

Resale Formulas

April 29, 10:30 – 12:00 | Julie Brunner





Agenda

- Intro to Resale Formulas
- Fixed Rate Formulas
- Index Based Formulas
- Appraisal Based Formulas
- Putting it all together...
Incomes

Resale Formulas

In exchange for buying a house at a **below-market price**, the seller agrees to **limit the price** at which they can sell in the future.



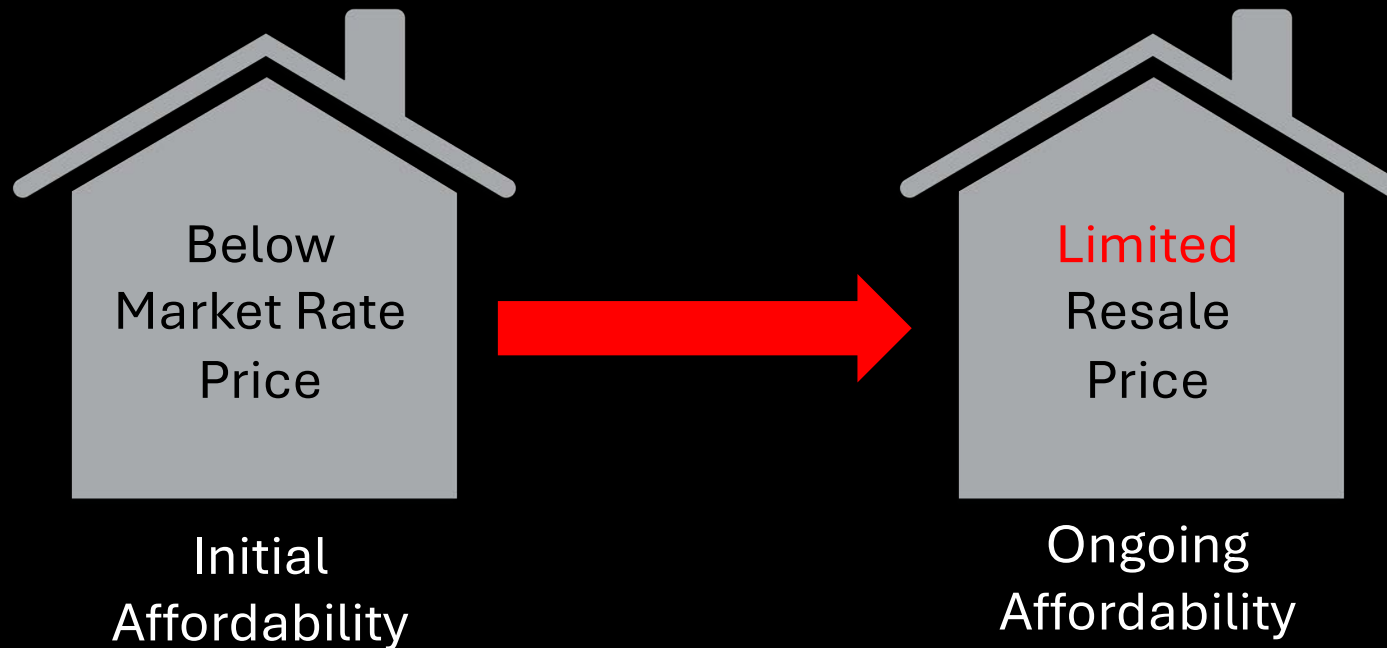
Resale Formulas

Our goals are to:

- Fairly allocated limited appreciation
- Protect the public investment
- Create a **stock of permanently affordable homes**



Resale Formulas



Balancing Interests



What are the goals?

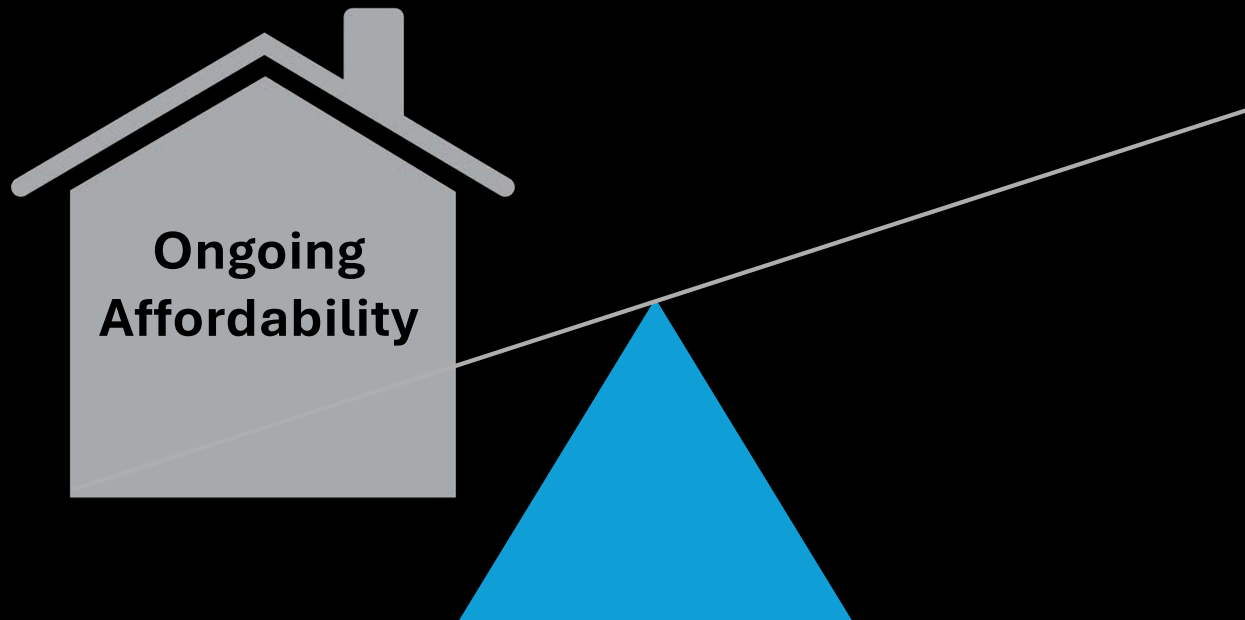
- Ongoing affordability
- Wealth creation
- Operational Goals
- Funder compliant

Resale Formulas - Introduction

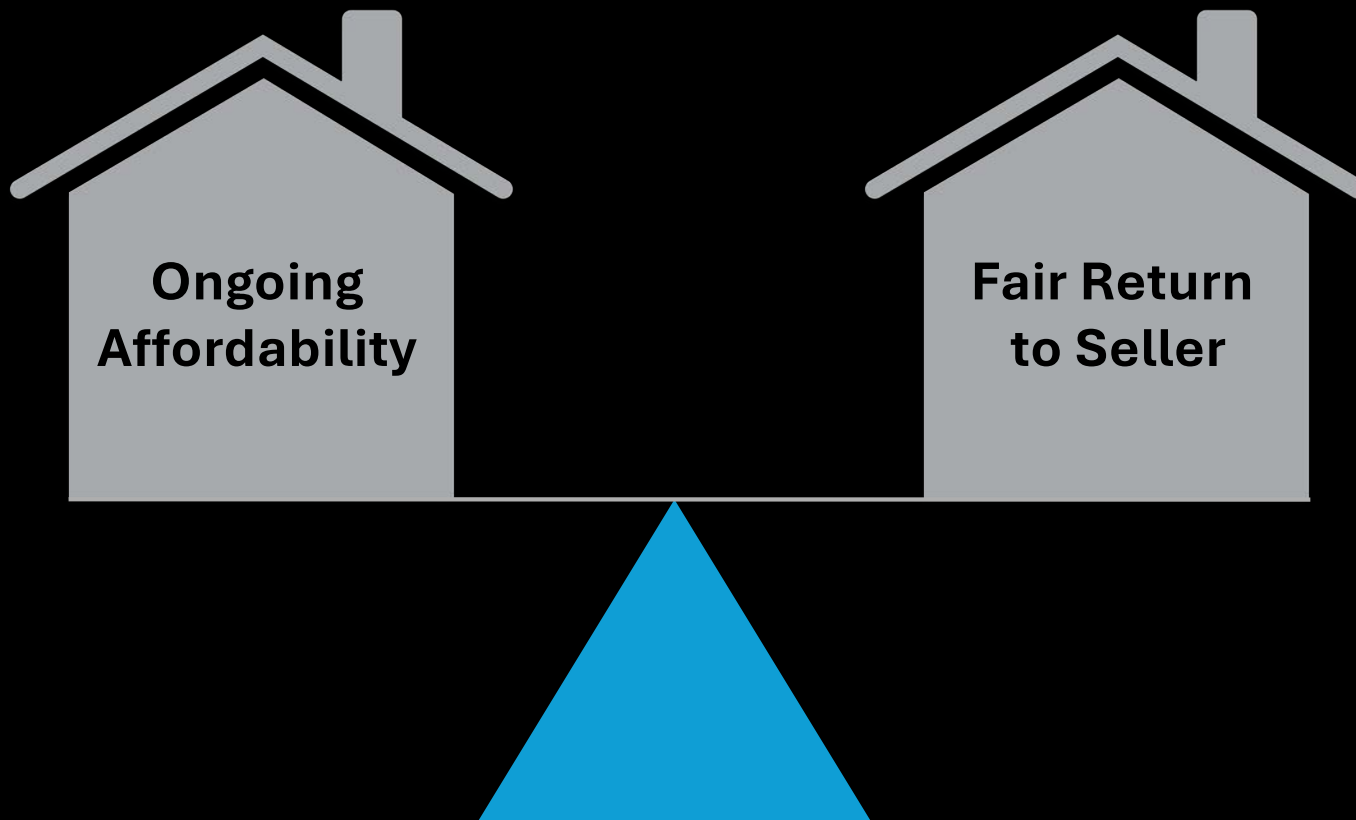


Affordability vs. Wealth Creation

Affordability vs. Wealth Creation



Affordability vs. Wealth Creation



What is fair?



Resale Formula Goals

Operational Goals

- Easy to administer
- Minimize disputes
- Easy to understand
- Easy to calculate
 - Regular communication
 - Property tax value updates



Resale Formula Goals

Funder Goals

- Guaranteed affordability
- Wealth creation
- Recapture & re-invest
- Compliance



Resale Formula Goals

Other Considerations

- Initial affordability
- Condition of homes
- Ease of administration



Resale Formulas - Introduction

What are the goals?

- Ongoing affordability
- Wealth creation
- Operational Goals
- Funder compliant



Resale Formulas - Introduction

What are the options?

- Fixed Rate Formulas
- Appraisal Based Formulas
- Index Based Formulas





Fixed Rates of Return

Resale Formulas – Fixed Rate

Fixed Rate Intro

- Base Price + Multiplier
- Multiplier = Fixed %
- Can increase w time



Resale
Formulas:
Fixed Rate

$$\begin{array}{rcl} & \text{Base Price} & \\ + & \text{Fixed \% Simple Interest} & \\ \hline = & \text{Formula Price} & \end{array}$$

Resale Formulas – Example

Sample Scenario



\$442,000= Initial Appraised Value



\$422,000 = Cost to develop



\$212,000 = Original Affordable Base Price



[Affordable to a HH of 4 @ 60% AMI]



\$210,000 = Subsidy Necessary

Resale Formulas – Fixed Rate

Sample Scenario



\$212,000 = Original Affordable Base Price



X 1.15 (1.5% Simple Int for 10 Years = 15%)



=\$243,800 = Formula Price



-\$9,000 Closing Costs



-\$177,410 Mortgage Payoff



=\$57,390 Cash to Seller

Resale Formulas – Fixed Rate

What are the Pros?

- Easy to administer
- Easy to understand
- Calculate at any time
- Slow steady increase

What are the Cons?

- No reflection of condition
- Unrelated to market



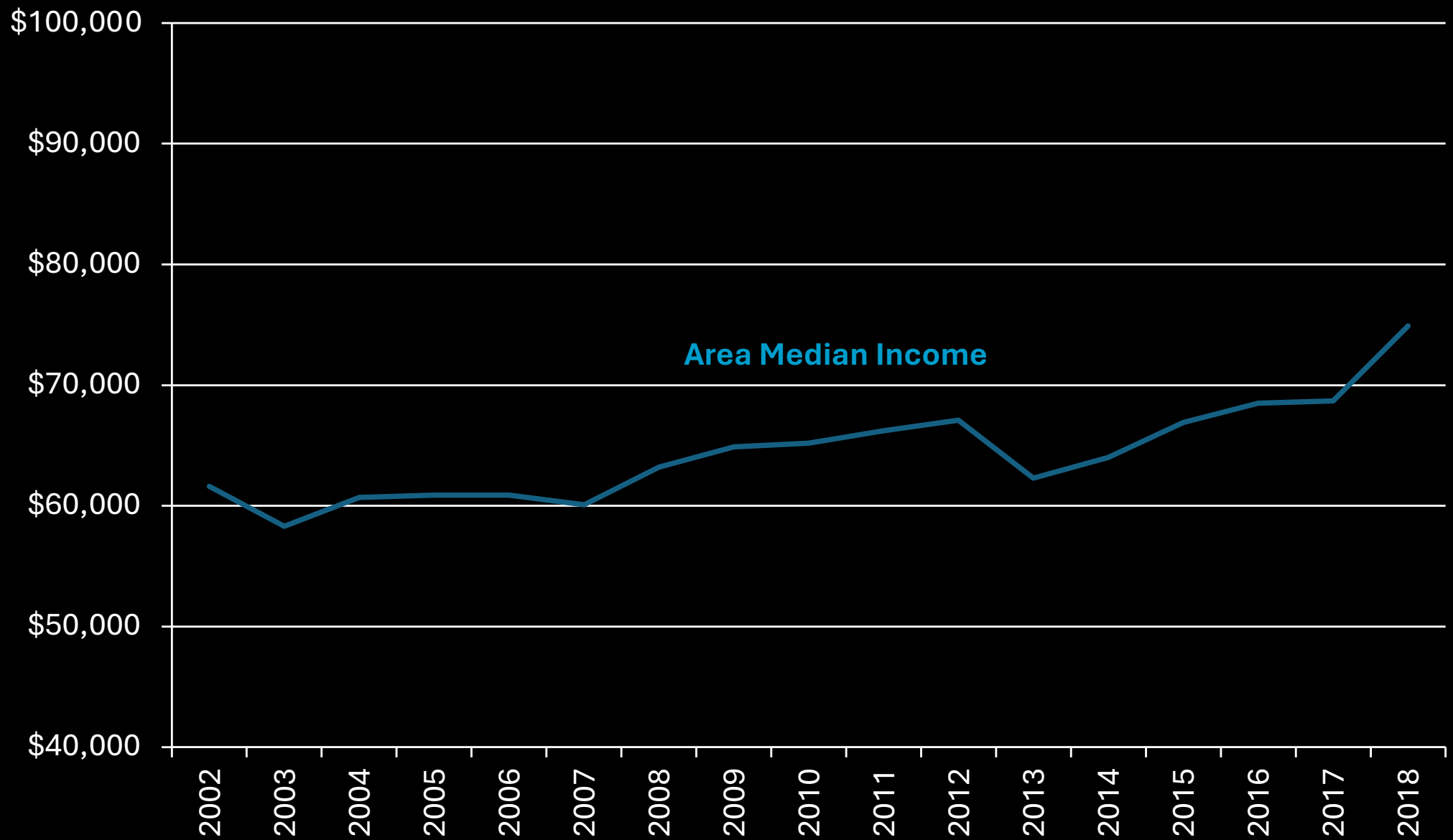
Fixed Rate – Deep Dive

What is your %?

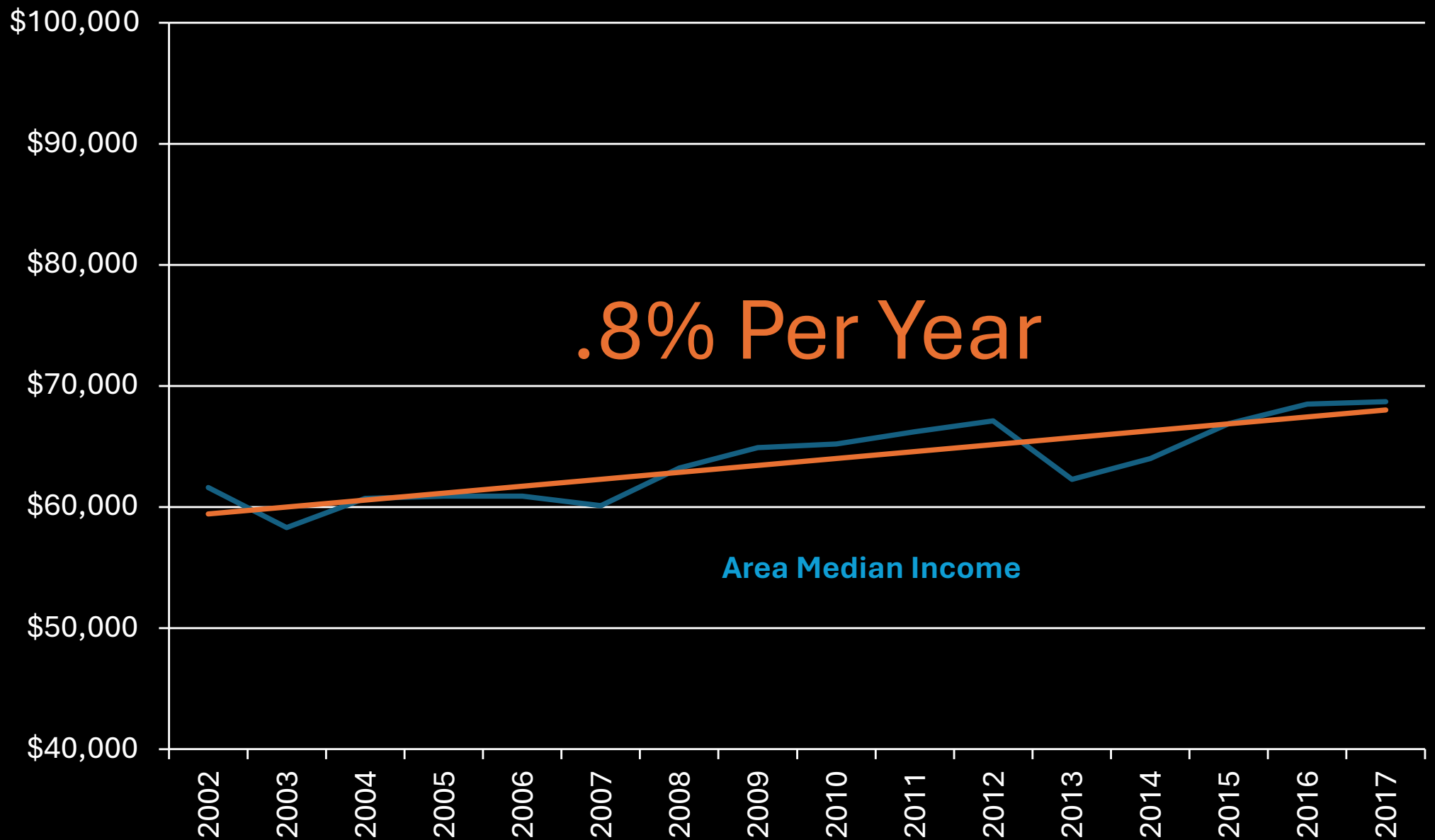
- What is happening to AMI?
- What is happening to wages?
- Simple or compound?



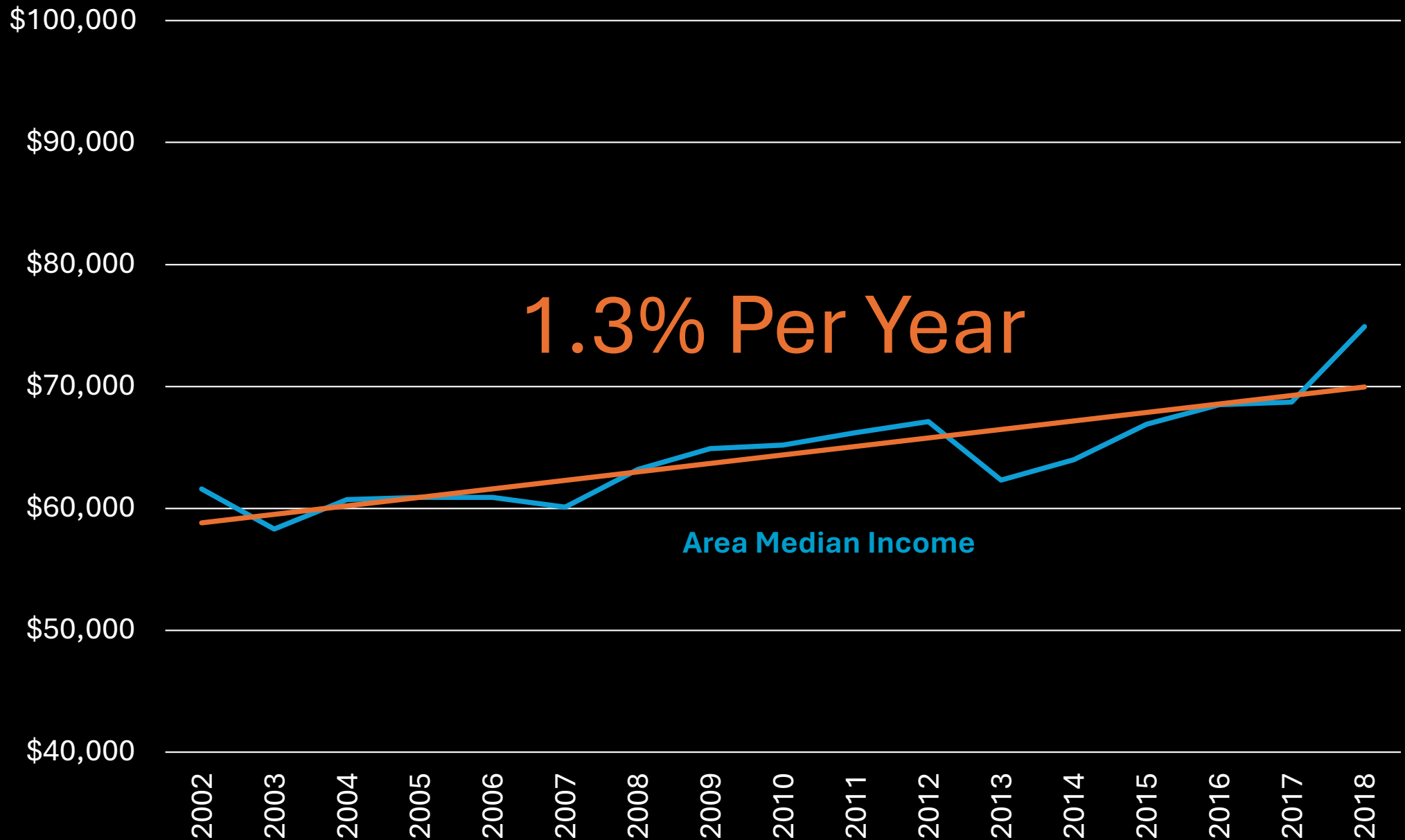
Change in AMI



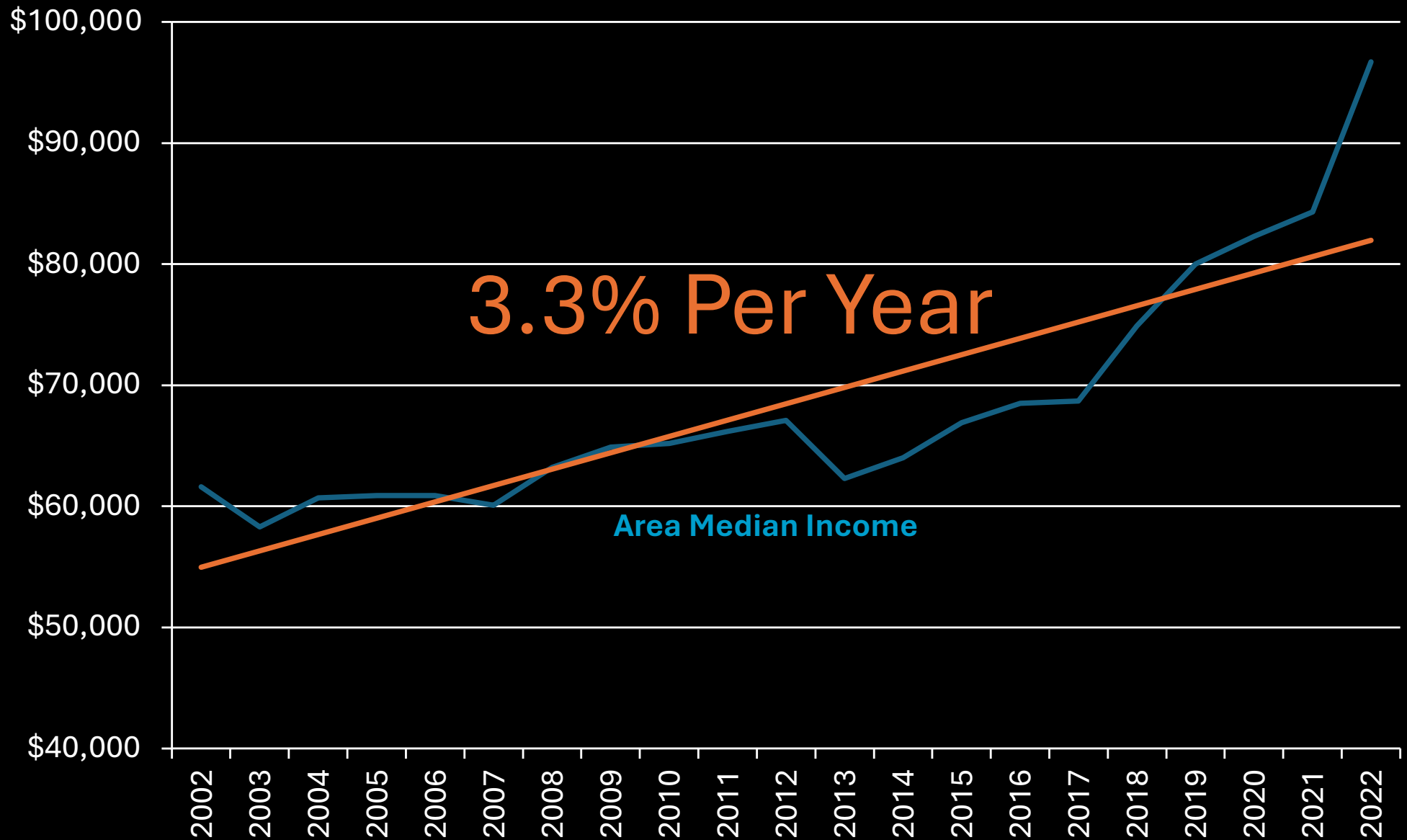
Change in AMI (2002 – 2017)



Change in AMI (2002 – 2018)



Change in AMI (2002 – 2024)



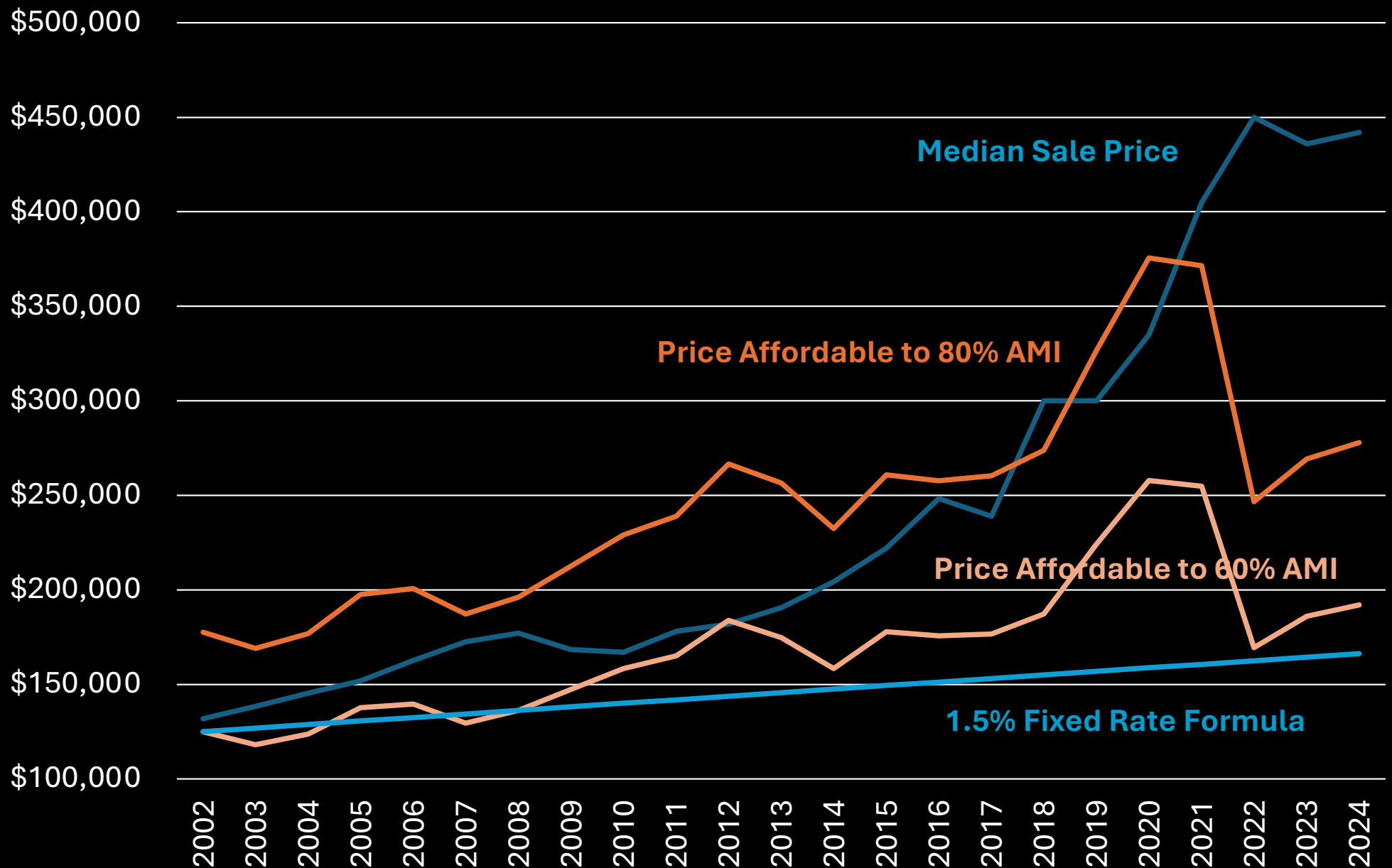
Change in AMI

Deeper Dive

- What do the trends tell us?
- Are incomes **ACTUALLY** increasing?
- How about for your target buyers?
- Err on the side of caution



Projections – Fixed Rate



INDEX

Resale Formulas – Index Based

- Base Price increased by % change in an index
- Commonly used
 - AMI
 - CPI
- Often includes not to exceed cap



Resale Formulas: Index Based Formula

$$\begin{array}{rcl} & \text{Base Price} & \\ X & \frac{1 + \% \text{ in Index Over Time}}{} & \\ = & \text{Formula Price} & \end{array}$$

Resale Formulas – Example

Sample Scenario



\$442,000= Initial Appraised Value



\$422,000 = Cost to develop



\$212,000 = Original Affordable Base Price



[Affordable to a HH of 4 @ 60% AMI]



\$210,000 = Subsidy Necessary

Resale Formulas – Index Based

2014 - 2024



\$212,000 = Original Affordable Base Price



X 1.67 (67% Increase over 2014-24)



=\$354,040 = Formula Price



-\$9,000 Closing Costs



-\$177,410 Mortgage Payoff



=\$167,630 Cash to Seller

Resale Formulas – Index Based

2007-2017



\$212,000 = Original Affordable Base Price



X 1.14 (14% Increase over 2007-2017)



=\$241,680 = Formula Price



-\$9,000 Closing Costs



-\$177,410 Mortgage Payoff



=\$55,270 Cash to Seller

Resale Formulas – Index Based

Pros

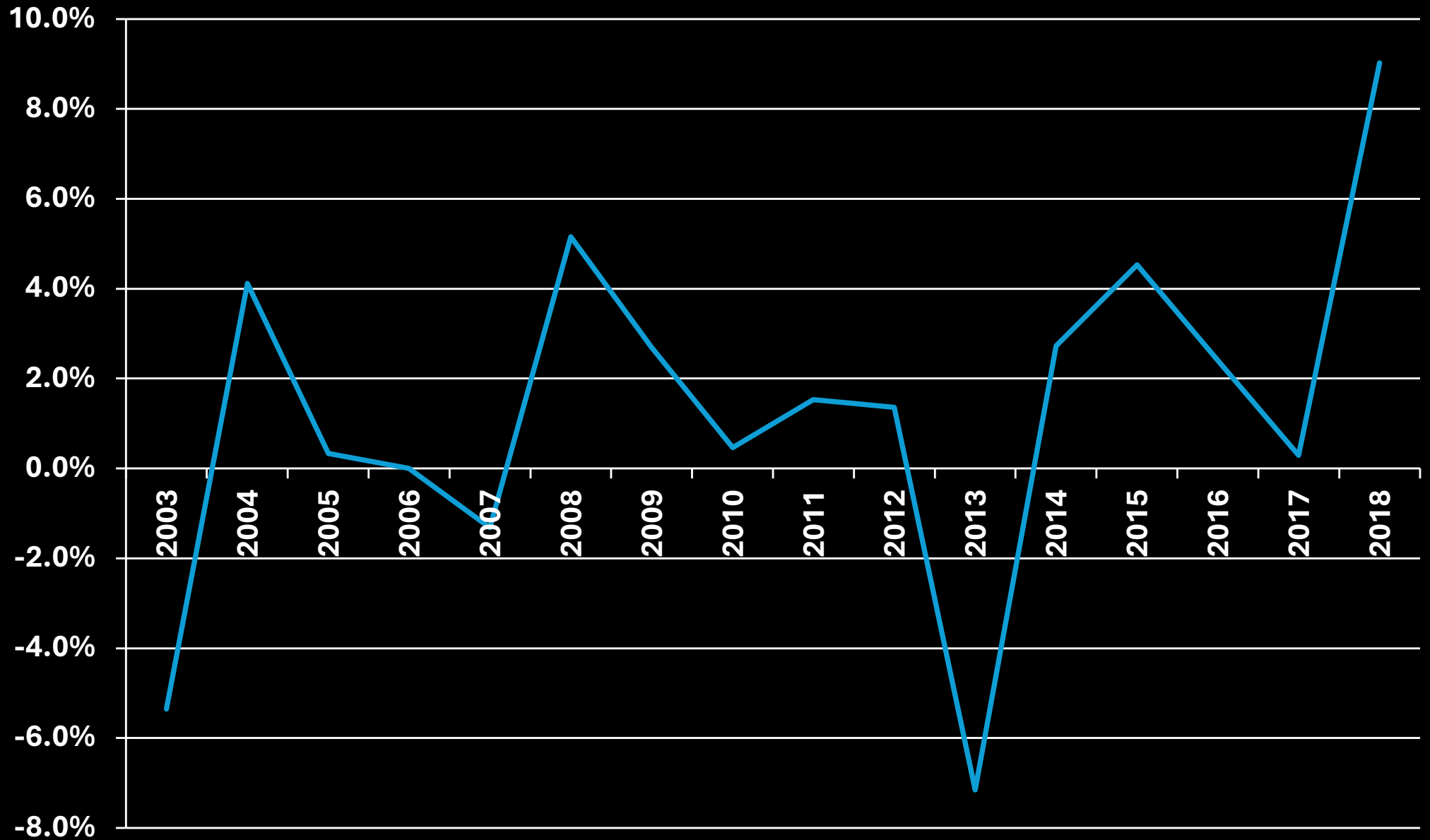
- Can tie to AMI
- Easy to administer
- Easy to understand
- Calculate at any time

Cons

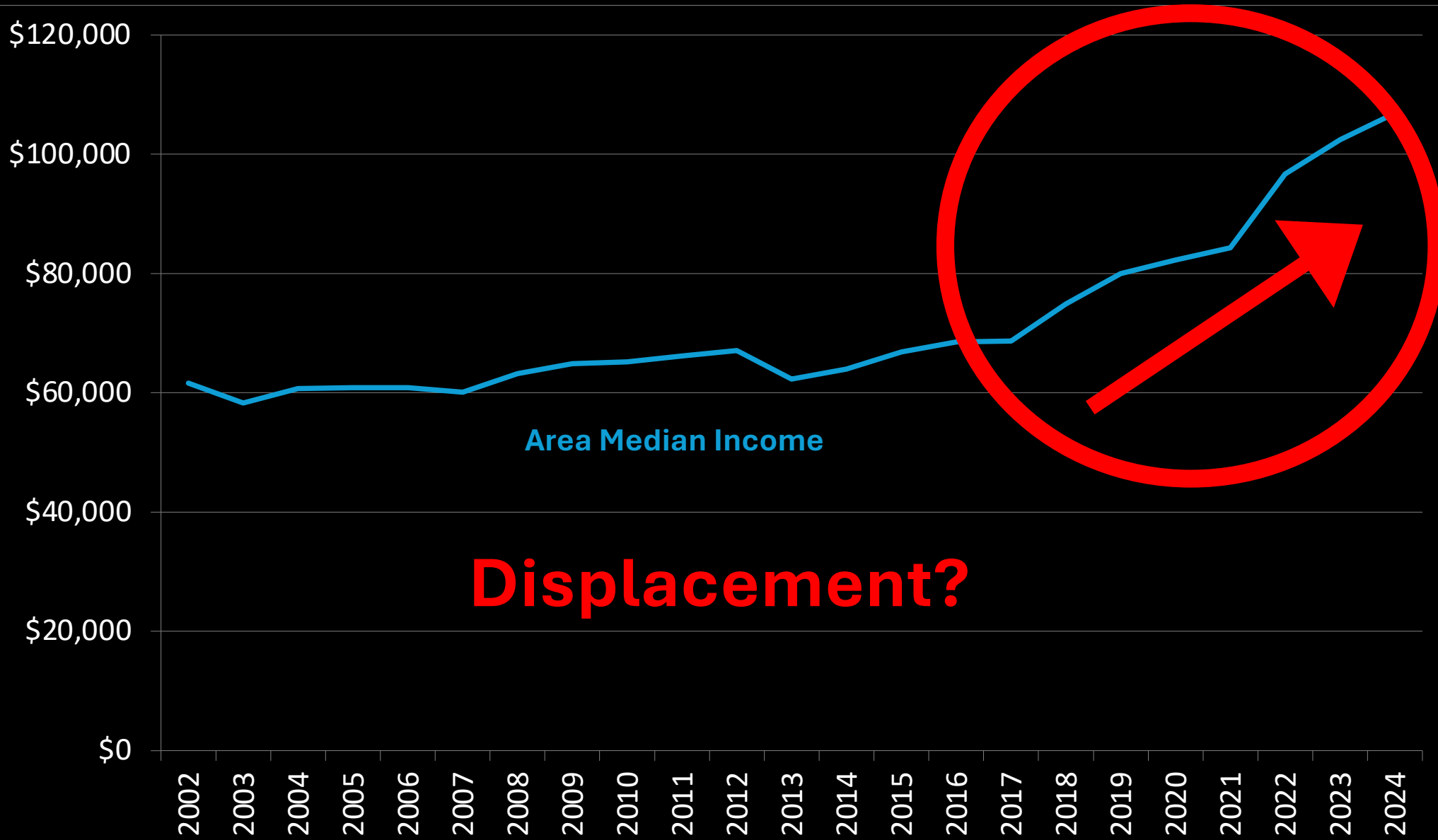
- No reflection of condition
- Unrelated to market
- Can be erratic
- May outpace wages



Annual % Change in AMI



Change in AMI





APPRAISAL

Resale Formulas – Appraisal Based

- Appraisal at purchase and resale
- Increase = % of the change in value
- % should be adjusted for your market



Resale

Formulas:

Appraisal

Based

Formula

$$\begin{array}{rcl} & \text{Base Price} & \\ \text{X} & \text{25\% of ▲ in Appraised Value} & \\ \hline = & \text{Formula Price} & \end{array}$$

Resale Formulas – Example

Sample Scenario

 \$954,720 = Current Appraised Value (based on 2014-2024)

 \$442,000 = Initial Appraised Value

 \$422,000 = Cost to develop

 \$212,000 = Original Affordable Base Price

 [Affordable to a HH of 4 @ 60% AMI]

 \$210,000 = Subsidy Necessary

Resale Formulas – Appraisal Based

2014 - 2024

 \$954,720 (Current Appraised Value)

 -\$442,000 (Original Appraised Value)

 =\$512,720 =(Change in Appraised Value)

 X 25% = \$128,180 (Seller's Share of Appreciation)

 + \$212,000 = Original Affordable Base Price

 =\$340,180 = Formula Price

 -\$9,000 Closing Costs

 -\$177,410 Mortgage Payoff

 =\$153,770 Cash to Seller

Resale Formulas – Appraisal Based

2007 - 2017

 \$609,960 (Current Appraised Value)

 -\$442,000 (Original Appraised Value)

 =\$167,960 =(Change in Appraised Value)

 X 25% = \$41,990 (Seller's Share of Appreciation)

 + \$212,000 = Original Affordable Base Price

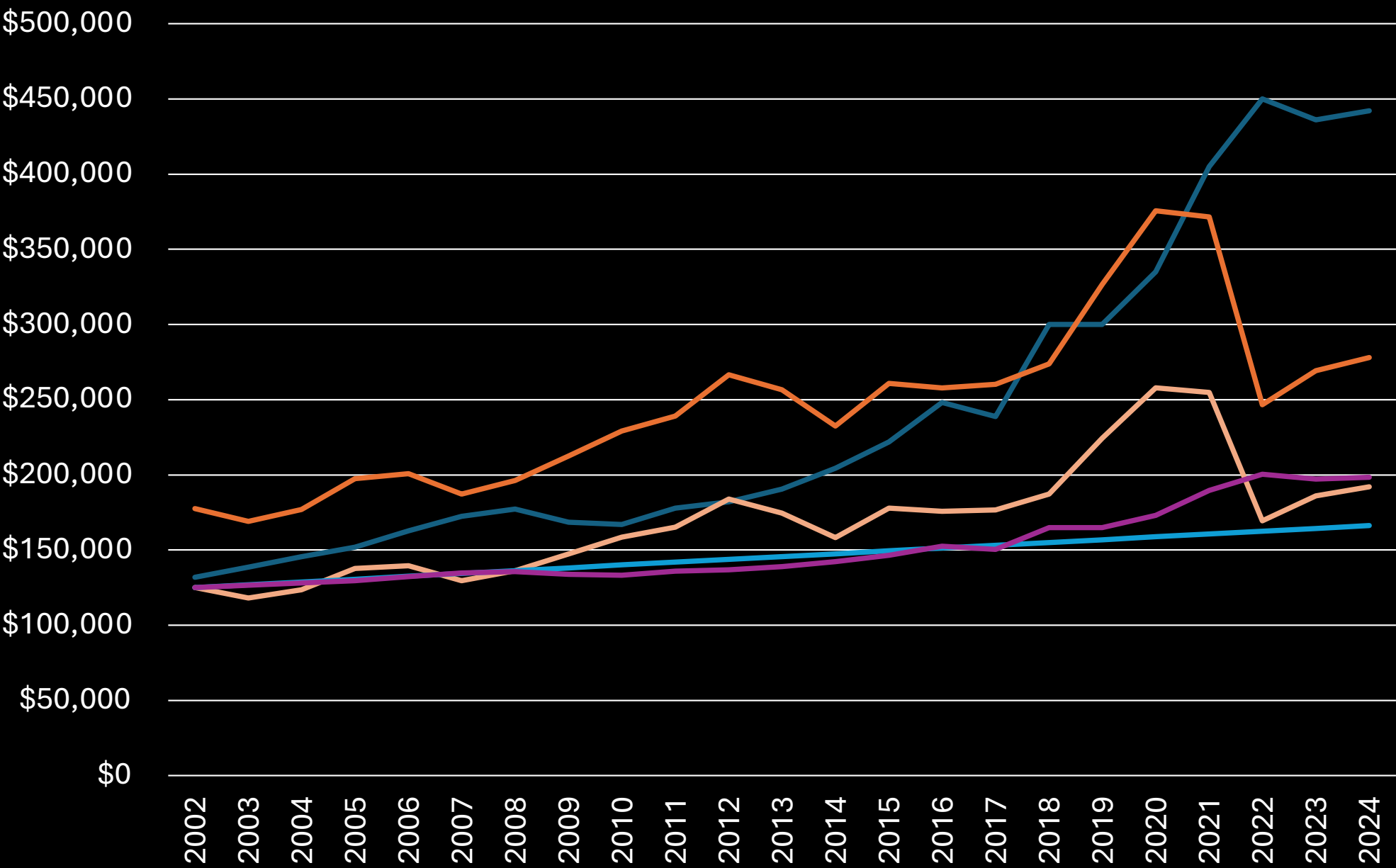
 =\$253,990 = Formula Price

 -\$9,000 Closing Costs

 -\$177,410 Mortgage Payoff

 =\$67,580 Cash to Seller

Projections – Appraisal Based



Resale Formulas – Appraisal Based

Pros

- Market based
- Reflects condition

Cons

- Appraisals!
- Can be difficult to understand
- Expensive



Ongoing Affordability vs. Wealth Creation

Fixed Rate

- \$238,500 (Formula Price)
- \$52,090 (Cash to seller)

AMI

- \$354,040 (Formula Price)
- \$167,630 (Cash to seller)

Appraisal Based

- \$340,180 (Formula Price)
- \$153,770 (Cash to Seller)



2017 Analysis

Fixed Rate

- \$167,625 (Formula Price)
- \$37,425 (Cash to seller)

Index Based

- \$177,310 (Formula Price)
- \$47,110 (Cash to seller)

Appraisal Based

- \$182,325 (Formula Price)
- \$52,125 (Cash to Seller)



Which Formula?

$$= \frac{\sqrt{b^2 - 4ac}}{2a}$$

$$(x+y)^2 - (x-y)^2$$

$$F = m - y$$



$$=mc^2$$

$$\sqrt{b^2 - 4ac}$$

$$\bar{x} = \frac{\sum fx}{N}$$

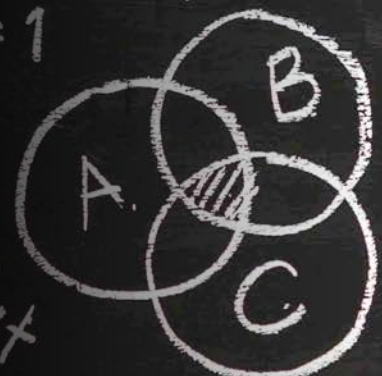
$$\frac{\overline{AD}}{\overline{AB}} = \frac{\overline{DE}}{\overline{BC}}$$

$$H^+ \quad CH_4$$

$$a^0 = 1$$

$$\sqrt{a^2 + b^2}$$

$$xy = a$$



$$\hat{ACB} = \frac{2}{5} \hat{ABD}$$

$$xy = ab^2$$

$$S = Vt$$

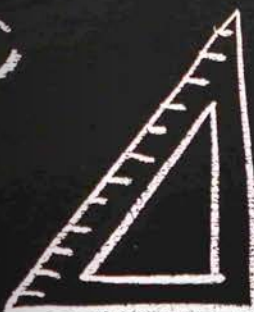
$$x = \sqrt{\frac{b^2}{C}} + C - \frac{b}{2}$$



$$P = S(1 - n \cdot d)$$

$$\triangle ABC \sim \triangle ADC$$

$$\sum_{i=1}^n (x_i - \bar{x})^2$$



$$\frac{n!}{r!(n-r)!}$$

$$H_0 \frac{\partial^2 \Omega}{\partial u^2}$$

$$\lim_{x \rightarrow \infty}$$

$$= \frac{mu^2}{2} = \frac{\left(\frac{P}{1200}\right) \left(1 + \frac{P}{1200}\right)^N}{\left(1 + \frac{P}{1200}\right)^N - 1}$$



$$F = \frac{Gm_1m_2}{r^2}$$

A zorse, a hybrid of a zebra and a horse, is shown grazing in a grassy field. The animal has a white body with prominent brown and black stripes, particularly on its hindquarters and legs. It is wearing a green halter. The background features a chain-link fence and a grassy area.

Hybrid Formulas

Hybrid Formulas

- Help mitigate risk
- Lesser of...
- Not to exceed....



A wooden house-shaped cutout is centered on a dark, textured surface. Surrounding the house are various tools: a red-handled tool in the top left, a wrench in the top right, a large adjustable wrench on the right, a saw blade in the bottom left, and several other pliers and tools scattered around. The text "Capital Improvements" is overlaid in white, centered on the house cutout.

Capital Improvements

Capital Improvements

- In the spirit of fairness!
- Add value for certain kinds of improvements
- Be sure its objective
- BE CAREFUL!
- Requires a conservative formula to allow room for increase



Capital Improvements

- Examples?
- Horror stories?



Putting it
all
together



Other Considerations?

- Racial equity considerations?
- Other economic considerations?
- Anything else?

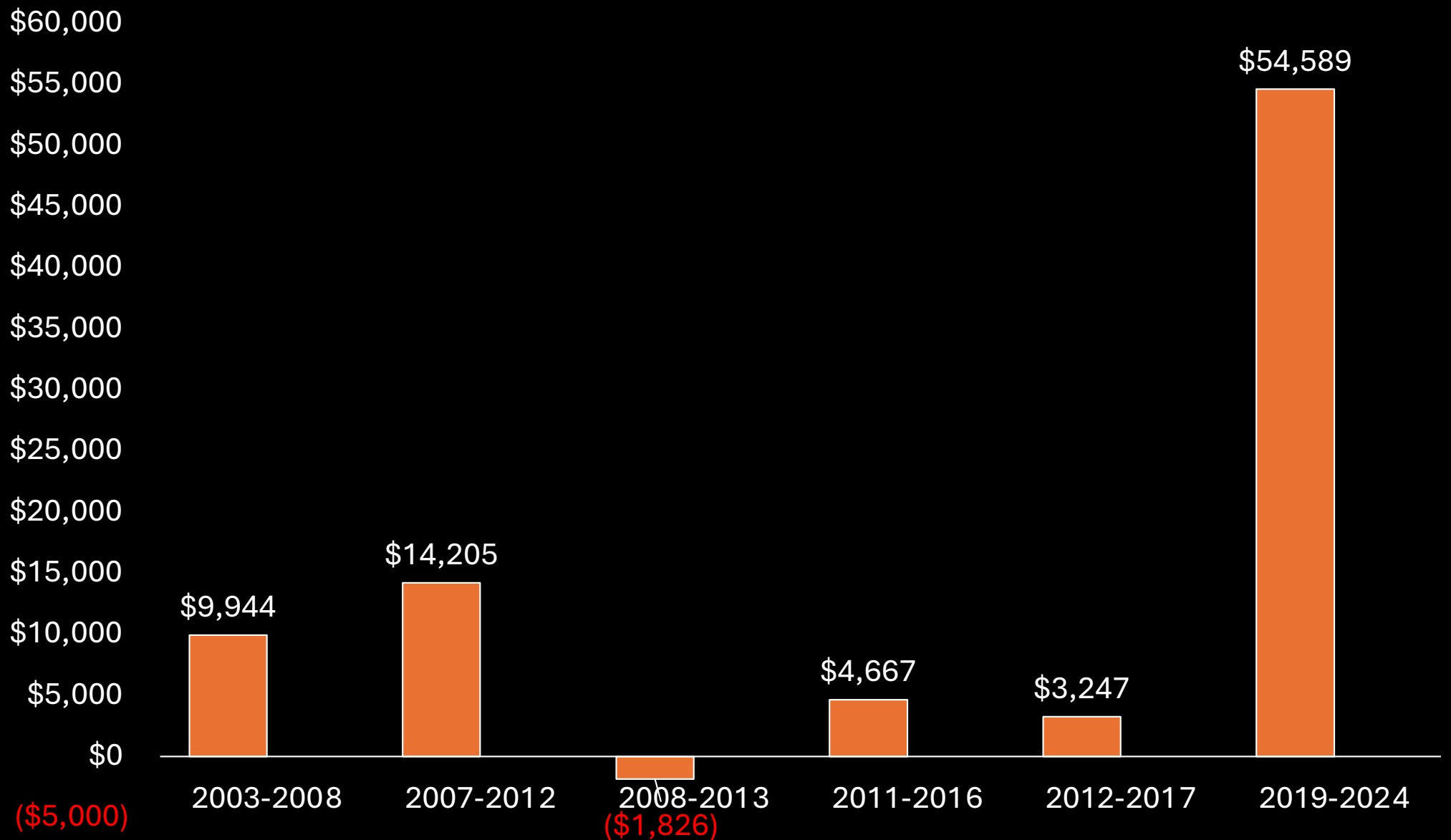


Which formula is for you?

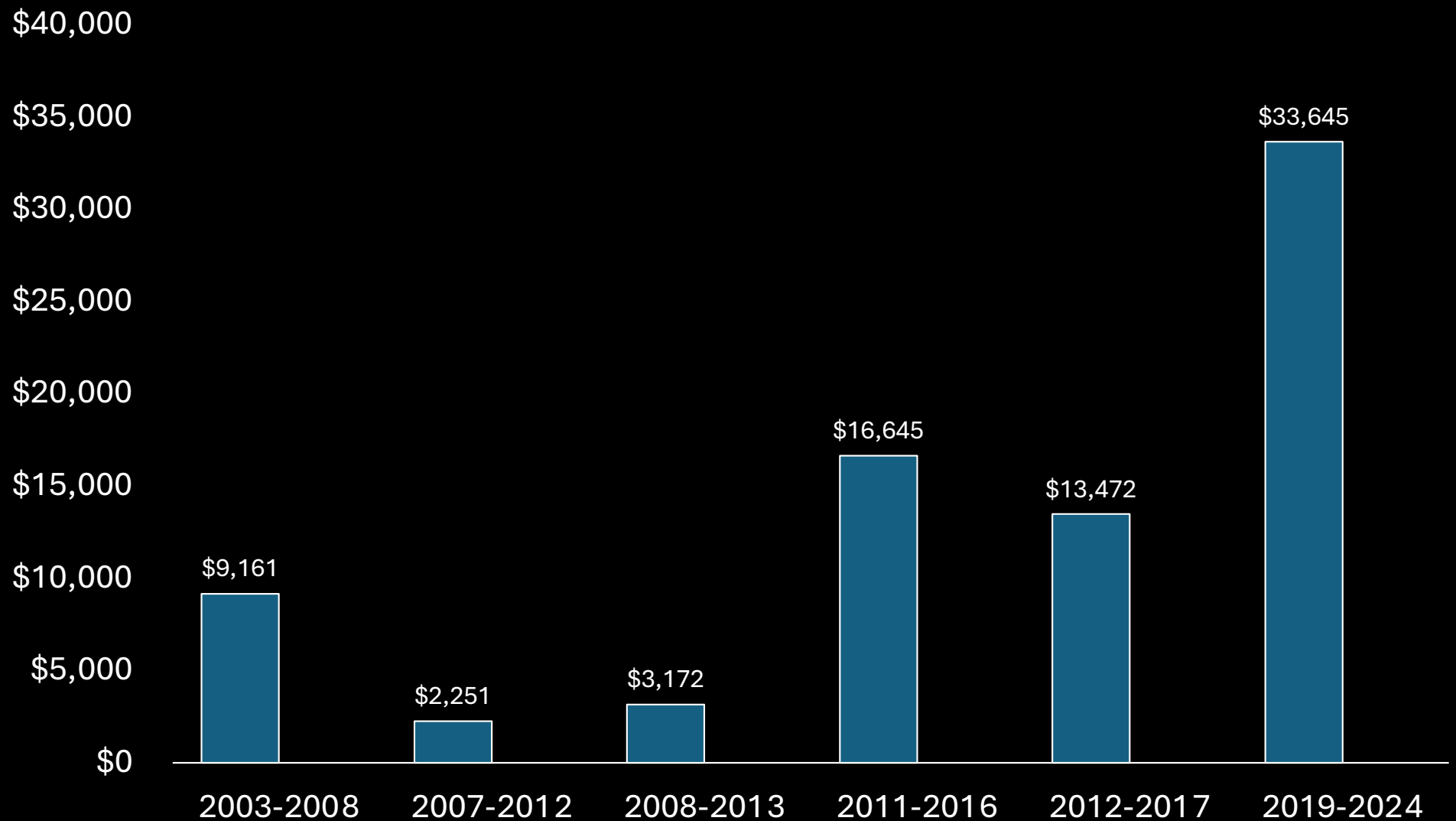
- Trend analysis for each formula type
- Transactions in different timeframes



5 Year Resales- AMI



5 Year Resales- Appraisal Based



5 Year Resales- Fixed Rate

\$10,000

\$5,000

\$0

\$7,813

\$7,813

\$7,813

\$7,813

\$7,813

\$7,813

2003-2008

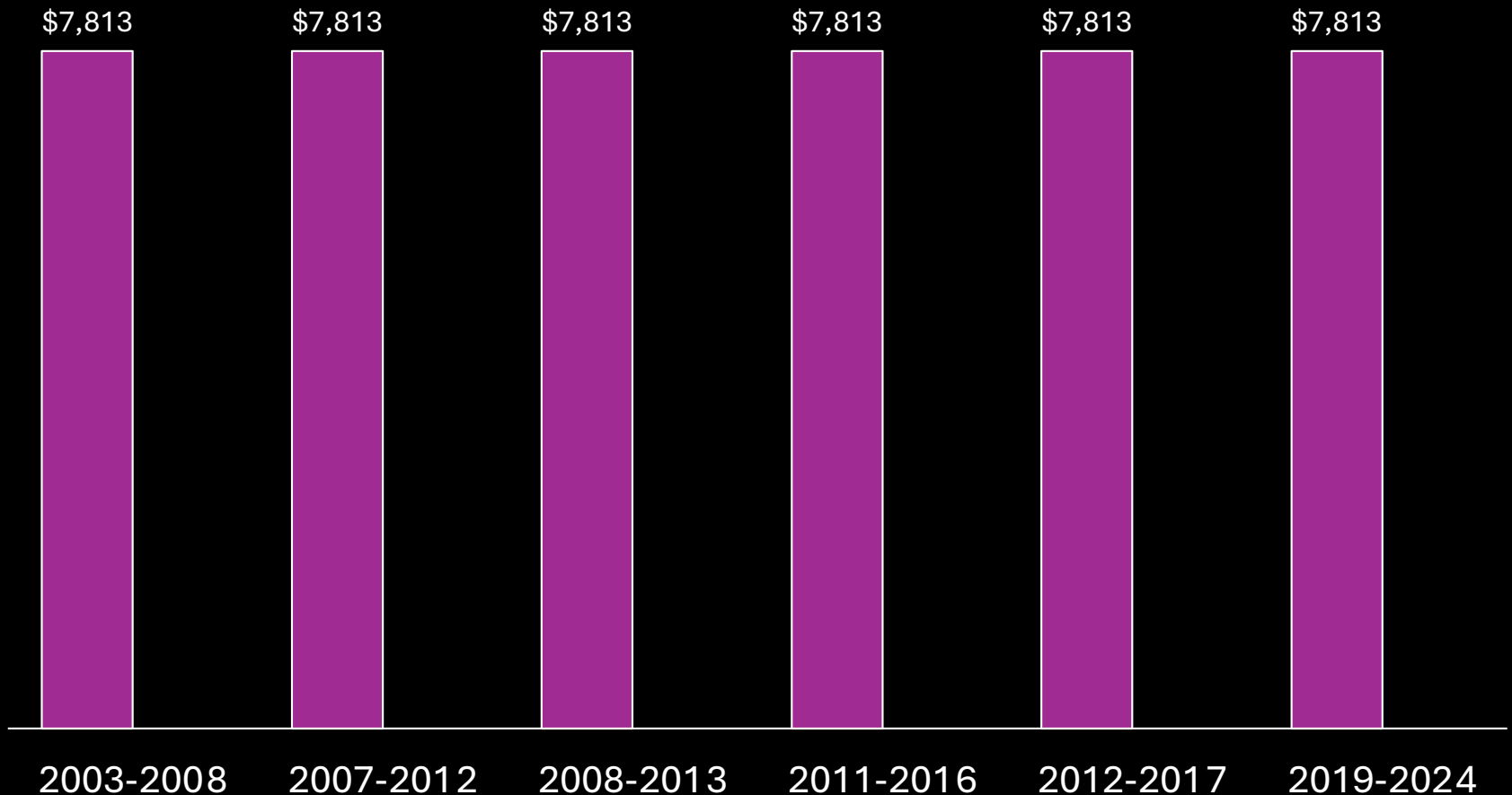
2007-2012

2008-2013

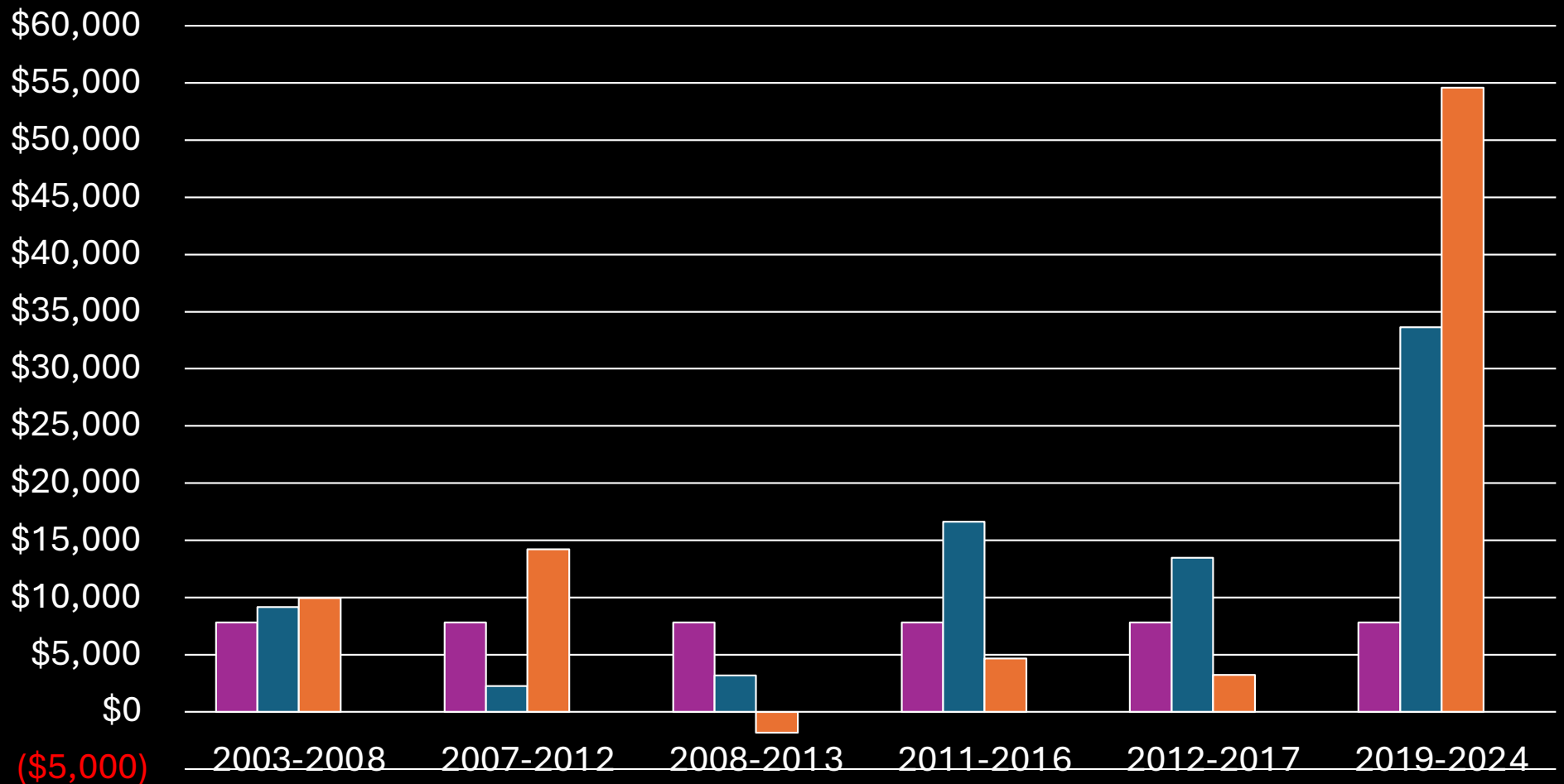
2011-2016

2012-2017

2019-2024



5 Year Resales- Comparison





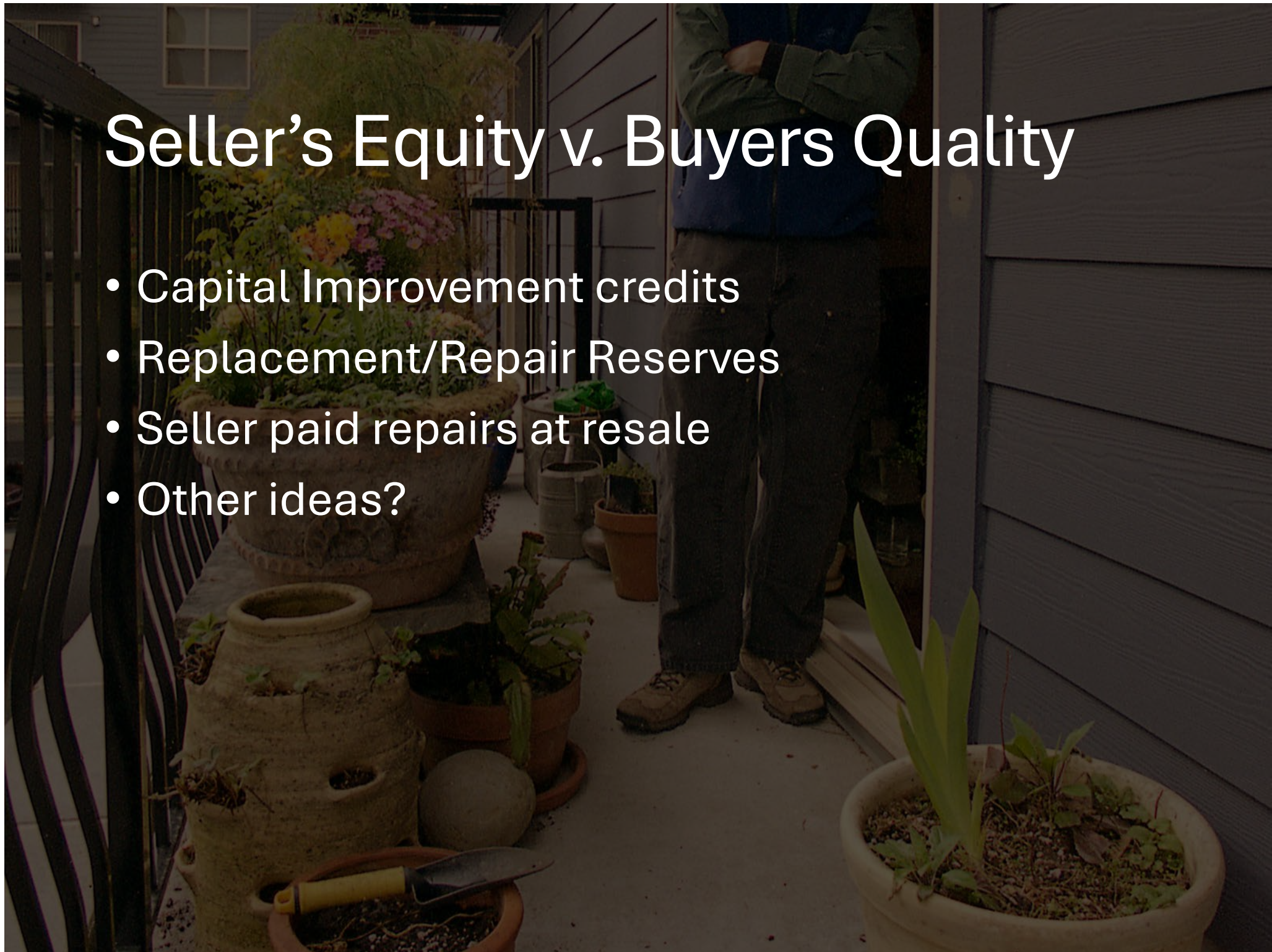
Now –
What's your
formula?

A photograph of two hands shaking in a firm grip, symbolizing a deal or agreement. The arms are extended from the left and right sides of the frame. On the left arm, the word "Seller" is written in orange. On the right arm, the word "Buyer" is written in green. The background is a solid grey color.

Seller's Equity v. Buyer's Quality?

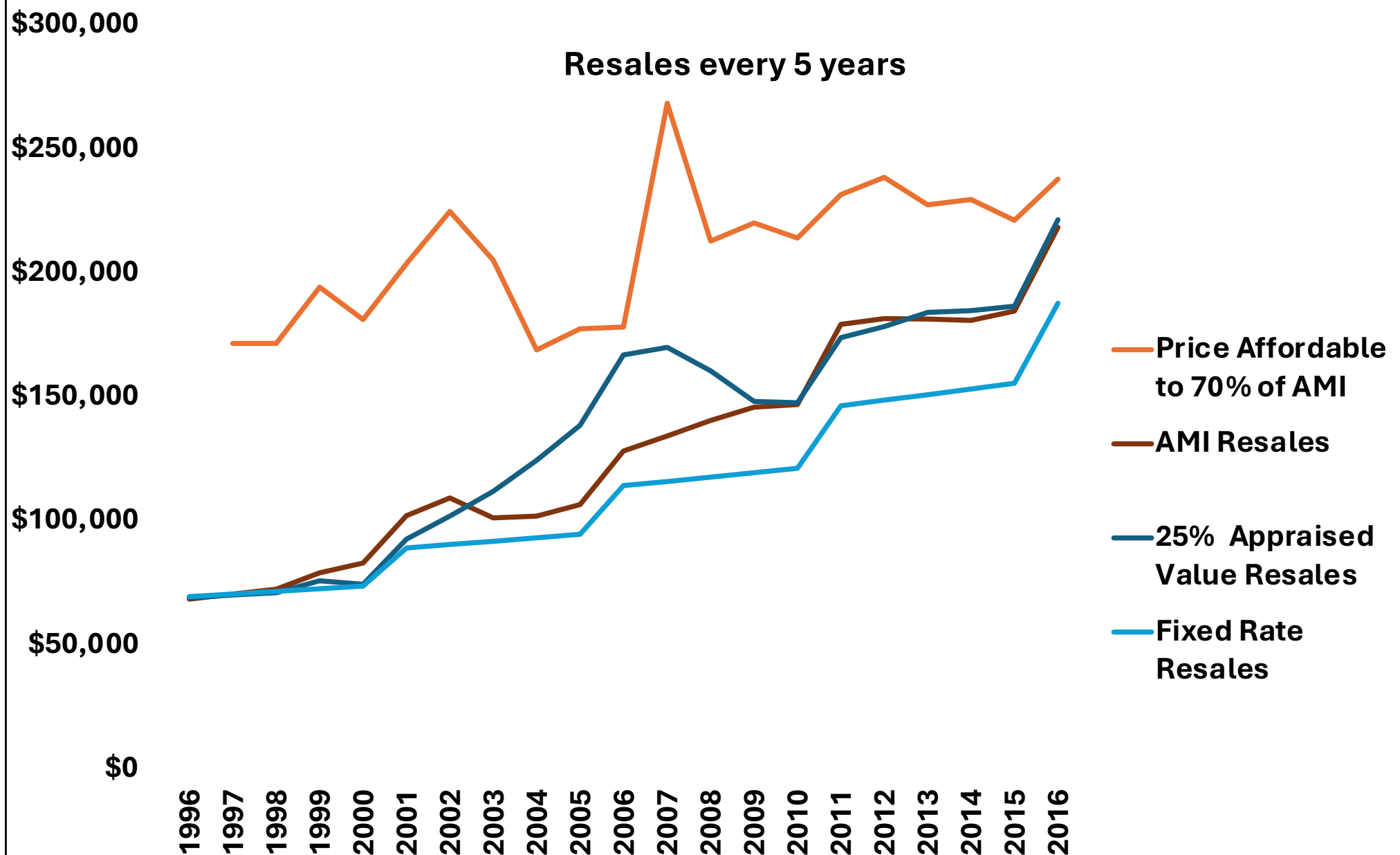
Seller's Equity v. Buyers Quality

- Capital Improvement credits
- Replacement/Repair Reserves
- Seller paid repairs at resale
- Other ideas?

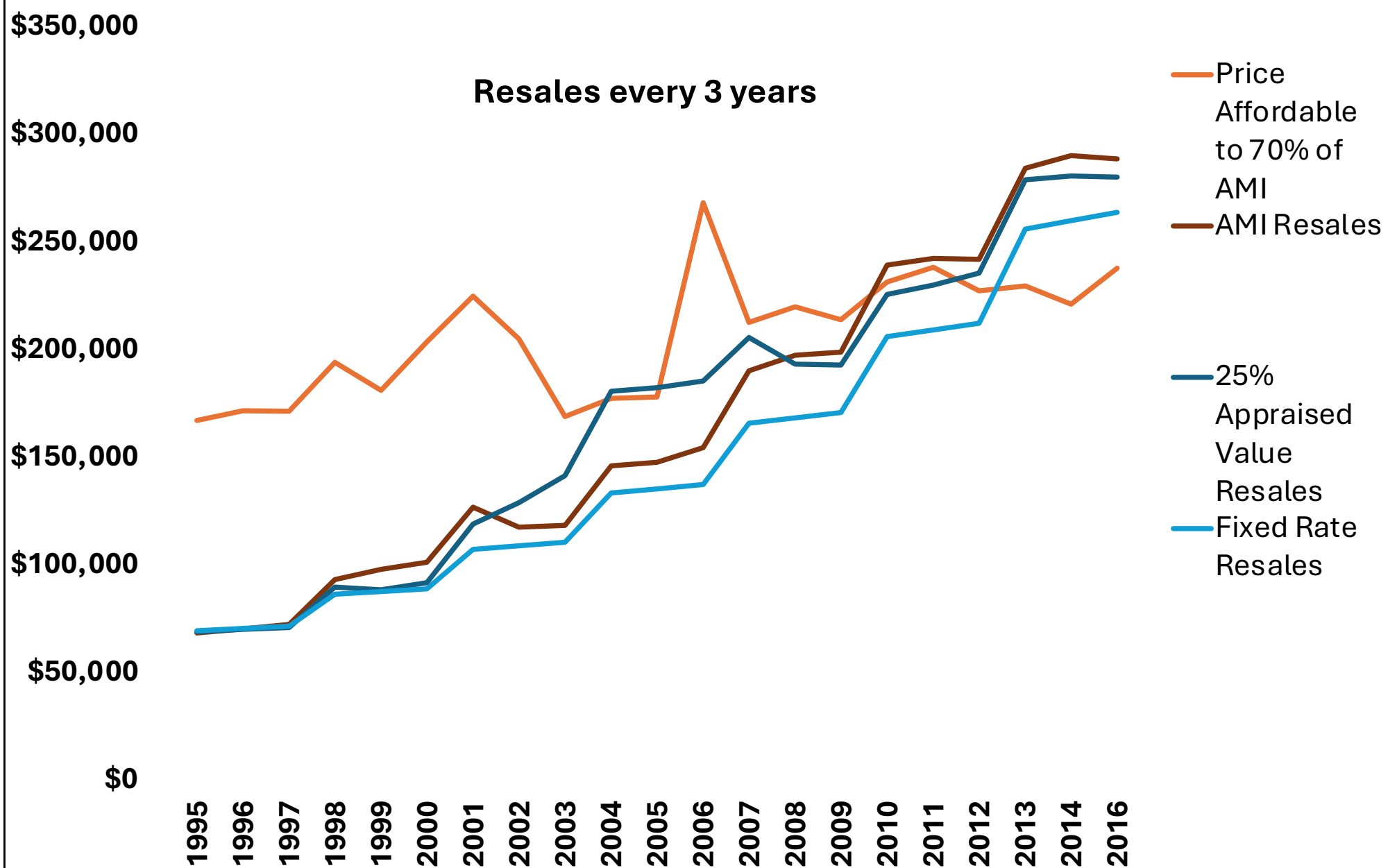




Buyer Paid – 5-year Resales



Buyer Paid – 3-year Resales



$$F = G \frac{m_1 m_2}{d^2}$$

$$i\hbar \frac{\partial}{\partial t} \psi = \hat{H} \psi$$

$$\phi(x) = \frac{1}{\sqrt{2\pi\sigma}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

The Perfect Formula?

$$ds \geq 0$$

$$\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$$

$$\frac{df}{dt} = \lim_{h \rightarrow 0} \frac{f(t+h) - f(t)}{h}$$



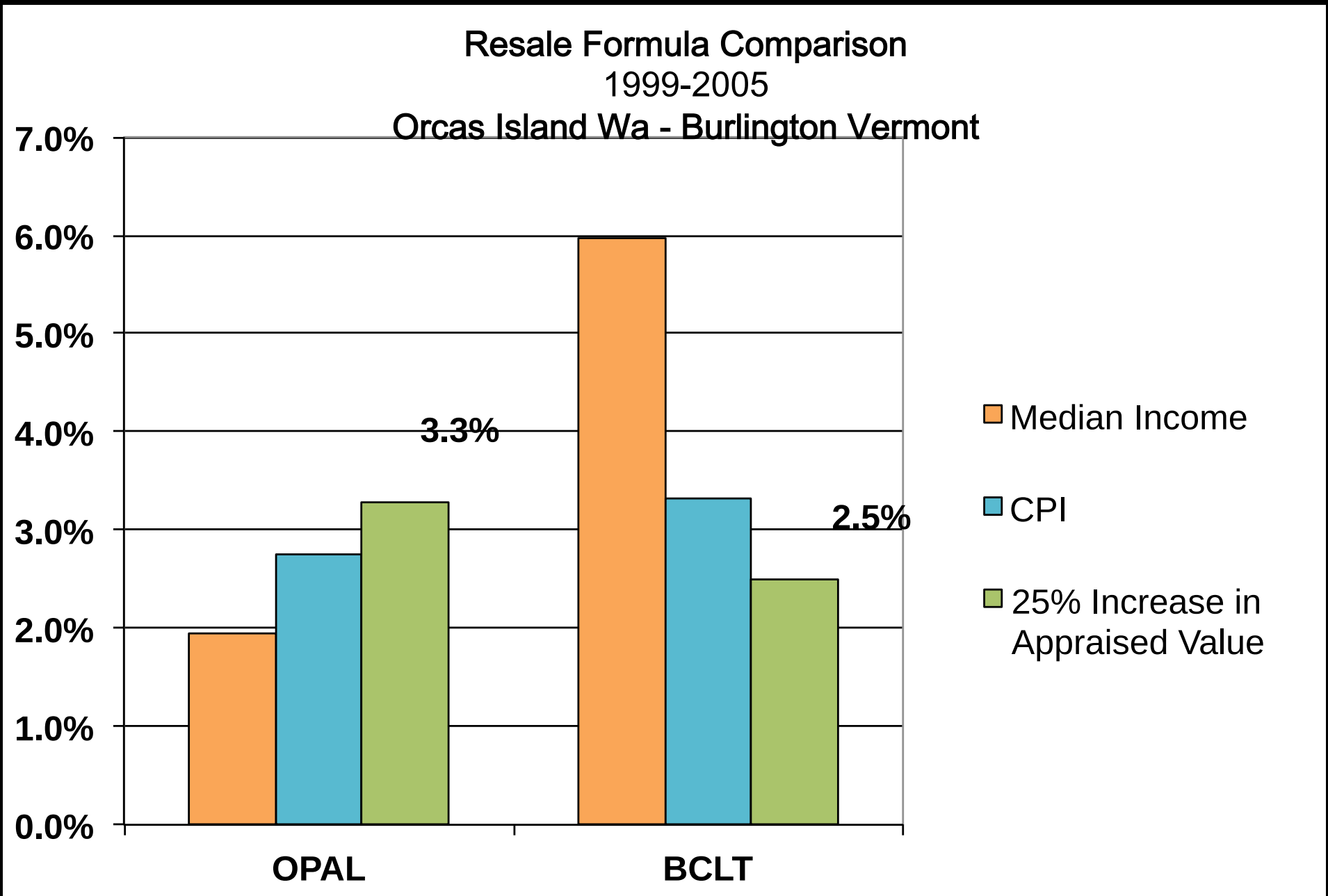
The Perfect Formula

One Size Fits All?

- Same formulas, different markets?
- Same pricing, different markets?



The Perfect Formula



The Perfect Formula

- There isn't one!
- Point in time vs. trends
- Different markets = different outcomes
- Fees, HOA, etc. and their impact
- Condition at resale
- KEEP IT SIMPLE!



The Big Picture

- Price it right to start with!
- Do your homework – look at the data
- Don't let the perfect be the evil of the good.
- Nothing is perfect or absolutely fair
- More equity = less affordability
- KEEP IT SIMPLE



If you get it wrong – CHANGE IT



Questions?

