JCOTS

JOINT COMMISSION ON TECHNOLOGY & SCIENCE

Bill Study

Algorithmic Pricing Devices

August 2025

How to read this report

This bill study is organized into five sections:

- **Executive Summary** provides a synopsis of the bill study accompanied with key takeaways;
- The **Introduction** gives an overview of the topic, description of important concepts related to algorithmic pricing devices, and outlines the relevance of algorithmic pricing devices to policy and policymakers;
- The **Key Concept** describes how algorithmic pricing software functions;
- The **Legislative Overview** summarizes the proposed Virginia bills pertaining to the regulation of algorithmic rental pricing devices and bills in other jurisdictions;
- Finally, the **Policy Recommendations** section puts forth several recommendations and suggestions for policymakers to consider when developing policy solutions.

The report can be read as a continuous document, or readers can skip to sections of interest. Important takeaways are summarized in the Policy Recommendations section.

Executive Summary

Algorithmic pricing is defined as data-driven pricing strategies that use various input data to populate algorithms (e.g., mathematical equations) in order to generate a suggested price. When algorithmic pricing is applied to software used in the rental market, some recent research and investigative reporting has shown that these algorithmic pricing devices can rely on nonpublic data in commercial revenue management software that was manually inputted and/or granted access to by property managers and landlords. The concerns around coordination, collusion, and price fixing come up when the pricing algorithm uses nonpublic data beyond a specific property and takes into account nonpublic data from competitors to generate a recommended rental price. [1]

This bill study documents the media coverage on algorithmic pricing devices with additional focus on the ongoing U.S. Department of Justice lawsuit against RealPage (i.e., a widely-used algorithmic pricing software in the rental market). Next, this bill study describes the structure of algorithmic pricing devices and how they function. The bill study then summarizes the proposed bills in Virginia and other jurisdictions, with city-level ordinances passed in San Francisco, Philadelphia, and

Minneapolis. The final section highlights policy recommendations for drafting future legislation, such as considering possible redundancies with the Virginia Antitrust Act, additional details for definitions, and attention to concerns for related markets outside of rentals, transparency, and collusion.

Introduction

Concerns around **algorithmic pricing devices** came to the forefront within the past year due to heightened media attention following a civil antitrust lawsuit against a software company operating in the rental pricing sector. Broadly, algorithmic pricing is defined as data-driven pricing strategies that use various input data to populate algorithms (e.g., mathematical equations) in order to generate a suggested price.[1] When algorithmic pricing is applied to software used in the rental market, these algorithmic pricing devices reportedly rely on nonpublic data in commercial revenue management software that was manually inputted and/or granted access to by property managers and landlords.[2] The issue arises when an algorithmic pricing software uses nonpublic data about properties other than the property in question, such as proprietary data from competitors to generate a recommended rental price. The algorithm's access to sensitive nonpublic competitor data allows for the potential coordination of price-setting across competitors, which violates consumer protection rights for fairness and competition in a free market under the Sherman Act.[3] There is an ongoing U.S. Department of Justice lawsuit against RealPage (i.e., a widely-used algorithmic pricing software in the rental market) that alleges the company's algorithmic pricing devices enable this kind of coordination among competitors while minimizing free market competition.

On August 23, 2024, the U.S. Department of Justice alongside the Attorneys General of North Carolina, California, Colorado, Connecticut, Minnesota, Oregon, Tennessee, and Washington filed a civil antitrust lawsuit against RealPage Inc. for its algorithmic pricing scheme that they allege decreases competition across landlords, and monopolizes the market for commercial revenue management software[2]. This lawsuit alleges that RealPage uses sensitive nonpublic data, such as effective rent and other leasing terms, from competing landlords to train and execute RealPage's algorithmic pricing software. The pricing recommendations derived from this algorithmic pricing software are grounded in the software's aim towards maximizing prices for landlords. Furthermore, access to nonpublic competitor data allows for the software to identify situations where **dynamic pricing** (i.e., rapid changes in price based on real-time analysis of market conditions and consumer behavior[4]) may benefit the landlord, such as implementing a $50 increase rather than a $10 increase based on the algorithmic

forecasting. The lawsuit highlights how affordable housing is a struggle for many Americans, and competition within the rental market should determine the rental prices, not an algorithmic pricing software aiming to maximize landlord profits through the use of nonpublic competitor data.

The U.S. Department of Justice lawsuit against RealPage Inc. has been extensively covered in news media. Prior to the lawsuit, a New York Times article reported that the RealPage software was under investigation in 2022 by ProPublica, which coincided at the same time when annual rent growth nationally peaked at 16 percent according to data from Zillow.[5] After the DOJ lawsuit was filed in 2024, another New York Times article quotes the government's complaint, which states that RealPage says that the software enables landlords to drive "every possible opportunity to increase price even in the most downward trending or unexpected conditions."[6] The article also highlighted how a client landlord provided the following testimony in the lawsuit: "I always liked this product because your algorithm uses proprietary data from other subscribers to suggest rents and terms. That's classic price fixing." To understand how widely used this specific software is within the rental market space, a Wall Street Journal article described how the RealPage software takes up 80% market share in the commercial revenue management space.[7] Another Wall Street Journal article reported on the amended civil complaint, which now includes six majority apartment landlords for the use of the RealPage software to artificially inflate rent across the nation.[8] This media coverage suggests the widespread the influence of algorithmic pricing software on a rental inflation across the United States.

Key Concept

Algorithmic Pricing Devices

Although RealPage software is the main algorithmic pricing software in the news media spotlight, this section will go into greater detail on how these algorithmic pricing devices function. Generally, when landlords and property managers use digital platforms to manage the operation of their property units, they rely on property management software, such as AppFolio, Buildium, and Yardi. Property management software houses operations information, such as property details, tenant information, financial data, and maintenance records.[9] Property details include information like unit floor plans, number of units, square footage, occupancy levels, amenities, and lease terms (i.e., effective rent, start/end dates). Tenant information includes the tenant's contact information, lease agreements, payment history, and communication logs. Financial data can include information regarding the generated income from rent, expenses (e.g., repairs maintenance, utilities), and other financial reporting that can gauge the profitability for the property units. Maintenance records track all the maintenance requests from tenants, the progress around those requests, and any preventative maintenance services. These categories and components that are tracked in the property management software provide a broad overview, but may not be completely exhaustive, and property managers may store additional information using other software tools or methods. It is also important to note that information housed in property management software is typically not readily accessible to the general public, if accessible at all.

Revenue management software is an additional tool that supports landlords and property managers in optimizing pricing, maximizing revenue, and improve profitability. The algorithmic pricing device is typically a component within revenue management software that uses a proprietary set of mathematical equations to derive suggested prices for rental units. This pricing algorithm typically accounts for publicly accessible market values for comparable floor plans (e.g., 1 bedroom, 1 bath) that are routinely (e.g., weekly) web-scraped by the software company or through a third-party aggregator. The pricing algorithm can also incorporate nonpublic internal inputs within the property management software if the landlords grant access to their internally held data stored in their property and/or revenue management software. This pricing algorithm also uses the property's demand (e.g., scheduled apartment tours, inquiries, number of applications) and supply (e.g.,

number of available units currently and within 90 days) towards suggesting a rental unit price. When algorithmic pricing devices use publicly available data and data from an individual property manager's stored information, there are no concerns around coordination across competitors because revenue management software is exclusively using public information in combination with a specific software user's locally stored data to provide that individual user with pricing recommendations.

However, the concerns around coordination, collusion, and price fixing come up when the pricing algorithm uses the privately held data from multiple property managers (e.g., effective rent, occupancy rates, lease details) to suggest prices to competing landlords. For the RealPage software, for example, a feature of their algorithm was factoring in the effective rent (i.e., the agreed rent amount in the finalized lease) towards suggesting a rental price for comparable floorplans within a 5-mile radius for a specific property unit. Effective rent, in this case, is a data category that is not publicly available, but which property managers could choose to share with the software from their own private records. This can allow the algorithm to draw on this data source across competing landlords to suggest a price based on nonpublic data. Although aggregated effective rent used in the RealPage software is only one example, any of the nonpublic data inputs within the different categories (e.g., property, tenant, financial and maintenance information) captured in the property management software can be used to train and execute the algorithmic pricing software towards suggesting a price based on nonpublic data across competitors.

Legislative Overview

Virginia

SB 1400 (Chief Patron: Senator Saddam Azlan Salim) and HB 1870 (Chief Patron: Delegate Katrina Callsen) are two proposed Virginia bills targeted towards the regulation of algorithmic devices that use nonpublic competitor data for setting, recommending, or advising landlords on rent prices and occupancy levels pertaining to their residential dwelling units. The goals of these bills are to protect tenants from inflated rental prices and preserve market competition. The bill specifies a violation as each month for each residential dwelling unit that the landlord used the suggested rental price

generated from algorithmic devices based on nonpublic data, and a monetary penalty for each violation.

HB 2047 (Chief Patron: Delegate Bonita G. Anthony) is aligned with the regulations described in the two bills in the previous paragraph. HB 2047 builds on these by proposing an Algorithmic Rent Pricing Ombudsman to offer structural support to oversee inquires, complaints, and violations pertaining to the use of algorithmic pricing towards rental units. This bill also required landlords to disclose whether an algorithmic pricing device was used in advising the rental unit price for prospective tenants.

Other Jurisdictions

Nineteen states have introduced legislation focused on the regulation of algorithmic pricing devices, with most of these bills either currently in committee or dead. Bills from California, Colorado, Illinois, Maine, Maryland, and New York have similar language and components to the Virginia bills. However, some state bills had unique features, such as inclusion of an effective date and clauses around the use of software for internal purposes that can add greater specificity for future proposed bills. For effective dates, some bills (e.g., Minnesota & Texas) gave specific dates for when the new regulation will take effect, while other bills (e.g., Massachusetts, New York & Kentucky) gave a time frame, such as the day the bill is signed or 60-90 days after becoming law to give time for landlords and property managers to comply with the new requirements. For the clauses around the use of algorithmic pricing software for internal purposes, a bill put forth in New Jersey (NJ A4916) explicitly states that, "This bill does not restrict the development, sale, or use of software to help landlords manage units based on internal data or with use of publicly available data." And Kentucky also stated in their proposed bill (KY HB358) that an algorithmic device "does not include a product designed internally and used exclusively by a landlord or a landlord's affiliates."

Colorado was the only state to pass a similar bill around algorithmic devices using nonpublic competitor data to coordinate rental prices (HB21-1004), which was vetoed by Governor Jared Polis. The rationale for the veto was around how the collusion among competitors is already covered in the Colorado Antitrust Act. Furthermore, the Governor expressed concern about the potential repercussions of signing the bill when there are ongoing state and federal investigations on algorithmic pricing software.

Although no state bills have been passed, at least three city-level ordinances prohibiting the use of algorithmic devices that use nonpublic competitor data for price-setting were passed in San Francisco[10], Philadelphia[11], and Minneapolis[12].

Policy Recommendations

JCOTS acknowledges the problems that may arise with algorithmic pricing devices and cites a growing body of evidence that the use of nonpublic competitor data may pose risks of collusion and unfair market practices. However, given the pending federal lawsuit against RealPage and the need for further systematic investigation and discovery in that case, JCOTS staff recommend that policymakers monitor the U.S. Department of Justice lawsuit[13] and its completion in order to draft specific language targeting any harms identified in that case. Informed by the outcome and findings in that case, the following recommendations may be considered if regulatory action is then deemed necessary.

Distinction from the Virginia Antitrust Act: Policymakers should consider whether Virginia Antitrust Act sufficiently covers the actions of algorithmic rental pricing software companies. The goal of this act is to promote a free market system, while prohibiting restraints of trade.[14] Section 59.1-9.5. (Contracts, etc., in restraint of trade unlawful) states that, "Every contract, combination or conspiracy in restraint of trade or commerce of this Commonwealth is unlawful." Future proposed bills could more clearly indicate that algorithmic pricing software is covered by this existing legislation, or if such software is not adequately covered, future legislation could expand or extend this section of the Code of Virginia with specific language about algorithmic manipulation of markets.

Definition of Nonpublic Competitor Data: The current definition around nonpublic competitor data in the proposed Virgina bills is as follows—"Nonpublic competitor data" means information that is not available to the general public, including information about actual rent prices, occupancy rates, lease start and end dates, and similar data, regardless of whether the data is attributable to a specific competitor or anonymized, and regardless of whether the data is derived from or otherwise provided by another person that competes in the same market or a related market.

After conversations with academics specializing in collusions/cartels and antitrust law, policymakers should consider the inclusion of the following components in an updated definition of nonpublic competitor data:

- *Characteristics:*
  - *Rental unit size (e.g., square footage)*
  - *Amenities*
  - *Concessions (e.g., first month free rent)*
  - *Number of occupied and unoccupied units*
  - *Overall capacity*
- *Definitions for:*
  - *Vacancy*
  - *Related market*
- *Additional Details:*
  - *Data that affect rents and markets*
  - *Data that are relevant to the lease terms and agreements*
  - *Description of aggregation of the data—this suggestion stems from the algorithm pooling comparable competitor units together to suggest a price based on nonpublic data*

Consideration for Related Markets: Realtors rely heavily on the Multiple Listing Service (MLS), which is a database maintained by real estate professionals to help their clients buy and sell property. Only realtor accounts have access to the MLS database and have the account privileges to input and update property listings. When realtors input and update property listings, there is a duration where the input data are nonpublic, and only other realtors have access to this data. However, after this embargo, the data inputted in the MLS database are syndicated or relayed to public facing websites, such as Zillow and Home.com. Policymakers may consider updating the nonpublic competitor data definition to include a clause that provides an exception for nonpublic data that will eventually become public after a certain duration. The addition of this clause will ensure that the operations of the MLS database are not disrupted by regulations proposed in future bills.

Consideration for Consumer Transparency: The use of and reliance on algorithmic pricing software have shed light on a broader lack of transparency in advertised rental prices. Algorithmic

pricing devices use proprietary equations and forecasting tools to estimate supply and demand for an individual property, and property managers, landlords, and renters are not given details around what factors and the accompanying degree of each factor affect the suggested rental price. Furthermore, the suggested rental price fluctuates based on the frequency of how many times the software scrapes public websites to gather market prices, in tandem with the individual properties' varying supply and demand, which in turn can lead to dynamic pricing.

In comparison to the rental market, the real estate market appears more transparent when appraising the value for a certain property. To appraise a property, they take into consideration the mortgage, property taxes, repairs, location (e.g., comps, school districts, etc.), and other housing characteristics based on the property itself and publicly available information. This level of transparency does not extend to the rental market and may be further exacerbated by proprietary algorithms that do not explicitly describe how various inputs in the algorithm were used to derive a suggested rental price.

Lack of transparency in conjunction with the dynamic pricing becomes a barrier for low-income prospective tenants that have fixed income and rental voucher amounts that do not have the flexibility to adapt to the dynamic pricing changes that these algorithmic pricing devices suggest. Policymakers could consider requiring additional consumer transparency reports for the rental market as exist in the real estate market and/or to require software developers to disclose certain information about how algorithms generate price recommendations for landlords and property managers.

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