (*in press*). Sample items include "I think job applicant information is used correctly by AI in making hiring decisions"; "I would believe in AI-based assessment even when I don't know for certain that it is correct". Anchors ranged from 1 "strongly disagree" to 5 "strongly agree". Cronbach's alpha for this variable was .94. We used da Motta Veiga et al.'s (2023) 5-item scale to measure participant fairness perception of AI-based assessment in hiring. Sample items include "Analyze social media information for traits and characteristics"; "analyze audio of applicants or voice cues". Anchors ranged from 1

Table 1: Descriptive statistics and zero-order correlations among variables in the study (N = 99)

Variables	1	2	3	4	5	6	7	8	9	10
1. Age	-									
2. Gender (1 = Male; 2 = Female)	-.18	-								
3. Education level	.40	.04	-							
4. Culture (1 = U.S., 2 = VN)	-.65	.17	-.29	-						
5. AI knowledge	.02	.07	-.03	.00	-					
6. AI interaction	-.25	-.06	-.05	.18	.10	.84				
7. Perceived role of AI	-.19	.04	-.02	.08	.23	.33	.72			
8. AI-based assessment trust	-.36	-.11	-.13	.40	.00	.52	.22	.94		
9. AI-based assessment fairness	-.29	-.18	-.15	.39	.10	.39	.09	.60	.87	
10. AI-based assessment satisfaction	-.40	.00	-.18	.44	.08	.47	.22	.65	.48	-
Mean	32.49	1.78	4.80	1.63	1.76	2.90	2.93	2.81	3.03	2.41
Standard deviation	13.71	.60	1.56	.49	.43	.83	.88	.97	.91	1.17

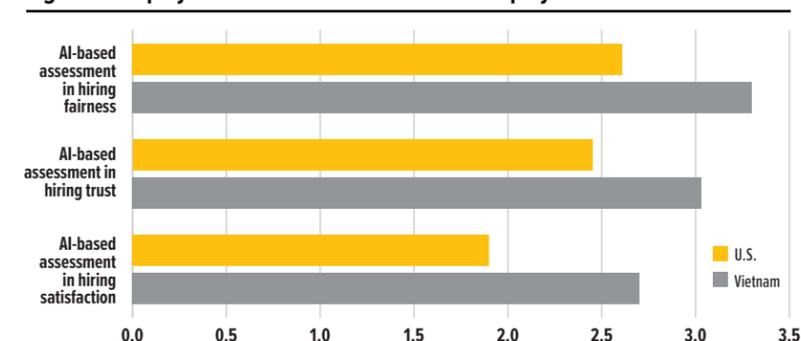
Note: Correlations $\geq .22$ are significant at $p < .05$; correlations $\geq .25$ are significant at $p < .01$ (two-tailed). Cronbach's Alpha estimates are shown along the diagonal.

"very unethical/unfair" to 5 "very ethical/fair". The internal consistency estimate for this variable was .87. Participants were asked to indicate their level of satisfaction with the hiring process if it were based entirely on AI. Anchors ranged from 1 "very dissatisfied" to 5 "very satisfied".

Results and Discussion

As shown in Table 1, culture was significantly correlated with perception of trust in AI-based assessment ($r = 0.40$, $p < 0.01$) with participants from Vietnam significantly trusting AI more than did U.S. participants. Participants from Vietnam also reported viewing AI-based assessment in hiring to be fairer ($r = 0.39$, $p < 0.01$) and more satisfied ($r = 0.44$, $p < 0.01$) with AI-based hiring process compared to U.S. participants. In addition, Vietnamese participants reportedly held a stronger view that AI would replace most jobs in the future compared to U.S. participants ($r = 0.23$, $p < 0.05$). To test the conceptual model, we ran a multivariate general linear model (GLM) in which three outcome variables including trust perception, fairness perception, and satisfaction with AI-based hiring procedure were simultaneously regressed onto demographic characteristics of age, gender, educational level, and culture while knowledge of AI, interaction frequency with AI, and perceived role of AI serving as covariates. Only culture and perceived role of AI were significant predictors of the above outcome variables. Specifically, participants from Vietnam were found to consistently perceive AI-based hiring procedure as fairer and more trustworthy as well as more satisfied with AI-based assessment in

Figure 2: Employee attitude toward automated employment decision tools



Note: Covariates in the model includes age, gender, education, AI knowledge, AI interaction, and perceived role of AI in future jobs.

hiring compared to U.S. participants controlling for age, gender, education, AI knowledge, and AI interaction. Figure 1 shows a graphical representation of the findings.

The finding of U.S. participants being skeptical or mistrusting AI-based assessment in hiring compared to Vietnamese participants provided further support to an earlier large-scale study based on 28 European nations discussed earlier in this article (Shoss & Ciarlante, 2022).

The U.S. income inequality has widened over the past few years and the COVID-19 pandemic has exacerbated this gap. One practical implication from this finding is to use AI to improve workers' jobs and/or incomes to reduce mistrust and increase acceptance. Whereas it is too soon to evaluate the effectiveness of enforcing the Automated Employment Decision Tools (AEDT) law in New York city, Maryland businesses may want to take heed in designing and adopting AI in hiring given our study findings. There is potential for AI to help improve business financial performance per McKinsey survey results, however, that potential cannot be realized without providing your employees with opportunities to gain new skills in training and development. Maryland businesses are advised to be mindful of the ethical challenges associated with adopting AI in the workplace in the absence of state rules in this area. For example, bias audits are required in New York city of all hiring organizations implementing AEDT. Because of this, Maryland businesses wishing to adopt AI are recommended to conduct regular bias audits to minimize any adverse effects from their AI predictive models to cultivate trust within their employees and improve procedural fairness.

Endnotes

¹ The term predictive models include both "supervised" regression and classification models as well as "unsupervised" models including neural network modeling to predict group membership for out-of-sample cases or variables.

² For more details, see Automated Employment Decision Tools (Updated) – NYC Rules (cityofnewyork.us)

³ Participants were sourced from all over the U.S. using listservs of various professional and academic associations

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The State of Maryland's Post-Pandemic Housing Finance Market

James Baublitz, CFA

Vice President - Capital Markets, First Home Mortgage Corporation

The years following the Great Financial Crisis of 2007–2008 have witnessed extraordinary shifts in affordability and availability in Maryland's housing market. After a dramatic increase in average home price appreciation (HPA) peaked in mid-2007, the early 2012 end to a five-year decline in HPA began the current cycle of substantial HPA increases to levels that now exceed pre-crisis values.¹ Along the way, the Federal Reserve's quantitative easing initiatives resulted in the purchase of hundreds of billions of dollars in mortgage-backed securities, driving mortgage rates to all-time lows. Inflation resulting from the end of disruptions associated with the COVID-19 pandemic prompted the Federal Reserve to embark on its most aggressive interest rate increases ever, driving mortgage rates to highs not seen since 2001.² This article addresses the state of Maryland's housing finance market and discusses the influences on prospective borrowers' home-purchasing decisions.

Inventory and Supply Challenges

Conversations about the 2023 housing market must begin with housing supply. It is helpful to think of the housing market in two distinct groups: resale and new construction.

Beginning with resale inventory, the housing market remained extremely competitive as of this article's writing in October 2023. The median days on the market for a home is a mere seven days, and the data shows only 1.5 months of housing inventory in the state of Maryland.³ This compares to 20 days and a 3.3-month supply nationally.⁴ Further, throughout the Washington D.C. and Baltimore metropolitan areas, home showings have declined between 18%–21% year-over-year, again speaking to a less robust housing market broadly.

Turning to new construction, the Census Bureau reports that while single-family starts—the number of new homes on which construction has started—have increased to almost 1 million units annually across the country, the pace remains well below the levels seen leading into the

Great Financial Crisis.⁵ Taken together, a lack of inventory in both the resale and new construction sectors is reducing homebuying options for prospective buyers.

Additionally, the prolonged period of extremely low mortgage rates is incentivizing existing homeowners to stay in their homes for longer, which further reduces inventory. Over 99% of existing conventional 30-year fixed-rate mortgages are at rates below current market levels, and monthly prepayments of existing mortgages (that is, additional payments made in addition to contractual payments) have slowed to a crawl.⁶ Each monthly prepayment report in 2023 from Fannie Mae, data reporting on borrower payments above their contractual payments of principal and interest, has printed at the slowest rate since 1999.⁷ The net effect has been to continue boosting home prices despite higher prevailing interest rates, due in large part to a lack of resale inventory.

Discount Points are Back in Vogue

Most lenders originate loans intending to sell them into the secondary market. They do so by creating mortgage-backed securities (MBS), bonds that group loans into larger pools of mortgages. MBS are valued relative to benchmark instruments such as the 10-year Treasury bond. Generally speaking, MBS typically trade at a higher rate than the 10-year Treasury, due to several reasons beyond the scope of this article. As Treasury yields have increased, so too have the yields on MBS, resulting in higher interest rates for prospective borrowers.

As rates increased throughout the broader bond market selloff, additional factors have weighed on MBS performance, which means that higher interest rates are required to sell MBS. The end of the Federal Reserve's quantitative easing program removed a major buyer of MBS from the market. The failures of Silicon Valley Bank, First Republic Bank, and others resulted in the Federal Deposit Insurance Corp. adding to supply by selling portfolios of MBS into the secondary market. Commercial banks, typically among the very largest buyers of MBS, have been constrained by their legacy holdings of MBS purchased in a much lower rate environment, so they have not been active buyers of new MBS.⁸ These and

¹ U.S. Federal Housing Finance Agency, All-Transactions House Price Index for Maryland (MDSTHPI), Q2 2023, FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/MDSTHPI>

² Freddie Mac Primary Mortgage Market Survey <https://www.freddiemac.com/pmms>

³ Maryland Association of REALTORS® Housing Statistics, August 2023 <https://www.mdrealtor.org/Portals/22/adam/Page%20Elements/yQ4trm-jDUiKBJ9hxZ8kWw/August/August%202023%20Housing%20Stats.pdf>

⁴ National Association of REALTORS® Existing Home Sales Release, August 2023, <https://www.nar.realtor/newsroom/existing-home-sales-decreased-0-7-in-august>

⁵ US Census Bureau, Monthly New Residential Construction, August 2023 <https://www.census.gov/construction/nrc/current/index.html>

⁶ Bloomberg, First Home Mortgage Corporation research

⁷ Bloomberg, First Home Mortgage Corporation research

⁸ U.S. Federal Reserve System, Assets and Liabilities of Commercial Banks in the United States – H.8 <https://www.federalreserve.gov/releases/h8/current/default.htm>

other factors have resulted in the spread between agency MBS and the 10-year Treasury reaching levels that are wide relative to historical norms. This, too, is weighing on affordability and prevailing interest rates in general.

One notable change in this market has been borrowers' willingness to pay so-called discount points. Discount points are upfront fees paid by the borrower to permanently reduce the interest rate of their loan. The price spread between different MBS coupons is such that, in some cases, borrowers can significantly reduce their



The credit profile of the typical borrower in Maryland remains much stronger than in the years leading up to the Great Financial Crisis.

interest rate in exchange for paying discount points. For example, as of this article's drafting, a Federal Housing Administration (FHA) borrower paying 0.75 discount points (or \$2,250 on a \$300,000 loan) could permanently reduce their interest rate from 7.125% to 6.625%, recouping their investment in discount points in just over 12 months of monthly payments. First Home Mortgage's analysis of Maryland residents found that over 70% of borrowers have paid discount points as of October 2023 versus only 39% in 2021—a dramatic difference in a two-year period.

Affordable Housing Initiatives Are Top of Mind

Fannie Mae (FNMA) and Freddie Mac (FHLMC), two government-sponsored enterprises (GSEs), play a critical role in the nation's housing finance system. Importantly, these GSEs, in collaboration with the Federal Housing Finance Agency (FHFA), set the underwriting guidelines and policies for what are considered conforming loans. Simply stated, this includes the maximum loan-to-value, debt-to-income, and other metrics associated with borrower credit quality.

The FHFA, through the GSEs, significantly influences borrower behavior through the fees it charges lenders to guarantee the timely payment of principal and interest on the underlying mortgages. Fannie and Freddie charge a so-called guarantee fee—collected as a portion of the loan's interest rate every month—as well as upfront credit risk adjustments. Lenders offer borrowers a range of note rates and amortization terms that incorporate these fees.

FHFA periodically adjusts these upfront credit fees, and the most recent adjustment, effective May 1, 2023, prioritized first-time homeownership and affordability.⁹ Eligible borrowers whose qualifying income is lower than certain percentages of the area median income of the property location have those upfront fees entirely eliminated, boosting purchasing power through a more affordable interest rate. For a typical borrower, this rate difference is often 0.625% or more.¹⁰ Additionally, the focus on affordable housing has resulted in the development of a robust secondary market for mortgages backed by lower-income borrowers. As a result, many lenders have recently introduced programs that provide down-payment assistance or reduced closing costs.

The credit profile of the typical borrower in Maryland remains much stronger than in the years leading up to the Great Financial Crisis. Borrower debt-to-income ratios and average credit scores have improved substantially when compared to the years leading up to the Great Financial Crisis (see table below).¹¹ In fact, the percentage of loans in foreclosure nationwide remains near the lows of this century. Mortgage products made famous through the

⁹ U.S. Federal Housing Finance Agency Press Release, January 2023, <https://www.fhfa.gov/Media/PublicAffairs/Pages/FHFA-Announces-Updates-to-Enterprises-SF-Pricing-Framework.aspx>

¹⁰ First Home Mortgage Corporation research based on a 700 FICO, 80 LTV conventional borrower.

¹¹ U.S. Federal Housing Finance Agency National Mortgage Database, National Mortgage Database Aggregate Statistics, June 2023, <https://www.fhfa.gov/DataTools/Downloads/Pages/National-Mortgage-Database-Aggregate-Data.aspx>

Table 1: Average Debt-to-Income (DTI) Ratios and Average Credit Scores, 2004–2008 Versus 2020–2022

	Time Period	Average DTI	Average Credit Score
Maryland (Purchase Loans)	2004–08	39.3	702
Maryland (Purchase Loans)	2020–21	36.5	736

crisis—option adjustable-rate mortgages, minimal or no documentation loans, negative amortization loans—have not significantly returned to the market, and the vast majority of new mortgage issuance is made up of loans backed by FNMA, FHLMC, or Ginnie Mae (GNMA).¹² This more creditworthy borrower is, for the moment at least, resulting in fewer foreclosures and again contributes to a lack of resale home inventory in the market as a whole.

Conclusion: Higher Prices and Rates, But Home Purchases Are Still Possible

Higher prevailing rates, lower housing inventory, and shorter times on the market are hallmarks of the home-purchasing experience for prospective borrowers in Maryland. In an effort to support first-time homebuyers in particular, both Fannie and Freddie, as well as individual lenders, have prioritized programs that emphasize reduced interest rates, closing-cost assistance, or down-payment assistance—or all three. The dollar prices of new-production MBS have generally moved from a substantial premium to par to either a modest premium or a discount to par. Moving from a so-called premium-priced market to a discount market for MBS has dramatically increased the prevalence of discount points to permanently buy down the loan's interest rate, and borrowers are seeing a bigger bang for their buck in those scenarios. Finally, while legitimate home affordability concerns exist, the erosion of credit quality standards witnessed in the last period of significantly increasing home price appreciation has not returned. Instead, delinquencies and foreclosures remain low, lending standards remain high, and the vast majority of borrowers continue to prioritize FNMA/FHLMC/GNMA financing.

¹² Black Knight, Incorporated, August 2023 Mortgage Monitor https://www.blackknightinc.com/wp-content/uploads/2023/08/BKI_MM_AUG2023_Report.pdf

Still, with proper preparation and a good understanding of the current market environment, prospective borrowers are able to pursue their homeownership goals, and disciplined borrowers are able to find attractive avenues to make that purchase possible.



Banking the Unbanked

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According to the most recent S&P Global Financial Literacy Survey, 43% of adults in the United States are financially illiterate.¹ Financial literacy captures the ability for someone to use basic economic knowledge and financial concepts to make choices about saving, investing, borrowing, and building assets. In Maryland, over half of adults have low financial literacy.²

Significant deficits in financial literacy tend to be concentrated in low socioeconomic areas.³ Amongst the lowest income households, over 65% of people are financially illiterate. These households end up spending four times more hours a week addressing personal finance issues compared to people with high financial literacy. The costs of financial illiteracy lead to the inability for households in low socioeconomic areas to ‘get ahead’ and build a positive net worth. Moreover, the cycle becomes persistent. Financial literacy lends itself to being more strategic with respect to saving and borrowing, particularly with the utilization of banks. Yet, we still see a significant number of households across the U.S. that do not have any type of bank account or do not utilize bank services to meet most of their financial needs. These deficits are particularly true in metro areas with a larger portion of low-income households like Baltimore City.

Every two years, the Federal Deposit Insurance Corporation (FDIC) conducts a survey to measure the access to banking services in the U.S. This survey, the FDIC National Survey of Unbanked and Underbanked Households, was last administered in 2021 and examines unbanked and underbanked households. An unbanked household is one where no individual in the household holds any type of bank account (checking or savings). An underbanked household is where someone held a bank account in the last year but still relies on alternative financial transactions (e.g., money orders, pawn shops, Venmo) to meet many of their financial needs.⁴

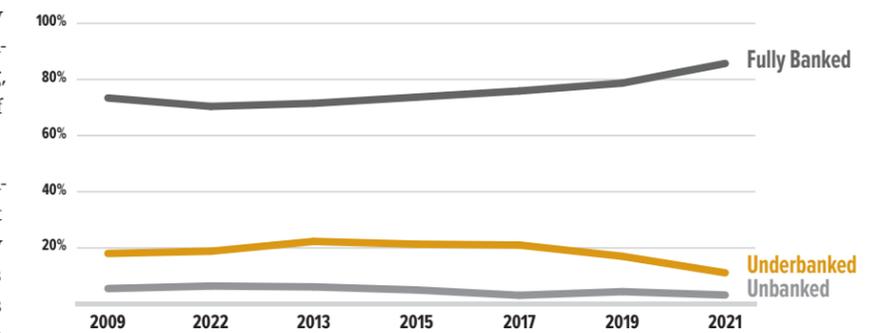
¹Standard & Poor’s Rating Services Global Financial Literacy Survey. <https://gflec.org/initiatives/sp-global-finlit-survey/>

²The Most Financially Savvy States, conducted by Smartest Dollar. <https://smartestdollar.com/research/most-financially-savvy-states-2023>

³Boel, Paola, and Peter Zimmerman. “Unbanked in America: A Review of the Literature.” *Economic Commentary* 2022-07 (2022).

⁴ 2021 FDIC National Survey of Unbanked and Underbanked Households. <https://www.fdic.gov/analysis/household-survey/index.html>. Federal Deposit Insurance Corporation.

Figure 1: Households in the DMV Region



As of 2021, approximately 4.5% of U.S. households were unbanked and 14.1% were underbanked. However, the good news is that since the survey started in 2009, the number of unbanked and underbanked households fell across the U.S. and, specifically, fell in the DC/Maryland/Virginia (DMV) region as well. Figure 1 shows the trends in the DMV region for the percentage of households in each classification.

The recent trend is the continuation of a longer trend that has seen unbanked households in the U.S. drop from 14% in 1989 to its most recent reading of 4.5% in 2021. The COVID-19 pandemic had the unintended and welcomed consequence of accelerating households’ decision to open bank accounts. The immediate policy of limiting social interaction in response to COVID-19 prompted businesses to move away from cash payments and toward electronic payments. Further, as households were eager to receive relief via pandemic stimulus payments and unemployment benefits, they opened bank accounts to facilitate such transfer payments. As a result, the 2021 FDIC survey revealed these pressures pushed an additional 4.2% of U.S. households to become recently banked⁵, or close to half of the unbanked, helping to explain the recent gains of the banked ranks.

⁵ 2021 FDIC National Survey of Unbanked and Underbanked Households. <https://www.fdic.gov/analysis/household-survey/index.html>. Federal Deposit Insurance Corporation.

Table 1: Distribution of Unbanked, Underbanked, and Fully Banked Households

United States		Household Income Levels				
	Total	<\$15K	\$15-30K	\$30K-50K	\$50K-75K	>\$75K
Unbanked	4.5%	19.8%	9.2%	4.0%	2.1%	0.6%
Underbanked	14.2%	19.2%	18.9%	17.3%	14.0%	9.7%
Fully Banked	81.3%	61.0%	71.9%	78.7%	83.9%	89.7%
DMV Region		Household Income Levels				
	Total	<\$15K	\$15-30K	\$30K-50K	\$50K-75K	>\$75K
Unbanked	3.2%	20.5%	9.3%	4.5%	1.5%	0.3%
Underbanked	11.1%	20.8%	21.3%	9.6%	9.1%	9.1%
Fully Banked	85.7%	58.6%	69.4%	85.9%	89.3%	90.6%

Washington D.C., Maryland, and Virginia Region vs. Nation

As anticipated, most unbanked households are concentrated in low-income households. Like the nation, most of the DMV region's unbanked population is concentrated in low-income households (less than \$30,000 a year). Table 1 presents a breakdown of the percentage of unbanked, underbanked and fully banked households by income level based on the 2021 survey. We observe that as household income increases, banking services usage increases in step. For our top income category, with income greater than \$75,000 annually, a full 90.6% of DMV households are fully banked. In contrast, Table 1 reveals that 35% of all households earning less than \$30,000 a year are unbanked or underbanked in the DMV region compared to only 32% of similar households in the entire U.S.

Understanding the Unbanked and Underbanked Households

To facilitate more widespread access to banking services, policy makers have attempted to understand the causes of the relationship between household income and the utilization of banking (and other financial services).⁶ Banks provide key services to households and have been historically a key partner in wealth creation. From checking, direct deposit, savings to loans, having a relationship with a bank is crucial for many households. The FDIC survey investigates the reasons as to why some households remain unbanked. When asked why a given household did not use a bank for their financial transactions, the top reasons cited were: minimum balance requirements, privacy concerns, lack of trust, fees, and past problems with banks/credit. Figure 2 contrasts the national answers to the reasons for households in the DMV. Unlike the nation at large, the biggest reason DMV households do not use banks is a lack of trust.

We break down these reasons by household income in the DMV area in Table 2. Overwhelmingly, it appears that a combination of not trusting banks and wanting to maintain privacy dominates the lower income brackets. The upper income brackets seem to have bigger problems with minimum balance requirements and fees.

⁶ Boel, Paola, and Peter Zimmerman. "Unbanked in America: A Review of the Literature." *Economic Commentary* 2022-07 (2022).

Table 2: Reasons for not having a banking account by household income in the DMV

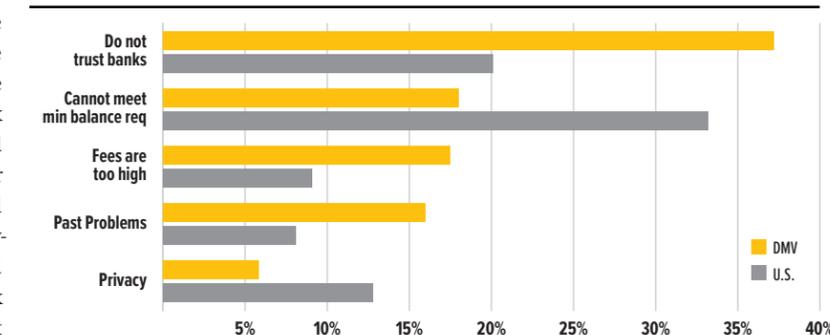
Reason	<\$15K	\$15-30K	\$30K-50K	\$50K-75K	>\$75K
1	Trust	Trust	Past Problems	Balance	Balance
2	Privacy	Privacy	Trust	Fees	Fees
3	Past Problems	Fees	Fees	Trust	Privacy
4	Fees	Balance	Balance	Privacy	Trust

Current Initiatives

Nationwide initiatives are attempting to decrease the number of unbanked and underbanked households. These range from the FDIC's own #GetBanked campaign to the nonprofit Cities for Financial Empowerment Fund Bank On initiative. Launched in 2015, Bank On has now certified more than 100 financial institutions with a network of over 40,000 branches and continues to work closely with local coalitions and governments.⁷ In 2022, over 95% of the low- and middle-income populations in the U.S. are located near a branch within this network. Central to the Bank On movement is the first-ever Bank On National Account Standards and Certification - a uniform benchmark for safe and affordable banking accounts. At last Standards, these accounts are required to be safe, low cost and functional. They require a minimum opening deposit of \$25 or less and carry no overdraft or insufficient funds fees. They cost \$5 or less per month with no unpredictable fees. They allow free access to debit card, free branch and ATM access and free deposits, withdrawals and bill payments.⁸ These accounts help expand safe and affordable banking access for low- and middle-income communities.⁹ At last report, the initiative has helped create 5.8 million active accounts. This number of new accounts compares favorably to the documented 5.9 million unbanked households remaining.¹⁰ The State of Maryland became a partner in the initiative in 2019 launching Bank On Maryland via the CASH (Creating Assets, Savings and Hope) campaign. In 2021, over 69,000 new bank accounts were opened in Maryland.

⁷ ABA BankOn Dashboard <https://public.tableau.com/app/profile/american.bankers.association/viz/ABABankOnDashboard/BankOn>
⁸ Bank On National Account Standards 2023-2024. <https://joinbankon.org/wp-content/uploads/2022/08/Bank-On-National-Account-Standards-2023-2024.pdf>
⁹ BankOn. https://joinbankon.org/certify/?utm_source=referral&utm_medium=aba&utm_campaign=bankon
¹⁰ The Bank On National Data Hub: Findings from 2021. <https://www.stlouisfed.org/community-development/bank-on-national-data-hub/bank-on-report-2021>

Figure 2: Reasons for Not Banking



In conjunction with Bank On, locally, states have also enacted their own programs to reduce the number of unbanked households. Following on one of his campaign promises, Governor Wes Moore signed into law in May 2023 the Access to Banking Act (HB0548).¹¹ This Act, effective July 1, 2023, created the Maryland Community Investment Venture Fund. The idea behind the Act is twofold. First, the Act offers incentives to local banks to create branches in low-to-moderate income communities.¹² Second, the Act establishes a venture fund to promote the creation of financial innovations to serve the needs of low-to-moderate income communities. By supporting more bank branching footprint in low-to-moderate income communities and offering local banks access to new fintech solutions, the Governor hopes to provide Maryland entrepreneurs easier access to capital and target investments in high-growth industries.

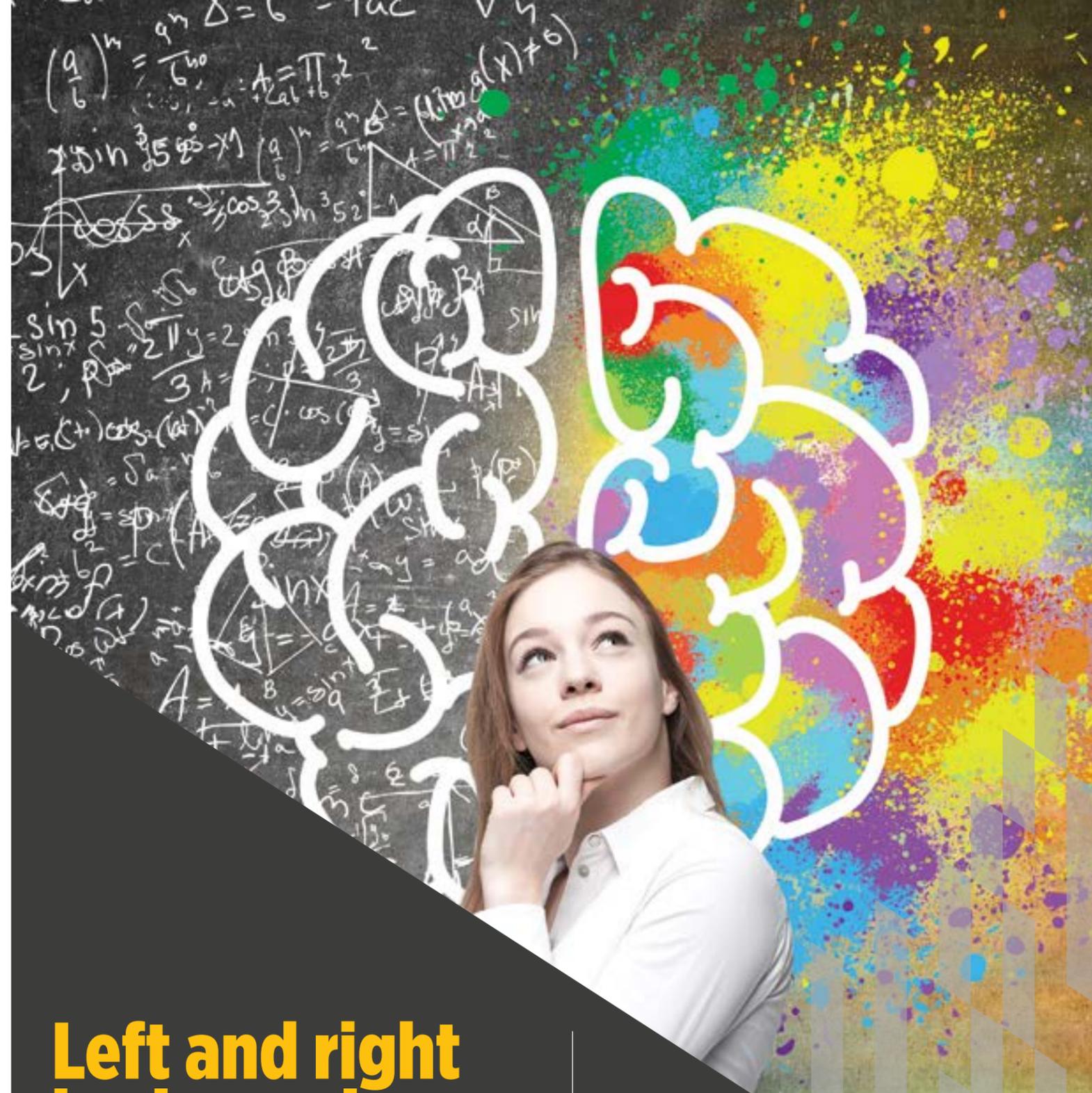
¹¹ Maryland General Assembly. <https://mgaleg.maryland.gov/mgaweb-site/Legislation/Details/hb0548>
¹² Maryland Access to Banking Act – Financial Regulation. Maryland Department of Labor. July 18, 2023. <https://www.dlr.state.md.us/finance/banks/access-to-banking.shtml>

The Path Forward

The types of policies that currently try to improve the state of unbanked and underbanked households still do not appear to target effectively the bigger underlying issues. Even if there are more banks readily available in low-income neighborhoods and these banks eliminate minimum balance requirements, there remains a significant hurdle to reach unbanked and underbanked households. Given that privacy and trust are the most cited reasons for households not to use banks, unless campaigns target these issues, the unbanked will remain unbanked. Unfortunately for both parties, the road ahead looks arduous. The banking industry has yet to recover in the eye of the public from its past offenses. The 2023 Edelman Trust Report ranks the Financial Services industry 16th out of 17 industries, with only Social Media more distrusted.¹³

Historically, banks built trust by being local and a presence in the community. Today, over 70% of financial transactions are digital. At a time when banks need to lean in on personal interactions to maintain, restore and instill trust, technology is making it harder to make that connection. One can only welcome the Maryland initiative to champion new branches in low-to-moderate income neighborhoods. Ultimately, banks can only hope to gain trust via a multi-pronged approach that will: 1) Personalize services to meet the customers where their knowledge is, 2) Put consumers first so banks can anticipate and meet their needs through new or improved product offerings, 3) Be more transparent so that not only fees are predictable but customers understand how their data is used, 4) Promote data privacy and protection, and 5) Show character so that customers will know the bank's values as it engages with the community. Banks should be ready to recognize that the issue of trust is not simply important to attract the unbanked. For banks, building trust is imperative to their survival as they face increasing competition from non-bank fintech innovators.

¹³ 2023 Edelman Trust Barometer. <https://www.edelman.com/sites/g/files/aatuss191/files/2023-05/2023%20Edelman%20Trust%20Barometer%20Insights%20for%20the%20Financial%20Services%20Sector.pdf>



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State Business Climate Rankings: Insightful Signal or Mostly Noise?

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People are drawn to rankings, whether it is the best beaches, boardwalks, football quarterbacks, or colleges and universities. Chances are, you have seen mentions of state business climate rankings. For instance, a July 2021 *Baltimore Business Journal* article stated, “Maryland jumped 19 spots to No. 12 in CNBC’s annual list of America’s best states for business — the biggest leap of any state.”¹ The article comments that Gov. Larry Hogan, who ran for office in 2014 on a platform of lowering taxes and improving Maryland’s business climate, did not waste time touting Maryland’s placement on CNBC’s latest list. Hogan is quoted saying, “Maryland is open for business hasn’t just been our slogan — we have changed the entire mission of state government to be unabashedly pro-jobs and delivered one of the biggest economic turnarounds in America.”

Our goal is to take a closer look at these numerous and seemingly compelling business climate rankings. We find that there is not much agreement among them, and we explain why. We also assess evidence regarding the ability of these rankings to predict business and economic outcomes.

Where Do Rankings Come From?

These rankings are produced by various organizations and are based on measures expected to reflect the business climate of a state. Numerical values are assigned to each measure and aggregated into an overall score. The score is ranked from 1 to 50, best to worst.² When analysts independently create rankings, results are inconsistent with one another because different measures are used and because different methods are used to aggregate the measures. While the rankings all aim to measure the broad concept of business climate, just how different are they? To shed light on this, we examined six different reports that rank states across the U.S.

Six Different Rankings and Maryland’s Rank

With an eye to assessing how similar they are, we looked at what underlay the findings of six different reports that rank state business climates. We found the most recent release of each and identified how many measures are used to create the overall ranking, and we provided a few examples of these measures. In no particular order, here’s what we found.

The **Economic Freedom of North America** (EFNA) of the Fraser Institute has a publication date of 2022.³ Examples of the measures used include union density and general consumption expenditures by the government as a percentage of income.

The **State Business Tax Climate** (SBTC) of the Tax Foundation has a publication date of 2023.⁴ As its name implies, it focuses exclusively on taxes. It is based on 125 measures, such as the top individual marginal tax rate and the top corporate tax rate.

The **ALEC-Laffer State Economic Competitiveness Index** (ALSEC) of the American Legislative Exchange Council has a publication date of 2023.⁵ It is based on 15 measures, such as the estate/inheritance tax levied and the state minimum wage.

The **Best States 2023 Ranking Performance Throughout All 50 States** (USN) ranking is created by U.S. News.⁶ It is based on 71 measures, such as the share of people 25 or older who have an associate’s degree or higher and state and local tax revenues as a share of personal income. We note that this ranking is not as focused on business as the others because it aims to show how residents of the state are served in a variety of ways.

¹ Holden Wilen, “Maryland rises 19 spots in CNBC’s list of best states for business,” *Baltimore Business Journal* (July 13, 2021), <https://www.bizjournals.com/baltimore/news/2021/07/13/maryland-moves-up-in-cnbc-state-business-rankings.html>

² Rankings are what are reported in the media because they are easy to interpret. Researchers doing statistical analysis, however, would most likely analyze the scores used to create the ranking instead of the ranking. A relatively high score would cause a ranking close to one and a relatively low score would cause a ranking close to 50. Given this, the score and the ranking would have a negative relationship. If the rankings are created so that 50 is the best, and 1 is the worst, the score and the ranking have a positive relationship.

³ Dean Stansel, José Torra, Fred McMahon, and Ángel Carrión-Tavárez, “Economic Freedom of North America 2022,” *Fraser Institute*, 2022, <https://www.fraserinstitute.org/studies/economic-freedom-of-north-america-2022>

⁴ Janelle, Fritts, and Jared Walczak, “2022 State Business Tax Climate Index,” *Tax Foundation*, 2021, <https://taxfoundation.org/research/all-state/2022-state-business-tax-climate-index/>

⁵ Laffer, Arthur B., Stephen Moore, Jonathan Williams, Rich States, Poor States, *ALEC-Laffer State Economic Competitiveness Index 16th ed.*, American Legislative Exchange Council, 2023, <https://alec.org/publication/rich-states-poor-states-16th-edition/>

⁶ Rankings: Overall Best States | US News Best States, U.S. News, <https://www.usnews.com/news/best-states/rankings>, Elliott Davis, Jr., “Best States Rankings,” *U.S. News*, 2023.

Table 1: Maryland and Neighboring State Rankings

STATE	EFNA	SBTC	ALSEC	USN	NASICI	SNE
DE	41	16	29	18	8	12
MD	30	46	41	22	3	4
PA	17	33	35	40	20	21
VA	6	26	18	13	18	6
WV	44	20	28	46	47	47

Table 2: Correlation Matrix of Rankings

	EFNA	SBTC	ALSEC	USN	NASICI
SBTC	0.55				
ALSEC	0.70	0.69			
USN	0.25	0.03	-0.01		
NASICI	-0.13	-0.23	-0.29	0.36	
SNE	-0.04	-0.23	-0.26	0.43	0.89

The North American Subnational Innovation Competitiveness Index (NASICI) of the Information Technology and Innovation Foundation (ITIF) has a publication date of 2022.⁷ It uses 13 measures, such as the share of households subscribing to broadband internet and the share of the labor force with a post-secondary education.

The **State New Economy (SNE)** ranking was also created by the ITIF and has a publication date of 2020.⁸ It uses 25 measures, such as employment in high tech industries as a percent of private-sector employment and the amount of venture capital dollars invested as a percent of gross state product.

Table 1 shows where Maryland (MD) is ranked by these six indexes, as well as the rankings of the neighboring states that share a border with MD: Delaware (DE), Pennsylvania (PA), Virginia (VA), and West Virginia (WV).

⁷ The North American Subnational Innovation Competitiveness Index | ITIF Luke Dascoli and Stephen Ezell, The North American Subnational Innovation Competitiveness Index, 2022, Information Technology and Innovation Foundation, <https://itif.org/publications/2022/06/21/north-american-subnational-innovation-competitiveness-index/>

⁸ Robert D. Atkinson and Caleb Foote, The 2020 State New Economy Index, Information Technology and Innovation Foundation, <https://itif.org/publications/2021/10/19/2020-state-new-economy-index/>

There is quite a bit of variation across these state rankings. Maryland ranks highly (#3) using the NASICI but poorly (#46) using the SBTC. Virginia ranks highly (#6) using the EFNA but near the median (#26) using the SBTC. West Virginia is the lowest in four of the six rankings, but it does have two rankings near the median (SBTC and ALSEC). Clearly, there is no consistency across the rankings. An exception is that the two rankings produced by the ITIF are generally similar for the states in Table 1.

To provide a bigger-picture perspective on the degree of dissimilarity among the rankings, we calculated the pairwise correlation coefficient between each pair.⁹ If the two rank orders were identical, the correlation coefficient would be +1. If the rankings were the exact opposite, the correlation coefficient would be -1. Table 2 summarizes these results.

The EFNA and ALSEC correlation is high at 0.70. Both of these rankings use measures that tilt toward low taxes and smaller government spending as positive aspects of the business climate. The correlation between the two ITIC rankings is high at 0.89. This is not surprising because the two indexes have a similar emphasis on innovation and technology, and they share some of the same component measures. Of the other 13 correlations, 11 are below 0.50, and seven are negative. In general, the rankings do not exhibit a high degree of correlation.

Do Rankings Change?

One would expect that large changes in rankings are not likely in a short period of time. But over longer periods, what happens? Does it appear that a state could change in ways that improve or worsen its ranking? To examine this, we looked at two of the measures (EFNA and SNE) that have a long history. We compared their 2020 to their 2010 rankings.

For the EFNA, Maryland's ranking was 11 in 2010 and 30 in 2020. The rankings for neighboring states in 2010 and 2020, respectively, were: Delaware 27 and 41, Pennsylvania 26 and 17, Virginia 4 and 6, and West Virginia 48 and 44.

⁹ These are Pearson correlations of the rankings. A Spearman correlation of the rankings provides essentially the same number. With six rankings, there are 15 unique correlations, not counting the correlations of each ranking with itself (a correlation of 1.0).

For the SNE, Maryland was 3 in 2010 and 4 in 2020. The neighboring states' rankings for 2010 and 2020, respectively, were: Delaware 6 and 12, Pennsylvania 22 and 21, Virginia 8 and 6, and West Virginia 49 and 47. In general, changes in both cases are not particularly large over this decade for both measures. The largest change was Maryland, which fell 19 places for EFNA.

We used only five states to illustrate the way rankings change. Using all 50 states gives a more complete picture. The correlation coefficient of the EFNA ranking in 2020 and that from 10 years earlier is 0.81. The correlation coefficient of the SNE ranking in 2020 and that from 10 years earlier is 0.94. Given these high correlations, rankings again are shown to generally not change substantially over time. They are somewhat persistent.

Do These Measures Matter?

For these rankings to contain insight or be worthy of attention, there should be evidence linking them to state economic growth, entrepreneurship, and other indicators of a state's economic health. Researchers have studied whether these rankings are related to economic indicators. In a simple case, one would look at the correlation between a ranking and a desirable measure, such as average wages, employment growth, business startups, and so on. Because other variables might affect these indicators, researchers often use regression analysis to account for these potential influences. When done correctly, which is easier said than done, the influence of the business climate measure can be assessed. Stansel and Tuszynski (2019) identified 155 academic articles, book chapters, and policy papers that used the EFNA in empirical analyses. They found that in two-thirds of these, the EFNA was positively associated with desirable outcomes. The remainder presented mixed or inconclusive results. In a specific example, Cichello and Lamdin (2005) performed this type of analysis and found that the number of initial public offerings in a state is positively related to the EFNA. If a business climate measure does appear to have a positive impact on an important measure of economic or business health, it may be worthy of attention. The studies just mentioned used EFNA. It is perhaps the best-known measure and has a long history. Fisher (2013) illustrates that the ALSEC tends to have a negative relationship with positive outcomes, casting doubt on its measurement of a state climate conducive to business.

Geographic Scope

Our focus is on state rankings. However, business climate variations exist within states and are likely important. If a business seeks to locate or move to California, San Diego and San Francisco may be viewed differently. Or a move to Texas could be a choice among Austin, Dallas, and San Antonio. The EFNA measure has been extended to 382 U.S. metropolitan areas (Stansel, 2019). Of Maryland's six metropolitan areas, the highest ranked was Baltimore-Columbia-Towson at 16, and the lowest ranked was Salisbury at 211.¹⁰ State-level rankings will not detect intrastate variations.

Concluding Thoughts: Rankings of Limited Use

It is reasonable to think that business climate would play a role in whether new ventures are more likely to succeed in a state and whether a state tends to be attractive for businesses seeking to expand or relocate. However, it's not easy to achieve the goal of measuring a vague concept such as business climate. If business climate could be measured well enough to be useful from a business decision-making perspective, it would be best to measure it at the metropolitan level. Also, the factors that may create an ideal business climate likely differ across sectors and industries. A single meaningful one-size-fits-all measure at the state level and applicable across sectors and industries is unlikely to result in a widely accepted measure to the exclusion of competing alternatives. This is supported by our showing that various state rankings of business climate are not in agreement.

Research that attempts to find a relationship between business climate measures and measures of business and economic outcomes has mixed results. Overall, the likelihood is high that a state business climate ranking you read about is probably more noise than signal. While useful for social media posts, reporters' articles, and politicians' press releases, we are skeptical about the practical value of these rankings as a basis for business decisions or to assess a state's economic development policy decisions.

¹⁰ Dean Stansel, "Ranking U.S. Metropolitan Areas on the Economic Freedom Index." *Reason Foundation* Jan., 2019, <https://reason.org/policy-study/us-metropolitan-area-economic-freedom-index/>

On a more positive note, a more informed and nuanced ranking that's potentially useful for practitioners may be evident in the trade publication *Area Development*.¹¹ It reports the results of a survey of consultants to businesses with a nationwide client base who are asked to rate states on 13 categories that could affect companies' location and facility plans. The rankings are thus based on expert opinion rather than numerical measures. The categories include available real estate, corporate tax structure, and access to capital and funding. The overall results report on the top 20 states. The most recent top five, in declining order, are Georgia, Tennessee, South Carolina, Texas, and North Carolina.

In keeping with the theme of inconsistent rankings, the *Area Development* rankings are not closely aligned with the six rankings examined earlier. This is evident when the average of the six rankings and the highest of the six is examined for the top five states. Georgia had an average of 19, with EFNA the highest at #8. Tennessee had an average of 20, with EFNA the highest at #5. South Carolina had an average of 25, with ALSEC the highest at #12. Texas had an average of 16, with EFNA the highest at #4. North Carolina had an average of 12, with SNE the highest at #2. Of these top five states, none have an average ranking in the bottom half, so there is some weak alignment with the six rankings. To return to a Maryland focus, we note that Maryland was not in the top 20 states. Moreover, Maryland was not among the top 10 states for any of the 13 categories.

¹¹ Steve Kaelble, "2022 Top States for Doing Business," *Area Development*, Q3, 2022.

How this overall measure with the top 20 states—and category measures for the top 10 states—compares to rankings with all 50 states may be worthy of further study. But the absence of overall rankings for 30 states and category rankings for 40 states creates problems in such an analysis. The top 20 states could be used as a starting point for location decisions by businesses seeking to expand or relocate. The individual categories could be used for a more targeted evaluation of the decision at hand. But, as discussed earlier, comparisons of various potential locations within a given state would be warranted because these can differ.

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Protecting Maryland’s Mail Voting Processes through Poll Worker Training

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Introduction and Motivation

Ongoing national discourse and legal proceedings on the integrity of elections have led to significant scrutiny over the methods, equipment, processes, and people involved in administering this vital piece of our democracy. Mail-based voting, in particular, recently drew questions of integrity despite it being part of United States elections since the Civil War. According to the U.S. Election Assistance Commission (2017), most voters in seven states (i.e., Arizona, California, Colorado, Montana, Oregon, Utah, and Washington) opted to vote by mail in 2016, showing that mail-based voting has continued relevance today. More recently, the COVID-19 pandemic necessitated even broader mail-based voting opportunities for constituents to allow safe and easy access to cast a ballot. In Maryland, nearly half of all statewide voters in the 2020 General Election chose to vote-by-mail; in total over 3 million voters, or 74.5% of all eligible voters, participated in that election (Maryland State Board of Elections, 2021). In the 2022 Midterm Election, nearly 2 million Maryland voters cast ballots, or 47.4% of all eligible voters, and 27% of those voters did so by mail (Maryland State Board of Elections, 2023). Furthermore, Maryland residents can now opt in to permanently vote by mail and automatically receive a ballot for each election.

Recognizing that elections, voting processes, and equipment integrity are of “vital national interest,” the U.S. Department of Homeland Security (2023) labeled them as critical infrastructure within the Government Facilities sector in 2017. The nearly 1 million poll workers needed nationwide to administer a General Election are, oftentimes, the first line of defense in maintaining the integrity and security of elections. This paper builds on our “see something, say something” approach to securing elections at the local poll worker level and extends the work of Price et al. (2019), Scala et al. (2020), and Dehlinger et al. (2021), all of which analyzed the cyber, physical, and insider threats in various in-person voting processes and developed poll worker training modules for those threats in partnership with Maryland Boards of Elections. Specifically, in this article, we describe the design, validation, and deployment of a new mail-based voting training module.

Figure 1. Ensuring Mail-In Voting Security Training Module Screenshot



Module Design and Deployment

In our previous work, the Empowering Secure Elections Research Lab at Towson University established more than 100 potential threats for mail-based voting processes and identified security measures that could mitigate them (Scala et al., 2022). Utilizing these identified threats and following our prior poll worker training module design (Dehlinger et al., 2021 and Scala et al., 2020), the mail-based voting training module also focuses on developing poll workers’ abilities to understand the *cyber*, *physical*, and *insider* threats that could arise during an election. *Cyber* threats take place digitally and may or may not need an Internet connection. *Physical* threats happen when election equipment is tampered with (e.g., thievery or damage to machines) or ballots fail to be safeguarded (e.g., supply chain disruptions, insecure storage). *Insider* threats come from human interactions with the process,

Figure 2. System Usability Scale (Brooke, 1996)

	Strongly Disagree				Strongly Agree
1. I think that I would like to use this system frequently	<input type="checkbox"/>				
2. I found the system unnecessarily complex	<input type="checkbox"/>				
3. I thought the system was easy to use	<input type="checkbox"/>				
4. I think that I would need the support of a technical person to be able to use this system	<input type="checkbox"/>				
5. I found the various functions in this system were well integrated	<input type="checkbox"/>				
6. I thought there was too much inconsistency in this system	<input type="checkbox"/>				
7. I would imagine that most people would learn to use this system very quickly	<input type="checkbox"/>				
8. I found the system very cumbersome to use	<input type="checkbox"/>				
9. I felt very confident using the system	<input type="checkbox"/>				
10. I needed to learn a lot of things before I could get going with this system	<input type="checkbox"/>				

much of these involving voters, poll workers, and election officials making honest mistakes as they try to genuinely participate in elections. Of the more than 100 potential threats to the mail-based voting process, Scala et al. (2022) categorized these into 4 cyber threats, 26 physical threats, and 72 insider threats.

We designed the mail-based voting training module into seven sections: Introduction, Mailing the Ballot, Storage Security, Voters, Ballot Distribution and Canvassing, External Actors, and Cyber Threats. As shown in Figure 1, we arranged these sections in a logical order, generally following the sequence of processes a mail ballot undergoes before being counted. Threats that may interfere with these processes and mitigations to counteract threats are summarized under each corresponding section. To progress through the module, participants must respond to a series of self-assessment questions situated at the

conclusion of each section. These self-assessment questions are in place to ensure that a potential poll worker or election official genuinely engages with the training materials and comprehends the content, as opposed to merely skimming through it. The questions are multiple-choice and modeled after scenarios that may arise during the mail voting process.

This training module was designed to be a short (i.e., approximately 20 minutes) and supplemental cybersecurity training (as cyber, physical, and insider threats are not currently covered in many election training procedures) to existing poll worker training processes. The design of the training module: (1) follows pedagogical best practices to reduce cognitive overload through *segmentation* and focuses the poll worker's efforts on attaining the content through *interactivity* (Dehlinger et al., 2021); and (2) has been shown to improve the understanding of the cyber, insider, and physical threats within the election process after completion (Scala et al., 2023). The mail-based voting training module for use by partnering Boards of Elections was deployed online using the Security Injections@ Towson e-learning system, which has been used by over 360 faculty across 221 institutions who have completed more than 3,100 cybersecurity modules (Kaza et al., 2010).

Module Validation and Assessment

While prior work established that the use of training modules allows poll workers to better understand the cyber, physical, and insider threats specific to an election process and that it is of sound pedagogical design, the developed mail-based voting training module content and mitigations required subject matter expert validation, piloting, and assessment so that it is usable and appropriate for its intended use. As discussed in the 2020 *Baltimore Business Review* article (Scala et al., 2020), we collaborated with a Maryland County Board of Elections — in this case, Anne Arundel County. The Anne Arundel County Board of Elections also served as our subject matter experts

Table 1. Participants' Technology Experience

Statistics (in years)	Type of Technology			
	Desktop Computer	Laptop Computer	Smartphone	Tablet Computer
Average	16.5	13.81	10.70	7.22
Median	15	14	10	8

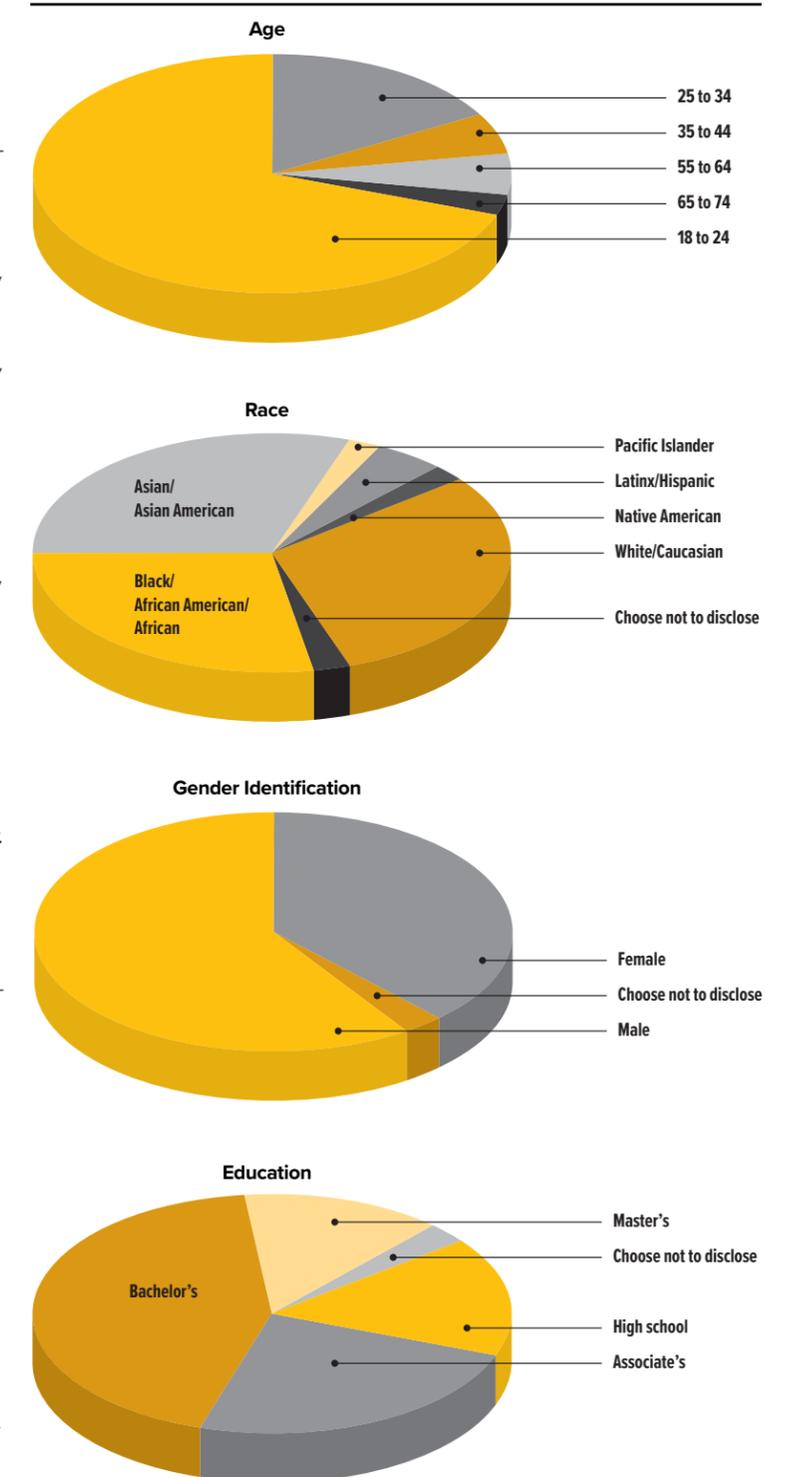
who iteratively provided feedback and corrections to the mail-based voting processes utilized in Maryland and validated the accuracy of the self-assessment questions from a poll worker's perspective.

To ensure that the mail-based voting training module content, as designed and deployed on the Security Injections@ Towson e-learning system, is usable and accessible to a diverse range of poll workers, assessing the usability of a system and its content is important to ensure its ease of use and wide dissemination (Meiselwitz and Sadera, 2008). To do so, we utilized the System Usability Scale (SUS) survey (Brooke, 1996) because it is a "simple and reliable tool" to assess the usability of a system (Brooke, 2013). Furthermore, the SUS survey is easy to conduct, has strong reliability and validity measures, and only requires at least twenty users to achieve statistically relevant results (Alroobaea and Mayhew, 2014). As shown in Figure 2, the SUS survey consists of 10 questions where participants respond using a 5-point Likert rating scale ranging from "Strongly Disagree" to "Strongly Agree." Subsequently, the individual usability scores for each participant are averaged to assess the overall system usability.

For this study, we administered the SUS survey during the winter of 2022 via Qualtrics to participants who are eligible to be poll workers or have previously served as one in the United States. No personally identifying information was collected from any participant, and the Institutional Review Board at Towson University reviewed this study. Even though a valid SUS survey requires a minimum of 20 participants to obtain statistically relevant results (Nielsen, 2012), we solicited and received more than 60 participant responses. After removing invalid (e.g., not eligible to be a poll worker) and incomplete/straight-lined responses, 37 responses were used in the usability assessment. Figure 3 provides the demographic statistics of response participants, and Table 1 presents response participants' experiences with technology.

The overall usability score was calculated to be 83.58; based on Brooke's (1996) SUS Grading Scale, shown in Figure 4, the developed mail-based voting training module achieved an Acceptable range/B grade/Good-Excellent rating. This compares favorably to the threat awareness poll worker training modules for other election processes and voting equipment previously developed by Dehlinger et al. (2021). As such, the developed training module is usable and ready for deployed use by poll workers in a partnering Maryland county during the 2024 Primary and General Elections.

Figure 3. Participants' Demographics



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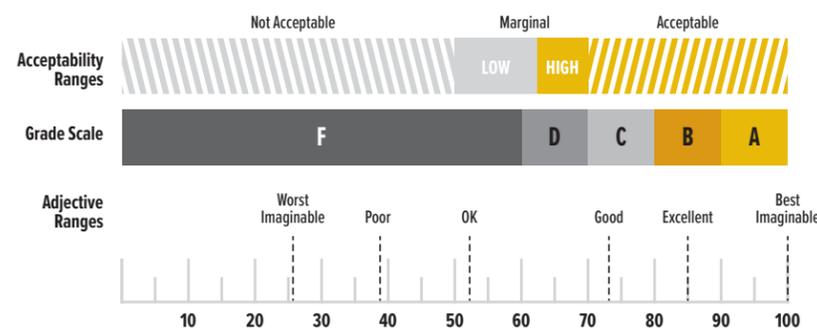
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Figure 4. System Usability Scale Grading Scale (Brooke, 1996)



Goals and Concluding Remarks

The importance of public perception and confidence in the integrity and security of U.S. elections cannot be overstated in the context of a healthy democracy. Despite poll workers being crucial to the process, very little training specific to understanding and mitigating cyber, physical, and insider threats is provided to the nearly 1 million poll workers who administer Election Day equipment and processes. In collaboration with the Anne Arundel County Board of Elections, we developed, validated, and assessed a new poll worker training module specific to the mail-based voting process that will help enable poll workers to understand associated threats.

The work presented in this article by the Empowering Security Elections Research Lab at Towson University is part of our larger effort to understand and analyze the cyber, physical, and insider threats within election processes and to develop mitigations and actionable training to improve the integrity and security of our election infrastructure at the local level. Prior related work was recognized by the United States Election Assistance Commission with a Clearinghouse Award in 2020 for Outstanding Innovation in Election Cybersecurity and Technology.

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Overstated Cash Flows and Ownership Shrinkage: Accounting Treatment of Stock-Based Compensation Needs to Change

By Niall H. O'Malley, MBA
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How employees are paid at publicly traded U.S. technology companies has changed dramatically over the past 30 years, but the accounting rules associated with paying employees with stock rather than cash have not kept up with those changes. In 2022, stock-based compensation (SBC) as a percentage of sales was nearly five times what it was in 2006.¹ Current accounting rules are dramatically overstating cash flows from operations and free cash flows used to value companies.

This article looks at companies that have shaped Maryland's economy during the COVID-19 pandemic and suggests investor and Financial Accounting Standards Board (FASB)² adjustments to accurately record compensation costs. Without adjustments, the operating cash flows are systematically overstated. This overstatement affects all public company valuation multiples based on free cash flow. Overstated cash flows from operations cause investors to overvalue technology companies and cause managers to misallocate capital.

Historical Perspective

The statement of cash flows is a relatively recent development. Starting in 1987, FASB required all U.S. private sector businesses and accounting firms to include a statement of cash flows in their financial statements. FASB approved two formulation methodologies for creating a statement of cash flows: 1) the direct method, which FASB preferred in 1987, in which only cash transactions were used in calculating cash generated by operations; 2) the indirect method, which permits noncash changes to be added back to net income for arriving at cash generated by operations. The primary difference between these two methods of creating a statement of cash flows is that the indirect method necessitates the add-back of depreciation, amortization, and SBC, along with working capital changes.

The FASB statement of cash flows rule was issued in 1987 before the introduction of the Windows operating systems in the 1990s enabled more complex account-

ing at smaller companies. At that time, FASB and public comments expressed concern that the new accounting standard would be too demanding for smaller companies, so FASB's less-preferred indirect method was permitted. During the 36 years since FASB required the creation of a statement of cash flows, the direct method has become extinct. The easier method is currently the only method used to create a statement of cash flows.

The problem with the indirect method is that the noncash add-backs like SBC have become enormous and misrepresent the cash flows from operations and the valuation measures for technology companies. Free cash flow from operations measures the amount of cash a company has left over after covering costs associated with operating expenses after taxes minus the investment for future growth, which is an important measure of financial condition.

The accounting treatment of SBC has been contentious because SBC is a key incentive used by technology companies to attract and incentivize talent. SBC creates shareholder value as long as the rate of business growth is greater than the rate at which share dilution occurs. In 1993, FASB proposed closing an accounting loophole that allowed companies to avoid expensing SBC on their income statement. A Merrill Lynch study indicated that expensing SBC would cut the profits of technology companies by 60% on average. In 1994, technology companies went to extreme lengths to lobby against the FASB rule change proposal. They successfully had a nonbinding resolution passed in the U.S. Senate, 88 to 9, against the expensing of SBC. SEC Commissioner Arthur Levitt initially supported the FASB proposal for expensing SBC but was forced to back down because members of Congress threatened to remove FASB's independent rule-making authority.

After 2001's internet dot-com bubble collapse and the Enron scandal, the use of SBC declined. In 2006, FASB changed the generally accepted accounting principles (GAAP) rules for the recognition of SBC. Before 2006, stock options were a popular form of employee compensation because it was possible to record the cost of compensation as zero so long as the exercise price was equal to the fair market value (FMV) of the stock at the time of

¹ Page 17 Michael Mauboussin and Dan Callahan, "Stock-Based Compensation" Morgan Stanley Investment Management's Counterpoint Global (April 18, 2023), https://www.morganstanley.com/im/publication/insights/articles/article_stockbasedcompensation.pdf

² FASB is the current single source of U.S. generally accepted accounting principles (GAAP). FASB is a private standard-setting body that maintains the Accounting Standards Codification (ASC). The Securities and Exchange Commission (SEC) designated FASB as the organization responsible for setting accounting standards for public companies in the U.S.

Table 1: Example of Statement of Cash Flows Indirect Method

Cash Flows from Operating Activities	
Net income (from income statement)	\$100,000
Add back depreciation and amortization	\$5,000
Add back stock-based compensation	\$20,000
Add back loss on sale of equipment	\$2,000
Changes in current assets and current liabilities (working capital)	
Accounts receivable increase (use of cash)	(\$7,000)
Prepaid expenses decrease (source of cash)	\$2,000
Accounts payable decrease (use of cash)	(\$2,000)
<i>Net cash provided by operating activities</i>	<i>\$120,000</i>
Cash Flows from Investing Activities	
Capital expenditures (future depreciation)	(\$10,000)
Proceeds from sale of equipment	\$3,000
<i>Net cash used in investing activities</i>	<i>(\$7,000)</i>
Cash Flows from Financing Activities	
Payment of finance leases	\$2,500
Proceeds from issuing stock	\$4,000
Purchase of treasury stock (buying back stock)	(\$1,000)
Payment of dividends	(\$2,000)
<i>Net cash used in financing activities</i>	<i>\$3,500</i>
Net increase in cash during the year	
Cash at the beginning of the year	\$50,000
Cash at the end of the year	\$166,500

granting. Under the new GAAP rules in 2006, companies were required to recognize awards of restricted stock as a compensation expense on the income statement equal to the FMV of the stock award. The recognition of restricted stock awards as an expense on the income statement became a popular way for companies to reduce corporate taxes.

The Half-Step Recognition of Stock-Based Compensation

Recognizing the FMV of restricted stock awards on the income statement in 2006 was a half-step improvement in corporate reporting, but the practice of adding back SBC to the operating cash flow remained unchanged and flawed. SBC represents an ongoing and increasing wage

expense. Research indicates that nearly all of the increase in SBC has replaced cash wages.³

FASB's indirect method for creating a statement of cash flows needs to be changed. Issuing equity securities is a financing activity, not an operating activity, which means SBC should be recognized in a company's cash flows from financing activities.

In 2022, executives at publicly traded technology companies receive most of their pay from SBC. Also recently, there has been a shift, with over 80% of SBC paid to

³ Page 1 Michael Mauboussin and Dan Callahan, "Stock-Based Compensation," *Morgan Stanley Investment Management's Counterpoint Global* (April 18, 2023), https://www.morganstanley.com/im/publication/insights/articles/article_stockbasedcompensation.pdf

Table 2: Examples of Overstated Cash Flows for Zoom, DocuSign, Amazon and Workday

As reported under Generally Accepted Accounting Principles (GAAP)	Zoom Video Communications 10-K (Ticker ZM)			DocuSign 10-K (Ticker DOCU)		
	Shaded values as reported			Shaded values as reported		
	2022	2021	2020	2022	2021	2020
Revenues in thousands	\$4,392,960	\$4,099,864	\$2,651,368	\$2,442,177	\$2,037,272	\$1,381,397
Cash Flows from Operating Activities:						
Net Income	\$103,711	\$1,375,639	\$672,316	(\$97,454)	(\$69,976)	(\$243,267)
Net Income as a % of Revenue	2.4%	33.6%	25.4%	-4.0%	-3.4%	-17.6%
Stock Based Compensation - Add Back	\$1,285,752	\$477,287	\$275,818	\$538,726	\$408,542	\$286,877
Stock Compensation as a % of Revenue	29.3%	11.6%	10.4%	22.1%	20.1%	20.8%
Other Cash Flows from Operating Activities - Net	(\$99,201)	(\$247,660)	\$523,043	\$65,487	\$167,901	\$253,344
Net cash provided by operating activities	\$1,290,262	\$1,605,266	\$1,471,177	\$506,759	\$506,467	\$296,954
Stock Based Compensation Expense Recognized	(\$1,285,752)	(\$477,287)	(\$275,818)	(\$538,726)	(\$408,542)	(\$286,877)
Adjusted net cash provided by operating activities	\$4,510	\$1,127,979	\$1,195,359	(\$31,967)	\$97,925	\$10,077
% Overstated Cash Flows from Operations & FCF	28509%	42%	23%	1585%	417%	2847%
	Fiscal year-end January 31st			Fiscal year-end January 31st		
As reported under Generally Accepted Accounting Principles (GAAP)	Amazon 10-K (Ticker AMZN)			Workday 10-K (Ticker WDAY)		
	Shaded values as reported			Shaded values as reported		
	2022	2021	2020	2022	2021	2020
Revenues in thousands	\$242,901,000	\$241,787,000	\$215,915,000	\$6,215,818	\$5,138,798	\$4,317,966
Cash Flows from Operating Activities:						
Net Income	(\$2,722,000)	\$33,364,000	\$21,331,000	(\$366,749)	\$29,373	(\$282,431)
Net Income as a % of Revenue	-1.1%	13.8%	9.9%	-5.9%	0.6%	-6.5%
Stock Based Compensation - Add Back	\$19,621,000	\$12,757,000	\$9,208,000	\$1,294,622	\$1,100,584	\$1,004,853
Stock Compensation as a % of Revenue	8.1%	5.3%	4.3%	20.8%	21.4%	23.3%
Other Cash Flows from Operating Activities - Net	\$29,853,000	\$206,000	\$35,525,000	\$729,322	\$520,747	\$546,019
Net cash provided by operating activities	\$46,752,000	\$46,327,000	\$66,064,000	\$1,657,195	\$1,650,704	\$1,268,441
Stock Based Compensation Recognized	(\$19,621,000)	(\$12,757,000)	(\$9,208,000)	(\$1,294,622)	(\$1,100,584)	(\$1,004,853)
Adjusted net cash provided by operating activities	\$27,131,000	\$33,570,000	\$56,856,000	\$362,573	\$550,120	\$263,588
% Overstated Cash Flows from Operations & FCF	72%	38%	16%	357%	200%	381%
	Fiscal year-end December 31st			Fiscal year-end January 31st		

employees who are not high-ranking executives.⁴ The aggressive use of SBC at technology companies overstates their operating cash flows and the free cash flows used to value the companies. Berkshire Hathaway Chairman Warren Buffett, who is against unrecorded SBC, has said, "Shareholders should understand that companies incur costs when they deliver something to another party and not just when cash changes hands."⁵

⁴ Page 2 Michael Mauboussin and Dan Callahan, "Stock-Based Compensation," *Morgan Stanley Investment Management's Counterpoint Global* (April 18, 2023), https://www.morganstanley.com/im/publication/insights/articles/article_stockbasedcompensation.pdf

⁵ "Buffett on Using Options as Compensation," *GuruFocus.com* (July 29, 2019), <https://www.gurufocus.com/news/917402/buffett-on-using-options-as-compensation>

Purpose and Structure of the Statement of Cash Flows

The statement of cash flows should provide insights into a company's liquidity, solvency, financial condition, and borrowing needs. FASB's indirect method for recording cash flows from operating activities adds back noncash charges such as depreciation and amortization, SBC, and losses on equipment sales. The cash changes in current assets and liabilities provide insight into changes in a company's working capital. The cash flows from operating activities, investing activities, and financing activities provide investors and managers with insight into the cash generation and financing needs of a company.

The example statement of cash flows in Table 1 summarizes how, for example, increased accounts receivables are a use of cash, which is also true if accounts payable are paid. For the purposes of this article, the cash impacts of SBC on taxes are not included.

Technology Companies Touched Every Part of Maryland during COVID-19

The COVID-19 lockdowns and interaction restrictions created enormous demand for technology services. For extended periods, there was no access to brick-and-mortar stores across Maryland. Daily interactions in Maryland and around the world were Zoom calls, and the signing of transaction documents was done through DocuSign. Groceries and other items were ordered through Amazon. The distribution centers supporting Amazon's operations have become one of Maryland's biggest employers. Employees, whether for the City of Baltimore or Northrop Grumman, used Workday human resource and finance software to complete business functions. Seemingly limitless demand for technology company services was a hallmark of the COVID-19 period. In the post-lockdown period, demand for many technology services and products is falling. This shift makes understanding valuation, free cash flow, and capital intensity even more important because the growth rates of many technology companies are declining as consumers and businesses re-engage in in-person transactions.

There is growing evidence that technology companies are overvalued.⁶ As interest rates increase, the value of future earnings falls because the earnings have to be discounted back to the present value using higher interest rates.

The Discontinuation of FASB's Add-Back of SBC to Operating Cash Flows Is Needed

The cost of SBC rose to \$270 billion for U.S. companies in 2022, according to research by Morgan Stanley Investment Management's Counterpoint Global.⁷ Informed

⁶ Sanjeev Bhojraj, "Stock compensation expense, cash flows, and inflated valuations," *Cornell University Video* (May 17, 2022), [https://www.cii.org/files/events/2020/Stock Compensation Expense 05072020.pdf](https://www.cii.org/files/events/2020/Stock%20Compensation%20Expense%2005072020.pdf)

⁷ Michael Mauboussin and Dennis Callahan, "Stock-Based Compensation," *Morgan Stanley Investment Management's Counterpoint Global* (April 18, 2023), https://www.morganstanley.com/im/publication/insights/articles/article_stockbasedcompensation.pdf

investor decisions require that SBC costs be factored in. As corporate finance professor Aswath Damodaran states, "There are no free lunches and if a company chooses to pay \$5 million to an employee, that will affect the value of my equity, no matter what the form of that payment is in (cash, restricted stock, options, or goods)."⁸ Cornell University business school professor Sanjeev Bhojraj agrees, saying, "Following the current FASB rules, companies are systematically overstating cash flows and free cash flows."⁹ The time for FASB to act is now. Not including the cost of SBC as a cost in operating cash flows is creating dangerous levels of overvaluation, which, if not changed, will likely lead to an accounting crisis.

The U.S. financial markets are built on trust. To maintain investor trust and help managers effectively allocate capital, the FASB needs to recognize SBC as an operating expense—not as a misleading add-back in the operating cash flow statement.

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FinTech in Maryland: Evidence from Paycheck Protection Program

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Traditional bank lending has been criticized for statistical discrimination when banks use lending algorithms to control for credit risk (Kleinberg, Lakkaraju, Leskovec, Ludwig, and Mullainathan (2018), Hoffman, Kahn, and Li (2018)). In recent years, the emergence of FinTech has provided an alternative financing channel for borrowers who tend to have difficulties in receiving credit from traditional banks.

During the Pandemic, the Paycheck Protection Program (PPP) has carried out a significant role in providing necessary credit to assist many businesses' survival when Covid-19 presented an economy-wide shock to nearly all businesses.¹ The extremely low interest and full forgiveness of the credit backed by the government attracted both lenders and borrowers to participate in the PPP. However, such government guarantee for all PPP loans also mitigated the advantage of FinTech over traditional banking in reducing statistical discrimination. Did FinTech's participation in the PPP program show different impacts on borrowers compared to the traditional lending channel? In this study, we explore FinTech's lending activities in Maryland.

To measure PPP loan distributions in Maryland by FinTech and Non-FinTech lenders respectively, we retrieve information from the PPP loan data released by the Small Business Association (SBA) on March 2, 2021.^{2,3} The entire PPP dataset contains around \$6.46 million loans processed by 5,593 lenders, with detailed and comprehensive loan-level information for all sizes. Table 1 lists the major FinTech players and their lending partners in the PPP program.

Overall, FinTech companies issued 27,339 loans in Maryland, compared to 163,379 loans issued by Non-FinTech lenders. The comparisons of overall lending activities between FinTech and Non-FinTech participants are shown in Figures 1 to 5. Specifically, we tracked the activities over the three waves of lending during the Pandemic. Figures 1 to 5 show that compared to loans extended by Non-FinTech lenders, loans from FinTech lenders tended to be small and borrowers tended to smaller in size, and took a longer time to process the forgiveness. Figure 4 shows that FinTech lending took a larger role in issuing small loans.

¹ The Paycheck Protection Program was established based on the Coronavirus Aid, Relief, and Economic Security (CARES) Act enacted on April 3, 2020.

² Historically, the SBA lending program includes many non-bank lenders to provide credit to less bank-connected small businesses. We treat these non-banks as non-FinTech lenders because they are similar to banks in their lending technology.

³ The dataset is available at: <https://www.sba.gov/funding-programs/loans/covid-19-relief-options/paycheck-protection-program>.

Table 1: FinTech Participants in PPP

	FinTech Company	Lender name in PPP dataset
1	Biz2credit	Itria Ventures LLC
2	BlueVine	Cross River Bank
3	Cross River Bank	Cross River Bank
4	Divvy	Cross River Bank
5	Forwardline Financial LLC	FinWise Bank
6	Fundbox	Fundbox, Inc.
7	Funding Circle	FC Marketplace, LLC (dba Funding Circle)
8	Intuit (Quickbooks)	Intuit Financing Inc.
9	Kabbage	Kabbage, Inc.
10	Lendio	Sunrise Banks, National Association
11	Lendistry	BSD Capital, LLC
12	OnDeck	Celtic Bank Corporation
13	Opportunity Fund	Opportunity Fund
14	Community Development	Community Development
15	Paypal	WebBank
16	Ready Capital	Readycap Lending, LLC
17	Reliant Funding	Cross River Bank
18	Square	Celtic Bank Corporation
19	Veem	Cross River Bank

Figure 1: Average Loan Amount (\$)

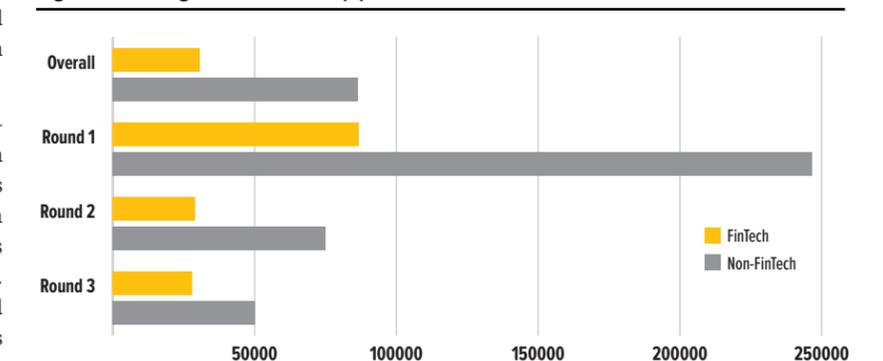


Figure 2: Business Size (Number of Employees)

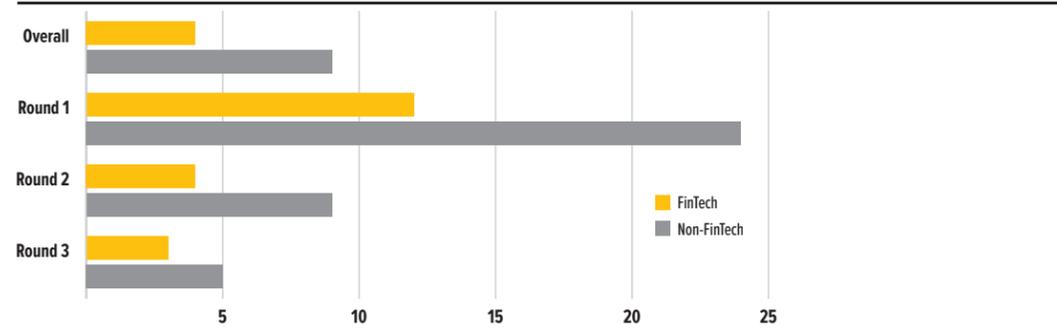


Figure 3: Days to be Forgiven

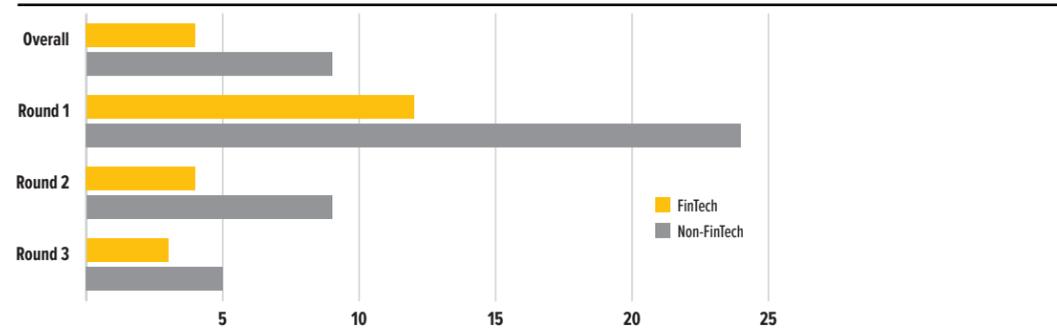


Figure 4: Loan < \$25,000 (%)

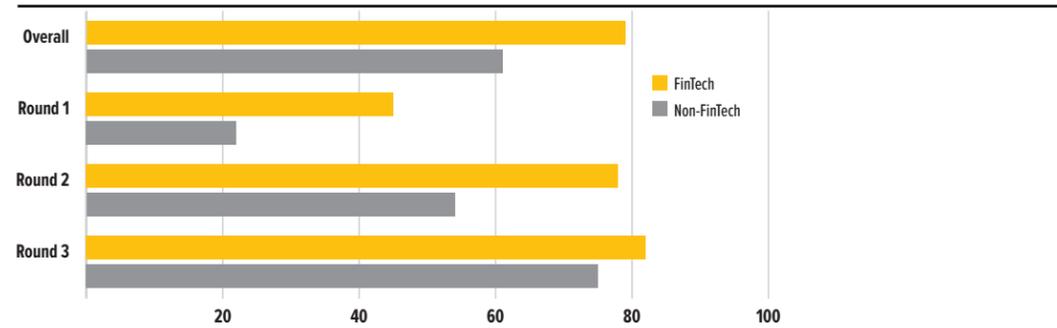


Figure 5: Rural Area (%)

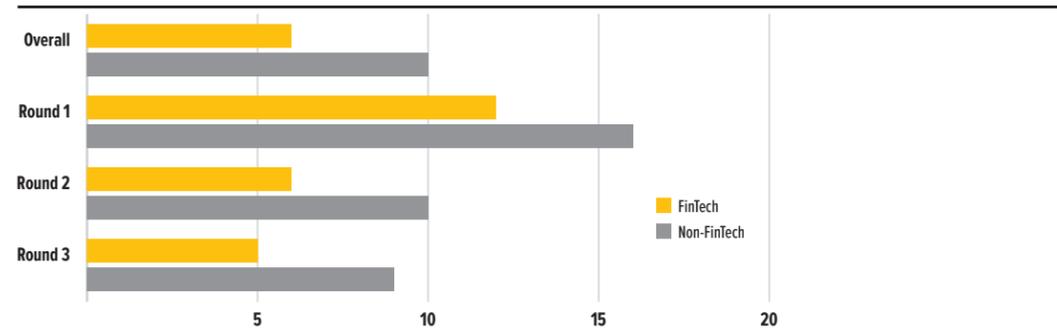


Figure 6: Loan Issuance (%)

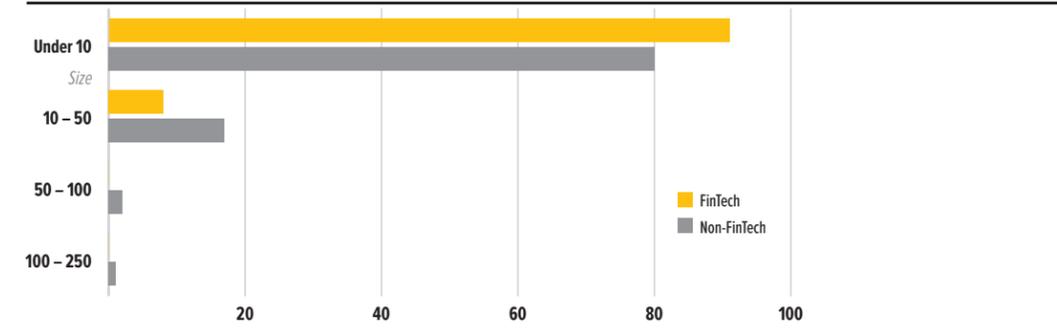
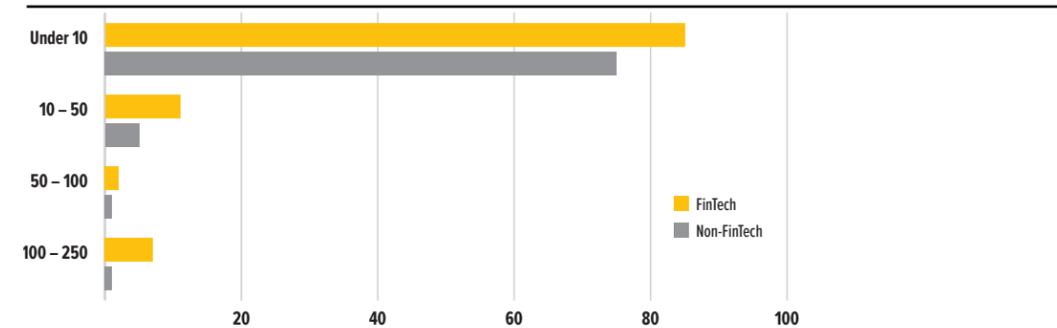


Figure 7: Loan < \$25,000 (%)



[SBA reported that nationwide, 75% of PPP loans are issued to businesses with nine or fewer employees and we find similar distribution in Maryland. Figure 6 compares the lending activities of FinTech and Non-FinTech participants across different business size categories in Maryland. We observe that within FinTech lending, 91% of loans were issued to businesses with less than 10 employees, while within Non-FinTech lending, 80% of loans were issued to businesses with less than 10 employees. In Figure 7,

we see a similar role of FinTech in providing small-size loans to fit the needs of smaller size businesses.

While the Pandemic crisis impacted nearly all business sectors, the damages (and, hence, the needs for financial assistance) were different across the industries. In Figures 8 and 9, we see again a monotonic phenomenon that FinTech played a different role in providing credit to small businesses, compared to the Non-FinTech lenders.

Figure 8: Business Size Across Industries (Number of Employees)

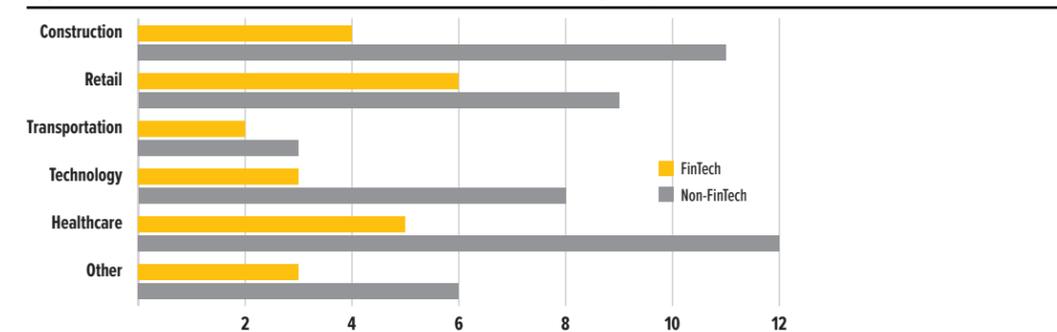


Figure 9: Small Lending Across Industries (%)

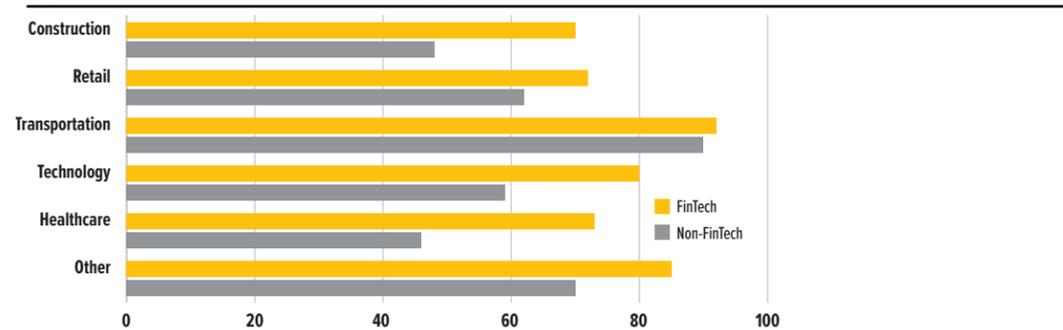


Table 2: PPP Loan Distribution across Counties

County	FinTech				Non-FinTech			
	# of Loans	Average Loan Amount (\$)	Loan < \$25,000 (%)	Business Size	# of Loans	Average Loan Amount (\$)	Loan < \$25,000 (%)	Business Size
Allegany	76	42601	76%	8	1241	85123	50%	11
Anne Arundel	2235	28877	79%	4	14368	98695	53%	10
Baltimore	3916	31714	79%	4	23386	87932	62%	9
Calvert	213	35062	72%	5	1657	81181	51%	10
Caroline	54	14170	85%	3	776	82127	65%	8
Carroll	416	32226	66%	5	3904	87386	47%	10
Cecil	147	44326	73%	6	1504	73331	55%	9
Charles	584	27443	79%	4	3735	60671	68%	7
Dorchester	46	18779	85%	3	1009	54452	70%	7
Frederick	688	32012	73%	5	5532	100515	49%	11
Garrett	23	16345	87%	3	1126	73839	58%	9
Harford	613	32861	78%	4	5531	78547	56%	10
Howard	1751	31955	76%	4	10144	121419	54%	12
Kent	41	15209	83%	3	725	65606	56%	8
Montgomery	6121	29808	79%	4	32054	93464	59%	9
Prince Georges	5816	28253	83%	3	26914	66622	74%	7
Queen Annes	112	30714	69%	10	1611	65788	60%	8
St Marys	191	32647	69%	5	1486	94198	52%	11
Somerset	85	30750	79%	5	269	50299	67%	8
Talbot	85	24263	80%	4	1783	76120	58%	10
Washington	239	23546	84%	3	3033	91387	54%	11
Wicomico	506	66709	56%	9	2186	89353	57%	11
Worcester	218	46751	66%	7	2241	80663	51%	13
Baltimore City	3163	29642	80%	3	17164	83166	67%	9

Next, we examine the PPP loan distribution by geographic location. We list in Table 2 the PPP loan distribution between FinTech and Non-FinTech Lenders across the counties in Maryland. Table 2 shows that both categories of lending were the most active in Montgomery County with the highest number of loans issued. Wicomico has the largest average loan size in FinTech lending while Howard County has the largest average loan size in Non-FinTech lending. There are clear differences between Fin-Tech and Non-FinTech lending in terms of loan size and business size. We see that in most of the places, FinTech issued more small-size loans to businesses of smaller sizes, especially in Washington County where we observe a stark difference.

Table 3 shows that in Maryland more loans were issued in urban areas compared to rural areas, however, the average loan size of FinTech lending was larger in rural areas, while the opposite is observed for Non-FinTech lending.

Table 3: PPP Loan Distribution between FinTech and Non-FinTech Lenders: Urban vs. Rural Area

	FinTech	Non-FinTech
Urban		
# of Loans	25,806	146,653
Loan Amount (\$)	30,653	87,412
Business Size (Number of Employees)	4	9
Loan < \$25,000 (%)	79.33	62.52
Rural		
# of Loans	1,533	16,726
Loan Amount (\$)	32,325	78,315
Business Size (Number of Employees)	5	10
Loan < \$25,000 (%)	72.02	55.46

Overall, the above observations are consistent with the finding that FinTech provides an alternative source of financing to the underserved communities. Granja et al. (2022) show that in PPP, banks are more likely to extend credit in regions less adversely impacted by the pandemic, rather than assisting businesses with the greatest needs. As a result, borrowers in regions underserved by the traditional banks turn to FinTech lenders (Erel and Liebersohn, 2022).

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Towson University Investment Group Outlook on Investing in Emerging Technologies: AI, Blockchain, and Beyond

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Introduction:

The Towson University Investment Group (TUIG) surveyed the extent to which Towson University students know about investing in emerging technologies. We started our survey by gathering data from our target demographic audience about general investing knowledge, followed by investment decisions and risk tolerance. In total, we had 37 respondents. We sought to evaluate students' knowledge of investment decisions, risk management, time-horizon, and used major and college-specific segmentation of respondents to segment our data. In this era of exciting emerging technologies, with new investing trends, a surge of new investors, and a reshaping of economic boundaries, the survey shed light on how college students are approaching their investment choices. Key questions in the survey included: Are you invested in any companies that are utilizing AI to a significant degree? Using the scale below, how worried are you about AI replacing jobs, specifically in the finance industry? How much of your portfolio are you willing to allocate towards companies that have a strong focus on AI or blockchain capabilities? Are you more inclined towards investing in Artificial Intelligence (AI) or Blockchain technologies?

Towson University is composed of the following colleges: College of Business & Economics (CBE), College of Health Professions (CHP), Jess & Mildred Fisher College of Science & Mathematics (FCSM), College of Liberal Arts (CLA), College of Fine Arts & Communication (COFAC), and College of Education (COE). We questioned the students throughout the entire University to involve a variety of answers and conducted the survey in October 2023. The results helped us conclude how Towson University students approach investing in emerging technologies, including Artificial Intelligence, Blockchain, and Cryptocurrency.

Participant Background

Our data shows a diverse mix of participants with no significant bias towards any particular group. Among them, 30% are seniors and 84% are male. In terms of ethnicity, 27% identified as African American, 21.6% as Asian American/Pacific Islander, 5.4% as Hispanic, and 46% as Caucasian. We observed a slight inclination towards more advanced students, with over 60% having more than 60 credits (junior and seniors), which aligns with our goal of understanding concerns about AI replacing full-time jobs.

Looking at majors, 43% are in Business Administration with a focus on Finance, 13% are studying Accounting, 16% are in Investments or Financial Planning, 22% are in general Business Administration without a concentration, and 6% fall under various other majors including Psychology, Art and Design, Economics, and International Business. This comprehensive data offers valuable insights on how college students perceive the potential impact of AI on future job prospects.

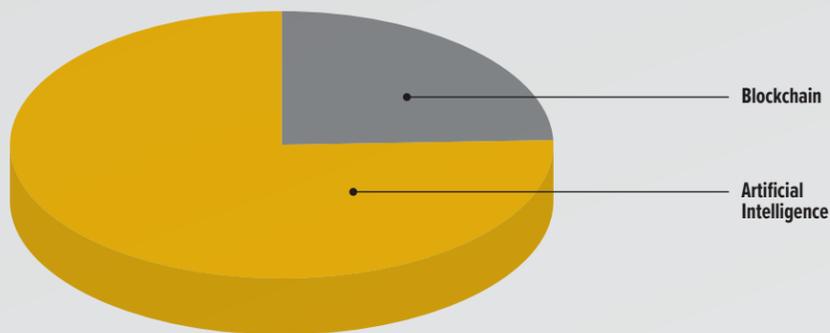
PART ONE: About the portfolio of TUIG

It is evident that investing in emerging technologies not only produces outsized returns, but also allows investors to stay ahead in today's rapidly evolving digital landscape. The internet, smartphones, and social media are three 21st century technological advancements that presented lucrative investment opportunities for those that were willing to take a risk at the time. With the recent emergence of Artificial Intelligence (AI) and Blockchain technology, it is important that we take advantage of the opportunities that we have been presented, particularly from an investment standpoint.

Two significant TUIG equity holdings are Apple Inc. and Google, which make up 6.21% and 6.17% of the portfolio, respectively. Both companies have made significant strides in implementing AI into their processes and products. Recently, Apple has integrated AI into the voice of Siri, the company's voice assistant. Further, Apple has also used AI in its cameras to enhance photographing capabilities. Google, on the other hand, utilizes AI extensively in its search engine algorithms, as well as in its virtual assistant, Google Assistant. There is no question that both companies are going to continue to capitalize on this ever-changing technology, especially as it becomes more advanced in the years to come.

Regarding the emergence of Blockchain technology, it is worth noting the advancements being made by two of the largest payment-processing companies in the world, together making up roughly 10% of the TUIG portfolio. Mastercard and Visa have been at the forefront of implementing the blockchain into everyday purchases made by consumers. Both companies have experimented with blockchain solutions to simplify and expedite the international money transfer process. They are aiming to provide faster and more cost-effective methods by leveraging this emerging technology. Second, the blockchain's security features allow for fraud prevention and security when making payments, which is a concern for many in this

Figure 1: Comparison between students favoring investing in AI and students investing in Blockchain



technological age. As the blockchain continues to evolve, it will be interesting to see how not only Mastercard and Visa adapt, but also the other companies that make up our portfolio.

In recent weeks, the TUIG Executive Team introduced a new position for members of the club that are interested in researching companies and writing equity research reports on their findings, with the goal of adding those companies to the portfolio. Each “analyst” is assigned to a specific sector, which allows them to gain important knowledge on not only the company they are researching, but the industry as a whole. For the upcoming semester, a particular focus will be set on finding companies that are leading the way in the implementation of emerging technologies. Given the long-term focus of the portfolio, it is paramount that we capitalize on the opportunities in front of us, especially considering that many of these technologies are in their early stages.

PART TWO: Survey Questions and Responses

Although Artificial Intelligence is still developing, many companies are switching to Artificial Intelligence to transform employment, drive faster productivity, and drive gains for investors. When students were asked, “Using the scale below, how worried are you about AI replacing jobs, specifically in the finance industry?” 68% of students responded with “Somewhat worried,” 3% said “Very worried”, and 30% of respondents replied, “Not at all worried.” Related to the finance field, studies have shown that Artificial Intelligence is not able to replace many roles in the next decade since many roles require expertise, judgement, and adaptability.

However, this can be a growing concern as when asked, “Are you more inclined towards investing in Artificial Intelligence (AI) or Blockchain technologies?” 76% of respondents replied to AI and 24% responded to Blockchain technology. Investing heavily in AI within the finance sector might have downsides for some folks. Here’s why:

Figure 1: Comparison between students favoring investing in AI and students investing in Blockchain

Job Loss Potential: As AI gets smarter, it can take over tasks that used to be done by people. This could mean fewer job opportunities for finance professionals.

Unequal Access: Fancy AI tools might be more accessible to rich individuals and big institutions, giving them an unfair advantage over smaller players.

Opacity in Decision-Making: AI systems can be pretty complex, making it hard to figure out how they’re making decisions. This lack of transparency is a concern in an industry where trust is key.

Possibility of Biased Outcomes: If AI isn’t carefully designed, it might perpetuate existing biases in financial systems. This could lead to unfair lending or investment choices.

Relying Too Much on Tech: Leaning too heavily on AI without human oversight can lead to unexpected risks and problems.

Regulatory Hurdles: Keeping up with the rapid pace of AI in finance can be tough for regulators. This might mean there are gaps in oversight.

While AI has its benefits, like making things more efficient, these potential drawbacks highlight the need for careful and ethical use of AI in the financial world. Respondents regularly follow industry updates and insights through Bloomberg, Yahoo Finance, Forbes, NY Times, and Morningstar.

Investing can be complicated for many, that’s why students attend Towson University Investment Group meetings to learn about financial independence and principals to retire early. However, Artificial Intelligence has been becoming popular in the investing world. With the new emergence of Robo-advising, investors can feed capital to a machine and generate profits.

Robo-advising is an automated investment platform that uses computer algorithms to provide financial advice and manage investment portfolios for individuals. It typically operates online and aims to streamline the investment process by utilizing algorithms to analyze a client’s financial situation, goals, and risk tolerance. Based on this information, a robo-advisor suggests an appropriate investment strategy and selects specific securities or funds to implement it. This approach offers a more hands-off and cost-effective alternative to traditional human financial advisors.

In Finance classes, students were introduced to the idea of a robo-advisor, and were asked, “Would you consider using robo-investor compared to a regular financial investor? If so, why?” Here are a few responses from students:

“Yes, since it streamlines the process of creating your personalized allocations, although the loss of the human interaction will deter many and could lead to miscommunication in needs and risk tolerances.”

“Yes, because since society is becoming more advanced technologically, a lot of what we are used to will be moved online. In addition, in my opinion, AI knows a lot more than a human individual.”

“I would personally invest for myself but if not, I would prefer a robo investor because it will probably have similar performance with lower fees.”

“I would not rule out the possibility of considering a robo-investor, simply due to its ability to analyze data at a very fast rate. However, I still feel more comfortable with the traditional method.”

Although there is no right or wrong answer, students feel mixed about the thought of AI trading for them. Overall, there is a recognition of the benefits of robo-investing, particularly in terms of efficiency and technological advancement. However, there is also a preference for human advisors, particularly due to the comfort and trust associated with traditional methods. The sentiment leans towards a balanced approach, with some individuals favoring robo-advisors for specific advantages they offer.

The answers provided by students demonstrate that those who are studying finance related subjects have an excellent understanding of Artificial Intelligence, Blockchain, and emerging technologies. The survey conducted by the Towson University Investment Group finds that Towson University is producing individuals who are well educated, and aware of the current economic and financial market conditions.

PART THREE: Investment Potential

One of the main questions surrounding the blockchain and AI remains to be, is there actual investment potential here? While this question remains widely unanswered for the long term, we have seen short-term investors utilize crypto currency in their portfolios. One of the issues currently is the volatility of market fluctuations and the onset of regulations. While crypto currencies by themselves present a substantial amount of risk, they also can provide diversification buffer for investors who otherwise don’t invest in crypto.

Per a discussion with a private banker, he noted that he has seen crypto currencies expedite the process of transferring funds between financial institutions. Until crypto, it had taken weeks, almost months to transfer assets between financial institutions which can be frustrating to both the banker and the client especially if the banker sees an opportunity that might not be around by the time the assets process. With crypto currency, it is almost instantaneous. AI has also had a profound impact in the Finance industry. Hedge funds utilize algorithms for trading improving efficiency. AI algorithms can also identify patterns and trends, helping these funds make more informed investment decisions and predictions. Other benefits of AI in finance include risk management, the aforementioned rob advisors, and cost and human error reduction.



Towson University Investment Group Disclosure:

TUIG is a student run organization that was created as a forum for highly driven, like minded students to gain real-world experience through quantitative and qualitative research. We offer students a professional environment to discuss, learn, and connect with real-world financial experiences. TUIG maintains professional relationships with a widespread network of integrated local Maryland businesses in order to provide members with the opportunity to create interpersonal relationships with mentors and potential future employers.



Many large companies are utilizing this technology already:

- **JPMorgan Chase:** JPMorgan has been investing in AI for risk management, fraud detection, trading algorithms, and chatbots for customer service.
- **Wells Fargo:** Wells Fargo is using AI for customer service chatbots and to identify potential fraudulent transactions.
- **Citigroup:** Citigroup has implemented AI in various aspects of its operations, including anti-money laundering (AML) compliance and customer service.
- **UBS:** UBS is investing in AI for wealth management, trading algorithms, and compliance.
- **Goldman Sachs:** Goldman Sachs has been using AI in trading and asset management, and it's exploring applications in other areas of its business.
- **Morgan Stanley:** Morgan Stanley has adopted AI for risk assessment, trading, and financial advisory services.
- **Bank of America:** Bank of America has been investing in AI for customer service and financial planning tools.
- **Barclays:** Barclays has used AI for trading, investment research, and customer service.
- **DBS Bank:** DBS Bank has incorporated AI into its operations for areas such as chatbots, risk assessment, and wealth management.
- **Citi Ventures:** Citi Ventures, the innovation and investment arm of Citigroup, actively invests in AI and fintech startups to promote innovation in financial services.
- **BNY Mellon:** BNY Mellon has explored AI for custody services and data analytics.
- **BlackRock:** BlackRock, one of the largest asset management firms globally, utilizes AI for portfolio management and investment research.
- **Prudential Financial:** Prudential is exploring AI for financial planning and investment services.
- **Fidelity:** Fidelity has integrated AI into its wealth management and retirement planning services.

These are just a few examples, and many other financial institutions and insurance companies are actively investing in AI to optimize their operations and enhance the services they offer to clients. The adoption of AI in finance is expected to continue growing as technology advances and AI solutions become more integrated into financial services

The Towson University Investment Group's survey provides a comprehensive snapshot of how Towson University students perceive and approach investing in emerging technologies, particularly Artificial Intelligence (AI) and Blockchain. The data reflects a diverse participant pool, representing various majors and colleges, indicating a wide range of perspectives within the student body.

The prominence of AI and Blockchain in TUIG's equity holdings, with companies like Apple and Google leading the way, underscores the significance of these technologies in today's investment landscape. While students express a strong interest in AI investment, concerns about potential job displacement and transparency in decision-making highlight the need for thoughtful and ethical integration of AI in finance.

The survey also illuminates the ongoing debate between robo-advisors and human advisors, emphasizing the value students place on both technological efficiency and traditional human trust in financial advisory services. Overall, Towson University students exhibit a keen awareness of the potential impact of emerging technologies on the financial world, signaling a need for a balanced and considered approach to these transformative forces.



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Contributors

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VANESSA GREGORIO is a Towson University undergraduate student pursuing a B.S. in Business Administration with a Legal Studies concentration. Her expected date of graduation is May 2024. As a student researcher in the Empowering Secure Elections lab, she has assisted in creating an educational module for mail voting, collecting and analyzing survey data, and writing for various projects. During the past two summers, she has interned for International Programs at Naval Air Systems Command.



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JORDAN LE is an undergraduate senior double majoring in Business Administration with a Concentration in Finance and Accounting at Towson University. Jordan currently serves as the President for the Towson University Investment Group and aims to provide equitable access to financial independence and financial literacy for all. Upon graduation, Jordan plans to work at Ernst & Young doing Audit for Financial Services.



NAYIB MEJIA is a senior at the University of Maryland, Baltimore County, majoring in Public Health and minoring in Entrepreneurship. He is currently interning for the Office of the Assistant Secretary of the Employment and Training Administration at the US Department of Labor. In his spare time, he learns about trading in the stock market and participates in hobbies such as reading, cooking, and exercising. His future plans include obtaining an MBA and starting an entrepreneurial venture in the healthcare sector.



NIALL H. O'MALLEY, MBA, is the Portfolio Manager for Blue Point Investment Management. He leverages a keen understanding of the creative/destructive cycle that governs innovation, 12-years of international experience, and his understanding of the capital markets to seek sustainable growth. Niall has a B.A. in Political Science from Acadia University in Nova Scotia, Canada. He studied for a year at the Institute for European Studies in Vienna, Austria, and received an MBA in Finance and Investments from George Washington University. He passed Level II of the CFA examination. Niall taught Investments and Equity Security Analysis at the College of Business and Economics at Towson University. He enjoys furthering the professional development of Blue Point's Equity Research Interns and presenting on macroeconomics.



Contributors

ANDREW POLUN is an undergraduate junior currently double majoring in Finance and Accounting in the Honors College at Towson University. He serves as incoming President for the Towson University Investment Group and will assume the role of president in the Spring 2024. Andrew is currently an Audit Intern for CliftonLarsonAllen (CLA) and an Accounting and Economics Tutor for Towson University. Andrew is also currently studying for the CFA Level I exam and plans to take it in the Spring



NATALIE M. SCALA, PH.D., is an Associate Professor and Director of the graduate programs in Supply Chain Management in the College of Business and Economics at Towson University. She earned Ph.D. and M.S. degrees in Industrial Engineering from the University of Pittsburgh. Her primary research is in decision analysis, with specialization in military and security issues. She co-directs the Empowering Secure Elections research lab, which defines threats to voting as systemic and an interplay between cyber, physical, and insider sources. Her expertise in elections security earned a University System of Maryland Board of Regents Award for Excellence in Public Service, the system's highest faculty honor. In conjunction with Anne Arundel County, Maryland, her work in cybersecurity and threat training for poll workers received a U.S. Elections Assistance Commission Clearinghouse Award for Outstanding Innovation in Election Cybersecurity and Technology. Dr. Scala frequently consults to government clients and has extensive professional experience, to include positions with the United States Department of Defense and the RAND Corporation as well as a faculty affiliation with the University of Maryland's Applied Research Lab for Intelligence and Security.



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About Towson University



Towson University is Maryland's university of opportunities. With more than 150 years of experience pushing possibilities, TU is recognized as one of America's top regional public universities and a leader in academic excellence, research and discovery. As the largest university in Greater Baltimore and Maryland's fastest-growing university, Towson University's momentum is always accelerating with more than 19,500 current students and more than 200 bachelor's, master's and doctoral degree programs in the liberal arts and sciences and applied professional fields. Located amid one of the East Coast's cultural and economic epicenters, TU is a beacon and powerful catalyst in the Mid-Atlantic region partnering with hundreds of businesses and organizations, impacting communities and fueling change. Towson University is currently ranked as a leading regional university by both Princeton Review and U.S. News & World Report. TU is also one of only a handful of institutions where graduation and retention rates are the same for all students, a result of a deeply inclusive culture with a focus on equity among all students, faculty and staff.

About CFA Society Baltimore



CFA Society Baltimore is a local member society of CFA Institute, which has over more than 190,000 CFA charterholders worldwide and over 160 societies. CFA Society Baltimore is over 750 members strong, draws from a diverse cross section of local investment firms, financial and educational institutions, and government agencies.

CFA Society Baltimore leads the investment profession locally by promoting the highest standards of ethics, education, and professional excellence for the ultimate benefit of our community. CFA Society Baltimore also seeks to encourage and aid the education of persons engaged in the investment profession, and to provide members of the society with opportunities to exchange ideas and information amongst their peers.

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