

Housing.gov



Team

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Problem Statement 1.a)

Many individuals with disabilities are in need of affordable, accessible, and integrated housing. Fairfax County housing providers, whether public, nonprofit, or private organizations, own units that have been modified to meet the needs of persons with disabilities. For example, units may be modified with lower countertops, have grab-bars in the bathroom, or have lighting features for persons with visual impairments. However, property owners who own modified units often have difficulty finding applicants in need of these features, and may rent them to people without the applicable disabilities. As a result, there is often a mismatch between connecting these critically-needed units with the people who require those features. How can we use technology to better connect the supply of accessible housing with those in need of such accommodations?

How we approached the problem

- Researched existing technology solutions
 - What was out there?
 - Who manages those solutions?
 - What are their limitations?
 - What do they do well?
- What should a new or updated solution look like? What would be included?
 - How do we get insights from the data that this platform collects?
- Technology implementation.
- Scope: preliminarily looking at properties that have loans or restrictive covenants with state or local agencies

Available Websites

- 1) Virginia Housing & Supportive Services (VAHSS)
 - a) Subsidies
- 2) Go Section 8
 - a) Provides specific housing and assistance for low-income, elderly, and disabled
- 3) Affordable Housing Online
 - a) Separate Waitlists for section 8 and public housing
 - b) Tags for Details
- 4) Georgia Housing Search
 - a) Landlord spoken languages
 - b) Local Transit, shopping, and hospitals
 - c) Area Median Income
 - d) Accessible and other options
- 5) Fairfax County GIS Map
 - a) Maps of community, assisted living and county facilities

Limitations

->

Solutions

Not all landlords are on one system

Have system centrally managed by VHDA, and include as a requirement in loan docs (similar to WTCMS) that landlords have to maintain.

Timeliness

Robust real-time matching.

Precision

Spell out accessibility features, apply to unit specifically.

[Home](#)[About](#)[Sign-up](#)[FAQ](#)

Looking for affordable or ADA compliant accommodations? Sign-up or log-in and complete our questionnaire, we'll match you with properties that have what you need. No vacancies? No problem, select all properties that you like and you'll be added to their waitlist, the landlord will notify you when an appropriate unit comes available.

Log-In

Don't have a log-in? Click [here](#)

Your username is your e-mail address

Did you forget your password? Click [here](#) to send a reset e-mail



Your Homes

Edit Preferences

Explore

Search...



West Wood Oaks Unit 116
1 Bed 1 Bath Ramp Access
Deaf Accessible **100%**



Wedgewood Unit 206
1 Bed 1 Bath Ramp Access
Deaf Accessible **96%**



The Reserve Unit 304
1 Bed 1 Bath Ramp Access
Deaf Accessible **70%**



The Finley Unit 250
2 Bed 1 Bath Ramp Access
Elevator **61%**





Your Homes

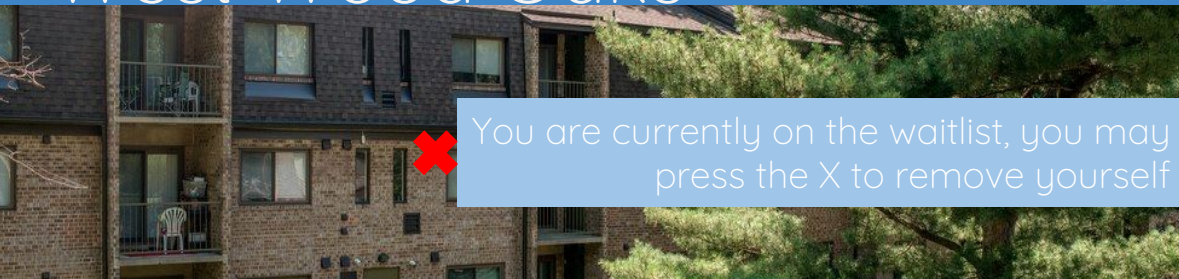
Edit Preferences

Explore

Search...

West Wood Oaks

100%



You are currently on the waitlist, you may press the X to remove yourself



Matching Units

- Unit 112
- Unit 116

Features

- Ramp, Deaf Accessibility
- Ramp, Deaf Accessibility

Available?

- No
- No

Pictures



Property Manager

Falcon, Pergine A.
 [P] (703)-345-8762
 [E] afalcon@wwo.org

[Your Homes](#)[Edit Preferences](#)[Explore](#)

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Your Homes

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Search...

Wedgewood

96%



You are currently on the waitlist, you may press the X to remove yourself



Matching Units

Unit 206

Features

Ramp, Deaf Accessibility

Available?

No

Pictures



Property Manager

Eagle, Stellars An.

[P] (571)-222-9362

[E] aneagle@dev.org



Hello Southern Albatross! Make changes to your preferences and needs on this screen. Fill out more of this information for more specific suggestions in the Your Homes screen, fill out less information for more general recommendations.

▶ Disabilities

▶ Unit Size

▶ Unit Features

▶ Neighborhood



Hello Southern Albatross! Make changes to your preferences and needs on this screen. Fill out more of this information for more specific suggestions in the Your Homes screen, fill out less information for more general recommendations.

▼ Disabilities

Hearing Impairment

- ✓ Partially Deaf
- Deaf

Physical Impairment

- ✓ Wheelchair Reliant
- Limited Mobility - upper body
- Limited Mobility - lower body



Your Homes

Edit Preferences

Explore

Search



New Notification

Hello Southern Albatross! Make changes to your preferences and needs on this screen. Fill out more of this information for more specific suggestions in the Your Homes screen, fill out less information for more general recommendations.

▼ Disabilities

Hearing Impairment

- Partially Deaf
- Deaf

Physical Impairment

- Wheelchair Reliant
- Limited Mobility - upper body
- Limited Mobility - lower body



West Wood Oaks unit 116 is available and you are next on the waitlist, the property manager should be contacting you soon. Click this bubble to go to West Wood Oaks.

No other Notifications.

Deaf

Physical Impairment

- ✓ Wheelchair Reliant
- Limited Mobility - upper body
- Limited Mobility - lower body

es and needs on this screen. Fill out more of
mes screen, fill out less information for more



Your Homes

Edit Preferences

Explore

Search...

West Wood Oaks

100%



You are currently first on the waitlist for unit 116 and it is **available** you may press the X if uninterested. The property manager should contact you soon, or you can reach out if you don't hear from them.



Matching Units

- Unit 112
- Unit 116

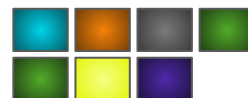
Features

- Ramp, Deaf Accessibility
- Ramp, Deaf Accessibility

Available?

- No
- Yes

Pictures



Property Manager

Falcon, Pergine A.
 [P] (703)-345-8762
 [E] afalcon@wwo.org



Policy and Implementation

- Global waitlist of applicants that the property specific waitlists pull from.
 - Would allow tracking length of time applicants wait for a unit across regions.
 - Would allow applicants to be automatically removed from other property waitlists once they accept a new apartment.
 - Would allow analysis on which disabilities are most often accommodated.
- Key Participants
 - Landlords
 - VHDA
 - Local Jurisdictions such as Fairfax
 - If working with existing tech groups to update their product
 - SocialSolutions or Georgia housing search

User goes to housing.gov

Selects Role

Applicant

Landlord

Property

Unit

Fills out

View edit

View

Wait List

- Personal Information
- Source of Income (Section 8, VASH, etc.)
- Housing needs
- Neighborhood, public transportation characteristics



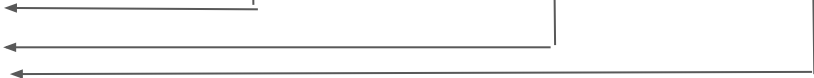
Distance Matching Algorithm



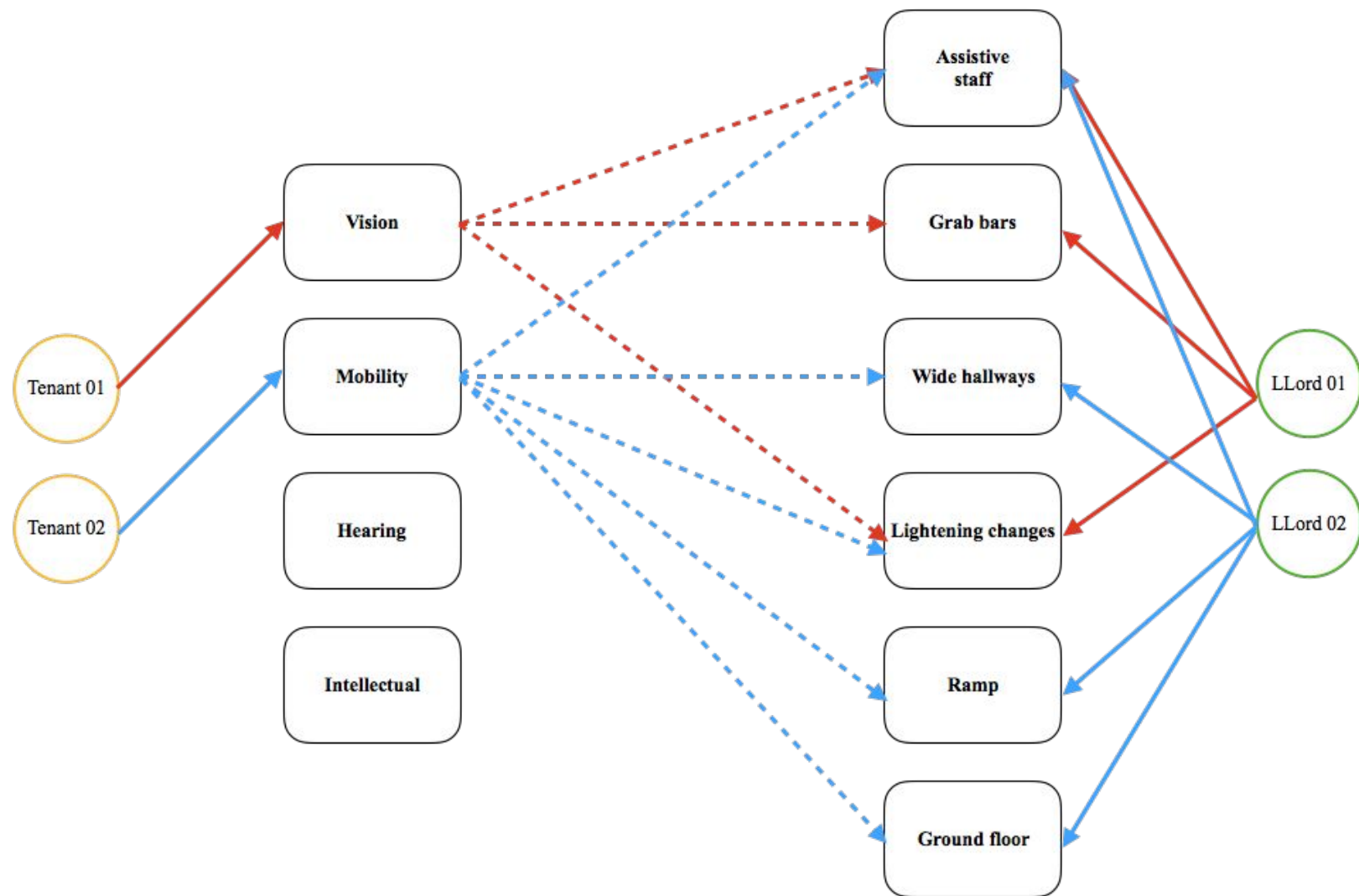
- Address
- Year Built
- Property-wide accessibility features

- Contact Information
- Familiarity with Section 8, VASH, etc.
- Languages spoken
- Familiarity with Reasonable Accommodations
- Non-profit, Government Entity

Bedrooms, bathrooms
Unit accessibility features



Coarse Grained Problem



Sample Solution

$$T_1 = [110100]$$

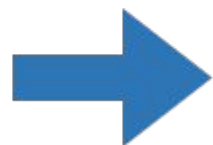
$$T_2 = [101111]$$

$$L_1 = [110100]$$

$$L_2 = [101011]$$



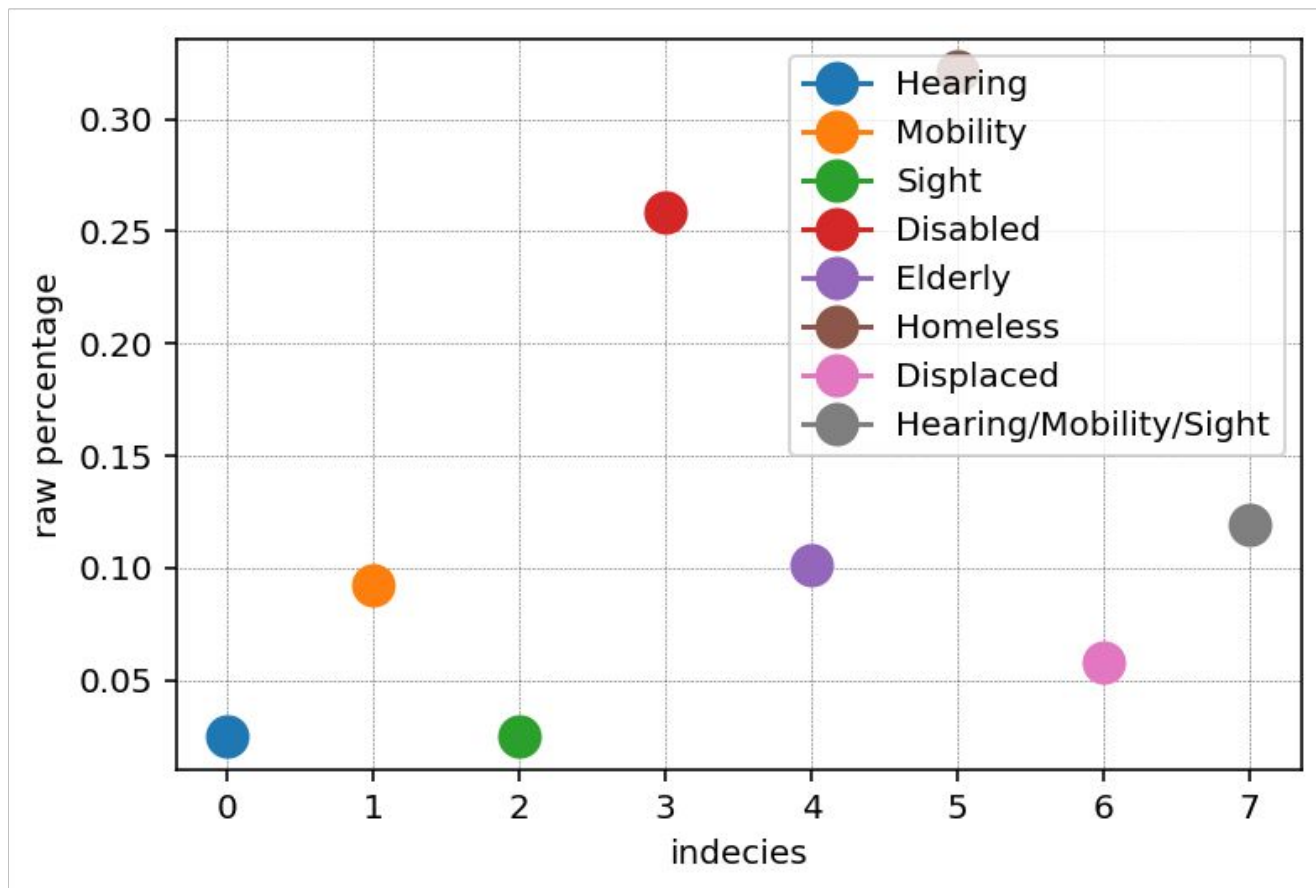
distance	L_1	L_2
T_1	0 ✓	5
T_2	4	1 ✓



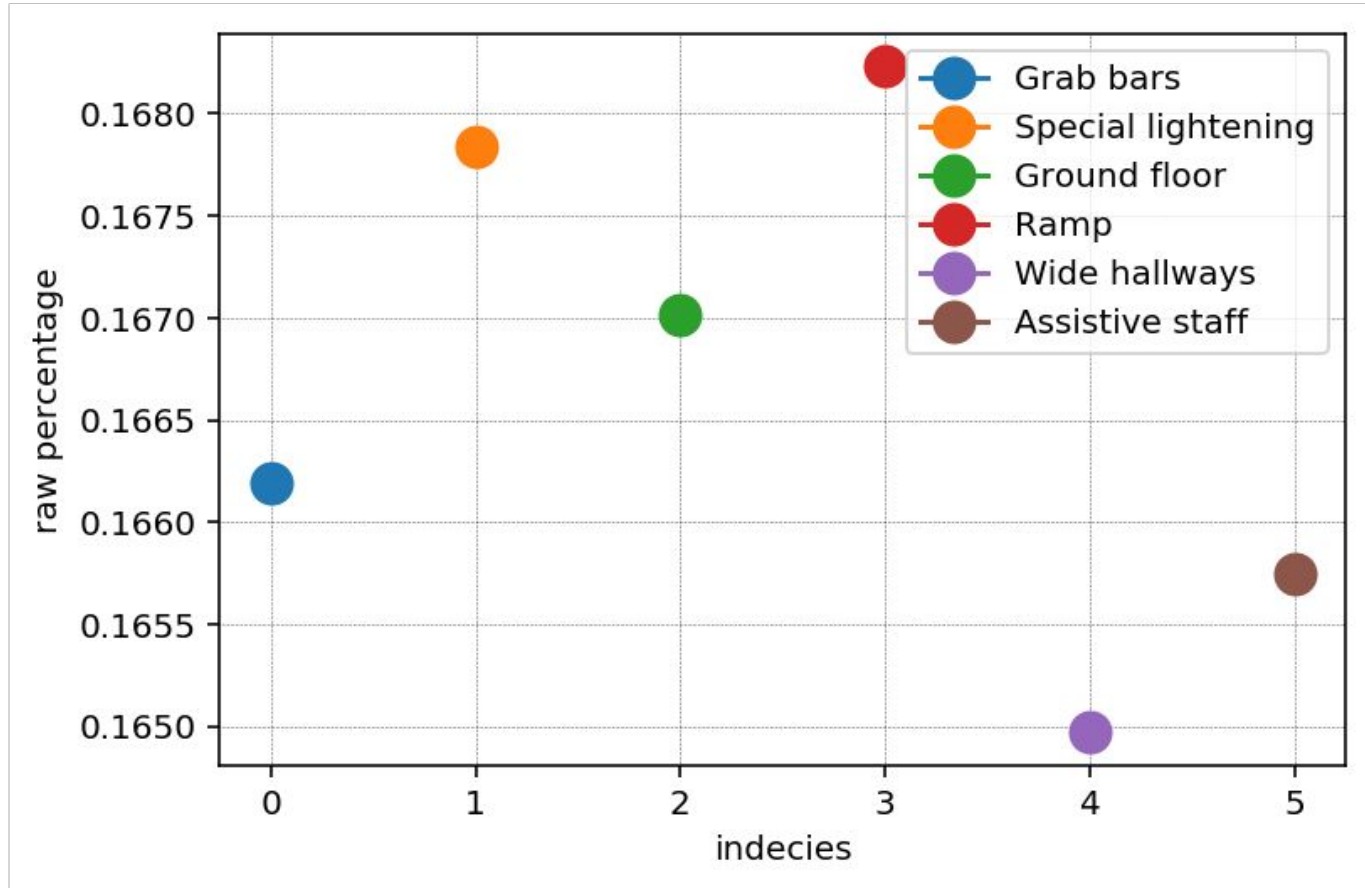
$\{ T_1, L_1 \}$
 $\{ T_2, L_2 \}$

Tenant Data

Waiting List of Tenants from Fairfax County Department of Housing and Community Development 13000 applicants



Landlord Data



Results/1

L. A. N. D L. O. R. D. S

T. E. N. A. N. T. S

	0	1	2	3	4	5	6	7	8	9	10	11
0	2	4	3	5	1	3	5	4	4	2	4	4
1	5	1	4	2	4	4	2	5	1	3	3	3
2	3	5	2	4	0	2	4	3	3	1	5	3
3	5	1	4	2	4	4	2	5	1	3	3	3
4	5	1	4	2	4	4	2	5	1	3	3	3
5	5	1	4	2	4	4	2	5	1	3	3	3
6	5	1	4	2	4	4	2	5	1	3	3	3
7	6	2	3	1	3	3	1	4	0	2	4	2
8	5	1	4	2	4	4	2	5	1	3	3	3
9	5	1	4	2	4	4	2	5	1	3	3	3
10	5	1	4	2	4	4	2	5	1	3	3	3
11	5	1	4	2	4	4	2	5	1	3	3	3
12	5	1	4	2	4	4	2	5	1	3	3	3
13	5	1	4	2	4	4	2	5	1	3	3	3
14	5	1	4	2	4	4	2	5	1	3	3	3
15	5	1	4	2	4	4	2	5	1	3	3	3
16	5	1	4	2	4	4	2	5	1	3	3	3
17	5	1	4	2	4	4	2	5	1	3	3	3
18	2	4	3	5	1	3	5	4	4	2	4	4
19	5	1	4	2	4	4	2	5	1	3	3	3
20	6	2	3	1	3	3	1	4	0	2	4	2
21	6	2	3	1	3	3	1	4	0	2	4	2
22	5	1	4	2	4	4	2	5	1	3	3	3

Distance matrix

Results/2

Tenant	Landlord	Tenant	Landlord	Tenant	Landlord
1	11468	10	5786	19	4203
2	1292	11	10011	20	1809
3	7064	12	7159	21	3900
4	700	13	12137	22	8309
5	7236	14	1872	23	9124
6	11181	15	6133	24	9630
7	7421	16	10902	25	3129
8	2231	17	11764	26	1145
9	8311	18	1948	27	11139

...