FTC Surveillance Pricing 6(b) Study: Research Summaries
A Staff Perspective
January 2025

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About the Research Summaries: These research summaries highlight FTC staff's initial findings from the agency's Surveillance Pricing 6(b) study underway.[1] This document is designed to showcase ideas and emerging findings, facilitate early engagement and collaboration within the research community, present general learnings in service of increased transparency to the public, and address the time-sensitivity of a quickly moving technological landscape.[2]

Since July 2024, FTC Staff has been working diligently to gather documents, distill information and analysis in real-time, and synthesize information to help the FTC better sharpen its understanding of rapid changes of surveillance pricing in a timely manner. One of the original mandates of the Office of Technology when it was established by the Commission in 2023 was to highlight market trends and emerging technologies that impact the FTC's work by engaging with the public and external stakeholders.

Many fields have a normalized version of a "pre-publication" that enables efficient dissemination of information, distributes broader access to critical work and thinking, encourages feedback and collaboration, and fosters open access to knowledge. This model is especially useful in fast-moving fields. In the technology sector, companies release beta versions of applications and prototypes. In science and medicine, there are clinical trial results and protocol papers. In other areas of academia, there are preprints, draft chapters, manuscripts, extended abstracts, and tiny papers.[3] The agency also published an interim staff report on pharmacy benefit managers as part of the ongoing 2022 6(b) inquiry.[4]

Staff notes that this is not an exhaustive declaration of the findings of the Surveillance Pricing 6(b) study. The format of this work aims to highlight initial observations and communicates that there is much more work to do and share. This document does not reflect or suggest any assessment as to whether anyone has engaged in illegal conduct.

Context of the Surveillance Pricing 6(b) Study: Companies that collect or obtain individualized information about their actual or potential customers can potentially use a variety of features to target prices to specific consumers and charge particular groups higher prices or use those features to generate greater profits. In addition to the methods examined as part of this 6(b) study, there are many pricing methods, as well as online targeting techniques,[5] that involve some combination of leveraging information about a customer or the specific market conditions surrounding a particular transaction and determining varied prices.[6]

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[1] Press Release, Fed. Trade Comm'n, FTC Issues Orders to Eight Companies Seeking Information on Surveillance Pricing (July 23, 2024), https://www.ftc.gov/news-events/news/press-releases/2024/07/ftc-issues-orders-eight-companies-seeking-information-surveillance-pricing.
[2] The views expressed in this document are those of FTC Staff and do not necessarily reflect the views of the Commission or any individual Commissioner.
[3] *See, e.g., Tiny Papers in 2025,* ICLR, https://iclr.cc/Conferences/2025/CallForTinyPapers.
[4] Press Release, Fed. Trade Comm'n, FTC Releases Interim Staff Report on Prescription Drug Middlemen (July 9, 2024),

https://www.ftc.gov/news-events/news/press-releases/2024/07/ftc-releases-interim-staff-report-prescription-drug-middlemen.
[5] OECD Secretariat, *Personalised Pricing in the Digital Era: Background Note by the Secretariat*, DAF/COMP(2018)13 (Nov. 20, 2018), https://one.oecd.org/document/DAF/COMP(2018)13/en/pdf.
[6] *See, e.g.*, Amanda Aroncyzk, et. al., *Is dynamic pricing coming to a supermarket near you?*, NPR (Mar. 6, 2023), https://www.npr.org/2024/03/06/1197958433/dynamic-pricing-grocery-supermarkets; s*ee also* Amanda Mull, *Inflation is Coming Down, But Prices Won't Stand Still in 2025*, BLOOMBERG (Dec. 16, 2024), https://www.bloomberg.com/news/articles/2024-12-16/dynamic-pricing-is-coming-to-more-product-categories.

Launched in July 2024, the FTC's Surveillance Pricing 6(b) study seeks information about what the orders define as "targeted pricing" and "user segmentation solutions."[7]

As mentioned in the FTC's announcement at the launch of this study, the orders are aimed at "helping the FTC better understand the opaque market for products by third-party intermediaries that claim to use advanced algorithms, artificial intelligence and other technologies with personal information about consumers ... to categorize individuals and set a targeted price for a product or service."[8]

The study aims to catalog the types of data that companies use to fuel their algorithms and where that data is sourced. It also aims to enhance the agency's understanding of what industries, if any, are using these pricing technologies. The study focuses on intermediary firms, the middlemen enabling firms to algorithmically tweak and target their prices. By examining the actors involved, their technical tactics, and the pipelines that enable surveillance pricing, the Commission continues to unpack the effects that surveillance technology has on consumers–including the prices they pay, the products presented to them, and the types of personal data that are used to determine those prices and product offerings.

The Commission has used its Section 6(b) authority for decades to better understand opaque market practices like surveillance pricing. Section 6(b) empowers the Commission to require an entity to file "annual or special ... reports or answers in writing to specific questions" to provide information about the

entity's "organization, business, conduct, practices, management, and relation to other corporations, partnerships, and individuals." 15 U.S.C. § 46(b). The Commission's 6(b) authority also enables it to conduct wide-ranging studies that do not have a specific law enforcement purpose. Section 6(f) authorizes the Commission to "make public from time to time" portions of the information that it obtains, where disclosure would serve the public interest. 15 U.S.C. § 46(f).

The agency will only release information obtained from a 6(b) study as long as it has been aggregated or anonymized as necessary to protect trade secrets and confidential or privileged commercial or financial information. Thus, any information presented in this document has been aggregated or anonymized as necessary to protect trade secrets and confidential or privileged commercial or financial information.

There are limitations to this document. These summaries are limited due to information that is still being gathered to meet the study's structure, scope, and purpose.[9] The summaries do not represent the full breadth of information, degree of nuance, or level of detail with which staff are currently working. The details in this document are not fully representative of the products, data, or industries that could play a role in surveillance pricing. The information shown here reflects what staff has learned since the 6(b) study began gathering information (*i.e.*, July-December 2024) and can be outdated with new information. As research and document retrieval continue, more insights will be gathered. Responses are limited to "solutions"[10] used in

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[7] *See also* Fed. Trade Comm'n, 6(b) Orders to File Special Report Regarding Surveillance Pricing Involving Intermediary Companies (2024), https://www.ftc.gov/reports/6b-orders-file-special-report-regarding-surveillance-pricing-involving-intermediary-companies.
[8] Press Release, Fed. Trade Comm'n, FTC Issues Orders to Eight Companies Seeking Information on Surveillance Pricing (July 23, 2024), https://www.ftc.gov/news-events/news/press-releases/2024/07/ftc-issues-orders-eight-companies-seeking-information-surveillance-pricing.
[9] Given the ongoing nature of the study, these summaries are based upon analysis of documents produced by the following 6(b) order respondents: Mastercard, Revionics, Bloomreach, PROS, Accenture, and McKinsey & Co.
[10] Two categories of "Solutions" were defined in the initial order: A "Targeted Pricing Solution," which refers to a product or service

"that is used, has been used, or has been marketed for use alone or in combination with other products or services to charge or set prices, or determine quantity and availability for Individual Consumers based on location, purchase history, return history, customer service history, browsing behavior, demographic information, or any other variables." A "User Segmentation Solution" refers to any product or service "that is used, has been used, or has been marketed for use alone or in combination with other products or services to categorize or build profiles associated with Individual Consumers based on location, purchase history, browsing behavior, demographic information, or any other variables." *See also* Fed. Trade Comm'n, Order To File A Special Report - 6(B) Surveillance Pricing Intermediaries (2024), https://www.ftc.gov/system/files/ftc_gov/pdf/sp6b_order_surv_pricing.pdf.

the United States. Respondents provided varying amounts of information about the solutions they offered and, in some cases, objected to the characterization that the tools they offered were designed or used to set individualized prices for consumers or enable surveillance pricing.

Research Summaries Featured: The structure of this document follows the substance of the specifications in the order template sent to respondents.[11] This includes what staff is learning so far about:

1. The types of products and services being offered;
2. How these tools work to target prices or segment users;
3. The customers and industries involved;
4. The data sources and types of data collected to power surveillance pricing products and services;
5. The tools' effects on prices, sales, revenue, or consumers.

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1. What is staff learning so far about the types of products and services being offered?

Based on the respondents' productions, staff have so far reviewed a variety of tools that use a broad range of approaches for different contexts, such as generalized price setting for brick-and-mortar stores and personalized display and product rankings on ecommerce websites.[12] Of the tools reviewed, several appear to be designed for use by consumer-facing retailers, while some tools appear to be designed specifically for business-to-business contexts.

The surveillance pricing tools studied appear to be intended for a spectrum of targeting, from more generalized store-level pricing and promotions to more individually targeted outputs and prices. For example, on the more generalized end, a tool could use aggregated transaction data about goods like eggs or halal meat to set prices for a group of stores.

On the more individualized end, a tool could be used to collect real-time information about a person's browsing and transaction history and enable a company to offer—or not offer— promotions based on that consumer's perceived affinity[13] for particular products. For example, a pharmacy could choose to exclude routine, regular customers in a special promotion for over-the-counter medications or weight-loss supplements because the pharmacy inferred that those customers are likely to buy[14] those products anyway. Instead, it may target discount codes to a group of infrequent buyers for these products who may be "at risk" of disengaging.

Some categories of tools identified thus far include: (1) price targeting tools, (2) consumer segmentation and consumer profiling tools, and (3) search and product ranking tools. These tools could also potentially work in conjunction with each other. Data from a consumer segmentation tool, for instance, could be used with a search and product ranking tool.

(1) Price targeting tools use algorithms that take data collected about consumer behavior and market conditions as inputs and generate targeted prices for a buyer or a firm. These algorithms can accommodate input data at varying levels of aggregation or specificity and

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[11] *See also id.*
[12] Staff is still in the process of understanding the range of available tools and their applications and acknowledges that these may not be fully representative of all potentially relevant tools available on the market.
[13] Based on the documents produced, the term "affinity" can generally be thought of as a shopper's likelihood of gravitating towards specific products, retailers, or brands. This definition is not necessarily specific to one company or retail vertical, since "affinity" can be measured differently depending on the parties involved in measurement. *See, e.g.,* Respondent Document Submission

[14] Based on the documents produced, staff has gathered that some tools can be designed to make inferences about a given consumer based on data the consumer might provide explicitly for this purpose (*e.g.*, by answering a survey about product preferences). *See, e.g.,* Respondent Document Submission

generate pricing recommendations across a client's entire catalog of offerings and sales channels.[15]

> **Price Targeting Use Case**
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> **Different Locations, Different Prices**: For example, a price targeting tool could potentially be used by an office supplies retailer to determine different product prices for each of its stores by using data gleaned about a nearby competitor's pricing for comparable products. In this instance, that retailer could then tailor its website so that visitors see only the specific prices featured in the store nearest to their inferred location.

Price targeting tools can be used to generate pricing recommendations on different schedules, from monthly updates to minute-by-minute updates.[16] For companies that operate an ecommerce website or use electronic shelf labels, price changes could occur with similar frequency. Some tools are designed specifically for businesses that sell to other businesses and can generate targeted prices on-demand, potentially in milliseconds, for quote negotiation or for other purposes.[17]

(2) Consumer segmentation and profiling tools create unique consumer profiles and divide consumers into segments based on attributes or behaviors that are either inferred or explicitly defined.[18] Those segments can then be used as targets for ads, promotions, and coupons based on what a company has learned about a consumer, including how the consumer interacts with its website, what they have spent on a specific products or services, or predictions about what that consumer might purchase in the future.[19] For example, a company could use such a tool to segment a group of consumers as "service veterans seeking jobs" and target those consumers with promotional codes for career services, financial products, or job development certifications. These segments can serve as proxies for a customer group's potential interest in purchasing certain goods or services, which can then be used to streamline the process of targeting ads or promotions toward that group. Segments defined with these tools may also be used with other categories of tools, such as ones that determine search results or product rankings.[20]

(3) Search and product ranking tools, while not the intended focus of the 6(b), were identified as solutions by some intermediaries. These solutions can use consumer segments or

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[ ] Other tools might allow a company to make inferences based on a consumer's interactions with a website or app that can be more implicit about communicating intent or product preferences (*e.g.*, mouse movement behavior, browser inactivity, etc.). *See, e.g.,* Respondent Document Submission

[15] Respondent Document Submission

[16] Respondent Document Submission

[17] Respondent Document Submission

[18] This can include tools that could let online retailers segment shoppers visiting their website or app along attributes like preferred price range or fondness for certain brands. These inferences may be partially derived from the real-time interactions that shoppers have with a digital storefront including clicks, time spent watching content, and more. *See, e.g.,* Respondent Document Submission

[19] In general, some products may use inputs (like a person's past purchase history or coupon usage) to algorithmically determine certain shoppers are likely to spend in different categories of goods, whether online or in-person. *See, e.g.,* Respondent Document Submission

[20] Respondent Document Submission

real-time behavioral data associated with a shopper to affect what products are given prominence on a webpage,[21] which can mean re-ordering the shopper's search results for a given online storefront.[22]

Product Ranking Use Case

Search Results for New Parents: For instance, if a consumer is profiled as a new parent, the consumer may intentionally be shown higher priced baby thermometers on the first page of their in-app search results, based on their residential zip code and time of purchase. These tools could also potentially be used to collect behavioral details that a retailer could use to forecast a customer's state of mind, like using a shopper's selection of "fast-delivery" shipping on an order of infant formula to infer that a shopper could be a rushed parent who may be less price-sensitive.

The company using these tools can further alter the placement of products within search results or product recommendations based on factors like a product's popularity, its available inventory, its profitability, or datapoints it collects from consumers such as user views,

cart-adds, or other measures of perceived intent to purchase different goods.[23]

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2. What is staff learning so far about how these tools work to target prices or segment users?

Increased access to computational power,[24] advancements in machine learning and artificial intelligence,[25] and access to third party specialized pricing products and services[26] have enabled companies to develop pricing strategies tailored to detailed consumer characteristics.[27]

Existing and common techniques used for targeted advertising can also be used for other forms of targeting prices. These mechanisms can be used to offer discounts to specific customer groups, tailor the prices each group sees, or curate the product selection made immediately available to each. For example, targeted ads often rely on browser cookies or mobile software development kits (SDKs)[28] to track people's responses to seeing a targeted ad on their device.[29] These types of tools can also be used to monitor people's responses to seeing specific products displayed on an ecommerce website.[30]

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[21] Respondent Document Submission ▮▮▮

[22] Respondent Document Submission ▮▮▮

[23] Respondent Document Submission ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

[24] *See, e.g.*, Jai Vipra & Sarah Myers West, *Computational Power and AI*, AI NOW INSTITUTE (Sep. 27, 2023), https://ainowinstitute.org/publication/policy/compute-and-ai.
[25] *See also* Margarethe Vestager, Sarah Cardell, Jonathan Kanter & Lina M. Khan, Joint Statement on Competition in Generative AI Foundation Models and AI Products (July 23, 2024), https://www.ftc.gov/system/files/ftc_gov/pdf/ai-joint-statement.pdf.
[26] *See also* Lesley Fair, Fed. Trade Comm'n, Better Safeguard Than Sorry (Dec. 15, 2020), https://www.ftc.gov/business-guidance/blog/2020/12/better-safeguard-sorry.
[27] *See also* Elisa Jillson, Fed. Trade Comm'n, Aiming for truth, fairness, and equity in your company's use of AI (Apr. 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.

[28] Respondent Document Submission ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

[29] Browser cookies can be described as small files that are dropped into a person's web browser when they visit a website for the purposes of tracking details like a users' device information, relevant login information, search histories, or behavioral data. *See, e.g.,* Wayne A. Jansen et al., *Guidelines on Active Content and Mobile Code*, NAT. INST. OF STANDARDS AND TECHNOLOGY at C-1 (Mar. 2008), https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-28ver2.pdf. SDKs are libraries natively integrated into mobile apps by developers to interface with an upstream application. *See, e.g., Terminology,* IEEE XPLORE API PORTAL, https://developer.ieee.org/Terminology. Instead of relying on browser cookies, SDKs can interface with application databases allowing them to store details necessary to tie app installations, in-app purchases, and other behaviors to a given ad campaign.
[30] Multiple respondents highlighted the importance of browser cookies as a tracking mechanism in scenarios in which PII such as a shopper's email address or phone number are unavailable. *See, e.g.,* Respondent Document Submission ▮▮

Segmentation Use Case
Targeting Reluctant Gamblers: For instance, if a hypothetical customer who visits a sports betting website demonstrates hesitation by lingering on the homepage longer than expected or moves their cursor towards the button to close out their browser tab, the website may trigger a pop-up showing popular sporting events to incentivize the visitor to remain on the website and place a bet.

In addition, in the same way that online advertisers have techniques to tie ads a person sees on one device (such as their phone) to the ads seen elsewhere (such as their desktop),[31] intermediaries can use responses to promotions and discounts presented in one environment (such as shopping in a store) to influence[32] the discounts and promotions presented in another (such as shopping in an app).[33]

Thus far, the study has highlighted a variety of targeting methods that are used by the 6(b) study respondents.[34] The sets of products reviewed focus on a breadth of data types from different data sources.[35] There are a number of variables that can impact what products a consumer is shown or what prices (including promotions or discounts[36]) a consumer might be offered. These include *where* the consumer is, *who* the consumer is, *what* the consumer is doing, and *prior actions* a consumer has taken, such as clicking on a specific button or element on webpage, watching a video, or adding a particular item to their cart or wish list.[37] Some of the 6(b) documents outlined that a consumer's geolocation may play a role in determining the prices to present,[38] along with potentially many other variables, including but not limited to, the channel the consumer is searching (online, in store, in app) and individual characteristics of the consumer.[39]

Consumer Targeting Use Case
Encouraging Impulse Shopping During Critical Times: A hypothetical health supplies company that has identified some of its customers[40] as homeowners living in an area that is undergoing flooding could target them with promotional campaigns for stress-relief supplements.

Alternatively, intermediaries can potentially offer targeted pricing that uses customers' characteristics, interactions, and purchases to

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[31] *See, e.g.,* IAB UK, *ID5 ID and Cross-Device Graph*, https://www.iabuk.com/directory-targeting-measurement-tools/id5-id-and-cross-device-graph.
[32] Respondent Document Submission █████████ ██████████████████

[33] For example, a retailer can compile a list of email addresses from shoppers who have signed up for its loyalty program in-store and then encourage those customers to shop online by targeting them with promotional deals exclusive to its website.
[34] *See also* Order Specifications Nos.1, 2.
[35] Respondent Document Submission ████████████████████

[36] Respondent Document Submission █████████

[37] Respondent Document Submission

[38] Respondent Document Submission ███████████

[39] Documents have indicated that customers targeted can include those who are coupon-inclined, who have perceived customer "loyalty," or who demonstrate a "willingness to pay," or based on consumer data directly, such as the price bracket that their past purchases fall within. *See, e.g.,* Respondent Document Submission ████████████████████

See also, Respondent Document Submission ██████████████████

[40] Identifying consumers can be done in a variety of ways including by using prior purchase history, location, or shipping address. *See, e.g.,* Respondent Document Submission ███████

produce a personalized price, discount, or quote based on an estimate of their price sensitivity.

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3. What is staff learning so far about the customers and industries involved?

As part of the 6(b) orders, respondents were asked to disclose a list of all current clients for each Solution,[41] identify their top clients by spend, and provide contracts and service agreements from those clients.[42] Based on review of the productions thus far, staff have determined that the intermediaries collectively work with at least 250 clients that sell goods or services to some combination of consumers and businesses.

Several types of consumer-facing businesses were among the disclosed clients, including grocery stores,[43] apparel retailers, health and beauty retailers, home goods and furnishing stores, convenience stores, building and hardware stores, and general merchandise retailers such as department or discount stores. While some of these clients appeared to sell goods primarily online, others sold through a combination of ecommerce and brick-and-mortar stores. Two intermediaries also offered tools specifically for the financial services industry and travel companies, and some indicated that their clients included credit card issuers and car rental companies. Other clients included ecommerce marketplaces where consumers who might have difficulty purchasing goods on credit can otherwise purchase brand name items on a lease-to-own basis, as well as online casinos and companies specializing in sports betting.

Some intermediaries offered and sold tools specifically for businesses that sell to other

businesses. Business-facing clients include distributors and wholesalers that specialize in areas such as groceries and pharmacy or medical supplies, and manufacturers of construction and building supplies, food and beverages, and electronics.

In a few cases, multiple respondents identified the same clients, suggesting that, for instance, some intermediary tools have distinct purposes that could potentially be used together in practice with other intermediary tools.[44]

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4. What is staff learning so far about the data sources and the types of data collected to power surveillance pricing products and services?

Data Sources. Data inputs vary based on the intended purpose of a given tool. The data that is used in conjunction with solutions does not necessarily have to be sourced from the developer of the tools. Based on documents reviewed thus far, it seems that some companies that use solutions offered by the respondents may often provide their own customer data, instead of relying on data provided by the respondents themselves.[45]

Some solutions offer the ability to do more generalized price setting and management. These tools are typically geared toward retailers that operate many stores or retail channels. These tools rely on data about the products being sold, the locations where consumers can buy them, historical sales data, and consumer segmented and geolocational pricing rules.[46] They can also rely on data about how competitors are pricing the same or similar

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[41] *See supra* note 8.
[42] *See also* Fed. Trade Comm'n, Order To File A Special Report - 6(B) Surveillance Pricing Intermediaries (2024), https://www.ftc.gov/system/files/ftc_gov/pdf/sp6b_order_surv_pricing.pdf.
[43] This includes large regional grocers.
[44] This dynamic has been seen with food and beverage retailers, including grocery chains, and department stores.
[45] Respondent Document Submission ▮▮▮▮▮

[46] Respondent Document Submission

products.[47] This information can be obtained via web scraping or other means.[48]

However, other solutions can facilitate the direct collection and collation of individual consumer data or infer information about a consumer by collecting data directly when they take actions such as registering an account, signing up for emails, or completing purchases.[49]

Types of data. The following highlights some examples of data types that are collected.

• **Direct consumer or behavioral data.** Some tools, such as intermediary-provided web pixels, can collect signals from a broad array of online behaviors. These tools could also collect information such as a consumer's IP address, device type, the browser they used, or language settings to draw conclusions about the offerings a consumer might be most interested in.[50] For example, a person who visits the website for a financial institution using a U.S. IP address with their language default set as "Spanish" might be offered different credit cards or money transfer.

Further data collected can include micro interactions shoppers might have with a virtual storefront, whether they've used their mouse to highlight the name of a particular product on the page, how far down that page they scroll while shopping, or whether they watched a given percentage of an on-page video before closing it.[51] An online retailer for survivalist gear, for example, could use the information that a site visitor watched at least 65% of a video on its homepage as a signal that they might be

receptive to text messages urging them to make a purchase.

Other tools are designed to track responses to promotional campaigns. These tools can report details like the time of day a person is most likely to respond to an email blast, which links in that email they click on, or how quickly they exit the page after clicking on one of those links.[52]

Data Collection Use Case

Targeting Consumers Using Skin Tone Data: For example, a cosmetics company may collect information on consumer's skin type or skin tone through a survey. The company can then use that information about skin tone to target consumers with ads or promotions.

• **Inferred data.** Other information can be inferred based on a consumer's online behavioral data.[53] For example, a consumer's IP address could be used to infer their location. Actions like placing an item in a cart, but not purchasing, or sorting a feed of products from "lowest" to "highest" price, could hypothetically be used to infer aspects such a shopper's emotional state, purchase intent, or financial sensitivity. For example, it could be inferred whether a consumer is an impulse shopper as opposed to one who studies products prior to purchase, or whether the consumer is likely to be interested in products eligible for food assistance benefits. Data inference mechanisms can be varied, and the study documents did not fully

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[47] Respondent Document Submission ▮▮▮▮▮▮▮▮▮▮▮▮

[48] Respondent Document Submission ▮▮▮▮▮▮▮▮▮▮▮▮

[49] Respondent Document Submission ▮▮▮▮▮▮▮▮▮▮▮▮

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outline or represent how some inferences were derived.

• **Other company data sources (e.g., third-party or first-party sources).** Companies who purchase the solutions can also provide additional data they may have on-hand or in other places to intermediaries, such as previous purchases the consumer has made with the company or a consumer's gender or birthday.[54] Companies can also share customer data with other platforms or data brokers and can import additional customer data from third-party sources.[55] These external data sources can include ecommerce platforms, loyalty or rewards platforms, reservation-booking systems, customer support platforms, review platforms, call-tracking platforms, and data brokers.

Consumer profiles. Some tools offer the capability to merge data from disparate sources into a unique profile about a specific consumer that a company can link to identifiers such as a unique browser cookie, or an email address a shopper provides during checkout.[56] Once a consumer's profile is assembled by a given company, this profile can be continuously supplemented with new information gleaned from the consumer's ongoing interactions with it. These interactions are not limited to those made while shopping on a single device.[57] Consumer behaviors within apps or in-store kiosks, including those with interactive touchscreens, could influence the promotional

targeting that a shopper experiences in the following days, weeks, or even months.[58] Based on their profiles, a company can use these tools to segment consumers into different categories based on perceived traits like a shopper's "loyalty"[59] to a specific retailer, the total revenue that retailer expects to derive from that customer over time, or how recently or frequently the consumer tends to make purchases. They can also be used to generate predictions about a given shopper segment, such as how likely they are to make a purchase with the company within the next month. Consumer profiles and the ways they are segmented can affect how products are displayed on a website or app, alter the language or imagery displayed, or alter the promotions that might be made available to them at any given time.

Consumer Profiling Use Case
First-time car buyers: For example, a person who visits a car dealership and uses an in-store kiosk to explore different vehicle models, features, and financial options for a car could potentially be segmented as a "first-time car buyer" by the dealership using these tools, inferring that shopper might be less savvy about the options available and be promoted particular financing rates, trade-in discounts, or maintenance products.

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[59] Based on the collective documents provided, one interpretation for this phrase in commerce-related scenarios, can be a person's inclination to make ongoing purchases with a given retailer or brand. For instance, some respondents noted in documentation that a given retailer can gauge a shopper's "loyalty" to their products by measuring metrics like the frequency a person shops at a given location or for a specific product, and the sum total of purchases that person has made over time. *See, e.g.,* Respondent Document Submission ████████████████████
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5. What is staff learning so far about the products' effects on prices, sales and revenue, or consumers?

In provided documents and public marketing materials, respondents generally described their tools as having two kinds of "business value": boosting revenue (through higher prices for their goods and more goods sold) and lowering costs (through automated pricing and marketing).[60]

Several respondents described revenue impacts in the form of increases in sales volumes, revenue, margin, or profit.[61] Multiple respondents described their tools as supporting revenue growth at between 2–5%.[62] Some respondents described these impacts across all transactions, while other respondents described impacts at the level of an average customer.[63] Multiple respondents claimed increases in margins of 1-4%,[64] meaning the tools can, for example, help companies increase prices or lower costs on average, rather than simply increasing the number or size of sales.[65]

Price targeting tools, including the ones previously mentioned, can potentially lower the cost of setting and changing prices, enabling companies to customize prices for more combinations of goods, locations, times, and sales channels.[66]

Prices are increasingly multi-dimensional. Instead of a price being a static feature of a good, the same good may have different prices in different places or for different people or audience segments based on data gathered and used from various sources. Customer shopping is not necessarily defined by the interactions that start or end in a session online or in stores. With pricing intermediaries, there are more options for firms to deploy surveillance pricing related strategies for their businesses.

There is more work to do. In terms of broader, more definitive impacts to prices or market participants, this area of study is still underway.

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[60] Respondent Document Submissions ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

[61] Respondent Document Submissions ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

[62] Respondent Document Submissions ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

[63] *See, e.g.* Amita Jain, *Customer Lifetime Value (CLV): A Critical Metric for Building Strong Customer Relationships,* GARTNER DIGITAL MARKETS (May 5, 2023),

https://www.gartner.com/en/digital-markets/insights/what-is-customer-lifetime-value.

[64] Respondent Document Submissions ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

[65] "Margin" generally describes the gap between the price at which a product is sold and the cost of making it, often expressed as a percentage of the sale price. Increasing margins typically requires increasing prices or decreasing the cost of producing the product. While increasing the number or size of sales of a product boosts revenue, those kinds of changes do not change the margin of the good.

[66] Respondent Document Submissions ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮