

ZillowMF Affordability Algorithm

Home ownership is a fundamental part of the American Dream. For most, it will be the biggest financial investment that people will make in their lives. In fact, determining one's affordability affects all the stages for a buyer from determining potential locations, pre-approval from mortgage lenders, and gaining competitive mortgage rates.

Potential homeowners can utilize online tools such as affordability calculators to determine their affordability. Typically, these tools help potential homebuyers answer the question *Is this property affordable for me?* They include components such as intended down payment, mortgage amount, mortgage term, mortgage interest rate, property taxes, and home owner association fees in their derivations.

Our algorithm aims to provide a more holistic overview for potential homebuyers to understand their financial constraints. By building upon current calculators, we help potential homebuyers answer two questions: (1) *What is the maximum mortgage amount I can afford based on my current conditions?* (2) *Is this property completely affordable for me when I account for a complete list of typical home expenses?*

There are several use cases that need to be considered when determining potential affordability that are combinations of creditworthiness, first time home buying, potential rental income, location, mortgage interest rate, loan terms, property types etc. For the purposes of our proof of concept, we focused on **high creditworthy, first time multifamily homebuyers in the greater King County, Washington (Greater Seattle, Washington metropolitan area).**

By focusing on this use case, we are able to leverage key statistics regarding housing expenses in the Seattle area and mortgage information regarding Federal Housing Administration (FHA) insured loans. We made several key assumptions in our algorithm. They are:

- *The interest rate is assumed to be 6%, as defined by the highest Fannie Mae multifamily interest rate.*
- *The minimum down payment percentages is 3.5%, as defined by FHA Loan standards.*
- *The maximum loan amount is \$930,300.00, as defined by the FHA Loan Limits for Multifamily properties in King County.*
- *Property taxes are 1.02% of property amount for King County.*
- *Yearly home insurance is \$811.00, the average amount in Washington state.*
- *Miscellaneous maintenance costs are 1% of property amount, as per the One Percent Rule.*

The three scenarios our algorithm provides insights for potential multifamily home buyers are:

- *What is the most expensive multifamily house I can afford?*
- *Which properties provide me the most extra monthly cashflow (by utilizing rental income in my monthly mortgage payments)?*
- *Which properties can I pay off the quickest? (by utilizing rental income as prepayment amounts in my monthly mortgage payments)*