

RESIDENTIAL INFILL PROJECT

Year-One Report



JUNE 26, 2023

Project Context

- The Residential Infill Project (RIP) Year-One Report was produced for the City of Portland's Bureau of Planning and Sustainability (BPS).
- It is an analysis of residential sales activity in the R2.5, R5, and R7 zones in the three years leading up to RIP adoption and permit activity during the first 12 months following its implementation (August 2021 –July 2022).
- Understanding RIP's longer-term impact on housing production will likely take continued monitoring. This period is also during the COVID-19 pandemic, which is not indicative of normal market trends.

How is the study organized?

- **Pre-RIP Context Analysis:**
Analysis of residential sales in the three years prior to adoption of RIP:
 - ◆ Sales Volumes
 - ◆ Home Prices / Sizes
 - ◆ Housing Unit Characteristics
- **RIP Permit Reporting:**
Permit data was analyzed to identify common traits of Middle Housing development:
 - ◆ Development Characteristics
 - ◆ Locational Context

What is the Residential Infill Project (RIP)?

- The City of Portland adopted rules that govern the types of housing permitted in its neighborhoods to **allow more housing options** in Portland and also regulate the size and scale of new housing.
- Portland City Council adopted RIP 1 on August 12, 2020, and most changes went into effect on August 1, 2021. This report analyzed the first year of adoption **August 1, 2021-July 31, 2022**.
- RIP 1 allows **duplexes, triplexes and fourplexes, sixplexes, as well as additional/expanded ADU allowances**.
- [RIP](#) affects **R2.5, R5, and R7 zones** in the city.

Critical Takeaways

- Excluding ADUs, the **majority of housing units** permitted in the R2.5, R5, and R7 zones in the first year since adoption of RIP were in Middle Housing projects.
- **Fourplexes** accounted for more than $\frac{3}{4}$ of middle housing units in these zones.
- Middle housing uses land nearly **three times more efficiently** than single houses.
- **ADUs are still an important part of the housing mix**, producing an equal number of units as middle housing.
- But unlike ADU's, **over 99% of middle housing units had 2 or more bedrooms**, enabling growing or multigenerational households.
- Building size limits imposed by RIP have **prevented very large, and more expensive single dwelling homes** from being built.

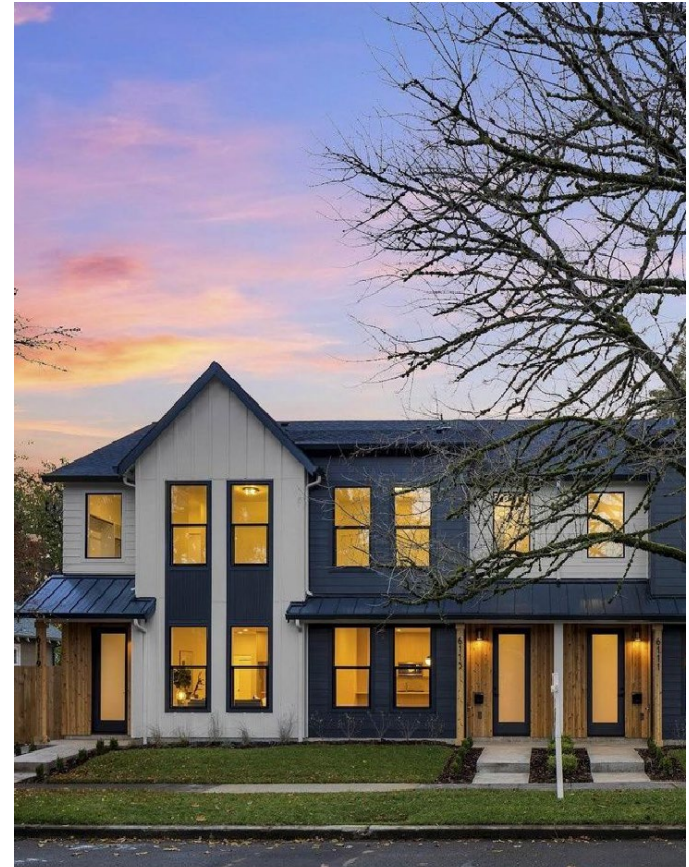
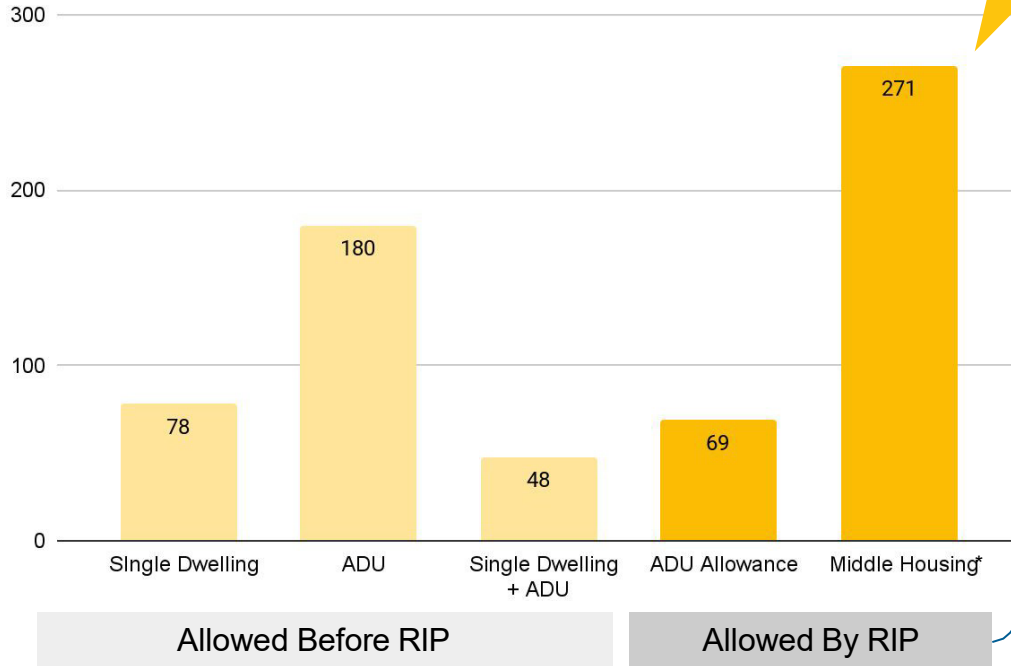


Image Source: Zillow

Permit Activity Overview

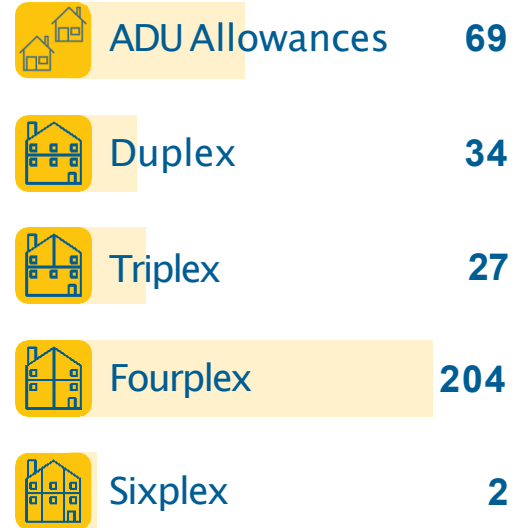
 **Key Finding**
 Three quarters of permitted middle housing units were in fourplexes

Permit Activity by Housing Type (R2.5, R5, and R7 Zones)



RIP-Enabled Units Permitted by Housing Type

Aug 1, 2021- July 31, 2022



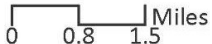
*Middle Housing category includes 4 corner duplexes
 Source: City of Portland Building Permit Data R2.5-R7 Zones, 8/21-7/22

Middle Housing Permits

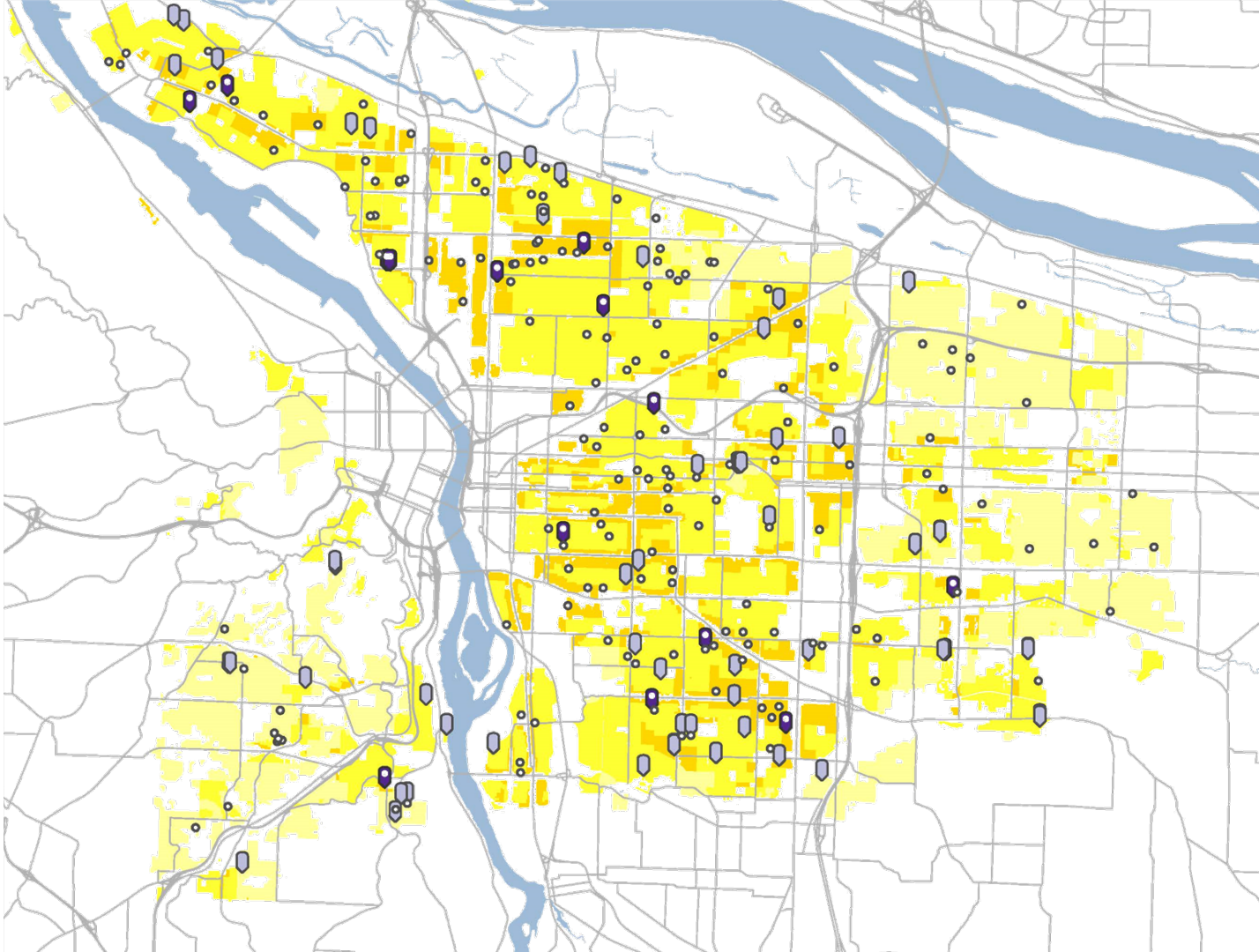
August 2021 through July 2022

Legend

- City of Portland Boundary
- ADU Allowance
- Duplex
- Triplex
- Fourplex
- Sixplex
- High Density SD Zones



Esri, NASA, NGA, USGS, FEMA



Single Family Residence New Houses, ADUs

Legend

Permits August 1, 2021 - July 31, 2022

- ADU
- ▭ House (SD)
- ▭ House with ADU (SD w/ ADU)

Zone

- Single Dwelling Residential 2,500 (R2.5)
- Single Dwelling Residential 5,000 (R5)
- Single Dwelling Residential 7,000 (R7)

Glossary

Residential Infill Project (RIP): recent changes to zoning regulations for single-family lots, allowing for the construction of smaller, more varied housing types such as duplexes, triplexes, and fourplexes. For the purposes of this study, RIP implies the first phase of RIP implementation, often referred to as RIP 1.

Accessory Dwelling Unit (ADU): a self-contained living unit that is secondary to the main dwelling on a residential property.

Single Dwelling (SD): detached single-family dwelling on its own lot without an ADU






Middle Housing (MH): For the purposes of this study, middle housing refers to duplexes including corner lot duplexes, triplexes, fourplexes and sixplexes.

ADU Allowance: additional ADUs allowed as part of RIP. These could include 2nd ADUs with a house, an ADU with a duplex, and internal basement conversion ADUs of a larger size than were permitted before RIP.

Floor-to-Area Ratio (FAR): a measure of the total amount of floor area that can be developed on a particular piece of land, expressed as a ratio of the total area of the lot.

Table of Contents

The RIP Year–One Report includes findings from three years of home sales prior to adoption of RIP, data analysis of the first 12 months of permit activity in zones where RIP took effect, and case studies of RIP development projects.

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PRE-RIP CONTEXT ANALYSIS

Analysis of residential sales in the three years prior to adoption of RIP:

- Sales Volumes
- Home Prices / Sizes
- Housing Unit Characteristics

PRE-RIP CONTEXT ANALYSIS

New Floor Area Ratio (FAR) Restrictions Imposed by RIP

In addition to allowing more units per parcel, RIP placed limits on the maximum floor area allowed for single unit dwellings. To understand the potential impact of these limits, residential sales were analyzed for the three years preceding RIP adoption.

The Pre-RIP Context Analysis focuses on detached single-family homes built between 2018 and 2022 that are above and below RIP floor-to-area (FAR) limits for single unit dwellings. Under RIP, there is a sliding scale for maximum FAR that varies by zone and number of units per lot.

Under RIP1, the FAR for four units was the same as for three units. This was changed with RIP2.

FAR by Zone and Units per Lot

Units	R7	R5	R2.5
1	0.4 to 1	0.5 to 1	0.7 to 1
2	0.5 to 1	0.6 to 1	0.8 to 1
3+	0.6 to 1	0.7 to 1	0.9 to 1

Source:

<https://www.portland.gov/bds/zoning-land-use/residential-infill-project/residential-floor-area-ratio>

PRE-RIP CONTEXT ANALYSIS

Data Sources

The Pre-RIP Context Analysis relied on Regional Multiple Listing Service (RMLS) data which captures open market sales transactions.

RMLS data from Q1 2018 – Q2 2022 was studied to understand trends in housing production in the R2.5–R7 zones prior to RIP adoption. In order to focus only on new housing production, this data excluded sales of homes built prior to 2018. Home sales prices were inflation-adjusted to 2022 dollars.

Given the length of time housing development takes to move through the pipeline, the data includes homes sold during when RIP in effect.

Critical Questions:

- What proportion of houses built prior to RIP could not be built today?
- How much more expensive were these houses than those below current FAR limits?



Above RIP FAR (Zone R5 | .8 FAR)



Above RIP FAR (Zone R2.5 | 1.3 FAR)

PRE-RIP CONTEXT ANALYSIS

Summary of Findings

Sales trends for new detached single-family homes in the years leading up to RIP adoption suggest that **RIP's impact is not just in what it allows, but also in what it does not.**



Key Finding #1

Nearly half of the new detached single-family homes built and sold from Q1 2018 to Q2 2022 are not possible to build under RIP. This means that RIP not only altered the nature of housing production, it also **truncated the most expensive segment of the detached single-family housing market.**

Pre-RIP Context Analysis Snapshot

1,178

Total new (built since 2018) detached single dwelling homes sold 2018 - 2022

44%

Percent of new detached single dwelling homes sold over FAR threshold

\$117k

Average sale price difference between homes above and below FAR limits set by RIP

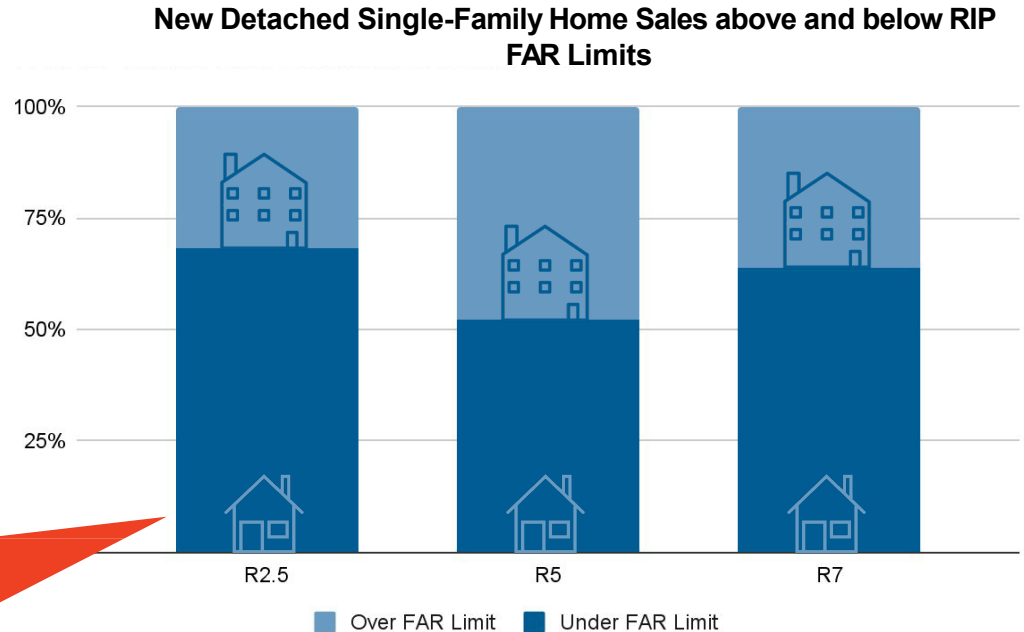
Source: RMLS data (Q1 2018 - Q2 2022)

PRE-RIP CONTEXT ANALYSIS

Detached Single-Family Sales Trends

A large proportion of new detached single-family homes sold between 2018 and 2022 in the R2.5-R7 zones could not be built today under new FAR limits imposed by RIP.

Roughly one-third to one-half of new detached single-family homes built and sold between 2018 and 2022 are larger than the threshold set by RIP for single dwellings.





Pre-RIP house remodel



Post RIP duplex

PRE-RIP CONTEXT ANALYSIS

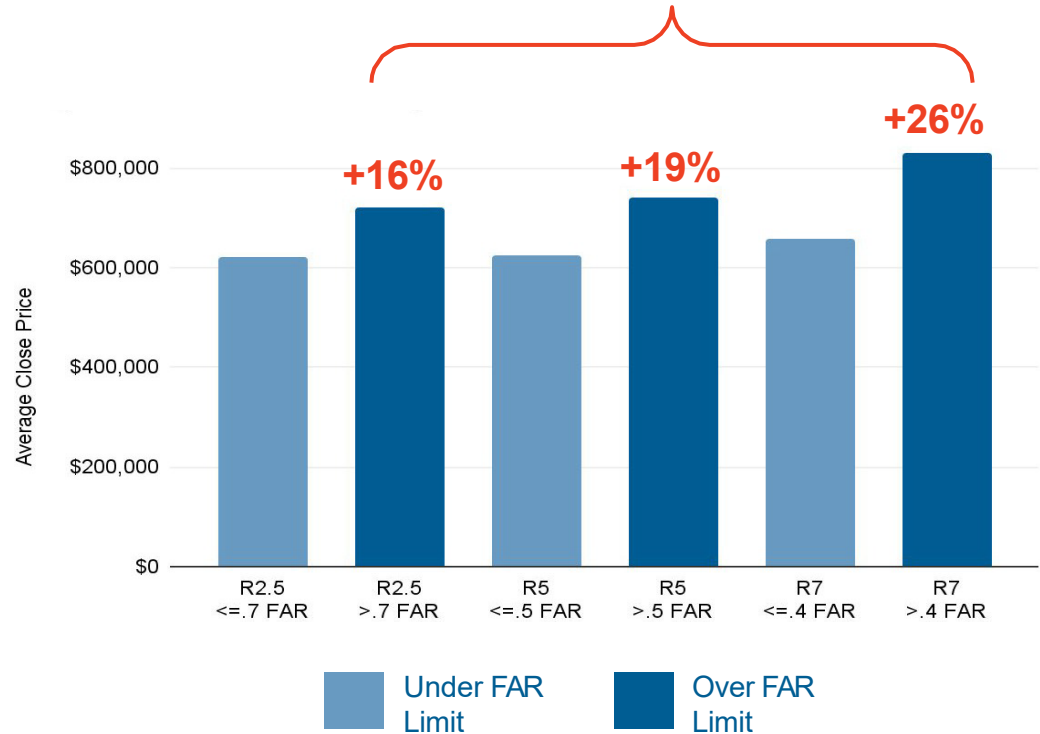
FAR Limits and Impacts to Home Sales Prices



Key Finding #2

Detached single-family homes with high FARs tend to sell for higher prices due to their size. By limiting the largest of these detached single-family homes, RIP prevents more expensive homes from being built and makes Middle Housing more competitive.

Detached single-family homes over the current FAR limit sold for substantially more than those below the limit. On average, the difference in sales price was over \$117,000.



RIP PERMIT DATA ANALYSIS

Permit data was analyzed to identify common traits of Middle Housing development:

- Development Characteristics
- Locational Context

RIP PERMIT DATA ANALYSIS

Overview

The RIP permit data analysis compares the housing production pipeline for all dwelling units in the R2.5, R5, and R7 zones for the 12 months following when RIP took effect.

It is organized in two data analysis categories. The first, *Development Characteristics*, includes detailed summaries of Middle Housing development projects. The second, *Locational Context* focuses on the location of new Middle Housing units relative to other forms of housing built over the same time period.

DATA ANALYSIS CATEGORIES

- DEVELOPMENT CHARACTERISTICS
Parking, size, demolitions
- LOCATIONAL CONTEXT
Parks, transit, centers & corridors, zones

RIP PERMIT DATA ANALYSIS

Data and Methods

The RIP permit data analysis relies on information from the City of Portland's permitting system, *AMANDA*, demolition permits, and detailed information from 85 permit applications submitted for Middle Housing projects during the first 12 months after RIP took effect.

The City also conducted geospatial analysis that evaluated permit activity across multiple categories to add more context to the permit activity pulled from the first year of RIP.

Permit Classification

The following sections will refer to various housing types permitted in the R2.5–R7 zones. These housing types are listed below. Refer to the glossary for more information on each permit class.

01 – Single Dwelling	}	Allowed Prior to RIP
02 – ADU		
03 – Single Dwelling + ADU		
04 – Corner Duplex		
<hr/>		
05 – ADU Allowance	}	Allowed by RIP
06 – Duplex		
07 – Triplex		
08 – Fourplex		
09 – Sixplex		

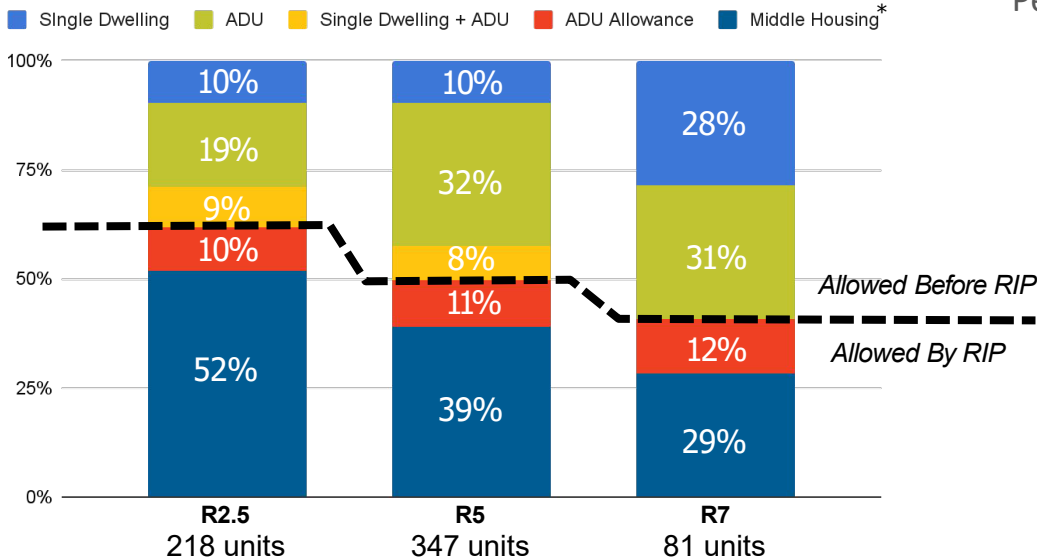
**When comparing the performance of single dwelling development against middle housing, this report includes corner duplexes as middle housing.*

RIP PERMIT DATA ANALYSIS

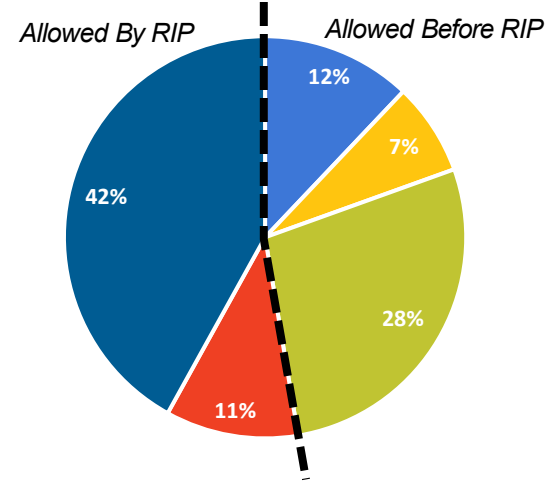
RIP Permits at a Glance

 **Key Finding #3**
 Units allowed by RIP represent the majority of permitted units

Percent of Units Permitted by Housing Type in RIP Zones




Percent of Units Permitted by Housing Type (R2.5, R5, R7 combined)



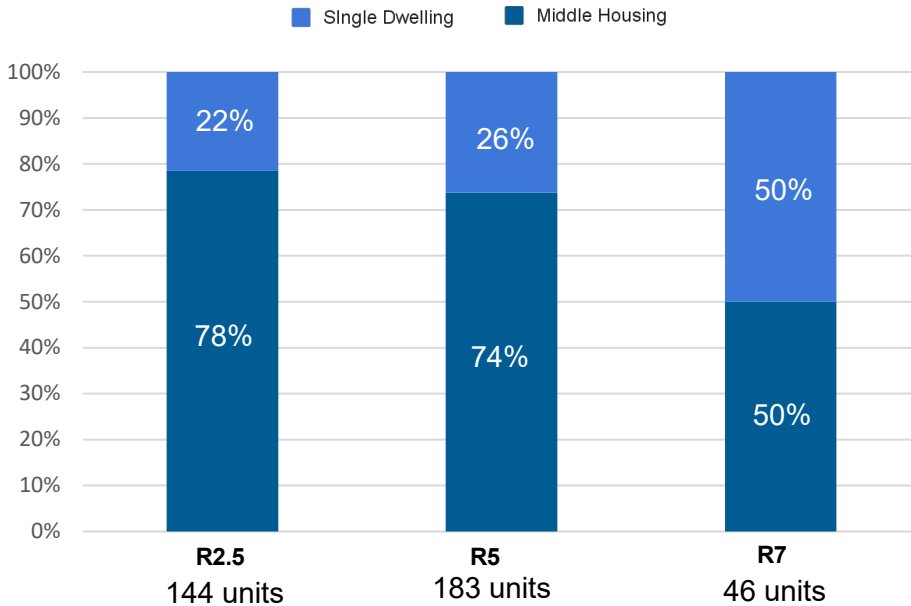
*Middle Housing category includes corner duplexes

RIP PERMIT DATA ANALYSIS

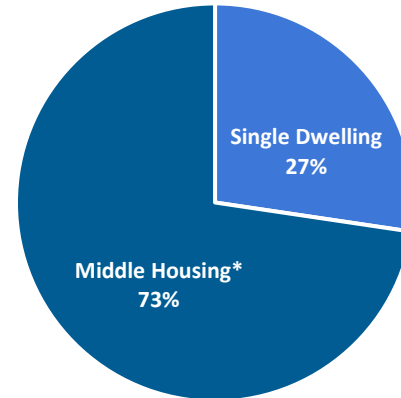
RIP Permits at a Glance

 **Key Finding**
Excluding ADU's, middle housing units accounted for 73% of all units

Percent of Units Permitted by Housing Type in RIP Zones (excluding ADUs)




Percent of Units Permitted by Housing Type (R2.5, R5, R7 combined, excl ADUs)



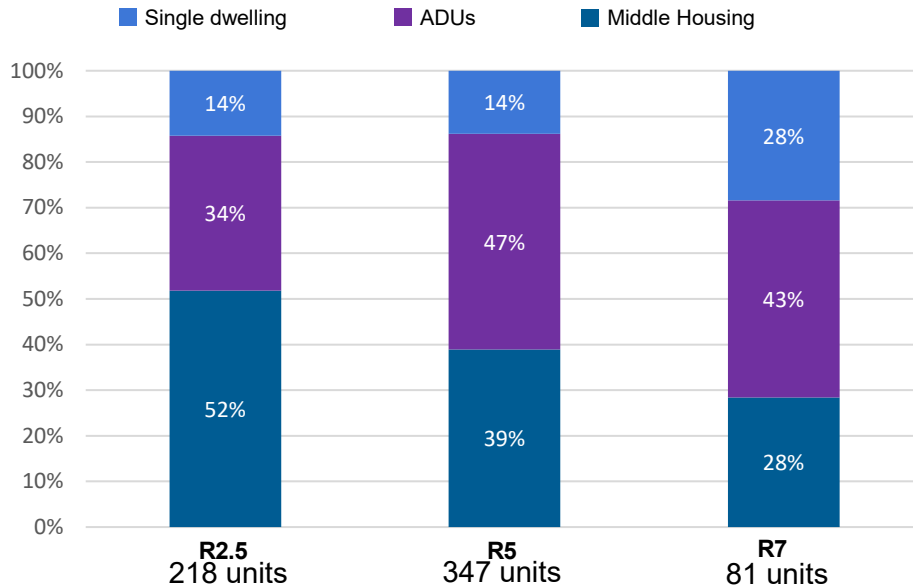
*Middle Housing category includes corner duplexes

RIP PERMIT DATA ANALYSIS

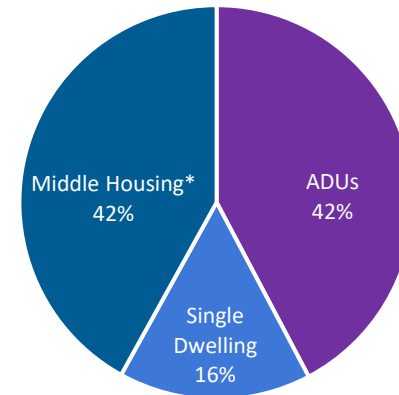
RIP Permits at a Glance

 **Key Finding**
ADUs equaled middle housing units permitted overall

Percent of Units Permitted by Housing Type in RIP Zones (House, ADU, Middle Housing)



Percent of Units Permitted (SD, ADU, MH) R2.5, R5, R7



*Middle Housing category includes corner duplexes. ADUs includes ADU, ADU w/house and ADU allowances

DEVELOPMENT CHARACTERISTICS

Development characteristics of RIP permits were analyzed to identify trends in lot sizes, development projects, and parking configurations.

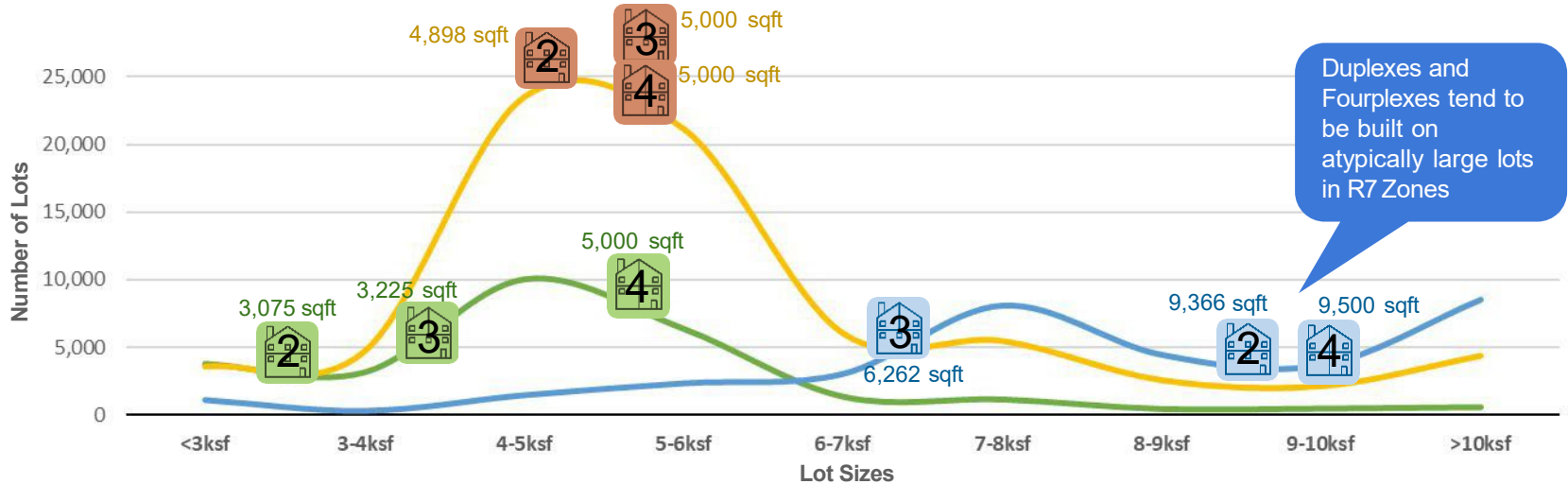
DEVELOPMENT CHARACTERISTICS

Lot Size

Key Finding #5

Developers of fourplexes appear to prefer larger than average lots in the R2.5 and R7 zones.

Distribution of Lot Sizes Citywide by Zone vs Median Lot Sizes for Middle Housing Projects



Source: City of Portland Building Permit Data R2.5-R7 Zones, 8/21-7/22

— R2.5 — R5 — R7  Duplex  Triplex  Fourplex (colors reflect zoning)

DEVELOPMENT CHARACTERISTICS

Unit Size By Housing Type in Each Zone



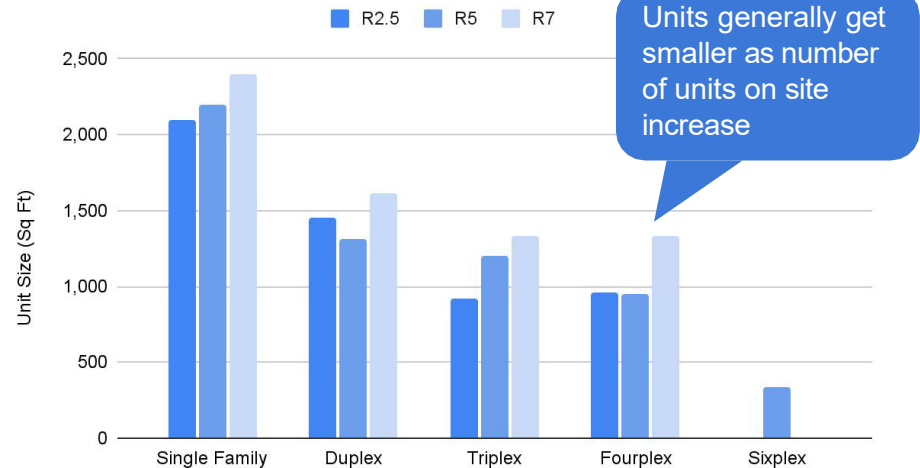
Key Finding #6

Even with new FAR limits for all building types, Middle Housing units tend to be much smaller than detached single dwellings.

This trend is also visible within Middle Housing types. For example, fourplexes tend to include smaller units than triplexes and duplexes.

The Planning Commission revised FAR limits for fourplexes as part of RIP2 to better enable larger sized units.

Average Unit Size (Sqft) by Housing Type and Zone



DEVELOPMENT CHARACTERISTICS

Number of Bedrooms by Housing Type

More units per building tends to produce less bedrooms per unit.

Developers tend to build smaller units with fewer bedrooms in fourplexes than they do in duplexes and triplexes.

Units Permitted by Housing Type and Bedroom Count*

Housing Type	1 Bedroom	2 Bedroom	3 Bedroom	4+ Bedroom
Duplex	1	13	20	2
Triplex	0	13	11	3
Fourplex	0	176	21	7



Key Finding #7

2 bedroom appears to be the “sweet spot” for fourplexes

**Does not include 2 unit conversion into sixplex*

Source: City of Portland Building Permit Data R2.5-R7 Zones, 8/21-7/22

DEVELOPMENT CHARACTERISTICS

Parking Spaces by Housing Type

Parking competes with site area for dwelling units.



Key Finding #8

For Middle Housing types with 3+ units, developers tend to provide less parking. This is likely a result of needing more site area to achieve desired FAR.

**Does not include 2 unit conversion into sixplex*

Source: City of Portland Building Permit Data R2.5-R7 Zones, 8/21-7/22

Number of Parking Spaces per Unit by Permit*

Housing Type	No Parking	< 1 Space per Unit	1 Space per Unit	> 1 Space per Unit
Duplex	5	1	11	2
Triplex	6	1	2	0
Fourplex	46	1	4	0

Fourplexes leverage flexible parking requirements

DEVELOPMENT CHARACTERISTICS

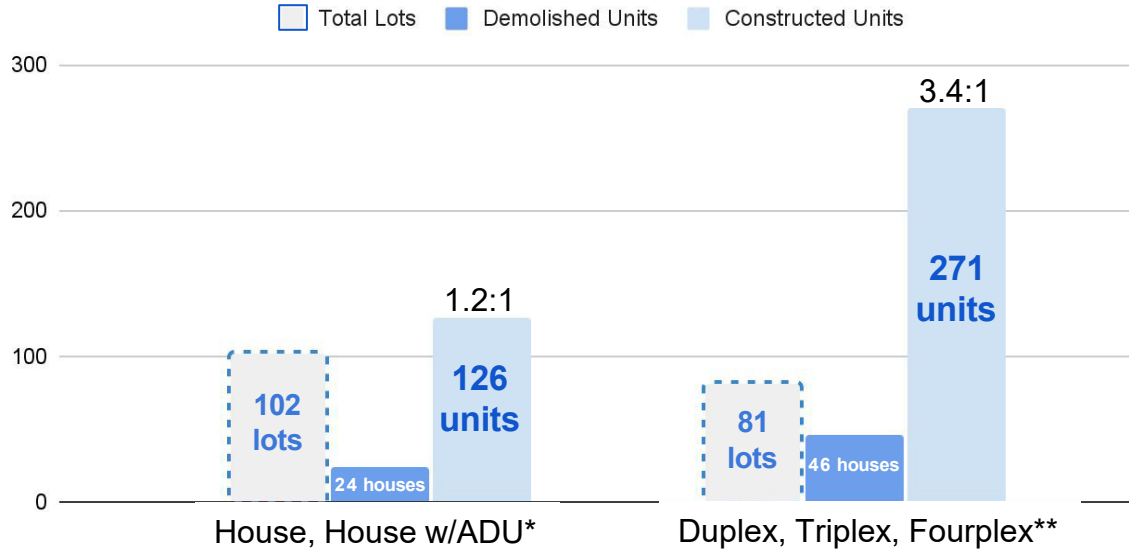
Demolitions and Replacements

The housing unit replacement rate is the ratio of new units built to units demolished.

Key Finding #9

The net number of units added for Middle Housing has been substantially higher than for single dwellings.

Total Lots and Demolitions vs Number of Units Permitted



* Count of primary single dwellings and ADUs on lots where single dwellings or single dwellings + ADU were permitted. Excludes sites where only ADUs were constructed.

** Excludes ADU allowances, includes corner duplexes

DEVELOPMENT CHARACTERISTICS

Demolitions and Replacements

PERMIT REFERENCE
DATA

	Unit Type	Demolished Units	Constructed Units
NON-RIP	Single Dwelling	21	78
	Single Dwelling + ADU	3	48
	Corner Duplex	2	4
RIP	Duplex	5	34
	Triplex	5	27
	Fourplex	34	204
	Sixplex	0	2*

*2 unit conversion from a fourplex into a sixplex

Source: City of Portland Building Permit Data R2.5-R7 Zones, 8/21-7/22

LOCATIONAL CONTEXT

Permit locations for all housing types were analyzed to examine location preferences relative to centers, corridors, zones, and pattern areas.

LOCATIONAL CONTEXT

Proximity to Centers and Corridors

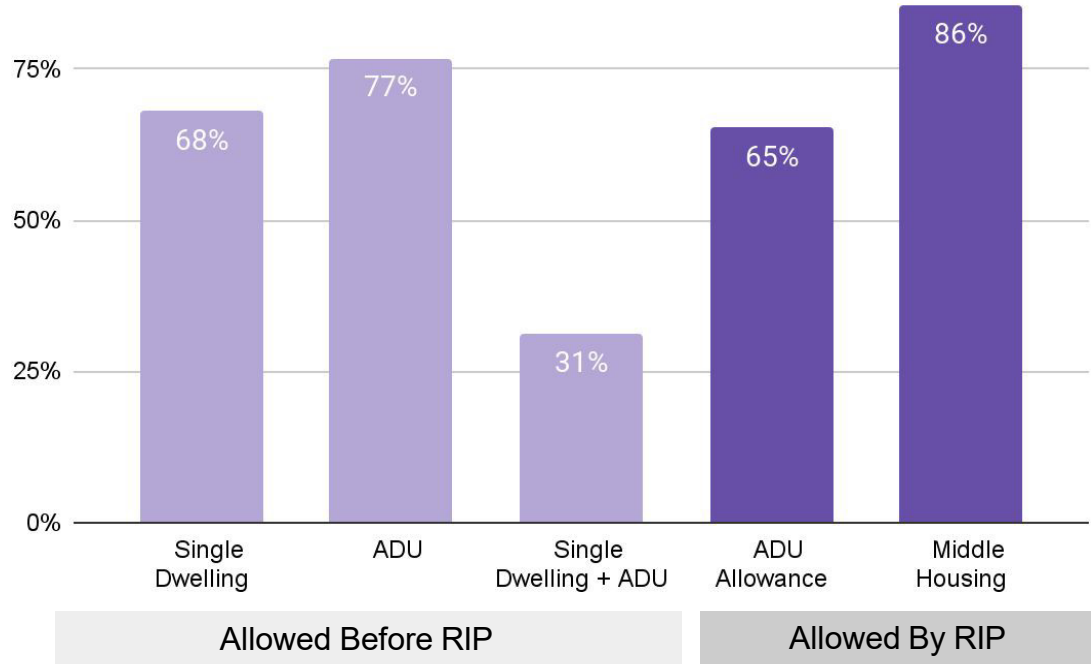


Key Finding #10

A greater share of permitted units newly allowed by RIP are near designated Centers and Corridors.

It is possible that developers of these units perceive benefits from proximity to amenities, such as public transportation and walkable retail.

Percent of Units Built Within ¼ Mile of a Center or Corridor



LOCATIONAL CONTEXT

Proximity to Centers and Corridors

PERMIT REFERENCE DATA

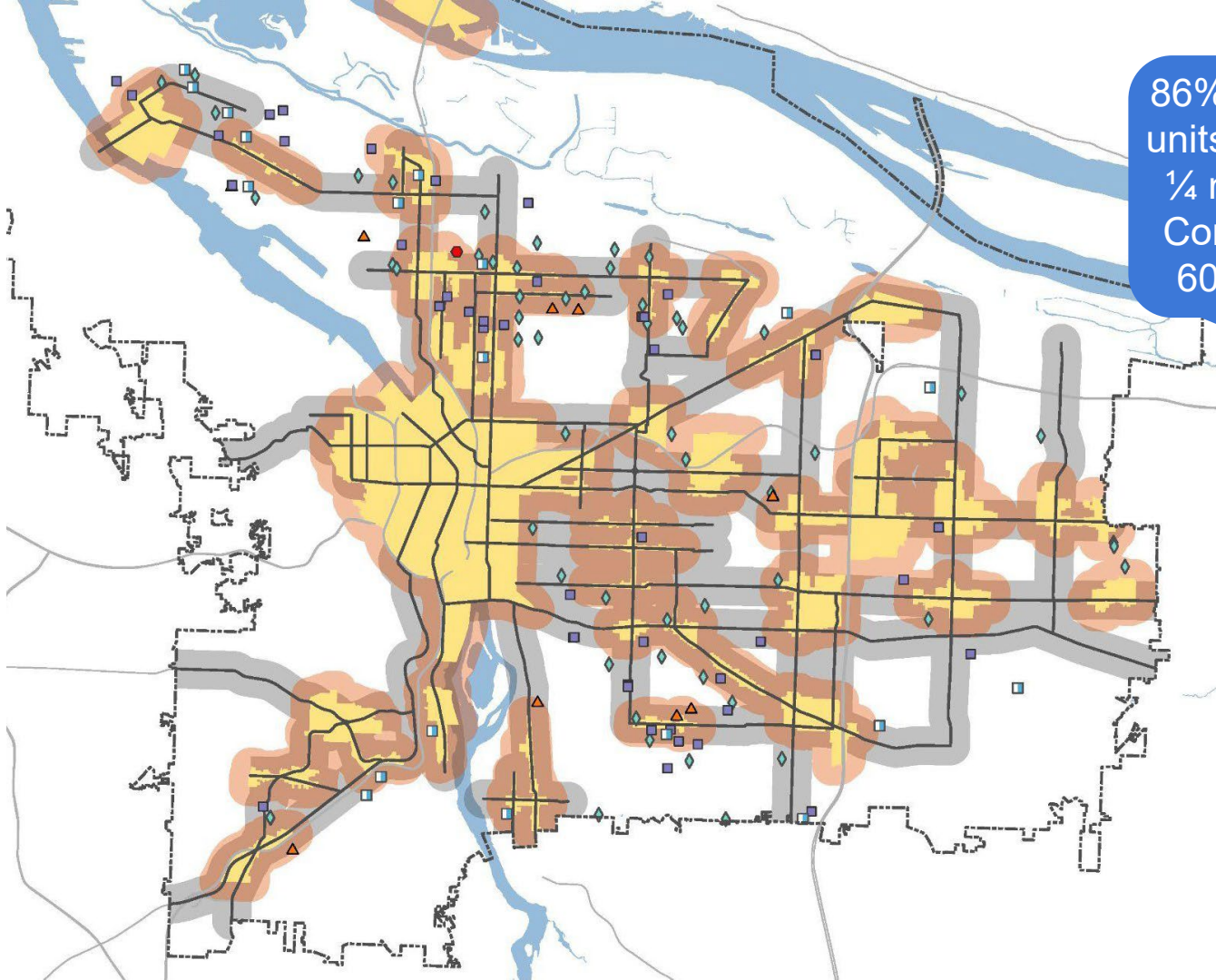
	Unit Type	Total Units	Units within ¼ mile of Centers or Corridors
NON-RIP	Single Dwelling	78	53
	ADU	180	139
	Single Dwelling + ADU	48	15
RIP	ADU Allowance	69	45
	Middle Housing	271	232

86% of middle housing units were built within a 1/4 mile of a Center or Corridor compared to 60% of new houses

RIP Y1 Middle Housing Permits, Centers, Corridors

Legend

- Permit Type
- ◆ ADU Allowance
 - Duplex or Duplex on Corner
 - ▲ Triplex
 - Fourplex
 - Sixplex
- Centers
- Centers 1/4 Mile Buffer
- Corridors
- Corridors 1/4 Mile Buffer
- Highway/Freeway



LOCATIONAL CONTEXT

Proximity to Transit Stops

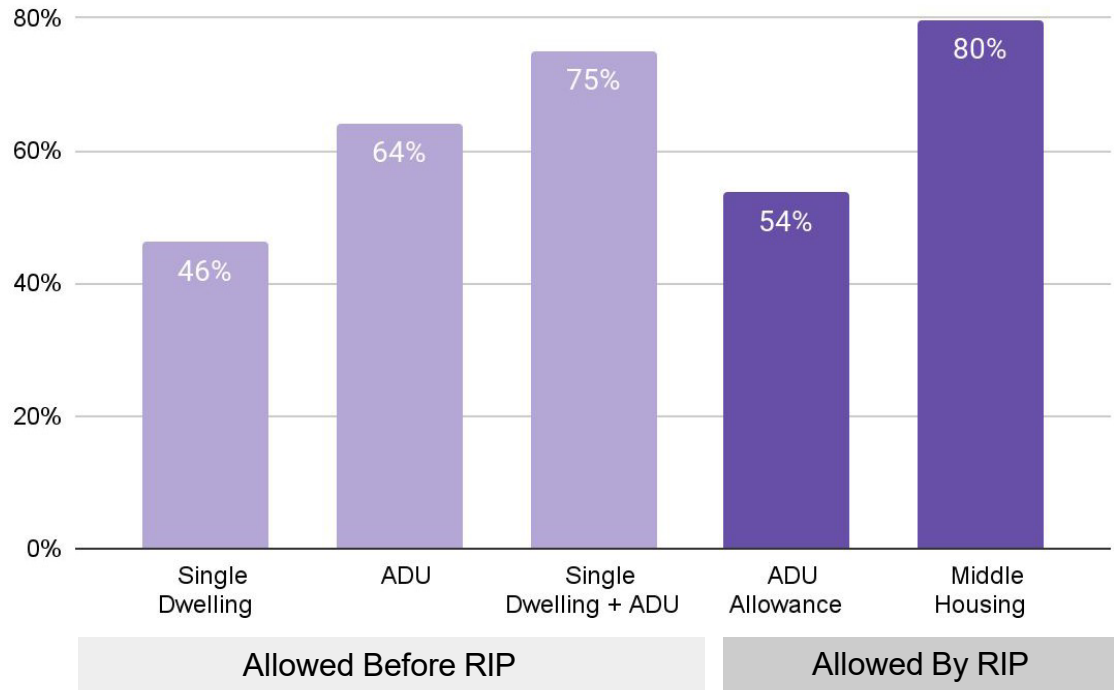
A greater share of permitted units newly allowed by RIP exist near a transit stop.



Key Finding #11

Just over half of Single Dwelling homes are within 1/4 of transit compared to over three-quarters of Middle Housing.

Percent of Units Built Within 1/4 Mile of a Transit Stop

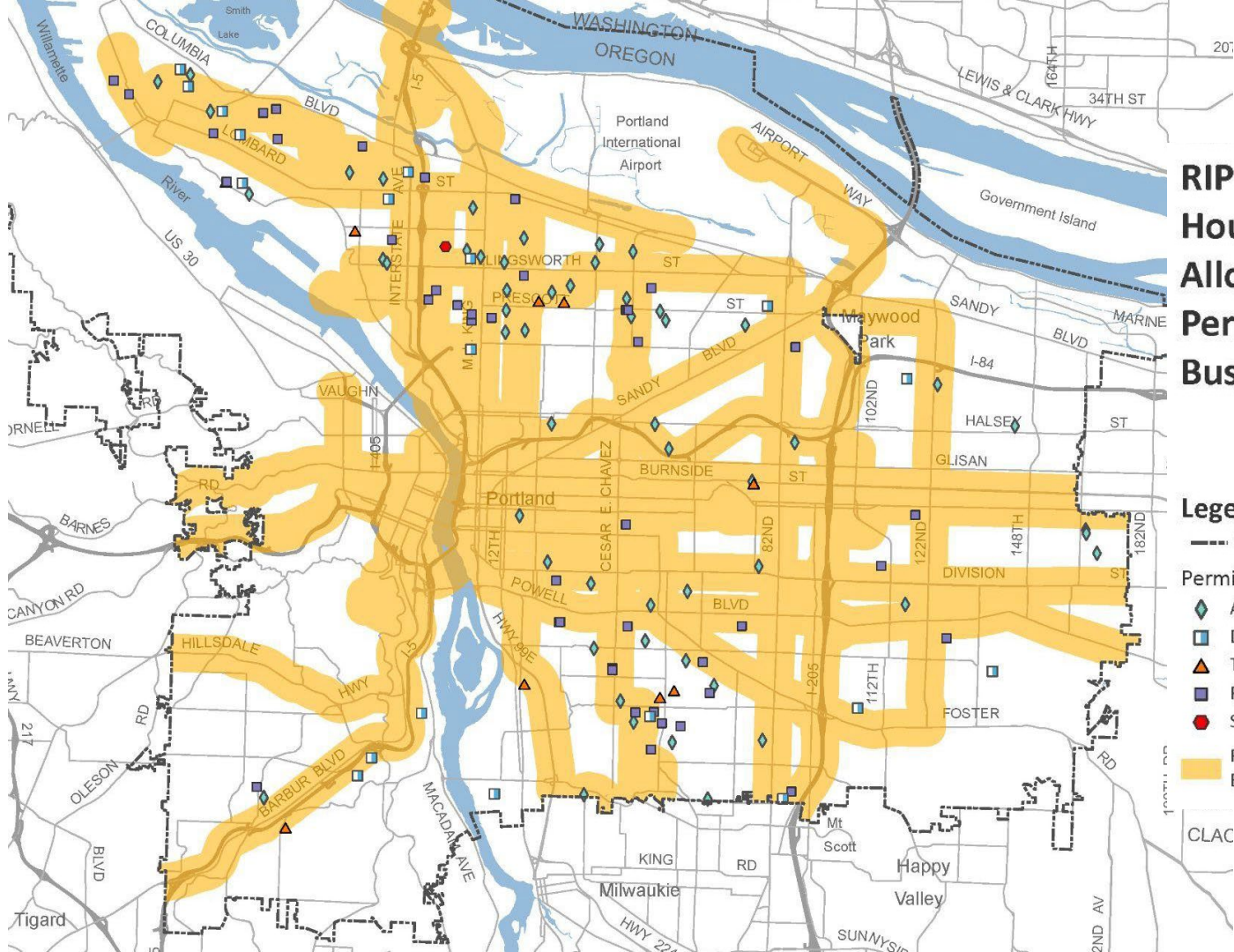


LOCATIONAL CONTEXT

Proximity to Transit Stops

PERMIT REFERENCE DATA

	Unit Type	Total Units	Units Within 1/4 Mile of Transit	Percent
NON-RIP	Single Dwelling	78	36	46%
	ADU	180	116	64%
	Single Dwelling + ADU	48	36	75%
RIP	ADU Allowance	69	37	54%
	Middle Housing	271	216	80%



RIP Y1 Middle Housing, ADU Allowance Permits, Frequent Bus Lines

- Legend**
- City of Portland Boundary
 - ◆ ADU Allowance
 - ▣ Duplex or Duplex on Corner
 - ▲ Triplex
 - Fourplex
 - Sixplex
 - Yellow shaded area: Frequent Bus Lines 1/4 Mile Buffer

CLAC

LOCATIONAL CONTEXT

Housing Units Permitted by Zone

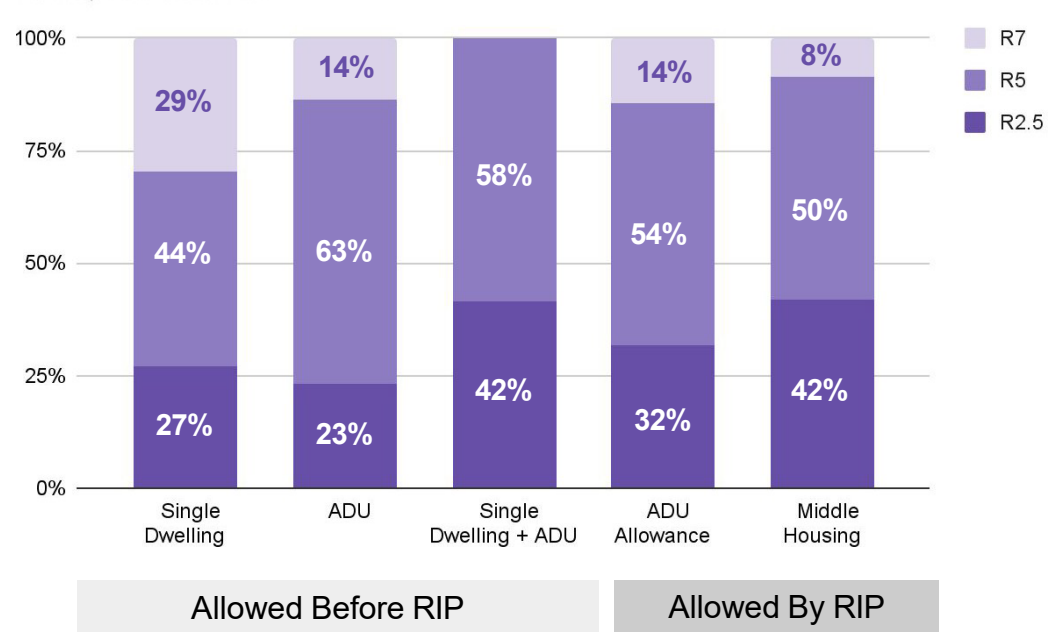
Middle Housing is the dominant housing type in R2.5 and R5.



Key Finding #12

Over 90% of Middle Housing units were constructed in the R2.5 and R5 zones, and they now represent the majority of units permitted in those zones.

Percent Housing Type Permitted by Zone



LOCATIONAL CONTEXT

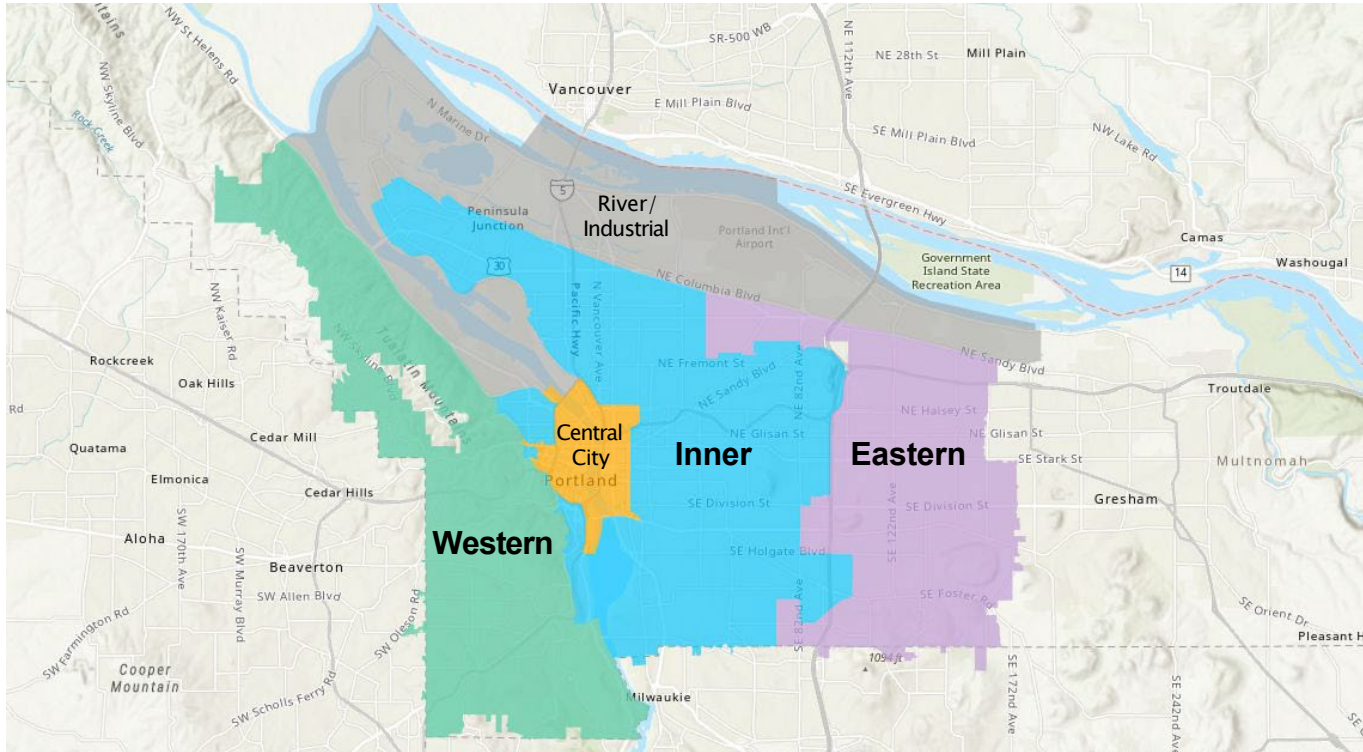
Housing Units Permitted by Zone

PERMIT REFERENCE DATA

	Unit Type	Total Units	R2.5	Percent	R5	Percent	R7	Percent
NON-RIP	Single Dwelling	78	21	27%	34	44%	23	29%
	ADU	180	42	23%	113	62%	25	14%
	Single Dwelling + ADU	48	20	42%	28	58%	0	0%
RIP	ADU Allowance	69	22	32%	37	54%	10	14%
	Middle Housing	271	113	42%	135	50%	23	8%

LOCATIONAL CONTEXT

Pattern Areas Map

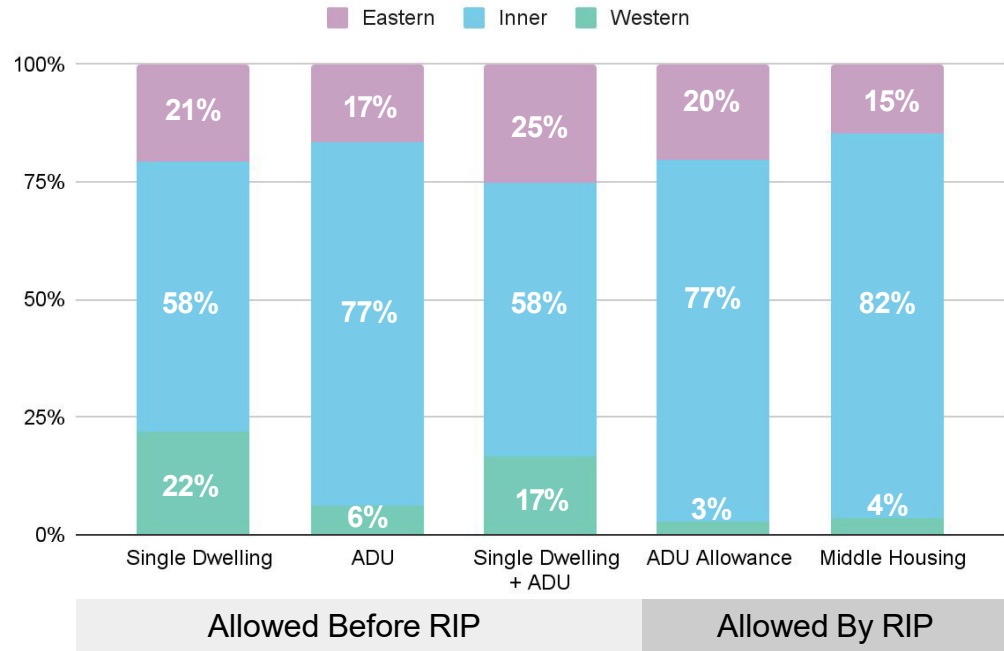


LOCATIONAL CONTEXT

Pattern Areas

The market for Middle Housing in RIP zones is concentrated in inner neighborhoods. Over 80% of middle housing units were constructed in inner neighborhoods.

Pattern Areas by Housing Type



LOCATIONAL CONTEXT

Pattern Areas

PERMIT REFERENCE DATA

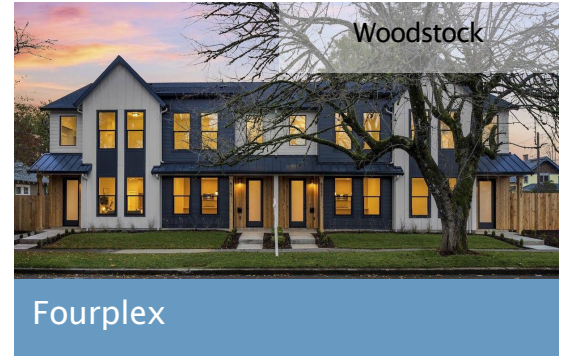
	Unit Type	Total Units	Inner	Western	Eastern
NON-RIP	Single Dwelling	78	45	17	16
	ADU	180	140	11	29
	Single Dwelling + ADU	48	28	8	12
RIP	ADU Allowance	69	53	2	14
	Middle Housing	271	221	10	40

CASE STUDIES

Six case studies are highlighted to represent the range of project types being developed and includes key characteristics.*

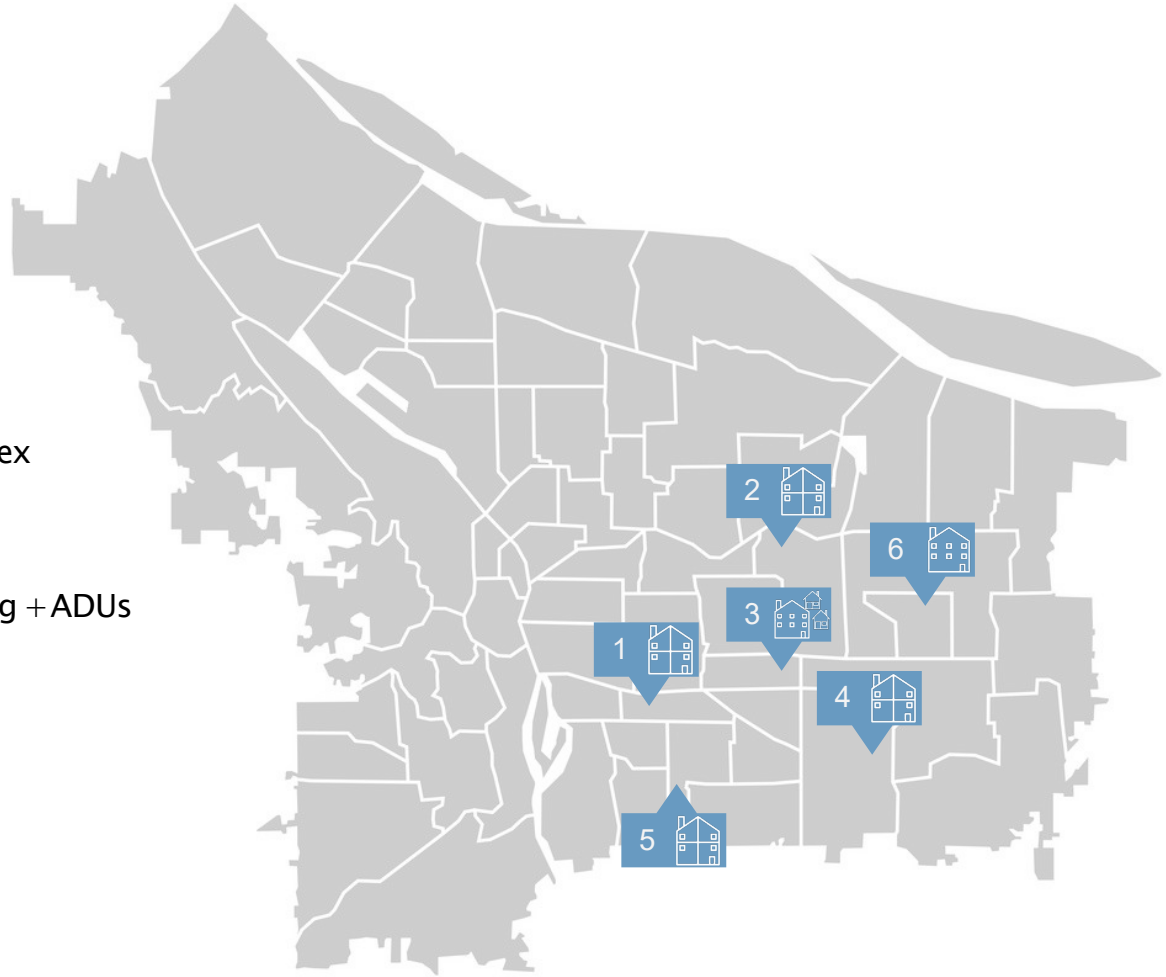
**Due to a lack of completed projects at the time this report was developed, no duplex or triplex case studies were included.*

CASE STUDIES



CASE STUDIES

- 1 [Creston–Kenilworth](#) | Fourplex
- 2 [Montavilla](#) | Fourplex
- 3 [South Tabor](#) | Single Dwelling + ADUs
- 4 [Lents](#) | Fourplex
- 5 [Woodstock](#) | Fourplex
- 6 [Mill Park](#) | Single Dwelling



CASE STUDIES



*Price retrieved Apr 2023

**Sales price inflation-adjusted to 2023 dollars

Image Source: Redfin

Fourplex

Three four-unit townhomes on vacant lots

Case Study Overview

Zone	R2.5
Avg Unit Size	1,008
FAR	0.8
Avg Price / Unit*	\$419,900
Avg Bedrooms / Unit	2
Parking	Not included
HOA	\$80
Lot Size	4,750 sq ft
Tenure	Ownership
Previous Lot Sale Price**	\$1,232,000 – price for 3 lots

CASE STUDIES



Image Source: Zillow

Fourplex

Three-unit townhomes replaced a single-family home while retaining a detached ADU

Case Study Overview

Zone	R5
Avg Unit Size*	1,150 sqft
FAR	0.7
Avg Rent / Unit**	\$2,300/mo
Avg Bedrooms / Unit*	2-3
Parking	Not included
Lot Size	5,000 sqft
Tenure	Rental
Previous Lot Sale Price***	\$375,669

* Townhomes only

**Price Retrieved Aug 2022

***Sales price inflation-adjusted to 2023 dollars

CASE STUDIES



Single Dwelling + 2 ADUs

Single Dwelling + 2 ADUS replaced a single-family home

Case Study Overview

Zone	R5
Avg Unit Size*	888 sqft
FAR	0.5
Avg Price / Unit**	\$456,950
Avg Bedrooms / Unit*	2
Parking	Not Included
HOA	\$34/month
Lot Size	8,125 Sq.Ft
Tenure	Ownership
Previous Lot Sale Price***	\$570,000

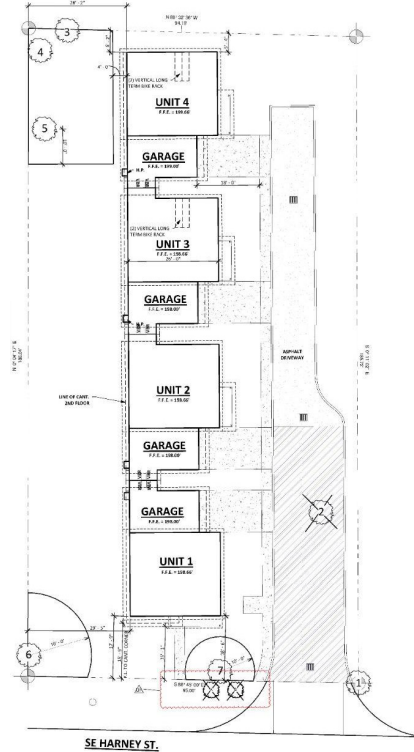
* ADUs only

**Price retrieved Feb 2023

***Sales price inflation-adjusted to 2023 dollars

Image Source: Zillow

CASE STUDIES



Fourplex

Four-unit townhomes replaced a single-family home

Case Study Overview

Zone	R7
Avg Unit Size	1,527 sqft
FAR	0.3
Avg Price / Unit*	\$406,000
Avg Bedrooms / Unit	4
Parking	1 surface, 1 garage
HOA	\$61/month
Lot Size	17,569 sqft
Tenure	Ownership (Condo)
Previous Lot Sale Price**	\$215,000

*Price retrieved March 2023

**Sales price inflation-adjusted to 2023 dollars

Image Source: Redfin

CASE STUDIES

Image Source: Zillow

Woodstock



Fourplex

Four-unit townhomes replaced a single-family home

Case Study Overview

Zone	R2.5
Avg Unit Size	1,395 sqft
FAR	0.6
Avg Price / Unit*	\$518,099
Avg Bedrooms / Unit	4
Parking	Not Included
HOA	\$40/month
Lot Size	10,000 sqft
Tenure	Ownership (Condo/Co-op)
Previous Lot Sale Price**	\$572,270

*Price retrieved Feb 2023

**Sales price inflation-adjusted to 2023 dollars

CASE STUDIES



Image Source: Redfin

*Price retrieved Apr 2023

**Sales price inflation-adjusted to 2023 dollars

Single Dwelling

One single dwelling (SD) home on two lots was demolished and replaced with a SD home on each lot

Case Study Overview

Zone	R5
Unit Size	2,076
FAR	0.4
Avg Price / Unit*	\$579,900
Avg Bedrooms / Unit	4
Parking	1 Car Garage
HOA	N/A
Lot Size	5,227 sq ft
Tenure	Ownership
Previous Lot Sale Price**	\$220,335

RECOMMENDATIONS

The following recommendations are intended to improve the City of Portland's workflow in future years of reporting on RIP.

Recommendations for Ongoing Reporting

1

Because trends in housing production take time to identify, conduct recurring annual or bi-annual reporting on the residential development pipeline in zones where RIP took effect.

2

Develop a definitive list of permit classifications and definitions to differentiate Middle Housing from other housing types.

3

Cross reference Middle Housing permits with sales data to gain better understanding of the pricing of for-sale units as more come online.

4

Cross reference Middle Housing permits with “schedule R” rental property registration data to gain a better sense of tenure.

5

Conduct further interviews with Middle Housing developers to understand perceived barriers to development as well as location, site, and development project preferences.

6

For Middle Housing permits, develop a streamlined workflow for extracting development projects from plansets. For all other permits, track lot and building size at a minimum. Track unit sizes for ADUs.