Big Data Means Big Opportunities and Big Challenges

Promoting Financial Inclusion and Consumer Protection in the "Big Data" Financial Era

PIRG Education Fund

CDD center for digital democracy

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Introduction

Dramatic changes are transforming the U.S. financial marketplace. Far-reaching capabilities of "Big-Data" processing that gather, analyze, predict, and make instantaneous decisions about an individual; technological innovation spurring new and competitive financial products; the rapid adoption of the mobile phone as the principal online device; and advances in e-commerce and marketing that change the way we shop and buy, are creating a new landscape that holds both potential promise and risks for economically vulnerable Americans.[1] Using advances in data analytics specifically to promote economic inclusion and fairness during this period of transformation in the U.S. economy should be a proactive strategy embraced by all stakeholders. While not a panacea to address growing financial inequality, a wise investment in strategies that harvest the potential of the new digital financial system may better enable struggling Americans to maneuver a difficult economic future.

It is also possible, however, that the emergence of a powerful data-driven "Banking 3.0," (as it is sometimes called), and the shift to a digital and mobile services financial system, could provide further obstacles to the consumers most at risk today—imposing new forms of unaffordable loans, discriminatory pricing, escalating fees for services, and unfair marketing practices.

The consequences of the financial meltdown, a low-wage-centered economy, historic barriers to equitable access to education and opportunity, and the too-long-ignored one-in-six Americans who live below the poverty line, have placed tens of millions at the margins—or out of reach—of the financial system.[2] Families and children are at particular risk: More than a third of single mothers and their children now live below the poverty line;

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since 2000, poverty has grown 54 percent in our suburbs alone.[3]

But beyond the grim statistics and the heart-breaking daily struggles that so many face, there is also the glimmer of a potential opportunity. Underbanked and unbanked Americans are not totally cut off from the changes that are reshaping financial services. In fact, they can help to influence its direction and growth. Digital services—especially mobile phones—play an extraordinary role in how the new financial services marketplace delivers products and services for banking, credit, shopping, and more. Many lower income and other consumers already rely on mobile phones to access the Internet (illustrating the realities of the "digital divide" that makes wireline-based broadband connections out of reach).[4] Nearly 90 percent of underbanked consumers have mobile phones; more than half have "smart phones." Nearly half of the underbanked already use their mobile phones for banking services.[5] As the Federal Reserve recently explained, "smartphone ownership growth for underserved consumers is higher than other consumer groups because of the low cost and PC-like functionality of today's modern mobile handsets. As such, many of the underserved are migrating directly from cash–based payments to mobile (prepaid) accounts." The policy issues raised by the lack of affordable and equitable access to residential broadband continue to require debate and intervention strategies. However, it is increasingly recognized that mobile phones are quickly becoming the leading online device, overtaking the role that personal computers have traditionally played.[6]

As the marketplace looks to define "best" mobile marketing practices, as regulators seek to establish rules and guidelines, and as the financial and other digital industry sectors seek to build new markets (such as "hyper-local" targeted online advertising), ensuring that economically vulnerable Americans benefit should be a strategic goal during this transition period.

This report is intended to provide an overview of key issues for policymakers, thought leaders, and others concerned about financial inclusion and economic opportunity. The authors hope that its recommendations for further research, engagement, and outreach provide guidelines for next steps.

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I. The "Connected Consumer" and the Underbanked Consumer Now Live in a Big Data World

1. The Data-Dependent World We Live In

Today, we live in an increasingly data-dependent world. A historic transformation of society is taking place, as data processing and the digital media further converge, ultimately blurring the divisions that now exist between the physical and online worlds. Powerful computers, communications networks, sophisticated data-processing techniques, and the use of Internet-connected devices are the foundation of the economy and contemporary society. Each day, billions of transactions from millions of consumers are instantly collected, analyzed, and processed for subsequent marketing.[7]

Financial services companies are repositioning their operations and relationships with consumers to take advantage of these changes. Banks, credit, and retail companies have invested to ensure they have the ability to gather, analyze, and make actionable—instantly—information about our offline and online behaviors—especially those related to our finances and spending. They understand that they must be able to engage interactively in real time with consumers using "omni-channel" communications—reaching current and potential customers through mobile phones, social media, in stores and through digital TVs. The flow of personal and other data coming from these devices is being combined with other information—about our neighborhoods, race, ethnicity, buying habits, social relationships, and more to create detailed profiles and predictions about us and our communities. Increasingly, we are being placed under a powerful "Big Data" lens, through which, without meaningful transparency or control, decisions about our financial futures are being decided.

As an official of FICO (the company best known for its consumer credit scoring services) recently explained, "Companies will decide how to converse with their customers based on a deep and timely analysis of each customer's context, behavior and history… ." We are on the cusp of a major shift in how enterprises formulate and manage their interactions with customers."[8]

Financial services companies are leading the adoption of Big-Data techniques, covering such

activities as sales and marketing, risk management, and new product development. U.S. banks were predicted to spend $41.5 billion on technology in 2013, with JPMorgan Chase, Bank of America, Citigroup, and Wells Fargo said to spend "$7 billion to $10 billion annually" alone.[9] In 2012, the financial services sector spent nearly $4.75 billion for digital marketing to take advantage of how mobile phones and the Internet have changed how consumers interact with banks, loan, and credit card companies.[10] An executive at Fidelity Investments candidly noted that "we've seen a proliferation of data that gives marketers the ability to target consumers more precisely … . [W]e're at a new golden age of marketing [and] have more tools at our disposal than we've ever had before."[11]

TAKEAWAY:

The financial system is at a critical transition period, as it repositions itself to take advantage of the changes made possible by advances in data processing and the growing consumer use of online media, especially mobile phones. Advocates and others concerned about poverty in the U.S. should take advantage of this unique window of opportunity to ensure that the interests of both the poor and those with low incomes are meaningfully addressed.

2. The Role of Unbanked and Underbanked Consumers in the Digital Marketplace

The consequences of the financial meltdown, a low-wage-centered economy, historic barriers to equitable access to education and opportunity, and the too-long-ignored one-in-six Americans who live below the poverty line, have placed tens of millions at the margins—or out of reach—of the financial system.[12] Nearly 30 percent of U.S. households are considered "either unbanked or underbanked" and conduct "some or all of their financial transactions outside of the mainstream banking system," according to a 2012 FDIC report. Seventeen million adults live in unbanked households (8.2 percent of all U.S. households), while 51 million adults—20 percent of U.S. homes—are considered underbanked. Minorities (except Asian), unemployed, younger, and low-income households are groups with the "highest unbanked and underbanked rates," according to FDIC's survey.[13] Sadly, more than 48 million children under 18 today live in low-income or poor families across the ethnic/racial and geographic spectrum, with higher percentages for children from African-American, Hispanic, Native American and other (non-white or -Asian) households.

Underbanked and unbanked consumers rely on increasingly popular prepaid debit cards, as well as products from alternative financial service (AFS) providers (non-banks), for services such as check cashing, payday loans, rent-to-own, and refund-anticipation loans. Today, debit cards and the AFS marketplace are rapidly adopting mobile and online-connected products and services. As the Center for Financial Services Innovation (CFSI) and others have identified, providing services for economically at-risk consumers is an important way for banks and other credit providers to generate new business, delivering significant profit and growth. According to CFSI, underbanked Americans spent $78 billion in 2011 in fees and interest for financial services. "This revenue was generated from an overall market volume of $682 billion in principal loaned, funds transacted, deposits held, and other financial services rendered," it explained.[14] The revenue potential of the underbanked is just one of the emerging markets now eyed by the financial services sector—which also knows that the rewards of serving multicultural consumers (especially Hispanics) and the growing mobile commerce marketplace will be critical for their near-term success.

Seeking to expand into these valuable sectors, as well as serve current customers and build new businesses, established and venture-backed start-up companies are competing to offer new services for credit and loans, banking, and payment. These include debit cards, lending services, mobile payment products, and other online-consumer-friendly tools enabling greater personal control over one's finances. Companies not traditionally identified with the financial services industry—such as Walmart, Google, Verizon, and scores of others—now provide a growing range of financial services and products.

TAKEAWAY:
New opportunities to serve underbanked consumers better may be possible by taking advantage of recent entrants in the financial services market. Telephone, computer, and other tech-based companies may have different policy priorities and market goals than the traditional market participants.

3. We Face a Mobile Moment of Opportunity for Reform

The impact of the mobile phone as an online device is at the core of the fundamental changes that are restructuring how we communicate and engage with both the marketplace and society at large. As we will discuss, the mobile device will be the key to accessing financial services and much more—to pay for goods and services and participate in everyday life. Financial companies are currently making a "massive investment" in their

ability to use mobile devices to reach and serve consumers. U.S. financial services companies comprise "the second highest spender in paid online and mobile media" marketing.[15] In one 2013 survey of the financial industry, "mobile banking" topped the list of the most important products to promote (followed by auto and mortgage loans). More than two-thirds of respondents said that "online advertising and social media" were going to be the "most important" media channels to use, with three-quarters of retail financial institutions involved with at least one social media service (and with "nearly one out of every four financial institutions is on Facebook"). Almost 60 percent said that merging offline data for online targeting was going to be very important as well.

The focus on mobile and online banking is partly being driven by demographic trends, especially younger consumers who are more comfortable conducting their financial activities online, without the need to walk into a bank. More than half of all bank transactions are now made online (although we still heavily use ATM's and other "physical" banking facilities).[16] The growth of mobile financial services also intersects with other developments. In the aftermath of the economic crisis, "households have adopted new financial and decision criteria to determine their lifestyles and credit behavior," explained Equifax.[17] Financial institutions are keenly aware that there is a growing number of dissatisfied customers who can easily switch to other companies, especially those offering digital access. Companies such as Walmart vie to serve what they call the "unhappily banked," consumers not content with the services offered by their current institution, and who seek alternatives that provide them with better financial control.[18]. There is also growing interest by consumers in having accessible, easy-to-use, and informative means of controlling their finances more closely. At-risk consumers can now access services that until recently would have been solely the preserve of the elite. For example, they can now use mobile phones to pay bills electronically, deposit a check without a visit to the bank (using the smartphone camera), receive a balance warning by text message, and add ("reload" or "top off") money to debit cards at thousands of convenient locations.[19] The availability of mobile payment technologies provided by PayPal, Square, and others enables new and community businesses to collect funds from payment cards without having to make a major investment.[20]

A wave of change in how we bank and buy will be a hallmark of what's called mobile payments—a swipe of a card (or merely carrying your mobile phone "wallet") will pay for services and enable banking almost anywhere and anytime. All consumers will require some form of mobile-enabled payment card or device to maneuver through this new landscape in the very near future. The combination of all these developments—mobile payments, new competition and services, digital media behaviors—is understood as a unique moment for the industry. "We've never seen a market opportunity of this size and magnitude … ," explained one venture investor. "There is a massive restructuring taking place."[21]

TAKEAWAY:

As credit is extended to more Americans, their use of new forms of mobile and online banking will also likely grow. We believe that economically vulnerable Americans form the basis of a very important—and potentially influential—constituency that should play a proactive role ensuring that this new marketplace evolves fairly and with the goal of promoting asset building. Through a variety of coalition outreach efforts focused on industry and policy leaders, a set of best practices and rules should emerge that directly benefits low-and moderate income Americans.

4. It is an Opportunity, however, with Looming Risks

However, while the new financial marketplace has the potential to provide greater economic opportunity, it also poses unprecedented challenges and risks for economically vulnerable Americans. It is possible that the shift to the data- and digitally driven financial marketplace could make life harder. For example, the growing use of highly sophisticated and powerful online techniques that enable the "micro-targeting" of vulnerable consumers to apply for high-interest payday loans is just one example. So is the expansion of so-called "e-scores"—a form of invisible (to the consumer) online ratings—that can help determine our credit worthiness, "lifetime value," or even the prices we pay. These e-scores can be used to blacklist or engage in discriminatory practices against individuals or even groups of consumers.

New economic stress may also be placed on economically vulnerable individuals and families, if financial marketers use their data-driven capabilities to focus primarily on more affluent or financially rewarding consumers. How much information about one's financial behavior, race/ethnicity, or health concerns can or should be used in making decisions on credit, now that advances in data processing enable a person's actions and behavior to be tracked and analyzed online and off? In a world where there is the ability to reach and engage the desired individual with growing precision and cost-effectiveness, what are the economic consequences for those citizens and consumers who do not offer the desired financial returns? Another looming problem is that consumers will be continually (and creatively) urged to spend, as alluring real-time offers—increasingly tailored to their interests and behavior because of data profiling—appear on their mobile phones and on social media sites. Marketing, sales, and payment will all seamlessly converge on the mobile device, creating endless opportunities for marketers to convince us to buy products when we are most vulnerable. The forces shaping personalized, data-driven commerce could undermine the financial security of all Americans, but especially those living paycheck to paycheck and on tight family budgets.

In addition, while the rise of "alternative" data is helping make more credit available to the underserved, there are important questions that should be raised about the reliability, fairness, and propriety of using, for example, social media, utility bills, and other records as sources of information.

Typical of what is emerging in hyper-local consumer targeting is the work of one company that is now mapping "data from multiple sources onto a grid of tiles that cover every square foot of the U.S. Each tile is 100 meters by 100 meters, and we inject third-party demographic information about the tile, as well as data on what's physically located there— … retailers and so forth. Then, we connect that data with where a mobile device is in real-time, or where it has recently been … ."[22] The growing capabilities to analyze and make non-transparent or accountable decisions about people and their "micro-neighborhoods" could usher in new forms of digital redlining for all kinds of services.[23]

New forms of discrimination may emerge as financial (and other) marketers deploy geospatial mapping software, tied to demographic, financial, and other databases to closely identify and classify the behaviors of individuals residing in a distinct neighborhood or "micro-community." Communities across the nation are subject to intense scrutiny as "location-centric data science" closely maps and assesses who we are and what we do in very narrowly defined geographic areas. Geo-mapping can identify locational differences, classifying neighborhoods by "social grade," "buying habits," and "blue vs. white collar."[24] Marketers are able, for example, to "learn" about "where users go and how often; when they go and how long they stay there; perhaps as importantly, where they *don't* go."[25] Such analysis can be used to make decisions about investing in some communities and bypassing others, or to take advantage of consumer vulnerabilities that may be harmful (such as the reliance on fast food by a neighborhood's families.[26]

TAKEAWAY:
While there has been understandable enthusiasm and support to help promote new financial products and services to low-income Americans, there are critical concerns that must be addressed. Technology and the use of data can play both a positive and negative role in our society. It is essential to identify and address the obstacles now present or emerging from the marketplace that pose a risk to already economically vulnerable consumers. The growing role of geo-spatial community analysis needs to be reviewed to prevent possible discriminatory practices.

5. Multicultural Communities are at the Epicenter of the Digital Marketplace

Over the last several years, a robust system to identify and target Hispanics and African Americans online has emerged.[27] Marketers are especially aware that Hispanics, African Americans, and Asian Americans are early and enthusiastic adopters of mobile phone use, social media, and online video services.[28] The development of data-driven profiles that are built around taking advantage of consumers' race or ethnicity—whether to sell insurance, a credit card, or fast food—can be used to steer individuals toward making good or poor decisions. The use of racial and ethnic data for financial marketing, including identifying an individual's "language," "assimilation," and "Hispanic country of origin," which can be combined with income, religion, use of a debit card and more, raises important questions about ensuring that historic discriminatory practices are not tolerated in the new financial marketplace.[29]

More than 63 percent of African Americans, 60 percent of Hispanics, and 62 percent of Asian Americans were predicted to own smartphones in 2013, outpacing the white population (at 54 percent). Hispanics and African Americans spend more time on the "mobile Web" and also with apps. Three-quarters of African-American and 68 percent of Hispanic cell phone users "go online" from their phone. More than half of all Americans with incomes below $30,000 a year and who have mobile phones rely on them to connect to the Internet (as do 60 percent of those earning between $30,000 and $50,000 a year).[30] These groups are the subject of intense research and analysis on their buying and financial behaviors by marketers that also incorporate cultural analyses into their targeting plans. One study of Hispanics and their use of mobile phones explained, for example, that "For Hispanic users the Web is more organically integrated into their lives. It's on the go, right now, access to their friends, family and information."[31]

America's multicultural communities include a much higher percentage of youth and young adults than the general population.[32] Younger multicultural consumers are highly prized by marketers because they are considered key "influencers" helping to define trends for the wider culture.[33] Consequently, these "digital natives" are often the focus of intensive campaigns designed to get them involved with brands and products.[34] Food and beverage, retail, and gaming advertisers target multicultural teens (and their younger siblings) using an array of highly sophisticated digital tracking techniques, especially on social media (such as Facebook) and on mobile phones. Youth of color are the focus, for example, of more junk food ads than other groups.[35] To take better advantage of how these and other young people are online today, fast food companies are quickly building new wireless payment systems that will enable a teen to order and pay for a meal instantly using a mobile app.[36] By purposely tapping into the developmental and emotional vulnerabilities of young people

to foster spontaneous decision-making about buying products, marketers place both their physical well-being (such as from obesity and diabetes) and their families' financial resources at greater risk.

The commercial digital media culture plays a powerful role in helping shape the identity and behaviors of youth from all backgrounds. These young people are enthusiastic participants in and creators of the digital culture, helping develop this marketplace (such as through the growing practice of watching TV and being online simultaneously).[37] However, they are being deliberately socialized through a range of digital marketing practices to embrace brands, engage in impulse buying, and care less about protecting their privacy.

TAKEAWAY:

As a key target for digital marketing, multicultural youth will be especially at risk. Not only will digital marketing have an impact on the health and well-being of children and teens, it will likely cause new strains on the emotional relations and budgets of their families. Concerning privacy, although children have some online marketing safeguards, teens are largely unprotected. Adolescents are subject to a growing onslaught of marketing on social media and on mobile devices. Encouraging a broad range of stakeholders to address unfair digital marketing practices targeting multicultural youth should be a priority.

6. The Data-Driven Financial Marketplace Focuses on Today's "Connected Consumer"

The explosion of consumer and transaction data, along with our computer device-driven lifestyle, and the growing capabilities of marketers to analyze and use those data effectively, have combined to become the driving force behind the emergence of "Big Data" in our lives.[38] Financial services companies are investing in an array of data management and other customer relationship management platforms to take advantage of the "pools of data that used to be unreachable."[39] Reflecting the volume, velocity, and variety of data associated with the current Big Data era, "2.8 trillion gigabytes [of information] were created, replicated or consumed in 2012."[40]

Financial services companies now engage in "Precision Marketing" using fine-tuned "customer segmentation" techniques; incorporate "time to event" and other "predictive" models designed to "optimize" the marketing process; and create "micro segments"—data that can all be used in the consumer credit review process. They use "text mining" and "semantic" analytics software to "discover patterns and hidden value" in what consumers say online (such as with social media).[41] Companies are working to connect all their information that was previously "silo-ed," so their various business divisions can access "customer-level data" and use that information to make decisions on credit, collections, fraud, and marketing. Prof. Robert Stine, who teaches statistics at the Wharton School, University of Pennsylvania, and who researches credit scoring, observed that "we're seeing a new leap in the kind of [accessible] data and the technology that is available to manipulate that data."[42]

For example, Capital One "continually seeks to refine its methods for segmenting credit card customers and for tailoring projects to individual risk files … ." The company "conducts more than 65,000 tests each year, experimenting with combinations of market segments and new products." It uses "transaction histories" that indicate a "customer's approximate annual income, spend-

There Is A Range of Tools At Marketers' Disposal

Financial marketers can mix and match a range of tools that identify, both online and offline, financially vulnerable consumers, such as the following:

- Nielsen's P$yche product uses "financial behaviors" that help make up its 58 "actionable" segments, which are "based on age, family structure, income and assets." One can identify consumers labeled "Payday Prospects," "ethnically mixed," and those who "often find themselves living paycheck to paycheck." Or a company could decide to market to, or ignore, "the most financially challenged segment. Those classified as "Bottom Line Blues" "have low educations and insecure jobs, surviving on cash instead of bank or insurance products."[55]
- Datalogix sells our "known financial behavior" so a consumer can be targeted online, including on Facebook. The data it uses cover 110 million U.S. households and are "verified by at least two 3rd party sources," collected from "credit header sources permissible for marketing use," "estimations from modeled credit data," and public records (deeds and the census). Consumers can be targeted based on their use of "credit cards, credit status, net worth, investments, household income" and use of "financial services" for banking and insurance. Datalogix identifies consumers' estimated "credit worthiness," listing whether they are "poor, fair, good, very good or excellent" prospects.[56]
- Data "co-ops" or exchanges buy and sell an array of consumer information that can be bought and sold. Through BlueKai's[57] Exchange, for example, companies can purchase information to identify consumers based on "estimated household income," "employment status," whether they are a "homeowner or renter," and if they have "propensities" for "personal finance" products."[58]
- Leading data company Alliant's information contains "detailed online and offline purchase transactions and payment histories on over 135 million consumers" that are "updated monthly." For online targeting, Alliant sells information on the "Financially Challenged" ("Payment Score: Bottom 50%, Bottom 20%, Bottom 5%, etc.), "Credit Card Rejects," "Credit Challenged," and "Risky Consumers."[59]
- In September, Acxiom introduced a new product so that "for the first time in history … marketers are able to fully leverage all kinds of data—first-party, transactional, digital, social, mobile and other audience information."[60]
- Mobile phones can be targeted with "true precision" by financial marketers using Acxiom, consumer, and purchase data, according to AdHaven Bullseye.[61]

ing habits, online usage patterns, and transaction types, along with how he or she typically makes payments … ."[43]

Harnessing its new data capabilities, one unnamed bank

created a system able to monitor the financial "lives" of customers—tracking deposits, withdrawals and other transactions. When an activity two standard deviations or more from the norm was detected, the system immediately alerted and briefed the customer service function. So, a real-time offer tailored to that change could be made at once. Using immediacy and familiarity—hallmarks of a social interaction—the bank created a 60% action rate, and a 38% conversion rate, by offering relevant contact at that moment of greatest opportunity. The same bank also explored location—by combining the when of customer interactions with the where … .[44]

This ability to analyze, predict, and immediately act on a consumer's data illustrates the changes helping transform the financial services industry. Companies in this sector now enjoy

"unprecedented levels of insight" to use in their consumer decision-making. As TSYS, a leading payment processor noted, mobile "technologies have greatly enhanced this data collection by giving organizations valuable information about individuals' transactions, preferences and online interactions." The harvesting of transaction data, according to TSYS, "will provide a more complete picture of cardholder behavior and, in turn, identify which cardholders are most profitable."[45]

Such comments reflect an intense interest by many in the industry to bypass individuals who have been identified as having a low or less profitable "lifetime value," and focus their best offers and services on the well-to-do.

TAKEAWAY:

In this era in which marketers know so much about individuals, and can reach them literally anytime and anywhere, critical questions about equity should be raised. Will the most attractive offers and opportunities for financial gain be offered only to the fortunate? Will already economically at-risk consumers be identified for their "value" to generate high fees and rates of interest, creating a new cycle that will create additional obstacles to their survival?

7. The Growth of the Consumer-Financial Data Complex

Financial information on a consumer has become a highly sought—and now daily sold—commodity. The amount of financial data that can be readily obtained today on an individual is staggering.[46] There is a literal explosion of firms, including data brokers, retailers, credit companies, and many more that vie to buy and sell information on a consumer in order to assess more accurately how to treat current and prospective customers. Credit bureaus and other data companies have established online products—overflowing with financial information—to complement their traditional offline services. Acxiom, Experian, and Equifax, for example, now have well-defined—and growing—digital divisions.[47]

In a 2012 presentation to its "Financial Services and Insurance" clients, Merkle described the need for companies to have a "single repository" that provides a "consolidated view of the consumer across all touchpoints." That includes capturing and understanding individuals' offline and online media use (including mobile, social, and print), "life events," demographics, and what "Life-Time Value" segment they are in. The ease of merging offline and online data (so-called data onboarding) has presented marketers with new opportunities to evaluate consumers.[48] "Not having the ability to link the digital address with their customer history means you could be missing revenue opportunities," explains Acxiom. Its "Single Customer View & Value" captures all the ways a consumer can interact with digital and in-store marketing, including the use of "bank data."[49] Real-time data collection practices bring together a diverse set of information, including what's called "first-party" and "third-party" information (data on an individual's transactions combined with demographic and online sources, respectively).

Consumers are largely unaware of the extent of data collected today on their activities, and how this is done. Marketing-automation software enables thousands of companies to have the capability to capture a consumer's "digital body language." They can collect data at each interaction, including "website visits, downloads, social networks, and searches," for example. They can know when a consumer has opened up an email and how a person has interacted on a site or series of websites. Companies can increasingly "monitor social conversations to … gain insight, dislikes, and perceptions and [then] drive [consumers] directly back into your social campaigns, social properties and communities."[50] Facebook and other social media are key platforms to promote products, including financial services. On Facebook, campaigns can be tailored to "regions, cities, zip codes, languages, brands, and products to gain complete control of customer targeting … [and] [d]rive traffic to spe-

Will Scores Be Used To Discriminate?

The role of scores as a potential discriminatory tool that can harm the interests of Americans seeking better financial opportunities is reflected in how some of these products are now being used, as the following examples suggest:

- Data and scoring company Alliant explains that its "ProfitSelect accesses the current transaction histories of over 130 million consumers" and allows companies to "cultivate the good, weed out the bad … ," "know who the slow or non-payers are, in advance …" and "identify the best customers early on and focus your best offers on them."[72]
- Scores from Netmining, which use "vast pools of data in real-time," measure the "value each individual is." Consumers are given "true-interest" scores, which dynamically change based on their actions.[73]
- Consumers are awarded "customer quality scores" using "predictive behavioral models [that] evaluate thousands of data features." These scores are used to "'tell apart' high quality visitors from the rest … . [E]ach of your visitors will see a unique section of products."[74]
- "P3 scores" that reflect "Personal, Purchase and Propensity" information on consumers, based on their spending and behaviors, are integrated into "300 million unique cookies" a month) used for online targeting. (Cookies are a form of online profiling software.)[75]
- Location, online behavior, and scoring are merged in Alliant's "real-time offer decisioning" "GeoPerformance" scores. "People tend to live near people like them. So if you know the area, you can predict the performance of the people who live there," Alliant explains. Data used for the score cover the behavioral waterfront: household income, recency of purchase, product preferences, detailed payment and transaction histories.[76]
- Mobile phone users are scored as well. Data-targeting company Dstillery says it can "score and rank the universe of mobile user events … through our observation of billions of user actions over time."[77]

cific offers or exclusive social deals," explains one leading data-oriented marketing company.[51] Some of the largest databrokers in the world are now part of Facebook's data targeting apparatus.[52]

These developments reflect the continuous monitoring and assessment of individual consumers, forms of what the *New York Times* has referred to as "commercial surveillance."[53] As a spokesperson for global advertising giant (and increasingly data-driven) WPP recently explained, "We're all moving to some point in the future where we can all monitor exposure at an individual or household level and that will all get fed into a data management platform." WPP coined the term "adaptive marketing" to describe new capabilities of using data for continuous targeting, using a consumer's "data exhaust" to help inform the next marketing cycle.[54]

TAKEAWAY:

Data collection practices that impact all consumers are growing, helping to fundamentally restructure how we buy and pay for products. Individual consumers can now be tracked by marketers and specifically targeted with personalized offers and even prices. This process could foster additional and unnecessary spending that may harm already fragile budgets.

Using such data products, underbanked consumers can be identified and targeted online for

payday loans, prepaid debit cards, money transfer, and similar services. For example, one data targeting company that focuses on the underbanked relies on a "proprietary formula of 127 predictors" based on the analysis of "1000s of raw data points per individual." This information comes from databases that contain "profile insights on almost every U.S. household and adult consumer," including "financial data, geo-location, purchase history, household data, [and] life stages." The same company also ranks U.S. neighborhoods on their "financial health"—the ability of their residents "to satisfy their existing financial obligations" (broken down using 9-digit Zip codes).[62]

The expansion of the consumer data financial profiling system, and its use in real-time decision-making on a wide range of products and services, require scrutiny on behalf of the underbanked and unbanked. Financial products and services promoted to the underbanked and unbanked should be reviewed for the role that data collection plays in their operations.

8. How Will Invisible Predictions Affect Our Financial Future?

Today, companies use decision-management systems to build a "sophisticated predictive model for every data mining function under the sun." One of the outcomes of this process is the growing array of so-called "e-scores."[63] These scores rate individual consumers based on a number of variables connected to their financial status and behaviors. Such identifiers can signal what companies believe consumers' "lifetime value" (LTV) to be, their "propensity" for purchasing goods, and how they should be treated in terms of offers and customer service.[64] The scoring function is incorporated in "decision management and prediction" software used by banks and others, capable of rating millions of customers in "minutes."[65]

Scores are more than just a more precise segmentation strategy. They can serve as a digital "scarlet letter" to convey a potentially negative assessment of individuals that can affect the services they are offered, whether or not they become a magnet for high-interest payday loans, or are given second-class customer treatment (made to wait longer on the phone for assistance, for example, as those with "better" e-scores are given priority). New forms of both overt and subtle discrimination, hidden from view, may be one of the consequences that e-scores have on economically vulnerable consumers.

In addition to scoring used to influence or determine our financial status, so-called "propensity" scores are sold to help marketers keenly understand consumers' potential interest in specific financial products or that they are likely associated with some negative event. Using data on our behavior, spending patterns, assets, what we have purchased previously, the media we prefer and more, propensity scores "provide rich insight" into how a consumer is likely to "respond, convert and remain loyal … ."[66] They can be used to identify customers who "are likely to spend more," or don't require (or need) significant "discounting." Banking, credit cards, insurance, retail and other markets buy these "propensity" scoring products. (Acxiom alone has "[t]housands of prebuilt, propensity model scores … available.")[67]

The expansion of data collection enables propensity and predictive modeling on a consumer to incorporate information connected to our "favorite ATMs close to work or home, favorite gas stations along a daily commute, preferred supermarkets and preferred online stores for shopping … [and even] our favorite cash withdrawal amounts."[68] It can also include, among the "decision model variables," data related to our "lifetime value," what we purchase, our "clickstream" activity, and how we have interacted with a company previously.[69]

For now, we can only surmise what the impact of secretive, data-driven scoring may be on financial opportunity. If a financial marketer identifiers consumers as having a "propensity" to buy more than they can afford, or in continual need of paycheck-advance loans, will this trigger a flood of payday loan ads on their mobile phones, as well as enticing digital discount coupons that promote over-spending?

Financial marketers are also interested in identifying individuals based on their "influencer"

potential on social media—whether what they say and do online can sway their friends and others to like or purchase. "Influencer scores" are being used based on the analysis of an individual's postings and relationships on Facebook and other social media.[70] Increasingly, the social media scoring models are also being used for financial decisions as well, by lending firms such as Lendup, a recipient of startup funding from Google Ventures, and Moven. While the U.S. Federal Trade Commission and Consumer Financial Protection Bureau regulate the sharing of such information by credit bureaus, its use by a firm to evaluate its own customers and potential customers is not regulated.[71]

For example, credit scoring company FICO has developed a "predictive scorecard" that analyzes the relationship of "social influencers."[78] Epsilon, another major provider of data and which works closely with Facebook, gathers "public" social media information as part of its consumer services, including "tweets, posts, comments, likes, shares, and recommendations," as well as "users' IDs, names, ages, genders, hometown locations, languages and numbers of social connections (e.g. friends or followers)."

Epsilon says that it "does not associate social media data with any other information stored in our databases." But it also says, on its financial services page, that "Understanding customers and when they are 'in market' for financial services and insurance is critical for today's marketer," raising questions about how such social data may ultimately be used.[79]

TAKEAWAY:

Questions should be raised about the overall role and use of scoring, especially for economically vulnerable Americans. In addition to possible discriminatory behavior, it will be essential to know what such scores mean in terms of additional unfair services offered to hard-pressed consumers.[80] One glaring problem is that unlike traditional credit bureau reports, which by law must give consumers free access once a year (as well as numerous other rights and protections), e-scores are unregulated practices. The public needs access to the profiles used to generate these e-scores, along with a public debate on their role in today's financial system including a review of what other consumer protections should apply to their use.

9. New Variables Used for Credit Scoring: Ubiquitous, Around-the-clock, Year-round Surveillance Tracking Systems

The emergence of these products raises other questions that reflect the directions of today's financial marketplace. Companies may wish to surveil underbanked consumers continually (in order to identify when they may be considered for approval). For example, Experian urges its clients to consider "radical processing." To capture these "new entrants" and "credit seekers" better, it recommends implementing a "continuous prospect monitoring process, using propensity scores, triggers and attributes … ." This involves using data on consumers about their use of credit and their "behavior patterns" for as long as the previous two years. This analysis can help financial companies "confidentially identify prospects within the near-prime segments who are trending upward and … make an offer to these receptive consumers."[81]

There are also emerging credit models that rely on a wider variety of consumer data for their decision-making. For example, Zest Finance says its mission is to make sure that people "being left out" of the credit system, even if they may have "bad credit," are considered for loans. To make such loans, Zest "analyzes thousands of potential credit variables—everything from financial information to technology usage—to better assess factors like the potential for fraud, the risk of default, and the viability of a long-term customer relationship … ."[82]

The influx of nontraditional data may help secure credit for consumers who do not have a traditional credit history, but questions on the scope and propriety of the data used must be raised. For example,

- AvantCredit promises to provide "immediacy" through the use of "machine learning" to determine lending risk, rather than relying solely on a credit score. Its platform "analyzes dozens of data sources while the customer is filling out an application, using an algorithm to find a customer's 'true' credit worthiness."[83]
- Credit Optics "supplemental score introduces a new dimension to the assessment of credit worthiness: Stability." The score "gauges risk by examining the velocity of account openings along with changes in the consumer's phone numbers, addresses and additional identifiers—all in real time."[84]
- Moven's CredScore product uses "a combination of financial wellness, social media metrics, transactional insight, and feedback loops to provide customers with the ability to understand their day-to-day financial behavior." Consumers are given their score "in real-time … . CRED is used as a transparent 'relationship' score—so we share your score in real-time" to understand "how that affects your monthly fees, other processing charges, interest rates on savings, availability to credit facilities."[85]

TAKEAWAY:
The availability of new sources of data used for credit review needs to be analyzed for their fairness, effectiveness, and relationship to loan products.

10. The Role of Online Lead Generation

E-scores play a role in another growing practice that impacts vulnerable consumers especially—online lead generation. "Lead gen," as it is called, is the practice of collecting and selling information about an individual as a "lead" who may be seeking a loan, credit card, or a product that requires a significant expenditure. Online lead generation was used as a technique to identify potential customers for subprime loans during the period that led to the financial meltdown.[86] Today it is a nearly $1.7 billion business in the U.S.[87] Websites that may offer loans or other financial products and services—even those that provide online calculators for mortgages, for example—are often only "lead generation" sites. They are designed to capture a

Search Engine Marketing

Financial services advertisers are also heavily involved with search engine marketing to win over potential customers and, by encouraging them to visit a website or fill out an information request, to collect data that can be used for lead generation.[90] Quicken Loans, which relies on the Internet for its marketing, uses nearly 47,000 keywords and spends anywhere from $120,000 to $198,000 *per day.* Lending Tree spends approximately $73,000 daily for its 41,000 search terms; Bankrate.com relies on more than 126,000 terms, spending anywhere from $32,000 to $48,000 daily. Major brick-and-mortar financial companies focus on search marketing as well. Bank of America, for example, uses some 63,000 search terms, spending $11,000 to $122,000 a day.[91] Google has paid close attention to how African Americans and Hispanics use search services to make buying decisions.[92]

person's information, such as street address and financial background, as well as gathering online data so individuals can later be targeted when they are on the Internet. Once a person's information is collected, it can be sold through what is known as a reverse auction. A person's data are auctioned off to the highest bidder—a lender, for example, who will pay the most for what's called a "hot" lead, because they have identified someone "in-market" for a loan. It's unlikely that consumers will get a good deal with reasonable rates once they become part of the lead generation system. Marketers employ an array of stealth tactics to collect information from consumers, including the use of the latest "Big Data" technologies. For example, consumers can be encouraged to fill out an online request for more information—or offered an online calculator to determine the cost of a loan. Consumers' activities can also be surreptitiously gathered online, as their actions are observed on numerous websites. Their data—whether personal information such as name and address (on a form), or cookies placed on their Web browser (in the case of the calculator or other online tracking tool)—are analyzed and scored to create what the industry calls "quality" or "hot" leads. Companies analyze the information to determine the identity and value of that prospect, which is then sold—often in real time—in a well developed lead marketplace.[88] Companies such as Lending Tree, Quicken, and Bankrate are leading sellers of such online leads, which are sold to companies or brokers seeking to sell payday, mortgage, and private school loans and similar products.[89]

A very "sophisticated network of high quality payday lead generation websites" thrives online today, including Spanish-language sites, that helps to sell these often unaffordable loan products.[93] Lead generation companies now use the latest state-of-the-art data-driven technologies to discover individuals who will be responsive to payday loan offers—including when consumers are using their mobile phones or on Facebook.[94] Companies offering loans or leads can feed data into superfast computers that identify individuals as prospects based on their behaviors, actions, and other variables. These consumers can be served an ad in milliseconds and can be followed wherever they go online.[95] Consumers are also unlikely to be aware that online lead generators conduct "testing" to help ensure that their websites trigger the responses they seek from largely unsuspecting consumers.[96]

Leads for loans and other financial products often come from online companies that most consumers believe are informational sites, but they make their revenues from collecting data and selling leads. Among online lead-generation company Datalot's clients are Bankrate.com, Efinancial, HomeAdvisor, and eHealth, Datalot operates its own lead-exchange system called "lead.io," which enables lead generation customers "to acquire and process consumers across multiple channels at scale … [and] provides real-time insight into lead value and traffic quality … ." In another illustration of how technology fused with data practices enables individuals to be assessed, Datalot says it "statistically determines a customer's value, and delivers only the most actionable, high-value prospects to the sales force from the sea of widely varying consumer interest … [using] proprietary tech-

nology to isolate and deliver actionable customer prospects.[97] It provides "one-stop" targeting for users of Facebook, Google, Yahoo, Twitter, and Microsoft's Bing, regardless of whether the consumer uses a desktop or mobile phone. Facebook, which opened its own ad exchange in 2012, is also working with online lead generation companies and payday-style lenders[98]

TAKEAWAY:

The role of the online lead generation industry and its impact on the underbanked and unbanked are not well understood. The industry's use of sophisticated data-driven online techniques enables payday lenders to reach vulnerable consumers regardless of location. Public education and safeguards are required to address these practices, which appear to facilitate the marketing of high-cost, under-regulated, non-transparent loan products, rather than to promote financial inclusion and opportunity.[99]

11. Alternative Credit Data Scoring

Lenders use credit-risk scores to determine the likelihood that a potential customer "will repay their various credit obligations."[100] FICO, a leading provider of these scores, notes that three-quarters of all mortgage loans are "underwritten" with its scores (and nearly "10 billion FICO scores" are used yearly). However, 64 million Americans "have little or no traditional credit history," according to Experian, creating a class of consumers considered not eligible for credit or forced to accept non-prime loan terms.[101] CFSI notes that "millions of Americans continue to go without access to affordable, high-quality credit products, in part, because they lack a long credit history or do not have a credit history at all. This quandary could be at least partially resolved by the use of alternative data."[102] Policy organizations including CFSI, the Political and Economic Research Council (PERC), and the Corporation for Enterprise Development (CFED) have all supported alternative data collection, including the use of so-called full-file utility reporting. [103]

Conversely, while underbanked and other at-risk consumers may benefit from these products, the data they rely on and how that information is subsequently used needs to be reviewed. The use of some non-traditional data has raised concerns from some financial consumer advocates, including the authoritative National Consumer Law Center (NCLC), which has questioned their reliability as meaningful predictors of credit worthiness and the appropriateness of their use. For example, NCLC has pointed out that for the lowest income at-risk consumers to qualify for winter energy relief programs such as LIHEAP in many states, they must first be delinquent in payments. NCLC has also pointed out that utility reporting is extremely inconsistent across sectors and across states.[104]

Recognizing that serving so-called "thin-file" consumers can be a good business, some companies have developed products that use non-traditional data to evaluate consumer applications. Equifax offers insight into how credit companies see the underbanked as critically new important markets, explaining that "Retail banking is undergoing change … making it harder to identify and capture potentially profitable households. … [T]raditional consumer risk assessment tools are limiting many financial institutions' success at the point of sale. They rely heavily on negative information that can be dated and unreliable. As a result, customers that could present significant revenue opportunity are walking out your door and customers that may ultimately charge-off are being approved."[105]

Examples of the data used by these new credit-scoring products (which can also contain a more traditional analysis) include the following:

- Equifax's "Insight Score for Retail Banking," which "leverages its data on 25 million so-called 'unscorable' customers with no traditional credit history," uses mortgage and loan repayments; income; wealth and assets; demo-

graphics; utility, pay-TV and telecommunications bill payments.[106]

- VantageScore (created by credit-reporting companies Equifax, Experian, and TransUnion), one of the leading providers of such scoring services and created by the Big Three credit bureaus to compete with FICO, adds information on a consumer's "rental, utility and cell" payments.[107]
- FICO's "Expansion Score" uses "aggregated data" (see section below on aggregated products) from such sources as "cell and landline telephone utility information, membership club records, [and] judgments." Made for the "credit-underserved market," the score is aimed at "recent immigrants, young adults, recently widowed or divorced and mature cash-spenders."[108]
- CoreLogic's products help to "identify previously hidden risks and new lending opportunities." It explains that "property, landlord/tenant credit and public record data elements represent unique insight into borrower debt and assets." Its so-called "FCRA-compliant" data used for the score include renter lease applications, collections, court records (failure to pay, judgments for rent, eviction writs or warrants), property transactions (liens, property tax amount), alternative credit information (online and storefront cash-advance lending, installment lending, rent-to-purchase inquiries), and borrower-specific public records (judgments for money—child support, deficiency judgment, tax liens, bankruptcies).[109]

Today, then, there is a robust debate among how such data, such as utility bills, should be used in applications to help predict creditworthiness.[110] Looming as a key issue as well is the growing availability of social media and new sources of other financially related digital data.

TAKEAWAY:
The range of information that can be collected and analyzed for consumer credit decision-making will continue to grow. While alternative credit scoring can be a boon for the underbanked, there need to be standards and safeguards to ensure that any new data are used appropriately.

12. Prescreening, Scoring, and the Fair Credit Reporting Act

Banks and other lenders have access to scoring products that enable them to identify, analyze, and then target a prospective consumer more precisely. To the extent that such modeling data are used to "prescreen" an individual as part of the "firm offer of credit" process, the Fair Credit Reporting Act (FCRA) regulates these practices and provides consumers with strict consumer protections, including the explicit right to opt-out of having their credit files used for prescreen marketing.

However, marketers claim that much of the financial and other data they use to make decisions on whom to target fall outside of the FCRA rules—since such data are tied only to advertising to promote interest in a brand or product, not, purportedly, to credit decisions. While the Fair Credit Reporting Act restricts the use of financial (including mode of living) data in credit reports to credit or insurance marketing purposes only (not general target marketing), the firms claim that they are not using such data to make financial offers, only to build audiences. They also claim that the files developed are not on individual consumers, but on clusters of consumers. Not subject to FCRA regulation, they assert, are scores and other products that identify consumers on an aggregate basis—which for them means information narrowed to a small cluster of households at the ZIP+4 level.[111]

However, given the capabilities of the contemporary data-driven consumer landscape, an ar-

ray of detailed information can be used to create a consumer profile and then deliver a "micro-targeted" ad or marketing message designed to initiate a process leading to a transaction (such as the sale of a financial product). As ads for credit cards and loan products are delivered directly to consumers on their computers and mobile phones, and are based on data that have analyzed a consumer's behavior, history, and financial transactions, should these practices not be considered a prescreened offer under the FCRA? What criteria are used to perform the prequalification assessment, and do they or should they trigger the FCRA?

On the one hand, data companies are fairly candid about the capabilities of the marketplace to identify a consumer for a specific product. Experian, for example, recommends to clients that they use an "online acquisitions strategy" involving the "prequalifying [of] consumers online to manage risks of prospects being evaluated for underwriting." Credit marketers "who choose to expand into the online channels have integrated tools that assess a prospect's risk prior to the application process," it explains.[112] Financial services companies like Equifax claim that such "aggregated" scoring products—a "micro-neighborhooded form of the FICO Score to enhance marketing applications" that the company claims is not linked to a specific individual—are permissible under the FCRA.[113]

But an examination of the composition and intent of aggregated products raises questions about the role of these scores, and the need for new safeguards. For example, these unregulated products provide financial companies information on "capacity to pay, financial stress, financial activity," as well as whether a household in a "micro-neighborhood" will "file for bankruptcy," "be looking to purchase a new automobile and looking for financing," or be a credit borrower that it has somehow determined is "likely to become a liability in the near future."[114] Among the 390 metrics available in the CreditStyles Pro product offered by Equifax is its "3.0 Neighborhood Risk Score," which identifies whether there's a "likelihood a household in a particular ZIP+4 will file for bankruptcy."[115]

There are also "aggregated" FICO scores for "marketing applications" that are used to predict "the likelihood that an existing account or potential credit customer will become a serious credit risk within 24 months." The score "identifies and projects the full range of credit risks" for a wide range of financial products, including auto loans,

Customers are leaving pieces of information at numerous touch points that are like bread crumbs and marketers are struggling to make sense of them," the CEO of one onboarding company explained."

bankcards, paying rent or mortgage and more. These data profiles are also considered outside the scope of the FCRA.[116] The explanation of how aggregated scores can be used online also suggests that their intended use is significantly to focus on—if not single out—an individual consumer. As explained by IXI (a division of Equifax), it can now "differentiate visitors in real-time" to "reach more visitors with the desired standard profile and propensities for products and services." It can "serve the right offer with the right message and creative [the ad or marketing content] based on visitors' likely financial position and purchase tendencies."[117]

One can digitally target consumers by "wealth, income, spending and ability to pay, by financial and economic behaviors," as well as behaviors related to products such as mobile phones, cable TV subscriptions, retail shopping, and "travel, leisure and entertainment."[118] IXI provides the following products that it says fall outside of the FCRA:

- Income360 Digital: "a powerful estimate of your prospects' and customers' total household income";
- DS$ Digital: "an estimate of a household's spending after accounting for fixed expenses of life—housing, utilities, public transportation";
- Ability to Pay Digital: "ranks online consumers based on their expected ability to pay their financial obligations";
- Financial Cohorts Digital: "data involving consumer assets, income, spending, and likely availability of credit." Companies can provide "premium offers to visitors likely to have significant financial potential and save lower value offers for others."[119]

Data targeting that enables the incorporation of a consumer's offline and online information—what's called "onboarding"—are also claimed to be "FCRA compliant" (an Orwellian construction meaning these uses of information are, in fact, outside FCRA regulation). "Customers are leaving pieces of information at numerous touch points that are like bread crumbs and marketers are struggling to make sense of them," the CEO of one onboarding company explained. The company takes these "bread crumbs" and merges them with "IP addresses, email addresses and zip codes," which are then "matched with more than 500 data points from approximately 250 million US consumers … ."[120] Yet this practice enables the more precise identification of individuals by connecting their online and offline identity information.

TAKEAWAY:

Credit bureaus and financial services companies are compiling expanding datasets on consumers to make decisions about their financial prospects. Yet the firms claim much of this information isn't personal to an individual consumer nor used for a transactional decision and therefore falls outside current federal FCRA rules. A review of the role of aggregated scoring and other services purported to be "FCRA compliant" is urgently needed to ensure that economically vulnerable consumers are not being unfairly treated by these practics.

II. The Underbanked in the Emerging Mobile Financial Marketplace

1. Prepaid Cards, Mobile Payments, and Digital Wallets

The financial marketplace is in a period of accelerated change, as prepaid cards are tied to online services (such as mobile apps); as the mobile payment becomes a primary way to interact for banking and shopping; and as the mobile phone "morphs" into a credit/debit card (or personal banker and shopping assistant on the go). As the Federal Reserve Bank of Boston stated last May, the "rapid growth in use of smartphones and mobile apps," the role of "non-banks" (including PayPal and Google) offering financial products, and the "convergence of online, mobile and POS (point of sale) channels" is helping drive the growth of the mobile payments marketplace.[121] The underbanked and unbanked will be directly affected by these developments. On the one hand, if companies and government develop safeguards and fair services, they can be new opportunities to conserve resources and spend wisely. But they can also place new pressures on vulnerable consumers and families who will be deluged to spend more, as the data profiling enabled by these services create a steady stream of sophisticated and personalized pitches.

Today, prepaid debit cards, which enable a consumer to "load" money to pay for expenses, are a key financial instrument for underbanked and unbanked consumers. Prepaid cards are a growing part of the financial services industry, enabling consumers to gain access to forms of electronic payment without needing to qualify for credit. The 2012 FDIC Underbanked report says that one in ten households uses this service. "For those with little or no net worth, prepaid remains their primary and often only choice," explains a presentation by Acxiom. Half of prepaid consumers "are unlikely to deal with a traditional bank or credit union," and "are much more likely to be Hispanic or African American," it notes.[122]

Debit cards enable greater control over spending, as one knows exactly how much one has on the card. Economically vulnerable consumers prefer their ability to control spending through prepaid cards.[123] As Consumers Union notes, today a variety of prepaid cards are "mainstream financial products," regularly used by "[m]illions of Americans" with "their wages, government benefits payments, tax refunds and other income regularly loaded." In 2012, General Purpose Reloadable (GPR) and other prepaid cards "were used in

1.3 billion transactions totaling $77 billion," and were expected to grow to $167 billion in 2014."[124] There is a growing number of prepaid card providers, from traditional institutions to recent entrants, such as Walmart and PayPal.[125] However, as the National Consumer Law Center has noted, GPR cards have weaker consumer protections than payroll or government benefit cards or debit cards linked to bank accounts.[126]

The greatest concern of most consumer advocates is that prepaid cards have served as a safe harbor for vulnerable consumers from both high-cost payday loans and bank account overdraft fees. However, cards are beginning to emerge with payday loan and overdraft features that impose new fees, thus eroding the potential to be a positive tool. As prepaid cards connect to the Internet, enabling real-time marketing of additional services, other new fees may be imposed as well.[127] If prepaid cards are to serve as a cost-effective and fair foundation for underbanked and unbanked consumers, they need to maintain low fees and transparent practices during this transition period.

TAKEAWAY:

The prepaid card market has become a cornerstone that provides financial services to the underbanked. As additional features are added to prepaid cards, new fees and features could be imposed that lead to unanticipated expenses for vulnerable consumers. In particular, overdraft fees or payday loan-type features could override the benefits of prepaid cards for vulnerable populations.

2. Protecting Vulnerable Consumers in the Smartphone-Connected Prepaid Card Market

The integration of prepaid cards with mobile phones and apps enables underbanked consumers to access features that can provide more effective control over their resources—such as record-keeping tools, remote check deposit, and opportunities for discounts and rewards.[128] For example, when one is "linked to a PayPal account, and uses its prepaid card, it unlocks services such as online payback rewards, an optional savings account, immediate account alerts, and online budgeting tools.[129] But increased online access also opens up a digital Pandora's box, filled with data collection, new opportunities for user financial profiling, and continuous "calls to action" to spend money.

Financial and other marketers have conducted numerous research studies to determine how best to use mobile phones to sell products. One striking finding is that most individuals view their mobile device as a part of themselves—not some distant digital tool. Google recently commissioned anthropological research on consumer attitudes towards their phones, and found that most consumers would give up chocolate or beer before surrendering their mobile phone.[130]

New ways to get further in debt, however, may also be one of the hallmarks of this new marketplace. Through the collection of underbanked consumers' financial information, including what they spend their resources on and where, Internet-connected prepaid card operators can make hard-to-resist offers that appear precisely during the decision-making process. Real-time credit, with payday loan-type terms, will increasingly become part of the underbanked consumer's financial landscape. The merging of prepaid cards with online access will enable consumers to apply for credit as they consider (through online ads or the use of digital discount coupons in stores) buying products or services, even with critical expenses such

as medical bills.[131] During the most recent holiday season, for example, PayPal offered instant credit access by integrating its app with its "BillMeLater" service. As a PayPal official explained, "For the first time, in the app that launched today, credit is built directly into the app. You can apply for a line of credit from the mobile app and it is not like a three-day process, we will basically give you a decision and a line of credit while you are still in that app in a matter of a minutes."[132]

The mobile phone's role in promoting and processing credit also raises concerns. The mobile device's small screen, and its configuration to serve as a very effective digital "salesperson," restricts how much information can be delivered to a consumer. Currently, there are no rules in the "wild west" world of what's called m-commerce (mobile commerce). Will already vulnerable consumers shopping for their children during the holidays have the time or inclination to see how much interest will be charged, or the terms of service concerning data collection, by reviewing the digital fine print displayed on their mobile phone's small screen? Moreover, as data profiling drives such personalized credit offers in real time (butressed with the increased dimension of locational information), and as advertisers deliberately use messaging that triggers emotions rather than reason, will a consumer be capable of making the wisest decision?

TAKEAWAY:

The introduction of new credit and loan services that are integrated into mobile app-connected prepaid cards requires safeguards, including a set of best practices. Real-time loan offers, especially those tied to a consumer's data profile, raises new financial risks for the underbanked. Principles of transparency, disclosure, and fairness should be applied to this new feature, as well as to the role of mobile devices providing financial-related services.

3. Mobile Payments and Mobile Wallet Markets are Growing Rapidly

The ability to pay for products through a swipe or use of a card or mobile device at numerous Point of Sale (POS) locations, and to engage in financial services nearly anywhere, is at the core of the mobile payment system. POS opportunities will abound, at the grocery shelf, in retail aisles, and for public services. Consumer interactions with financial services companies and their networks will become a routine daily feature.

At the moment there are competing technologies and companies all working to build out the mobile payment environment (with policymakers involved as well). Regardless of what standard or standards prevail, there will be an accelerated transition to POS and mobile payments that helps reconfigure consumer financial services as we now know them. Standalone prepaid and bankcards will eventually merge with smart phones—enabling that device to become the much-discussed mobile wallet. Leading credit card, phone, online marketing, and other companies are all working on mobile wallet initiatives. For example, the Google Wallet enables customers "to store their debit and credit cards" onto its platform and use it to pay for transactions at POS terminals (which use its preferred technology, called near field communications, or NFC).[133] The ISIS mobile wallet consortium, formed by AT&T, Verizon and T-Mobile, is developing its own technological standards for the mobile wallet.[134]

Companies are enthusiastically offering various mobile wallets, as they position themselves both to lead in this new area and also reap the financial benefits gained by offering an integrated set of services. MasterCard's MasterPass, for example, is designed to "unify" all of a user's transactions and provide a "a consistent experience whether the purchase is made at the cash register with a phone or credit card, online, or through a browser on the smartphone."[135] PreCash introduced a mobile wallet aimed at consumers without a bank account or credit card "that enables instant remote check deposits and bill pay from a smartphone." Bills can be paid to "utility, wireless, cable, Internet, auto loan" and other creditors. PreCash's

device can also be used to "top off" the amount of credit on the phones of their families or other contacts abroad.[136]

Various technological and standards groups are working to perfect the mobile payments and mobile wallets system. The Merchant Customer Exchange (MCX), created by Walmart, Target, 7-Eleven, and Best Buy, will enable thousands of stores to accept mobile payments in the U.S.[137]

The convenience of mobile payments and using one's phone (or yet unimagined device) will first be used as a supplement to but will eventually surpass the use of traditional credit and debit cards or online payment systems. But questions abound about what the costs will be. Will a series of daily transactions result in additional fees? Will consumer data be shared by the various partners working to develop these new services, creating new ways to profile and target vulnerable consumers?

TAKEAWAY:
The mobile phone will eventually become a leading—if not dominant—way we pay bills. This marketplace requires analysis and the establishment of safeguards on behalf of the underbanked and unbanked.

4. Mobile Apps and Wallets Pose Privacy Threats that Could Lead To Adverse Behavioral Targeting

While the growth of mobile payment services provides new opportunities and the capabilities to control one's finances, it also opens up the potential for further collection and use of consumer data. As legal scholars wrote, "Mobile payment technologies offer the ability to collect more information than before, and share it with different participants in transactions, providing an attractive service enhancement to both merchants and payment providers … ." They noted that more merchants will be able to "collect personally identifiable" information, and share it with financial services companies (including the companies that help process these transactions).[138]

These potential privacy risks are at odds with the often-voiced industry claim that users will have *greater* control over their information in this new era. The image of "empowered consumers" is often invoked by industry, despite research indicating that few consumers really understand how the data collection process and its various applications actually work.[139] Whether the general public, especially economically vulnerable consumers, will have any privacy or other new consumer rights is an open question at the moment. The mobile payment landscape should be encouraged to reduce fees, provide greater services, and ensure better protection of the information of all consumers.

TAKEAWAY:
Mobile phones pose a major privacy concern because these devices can collect both transactional (what you do and where you go online) and locational information. Consumer advocates need to be encouraged to focus on ways to protect the privacy of economically vulnerable consumers.

5. Loyalty Programs and Rewards Help Firms Collect Information

Leading financial companies are developing loyalty programs that take advantage of both the real-time accessibility of the individual consumer and also the information that can be gathered and monetized.[140] Underbanked consumers may find such programs especially attractive, believing that through earning "points" and other loyalty rewards they can build up resources for needed purchases. But these services can pose risks to their financial well-being. Some 400 financial institutions, including Bank of America, Regions, and PNC, work with loyalty program provider Cardlytics, including with debit, credit, and pre-paid cards. The company mines "detailed purchase data" to identify "an array of buying behaviors for millions of consumers," explaining that they "know what consumers buy—based on actual transactions." This information is made "actionable for marketers" and placed "in the online and mobile banking statements" of customers.[141] "When consumers log into their digital bank statements, they see advertising for products and services, chosen for them based on their recent purchases. They click to accept the offer, visit the store or website, and then use their debit or credit card to receive cash back from their bank."[142] While these rewards are attractive to consumers, few are likely to be aware of the data that are collected and how they may be used to make targeted financial offers.

TAKEAWAY:
Loyalty programs are being embedded into new banking services that take advantage of consumer data to make ongoing personalized offers. This raises both privacy concerns and the specter of another possible way the underbanked may be unfairly singled out to accept new forms of expensive loans and spend more of their limited resources.

III. Big Data and the Shopping Experience

1. SoLoMo and Other "Shopper Science" Technologies

The role that Big Data and new approaches to financial services play in the lives of vulnerable consumers is more than just access to credit and banking or the tools used to pay for products. It is reshaping the daily buying and shopping experience, changing over time what we may pay for appliances, clothing, and even groceries.[143] Much of the innovation in mobile payments, use of smart phones, and online marketing is being spurred by the economic rewards expected as technology fundamentally changes how we shop and pay for our purchases. Retail and grocery chains, online advertising powerhouses like Google, credit card, and phone companies are all actively participating in this transition. The field known as "shopper sciences" is working quickly to bring to local stores the ability to use data and mobile phones to drive sales. Intensively researched to advance the goal of a seamless and continual shopping "experience," the industry has developed a number of paradigms to describe the process—including "Path-to-Purchase, "Zero Moment of Truth," and "**SoLoMo** (combining social, location and mobile data and strategies)."[144] Through consumers' data profiles, which include online, in-store purchase, and financial data, "hyper-local" and personalized mobile targeted ads and e-discount coupons will be sent at the most effective time of day. These communications will be virally promoted by brands' social media messages on products, and payment or loyalty card smart "apps" that know when consumers are near or inside a store will urge them to buy.[145] Advances in data collection and analysis have enabled retailers to link in-store sales with targeted digital marketing, including on mobile phones.[146]

The proliferation of mobile phones will enable distinct marketing—and instant payment—pitches to be sent to multipleindividuals in a family, including children—all to reinforce a message. As a Mondelez (Kraft) executive recently observed, "The mobile phone is the one device that you have with you every second of the day … . Mobile is disrupting consumers' path-to-purchase as well as in-store experience, from the aisle to the register."[147]

TAKEAWAY:

Shopper science is significantly changing how we make buying decisions and interact with stores and services. It is part of the changes connected to mobile payments and online marketing that are ushering in the new financial landscape. A review of how changes in grocery store and other retail shopping from these technologies will affect economically vulnerable consumers is required.

2. You Don't Decide Anymore, They Decide for You

The same predictive modeling and segmentation information used to score consumers for financial services is being applied in the retail sector. When combined with the ability to reach a consumer in real time and at any location, the results can be that stores create "marketing offers so precise, so targeted, that customers think they were developed just for them," according to a KXEN-sponsored report. As one data technologist explained, "With behavioral profiling, companies can determine how much a consumer will pay for a product, and deliver coupons selectively so that each customer's discount reflects what they are willing to pay."[148] The key difference is that in the past customers decided whether or not to look for, collect, and use a coupon, while in the new model companies will determine who gets which coupons. More than 92 million Americans used a mobile coupon in 2012; e-coupons are expected to largely replace paper ones in the near future.[149]

Offers will also be based on our geography—where we live, the streets we cross, and places we visit. Geo-fences and other location-aware technologies are closely mapping and analyzing the individual and collective resources of ever-more discrete communities.[150] Hyper-local technologies can help companies analyze "existing customers" and also identify "people displaying similar behaviors and preferences."[151] This includes how we interact online and offline as well.[152] Illustrating again the cross-industry uses of data analytic technologies, credit-scoring company FICO is examining the use of locational information, explaining that the ability to access GPS data "provides a wealth of hidden predictive information about your customers' activity." Marketers can determine "the interaction between the path taken by the customer" and various community locations, providing a "powerful mechanism to influence a person's" behavior.[153] We do not yet know—but need to—what geo-related designations or inferences are being attributed both to consumers who struggle economically and to their physical environment.[154]

The "one-to-one marketing" model of delivering the "right ad to the right person at the right time," which is at the core of today's advertising-driven e-commerce system, will also begin to influence the prices a consumer may pay. Big Data technologies have helped create "analytic offer managers," which use "sophisticated time-to-event (TTE) scorecard models" based on the observed buying behavior for specified time frames," and which processes thousands of decision variables … ." The result, explains FICO, is a way to "execute targeted offers on a massive scale, in the context of real-time interactions."[155] The potential for new forms of price discrimination exists in this new digital marketing environment, as tools are made available that identify the "right or wrong price at the right time" for a single consumer.

How the data-driven shopping process ultimately influences consumers is still an open question. On the one hand, the Internet mobile phone allows consumers to check and compare prices more easily—what's now called "showrooming." Armed with more information or competitive offers, there's a good chance that a reasonable buying decision will be made.[156] But there is also a very real risk that an individual's ability to have the time and ability to make reasonable consumer decisions will be influenced—if not overwhelmed—by the powerful combination of marketing forces at work. Financially strapped and sensitive consumers could be harmed by these developments, if they are unfairly targeted for products they may not require or at prices they cannot afford or are higher than the prices offered others. There are consequences beyond busting the family budget as well, including to their health, as quick-service restaurants, food and beverage marketers, and even drug companies embrace the new digital model for marketing.[157]

TAKEAWAY:

New forms of community redlining and other discriminatory practices may emerge as marketers take advantage of their ability to "micro-target" individuals and their communities. An examination is required on the growing capabilities and interest of marketers to use personalized pricing for consumers, creating possible new forms of discrimination.

3. Financial Marketing on Social Media

A new frontier for data-driven financial marketing is on social media, especially Facebook and Twitter. Already, Visa, MasterCard, American Express, Chase, and Citibank are among the top-30 advertisers on Facebook.[158] Facebook and other social media sites provide new opportunities for financial services companies to engage in data mining, targeting, and influencing consumers and their networks of friends.[159] The social media structure is a complex, evolving, and purposely opaque system. But because companies such as Facebook require individuals to provide personal information, the amount of data that can be gathered and made actionable is significant.

Facebook itself is candid about its interest in working with banks, credit card companies, and others. As one trade article on a recent ABA presentation by Facebook's head of global marketing for financial services explained, "You don't have to tell Facebook what financial products this pool of people has or doesn't have—they don't care. All Facebook needs to know is that you've identified a type of consumer you'd like to focus on. Facebook uses your list to find users in its system attached to the email addresses and phone numbers you've supplied. Facebook can then build a profile of other users who match the 'digital accountholder' segment you've defined." Facebook says it does this with "astonishing precision."[160]

Financial services companies (like most others) are investing in what are called social commerce solutions.[161] Through these services, which help orchestrate complex social media marketing campaigns, companies can engage in "rich data capture," as Merkle describes it, on individuals and their friends. Other financial marketers are using Facebook for "new leads for their loan and refinance offers," involving "category, behavioral and email" targeting.[162]

TAKEAWAY:

Facebook and other social media are quickly becoming the new "public square," and will grow in importance as places of influence and where marketing and sales occur. These services are also successfully migrating to mobile devices as well. There are opportunities, however, to propose a set of best practices for the emerging social media industry and financial services, especially related to payday loans, lead generation and other products that impact underbanked and unbanked consumers.

4. Food, Beverage, Retail, or Bank Account: All Can Play

Financial, retail, food and beverage, and others are also using the same advanced data targeting structure to track and reach individuals online. As with online leads, financial firms, food companies, and other marketers can "buy" the right to deliver a very targeted message to an individual consumer. Through "ad exchanges" an individual with the desired online profile or record (such as financial behavior) is sold to the highest bidder in milliseconds. That message is then delivered to the individual's home or work computer, mobile phone, and—very soon—even their TV set.[163] Real-time bidding, using ad exchanges and other forms of "programmatic" buying, was predicted to generate $3.34 billion in 2013, comprising a fifth of online ad buying. It is expected to grow to $8.69 billion by 2017.[164]

The "Brave New World" of advertising is now being run by what are called "Math Men" (and women), not just copywriters. Although still largely out of public view, marketing is becoming more embedded into our everyday lives. It will be further integrated into all of our experiences, packaged as appealing entertainment, free services, and even "branded content" disguised as news. But the goal of such advertising will be to observe silently what we and our friends do—and use that information for what will be the lifelong profiling of individuals for commercial purposes.[165]

The intertwined forces of data collection and digital device adoption enable a "360-degree" targeting environment—"anytime and anywhere"—according to the industry refrain. Although there will be a focus on serving the well-to-do and middle class, it is likely everyone will be a target (since "influence" and positive word of mouth are desirable outcomes in addition to buying products in the new social commerce-oriented environment). In other words, economically vulnerable consumers, especially families and youth, will not likely find respite from the increasingly personalized and pervasive pitches that will continually reveal themselves when we shop, transfer funds, send money, or check our balances.

TAKEAWAY:

Technological advances that collect, analyze, and make actionable consumer data are now at the core of contemporary marketing. The public is largely unaware of these changes and there are few safeguards in this new marketplace. Economically vulnerable consumers, and especially youth, will be continually urged to spend their limited resources. Conversely, there are opportunities to use the same tools to urge consumers to budget, save and build assets.

IV: Where Do We Go from Here? Recommendations for Next Steps

The Need for Public Education, Transparency, and Advocacy

The next several years are a critical transition period to ensure that unbanked and underbanked Americans specifically benefit from the developments addressed in this report. We believe that the new financial marketplace can operate in a fair and equitable manner, helping to generate opportunities to promote economic security for individuals and communities. But to accomplish this, we should develop a proactive agenda that specifically identifies how the shift to digital and mobile financial services should be used to protect and serve the interests of America's economically vulnerable consumers. We should further examine the role that data analysis plays in the underbanked and unbanked financial marketplaces. Work should be done that identifies as early as possible best practices, potential harms, and areas requiring industry codes of conduct, public accountability, and regulation. A chief goal would be to nurture the positive potential of the digital financial system and reduce its negative consequences to individuals, families, and children as much as possible. To help create this agenda, an initiative should be created that reaches out to NGOs and coalitions already working on financial reform and economic inclusion and justice. Working with existing partnerships and forming new alliances as required, there should be outreach to other consumer, health, education and parent groups, industry, philanthropy, academia, and government.

A. Public Education

Few consumers—nor even many NGOs—understand the dimensions of the contemporary data-driven digital marketplace. As research shows, consumers are largely unaware of how their information is collected and used, as well as protected by regulatory safeguards.[166]

While there is extraordinary consumer acceptance of the role of mobile phones and digital marketing in their lives, despite concerns about privacy, much is not well publicly known about how data collection practices for the financial services industry actually works.

Consumers need a better understanding of the emerging landscape of data-driven financial services—how products such as mobile payments

and apps operate, and what the rewards and risks ultimately are. Clearly written and publicly accessible materials should be available that provide both the "big picture" of "Big Data" transformation as well as information on specific technologies, services, and issues (including privacy). Such bilingual information should be delivered using a range of media, from print and online (including social media) to mobile communications and perhaps even gaming. Materials should be conceived and then distributed through alliances with religious groups, economic justice advocates, civil rights organizations, and consumer and financial reform advocates.

B. Best Practices

This is a tumultuous period for the financial services sector. Traditional consumer expectations and relationships are changing, as competition further erodes the overwhelming dominance of the major financial brands. Companies are also stepping up the pace of innovation, introducing new products and services (especially for mobile). However, the forces of consolidation are at play as well, likely leaving fewer companies in the long term that rely on increasingly standardized practices for marketing, data practices, etc.[167] A "window of opportunity" is now open to help set standards for products serving the underbanked that help—not impair—their ability to conserve and grow their assets. An objective assessment needs to be conducted on the data-gathering and analytical products used by leading financial companies, to identify where disclosure, transparency, consumer control, and regulatory safeguards are warranted (such as with the use of social media data for financial decision making and whether new forms of digitally-based redlining are emerging).

Consumer groups, advocates for the underbanked, privacy organizations, and other experts have critical roles to play in this area. For each of the major categories of products and services focused on or potentially useful for asset building—such as prepaid cards, mobile payments, alternative scoring, data collection, and the role of social media—we propose the creation of small working groups. These individuals and organizations would be tasked with engaging in an intensive overview, including interviewing industry representatives, scholars, and government officials, and developing a set of "best practices" and potential self-regulatory (or policy-based) guidelines. For example, it is important now to identify and address the likelihood and impact of new or escalating fees imposed for services that are supposed to benefit the underbanked economically.

Through dialogue with industry and allies (such as CFSI and the Asset Funders Network), as well as with the FTC, CFPB, and others, and also through public outreach via the media, this effort would help set the parameters for what is preferred—and what is unacceptable—for products and services offered to underbanked Americans.[168]

C. Coalition Building and Cross-Fertilization of Ideas

The mobile phone is a key instrument for financial inclusion and communication, and will deliver many of the important services (through apps, mobile wallets, wireless payments, for example) The mobile industry is primarily dominated by a handful of companies, including the telephone industry, Apple, and Google. They are helping set the standards for the industry and also distributing much of its content.

A new coalition of consumer, civil rights, and anti-poverty organizations should be formed—or developed from existing alliances—that is specifically focused on the role that mobile devices play serving the underbanked. This group would work to support best practices, extend mobile Internet access to more low-income Americans, and engage with industry stakeholders. It would also work with other groups focused on issues at the FCC, CFPB, and elsewhere. For example, the FCC, which has regulatory oversight of the telephone network, should be encouraged to examine the impact of new forms of credit that will be placed on a consumer's telephone bill ("Direct carrier billing").

D. Industry Standards-building and Government Oversight

Rules for the new financial marketplace are principally being developed by industry. A number of forums or consortiums are known to be working on best practices, technical standards, and other issues that will affect the underserved. For example, in addition to the Merchant Customer Exchange (MCX) initiative discussed earlier, there is also the Mobey Forum North America, a "bank-led industry association driving the evolution of a sustainable and prosperous mobile financial services (MFS) ecosystem."[169] Its members include American Express, Bank of America, Capital One, CIBC, MasterCard, TD Bank Group, US Bank, and Visa, which gather together to deliver sustainable, long-term mobile services to the mass market.[170] There is also the new SmartCard Alliance that is working on near field communications and wireless payments.[171] The Federal Reserve Bank of Boston also has a "Mobile Payments Industry Workgroup."[172]

Industry trade associations working on issues related to the underbanked, including new entrants such as the Online Lenders Alliance, should also be tracked.[173] The concerns of underbanked consumers should be represented in these forums on an ongoing basis, or at least closely followed to ensure they play the most positive role.

E. Policy

While public education and industry engagement are essential, there should also be federal and state safeguards against unfair practices as well as policies that encourage asset-building, budgeting, financial inclusion and opportunity. Working with Americans for Financial Reform and others, the CFPB and FTC should be encouraged to review the products and services that comprise the contemporary underbanked financial marketplace. Rules governing data collection, profiling, and targeting of vulnerable consumers should be implemented. Groups should propose agency review of the FCRA to ensure it addresses these current practices. New safeguards to protect consumer privacy should also be recommended, including addressing the needs of youth. Groups should also develop a strategy to encourage the Federal Communications Commission (FCC) to use its authority to promote affordable access to mobile devices and develop consumer protection standards.

F. Conclusion

As we have explained, the U.S. is now in the initial phase of a significant transition period, as technology, financial products and services, and consumer behavior and expectations undergo significant change. We have no doubt that these changes will create on their own both new opportunities and pitfalls for economically challenged Americans. But we believe they have the most to gain—and lose—with the digitally connected and data-aware marketplace. Either they will have access to an array of products that operate fairly, that help them save and make the best decisions possible, or they will confront a marketplace that takes advantage of them and makes their lives harder. We know that not doing anything will bring us no closer to promoting economic justice and equity. But by taking advantage of the fundamental change that is upon us, we can help shape this shift to promote the interests of those who have a critical stake in the outcome.

APPENDIX: Walmart Positions Itself for the New Financial, E-commerce, and Shopping Marketplace

Walmart is keenly aware of the changes discussed in this report, and how they affect their customers, many of whom are in the underbanked category. The retail giant is significantly investing in financial products and services, big data analytics, mobile phone, e-commerce, and other digital applications. In 2012, it introduced its low-priced Bluebird debit card in partnership with American Express, proving a wide range of banking and credit services to its customers.[174] Knowing a majority of Walmart shoppers (55 percent) already come into the store with a smartphone, it introduced a mobile app. Its app users are some of the retailer's best customers—visiting the store twice as often as the average shopper, and also spending some 40 percent more in the process. Walmart's competitors—including Dollar General and Target—also now offer mobile apps.[175]

Walmart's smartphone "app leverages geolocation to detect when a consumer is nearby to a store and automatically prompts the user to flip the app into store mode—which lets consumers view maps of stores and find products within aisles."[176] There is a "shopping list feature that lets consumers scan in-store bar codes or add products to their shopping lists."[177] Local stores can promote specials or offers to their mobile app users. The app's "Scan & Go" feature allows customers to "clip coupons by tapping their smartphones and having the savings automatically applied." In some stores, the app can scan the products on shelves and counters, enabling a faster checkout. A recent update to the Walmart app enables users to register their phone number during checkout in order to receive automatic electronic receipts for future in-store purchases.[178]

Beyond convenience, Walmart's moves into mobile are also designed to help deliver revenues. Its app-delivered electronic coupons can be used to increase the "basket size from existing customers," according to Alex Campbell, chief innovation officer of mobile marketer Vibes ("basket" referring to total checkout expenditures). Campbell believes that the ability to access consumers through mobile phones "will allow Walmart to do some really dynamic pricing based on individual customers and buying behavior."[179]

Walmart's mobile app is an example of how the

company has entered the Big Data and e-commerce arms race, adding millions of data points daily for customers who no longer need to be within the confines of a Walmart in order to be touched by the retail giant. It has created a data-oriented research and product development facility in Silicon Valley—Walmart Labs. A recent job posting at the Labs makes clear the direction in which the company is headed: "We are building smart data systems that ingest, model and analyze the massive flow of data from online, social, mobile and offline commerce/user activity to set key business attributes for millions of products in real time."[180]

Illustrating the same omnichannel data collection, analysis, and targeting orientation used by the financial sector, Walmart analyzes a broad range of consumer information. As a Walmart Labs blog post explained, "The targeted team … ingests just about every clickable action on Walmart.com: what individuals buy online and in-stores, trends on Twitter, local weather deviations, and other local external events … . We capture these events and intelligently tease out meaningful patterns … . Our big data tools help us personalize the shopping experience and our psychological analysis helps us to dissect even deeper meaning behind the patterns in the data. We apply behavioral economics to find clarity behind both the rational and irrational behavior shoppers experience." Through its "targeting team comprised of PhD's in computer science, statistics, signal processing and behavioral psychologists," Walmart "has developed methodologies" that can identify "what customers might be seeking" as well as other products they may have a strong appeal for them (through an analysis of their "historical buying patterns," for example).[181]

Among the products developed at the Labs was its own Walmart search engine that is "sensitive to how their customers interact on social networks, so the products that show up are much more likely to be relevant and they claim something like a 10-15% higher conversion rate using their own, in-house search." For its e-commerce online site (with $10 billion in sales), Walmart enables its customers to "shop online and pay in-cash."[182]

The transformation of how we shop was one reason why Walmart bought Inkiru last June. That company developed a "real-time analytics solution" that "allows merchants to analyze and predict customer behaviors, improve active customer marketing, optimize for personalized customer engagements, and detect fraud during a live transaction, all prior to the transaction completion."[183]

Through its combination of powerful data analytics, mobile applications, personalized online and in-store targeting, and financial services, Walmart is playing a key role accelerating how the Big Data transformation will affect its underbanked household customer base.

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- The Audience Operations Layer: enabling that data to be cleansed, matched, and contextualized to provide actionable insights about real people that can then be activated across channels and media buys.
- The Applications Layer: activating a growing roster of trusted development partners to create AOS-approved apps customized to meet any marketing need.
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- A/B (split) testing
- Multivariate testing (Full Factorial, Fractional Factorial, Adaptive Multivariate Testing Methods)
- Multi-page testing
- Usability testing
- Template variation testing
- Total-experience testing

"Optimo has built in experiments that use analysis of variance, Chi-squared test, correlation and factor analysis, mean square weighted deviation, linear regression and time series analysis, maximum likelihood estimation, Stochastic calculus, Black–Scholes model to automatically come up with highest revenue generating funnels. In addition to data mining and demographic analysis we hire behavioral psychologists to help us improve our funnels by understanding consumer behavior." LeadsMarket, "Our Technology," http://www.6ivi9.com/optimo.aspx?AspxAutoDetectCookieSupport=1. See also "Personal Loan Affiliate Program LeadsMarket.com Releases New Compliance Package for Publishers," PRWeb, 14 May 2013, http://www.prweb.com/releases/2013/5/prweb10720963.htm. Companies can also use eye-tracking technology to make sure consumers seldom stray from the "call-to-action" or some other lure used to gather the desired data. Tobii, "Advertising Research and Eye Tracking," http://www.tobii.com/eye-tracking-research/global/research/advertising-research/ (all viewed 10 Feb. 2014).

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