HBI Building Careers. Changing Lives.

NAHB National Association of Home Builders

Franklin L. Burns School of Real Estate & Construction Management
UNIVERSITY OF DENVER

THE SKILLED LABOR SHORTAGE AND AMERICA'S HOUSING CRISIS

How the Skilled Labor Shortage Impacts Building Costs and Cycle Times

A Research Study by

Home Builders Institute

University of Denver

Dr. Eric A. Holt, University of Denver, Lead P.I.,

Bill Ray, University of Denver, Research Assistant

Research Report Technical Amendment

provided by the National Association of Home Builders

Estimating the Aggregate Economic Impact of the Skilled Labor Shortage: A Technical Supplement and Executive Summary

Dr. Robert Dietz, NAHB Chief Economist

Purpose

Utilizing the results of the research project requested by the Home Builders Institute (HBI), prepared by Dr. Eric Holt and Bill Ray at the University of Denver, the NAHB Economics team produced the following economic impact estimates of the skilled labor shortage for single-family home building. The findings detailed below indicate that the skilled labor shortage's impact on the residential construction industry is a multibillion-dollar annual challenge that is responsible for the lost production of thousands of newly built homes.

This technical note finds that the aggregate, annual impact of the skilled labor shortage in the home building sector is $2.663 billion in terms of higher carrying costs and $8.143 billion in terms of lost single-family home building (19,000 homes). This represents a combined aggregate economic effect of $10.806 billion due to longer constructions times associated with scarce skilled labor.

Estimates

NAHB utilized a two-step process to determine the economic impact of the skilled labor shortage on the residential construction industry. The first element is the direct cost of a longer construction times, as measured by Holt and Ray, primarily through the increase of carrying costs. The second element is the induced impact on lost construction activity due to implied higher construction and carrying costs.

Using the survey and case study results from Holt and Ray, the collected data of their study finds that the unweighted average of the incremental increase for construction time for single-family home building that respondent attributed directly to a lack of skilled labor is 1.98 months. The median impact is 1.75 months.

For smaller home builders (firms building fewer than 100 homes annually), the impact was estimated at 2.36 months. For medium-sized builders (firms constructing 100 to 1000 homes annually), the impact was an extension of construction time of 1.88 months. The largest home builders reported smaller impacts on construction time.

To transform these direct cycle time estimates into an economic impact, we employ the NAHB national economic impact model of residential construction activity.[1] The model requires

[1] Emrath, Paul. April, 2020. *National Impact of Home Building and Remodeling: Updated Estimates.* https://eyeonhousing.org/2020/04/how-home-building-can-lead-a-recovery-by-generating-jobs/

specifying certain construction values for single-family home building. For the average home price of newly built single-family home construction, we use the Census Bureau 2023 annual average sales price of $428,600.[2] We note that this is a conservative estimate as this value only reflects homes built for sale. Roughly one out of five single-family homes are built as contract-built on an owner's lot. Such homes are not reflected in this average value. If included, the average sales price would be larger, as would the economic impact.[3]

To determine the direct economic impact of longer construction times due to a lack of skilled labor, we next estimate the carrying costs of expanded cycle time. The share of final sales price that is attributable to construction costs is on average 56.6% per NAHB Construction Cost surveys over the period 2002-2019.[4] This yields an average construction cost of $242,588 for the purpose of this analysis. Per 2018-2020 averages generated in the quarterly NAHB AD&C Financing Survey, 86% of such costs are debt-financed.[5] This implies a typical construction loan amount of $208,625.

We further assume an average Federal Funds interest rate of 3% (again, this is conservative estimate given current rates of 4.33%[6]), as this reflects the NAHB late-2024 forecast of the terminal rate after a period of Federal Reserve easing and monetary policy normalization. This suggests a corresponding prime interest rate of 6%. The NAHB quarterly AD&C survey covering 2018-2020 (during a more normal credit market) indicates AD&C loan rates typically posses a 1.15 percent point spread over the prime interest rate. These values imply a conservate average interest rate for construction loans of 7.15%. Assuming the mid-point of lending, i.e. with a 50% draw on the total construction loan, these values find an average monthly cost of financing for a typical single-family home construction project of $622 per month.

Added to this estimated financial carrying cost are the additional non-financing elements required to build and hold a home during the construction phase for a longer period. These additional carrying costs include, but are not limited to, property taxes assessed on developed lots, possible property taxes on finished homes and homes under construction, and general administrative and management costs associated with ongoing construction/development activities.

Given average effective property tax rates nationwide (above 1% of property value per year) and conventional estimates of operational/management expenses (also above 1% property value per year), we conservatively estimate an additional 2% of property value annualized cost of associated with these non-construction loan related carrying costs. This calculation yields a cost

[2] https://www.census.gov/construction/nrs/index.html
[3] https://eyeonhousing.org/2023/11/square-foot-prices-more-than-double-inflation-in-2022/
[4] https://eyeonhousing.org/2023/03/cost-of-constructing-a-home-in-2022
[5] https://www.nahb.org/news-and-economics/housing-economics/indices/adc-financing-survey
[6] https://www.newyorkfed.org/markets/reference-rates/effr

of $711 per month for a typical newly built home based on the Census 2023 new home property price.

Combining the monthly financing and additional carrying cost factors yields a total monthly carrying expense for a newly built single-family home of $1,333.

We can now calculate the aggregate financial impact due to longer construction cycle times. Using the 1.98 months delay average effect from Holt and Ray's collected data cited above, we estimate an average $2,639 total financial cost per single-family home due to the lack of skilled labor. It is worth noting that these numbers will be larger for smaller builders reporting longer cycle time impacts.

To finalize the aggregate impact, we use the 1,009,000 preliminary Census 2024 single-family starts total. Applying the total financial cost impact across total industry impact of $2.663 billion of higher costs due to a lack of labor and corresponding lengthened construction cycle times.

Economic theory indicates that for higher constructions costs, there will be a lower level of housing supply undertaken by home builders. This reduced level of construction also generates an economic loss for the nation with respect to home construction not undertaken. To estimate the value of lost production, we use an estimated housing supply elasticity of 1.75, meaning a 1% increase in cost yields a 1.75% reduction in underlying construction activity.[7] The $2,639 impact estimated earlier represents a 0.62% cost impact for a typical newly built home, generating a housing supply effect of -1.85% to baseline production.

For 2024, if production was reduced by 1.85%, this calculation implies that total single-family housing starts would have not been the realized 1,009,000 total but 1,028,000, yielding a lost level of production of approximately 19,000 homes that were not built in 2024 due to the skilled labor shortage. Using the average value of a typical new single-family home detailed earlier, this loss of 19,000 homes represents an aggregate economic loss of $8.143 billion.

Combining these estimates, this technical note finds that the aggregate direct and indirect effect of the residential construction skilled labor shortage is $10.806 billion per year. This is a significant cost impact given the current size of the single-family residential construction building market: $422.8 billion at the annual rate measured by Census in November 2024.[8]

---

[7] Albert Saiz. *The Geographic Determinants of Housing Supply*. Quarterly Journal of Economics. 2010. Volume 125, Issue 3, August 2010. Pages 1253-1296. https://academic.oup.com/qje/article-abstract/125/3/1253/1903664

[8] www.census.gov/construction/c30/pdf/release.pdf

Table of Contents

Executive Summary

This study examines how the ongoing skilled labor shortage affects residential construction costs and project timelines across the United States. The research, based on interviews with 30 homebuilders spanning different sizes and geographic regions, reveals significant impacts on the industry's operational and financial landscape.

The study identifies three distinct builder segments - small (20-100 homes annually), medium (100-1,000 homes annually), and large (over 1,000 homes annually) - each experiencing unique challenges while sharing common industry-wide pressures. Key findings indicate fundamental shifts in construction economics and operations since the COVID-19 pandemic.

Labor costs have risen dramatically across all segments, with wages increasing 40-50% for small and medium builders and 20-30% for large builders. Specific trades show even more substantial increases, with some positions seeing wages double since 2020. These elevated labor costs appear to be a persistent feature rather than a temporary spike, creating what industry participants describe as a "new normal."

Project cycle times have evolved differently across builder segments. While small builders continue to experience extended timelines of 9-12 months compared to pre-pandemic 4-6 months, medium and large builders have made substantial progress in reducing delays. Large builders are approaching pre-pandemic efficiency levels, though timelines remain slightly extended compared to historical benchmarks.

Material costs have stabilized but at significantly higher levels than pre-pandemic. Custom home construction costs for small builders have increased from $200 to $350 per square foot, while medium builders face nearly 89% increases in framing costs. Large builders report dramatic increases in basic materials, such as concrete rising from $59 to $229 per yard.

Builders across all segments are responding to these challenges through various strategies:

- Investment in workforce development and training programs
- Adoption of new construction technologies and methods
- Formation of strategic partnerships with subcontractors and educational institutions
- Implementation of more efficient project management systems
- Development of innovative pricing strategies to maintain affordability

The research indicates these changes represent a structural shift rather than a cyclical adjustment, suggesting the need for long-term strategic responses from industry participants. The findings underscore the critical importance of adapting business models, pricing strategies, and operational approaches to maintain viability while addressing ongoing challenges in housing affordability.

Study Overview

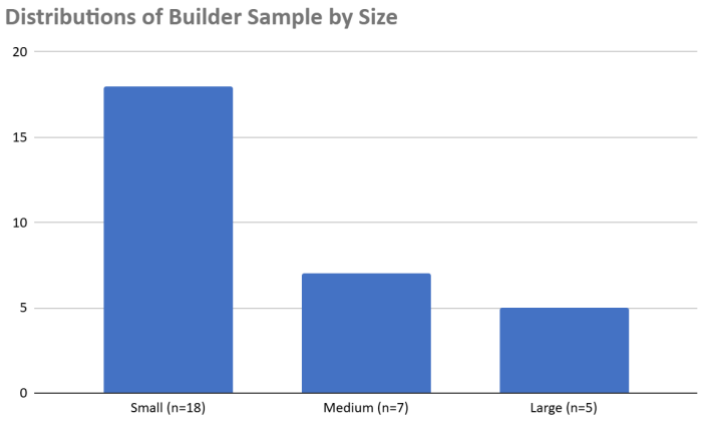
This study explores the ongoing skilled labor shortage within the home building industry and its far-reaching effects on both residential building costs and project timelines across the United States. As the demand for new homes continues to rise, the availability of a skilled workforce has become a critical factor influencing the pace and cost of construction. By quantifying the operational and financial implications of these labor constraints, the study seeks to provide a detailed and data-driven understanding of how workforce shortages are reshaping the housing sector. It also seeks to investigate how builders with varying annual production volumes are experiencing these issues in distinct ways. Through this, the research not only highlights the broader trends and challenges affecting the home building industry but also reveals the specific strategies and responses adopted by builders of different sizes to mitigate the effects of the skilled labor shortage.

Methodology

The study adopts a qualitative research methodology, utilizing semi-structured interviews with homebuilders from various regions across the United States. A stratified sampling approach is employed to ensure that the sample includes a diverse range of builder sizes and geographic areas.

Builder Respondents.

The researchers and industry partners sent out interview requests to homebuilders throughout their networks asking to be interviewed for this study. To date, 30 case studies have been conducted, segmented by annual production volume into three categories: small builders (20-100 homes annually), medium builders (100-1,000 homes annually), and large builders (more than 1,000 homes annually). This stratification allows for a nuanced understanding of how labor shortages impact builders of different scales.

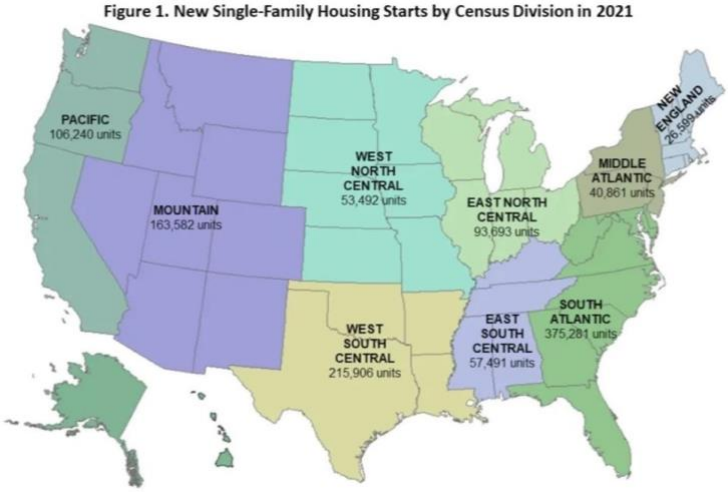


Geographic Distribution:

To ensure comprehensive geographic representation, participants are recruited from all nine U.S. Census Divisions:

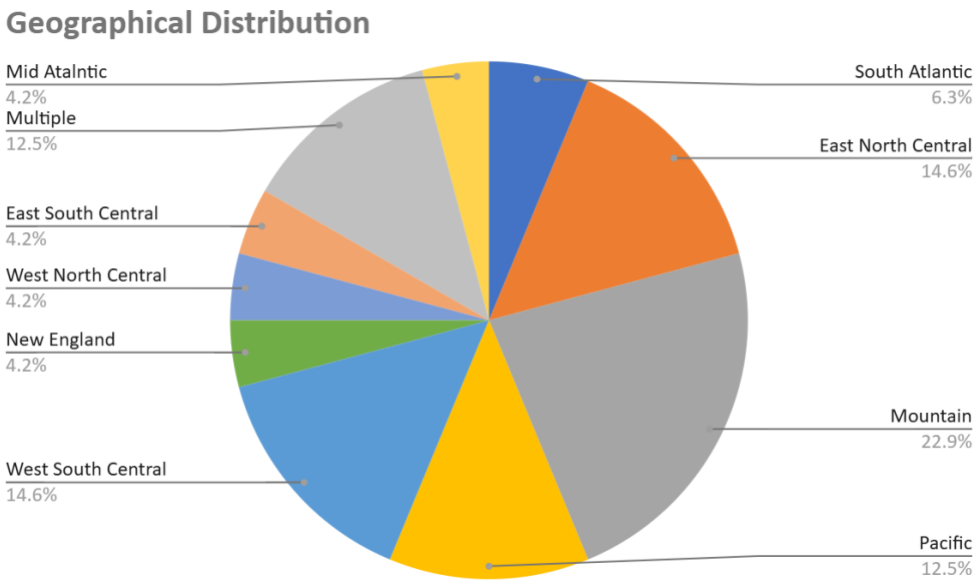
- Pacific Division
- Mountain Division
- West North Central Division
- West South Central Division
- East North Central Division
- East South Central Division
- South Atlantic Division
- Middle Atlantic Division
- New England Division

Figure 1. New Single-Family Housing Starts by Census Division in 2021



Source: NAHB tabulations of data from the 2021 Survey of Construction. U.S. Census Bureau, partially funded by HUD.

This approach allows the study to capture the regional variations in labor availability, housing demand, cost pressures, and other factors that influence the home building industry across the United States. By including builders from diverse geographic locations, the study accounts for regional differences in the skilled labor shortage and its impact on residential construction, ensuring that the findings reflect the full scope of challenges faced by the industry nationwide.



Data Collection:

The primary data collection method for this study involves individual semi-structured interviews conducted via video conferencing technology, specifically using the Zoom platform. This format allows for in-depth, open-ended discussions, enabling participants to share detailed insights into their experiences and challenges related to the skilled labor shortage. Each interview is recorded and transcribed to ensure accuracy and consistency in the data, facilitating thorough analysis and ensuring that no key points are overlooked.

To ensure the sample accurately reflects the target population, the research team collaborated with industry partners, including trade associations, regional builders' organizations, and other relevant stakeholders, to identify and recruit participants who meet the study's criteria. These participants, representing a range of builder sizes and geographic regions, provide diverse perspectives on the issue, allowing the research to capture a comprehensive view of how labor shortages are affecting the home building industry across the United States.

Data Analysis

A multi-step process leveraging the GPT-4o language model transformed raw interview transcripts into this report. The analysis began with 30 transcripts, each transcribed using Otter AI. The interviews were conducted according to our interview guide provided in the appendix.

The interview guide was divided into 59 specific questions using GPT-4o. Each of the 59 questions was paired with the 30 interview transcripts, resulting in 1,770 individual queries to the GPT-4o model. For each query, the model was instructed to:

1. Extract a Quote: Identify a direct quote from the interview transcript that answered the specific question. If no answer was present, the model explicitly noted this.
2. Provide an Answer: After extracting a quote, the model formulated a concise answer. This two-step, chain-of-thought-like approach ensured the responses were grounded in the interview content.

To ensure the reliability of the model's outputs, many of the extracted quotes were manually cross-referenced with the corresponding answers. The 59 questions were subsequently grouped into nine thematic sections, seven of which aligned with the "Research Questions" section of this report and two of which informed the "Builder Demographics" section. To create each of the nine sections, the answers for each section were grouped by builder size, and GPT-4o was prompted to identify similarities between all builders and features unique to small, medium, and large builders. The sections in the report were derived from these features. The "Qualitative Analysis Overviews" were created by grouping the features by builder size and a similarities section, prompting GPT-4o to summarize the features.

The quantitative analysis overview sections were created by instructing GPT-4o to extract quotes and explanations containing quantitative data from each transcript for labor cost, cycle time, and material costs separately. The model was also instructed to identify when no relevant quotes were found in the transcript. This process resulted in 90 calls to the model. These quotes were then grouped by builder size and quantitative feature to create nine groupings. These groupings were provided to GPT-4o to create a structured summary of the quantitative quotes and explanations.

This process ensured that the study's findings were rooted in the perspectives of homebuilding professionals. Combining AI tools and human oversight allowed for heightened attention to detail. By leveraging AI's ability to condition on every word in the transcripts, we captured granular insights. At the same time, human quality control and reasoning ensured that key pieces of information were accurately identified and extracted.

Qualitative Analysis Overview

Similarities of all Builders:

This report provides an overview of the challenges and strategies faced by homebuilders of various sizes, from small to large enterprises, focusing on labor shortages, project timelines, and economic factors. A key finding across all builder sizes is the significant challenge of skilled labor shortages, particularly in trades such as HVAC, plumbing, and electrical work. Builders are increasingly relying on subcontractor relationships, vocational training, and strategic partnerships to mitigate this issue. The aging workforce and lack of younger workers entering the trades are contributing to these shortages, which, in turn, drive up labor costs and extend project timelines. These challenges are further exacerbated by external factors like the COVID-19 pandemic, supply chain disruptions, and fluctuating material costs.

Despite the challenges, homebuilders across all segments—small, medium, and large—are adopting various strategies to mitigate the impact of labor shortages. These include investing in training and development programs, exploring technology and automation solutions, and fostering collaborations with other construction firms and subcontractors. Additionally, builders are increasingly turning to off-site fabrication and other innovative techniques to maintain efficiency and reduce costs. Government policies, including permit processes and regulatory changes, are also identified as contributors to the increasing costs and delays faced by the industry.

Furthermore, all builders are adapting to rising home sale prices, managing client expectations regarding cost increases and project delays, and emphasizing transparent communication. The report highlights that the labor shortage, while a pervasive issue across all builder sizes, is not insurmountable. Builders are proactively addressing it through long-term strategies such as

vocational training, partnerships with educational institutions, and embracing new construction technologies. The future of the industry will depend on these efforts to address labor challenges while adapting to evolving market and economic conditions.

Unique Aspects for Small Builders:

Small builders are often led by entrepreneurial owners who wear multiple hats, combining design, management, and ownership roles. Many have relatively short industry tenures, with some owners possessing as little as three years of experience, reflecting the dynamic and adaptable nature of the small builder sector. Their operations are typically lean, with few employees, and they focus on high-end, custom homes, often catering to wealthy clients in niche markets.

The labor shortage presents a particularly significant challenge for small builders, who struggle to recruit skilled trades due to waning interest from younger generations. This is compounded by competition from larger builders, leading to higher turnover rates and poaching of skilled workers. Small builders often rely on long-standing personal relationships with subcontractors and local networks for recruitment, but the shortage of workers, along with rising subcontractor prices, severely impacts their operations. Geographic challenges, such as high real estate prices and travel distances for trades, further amplify the difficulty in maintaining high standards. Additionally, language barriers can hinder communication on the job site.

In response to these challenges, small builders have employed a range of strategies, including the use of panelized framing to offset labor shortages and the implementation of local community initiatives to attract new talent. They also leverage their smaller scale to adopt more agile quality control processes. However, increased cycle times, particularly due to permitting and regulatory delays, have had a substantial impact on project timelines, with some projects extending from 6 months to 18-24 months. These delays, along with rising costs from both labor and regulations, have forced small builders to adjust pricing strategies, often resorting to "cost-plus" contracts and speculative building methods.

Looking ahead, small builders recognize that community engagement and local partnerships are vital for their success. They continue to focus on workforce development through local educational institutions and home builders associations. However, they remain concerned about the high entry barriers due to stringent licensing requirements and the growing influence of regulations on affordability and operational timelines. The labor shortage and regulatory challenges will continue to drive up costs, particularly in trades like bricklaying, where costs have doubled since 2020. Despite these challenges, small builders are committed to maintaining personalized, high-quality service while navigating a rapidly changing construction environment.

Unique Aspects for Medium Builders:

Medium builders typically bring decades of experience to the table, often with leadership roles held by individuals who have spent over 20 years with the same company. These businesses tend to be stable, family-oriented operations with strong regional presences in areas such as Houston and Denver, producing between several hundred to 1,200 units per year. They focus on a mix of high-performance housing and workforce housing to address the "missing middle" in the housing market, catering to first-time and move-up buyers with mid-range home prices.

Labor shortages are a significant concern for medium builders, exacerbated by economic factors like high interest rates, which affect both labor costs and construction demand. Poaching by higher-paying commercial projects further destabilizes their workforce. To counteract these issues, medium builders adopt a balanced approach to recruitment, relying on local relationships, vocational programs, and strategic partnerships with educational institutions. They also emphasize creating a stable, loyal labor force by offering reliable payments and fostering quality assurance programs to improve efficiency and reduce turnover. Despite these efforts, high insurance costs, particularly in regions like Colorado, and regulatory challenges compound the impact of labor shortages.

Medium builders are adapting to the labor shortage by exploring innovative construction methods such as modular and panelized construction, as well as integrating technology like robotics to streamline operations. They also focus on improving cycle times through strategic planning and operational adjustments, noting significant improvements in cycle time recovery post-COVID. However, they continue to face challenges in maintaining affordability due to rising construction costs, which are influenced by labor shortages, supply chain disruptions, and economic factors like high borrowing rates.

Looking forward, medium builders recognize the importance of staying attuned to regional market dynamics and are actively investing in workforce development through structured training programs. They continue to refine their pricing strategies, such as offering buy-downs and refinancing options, to balance affordability with rising construction costs. Despite the challenges, medium builders are optimistic about their ability to navigate these issues through strategic partnerships, technological innovation, and a focus on creating stable, skilled workforces.

Unique Aspects for Large Builders:

Large builders, typically led by executives with around 25 years of industry experience, operate on a national scale and handle a vast array of projects, including entry-level, high-end homes, age-targeted communities, and production housing. With revenues often exceeding $1 billion, these builders close up to 500 units annually and manage complex developments across multiple

states and cities. Their large-scale operations require extensive employee networks and a strategic approach to maintaining quality and meeting diverse client demands.

Labor shortages present significant challenges for large builders, particularly in filling leadership positions such as construction managers and directors. The reliance on immigrant labor, along with strained relationships with utility companies and entitlement delays, further complicates their ability to maintain timelines. Despite these challenges, large builders are equipped with resources to address labor shortages, including in-house training programs, partnerships with established trade partners, and national programs like Lennar's Build Pro to provide standardized training across the country. They also leverage technology, such as BuildPro and automation tools, to streamline operations and compensate for labor deficiencies.

Large builders have generally managed to bring cycle times back to pre-pandemic levels, though they still face long delays on larger projects, with timelines for some developments stretching from 2-5 years to 7-10 years. Their ability to manage large capital investments and complex projects is facilitated by big data, which informs cost management and scheduling. However, they continue to confront margin compression, buyer expectations, and the challenges of bespoke client customization processes. While some builders report minimal impact on costs due to labor shortages, others experience significant increases driven by competition for talent and other economic pressures.

Looking forward, large builders emphasize the need for clearer immigration policies to secure a stable labor force and consider public-private partnerships as a means to overcome regulatory barriers. The use of big data and technology will continue to play a central role in streamlining operations and improving efficiency, positioning large builders to adapt to the evolving landscape of the housing industry. Despite the ongoing challenges, they remain focused on managing labor shortages through innovative strategies and partnerships, while maintaining a high standard of quality and meeting the complex demands of the market.

Builder Demographics

1. Interviewee's Personal and Company Background

Similarities for all Builder Sizes:
Many individuals across all sizes have extensive experience in the construction industry, often spanning decades. Owners or founders are commonly present in Small and Medium-sized companies, reflecting a hands-on approach and direct influence in operations. Longevity within companies is a common trait, with several interviewees having spent a significant portion of their careers at their current companies. All builders, regardless of size, engage in constructing a mix of homes, including single-family and townhomes, with some custom and semi-custom home options. Each group targets a range of clientele, from entry-level buyers to high-end luxury clients, adapting to the specific economic demographics of their respective markets.
There is a focus across all sizes on catering to specific geographic areas, tailoring their projects to local demands and conditions. All segments see a mix of traditional home building and innovative, energy-efficient projects, indicating a trend towards sustainable living..

Unique Aspects for Small Builders:
Small builders exemplify a highly personalized approach to construction, characterized by owners who maintain active management roles such as Vice President, President, or Chief Financial Officer while directly overseeing various aspects of construction operations and strategic decision-making, demonstrating the versatile skill sets required in smaller operations. These organizations typically operate with minimal employees but maintain significant flexibility to scale operations up or down as needed, focusing primarily on luxury custom homes and renovations for wealthy clients in prestigious locations like Sun Valley, Idaho, or Portland, Oregon. Their business model emphasizes design-build and energy-efficient construction, with annual unit completions typically ranging from a handful to several dozen homes, allowing them to maintain an intense focus on customization and high-quality craftsmanship. The direct involvement of ownership in day-to-day operations promotes strong personal relationships with clients, enabling them to deliver highly customized solutions while maintaining close oversight of quality and project execution.

Unique Aspects for Medium Builders:
Medium-sized builders demonstrate a sophisticated organizational structure balanced between executive leadership and specialized operational roles, with positions like Chief Operating Officer and Vice President reflecting their structured framework while maintaining an emphasis on sustainability and innovative development strategies. These organizations are distinguished by the exceptional depth of experience within their leadership, with many executives having over 45 years in the industry and typically maintaining tenures exceeding 20 years at a single organization. This combination of structured hierarchy, strategic focus on innovation, and long-

term leadership stability suggests a business environment that successfully balances professional management with the stability often associated with family-run operations, while fostering both expertise and continuity.

Unique Aspects for Large Builders:
Large builders exhibit a distinctly corporate organizational structure, characterized by executive and director-level positions that emphasize strategic leadership and operational oversight across national operations. These organizations typically recruit seasoned professionals with an average of 25 years of industry experience for their high-tier positions, placing them in specialized roles focused on broad, scalable initiatives such as supply chain optimization and continuous improvement. The presence of divisional leaders and directors, often operating within well-established national firms, reflects a sophisticated hierarchical structure designed to support distributed leadership across large-scale operations, while their emphasis on national roles, such as Director of Continuous Improvement for national supply chains, underscores their commitment to efficiency and standardization across widespread operations.

2. Company Overview (Size, Revenue, Operations)

Similarities for all Builder Sizes:
All builders, regardless of size, construct a mix of homes, including single-family and townhomes, with some custom and semi-custom home options. Each group targets a range of clientele, from entry-level buyers to high-end luxury clients, adapting to the specific economic demographics of their respective markets. There is a focus across all sizes on catering to specific geographic areas, tailoring their projects to local demands and conditions. All segments see a mix of traditional home building and innovative, energy-efficient projects, indicating a trend towards sustainable living.

Unique Aspects for Small Builders:
Small builders often operate with a minimal number of employees and can scale operations up or down significantly. They tend to offer high-end custom homes and renovations, focusing on design-build and energy-efficient construction. Their target market includes wealthier clients seeking luxury custom homes, particularly in specific esteemed areas like Sun Valley, Idaho, or Portland, Oregon. The number of units closed per year tends to be lower, often ranging from a handful to several dozen, with a strong emphasis on customization and high-quality craftsmanship.

Unique Aspects for Medium Builders:
Medium builders occupy a distinctive middle ground in the construction industry, capable of significant production volumes ranging from 100 to 1000 units annually while maintaining diversity in their project portfolio. Their operations typically span multiple states with strong

presences in major metropolitan areas like Houston and Denver, allowing them to serve urban and suburban markets with a variety of residential offerings including townhomes, multifamily developments, and build-to-rent projects. This broad market presence is matched by a diverse customer base, from sustainability-focused custom homebuyers to first-time and move-up buyers seeking affordable options.

Their organizational structure reflects this intermediate scale, employing significantly more staff than small builders while maintaining enough flexibility to adapt to market demands. They strategically position themselves to fill the "missing middle" in the housing market, offering mid-range pricing that appeals to both first-time buyers and those seeking to upgrade, while also addressing specialized needs through high-performance and workforce housing projects. This balanced approach allows them to maintain a sweet spot between customization and production efficiency, serving community housing needs while remaining responsive to specific market demands for sustainability and energy efficiency.

Unique Aspects for Large Builders:

Large builders operate at a scale that sets them distinctly apart in the construction industry, with massive operational capacities evidenced by workforces exceeding 500 employees and annual revenues reaching $10-12 billion. Their production volumes are equally impressive, with some organizations closing up to 80,000 units annually, demonstrating unmatched capacity for high-volume home building across multiple market segments.

These organizations leverage their extensive resources and broad geographic reach to serve diverse market needs across multiple states and regions, adapting their offerings to varying local conditions while maintaining standardized operational efficiency. Their project portfolio spans the full spectrum of housing solutions, from entry-level homes to high-end developments, with specialized offerings such as age-targeted communities and production homes. This comprehensive approach to market coverage, combined with their ability to manage complex developments across multiple cities and states, showcases their unique position in addressing housing needs at a national scale while maintaining the flexibility to adapt to local market dynamics.

Research Questions

1. How does the lack of labor affect housing affordability?

Similarities for all Builder Sizes:
The homebuilding industry faces pervasive challenges stemming from labor shortages, with impacts that cascade throughout the building process and ultimately affect housing affordability across all market segments. These shortages, compounded by an aging skilled workforce and insufficient recruitment of younger workers, create a concerning outlook for future labor availability that threatens to further escalate housing costs. The situation is exacerbated by construction delays due to workforce limitations, which increase project expenses through extended timelines and higher carrying costs.

Beyond the immediate cost implications, the industry grapples with broader quality concerns as labor shortages affect workmanship standards. This trend has shown particular deterioration during economic downturns and the COVID-19 pandemic. In response, builders of all sizes emphasize maintaining strong relationships with subcontractors while investing in training programs and vocational partnerships to enhance workforce quality. These efforts, combined with strategic partnerships and regulatory compliance requirements, represent the industry's attempt to balance quality maintenance with cost management, though the cumulative effect of these factors continues to put upward pressure on housing prices.

Unique Aspects for Small Builders:
Small builders face particularly acute challenges from the current labor market conditions, with some reporting up to 40% increases in skilled trade costs since pre-COVID. Their limited scale makes them especially vulnerable to financial pressures, as they struggle to absorb increased financing costs from extended construction timelines and face greater difficulty maintaining profitability while implementing required regulatory changes, such as updated energy codes.

The impact on their business model is substantial, with rising construction costs effectively preventing many small builders from offering affordable, entry-level housing. Their recruitment challenges are intensified by waning interest among younger generations in construction trades, forcing them to rely heavily on personal networks, local educational programs, and word-of-mouth referrals for hiring. However, their smaller scale does provide some advantages, particularly in quality control, where they can maintain more rigorous processes and foster strong, loyalty-based relationships with subcontractors through long-term collaborations, though these relationships alone cannot fully offset the broader market challenges they face.

Unique Aspects for Medium Builders:

Medium builders face a complex web of challenges in managing workforce expansion and cost control, particularly due to licensing difficulties and competitive markets. Their response to these challenges often includes the adoption of innovative construction methods, such as modular and off-site building, to reduce dependence on scarce labor resources. However, the necessity to absorb increasing labor costs to remain competitive has led to reduced profit margins, a situation further complicated by regional variations in labor costs often tied to high living expenses in certain markets.

These organizations take a balanced approach to workforce management, occupying an intermediate position between small and large builders in their reliance on subcontractors. While they lack formal recruitment processes, they effectively leverage existing local relationships and vocational programs for hiring, though high turnover remains a significant concern. Their strategy sometimes includes introducing new vendors to control costs, despite the potential risks to quality and efficiency consistency. This approach to labor management is heavily influenced by local economic conditions, with builder slow-downs and regional vocational programs playing crucial roles in shaping their recruitment and quality control strategies.

Unique Aspects for Large Builders:

Large builders occupy a unique position in managing labor challenges, leveraging their scale and resources to establish strategic partnerships with major trade partners that help buffer against labor shortages. Their ability to implement efficiency-focused initiatives, such as value engineering and innovative installation methods, combined with economies of scale, allows them to maintain relative housing affordability despite industry-wide labor constraints. This advantage is further strengthened by their capacity to form partnerships with financially stable trade partners, enabling them to negotiate better pricing and reliability.

Their approach to workforce management is notably more structured, featuring formalized recruitment processes with bi-weekly hiring cycles and comprehensive in-house training programs partnered with educational initiatives. However, despite these advantages, large builders face their own set of challenges. They express concerns about future disruptions to production levels due to labor shortages, while specialized federal regulations can indirectly increase costs by requiring skilled labor. Additionally, their extensive operations make them particularly vulnerable to economic crises, and they face a growing knowledge gap as experienced workers retire, threatening their long-term operational stability despite their current market advantages.

2. What are the Labor Shortage and Recruitment Challenges?

Similarities for all Builder Sizes:

At the core of these challenges is a demographic shift: an aging workforce coupled with insufficient recruitment of younger skilled workers into the trades. This shortage is particularly acute in specialized areas like HVAC, plumbing, electrical, and framing. The labor shortage has created a cascade of financial impacts. Builders are forced to offer higher wages to compete for a limited pool of skilled workers, which in turn drives up labor costs. These increased costs, combined with extended project timelines due to workforce constraints, have led to higher carry costs across the board.

To navigate these challenges, builders have adopted various strategies. Maintaining strong relationships with reliable subcontractors has emerged as a crucial approach for builders of all sizes. The recruitment landscape primarily revolves around subcontracting and relationship-based hiring, with some builders investing in training and education initiatives to develop new talent. However, these efforts have been complicated by external factors such as economic downturns and the COVID-19 pandemic, which have further impacted labor quality and subcontractor reliability.

The situation reflects a broader industry-wide concern about the decline in skilled labor quality and the growing difficulty in finding and retaining qualified workers. This challenge requires both immediate solutions for current projects and long-term strategies for workforce development.

Unique Aspects for Small Builders:

Small builders face distinct workforce challenges that are often magnified by their size and limited resources. Their operations typically run as family businesses with minimal full-time staff, relying heavily on subcontractors for specialized work. This dependency makes them particularly vulnerable to labor market fluctuations and competition from larger projects, which can lead to higher turnover rates through worker poaching.

Quality control presents a significant challenge for small builders. While their smaller scale can allow for more agile quality control processes, maintaining consistent standards becomes difficult due to labor shortages and frequent turnover. Language barriers among crews often compound these challenges, affecting communication efficiency and overall productivity.

The recruitment process for small builders is notably different from larger operations. Rather than utilizing formal systems, they typically rely on personal networks, word-of-mouth referrals, and local educational programs. Recruitment tends to be infrequent, sometimes occurring only every few years, which makes each hire particularly crucial. This informal approach emphasizes the importance of loyalty and personal relationships, especially with subcontractors, where long-term collaborations become essential for maintaining quality and consistency.

Geographic factors pose additional challenges, with high real estate prices and significant travel distances for trades having a disproportionate impact on small builders' operations. They are also particularly vulnerable to price increases from subcontractors, which can significantly affect their

project costs. The declining interest in trades among younger generations poses a particular threat to small builders, who often struggle to recruit skilled workers like electricians and plumbers, potentially threatening the long-term sustainability of their operations.

Unique Aspects for Medium Builders:
Medium builders occupy a unique position in the construction industry, facing challenges that reflect their intermediate scale of operations. They typically maintain a hybrid staffing model, balancing full-time employees with subcontractors, while striving to maintain quality through strategic relationships. However, this balance is increasingly challenged by various market pressures.

These builders face significant financial pressures from multiple directions. High insurance costs and licensing requirements, particularly in regions like Colorado, add substantial overhead. Their operations are notably sensitive to economic factors such as interest rates, which affect both construction demand and labor costs. Further complicating matters is the persistent challenge of labor poaching by high-wage commercial projects, which destabilizes their workforce in residential developments.

The quality of labor presents a mixed picture for medium builders. While some maintain high standards through established relationships and training programs, others report a decline in quality dating back to the 2008-2009 recession. This variability in labor quality, combined with high turnover rates, represents a significant operational challenge. Their approach to recruitment and workforce development tends to be more structured than smaller builders but less formal than larger ones. They often leverage a combination of local relationships and vocational programs, creating pathways for introducing younger workers to the trades. Some are exploring innovative solutions to labor challenges, including the adoption of new construction methods like wall panels or modular construction.

The effectiveness of their labor strategies is heavily influenced by local economic conditions, reflecting the regional nature of construction markets. While they maintain more formal processes than small builders, they still rely significantly on established local relationships and industry networks for recruitment and quality control, positioning them as an intermediate model between small and large operations.

Unique Aspects for Large Builders:
Large builders operate with distinct advantages and challenges that stem from their scale of operations. While they benefit from the ability to form strategic partnerships with financially stable trade partners, leading to better pricing and reliability, they also face unique complexities in workforce management and quality control.

Their labor force structure is characterized by a significant split between direct employees and contractors, with a notable emphasis on retaining long-term full-time employees. However, they face particular challenges in filling leadership positions such as construction managers and directors. The retirement of experienced workers creates a concerning knowledge gap, which is especially impactful given their extensive operations. Quality control presents a persistent challenge for large builders, despite their formal processes. There appears to be a tension

between the need to quickly fill positions and maintaining high standards of workmanship. This challenge is partially addressed through in-house training programs and educational partnerships, though results vary.

Their scale makes them particularly vulnerable to certain external factors. Unresolved immigration policies have a disproportionate impact due to their reliance on immigrant labor. Additionally, they face significant challenges from utility company relationships and entitlement delays, which can substantially affect construction timelines. Economic crises tend to have amplified effects on their operations due to their size.

Their recruitment approach is more formalized than smaller builders, with regular bi-weekly hiring processes ensuring consistent labor flow. They typically focus on larger geographic areas, allowing for strategic alliances and partnerships. Their approach to trade partner relationships is systematic, often starting with one division and expanding based on performance metrics, demonstrating a strong emphasis on scalability and sustainable growth.

3. How does the lack of labor affect the construction costs of a project?

Similarities for all Builder Sizes:
Builders across the industry face substantial financial pressures stemming from pervasive labor shortages. These shortages drive up wages across all trades, with particularly acute impacts in specialized fields like electrical, plumbing, and carpentry. The resulting project delays create additional financial strain through increased carrying costs and extended construction loan periods, significantly impacting overall project economics.

The situation is further complicated by regulatory and licensing requirements that constrain the available labor pool while adding compliance costs. In response, builders have emphasized building and maintaining strong relationships with subcontractors as a crucial strategy for managing labor-related cost increases. However, despite these efforts, the cumulative effect of rising labor costs continues to challenge builders' ability to maintain housing affordability, creating a broader market challenge that affects both the industry and potential homebuyers.

Unique Aspects for Small Builders:
Small builders face unique vulnerabilities in managing labor-related costs, particularly in their ability to retain skilled tradespeople amid competitive wage pressures. Their position is further weakened by demographic challenges - an aging workforce combined with insufficient new entrants into the trades - which creates upward pressure on wages and reduces their already limited labor pool. Without the negotiating leverage of larger operations, small builders find themselves especially susceptible to sudden price increases from tradespeople, often forcing them to absorb these cost increases rather than pass them on to buyers to remain competitive in their markets.

Unique Aspects for Medium Builders:
Labor shortages are forcing medium-sized builders to adapt their construction methods, relying on available trades and adjusting to regional factors, such as natural disasters, which further strain resources and drive up subcontractor demand. These challenges are compounded by regulatory barriers, which create inefficiencies that particularly affect labor costs and project timelines, making it harder for builders to meet deadlines and manage budgets. Additionally, rising wages push builders to either increase home prices or alter project scopes to control costs, all while striving to avoid deterring potential buyers. Together, these pressures require medium builders to navigate a complex and evolving market landscape.

Unique Aspects for Large Builders:
Large builders are able to mitigate labor shortages and associated costs by leveraging strategic partnerships with well-capitalized trade partners, allowing them to secure the necessary workforce and resources. These builders also benefit from established data programs and strong relationships, which help them manage labor-related expenses more effectively. With a greater focus on material costs, large builders can better absorb fluctuations in labor costs compared to smaller competitors. Their comprehensive cost management strategies enable them to handle indirect labor cost increases without significantly affecting project timelines, ensuring they remain competitive and efficient in the market.

4. How does the lack of labor affect the cycle time of a project?

Similarities for all Builder Sizes:
Builders of all sizes have reported significant impacts on cycle times due to labor shortages and supply chain issues, especially during the COVID-19 pandemic. Delays were commonly attributed to the availability of specific trades or materials, and collaborations with subcontractors were notably affected by widespread labor shortages. However, there is a general trend of improvement post-pandemic, with cycle times returning to or surpassing pre-pandemic levels in many cases. The challenges faced during the pandemic led to fluctuations in cycle times across all builder sizes, driven by external factors such as labor shortages and supply chain disruptions.

Labor shortages have remained a persistent concern, affecting project timelines and delivery across the board. Similarly, delays in receiving materials have contributed to prolonged cycle times for builders of all sizes. In response, many builders have adopted new strategies, including the integration of new technologies and the revision of operational processes, to mitigate the impact of these challenges. These adaptations have helped builders navigate the ongoing labor and supply chain difficulties, allowing for greater efficiency in managing projects.

Unique Aspects for Small Builders:

Small builders have faced significant increases in cycle times, both during permit preparation and construction, often due to bureaucratic delays and regulatory hurdles. These delays have had a more pronounced impact on small builders compared to their larger counterparts. Additionally, a severe reduction in crew sizes, coupled with an acute shortage of available workers, has led to longer project timelines, with some projects extending from six months to as long as 18 to 24 months. Regulatory and permit delays were often cited as more significant factors in cycle time increases than labor shortages alone.

In response, small builders have adapted by directly controlling certain trades, such as launching their own HVAC companies to mitigate subcontractor delays. Some have even transitioned to panelized framing as a way to offset the impacts of labor shortages, demonstrating their ability to innovate in the face of challenges. Client decisions have also been a key factor influencing cycle times, often having a more substantial impact than labor shortages. This highlights a unique set of challenges faced by small builders, who must navigate a combination of external delays and internal decisions to keep projects moving forward.

Unique Aspects for Medium Builders:

Medium builders have experienced varied cycle time changes, with some reporting increases of up to six months, while others have achieved reductions through strategic planning and flexibility. These builders have been particularly responsive to changing conditions, shifting their building approaches to mitigate delays. For example, they experimented with different techniques like stick framing, which had mixed effects on cycle times but showcased their adaptability. Over the last 18 months, many medium builders have made significant strides in cycle time recovery, with some reducing their timelines by as much as 25%.

This recovery can be attributed to a strong focus on strategic planning and operational improvements, as medium builders have proactively adjusted their processes to address delays. However, high borrowing interest rates have been a specific challenge, leading to costly delays and additional financial pressures that have impacted project timelines.

The transition to wall panels and trusses from stick framing also posed a unique challenge, further affecting cycle times as builders adapted to new methods. Despite these challenges, medium builders have demonstrated resilience and a commitment to refining their operations to stay competitive.

Unique Aspects for Large Builders:

Large builders report a return to pre-COVID cycle times, suggesting improved resource availability and the integration of advanced technologies like big data to enhance efficiency. This shift highlights their ability to adapt quickly and manage supply chain and operational challenges more effectively. However, these builders are also grappling with significant long-term project

delays, with some large-scale projects now taking 7 to 10 years to complete, compared to the expected 2 to 5 years. These delays are compounded by utility company labor shortages, which have created additional obstacles in project timelines.

Furthermore, large builders emphasize the ongoing impact of labor shortages, particularly in terms of maintaining quality and meeting high demand. This issue has driven a heightened focus on management oversight and the allocation of more resources to ensure project standards are met. The integration of data-driven decision-making has become crucial in navigating these challenges, helping builders manage complexities and improve operational efficiency despite the increased demands on their teams.

5. Client Communication of Cost and Pricing?

Similarities for all Builder Sizes:
Rising costs have become a universal challenge, affecting builders of all sizes. Home sale prices have increased significantly, driven by a combination of escalating labor and material costs. These cost pressures stem from multiple sources, including labor shortages, supply chain disruptions, rising interest rates, and broader market volatility. The COVID-19 pandemic has further complicated these challenges, creating additional pressures on both costs and timelines.

Labor shortages have emerged as a particularly critical factor affecting both project costs and timelines. The shortage of skilled workers has led to increased labor costs while simultaneously extending project durations, creating a compound effect on overall project expenses. This has made cost management and timeline prediction more challenging across the industry. In response to these challenges, builders of all sizes have placed increased emphasis on client communication and expectation management. Transparency has become essential, particularly regarding potential cost increases, timeline adjustments, and project challenges. Many builders have adopted technology and project management tools to better schedule and communicate with clients, helping to manage expectations in an increasingly unpredictable environment.

The impact of external factors, such as macroeconomic conditions, regulatory changes, and market volatility, has heightened the importance of clear client communication. Builders across all sizes recognize that keeping clients informed about how these external factors affect their projects is crucial for maintaining positive relationships and successful project outcomes. This emphasis on transparency and communication has become a fundamental aspect of project management in the current construction environment.

Unique Aspects for Small Builders:
Small builders employ a distinctive business model that often combines speculative building with custom projects. In their speculative builds, they minimize direct client communication during the construction process, instead relying on their reputation and portfolio of completed work to demonstrate value. This approach helps reduce the complexity of frequent cost revisions and client-driven changes during construction.

When engaging in custom builds, small builders typically adopt a more personal approach to client relationships. They often utilize "cost-plus" contracts and employ detailed specification

sheets and upfront meetings to establish clear expectations. This comprehensive initial communication strategy helps maintain transparency while managing client expectations throughout the project.

However, small builders face particular challenges in maintaining quality standards due to their limited access to skilled labor. They are especially vulnerable to competitive poaching from larger projects, which can draw away their best workers. This labor instability can affect both their ability to maintain consistent quality and their project timelines. Their market position is heavily influenced by local conditions and competition. While stable demand in certain areas supports their speculative building approach, they must constantly navigate the challenges of competing with larger builders for both labor resources and market share. Their success often depends on their ability to leverage their reputation for quality work and personal service to differentiate themselves in an increasingly competitive market.

Unique Aspects for Medium Builders:
Medium builders demonstrate a sophisticated approach to cost management and client communication, leveraging both technology and strategic relationships. They utilize specific project management software like FTQ360 and Asana to maintain real-time communication and project tracking, enabling more efficient management of timelines and costs. This technological integration allows them to provide detailed breakdowns of cost influences, including regional factors, workforce migration patterns, and the impact of federal policies.

Their pricing strategies show particular flexibility and innovation. Medium builders often implement various approaches to maintain affordability while managing rising costs, including strategic pricing, buy-downs, and refinancing options. They frequently find themselves absorbing some cost increases internally while adjusting pricing based on market conditions, demonstrating a balanced approach to maintaining both profitability and market competitiveness.

Labor competition from commercial projects presents a significant challenge for medium builders. High-paying commercial work often draws away residential labor resources, affecting both availability and costs. This challenge is compounded by complex approval processes and regulatory requirements that can impact project timelines and expenses.
Medium builders place strong emphasis on relationship management, particularly with vendors and strategic partners. These relationships help them navigate cost challenges and regulatory hurdles more effectively. They also focus on market absorption rates, carefully balancing the pace of construction with market demand to maintain optimal pricing strategies. This comprehensive approach to cost management and communication reflects their intermediate position in the market, requiring them to be both sophisticated in their operations while maintaining enough flexibility to adapt to changing conditions.

Unique Aspects for Large Builders:
Large builders employ sophisticated systems for cost management and client communication that reflect their scale and complexity of operations. Their approach is notably data-driven, leveraging big data analytics and standardized processes to manage costs and timelines effectively. This systematic approach has helped them return to pre-pandemic cycle times more successfully than smaller builders.

Their financial management is particularly complex, involving large-scale capital investments and significant carry costs. They form strategic partnerships with well-capitalized trade partners to help manage these financial challenges and maintain stability in their operations. These partnerships, combined with their data-driven approach, allow them to better predict and control costs across their large-scale projects.

Client communication presents unique challenges for large builders due to the complexity of their projects and heightened buyer expectations. They must manage extensive client involvement, often beginning at the pre-sale stage, while handling detailed design preferences and customization requests. This requires them to balance standardization with flexibility in their client communication processes.

Large builders face distinct pressures in maintaining profitability, particularly in dealing with margin compression while meeting sophisticated client demands. Their approach to managing these challenges often involves using base templates and standardized processes, while still accommodating bespoke client customization requests. This balance between efficiency and customization reflects the unique position of large builders in managing both scale and client satisfaction.

6. What long-term strategies are being utilized to mitigate labor shortage?

Similarities for all Builder Sizes:

Workforce development has emerged as a critical strategy across the industry. All builders are investing in some form of training and development programs to enhance workforce skills, though the scale and sophistication of these programs differ significantly based on company size and resources. These initiatives represent an industry-wide recognition that developing skilled workers is essential for long-term sustainability.

Technology and automation are increasingly being explored as potential solutions to labor shortages, though adoption patterns vary considerably. While some builders have embraced technological solutions to improve efficiency and reduce labor dependencies, others are still in the early stages of implementation. This variation in technology adoption reflects differences in resources, scale of operations, and organizational capacity for change.

Partnerships have become a key strategy for addressing labor shortages, with builders of all sizes exploring collaborations with other construction firms and subcontractors. However, the effectiveness of these partnerships varies significantly, often depending on the builder's size and market position. Despite these differences, the industry-wide trend toward collaboration suggests a recognition that no single builder can solve the labor shortage independently.

Unique Aspects for Small Builders:

Small builders demonstrate a distinctly community-centered approach to addressing labor challenges. They actively engage with local institutions, particularly schools and workforce programs, to cultivate new talent for the construction industry. This grassroots approach to workforce development leverages their strong community connections and local presence to create sustainable pipelines for new workers.

Their strategy for maintaining a stable workforce heavily emphasizes personal relationships and loyalty. Small builders typically rely on informal networking and collaboration, fostering strong connections with subcontractors through practices like prompt payment and flexible business arrangements. These personal relationships often prove crucial in maintaining a consistent trade base despite intense competition for skilled workers.

In response to labor shortages, some small builders have taken innovative steps toward vertical integration, such as establishing their own trade businesses in areas like HVAC. This approach helps reduce their dependency on subcontractors while maintaining more direct control over quality and scheduling. When subcontracting is necessary, they prefer to maintain close relationships with a select group of trusted partners.

Their involvement with trade associations and community events plays a crucial role in their workforce development strategy. Small builders actively participate in home builder associations and local industry events, using these platforms to network, share resources, and create opportunities for workforce development. This multi-faceted approach to community engagement helps them maintain a presence in the local labor market while contributing to the broader development of the construction workforce.

Unique Aspects for Medium Builders:
Medium builders take a more structured approach to workforce development, establishing formal partnerships with educational institutions. They actively invest in future talent through scholarship programs and collaborations with universities and vocational schools, creating systematic pathways for new workers to enter the industry. These educational partnerships often extend to junior colleges and high schools, demonstrating a comprehensive approach to workforce development.

Their strategy for maintaining a stable workforce focuses on positioning themselves as a "destination employer" for contractors. They achieve this through reliable business practices, including timely payments and consistent work opportunities, which helps them attract and retain skilled subcontractors in a competitive market. This emphasis on becoming a preferred partner reflects a sophisticated understanding of contractor relationships.

Quality assurance and skill enhancement are central to their approach. Medium builders frequently establish formal relationships with vendor partners and trades, emphasizing accountability and high standards. They often maintain dedicated quality assurance departments and invest in strategic partnerships to improve workforce efficiency and capabilities.

Operational innovation plays a key role in their labor strategy. Many medium builders have adopted new construction methods, such as panelized construction, to manage costs and improve cycle times. These innovations, combined with their focus on sustainability and industry standards, demonstrate their commitment to balancing efficiency with quality. Their systematic approach to workforce development and labor relations positions them to better weather labor shortages while maintaining construction standards.

Unique Aspects for Large Builders:
Large builders employ a highly systematic, data-driven approach to workforce management and labor relations. Their strategy leverages their considerable scale to form strategic partnerships with larger trade partners, enabling them to negotiate better terms and ensure greater reliability. These partnerships are often reinforced through formal initiatives like seed money agreements and comprehensive quality performance reviews (QPRs).

Their approach to workforce development is notably structured and standardized. Large builders implement comprehensive internal training programs which provide consistent training standards across national operations. This standardization extends to their quality and safety reviews, reflecting a top-down approach to maintaining construction standards across their extensive operations.

Technology plays a central role in their labor management strategy. Large builders heavily invest in automation tools and scheduling systems to compensate for labor shortages and maintain efficiency. This technological integration allows for data-driven decision-making in operations management and helps streamline their complex supply chains.

Their scale allows them to pursue efficiency through simplification and standardization. Large builders often focus on reducing operational complexity and streamlining supply chains to maintain cost-effectiveness. This approach to optimization, combined with their ability to leverage national programs and partnerships, helps them manage labor challenges while maintaining consistent quality across their operations. However, this standardization must be balanced against the need for local market adaptability and specific project requirements.

7. What are Industry-Wide Perspectives and Future Outlooks?

Similarities for all Builder Sizes:
Labor shortages represent a fundamental challenge across the construction industry, affecting builders of all sizes. This universal challenge impacts project timelines and costs, pushing builders to invest in training and development programs to address workforce gaps. While there's cautious optimism about eventually resolving these shortages, the immediate impact continues to strain resources and capacity across the industry.

Regulatory environment and government policies create significant hurdles for all builders. Permit processes, regulatory changes, and compliance requirements increase both costs and operational complexity. These regulatory inefficiencies affect not only direct construction costs but also impact labor availability and project timelines across the industry.

A common thread among builders of all sizes is their approach to long-term solutions. The industry has broadly embraced vocational training programs and educational partnerships as essential strategies for workforce development. Outreach to high schools and collaboration with educational institutions have become standard practices to encourage careers in construction and develop future talent.

Technology adoption is increasingly recognized as critical for improving construction efficiency. While implementation varies, there's industry-wide acknowledgment of technology's potential role in addressing labor challenges, particularly through innovations like off-site fabrication. This technological evolution occurs against a backdrop of persistent affordability challenges and fluctuating consumer demand, which affect builders across all segments.

Strategic relationships, particularly with reliable subcontractors, have emerged as a crucial element for success regardless of builder size. This emphasis on relationship building, combined with consideration of alternative construction methods, reflects the industry's adaptation to ongoing challenges while maintaining focus on long-term sustainability.

Unique Aspects for Small Builders:

Small builders face distinct challenges in dealing with government policies and regulations, particularly at the local level. They are especially impacted by licensing requirements and land management policies, which create significant entry barriers and operational complexities. These regulatory hurdles directly affect their ability to maintain affordable housing options while meeting timeline commitments.

Competition for labor resources presents a particular challenge for small builders, especially when competing against large-scale government projects. These public projects often have the resources to offer higher wages, effectively drawing skilled workers away from smaller residential projects. This dynamic exacerbates the already challenging labor situation for small builders.

Their approach to addressing these challenges focuses heavily on local community engagement and relationship building. Small builders actively participate in community initiatives, including partnerships with organizations like Habitat for Humanity and involvement in local educational programs. These connections help them maintain a presence in their communities while developing potential workforce pipelines.

Small builders demonstrate varying levels of optimism about resolving labor issues, with many emphasizing the need for legislative changes to improve the situation. In the meantime, they focus on practical solutions, including strong subcontractor relationships and efficiency innovations like pre-cut framing and visual guides. These strategies help them maintain productivity despite regulatory and labor challenges.

The impact of building codes and other regulations on affordability and operational timelines is particularly acute for small builders. Their smaller scale means they have less ability to absorb or distribute the costs of regulatory compliance, making them more vulnerable to policy changes and enforcement actions.

Unique Aspects for Medium Builders:

Medium builders face distinct regional challenges that significantly impact their operations. Their responses to these challenges must account for unique market conditions and regional litigation laws that affect both costs and operational strategies. This regional variation requires them to maintain flexibility while developing market-specific approaches to construction and workforce management.

Technology integration plays a central role in their strategy for addressing challenges. Medium builders are increasingly focused on implementing advanced solutions, including robotics and off-site construction methods. They view technological advancement as critical for improving efficiency and compensating for labor shortages, while digital scheduling tools help optimize project management and resource allocation.

Their approach to workforce development tends to be more structured and institutionalized. Medium builders frequently establish formal partnerships with technical institutes and junior colleges for vocational training programs. These relationships help create systematic pathways for recruiting and training younger workers, addressing the industry's aging workforce challenge.

Regulatory and licensing challenges particularly affect their operations through their impact on subcontractor availability and project costs. Medium builders must navigate these requirements while maintaining efficiency and profitability. Their response often involves developing scalable production environments and standardized processes that can adapt to regulatory requirements while maintaining operational efficiency.

The emphasis on regional adaptation and technological innovation reflects medium builders' position in the market - large enough to invest in advanced solutions but still needing to remain responsive to local market conditions and regulatory environments. This balance between innovation and regional adaptation characterizes their approach to addressing industry challenges.

Unique Aspects for Large Builders:
Large builders take a broader, more systemic approach to addressing industry challenges, particularly focusing on policy-level solutions like immigration reform. Their scale allows them to engage with and advocate for national policy changes that could help address labor shortages through clearer pathways to citizenship for workers. This macro-level perspective reflects their ability to influence and respond to industry-wide challenges.

Their approach to regulatory challenges often involves strategic partnerships with municipalities and larger trade partners. These relationships help streamline processes and secure land for future development, while public-private partnerships provide pathways to overcome regulatory hurdles. This collaborative approach with governmental entities demonstrates their capacity to operate at a scale that can influence local and regional development patterns.

Technology and data analytics play a crucial role in their strategic planning. Large builders invest significantly in big data solutions and operational streamlining to enhance efficiency and sustainability. This technological sophistication allows them to better predict and respond to market trends while optimizing their operations across multiple regions and projects.

Consumer demand presents a particular challenge for large builders, with some reporting it as accounting for up to 70% of their difficulties. This heightened sensitivity to market demand reflects their larger scale of operations and the need to maintain consistent production levels. Their response typically involves using data analytics to better understand and predict market

trends while developing strategies to maintain operational efficiency despite demand fluctuations.

Their size and resources enable them to take a more comprehensive approach to addressing industry challenges, combining policy advocacy, technological innovation, and strategic partnerships to create sustainable solutions for growth and efficiency.

8. Final Thoughts on Labor Shortage?

Similarities for all Builder Sizes:
The scarcity of skilled workers has created a cascade of financial impacts that touch every aspect of construction operations. These shortages have significantly reduced the pool of available subcontractors, leading to decreased competition and subsequent price escalation. The financial impact manifests in several ways. Rising wage demands have become commonplace as workers leverage the tight labor market to secure higher compensation. This wage pressure, combined with the need to retain skilled workers in a competitive environment, has forced builders to increase their labor costs substantially. The reduced competition among subcontractors has further exacerbated the situation, as fewer options lead to higher pricing across available trades.

Project timelines have also been affected, with labor shortages causing longer cycle times and delays. These extended timelines create additional financial burdens through increased carrying costs and overhead expenses. The combination of higher direct labor costs and extended project durations has significantly impacted overall project economics.

These cost pressures have forced builders across all segments to adjust their pricing strategies, with many passing increased costs on to consumers. This industry-wide phenomenon has contributed to rising construction costs and home prices, creating challenges for maintaining affordability while preserving financial viability. The universal nature of these cost impacts suggests a systemic challenge that affects the entire construction ecosystem, regardless of builder size or market position.

Unique Aspects for Small Builders:
Small builders have experienced particularly severe cost increases due to labor shortages, with many reporting a doubling of labor costs since 2020. This dramatic escalation is especially evident in specific trades, such as bricklaying, where costs have risen substantially. The impact is further magnified by their limited ability to negotiate prices in a market where skilled labor is scarce.

The financial impact extends beyond direct labor costs. Small builders report significant increases in cycle times, which directly translate to higher costs per square foot. These extended timelines create additional carrying costs and overhead expenses that further strain their financial resources. The combination of higher direct costs and longer project durations has created a challenging economic environment for small builders.

Their position in the market makes them particularly vulnerable to cost pressures. Small builders often find themselves unable to negotiate effectively with subcontractors due to their limited

scale and the current labor shortage. This weak negotiating position frequently results in them having to accept higher prices to secure necessary labor, even when these increases cannot be offset by higher margins.

Regulatory requirements compound these challenges, creating an additional layer of cost pressure alongside labor shortages. Small builders must absorb these regulatory costs while managing escalating labor expenses, often without the ability to adjust margins accordingly. This squeeze on profitability highlights the particular vulnerability of small builders to market pressures and their limited ability to distribute or absorb increased costs across multiple projects.

Unique Aspects for Medium Builders:
Medium builders are focused on mitigating rising costs through strategies like leveraging well-trained labor and fostering strong partnerships with suppliers. During the COVID pandemic, they experienced significant cost escalations, particularly in framing and manufacturing, which were further exacerbated by the growing pricing power of suppliers. Builders note that the cost pressures were compounded by labor shortages, supply chain disruptions, and the impact of immigration policies on workforce availability. These factors have contributed to an "upward cost creep," as wage demands rise and manufacturing sector price increases continue to affect overall costs.

In addition to these challenges, medium builders in Colorado are particularly concerned with high insurance premiums, driven by construction defect litigation. This adds another layer of financial strain, impacting project budgets and timelines. Despite these challenges, medium builders remain focused on proactive cost mitigation, emphasizing the importance of skilled labor and strategic partnerships to manage expenses and maintain project quality amidst the ongoing economic pressures.

Unique Aspects for Large Builders:
Large builders frame cost pressures as indefinite, largely driven by the ongoing competition for talent rather than specific financial challenges. They emphasize the long-term nature of these pressures, with a strategic focus on managing labor rather than addressing day-to-day cost adjustments. While some large builders report minimal impact on costs due to labor shortages, others have seen substantial cost increases. This variation highlights the diverse ways in which labor shortages are affecting the industry, with some companies better able to absorb the impact through efficiencies or resource management. Overall, the focus is less on immediate financial mitigation and more on developing long-term strategies to navigate talent shortages and their broader implications for the construction sector.

Quantitative Analysis Overview

1. Labor Cost

Unique Aspects for Small Builders:

The study highlights several critical trends in the home building industry, particularly the persistent labor cost increases that have emerged post-pandemic. Labor costs have nearly doubled in some cases since the COVID-19 pandemic, with significant wage inflation observed across both entry-level and skilled trade positions. This sharp rise in labor costs has compounded the challenges of an already strained workforce, where shortages in skilled labor continue to be a major concern.

Quantitative Changes

- Labor costs for trades such as framers and plumbers have increased by approximately 40% since before COVID-19 and shown no signs of decreasing.
- Specific labor cost examples include framers whose costs range from $6-$7 to $25 per square foot, and basic site labor rising from $7-$8 per hour to $25 per hour.
- Young electricians' wages have increased from $12-$15/hour to $20-$25/hour.
- Electrical-related costs have risen from $3.75 to nearly $10 per square foot.
- Construction costs have escalated from $85 to $112 per square foot in three years and from $200 to $350 in custom home builds over five years.
- Wage increases over the last eight years, ranging between 40% and 50%.

Impact Analysis

- Labor cost inflation has led to increased project timelines, shifting from 120-day cycles to approximately 165 days due to labor availability issues.
- Builders increasingly face a competitive market to secure labor, with labor costs doubling in some areas such as bricklaying.
- Scarcity of workers has necessitated procedural flexibility in construction to retain limited labor forces.

Conclusion

Labor costs for small homebuilders have increased significantly post-pandemic, with notable hikes in wages and operating expenses. This rise, fueled by labor shortages and demand, has doubled costs in some sectors, and notably lengthened project timelines. Despite market slowdowns, elevated labor costs are seen as a "new normal," underscoring a lasting shift in the construction labor market landscape.

Unique Aspects for Medium Builders:

Labor costs for residential construction have risen significantly due to a shift of workers to higher-paying commercial jobs, such as those at airports, creating a gap in the skilled labor pool for residential projects. As some workers return to residential construction, they now expect higher wages, further driving up labor costs. Additionally, labor shortages, particularly in

affordable roofing services, have been exacerbated by storm-related demand, putting further pressure on wages and contributing to overall rising labor costs in the sector.

Quantitative Changes

- Hourly wages for mechanics have increased from $12-15 to $30, indicating a doubling of costs.
- Minimum labor wages have risen from $15 to potentially $17 per hour.
- Framing labor costs increased by approximately 89%, from $1.85 to $3.50 per square foot during the COVID period.
- Roofing costs have increased by $20 to $30 per square due to shortages and weather events.
- Labor contributes significantly to a 10-12% rise in overall construction pricing.
- House prices surged from $320,000 in 2017 to $450,000-$470,000 and from $300,000 three years ago to $500,000.

Impact Analysis

- Labor cost increases of 3-5% impact residential construction budgets, squeezing profit margins.
- Inflationary pressures on labor have contributed to significant house price increases, affecting affordability.
- Improved construction efficiency has reduced project timelines from up to two years to six or seven months, potentially moderating some labor cost impacts.

Conclusion

The data indicates substantial increases in labor costs due to shifts toward higher-paying jobs, shortages, and inflationary pressures, significantly affecting home pricing and builder profit margins. Despite improvements in construction timelines, rising labor costs continue to be a critical factor in housing affordability and the industry's overall financial dynamics.

Unique Aspects for Large Builders:

As builders face increasing pressure to manage rising labor costs, the focus has shifted from reducing labor expenses to maintaining current wage levels in order to remain competitive. Labor costs have become less stable, with workers frequently switching between job sites for small wage increases, further driving up competition for skilled labor. This constant mobility among workers makes it challenging for builders to maintain consistent workforce levels and introduces volatility into construction project costs, requiring more strategic efforts to retain talent and control labor expenses.

Quantitative Changes

- Estimated labor cost increase of 20-30% over an unspecified recent period.

Impact Analysis

- The rising labor costs reflect significant economic pressures impacting project budgets and timelines.

- Competitive labor market dynamics lead to increased costs and challenges in workforce stability.

Conclusion
Labor costs in the homebuilding industry have significantly risen, with a notable increase of 20-30%. The industry's focus has shifted from cost reduction to maintaining current cost levels, underscoring broader economic pressures and a competitive job market.

2. Cycle Time

Unique Aspects for Small Builders:
Over the past two decades, the cycle time for building standard houses has steadily increased by approximately 1 to 1.5 months, with the total time from lot purchase to completion rising from 8-9 months to 12-15 months. This shift reflects broader changes in construction practices, supply chain dynamics, and regulatory factors. Notably, the COVID-19 pandemic caused a significant disruption, extending typical cycle times from the usual 4-6 months to 9-12 months due to labor shortages, material delays, and logistical challenges. Furthermore, contemporary building practices have seen a shift from the historically efficient cycle time of as few as 62 days to considerably longer durations, highlighting a departure from past efficiencies and the increasing complexity of modern construction projects.

Quantitative Changes
- Building custom homes now takes 14-16 months compared to the previous 10-12 months, a 16-60% increase.
- Prior to COVID-19, completing houses took about 5-6 months; this has risen to around 9 months post-pandemic.
- Typical build times have stretched from 90 to 140 days more recently, reflecting new challenges and constraints.
- The number of houses completed annually has reduced significantly, from 40 in 2020 to a projection of 5 by 2024.
- Sector-specific cycle times: luxury single-family homes target completion in approximately 12 months.

Impact Analysis
- Extended cycle times have led to increased carrying costs, with interest expenses doubling from $10,000 to $20,000-$25,000 over recent years.
- Material and labor costs have seen significant surges, exacerbating financial burdens and contributing to extended project timelines.
- Labor shortages directly add 3 to 4 weeks to project durations, highlighting the impact of workforce challenges on cycle efficiency.
- Adoption of technology over the past 5-6 years has provided partial mitigation against labor shortages, helping stabilize or improve cycle times where possible.

Conclusion

The construction industry has been facing increasing cycle times due to labor shortages, regulatory delays, and the lasting impacts of the COVID-19 pandemic. While technological adoption offers some relief, the sector generally reports extended timelines and increased costs. This trend highlights the need for strategic adjustments to improve efficiency and cost management in homebuilding processes.

Unique Aspects for Medium Builders:

Increased cycle times were a notable challenge from 2021 to 2022, with many projects taking 1 to 3 months longer than usual due to the lingering effects of the COVID-19 pandemic, including labor shortages and ongoing supply chain disruptions. However, recent improvements have shown a downward trend in cycle times, with some builders achieving a 25% reduction over an 18-month period. This shift reflects significant progress since the height of the disruptions, with cycle times for house building reducing from 18 months to around 6-7 months in some cases. These improvements indicate that the industry is adapting and regaining efficiency, although some residual challenges remain.

Quantitative Changes

- An additional $3,000 to $5,000 in costs per month per house were accumulated for each month due to elongated cycle times.
- Cycle times in some cases decreased from 270 days to 180 days, marking a near 37% improvement.
- Due to supply chain issues, cycle times increased from 120 to 160-180 days, a 33% to 50% rise.

Impact Analysis

- Innovative methods, like wall panelization, saved about 5-6 days off the build cycle, contributing to efficiency improvements.
- Entry-level home cycle times improved from 150 days during COVID to under 100 days, reflecting recovery and adjustments post-pandemic.
- Projects were previously delayed due to significant supply chain disruptions, including 6-8 months wait for key materials.

Conclusion

The interviews show a clear trend of initially increased cycle times due to supply chain challenges and labor shortages, followed by significant recent improvements in reducing build times. Builders have employed various strategies, such as operational improvements and innovative construction techniques, to combat delays and contain costs. While cycle times have generally decreased, returning closer to pre-pandemic levels, some challenges remain, indicating ongoing adjustments in the building process.

Unique Aspects for Large Builders:

Post-pandemic, builders have generally returned to or are approaching pre-pandemic cycle times after experiencing significant extensions during the COVID-19 pandemic. Construction timelines were severely delayed during the height of the pandemic due to labor shortages, supply chain disruptions, and health-related restrictions. However, since mid-2023, cycle times have been trending toward improvement, with builders gradually regaining efficiency. As of 2024, many builders report that their timelines are closer to pre-pandemic norms, though some regional or project-specific delays still persist due to ongoing challenges in labor availability and material costs.

Quantitative Changes

- Current average cycle times for some builders range from 130 to 150 working days.
- During the pandemic, cycle times were extended to as long as 180 to 240 days, depending on the builder.
- Post-COVID improvements have seen cycle times reduced by approximately 25-30% from the peak delays.
- Some builders aim to reach a cycle time of 110 to 115 business days from a current average of 125 days.
- Reduction in cycle times continues at a pace of a few days per quarter.

Impact Analysis

- The return to pre-pandemic cycle times suggests significant recovery in construction schedules and process efficiencies.
- Reduced cycle times since the pandemic have lessened the holding costs and other financial burdens associated with delays.
- Builders have not yet fully met their ideal cycle time targets, indicating ongoing inefficiencies needing further optimization.

Conclusion

Builders are gradually overcoming pandemic-induced delays, with current cycle times improving substantially yet remaining slightly above pre-pandemic benchmarks. Continued reductions in cycle times are crucial for achieving optimal efficiency and cost-effectiveness in construction projects.

3. Material Cost

Unique Aspects for Small Builders:
Lumber costs have exhibited significant volatility, with dramatic price spikes during the COVID-19 pandemic, reflecting the intense supply chain disruptions and shifts in demand that characterized the period. While the lumber market has since stabilized, it continues to show cyclical behavior, with prices fluctuating based on seasonal and market conditions. In contrast, the prices of other key construction materials, such as drywall, concrete, and various other materials, have followed a more consistent upward trend over time. These materials have steadily increased in cost due to ongoing supply chain challenges, inflationary pressures, and persistent demand, contributing to the overall rise in construction expenses.

Quantitative Changes

- Lumber prices doubled during the pandemic, reaching highs of $115,000 for lumber packs, although they have partially retreated from these peaks.
- Concrete costs rose from $98 to $140, marked as part of a broader inflationary pressure.
- Drywall prices increased from $20 to $40 per sheet over five years, showing a 100% increase.
- The cost per square foot for home construction rose from $85 to $112 in three years.
- Electrical safety upgrades contributed to costs rising from $375 to nearly $10 per square foot.
- Custom home construction costs increased from $200 to $350 per square foot over five years, marking a significant 75% rise.
- General material costs rose 30-35% since 2020 due to production halts, shipping, and fuel costs.

Impact Analysis

- Construction budgets were severely impacted by a 300% spike in lumber, leading to halted projects to avoid financial losses.
- Increases in material costs led to significant rises in home prices, with a typical 2000 square foot home costing over $100,000 more post-COVID.
- Labor shortages and logistical issues, particularly in lumber delivery, caused significant delays in the building process.

Conclusion
The small homebuilding sector faced substantial increases in material and associated labor costs, largely driven by pandemic effects and subsequent economic pressures. These developments have led to higher construction budgets, increased home prices, and logistical delays, emphasizing the need for strategic financial planning and adjustments in project management.

Unique Aspects for Medium Builders:
Framing costs have nearly doubled since the pre-COVID period but have now stabilized at a new, higher level, reflecting the lasting impact of the pandemic on the industry. Meanwhile, prices for dimensional lumber and plywood, while still higher than 2019 levels, are following

typical supply-and-demand fluctuations consistent with market behavior. These materials continue to be influenced by broader market trends, but their price volatility has become more predictable in recent months. Despite stabilization, the elevated cost of framing materials remains a significant contributor to overall construction expenses, requiring builders to adjust their pricing strategies accordingly.

Quantitative Changes

- The cost of framing increased $1.85 to $3.50 per square foot, representing a nearly 89% rise.
- Dimensional lumber and plywood prices have risen since 2019, although exact figures of the increase are not specified.

Impact Analysis

- The increased framing costs significantly impact budgets, necessitating adjustments to financial planning, as builders adapt to the elevated and sustained pricing.
- Slight increases in lumber and plywood costs over the period indicate smaller but persistent adjustments required in budgeting due to typical market variations.

Conclusion

The primary findings indicate a significant, nearly doubled increase in framing costs, which have since stabilized at their high. Although lumber and plywood costs are up from 2019, they have shown regular market fluctuations, necessitating ongoing, if minor, adjustments in budgeting and material procurement strategies.

Unique Aspects for Large Builders:

Labor costs in the home building industry have increased by an estimated 20 to 30%, adding significant financial strain to builders. Alongside rising labor costs, material prices have also surged, with concrete prices climbing from $59 per yard to $229 per yard over a substantial period. While material costs have stabilized at their peak levels from 2022, they remain high, continuing to impact overall project budgets. This combination of increased labor and material costs has created a challenging environment for builders, requiring them to adjust pricing and project timelines to account for these ongoing cost pressures.

Quantitative Changes

- Labor cost increases of approximately 20 to 30%.
- Concrete cost increase of approximately 288% from original estimates to recent quotes.

Impact Analysis

- Increased labor and material costs likely strain project budgets and affect housing affordability.
- Stable but high material costs at 2022 peak levels result in sustained pressure on construction costs.

Conclusion
Material costs for large builders have notably increased, particularly labor and concrete costs. Despite recent stabilization, prices remain high, consistently impacting budgets and housing affordability.

Conclusions

Based on the research data, the homebuilding industry has undergone fundamental changes since the COVID-19 pandemic that have reshaped its cost structure and operational dynamics.

Labor costs have risen dramatically across builder segments, with wages nearly doubling in some trades. Small and medium builders report skilled trade wages increasing 40-50%, while large builders face 20-30% increases. These elevated labor costs appear to be a persistent feature rather than a temporary spike, creating what many describe as a "new normal" in construction labor markets.

Cycle times show signs of improvement after significant pandemic-related extensions. While small builders still experience stretched timelines of 9-12 months compared to pre-pandemic 4-6 months, medium and large builders have made substantial progress in reducing delays. Large builders are approaching pre-pandemic efficiency levels, though timelines remain slightly extended compared to historical benchmarks.

Material costs have stabilized but at considerably higher levels than before the pandemic. Custom home construction costs for small builders have risen from $200 to $350 per square foot, while medium builders face nearly 89% increases in framing costs. Large builders report dramatic increases in basic materials like concrete, which has risen from $59 to $229 per yard.

These sustained increases in labor, timeline extensions, and elevated material costs have fundamentally altered the industry's cost structure. This new environment requires builders to adapt their business models, pricing strategies, and operational approaches to maintain viability while addressing ongoing challenges in housing affordability. The data suggests these changes represent a structural shift rather than a cyclical adjustment, indicating the need for long-term strategic responses from industry participants.

Acknowledgments:

The researchers would like to thank the following builders for participating in this study.

- Aric Jones, Brightland Homes
- Bill Rectanus, Thrive Home Builders
- Bob Baldwin, R.B. Homes, Inc.
- Brad Simons, Magleby Construction
- Brent Forsberg, TA Forsberg
- Brian Conway, Cardel Homes
- Brian McKee, Midwest Homes
- Chetter Latcham, Shea Homes
- Craig Shuck, Tri Pointe Homes
- Dennis Web, Fulton Homes
- Derek Yasuzawa, Tri Pointe Homes
- Drew Retz, Jerry's Homes
- Erin DeWeese, Brian D Wiggs Homes Inc.
- Gene Myers, Thrive Home Builders
- Jason Brown, Ascent Builders
- Jesse Younger, Younger Homes
- Jim Anzlovar, Lennar
- Jim Jonsson, Ivory Homes
- Jim Latsis, Latsis Custom Homes
- Justin Wood, Fish Construction NW
- Ken Williams, Colina Homes
- Kenneth Estes, Estes Build 4U
- Kristy Wozniak, Keene Homes
- Larry Kornman, Sunrise Homes
- Mark Zimpfer, Zimpfer Construction
- Mike Dishberger, Sand Castle Homes
- Mike Teague, Reef Builders
- Patrick Goodman, Noyes Development
- Randy Noel, Reve, Inc
- Scott Czarnek, Shea Homes
- Stevie Tuck, Tuck Development
- Todd Usher, Addison Homes

Appendix:

Labor Shortage Study Research Interview Guide

OBJECTIVES RE-CAP

To research the skilled labor shortage in residential single-family home construction and how that impacts current and future needs with affordable supply.

- What research has been done before on this topic in industry and academia?

DISCUSSION FLOW SUMMARY

INTRODUCTIONS (5 Minutes)
↓

ABOUT YOU AND YOUR HOMEBUILDING COMPANY (10 Minutes)
↓

DEEP DIVE ON LABOR SHORTAGE IMPACTS (40 Minutes)
↓

LABOR SHORTAGE FUTURE OUTLOOKS (5 Minutes)

MODERATOR'S GUIDE

Note on the Approach

One-on-one interviews will be open and conversational. In some cases, the discussion may not follow the exact order below, and not every question will be asked of every respondent. Rather, the interviewer will guide the discussion, with the goal of aligning what we hear about respondents' key motivations/goals with our key research objectives.

1) **INTRODUCTIONS (5 Minutes)**
   1. **PURPOSE** → We're talking to home builders to research the skilled labor shortage in residential single-family home construction and how it impacts current and future needs with affordable supply.
   2. **REMINDERS** → don't think too much, no right or wrong answers, be open/honest. I will be asking questions about you personally and professionally. As much as you can, share what's really happening regarding what you have experienced about the labor shortages in your market and company. We are recording for the transcript and later analysis.
   3. **THANK YOU** → Thank the respondent for participating.

2) ABOUT YOU AND YOUR HOMEBUILDING COMPANY (10 Minutes)

1. **Introduce yourself**, mentioning your role, tenure in the construction industry, and duration with the current company.
2. **Company Size:** What is the size of the construction company in terms of # of employees, # of units per year closed, and/or revenue dollars?
3. **Annual Residential Projects:** Discuss the number and types of residential projects undertaken annually, including luxury, single-family, and multi-family units, and average home sale price and target clientele.
4. **Geographical Spread:** What are the concentration and spread of your projects geographically?

3) DEEP DIVE ON LABOR SHORTAGE IMPACT (40 Minutes)

Construction Labor Recruitment and Retention

1. Quality of Labor and Subcontractors: Assess the quality of labor and subcontractors. How has it changed over the years? When did you see the most significant change?
2. Recruitment Process: What is your typical process for recruiting construction workers, locations, frequency, turnover rates, tenure, and the split between full-time employees and contractors?
3. Challenges: What challenges have you faced in hiring construction labor, especially in the past year?
4. Extent of Labor Shortage: How would you gauge the extent of the labor shortage and the factors contributing to it?

Impact on Cost

1. Overall Impact: How has the labor shortage affected the home-building project cost?
2. Specific Cost Increases: Do you have specific examples of cost increases directly linked to the labor shortage?
3. Labor vs. Materials Cost: What percentage of construction cost is attributed to labor versus materials?
4. Labor Cost Increase: What has been the percentage increase in labor cost over the last two years?
5. Sale Price Changes: What changes in home sale prices and what factors contribute to them?

Cycle Time of Home Building

1. Observations: What have you observed changes in the cycle time of home building projects due to the labor shortage?
2. Quantifying Impact: How do you quantify the impact of the labor shortage on project completion time?
3. Delivery Time Impact: How have the labor shortages affected delivery time? providing examples.
4. Cycle Time Change: What has changed in cycle time over the past five years, and what are what are the factors contributing to it?
5. Carry Cost Increase: Has this increased your carry cost, and how is it calculated?

Training and Development Programs/Alternative Solutions

1. Investment: Is your company investing in training and development programs to address the labor shortage?
2. Initiatives: Are you doing any specific initiatives to enhance workforce skills? Explain.
3. Implemented Strategies: What strategies are implemented by your company to cope with the labor shortage?
4. Technology Utilization: Has technology or automation been explored to compensate for the labor shortage?

Collaboration and Partnerships/ Government and Industry Support

1. Partnerships: Has your company partnered with other construction firms or subcontractors to mitigate the impact of the labor shortage?
2. Experience and Impact: What are the experiences and influence of such partnerships on project efficiency and cost-effectiveness?
3. Government Role: What about the role of government policies in alleviating the labor shortage?
4. Industry-wide Initiatives: What potential industry-wide initiatives to address the labor shortage?

Client Communication

1. Communication Approach: How does your company communicate timelines and home prices with clients, including revisions and cost increases?
2. Challenges: What other challenges or best practices in managing client expectations regarding labor shortages or cost increases?

4) LABOR SHORTAGE FUTURE OUTLOOKS (5 Minutes)

Future Outlook

1. Biggest Challenges: Allocate percentages to the company's biggest challenges, including consumer demand, technology, labor, and capital.
2. Optimism: Assess the company's optimism regarding resolving the labor shortage in the coming years.
3. Long-term Strategies: Inquire about any long-term strategies the company is considering to navigate potential future labor challenges.

- **FINAL THOUGHTS** → The Moderator will ask for any final thoughts about the labor shortages and how it has affected their cost.

Acknowledgment of Participation

We extend our sincere gratitude to the companies and organizations that contributed to this research study. Your valuable insights, time, and partnership were instrumental in helping us better understand the impact of the skilled labor shortage and shape actionable solutions for the industry.

Addison Homes

Keene Homes

Latsis Custom Homes

Fish Construction NW

Noyes Development

Reve, Inc

Sand Castle Homes

Reef Builders

Zimpfer Construction

Jerry's Homes

Younger Homes

Ascent Builders

Tuck Development

Midwest Homes

Brian D Wiggs Homes Inc.

Estes Build 4U

Magleby Construction

R.B. Homes, Inc.

TA Forsberg

Thrive Home Builders

Ivory Homes

Sunrise Homes

Colina Homes

Fulton Hmes

Lennar

Shea Hoes

Tri Pointe Homes

Brightland Homes

Cardel Homes


HBI
Building Careers.
Changing Lives.