To: Arlington Redevelopment Board
From: Stephen Revilak
Date: Feb 21, 2019
Subject: The cost of multifamily housing

Hello Arlington Redevelopment Board,

During the last few weeks, I've heard the question "how will the proposed multi-family zoning articles affect affordability?" come up several times. This memorandum grew out of my attempt to answer that question, based on the town's 2018 property assessments. I wanted to examine the unit cost distribution within housing types (e.g., what's the cost distribution of single-family homes in town), the unit cost differences among housing types (e.g., single-family vs two-family vs apartments), and the unit cost distribution across the town as a whole. I'm sharing these findings with the board in the hope of fostering a better-informed discussion about the cost of housing in Arlington.

I'll present my observations in two sections: the first contains data from our 2018 property assessements; the second attempts to draw conclusions based on the first.

Assessors Data

From the assessor's data, I will focus on the following land uses:

primary land use[1]	**Description**	**#properties**	**#units**
101	Single-Family	7992	7992
102	Condominium	3662	3662
104	Two-family	2218	4436
105	Three-family	190	570
111	Apartments 4-8 units	77	354
112	Apartments 9+ units	66	2192

My goal is to examine the distribution of unit costs within each land use code, and then across the entire set of land use codes. For single-family homes and condominiums, the unit cost is equal to the total assessed value of the property. For multi-family housing, the unit cost is equal to the total assessed value divided by the number of units. For example, a two-family home assessed at $900,000 equates to two units at $450,000/each; a three-family home assessed at $900,000 equates to three units at $300,000/each.

1 The land use codes in the Assessor's data refer to MassDOR's Property Type Classification Codes. See https://www.mass.gov/files/documents/2016/08/wr/classificationcodebook.pdf for a full listing.

With that introduction, I'd like to present a series of histograms to show variation in unit cost across the low-density housing types (primary land uses 101, 102, 104, 105). The x-axis shows assessed value per unit in dollars, and the y-axis indicates the number of units within a given band. Each graph shows approximately 100 cost bands spanning a range of $0 -- $2,000,000. Histograms are accompanied by statistical summaries, showing the miminum, first quartile, median, mean, third-quartile, and maximum values.

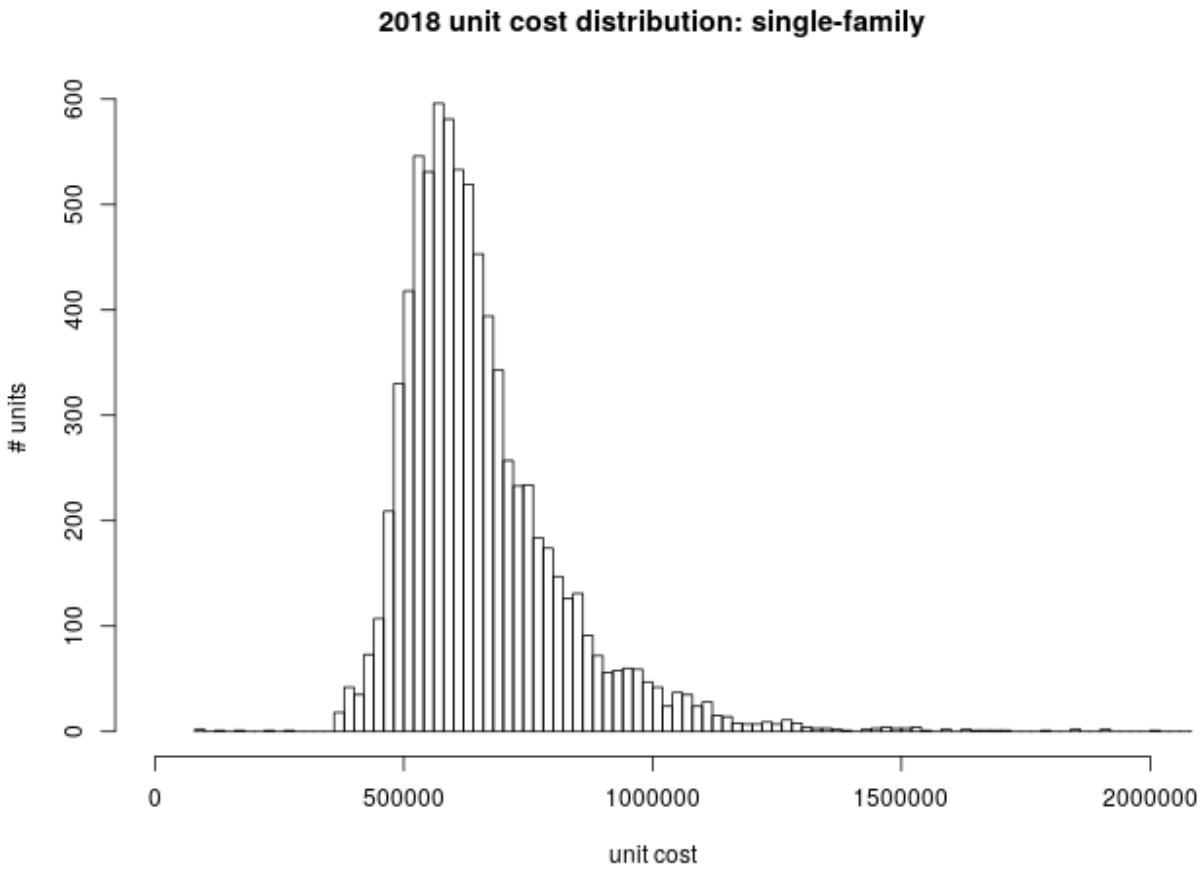

Image 1: Unit cost distribution for single-family homes

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
  85700  548700  618800  656100  720200 2701000
```

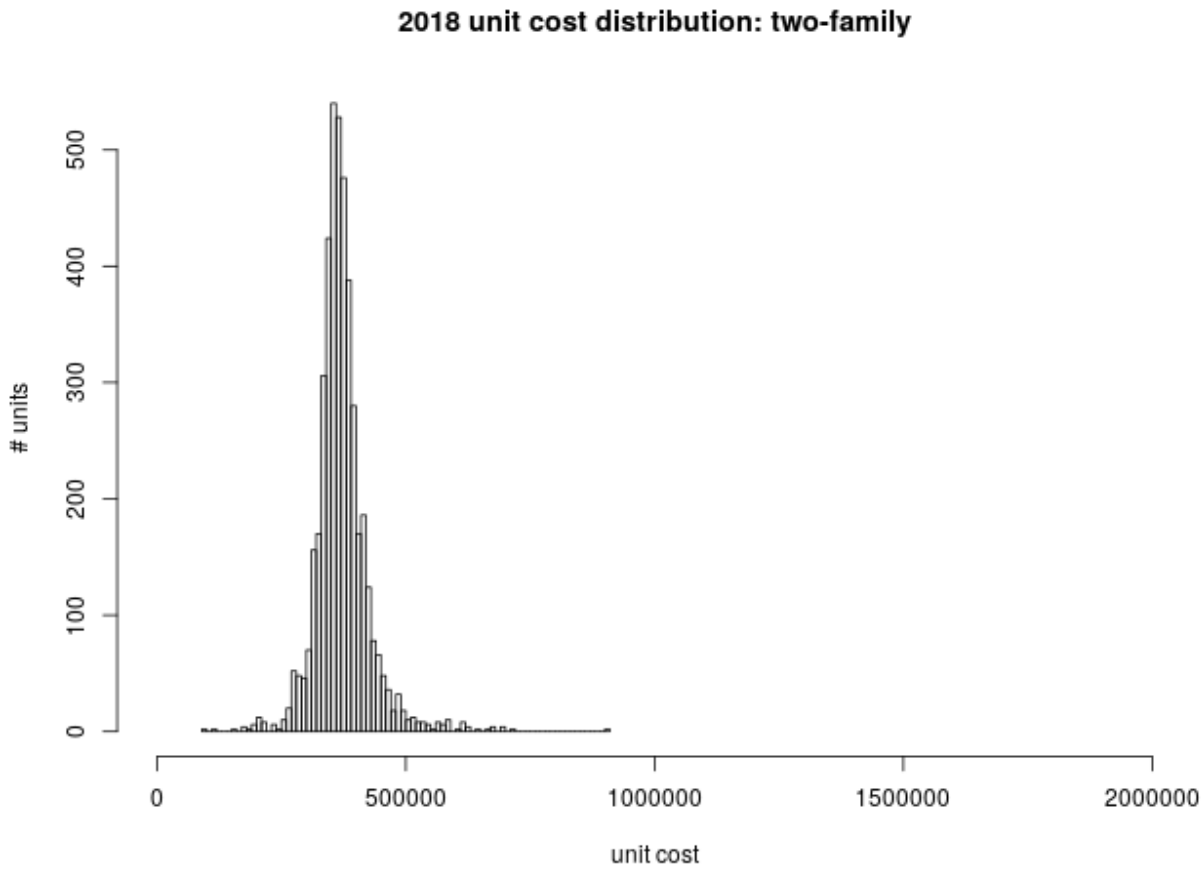

Image 2: Unit cost distribution for two-family homes

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
  99580  344600  366000  371200  391800  900900
```

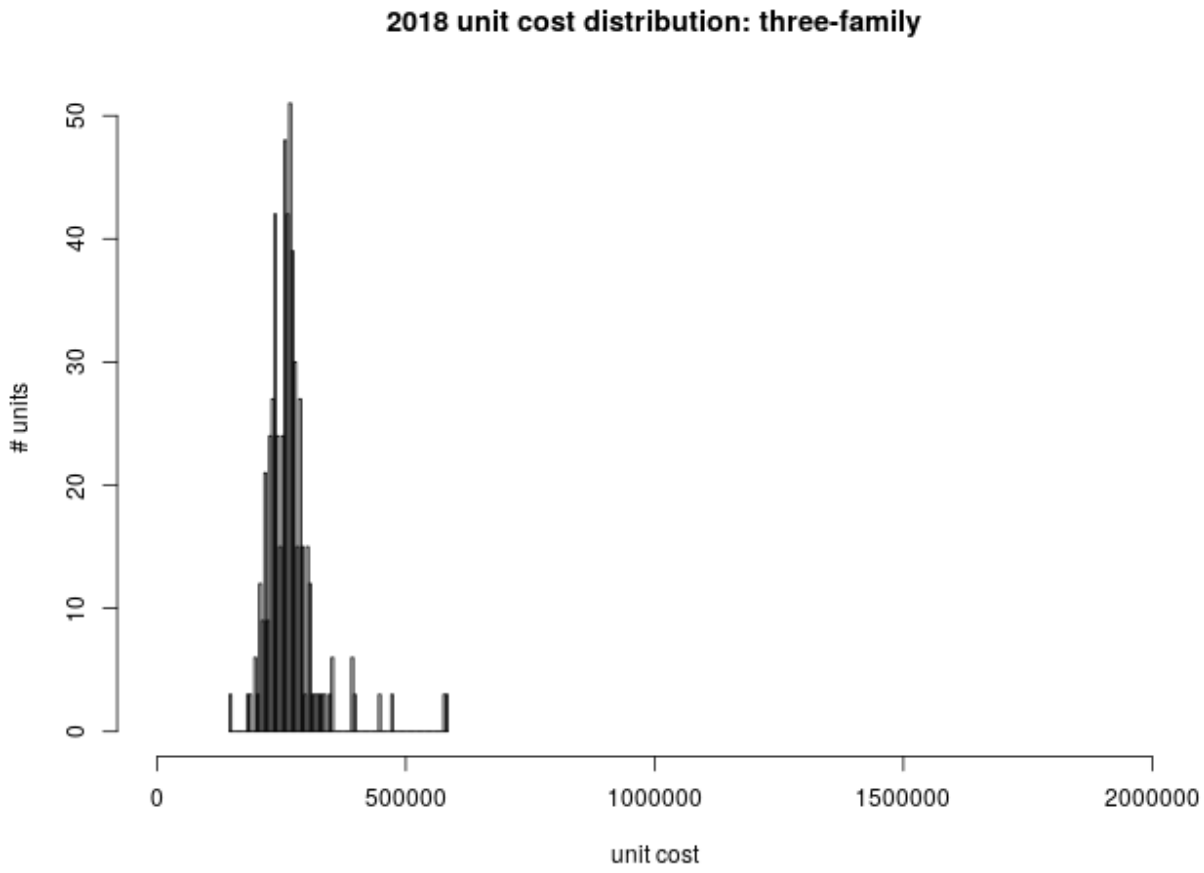

Image 3: Unit cost distribution for three-family homes

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 145200  238600  262500  266500  278100  581100
```

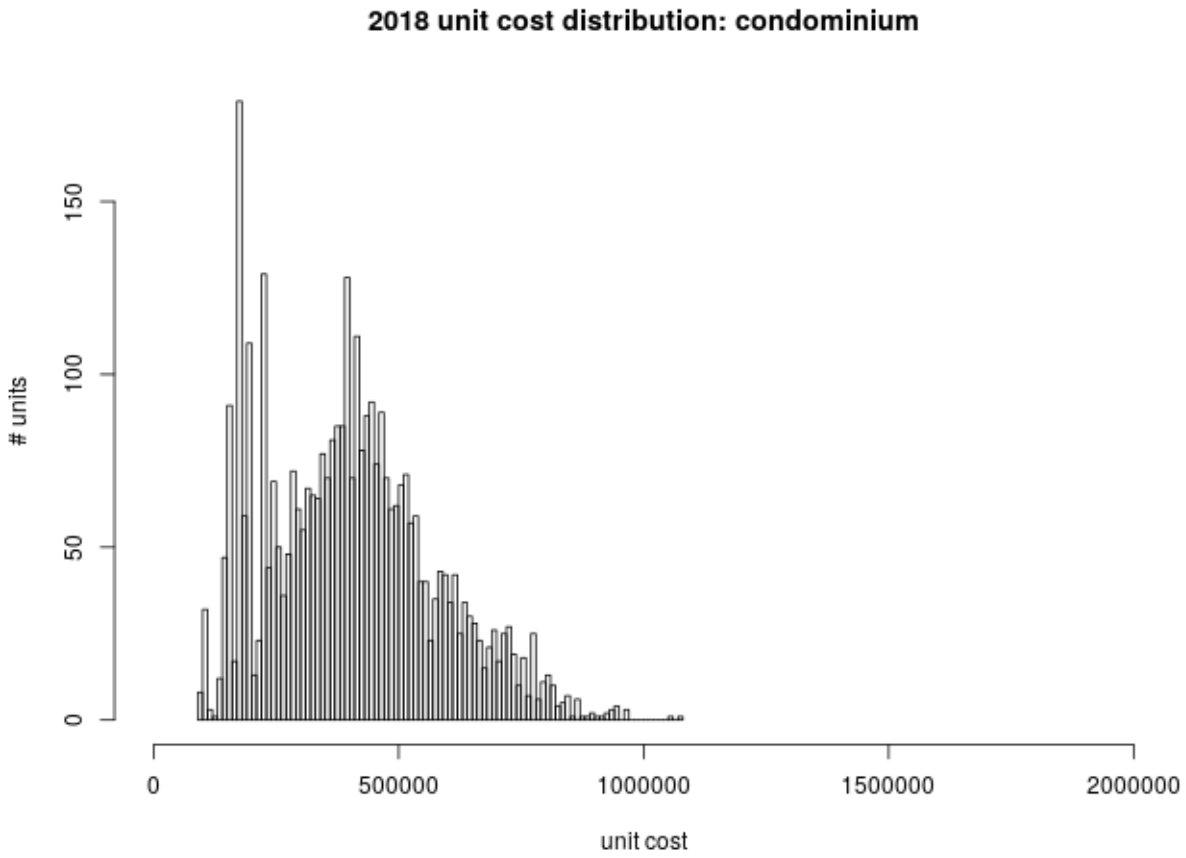

Image 4: Unit cost distribution for condominiums

```
  Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 99000  268200  395400  404400  510800 1073000
```

The next pair of histograms show unit costs for the two apartment-based primary uses: 4--8 units, and 9+ units. Note that the x-axis spans a range of $0 -- $425,000.

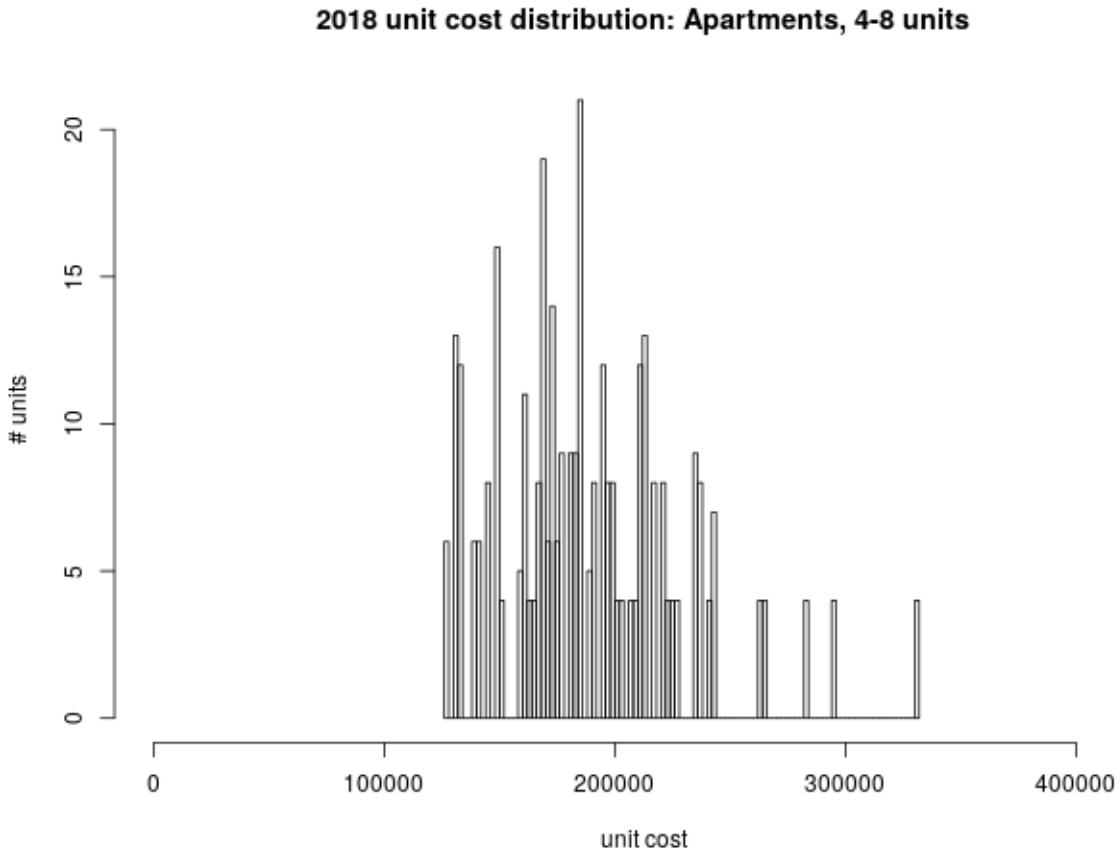

Image 5: Unit cost distribution for Apartments of 4-8 units

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 127800  162900  184100  188700  212200  330800
```

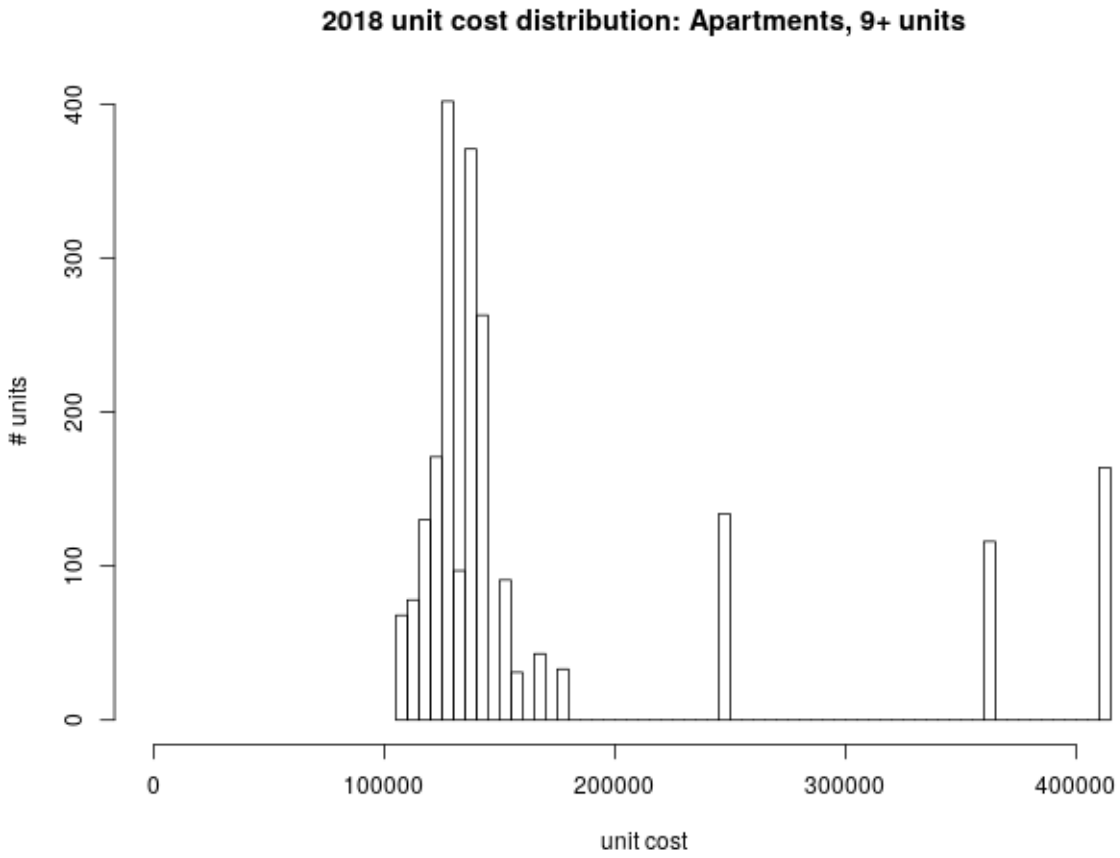

Image 6: Unit cost distribution for apartments of 9+ units

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 106900  125800  136400  173200  153200  412300
```

Finally, I'd like to show the unit cost distribution of all the aforementioned housing types in a single graph (representing nineteen-thousand and some odd units).

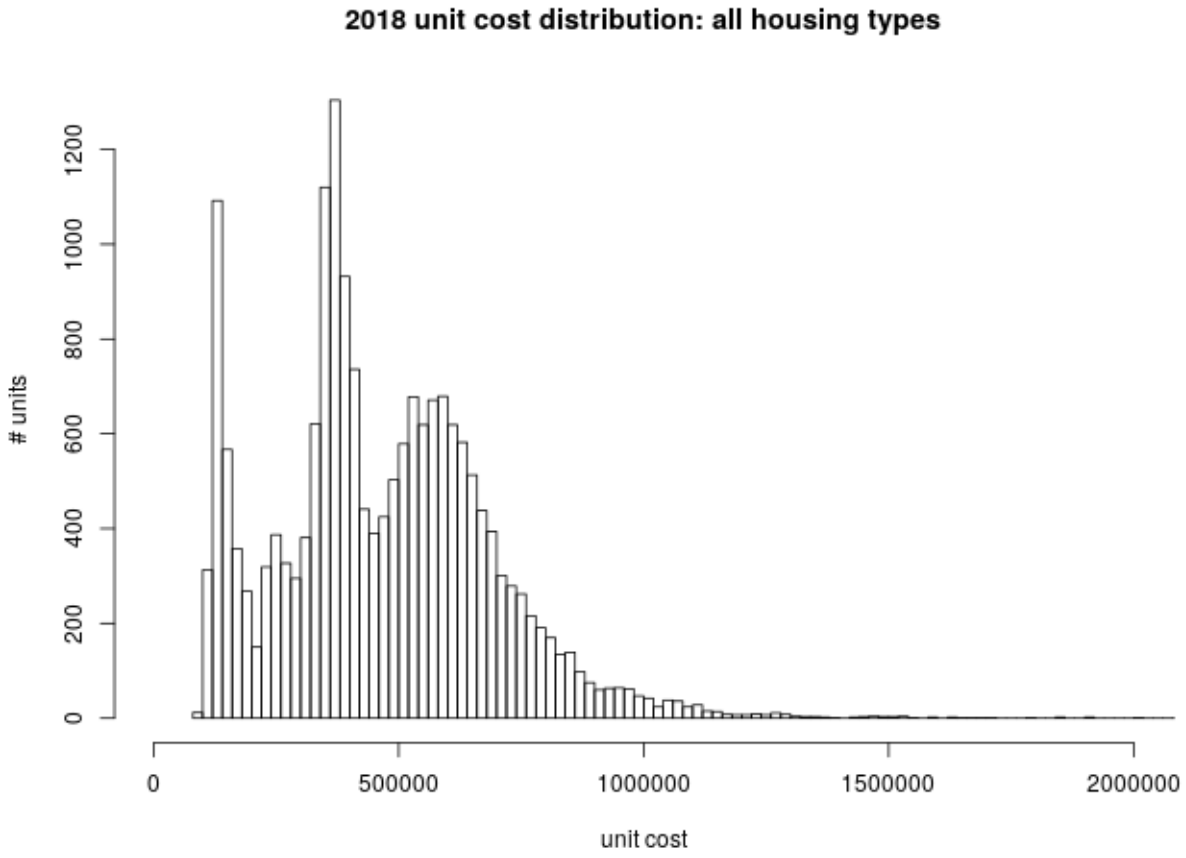

Image 7: Unit cost distribution across all housing types

```
  Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 85700  333000  438900  467000  607100 2701000
```

Discussion

Having looked at unit cost distributions for different forms of housing, we're back to the original question -- will the addition of new multi-family housing improve affordability? I'll try to answer this question in several different ways.

If the question involves the statutory defintion of affordability (i.e., non-housing burdened for a given family size at a given percentage of the area median income), then I believe the answer is likely to be yes. If the proposed changes permit a new project of six units or more, that project will trigger the inclusionary provisions of Arlington's zoning bylaw. So let's suppose that the question involves affordability in the general sense of the word (aka, "small-a affordability").

When examining the unit-cost distributions, one observes that costs go down as the number of units goes up. This is more obvious when median costs are compared directly:

Use	**median cost/unit**
Single-family	$618,800
Two-family	$366,000
Three-family	$262,500
Apartments, 4-8 units	$184,100
Apartments, 9+ units	$136,400
Condominiums[2]	$395,400
All housing types	$438,900

If we say "more affordable" in the general sense, then we have to provide a reference point for comparison: more affordable in relation to what? We could use single-family housing -- the predominant form of housing in town -- as a reference point. That's not a challenging obstacle to overcome, because single-family is our most expensive form of housing. I think one could make an argument that any form of multi-family housing will beat single-family on a cost per unit basis, if for no other reason than multi-family allows the cost of land to be amortized over several units. So let's choose a different reference point.

The next natural reference point is the median across all of the different housing types: $438,900/unit. All of the multi-family housing types have median costs below this amount.

Alternatively, we could look at the unit costs of the newer (and more expensive) apartments, rather than town-wide medians. Here, I'd like to draw attention to the top three cost bands in

2 The unit cost for condominiums is quite variable, relative to other housing types. A condominium can be part of a large building (like an converted apartment), or part of a smaller building (like a converted two-family home).

Image 6 (unit cost for apartments of nine or more units). These correspond to three relatively recent projects

- 420-440 Mass Ave. Constructed in 2000. 134 units at an average cost of $249k/unit
- Brigham Square. Constructed in 2012. 116 units at an average cost of $360k/unit
- Arlington 360 at the former Symmes site. Constructed in 2013. 164 units at an average cost of $412k/unit.

Each of these is below the town-wide median of $438,900/unit.

I should point out that my analysis has focused on the capital cost per unit. I believe this translates well to the purchase of housing, but may not translate so neatly where rental housing is concerned. The monthly cost of an owned unit tends to remain static over time (modulo changes in tax rates, insurance, and debt refinancing), while the monthly cost of a rental unit can be more variable. The capital cost for a rental unit dictates a floor on rental rates, but it does not dictate a ceiling. Nonetheless, I believe it is likely for (say) a $250,000 unit to demand a lower rent than (say) a $439,000 unit.

I conclusion, based on Arlington's assessor's data, I believe that permitting more multi-family housing is likely to produce units at a cost below our town-wide median of $438,900.

Data and computer code for this analysis are available by request to steve@srevilak.net.