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How Long Does It Take to Build Multifamily Housing?

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Summary:

Increasing the supply of multifamily housing is a key strategy to reduce the cost of shelter in our larger cities. However, the time required to produce these units has grown over time. We document the duration from when an apartment or condominium development or redevelopment (i.e., conversion from another use) is first announced until its completion. We break down this duration into (a) the planning and permitting phase and (b) the construction phase. We find that, on average, projects spend three to four months more in the planning stage than in construction. This project duration is longer in the Northeast and the West, compared to the Midwest and the South, and it is cyclical over time, declining during extended periods of market weakness. Mixed-use projects and conversions tend to take longer to plan and build than multifamily-only projects and new construction. Finally, there is very little difference in development time between projects with public versus private funding.

Key findings:

1. It takes longer to plan and permit new multifamily housing than it does to construct.
2. Development time is cyclical with the building cycle suggesting that congestion in local planning offices or building suppliers may prolong project completion.
3. Converting an existing building to housing actually takes longer than building a new structure.

Center Affiliation: Center for Housing and Policy

JEL Classification: R31, H57

Key words: multifamily housing, residential real estate, planning, construction, project duration, geographic variation

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1 Introduction

In this analysis, we measure the duration from project announcement and permitting through construction to completion of multifamily buildings (apartments or condominiums). We use Dodge's SupplyTrack database of individual property development pipeline, which allows us to track the extensive planning phase that spans the period when a project is introduced to the public, zoning approval or variances are secured and contract is let.[1] This planning period includes architectural and engineer design, market analysis and community engagement, and—most critically—zoning approval. We compare these timelines across buildings of different sizes, types, and locations across the United States. This analysis reveals the geographic variation in development time, the cyclicality of development time, and the differences across types of development on four dimensions: building size, public versus private projects, conversions versus new construction, and multifamily-only versus mixed-use. We conclude by highlighting important implications for both policy makers and researchers to better understand and address these challenges as US cities strive to build for the future.

This work builds upon previous work by Millar, Oliner and Sichel (2016), using the same database during an earlier time period. They identify 80,000 projects from 1999 to 2010. They focus on "time-to-plan," measured as the time from the beginning of the planning phase to the construction start date. They find an average time of 16 months across the United States over these 12 years, with higher averages for bigger buildings and for projects located in California and the Northeast. They also find that the average time-to-plan increased by three to four months during this time period. Our analysis adds an additional "time-to-build" component for the construction process itself, and we extend the time period through 2022.

Both the causes and consequences of this development timeline are of interest. In the urban economics literature, the most commonly measured "cause" of development delays has been regulations, such as different zoning ordinances, building codes, and government approval processes. Gyourko, Hartley and Krimmel (2021) have shown compelling evidence that these restrictions and hurdles have grown over recent years, as most major US cities have made it more difficult to build quickly or affordably. Their Wharton Residential Land Use Regulatory Index surveys more than 2,450 "primarily suburban communities" in 2006 and 2018 to show these changes over time. They find that the average time from submitting a project to approval is five months on average, ranging from 3.4 for the bottom quartile to 8.4 months for the top quartile. Of the 44 metropolitan areas with at least 10 communities reporting, the most regulated cities are located in the Northeast or West, and the least regulated cities are located in the Rust Belt. These results are consistent with our findings, regarding the locations of the longest and shortest development times, respectively. The Wharton Index is a compilation of many different kinds of regulations and does not correlate perfectly with our metrics of interest here, but it does

[1] For example, the National Association of Home Builders (NAHB) has a blog using a survey of construction data that have a very short period to secure a permit. However, this does not capture the planning phases that include zoning approval.

include a seperate measure called the Approval Delay Index (ADI), which more closely matches our measures by tracking the average of review times for different types of projects. The correlation between this ADI and the overall Wharton Index is only 0.41. As a result, it is not surprising that Millar, Oliner and Sichel (2016) find that the 2006 Wharton Index does not have a statistically significant association with their measure of time-to-plan, but the ADI does.

The consequences of these time delays go far beyond urban economics. In fact, they comprise one of the key parameters in many macroeconomic models. Most capital investment takes time to deploy and is often irreversible. The decision to proceed with an investment is informed by the expected value of the project at completion and uncertainty around that expectation. Thus, any expected delays—between the investment decision and new supply in the market—alter investment behavior and therefore the fluctuating pace of investment over the business cycle. Christiano and Todd (1996) argue that long lead times help to explain why business cycles are so persistent—i.e. why GDP has such strong autocorrelation—because investments cannot be reversed quickly in response to a shock. They also can explain why productivity rises before hours worked: Investment begins, but construction does not follow until several months later. Finally, they suggest, long lead times explain why investment lags output: Most firm spending occurs in the construction phase, even though the positive shock occurred several months earlier. Millar (2005) provides empirical evidence to support some of these claims. In a structural vector autoregression, investment only responds to permanent shocks, not temporary shocks; however, conventional macroeconomic indicators such as cash flow and Tobin's Q respond to both shocks, suggesting that they are poor predictors of investment in the real world where there are "gestation lags" for investment to be fully realized. Boca et al. (2008) add further nuance by showing that Tobin's Q is useful for predicting equipment investment, but not structures, because structures take two to three times longer to plan and build. They go so far as to suggest that these time delays can explain why investment often appears insensitive to interest rates, equity prices, and other conventional indicators because "the current flow of investment reflects not only expenditures for new projects, but also the completion of existing projects, the decisions for which were based on the expectations of costs and benefits formed in earlier periods." Thus, it is crucial to understand the length of these overlapping times to plan and execute large capital investments.

2 Data

Our primary data set is a proprietary database of current and prospective development projects from January 2003 to December 2022, collected by Dodge Construction Network compiled in the SupplyTrack database. Dodge reporters regularly make "source calls" to contacts at development, architecture, engineering, and construction firms, as well as monitoring the local trade press, business journals, and planning and zoning notices. They also use a "Custom Scoop" algorithm to search the internet for development news, and they judge the comprehensiveness of their sampling by comparing the resulting projects to the total number of building permits *ex post*. Based on this robustness test, they estimate that the SupplyTrack database captures 80 percent of construction starts in the United States (and Canada) by dollar volume every year.

Despite this high sampling fraction, the nature of the data collection introduces three limitations into our analysis. First, because the Dodge reporters are focusing on public news, this sample is likely biased toward the larger and more prominent projects; therefore, they suggest that it is most reliable for projects worth more than $8 million.

Second, we do not know how soon in the development process a project is observed or whether this process varies by city or region based on the skill of the local SupplyTrack reporter or the depth and coverage of the local press.

It is possible that places with seemingly more rapid development timelines are in fact just slower to discover projects in the development pipeline. Some developers, perhaps in less dynamic cities with more speculative projects, may announce their plans early in the process while in a search for funding. Alternatively, firms with viable projects but in a challenging zoning regime may advance the project further before disclosing it to the outside world if they fear that third parties will try to block the project. The endogenous announcement/discovery of new projects represents the key challenge to working with these data in a purely cross-sectional framework. However, SupplyTrack data can still serve as an important gauge of the pace of development activity over time both national and locally.

From the moment a project is announced, it enters the SupplyTrack database permanently. Every month, SupplyTrack assigns each project to one of eight phases of development:

1. **Preplanning:** the initial conceptual phase when the project is announced but not designed or permitted yet;
2. **Planning:** when design schematics are drawn up and physical plans are made;
3. **Final planning:** when the developer is getting final approvals from all stakeholders;
4. **Bidding:** when the developer is accepting offers from contractors and negotiating contracts;
5. **Underway:** the actual construction phase;
6. **Completed:** when construction is complete and the building is operational;
7. **Deferred:** if the developer has announced that they are halting the project and waiting for some challenge to be resolved; and
8. **Abandoned:** if the project is canceled and never completed in its current form or by the current developer.

We focus on three intervals: (1) the length of time between when a multifamily project first enters the preplanning or planning stage (its inception), and when the Dodge reporter first discovers it's under construction and (2) the length of time between when it begins construction and when the project is ultimately completed. This is one advantage of our data. While acquiring a building permit can be relatively quick, securing the necessary zoning permissions, financing, and often neighborhood consent can take much long. Finally, we look at first announced to

completion duration to observe how long it takes from inception to delivery.

One challenge to measure duration is that the underlying data-generating process means that completed projects in later years can take longer because we have more time to observe their gestation not because they're actually slower. To overcome this, we impose a five-year rolling window, dropping the first five years of our data (2003–08) and excluding projects that took more than five years to break ground. This drops 3 percent of completed projects overall but 9 percent of the projects completed in 2022. This highlights the need for a fixed window to observe completions.[2] Still the project censoring imposed by the 5 year window means our project duration estimates are a lower bound of the true average timeline.

In addition, Dodge archived earlier project data through 2015 and brought in existing data in 2003 and 2005, which may have introduced projects already well along and perhaps making these projects look unduly expedient. To avoid this, we drop any projects that first appear in SupplyTrack in January 2003, October 2005, or January 2016.

We also exclude any projects that were first identified by Dodge reporters when they were only first discovered by the reporters in the "final planing" or "bidding" stage. Finally, we exclude the top 1 percent of projects based on number of housing units delivered, excluding projects with more than 480 dwellings. These very large projects are of often part of staggered, master-planned development projects that may have a very different planning and review process.

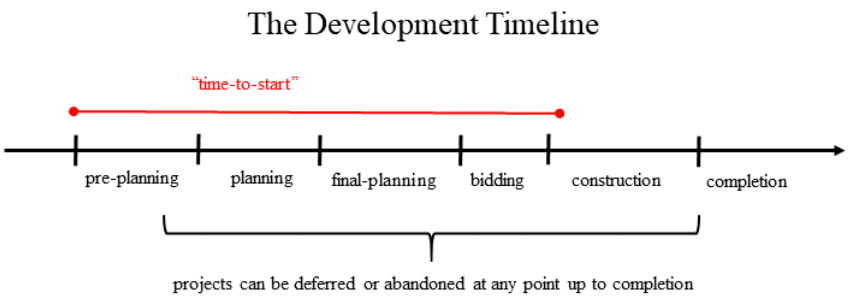
Initially, we measure the duration of time (in months) between when a project is first announced (discovered by Dodge reporters) and when construction starts. Before the project begins, SupplyTrack denotes four different phases: pre-planning, planning, final planning, and bidding. These phases are denoted in figure 1 as "time-to-start." However, it is not always the case that *every* phase is populated for a given project. A project can first appear in the planning stage or final-planning stage, or skip directly from pre-planning to bidding. For our preferred specifications, we simply use the month the project is first observed, whatever planning phase it is in or we may simply be observing different types of projects than Census.

On average across all years and geographies in our data set, it takes 15.3 months from when a project is first announced to when construction begins as shown in the first row of table 1. From the time construction starts to the time it is completed (second row) takes an addition 12.3 months on average and thus, from inception to delivery, a multifamily project takes 27.6 months in our sample period. This represents a somewhat fast construction phase compared to measures derived from Census's Survey of Construction. It may be that Dodge reports sometimes miss when a project first breaks ground or that we are censoring the most troubled projects via our five-year completion window.

Dodge agents record a number of useful characteristics of individual projects. The

[2] We also experiment with quantile regression to recover median project duration when is less sensitive to long-duration projects in the tails. Our results are largely robust to these alternative specifications.

Figure 1: Phases of Development



Note: This figure presents the six phases in the SupplyTrack database under the timeline. Above the timeline, "time-to-start" is the authors' calculation. Source: Dodge Construction Network.

average multifamily project contains 94.3 residential units units. Roughly 2 percent of multifamily projects tracked by Dodge include public participation. Most of the sample is new construction, but 4 percent is conversions from some other use to multifamily. Approximately 20 percent of the sample is mixed-use, including either a retail component or a hotel component. There are a small number of projects intended for seniors.

Our second measure of interest is the duration of time between when the project actually breaks ground and when the project is completed. This "construction" phase as denoted in figure 1 and is, formally, the duration in months from when the project was first determined to be "underway" and when it was finally completed. Sometimes a project can enter a "deferred phase" but if it is ultimately completed it remains in the analysis.[3] The Time-to-Build phase tends to be shorter than the planning phase, with an average 12.3 months as shown in row (2) of table 1.

3 Variation in Project Duration

We now proceed to parse project duration. We examine how project duration has varied by time, region, and number of units.

Changes in Project Duration over Time

Looking across the study period, on average, multifamily housing takes longer to develop today than it did 10 or 15 years earlier. Figure 3 shows this increase in the average duration from approximately 26 months in 2008 to 30 months in 2022. This upward trend is similar to the one that Millar, Oliner and Sichel (2016) detected from 1999 to 2010. The change in median duration is even more striking going from 23 months in 2006 to more than 29 months in 2022. Here, the mean is higher than the median, indicating a skew in the distribution due to a minority of projects that take a very long time to develop, but the six-month rise in median duration suggests that extended project timelines are becoming more systemic.

[3] We are only looking at completed projects, so we are forced to exclude any projects that were abandoned.

Table 1: Summary Statistics for Multifamily Projects 2008-2022

	Mean	(std. dev.)	min	max
Duration (dependent variables)				
Plan-to-completion (total)	27.6	11.7	2	60
Plan-to-start (planning)	15.3	10.4	1	59
Start-to-completion (construction)	12.3	6.3	1	55
Covariates				
Number of Unit	94.3	101.5	5	480
Public funding (D)	0.02			
Conversion (D)	0.04			
Has a retail component (D)	0.19			
Has hotel component (D)	0.004			
Intended for seniors (D)	0.003			
Region:				
Midwest (D)	17.8			
Northeast (D)	33.0			
South (D)	30.0			
West (D)	19.2			
Observations	34,541			

Note: excludes Alaska and Hawaii and project with less than 5 units or more than 480 (the top 1 percent of units). We exclude projects that took more than five years to complete. Source: Dodge Construction Network and authors' calculations.

The time-varying measure of average and median planning and construction phases are presented in figure 3. First we note the the planning and construction phases (both mean and median) have tended to increase over time.

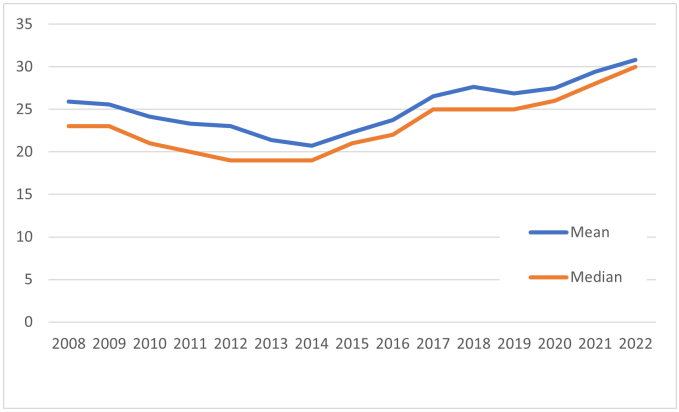
However, timelines did not march steadily upward. In the wake of the housing bust of 2008, production timelines actually compressed, before starting to rise again after 2015. This was a period of low overall multifamily construction. This decrease in development time was observed both in the planning process and especially during construction, suggesting that during building booms there may be some congestion or bottlenecks for key materials or skilled trades and perhaps with the planning and permitting offices.

Geographic Variation and Number of Units on Delivery Time

We present average total development times by planning and construction in the left panel of figure 4. The fastest development occurs in the Midwest, where projects exit the planning phase faster and are also built more quickly. Projects take approximately three months longer to complete in the Northeast and 5.7 months longer in the West. Surprising, it takes slightly longer to deliver a project in the South despite its reputation for having a more permissive planning regime.

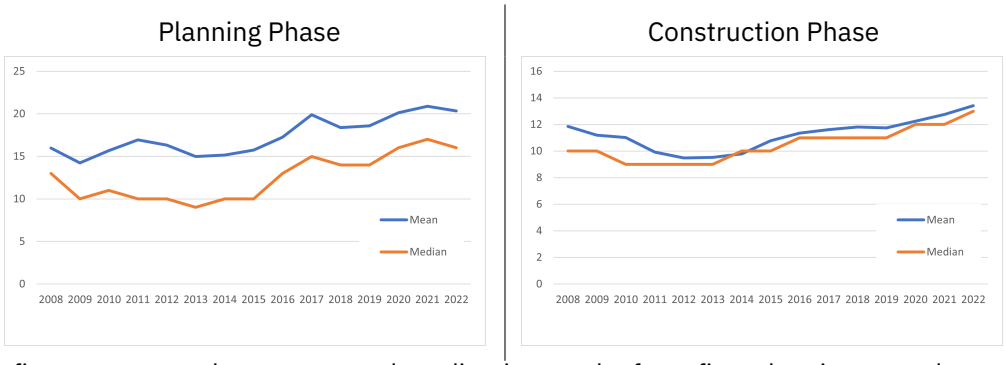
Looking within phases, we note that the South's relatively fast planning phase—consistent with fewer regulatory hurdles—is offset by the slowest building phase of any region. Accommodative planning departments may not only approve projects faster but also permit more units, allowing the South to build larger projects that then take longer to complete. In our sample, the average newly completed multifamily unit in the South had 146 units, whereas in the Northeast, the average project delivered only 53 units.

Figure 2: Multifamily Development Timeline from Inception to Completion



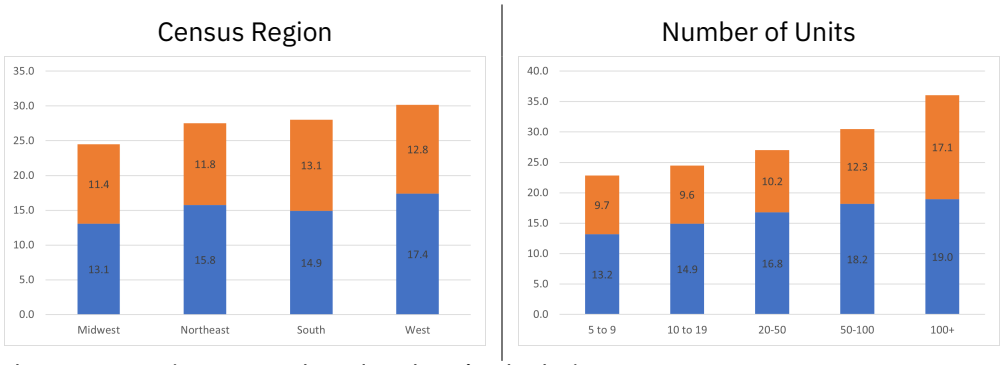
Note: This figure presents the average and median in months from a multifamily projects first announcement to its completion. Source: Dodge Construction Network and authors' calculations.

Figure 3: Planing and Construction Duration over Time



Note: This figure presents the average and median in months from first planning to underway and from underway to completion. Source: Dodge Construction Network and authors' calculations.

Figure 4: Average Time to Completion by Region and Number of Units



Source: Dodge Construction Network and authors' calculations.

In the right panel of figure 4, we show average planning and construction duration by the number of residential units delivered. Planning duration appears to grow steadily with project size, whereas project with more than 50 units and certainly more than 100 units take significantly longer to complete. This may explain the South's slow construction phase. At the same time, growing planning and construction timelines presented in figure 3 could be an artifact larger multifamily projects being built. Average units delivered grew from 68 in 2008 to 94 in 2022.

To compensate for this variation in project types we will turn to statistical methods to isolate determinants of project duration and to recover a constant size duration timelines.

4 Controlling for Project Location, Scale, and Type

There is tremendous heterogeneity in multifamily development projects. It may not be reasonable to expect a 30-story low-income apartment building in a heavily regulated neighborhood to be approved in the same time as single-story market-rate garden apartments under a more *laissez faire* regime. We (modestly) attempt to normalize these projects across areas, size, and other characteristics.

For each of our three outcome measures, we estimate a conventional ordinary least squares regression of the dependent variable, $duration_{ip}$, on the the total number of housing units within the project (as a quadratic), whether the project also contains a retail or hotel element, whether the units are intended for senior housing, or whether there is public involvement in the project. We also control for the season of completion:

$$\begin{aligned} duration_{ip} = \alpha &+ \beta_1 units_i + \beta_2 units_i^2 + \beta_3 retail_i \\ &+ \beta_4 hotel_i + \beta_5 senior_i + \beta_6 public_i \\ &+ \lambda_s + \gamma_r + \chi_t + \varepsilon_{isrt} \end{aligned}$$

where i denotes individual projects, p, denotes which project phase we're studying (entire project, planning, and construction), s denotes seasons, r indexes census regions, and t indexes years.

We present the results from this simple regression analysis in table 2. Each column lists the coefficient estimates based on the duration being measured. First, total project duration in

column (1), duration from origination to first underway—the planning/permitting phase—in column (2), and duration from start to completion—the construction phase—in column (3).

We note a couple of interesting findings. Projects with more units take longer to plan, and build (and thus longer overall), but at a decreasing rate. The delay from additional units falls mostly during the construction phase. These findings are consistent with previous evidence documenting nonlinear increases in construction cost per square foot as building size increases (Eriksen and Orlando, 2022).

When we control for number of units and specific features of individual projects we find that the Midwest, the omitted category, is the fastest to deliver multifamily housing. Its planning phase is the shortest, and it builds as quickly as the South. On that note, when we control for what's actually being built, the South is two months slower to plan but can build as fast as the Midwest, a fact obscured by looking just a average or median project duration in the left chart of figure 4. The Northeast takes 2.6 months longer to plan and 1.4 months longer to build so that its total delivery time is four months longer than the Midwest and two months longer than the South. The West takes three-quarters of a month longer to build, but, critically, takes 4.3 months longer to plan than the Midwest, making its total project delivery time five months longer.

Public versus Private Projects

Looking at individual projects, we make some interesting, and perhaps surprising, discoveries. Public projects do not take longer to be delivered. They take about as long to plan as a purely private housing project. This observation is inconsistent with much anecdotal evidence about the additional regulatory and financial hurdles confronting low-income housing built with government tax subsidies and restricted rents (Kneebone and Reid, 2021). However, these results are only weakly statistically significant in most specifications. Additionally, these same public projects actually take *less* time to build than private projects, perhaps because they are of a simpler design or height.

Conversions versus New Construction

Second, conversions take almost two months longer to plan than new construction, according to column (2) of table 2. This observation is particularly important in the wake of the recent work-from-home revolution, as many observers point to conversions of vacant office space as being an easier or faster solution to the housing affordability crisis. As some skeptics warned, this solution likely to be held back by structural, economic, and legal constraints that make it difficult and time-consuming to execute such conversions (Hutson and Orlando, 2023). On the upside, once the planning phase is complete, conversions spend slightly less time in the construction phase than does a new build (column (3) of table 2). Overall, however, the planning phase dominates, and therefore conversions take an additional month to deliver. There are no time savings compared to new construction.

Multifamily-Only versus Mixed-Use

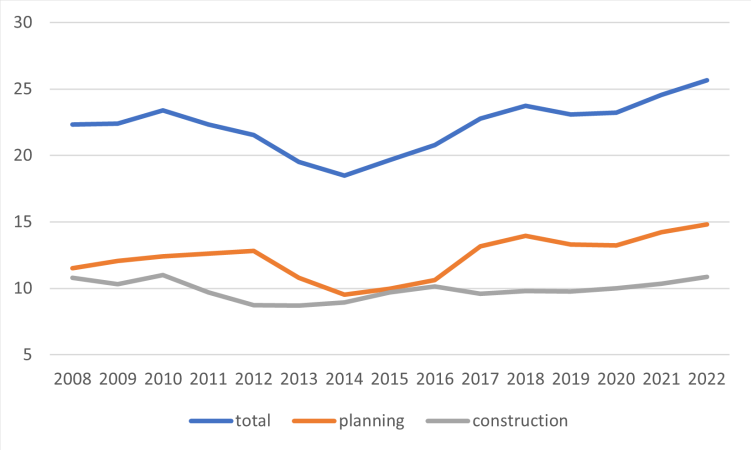
Finally, mixed-use projects take longer to develop than multifamily-only projects. Including retail or hotel housing components increases the planning time by two to three months (in table 2). Specifically, multifamily housing that incorporates retail space take another three months to

Table 2: Determinants of Multifamily Project Duration

Duration:	(1) plan to completion (total)	(2) plan to start (planning)	(3) start to completion (construction)
Number of units	0.0594***	0.0108***	0.0486***
	(0.00194)	(0.00180)	(0.000975)
Number of units2	-9.73e-05***	-4.14e-05***	-5.59e-05***
	(5.37e-06)	(4.97e-06)	(2.69e-06)
Public participation (D)	-0.145	0.514	-0.660***
	(0.401)	(0.372)	(0.201)
Conversion (D)	1.218***	1.871***	-0.652***
	(0.298)	(0.276)	(0.150)
Retail component (D)	3.184***	1.550***	1.634***
	(0.154)	(0.143)	(0.0774)
Hotel component (D)	2.186**	0.490	1.696***
	(0.991)	(0.918)	(0.497)
Senior component (D)	2.215*	1.983*	0.232
	(1.131)	(1.048)	(0.568)
Region:			
Northeast (D)	4.002***	2.635***	1.367***
	(0.177)	(0.164)	(0.0887)
South (D)	2.076***	2.215***	-0.139
	(0.182)	(0.169)	(0.0914)
West (D)	5.033***	4.287***	0.746***
	(0.195)	(0.181)	(0.0981)
Season Fixed Effects	yes	yes	yes
Year Fixed Effects	yes	yes	yes
Observations	34,541	34,541	34,541
R-squared	0.867	0.701	0.843

Note: excludes Alaska and Hawaii and project with less than 5 units or more than 480 (the top 1 percent of units.) We exclude projects that took more than 5 years to complete. Standard Errors clustered by housing sub-market. *** p<0.01, ** p<0.05, * p<0.1 Source: Dodge Construction Network and authors' calculations.

Figure 5: Planning and Construction Duration for a Standardized 100-Unit Multifamily Structure



Note: This figure presents the average and median in months from first planning to breaking ground by the year of project completion for multifamily residential projects. Source: Dodge Construction Network and authors' calculations.

deliver. The additional time is split roughly equally between addition planning and construction time. Multifamily that also has a hotel takes an additional two months to complete, mostly because of a longer construction phase. Planners often encourage mixed-use development because of positive externalities in dense, walkable cities, but this may slow delivering units to market. However, this observation is a bit speculative. It could be that the multifamily projects best suited to a retail or hotel component are built in areas with a lot of existing density that complicates construction and zoning approval independent of the inclusion of mixed-use.

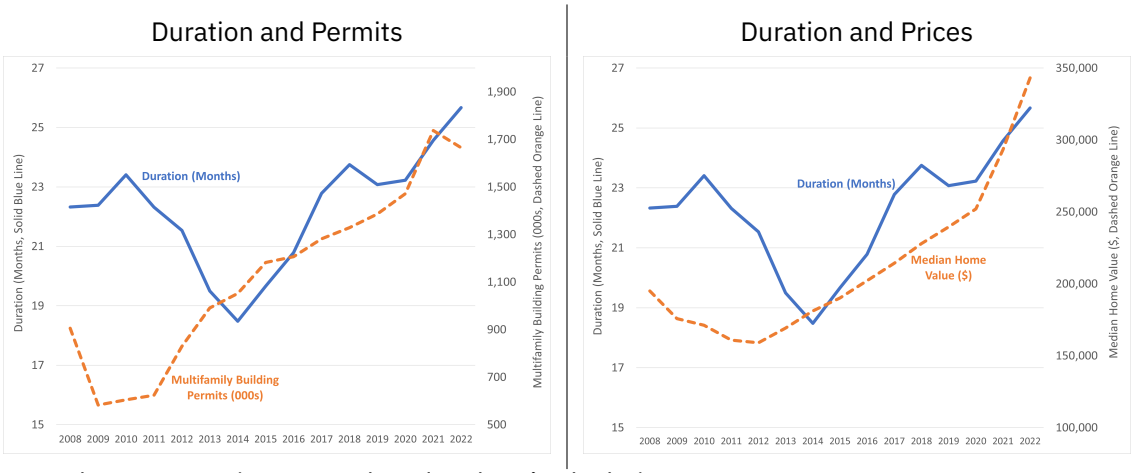
5 Cyclicality of Development Time

We now use the year coefficient estimates (χ_t) and number of units (β_1 and β_2) to estimate the duration of time to completion (and by phase) for a 100-unit, new construction, multifamily housing project with no retail or hotel component or intended for seniors built in the Midwest and completed in the spring. Looking at this standardized product reveals that much of the cyclicality we observed in the summary statistics persists. Construction time begins to decline in 2011 as the projects started in the boom worked their way to completion and doesn't approach its 2010 peak until 2022. Planning duration is more lagged, not declining until 2013 and starting to rise again in 2015.

However, comparing those endpoints obscures significant swings in the time series over this period. In fact, the total development time actually falls for four straight years, from 2010 to 2014, before beginning the ascent that eventually exceeds the previous peak. In other words, development time is cyclical.

Both planning time and construction time are driving this cyclicality. Planning time falls from 2012 to 2014, during a time when the housing market activity declined precipitously and then was slow to rebound from the Great Recession. During this period, there was less development occurring—and therefore, it is likely that many cities experienced fewer

Figure 6: Multifamily Total Project Time with Permits and Median House Prices



Source: Dodge Construction Network and authors' calculations.

bottlenecks in the approval process. The average planning time does not return to its previous peak again until 2017. Building time falls from a local peak of 10–11 months in 2010 to a low of 8–9 months in 2013, and unlike planning time, it just returns to its previous peak in 2022. In other words, there has been no increase in average building time overall during this period. However, the median construction duration was not as elevated in 2010, suggesting that the spike in average duration could be driven by projects in the right tail of the duration distribution. Perhaps some buildings stalled but did not abandon construction during the great recession.

On the whole, both durations seem somewhat cyclical, falling in the wake of the housing crisis and then creeping up as the market slowly recovered. Recall that we are measuring the duration of completed buildings, so the median multifamily building completed in 2013 began planning in 2011, and broke ground in 2012. We next plot our annual time using the total development time estimates from our baseline regression model with measures of development pressure or congestion.

The chart on the left of figure 6 shows how our duration measure tracks alongside multifamily building permits for buildings with five or more units. Throughout most of the graph, it appears that the duration measure responds to permits with a lag. The longest period of declining duration occurs when permits are persistently low. Only after a few years of increasing permits does duration begin to increase. Thus, it appears that projects get completed faster when the market is weak, and when the market is strong, they take longer to develop, perhaps because of competition for labor, building materials, or financial capital. Similarly, the chart on the right side of figure 6 shows duration only declines over multiple years when home values are low and stagnant, though this measure of market strength correlates less directly to the multifamily market (where price data are more difficult to estimate and obtain).

6 Implications for Policymakers and Researchers

This analysis reveals several important facts about the timing of multifamily housing development in the United States during the past two decades:

1. The majority of development time is spent on planning, not construction. On average, planning takes three to four months longer than building. This excludes stealth planning that may occur before announcement and is thus a lower bound.
2. Multifamily housing takes longer to develop in the Northeast and the West than in the Midwest and the South, consistent with previous literature documenting the steeper regulatory and geographic hurdles in those regions. These differences are more driven by differences in planning time than construction time.
3. Over the entire time period of analysis, average planning time increased from 16 months in 2008 to 20 months in 2022.
4. There appears to be a long-term upward trend in the time to deliver multifamily housing.
5. At the same time, development duration is cyclical. When the housing market is weak for an extended period of time, both planning and construction duration decline. However, as the market has been very strong for the past decade, these durations have both increased. Now, it takes longer to develop multifamily housing than it did 15 years ago. It's unclear whether incumbent opposition wanes when less overall development occurs or whether city planning departments tend to get backlogged.
6. Larger projects take longer to complete, mostly because of construction time.
7. Public projects may take longer to plan but are clearly faster to build than private projects. On net, there is very little total difference between the two in their time to reach market.
8. Conversions of other types of structures to multifamily take longer to plan but are shorter to build than new construction. Overall, the planning phase dominates, leading to longer development times for conversions.
9. Mixed-use projects that incorporate retail or hotel elements appear to take longer to plan and build than multifamily-only projects.

Several of these findings call into question conventional wisdom, such as the oft-assumed inefficiencies in public construction or the recent push for conversions as a faster alternative than new construction. However, these data are only one avenue to explore these issues. As the analysis here has suggested, it is unlikely that these delays are constant across time or space, and therefore they should be monitored regularly to better calibrate public policies as well as investment strategies whose efficacy depends critically upon timing.

In particular, this research holds several useful lessons for local policy makers as they confront these development delays amid a severe housing affordability crisis.

First, streamlining the permitting and entitlements process can be very valuable. This streamlining can take the form of both regulatory changes and personnel enhancements. As the time-series analysis here shows, development moves more briskly through the planning phase when markets are weak, likely because the bottlenecks in the approval process are lessened. Local policy makers should investigate how long the backlog is in their own planning

departments and whether better procedures and more staff could expedite these crucial steps.

Second, conversions are not a panacea. In the wake of the pandemic, many policy makers have become excited about the opportunities to convert commercial properties, especially offices, into residential properties. They have hoped that this avenue would be faster and less expensive than new construction. Our work shows, however, that conversions are not necessarily faster because they take so long to plan. Most conversions are complicated and introduce new challenges that outweigh any timing advantages of ground-up construction. Policymakers should ensure that they are not using this speed argument to justify the use of public resources to create incentives for conversions.

Third, zoning requirements that mandate ground floor retail, may be slowing the multifamily projects.

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