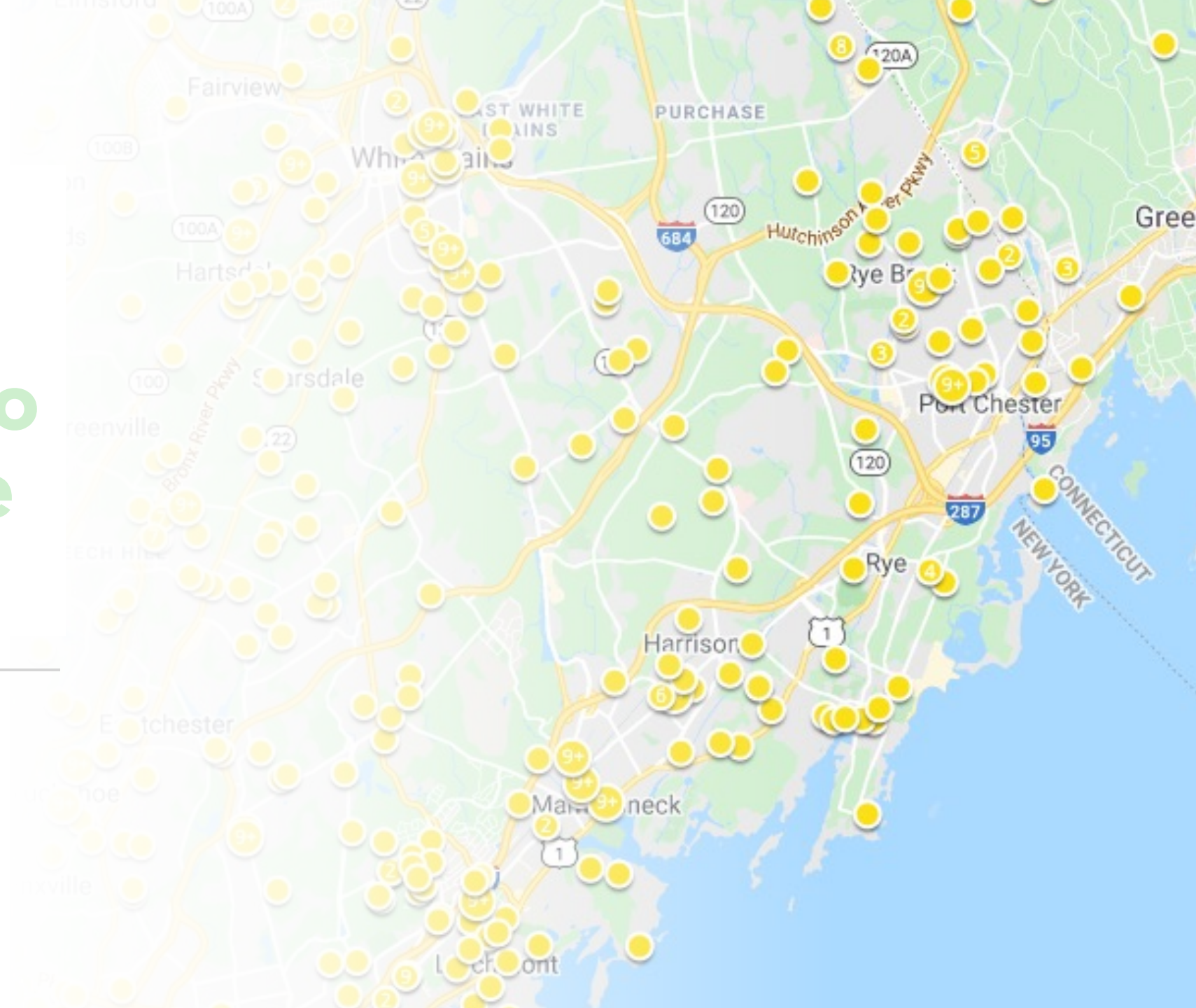




# Building an Application to Predict Home Valuations

Jen Hilibrand



# Why

- For most families, home equity is the largest component of household wealth
- US total real estate market is more than \$35 Trillion dollars
- Post-pandemic desire for more space (demand for suburban versus urban homes)

# Building from Previous Work

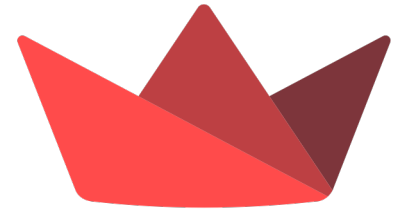
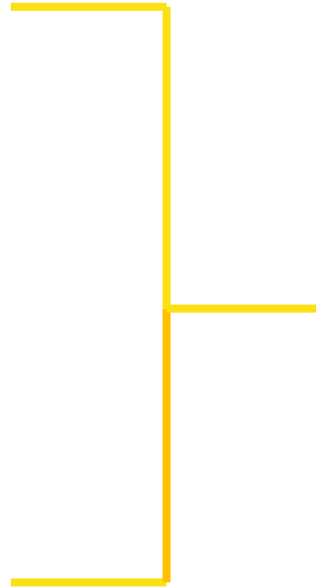
- Previous Zillow webscrapping to answer a question specific to northern NYC suburbs
- Convert this question into a flexible tool that could run a basic analysis for a house in any area

# Data Pipeline

- Square Footage
- Beds
- Baths
- Year Built
- Lot Size
- Geography
- Zestimate
- Tax Assessment
- Days on Zillow



- State income tax brackets and rates





# Data Pipeline



Save Share More

**\$1,625,000** 5 bd | 4 ba | 3,540 sqft

105 Middlesex Rd, Darien, CT 06820

Est. payment: \$8,322/mo [Get pre-qualified](#)

Contact Agent

Take a Tour

Overview [Facts and features](#) Home value Price and tax hist >

## Facts and features

**Type:** Single Family Residence

**Cooling:** Central Air

**Year built:** 1950

**Parking:** 2 Attached Garage spaces

**Lot:** 0.59 Acres

**Heating:** Forced Air, Oil

**Price/sqft:** \$459

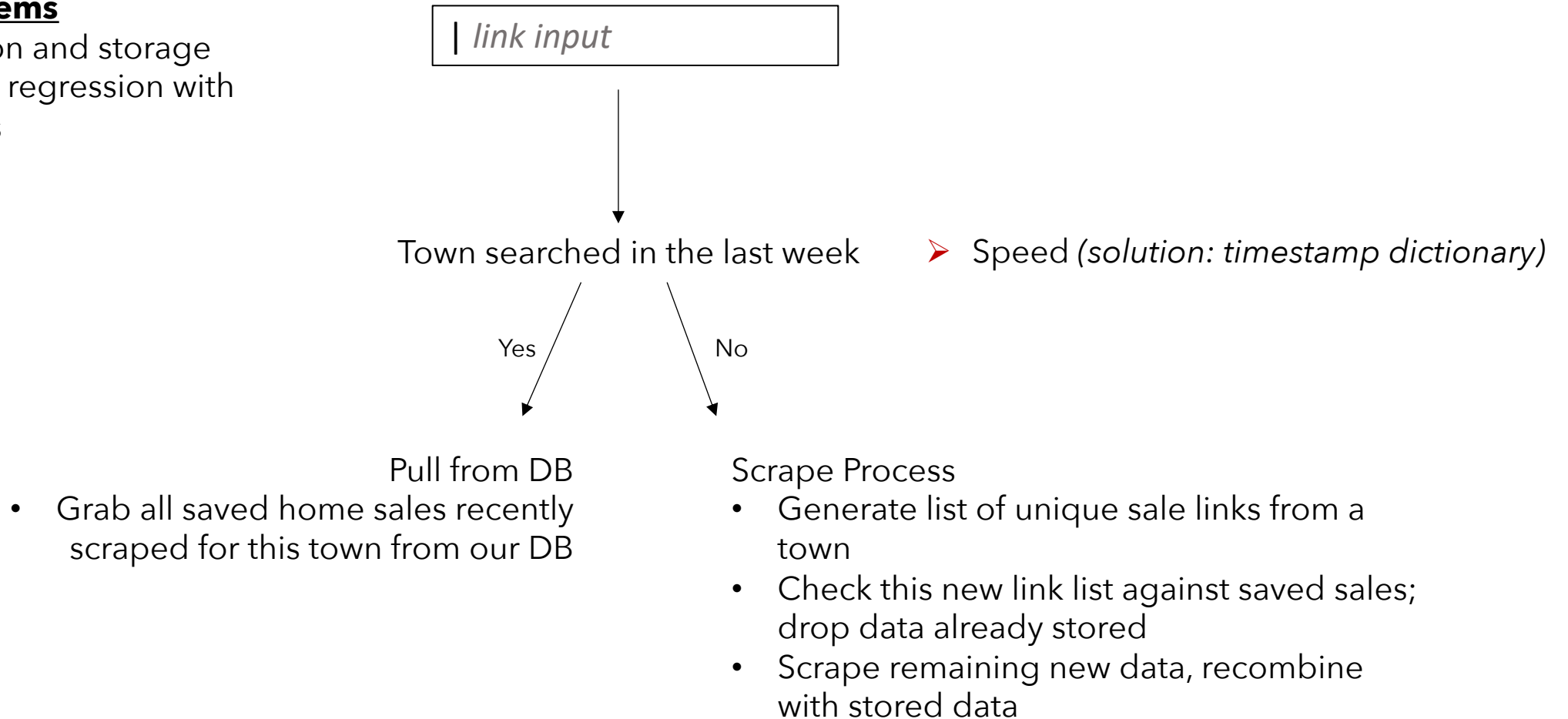
## Public tax history

Year	Property Taxes	Tax Assessment
2020	\$14,182(-0.9%)	\$868,490

# Application Flow

## **Other Key problems**

- Data acquisition and storage
- Consistency in regression with variable inputs



# Application Output

- Beds, baths, lot size, sqft (with percentile ranks)
- Listed price
- Predicted price from OLS
- Spread (between predicted and listed price)
- Tax assessment
- Number of homes in comparison set
- Most similar homes (in features, not price)
- R2 and regression/density plot of OLS
- State income tax brackets

## Zillow Comparative Analysis

Input a link:

<https://www.zillow.com/homedetails/103-W-Hartsdale-Ave-Hartsdale-NY-10530/>

Beds: 4 -> 72 Percentile

Baths: 3 -> 68 Percentile

No lot size found

Square Footage: 3,300 -> 91 Percentile

This home is currently priced at: 1,195,000

My predicted price for this home: 987,922

No Zestimate!

This house is overpriced by: 207,078

It was assessed at: 852,100

Average home sale price of our comparison group: 672,928

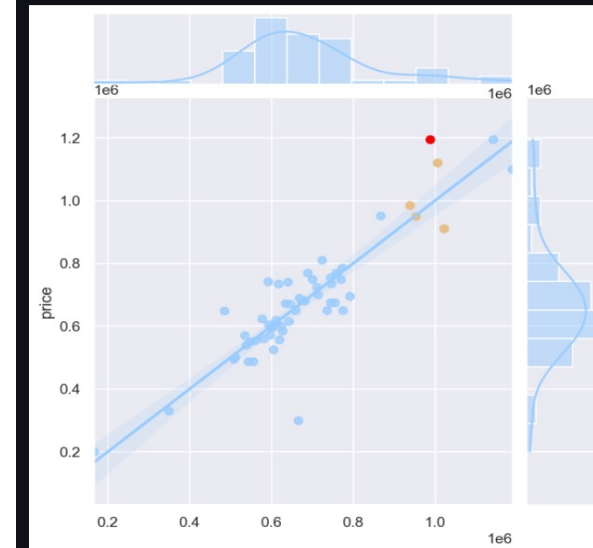
Number of comp houses: 56

Most similar homes:

	full_address	predicted	over_under	price	
48	23 Club Way, Hartsdale_	1,006,312.7224	113,687.2776	1120000	htt
8	180 Princeton Dr, Hart_	1,021,852.6940	-111,852.6940	910000	htt
47	27 Rochambeau Dr, Hart_	938,191.7118	46,808.2882	985000	htt
28	12 Old Farm Ln, Hartsd_	952,437.3905	-2,437.3905	950000	htt

Average Cross Validation R<sup>2</sup> of our Regression 0.4677238071363538

OLS regression and density plot:



State income tax brackets:

	Income Bracket barrier	Income tax %
0	0	4
1	12800	4.5000