Navigating the AI Landscape: Sectoral Insights on Integration and Impact

Ashish K Saxena

Independent Researcher, M. Tech in Computer Science and Engineering (with a focus on Machine Learning and Natural Language Processing), USA

*Corresponding Contact:
Email: ashish.krsaxena@gmail.com

ABSTRACT

This study delves into the varied sentiments and attitudes prevalent across the different sectors related to integrating Artificial intelligence (AI). Understanding how sectors perceive and embrace these changes is crucial for informed decision-making and policy formulation as AI technologies continue to thrive in industries. Artificial intelligence is making waves in 2023 as businesses, consumers, and the government benefit from this technology, promising new opportunities, economic growth, and the transformation of different industries. There was so much propaganda surrounding artificial intelligence based on economic factors such as employment, education, income patterns, housing, and food security, and with time, these issues have been proven true or false. AI will have a broadly beneficial effect on society.

Key words:
Artificial Intelligence, Machine Technology, Diverse Sectors, Education, Employment, Income patterns

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INTRODUCTION

New York City, renowned for its rich tapestry of cultures and socioeconomic diversity, is a fascinating crucible for examining the societal ramifications of Artificial Intelligence (AI). The city's burgeoning income disparities, where the top decile of earners commands a staggering 58% of the metropolis's wealth while the lower half struggles with a mere 9%, represent a pivotal backdrop for assessing public perceptions of AI's impact. NYC's economic landscape is further enriched by its prominent sectors, encompassing Finance, Media, Tourism, Technology, and Healthcare, each offering a unique vantage point into the manifold experiences of AI integration.

In New York City, household income categories are delineated by the Area Median Income (AMI) benchmark, designating those earning less than 80% of AMI as low income, those between 80% and 165% as middle-income, and those surpassing 165% as high-income.

These categories correspond to three families with earnings below $68,720, between $68,720 and $142,395, and above $142,395, respectively. These distinctions may elicit varying perspectives on the assimilation of AI, ranging from its potential benefits to its perceived threats. The demographic composition of these income strata—40% low-income, 35% middle-income, and 25% high-income—signifies a plurality of experiences within the city. Visual representations of income distribution further accentuate the glaring inequalities that underpin New York City, where the majority's earnings pale in comparison to the affluence of a privileged minority. This concentration of wealth underscores the potential for divergent views regarding the advantages and perils of AI.

Moreover, the city's elevated poverty rates, exacerbated by the employment upheavals stemming from the 2020 pandemic, may significantly color perceptions of AI, particularly in the context of apprehensions about job security. Data reveals that a substantial proportion of individuals earning less than $50,000 experienced a decline in their incomes in 2021, amplifying concerns about AI-induced employment displacement among this demographic. These findings, coupled with the city's 13.9% poverty rate in 2021 and the conspicuous income diversity ratio, underscore the potential disparities in AI perceptions across different economic strata. Detailed income data at the district level offers a granular view of New York City's disparities, highlighting accelerated income growth among earners at the 80th percentile. These regional divergences might further shape localized perspectives on AI, its potential benefits, and its accompanying challenges. As this research endeavor unfolds, its primary objective is to unveil the multifaceted views on AI across New York City's diverse socioeconomic landscape. Through this comprehensive exploration, we aspire to provide invaluable insights and formulate strategies that ensure the innovative integration of AI while preserving equity for all of the city's distinct communities.

Objectives of the Study

This research aims to investigate and understand how different sectors, such as finance, healthcare, education, services, and manufacturing, perceive the integration and impacts of AI technologies. This research also analyzes different sectors to adopt AI technologies, considering factors such as the technological infrastructure, regulatory environments, and organizational preparedness. This research paper also examines the sector-specific challenges that may hinder or facilitate the integration of AI technologies, considering regulatory hurdles, workforce composition, and existing technologies. This research explores the sectoral attitudes and concerns about potential job displacement because of AI adoption. This research will focus on a broad spectrum of sectors, ensuring a representative sample that includes healthcare, finance, manufacturing, education, and services. The primary focus of this research is on the diverse sectors.

Research Questions

The following research questions will be focused on in this study:

- To what extent are various sectors ready and willing to adopt artificial intelligence, considering factors such as technological infrastructure, organizational preparedness, and regulatory environments?
- What are the common trends and shared concerns across diverse sectors regarding integrating artificial intelligence technologies?
- How do different sectors perceive the role of artificial intelligence in their respective industries?

- What sector-specific challenges exist that may hinder or facilitate the integration of artificial intelligence, considering regulatory hurdles, workforce composition, and existing technological landscapes?
- How do different sectors perceive the potential impact of artificial intelligence on job displacement, and what measures are considered to address workforce concerns?
- How do socioeconomic factors influence the perception, trust, and acceptance of artificial intelligence among different demographic groups in New York City?

STATEMENT OF THE PROBLEM

Artificial intelligence is making waves in 2023 as businesses, consumers, and the government benefit from this technology, promising new opportunities, economic growth, and the transformation of different industries. There is so much hype surrounding artificial intelligence based on economic factors such as employment, education, income patterns, and housing, and, with time, these issues have been proven true or false (Nemorin et al., 2023).

AI was first used in the 1950s and described the efforts by computer scientists to produce general human intelligence and behaviors in computers (NYC Report, 2021). These early efforts to create AI systems have been primarily based on the rule-based attempt to stimulate human reasoning (Russell & Norvig, 2010). Today, AI mainly refers to using an approach known as Machine Learning (in the future "ML") (from now on 21). It is used in several services, healthcare departments, economics, technology, tourism, media, and industries (NYC CTO, 2021). For example, it is used for the care of patients and to help diagnose medical conditions. Another example, it is used to detect fraudulent financial transactions and manage financial services.

Today, AI and digitalization are changing our lives, learning, playing, communicating, and working (UNEVOC, 2021). AI is driving transformation in all areas of society (NYC CTO, 2021). The primary aim of AI is to produce robots and independent, intelligent machines that perform their duties as humans, such as thinking, communicating, and learning (Auda & Radhi, 2022). AI is used in almost every sector and industry. For example, rideshare companies like Uber and Lyft use AI to adjust pricing and demand and dispatch drivers (Levinson et al., 2011). In the Education sector, AI monitors students' engagement with online learning, personalizes lessons for students, and detects plagiarism (NYC CTO, 2021). It is also used in housing systems, e.g., facial recognition and biometrics. It is also used in the finance industry services using AI and credit card fraud (De Prado, 2018). Another important industry in which AI is used is Health and Medicine. Medicine and Health are considered the most significant areas for AI. It is used to design drugs and model diseases. The NYC is also used in Law Enforcement, Social Services, and Criminal Justice (NYC CTO, 2021). For example, in NYC, the police department and criminal justice system use AI (NYC CTO, 2021).

LITERATURE REVIEW

Nonetheless, all is different from employment rates and artificial intelligence, according to Grashof and Kopka (2023), who measure the risks of artificial intelligence in terms of benefiting a given labor force segment compared to others. Grashof and Kopka (2023) begin their assessment of AI risks by looking at the layoffs experienced since the inception of

artificial intelligence on factory floors and plant machinery as more workers become replaced with no alternative solutions. He agrees that AI does not consider skill patterns across the board and tends to bias one group. Sartori and Theodorou (2022) explore the implications of artificial intelligence on **economic factors** and take a detailed look at New York, where they track the implementation of AI and its influence on education, Health, employment, and income patterns.

New York has experienced **income inequality** shifts in the last five years owing to the accelerated adoption of new technologies across different industries, according to a report by Sitiris et al. (2023). Because low-income earners account for 40% of New York's population, their income levels are declining owing to technological changes, and the same applies to middle-income earners, who account for 35% of the New York population. Compared to the high-income earners, who account for 25%, income inequality is fast spreading in New York (Sitiris et al., 2023). Industries such as **healthcare and tourism** prefer skilled workers who can implement their business goals, which comes at the expense of low- and middle-class income earners who need these skills.

With a poverty rate of 13.9% in 2021, it is evident that income patterns are increasingly becoming unequal, with middle-class and low-income earners among the most affected. Adopting artificial intelligence in the job market means that unskilled workers will experience declining income rates compared to those skilled in artificial intelligence, says Wing (2023). High-income earners, such as those earning above $142,395, are unaffected by these technological changes, which means AI is boosting their income levels more than ever.

For example, the **media industry** in New York has had problems with many staff members because of rising operational costs. Consequently, there have been layoffs in the media industry, which has seen more people fall into the low-income earning category. The situation is even worse for migrant workers without the educational skills that pay in this highly digitized economic environment (Sitiris et al., 2023).

According to Dwivedi et al. (2023), housing is an essential social and economic factor that determines a region's living standards of an area, and the same applies to the New York City situation, where housing standards are directly related to income patterns. Based on findings, the housing gap is widening, so New York has come under pressure to accommodate different income groups while providing the best standards. **Low-income earners** experience the lowest living standards; standards, poor sanitation, and inadequate accommodation space are meant to make a living a good experience (Muchoki, 2022; Sanni, 2023). For this reason, people with low incomes have not yet experienced the benefits of housing because of rising unemployment and income patterns.

Chopra et al. (2023) argue that families with **middle-income status** are also experiencing challenges in terms of access to better accommodation facilities and security, which also affect those in the low-income group. For both low and middle-income earners, housing remains a big challenge. With the rise of new technologies such as artificial intelligence, housing has become a problem that continues despite government support (Koumetio, 2023). The lack of better income opportunities has held back most low- and middle-class earners because of the shrinking disposable income. The difference between their income levels and spending patterns is causing this problem, and this could extend for years to come if the government and other stakeholders still need to put together a solid plan to address the current housing crisis.

The main objective of this strategy is to prepare NYC to address the **opportunities and challenges** posed by AI effectively. It includes solid and comprehensive steps to help the local community thrive (NYC CTO, 2021). In NYC, a large and diverse population is present, which can drive inclusive innovation and growth. AI is increasingly integrated into the economy of NYC and society. Today, the citizens of NYC can offer uniquely diverse perspectives and skills. They have different business ideas that serve various market segments.

Additionally, they can contribute to ensuring that AI initiatives at the local level are fair, equitable, inclusive, and forward-thinking. NYC's economy is diverse and extensive, offering unique opportunities for AI growth (NYC CTO, 2021). The gross metropolitan product is $ 1.66 Trillion in NYC (NYC CTO, 2021). NYC is the global capital for a unique, diverse set of industries such as media, publishing, arts, Health, life science, hospitality, fashion, restaurants, and Health. Hence, NYC creates vital and significant opportunities for AI investment and growth in NYC.

In NYC, the **financial services industry** is considered a key sector of NYC's economy. There are several companies such as "largest banks, asset managers, and brokerages, such as Goldman Sachs, Morgan Stanley, BlackRock, and JPMorgan Chase, to more specialized firms that focus on technical investing, such as Two Sigma, DE Shaw, Jane Street, and others" (NYC CTO, 2021). The industry is changing. Significant part of that change is the growth of the "fintech" sector, which uses innovative technology in financial services. This has become a crucial development area for NYC, with AI playing a pivotal role (NYC CTO, 2021).

In NYC, the world's 2nd most valuable technology system is present. This sector is rapidly expanding at $ 147 billion. Before the pandemic crises, "this sector employed more than 330,000 people in the region" (NYC CTO, 2021). However, due to the pandemic, the economy suffered losses (Amandolare & Dvorkin, 2021). Even though the economy faced setbacks during the crisis, the technology sector saw job growth in the city in 2020. That year, "Apple, Amazon, and Facebook collectively expanded their office space by 1.6 million square feet, in addition to 1.7 million square feet acquired by Google in recent years" (NYC CTO, 2021). NYC is also considered the home of a thriving community of start-ups and small businesses. For example, in 2020, the venture capital investment in NYC enhanced and reached over $ 15 billion.

Today, NYC is considered a significant AI investment in place. According to "the Center for Security and Emerging Technology at Georgetown University, over $9 billion of funding in AI is already invested in the NYC" (Olander & Flagg, 2020). Hence, in the NYC, the AI is considered a key investment area for venture capital firms. In 2020, 13 percent of the AI workforce of the USA was in NYC (NYC CTO, 2021). Flatiron Health is a technology-based company founded in NYC. The fundamental mission of this company is to learn from patients' experiences. The learning is done through ML, statistical, and data infrastructure techniques. 2018, this company acquired $ 2 billion (NYC CTO, 2021).

Another important sector is **healthcare**, in which AI is used. In the US, Mount Sinai Health System (MSHS) has worked to integrate AI into the healthcare sector. The MSHS used AI for research purposes and clinical purposes. The "MSHS's AI-powered system helps clinicians to identify and prioritize patients at risk for conditions such as malnutrition, falls, and cardiopulmonary" (NYC CTO, 2021). Another important company, "Hugging Face," is considered a leading AI start-up based in NYC and Paris, and this company raised US$ 60 million in financing, including $ 40 million in March 2021" (NYC CTO, 2021).

According to Wach et al. (2023), artificial intelligence could not have come at a better time than now, in this age of digital transformation, where automation and production efficiency are taking center stage. They review the transformation of healthcare and education in New York by pointing to numerous benefits, such as cost-effective and quality healthcare based on technological support that assists healthcare providers in understanding the existing healthcare challenges and leveraging technology to provide efficiency and achieve health objectives.

For, the **healthcare department** used algorithms that recommended that Black community patients receive less health care as compared to white people during the pandemic (Obermeyer et al., 2019). Hence, the research shows that AI can intensify existing inequalities. Several scholars raised concerns about AI and future work, warfare, healthcare, inequalities, and more (Joyce et al., 2021). Some researchers state that AI can adversely affect people who are already disadvantaged, and the impact can vary for each specific AI application (Huhtamo, 2020). Some other researchers investigated which types of human labor will be substituted by or work in conjunction with emerging technologies in AI (Agrawal et al., 2019). According to research, in the USA, approximately 47 percent of all jobs are at risk because of computerization (Frey & Osborne, 2017).

The 2020 **pandemic** and the application of artificial intelligence for human tasks such as delivery have necessitated income drops for most wage workers, based on findings by Wing (2023). Some jobs need a human touch for the customer experience to be better, but as seen from the current technological shifts in New York, more workers will be jobless and looking for new opportunities. The bottom line is that these changes affect income levels, with those earning less than $50,000 per year feeling the heat of the changing economic times, according to Tosh (2015). Back to the pandemic, it became clear that those with low incomes continued to experience declining incomes, with some even opting for government food stamps.

Despite these concerns, the AI rapidly accelerated in the USA. In 2019, the US President Trump announced the “US AI Initiative” and signed the executive order 13859. The private sector, such as Microsoft, Google, and Amazon, also heavily invest in AI development (Joyce et al., 2021). The AI designers draw several computational techniques such as “pattern recognition, logic-based system, cybernetics, rule-based systems, probabilistic AI, adaptive behavioral model, statistical AI, and symbolic knowledge representation such as expert systems” (Nilsson, 2009). Recently, the programming communities have primarily focused on developing ML as a form of AI (Joyce et al., 2021). Government initiatives, institutes, and companies use the AI term. The AI practitioners may also be aware of the data about race inequalities, class inequalities, and socioeconomic status.

AI’s impacts on socioeconomic inequalities

NYC is considered a melting pot of cultures and economic activities. New York City’s dominant industries, Finance, Media, Tourism, Technology, and Healthcare, present a diverse landscape for AI integration. AI has several impacts on innovation, employment, and economic growth, varies across all these sectors, and influences the overall socioeconomic dynamics of NYC. For example, the media industry in New York has had problems with many staff members because of rising operational costs. Consequently, there have been layoffs in the media industry, which has seen more people fall into the low-income earning category. The situation is even worse for migrant workers without the educational skills that pay in this highly digitized economic environment (Sitiris et al., 2023).

Hence, the AI helps several people and enhances the **economy**. However, AI helps only a particular sector to boost its finances. AI introduces a new technology that replaces the jobs and tasks that workers in lower-skill occupations perform (Gries & Naudé, 2018). The initial reports held that AI automation replaced a significant percentage of the human labor force. In 2017, research predicted that up to 47 percent of USA jobs could be automated in 10-20 years (Frey & Osborne, 2017). Another critical research calculated that one additional robot per 1000 workers reduces employment (Acemoglu & Restrepo, 2017a). Therefore, automation (AI) predicts future job losses. An alternative meaningful impact of AI is job displacement rather than job replacement by AI.

Education, instead, has benefited from artificial intelligence, according to Wach et al. (2023), as they explain how technology assists teachers in collaborating with students in real time and reducing knowledge bureaucracies experienced in the past. Despite government support, the situation is still the same in the education sector, as students from less privileged families need more resources and materials to boost their learning. Education inequality is increasing in New York as those institutions charging more for learning invest in better technologies such as artificial intelligence (Ruvalcaba-Gomez & Cifuentes-Faura, 2023). Simply put, the education gap is not slowing down and could worsen if stakeholders do not address the current inequalities. Concurring with the prior, Scantamburlo et al. (2023) affirm that public learning institutions have raised concerns over declining education standards owing to poor government support and the student debt burden currently hitting New York and the rest of the country.

Notwithstanding, Sanina, Balashov, and Rubtcova (2023) affirm that artificial intelligence drives growth in the education industry, where institutions leverage this technology to equip students with relevant skills required in the modern economy (Sanina et al., 2023). Classrooms are using artificial intelligence to measure the performance of students and use AI-generated recommendations to gauge and understand how students can improve and become innovative at the same time. According to Martins and Gresse von Wangenheim (2023), these institutions are adopting AI to provide a better learning experience for students and encourage them to learn practical skills applicable to the real world.

Unfortunately, **education** is becoming a rich and poor affair, as seen by different income groups and their patterns of educating their children (Sumathi et al., 2023). For example, children from low-income families have little access to technological experiences compared to those in middle and high-income categories. This means that AI is a double-edged sword (Nesh, 2009) that can improve learning or create learning gaps among students because of their financial backgrounds. An equitable society, according to, should address education gaps, as seen in the case of New York, where those earning over $142,395 can afford to take their kids to better schools that provide learning and leverage artificial intelligence across the board Wörsdörfer (2023).

Middle-income and low-income earners face challenges affording top-notch education for their children because of the financial costs associated with such learning institutions. These families are grappling with unemployment because of technological displacement, which further compounds the problem based on research conducted by Nosova et al. (2023). Meeting their financial and educational needs is a burden for low-income earners earning less than $68,720. This means that skilled workers are better positioned to earn more income than low-skilled workers, according to Ugliotti et al. (2023). The economic conditions of low-income earners and those in the middle class continue to deteriorate as artificial intelligence capabilities take hold across different sectors in New York.

Another influence of AI on **income inequality** could be adverse, given its varying effects on distinct jobs and workers (Gries & Naudé, 2018). In broad terms, scholars commonly recognize two primary pathways by which AI automation is anticipated to exacerbate income distribution. The first involves the expanding' innovation rents' from AI, where the advantages may be concentrated among a limited number of companies. The second pathway pertains to AI altering the relative demand for labor, consequently influencing relative wages (Korinek & Stiglitz, 2018).

This new technology replaces the **jobs and workers** at lower skill levels, such as gardeners, cleaners, security staff, chefs, waitpersons, and receptionists. Another positive influence of AI on income distribution might manifest, as demonstrated, wherein AI could potentially diminish the wage gap through "high-skill automation." In their automation model, encompassing both high-skill and low-skilled labor, they propose that if only high-skill automation occurs, it may not necessarily lead to increased productivity or inequality. The underlying logic in their findings is that the automation of high-skilled labor could lower high-skilled wages, elevate the price of capital (at least in the short term as firms transition to machines), and consequently mitigate gains in productivity (Acemoglu & Restrepo, 2017b).

Sartori and Theodorou (2022) explore the implications of artificial intelligence on economic factors and take a detailed look at New York, where they track the implementation of AI and its influence on education, Health, employment, and income patterns. According to Wach et al. (2023), artificial intelligence could not have come at a better time than now, in this age of digital transformation, where automation and production efficiency are taking center stage. He reviews the transformation of healthcare and education in New York by pointing to numerous benefits, such as cost-effective and quality healthcare based on technological support that assists healthcare providers in understanding the existing healthcare challenges and leveraging technology to provide efficiency and achieve health objectives. According to Wach et al. (2023), education has benefited from artificial intelligence, as they explain how technology assists teachers in collaborating with students in real-time and reducing knowledge bureaucracies experienced in the past.

AI has diverse impacts on the **economy**. Inequality is considered to worsen during economic expansion. The inequality-producing effects of AI are not just limited to associated enhancement in capital income and wealth production. The AI has replaced the need for human labor in several sectors. Hence, several workers find themselves unable to generate an income. AI enhances the income inequalities for low-skill workers (Hadley, 2020).

Worker replacement continues to rise across businesses in New York, according to Grashof and Kopka (2023), because artificial intelligence is taking over these roles and working more efficiently than humans. Despite the low rate of technological displacement, wage-level employees in production firms and plant machinery have had their wages reduced significantly, leaving them in a dire economic situation. For example, these wage workers are in the low-level category based on an area median income of less than 80%, and this implies that they cannot support their families because of the changes happening because of artificial intelligence. Nonetheless, Blue-collar workers, according to Gerlich (2023), have also not been spared from job replacements created by artificial intelligence, and the same has seen layoffs happen across different companies in New York. Banks, insurance companies, and real estate firms opt for AI capabilities that reduce expenses and, at the same time, maximize revenues, based on research findings by Gerlich (2023).

Consequently, those earning between 80%-165% of the area's median income are struggling financially to find new jobs and support their families, according to Gerlich (2023). These middle-income workers in New York earning between $68,720 and $142,395 have reduced their wages, which means fewer savings and investments. Also, food security is at stake as an essential social and economic indicator in New York, which shows a growing gap between the poor and the rich, according to Bellantuono et al. (2023). For instance, low-income earners have food insecurity, as seen from their growing reliance on government stamps compared to the middle or high-earning classes, who can afford to put food on the table for their families (Sartori & Theodorou, 2022). To this end, the food inequality problem is an income and employment issue because people can afford to spend on food as long as they earn well. On the other hand, the rich have no problems with food insecurity due to their financial wealth and investments not seen in the lower cadres, such as the low and middle-class categories.

High-income earners, on the other hand, according to Meng, Juanatas, and Niguidula (2023), are benefiting from the current AI boom because of their investments in technology and leveraging it to earn even more profits. This group has earnings over 165% of AMI, which means they can afford to take risks and even use extra resources to invest in different ventures (Meng et al., 2023). For them, artificial intelligence is not only opening new wealth opportunities but also cushioning them against economic crises seen before when technology such as AI was not mainstream.

On the other hand, Nemorin et al. (2023) support the idea of artificial intelligence accelerating economic growth but raise concern about the resulting income gaps between low-income, middle-class, and high-income earners. Despite the benefits of artificial intelligence in creating new economic opportunities, Nemorin et al. (2023) caution against the widening income inequality that is increasing at a higher rate than seen before. He compares the financial disruption of artificial intelligence to the Great Depression era when the Industrial Revolution changed the fortunes of factory workers by emphasizing more automation. The modern economy functions well on technological innovation, but Nemorin et al. (2023) warn that technology does not consider the risks of low-skilled workers, who face the most considerable risk compared to highly skilled and educated workers.

Societal impacts of AI

Several high-profile debates have been conducted on AI's societal impacts (Joyce et al., 2021). The AI is used in every industry, and it has several impacts. The first concern related to the accountability and safety of AI arose when a pedestrian was killed by a self-driving car in Arizona (Wakabayashi, 2018). During COVID-19, the health authorities suggested risks associated with face-to-face recognition. Hence, for social distancing, the healthcare department replaces human workers with algorithms, automation, and AI (Joyce et al., 2021).

Research Methodology and Discussion

Education Sector

The correlation coefficient between "Highest Level of Education" and "AI Impact Perception - AI will positively impact society in the future" is approximately 0.4071. This indicates a moderate positive correlation, suggesting that as the level of education increases, there tends to be a more positive perception of AI's impact on society. In this research, the

Chi-Square test and T-test were used to determine if there is a statistically significant association between the two variables.

The **Chi-square statistic** is approximately 232.84. This value determines the significance of the association between the two variables. The p-value is about 1.68e-40, which is extremely low. Given a typical significance level (e.g., 0.05), this low p-value indicates a significant statistical relationship between education level and AI impact perception. The test has 16 degrees of freedom. This is calculated based on the number of categories in each variable (5 education levels and 5 AI perception levels) minus one. The expected frequencies under the null hypothesis (no association between the variables) are shown in the array.

These frequencies are used to calculate the Chi-square statistic. The **Chi-square test results** strongly suggest a significant association between the level of education and the perception of AI's impact on society. The low p-value rejects the null hypothesis of no association, indicating that the observed relationship is unlikely to be due to chance.

The **T-test** comparing AI impact perceptions between respondents with "High school or less" education and those with a "Master's degree" yields the following results: The T-statistics is approximately -9.21. This substantial negative value indicates a significant difference in the means of the two groups, suggesting that the mean perception score of the master's degree group is higher than that of the "High school or less" group. Approximately 7.68×10−197.68×10−19. This extremely low p-value indicates a highly statistically significant difference in AI impact perception between individuals with "High school or less" education and those with a "Master's degree." These **results** strongly suggest a significant difference in perceptions of AI's impact on society between these two education levels, with individuals holding a master's degree likely having a more positive perception than those with a "High school or less" education.

The **T-test results** comparing the AI impact perception between the two groups, "High School or Less" and "Doctoral Degree," are as follows: The T-statistic is approximately -7.66. This value indicates the extent to which the means of the two groups differ relative to the variation in the sample data. The p-value is about 3.59e-10, which is extremely low. In statistical testing, a low p-value (typically below 0.05) suggests that the observed differences in means between the two groups are statistically significant and not likely due to random chance.

The **negative T-statistic** suggests that the mean AI impact perception score for those with a Doctoral degree is higher than for those with a High School education or less. Given the very low p-value, we can conclude with high confidence that there is a statistically significant difference in AI impact perception between individuals with the highest and lowest levels of education in the dataset.

In Figure 1, the trend analysis of AI Impact Perception across different education levels reveals some interesting insights:

1. High School or Less: This group shows many opinions about AI's impact, from strong disagreement to strong agreement. However, the median lies around 'Neutral' to 'Agree.'

2. Some College: Similar to the previous group, various responses exist. The median perception is slightly more towards 'Agree.'

3. Bachelor's Degree: This group has a more positive perception of AI, with most responses clustered around 'Agree' and 'Strongly Agree.

4. Master's Degree: The responses are predominantly positive, with an intense concentration in the 'Agree' and 'Strongly Agree' categories. This indicates a generally positive perception of AI's impact among individuals with a master's degree.

5. Doctoral Degree: Those with doctoral degrees show a positive outlook towards AI, with the majority strongly agreeing about its positive impact. The responses are tightly clustered in the 'Strongly Agree' category. Overall, the trend suggests that as the education level increases, so does the positivity in the perception of AI's impact on society. This could indicate a correlation between higher education and a more optimistic view of AI's potential benefits.

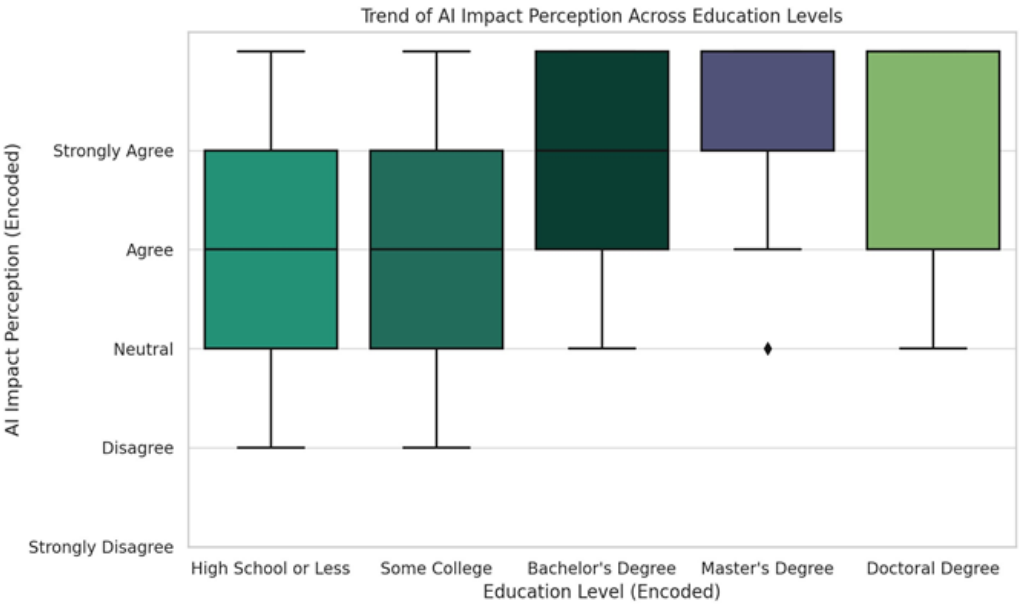

Figure 1: Education and AI Impact Perception

Employment Status and AI Perception

The Employment Status Category includes several employment situations such as employed part-time, employed full-time, etc. In this research portion exploring the relationship between employment status and perceptions of AI's future impact on society, distinct correlations were observed. Employed individuals (full-time and students) demonstrated a slightly more positive outlook toward AI, indicated by positive correlations of 0.068 and 0.040, respectively. Conversely, those not employed or in non-standard employment categories (like retired, unemployed, self-employed) tended towards a more neutral or negative perception, with unemployed individuals registering the strongest negative correlation at -0.062. These results suggest a potential link between one's employment situation and optimism or skepticism about the future societal impact of AI.

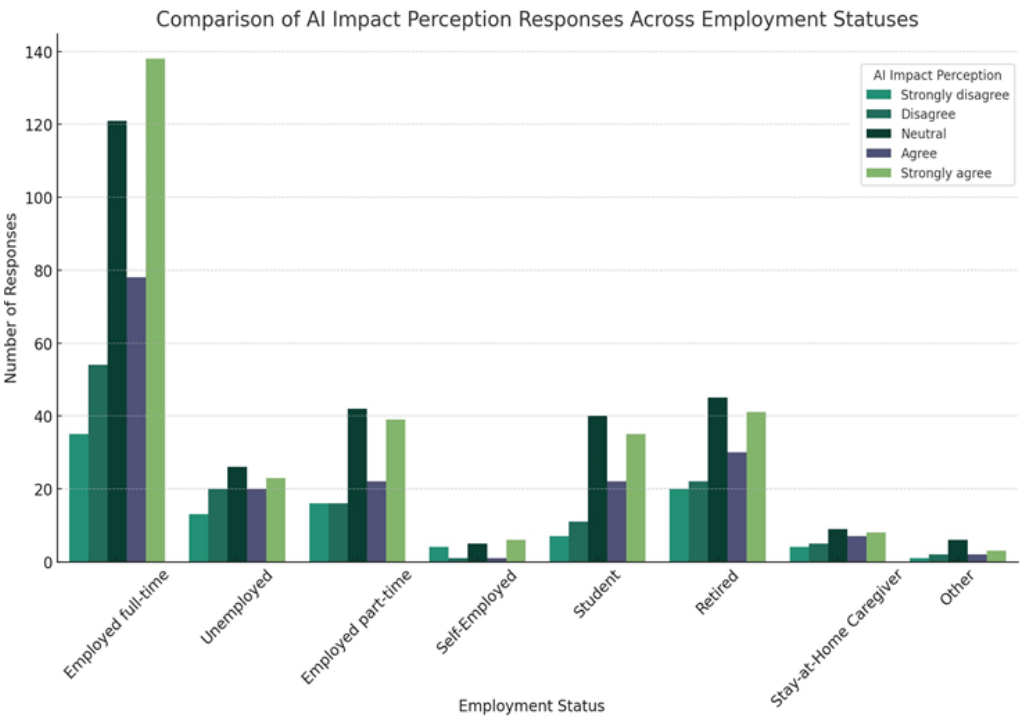

Figure 2: Employment Status and AI Impact Perception

Figure 2 collectively suggests that one's employment status may be associated with one's perception of AI's future impact on society. Employed individuals, especially those in full-time roles, seem more optimistic about AI's positive impact, as indicated by higher counts and averages of positive responses. On the other hand, categories like 'Unemployed' show more varied and generally lower perceptions of AI's positive impact. This could reflect differing experiences and exposures to AI technologies based on one's employment status.

In this research, the results of Figure 3 state that being **employed full-time** is the most common employment status among survey respondents, accounting for 42.6% of the total. The **Retired** is the 2nd most common status, representing 15.8 %. The **Employed part-time and Student** categories are also significant, with 13.5% and 11.5% respectively. Another critical category is **Unemployed**. About 10.2% of respondents are unemployed. **Other categories** include Stay-at-Home Caregivers (3.3%), Self-Employed (1.7%), and Other (1.4%). On the other hand, in AI impact perception, the highest proportion of responses was **Neutral**, with 29.4% of participants neither agreeing nor disagreeing about AI's positive impact. While 29.3% **strongly agree** that AI will have a positive impact, 18.2% **agree** (but not firmly) that AI will have a positive effect. The 13.1% and 10.0% (**Disagree and Strongly disagree**), respectively, indicate some level of skepticism or concern about the positive impact of AI.

Hence, in this survey, examining perceptions of AI's future impact and correlating these views with employment status, we found a diverse range of employment statuses among participants, with the majority being full-time (42.6%). Retirees and part-time workers also formed substantial portions of the respondent pool. Regarding AI's potential impact on society, opinions were notably divided. A plurality of respondents (29.4%) remained neutral, indicating uncertainty or a balanced view of AI's future role. A nearly equal

proportion (29.3%) expressed strong optimism about AI's positive impact. This optimism, however, is counterbalanced by a significant minority who disagreed (13.1%) or strongly disagreed (10.0%) with the notion that AI will have a positive societal impact. These findings suggest a complex and nuanced public perception of AI. While there is optimism, there is also a notable degree of skepticism and uncertainty, reflecting the diverse and often conflicting narratives surrounding AI in society. The variety in employment status also highlights the importance of considering various socioeconomic backgrounds when analyzing attitudes toward emerging technologies.

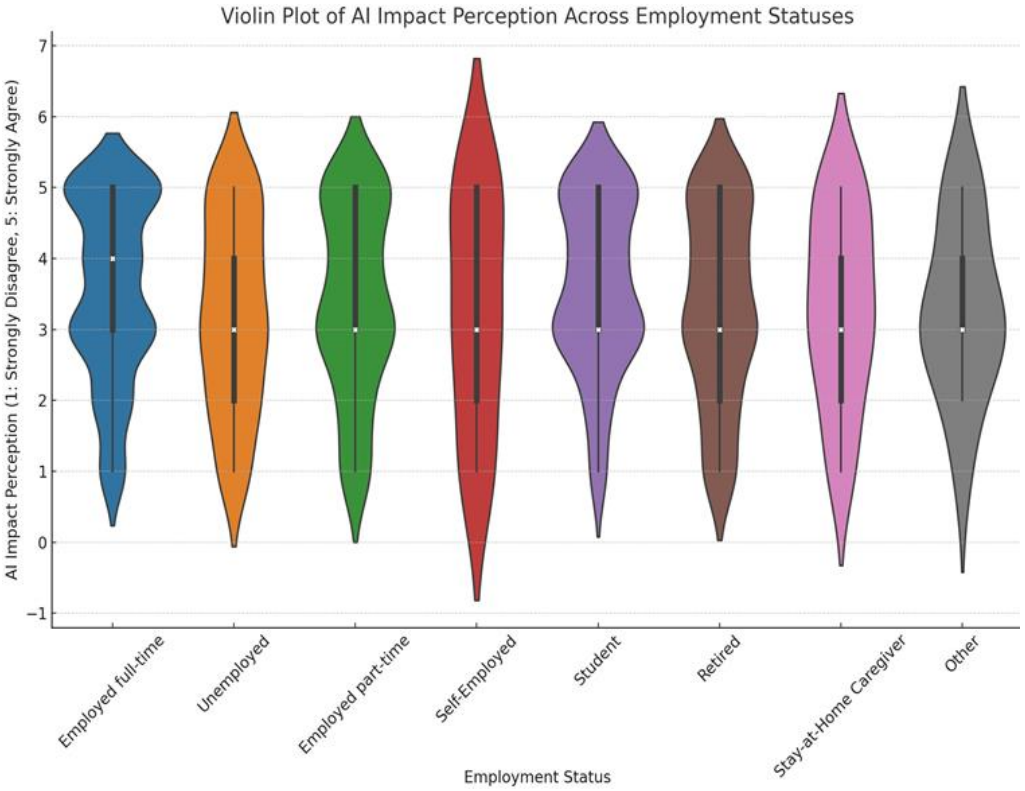

Figure 3: Violin Plot (It represents the AI Perception across Employment Statuses). This plot suggests a general leaning towards positive perceptions of AI's future impact (towards the higher end of the scale), consistent across different employment statuses but with varying degrees of consensus and spread.

Income and AI impact perception

This research also focuses on the correlation coefficient between the encoded "Income" and "AI Impact Perception" variables, which is approximately 0.35. This value suggests a moderate positive correlation between these two variables. In practical terms, as income increases, there is a tendency for individuals to have a more positive perception of AI's impact on society in the future.

The analysis in Figure 4 revealed distinct variations in AI perceptions across different income brackets. Stacked bar charts illustrated the count and the proportional distribution of opinions within each income group.

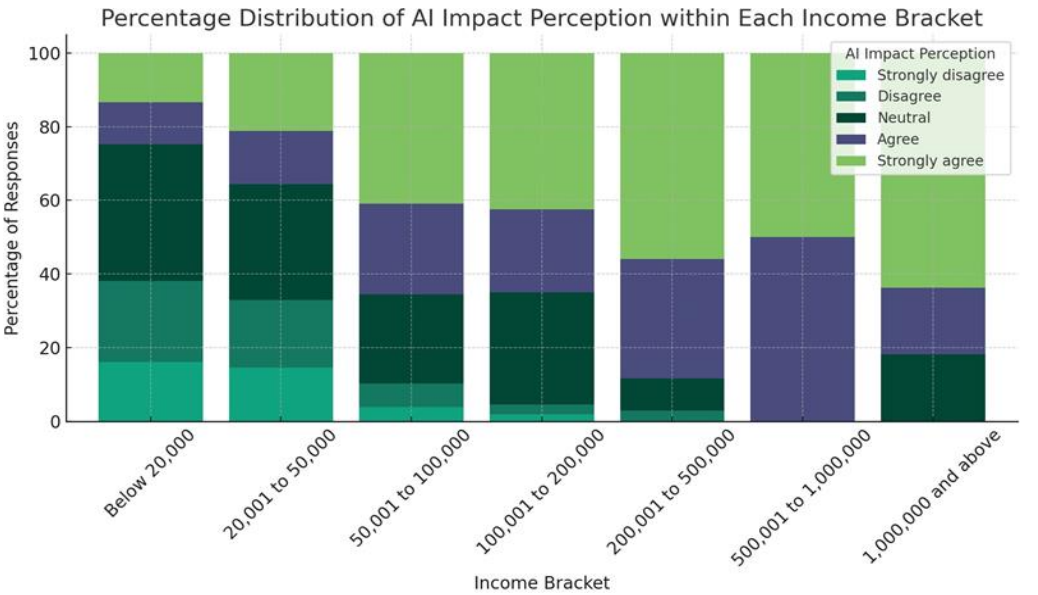

Figure 4: Income-based perception variation.

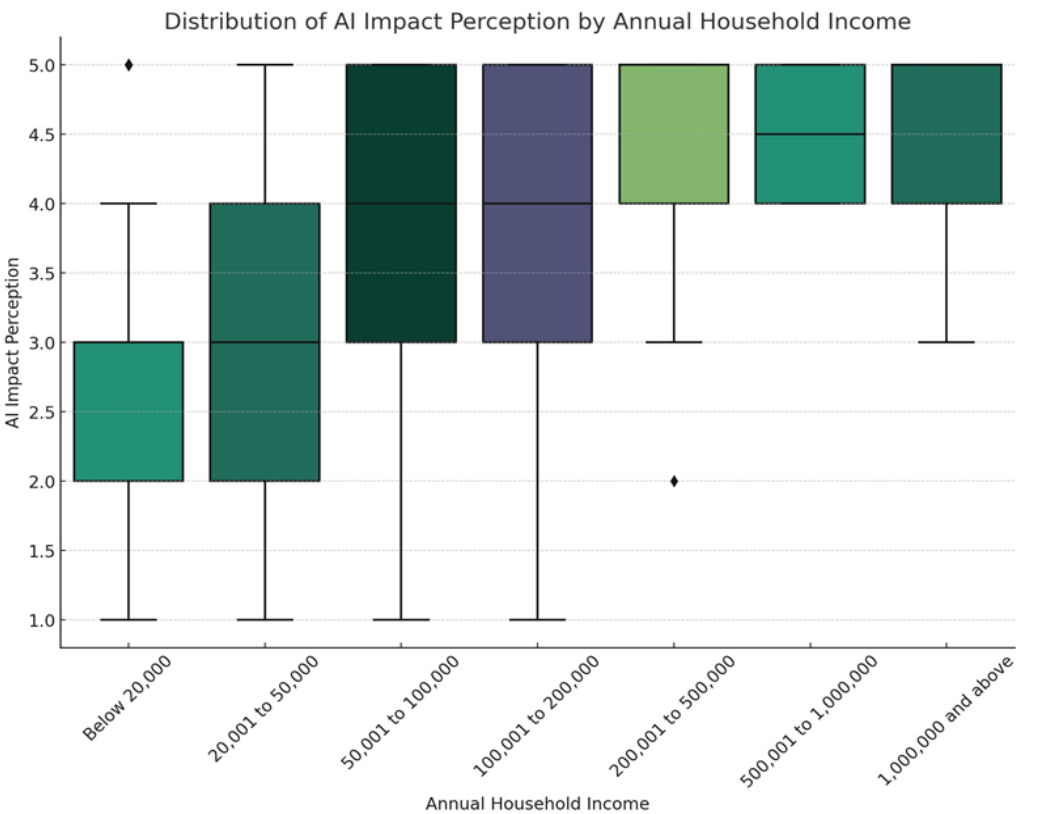

Figure 5: Income by AI Impact Perception.

Figure 5's box plot shows the distribution of income levels for each AI Impact Perception category. The median income increases with more positive perceptions of AI's impact. Notably, the group with the perception "Strongly agree" shows a higher median income than other groups. The income spread in each category is also quite broad, indicating a diverse range of income levels within each perception category.

The figures (4 & 5) collectively suggest a trend where individuals with higher incomes tend to have a more positive outlook on the future impact of AI on society. Various factors, including access to technology, education, and exposure to information about AI, could influence this trend. The data visualization supports the earlier findings and provides a clearer picture of the relationship between income levels and perceptions of AI. While there is diversity in perceptions across all income groups, individuals in higher income brackets generally show a more positive outlook on AI. This trend could be influenced by greater access to technology, education, and professional exposure to AI, often associated with higher income levels.

The income distribution, predominantly clustered in the lower to middle-income ranges, indicates a diverse economic representation of the survey participants. This diversity is crucial in understanding the varied perspectives on AI, as economic background can influence perceptions of technology and its societal impact. The data reveals a complex picture regarding AI impact perception: a significant proportion of respondents are either optimistic or neutral about AI's positive influence in the future. This suggests a cautious but hopeful outlook towards AI among the surveyed population. The presence of a notable skeptical minority underscores the need for ongoing dialogue and consideration of diverse viewpoints in the development and deployment of AI technologies. As indicated by the survey, the optimistic view towards AI may reflect New York City's role as a center for tech innovation and its residents' exposure to various forms of AI. A sizable group with neutral or opposing views underscores the complexity of public opinion in a metropolis known for its socioeconomic diversity.

In conclusion, the survey sheds light on the multifaceted views of AI's future role in society, contextualized within the diverse economic backgrounds of the respondents. This highlights the importance of inclusive and well-informed discussions in shaping the trajectory of AI development and its societal integration. The findings suggest public sentiment toward AI in New York City is not monolithic but varies across income levels. This highlights the importance of considering these variations in the ongoing discourse on AI's role in society.

The descriptive statistics for income and AI Impact Perception reveal particular insights: The average **income level** falls between the "20,001 to 50,000" and "50,001 to 100,000" categories, with half of the respondents falling into the lower of these two categories. This indicates a population predominantly belonging to the lower middle to middle-income brackets. The **average perception of AI's future impact** on society leans slightly positive, with a median response of "Neutral." There is, however, notable **variability** in perceptions, as indicated by the standard deviation. The broader spread in AI Impact Perception compared to income suggests more diverse opinions about AI than the diversity in income levels.

STUDY FINDINGS

The data suggests that higher education levels might be associated with a more optimistic view of AI's benefits. The data suggests a positive perception of AI's future impact across different education levels. A significant majority of respondents, regardless of their education level, believe that AI will have a beneficial role in the future. This optimism is particularly pronounced among those with higher educational qualifications, such as master's and Doctoral degrees. However, a population segment across all education levels remains neutral or skeptical about AAI's future impact. It underscores the importance of continued public education and discourse on AI and its societal implications.

The data shows that people with higher degrees, like master's and Doctoral degrees, are more optimistic about the future of AI. Around 80% of those with a Doctoral degree strongly believe AI will benefit society. This might be because they have studied more and understand the technology better. The more people learn about AI, the more positive they might feel about it. Sharing knowledge and information about AI with everyone is a good idea. The data shows that the more advanced the education, the more positive people are about AI. For example, most of those with Doctoral and master's degrees strongly believe that AI will benefit society. This could be because they have a deeper understanding of the technology. The data suggests that learning more about AI leads to more positive views about its potential.

The data underscores a prevailing sentiment: individuals with higher educational qualifications, such as master's and Doctoral degrees, tend to have a more optimistic perspective on AI. Many believe in the transformative potential of AI. For instance, one respondent with a master's degree mentioned, "Yes, gonna make life easier," reflecting a belief in the convenience and efficiency AI could introduce. Another individual, holding a Doctoral degree, opined that AI will bring forth "Many ideas and problem solvers of the future." However, it is also astonishing that there are variations in this group despite their reservations or wait-and-see attitude. A Doctoral degree holder articulated, "To be determined as I am not yet convinced, we may be opening Pandora's box." These responses underscore the depth and breadth of perspectives on AI, even among the highly educated. It emphasizes the need for ongoing dialogue and exploration as AI shapes our world.

The sentiment among full-time employees regarding AI's role in society offers a rich tapestry of views. One respondent captures a hopeful vision, stating, "Yes, I believe so; I don't think that it will be disastrous Like many think. It will augment our society incomes and be able to predict new drugs and scientific improvements in physics and mathematics." This reflects a belief in AI's potential to revolutionize various sectors. However, there are voices of apprehension, too, especially concerning social disparities: "I am not optimistic; it will likely be used to enrich the wealthy further and take to enrich the wealthy further from the poor." These underscore fears about AI's potential view emerge from answers such as "I believe there will be positive and negative impacts. Positive- ease of completing tasks or running systems. Negative- people will become increasingly and almost dependent on AI." Lastly, the complexity of AI's implications is aptly summarized by a respondent who offers a "50/50" perspective—AI's transformative potential and challenges, particularly in sectors requiring human healthcare.

On the other hand, the opinions of individuals regarding the future influence of AI strike a note of caution. A respondent's concerns come to saying, "I foresee it will amplify the bad in, sayings out dull prose, and tempts corporations to replace actual creative humans with lackluster software." This perspective touches upon fears about the quality of AI-driven

outputs and the potential side-lining of human creativity. Another individual underscores the importance of education in shaping perceptions, stating, "Probably, however, the people need to be educated to understand what these Nevertheless are capable of and not capable of, along with realistic expectations." While some acknowledge the benefits, as exemplified by the comment, "Absolutely, I think its benefits outweigh the costs, "there is a strong undercurrent of uncertainty; epitome is the observation, "At this point, I truly cannot see a positive impact in the future for AI because there are too many unknown variables." This narrative paints a picture of cautious optimism among the unemployed, emphasizing concerns about AI's broader societal implications and the importance of education in shaping balanced views.

The "20,001 to 50,000" income bracket significantly impacts AI in Income and AI Perception. There is neutral information or understanding about AI among this group, or they might weigh both AI's potential benefits and drawbacks. The household income of respondents influences the perception of AI's positive impact on society. Those in higher income brackets tend to view AI more positively, while those in the "20,001 to 50,000" bracket exhibit a mix of opinions, with a notable portion being neutral. The reasons behind these trends could be multifaceted, including factors like exposure to AI, educational background, and personal experiences with technology. Further analysis could delve deeper into these factors to provide a more comprehensive understanding.

CONCLUSION

Hence, the abovementioned discussion shows/highlights the multifaceted interactions individuals have with AI technologies. From daily tasks to business strategies, AI is influential. While many appreciate its significant powers, there is concern about its underlying limitations. As AI continues to permeate various sectors, it's essential to maintain a balanced perspective, recognizing its value while being aware of its boundaries. These real-world experiences with AI illustrate its potential to serve as a beneficial tool across various domains. However, they also highlight the need for careful consideration of ethical guidelines, transparency, and human oversight in AI development and deployment. As AI becomes increasingly integrated into the fabric of society, it's crucial to keep a well-informed public that can engage with these technologies responsibly and effectively.

The responses indicate a mix of perspectives on the role of AI in society and its development. While some see the potential benefits of AI in enhancing work-life balance and promoting inclusiveness, others are more generic or non-committal in their recommendations. Policymakers and tech developers would benefit from a more comprehensive understanding of public sentiment, emphasizing the need for transparency, inclusiveness, and public engagement in AI development and deployment.

As AI's influence permeates society, it's imperative that its development remains grounded in ethical considerations, ensuring it reflects diverse perspectives and serves the broader interests of humanity. In the discourse on artificial intelligence, the sentiments of the public serve as both a compass and a mirror, reflecting the current state and guiding the path forward. A respondent's call to "Support AI projects that empower disadvantaged populations and resolve sustainability concerns for future generations" encapsulates the essence of AI's potential: a tool for technological advancement and societal betterment. However, sentiments such as "don't use it" underscore the mixed feelings and potential apprehensions that many hold. It's a timely reminder that, as we forge ahead, we must prioritize inclusivity, ethical considerations, and a holistic vision of AI's societal role.

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