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Upstart's Upshot: Is Fintech Lending Fair?

Just 45 percent of Americans have access to bank quality credit, yet 83 percent of Americans have never actually defaulted on a loan. This is not what we would call fair lending…At Upstart, we decided to use modern technology and data science to find more ways to prove that consumers are indeed creditworthy.

—Dave Girouard, Upstart CEO[1]

Illinois-based Alliant Credit Union (Alliant), among the largest credit unions[2] in the United States, was considering a partnership with Upstart Holdings, Inc. (Upstart), a financial technology (fintech) firm that sought to "remake the lending process."[3] While conventional underwriting models were largely based on borrowers' credit scores, Upstart's lending platform used artificial intelligence (AI)/machine learning (ML)[4] algorithms to analyze more than 1,500 variables, including "alternative data" not typically considered in the underwriting process (e.g., college major).[5] Upstart claimed its models delivered higher approval rates and lower default rates than conventional models, particularly benefiting borrowers who might not otherwise qualify for loans.

Upstart's approach to underwriting was not without controversy. Policymakers, economists, and advocacy groups had raised concerns that the use of alternative data could unintentionally exacerbate disparities in access to credit for historically underserved groups. Indeed, a 2020 report from a student loan advocacy group claimed, all else equal, Upstart charged higher interest rates and origination fees to graduates of colleges and universities that primarily served underrepresented students. Upstart disputed the conclusions of the report but agreed to work with a third party to monitor for bias in its algorithms.

For 2022, Alliant wanted to reach $1 billion in loans generated via fintech partners.[6] Clearly, partnering with Upstart would help to do just that. But was now the right time, given the fairness concerns related to the

[1] *Examining the Use of Alternative Data in Underwriting and Credit Scoring to Expand Access to Credit: Hearing before the Task Force on Financial Technology of the Committee on Financial Services*, US House of Representatives, 116th Cong., first session, July 25, 2019, https://www.congress.gov/event/116th-congress/house-event/LC65599/text?s=1&r=3 (accessed Sept. 5, 2023).

[2] Credit unions provided many of the same services as banks, including lending, checking and savings accounts, and credit cards. In contrast to banks, credit unions operated as nonprofits and were owned by their members (customers).

[3] "Upstart Is the Leading AI Lending Marketplace," Upstart, https://www.upstart.com/our-story (accessed Sept. 9, 2023)

[4] "[AI] refers to the general ability of computers to emulate human thought and perform tasks in real-world environments, while [ML] refers to the technologies and algorithms that enable systems to identify patterns, make decisions, and improve themselves through experience and data." "Artificial Intelligence (AI) vs. Machine Learning," Columbia Engineering, the Fu Foundation School of Engineering and Applied Science, https://ai.engineering.columbia.edu/ai-vs-machine-learning/ (accessed Aug. 9, 2023).

[5] Jeff Keltner, "The Importance of Variables in Assessing Credit Risk," *Upstart* (blog), https://info.upstart.com/importance-of-variables-blog (accessed Sept. 5, 2023).

[6] Steve Cocheo, "Partnering with 'Lendtechs' to Grow Loans and New Accounts," Financial Brand, March 3, 2022, https://thefinancialbrand.com/news/loan-growth/partnering-with-lendtechs-to-grow-loans-and-new-accounts-131818/ (accessed Sept. 5, 2023).

This public-sourced case was prepared by Ian Appel, Associate Professor, and Aldo Sesia, Senior Case Researcher. It was written as a basis for class discussion rather than to illustrate effective or ineffective handling of an administrative situation.

use of alternative data? Moreover, Upstart's platform was largely focused on unsecured loans, a relatively risky segment of the consumer credit market. Could Alliant trust Upstart's algorithms to accurately assess the creditworthiness of borrowers?

Consumer Credit in the United States

Market overview

Consumers used two types of credit: installment and revolving. In installment loans (e.g., mortgages and auto loans), consumers borrowed a lump sum and made payments over a predetermined period. Revolving loans (e.g., credit cards) allowed consumers to repeatedly access funds up to a set limit and only pay interest on the outstanding balance.

In the early 1900s, the main suppliers of consumer credit included manufacturers and retailers that provided installment loans for large purchases. For example, General Motors Acceptance Corporation (GMAC) began offering auto loans in 1919.[7] By midcentury, most consumer credit was extended by banks. Not only did banks provide installment loans, but they also offered revolving loans in the form of credit cards. Bank of America, for instance, introduced BankAmericard (later Visa) in 1958.[8] Borrowers increasingly utilized these sources of credit over the course of the 20th century, with total consumer debt growing more than 25-fold (adjusted for inflation) between 1943 and 2000.[9]

In the first decades of the new millennium, consumer credit continued to grow, totaling more than $15 trillion in 2022 (**Exhibit 1**). The largest types of consumer debt were mortgages, student loans, auto loans, and credit cards (in descending order). Personal loans—often used for debt consolidation, home improvements, emergency expenses, and the like—were a fast-growing segment of the market. Originations of personal loans fell in 2020 due to lenders tightening standards in response to the COVID-19 pandemic. In 2021, however, originations increased by over 30%, reaching $222 billion. Fintechs played an increasingly important role in this market. In July 2021, loans made by digital lenders accounted for 57% of the market, up from 39% just 10 months earlier.[10]

Underwriting and credit scores

The availability and pricing of consumer credit were largely determined by the risk of delinquency and default. (**Exhibit 2** shows the percentage of consumer debt that was at least 30 days delinquent, going back to 2003.) Lenders used various sources of information to assess the creditworthiness of borrowers as part of the underwriting process. The information considered could be either "soft" or "hard" in nature. Soft information was difficult to quantify and often communicated as text.[11] For example, the stability of a borrower's future income was a piece of soft information often considered by lenders.

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[7] "Credit History: The Evolution of Consumer Credit in America," Boston Federal Reserve, https://www.bostonfed.org/-/media/Documents/ledger/spring-summer2004/credhistory.pdf (accessed Sept. 5, 2023).

[8] The first "charge card," Diner's Club, was created in 1949. In contrast to a credit card, a charge card required balances to be paid in full each month. https://www.bostonfed.org/-/media/Documents/ledger/spring-summer2004/credhistory.pdf.

[9] Based on authors' calculations from "Consumer Credit," Board of Governors of the Federal Reserve System, https://www.federalreserve.gov/releases/g19/HIST/cc_hist_sa_levels.html, and "CPI Inflation Calculator," US Bureau of Labor Statistics, https://data.bls.gov/cgi-bin/cpicalc.pl (both accessed Sept. 14, 2023).

[10] "Fintech Trends - Unsecured Personal Loans," white paper, Experian, December 17, 2021, https://www.experian.com/innovation/thought-leadership/2021-unsecured-personal-loans-trends-white-paper.jsp (accessed Sept. 5, 2023).

[11] José María Liberti and Mitchell A. Petersen, "Information: Hard and Soft," *Review of Corporate Finance Studies* 8, no. 1 (March 2019): 1–41, https://doi.org/10.1093/rcfs/cfy009 (accessed Sept. 5, 2023).

Unlike soft information, hard information was quantitative and not context dependent. Credit scores were a critical piece of hard information evaluated by lenders. The most widely used were FICO scores, with close to 90% market share.[12] FICO scores, which ranged from 300 to 850, represented a ranked ordering of borrowers based on their creditworthiness. Borrowers with higher credit scores had easier access to credit and received lower rates. For example, a 2021 report from the Consumer Financial Protection Bureau (CFPB) found that the total cost of credit[13] for revolving loans averaged 14% for "superprime" borrowers (FICO ≥ 720), compared to upward of 30% for "deep subprime" borrowers (FICO < 580).[14]

FICO scores were calculated using information reported to credit-reporting agencies (CRAs),[15] which gathered, organized, standardized, and disseminated credit-related information about consumers. The CFPB identified the primary factors that affected credit scores (see **Table 1**).

Table 1. Factors in credit scores.

- Payment history, including late payments and collection items
- Balances, available credit, and the percentage of existing credit lines being utilized
- Negative public records such as bankruptcy, judgments, and liens
- Length of the credit history and the mix of credit types
- Evidence of taking on new debt, such as new accounts or inquiries

Source: *The Impact of Differences between Consumer- and Creditor-Purchased Credit Scores*, report to Congress, Consumer Financial Protection Bureau, July 19, 2011, https://files.consumerfinance.gov/f/2011/07/Report_20110719_CreditScores.pdf (accessed May 30, 2023).

According to the CFPB, 26 million adults in the United States—approximately 1 in 10—did not have a file with a CRA. Such individuals were sometimes referred to as "credit invisible."[16] An additional 19 million had "unscorable files" either because they lacked sufficient credit history (a "thin file") or because they had not used credit for a long time (a "stale file"). Lack of sufficient credit history disproportionately impacted several communities: immigrants, young adults, low-income households, and racial minorities.[17] Without credit history, consumers largely found conventional forms of credit inaccessible.

Fair lending

The underwriting process was subject to considerable regulatory oversight, particularly regarding fairness. The focus of regulators and policymakers on this issue was a consequence of the long history of discriminatory practices in consumer lending markets. For example, some mortgage lenders had restricted access to credit for residents of neighborhoods with large Black or other minority populations, a practice known as "redlining."[18]

[12] Nikita Sheth, "How Does FICO Make Money?," finty, August 18, 2023, https://finty.com/us/business-models/fico/ (accessed May 23, 2023).

[13] The total cost of credit (TCC) "captures the totality of payments by consumers to issuers as an annualized percentage of cycle-ending balances on their accounts" (*The Consumer Credit Card Market*, Consumer Financial Protection Bureau, September 2021, https://files.consumerfinance.gov/f/documents/cfpb_consumer-credit-card-market-report_2021.pdf [accessed Sept. 5, 2023). The main components of TCC were interest and fees.

[14] https://files.consumerfinance.gov/f/documents/cfpb_consumer-credit-card-market-report_2021.pdf; data available at https://files.consumerfinance.gov/f/documents/cfpb_consumer-credit-card-market-report-figure-data_2021.xlsx.

[15] Leading CRAs were TransUnion, Equifax, and Experian.

[16] "Who Are the Credit Invisibles? How to Help People with Limited Credit Histories," Consumer Financial Protection Bureau, December 12, 2016, https://www.consumerfinance.gov/data-research/research-reports/who-are-credit-invisibles/ (accessed Sept. 5, 2023).

[17] "More Than a Score: The Case for Financial Inclusion," *Experian* (blog), February 7, 2022, https://www.experian.com/blogs/insights/2022/02/the-case-for-financial-inclusion/ (accessed Sept. 5, 2023).

[18] The term "redlining" originated from the practice of shading areas with large minority populations red on maps, indicating that making loans in such areas was not "economically sound." The Federal Housing Administration (FHA), a government agency that insured mortgages, "played a key role in institutionalizing and encouraging redlining." See: "Redlining," Federal Reserve History, https://www.federalreservehistory.org/essays/redlining (accessed Sept. 5, 2023).

Many argued that redlining, along with other racist lending practices, was a key contributor to persistent inequality in the United States.[19] Discrimination was not limited to racial and ethnic minorities. As recently as the 1970s, some lenders were unwilling to provide credit to women unless a man cosigned the loan. "Even if the woman had full potential to repay the loan or credit card, banks would often discriminate based on reasons that had no bearing on financial abilities," wrote one observer.[20]

The goal of fair-lending laws was to address discrimination in consumer credit markets. The Fair Housing Act (FHA), enacted in 1968, prohibited discrimination based on race, sex, religion, handicap, or familial status for mortgage-related transactions. In 1974, the Equal Credit Opportunity Act (ECOA) extended protections to all types of credit transactions (including loans to businesses or other entities) and included additional protected characteristics (e.g., age).[21] These laws prohibited lenders from discriminating based on protected characteristics when (1) making decisions to extend credit and (2) determining credit terms (e.g., the loan amount or interest rate charged). The **Appendix** provides further discussion of the enforcement of fair-lending laws.

The effectiveness of the FHA and ECOA was subject to debate. Access to credit and financial services continued to exhibit differences across groups. For example, a 2021 report from the Federal Deposit Insurance Corporation (FDIC) showed that Black and Hispanic households were less likely to use credit and more likely to be unbanked than White households with similar incomes (**Exhibit 3**).

Alternative Data

Lenders increasingly included alternative data in the underwriting process. Some used data that provided insights into borrowers' financial activities that could not be gleaned from credit scores (e.g., bank account transactions).[22] Others used data that was not directly related to borrowers' finances, such as education or social media activity. Will Lansing, CEO of FICO, quipped, "If you look at how many times a person says 'wasted' in their [social media] profile, it has some value in predicting whether they're going to repay their debt."[23]

Studies had shown that alternative data, even when it was not directly related to financial activities, was useful for predicting default. Evidence was largely from "countries with fewer restrictions on the use of proxy variables as it relates to discrimination."[24] For example, in 2020, researcher Tobias Berg and colleagues used data from an online retailer in Germany to examine the information content of consumers' digital footprints—"information that users leave online simply by accessing or registering on a website," including operating system used (e.g., Windows, iOS), email provider (e.g., Gmail, Hotmail), and the time of day a purchase was made.[25]

[19] In a 2008 speech, then-Senator Barack Obama stated, "Legalized discrimination…[where] loans were not granted to African-American business owners, or black homeowners could not access FHA mortgages…meant that black families could not amass any meaningful wealth to bequeath to future generations. That history helps explain the wealth and income gap between blacks and whites, and the concentrated pockets of poverty that persist in so many of today's urban and rural communities." Barack Obama, "Barack Obama's Speech on Race," (transcript of remarks, Constitution Center, Philadelphia, PA, March 18, 2008), NPR, https://www.npr.org/templates/story/story.php?storyId=88478467 (accessed Sept. 5, 2023).

[20] Jessie Kratz, "On the Basis of Sex: Equal Credit Opportunities," *Pieces of History* (blog), National Archives, March 22, 2023 https://prologue.blogs.archives.gov/2023/03/22/on-the-basis-of-sex-equal-credit-opportunities/ (accessed May 24, 2023).

[21] "Fair Lending Laws and Regulations," FDIC Consumer Compliance Examination Manual, IV, March 2021, https://www.fdic.gov/resources/supervision-and-examinations/consumer-compliance-examination-manual/documents/4/iv-1-1.pdf (accessed Sept. 5, 2023).

[22] "Alternative Data across the Loan Life Cycle: How FinTech and Other Lenders Use It and Why," Aite, (Experian Information Solutions, Inc., 2018), https://www.experian.com/assets/consumer-information/reports/Experian_Aite_AltDataReport_Final_120418.pdf (accessed Sept. 5, 2023).

[23] "Being 'Wasted' on Facebook May Damage Your Credit Score," *Financial Times*, https://www.ft.com/content/d6daedee-706a-11e5-9b9e-690fdae72044 (accessed Sept. 5, 2023).

[24] Adair Morse and Karen Pence, "Technological Innovation and Discrimination in Household Finance" (NBER working paper 26739, National Bureau of Economic Research, February 2020), https://www.nber.org/papers/w26739 (accessed Sept. 19, 2023).

[25] Tobias Berg, Valentin Burg, Ana Gombović, and Manju Puri, "On the Rise of FinTechs: Credit Scoring Using Digital Footprints," *Review of Financial Studies* 33, no. 7 (July 2020): 2,845–97, https://doi.org/10.1093/rfs/hhz099 (accessed Sept. 5, 2023)

The authors found that the information content of digital footprints could be used to predict defaults equally as well as credit scores.

The use of alternative data spurred considerable debate. Proponents argued that its use could help expand access to "invisible prime" borrowers—those who had little credit risk but thin or stale credit reports.[26] A 2006 Brookings Institute report concluded that incorporating alternative data in the underwriting process both decreased risk for lenders and increased access for borrowers.[27] The study found that Black, Hispanic, and low-income borrowers were particularly likely to benefit. Others noted, however, that the use of alternative data raised fair-lending concerns. "Using alternative data may present a greater risk of unlawful discrimination if new variables or factors are more closely related to a factor that can't be used under the law (such as race, ethnicity, or gender)," a report from the CFPB noted.[28] The US Government Accountability Office (GAO) reported that 13 of 16 lenders interviewed responded that alternative data raised fair-lending risks.[29]

The tradeoffs associated with using alternative data also caught the attention of policymakers. In July 2019, a hearing before the Task Force on Financial Technology of the House of Representatives Committee on Financial Services was held to discuss this topic. In his opening remarks, the task force chair, Stephen Lynch, highlighted the tradeoffs associated with the use of alternative data:

> Use of (alternative data) can potentially help 45 million Americans who might have trouble accessing credit with traditional factors alone. Take for instance, a 28-year-old woman in a modest-paying job, or maybe with 2 very modest paying jobs, who has never had a credit card or taken out a personal loan or mortgage loan. She might find herself denied access to credit based on traditional factors, even though she is working 12 hours a day. But a lender using alternative data might take into account that she went to a reputable school, had a job with a reputable employer, and always pays her rent and utility bills on time. In that case, they might approve her application for credit…However…imagine a similar scenario with much different results. Say, a young man with a decent but short credit history might be right on the cusp of being deemed creditworthy by traditional factors. However, a lender using alternative data sees in his rental history that he moves frequently…They may also see he doesn't have a college degree and that his Facebook friends have below average credit scores. So, they deny him access to credit. Unfortunately, this probably describes a number of our military personnel.[30]

Upstart

CEO Dave Girouard, whose career included stints at Apple and Google, cofounded Upstart in 2012 at age 46 along with two 20-somethings—Anna Counselman and Paul Gu. Initially, the cofounders worked on a product where people "could swap future earnings for a crowdfunded personal loan."[31] Despite some early success, this initial product had scale limitations.

[26] "How Fintech Serves the 'Invisible Prime' Borrower," Knowledge at Wharton, November 27, 2018, https://knowledge.wharton.upenn.edu/article/fintech-serving-invisible-prime-borrower/ (accessed Sept. 5, 2023).
[27] Michael A. Turner, Alyssa Stewart Lee, Ann Schnare, Robin Varghese, and Patrick D. Walker, *Give Credit Where Credit Is Due: Increasing Access to Affordable Mainstream Credit Using Alternative Data*, Political and Economic Research Council, The Brookings Institution Urban Markets Initiative, 2006, https://www.brookings.edu/wp-content/uploads/2016/06/20061218_givecredit.pdf (accessed Sept. 5, 2023).
[28] Brian Kreiswirth, Peter Schoenrock, and Pavneet Singh, "Using Alternative Data to Evaluate Creditworthiness," Consumer Financial Protection Bureau, February 16, 2017, https://www.consumerfinance.gov/about-us/blog/using-alternative-data-evaluate-creditworthiness/ (accessed Sept. 5, 2023).
[29] "MORTGAGE LENDING: Use of Alternative Data Is Limited but Has Potential Benefits," GAO-22-104380, US Government Accountability Office, November 2021, https://www.gao.gov/assets/gao-22-104380.pdf (accessed Sept. 5, 2023).
[30] https://www.congress.gov/event/116th-congress/house-event/LC65599/text?s=1&r=3.
[31] "Fresh Off IPO, Upstart's CEO Shares Why the Startup Isn't a Typical Success Story," Review, https://review.firstround.com/fresh-off-ipo-upstarts-ceo-shares-why-the-startup-isnt-a-typical-success-story (accessed May 16, 2023).

In 2014, the cofounders pivoted to offer consumers personal installment loans via its platform. Loans were unsecured (meaning they were not backed by collateral). Upstart's underwriting models considered both standard financial variables (e.g., debt-to-income ratio) and alternative data provided by applicants. Alternative data used in the underwriting process largely focused on borrowers' education histories. For example, early iterations of Upstart's models considered the average SAT score of a borrower's alma mater. Other examples of alternative data used in the underwriting process included employment history, cost of living, and loan application interactions.[32] Upstart used AI/ML algorithms to analyze this information and provide consumers with credit decisions, often in a matter of minutes.

The average borrower who used Upstart's platform was highly educated, 28 years old, and earned an annual income of $85,000.[33] Many borrowers had limited or no credit history.[34] Loan terms typically ranged from three to seven years with a monthly repayment schedule. Interest rates ranged from 6.5% to 35.99%.[35] On average, rates on Upstart loans were 43% lower than those on conventional underwriting models based on credit scores. In addition, Upstart's models approved 40% more borrowers than conventional models.[36]

Upstart employed a "capital-light" business model, in which it did not fund most loans, retaining only around 5% on its own balance sheet.[37] Instead, most loans were funded by partner banks and credit unions. Upstart's revenue primarily consisted of fees paid by these partners. Referral fees (3%–4% of loan value) were charged each time Upstart referred a borrower who obtained a loan. Partners were not charged this fee for bank-sourced loans. Platform fees (approximately 2%) were a separate fee charged for loans originated via the Upstart platform. Upstart also charged the holders of loans a service fee of 0.5%–1% each year.[38] Loans not held by Upstart were either retained by lending partners or sold to institutional investors.

While Upstart was gaining traction with consumers using its platform to apply for loans, the company expanded its business model by introducing "Powered by Upstart," the industry's first Software-as-a-Service (SaaS) lending platform. Powered by Upstart was a hosted service that provided lenders a complete solution—including borrower acquisition, underwriting, verification, and loan servicing—under the lenders' own brand and within their own websites. With the launch of this service, consumers could now access Upstart loans in one of two ways: either via Upstart.com or through a bank-branded product on a lending partner's own website. Over time, the company also expanded the types of loans it offered. For example, it began offering auto refinance loans in October 2021.[39]

Upstart's business saw a significant uptick during the COVID-19 pandemic (**Exhibits 4** and **5**). On December 16, 2020, the company went public with an initial offering at $20 per share. Upstart's strong performance continued into 2021, with analysts at Bank of America remarking, "We see Upstart's significantly higher growth rate vs. industry as further proof of Upstart's ability to disrupt the rigid and outdated personal lending process."[40] By September, the stock price stood at $390 (**Exhibit 6**).

[32] Tom Taulli, "Upstart: Can AI Kill the FICO Score?" *Forbes*, April 13, 2021, https://www.forbes.com/sites/tomtaulli/2021/08/13/upstart-can-ai-kill-the-fico-score/?sh=6ff19f30a563 (accessed Sept. 5, 2023).
[33] "Upstart's First SaaS Partner!" Upstart, December 19, 2017, https://www.upstart.com/updates/powered-by-upstart-launch-bankmobile (accessed May 18, 2023).
[34] Upstart Holdings, Inc., SEC Form 10-K, 2021, https://ir.upstart.com/node/7631/html (accessed May 17, 2023).
[35] https://ir.upstart.com/node/7631/html.
[36] "Credit Unions Are Partnering with Upstart to Grow Loans amidst Economic Uncertainty," Upstart, https://info.upstart.com/partnering-challenging-times (accessed Sept. 8, 2023).
[37] "AI > FICO; Substantial Long-Term Growth Prospects but Well Priced Here, Neutral," Bank of America, January 11, 2021.
[38] Upstart Holdings, Inc., SEC Form 40-APP, 2020, https://ir.upstart.com/node/6341/html (accessed Sept. 9, 2023).
[39] "Upstart Launches First Auto Retail Software with AI-Enabled Financing," Businesswire, October 6, 2021, https://www.businesswire.com/news/home/20211006005418/en/Upstart-Launches-First-Auto-Retail-Software-with-AI-enabled-Financing (accessed Sept. 5, 2023).
[40] "Upstart 2Q Delivers 5x growth vs. '19 and Positive Autos Update; Buy & PO to $200," Bank of America, August 11, 2021.

Beginning in late 2021, Upstart's stock price collapsed. A number of factors contributed to the company's struggles. Morgan Stanley analysts observed that Upstart had been "the beneficiary of a range of macro-based tailwinds in '21, including structurally suppressed delinquencies due to stimulus policies, as well as elevated capital availability given low prevailing interest rates."[41] As the Federal Reserve began to hike interest rates in spring 2022, these dynamics changed. J.P. Morgan analysts further noted that the company was "sensitive to the whims of its funding partners" and "institutional demand for its riskier unsecured consumer loans has waned."[42] In May, Upstart's stock fell over 50% in a single day, to under $34 per share, after the company lowered its forecasts and announced an increase in loans held on its balance sheet.[43]

Underwriting models

The backbone of Upstart's underwriting process was its AI/ML models. ML was a subfield of AI used to make predictions from datasets without providing explicit instructions. Essentially, ML models could "learn" from patterns in the data. While underwriters had long used statistical analysis (e.g., linear regressions) to determine which borrower characteristics predicted defaults, ML models could generate more accurate predictions than traditional techniques. Employing such models was crucial given the sheer volume of data Upstart analyzed for each borrower. Over time, the company had incorporated more variables into its underwriting models, growing from 23 in 2014 to more than 1,500 in 2021.[44] "The use of hundreds or thousands of variables is impractical without sophisticated machine learning algorithms to tease out the interactions between them," the company noted.[45]

The quality of Upstart's models was largely a function of data. As more training data (e.g., loan repayment events) was fed into its models, the accuracy of its predictions increased. Upstart thus benefited from a "flywheel effect"—"greater repayment data leads to improved risk and fraud detection, which leads to higher approval rates and increased volume," wrote analysts covering the company.[46] By the end of 2021, the dataset used to train Upstart's models consisted of over 10 million repayment events and was "rapidly growing."[47]

Upstart assigned risk grades (ranging from A+ through E−) to each borrower. Internal analysis showed that these grades conveyed more information than FICO scores (**Exhibit 7**). Academic research also supported this claim. For example, in 2021, Marco Di Maggio, Dimuthu Ratnadiwakara, and Don Carmichael concluded that "alternative data used by Upstart exhibits substantially more predictive power with respect to likelihood of default than credit score." Loans funded by Upstart but rejected by traditional models largely consisted of those for borrowers with weak credit histories but a low propensity to default. Providing such loans, the researchers argued, not only benefited borrowers but was also profitable for Upstart.[48]

While Upstart initially focused on predicting defaults, over time it developed models to help partners mitigate other types of risks while also increasing automation (see **Table 2**).

[41] "Valuation and Sentiment Reflect Emerging Macro Headwinds," Morgan Stanley, May 4, 2022.
[42] "No Good Deed Goes Unpunished; Initiating at Underweight," J.P. Morgan, April 11, 2022.
[43] Kevin Stankiewicz, "Upstart CEO Defends Increased Loan Balance, Says the AI Lending Platform's Model Hasn't Changed," CNBC, May 10, 2022, https://www.cnbc.com/2022/05/10/upstart-ceo-defends-increased-loan-balance-says-the-ai-lending-platforms-model-hasnt-changed.html (accessed Sept. 5, 2023).
[44] https://ir.upstart.com/node/7631/html.
[45] https://ir.upstart.com/node/7631/html.
[46] "No Good Deed Goes Unpunished; Initiating at Underweight."
[47] https://ir.upstart.com/node/7631/html.
[48] Marco Di Maggio, Dimuthu Ratnadiwakara, and Don Carmichael, "Invisible Primes: Fintech Lending with Alternative Data" (working paper, SSRN, May 28, 2022), http://dx.doi.org/10.2139/ssrn.3937438 (accessed Sept. 19, 2023).

Table 2. Examples of Upstart's AI/ML models.

- *Income fraud*—quantifies potential misrepresentation of borrower income
- *Acquisition targeting*—identifies consumers likely to qualify for and need a loan
- *Loan stacking*—identifies consumers likely to take out multiple loans in a short period
- *Prepayment prediction*—quantifies the likelihood that a consumer will make payments on a loan earlier than originally scheduled
- *Identity fraud*—quantifies the risk that an applicant is misrepresenting their identity

Source: Upstart Holdings, Inc., SEC Form 10-K, 2021, https://ir.upstart.com/node/7631/html (accessed May 17, 2023).

(Un)fair Lending at Upstart?

Upstart viewed expanding access to credit as its central goal, a point often emphasized by Girouard:

> As a company focused entirely on improving access to affordable credit for the American consumer, fairness and inclusiveness are issues we care about deeply. The opportunity for AI-based lending to improve access to credit for the American consumer is dramatic. But equally dramatic is the opportunity to reduce disparities and inequalities that exist in the traditional credit scoring system.[49]

Consistent with this goal, internal studies indicated that Upstart's models significantly expanded access to credit for historically underserved populations. For example, as of the end of 2021, Upstart's models approved over 40% more Black and Hispanic borrowers than models based solely on FICO scores, with annual percentage rates (APRs) that were more than 20% lower. [50]

Upstart worked with regulators to ensure its algorithms complied with fair-lending laws. In 2017, the CFPB issued Upstart a no-action letter (NAL), the first to a fintech company. The NAL indicated that the CFPB had "no present intent to recommend initiation of supervisory or enforcement action against Upstart with respect to the Equal Credit Opportunity Act," thus providing a degree of regulatory certainty for the company.[51] As part of the agreement, Upstart agreed to regularly report lending and compliance information to the CFPB. In 2020, Upstart received a renewed NAL from the CFPB extending through November 2023.[52]

Yet, fair-lending concerns persisted. In February 2020, the Student Borrower Protection Center (SBPC) released a report accusing Upstart of "educational redlining." The report described the impact of where a borrower attended college on credit underwriting at both Upstart and Wells Fargo. For its analysis of Upstart, the report considered hypothetical graduates of three schools: New York University (NYU), Howard University, and New Mexico State University (NMSU). Hypothetical applicants studied by the report were identical in every respect except for the institution of higher education attended.

SBPC's examination of Upstart indicated that, all else equal, a $30,000 loan to refinance the student debt for a graduate of Howard University (an HBCU—historically Black college or university) and for a graduate of

[49] *Equitable Algorithms: How Human-Centered AI Can Address Systemic Racism and Racial Justice in Housing and Financial Services. Virtual Hearing before the Task Force on Artificial Intelligence of the Committee on Financial Services*, US House of Representatives, 117th Cong., first session, May 7, 2021, p. 30 (printed for the use of the Committee on Financial Services Serial No. 117–23), https://www.govinfo.gov/content/pkg/CHRG-117hhrg44838/pdf/CHRG-117hhrg44838.pdf (accessed Sept. 5, 2023).

[50] "How CDFIS Can Expand Greater Access to Credit with AI," Upstart, https://info.upstart.com/inclusive-lending-ai (accessed Sept. 8, 2023).

[51] "CFPB Announces First No-Action Letter to Upstart Network," Consumer Financial Protection Bureau, September 14, 2017, https://www.consumerfinance.gov/about-us/newsroom/cfpb-announces-first-no-action-letter-upstart-network/ (accessed Sept. 5, 2023).

[52] "Fair Lending Monitorship of Upstart Network's Lending Model: Initial Report of the Independent Monitor," Relman Colfax PLLC, April 14, 2021, https://www.relmanlaw.com/media/cases/1088_Upstart%20Initial%20Report%20-%20Final.pdf (accessed Sept. 5, 2023).

NMSU (an HSI—Hispanic-serving institute) cost more than for a graduate of NYU. (See **Table 3**. **Exhibit 8** shows student population by race and ethnicity.)

Table 3. Comparison of loan terms, fees, and total cost.

School	Loan Interest Rate	Loan Origination Fee	Total Cost
NYU	16.34%	$1,231	$42,288
NMSU	19.23%	$1,862	$44,011
Howard University	21.29%	$1,960	$45,785

Note: Each hypothetical applicant was a 24-year-old New York City resident with a bachelor's degree, working as a salaried analyst at a company not listed among those offered by Upstart. Applicants had been employed by their current employer for five months, earned $50,000 annually, and had $5,000 in savings. They had no investment accounts or additional compensation and had not taken out any new loans in the past three months.

Source: *Educational Redlining*, Student Borrower Protection Center, February 2020, https://protectborrowers.org/wp-content/uploads/2020/02/Education-Redlining-Report.pdf (accessed May 18, 2023).

Upstart claimed that the report contained "inaccuracies and misunderstandings," highlighting purported methodological flaws:

> SBPC's study was based on a single individual misrepresenting his education 26 times over a two and a half month period to request a loan rate from Upstart. SBPC's claim that the loan applications were identical except for the applicant's college attended is inaccurate and misleading. The applications had many differences among them, including changes to the applicant's credit report. These differences affected the interest rate offered. Additionally, despite fabricating applications from 26 hypothetical consumers, the analyst selected the 3 results that best suited SBPC's hypothesis. As a matter of fact, our model doesn't consider individual schools but groups of schools that have similar economic outcomes and educational characteristics.[53]

The SBPC report received considerable coverage from the press, including articles by the *Washington Post* and NPR among others.[54] It also caught the attention of legislators. Just a week after the report's release, five US senators wrote to Girouard about their concerns around Upstart's use of educational data: "Upstart appears to be assessing creditworthiness based on non-individualized factors, which the CFPB, FDIC, and New York Attorney General have found raise fair lending concerns."[55] To better understand how Upstart was using educational data, the senators asked Girouard to provide them with specific details that informed Upstart's AI/ML models. In July 2020, three of the senators issued their findings from this inquiry, writing a letter to the CFPB director recommending that the bureau further review Upstart's use of educational variables in its models and requesting that the CFPB stop issuing NALs related to ECOA.

In December 2020, Upstart, the National Association for the Advancement of Colored People (NAACP) Legal Defense Fund (LDF), and SBPC agreed to appoint Relman Colfax, PLLC, as an independent monitor to

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[53] Paul Gu, "Upstart's Commitment to Fair Lending," Upstart, February 6, 2020, https://www.upstart.com/updates/upstarts-commitment-to-fair-lending (accessed Sept. 8, 2023).

[54] Danielle Douglas-Gabriel, "Where You Attend College Could Be Costing You More to Borrow and Refinance Education Loans, Report Says," *Washington Post*, February 5, 2020, https://www.washingtonpost.com/education/2020/02/05/where-you-attend-college-could-be-costing-you-more-borrow-refinance-education-loans-report-says/; Chris Arnold, "Graduates of Historically Black Colleges May Be Paying More for Loans: Watchdog Group," NPR, February 5, 2020, https://www.npr.org/2020/02/05/802904167/watchdog-group-minority-college-graduates-may-pay-higher-interest-rates (both accessed Sept. 19, 2023).

[55] "Brown, Senate Democrats Press Upstart, Lenders for Answers Following Reports of Higher Interest Rates for Students of Minority-Serving Institutions," United States Committee on Banking, Housing, and Urban Affairs, February 13, 2020, https://www.banking.senate.gov/newsroom/minority/brown-senate-democrats-press-upstart-lenders-for-answers-following-reports-of-higher-interest-rates-for-students-of-minority-serving-institutions (accessed August 9, 2023).

evaluate Upstart's underwriting process.[56] "Following conversations with LDF and the SBPC, Upstart changed how it utilizes educational data, including eliminating the use of average incoming SAT and ACT scores to group education institutions in its underwriting model," wrote Relman Colfax. "Upstart also established a 'normalization' process for Minority Serving Institutions (MSIs), in an effort to ensure that students from MSIs and from non-MSIs are treated, on average, equally. Upstart emphasizes that, to date, its internal fair lending analyses…have not identified fair lending violations."[57]

Alliant's Decision

Founded in 1935 by employees of United Airlines, Alliant had over 600,000 members nationwide with assets exceeding $15 billion as of the end of 2021.[58] Despite its long history, Alliant did not shy away from innovative business practices. In 2020, for example, Alliant permanently closed its remaining physical branches, becoming a "digital first" institution.[59] A potential partnership with Upstart fit into Alliant's broader strategy of working with fintechs focused on lending ("lendtechs") to increase loan volume and acquire new members.[60]

Alliant approached partnerships with caution. As a credit union with over $10 billion in assets, Alliant was subject to the CFPB's "vigilant oversight" regarding fair lending.[61] Thus, a mutual understanding regarding the importance of compliance was a critical factor in choosing a partner. Such an understanding was not always a given. "Often, I think lendtechs think they have everything figured out. They expect the capital partner to come along and adapt to how they conduct business, rather than expressing a willingness to see the world from your perspective," explained Charles Krawitz, chief capital markets officer at Alliant.[62]

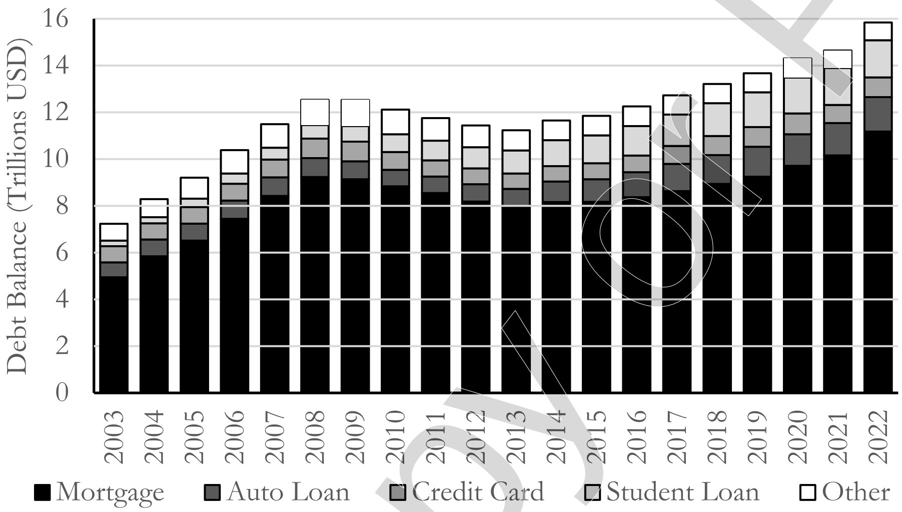
Alliant needed to weigh the tradeoffs of a partnership. Upstart had demonstrated that its platform improved upon traditional underwriting models. However, as the SBPC report highlighted, the use of alternative data could have unintended consequences. Did the benefits of a partnership outweigh the potential costs?

[56] https://www.relmanlaw.com/media/cases/1088_Upstart%20Initial%20Report%20-%20Final.pdf.
[57] https://www.relmanlaw.com/media/cases/1088_Upstart%20Initial%20Report%20-%20Final.pdf.
[58] "The Original Challenger FI: It's in Our DNA," Alliant Credit Union annual report, 2021, https://www.alliantcreditunion.org/images/uploads/files/Alliant_2021AnnualReport.pdf (accessed Sept. 5, 2023).
[59] Natasha Chilingerian, "When Member-First Means Digital-First: Part One," Credit Union Times, January 19, 2020, https://www.cutimes.com/2022/01/19/when-member-first-means-digital-first-part-one/ (accessed Sept. 8, 2023).
[60] Steve Cocheo, "Partnering with 'Lendtechs' to Grow Loans and New Accounts," Financial Brand, March 3, 2022, https://thefinancialbrand.com/news/loan-growth/partnering-with-lendtechs-to-grow-loans-and-new-accounts-131818/ (accessed Sept. 19, 2023).
[61] Charles Krawitz, "Online Lenders Seeking Growth Tap Credit Unions for Funding," Credit Union Times, June 21, 2022, https://www.cutimes.com/2022/06/21/online-lenders-seeking-growth-tap-credit-unions-for-funding/ (accessed Sept. 8, 2023).
[62] https://thefinancialbrand.com/news/loan-growth/partnering-with-lendtechs-to-grow-loans-and-new-accounts-131818/.

Exhibit 1

Upstart's Upshot: Is Fintech Lending Fair?

Balance and Composition of US Consumer Debt (2003–2022)



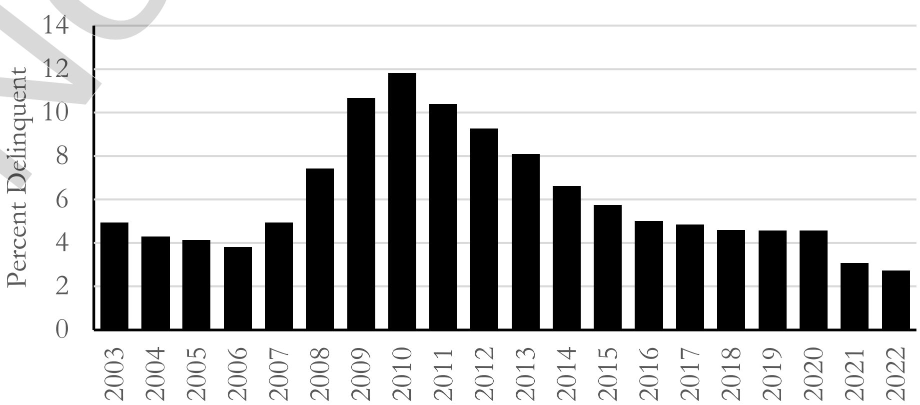
Note: "Other" category includes home equity line of credit (HELOC) as well as other types of debt that are not mortgage, auto loan, credit card, or student loan (e.g., personal loans, loans from retailers, etc.). Data are for Q1 of each year.

Sources: "Quarterly Report on Household Debt and Credit," Center for Microeconomic Data, Federal Reserve Bank of New York, https://www.newyorkfed.org/microeconomics/hhdc/background.html (accessed June 19, 2023) and authors' calculations.

Exhibit 2

Upstart's Upshot: Is Fintech Lending Fair?

Delinquent Consumer Debt Balance (2003–2022)



Note: Delinquent includes any loan for which payments are at least 30 days late. Data are for Q1 of each year.

Source: https://www.newyorkfed.org/microeconomics/hhdc/background.html and authors' calculations.

Exhibit 3

Upstart's Upshot: Is Fintech Lending Fair?

Unbanked in the United States by Income Level, Race, and Ethnicity (2021)

	Use Credit			Unbanked		
Income	**Black**	**Hispanic**	**White**	**Black**	**Hispanic**	**White**
Less than $15,000	18.6%	23.6%	43.9%	29.3%	26.5%	13.6%
$15,000 to $30,000	34.1%	39.2%	62.0%	18.3%	15.9%	4.2%
$30,000 to $50,000	49.4%	55.9%	74.5%	8.0%	8.4%	1.7%
$50,000 to $75,000	64.8%	71.2%	81.3%	3.4%	5.3%	1.0%
$75,000 or More	74.8%	84.7%	89.6%	1.7%	1.0%	0.3%
All	49.9%	60.0%	78.8%	11.3%	9.3%	2.1%

Notes: Use Credit: "Households were asked whether, in the past 12 months, they had a Visa, MasterCard, American Express, or Discover credit card (i.e., a credit card); a personal loan or line of credit from a bank (i.e., a bank personal loan); or a personal loan or line of credit from a company other than a bank (i.e., a nonbank personal loan)"; Unbanked: "No one in the household had a checking or savings account at a bank or credit union."

Source: "2021 FDIC National Survey of Unbanked and Underbanked Households," Federal Deposit Insurance Corporation, https://www.fdic.gov/analysis/household-survey/2021execsum.pdf (accessed May 19, 2023).

Exhibit 4

Upstart's Upshot: Is Fintech Lending Fair?

Upstart Holdings, Inc., Key Operating and Non-GAAP Financials (2019–2021)

	Year Ended December 31,		
	2019	**2020**	**2021**
Transaction Volume (US dollars)	$2,725,047	$3,444,854	$11,751,762
Transaction Volume (number of loans)	215,122	300,379	1,314,591
Conversion Rate	13.1%	15.2%	23.7%
Percentage of Loans Fully Automated	66%	70%	69%

Notes: Transaction Volume, Dollars: "The total principal of loans transacted on our platform between a borrower and the originating lending partner during the period presented"; Transaction Volume, Number of Loans: "The number of loans facilitated on our platform between a borrower and the originating lending partner during the period present"; Conversion Rate: "Transaction Volume, Number of Loans in a period divided by the number of rate inquiries received that we estimate to be legitimate, which we record when a borrower requests a loan offer on our platform"; Percentage of Loans Fully Automated: "End-to-End with no human intervention."

Data source: Upstart Holdings, Inc., SEC Form 10-K, 2021, https://ir.upstart.com/node/7631/html (accessed May 17, 2023).

Exhibit 5

Upstart's Upshot: Is Fintech Lending Fair?

Upstart Holdings, Inc., Income Statement (2019–2021)

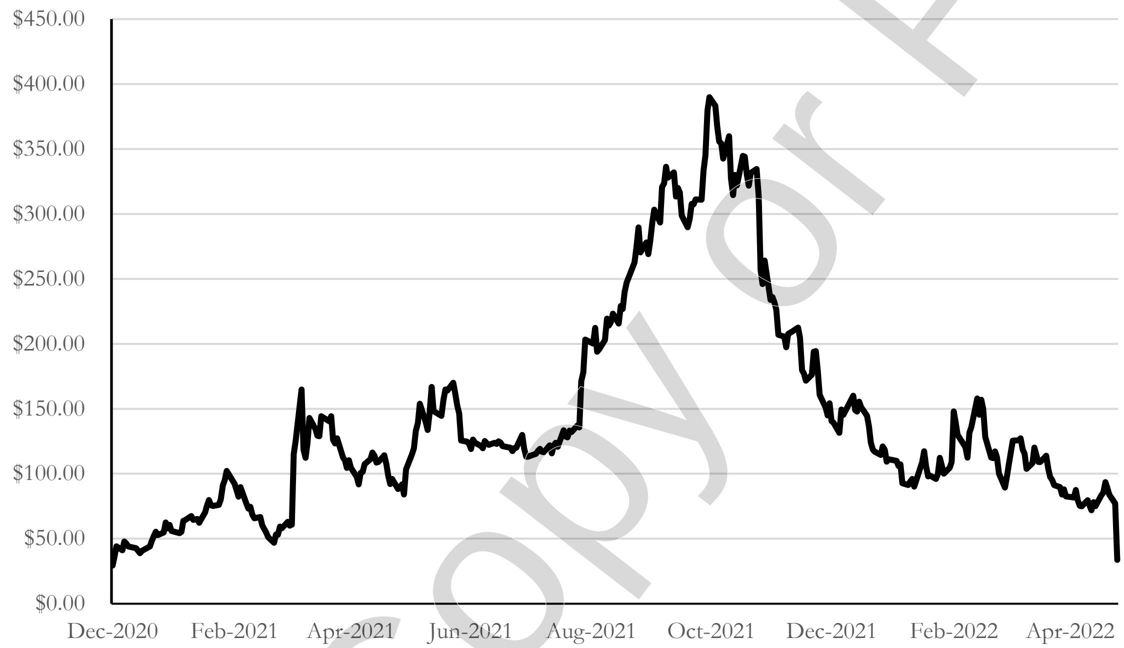
	Year Ended December 31,		
	2019	**2020**	**2021**
Revenue from fees, net	$159,847	$228,600	$801,275
Referral fees, net	90,672	133,425	497,996
Platform fees, net	53,383	66,832	228,165
Servicing and other fees, net	15,792	28,343	75,114
Interest income and fair value adjustments, net	4,342	4,816	47,314
Total revenue	164,189	233,416	848,589
Sales and marketing	93,175	99,659	333,453
Customer operations	24,947	37,581	117,579
Engineering and product development	18,777	38,802	133,999
General, administrative, and other	31,865	45,609	122,677
Total operating expenses	168,764	221,651	707,708
Income (loss) from operations	(4,575)	11,765	140,881
Other income (expense)	(371)	(5,815)	(7,150)
Net income (loss) before income taxes	(4,946)	5,950	133,731
Provision (benefit) for income taxes	74	371	(1,712)
Net income (loss)	($5,020)	$5,579	$135,443

Source: Created by author using data from https://ir.upstart.com/node/7631/html.

Exhibit 6

Upstart's Upshot: Is Fintech Lending Fair?

Upstart Share Price, December 16, 2020, to May 10, 2022



Source: "UPST Historical Data," NASDAQ, https://www.nasdaq.com/market-activity/stocks/upst/historical (accessed May 25, 2023).

Exhibit 7

Upstart's Upshot: Is Fintech Lending Fair?

Upstart Annualized Default Rates as of March 2022

	Upstart Risk Grades					
FICO Score	**A+**	**B**	**C**	**D**	**E−**	**Average**
700 or Above	0.6%	2.0%	3.9%	6.0%	9.2%	**3.4%**
680 to 699	0.7%	1.9%	3.6%	5.1%	8.3%	**4.1%**
660 to 679	0.7%	1.9%	3.5%	5.1%	8.0%	**4.8%**
640 to 659	1.0%	2.0%	3.2%	5.0%	8.3%	**5.4%**
639 or Below	1.2%	2.1%	3.4%	5.2%	10.2%	**7.7%**
Average	**0.7%**	**2.1%**	**3.6%**	**5.3%**	**9.0%**	

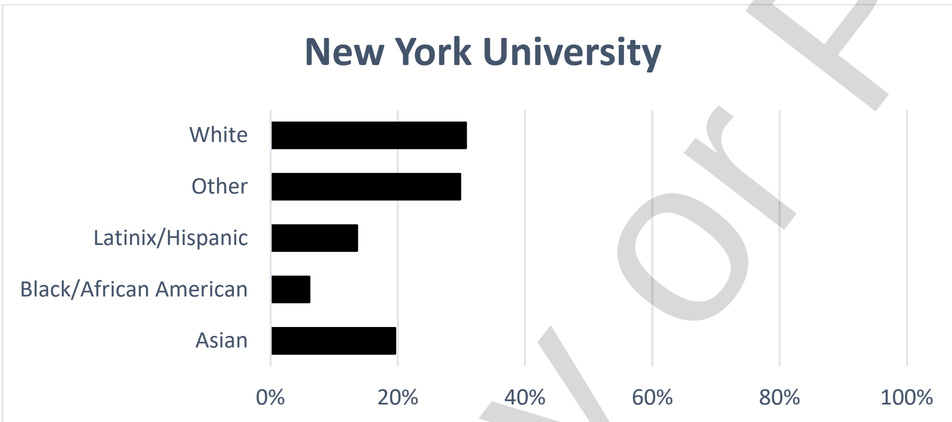
Note: Includes lending partner originations made Q1 2018 to Q3 2021.

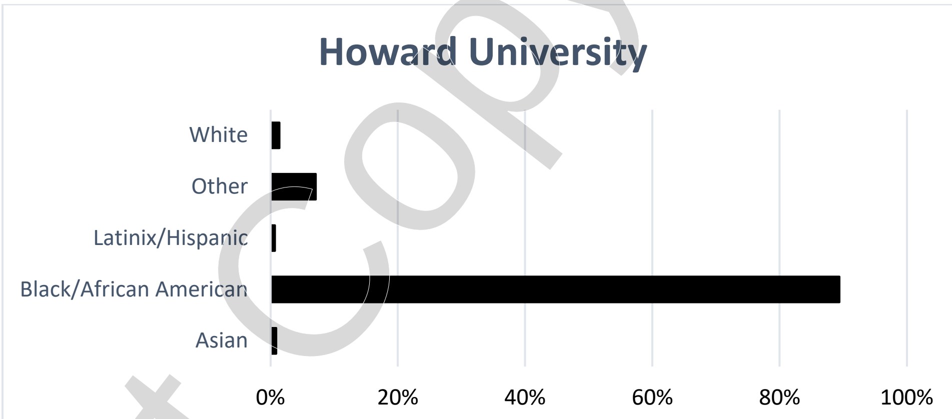
Source: Adapted from Upstart's Q1 2022 earnings presentation, May 9, 2022, https://ir.upstart.com/static-files/abb1aa09-a5a1-48f2-8880-296632a95404 (accessed Sept. 5, 2023).

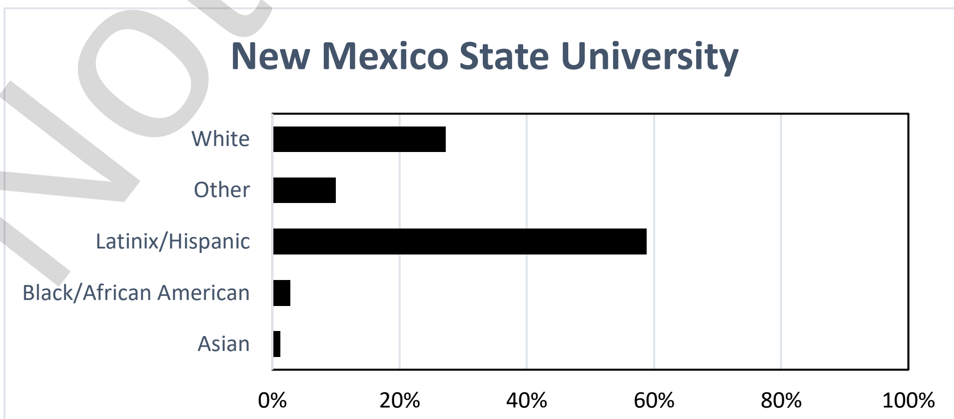
Exhibit 8

Upstart's Upshot: Is Fintech Lending Fair?

Student Populations by Race and Ethnicity (2021)







Source: Adapted from *Educational Redlining*, Student Borrower Protection Center, February 2020, p. 18, https://protectborrowers.org/wp-content/uploads/2020/02/Education-Redlining-Report.pdf (accessed May 18, 2023).

Appendix

Upstart's Upshot: Is Fintech Lending Fair?

Fair Lending Enforcement

Evidence of discrimination under the FHA and ECOA fell under two categories—*disparate treatment* and *disparate impact*.

Disparate treatment related to actions a lender took that either overtly or comparatively discriminated against a potential borrower. The *Consumer Compliance Handbook*, which provided guidelines for Federal Reserve bank examiners, explained this idea:

> Disparate treatment occurs when a lender treats a credit applicant differently on the basis of one of the prohibited factors. Showing that, beyond the difference in treatment, the treatment was motivated by prejudice or by conscious intention to discriminate against a person is not required. Different treatment is considered by courts to be intentional discrimination because the difference in treatment on a prohibited basis has no credible, nondiscriminatory explanation.

An example of a lending policy that would violate the ECOA's ban on age discrimination would be if "a lender offers a credit card with a limit of up to $750 for applicants age 21–30 and $1,500 for applicants over 30." Redlining based on the race or ethnicity of residents in a geographic area was also an example of illegal disparate treatment.

Disparate impact occurred when a lender applied a racially or otherwise neutral policy or practice equally to all credit applicants, but that policy or practice disproportionately excluded or burdened certain persons on a prohibited basis. The Federal Reserve provided an example of such a policy:

> A lender's policy is to deny loan applications for single-family residences for less than $60,000. The policy has been in effect for ten years. This minimum loan amount policy is shown to disproportionately exclude potential minority applicants from consideration because of their income levels or the value of the houses in the areas in which they live.

Differences in credit decisions based on protected characteristics did not necessarily constitute disparate impact under the FHA and ECOA. Rather, lenders were required to demonstrate a "business necessity" (e.g., profits) for such disparities. Even if such a necessity existed, the lender could still have been "in violation if an alternative policy or practice could serve the same purpose with less discriminatory effect."

Note: FHA = Fair Housing Act; ECOA = Equal Credit Opportunity Act.

Source: Created by author; all quotations are from "Federal Fair Lending Regulations and Statutes Overview," Consumer Finance Handbook, Federal Reserve, https://www.federalreserve.gov/boarddocs/supmanual/cch/fair_lend_over.pdf (accessed Sept. 8, 2023). For the full handbook, see "Consumer Compliance Handbook," Board of Governors of the Federal Reserve System, https://www.federalreserve.gov/publications/supervision_cch.htm (accessed Sept. 19, 2023).