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Reprogramming Competition: Remedying Algorithmic Price-Fixing in *U.S. v. RealPage*

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Abstract

The Department of Justice recently sued RealPage, an algorithmic rental pricing tool, for soliciting competitively sensitive information from landlords and facilitating collusion among them, in violation of Section 1 of the Sherman Act. The Department of Justice also extended these allegations of anticompetitive behavior to several major landlords, and reached a settlement with one, proposing to prohibit them from leveraging any nonpublic data in future price setting. Should the government win its case, we argue that three proposed types of remedies fail to eliminate the conditions that incentivize RealPage's collusive behavior. First, remedies that curb information sharing overlook that collusion is not predicated exclusively on information exchange: the algorithm's network of competing landlords is large enough for each landlord to expect mutual uptake of the algorithm's supracompetitive price recommendations. Second, remedies that impose technical limits on RealPage's algorithmic architecture prove difficult to consistently monitor for compliance, and thus may let intermittent collusion slip under the cracks. Finally, remedies that fracture RealPage's collusive network still leave fragments that can continue to maximize profit jointly for all landlords, both within their sub-network and among other sub-networks. Instead, we propose that RealPage be categorically barred from recommending bespoke prices for more than one competitor.

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I. Introduction

In 2022, ProPublica published an article diving into a "secret" algorithm responsible for raising rents, tracing it back to a high-tech revenue management company called RealPage.[1] The investigation detailed the company's use of its flagship software, YieldStar, to suggest rental pricing decisions to its client landlords. RealPage had recommended landlords to raise rents up to 14.5% with property managers raving "the beauty of YieldStar is that it pushes you to go places that you wouldn't have gone if you weren't using it."[2] Following the publication of the article, a steady crop of class action lawsuits alleging anticompetitive behaviors from RealPage and its users popped up across the country. Scrutiny against RealPage grew in 2023 when D.C. Attorney General Brian Schwab announced a lawsuit against RealPage and 14 other DC landlords for colluding in artificially raising rents.[3,4] In 2024, the Department of Justice Antitrust Division joined state attorney generals across the country in filing a civil lawsuit against RealPage.[5] In 2025, the DOJ added seven landlords as defendants to an amended complaint, citing their involvement in RealPage's scheme to collude to artificially inflate rent prices.[6]

While differing in the details, each complaint alleges something of the same architecture: RealPage amasses a network of rival landlords and polices their adoption of the company's AI-powered price recommendations, which work to jointly maximize profits, effectively engaging in collusive behavior that violates Section 1 of the Sherman Act. The DOJ additionally alleges that RealPage's amalgamation and use of sensitive competitive information to foreclose competitors in the market for commercial revenue management software constitutes illegal monopolization in violation of Section 2 of the Sherman Act.[7]

RealPage's algorithmic coverage extends to large swaths of metropolitan areas. ProPublica's investigation found that one Seattle neighborhood was dominated (70 percent of apartments) by just ten property managers—every single one of which used RealPage.[8] Nationwide, economists pin RealPage and their competitors' penetration in the rental housing market at a minimum of 10 percent, though that figure rises to 25 percent of all multifamily rental

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[1] Heather Vogell, *Rent Going Up? One Company's Algorithm Could Be Why.,* PROPUBLICA (Oct. 15, 2022), https://www.propublica.org/article/yieldstar-rent-increase-realpage-rent (last visited May 20, 2025).

[2] *Id.*

[3] District of Columbia v. RealPage, Inc. et al., No. 2023 CAB 006762 (D.C. Super. Ct. Nov. 1, 2023).

[4] State of Arizona v. RealPage, Inc. et al., No. CV2024-003889 (Ariz. Super. Ct. Maricopa Cnty. Feb. 28, 2024).

[5] United States et al. v. RealPage, Inc., No. 1:24-cv-00710 (M.D.N.C. Aug. 23, 2024).

[6] United States et al. v. RealPage, Inc. et al., No. 1:24-cv-00710-LCB-JLW (M.D.N.C. Jan. 7, 2025) [hereinafter DOJ Complaint].

[7] *Id.* at 100.

[8] Vogell, *supra* note 1.

housing;[9] in the top 20 metropolitan areas in the country, RealPage's penetration ranges from 10 to 70 percent.[10] In achieving a market share of at least 80 percent in the commercial revenue management software market, RealPage subsumed into its collusive network the 10 largest multifamily rental housing owners and operators[11] and at least 47 of the top 50.[12]

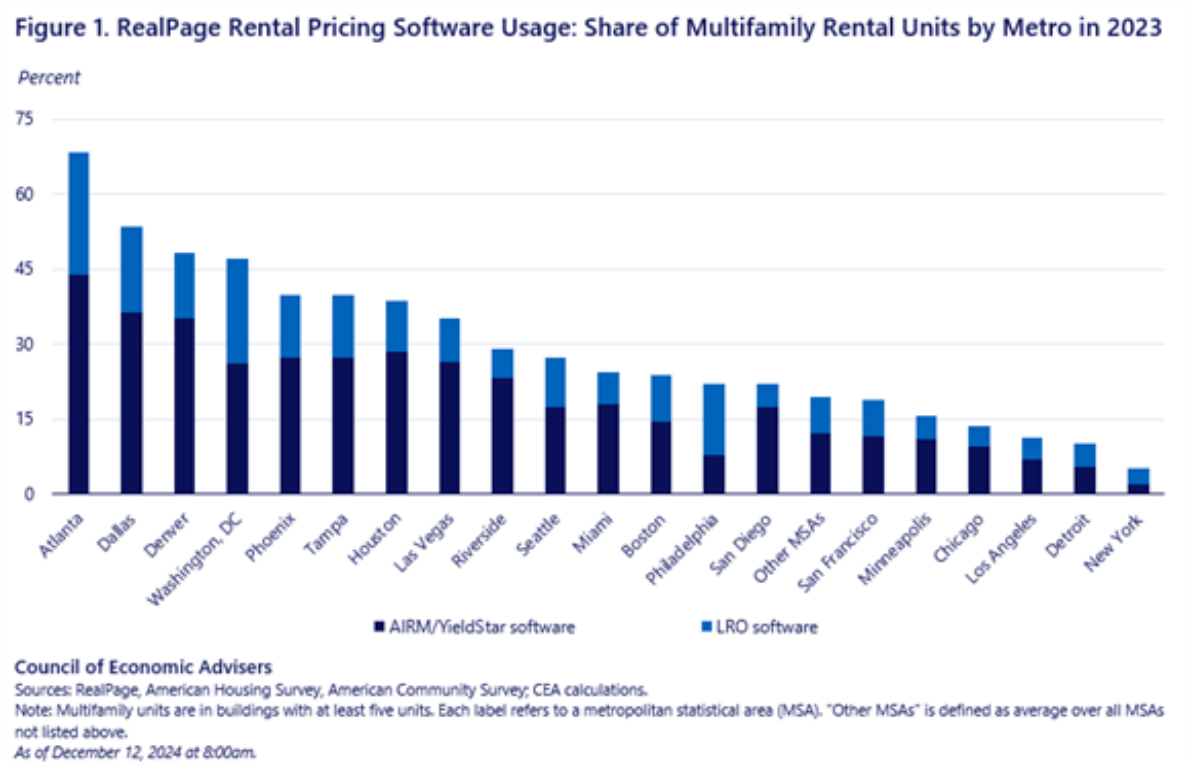

Fig 1: RealPage Rental Pricing Software Usage: Share of Multifamily Rental Units by Metro in 2023

In Appendices A and B of the amended complaint, the DOJ explicitly identifies the numerous markets in which violations are alleged: the universe of multifamily rental housing, segmented by bedroom count, within clusters of adjacent neighborhoods across major metropolitan areas.[13] Rental pricing algorithmic coverage in these markets range from 30 to 80

[9] Sophie Calder-Wang & Gi Heung Kim, *Algorithmic Pricing in Multifamily Rentals: Efficiency Gains or Price Coordination?*, J. POLITICAL ECON. (forthcoming, 2024), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4403058 (last visited May 20, 2025).

[10] Council of Economic Advisers, *The Cost of Anticompetitive Pricing Algorithms in Rental Housing*, THE WHITE HOUSE (Dec. 17, 2024), https://bidenwhitehouse.archives.gov/cea/written-materials/2024/12/17/the-cost-of-anticompetitive-pricing-algorithms-in-rental-housing/ (last visited May 20, 2025).

[11] District of Columbia v. RealPage, Inc. et al., No. 2023 CAB 006762 (D.C. Super. Ct. Nov. 1, 2023).

[12] United States et al. v. RealPage, Inc., No. 1:24-cv-00710 (M.D.N.C. Aug. 23, 2024).

[13] DOJ Complaint at 127-155.

percent; RealPage boasts a market share of at least 30 percent in most.[14] We endorse the DOJ's market definition, but acknowledge that the bespoke delineation of neighborhoods into these markets, or "submarkets" as the parties in the case refer to them, complicate the development and enforcement of a remedy. As such, the DOJ also offers core-based statistical areas (CBSAs), with multifamily rental housing segmented by bedroom counts, as relevant geographical markets. We adopt this market definition for our remedy analysis.

Assuming the DOJ prevails in its case against RealPage, it will have to carefully craft a remedy that restores competition to these markets. The DOJ has already reached a settlement with one of the defendant landlords, Cortland Management ("Cortland"), and proposed a set of remedies. [15] In addition to restrictions imposed on Cortland's own proprietary revenue management system, the DOJ proposed that Cortland be prohibited from using any third-party revenue management system that: 1) used any kind of nonpublic data – even Cortland's own data; 2) incorporated in its recommendations a rental price floor or limit on rental price decreases; or 3) mandated or rewarded acceptance of recommended rental prices.[16] Moreover, the DOJ prohibited Cortland from expressly or tacitly agreeing with non-Cortland property managers on the use of a particular third-party revenue management system. [17] Finally, the DOJ proposed that any use by Cortland of a third-party revenue management system must be notified to, cleared by, and regularly monitored by the court.[18]

If the Cortland proposed final judgment were to serve as the model for any future potential remedies involving RealPage, we argue that the court would still have failed to fully restore competition. The judgement, while regulating Cortland's access to nonpublic data and indirectly pushing RealPage to shift their algorithmic design, does nothing to address the central feature of RealPage's conduct: the dissemination of pricing instructions by a central decision-making authority to maximize profits for competitors collectively across entire markets. That decision-making power should not be placed in the hands of a central hub, and has traditionally been treated as cartel behavior.[19]

In this paper, we argue that any remedies which leverage pro-competitive justifications of RealPage's present business model to salvage the company may only slightly improve market

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[14] *Id.*

[15] Proposed Final Judgment, *United States v. Cortland Mgmt.*, LLC, No. 1:24-cv-00710-LCB-JLW (M.D.N.C. Jan. 7, 2025) [hereinafter Cortland Settlement].

[16] *Id.; see also* Comments of the Center for Democracy & Technology, *United States v. RealPage, Inc.*, No. 1:24-cv-00710-LCB-JLW (M.D.N.C. Mar. 24, 2025) (regarding proposed consent decree with Cortland Mgmt., LLC).

[17] *Id.*

[18] *Id.*

[19] S*ee generally* Interstate Circuit, Inc. v. United States, 306 U.S. 208 (1939); United States v. Apple Inc., 791 F.3d 290 (2d Cir. 2015); Toys "R" Us, Inc. v. FTC, 221 F.3d 928 (7th Cir. 2000).

conditions, but will ultimately falter in restoring competition and maximizing welfare. In particular, we argue that the following three potential remedies are insufficient:

1. Focusing narrowly on the sharing of nonpublic data;
2. Adjusting the algorithmic design and operation; and
3. Attempting to break up RealPage.

We argue that (1) the exchange of nonpublic data is neither a necessary nor sufficient condition for RealPage's collusive behavior, (2) the realities of policing algorithmic design entail a significant risk of costly under-monitoring, and (3) any sensible effort to break-up the RealPage network will fail to fully extinguish collusive behavior.

The issue at the heart of this case is RealPage's ability to simultaneously orchestrate prices for multiple competitors; so, the heart of our remedial recommendation is as follows: RealPage should be barred from making specific, tailored price recommendations to more than one competitor. Accordingly, it must either limit its price recommendation and optimization services to *one* client using only publicly available information. We acknowledge that the company may not find this line of business profitable. For that reason, we offer RealPage the option to recommend prices to *zero* competitors: it can distribute aggregated, non-confidential information *without recommending any specific price strategies*, in order to make the market more transparent and well-informed. Remedial schemes short of this complete termination of RealPage's ability to price on behalf of a network of competitors will leave the door open to future anticompetitive conduct.

II. A Primer on RealPage

At the core of the RealPage scheme is its flagship product, YieldStar—later renamed AI Revenue Management (AIRM). This software tool ingests competitively sensitive, real-time transactional data—including occupancy rates, lease terms, and rent rolls—collected from competing landlords through over 50,000 monthly calls surveilling over 11 million total properties; and through an algorithmic process delivers pricing recommendations to those same landlords.[20] While the AI-driven nature of the tool creates a veneer of neutrality, it masks a deliberate purpose: to engineer anticompetitive coordination which "raise[s] the tide" for "all ships." Sometimes, RealPage executives dispense with the pretense. As one company VP put it: "There is greater good in everybody succeeding versus essentially trying to compete against one another in a way that actually keeps the entire industry down"—a transparent and full-throated rejection of the competitive process. In other words, RealPage offers, in its own words, a system for "driving every possible opportunity to increase price." Indeed, economists find that RealPage and its competitors'

[20] DOJ Complaint.

facilitation of joint rental price maximization inflates rental prices by $25 to $70 per unit per month nationwide, soaring over $100 in areas such as Washington D.C., Denver, Dallas, and Atlanta.[21,22]

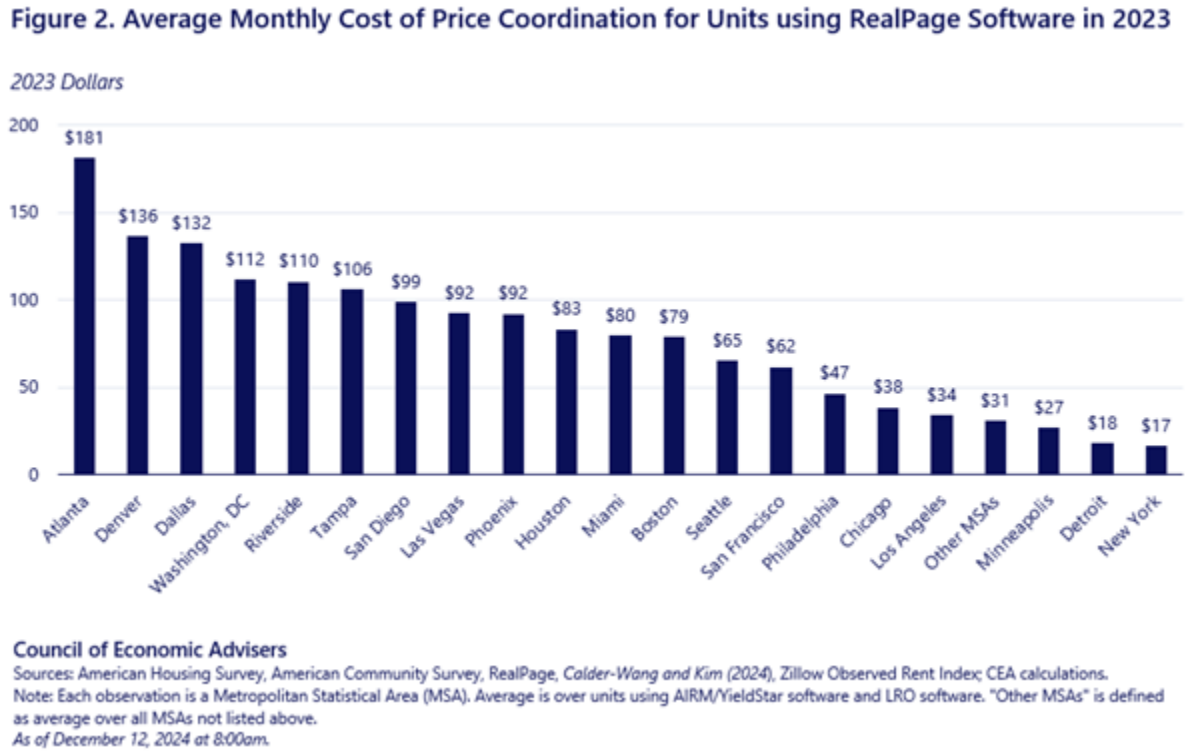

Fig 2: Average Monthly Cost of Price Coordination for Units using RealPage Software in 2023

RealPage's AIRM algorithm generates a daily pricing recommendation for each unit, accompanied by a "market range chart."[23] It appears that RealPage calculates these prices for the group of subscribing landlords. In other words, the pricing algorithm takes into account that other RealPage landlords in the market will also be setting a high price recommended by RP. The result is a similar calculation to the one a joint owner of these units would make.

Because such a calculation is not individually rational for independent landlords, RP has a novel strategy to encourage adherence. By default, the software is set to "auto-accept" price recommendations, meaning they are automatically implemented without manual review.[24] If a particular landlord wishes to override or manually review a recommendation, the apartment manager is required to submit detailed "specific business commentary" justifying the deviation.[25]

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[21] Wang & Kim, *supra* note 9.

[22] Council of Economic Advisers, *supra* note 10.

[23] DOJ Complaint at 18.

[24] DOJ Complaint at 3.

[25] DOJ Complaint at 25.

That justification is then reviewed by a designated RealPage "pricing advisor" tasked with monitoring compliance and enforcing alignment with the algorithm's recommendations.[26] In many cases, these pricing advisors actively pressure property managers to accept AIRM's price recommendations and, if the justification for the requested deviation is deemed inadequate, the matter may be escalated to the landlord's regional leadership.[27] RealPage's operational design creates explicit roadblocks for any landlord looking to reject the pricing recommendation. Landlords are able to comfortably select for the generated price recommendation with minimal fear of being undercut by their competitors. Unsurprisingly, RealPage earned a 90% approval rate on its price recommendations.[28]

RealPage draws much of its strength by obtaining competitively sensitive, nonpublic transactional data. As one landlord bluntly put it in an employee training document, "better data = better outcomes."[29] In this context, of course, a "better outcome" means that the landlord earns more profit. This granular data—capturing detailed lease terms and individual transactions—gives RealPage's algorithm deep insight into real-time market dynamics and competitor pricing. For instance, AIRM's "market seasonality" feature exploits this transactional data to generate rent recommendations informed by forecasts of competitors' *future supply*.[30] The DOJ reasons that unlawful access to nonpublic data drives landlords to RealPage over rival algorithmic pricing tools, allowing RealPage to have monopolized the market for commercial revenue management software products in violation of Section 2 of the Sherman Act.[31] Consequently, RealPage's substantial market share cements its position as a centralized pricing authority for large chunks of rental housing markets in the United States.

III. Insufficient Remedy #1: Terminating Confidential Information Sharing

The issue of sharing competitively sensitive, nonpublic data lies at the heart of the DOJ's case against RealPage and the named landlord defendants. In its proposed settlement with one of the landlord defendants, Cortland, the DOJ seeks to remedy competitive harm by narrowly prohibiting the sharing, pooling, or training of software on nonpublic data. Under the terms of the settlement, Cortland is effectively barred from using any nonpublic data in the rent-setting process—whether through direct contractual exchange, third-party intermediaries like RealPage, or comparable mechanisms.[32] Crucially, Cortland would still be permitted to use a third-party

[26] DOJ Complaint.

[27] DOJ Complaint at 3.

[28] American Economic Liberties Project & Local Progress, *A New Culprit in the Housing Crisis: Rent-Setting Software Algorithms*, AMERICAN ECONOMIC LIBERTIES PROJECT (Mar. 2024), https://www.economicliberties.us/wp-content/uploads/2024/03/Policy-Memo-Rent-Setting-Software-Algorithms.pdf (last visited May 20, 2025).

[29] DOJ Complaint at 62.

[30] DOJ Complaint at 22.

[31] DOJ Complaint at 100.

[32] Cortland Settlement.

algorithmic pricing tool shared by its competitors, provided that tool makes no use of nonpublic data and only under the supervision of a court-appointed monitor.[33]

Would competition be restored if courts were to adopt this remedial model—one that focuses solely on prohibiting the exchange of nonpublic data? The counterfactual has a real-world analogue: Lease Rent Options ("LRO"), a RealPage product acquired in 2018. Unlike AIRM, which relies on confidential, granular transactional data, LRO requires landlords to manually input information sourced from publicly available listings and generates pricing recommendations based only on that public data. In its amended complaint, the DOJ explicitly presents LRO as a procompetitive alternative to AIRM—based on the sole premise that it operates without access to nonpublic inputs.[34]

Yet this narrow focus on the nature of the *inputs* risks obscuring the central logic of the scheme's anticompetitive harm, which stems not just from the source of the data, but from the use of that data to produce coordinated pricing *outputs*. Competitively sensitive, nonpublic data may exacerbate the problem, but it is neither a *necessary* nor a *sufficient* condition for collusive outcomes when specific pricing instructions are determined jointly and collectively and then disseminated from a common source to competing firms.

Traditionally, antitrust enforcement has treated information sharing with suspicion because it increases transparency in ways that enable tacit collusion—i.e., coordination among competitors in the absence of any explicit agreement. When firms collude tacitly, they must circumvent the three traditional challenges to cartel formation in the absence of an agreement: (1) reaching consensus on the terms of coordination, (2) monitoring compliance and detecting deviations, and (3) deterring market entry. In markets characterized by high transparency, the first two obstacles become easier to overcome. Price signals and patterns become more legible, enabling firms to infer each other's intentions and align tacitly at supra-competitive levels. Similarly, transparency allows for real-time monitoring of rivals, so that any deviation from coordinated pricing can be quickly detected and punished, thereby discouraging defection in the first place. Firms which engage in information exchanges often recreate these high-transparency conditions for tacit collusion, typically through detailed common reports or forecasts.[35] In such cases, competitively sensitive

[33] Cortland Settlement.

[34] DOJ Complaint at 97 ("Less restrictive alternatives are available to RealPage and the market. RealPage has recently altered AIRM or YieldStar for some clients to remove those clients' access to competitors' nonpublic data in at least certain portions of the software. RealPage has the ability to make changes to remove broader access to competitors' nonpublic data in AIRM and YieldStar. RealPage has the capability to modify its software products to eliminate competitive defects. LRO does not require the same type and quantity of nonpublic, transactional data pulled from competitors' property management software. RealPage has stopped offering LRO to new clients and made plans to discontinue LRO for legacy clients by the end of 2024.").

[35] *See* United States v. Container Corp. of Am., 393 U.S. 333 (1969); American Column & Lumber Co. v. United States, 257 U.S. 377, 412–14 (1921).

information is far more harmful to competition than publicly available information, as it increases the granular transparency that allows firms to monitor specific rivals and their strategies closely. For this reason, courts have consistently viewed detailed information exchanges involving firm-specific, nonpublic data with greater skepticism than anonymized or aggregated disclosures.[36] Similarly, courts are especially skeptical of information exchanges that occur in highly concentrated markets involving fungible products, where coordination is both simpler to reach and to sustain.[37]

Notice that the pricing coordination alleged in the RealPage case does not rely on traditional transparency-based mechanisms of tacit collusion. Rather than enabling firms to independently align their strategies and overcome cartel problems via transparency-heightening information sharing, the information exchanges in RealPage serve to centralize decision-making authority.

RealPage's centralization of decision-making power solves the three cartel problems in a far more direct way from the top-down, rather than relying on certain kinds of data-enhanced transparency to improve tacit collusion. RealPage's algorithm uses the data to determine and disseminate specific pricing instructions to competing landlords, making the role of data *instrumental*: granular information may improve the algorithm's accuracy in setting sustainable collusive prices towards monopoly levels, but it is not essential to the structure of coordination. The common algorithm solves the problem of reaching consensus on the terms of coordination because it is in the express position to determine strategies which optimize profits jointly on behalf of landlords. RealPage overcomes the challenge of monitoring and deterring defection from the top-down, through enforcement mechanisms—such as the "auto-accept" feature, the pricing advisor arrangement, and more—which ensure in the very first instance that landlords comply with specific collusive strategic recommendations.

In that sense, the anticompetitive core of the scheme is not tethered to the nature of the data but to the centralization of pricing power. The essential economic harm arises from the fact that competing firms are outsourcing a critical competitive function—price-setting—to a common intermediary whose purpose is to maximize profits collectively rather than independently. The centralization of decision-making power for the express purpose of maximizing profits collectively instead of independently is objectionable regardless of the form of data utilized—as is the case in any hub-and-spoke cartel. If, instead of an AI-powered algorithm, a guy named "Bob" held the authority to instruct or set prices for otherwise competing firms—without access to any sophisticated private data—the arrangement would likely constitute a *per se* violation of Section

[36] *See* Maple Flooring Mfrs. Ass'n v. United States, 268 U.S. 563 (1925).

[37] *See* Todd v. Exxon Corp., 275 F.3d 191 (2d Cir. 2001).

1.[38] We must resist the temptation to let the novelty of "AI" obfuscate the core economics of the theory of harm to competition here.

In the context of RealPage, the sharing of competitively sensitive, nonpublic information is neither a *necessary* nor a *sufficient* condition for anticompetitive harm. It is not *necessary* because the core mechanism of coordination—the centralized generation and dissemination of pricing instructions—can operate even in the absence of nonpublic data. LRO relies solely on publicly available inputs, yet retains the same basic structure as YieldStar: a common pricing tool that receives data and distributes specific instructions to competing firms.

Moreover, competitively sensitive information sharing is not *sufficient* to create the type of pricing coordination at issue here. Traditional information exchanges may facilitate tacit collusion by increasing transparency and making rivals' behavior easier to monitor, but RealPage's system goes a step further: it does not merely enable firms to align with one another—it tells them how to align. The algorithm transforms data into explicit price recommendations and, in many cases, directly implements them through auto-accept features. Without this added element, competitively sensitive information sharing has distinct competitive effects and should be treated as such.

The DOJ's preference for LRO, then, is misguided and built on a formalistic distinction between public and nonpublic data that fails to address the underlying architecture of coordination and the function of the algorithm: even in the absence of nonpublic data sharing, RealPage's role as a centralized price-setter still poses serious antitrust concerns. The harm lies not in transparency between competitors, but in their delegation of pricing authority to a common decision-maker. LRO may rely on publicly available inputs, but it still functions as a centralized pricing tool. If those recommendations are widely adopted—as the system is designed to encourage—the effect is functionally the same: prices set not independently by firms in competition, but collectively through a shared mechanism.

IV. Insufficient Remedy #2: Tinkering with Algorithmic Design

RealPage's algorithmic design and its tactics for enforcing compliance among landlords are central to its coordination scheme. The proposed Cortland remedies attempt to constrain this indirectly by prohibiting Cortland from using any third-party pricing tool that requires acceptance of recommended prices or rewards compliance.[39] In effect, the remedy seeks to regulate RealPage by proxy—limiting the use of behavioral nudges and embedded biases that push landlords toward effectively acting as a collective, like a single entity. But while theoretically tenable, these kinds

[38] Maureen K. Ohlhausen, Acting Chair, Fed. Trade Comm'n, *Should We Fear the Things That Go Beep in the Night? Some Initial Thoughts on the Intersection of Antitrust Law and Algorithmic Pricing* 5 (May 23, 2017), ("[e]verywhere the word 'algorithm' appears, please just insert the words 'a guy named Bob.'").

[39] Cortland Settlement at 8.

of behavioral remedies are pragmatically unlikely to dismantle the architecture of collusion. They suffer from the enforcement fragility against which behavioral remedies routinely suffer: they are hard to monitor, invite circumvention, and rarely achieve durable compliance.

Behavioral remedies designed to remove the nudges that pressure landlords to adopt algorithmic recommendations are unlikely to meaningfully alter pricing outcomes. Even without these nudges, landlords are incentivized to follow recommendations under the assumption that their competitors will do the same; and the often publicly-advertised fact that their competitors use the same common pricing tool is inferential evidence that landlords can rely on collective adherence. Moreover, the nature of rental housing—a supply-constrained, locally concentrated market—dulls the payoff of defection, in contrast to product markets for fungible goods. Defecting from the supracompetitive recommended price yields limited gains to market share, while coordinated pricing yields high rents with minimal competitive risk.

Technical-focused behavioral remedies may seek to address the algorithm itself (for example, by stipulating that the algorithm maximize "individual" profits as opposed to "collective" profits). For this remedy to be effective, RealPage would be required to disclose how its algorithms generate pricing outputs, including weighing schemes, optimization goals, and decision rules. RealPage might additionally be required to silo its datasets for different landlords from one another, or to alter the process by which the algorithm translates that data into a price recommendation. An independent technical committee would then have to monitor the system consistently.

Yet algorithmic oversight faces serious practical challenges. Most notably, it is time- and resource-intensive: scrutiny of algorithmic pricing would require ongoing access to code, data, and technical documentation, audits, and expert review. In addition, contemporary algorithmic systems, especially those built on machine learning models, tend to be highly opaque. These so-called "black box" systems generate pricing outputs that are difficult, if not impossible, to trace back to clear decision rules or economic logic.[40] As a result, transparency mandates may fail to yield helpful insight into how pricing is being determined. Finally, RealPage may actively circumvent regulatory constraints, a concern underscored by the historical track record of weak compliance with behavioral remedies in antitrust. The *Live Nation–Ticketmaster* merger offers a cautionary tale: despite clear behavioral conditions in a consent decree, the combined firm allegedly violated its terms for years with little consequence.[41]

These skepticisms about behavioral and technical remedies are not rooted in doubts about their theoretical soundness or potential value. Rather, our caution reflects a practical risk aversion

[40] Lou Blouin, *AI's Mysterious "Black Box" Problem, Explained*, UNIV. OF MICH.–DEARBORN NEWS (Feb. 2, 2023), https://umdearborn.edu/news/ais-mysterious-black-box-problem-explained (last visited May 20, 2025).

[41] U.S. and Plaintiff States v. Live Nation Ent., Inc. and Ticketmaster LLC, No. 1:24-cv-04194 (S.D.N.Y. filed May 23, 2024).

to their vulnerability, particularly in terms of weak enforcement—especially in a market where firms face strong incentives to coordinate and RealPage continues to function as a price-setter used by many directly competing firms.

V. Insufficient Remedy #3: Breaking RealPage Up

Since the root of RealPage's anti-competitive conduct is the collusive network it facilitates in the rental market by serving as a common strategy-setter for a group of competitors, diffusing that network via divestment may serve as a direct remediation of competition. At its core, this remedy aims to reduce the size of RealPage's network—the grip it holds over a market as a centralized price-setter and the number of landlords whose strategies it directs—enough to strip it of its pricing power. In this ideal case, for any arbitrary rent increase in RealPage's reduced network, all landlords outside of RealPage's network find it in their best interest to *not* mimic the rent increase and instead capture market share from RealPage's landlords.

In practice, diffusing RealPage's network could start with divesting two of its three proprietary algorithms: YieldStar, AIRM, and LRO. However, breaking up the company along these fault lines might not be sufficient to reduce its pricing power. While RealPage doesn't share details on user count for each algorithm, it's plausible that in a metropolitan area, the share of users of these algorithms individually even post-divestiture is sufficiently large for it to afford pricing power. Verily, RealPage had marketed YieldStar as its flagship product, and then developed AIRM as YieldStar's successor, with plans to sunset YieldStar and LRO by the end of 2024.[42] Under these conditions, YieldStar or AIRM could surely capture the lion's share of RealPage users in a metropolitan area. Moreover, upon divestment, landlords could tacitly converge onto one algorithm, restoring the original RealPage's sizable market presence.

These conditions suggest that a successful remediation scheme must pair divestment with a hard cap on the market share of each divested algorithm. Herein lies the problem with a divestment-centered remedy: there is no magic number for an algorithm's market share threshold below which the threat of anti-competitive pricing is insignificant. At any cap, the market can sustain supracompetitive prices, because: (1) housing markets entail short-run, unit-level demand inelasticity, (2) price transparency dissuades undercutting due to the threat of rapid retaliation, and (3) algorithms themselves may learn to tacitly collude with one another.

Among heterogeneous, non-durable goods, rental housing is unique in its rigidly inelastic demand, in the short-run and at the unit-level. This trait stems from the very structure of rental housing consumption, marked by steep frictions that make switching costly.[43] First, switching is

[42] United States et al. v. RealPage, Inc., No. 1:24-cv-00710 (M.D.N.C. Aug. 23, 2024).

[43] Erick A. Hanushek & John M. Quigley, *What is the Price Elasticity of Housing Demand*, 62 J. POLITICAL ECON. 3, 449 (1980).

only viable at fixed intervals: 60 percent of leases in the US are 12-month leases.[44] When a tenant *can* consider switching, finding their best match is burdensome, despite a plethora of online tools at their disposal.[45,46,47] Tenants can't just swap out one up-charged unit for a more affordable replica, like they would with their local gas station. If a tenant finds a unit they'd prefer to their current arrangement, switching and transaction costs—from application fees to moving fees—could tilt the economic tradeoff toward staying put. Together, these conditions depress landlords' return on undercutting rivals who inflate rents, creating a market conducive towards sustained supracompetitive rents. In this environment, an algorithm that prices on behalf of 10 percent of units possesses a network too small to claim explicit pricing power, but large enough to spread the risk of market share loss from entertaining supracompetitive rents.

Once an algorithm tests the waters with supracompetitive rents amid its modest network, the competitors of each landlord in that network may find it in their best interest to match, if the reward of undercutting is meager and uncertain. While tenants find it difficult to survey all viable options for their next lease, landlords can use their neighbors' addresses to easily scour digital marketplaces and find their competitors' rents. The mere transparency of competitors' rent dissuades landlords from defecting from the supracompetitive scheme, regardless of whether or not they are in the algorithm's network. If landlords by and large only set rents once a year when lease terms expire, and regularly monitor their neighbors' rents, each landlord knows that their competitors will swiftly match any undercut, eliminating any profit or market share incentive that may arise from defecting from the scheme. In this manner, an algorithm that prices on behalf of a small share of the market not only sustains supracompetitive rents amid landlords within its network, but amid those landlords' competitors as well.

As such, one divested algorithm with a harsh market cap can do quite a bit of damage to the competitive landscape of the rental market. But the most pernicious threat to competition under this remedy scheme is the risk of the divested algorithms themselves learning to collude with one another. Ezrachi and Stucke explore this phenomenon of "secondary algorithmic tacit collusion," caused by a hub-and-spoke conspiracy in the primary market, as is the case today with RealPage,

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[44] Ben Houck, *Housing Leases in the U.S. Rental Market*, U.S. BUREAU OF LABOR STATISTICS: SPOTLIGHT ON STATISTICS (Sep. 2022), https://www.bls.gov/spotlight/2022/housing-leases-in-the-u-s-rental-market/ (last visited May 20, 2025).

[45] Nitish Kumar, *A Dynamic Search and Matching Model of Housing and Rental Market Interactions*, SSRN 4787212 (Apr. 7, 2024), http://dx.doi.org/10.2139/ssrn.4787212 (last visited May 20, 2025).

[46] Rocio Sanchez-Moyano, Geoff Boeing, & Julia Gabriele Harten, *The Promises and Pitfalls of Housing Search Digitalization*, FEDERAL RESERVE BANK OF SAN FRANCISCO (Jun. 28, 2023), https://www.frbsf.org/research-and-insights/blog/community-development/2023/06/28/promises-and-pitfalls-of-housing-search-digitalization/ (last visited May 20, 2025).

[47] Chris Hess et al., *Segmented Information, Segregated Outcomes: Housing Affordability and Neighborhood Representation on a Voucher-Focused Online Housing Platform and Three Mainstream Alternatives*, 33 HOUS. POLICY DEBATE 6, 1511 (2022), https://doi.org/10.1080/10511482.2022.2133548 (last visited May 20, 2025).

and conscious parallelism between algorithms in the secondary market.[48] Suppose now there are two algorithms in a market, each with a market share cap of 10 percent. If algorithm A arbitrarily raises its price, for the reasons elaborated above, algorithm B faces two options: (1) undercut and compete with the rest of the market to steal market share from algorithm A's landlords; or (2) match algorithm A's rents and reap higher profits as the risk of market share loss is spread thin. Through repeated games, the two algorithms learn that any of their rent increases will be mirrored by the other, and thus learn to price not to maximize the joint profit of its own network, but the joint profit of both networks combined. This isn't just a theory: scientific modeling has validated this phenomenon.[49] Paradoxically, the more competition RealPage faces in the algorithmic rent-maximizing market, the greater the risk of tacit collusion, even as RealPage's individual market share shrinks.

Structural remedies fail to solve the hub-and-spoke problem at the center of this case, and in other algorithmic pricing settings. Though the villain is the breadth of the algorithm's hub-and-spoke network, any efforts to fracture that network and minimize the share of the market fail to eliminate the risk of collusion, and in some cases, exacerbate it. With most behavioral and structural remedies being ineffective, the next section endorses a simple, viable one for courts to consider.

VI. Recommended Remedy

Given the limitations of the above-discussed remedies, an effective answer to the problem RealPage presents must involve restructuring it entirely. Hub-and-spoke collusion harms competition by gathering firms and centralizing their decision-making under one entity. RealPage acquired its collusive network by amassing users—and their information—onto its platform, and then feeding prices to each one. Even when RealPage is stripped of its ability to coerce landlords into swallowing its price recommendations, landlords, expecting their peers to use the same service, find it in their best interest to take up price recommendations.

Consequently, we propose a remedy that restricts RealPage from curating price recommendations for more than one competitor. RealPage must delete all non-public data it has ever collected, and strictly use public information when recommending prices, with the exception of the non-public data of the landlord for which it optimizes rents. If RealPage were to recommend prices for more than one competitor, it would have to ensure that it maximizes individual profits, mutually independent of competitors, with zero recursion to joint profit maximization. As such, the only possible scenario that achieves RealPage's procompetitive potential is one where

[48] Ariel Ezrachi and Maurice E. Stucke, *The Role of Secondary Algorithmic Tacit Collusion in Achieving Market Alignment*, 26 VANDERBILT J. OF ENTERTAINMENT & TECHNOLOGY LAW 3, 461 (2025).

[49] Assad, Stephanie et al., *Algorithmic pricing and competition: empirical evidence from the German retail gasoline market*, 132(3) JOURNAL OF POLITICAL ECONOMY 723 (2024); Emilio Calvano et al., *Artificial Intelligence, Algorithmic Pricing, and Collusion*, 110 (10) AM. ECON. REV. 3267 (2020); Emilio Calvano et al., *Protecting Consumers from Collusive Prices due to AI,* 370 (6520) SCIENCE 1040 (2020).

RealPage's algorithm is entirely transparent for a technical committee to monitor for any behavior that strays from individual profit maximization. We contend that net monitoring costs exceed the expected deadweight loss from intermittent joint profit maximization during unmonitored periods. Therefore we warn that any remedy that reassigns RealPage the power to build a network to receive recommendations, restores the very conditions that enabled RealPage to engage in its anticompetitive conduct, regardless of any procompetitive justification.

Should RealPage find it unprofitable to principally formulate specific price recommendations using its algorithm within these boundaries, it may decide to pivot from price recommendation altogether. We leave RealPage the option to leverage its strength in data management to serve as a market intelligence firm, akin to a trade publication. In this case, RealPage could amass information from landlords and report market conditions back to them, but it may not recommend prices to a single one. Its information exchange would be subject to constraints which align with traditional competition law principles: for example, the information must be aggregated and anonymized to sidestep the traditional transparency-driven tacit collusion concerns with information sharing. RealPage may not present non-public information in any way that directly or indirectly identifies a landlord, building, or unit. Most importantly, RealPage cannot communicate specific price recommendations in its disseminations.

VII. Beyond RealPage

RealPage is not the first instance of algorithmic collusion, nor will it be the last. For example, the Department of Justice recently filed a Statement of Interest in a remarkably similar case involving an algorithmic pricing tool in health insurance markets called MultiPlan.[50] As algorithms grow more complex and permeate several segments of the economy, policing algorithmic collusion on a case-by-case basis will become nearly impossible. Instead, the Federal Trade Commission ("FTC") should exercise its rulemaking authority under Section 5 of the FTC Act to promulgate a consistent and predictable standard for algorithmic collusion cases grounded in long-standing antitrust principles: devising specific pricing strategies for multiple firms competing within the same relevant market violates the law, whether orchestrated by an individual like "Bob" or by algorithmic price-setting software.[51] Members of Congress have introduced the *Preventing Algorithmic Collusion Act*, which essentially seeks to codify exactly that principle;

[50] Statement of Interest of the United States, *In re MultiPlan Health Ins. Provider Litig.*, No. 1:24-cv-06795, MDL No. 3121 (N.D. Ill. 2024).

[51] 15 U.S.C. § 45; *See also* Rohit Chopra & Lina M. Khan, *The Case for "Unfair Methods of Competition" Rulemaking*, 87 U. CHI. L. REV. 357 (2020).

Congress should pass this bill.[52] The *RealPage* case has also catalyzed action at state and local levels to address price-fixing by algorithms.[53]

VIII. Conclusion

In the case of the *United States et al. v. RealPage, Inc. et al.*, curbing information sharing, policing algorithmic design, and breaking up the algorithm network are inherently insufficient remedies, as they still entail anti competitive strategy-setting from a central decision-maker. As such, RealPage must be prohibited outright from recommending prices to more than one competitor, severing the channel through which the company facilitated collusion. Rule-makers and lawmakers can and should cement this principle into a consistent, predictable, and standardized policy.

[52] S. 232, 119th Cong. (2025).

[53] Most recently, Colorado passed HB25-1004, banning the use of algorithmic pricing tools for rent, with more states and cities considering similar measures.