

Availability of Workforce Housing in Maine

This is ***an existential moment*** in Maine's history. What will Maine look like in 5, 10, or 50 years? The need for significant growth in affordable housing in Maine is clear and urgent. But what does new workforce housing look like in a place that historically has not had a massive number of large apartment buildings? How is new affordable housing integrated into a place of such natural beauty and small, charming, towns?

“Wickedly complex” — The shortage of affordable housing for workers is as complicated a set of issues in Maine as in many other places in the USA. Maine has the oldest population and the 3rd smallest household size (<2 people per renting household²⁸). Mainers “aging in place” have had significant consequences. Growth in new household formation essentially requires new construction in order for those younger households to find a place to live. Maine further has a nasty case of Catch-22: The cost of construction is so high that many construction workers cannot afford to live in the homes they build. It is challenging to attract workers from other places when there is no place to call home (let alone an affordable one). Building a modern house is a complex undertaking with, on average, 24 sub-contractors (source NAHB) involved in a single build. This expansion of expertise-required labor has occurred as modern expectations and codes have added complexity. To dig itself out of its construction shortfall, Maine must confront a complex, overlapping, and multifaceted set of challenges.

In May 2022, the Shaw Innovation Fellowship awarded Sarah Sturtevant 1 of 4 fellowships to further analyze the challenges and possible solutions for increasing affordable workforce housing in Maine. In September 2022, Jacob Curtis, USM Undergraduate and Promise Scholar, joined our small 2-person team. We sought to answer two questions:

1. How bad is the shortage of affordable workforce housing?
2. What can be done about it?

To assess local affordability, Jacob focused on creating an interactive data visualization tool based on MaineHousing's consolidated subsidized-housing data and census (ACS) data. This tool (outlined in the gap analysis section and available on Maine Affordable Housing Coalition's (MAHC) website), helps **visualize the gaps in affordability at a more local level** and uses MSFT's Power BI software.

The fellowship also **focused on assessing “what can be done about it” by creating a pilot housing project in Rumford Maine** (small, lower-cost, modular townhouses). It is anticipated by the developer (Dooryard) that this pilot will be constructed in Winter 2023-24. Details of this demonstration project will be available through the Muskie School of Public Service, University of Southern Maine.

Special Thanks:

Dozens of individuals have contributed their time and knowledge. A special thank you to those below who contributed significantly to the project. Thank you all!

(in alphabetical order by organizational name; first name):

Association of General Contractors & Maine Construction Academy: Kelly Flagg (*Executive Director*); Thomas Sutherland (*MCA coordinator*)

Bangor Savings Bank: Jay Muth

Demonstration Project in Rumford Maine: Kara Wilbur (*Dooryard modular dealer and developer*); Gerard Howley (*KBS Regional Sales Manager*); George O'Keefe (*Rumford Economic Development Director*)

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Joint Committee on Housing: Dick Bradstreet (*also MHAM*); Dick Campbell (*contractor*); Matt Pouliot (*realtor and developer*)

Maine Affordable Housing Coalition (MAHC): Amy Cullen Chair (*MAHC Board and VP*); The Szanton Company; Laura Mitchell (*Executive Director of MAHC*); Nathan Szanton (*Board Member of MAHC and President, The Szanton Company*); Rich Hooks-Wayman (*Board Member of MAHC and CEO of VOANNE*)

MaineHousing.org: Adam Krea (*Senior Director of Finance & Lending*); Clyde Barr (*Senior Policy Analyst*); Erick Jorgensen (*Senior Director of Government Relations & Communications*); Laurie Glidden (*FSS Coordinator*); Mark Wiesendanger (*Director of Development*)

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Chapter 2: What can be done about it?

Through a Demonstration/Pilot Project in Rumford Maine and additional research, we have identified more than 30 evolutionary changes that may help reduce construction costs. **A more market-based solution is necessary, as subsidies are limited compared with need.** Included in this solutions section are opportunities organized in 5 categories. Importantly, no single solution — nor even a single group of solutions (i.e., can’t “just” focus on the physical design aspects) — is sufficient. Implementing changes in many of the 5 categories has the best chance to materially alter the (non-subsidized) build rate in Maine for new affordable housing. As such, these public/private channels should be viewed together:

1. **Town selection and municipal responses** can encourage developers to propose small homes/small communities and reduce construction costs for affordable home construction. Picking sites where the community wants investment is a critical first step.
2. **Physical changes: Small, modular, townhouse, designs** can lower construction costs.
3. **Transportation/site-work/set-work/logistical considerations** also are an important part of this site selection that can reduce construction costs.
4. **Business Model changes: Vertical integration, timing/speed and financing** changes can reduce construction costs and allow small homes/small communities to “pencil.”
5. **Education/training** actions that can build Maine’s Building Workforce.

Chapter 3: Factors to consider

A partial list of challenges for municipal, state, institutional, educational, nonprofit, and private-market participants to consider in the implementation of the possible solutions above.

Chapter 1:

How bad is the shortage of workforce housing in Maine, and why?

What is Affordable/affordable housing?

Affordable housing with a capital “A” is most often used to mean government subsidies of some sort (mostly HUD or USDA) designed to bring monthly housing expenditures to 30% of gross income (GI). To avoid confusion, we call these programs subsidized housing. Affordability with a little “a” is typically used to mean market-based housing that is also roughly 30% of GI spent on housing costs. The challenge is that while incomes have grown relatively slowly, supply-demand mismatch in housing construction has pushed housing costs to escalate much more quickly. The result is that a large percentage of households pay more than 30% of income for housing, and/or are under-housed.

What is affordable for Maine’s workers?

Below is a chart that shows a range of hourly rates and what 30% of gross income to housing equates to on a monthly basis. For example, a worker making Maine’s current minimum wage of \$13.80/hour³⁸ would need housing costs of \$623/month if they worked 35 hours (e.g., five 8-hour shifts without paid breaks) or \$712 if they worked 40 hours – in order to only pay 30% of their income to housing on an annual basis. Maine’s full-time minimum wage workers have gross annual income from earnings of \$24,150-\$27,600 (35 and 40 hours respectively and presuming 50 weeks a year with no paid vacation).

Existing market-rate rental costs far exceed \$623/month. We estimate that payment equates to a home-purchase-price of ~\$70,000. Permanent housing with bathrooms/kitchens, cannot be built, transported, connected to utilities, on land for \$70,000. Tiny homes at the factory door are sometimes priced slightly lower (e.g., \$40-50K), however, once they are transported, set, and connected the costs can double or even triple.

| Monthly housing budget (30% of gross) | | | | | | | | | | | |
|---------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--|
| hours worked | Hourly Pay Rate | | | | | | | | | | |
| | \$12.75 | \$13 | \$13.50 | \$14.00 | \$14.50 | \$15.00 | \$15.50 | \$16.00 | \$16.50 | \$17.00 | |
| 20 | \$ 328.95 | \$ 335.40 | \$ 348.30 | \$ 361.20 | \$ 374.10 | \$ 387.00 | \$ 399.90 | \$ 412.80 | \$ 425.70 | \$ 438.60 | |
| 30 | \$ 493.43 | \$ 503.10 | \$ 522.45 | \$ 541.80 | \$ 561.15 | \$ 580.50 | \$ 599.85 | \$ 619.20 | \$ 638.55 | \$ 657.90 | |
| 35 | \$ 575.66 | \$ 586.95 | \$ 609.53 | \$ 632.10 | \$ 654.68 | \$ 677.25 | \$ 699.83 | \$ 722.40 | \$ 744.98 | \$ 767.55 | |
| 40 | \$ 657.90 | \$ 670.80 | \$ 696.60 | \$ 722.40 | \$ 748.20 | \$ 774.00 | \$ 799.80 | \$ 825.60 | \$ 851.40 | \$ 877.20 | |
| 45 | \$ 740.14 | \$ 754.65 | \$ 783.68 | \$ 812.70 | \$ 841.73 | \$ 870.75 | \$ 899.78 | \$ 928.80 | \$ 957.83 | \$ 986.85 | |
| 50 | \$ 822.38 | \$ 838.50 | \$ 870.75 | \$ 903.00 | \$ 935.25 | \$ 967.50 | \$ 999.75 | \$ 1,032.00 | \$ 1,064.25 | \$ 1,096.50 | |
| 55 | \$ 904.61 | \$ 922.35 | \$ 957.83 | \$ 993.30 | \$ 1,028.78 | \$ 1,064.25 | \$ 1,099.73 | \$ 1,135.20 | \$ 1,170.68 | \$ 1,206.15 | |
| 60 | \$ 986.85 | \$ 1,006.20 | \$ 1,044.90 | \$ 1,083.60 | \$ 1,122.30 | \$ 1,161.00 | \$ 1,199.70 | \$ 1,238.40 | \$ 1,277.10 | \$ 1,315.80 | |
| 65 | \$ 1,069.09 | \$ 1,090.05 | \$ 1,131.98 | \$ 1,173.90 | \$ 1,215.83 | \$ 1,257.75 | \$ 1,299.68 | \$ 1,341.60 | \$ 1,383.53 | \$ 1,425.45 | |
| 70 | \$ 1,151.33 | \$ 1,173.90 | \$ 1,219.05 | \$ 1,264.20 | \$ 1,309.35 | \$ 1,354.50 | \$ 1,399.65 | \$ 1,444.80 | \$ 1,489.95 | \$ 1,535.10 | |
| 75 | \$ 1,233.56 | \$ 1,257.75 | \$ 1,306.13 | \$ 1,354.50 | \$ 1,402.88 | \$ 1,451.25 | \$ 1,499.63 | \$ 1,548.00 | \$ 1,596.38 | \$ 1,644.75 | |
| 80 | \$ 1,315.80 | \$ 1,341.60 | \$ 1,393.20 | \$ 1,444.80 | \$ 1,496.40 | \$ 1,548.00 | \$ 1,599.60 | \$ 1,651.20 | \$ 1,702.80 | \$ 1,754.40 | |

How many hours a week someone works has a big impact on how much that worker can pay for rent. For example, only working 20 hours has significant implications for housing-insecurity – while working more hours obviously means getting closer to the current market-rate levels of housing costs. However, a single full-time hourly worker has an extremely low likelihood of being able to afford, alone, Fair Market Rent (FMR) in any county in Maine.

A related issue is “How many workers are there per household?” Two minimum wage workers living together (or two retirees on Social Security) would have a much easier time affording housing than a single adult. I don’t know the answer to the question: “How do we encourage more adults to live together?” However, there is no doubt that providing an apartment or home for every single adult in Maine, is very costly (financially and for the environment).

Apartments and single-family homes cost the same to build. Each is about \$400,000¹⁵ to build a single modern home (source MAHC 4/2022 and NAHB 2/2023). The higher density land-use for multi-family is offset by meeting all the additional building and fire codes for apartment buildings. There’s some regional variability based on land costs, however, for the stick-built construction costs these two housing types are roughly equivalent in cost to build. Whether Maine builds apartments or homes-for-purchase is fairly fungible in terms of construction costs.

Pragmatically, there is a slight preference in our analysis for market-based, lower-cost, entry level ownership models. The developers’ financing can be recycled to new developments once the properties are sold. Therefore, from a financing perspective, the ability to increase availability quickly is better with a first-time-buyer ownership model. Also, for-sale-construction requires smaller subsidies via first-time-buyer programs, allowing subsidy dollars to stretch further.

Not all households are well equipped for home ownership. There will always be a need for market-rate and subsidized multi-family apartments. This need includes rentals with supported services attached, as well as apartments for independent living. However, many households are forced to rent when they would prefer to buy. Fostering the notion of housing as a service — vs. housing as an asset — does a disservice to the many households who *do* feel equipped to maintain a home. Saving on the “service” aspect is an important source of wealth creation for first time buyers. Instead of the landlord receiving the appreciation on the asset, first-time buyers slowly build equity.

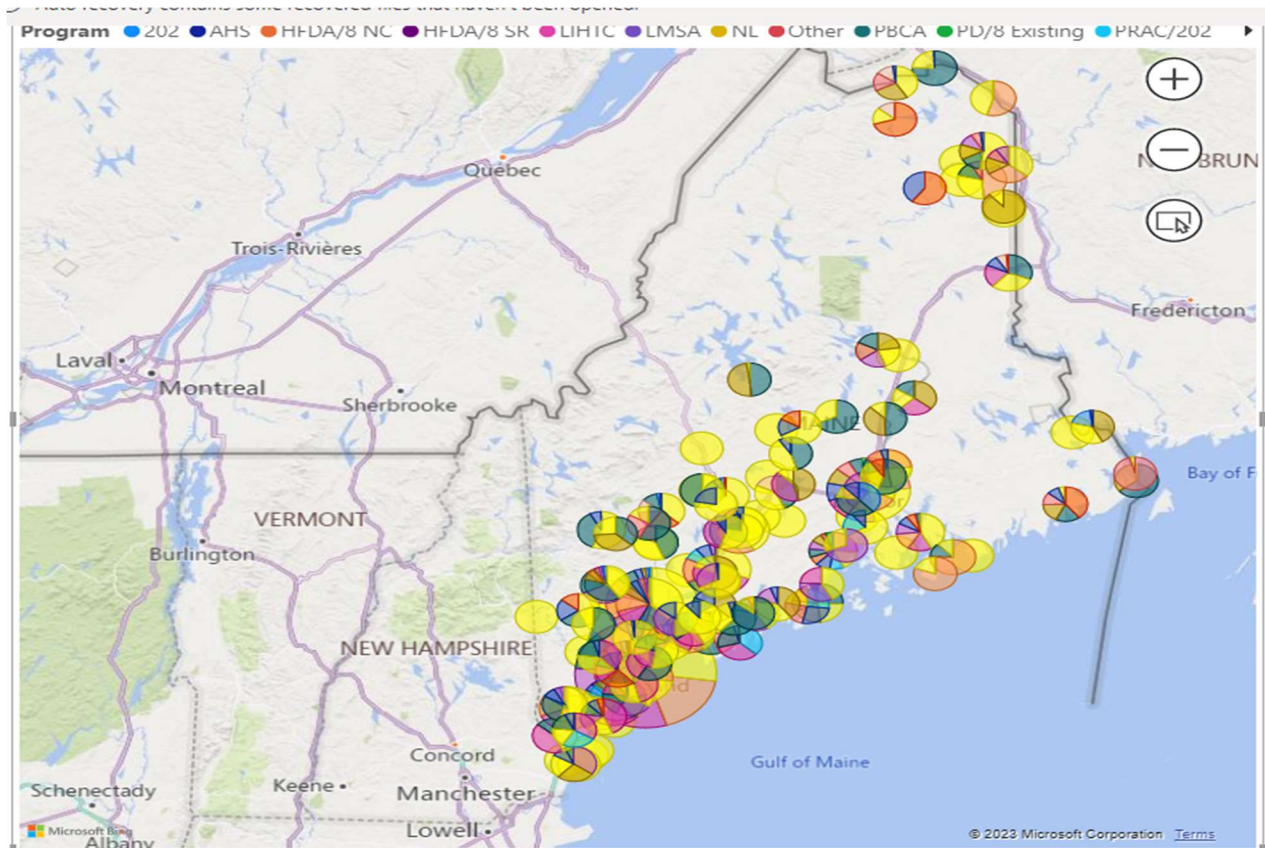
What is the status quo in “capital A” Affordable housing?

The status quo for Affordable housing (affordable with a capital “A”) is a fragmented tapestry of subsidized rental programs focused primarily on managing existing occupants’ subsidies. As of 9/2022, slightly more than 41,000 households³⁹ are housed in subsidized rentals in Maine (MaineHousing). The leading two programs (Section 8 and Public Housing) are funded by HUD, which requires Congressional appropriations for financial support. Section 8 is especially geographically dispersed with 12,286 (ibid) households receiving Section 8 subsidies in Maine as of 9/2022, while an additional 15,000+ households are on the wait list as of this writing (ibid). Annual HUD funding (for all programs) has substantial variability based on party distribution in Congress, which leaves housing authorities with limited options for expanding supply of new subsidized rentals. Additionally, the Faircloth Limit (1997 law) prohibits any growth in the number of new public housing units beyond the number of units available in 1997. These legal/legislative hurdles make public/Section-8 housing unlikely to grow enough to meet current unmet need. Programs to encourage private construction of low-income apartments (e.g., LIHTC) have had limited success compared to need, as high construction costs make it very hard to see a positive return on investment given rental rates, even with tax incentives. These programs are important and Maine

Housing is very active in creating capacity. However, the supply is just not large enough for the size of the need.

There are more than 41,000 households (ibid) in Maine who receive a housing subsidy of some sort. This is between 7-8% of Maine households as of 9/2022 (ibid).

Below is an image of the subsidized households in Maine as of 9/2022, by program:



Several things are clear from this data. First, there are a large number of programs shown in different colors (see appendix for program descriptions). For example, in yellow are households receiving a section 8 voucher subsidy. It's also clear that housing subsidies are geographically distributed, especially for section 8 vouchers. Third, there is a slight concentration of all programs in cities and towns that have apartments as a larger portion of their housing stock.

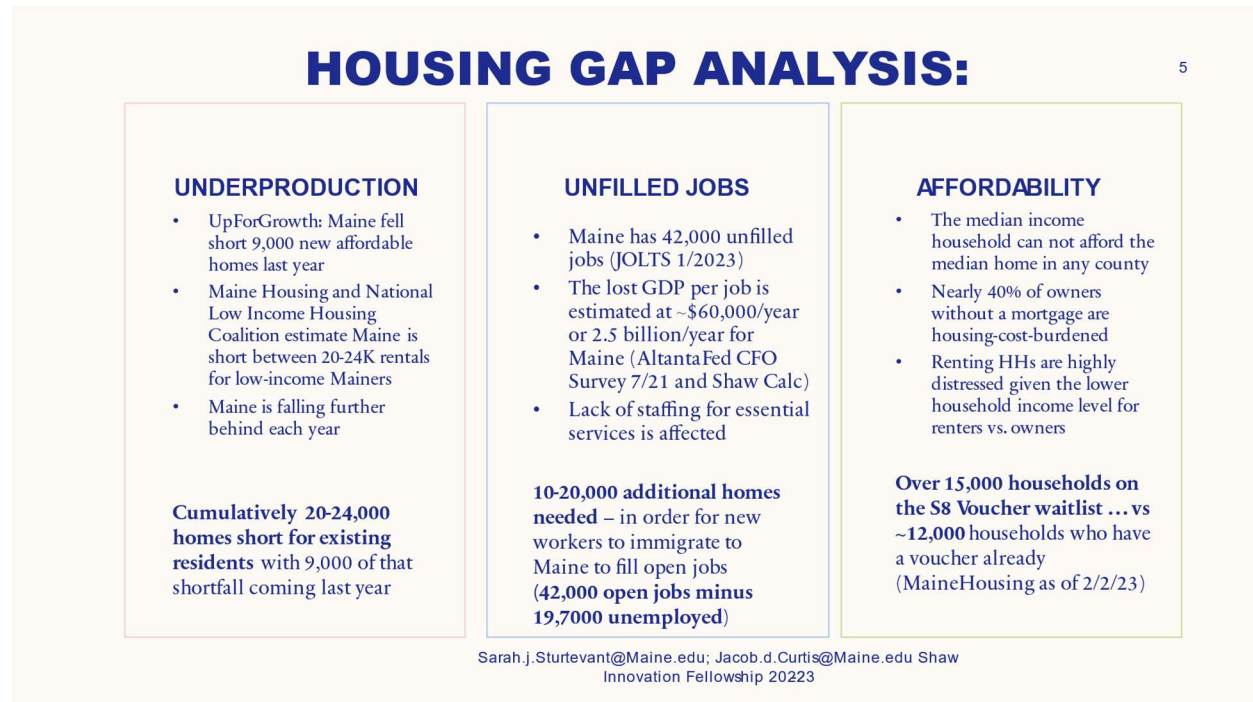
In total, 27% of Maine households rent and 73% are owner occupied²⁸. This is showing where the 7-8%²² of renting households in Maine, who receive a government housing subsidy of some sort, are located.

Despite this widespread housing support, the need is multiples of the supply of housing subsidies.

The status quo for market-based (little "a") affordable housing is a non-existent amount of construction. Virtually zero market units are constructed because \$400,000 is not affordable (this is excluding programs through MaineHousing or Habitat for Humanity). Private builders would quickly go out of business if they charged \$70,000/home, or even \$150,000/home, for a structure that costs \$400,000 to build.

Gaps in Maine's Housing

Three types of gap analysis were evaluated:



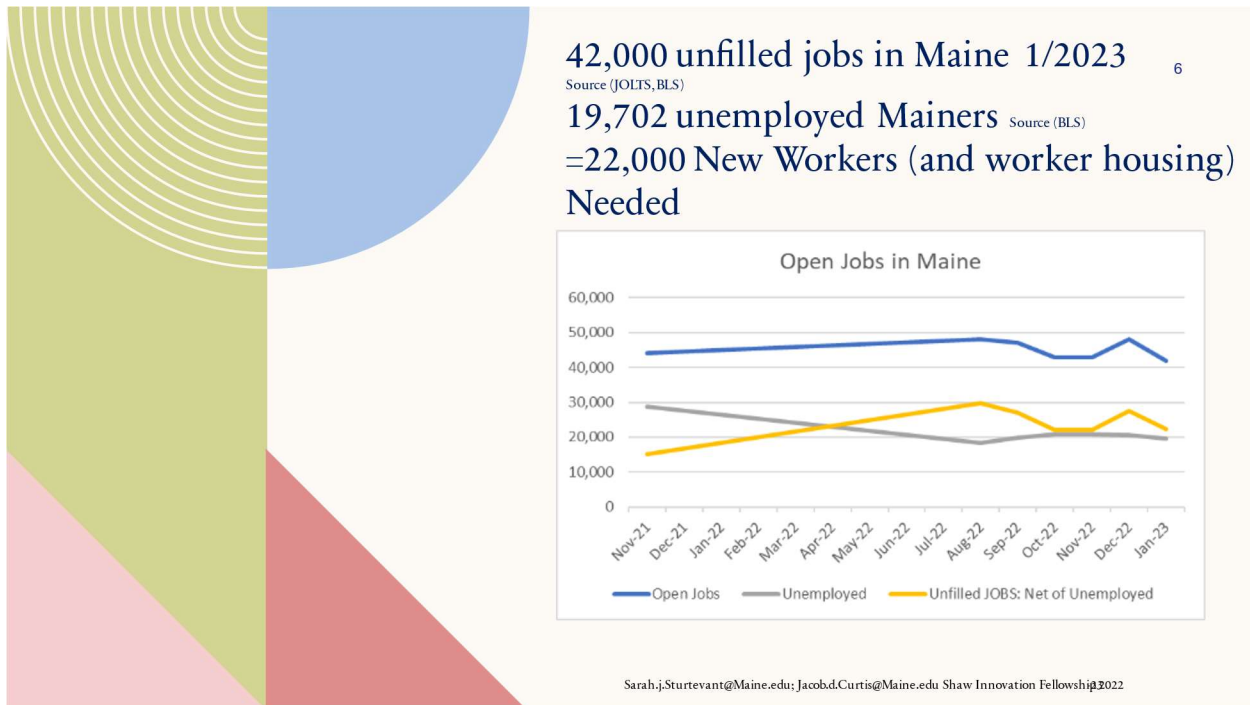
Underproduction of homes

UpForGrowth prepared a recent report and presented at Maine Affordable Housing Coalition's (MAHC) annual strategy conference in October of 2022. Based on their methodology, Maine fell short in building 9,000¹ affordable homes last year. Their methodology compares household formation to new affordable housing construction (after adjusting for substandard units).

MaineHousing.org and the National Low Income Housing Coalition, further estimate that cumulatively Maine is short 20-25,000⁴¹ affordable homes for current Extremely Low Income (30% AMI) Mainers. The need is even larger when looking above traditional housing subsidy income thresholds.

Unfilled jobs – housing needed for new workers

A shortage of workers is ubiquitous in Maine and is highly connected to the lack of workforce housing. The most widely accepted survey of open, unfilled, jobs is Bureau of Labor Statistics' Open Jobs Report or JOLTS. JOLTS is a survey – and not a very large one at that. Because of this, state statistics are not released every time the national, or regional numbers are released. The most current data as of this writing is January 2023. At that time there were 42,000⁴⁰ open unfilled jobs in Maine. This is down from 49,000 open jobs in September. However, that decline was identical to the prior year's estimates (i.e., with a big tourism industry, Maine's open jobs are somewhat seasonal). It remains to be seen what open jobs will look like in Maine in 2023. Nationally, open jobs have ticked down only modestly so far this year. At the time of the last state-specific JOLTS data (1/2023), there were 19,700 Mainers (ibid) who were unemployed. **Net, we would need to attract 22,300 additional workers to Maine to fill the outstanding open jobs.**



There is a significant societal impact to having so many unfilled jobs. Nearly every industry is experiencing a dire shortage of workers — from people to build houses, to health services and other essential workers. There is also a significant GDP loss to the state from open jobs. Using a CFO survey done by the Atlanta Fed in July 2021 and making some adjustments, I estimate that directionally, **Maine has lost GDP of \$2.5 billion/year from unfilled jobs.**

Maine needs to construct an additional 10-20,000 homes (depending on whether there are 1 or 2

A note about the current economic environment and rising interest rates: Economic sensitivity is present in many aspects of affordable housing.

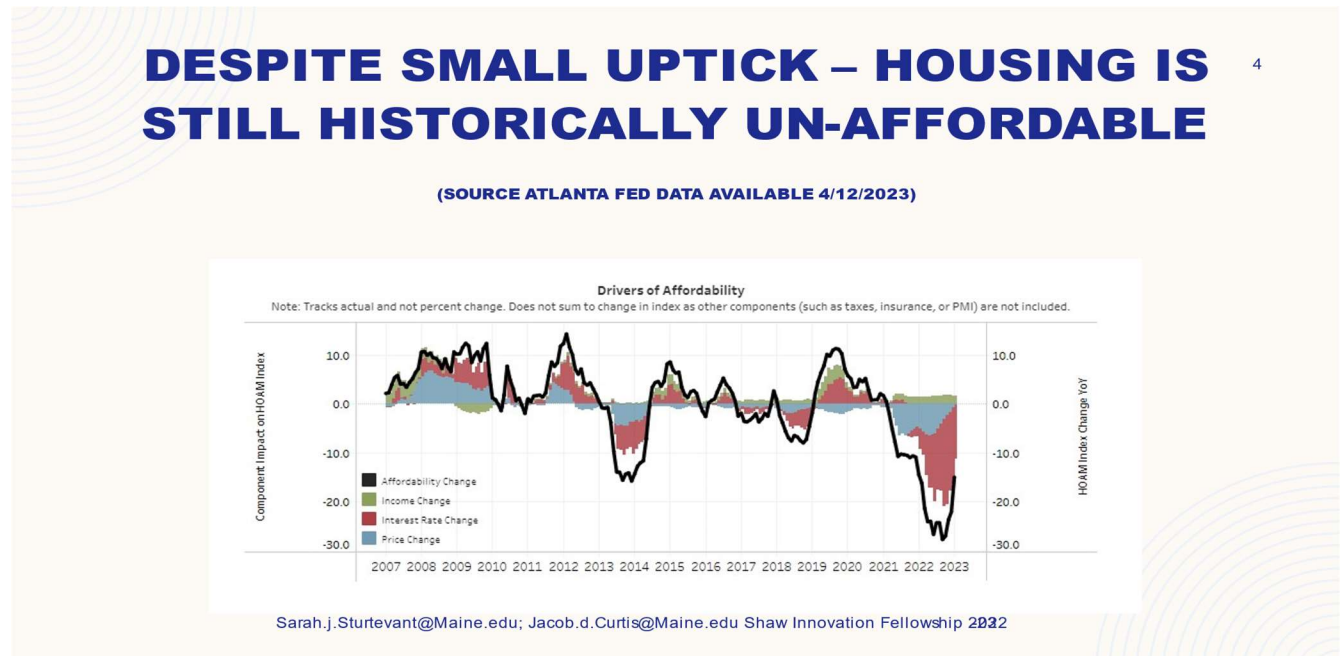
1. Household formation is partially impacted by economics. The number of households can shrink during a recession as they reconsolidate (live with family/friends when times are tough).
2. Open jobs tend to shrink during a recession. So far National JOLTS data has changed only slightly. It is hard to predict whether open positions will shrink substantially in Maine.
3. Construction borrowing is sensitive to rising interest rates. Lowering the overall project cost is a main way to partially offset higher rates, which is easier said than done during highly inflationary periods.
4. Listed sales prices tend to decline as interest rates rise. Monthly affordability is negatively affected by the higher interest paid on a mortgage.
5. The number of existing homes listed for sale may decline due to those “stuck-in-place” given prior low mortgage rates vs. current levels.

All of these are economic unknowns could reduce the number of homes needed to some degree.

workers per household) to fill these open jobs.

Affordability

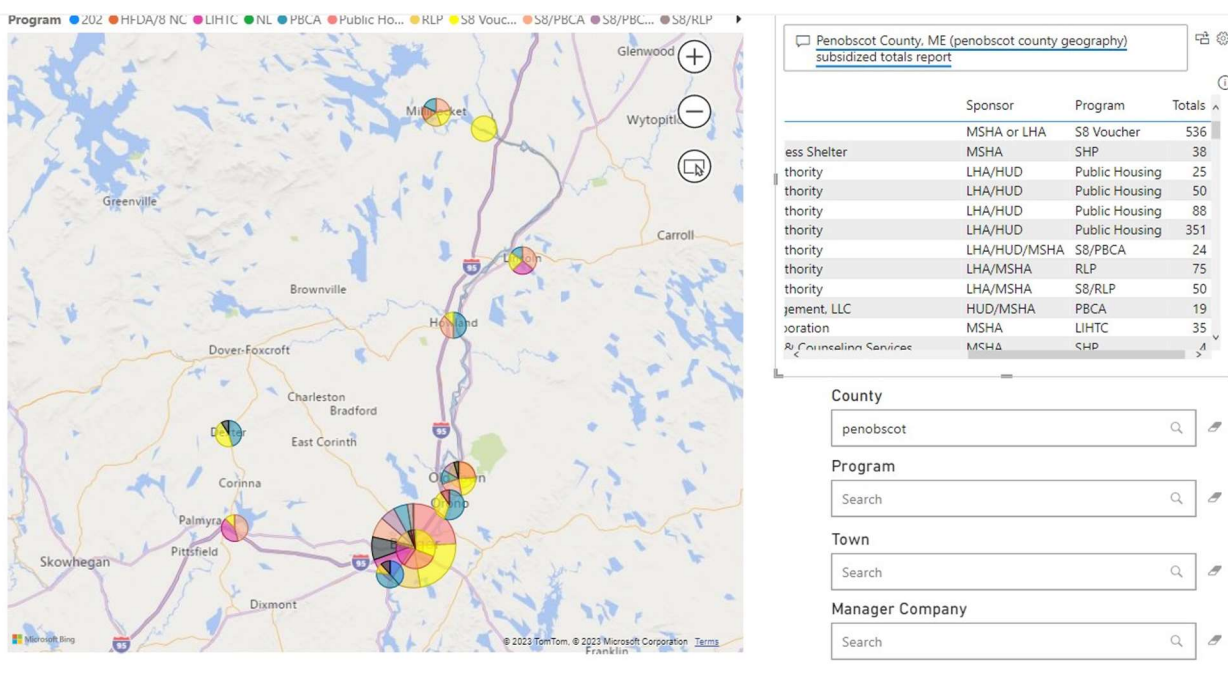
Nationwide, affordability is historically bad. The black line on the graph below shows Atlanta Fed’s estimate of changes in affordability. A small increase in incomes (green shading), combined with a slight improvement in the prices of homes (blue shading) is swamped by the increased cost of higher mortgage rates (red shading). Despite a small improvement in 2023, changes in affordability are as bad as any time since the global financial crisis.



What about Maine’s local affordability? Looking at county household income distributions, who can afford which types of housing?

Jacob Curtis, Shaw Innovation Fellowship Research Assistant, built a Power BI tool to visualize “Where is the subsidized housing in Maine?” (see map on page 6) and “Where is the need for additional affordable housing?” by graphing the household income distribution by county — compared to county specific housing costs. This data is drawn from MaineHousing (for subsidies as of 9/22³⁹); Census Bureau (ACS for income distribution⁴⁸); MaineHousing’s HUD table for Fair Market Rent (FMR 2022³⁹); NAR (for median sales price Q3 2022⁴²) and author’s estimate based on conversations with MAHC for new, stick-built, construction costs. This tool will be hosted on the MAHC website.

The results by county look something like the following in Penobscot County. **Below is the pie graph of subsidized housing in Penobscot County:**



21 April 2023

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Shaw Innovation Fellowship 2022 -23

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While 3,680³⁹ (5.8% of county total) households with housing subsidies is significant, it is multiples lower than need.

Interpreting this data in Penobscot County:

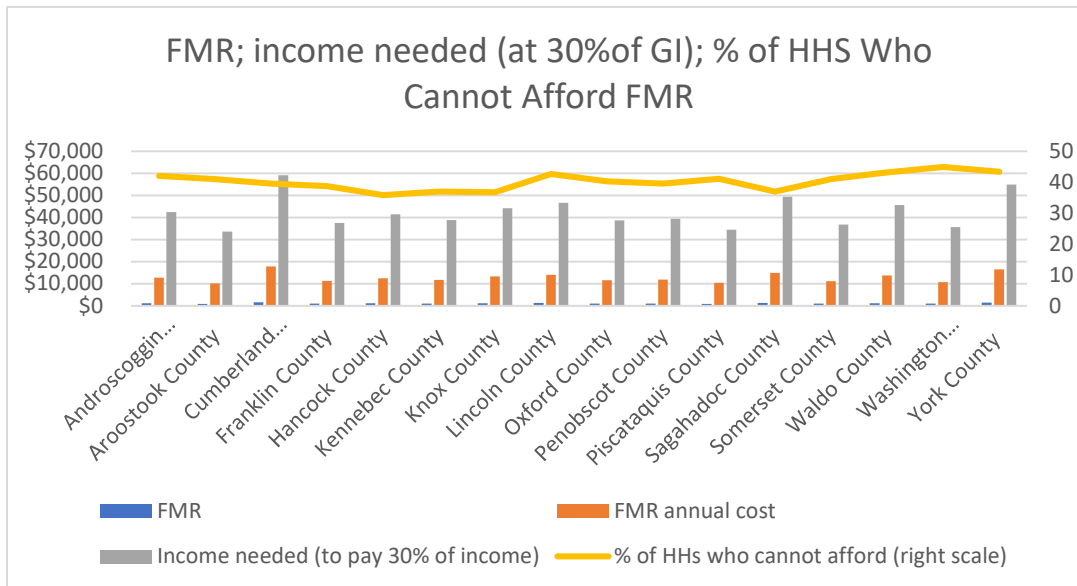
- HUD's calculation of Fair Market Rent (FMR) in Penobscot County for a 2-bedroom rental is \$983/month.
- This **FMR requires an income of \$39,320³⁹** to represent only 30% of gross income (i.e., to be considered affordable).
- Approximately **39.5% of households in Penobscot County have less than \$39,999/year in gross income⁴⁸** (ACS income bands stop at \$39,999 – very close to \$39,320).
- 5.8% of Households in Penobscot County receive a subsidy (see pie chart – and data).
- **The difference between the 39.5% of households who cannot afford FMR, and the 5.8% of households who get a subsidy, leaves 33.7% of households who need a housing subsidy but are not able to receive it.** Put another way, subsidies would have to increase 5-6-fold in Penobscot County to have the federal government fully fund housing subsidies for those most in need as of the date of this data. This level of HUD funding increase is highly unlikely. Even if it were to occur, it is likely that there would not be sufficient Section 8 apartments available as there are landlord requirements to participate in the program.

- Despite inflated rental rates, private landlords have not expanded rental supply; therefore, there are virtually zero rental vacancies even at “unaffordable” rental rates.
- Landlords and developers have not increased supply because the cost of building new units is so high, that even with inflated rental rates, they would lose money.
- **The increased rents and lack of rental supply is also because 79% of HH income** (ibid) **are priced out of owning a home** with only the top 21% of household income able to afford an existing home (based on median Penobscot County home sales price in 2022). The “missing middle” is more like the missing three quarters.
- The affordability for new construction is even worse, with only 8% of households (ibid) able to afford a new stick-built house. **With very low existing home inventory, new households seeking housing, would need ~\$160,000/year in household income to afford a newly constructed stick-built house.**
- Statewide, 73% of households are owner-occupied while 27% of households are renters.
- With all but the top 30% of household incomes unable to afford an existing house — and all but the top 8% unable to afford a new stick-built house; 70-92% of households in need of housing in Penobscot County, are competing for the small number of housing units that are rental. **No wonder Maine has high rental inflation and extremely low vacancies.**

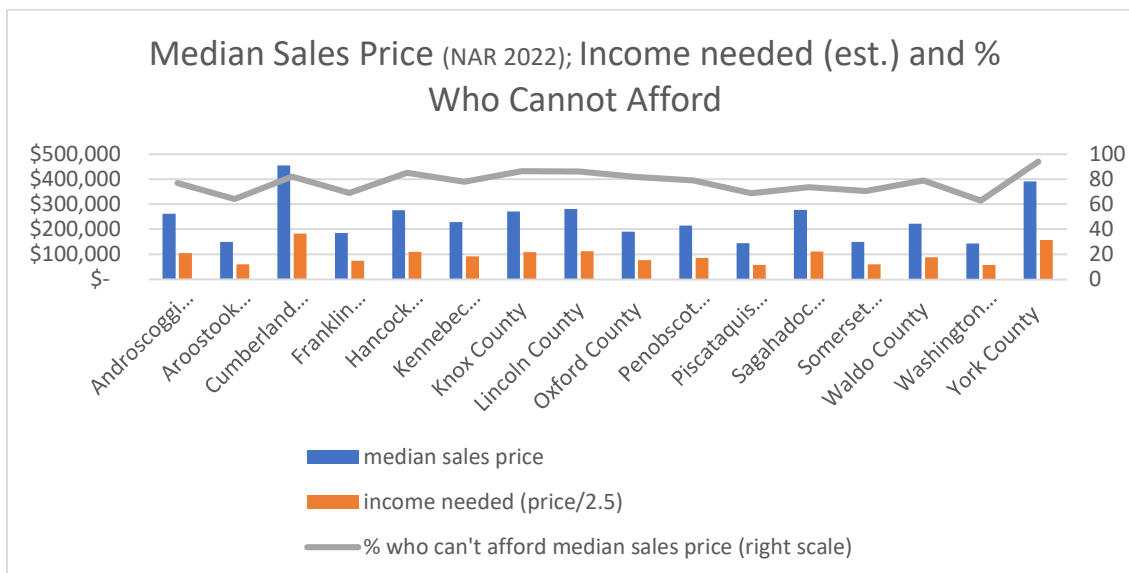
Sometimes a narrative is put forth that suggests housing affordability is only an urban issue. This is far from the truth. The Appendix displays this data for each county in Maine and, as can be seen in the following summary data, the dollar costs vary by county. Places with the highest (or lowest) nominal housing prices do not necessarily have the worst affordability as measured by the percentage who cannot afford a certain housing type. The distribution of household income changes who can afford different kinds of housing.

Across 16 counties in Maine, here is what we found:

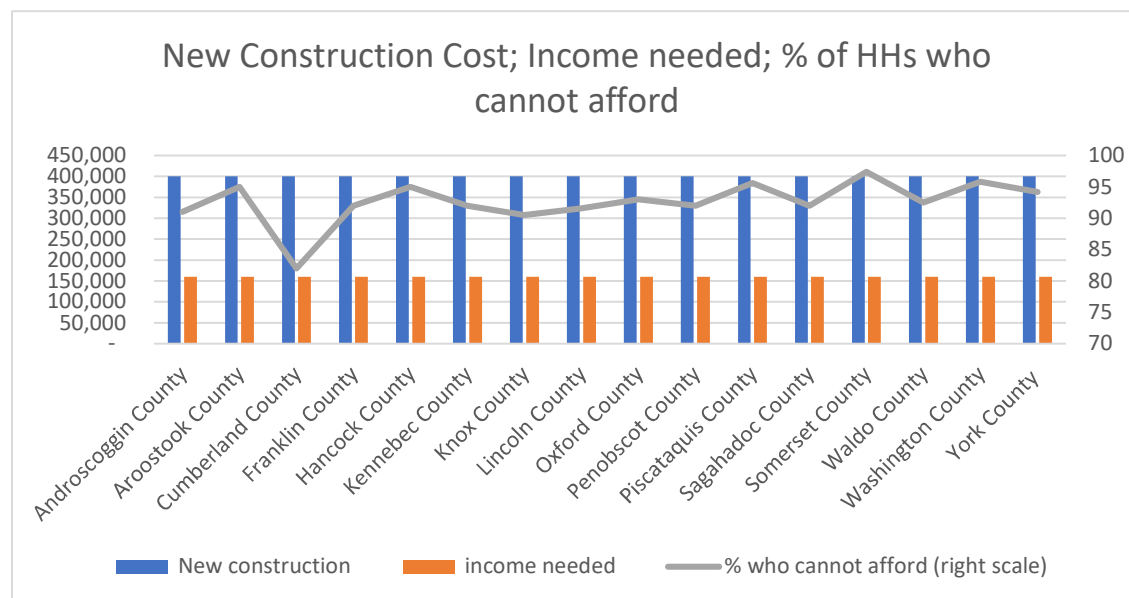
- On average (of the 16 counties' estimates), **40.2% of households cannot afford Fair Market Rent (FMR)** on a 2-bedroom apartment. There is a high clustering of counties where ~40% of households cannot afford FMR. Washington County is the highest, with 45% priced out.



- On average, **77% of households cannot afford to buy the median existing home** at 2022's sales price for each respective county. There is some variability by county in the percentage of households priced out of owning an existing home, ranging from 63-64% in Washington and Aroostook counties, to 94% in York County.



On average, 92% of households cannot afford new construction. Cumberland and York see existing home prices and new construction costs converging. Given those counties' higher income levels, there are slightly more households who can afford new construction. However, in other counties the spread between the two (existing/new) may imply worsening affordability issues to come as the inventory of "existing homes for sale" shrinks.



Because such a large percentage of households cannot afford to buy a home and therefore are forced to rent, those households are competing for the small stock of rentals, driving up rental costs and driving down vacancies. This in turn perpetuates a large number of households who are "priced out of renting" as well. The dollar values differ by county, given differences in the distribution of incomes, while the affordability trends are pretty much the same everywhere.

Importantly, **some counties see new construction costs and existing home prices nearing each other. In other places, like Penobscot County, there is still a spread. That spread (\$400K¹⁵ to build a new stick-built house vs. \$214K⁴² for median sales price in Penobscot County in 2022) leads us to anticipate even worsening affordability issues in the future as existing for-sale inventory dries up.** Any household who has a lower mortgage interest rate (this is, most who have a mortgage) have a huge incentive to stay put. This lowers supply of existing homes for sale and constipates turnover. **Given the rapid change in mortgage rates over a short period of time, existing home for-sale inventory is negatively affected.**

Notes and Caveats:

- a. *Not all households are unhoused. Only households in need of housing in those income brackets (all but the very top in household income) – would be looking at competing for rentals.*
- b. *The affordability of homeownership varies significantly by household (back-end-debt to income ratios, etc.) and in terms of local property taxes. To adjust for local variability, we have used a 2.5x multiplier as a crude approximation of home-ownership affordability.*
- c. *It is also an approximation to say that **if** 27% of households in Maine rent, **then** 27% of housing structures are rentals. Knowing whether a structure is owner occupied or rented (full or part time) is not easy to discern. The Maine state government has hired a consulting firm to conduct additional housing analysis which hopefully will provide additional data on this topic by year-end 2023.*
- d. *We use ACS 2020 household income not per-person income because financial institutions would look at household income re: underwriting a mortgage. ACS is the best available (and broadest) data despite the slightly dated date.*
- e. *As household size is very small in Maine (< 2 people per renting household), household income, and 1 worker per household, is a reasonable simplification for estimating how many homes are needed.*
- f. *Q3 2022 median sales price was the most recent data on NAR's site. We did not use calendar year 2022 because Q3 was actually lower than the year as a whole. There could be two reasons for this difference between Q3 and 2022 in total; 1. There could be a higher share of 2nd home purchases earlier in the year which affects the median; 2. As interest rates rise, house prices typically decline. Using the lower number here seemed more conservative*
- g. *Macro data are always rough estimates. Exact numbers can create a false sense of precision; therefore, the work is done at the decimal place level and then the results are rounded.*

Root Causes

Maine's housing crisis starts with supply-and-demand imbalances.

- Demand has increased because of household formation as retiring Mainers “age in place” and younger individuals form their own households. This trend, which is true for all of the USA, is exacerbated in Maine because the state has the oldest population in the Nation.
- Supply of housing has not increased enough because of the mismatch between incomes and construction costs which must be covered, and also earn a return, in order for the private market to risk capital.

This production gap stems from a mismatch between the costs of new construction vs. what many households can afford to pay. New projects don't “pencil” (i.e., are not forecast to be profitable for private market builders). There are structural issues between what is proposed (high value projects with large number of expensive homes) vs. what is wanted/needed (smaller developments of lower cost homes).

For those who think the government should step in, I would argue two things: 1. They already have with a large number of innovative construction-related programs coming from MaineHousing resulting in a run rate of nearly 1,000⁴¹ new affordable homes constructed a year through their various subsidy programs; and yet 2. Even that new subsidized building rate is insufficient compared to need.

There are 4 major, market-driven, reasons why Maine has been underproducing affordable housing:

Major Root Causes: Why isn't the market building affordable housing?

Why too few low-cost homes built

why it costs too much to build affordable housing vs. what HHs can afford

why regulations require specialized services

why technical complexity results in specialized knowledge/skills = high fees = rising soft costs

why **Soft costs add 40-50% for small projects; 20-40% on larger ones**

why too few low-cost homes built

why it costs too much to build affordable housing vs. what HHS can afford

why developers require a positive risk/reward (cannot lose money and stay in business)

why Large developments maximize profits, even with NIMBYism, and offset inherent risks, as soft costs are spread across more units

why primarily big buildings on big lots (high value projects) get proposed, which delays construction as this is the type of project that towns often dislike. **Adversarial Dance = Delays = Higher Costs**

why too few low-cost homes built

why Decades of low interest rates, pushed investors into the residential rental market

why Post 2007-2008 investors found a good risk/return buying-to-rent

why As RE prices increased, investors continued to buy while increasing rental rates to obtain a positive return on their investment

why **There are no financial incentives (for landlords, investors, or developers) to build lower cost housing**

why too few low-cost homes built

why Subsidies to build "affordable rentals" mainly focused on Extremely Low-Income Renters (mostly disabled/elderly in Maine)

why This seemed to be the greatest need; however, lack of focus on other cohorts had neg. effect

why 77% of HHs (average of 16 counties) cannot afford last years' median sales price

why **The missing middle is the missing three-quarters, who are forced to rent, compete for scarce rental stock and drive-up rental inflation**

High construction costs are partially caused by developers' assessment of risks, including variable soft-costs. Two prominent sets of risks arise frequently and therefore regularly inflate already high soft-costs (i.e., service costs required for real estate development):

1. **Political risks** can raise construction costs: Multiple rounds of community feedback raising A&E costs (architecture & engineering costs for redesigns) and fewer units to spread those costs among and carrying costs. Community pressure that results in cutting the number of units, directly raises the remaining unit's costs and even the financial feasibility of the project.
2. **Financial risks** can raise costs (delays + higher IR = higher carrying costs.) plus the vagaries of hard construction costs → supply chain, labor, materials costs, environmental unknowns.

This combination of political risks and financial risks inflate overall development costs. High soft costs also lead to primarily luxury/high-value construction as lower-cost housing developments (especially ones with a small number of homes) risk losses for the developer.

Summing up various housing gaps

Maine is short an entire city worth of construction: 9,000 homes short in construction of affordable housing last year; 20,000-25,000 homes short cumulatively for existing ELI Mainers; plus 10,000-20,000 new homes needed in order to attract workers from other places to move to Maine and fill open jobs. Combined, Maine needs 30,000-40,000 new homes, but only a handful of cities in Maine have 40,000 homes.

It is imperative that local leadership (public and private) work together to increase both the supply of small homes for entry-level purchase and the construction of additional affordable market-rate rentals through LIHTC or other subsidized construction programs. As later sections of this paper will show, building entry-level, single-family homes for purchase can be among the most cost-effective (subsidy-lite) ways to "free up" an existing apartment and reduce rental inflation. **Neither government (Federal + State + Municipal) alone, nor the private market alone, can dig Maine out of this housing under-supply.**

Chapter 2: Possible solutions

In the words of H L MENCKEN, "For every complex problem there is an answer that is clear, simple, and wrong."

Never has this saying been truer. It is enticing to look for a single, simple, answer to "fix the problem." Unfortunately, there is not a single reason for the high cost of construction. **Through building a demonstration project, we sought to identify and assess opportunities to reduce the cost of construction.** All of the things that could be done slightly differently are "necessary but not sufficient alone," and most are evolutionary, not revolutionary. A high level of coordination is needed between and among these opportunities in order to reduce home-construction costs in Maine.

The pilot project goal is to build and sell "at cost" of <\$150K for 1-bedroom homes and <\$200K for 2-bedroom homes. These price points would be affordable for 100-200% area median income (AMI) presuming minimal downpayments and utilization of MaineHousing's first-time buyer program.

The Rumford model is a solution that is intended to help alleviate Maine's housing challenges by: (1) Housing new and existing workers, or retirees who are downsizing; (2) Creating wealth for first-time buyers and (3) Helping with rent-subsidy migration, reducing rental-rate-inflation by reducing demand, freeing up an existing apartment for other renters, and freeing existing subsidy dollars to be used for new households on the housing waiting lists and/or lower AMI households.

Below is an image of the pilot project and a summary of the various decisions and actions that helped reduce anticipated costs in Rumford. Completion of the 4 townhomes is expected in Winter 2023-24.



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**WIP: IT IS POSSIBLE TO BUILD A
<\$200K HOME**

**4 MODULAR TOWNHOMES, ON INFILL LOT, EACH WITH
LAND, PARKING, SMALL BACKYARD → EACH BELOW
\$200K; SOURCE: DEVELOPER KARA WILBER; ARCHITECT CALEB JOHNSON**

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Sarah.j.Sturtevant@Maine.edu; Jacob.d.Curtis@Maine.edu
 Shaw Innovation Fellowship 20223

Five major categories of changes, resulting in more than 30 different actions, were needed to reduce Pro Forma Costs to <\$200,000/home.

| Municipal model | Physical model | Site-work; Set; Connect | Business & Financial Model | Building Maine's Building Workforce |
|----------------------------------|---------------------------------------|--|--|---|
| Town lot sold at tax-card value | Modular | Cleared lot (no demo/tree cutting) | Off-season building lowers costs; KBS costs; GC availability/costs | AGC offers pre-apprenticeship programs |
| No zoning | Small (400-700 sq ft) | Infill site– already paved w. curb cuts | Home-buyers utilize first time buyers programs (lower APR; downpayment grants) | 200 members – have access to 7 select technical HS' students |
| Set-back waiver (anticipated) | Townhouse (higher density) | City water + sewerage in street | Bank + NGO dev. Financing (lower rate and loan origination costs) | Provide intro to 13 trades and guaranteed interview for formal apprenticeship |
| No water or sewerage hook-up fee | 2 homes per box | Optimize flatbed use – 1truck + driver – 1 day – 2 trips | Low carrying costs– quick build once started | |
| No parking study | 80-90% complete at factory | Optimize crane costs– 1 day | Vertically integrated dealer/developer | |
| No impact fee (anticipated) | Belly wrapped | Foundation cost savings using piers | Low pre-development costs | |
| Low building permit cost | Heat pump installed in factory+rebate | Limited site build– no porches/decks | Utilize dealers' plans | |

21 April 2023

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Cost Savings by Category:

Site Selection and Municipal Actions

Affordance is “a feature of an object or environment that prompts or promotes a specific use or interaction, especially one easily perceivable to the user.”

I see affordances in Maine which could be a larger part of the solution set. These features of the environment could promote expanded affordable housing solutions in a way that is consistent with the physical, built, history of Maine.

Restoring the population to these small cities, seems like an affordance. Not all municipalities abhor construction. Developers often propose development in a place that is already beautiful. However, with every new project in a popular location, the community may struggle with population increases impacting congestion and demands on communal resources. Instead (or in addition to), let's revitalize the places that once had been larger and more vibrant; places that may have languished since the mid-20th century. I call this housing placement **Maine's Small-City Affordance**.

Perusing the 1950 census, I noticed that a number of towns and cities were once much larger. For example, 8 towns and cities held nearly 22,000¹⁸ more people combined in the middle of the 20th century than they did in 2020.



The fact that these places were once much larger, doesn't necessarily mean there will be zero NIMBYism. However, it may indicate a higher level of interest from municipal leadership in seeing investment in their small cities and towns. It also may indicate better capacity for meeting increased demands for city water and sewerage. Some locations realize that additional investment will help revitalize downtowns and increase area GDP. This has proven true in Rumford. It is my supposition that at least some of the other 7 locations above also would be supportive, as a community, to seeing investment in affordable housing.

Town selection and municipal permitting model — steps to reduce costs and encourage building:

- Building in Maine's small cities/towns, which were once much larger, may be easier than doing so in Greater Portland or more coastal locations. Jobs and GDP-growth follow housing increasingly — picking sites where the community wants investment was a helpful first step.
- Municipalities can encourage developers to propose development that is more acceptable. Small homes/small communities may be one such model. Municipal actions can help reduce construction costs for affordable home construction. Rumford has done (and is likely to continue to do) several things that accelerated new construction including direct outreach from DECD, George O'Keefe. From site walk to the special town meeting to authorize the sale of the lot was 2-3 months. From special town meeting to RFP issuance and award was 2 months. This kind of speed and coordination went a long way to reducing the anticipated project costs. Specifically:
 - Rumford has no zoning and is likely to waive their setback restriction
 - Rumford is likely to waive hookup fees (and does not require a utilization study)
 - Rumford will likely waive an impact fee
 - Streamlining the approval process reduces carrying costs – which are especially relevant as development-loan costs escalate due to rising interest rates. Saving a month's (or a year's) worth of interest is an important source of cost-savings.

Physical Models can lower construction costs

A second affordance, is recognizing that Maine is an emerging leader in both engineering and construction of offsite built homes (modular; panelized; 3D printed). This is an important way to build quickly, with efficient utilization of scarce resources like skilled labor, resulting in lower costs. **Maine has a process-affordance** in its emerging leadership of offsite-construction.

For example, the Rumford pilot has the following physical attributes:

- Small (400 and 700 square feet) modular townhomes. We started with a 400 square foot 1-bedroom home because that is the smallest size on which some banks felt comfortable underwriting a conventional mortgage. 400 square feet is also consistent with the size of a 1-bedroom apartment.
- The two end units are 2- bedroom homes of 700 square feet, with a higher pitched roof. We added larger homes for two reasons: 1. The higher pitched roof on the two end units, aesthetically references the Big House->Little House->Back House-> Barn model of many Maine farmsteads. The 2-bedroom homes replace the “big house” and “barn” in that visual relationship; 2. Most of the households on FSS and other first-time-buyer programs are families, who may need more than 1 bedroom.
- Returning entry-level homeownership to within reach of 80-200% AMI “frees up” apartments cost-effectively; reduces rental inflation pressures and optimizes utilization of subsidy dollars.
- Shared walls increase the energy efficiency; allow for more homes on 1 site and reduce construction costs. It is also consistent with the row-house aesthetic in Rumford of 100 years ago.
- Reducing NIMBYism:
 - Small infill developments may be more acceptable to existing abutters than large multi-family developments.
 - An ownership model is also more likely to be acceptable to abutters as owners are viewed as having more “skin in the game” than renters and/or absentee landlords.
 - The land use of townhomes is relatively dense, yet the number of new neighbors affecting abutters is small.
- Modular/offsite construction – quicker build with lower carrying costs is also a more cost-efficient use of skilled-labor and materials. KBS was an integral part of the development team, helping uncover cost-efficiencies throughout the design process.

Site; Transit; Install Model that can reduce construction costs

- At the door of the factory, a nearly complete home (flooring, trim, appliances, heat pump installed) is less than half the cost of a completed home. When readers see “tiny homes” listed for \$50K or less – they should realize that that price will nearly triple when including transportation, site work, set-work and connections – as well as soft costs.

- Site/Set/Connect is the place where the greatest need exists for additional workforce training in my view. Each piece of transit/site/set/connect is a specialty with limited players. I've proposed to AGC and modular/factory/offsite construction companies that they include a 14th trade in the Maine Construction Academy to include the skills necessary for next gen construction in Maine. To date the focus of all training I could find for new workers, is on legacy "stick-built" methods.
- The type of foundation chosen can also save money. The Rumford pilot is expected to use piers or piles, instead of a full foundation or slab. Cement is one of the least environmentally friendly building materials. Helical (steel) piles are relatively cost equivalent to cement piers and significantly more cost effective than a full foundation.
- The Rumford model as planned will maximize the efficiencies of transit (1 flatbed can make 2 trips in 1 day for transporting all 4 homes) and crane usage (4 homes set in 1 day I am told).

Business Model (vertical integration) and Financing actions that can reduce construction costs and allow small homes/small communities to "pencil"

- Business model changes through vertical integration can reduce soft costs. In Rumford, the developer is also a modular dealer, reducing layers of profit margin required. Typically, non-construction costs include:
 - Maine Sales Tax is charged on a portion of the Modular Company's bid
 - The General Contractor wants a 15% margin
 - The Modular Dealer (one is required by Maine state law) wants a 10% margin
 - Developers nationwide earn an 18% gross margin which is 7% net (NAHB 2020). Maine numbers vary, however, 15 and 10 (gross/net) are also common.
 - The Realtor wants a 6-10% commission (higher rates on lower priced houses)
 - Loan closing costs – financing fees, legal fees, and title searches which may be done 2x in a short period of time (once from the development loan and once for the homebuyer)
 - Combined = costs ~50% above the cost of land/labor/materials to physically build the home.
- Speed of construction is an important aspect of modular efficiencies. Developer loans typically charge interest only on the amount drawn. Therefore, buying the land and paying a small deposit on the modular order can be far more cost effective. The faster the construction, the less interest is paid.

In order to get the Rumford model pricing lower, the work has to be done off-season. While the modular process can be quick to build, if a developer misses the window for small, modular, construction and set, then they have to wait 6-8 months to restart the project. This time-sensitive calendar is still cost effective for those with the executive skills, and luck, to hit the off-season window.
- A new group of dual-mandate or hybrid, integrated, developers (do the right thing while making a small(er?) profit) may be emerging. ESG and Qualified Opportunity Zones are supportive of these initiatives. Personal drive seems to me to be the pivotal factor in developers' willingness to build lower-cost, housing.

A note about soft costs; what are they, why are they so high and what is the NIMBYism link?

Soft costs are a defined term. In general, any work that is not physically constructing something may be considered a soft cost. Everything from environmental work, legal fees, title search, borrowing costs, developers' fees and realtors' commissions may be considered "soft costs".

Soft costs add between 40-50% to the cost of construction for a small development and 20-40% for a large one. Those costs are currently born by the developer, which in turn means those costs are passed on to consumers. This is a major element making new construction unaffordable. Soft costs are also included in calculating whether the project will "pencil" (i.e., will investors see a return of, and on, their investment). The smaller the development, the higher the soft cost percentage. High service costs, for the development as a whole, get spread across a fewer number of homes. As a result, developers typically only propose high value (large # of units) projects. However, local communities tend to want small projects.

Community "push-back" delays the construction of new affordable housing. Delays from community members trying to push developers to reduce the size of the project, in turn drive up carrying costs, soft costs escalate (redesign and shrinking unit count) and reduce developer returns. Risks rise and returns shrink (not a good combination for market-based construction). This adversarial dance has helped no one. It increases the risk to developers, prevents small projects from being proposed as developers think the community will force concessions no matter what the size they initially propose, delays new construction for those in need of housing and takes up community residents' time and energy.

Educational/Training Model that can build Maine's Building Workforce

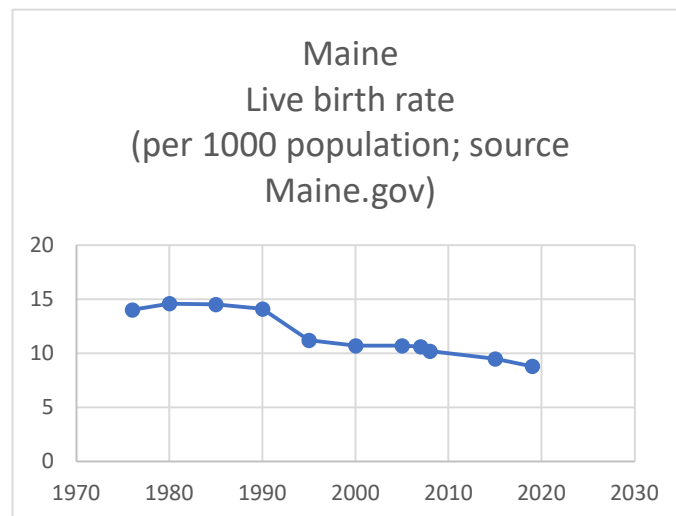
Education, training and jobs are three things which naively sound like they should go together. Unfortunately, they rarely do, especially not in the scale that Maine needs in order to build 30-40,000 new homes. It's not a provocative statement to say that Maine's educational institutions and programs see themselves as having a primary mandate to educate their students. However, that mind set can let educators "off the hook" in terms of whether the skills taught are relevant to employer's job openings – and to students' interests. For example, there are too few seats at Maine's Technical High Schools (CTE); little integration with Maine's somewhat scattered community college construction/trades programs, and those community college programs have little interaction with the advanced construction-related degrees offered by the University of Maine.

Coordinated and integrated training to build Maine's Building Workforce is possible. There is a promising new program being launched called Maine Construction Academy (MCA). It is pre-apprenticeship training coordinated by Association of General Contractors (AGC) which combines 3 weeks of classroom work to earn 6 different certifications, combined with onsite introductions to 13 trades. MCA brings together training/apprenticeships for AGC's ~200 member organizations; select technical high schools; work force development grants and adult education. A formal apprenticeship

A note about the baby-bust, worker shortages, and expanding the candidate pool:

A key issue affecting the availability of workers in Maine's building workforce is that most programs focus on a subset of teenage boys, attending a limited number of technical high schools, as the candidate pool. While that historical focus is perhaps understandable, it is far too limited given the baby-bust that began in the 1990s. A 16-year-old in 2023 was born in 2007. In contrast, a 47-year-old construction worker (average age in Maine) was born in 1976. Between 1976 and 2007 the live birth rate dropped by 37% - and continued to decline thereafter.

Additionally, periodically there is a narrative about people not in the workforce given the low labor force participation rates vs. history. However, labor force participation rates do not adjust for those who are disabled. When adjusting for disabled adults, 81% of adults in Maine are already employed²⁶. The remaining 19% include unpaid caregivers and full-time students. Maine is materially at full employment. There are fewer workers able to return to the workforce (especially for physically demanding work) than some may believe.



We must make room in our educational/training programs for people from other places, people of color and women.

program has formal training requirements of 144 hours of classroom training for every 2000 hours⁴² of work. Member organizations rarely have the capacity for the classroom component. As a result, only a half dozen of AGC members currently have formal apprenticeship program. MCA will change this status quo in that the 6 pre-apprenticeship certifications (NCCER/OSHA) will be done prior to apprenticeship placement and fulfill the 144 hour classroom requirement. During the 2023 launch year – 7 technical high schools will participate with 140 students⁴⁴ (mostly recent HS graduates). This is a great start. Unfortunately, single family residential construction is fragmented and small. AGC's membership is mostly large and commercial contractors. Few small residential developers/GCS are members and no offsite/modular companies are members of AGC as of this writing. There is an industry organization for

modular construction called the Manufactured Housing Association of Maine (MHAM), which has an online link to Manufactured Housing Institute (national organization). That curriculum appears to be mostly member-only continuing education, not focused on training new workers.

To reach out to under-represented potential candidates the workforce training programs could be advertised and marketed in terms that sound more attractive. The female and minority representation in the trades is so low (<3% of plumbers in the US are women⁴⁵) as to make word-or-mouth or prior knowledge non-existent. The terminology is also somewhat problematic in my view. Apprenticeship may sound “supportive” to a teenage boy who grew up with male relatives in the trades in Maine. In contrast, a young, female, adult from another country could have a different view and not apply for that career as a result. It seems clear that Maine cannot fill the construction shortfall with the current training strategy of looking only towards a very small subset of male, Maine technical-high-school, students.

Overall, there are too few seats and too little integration of educational/training formats. Each organization is deeply siloed; High School Education does not lead to →pre-apprenticeship training→skilled training/apprenticeships → job placement. And the outreach to new pools of potential workers is extremely limited.

Importantly the mindset shifts necessary, and slightly adjusted skill set needed, to promote offsite construction is largely ignored in current curriculum and training programs for new workers.

Maine can do far better than the current status quo for building Maine’s building workforce.

Chapter 3: Factors to Consider

The Rumford model is a format worth considering in other locations. The model is nimble, flexible, low cost, with low administrative burdens and the ability to adapt given the small footprint and small number of homes per project. It utilizes existing government programs (first-time-buyer; FSS) and private organizations (banks, modular manufacturing; modular dealer/developer) that are well established and funded. Therefore, the implementation challenges and administrative burdens are somewhat lower.

The Rumford site and municipal (permitting) costs are the most likely aspect of the model that may not be repeatable. However, other costs could shrink especially with government support. The richest pool of costs to target for cost-cutting, in my view, are soft costs that could be reduced and spread differently. Changes which could potentially reduce the political risks, encouraging more small developments to be proposed.

These are:

- **Open-Sourced Architecture & Engineering Plans (A&E).** Some communities have shifted to open source, pre-approved, building types and plans (Bryan, Texas and Claremore, Oklahoma). In Maine, the Rumford Model is attempting to create a lower-cost, modular, floorplan that could be utilized repeatedly with known costs. Perhaps pre-approving building plans/types could be a role for the regional COGs in Maine with appropriate funding? Working with their representative towns perhaps Regional COGS could create a catalogue of pre-approved plans? Not only does this reduce the explicit A&E costs for a developer – it would potentially reduce the NIMBYism risks overall since the plans have already been vetted. Fewer delays and less A&E redesign costs means lower-cost development and faster construction whether it is rental housing or “owned”. In the Rumford Pilot, A&E costs have been reduced by using a design from Dooryard.
- **Phase 2 and environmental testing:** In growth zones and infill lots, especially where existing buildings once stood, government could provide environmentally validated land. For infill lots, the local government had oversight when the prior building was built and then torn down. Therefore, it could be argued that the overseeing entity (local governments) should bear the environmental certification costs on infill lots going forward since they had full-circle responsibility for that plot previously. On virgin land, the community in total benefits (e.g., from proper rainwater runoff and hazardous material testing) so perhaps this cost could be shifted to some combination of government entities. Especially in growth zones, and on infill lots, the municipalities could be held to a higher standard of whether the land is “buildable” to include Phase 2 assessments. The Land Bank initiative may include some of these concepts, however, that legislation as I understand it, seems to be oriented towards underutilized-public-buildings – not empty infill lots.
- **Encouraging small or hybrid/dual-mandate developers:** I don’t know what form such financial encouragement could take. One might guess that an income-tax incentive might work. For affordable housing construction where the developer agrees to cap their fee – perhaps there could be an income tax write-off? Maine Housing’s Affordable Homeownership Program is also a strong (but limited \$ funding) support for developers. It doesn’t reduce costs, but shifts some of

the total development costs to a “forgivable loan” thereby encouraging additional entry-level construction. I’m not sure why “5” unit subdivisions are the starting point for participating in MaineHousing’s Affordable Homeownership program. Making it match to the 4 units specified in LD2003 would seem beneficial.

So why even bother with attempting to change Municipalities land entitlement practices or streamline pre-approved building types approval processes? Because not every site in every town is as accommodating (i.e., cost conscious) as Rumford. The repeatability of the Rumford model elsewhere is not a given. Therefore, we need some shifts in who pays for the risks/costs of soft-costs to incentivize developers to change their assessments of the risks and opportunities. Building low-cost houses, in small (low value) developments, to be sold at cost - is not in most developers’ DNA. There likely will need to be additional incentives such as reducing developer risks, to attract developers and contractors who are willing to alter the usual playbook. By making it easier to build small homes/small communities – vs. stick-built, custom, luxury, single or multi-family – there could be a coordinated public/private initiative to drive the creation of more affordable workforce housing. One could argue that cost-shifting soft costs from developers/home-buyers to government entities or housing funds, would be the most efficient use of capital to efficiently increase supply quickly. My hope is that the Rumford Pilot will see outcomes like “Pallet Shelters” which has been a highly replicated grassroots alternative for transitional housing for the homeless. Small Homes; Small Communities is a promising alternative for creating more low-cost permanent housing in Maine for its workers and retirees.

A note about definitions of success:

What if? What if instead of 1 large project that takes 6 years to build 263 apartments what if instead the developer placed 6 new, modular, townhomes every month and ended up with 432 new homes instead over 6 years?*

An 18-story building has “bragging rights”, while 6 modular, infill, townhomes at a time does not.

One format likely has higher margins than the other.

The perceptions of risks are also not equally well understood. The risks of a single Portland location may be better known by the developer. While the idea of 72 infill locations can represent risks which may not be well understood. The developer may fear that each of those 72 locations may have the same sort of municipal process and NIMBYism as in Portland.

** Landry French’s 18 story building at 201 Federal Street in Portland started approval process in 2018 and scheduled to finish in 2024⁴⁶*

Conclusions:

There are a number of “major mismatches”:

- Maine has two affordances that are rarely viewed as such:
 1. **Small City Affordance:** Revitalizing small cities that were once much larger (often mill towns but not always) is a wonderful opportunity for the future of Maine. Some may even welcome new investment in their cities.

2. **Offsite Construction Affordance:** Maine is an emerging leader in building with factory/offsite construction which is widely recognized as more efficient. So why isn't more done with factory construction? Out-reach, education, training and development are all needed. Changing work habits is not always quick nor comfortable.
- **Size mismatch:** Each project is different. However, in general developers tend to propose large, high value, projects. While municipalities (and abutters) often want new housing that is smaller scale and sprinkled around their cities/towns. NIMBYism at its heart is about how residents think their town will look, feel and function and the fear that the place they call home will change in a negative way. My conclusion is that NIMBYism is not about density (# of homes/acre) it's about the total number of homes in one location. Total number of units is the issue that may lead to congestion and additional demands on communal town resources (police; ED; fire; schools; utilities). Some NIMBYism may just be aversion to change or fear of the unknown. However, NIMBYism is so prevalent that it's important to understand legitimate concerns in trying to turn an adversarial-dance into a line-dance.
 - **Soft costs are too high (and virtually invisible).** How do we incentivize small homes: small communities? Encouraging vertical integration may be one way to reduce total costs. Shifting some soft costs to municipalities and other government entities, may be another complimentary route to encourage small developers to take a chance on building small communities.
 - **Institutional mindsets:** Many institutions don't see their role as being germane to new housing construction. The educational->training->jobs continuum is highly fragmented and disjointed with little enthusiasm behind updating curriculums and increasing seat-counts. Likewise, municipalities can positively impact (or negatively) the future of construction in their town. The fear of building looms large. The fear of NOT building (i.e., essential services are closed due to lack of staffing) must be made so clear as to be impossible to ignore. Until the realization of the costs of **Not Building** is sufficient enough to make individuals willing to change, until that day arrives – the lack of availability may continue to grow. In the meantime, the places that are changing (or have changed) will find more success than those who fear the wrong thing.
 - **Financial incentives overall are perverse.** Landlords' revenues increase each year, especially presuming turnover. With turnover, landlords can stop accepting *new* section 8 voucher holders (removing units from the program) and increase rental rates. The private rental-investor market has few incentives to finance new construction since that part of the RE-market can earn a higher return on the existing rental-stock which is a scarce resource. Despite higher private rents and FMR rates, new construction still doesn't pencil. Materials, land, labor, interest rates on developer-debt and soft costs are all high vs. returns obtained via rents. Soft costs are so incredibly high as to make only high value/large new developments viable – even with LIHTC. Large developments are the very sort of thing that communities abhor – dragging out an adversarial dance, driving up costs and slowing building. Private developer soft costs are structured as a % of total – with high value projects having the largest \$ profits. Developers therefore avoid small and low-cost projects because risk/returns are suboptimal. Especially when factoring in soft costs, community input delays and financial risks may be nearly as high for small/low-cost options as they are for larger ones. There's no financial incentive at any level to build what Maine's workforce needs. Disruptive business and building models therefore are needed. These models can change this adversarial dance and are therefore highly worthwhile. Shifting some subsidy dollars to encourage low-cost (aka affordable) construction not only has a high cost-benefit trade-off but is the most humane thing we collectively can do for Maine.
 - **Lack of workers:** While the state is working towards expanding programs like AGC's Maine Construction Academy to adults, women and new Mainers, perhaps there is more that the state

could do to support construction in the form of expanding city/town roads, city water and city sewerage (calling out the national guard to help with building housing infrastructure like extending roads/water/sewerage?). Throwing more money at a problem, without increasing the supply of workers, just drives up costs. Finding new pools of workers, training them quickly and targeting their efforts toward affordable housing construction (modular) could perhaps be prioritized by the state.

This analysis is just a start. Understanding the underlying issues, and considering previously unthinkable solutions (small, quick and efficient modular as the pinnacle of success?) is essential. The Rumford pilot isn't a panacea but does start to show what is possible. A permanent \$100,000 house can't be built in numbers by a developer in my estimation. However, a less than \$200,000 small house is possible.

Many questions remain. How can municipalities show their willingness for a certain type/size/format of construction? How can they streamline and expedite the adversarial dance with developers into a more orchestrated line-dance? How can we change mindsets about construction from "big, multi-year and costly" as the pinnacle of success -- to "small, quick and efficient" as the pinnacle of success? How can CTE; Community College; workforce development; industry groups; and apprenticeship programs all work together to build the next generation of builders in Maine? These are but a few of the questions that are worth further analysis.

Appendix:

Solutions assessment:

The Status Quo is severely limited in the likelihood that it will create meaningful numbers of new subsidized apartments. In no county in Maine can the median income household afford the median home (MaineHousing). And rentals (almost at any price) are unavailable. Only subsidized rentals become affordable. And yet, the new supply of subsidized rentals is very limited given current formulas for tax incentives, fair-market-rent and congressional funding. Construction costs far exceed rents, making returns for private developers untenable. This is the set of systems and programs that have brought us to this crisis level. More of the same is unlikely to be the cure.

Small homes/Small Communities Pilot is not a perfect solution in terms of immediate size of impact. However, it is not highly dependent on government subsidies, and is therefore flexible and nimble as a market-based approach. With a small number of new modular homes per development, the political risks (community input/NIMBYism) and carrying cost are less. It is possible to envision dozens of these small homes/small communities popping up around the state once the model has been validated. The Rumford model is also not a perfect solution as several types of households would not be helped: Large families, low AMI households, those who need support services and those with bad credit – especially would not be helped by this current design. However, there's no reason why the modular formats couldn't be sized-up for larger households in future iterations. HUD's FSS program could provide important financial literacy and support for first-time-buyers. Maine Housing's Advantage and First-time-buyer programs for qualifying households, provides a down-payment grant of \$5,000 together with a buy-down of the mortgage interest rate. Importantly this model would provide rental-subsidy migration, freeing up subsidy dollars to help lower AMI households.

Additional municipal involvement in the entitlement of land is the most equitable type of solution as it would encourage construction of both low-cost homes to own and lower cost rentals. It is the most impactful potentially in terms of number of new homes constructed. Unfortunately, it is the hardest to implement. Lowering construction costs by 20-50% would be highly meaningful in getting more new construction to "pencil", increasing availability of subsidized-rentals and low-cost owned homes. However, the implementation is much more challenging, as it requires municipalities (and regional governments?) to try to "get ahead of the curve" in planning and accepting additional environmental oversight costs that they previously have not borne. There would need to be some sort of incentives to fully encourage this option. Over time it is possible to envision best-practices simply evolving, however that will take years to trickle through implementation without state government support.

Challenging our educational institutions to re-engage in order to fill the needs of Maine's Building Workforce, and to coordinate with other institutions in the state, is essential. The educational silos are deep. For example, wait lists for electrical programs at CTE are as unacceptable as they are common. 80% of students in Maine⁴⁴ don't have access to a CTE program should they want one given program sizes. Without the collective "challenge" to educators, workforce training and development and adult education programs to focus on building professions as career paths for their students, we will not have a place for all workers to call home. Training only a small subset of male 17-year-olds to go into building professions, is not sufficient to dig Maine out of the housing construction shortfall.

Pros and Cons

Solution A: Status Quo

Pros:

For existing subsidized rental households, there is a high level of safety and certainty to knowing that no more than 30% of their gross income will go towards rent. This government intervention provides physical and mental health benefits and reduces housing insecurity for those housed under the tapestry of subsidized housing programs. SAFMR enables Section-8 holders to rent in higher-cost neighborhoods by boosting the calculation of what is “fair rent” in that neighborhood and improving the equitable outcomes for those select households.

Cons:

- *We need 2-6-fold increase in the availability of a scarce resource* (the wait lists are often as large -or larger - as the number of existing subsidized families). Therefore, there is a lottery mentality – where those who have a voucher/public apartment feel entitled to it. While the larger sized cohort who are on the wait list, are just as entitled, but can’t get in. There’s no “timing out” nor “earning-out” notion re: rotating off subsidies. This seems inequitable as newer households have a low probability of receiving subsidized housing under these programs. Some will wait years. Some households who qualify will never get in. Given the divided nature of our country, and that funding comes from congressional budgetary appropriations, more than doubling the size of HUD’s budget seems politically unlikely.
- *The rules required to build new subsidized housing make it one of the most expensive forms of construction* (Davis Bacon; ADA; Fire codes etc.). Well intentioned legislation to ensure that the new apartments are high-quality, has had the unintended consequence of too few new homes being built as even with LIHTC, the projects don’t “pencil” given the high costs of construction.
- *Section 8 is subsidizing a scarce market resource*: private apartments mostly – which landlords agree to rent at HUD’s calculation of the 40th percentile of market rental costs called Fair Market Rent (which can get a waiver to 50th percentile but is typically 40th percentile). During apartment shortages, landlords can raise rents and stop accepting new Section 8 voucher holders. Relying on private landlords, for subsidized housing, has resulted in under-production of affordable units as currently defined (size/amenities for set FMR price) given the high cost of building a new section 8 apartment compared to FMR rates in return. In short, there is little incentive for existing landlords to build more units.
- *Public Housing is congressionally limited from building new units*, to the level of apartments available in 1997 under the Faircloth Limit. Therefore, adding public housing units is not a political reality even if funding were available.
- *Working single adult (without children) households are unlikely to get a housing subsidy* even if on the wait-lists and lower-income, because preference is given to families, elderly, disabled and homeless. No one would argue with the decision to house the most vulnerable first. However, this is one of the ugly under-bellies of the affordable housing crisis. Need exceeds supply to such a degree that filling the small number of new rental openings is essentially ER triage. Those working, single, adults who are just barely scraping by – are unlikely to get help through existing subsidized rental programs.

Solution B: Modular small homes; small communities for first time buyers

Pros

Sold at cost, this pilot would have been affordable for 80% AMI before the FED started raising interest rates this summer. With interest rate increases (and even with MaineHousing's interest rate buy-down) it is currently affordable for 100-200% AMI – or two full-time minimum-wage workers, depending on the size of their down-payments. This pilot further frees-up 4 lower cost apartments in Rumford potentially and/or attracts additional workers for the hundreds of unfilled jobs in Rumford on Indeed.

Cons

Four primary issues exist:

- I. *Is it repeatable?* The modular construction company in Maine (KBS) would make this specs/pricing available to any developer in the state. And 4 is a small enough number as to both (a.) minimize NIMBYism (together with providing parking and ownership model) and (b.) be able to fit on a standard city lot. With a faster turnaround vs. stick built – developers could earn a good annual return. However, each city and each site are different. Service providers involved in the construction of new housing (developer, modular dealer, general contractor, subs, lawyers, accountants, bankers, engineers, architects, realtors) are used to getting a piece of the development pie. The bigger the project, the bigger the \$ slice of pie. Small and low-cost development is a bit of an anathema. Incentives are currently lacking for quick, and low-cost, development.
- II. *Not everyone is "built" to be a homeowner.* Numerous studies have shown that hesitancy to be a homeowner, which is often accompanying bad credit scores, are detrimental to long term wealth creation for a household. To bridge the gap, HUD's Family Self Sufficiency (FSS) program was developed to help with financial literacy and preparedness for home ownership through an escrow savings account.
- III. *With a need of 30-40,000 homes – 4 townhouses at a time seems a drop in the bucket.* However, time and again large developments proposed in Maine have been fiercely contested in local municipalities. Sometimes as few as 32 new apartments have faced fierce community push-back (Madison) requiring costly redesign and elevated costs as the number of units approved shrank. My hunch is that existing residents object to the number of units – not the density per se – as they fear congestion from 1-2 cars per new household and additional demands on shared town resources. Many small developments spread across the state, seems more viable than a smaller number of larger developments.
- IV. *It's not appropriate for families who need more bedrooms.* The small size is appropriate given the small household size in Maine (1.9 people per renting household in Maine). There are a high number of single-adult households in Maine. However, the Rumford modular 1 and 2-bedroom townhouse proposal is only a partial solution – it is not going to solve the need for every type of household (large families; those who need ongoing support services, those with lower AMI etc.). By preparing some subsidized households to become homeowners, perhaps the subsidy dollars could be spread to help new households (those on the wait list) who have little hope of ever getting called for subsidized housing currently.

Solution C – Streamline, Reduce and Cost-shift “Soft Costs”

Pros

Making it less risky, and costly, for developers to propose new construction is an important key to getting out of our current crisis. Reducing political risk (community review/input; NIMBYism; planning board/zoning) is not a 1-shot solution but is iterative and multi-pronged. Having entitled land (buildable land in growth zones) and pre-approved building types/plans – would go a long way towards reducing costly delays and redesign costs. It would also remove some explicit line-item soft costs that are substantial contributors to the overall development costs, allowing smaller developments to be proposed.

Cons

Municipal motivation may be lacking. For municipal town officers, volunteers, and employees (citizen and staff planning boards, selectmen, councilors etc.), who are already housed, it is hard to imagine the crisis warrants doing work ahead of time that they haven’t had to do in the past. Considering theoretical building plans and taking on additional environmental costs – may seem alien and unnecessary. Especially for infill sites, where the town had municipal oversight of the lot previously and therefore, could/should have prior knowledge of what environmental hazards the lot presents, it may be hard to shift the mindset that “the developer pays” ... i.e., the household pays. Nothing succeeds like success, though. A pilot effort will likely be needed to show the impact these business model changes could have. In fact, Rumford has done several things to expedite the review process which have had a direct cost reduction impact on the Rumford Pilot. Overall, the ability to implement open-sourced and pre-approved building types and plans has a higher probability of being voluntarily adopted, than the likelihood that municipalities will accept more of the environmental review costs without some additional motivation from the state of Maine.

Solution D – Re-engage Maine’s educational institutions’ focus on building Maine’s building workforce

Pros:

Building a house is a complex undertaking. On average there are 24 subcontractors per home with a median of 22 (source NAHB). Increasing educators’ understanding of the types of careers; pay ranges; skills required and training needed is an important first step. Perhaps Maine could “encourage” leadership at CTE, adult education, community college system and University of Maine systems to put their heads together about how to integrate and update the curriculums and increase the number of seats. Relying on private companies, who are already under-staffed, to train future workers is resulting in too few workers.

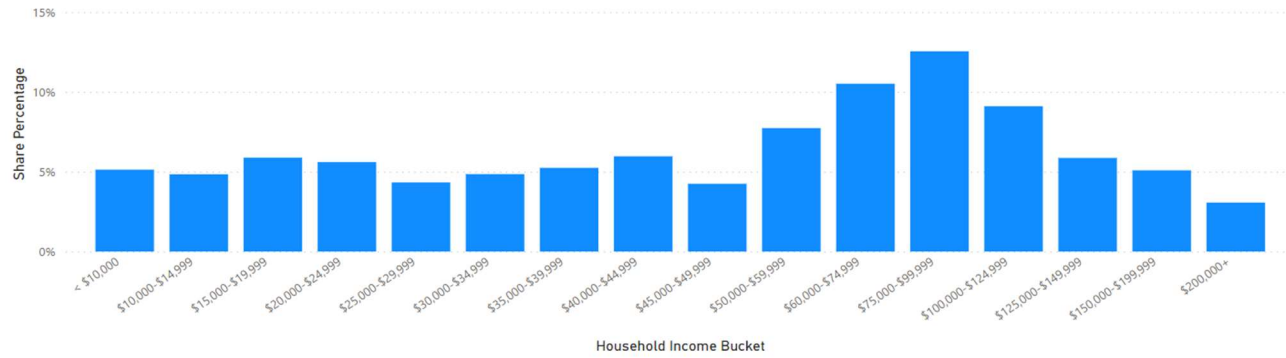
Cons:

No one knows better than a company, what they need their workers to know. Shifting responsibility for pre-apprenticeship workforce development **may still result in too few candidates** with too few placements unless companies are directly involved.

For additional information, I can be reached at Sarah.J.Sturtevant@Maine.edu or sjsturt@gmail.com

| Program | Color | Example |
|----------------|-----------------|---|
| S8 Voucher | Yellow |  S8 Voucher |
| S8 | Peach |  S8 |
| 202 | Blue |  202 |
| AHS | Purple/Blue |  AHS |
| Rrhab | Light Blue |  Rrhab |
| PRAC/811 | Dark Grey |  PRAC/811 |
| LIHTC | Purple/Pink |  LIHTC |
| HFDA/8 NC | Orange/Brown |  HFDA/8 NC |
| LMSA | Dark Purple |  LMSA |
| NL | Green |  NL |
| Other | Grey/Green |  Other |
| PBCA | Dark Turquoise |  PBCA |
| PD/8 Existing | Pink/Peach |  PD/8 Existing |
| PRAC/202 | Light Turquoise |  PRAC/202 |
| Public Housing | Light Red/Pink |  Public H... |
| HFDA/8 SR | Purple |  HFDA/8 SR |

Distribution of Household Income For Androscoggin County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|--------------|--------------------|-----------------------------|---------------|------------------------------|
| Androscoggin | FMR | \$1,060 | \$42,400* | 42% |
| | Median Sales Price | \$261,766 | \$104,706** | 76.9% |
| | New Construction | \$400,000 | \$160,000 | 91% |

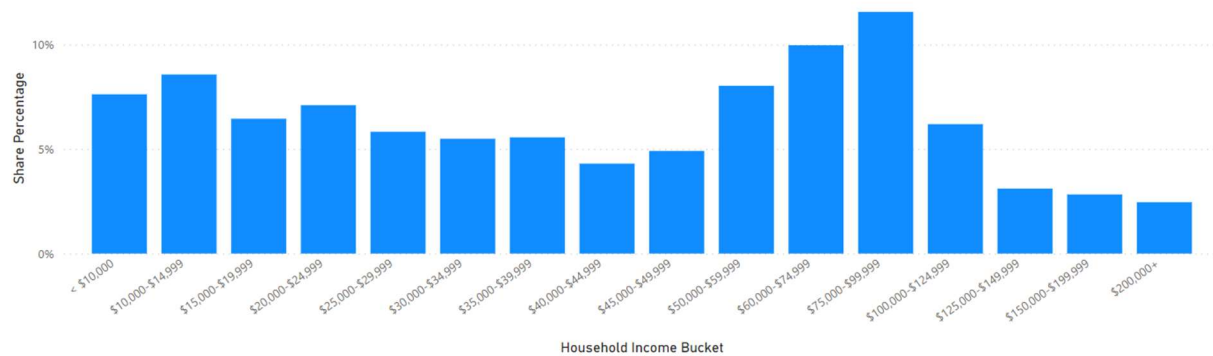
* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

**** The entire income cohort is used in summing % of households who cannot afford a type of housing. Without knowing the distribution of incomes within each band, including the entire cohort's weight seemed the most conservative for FMR and Median House Price. For Stick-built new construction (which needs a \$160,000 income) we have included the entire \$150,000-199,999 income band as being able to afford that type of housing

Distribution of Household Income For Aroostook County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|-----------|--------------------|-----------------------------|---------------|------------------------------|
| Aroostook | FMR | \$841 | \$33,640* | 41% |
| | Median Sales Price | \$150,065 | \$60,026** | 64% |
| | New Construction | \$400,000 | \$160,000 | 95% |

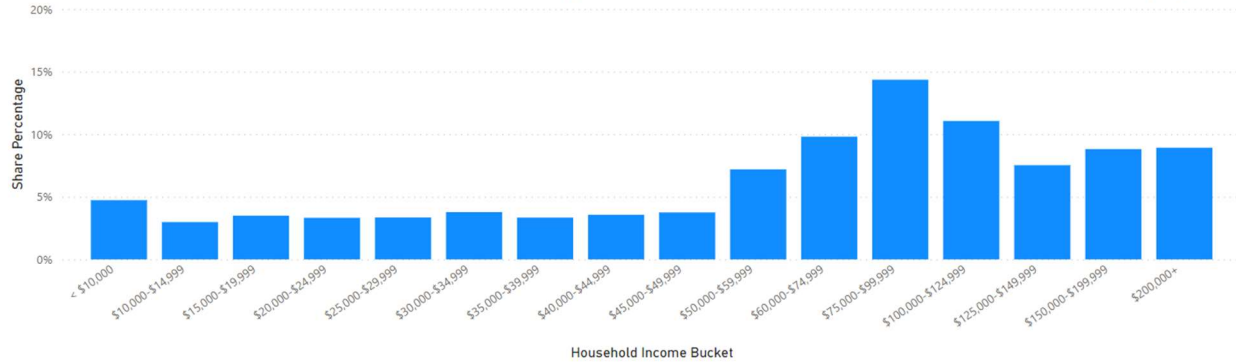
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** (Housing Cost/2.5)

*** (New Construction/2.5)

**** The entire income cohort is used in summing % of households who cannot afford a type of housing. Without knowing the distribution of incomes within each band, including the entire cohort's weight seemed the most conservative for FMR and Median House Price. For Stick-built new construction (which needs a \$160,000 income) we have included the entire \$150,000-199,999 income band as being able to afford that type of housing

Distribution of Household Income For Cumberland County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|------------|--------------------|-----------------------------|---------------|------------------------------|
| Cumberland | FMR | \$1,478 | \$59,120* | 39.5% |
| | Median Sales Price | \$455,200 | \$182,080** | 82% |
| | New Construction | \$400,000 | \$160,000 | 82% |

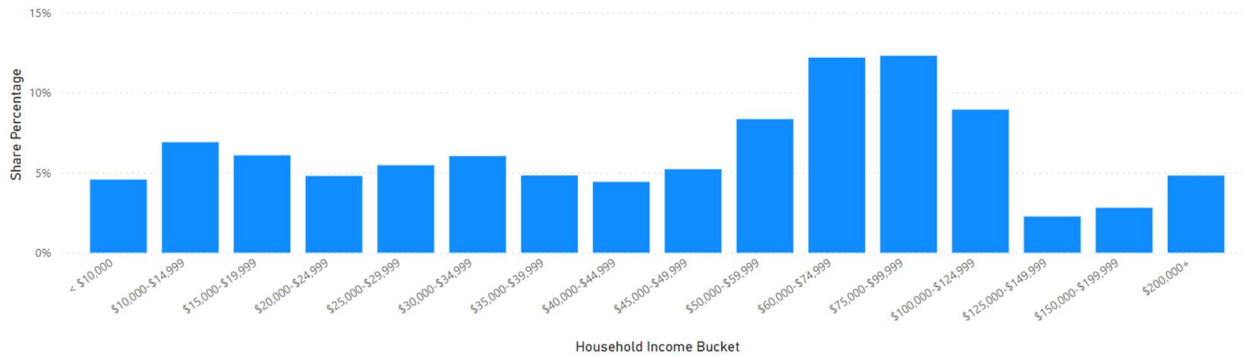
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* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

Distribution of Household Income For Franklin County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|----------|--------------------|-----------------------------|---------------|------------------------------|
| Franklin | FMR | \$939 | \$37,560* | 38.7% |
| | Median Sales Price | \$185,168 | \$74,067** | 68.9% |
| | New Construction | \$400,000 | \$160,000 | 92% |

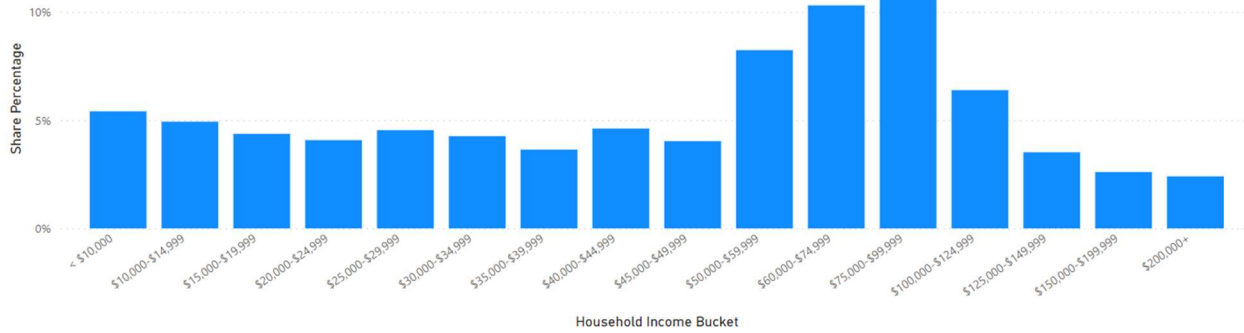
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* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

Distribution of Household Income For Hancock County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|---------|--------------------|-----------------------------|---------------|------------------------------|
| Hancock | FMR | \$1,036 | \$41,440* | 35.9% |
| | Median Sales Price | \$275,883 | \$110,353** | 85% |
| | New Construction | \$400,000 | \$160,000 | 95% |

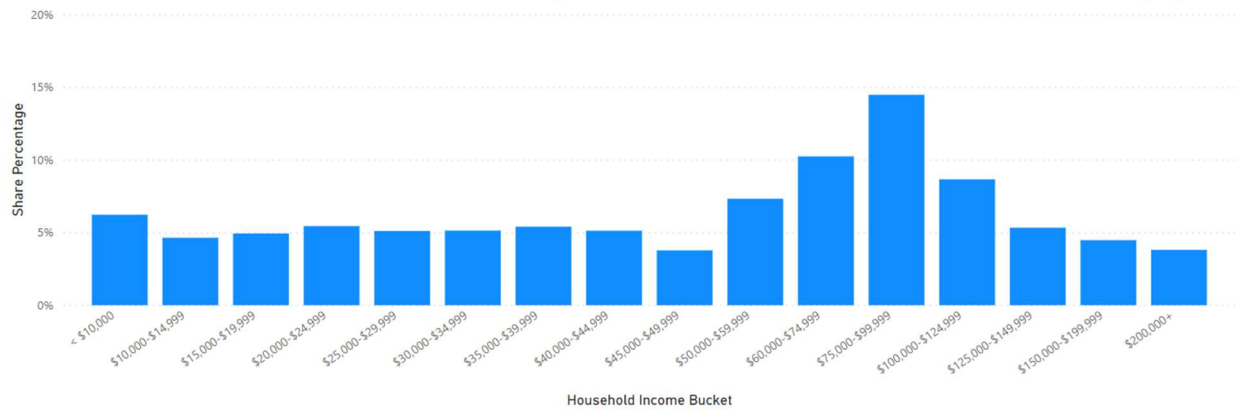
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* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

Distribution of Household Income For Kennebec County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|----------|--------------------|-----------------------------|---------------|------------------------------|
| Kennebec | FMR | \$971 | \$38,840* | 36.9% |
| | Median Sales Price | \$228,354 | \$91,342** | 77.8% |
| | New Construction | \$400,000 | \$160,000 | 92% |

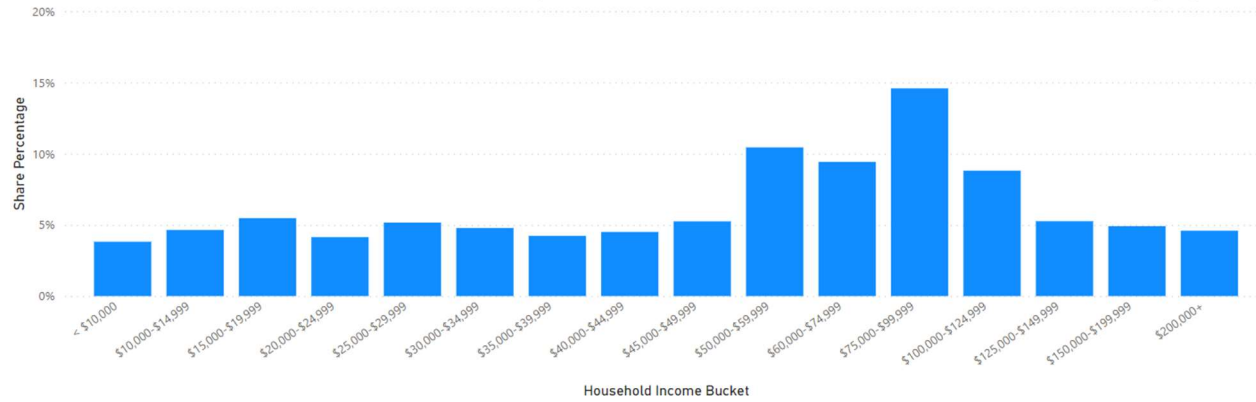
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* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

Distribution of Household Income For Knox County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost/Monthly Rent | Income Needed | % of those who cannot afford |
|--------|--------------------|---------------------------|---------------|------------------------------|
| Knox | FMR | \$1,103 | \$44,120* | 36.7% |
| | Median Sales Price | \$270,695 | \$108,278** | 85.3% |
| | New Construction | \$400,000 | \$160,000 | 90.5 |

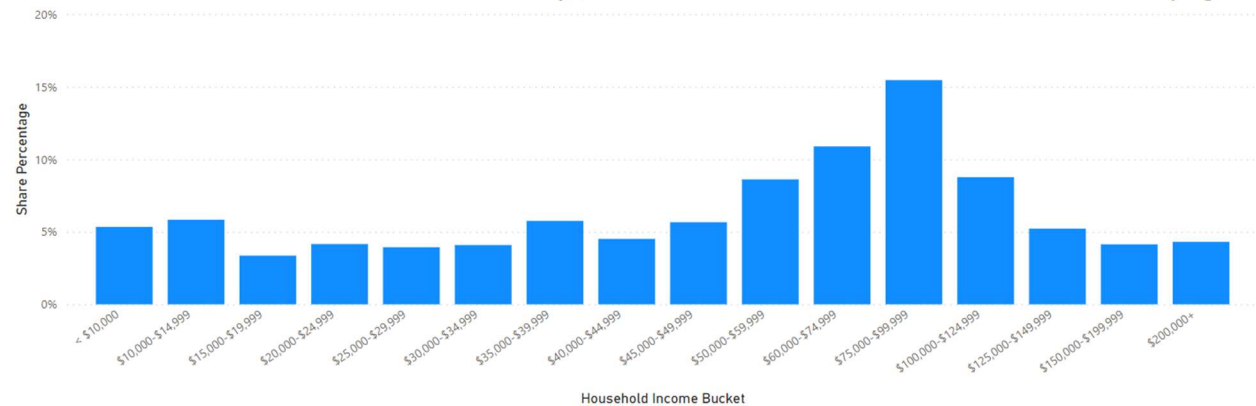
* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

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Distribution of Household Income For Lincoln County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|---------|--------------------|-----------------------------|---------------|------------------------------|
| Lincoln | FMR | \$1,165 | \$46,600* | 42.6% |
| | Median Sales Price | \$281,432 | \$112,573** | 86% |
| | New Construction | \$400,000 | \$160,000 | 91.6% |

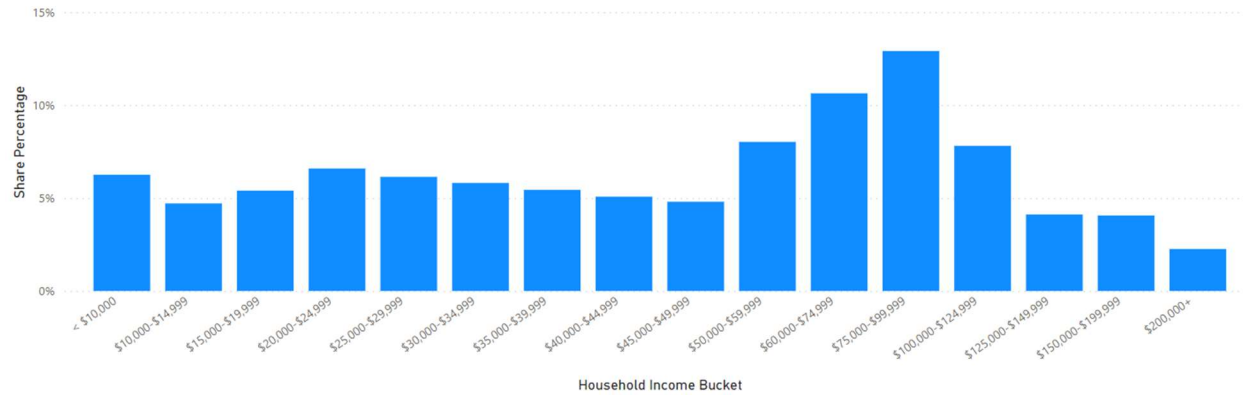
* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

**** The entire income cohort is used in summing % of households who cannot afford a type of housing. Without knowing the distribution of incomes within each band, including the entire cohort's weight seemed the most conservative for FMR and Median House Price. For Stick-built new construction (which needs a \$160,000 income) we have included the entire \$150,000-199,999 income band as being able to afford that type of housing

Distribution of Household Income For Oxford County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|--------|--------------------|-----------------------------|---------------|------------------------------|
| Oxford | FMR | \$966 | \$38,640* | 40.3% |
| | Median Sales Price | \$190,114 | \$76,046** | 81.8% |
| | New Construction | \$400,000 | \$160,000 | 93% |

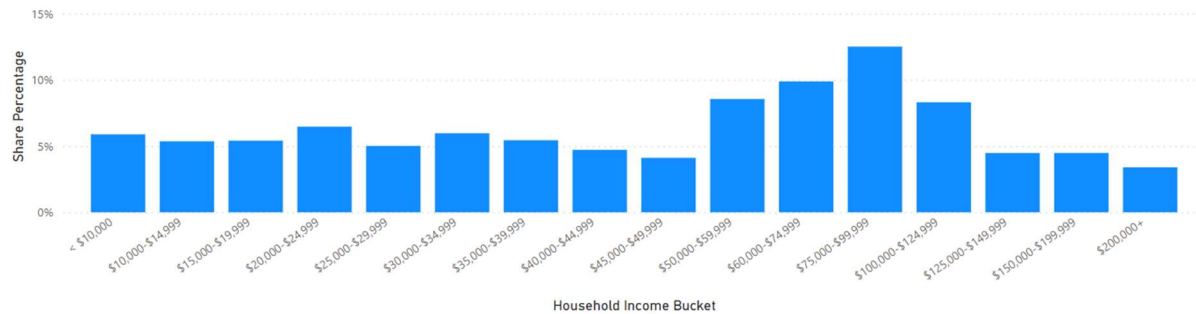
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*** (New Construction/2.5)

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Distribution of Household Income For Penobscot County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|-----------|--------------------|-----------------------------|---------------|------------------------------|
| Penobscot | FMR | \$983 | \$39,320* | 39.5% |
| | Median Sales Price | \$214,816 | \$85,296** | 79% |
| | New Construction | \$400,000 | \$160,000*** | 92% |

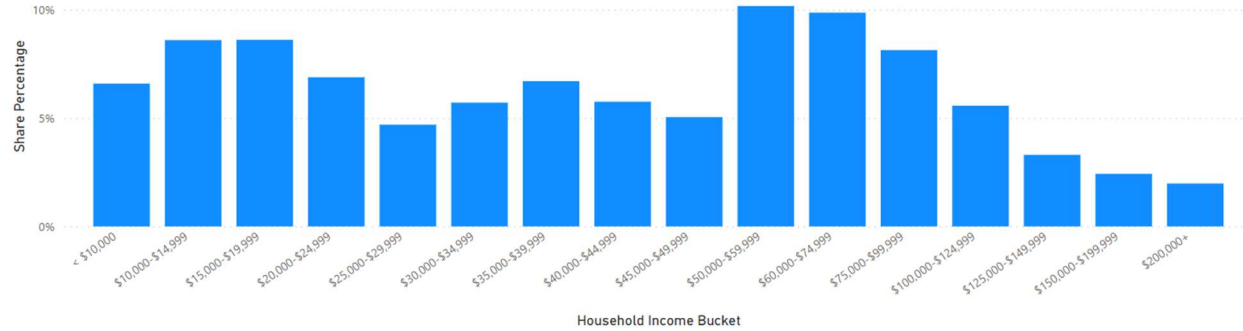
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** (Housing Cost/2.5)

*** (New Construction/2.5)

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Distribution of Household Income For Piscataquis County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|-------------|--------------------|-----------------------------|---------------|------------------------------|
| Piscataquis | FMR | \$860 | \$34,400* | 41.1% |
| | Median Sales Price | \$144,516 | \$57,806** | 68.8% |
| | New Construction | \$400,000 | \$160,000 | 95.6% |

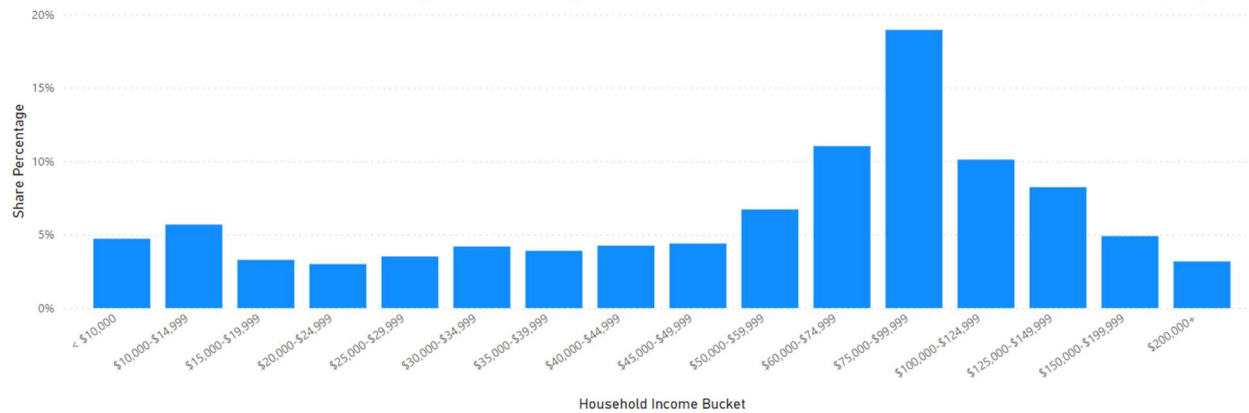
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* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

Distribution of Household Income For Sagadahoc County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|-----------|--------------------|-----------------------------|---------------|------------------------------|
| Sagadahoc | FMR | \$1,236 | \$49,440* | 36.9% |
| | Median Sales Price | \$277,704 | \$111,082** | 73.6% |
| | New Construction | \$400,000 | \$160,000 | 92% |

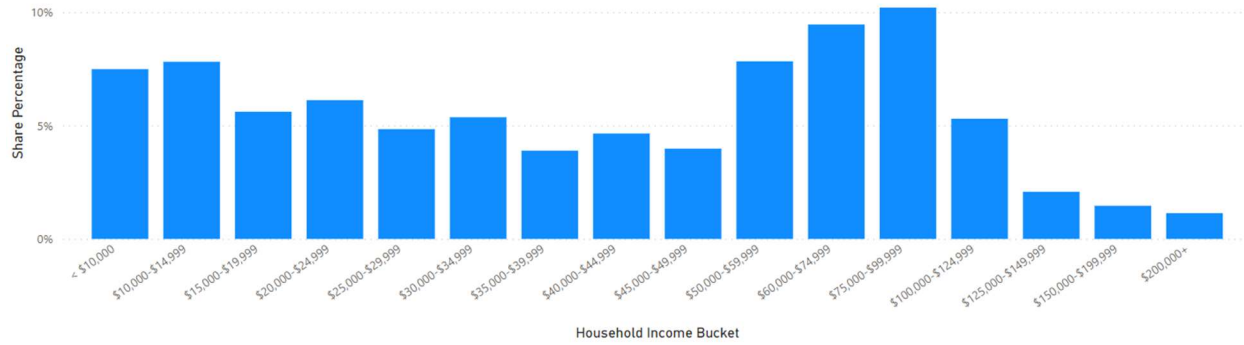
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* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

Distribution of Household Income For Somerset County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|----------|--------------------|-----------------------------|---------------|------------------------------|
| Somerset | FMR | \$920 | \$36,800* | 41.13% |
| | Median Sales Price | \$149,823 | \$59,929** | 70.4% |
| | New Construction | \$400,000 | \$160,000 | 97.4% |

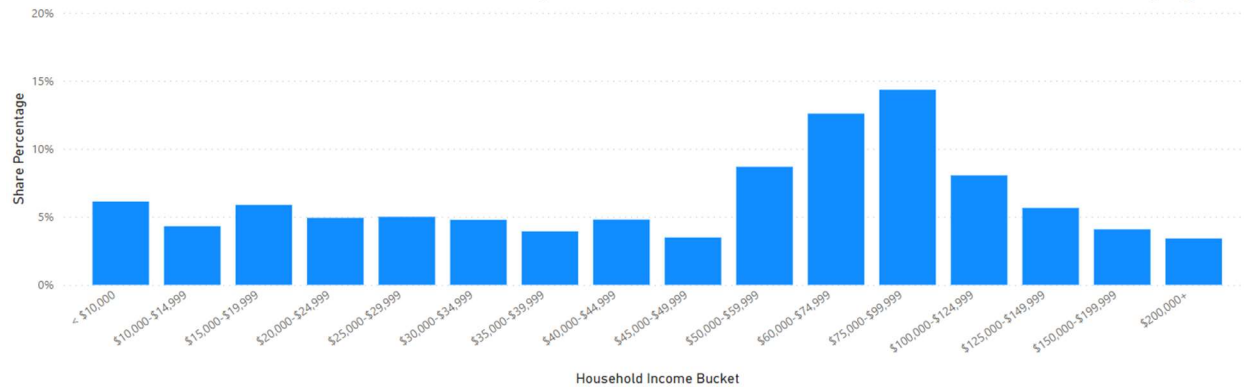
**** The entire income cohort is used in summing % of households who cannot afford a type of housing. Without knowing the distribution of incomes within each band, including the entire cohort's weight seemed the most conservative for FMR and Median House Price. For Stick-built new construction (which needs a \$160,000 income) we have included the entire \$150,000-199,999 income band as being able to afford that type of housing

* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

Distribution of Household Income For Waldo County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|--------|--------------------|-----------------------------|---------------|------------------------------|
| Waldo | FMR | \$1,142 | \$45,680* | 43.2% |
| | Median Sales Price | \$221,719 | \$88,688** | 78.8% |
| | New Construction | \$400,000 | \$160,000 | 92.5% |

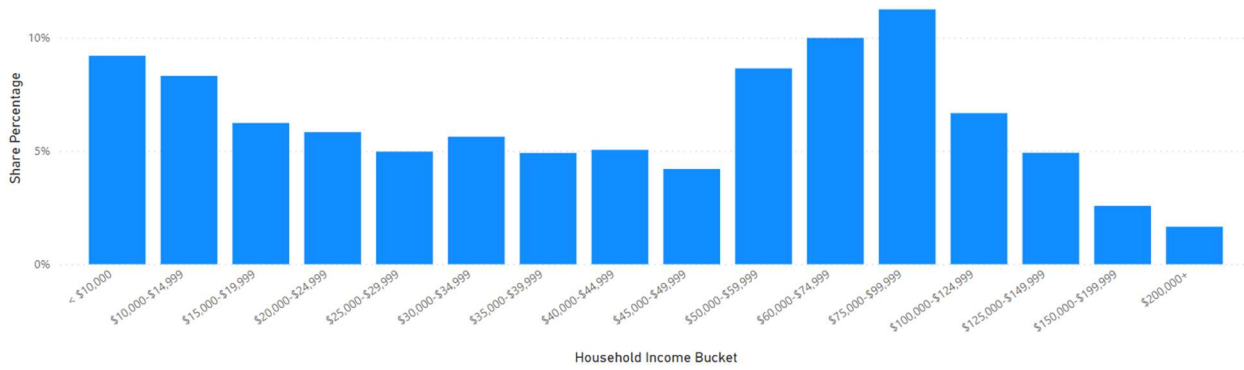
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* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

Distribution of Household Income For Washington County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|------------|--------------------|-----------------------------|---------------|------------------------------|
| Washington | FMR | \$889 | \$35,560* | 45% |
| | Median Sales Price | \$142,706 | \$57,082** | 63% |
| | New Construction | \$400,000 | \$160,000*** | 95.8% |

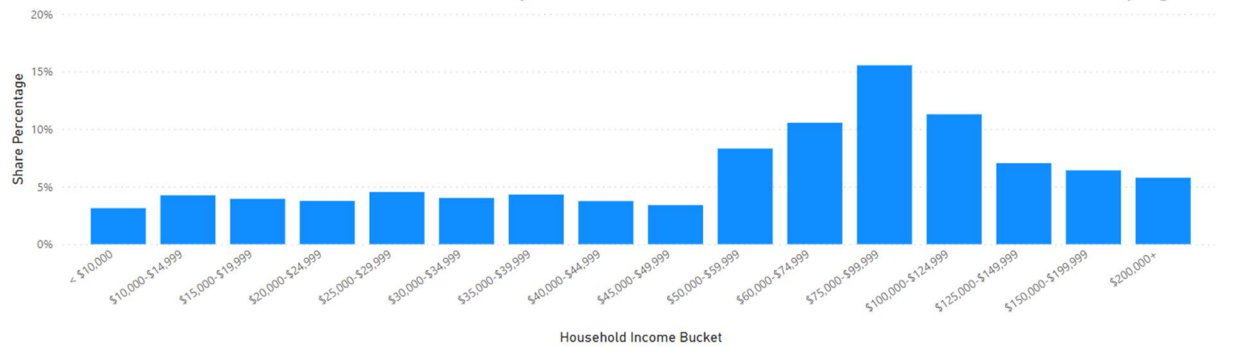
* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

**** The entire income cohort is used in summing % of households who cannot afford a type of housing. Without knowing the distribution of incomes within each band, including the entire cohort's weight seemed the most conservative for FMR and Median House Price. For Stick-built new construction (which needs a \$160,000 income) we have included the entire \$150,000-199,999 income band as being able to afford that type of housing

Distribution of Household Income For York County (Source ACS 2020 - Note ACS Uses Uneven Income Groupings)



| County | Housing Type | Housing Cost & Monthly Rent | Income Needed | % of those who cannot afford |
|--------|--------------------|-----------------------------|---------------|------------------------------|
| York | FMR | \$1,372 | \$54,880* | 43.4% |
| | Median Sales Price | \$391,240 | \$156,496** | 94.2% |
| | New Construction | \$400,000 | \$160,000*** | 94.2% |

* (FMR/0.3) x 12

** (Housing Cost/2.5)

*** (New Construction/2.5)

**** The entire income cohort is used in summing % of households who cannot afford a type of housing. Without knowing the distribution of incomes within each band, including the entire cohort's weight seemed the most conservative for FMR and Median House Price. For Stick-built new construction (which needs a \$160,000 income) we have included the entire \$150,000-199,999 income band as being able to afford that type of housing

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