

Final Project

Introduction	Credit Requirements and Wheelchair Acces..	Clustering States	Listings Most Likely to be Wheelchair Access..	Variation of Price by Accessibility	Regression Analyses on Price and Square F..	Conclusion
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Rental Housing Accessibility in Select States

12.1% of those in the United States have a mobility disability, and **over 5 million** of these individuals use a wheelchair to help them get around.⁽¹⁾⁽²⁾

At the same time, **less than 5%** of national housing is accessible at all, and **less than half of that** is wheelchair accessible specifically. Moreover, for many disabled Americans, if they find accessible housing, it is **well out of their price range**.⁽³⁾

This is a **real problem** affecting a lot of people in the United States. Knowing this, we used a scraped Craigslist dataset to explore **how rental units in select states fare when it comes to accessible housing** and **how, if at all, accessibility has a relationship with rental price**.

Sources:

(1) "Disability Impacts All of Us Infographic." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 15 May 2023, www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html.

(2) Iezzoni, Lisa I. "Millions Rely on Wheelchairs for Mobility, but Repair Delays Are Hurting Users." *Harvard Health*, Harvard Health Publishing, 21 July 2022, www.health.harvard.edu/blog/millions-rely-on-wheelchairs-for-mobility-but-repair-delays-are-hurting-users-202207212785.

(3) Konish, Lorie. "Less than 5% of U.S. Housing Supply Is Accessible to Older, Disabled Americans. These Changes May Help." *CNBC*, CNBC, 21 July 2023, www.cnbc.com/2023/07/21/less-than-5percent-of-housing-is-accessible-to-older-disabled-americans.html.

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Price Per Square Foot by Credit Listing



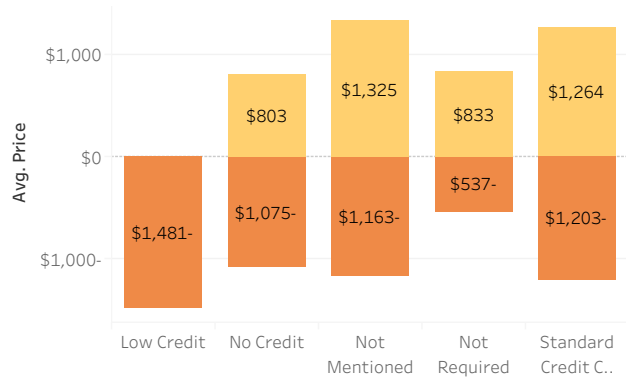
We began by looking at **affordability in accessible housing at large**. We created credit-listing categories, using keywords in descriptions and systematically double-checking accuracy. We found a **few key takeaways**:

Within the dataset, there are **no wheelchair accessible listings that advertise low credit acceptable descriptions**. Individuals with disabilities have lower credit on average across all racial, ethnic, and socioeconomic groups, so this is a big issue. (1)(2)

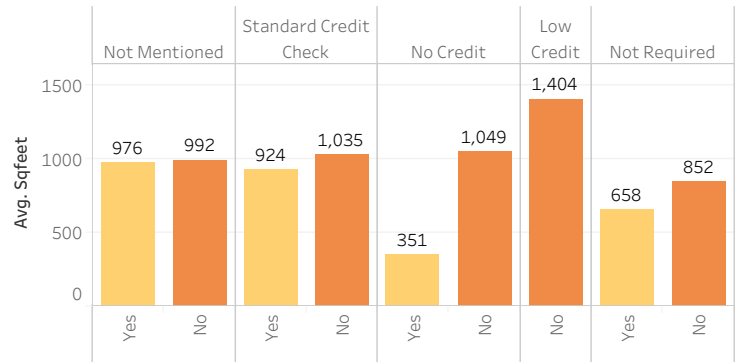
Price per square foot is higher across all credit listings for wheelchair accessible units.

Average price is **only lower** for accessible versus inaccessible listings for units that advertised "no credit" was acceptable. However, the size of those rooms are **significantly smaller**. In general, **accessible units have less square footage**.

Average Price by Credit Listing



Average Square Feet by Credit Listing



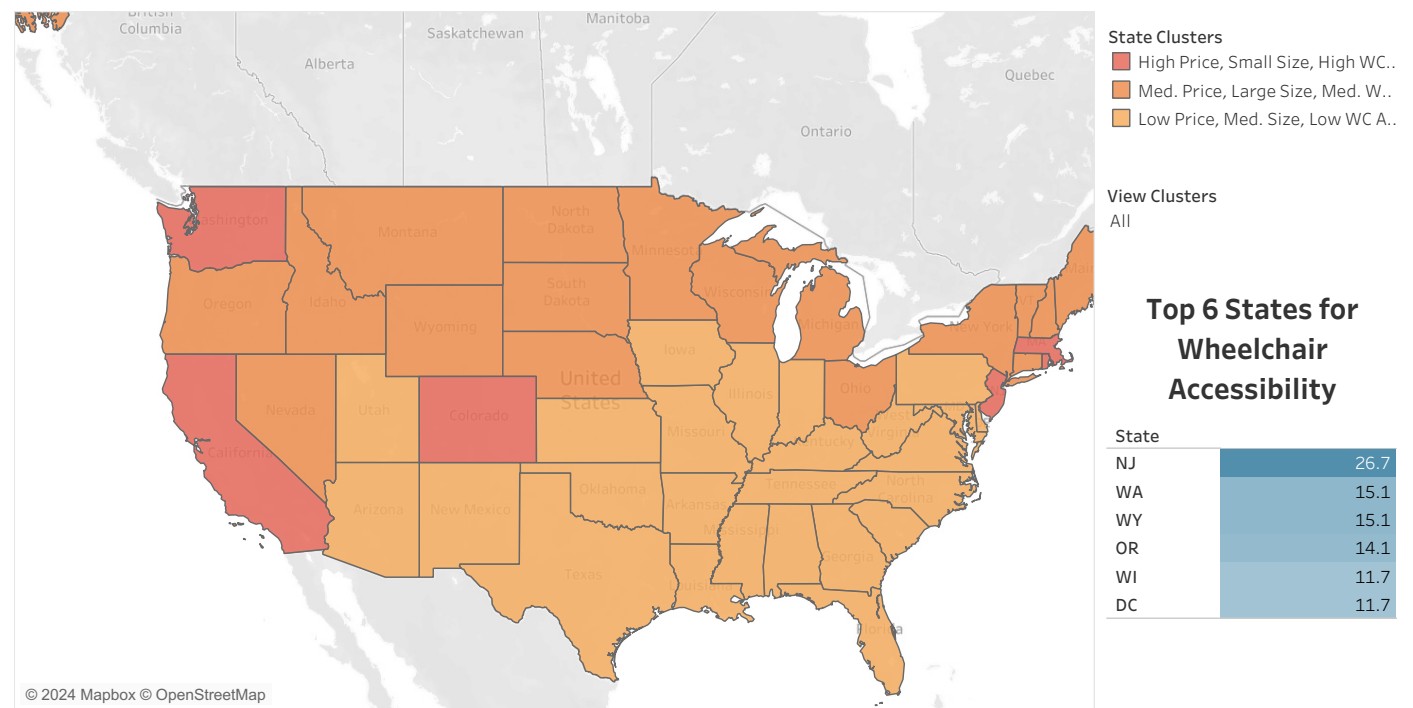
Sources

Katie Auchenbach, "Disability, Race and Ethnicity: Factsheets and Infographic," *National Disability Institute*, December 2, 2021, <https://www.nationaldisabilityinstitute.org/reports/disability-race-and-ethnicity-factsheets-and-infographics/>.

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States Clustered by Price, Size, and Accessibility Features



After considering pricing at large, we wanted to narrow our scope for finer in-depth analysis. We **clustered the states into 3 groups** based on the average price of listings, average square footage, and share of listings that are: wheelchair accessible, provide parking and on-site laundry options (each variable independently).

On average, listings in states in our smallest cluster (CA, WA, CO, NJ, RI, MA, DC, HI) have **higher prices** and **smaller areas**, while the **share of wheelchair accessible listings is significantly higher (11.4%)**. Their laundry and parking accessibility were also **medium-to-high**.

We decided to focus on this cluster to **examine what these high shares of wheelchair accessible options look like** and to see **if more accessibility increases rental price**.

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Narrowing it down to just these few states, we want to learn what these wheelchair accessible listings look like. Specifically, **which types of housing in these states have the largest percentages of wheelchair accessible housing?** We also included filters to determine if anything changes when we include **laundry and parking accessibility** as well.

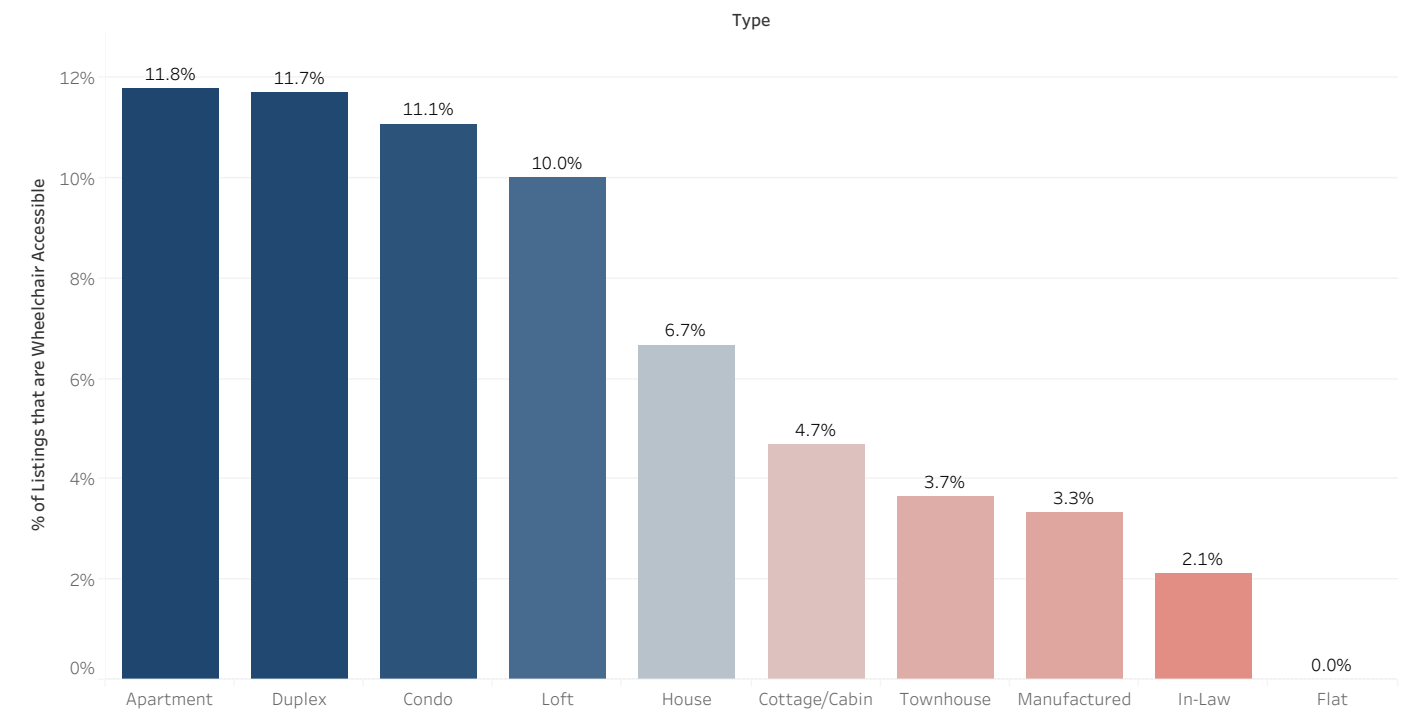
Throughout all of the filters, **apartments, duplexes, condos, and lofts** offer wheelchair accessible listings more often than other listing types. To reduce data noise and improve our analyses, we chose to focus on these more common types of wheelchair accessible rentals moving forward.

How do the numbers change when we filter for laundry accessibility?
All

What about parking accessibility?
All

To look at specific states:
All

Which types of housing in our cluster’s states are most wheelchair accessible?



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How does the average price change by wheelchair, parking, and/or laundry accessibility?

Laundry Accessible	Parking Accessible	Wheelchair Accessible		Grand Total
		Yes	No	
Yes	Yes	\$2,065.39	\$1,674.61	\$1,729.53
	No	\$1,840.05	\$1,654.38	\$1,704.65
	Total	\$2,038.25	\$1,673.46	\$1,727.88
No	Yes	\$1,258.00	\$1,273.76	\$1,273.52
	No	\$1,795.00	\$1,395.46	\$1,398.00
	Total	\$1,347.50	\$1,313.47	\$1,313.90
Grand Total		\$2,037.55	\$1,668.42	\$1,722.88

Laundry accessibility:

Similarly, laundry accessibility is a significant factor in the price of a listing - laundry accessible rentals are **considerably more expensive** than those with no accessible laundry options. The effect of laundry accessibility even more pronounced on the price than that of wheelchair accessibility.

We want to note our range of **sample sizes** for this analysis. Some combinations have very small sample sizes, so there should be some caution taken with our observations.

At the same time, we want to bring some attention that this is partly due to the **availability of wheelchair accessible housing, or lack thereof**. In every case, there are much fewer listings that are wheelchair accessible than otherwise.

Laundry Accessible	Parking Accessible	Wheelchair Accessible	
		Yes	No
Yes	Yes	5,586	37,713
	No	720	2,248
No	Yes	6	430
	No	1	194

Sample Sizes (and What They Say about Availability)

Laundry Accessible	Parking Accessible	Wheelchair Accessible	
		Yes	No
Yes	Yes	5,586	37,713
	No	720	2,248
No	Yes	6	430
	No	1	194

Focusing on those 4 most commonly wheelchair accessible housing types, we can now analyze **how listing prices vary by wheelchair, parking and laundry accessibility**. While we did not find anything too notable with parking accessibility, we learned the following about the other two types of accessibility:

Wheelchair accessibility: There is a clear positive relationship between wheelchair accessibility and price on average, holding parking and laundry accessibility variables constant. The average price for wheelchair accessible listings is \$2,037, which is **22% higher** than for listings with no w..

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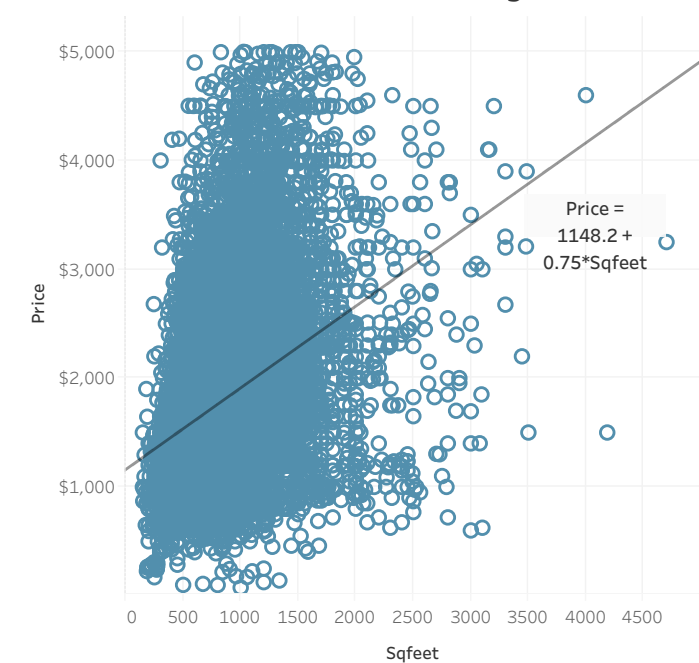
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Delving further into price, we wanted to also know, for these states and listings: **Is the relationship between price and square footage different for wheelchair accessible housing vs. wheelchair inaccessible housing?** Our regression analyses, both significant at the 99% level, find that the answer is **yes**:

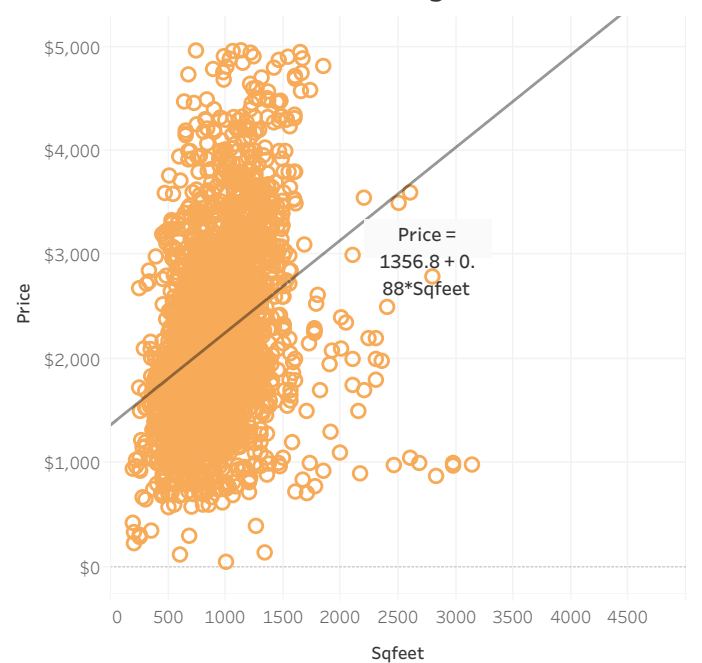
Our regression analysis illustrates that on average, holding all else equal, 1 unit increase in square footage of a rental unit with **no wheelchair accessibility** is associated with **\$0.75** increase in its price.

The regression analysis for **wheelchair accessible** listings finds that, holding all else equal, 1 unit increase in square footage of a rental unit is associated with **\$0.88** increase in its price. There is also a **higher intercept** than in our previous regression.

Regression Analysis of Price per Square Footage for Non-Wheelchair Accessible Listings



Regression Analysis of Price on Square Footage for Wheelchair Accessible Listings



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We want to **end at the beginning**, looking at the United States as a whole. We had dug into affordability a bit in the first part of the story, and we saw that **wheelchair accessible apartments are often pricier, less attainable, and smaller**.

When we narrowed it down to the states with the highest percentages of wheelchair accessible listings, **we saw the same**. Even in these states, it is more expensive to live in a space that is accommodating to mobility disabilities, and the options for what that space looks like - whether you prefer an apartment or a home - are limited.

Keep in mind: these are the places with the highest percentage of wheelchair accessible listings! **Imagine trying to live anywhere else in the United States**. Consider the red states in the map below - rental listings that are wheelchair accessible are **few and far between** in these places.

This is a serious issue across the country. We must work toward a future where it is **easy to find a variety of accessible housing** in every s..

Few states offer options for wheelchair users.

