combine

StayScore

Making housing quality legible

—— for the people who live in it

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Building Aging Analysis

Hancheng Chang

Noise
Privacy Modeling

Five planners and technologists at Columbia GSAPP. We are not building this for a quick exit. We're building it because we'll be the planners working with this data for the next thirty years.

Problem

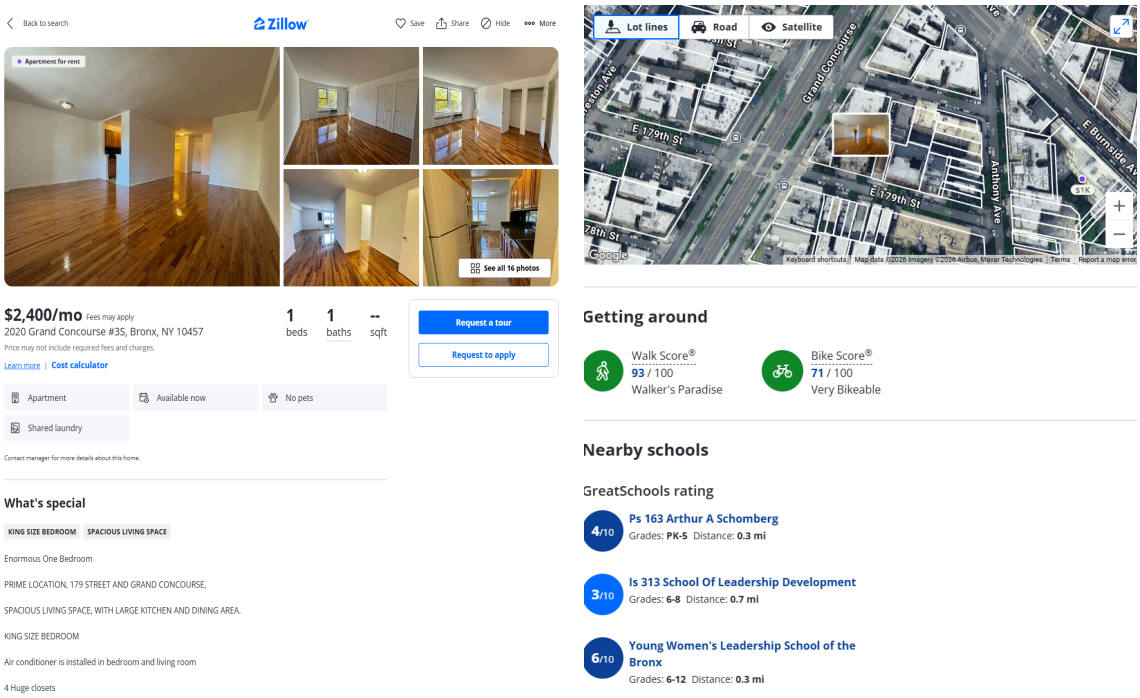

Figure 1: Zillow property list

This is not merely a data gap. It is a structural problem in how housing is valued, marketed, and regulated. The housing market trades on what it can easily measure: rent, floor area, number of bedrooms, distance to transit, and the neighborhood. Yet many of the conditions that most directly shape a tenant's daily life remain absent from listings and difficult to verify before moving in. A unit may look affordable on paper, but if it receives little natural light, faces constant street noise, has poor ventilation, or lacks basic privacy, its real livability is much lower than its advertised value suggests.

This invisibility distorts the housing market. When key quality-of-life conditions are not measured, they are not properly priced. Landlords can charge similar rents for units with very different living conditions, while renters are forced to make decisions with incomplete information. The burden of discovery falls on the tenant, often after the lease has already been signed.

It also weakens enforcement. Regulators can track violations, legal standards, and formal building conditions, but many everyday housing harms fall into a gray area: serious enough to affect health, comfort, and dignity, but not always visible in the data systems used for oversight. As a result, the qualities that determine whether housing is truly livable remain outside the systems of pricing, regulation, and accountability.

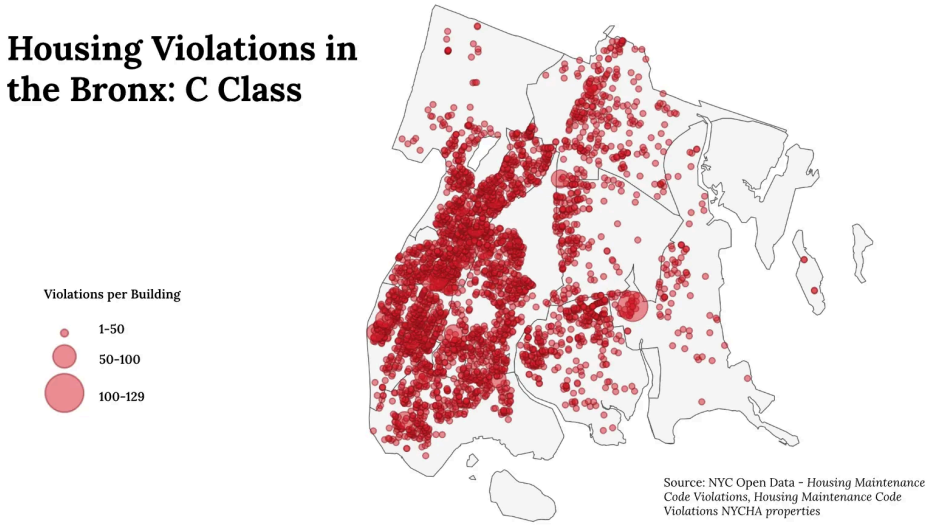

Figure 2: HPD Housing Violation Map NYC (2025)

About two-thirds of New Yorkers are renters, yet most renters make housing decisions with very limited information about the actual quality of the unit they are about to occupy. At the citywide level, this information gap is not small. There are roughly 750,000 active housing code violations on record in New York City. Many of the most common complaints—plumbing problems, structural deterioration, noise, heat and hot water failures, mold, pests, and leaks—are precisely the issues that are difficult or impossible to identify during a short apartment viewing. A unit may appear acceptable during a 15-minute tour, while still being part of a building with repeated maintenance failures or unresolved habitability problems.

New York City lacks accessible, decision-grade data on housing quality. Existing public data is rich, but fragmented. It records pieces of the housing experience without translating them into a format that renters, advocates, and regulators can easily use.

StayScore exists to build that missing layer. By integrating public datasets on violations, complaints, building conditions, traffic, noise, and environmental exposure, StayScore converts scattered records into comparable housing-quality scores. The goal is to help renters understand what they are actually renting, support tenants with stronger evidence, and create a more transparent foundation for housing accountability.

Our Solution

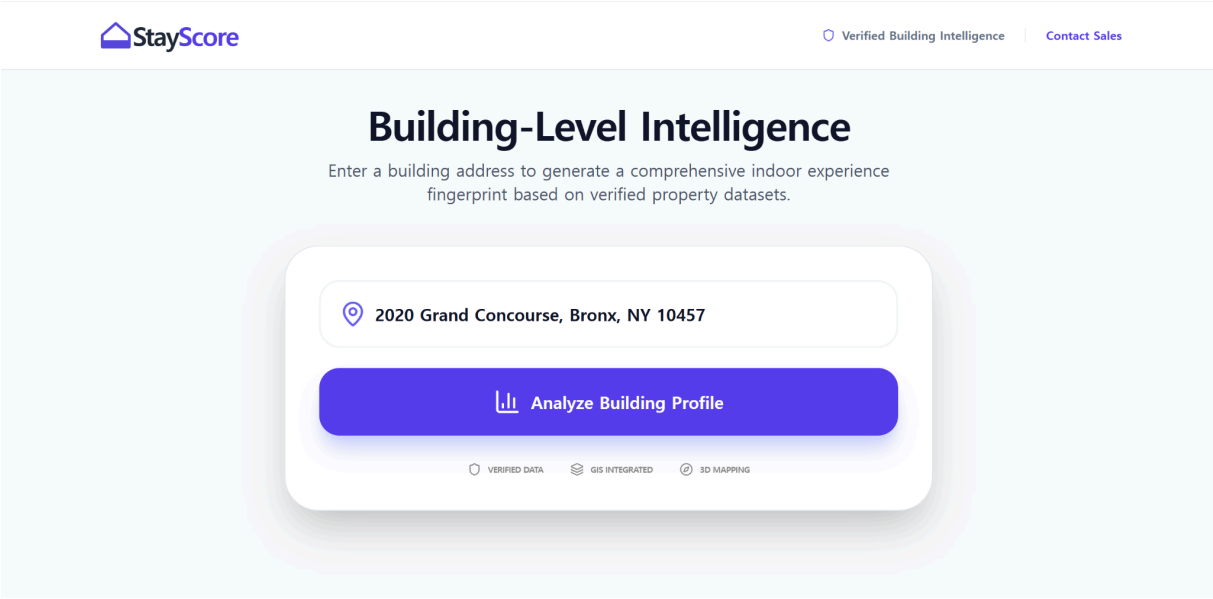

Figure 3: Stayscore Search Engine Image

Stayscore turns fragmented public data into clear, comparable housing-quality metrics. Today, information about apartment livability is scattered across multiple agencies: building geometry from the Department of Buildings, habitability and violation records from HPD, 311 noise complaints, DOT traffic data, and other public datasets. Each source reveals part of the tenant experience, but none of them alone gives renters a complete picture of what it is like to live in a specific building.

Our platform integrates these datasets into one scoring pipeline. The data is cleaned, geocoded, standardized, and processed through our algorithm so that raw public records can be converted into decision-grade metrics. Instead of asking renters to search through separate databases, Stayscore translates complex records into readable scores that reflect key dimensions of housing quality, including maintenance risk, noise exposure, traffic conditions, sunlight potential, air quality, and privacy.

When a user enters a property address, the platform generates a concise building profile. This includes a brief neighborhood context, an overall **StayScore**, detailed score breakdowns, relevant violation and complaint histories, and a comparison with neighboring buildings. The comparison function is especially important because it allows users to see whether a property performs better or worse than similar buildings nearby.

By combining agency records with spatial and environmental data, Stayscore makes hidden housing conditions visible before a lease is signed. It helps renters evaluate apartments beyond price and square footage, while also creating a more transparent evidence base for tenant organizers, advocates, and regulators.

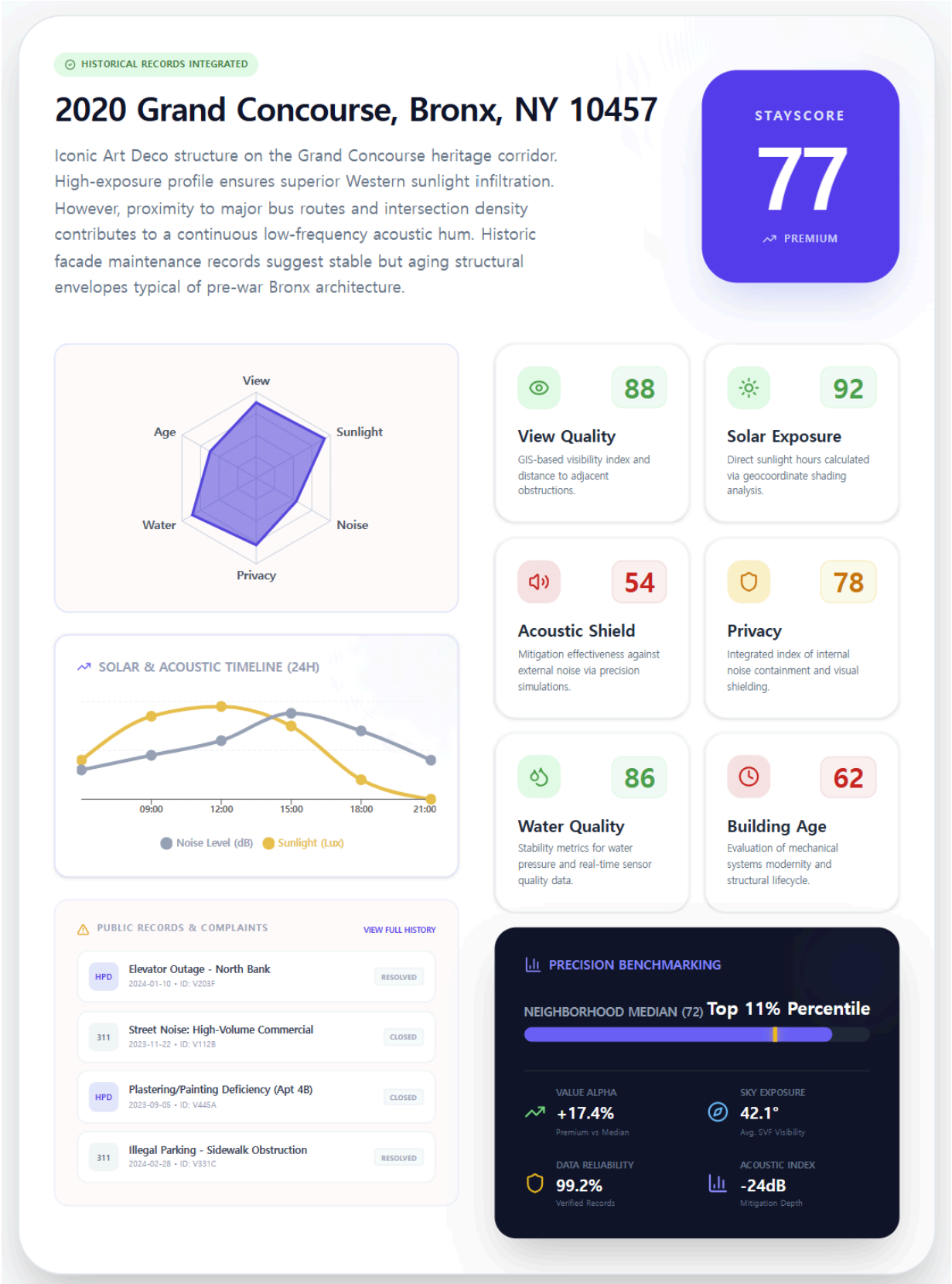

Figure 4: Stayscore Search Result Image

Methodology

INDICATOR	INPUT DATA	PROCESSING
View	DOB 3D massing Building heights Adjacent building angles	Ray tracing from window reference points to compute **Sky View Factor (SVF)**. Analyzes height and angle of all adjacent buildings to quantify the proportion of visible sky area and overall sense of openness at each building face.
Sunlight	DOB 3D massing NOAA solar trajectory Facade material	Annual **solar trajectory simulation** computes seasonal daylight hours per window plane. Goes beyond orientation alone: models **shadow casting** from neighboring tall buildings hour-by-hour, plus **reflected light contribution** from facade materials. Outputs cumulative solar energy exposure across the full year.
Noise	DOT traffic volume 311 noise complaints Subway/rail proximity Facade material	**Diffraction noise simulation** models ground-level sound propagation toward building envelope. Factors in traffic density, pedestrian activity patterns, and proximity to subway/elevated rail. Predicts indoor **attenuation rate (STC rating)** based on window assembly type and facade material characteristics.
Privacy	DOB 3D massing Window positions Adjacent bldg distance	**Sight-line overlap analysis** within 50m radius. Calculates the angular intersection between subject windows and all neighboring building windows. Applies **distance-weighted probability model** to estimate likelihood of interior visibility from external vantage points. Closer buildings with direct-facing windows score higher intrusion risk.
Water	DEP pipe age records HPD water complaints Utility repair history	Combines **pipe deterioration curve** (age vs. material lifespan) with historical repair frequency for the supply zone. Cross-references HPD water-related violations and **high-floor pressure stability records** to assess whether the building maintains consistent supply under peak demand conditions.
Aging	DOB permit history HPD violations Facade material type Maintenance cycle	Analyzes DOB **renovation/repair permit history** to establish maintenance trajectory. Models facade **material-specific deterioration curves** (e.g. brick vs. curtain wall lifespan). Integrates cumulative HPD violation count and maintenance interval regularity to diagnose current position within the building's **structural lifecycle**.

Figure 5: Detailed methodology for each score

Market and Customers

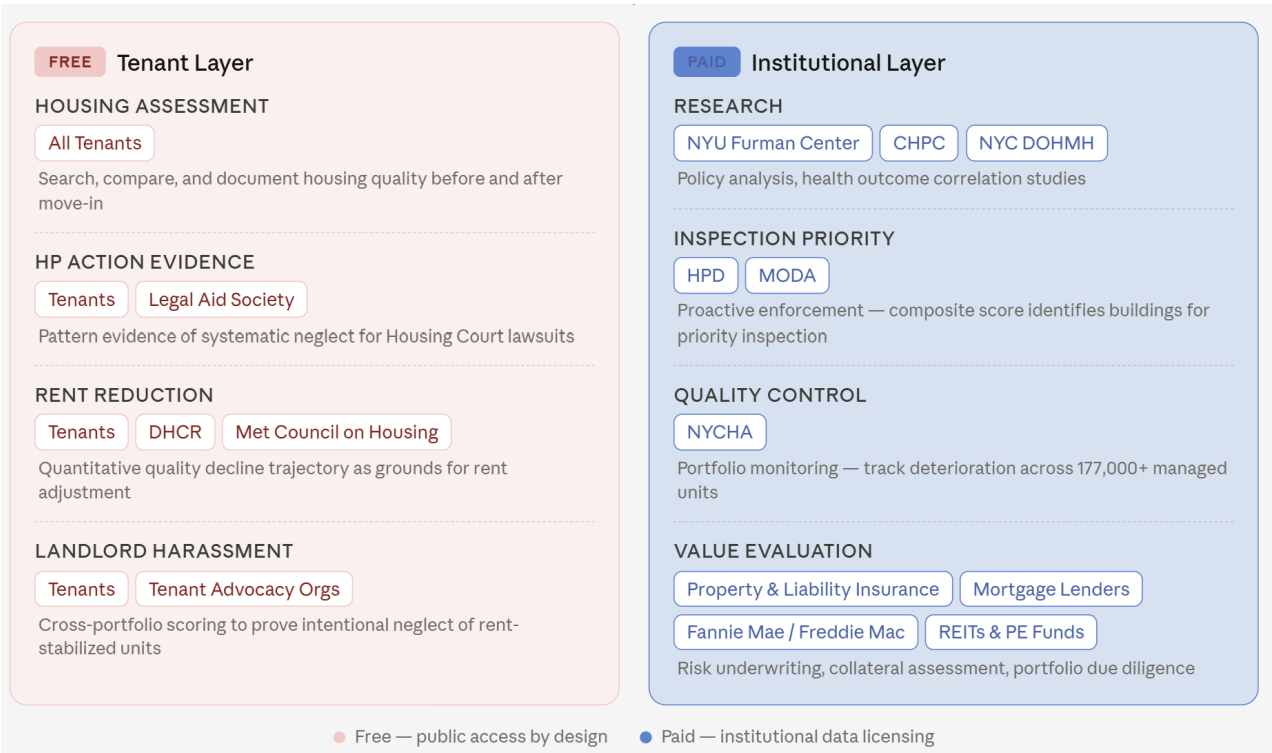

Figure 6: Customer Prediction

Access and funding of Stayscore are intentionally separated. Stayscore is free for tenants. Anyone can search and document a building. Legal aid uses the score as pattern evidence in HP Action lawsuits. Tenants present quality decline trajectories at DHCR for rent reduction. Advocacy orgs document landlord harassment patterns.

However, we get paid by institutions accountable for housing outcomes. Research institutions like NYU Furman Center and NYC DOHMH license the data for policy and public health analysis. HPD uses it to prioritize inspections. NYCHA monitors its own portfolio. And in the long run — insurers, mortgage lenders, even Fannie Mae — use it for risk assessment.

In addition, grants from Robin Hood Foundation seem to be available for us. JustFix.nyc, which is a nonprofit that helps tenants take legal action, was incubated by Robin Hood through the same logic. We're in the same funder ecosystem.

Competitors

	Zillow	Rentlogic	NYC Housing Resource Portal	StayScore
Quality data beyond price/sqft	✗	Limited	Violations only	**6 standardized indicators**
Tenant-first access	✗	✗	Bureaucratic	**Free, public**
Funded by landlords/listings	✓	✓ (failed model)	N/A	**No — institutional payers**

Figure 7: Comparison with competitors

1. The Advertising Bias (Zillow / StreetEasy)

Zillow and StreetEasy are advertising engines with skewed power dynamics. Landlords are customers; listings are commodities. Tenant attention is the product sold to the payer. Consequently, these platforms prioritize marketing over transparency, masking structural issues or management records to protect revenue.

2. The Failure of Opt-in Models (RentLogic)

Previous attempts like RentLogic failed due to a fundamental misalignment of incentives. Their model depended on landlord cooperation or opt-in participation. Under such a structure, landlords with substandard buildings have zero incentive to participate in a system that would validate their poor performance. This created a selection bias where the "worst actors" remained invisible, rendering the rating system ineffective as a city-wide transparency tool.

3. New Approach: Data Integrity

Our model ensures absolute operational neutrality by engineering the landlord out of the feedback loop. Unlike platforms that rely on self-reported data, we harvest mandated municipal records—a data stream that exists independent of landlord consent. By transitioning to an institutional B2B payer structure, we align our financial incentives with data integrity rather than marketing. This architecture creates a "forced transparency" environment where property owners possess zero mechanism to distort, edit, or manipulate their public accountability scores.

Regulatory Environment

New York City's regulatory environment provides a strong legal foundation for our product. Under the NYC Open Data Law, key data sources ,such as HPD housing violation records and DOB public filing information, are legally required to be made available to the public. This ensures the legitimacy and transparency of our data inputs and guarantees that our product complies with regulatory requirements at the data collection level. Beyond the legal accessibility of the data itself, our platform can further strengthen existing housing governance mechanisms. For example, it supports HPD's enforcement efforts, promotes the practical application of the New York City Tenants' Rights Act, and provides clearer data-driven support for evidence standards in housing court. Our system organizes and analyzes accessible information at the building level, helping renters, regulators, and legal stakeholders better understand patterns of housing violations and property owner compliance.

At the same time, our product design fully accounts for potential legal risks. Our scoring system focuses on the building itself rather than evaluating specific individual renters, thereby helping to avoid falling under the scope of the Fair Credit Reporting Act (FCRA). Furthermore, since inaccuracies in the presentation of identifiable property owner information could lead to potential defamation risks, our scoring methodology emphasizes transparency, auditability, and accurate disclosure. All scoring logic, data sources, and evaluation standards will remain traceable, ensuring users and stakeholders can clearly understand how each conclusion is reached. This auditable approach not only mitigates legal risks but also enhances the platform's credibility and public value.

Pilot Strategy & Use of Funds

In order to implement the South Bronx pilot project, we plan to apply for $75,000 in seed funding to support a 12-month pilot phase. It is important to note that the product prototype has already been completed; therefore, the primary purpose of this round of funding is not to develop the product from scratch, but rather to support project verification, field testing, and impact assessment.

During the pilot phase, we will focus on establishing partnerships with two types of organizations: tenant advocacy groups and legal aid organizations. Tenant advocacy organizations can help us engage with actual tenant communities in our target areas to understand their practical needs regarding housing quality, property owner responsibilities, and the process of asserting their rights; legal aid organizations, on the other hand, can assist in evaluating the practical value of the information generated by

the platform in the contexts of tenant rights advocacy, legal consultation, and housing court proceedings. These two partners will ensure that the pilot project goes beyond the technical level and truly integrates into community service and legal support systems.

In addition, we plan to engage methodological advisors from the fields of environmental engineering, housing law, and data ethics. Environmental engineering advisors can help us assess the scientific validity of building environmental risk indicators and ensure that the project maintains a prudent approach regarding transparency, fairness, and responsibility.

Overall, these funds will be used to demonstrate the platform's feasibility and public value in real world housing settings in the South Bronx. Through a 12 month pilot, we aim to assess whether the platform can effectively help renters identify high-risk housing issues, support the work of advocacy organizations and legal aid agencies and establish a credible evidence base for future expansion to other neighborhoods in New York City.

Phase 1: Bronx Community District 5 Pilot Area

Phase 1 will launch in Bronx Community District 5, which includes Fordham, University Heights, Morris Heights, and Mount Hope. This area is selected as the initial pilot because it concentrates many of the housing market problems that the project seeks to make visible: high rental dependence, housing instability, and recurring maintenance violations.

Bronx CD 5 is a renter-majority district, with more than 95% of households living in rental housing. This makes apartment quality and tenant protection especially important, because most residents experience housing conditions through the rental market rather than through ownership. In this context, poor sunlight, noise exposure, air quality, privacy, and building maintenance are not minor lifestyle issues. They directly shape health, comfort, safety, and long-term housing stability.

The district also has one of the highest eviction filing rates in New York City, indicating a high level of housing precarity. When tenants are already vulnerable to displacement, missing information about apartment quality becomes even more consequential. Renters may sign leases without knowing the true conditions of the unit, while landlords can continue to price apartments based on formal characteristics such as size, location, and bedroom count, rather than lived quality. This creates a mismatch between what tenants pay and what they actually experience.

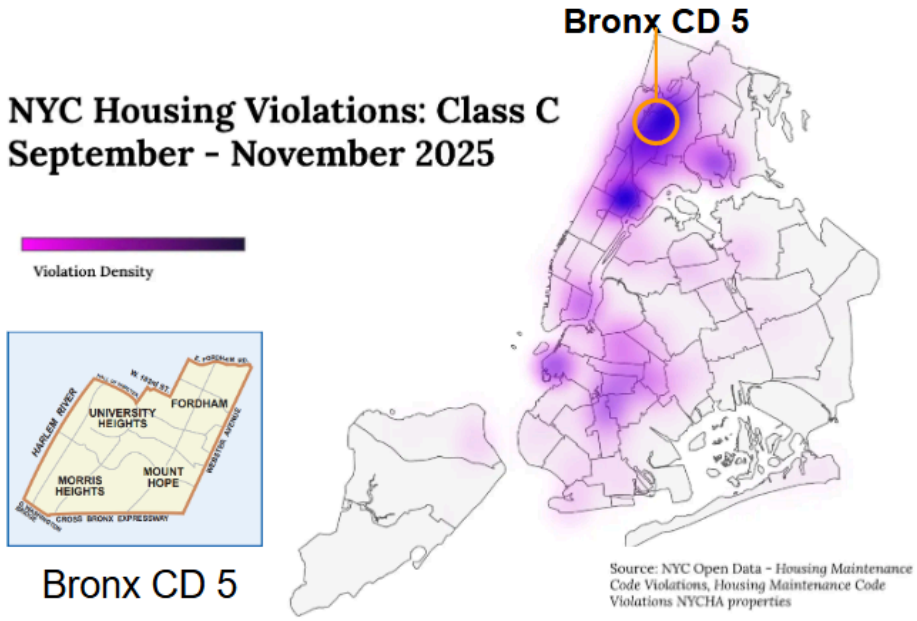

Figure 8: NYC Housing Violations and Location of Bronx CD5

The map of Class C housing maintenance code violations from September to November 2025 shows a visible concentration of severe housing problems in and around Bronx CD 5. Their spatial concentration suggests that housing distress is not randomly distributed across the city. Instead, it clusters in neighborhoods where renters often have fewer resources, less bargaining power, and greater exposure to poor building conditions.

For this reason, Bronx CD 5 is an appropriate site for the first phase of the project. It provides both a clear need and a strong implementation environment. The district already has a mature tenant-organizing infrastructure, meaning there are local organizations, tenant associations, and advocacy networks that understand the housing landscape and can help connect data analysis to real tenant needs. This makes the area “partner-ready”: the project would not begin from zero, but could build on existing community knowledge, organizing capacity, and enforcement efforts.

The goal of Phase 1 is not simply to document housing violations, but to test a broader framework for measuring housing quality beyond the variables currently visible in the housing market. Bronx CD 5 becomes a testing ground for a more accountable housing information system: one that helps renters make better decisions, supports tenant

organizers with stronger evidence, and gives regulators a clearer picture of where intervention is most urgent.

Phase 2: Expanded Scoring, Service Area, and Unit-Level Analysis

After Phase 1 is complete, Phase 2 will expand the project in three major ways: score categories, service area, and scoring resolution. While Phase 1 focuses on testing the model in Bronx Community District 5, Phase 2 will move toward a broader and more detailed housing-quality assessment system.

First, the scoring framework will be expanded to include more categories of housing conditions drawn from HPD Housing Maintenance Code violation types. Instead of treating housing quality as a single general score, Stayscore will begin to distinguish between different forms of risk, such as heat and hot water problems, mold, leaks, lead hazards, pests, structural issues, fire safety concerns, and other maintenance-related violations. This will allow users to understand not only whether a building has a poor record, but also what kind of problems are most common. A building with repeated heat complaints, for example, represents a different tenant experience from a building with recurring pest or mold issues. Separating these violation types makes the scoring system more useful for renters, tenant organizers, and regulators.

Second, Phase 2 will expand the service area to East Harlem, which has one of the highest concentrations of housing violations in New York City. East Harlem is an important next-stage service area because it shares several conditions with the Bronx pilot area: a large renter population, a significant stock of older multifamily housing, and ongoing concerns about housing affordability, maintenance, and displacement pressure. Expanding into East Harlem will allow the project to test whether the scoring model can work across different neighborhood contexts while still remaining sensitive to local housing conditions.

Third, Phase 2 will begin research and development for a unit-level scoring system. This is a key technical step because housing quality can vary significantly within the same building. Two apartments at the same address may have very different conditions depending on floor level, floor plan orientation, exposure to traffic noise, access to sunlight, ventilation, privacy, and proximity to building systems such as shafts, elevators, trash rooms, or mechanical equipment. A building-level score can identify general risk, but it cannot fully explain the lived experience of a specific apartment.

To address this limitation, Phase 2 will develop an algorithm that can estimate the floor and orientation of a unit within a building based on the address and unit number entered

by the user. This would allow Stayscore to move from general building assessment toward more precise unit-level analysis. For example, if a user enters a specific apartment number, the system could infer whether the unit is likely located on a lower or upper floor, whether it faces the street or the rear yard, and how those spatial conditions may affect sunlight, noise, air quality, and privacy.

This phase is therefore both an expansion and a refinement. It broadens Stayscore's reach from Bronx CD 5 to East Harlem, adds more detailed HPD violation-based indicators, and begins building the technical foundation for apartment-specific scoring. The long-term goal is to create a housing information system that can evaluate not only where a building is located, but what it is actually like to live in a particular unit.

1 - B

- ~~1 - B~~
- ~~2 - B~~
- ~~3 - I~~
- ~~4 - I~~
- ~~5 - J~~
- ~~6 - J~~
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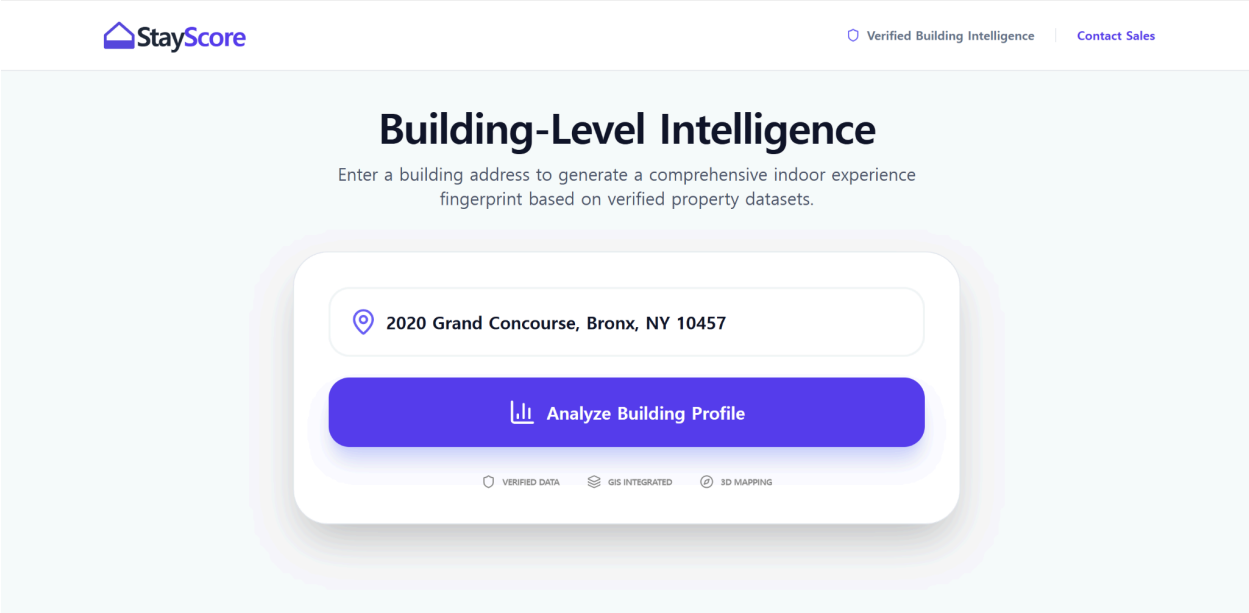
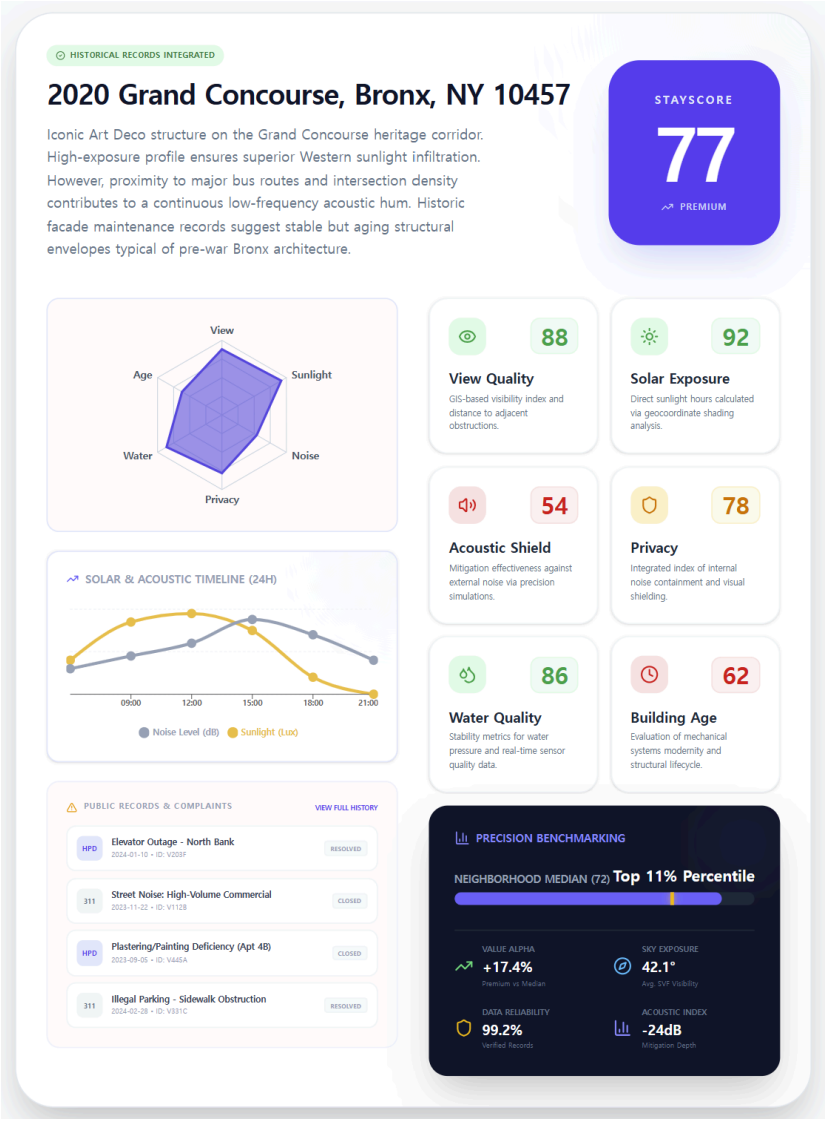
- ~~8 - A~~
- ~~9 - I~~
- ~~10 - A~~
- ~~11 - C~~
- ~~12 - J~~

Our solutions



We take fragmented public data such as building geometry from DOB, habitability records from HPD, 311 noise complaints, DOT traffic data, and process them through our algorithm so it can be converted into comparable, decision-grade metrics.

When you type your property address, you get a brief neighborhood context, the overall StayScore with detailed breakdowns, violation and complaint records, and a comparison against neighboring buildings.



The following are detailed methodology for each score.

View

Input Data

- DOB 3D massing
- Building heights
- Adjacent building angles

Processing

Ray tracing from window reference points to compute **Sky View Factor (SVF)**. Analyses height and angles of all adjacent buildings to quantify the proportion of visible sky area and overall sense of openness at each building face.

Sunlight

Input Data

- DOB 3D massing
- NOAA solar trajectory
- Facade material

Processing

Annual solar trajectory simulation computes seasonal daylight hours per window plane. Goes beyond orientation alone: models shadow casting from neighboring tall buildings hour-by-hour, plus reflected light contribution from facade materials. Outputs cumulative solar energy exposure across the full year.

Noise

Input Data

- DOT traffic volume
- 311 noise complaints
- Subway/rail proximity
- Facade material

Processing

Diffraction noise simulation models ground-level sound propagation toward building envelopes. Factors in traffic density, pedestrian activity patterns, and proximity to subway/elevated rail. Predicts indoor attenuation rate **(STC rating)** based on window assembly type and facade material characteristics.

Privacy

Input Data

- DOB 3D massing
- Window positions
- Adjacent bldg distance

Processing

Sight-line overlap analysis within 50m radius. Calculates the angular intersection between subject windows and all neighboring building windows. Applies distance-weighted probability model to estimate likelihood of interior visibility from external vantage points. Closer buildings with direct-facing windows score higher intrusion risk.

Water

Input Data

- DEP pipe age records
- HPD water complaints
- Utility repair history

Processing

Combines pipe deterioration curve (age vs. material lifespan) with historical repair frequency for the supply zone. Cross-references HPD water-related violations and high-floor pressure stability records to assess whether the building maintains consistent supply under peak demand conditions.

Aging

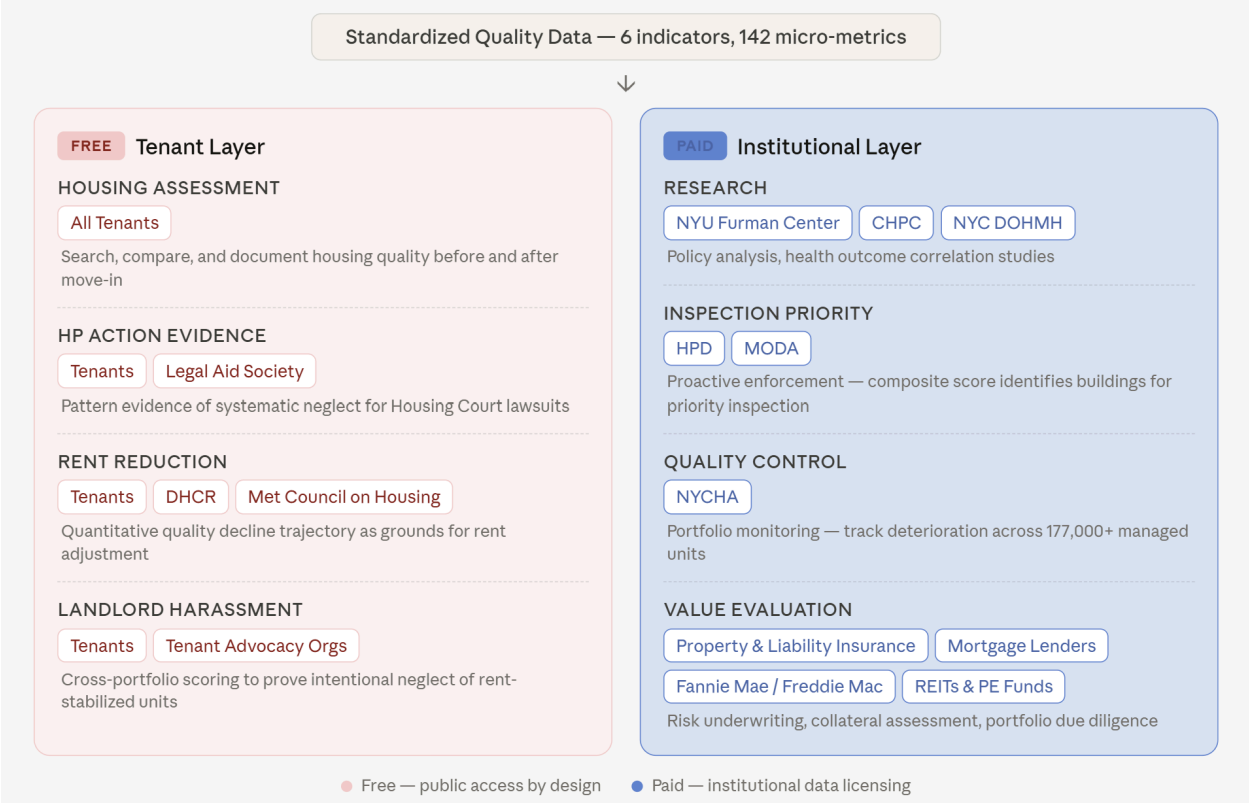
Input Data

- DOB permit history
- HPD violations
- Facade material type
- Maintenance cycle

Processing

Analyzes DOB **renovation/repair permit history** to establish maintenance trajectory. Models facade **material-specific deterioration curves** (e.g. brick vs. curtain wall lifespan). Integrates cumulative HPD violation count and maintenance interval regularity to diagnose current position within the building's structural lifecycle.

Market and Customers



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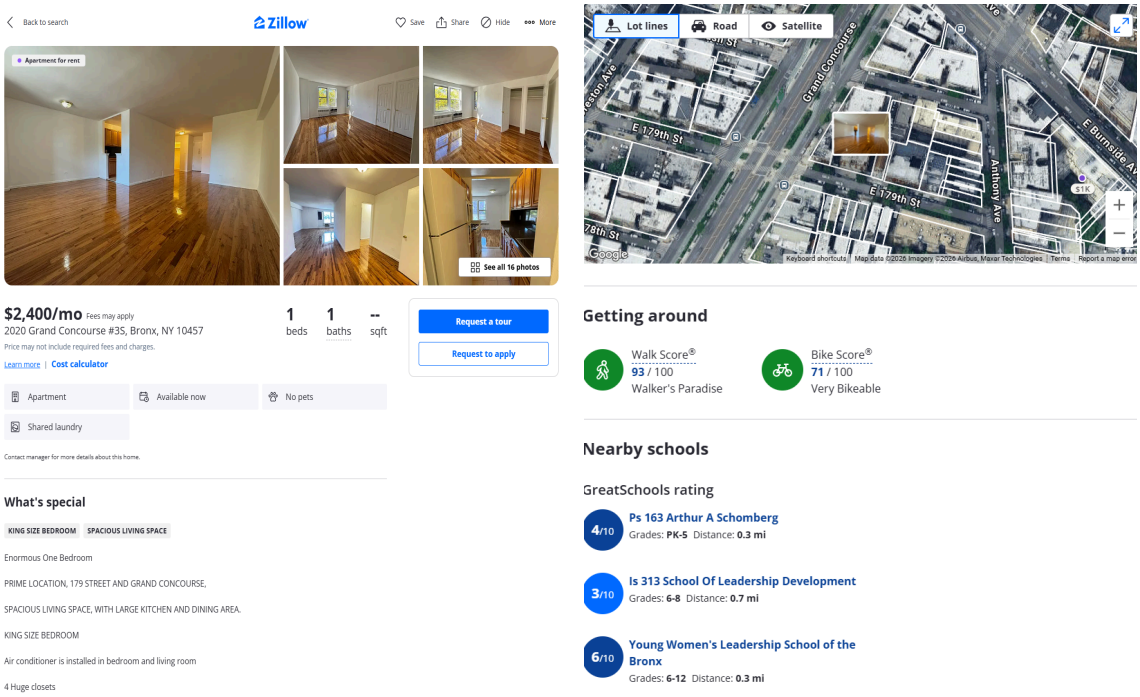
Problem Framing



You can compare two apartments by price & square footage.
You cannot compare them by sunlight, noise, air, or privacy.
This is not just missing data. It leads to mispriced housing and weak enforcement.

The housing market trades on the data it can measure. Everything that actually shapes a tenant's daily life is not on the listing, invisible to the renter, and invisible to the regulator. This isn't just missing information. It produces mispriced housing and weak enforcement.

- Expanded:

This is not merely a data gap. It is a structural problem in how housing is valued, marketed, and regulated. The housing market trades on what it can easily measure: rent, floor area, number of bedrooms, distance to transit, and neighborhood name. Yet many of the conditions that most directly shape a tenant’s daily life remain absent from listings and difficult to verify before moving in. A unit may look affordable on paper, but if it receives little natural light, faces constant street noise, has poor ventilation, or lacks basic privacy, its real livability is much lower than its advertised value suggests.

This invisibility distorts the housing market. When key quality-of-life conditions are not measured, they are not properly priced. Landlords can charge similar rents for units with very different living conditions, while renters are forced to make decisions with incomplete information. The burden of discovery falls on the tenant, often after the lease has already been signed.

It also weakens enforcement. Regulators can track violations, legal standards, and formal building conditions, but many everyday housing harms fall into a gray area:

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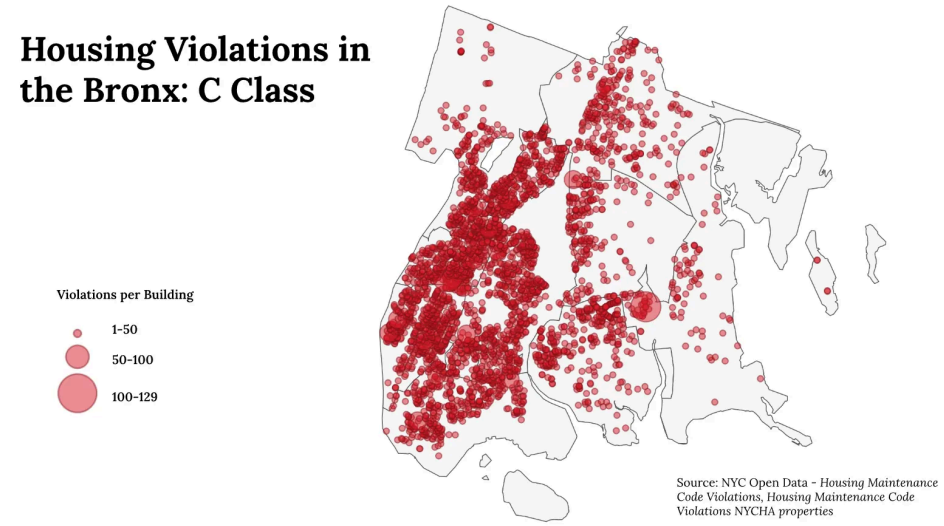
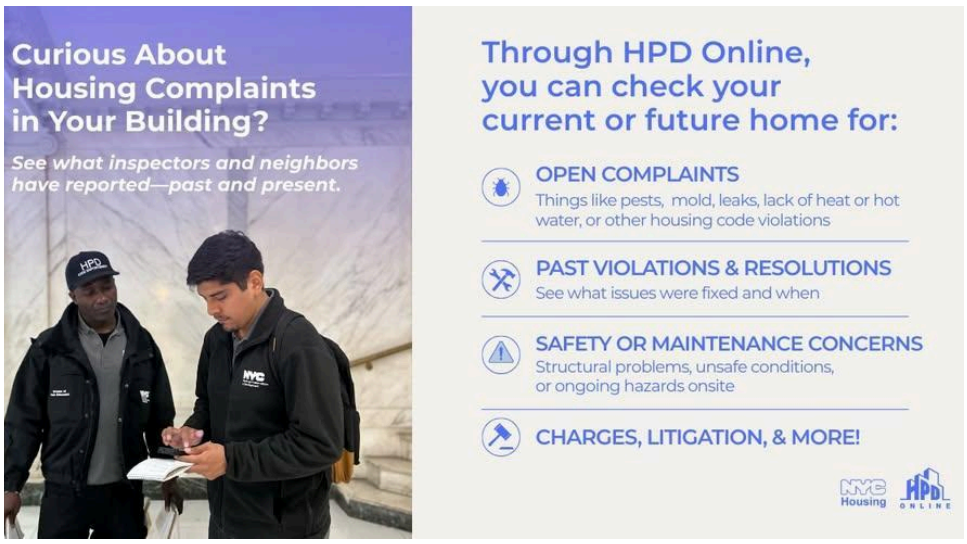
The Problem





About two-thirds of New Yorkers are renters. There are roughly 750,000 active housing code violations on the books. The most common complaints — plumbing, structural deterioration, noise — are precisely the things you cannot see at a viewing. Without standardized data, tenants can't evaluate a unit before signing. They can't document problems with comparable evidence. And they can't support enforcement when things go wrong. These three failures share one cause: there is no comparable, decision-grade data on housing quality. That's what StayScore exists to build.

1.2.7-Bolun's Part

StayScore

Making housing quality legible

—— for the people who live in it

PLANA4587 Urban Technology, Innovations and Planning Institutions

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Visual Design View
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Noise & Privacy Modeling

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7. Competitors

	Zillow	Rentlogic	NYC Housing Resource Portal	StayScore
Quality data beyond price/sqft	✗	Limited	Violations only	**6 standardized indicators**
Tenant-first access	✗	✗	Bureaucratic	**Free, public**
Funded by landlords/listings	✓	✓ (failed model)	N/A	**No — institutional payers**

- **The Advertising Trap (Zillow / StreetEasy):**
These are marketing tools where landlords are the customers. Since revenue depends on them, the platform is incentivized to prioritize promotion over transparency.

- **The Opt-in Failure (RentLogic):**
This model failed because it depended on landlord participation. Under-performing landlords simply opted out, creating a massive selection bias.

- **Our Disruptive Solution:**
We remove landlord influence entirely. By using mandated public data and institutional payers (e.g., lenders, insurers), we provide an unbiased, high-integrity "Credit Score for Landlords" that cannot be gamed or edited.

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8:Regulatory Environment

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10:What we need to launch the South Bronx pilot

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In addition, we plan to engage methodological advisors from the fields of environmental engineering, housing law, and data ethics. Environmental engineering advisors can help us

assess the scientific validity of building environmental risk indicators and ensure that the project maintains a prudent approach regarding transparency, fairness, and responsibility.

Overall, these funds will be used to demonstrate the platform's feasibility and public value in real world housing settings in the South Bronx. Through a 12 month pilot, we aim to assess whether the platform can effectively help renters identify high-risk housing issues, support the work of advocacy organizations and legal aid agencies and establish a credible evidence base for future expansion to other neighborhoods in New York City.

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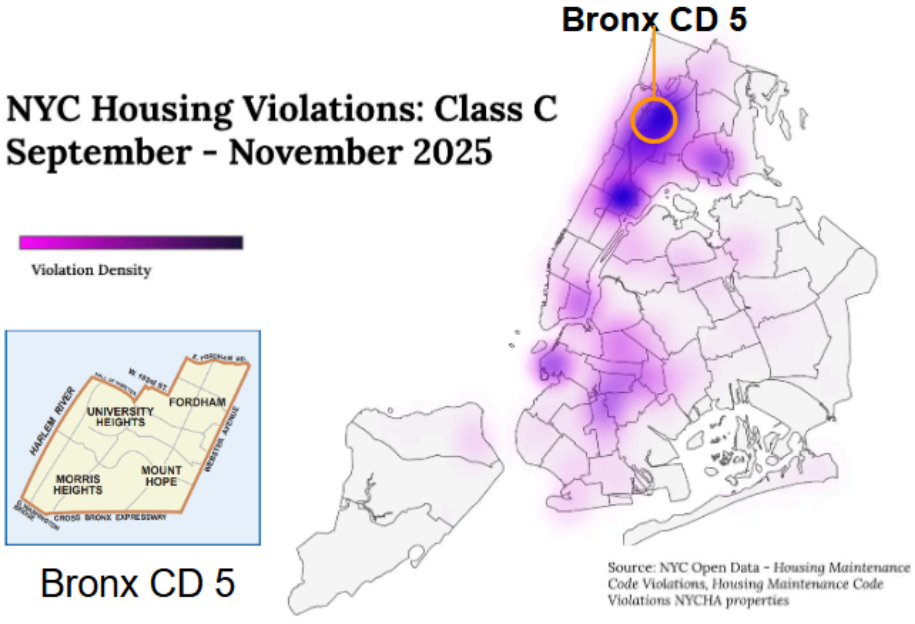
Phase 1: Bronx Community District 5 Pilot Area

Phase 1 will launch in Bronx Community District 5, which includes Fordham, University Heights, Morris Heights, and Mount Hope. This area is selected as the initial pilot because it concentrates many of the housing market problems that the project seeks to make visible: high rental dependence, housing instability, and recurring maintenance violations.

Bronx CD 5 is a renter-majority district, with more than 95% of households living in rental housing. This makes apartment quality and tenant protection especially important, because most residents experience housing conditions through the rental market rather than through ownership. In this context, poor sunlight, noise exposure, air quality, privacy, and building maintenance are not minor lifestyle issues. They directly shape health, comfort, safety, and long-term housing stability.

The district also has one of the highest eviction filing rates in New York City, indicating a high level of housing precarity. When tenants are already vulnerable to displacement, missing information about apartment quality becomes even more consequential. Renters may sign leases without knowing the true conditions of the unit, while landlords can continue to price apartments based on formal characteristics such as size, location, and bedroom count, rather than lived quality. This creates a mismatch between what tenants pay and what they actually experience.



The map of Class C housing maintenance code violations from September to November 2025 shows a visible concentration of severe housing problems in and around Bronx CD 5. Their spatial concentration suggests that housing distress is not randomly distributed across the city. Instead, it clusters in neighborhoods where renters often have fewer resources, less bargaining power, and greater exposure to poor building conditions.

For this reason, Bronx CD 5 is an appropriate site for the first phase of the project. It provides both a clear need and a strong implementation environment. The district already has a mature tenant-organizing infrastructure, meaning there are local organizations, tenant associations, and advocacy networks that understand the housing landscape and can help connect data analysis to real tenant needs. This makes the area “partner-ready”: the project would not begin from zero, but could build on existing community knowledge, organizing capacity, and enforcement efforts.

The goal of Phase 1 is not simply to document housing violations, but to test a broader framework for measuring housing quality beyond the variables currently visible in the housing market. Bronx CD 5 becomes a testing ground for a more accountable housing information system: one that helps renters make better decisions, supports tenant organizers with stronger evidence, and gives regulators a clearer picture of where intervention is most urgent.

Phase 2: Expanded Scoring, Service Area, and Unit-Level Analysis

After Phase 1 is complete, Phase 2 will expand the project in three major ways: score categories, service area, and scoring resolution. While Phase 1 focuses on testing the model in Bronx Community District 5, Phase 2 will move toward a broader and more detailed housing-quality assessment system.

First, the scoring framework will be expanded to include more categories of housing conditions drawn from HPD Housing Maintenance Code violation types. Instead of treating housing quality as a single general score, Stayscore will begin to distinguish between different forms of risk, such as heat and hot water problems, mold, leaks, lead hazards, pests, structural issues, fire safety concerns, and other maintenance-related violations. This will allow users to understand not only whether a building has a poor record, but also what kind of problems are most common. A building with repeated heat complaints, for example, represents a different tenant experience from a building with recurring pest or mold issues. Separating these violation types makes the scoring system more useful for renters, tenant organizers, and regulators.

Second, Phase 2 will expand the service area to East Harlem, which has one of the highest concentrations of housing violations in New York City. East Harlem is an important next-stage service area because it shares several conditions with the Bronx pilot area: a large renter population, a significant stock of older multifamily housing, and ongoing concerns about housing

affordability, maintenance, and displacement pressure. Expanding into East Harlem will allow the project to test whether the scoring model can work across different neighborhood contexts while still remaining sensitive to local housing conditions.

Third, Phase 2 will begin research and development for a unit-level scoring system. This is a key technical step because housing quality can vary significantly within the same building. Two apartments at the same address may have very different conditions depending on floor level, floor plan orientation, exposure to traffic noise, access to sunlight, ventilation, privacy, and proximity to building systems such as shafts, elevators, trash rooms, or mechanical equipment. A building-level score can identify general risk, but it cannot fully explain the lived experience of a specific apartment.

To address this limitation, Phase 2 will develop an algorithm that can estimate the floor and orientation of a unit within a building based on the address and unit number entered by the user. This would allow Stayscore to move from general building assessment toward more precise unit-level analysis. For example, if a user enters a specific apartment number, the system could infer whether the unit is likely located on a lower or upper floor, whether it faces the street or the rear yard, and how those spatial conditions may affect sunlight, noise, air quality, and privacy.

This phase is therefore both an expansion and a refinement. It broadens Stayscore's reach from Bronx CD 5 to East Harlem, adds more detailed HPD violation-based indicators, and begins building the technical foundation for apartment-specific scoring. The long-term goal is to create a housing information system that can evaluate not only where a building is located, but what it is actually like to live in a particular unit.