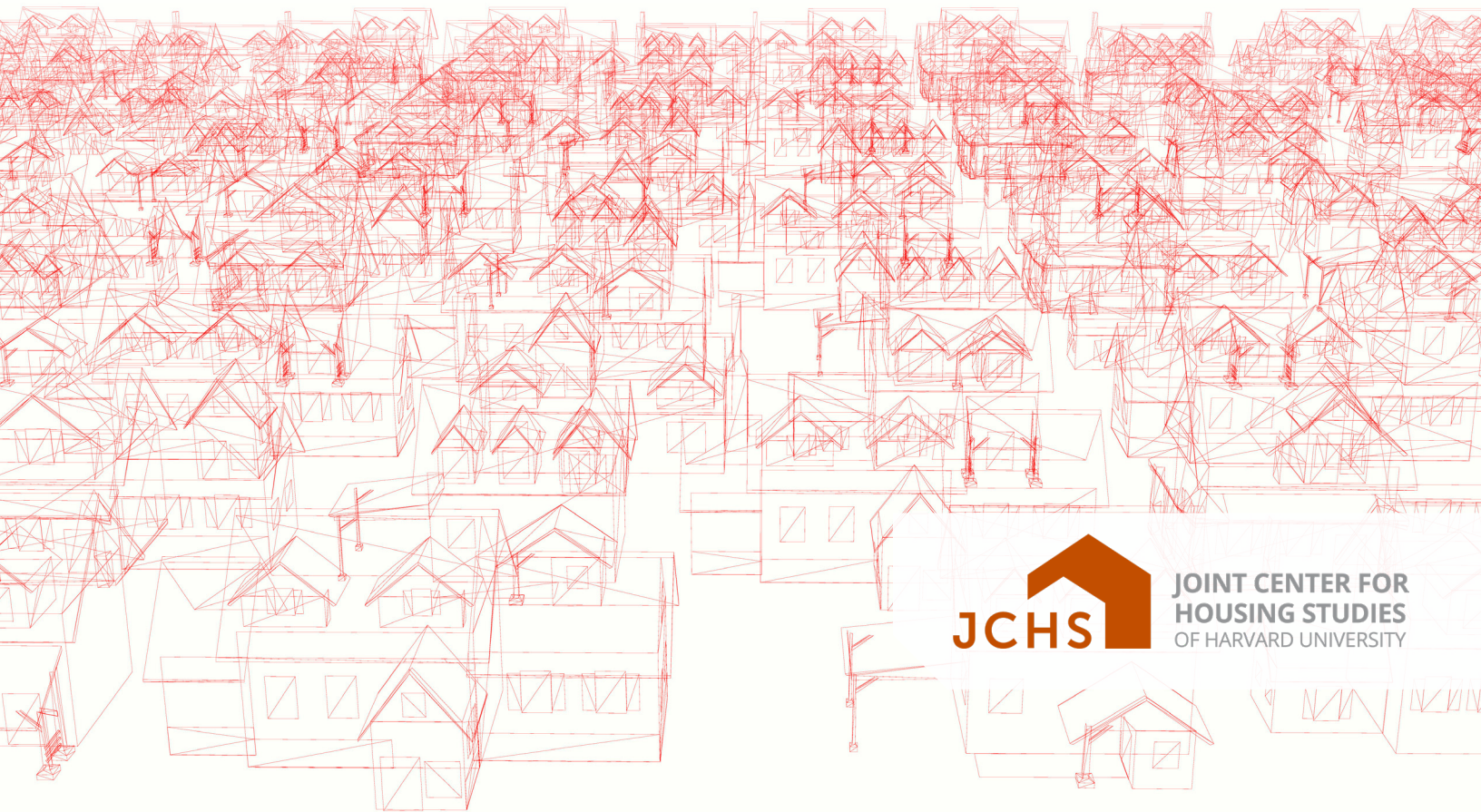


BRINGING DIGITALIZATION
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Digitalization of the Housing Search

Homeseekers, Gatekeepers, and Market Legibility

MARCH 2023 | GEOFF BOEING, JULIA HARTEN, ROCIO SANCHEZ-MOYANO



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Digitalization of the Housing Search: Homeseekers, Gatekeepers, and Market Legibility

Geoff Boeing (University of Southern California)

Julia Harten (University of British Columbia)

Rocio Sanchez-Moyano (Federal Reserve Bank of San Francisco)

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Abstract

In recent years, digitalization has reshaped the housing search. Today, online platforms facilitate housing market information exchange and expand the legibility of the housing market for sellers, buyers, landlords, and renters. Such platforms can democratize information access and diversify homeseekers' information supplies. This in turn can expand choice sets, increase search radii, reduce search costs, and sideline traditional gatekeepers to help homeseekers realize a more efficient housing search with a superior outcome. However, certain market participants benefit more than others, and the promise of digitalization is muted by its drawbacks. This paper explores how these online platforms shape the housing search by influencing information supplies, presentation, and consumption. Tensions arise as old gatekeepers develop new strategies to maintain power in the digital realm and new gatekeepers emerge to capitalize on digital trends. Policymakers can play an important role in maintaining and developing the societal benefits of housing market digitalization while better mitigating its harms.

1. The Promise of Digital Democratization

In recent years, online platforms have reshaped the housing search for buyers and renters. These technologies can increase homeseekers' search radii, efficiently broadcast information, enable searches by unit and neighborhood characteristics rather than familiar geographic siloes, target listings algorithmically and precisely, and provide remote interactive experiences to prospective homebuyers. As privately owned public information exchanges, these technologies render formerly less-legible market transactions more legible to more people. This increased legibility in turn offers owners, landlords, brokers, and homeseekers useful information about housing availability, valuation, and market comps, while also offering planners and policymakers a new data source to monitor market trends and affordability challenges. As such, legibility suggests more than mere transparency: digitalization helps market participants and governments *understand* the market in new ways and develop new loci of control.

Digitalization and the concomitant growth in available information carry a promise of “democratizing” housing searches by diminishing the power of traditional market gatekeepers such as real estate agents, rental brokers, and property managers. Reducing information asymmetries between real estate professionals and homeseekers could improve affordability and attenuate discriminatory practices—such as racial steering—while improving homeseekers' ability to secure suitable housing. These reduced asymmetries could particularly benefit traditionally marginalized communities. Whether these promises materialize, however, depends on how online platforms are used. If they are disproportionately utilized by privileged subsets of users—or if different kinds of homeseekers sort into different platforms—housing outcome gaps may widen between advantaged groups and others, reproducing the inequities long seen in traditional forms of gatekeeping. At the same time, online searches may facilitate residential sorting based on neighborhood characteristics that were previously challenging to track at scale, like school performance data. Given the high correlation of school scores to the racial composition of the school, this sorting may perpetuate existing segregation.

The shift online has also impacted housing search information exchange behaviors. To target certain audiences, sellers and landlords are adjusting how they market and stage units on these platforms. With initial contact happening online, sellers and landlords can screen and filter in novel and automated ways. On the homeseekers' side, prospective buyers and tenants are now obligated to communicate their desirability effectively in the digital realm. This increasingly entails sharing more personal information early on, raising privacy concerns. The digitalization of housing market information exchange has even precipitated the formation—or sometimes formalization—of new markets. Online

platforms have facilitated a boom in less-formal home-sharing arrangements and have empowered new kinds of buyers and landlords to enter the market, such as remote investors and FinTech corporations.

In sum, digitalization offers a variety of benefits to homeseekers, sellers, landlords, researchers, and practitioners. However, it also disrupts traditional market processes—often in unexpected ways—and can entail substantial drawbacks and challenges. A key question emerges for policymakers and practitioners: how to ensure that these platforms’ societal benefits outweigh their societal harms—for the community at large and for its most vulnerable members. This paper investigates these recent trends, considers how online platforms influence the housing search, and discusses the opportunities and challenges they pose. It asks four primary questions. What do we know about these platforms’ use today? Who benefits from digitalization? Who could be harmed? How can we balance societal benefits and harms? We explore these questions through three currents unfolding today around the digitalization of the housing search: information broadcasting, nontraditional residential mobility, and shifting power dynamics.

2. Information Broadcasting

Access to information is central to understanding housing search behaviors and outcomes.¹ Information channels, search behavior, and housing outcomes intertwine. Among the most significant changes brought about by the emergence of online housing platforms is the revolution in information broadcasting. Housing market information exchange traditionally relied heavily on personal relationships, private connections, and physical proximity. On the homebuying side, information exchange usually relied on Multiple Listing Services (MLS) and the realtors who served as their gatekeepers. On the renting side, information exchange took on a variety of forms, including newspaper classified ads, physical for-rent signs, and word of mouth through real-world social networks. However, online platforms allow homeseekers and landlords/sellers to broadcast information digitally through public channels for anyone to see, potentially anywhere in the world.²

Increasing market legibility has the potential to mitigate longstanding inequities that arise from unequal access to information. The promises of decentralized, peer-to-peer information exchange include reduced search costs, expanded search radii to overcome geographic siloes, and more

¹ Laura Carrillo, Mary Patillo, Erin Hardy, and Dolores Acevedo-Garcia, “Housing Decisions Among Low-Income Hispanic Households in Chicago.”

² Max Besbris, Ariela Schachter, and John Kuk, “The Unequal Availability of Rental Housing Information Across Neighborhoods.”

information about unit characteristics to help match homeseekers to the kinds of homes they need.³ This greater diversity and democratization of information may alleviate the pernicious socio-structural factors that influence residential sorting and in turn segregation. For example, neighborhood knowledge is strongly shaped by where one grew up and whom one knows, and homeseekers tend to search for housing in neighborhoods with which they are already familiar.⁴ Online platforms' expansion of choice sets through millions of listings could be particularly advantageous for poorer or minority households to discover listings in new neighborhoods that meet their unit requirements, unlocking residential mobility into choice communities.⁵

Accordingly, equalizing access to information could benefit homeseekers from marginalized groups who are disproportionately subject to discrimination. In housing, discrimination translates to fewer viewings, less information, and price and quality differentials—all of which increase the housing search burden for marginalized homeseekers.⁶ Historically, middlemen have shaped housing market information flows to the detriment of underprivileged communities, steering buyers towards different neighborhoods or providing different kinds of information depending on the homeseeker's race.⁷ Beyond explicit gatekeeping, certain groups—e.g., elderly homeseekers—have had access to fewer information resources and faced constrained search radii due to factors correlated with seeker characteristics.⁸ Today, marginalized homeseekers may be able to leverage online platforms to broadcast targeted, group-specific information. Specialized communication channels with broad reach are one of the central affordances of the internet.⁹ Single women and racialized and LGBTQ2S+ people—who regularly experience housing discrimination—could uniquely benefit from online social networking to improve their housing searches.¹⁰

³ Ralph McLaughlin and Cheryl Young, "Data Democratization and Spatial Heterogeneity in the Housing Market."

⁴ Maria Krysan and Kyle Crowder, *Cycle of Segregation: Social Processes and Residential Stratification*.

⁵ Philip M. E. Garboden, "You Can't Get There from Here: Mobility Networks and the Housing Choice Voucher Program."

⁶ Katrin Auspurg, Andreas Schneck, and Thomas Hinz, "Closed Doors Everywhere? A Meta-Analysis of Field Experiments on Ethnic Discrimination in Housing Markets."

⁷ Margery Austin Turner, Rob Santos, Diane K. Levy, Doug Wissoker, Claudia Aranda, and Rob Pitingolo, "Housing Discrimination Against Racial and Ethnic Minorities 2012."

⁸ Larry DeBoer, "Resident Age and Housing Search: Evidence from Hedonic Residuals."

⁹ Bharat Mehra, Cecelia Merkel, and Ann Peterson Bishop, "The Internet for Empowerment of Minority and Marginalized Users."

¹⁰ Julia Gabriele Harten, "Housing Single Women: Gender in China's Shared Rental Housing Market"; Maria Krysan, "Does Race Matter in the Search for Housing? An Exploratory Study of Search Strategies, Experiences, and Locations"; Heather MacDonald, Jacqueline Nelson, George Galster, Yin Paradies, Kevin Dunn, and Rae Dufty-Jones, "Rental Discrimination in the Multi-Ethnic Metropolis: Evidence from Sydney."

Despite the promise of these benefits, the preliminary empirical evidence is more mixed. For example, significant differences exist in the quantity of information provided in different neighborhoods: online rental platforms supply more information in wealthier, whiter, and better-educated communities.¹¹ Online rental listings in Black or Latino neighborhoods contain less information about unit and neighborhood amenities than do listings in otherwise equivalent white neighborhoods.¹² Such information inequalities are particularly pernicious because they represent an aggregate phenomenon emerging from the disaggregate—and legal—behavior of millions of market participants.¹³ Sellers and landlords listing housing units online directly shape the information supply's volume, quality, and type.¹⁴ In practice, if these information supplies correlate with neighborhood demographics, the aforementioned benefits of information broadcasting accumulate in already-advantaged communities.¹⁵

Furthermore, homeseekers' behavior can shape seller and landlord behavior through a supply-and-demand feedback loop.¹⁶ Neighborhoods with older, poorer, or more immigrant residents may have less access to the Internet, less comfort in using it, and less capacity to engage with English-language websites. To the extent that such communities rely more on soft ties and personal relationships to find housing, local sellers and landlords may in turn see little reward in advertising available units online in these communities. In turn, if homeseekers tend to search in already-familiar neighborhoods, then disadvantaged communities miss out on the benefits of expanded choice sets and reduced search costs. This information segregation and asymmetry limit neighborhood integration efforts and reproduce traditional housing market information inequalities. Conversely, underrepresentation in online rental listings may be advantageous to underprivileged communities if it limits "discovery" by higher socioeconomic status homeseekers who would otherwise gentrify the neighborhood.¹⁷ All these effects, however, may be more muted in the buying market than in rental markets. Major digital home sale platforms draw many listings from Multiple Listing Services used by real estate brokers, resulting in

¹¹ Geoff Boeing, "Online Rental Housing Market Representation and the Digital Reproduction of Urban Inequality."

¹² Geoff Boeing, Max Besbris, Ariela Schachter, and John Kuk, "Housing Search in the Age of Big Data: Smarter Cities or the Same Old Blind Spots?"

¹³ Ian Kennedy, Chris Hess, Amandalynne Paullada, and Sarah Chasins, "Racialized Discourse in Seattle Rental Ad Texts."

¹⁴ Boeing et al., "Housing Search in the Age of Big Data"; Kennedy et al., "Racialized Discourse in Seattle Rental Ad Texts."

¹⁵ Besbris, Schachter, and Kuk, "The Unequal Availability of Rental Housing Information Across Neighborhoods"; Chris Hess, Arthur Acolin, Rebecca Walter, Ian Kennedy, Sarah Chasins, and Kyle Crowder, "Searching for Housing in the Digital Age: Neighborhood Representation on Internet Rental Housing Platforms Across Space, Platform, and Metropolitan Segregation."

¹⁶ Boeing, "Online Rental Housing Market Representation."

¹⁷ Ibid.

listing coverage that in many ways reflects the non-digital marketplace. Though individual listing information may still vary, the use of MLS data will largely negate the supply-and-demand feedback loops that may be produced in the digital rental market.

Beyond purely broadcasting information, online platforms have reshaped how the housing search process can unfold in the digital realm. The COVID-19 pandemic provided ample demonstration of this. During these years of quarantine and social distancing, platforms like Zillow and Redfin have enabled potential buyers to take virtual 3D tours and make purchases remotely without ever setting foot on the prospective property. However, this “decentralization” to home listers and seekers comes with an enormous caveat: these online platforms themselves represent an emerging oligopoly over housing market information exchange. Given their power to define how and for whom these searches would work, they could, if they ever fully exerted that power, drastically impact housing searches in unforeseeable ways.¹⁸ Today, this restructuring of market relations and processes is already reshaping nontraditional residential mobility and institutional power dynamics.

3. Fostering Nontraditional Residential Mobility

How does the digital turn in the housing search affect subpopulations which “challenge” housing market conventions? This section considers the impacts of digitalization for two growing urban demographics: new immigrants and one-person-households. Broadcasting information widely while targeting communication to certain groups—via language, cultural codes, and dedicated platforms—has enabled the formation of new submarkets. As these evolve, first evidence indicates that the ability to niche leads to selections, which can turn discriminatory. The full effect of nontraditional residential mobility, however, remains an open question. Here, we review select recent works on economic migration and single living in the context of digitized housing searches.

3.1 Migration and Economic Mobility

Moving the housing search online has increased housing information availability across much wider geographies. Transforming once highly localized knowledge into broadly accessible online knowledge facilitates long-distance remote homeseeing in particular. This has economic mobility implications. As digital housing searches reduce the costs of moving, less spatially confined and more efficient

¹⁸ Geoff Boeing, Max Besbris, David Wachsmuth, and Jake Wegmann, “Tilted Platforms: Rental Housing Technology and the Rise of Urban Big Data Oligopolies.”

intermetropolitan labor market matching becomes possible.¹⁹ This is especially relevant for younger people, who are more likely to rent and face longer-term earnings implications.²⁰

Importantly, information as scaffolding for economic mobility has implications for international relocations.²¹ Immigrants, who may face myriad barriers to securing housing in a new country, can now access housing information online *before* they relocate.²² Diasporic networks still remain essential to facilitating such moves,²³ but online platforms have already begun to alter these relationships. Particularly for the digitally literate, reliance on traditional social networks can be supplemented or replaced with online information and social capital. While group-specific online information repositories may lower the barriers to migrate, entrepreneurial realtors have also started to leverage the new, digitally facilitated reach to actively make new markets abroad. Although currently understudied, the proliferation of ethnicity-, culture-, and language-specific online offerings—such as dedicated WeChat or Facebook groups and exclusively Chinese-language housing search platforms in Vancouver, Canada—are evidence that this change is already underway.

3.2 Shared Housing

The jump from low-tech localized searches relying on social ties to broader audiences via online platforms has facilitated the growth of shared renting among unrelated individuals. Once considered the domain of student housing²⁴ or a kin-based safety net in times of economic hardship,²⁵ shared accommodation has grown into a mainstream housing strategy.²⁶ This strategy encompasses new

¹⁹ Geoff Boeing, Jake Wegmann, and Junfeng Jiao, "Rental Housing Spot Markets: How Online Information Exchanges Can Supplement Transacted-Rents Data."

²⁰ Giovanni Peri, "Young Workers, Learning, and Agglomerations."

²¹ Lucia Maria Pesando, Valentina Rotondi, Manuela Stranges, Ridhi Kashyap, and Francesco C. Billari, "the Internetization of International Migration"; Pedro J. Oiarzabal and Ulf-Dietrich Reips, "Migration and Diaspora in the Age of Information and Communication Technologies."

²² Sophia Maalsen, Peta Wolifson, Dallas Rogers, Jacqueline Nelson, and Caitlin Buckle, "Understanding Discrimination Effects in Private Rental Housing"; Carlos Teixeira, "Barriers and Outcomes in the Housing Searches of New Immigrants and Refugees: A Case Study of 'Black' Africans in Toronto's Rental Market."

²³ Vilna Bashi, *Survival of the Knitted: Immigrant Social Networks in a Stratified World*.

²⁴ Zahra Nasreen and Kristian J. Ruming, "Informality, the Marginalised and Regulatory Inadequacies: A Case Study of Tenants' Experiences of Shared Room Housing in Sydney, Australia"; David Rhodes, "Students and Housing: A Testing Time?"

²⁵ Judith A. Seltzer, Charles Q. Lau, and Suzanne M. Bianchi, "Doubling up When Times Are Tough: A Study of Obligations to Share a Home in Response to Economic Hardship"; Emily E. Wiemers, "The Effect of Unemployment on Household Composition and Doubling Up."

²⁶ Maalsen, "'Generation Share': Digitalized Geographies of Shared Housing"; Sue Heath, Katherine Davies, Gemma Edwards, and Rachael Scicluna, *Shared Housing, Shared Lives: Everyday Experiences across the Lifecourse*.

housing models that redefine “living alone together,”²⁷ from low-cost strategies such as room sharing²⁸ to high-end co-living, professionally managed and targeting mobile and affluent young urban professionals.²⁹ Recent demographic (e.g., partnering later, extended education), work (e.g., labor market flexibilization), and housing (e.g., diminishing affordability) trends have made home sharing more attractive to more people.³⁰ Motivated by financial, social, and cultural factors, sharing housing today occurs for longer durations and across wider demographics than before.³¹

Digitalization intersects with these societal changes in several ways. First, by increasing information access and the pool of potential sharers, online platforms enable new kinds of matches. This renders niche offerings more viable. New markets do not form without the demand to support them. But, the ability to target (changing) preferences with differentiated housing products, or to connect like-minded homeseekers who otherwise would not meet, has facilitated a range of submarket formations.

Second, platforms increasingly set the rules of the game. For example, using online platforms means homeseekers must perform online identities, which credibly communicate desirability in the digital realm.³² In the context of decentralized, digitally mediated markets, trust is increasingly built by interfacing through social media platforms, such as linking to a personal Facebook or Instagram profile.³³ Against the anonymity of the internet, a more detailed profile can increase individual visibility—and with that the odds of success.³⁴ This growing volume of information sharing, however, raises privacy concerns, especially since many of these platforms’ bottom lines depend on data extraction.³⁵ These concerns particularly afflict the shared housing sector, where individuals seek to match on personal characteristics as much as unit characteristics, encouraging the supply of ever more detailed information.

²⁷ Oana Druta and Richard Ronald, “Living Alone Together in Tokyo *Share Houses*,” 1223.

²⁸ Julia Gabriele Harten, “Housing Single Women: Gender in China’s Shared Rental Housing Market”; Nasreen and Rumeng, “Informality, the Marginalised and Regulatory Inadequacies.”

²⁹ Tegan L. Bergan, Andrew Gorman-Murray, and Emma R. Power, “Coliving Housing: Home Cultures of Precarity for the New Creative Class”; Druta and Ronald, “Living Alone Together in Tokyo *Share Houses*”; Karin Grundström, “Dwelling On-the-Move Together in Sweden: Sharing Exclusive Housing in Times of Marketization.”

³⁰ Rowan Arundel and Richard Ronald, “Parental Co-Residence, Shared Living and Emerging Adulthood in Europe: Semi-Dependent Housing across Welfare Regime and Housing System Contexts”; Ron Lesthaeghe, “The Second Demographic Transition: A Concise Overview of Its Development.”

³¹ Druta and Ronald, “Living Alone Together in Tokyo *Share Houses*”; Heath et al., *Shared Housing, Shared Lives*.

³² Vicky Clark, Keith Tuffin, Natilene Bowker, and Karen Frewin, “A Fine Balance: A Review of Shared Housing Among Young Adults”; Sophia Maalsen and Nicole Gurran, “Finding Home Online? The Digitalization of Share Housing and the Making of Home through Absence.”

³³ Sharon Parkinson, Amity James, and Edgar Liu, “Luck and Leaps of Faith: How the Digital Informal Economy Transforms the Geographies of Shared Renting in Australia.”

³⁴ Maalsen, “Generation Share.”

³⁵ Desiree Fields and Dallas Rogers, “Towards a Critical Housing Studies Research Agenda on Platform Real Estate.”

Third, physically distant forms of communication—the currency of the digital realm—generate more opportunities for content curation. This impacts how discrimination unfolds online. Digitalization privileges those who know how to successfully perform certain online identities,³⁶ while disadvantaging those, such as foreign immigrants or elderly renters, who might miss cultural cues.³⁷ Lower-income individuals, too, may be affected in new ways. Online housing communication frequently includes codes such as “travel” for “experience and worldliness,” something inaccessible to those with limited means.³⁸ Besides favoring cultural insiders, these manicured displays of self may also become subject to selective discrimination. In the shared market in particular, applicants are typically selected based on “fit.” When tenants themselves become gatekeepers in this way, online discrimination can lead to real world discrimination. Shared households gravitate towards choosing other people like themselves, perpetuating the inequities of the status quo.³⁹ Moreover, platforms’ inherent drive towards standardization, classification, and extraction means that these exchanges create the knowledge base informing future algorithmic steering, as showcased in the recent lawsuit regarding Facebook’s steering of housing ads.⁴⁰

4. Changing Power Dynamics

The digitalization of the housing search has changed the roles of traditional market gatekeepers and facilitated the entrance and expansion of institutional buyers. Reducing the impact of gatekeepers may improve outcomes for housing searchers who have traditionally faced discrimination if these roles are sufficiently diminished. Meanwhile, the entrance of new buyers has created more rental opportunities in suburban markets and offered ease and convenience for home sellers while also increasing competition and potentially decreasing the accessibility and affordability of homeownership for owner-occupant buyers.

³⁶ Maalsen and Gurran, “Finding Home Online?”

³⁷ Nasreen and Ruming, “Informality, the Marginalised and Regulatory Inadequacies”; Parkinson, James, and Liu, “Luck and Leaps of Faith.”

³⁸ Clark et al., “A Fine Balance.”

³⁹ Clark et al., “A Fine Balance”; Vicky Clark and Keith Tuffin, “Choosing Housemates and Justifying Age, Gender, and Ethnic Discrimination.”

⁴⁰ Fields and Rogers, “Towards a Critical Housing Studies Research Agenda on Platform Real Estate”; Eva Rosen, Philip M. E. Garboden, and Jennifer E. Cossyleon, “Racial Discrimination in Housing: How Landlords Use Algorithms and Home Visits to Screen Tenants.”

4.1. Evolving Roles of Agents and Brokers

Digitalization reshapes consumer interactions with real estate professionals, such as agents and brokers, and affects how industry actors like real estate investors and landlords compete with or attract housing consumers. Ninety-seven percent of recent homebuyers used the internet during their housing search.⁴¹ Although renters are more likely than owners to rely on informal networks and advertising, online searches to find rental housing have increased as well. Circumventing gatekeepers by relying on online platforms may lower the housing search's transaction costs for both searchers and owners. However, a widespread elimination of gatekeepers does not appear to have emerged: the share of homes for-sale-by-owner has remained relatively static, suggesting that current incentives and lack of competition may result in few changes to the status quo, at least among sellers.⁴²

Decreasing the power of housing market gatekeepers could attenuate the forces of segregation and discrimination. Despite fifty years of fair housing law, blind-audit studies find continued racial steering and discrimination by agents and brokers.⁴³ Korver-Glenn identifies several stages in the housing acquisition process in which searchers of color may be affected by discrimination (i.e., relationships with agents, marketing, evaluation of the homeseekers for acceptance, appraisal). As a result, the opportunity for a searcher to be affected by discrimination is compounded as discrimination is possible at each stage.⁴⁴ Cutting out middlemen and making markets more legible could help homeseekers of color and other marginalized homeseekers obtain more favorable housing outcomes by eliminating discrimination at one or more stages of the process.

Whether changing interactions with real estate professionals translates into material benefits for marginalized homeseekers remains unclear. Eighty-seven percent of homebuyers continue to use agents, though many begin their housing search online.⁴⁵ The market norm in the US of sellers paying for both the listing and buyers' agent fees suggests that there is little incentive for buyers to abandon agents. Although homebuyers of different races and ethnicities use agents at similar rates,⁴⁶ there is

⁴¹ National Association of Realtors Research Group, "Real Estate in a Digital Age."

⁴² Panle Jia Barwick and Maisy Wong, "Competition in the Real Estate Brokerage Industry: A Critical Review."

⁴³ Margery Austin Turner, Rob Santos, Diane K. Levy, Doug Wissoker, Claudia Aranda, and Rob Pitongolo, "Housing Discrimination Against Racial and Ethnic Minorities 2012"; Margery Austin Turner, Stephen L. Ross, George Galster, and John Yinger, "Discrimination in Metropolitan Housing Markets"; Maria Krysan, Kyle Crowder, Molly B. Scott, and Carl Hedman, "Racial and Ethnic Differences in Housing Search"; Ann Choi, Keith Herbert, and Olivia Winslow, "Long Island Divided"; Elizabeth Korver-Glenn, "Compounding Inequalities: How Racial Stereotypes and Discrimination Accumulate across the Stages of Housing Exchange."

⁴⁴ Korver-Glenn, "Compounding Inequalities."

⁴⁵ National Association of Realtors Research Group, "Real Estate in a Digital Age."

⁴⁶ National Association of Realtors Research Group, "A Snapshot of Race and Home Buying in America."

significant evidence of race matching between agent and client: white homeseekers tend to use white real estate agents whereas Black homeseekers tend to use Black real estate agents.⁴⁷ If real estate agents market homes in neighborhoods which are themselves racially segregated, race matching can contribute to the perpetuation of housing segregation unless buyers use outside sources of information to counter agents' scoping behavior.

In the rental market, Black searchers, relative to white searchers, rely more on personal networks and favor phone or in-person interactions to weed out discriminatory landlords. Additionally, minorities rely on personal networks to identify inclusive neighborhoods.⁴⁸ While many rental housing searches are initiated online, their subsequent stages are less reliant on an online approach.⁴⁹ While online search may prevent discriminatory brokers from influencing the search outcomes of marginalized homeseekers, those homeseekers may instead face discrimination later in the process. Finally, digitalization may also introduce new kinds of discrimination into housing searches. New types of tenant screenings are expanding beyond traditional reference and credit checks, and "algorithmic redlining" can automatically present different types of searchers with different results.⁵⁰

4.2. The Emergence of New Buyers

Digitalization has also facilitated the entrance of new buyers into the real estate market. Traditionally, investing in and managing a portfolio of single-family rental properties was more challenging than doing so with a multifamily property. However, online platforms and their troves of data are decreasing the costs of such "scattered-site" investment—though increased institutional single-family-rental investing in the last decade can be largely attributed to market conditions following the Great Recession.

Online platforms' data exhaust—trails of data left behind by users—has also enabled the rise of iBuyers ("instant" buyers who use technology to purchase homes quickly for cash with the intent to resell quickly). iBuyers offer a convenience to home sellers—the ability to sell the home without the need to clean, renovate, stage, or hire an agent to prepare the home for sale. iBuyer sales can occur more quickly than traditional home sales and do not come with many of the contingencies (like inspection, appraisal, and financing contingencies) and risks that can derail a sale after an offer contract

⁴⁷ Maria Krysan, "Does Race Matter in the Search for Housing? An Exploratory Study of Search Strategies, Experiences, and Locations."

⁴⁸ Krysan et al., "Racial and Ethnic Differences in Housing Search."

⁴⁹ Ibid.

⁵⁰ Mara Ferreri and Romola Sanyal, "Digital Informalisation: Rental Housing, Platforms, and the Management of Risk," 9.

has been signed. iBuying has also facilitated investor purchases of single-family homes. In the case of Zillow, the closure of their iBuying business resulted in bulk sales to institutional investors.⁵¹ Generally, investors can be attractive customers for iBuyers, as they can buy in bulk or repeatedly and can purchase homes quickly (and often with cash).⁵² Though such buyers purchase only a small share of the overall single-family housing stock, evidence suggests they concentrate in certain markets and in certain neighborhoods within these markets.⁵³ Competition with investors, who are often all-cash buyers, can push low- and mid-market homes out of aspiring homeowners' reach. At the same time, the expansion of the single-family rental stock is providing increased access to a type of dwelling (and suburban locations and amenities) previously less accessible to renters, though increased corporate ownership raises concerns about the impact on renters and neighborhoods.⁵⁴

5. Wrestling with Faux Democratization

Digitalization has revolutionized the housing search and the legibility of the housing market itself, but certain participants and transactions benefit more than others. In principle, digitalization can democratize access to housing search information and diversify information supplies. In practice, this promise is muted by a range of drawbacks. Platforms shape the housing search experience both by influencing what information is shared and how and by whom this information is supplied, presented, and consumed. Power differentials in the real world matter in the digital realm as well: digitalization's benefits concentrate in already-advantaged communities and reintroduce concerns around privacy and the reinforcement of longstanding residential sorting and segregation.

The promises of market legibility and increased transparency may be elusive. Despite the apparent "democratization" of housing information through online platforms, there is a risk that the housing market in fact remains more opaque than mainstream consumers realize. Housing markets are segmented and hyperlocal. This continues to give experienced professionals a competitive edge. The vast majority of homeowners and homeseekers transact very few times, and, traditionally, market

⁵¹ Jerusalem Demsas, "Could Zillow Buy the Neighborhood?"; Patrick Clark, Sridhar Natarajan, and Heather Perlberg, "Zillow Seeks to Sell 7,000 Homes for \$2.8 Billion After Flipping Halt."

⁵² Noah Buhayar, Patrick Clark, and Jordyn Holman, "Wall Street Is Using Tech Firms Like Zillow to Eat Up Starter Homes."

⁵³ Ibid.

⁵⁴ Elora Raymond, Richard Duckworth, Ben Miller, Michael Lucas, and Shiraj Pokharel, "Corporate Landlords, Institutional Investors, and Displacement: Eviction Rates in Single-Family Rentals"; Steve King, *Who Owns Your Neighborhood? The Role of Investors in Post-Foreclosure Oakland*; Sarah Treuhaft, Kalima Rose, and Karen Black, "When Investors Buy Up the Neighborhood."

opacity meant that inexperienced homeseekers had to rely on agent and broker gatekeepers to secure suitable housing. Housing markets also have hyperlocal norms—e.g., expectations for “standard” home offers, payment of broker fees by prospective renters, cover letters for aspiring renters or owners—and regulations. The shift online has lessened some of the power gatekeepers hold as searchers can now use online platforms to identify units, contact owners, and view units virtually. However, if housing transactions remain entrenched in local customs and regulations, homeseekers relying solely on online platforms and public information may be at a disadvantage relative to those who still utilize traditional gatekeepers. Ironically, because the online housing search provides some additional transparency, these online-only homeseekers may not realize that they are operating at a disadvantage. Such effects will be magnified in hypercompetitive markets with little inventory.

Information asymmetries arising from the shift online may further stratify housing markets and homeseekers by income or socioeconomic status. As discussed, different kinds of people may use different online platforms or may have unique ways of presenting themselves online, while online content can vary across platforms and neighborhoods based on where a unit is located. Such variations suggest that disadvantaged homeseekers who search online see incomplete market information and therefore make less efficient housing decisions—or must fall back on traditional means of looking for housing. Information segregation also limits the ability of homeseekers to discover new neighborhoods, and, in turn, diversify and desegregate neighborhoods.

The process of matching homeseekers with homes involves several stages, of which the search for housing is just the first. Even if digitalization meant that all homeseekers saw more listings, for marginalized buyers and renters the expanded choice set is often an illusion. Far from disrupting discrimination itself, digitalization merely changes the setting for discrimination to play out. If anything, preliminary evidence suggests that technology aids discrimination based on race, ethnicity, gender, sexuality, language, age, and socio-economic status. Removed forms of online communication dissociate personal elements and provide data points for automated screening, making it easier than ever for landlords, agents, room share households and sellers to pick and choose according to their preferences and biases.

Policymakers and practitioners have several opportunities to foster the societal benefits of digitalization while mitigating its harms. First, they can use the public data exhaust from online platforms to better understand market conditions. However, these data sit in a gray area: they are publicly accessible but only through private platforms that often maintain restrictive terms of use. Nevertheless, data mining online housing markets can enable the study of market dynamics—if partial

and fragmented—with much higher frequency and geographic granularity than what traditional market data from the US Census Bureau could offer. Improved understanding of market conditions in turn improves the evidence basis for policy making. Such insight could be crucial in addressing the ongoing affordability crisis. The unique ability to observe trends in informal arrangements, such as sharing, unlocks a fuller picture of the extent and urgency of unmet housing needs. Of course, where these data are used to inform policy, caution is required. Due to online information segregation and asymmetries, data collection is likely biased. Recent studies by US housing scholars and practitioners have focused primarily on English-language platforms. In places where non-English-speaking residents constitute large shares of the population, the sampling bias is likely substantial. Additionally, in some tight markets, rental listings are increasingly moving to membership-based platforms such as Facebook. To the extent that the movement of ads to digital spaces with restricted access is non-random, market understandings based on public online exchanges may become increasingly biased. Finally, the overrepresentation of certain types of units or neighborhoods in online platforms may obscure market dynamics and processes such as gentrification or neighborhood decline in low-income communities and communities of color, which appear less frequently in online listings.

Second, policymakers and practitioners can work with technology firms that host online platforms to redesign these platforms to better distribute the costs and benefits of the online housing search more evenly among all communities. Regulating housing market information exchange in the digital realm comes with enduring challenges. For one, while users may not use language directly associated with overt discrimination, they may ask and write about proxies and codes from which they derive information on protected categories. As has been shown, algorithms also utilize categories associated with, for instance, race, thus perpetuating structural disadvantage and structural racism. Another challenge is the blurring of personal matchmaking and finding suitable accommodation in the shared housing sector. The tendency for matching to be based on “personality fit” is, on the one hand, legitimate, while at the same time it perpetuates the inequities of the status quo. Recognizing that home sharing is for many a coping strategy in the face of crippling unaffordability, there is scope for planning interventions to tackle the unmet housing need directly and offer viable, affordable alternatives.

Despite these challenges, guidelines or systematic cooperation with online search platforms may still be able to reduce inequality by requiring inclusion of certain types of information or restricting the collection of others. Data collection and privacy may be another point of intervention for policymakers. Homeseekers provide multitudes of information to online platforms, either indirectly

through cookies and other forms of online tracking, or directly through application portals and member profiles. Standards for how these data may be used, particularly when applied to marketing, screening, or other selection criteria, may limit discrimination against protected classes. Continued enforcement of existing fair housing laws, both within online platforms and among traditional actors in the housing market, are also important in reducing discrimination. Finally, housing practitioners working with marginalized homeseekers can leverage these platforms' information broadcasting to their advantage. Recent efforts have designed new, targeted platforms that draw on the information provided on conventional platforms but make them accessible to disadvantaged communities.

Digitalization has precipitated changes across society—some beneficial and some harmful—and requires a broader societal discussion about the data it generates. These data represent key profit centers for major corporations, but they also offer a public good: more-equal access to information. In the housing search, this public good is threatened by the private nature of the digital infrastructure. Old gatekeepers shift their strategies to maintain power and new gatekeepers arise to capitalize on digitalization. But at the end of the day, all of these forces shape housing outcomes and in turn people's lives. Policymakers have an opportunity to play an essential role in maintaining and further developing the potential benefits of digitalization while better mitigating its drawbacks to maximize societal good.

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