2022

UNION CRAFT

LABOR SUPPLY

REPORT

The Association of Union Constructors

CLRC Construction Labor Research Council

MEASURING TODAY FOR A SUCCESSFUL TOMORROW

INTRODUCTION

The *2022 TAUC Union Craft Labor Supply Report* marks the eighth year that The Association of Union Constructors (TAUC) has commissioned the Construction Labor Research Council (CLRC) to conduct a comprehensive analysis of the current state of the union construction and maintenance industry. The first study was completed in 2015.

Copies of the previous year's report can be obtained by visiting the TAUC website: **www.tauc.org/laborsupply**

THE ASSOCIATION OF UNION CONSTRUCTORS (TAUC)

The Association of Union Constructors (TAUC) is the premier national trade association for the union construction and maintenance industry. Membership is made up of contractors who use union labor for their projects, as well as local contractor associations and vendors in the construction and maintenance industry. TAUC's mission is to act as an advocate for union contractors and to enhance cooperation between the three entities involved in the successful completion of construction and maintenance projects: the union, the contractor, and the owner-client (the company for which the work is being completed). TAUC's ultimate goal: to demonstrate that union construction and maintenance is the best option because it's safer and more productive and provides a higher-quality, cost-competitive product.

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CONSTRUCTION LABOR RESEARCH COUNCIL (CLRC)

The Construction Labor Research Council (CLRC) is the nation's foremost source of labor cost and related information for the unionized sector of the construction industry. It serves as a key resource for data on labor costs, workforce issues, market share, labor contract terms, safety and associated topics. The CLRC database contains wages, fringe benefits and contract language information on nearly 3,000 contracts in 285 cities for 17 crafts. CLRC is supported by management associations whose member firms employ union construction craftworkers.

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EXECUTIVE SUMMARY & KEY FINDINGS

The *2022 Union Craft Labor Supply Report* was conducted by the **Construction Labor Research Council (CLRC)** and sponsored by **The Association of Union Constructors (TAUC)**. This important, annual research project provides a useful, detailed and data-driven picture of the state of the union craft workforce in construction and maintenance activity throughout the United States. Analyses focus on current status, growth projections, labor shortages and surpluses, craft-specific results, and new information on timely topics each year.

TAUC, CLRC and their partners know that a data-based approach is the best way to achieve shared goals of improving business performance and increasing union market share.

STUDY FOCUS

This study covers the following topics:

- Growth in the construction and maintenance industry (union and nonunion)
- Labor supply for union craftworkers covering:
  - Recent history
  - Projections for 2022 and beyond
  - Apprentice levels
- Detailed findings for 14 union crafts
- Skills shortage

NEW FOR 2022

- Demographic data cuts on the age of the participants in the study (with some surprising findings).
- Additional unique perspectives on union craft staffing.
  - Pervasiveness of labor shortage
  - Pre-COVID-19 vs. current staffing
  - Confidence in meeting craft labor needs
- Questions about employee health and well-being.
  - Vaccination status
  - Substance abuse
  - Suicide

UNIQUE FEATURES OF THE STUDY

A number of features make this study a trusted and useful resource for professionals interested in the construction and maintenance industry.

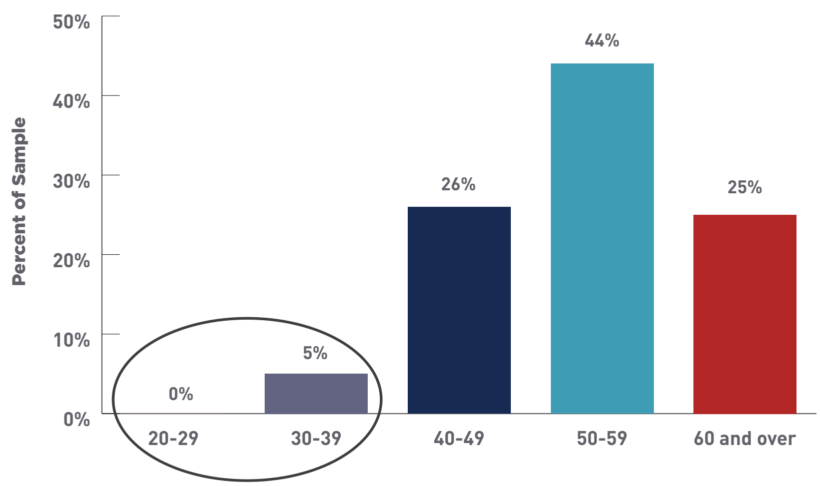
- Respondents were instructed to report information based on their own organization, not their perceptions of an overall generic labor market, hearsay or what they may have read in some publication. This type of data collection enhances the validity of the results and minimizes erroneous data, which can distort the results.
- The population from which the sample was drawn is knowledgeable and engaged regarding the topic of craft labor supply.
- A large amount of craft-specific results is included in the report.
- Detailed analyses, including data cuts by the five demographic variables (i.e., role, industry, region, organization size, age distribution) and interactions among those variables, are presented throughout the report.
- Many charts and tables, along with helpful explanatory text, are included to ensure that the study results can be efficiently and accurately understood by the reader.
- Each year, a new set of custom questions is included as a one-time event (previous questions are rotated off). These questions focus on emerging issues or topics critical to the construction and maintenance industries.

KEY FINDINGS

1. Where Are All the Young People?

Perhaps the most surprising finding of the *Union Craft Labor Supply Report* this year was the dearth of younger people completing the survey. ***There were no respondents in the 20-29 age category and just 5% were in the 30-39 grouping! That means that 95% of the sample was age 40 and over.*** The 50-59 age range was easily the most populous, with 44% of the respondents. Assuming the sample responding to the survey is representative of the overall population of workers in the construction and maintenance industry, it is definitely a mature industry, agewise. See **Section I** for detailed analysis.

AGE OF STUDY PARTICIPANTS



95%
OF STUDY PARTICIPANTS ARE AGED **40 AND OVER.**

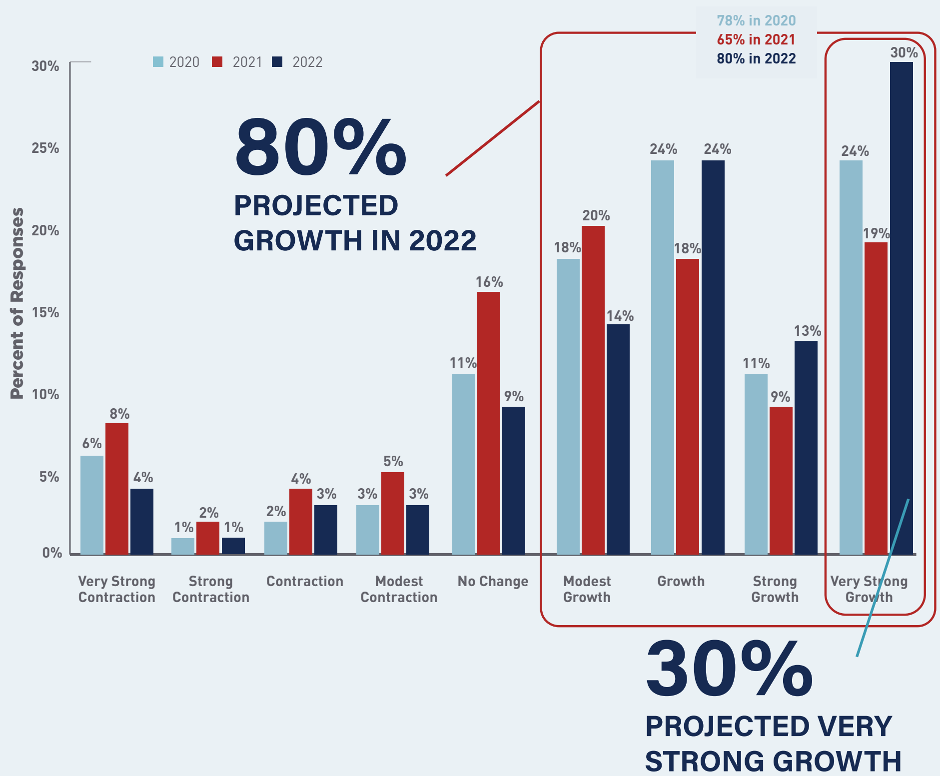
2. Growing Confidence

There was great confidence in the growth prospects for the construction and maintenance industry. In fact, 80% projected growth and a strong 30% projected "Very Strong Growth" for 2022.

The improved growth projections were nearly universal across all the demographic data cuts. In other words, nearly every role, region, industry, organization size and age group were bullish on growth for 2022 (but there were a few exceptions). See **Section II** for detailed analysis.

These are the highest growth projection results since the study began in 2015!

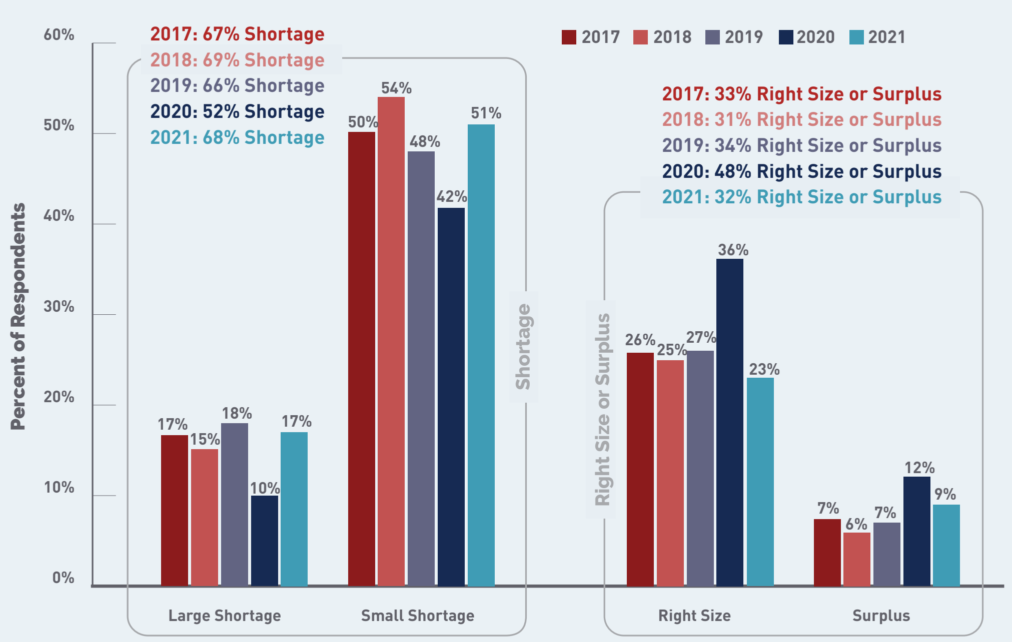
GROWTH/CONTRACTION PROJECTIONS FOR THE CONSTRUCTION AND MAINTENANCE INDUSTRY



3. Back to the Future for Union Craftworker Shortages

After a reprieve last year, reported union craftworker shortages are back to their pre-COVID-19 levels. *However, while most respondents reported a shortage, it was a small shortage (51%). Meanwhile, a sizable percentage reported having the right number of workers (23%) or a surplus (9%). Only 17% reported a large shortage in 2021.*

SHORTAGE/SURPLUS AMONG UNION CRAFT WORKERS



These findings were very robust across the data cuts, with almost no exceptions. That is, regardless of role, region, industry, organization size, or age group, there were more people reporting a union craftworker shortage in 2021, albeit a small shortage.

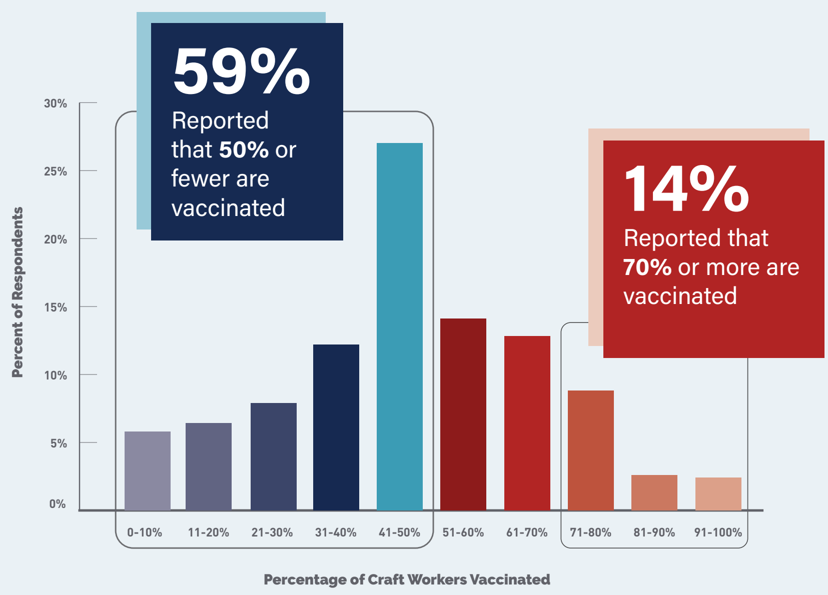
Once again, the two crafts with the largest percentage reporting a shortage were Electricians and Carpenters & Millwrights. These crafts have had the largest shortages for the past three survey years, including projections for 2022 and apprentice shortages last year (2021). See **Section III** for detailed analysis.

4. Employee Health and Well-Being

The perceived vaccination status of union craftworkers was fairly low (actual vaccination rates not available for this study). More specifically, 59% of the study participants reported that 50% or fewer of the union craft employees in their organization were vaccinated and just 14% said that at least 70% were vaccinated.

A large majority (83%) indicated that they were aware of at least one craftsperson in their organization who missed work or underperformed because of a substance abuse issue in 2021. Twenty percent said they knew of a craftworker in their organization who died by suicide in 2021. See **Section V** for detailed analysis.

PERCEIVED PERCENTAGE OF UNION CRAFT WORKERS WHO ARE VACCINATED

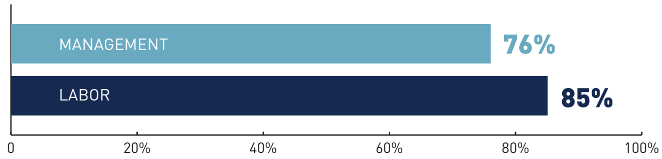


5. Differing Perspectives: Management and Labor

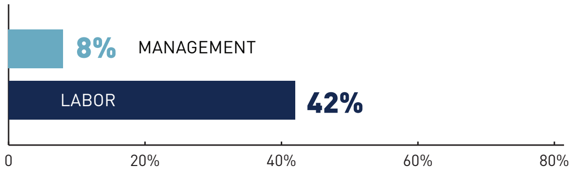
A consistent theme each year in this study is the different perspectives that labor and management have on many issues. In topics focusing on the business, labor consistently presents a more optimistic response. As expected, labor seemed to have more awareness regarding topics focusing on the health and wellness of union craftworkers. See **Section IV** for detailed analysis.

Business Topics

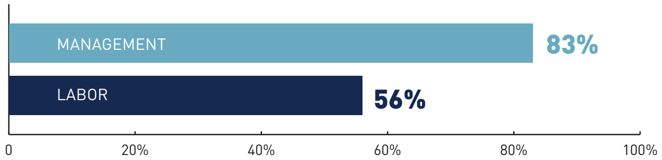
PROJECTED GROWTH IN THEIR ORGANIZATION FOR 2022



VERY CONFIDENT THEIR ORGANIZATION WOULD BE ABLE TO MEET CRAFT STAFFING NEEDS

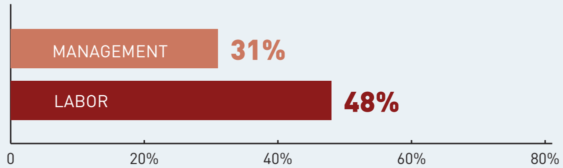


REPORTED A UNION CRAFT LABOR SHORTAGE IN THEIR ORGANIZATION IN 2021

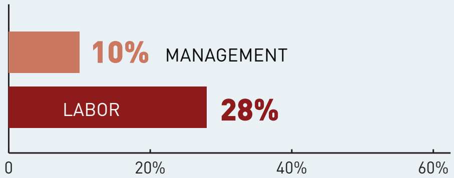


Employee Topics

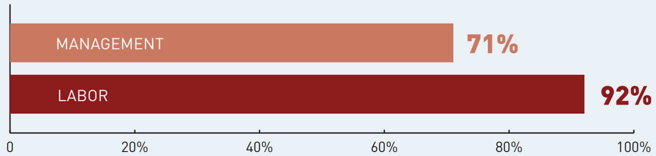
THOUGHT AT LEAST 50% OF THE CRAFTSPEOPLE IN THEIR ORGANIZATION WERE VACCINATED



KNEW A CRAFTSPERSON IN THEIR ORGANIZATION WHO DIED BY SUICIDE IN 2021



KNEW A CRAFTSPERSON IN THEIR ORGANIZATION WHO MISSED WORK OR UNDERPERFORMED BECAUSE OF A SUBSTANCE ABUSE ISSUE IN 2021



STUDY RESULTS

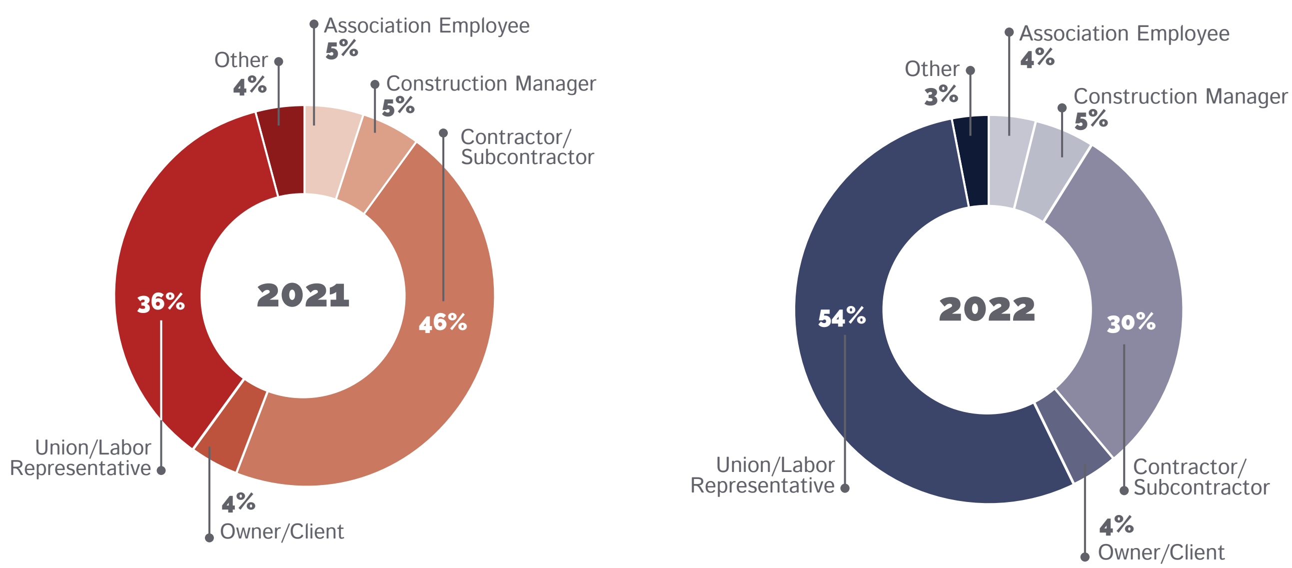
Beginning on January 12, 2022, a questionnaire focusing on union craft labor in the construction and maintenance industry was circulated to individuals directly engaged in that industry. **A total of 693 people responded,** representing a variety of roles in their organizations, industries, geographic regions and organization sizes and respondent ages.

I. STUDY DEMOGRAPHICS

A. Role

As shown in **Figure 1.1**, in 2022 most respondents were either a Union/Labor Representative (54%) or a Contractor/Subcontractor (30%). The remaining roles represented 16% of the study sample. The proportion of the sample in the Contractor/Subcontractor role has fluctuated from 33% to 46% to 30% the past three years (2020, 2021, 2022, respectively). The percent of the sample in the Union/Labor Representative role has mirrored this trend, with 53%, 36% and 54% of the sample in 2020, 2021 and 2022, respectively. The size of the total management cohort (Association Employee, Construction Manager, Contractor/Subcontractor and Owner/Client) was 43% in 2022.

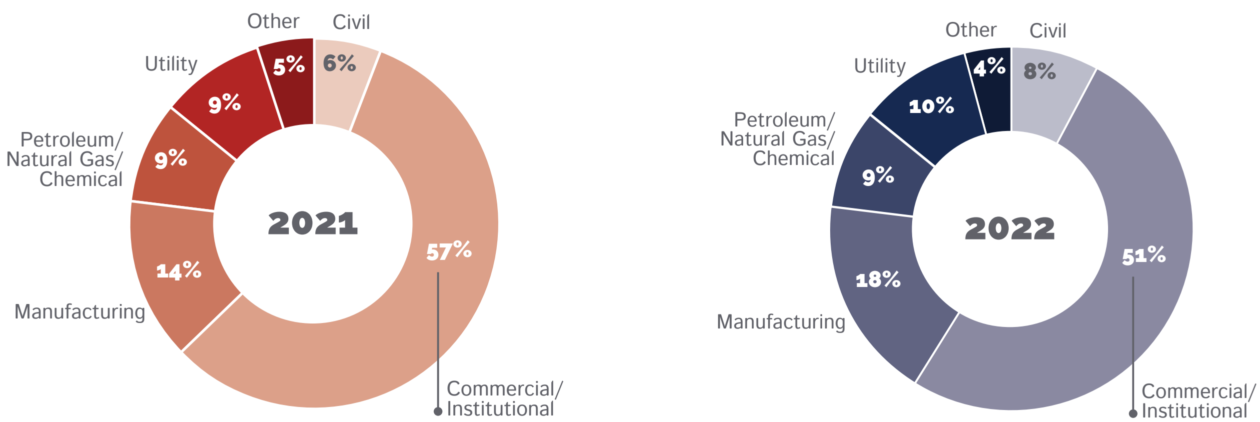
FIGURE 1.1 | RESPONDENT ROLE



B. Industry

Study participants were asked to indicate the industry in which their organization performed the most union construction and maintenance work. The Commercial/Institutional industry sector was again the most common one in 2022, representing 51% of the sample (57% in 2021 and 47% in 2020), as displayed in **Figure 1.2**. However, a larger percentage than last year fell in other industry categories such as Civil (8%), Manufacturing (18%) and Utility (10%).

FIGURE 1.2 | INDUSTRY

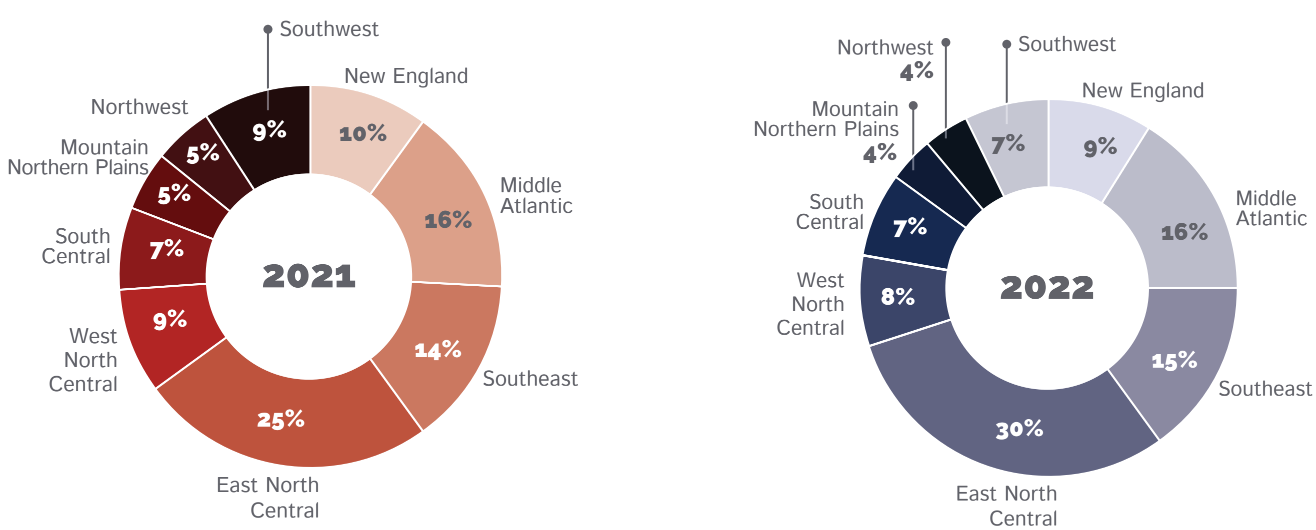


C. Region

Respondents were instructed to indicate the region(s) for which they were most familiar with their organization's union construction and maintenance work activity. In order to ensure reliable data from knowledgeable participants, respondents were instructed to provide data only for those regions they were familiar with and where their organization had performed work.

As illustrated in **Figure 1.3**, the East North Central region had the plurality of responses both in 2021 and 2022 at 25% and 30%, respectively. Other regions with a double-digit percentage of the responses in 2022 were the Middle Atlantic (16%) and Southeast (15%) regions. Overall, there was strong consistency from 2021 to 2022 in how the respondents were distributed across the regions.

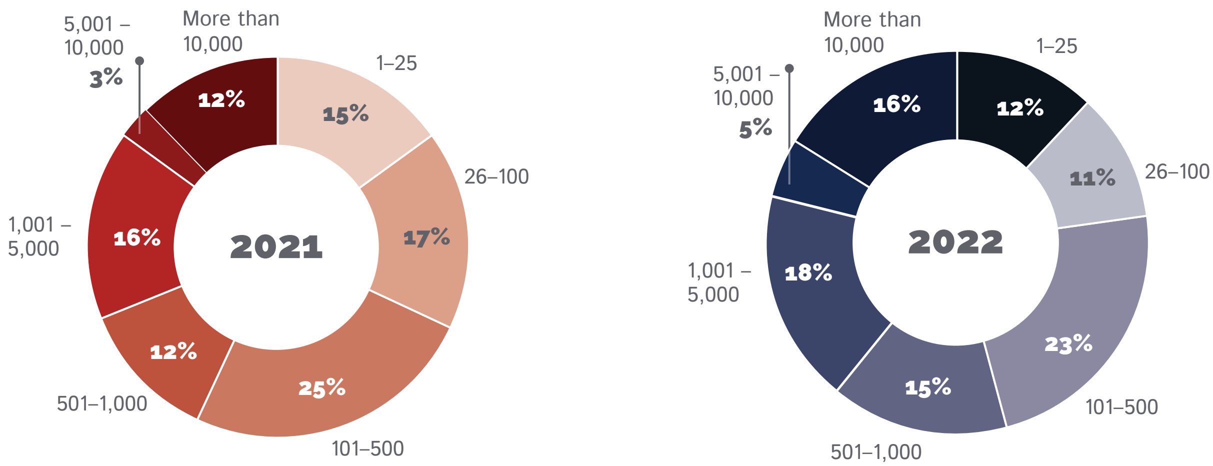
FIGURE 1.3 | REGION



D. Organization Size

Figure 1.4 shows that the participants in the study were fairly evenly distributed across various sizes of organizations. Like last year, the most common size in 2022 was 101-500 employees (23%). All other organization sizes, except 5,001-10,000, had 11% to 18% of the respondents.

FIGURE 1.4 | ORGANIZATION SIZE



E. Age

New this year, the study added age as a demographic variable. Data cuts based on age have been added to various results presented throughout the report. *The most curious finding concerning age is that there were no respondents in the 20-29 age category, and just 5% aged 30-39. as shown in* **Figure 1.5***. The most common age range, by far, was 50-59, representing 44% of the respondents.*

Figure 1.6 shows the average age by role. There was great consistency in the results, with the average age for all roles falling from 51.3 to 55.0.

FIGURE 1.5 | AGE DISTRIBUTION

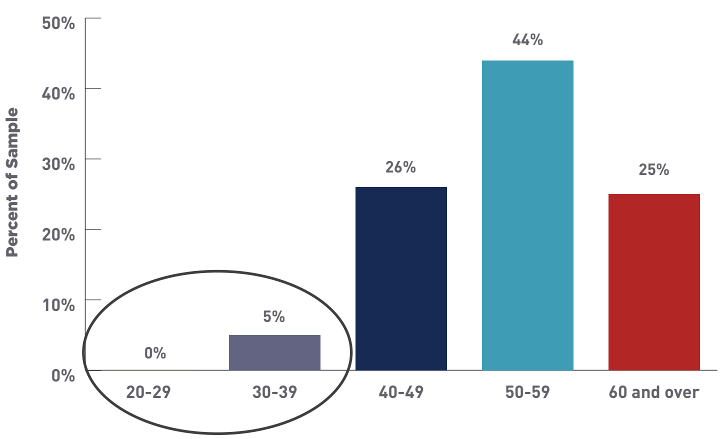


FIGURE 1.6 | AVERAGE AGE BY ROLE

Organization Role	Average Age
Association Employee	55.0
Construction Manager	51.8
Contractor/Subcontractor	54.0
Owner/Client	51.3
Union/Labor Representative	53.9
Other	58.0

II. GROWTH AND CONTRACTION IN THE CONSTRUCTION AND MAINTENANCE INDUSTRY

Section II refers to *all* construction and maintenance work, including both union and nonunion (the remainder of the report after **Section II** focuses specifically on *union only*). This section documents the degree of growth or contraction projected by those in the study sample for 2022 (and also projections for previous years as useful points of comparison).

Section II is divided into two parts:

- **Part 1.** Overall Growth/Contraction
- **Part 2.** Growth/Contraction by Demographic Data Cut
  - Role
  - Industry
  - Industry by Region
  - Region
  - Organization Size

Part 1. Overall Growth/Contraction

At 80%, projected growth in this year's study was the highest it has been since this study began in 2015. From 2017-2020, just over 75% of the respondents projected growth. Last year, in 2021, there was a dip in the results to 65%. However, 2022 came with a strong rebound, with a large majority of the sample projecting growth in 2022. Moreover, 30% forecasted *Very Strong Growth*, further substantiating the optimism for 2022 among study participants.

FIGURE 2.1 | GROWTH PROJECTIONS

The figure below illustrates how the data for 2020-2022 fell into each of the rating options for growth (i.e., modest growth, growth, strong growth, and very strong growth), contraction (i.e., modest contraction, contraction, strong contraction, very strong contraction) and no change.

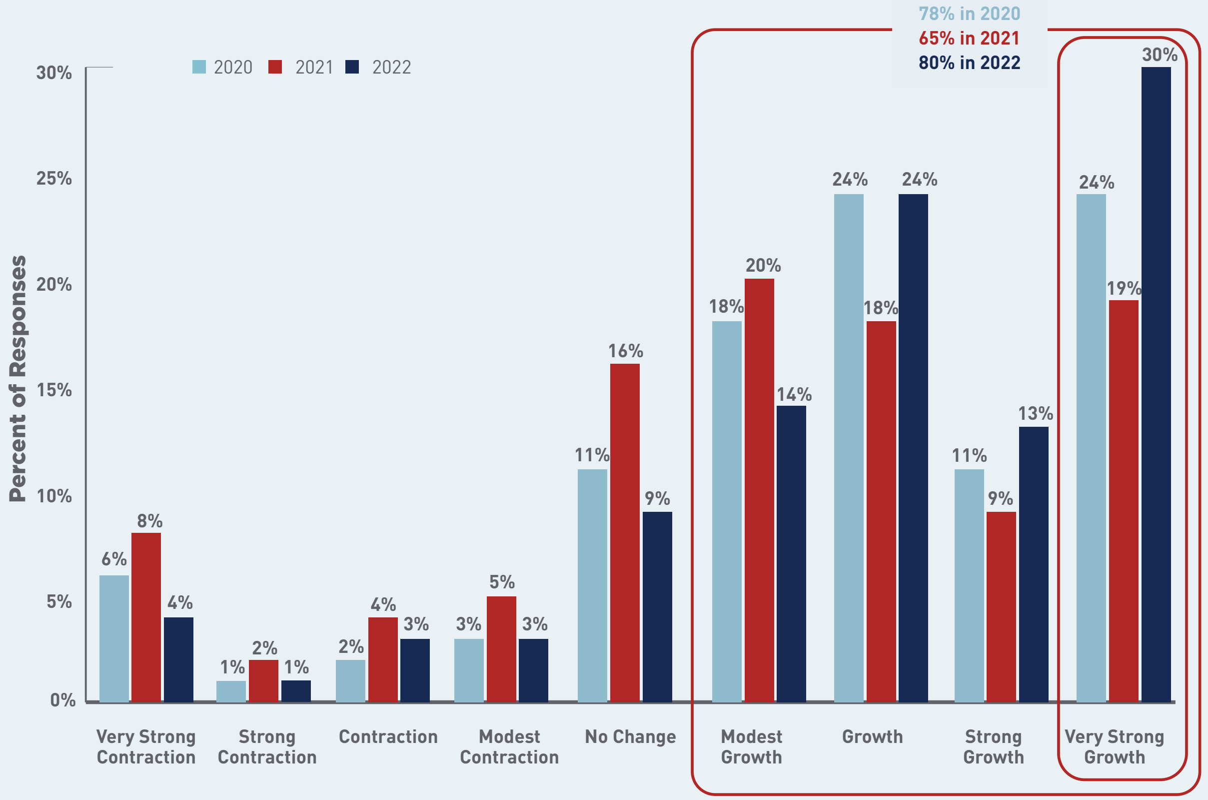


FIGURE 2.2 | GROWTH TRENDS

This figure illustrates how growth and contraction ratings have trended from 2016–2022.

As already noted, after a modest decline in 2021, the results for 2022 indicate a significant degree of optimism for growth.

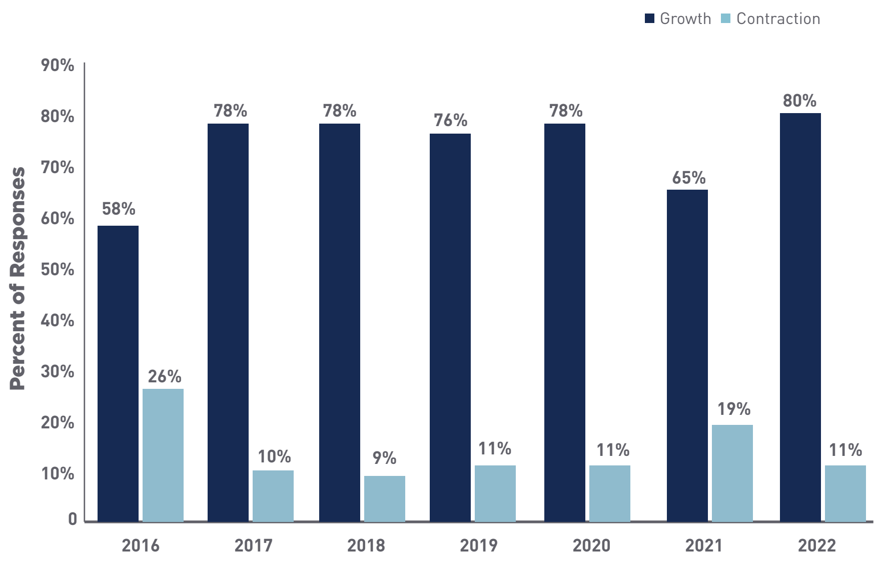
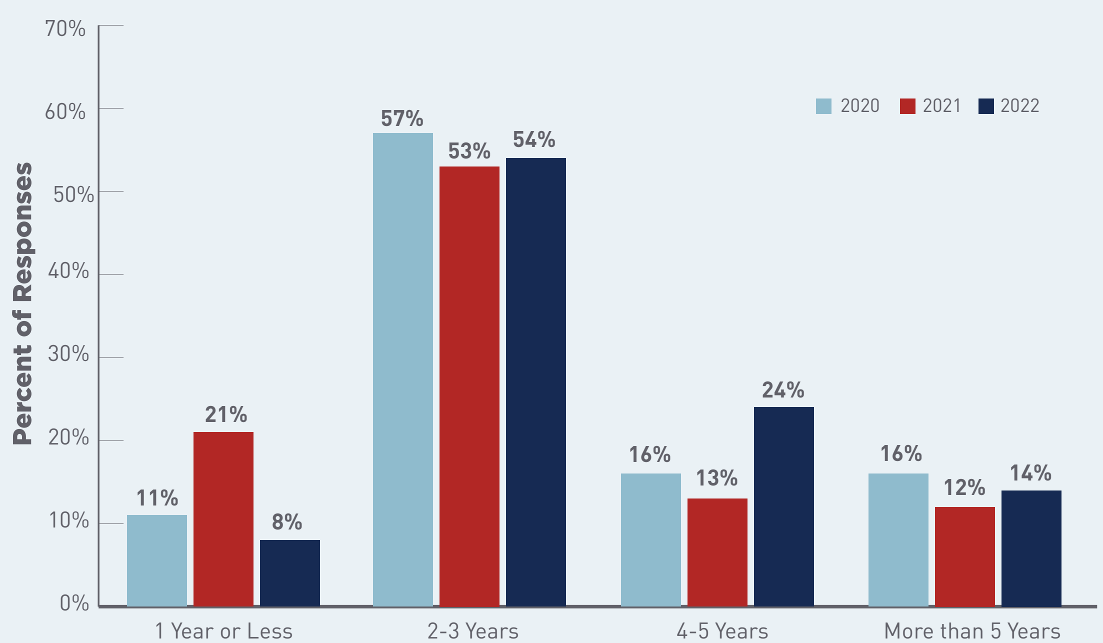


FIGURE 2.3 | GROWTH TIMESPAN

As this figure illustrates, expectations concerning the number of years the growth/contraction pattern will last have been surprisingly stable the past three years, especially considering the disruption brought about by the COVID-19 pandemic.

Most respondents reported that the timespan for their beliefs about growth/contraction was 2-3 years. Last year, likely due to the pandemic, a larger percentage reported a short timeframe (1 year or less) for their projection, reflecting greater uncertainty. However, that changed significantly this year with many more reporting a longer timeframe, including 4-5 years for their projection.

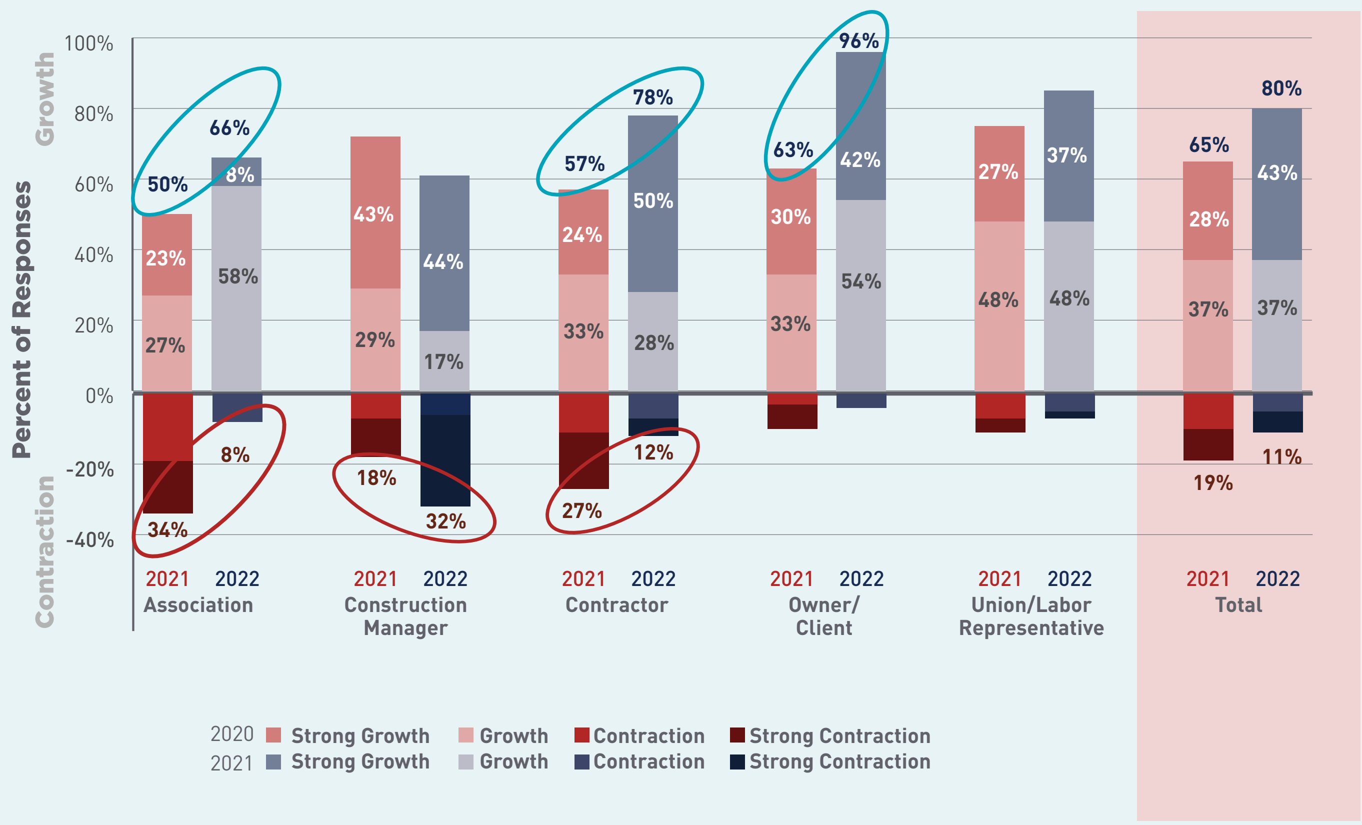


Part 2. Growth/Contraction by Demographic Data Cut

Figures 2.4–2.11 show results for growth/contraction by four data cuts: role, industry, region and organization size. The bars in the even numbered bar charts (i.e., **Figures 2.4, 2.6, 2.8, 2.10**) represent the percent of the sample providing each rating (i.e., growth, strong growth, contraction, strong contraction) not the actual percent of growth or contraction projected for the construction and maintenance industry. The bars in the odd number charts (i.e., **Figures 2.5, 2.7, 2.9, 2.11**) show the *average* growth/contraction projections. It should be noted that the even numbered Figures show the percentage of responses for various response options (i.e., growth, strong growth, contraction, strong contraction) and do not show those who said there would be no growth, whereas the odd numbered Figures take into account all ratings and calculate the average degree of growth expected.

For comparison, also included in **Figure 2.4** are growth projections for 2021 from last year's study. *For all but those in the Construction Manager role, there was a pronounced increase in growth projections. For example, for Contractors 78% projected growth in 2022 compared to just 57% last year. And the Owner/Client role increased to an incredible 96% projecting growth in 2022, up from 63% in 2021. Consistent with this, most roles showed fewer people projecting contraction (bar segments below the 0% line).* Interestingly, Construction Managers did not follow this trend—they had a more pessimistic view in 2022 than in 2021.

FIGURE 2.4 | GROWTH RESPONSE BY ROLE

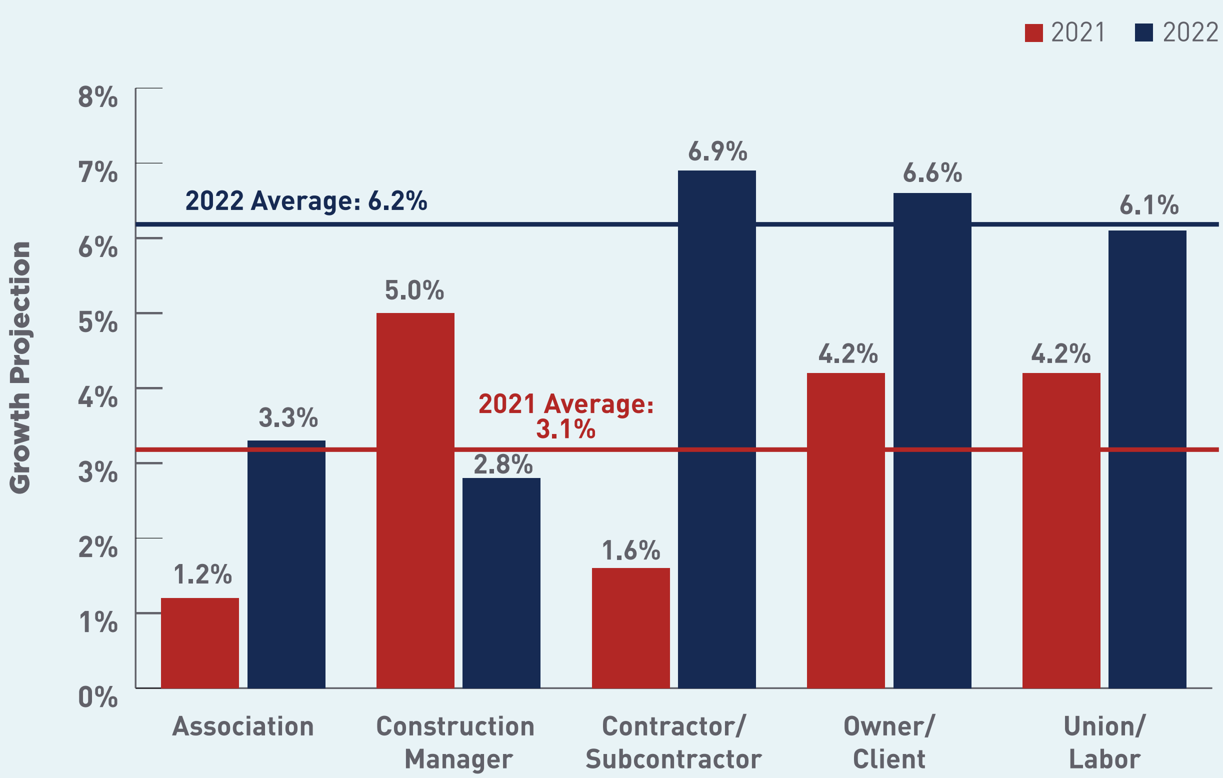


Regarding the projected size of the growth/contraction, the average ratings increased significantly in 2022 to 6.2% from 3.1% the previous year, as illustrated in Figure 2.5. The largest gain in optimism came from Contractors/Subcontractors, jumping from 1.6% to 6.9%. The lowest growth ratings were from two of the smaller role categories, Association Employees and Construction Managers (which actually declined).

It is useful to note that the values shown for **Figures 2.5, 2.7, 2.9 and 2.11** are the average of all ratings—those reporting growth, those reporting contraction and those reporting no change. Although the charts are valuable because they concisely and accurately summarize all ratings, the contraction ratings (negative values in the analysis) and growth ratings (positive values) tend to cancel each other out somewhat when calculating the average.

As a result, the averages contained in the these charts are somewhat "muted." In other words, if the average were calculated separately for those reporting growth and those reporting contraction the results would be more pronounced.

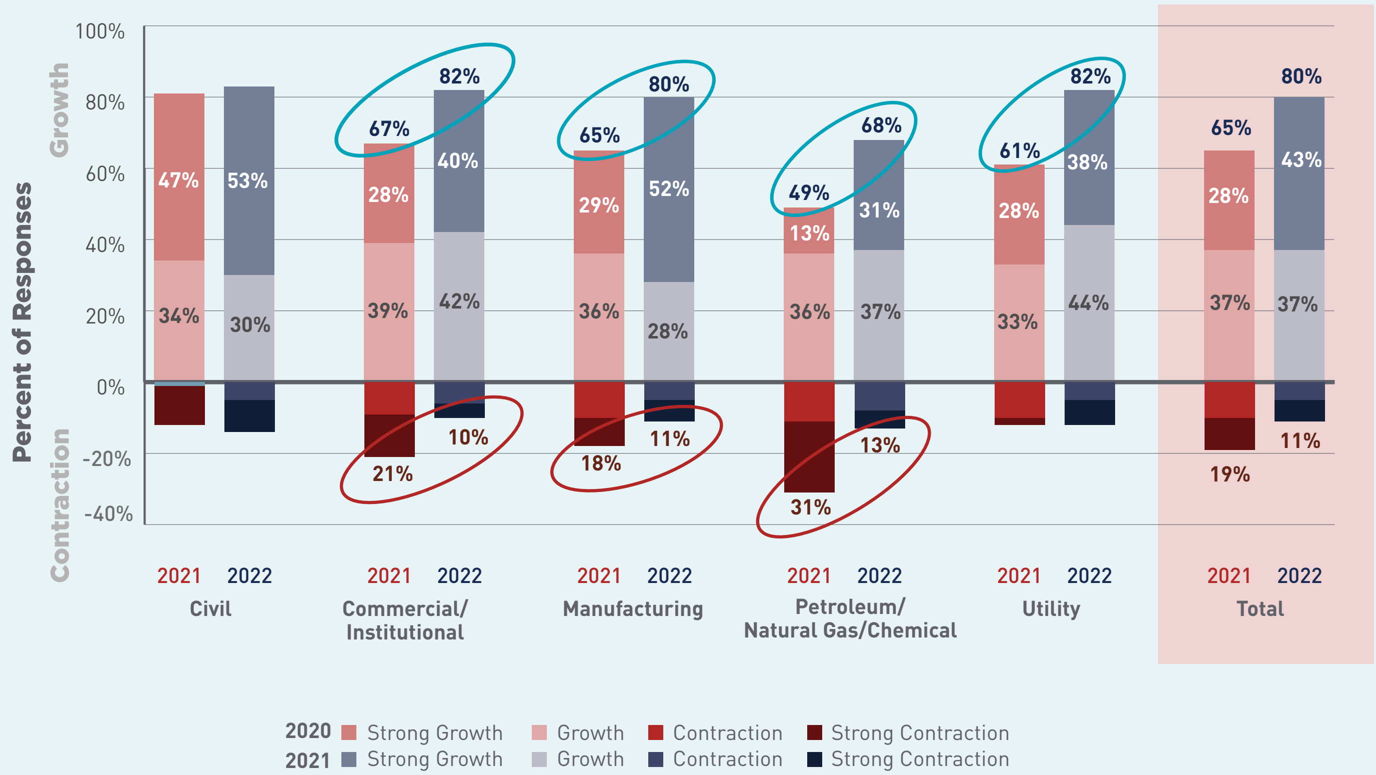
FIGURE 2.5 | AVERAGE GROWTH BY ROLE



Similar to the previous two Figures, **Figure 2.6** clearly shows optimism in 2022, in this case by industry. The largest increases in growth projections for 2022 were for the Petroleum and Utility industries, although there were strong gains in the Commercial and Manufacturing sectors also. Only the Civil sector showed little change from 2021.

Gains in the percentage of respondents projecting growth from 2021 to 2022 ranged from 15% to 21% (excluding Civil). With this came noticeable reductions in the percentage reporting contraction for 2022.

FIGURE 2.6 | GROWTH RESPONSE BY INDUSTRY



Consistent with **Figure 2.6, Figure 2.7** illustrates the large increases in the expected growth responses in 2022, but as averages. The Commercial/Institutional and Manufacturing industries each gained over 3.0% from 2021 and no industry had a decline in its average growth rating in 2022.

Three industries—Civil, Commercial/Institutional and Manufacturing—had expected growth of over 6.0%. Even the industry with the lowest average in 2022 (Utility) was higher than all but one industry last year, further supporting the growth theme in the report this year.

FIGURE 2.7 | AVERAGE GROWTH BY INDUSTRY

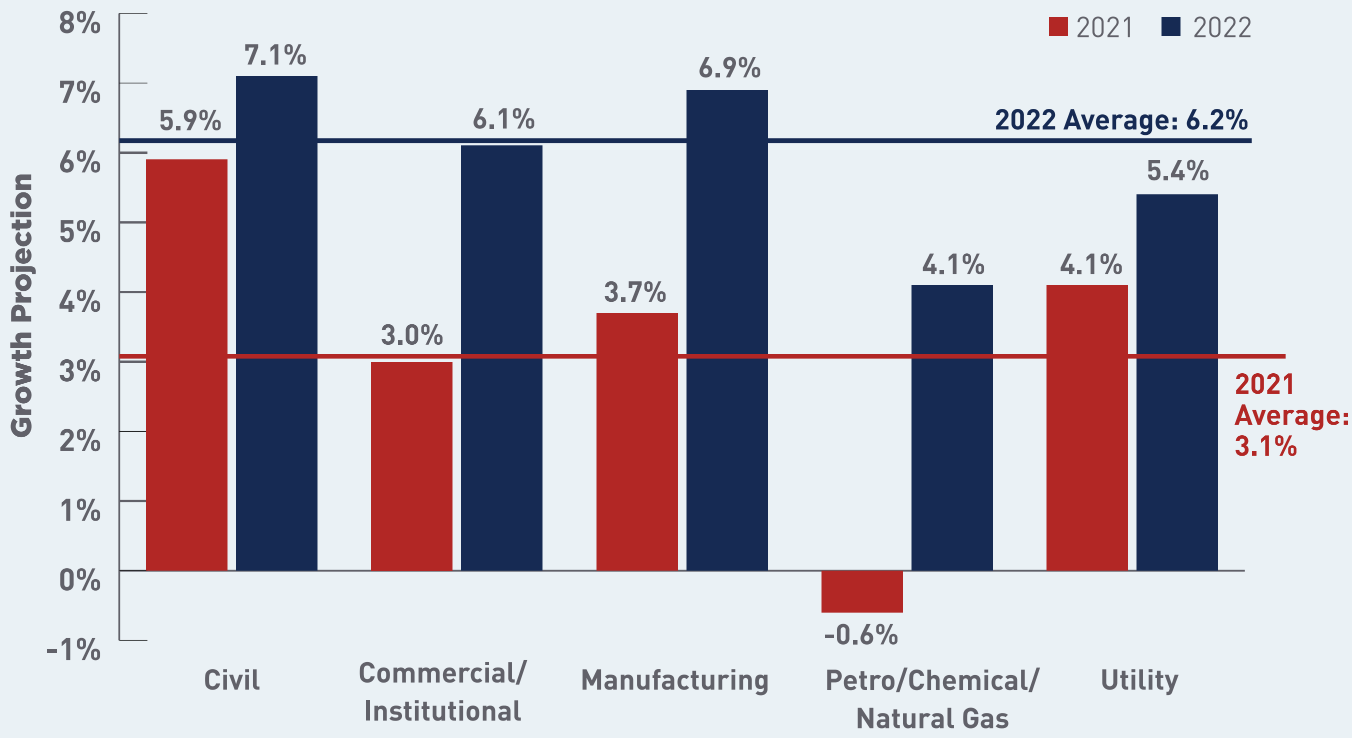
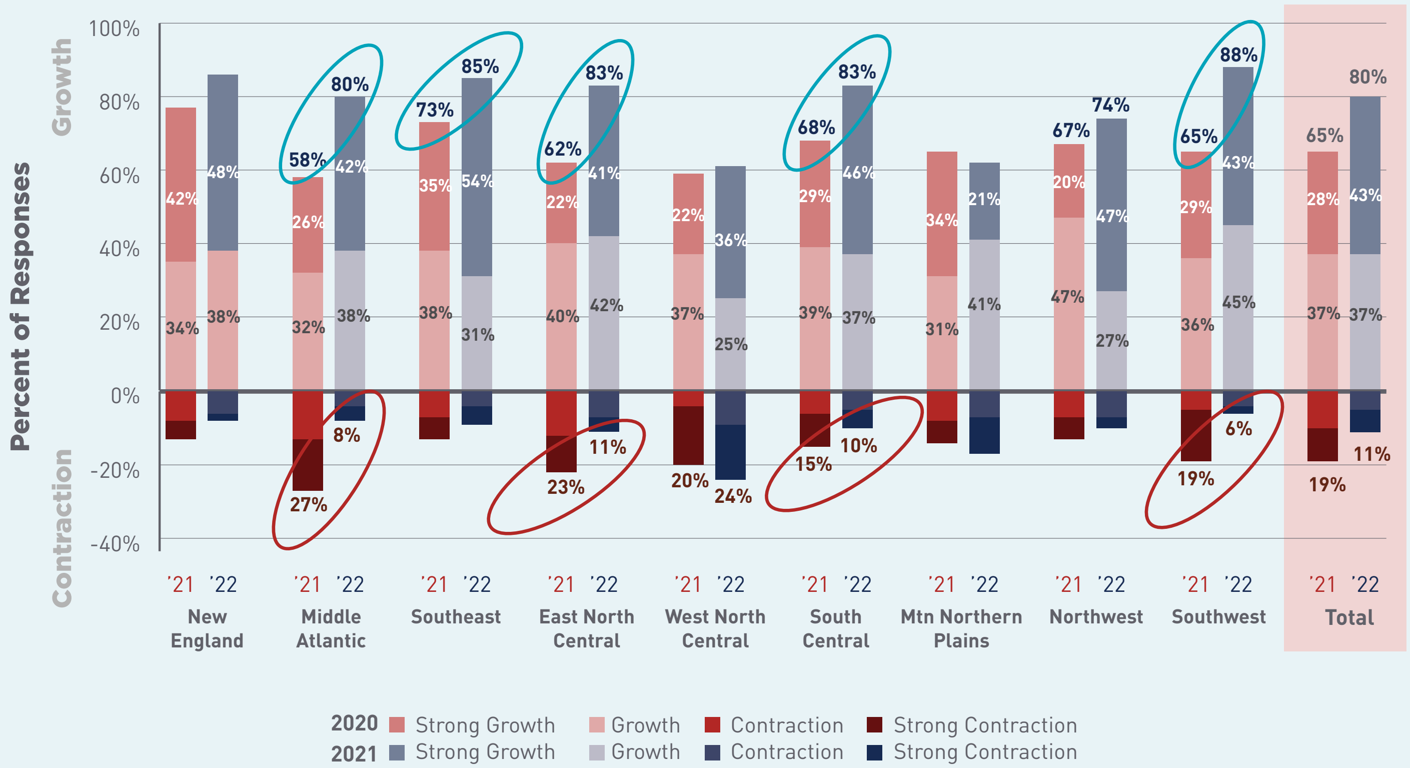


Figure 2.8 displays the differences in growth/contraction projections among the nine geographic regions. As noted with ovals, five of nine regions had more than a 10% increase from 2021 in the percentage of respondents forecasting growth in 2022. Those regions are: Middle Atlantic, Southeast, East North Central, South Central and Southwest. All of those regions also saw fewer respondents reporting a shortage, with the more pronounced changes highlighted with an oval.

FIGURE 2.8 | GROWTH RESPONSE BY REGION

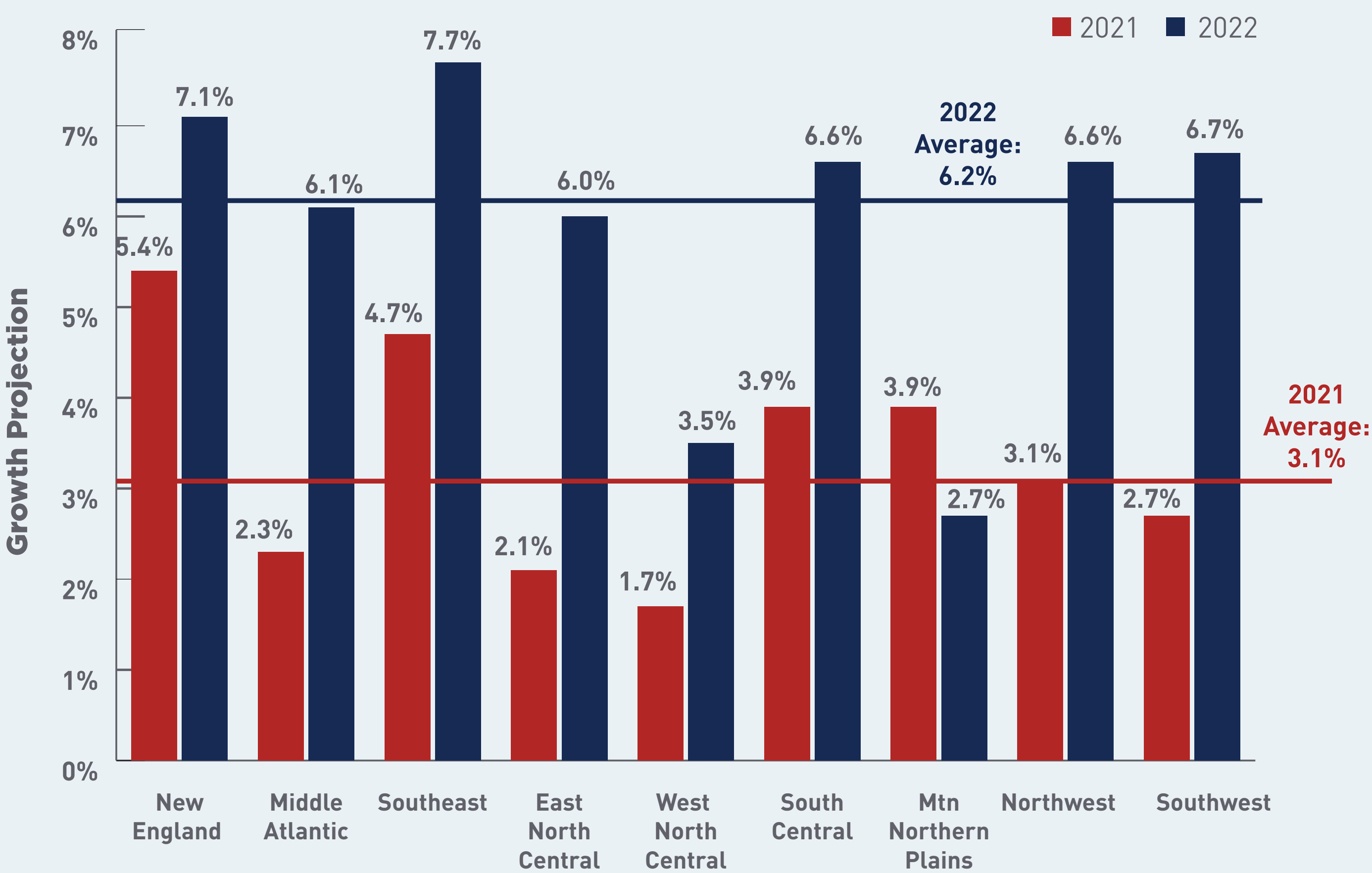


Region	States
New England	Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont
Middle Atlantic	District of Columbia, Delaware, Maryland, New Jersey, New York, Pennsylvania
Southeast	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia
East North Central	Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, West Virginia
West North Central	Iowa, Kansas, Missouri, Nebraska
South Central	Arkansas, Louisiana, New Mexico, Oklahoma, Texas
Mountain Northern Plains	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming
Northwest	Alaska, Idaho, Oregon, Washington
Southwest	Arizona, California, Hawaii, Nevada

As illustrated in **Figure 2.9,** all but one region had an improvement in growth average ratings in 2022. Only the Mountain Northern Plains region had a decline. The highest averages were in the New England and Southeast regions, both over 7.0%. The largest changes from 2021 were in the Middle Atlantic, East North Central, Northwest and Southwest regions, each with at least a 3.5% gain over last year. These geographic data cuts show that the optimism in 2022 was pervasive throughout nearly all of the US.

As a reminder, the analyses for these averages include all ratings—growth, shortage and no change—whereas the statistics in the colored bar charts in this section look at just the growth and shortage data (no change is excluded) and show what percent of the responses fell into each rating category.

FIGURE 2.9 | AVERAGE GROWTH BY REGION



In **Figure 2.10** the data are shown as sliced by the organization size demographic variable. Consistent with the other data cuts, increases in 2022 were seen in nearly every category. That is, from the smallest to the largest organizations, more workers projected growth this year than last year. Although all sizes except 5,001-10,000 had higher ratings in 2022, the most noticeable gains were found in smaller organizations (up to 100 employees).

FIGURE 2.10 | GROWTH RESPONSE BY ORGANIZATION SIZE

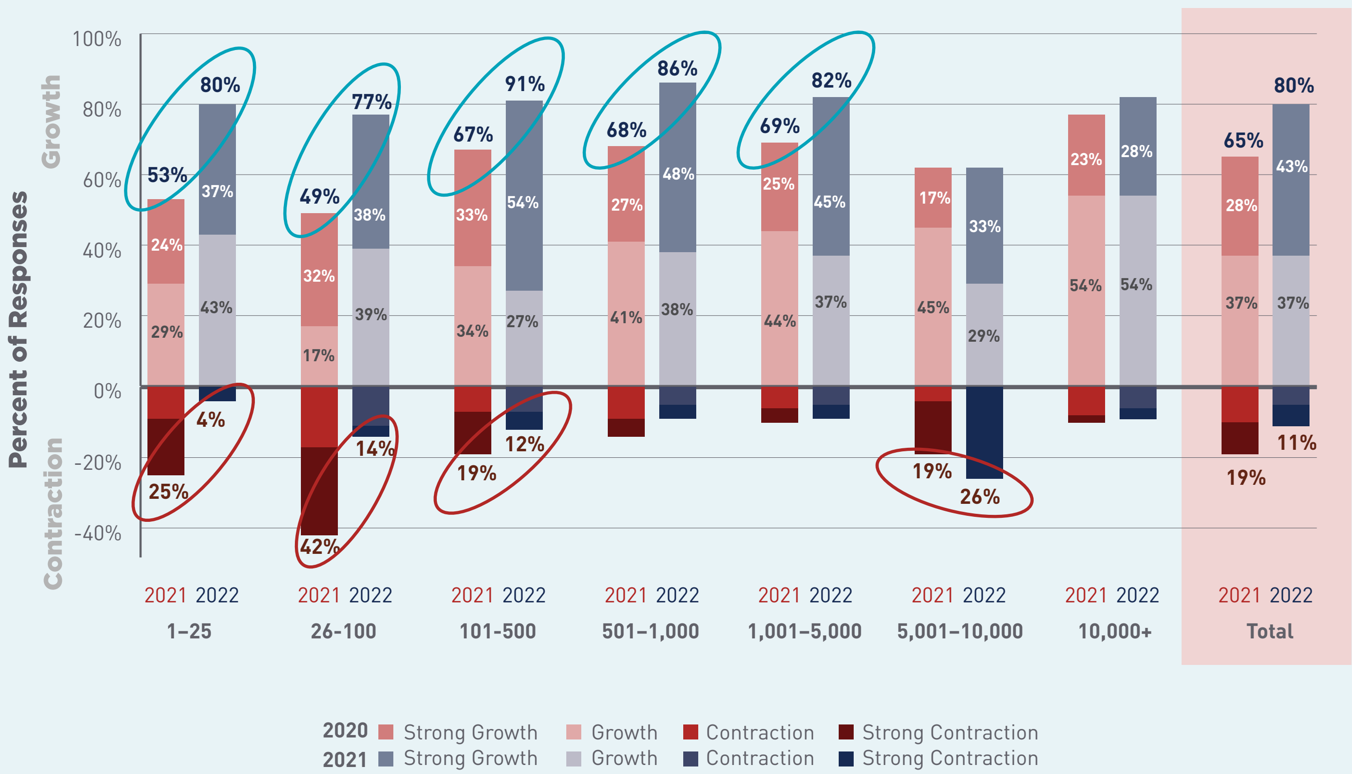
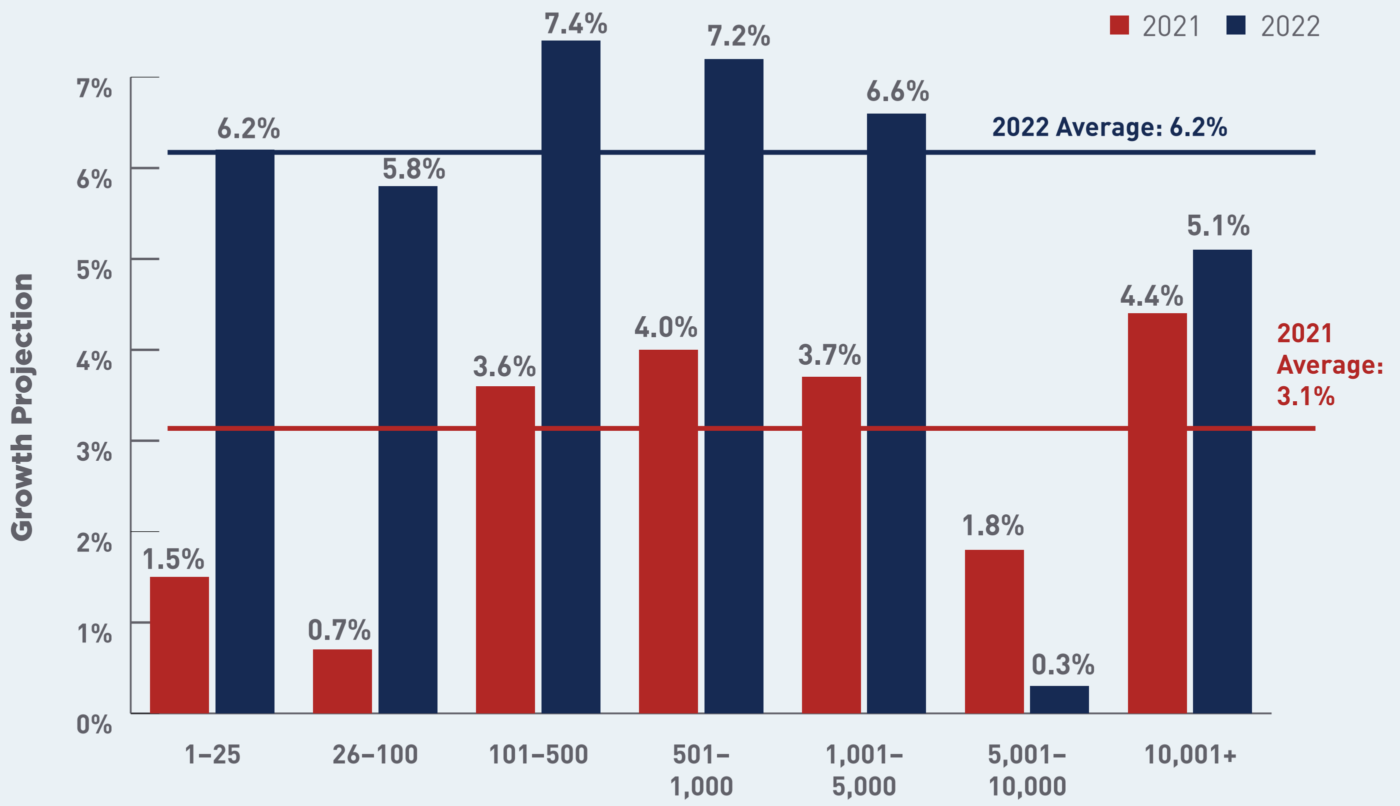


Figure 2.11 reflects findings highly consistent with **Figure 2.10**. Average growth ratings were higher in 2022 than in 2021 for all organizations sizes except 5,001-10,000. The largest increases were in the two smallest size categories (1-25 and 26-100 employees). The highest ratings were with mid-sized companies, however (101-500 and 501-1,000 employees).

FIGURE 2.11 | AVERAGE GROWTH BY ORGANIZATION SIZE

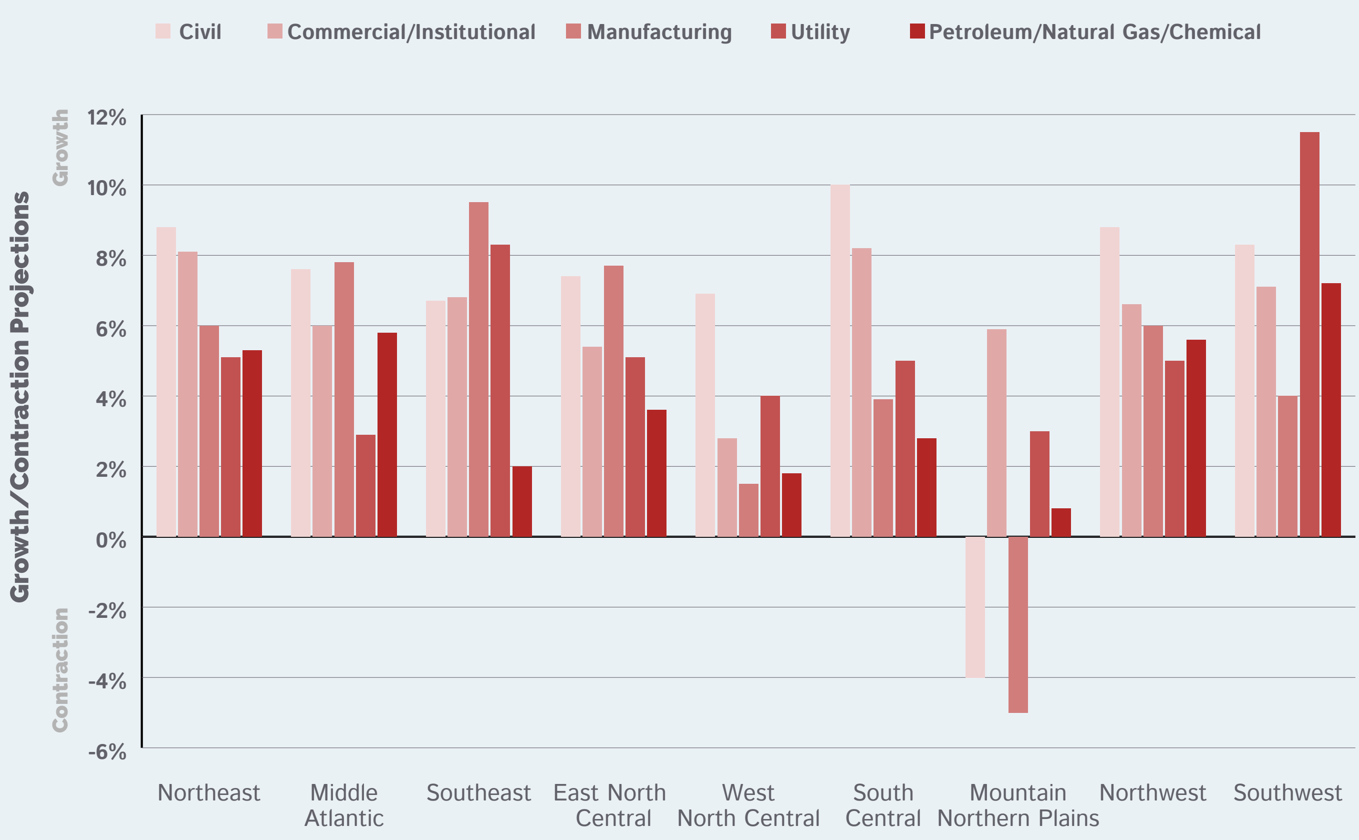


Highlights of **Figure 2.12** include the following:

- **Civil**: The Civil industry had the highest growth-oriented findings, compared to the other industries, in four of the nine regions: New England, West North Central, South Central and Northwest. Interestingly, data on the Civil industry actually fell to a negative value (-4.0%) in the Mountain Northern Plains region. (Note, interpret the declines in Figure 2.12 with caution due to limited data for those data cuts).
- **Commercial/Institutional**: For the popular Commercial/Institutional industry (51% of respondents said this is where they do most of their work), ratings were consistent and had less fluctuation from region to region than any other industry. For seven regions, Commercial/Institutional ratings fell in the narrow range of 6.0% to 8.1% growth. In the Mountain Northern Plains region, the Commercial/Institutional industry had the highest growth projections.
- **Manufacturing**: The Manufacturing industry had more regional variance than any other industry. That is, it had the highest growth prospects of any industry in three regions (Middle Atlantic, Southeast, East North Central) and the lowest growth prospects in three regions (West North Central, Mountain Northern Plains, Southwest).
- **Utility**: The strongest growth rating of any industry by region data cut was for the utility industry in the Southwest (11.5%). However, the Utility industry was also the lowest ranked industry in three regions (New England, Middle Atlantic, Northwest).
- **Petroleum/Natural Gas/Chemical**: Like last year, this industry had the least favorable ratings overall, and the lowest ranking in three regions (Southeast, East North Central, South Central)

FIGURE 2.12 | GROWTH: INDUSTRY BY REGION

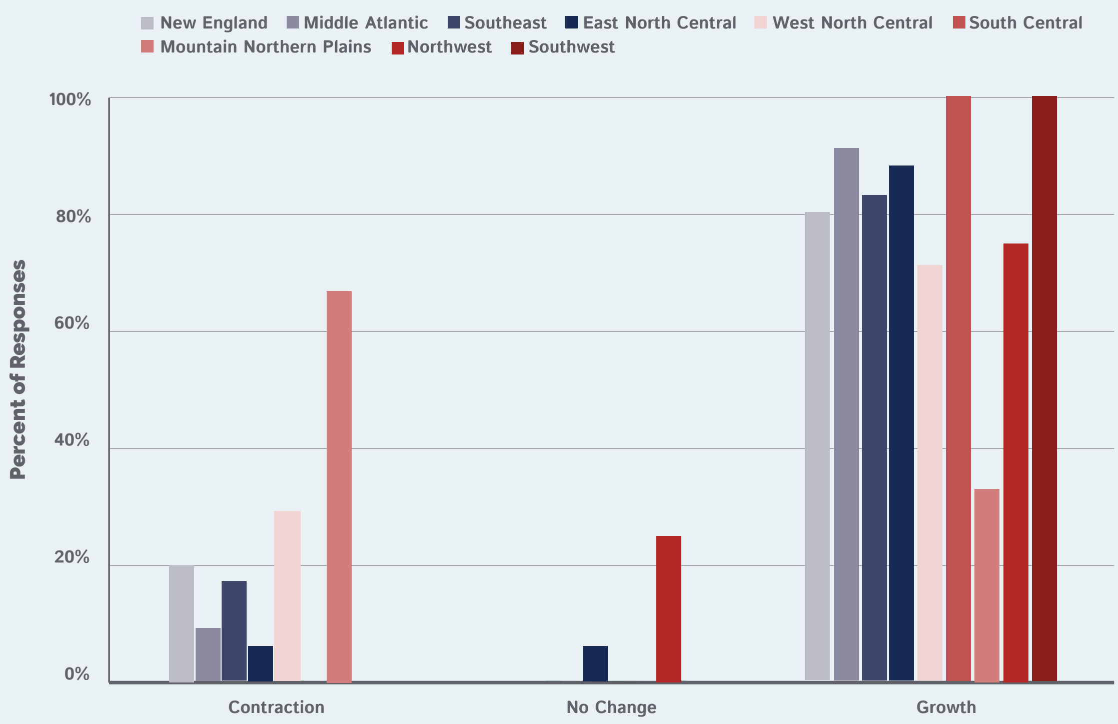
Illustrates the results for the average growth/contraction projections that were further analyzed by looking at the data in an even more detailed manner: industry by region. In other words, the growth/contraction ratings were examined for each industry in each region.



Figures 2.13 – 2.16 aggregate the more detailed response options in the survey (e.g., very strong growth, strong growth, very strong contraction, strong contraction, etc.) into three categories: contraction, no change and growth.

Results are displayed using a separate chart for each industry. The growth third (right side) of each bar chart clearly was the most prevalent sentiment among study participants.

FIGURE 2.13 | GROWTH: CIVIL



Region	States
New England	Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont
Middle Atlantic	District of Columbia, Delaware, Maryland, New Jersey, New York, Pennsylvania
Southeast	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia
East North Central	Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, West Virginia
West North Central	Iowa, Kansas, Missouri, Nebraska
South Central	Arkansas, Louisiana, New Mexico, Oklahoma, Texas
Mountain Northern Plains	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming
Northwest	Alaska, Idaho, Oregon, Washington
Southwest	Arizona, California, Hawaii, Nevada

FIGURE 2.14 | GROWTH: COMMERCIAL/INSTITUTIONAL

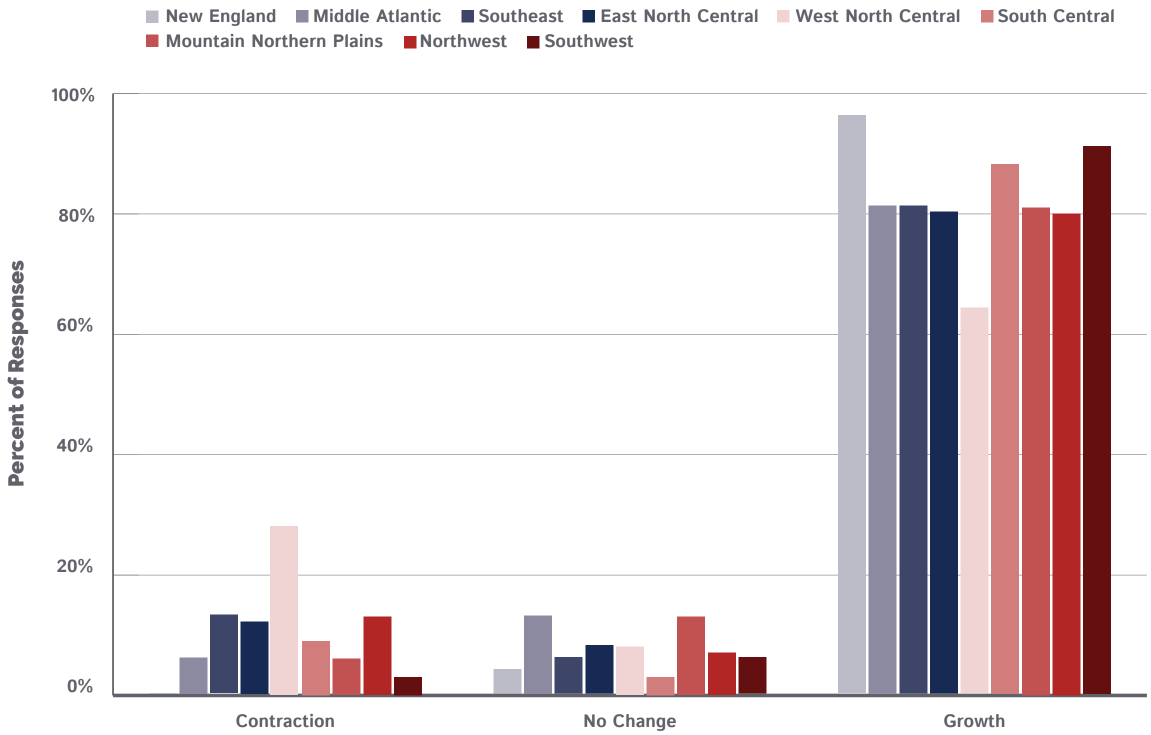


FIGURE 2.15 | GROWTH: MANUFACTURING

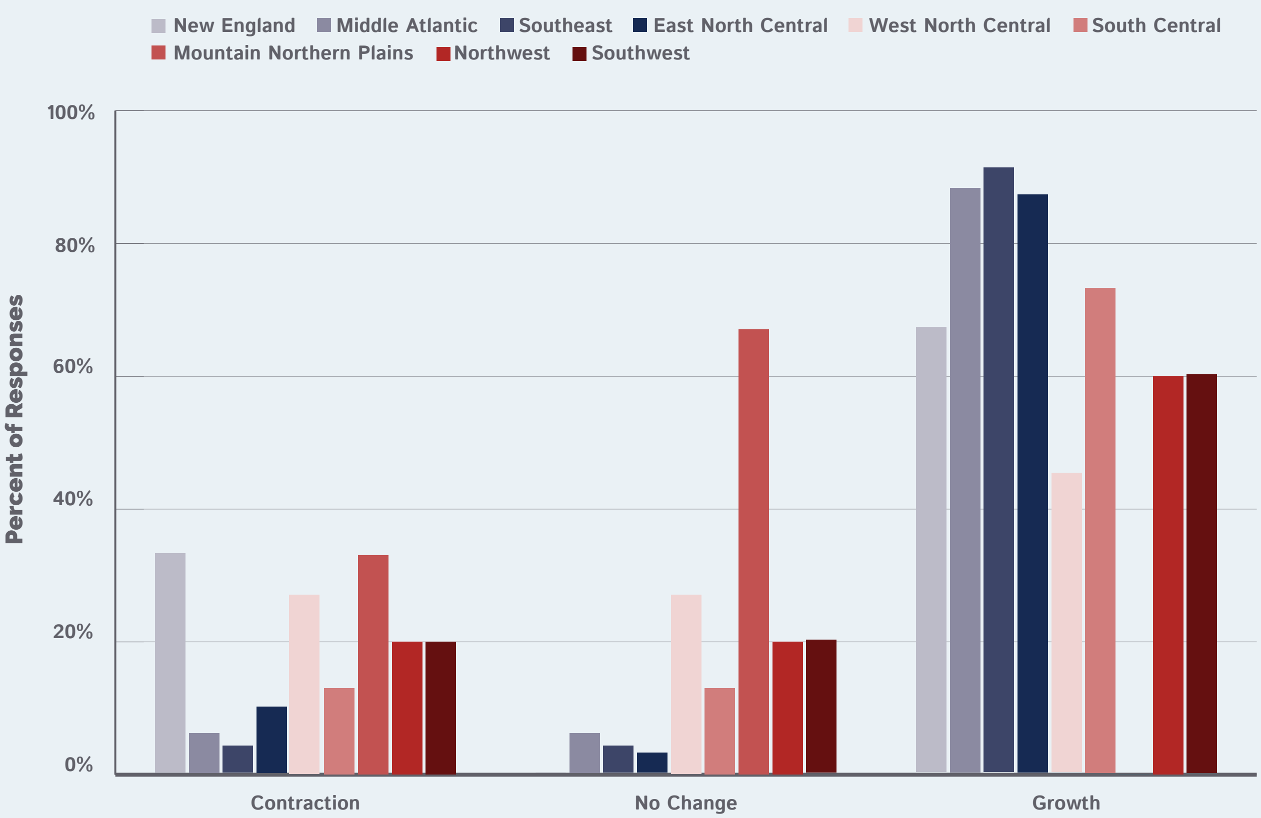


FIGURE 2.16 | GROWTH: UTILITY

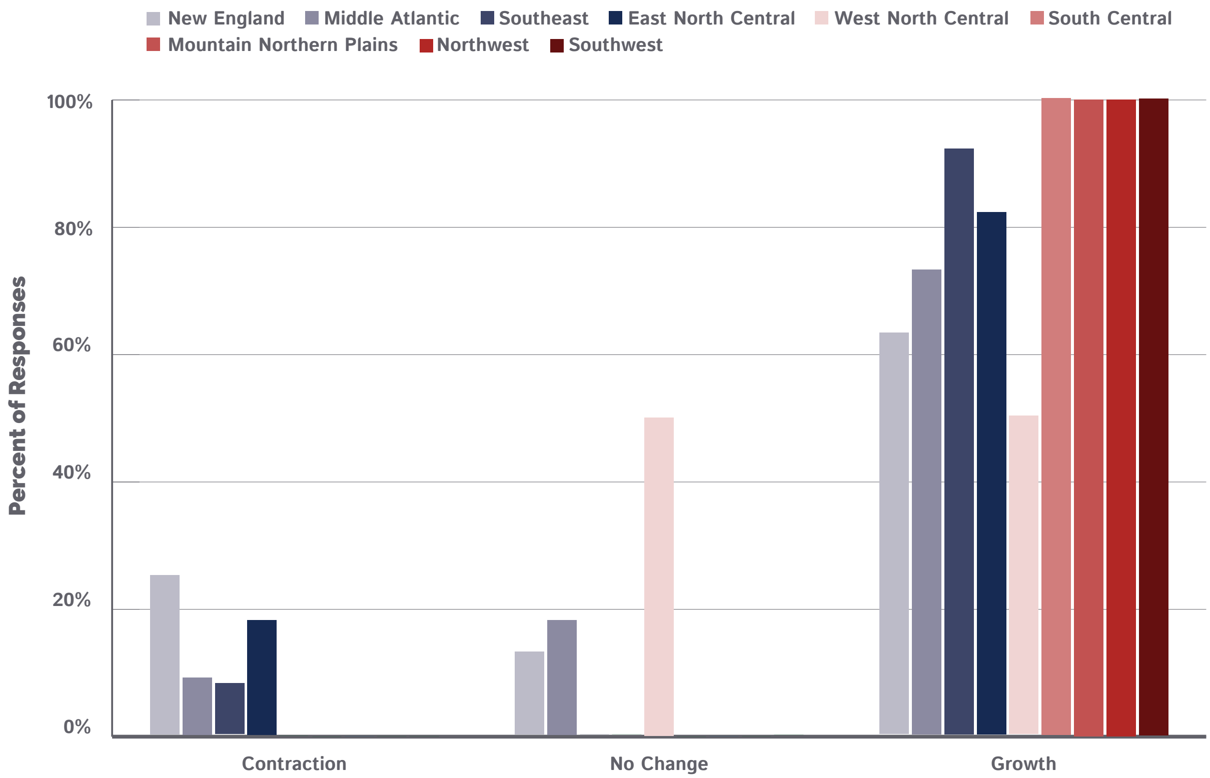
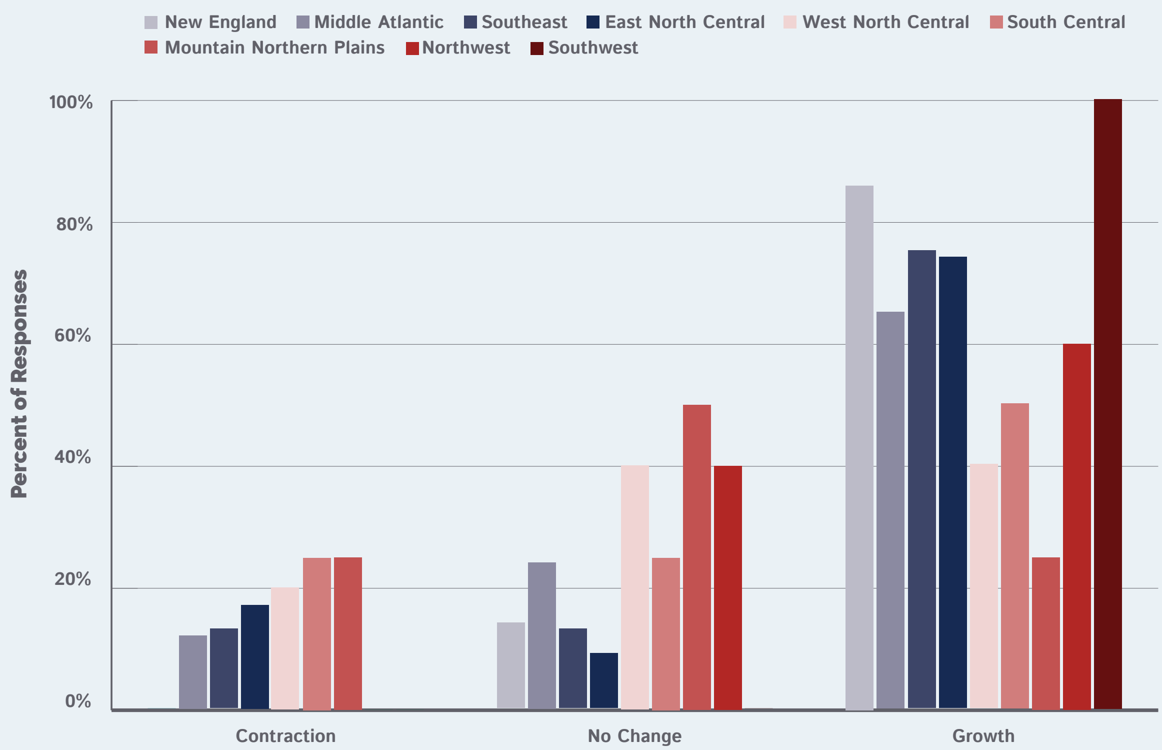


FIGURE 2.17 | GROWTH: PETROLEUM/NATURAL GAS/CHEMICAL



III. UNION CRAFT LABOR SHORTAGE AND SURPLUS

Section III refers specifically to *union craft labor*. This section describes how respondents reported the union craft labor shortage or surplus in their organization in 2021 (not what they assumed was happening in other organizations where they did not have first-hand knowledge). These are termed "actual" results since respondents reported their company's experience from the previous year (not more subjective projections for upcoming years).

Similar to the layout of **Section II**, **Section III** provides results in two parts:

- **Part 1.** Overall Union Craft Labor Shortage/Surplus
- **Part 2.** Union Craft Labor Shortage/Surplus by Demographic Data Cut

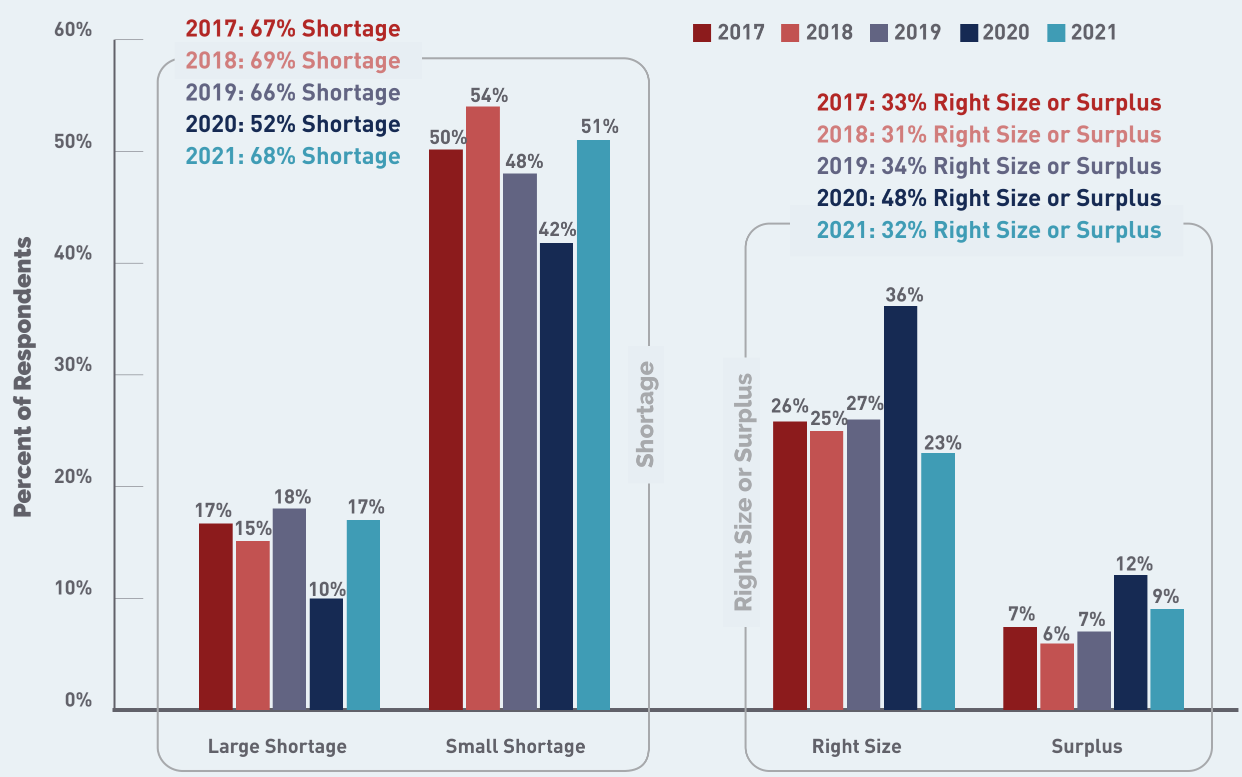
Part 1. Overall Union Craft Labor Shortage/Surplus

After a modest change last year, this year the results were back to where they have been throughout the history of this survey regarding the shortage/surplus of union craft workers. The percentages of the sample reporting a large shortage, small shortage, right size and surplus this year were each within four percentage points of the results two years ago, as displayed in **Figure 3.1**.

For a number of years this study has signaled that the union craft labor shortage was not quite as severe as some sources seemed to indicate. That again seems to be the message this year where over half of the sample (51%) reported a small shortage and another 32% reported the right number, or even a surplus, of union craft workers.

That is not to suggest that there is no shortage, or to downplay its importance. Rather, the TAUC Union Craft Labor Supply Study shows the shortage as fairly modest, except for 10–18% percent of the construction and maintenance industry (depending on the year) where there has been a large shortage through recent history.

FIGURE 3.1 | UNION CRAFT LABOR SHORTAGE



Part 2. Union Craft Labor Shortage/Surplus by Demographic Data Cut

Figures 3.2 – 3.6 show results for the union craft labor supply in 2021 (and 2020 for comparison) by four data cuts: role, industry, region and organization size. The different colored segments in the bars (excluding **Figure 3.3**) represent the percentage of the sample providing each rating (i.e., large shortage, small shortage, right size, surplus), not the actual percentage size of the shortage (or surplus). In **Figure 3.2**, the results for 2020 and 2021 from **Figure 3.1** are broken out by respondent role.

Figure 3.2 shows the percent of respondents who reported a shortage of union craft workers by role.

Although every role reported increased shortages, as indicated by the upward pointing arrows, this was most noticeable with Construction Managers and Owners/Clients and least pronounced with Union/Labor representatives.

This year (data reporting on 2021 staffing levels), the overall average showed 68% reporting a shortage (51% said the shortage was "small"), up from 52% last year. Moreover, the percentage saying they had the right number of union craft workers declined from 36% last year to 23% in this year's study.

Overall, although the union craft worker staffing situation declined in 2021, it should be remembered that the findings last year were the most favorable they have been since this study began in 2015. Additionally, the results this year are very consistent with the results from two years ago.

FIGURE 3.2 | UNION CRAFT LABOR SHORTAGE BY ROLE

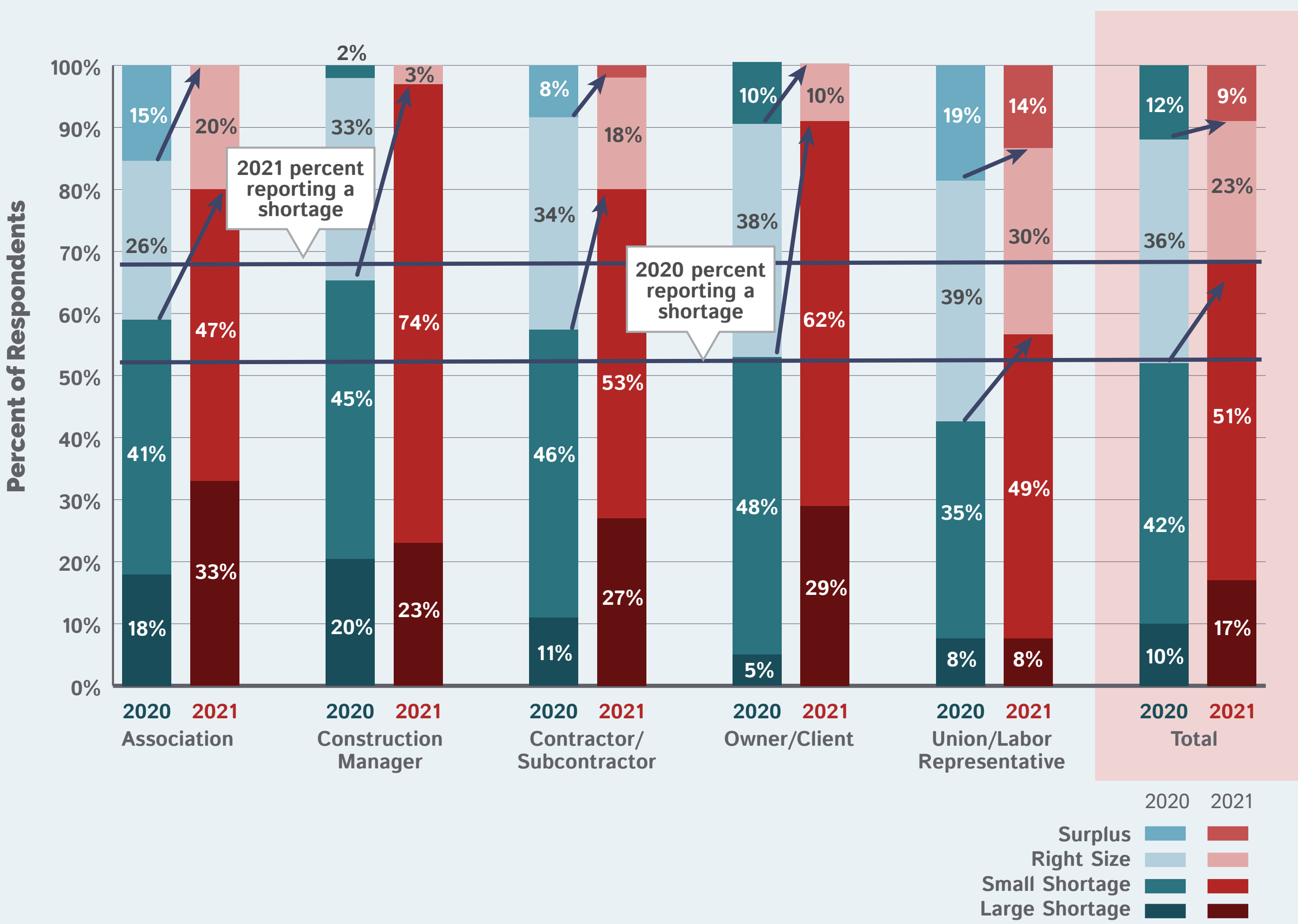
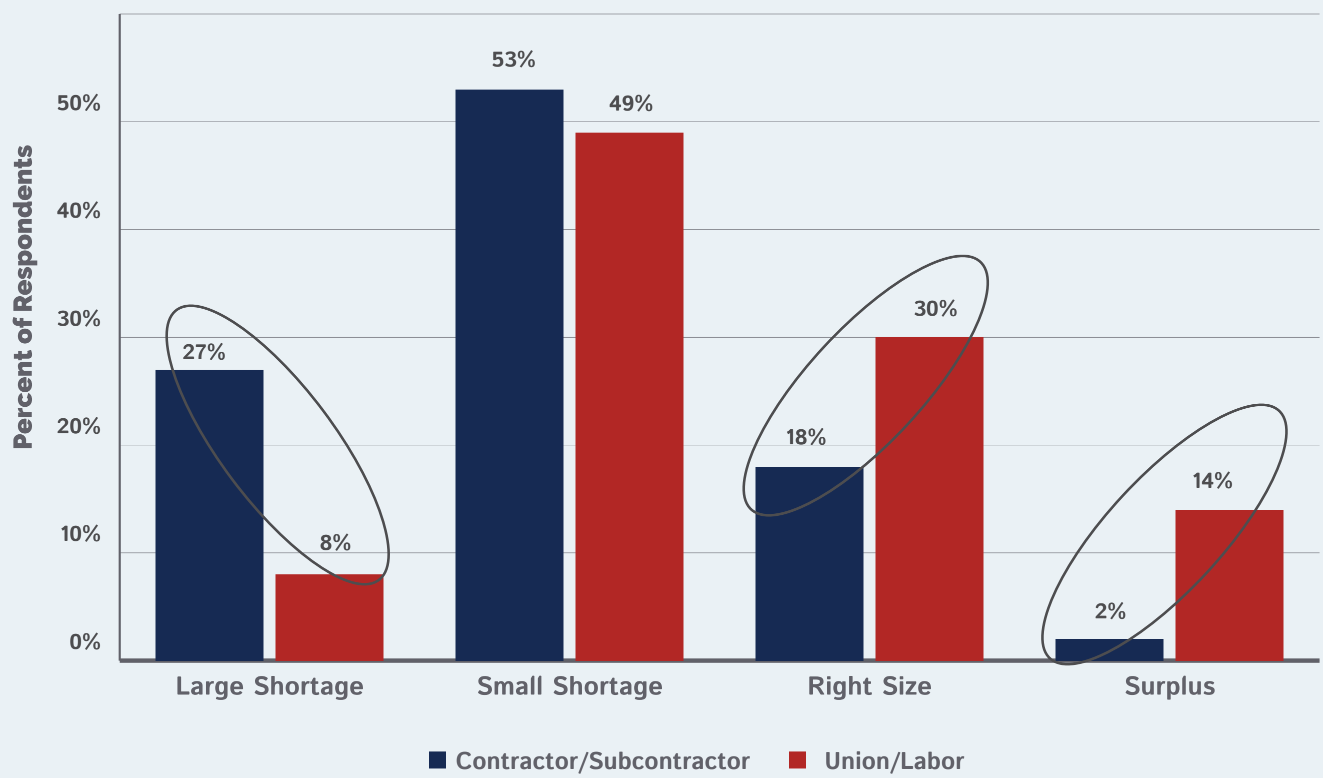


Figure 3.3 represents a subset of **Figure 3.2**; it portrays the unique perspectives between the two largest roles providing data for the study: Contractors/Subcontractors and Union/Labor Representatives. As the Figure displays, Union/Labor Representatives were more optimistic. They had significantly fewer individuals indicating a large shortage, and many more reporting the right number of workers, or a surplus.

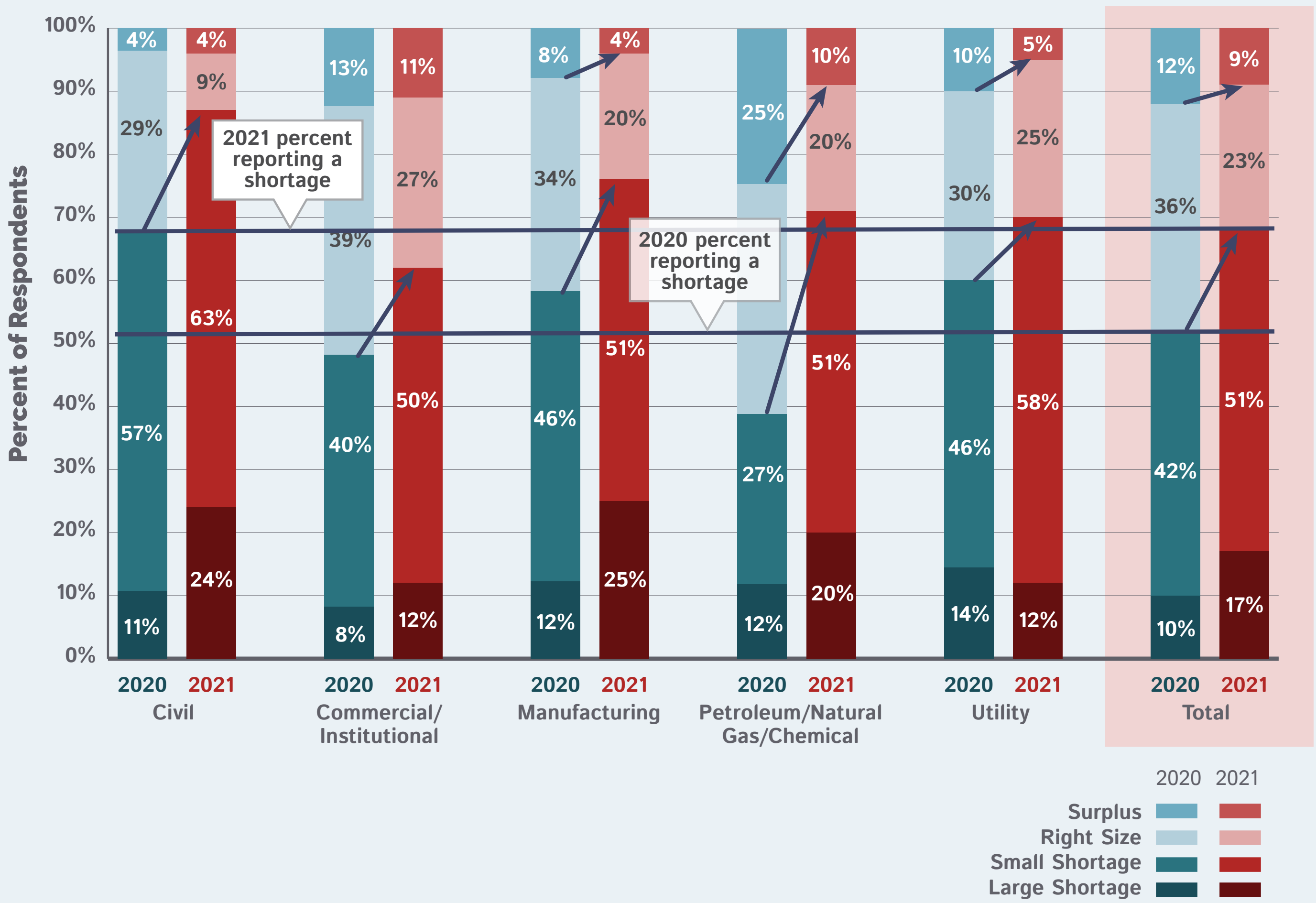
FIGURE 3.3 | RATINGS COMPARISON: CONTRACTORS & SUBCONTRACTORS VS UNION & LABOR REPRESENTATIVES



As shown in **Figure 3.4**, there was an increase in all industries in the percentage reporting a shortage. The greatest shortages were reported for Civil and Manufacturing. However, the Petroleum/Natural Gas/ Chemical industry saw the largest increase in the percentage reporting a shortage.

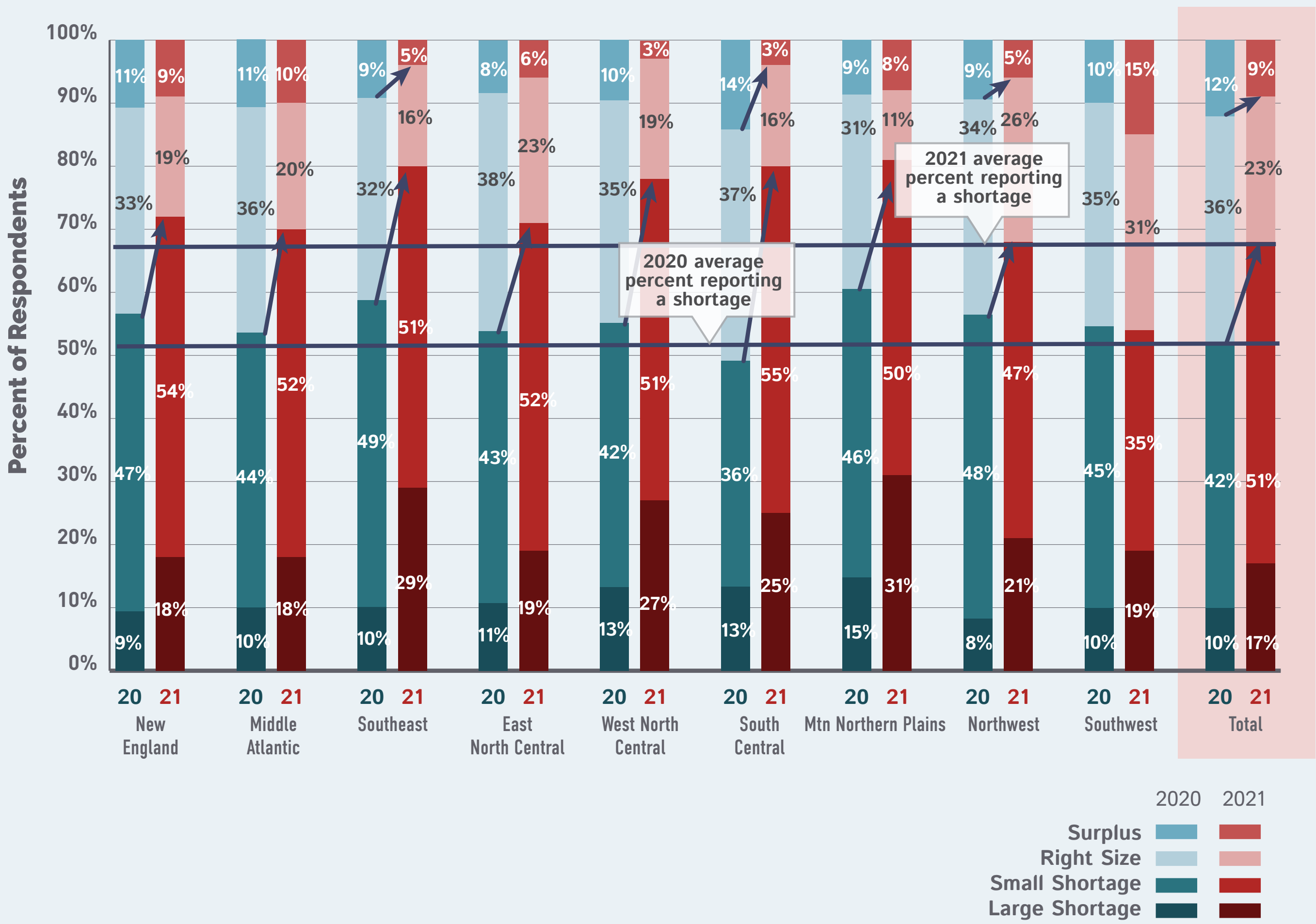
Earlier, in Section II, Figure 2.6, it was reported that the Civil industry had some of the highest growth projections. Combined with the shortages in this industry, the Civil industry may experience some of the most significant labor challenges.

FIGURE 3.4 | UNION CRAFT LABOR SHORTAGE BY INDUSTRY



As shown in **Figure 3.5**, there was an increase in nearly every region in its shortage results. Regions with the largest percentage of the respondents reporting a shortage were the Southeast, West North Central, South Central and Mountain Northern Plains regions. The Southwest region had the fewest percentage of raters reporting a shortage and it was the only region with a decreased shortage over last year.

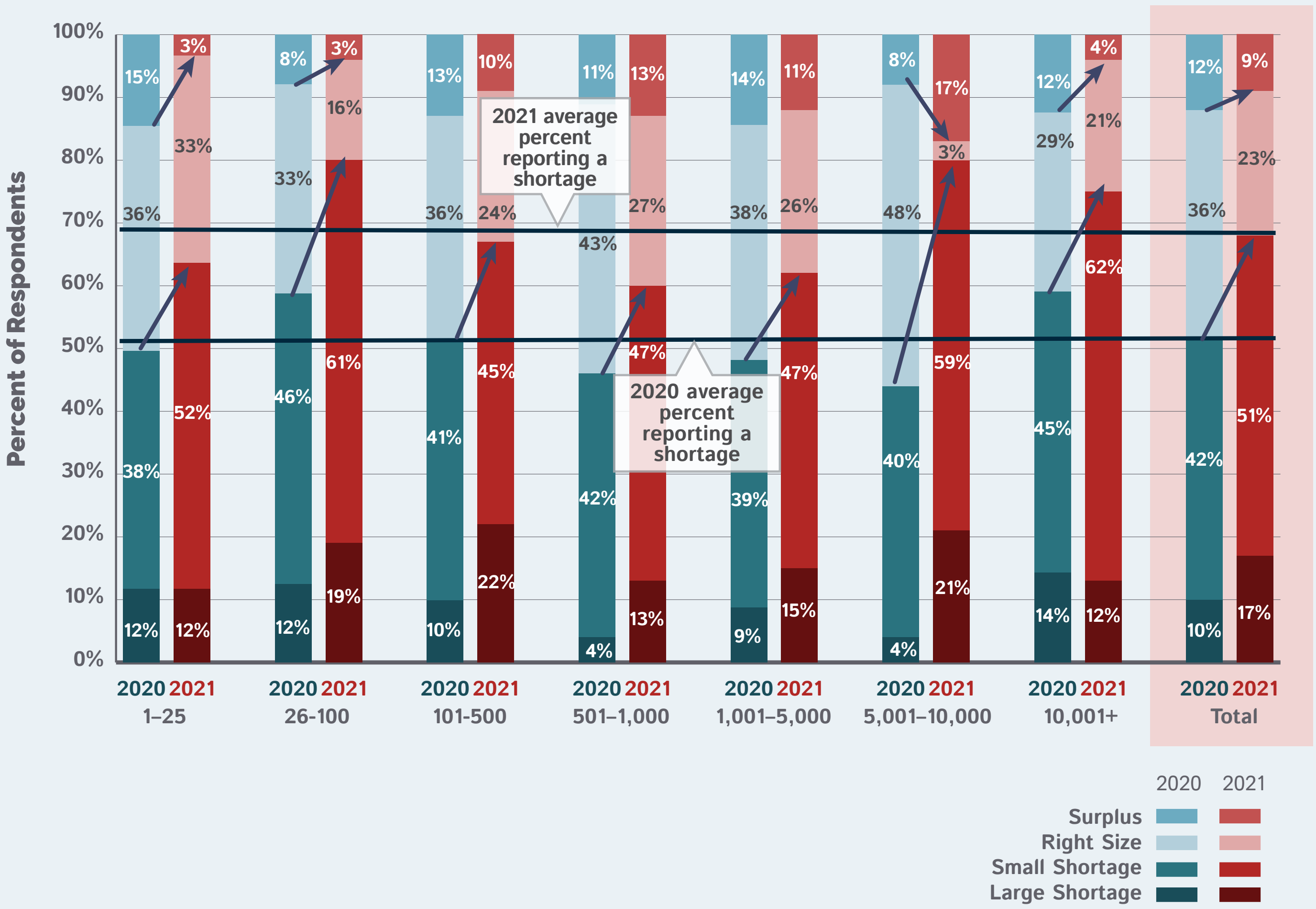
FIGURE 3.5 | UNION CRAFT LABOR SHORTAGE BY REGION



Region	States
New England	Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont
Middle Atlantic	District of Columbia, Delaware, Maryland, New Jersey, New York, Pennsylvania
Southeast	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia
East North Central	Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, West Virginia
West North Central	Iowa, Kansas, Missouri, Nebraska
South Central	Arkansas, Louisiana, New Mexico, Oklahoma, Texas
Mountain Northern Plains	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming
Northwest	Alaska, Idaho, Oregon, Washington
Southwest	Arizona, California, Hawaii, Nevada

Following the pattern established in the other data cuts in this section, the reported labor shortage grew in all seven organization size categories. The categories with the most people reporting a shortage were 26-100, 5,001-10,000, and 10,000+ employees. At least 68% of the study participants in organizations of these sizes reported a shortage in 2021. The largest increase in shortage numbers was in the 5,001-10,000 category.

FIGURE 3.6 | UNION CRAFT LABOR SHORTAGE BY ORGANIZATION SIZE



In order to gain an even better understanding of the worker shortage/surplus data, the interaction between industry and geographic region was studied. That is, in **Figures 3.7–3.15** each of the nine charts represents a different geographic region. Within each chart, the percentage of ratings that fall in each rating option (large shortage, small shortage, right size, surplus) is shown for each of the five industries. These charts are valuable in order to pinpoint more precisely where the union craft labor shortages (and surpluses) exist relative to two key parameters simultaneously: industry and region.

FIGURE 3.7 | NEW ENGLAND

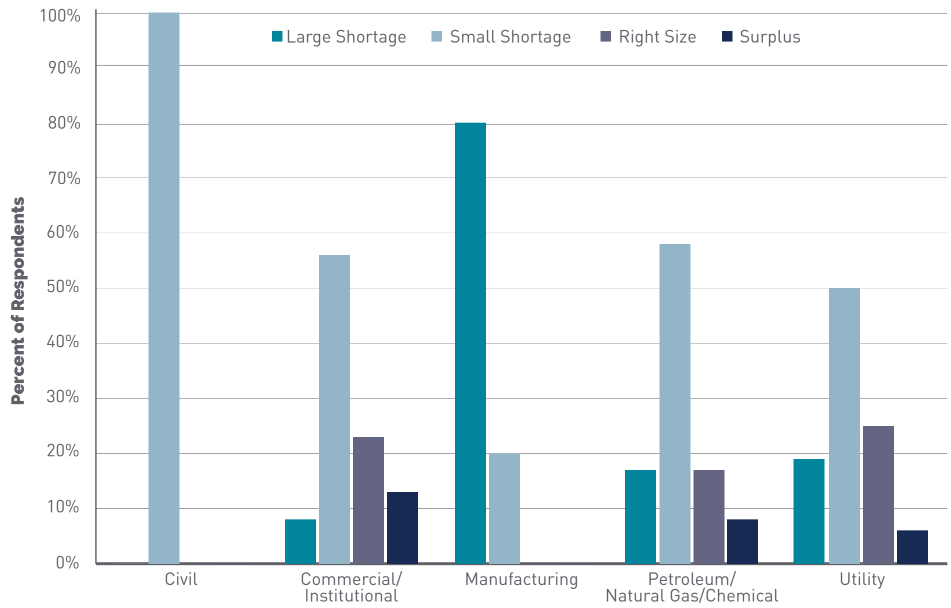


FIGURE 3.8 | MIDDLE ATLANTIC

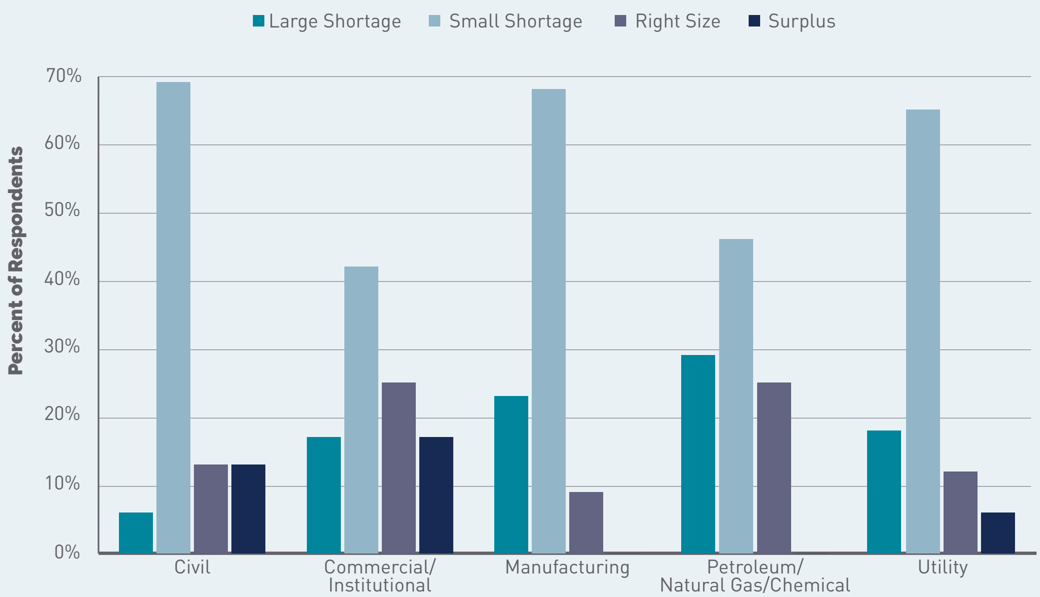


FIGURE 3.9 | SOUTHEAST

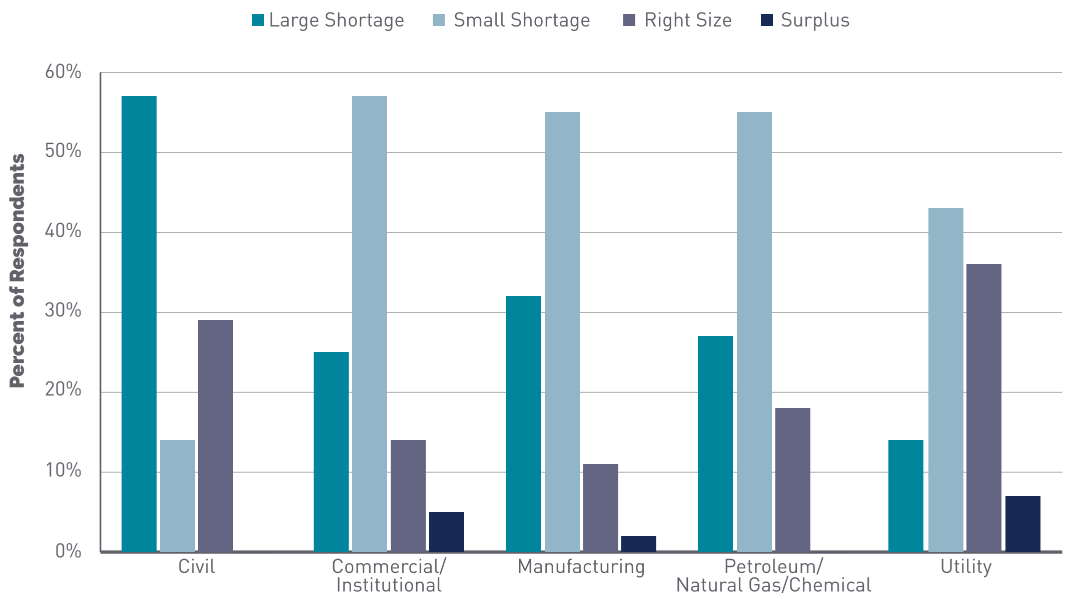


FIGURE 3.10 | EAST NORTH CENTRAL

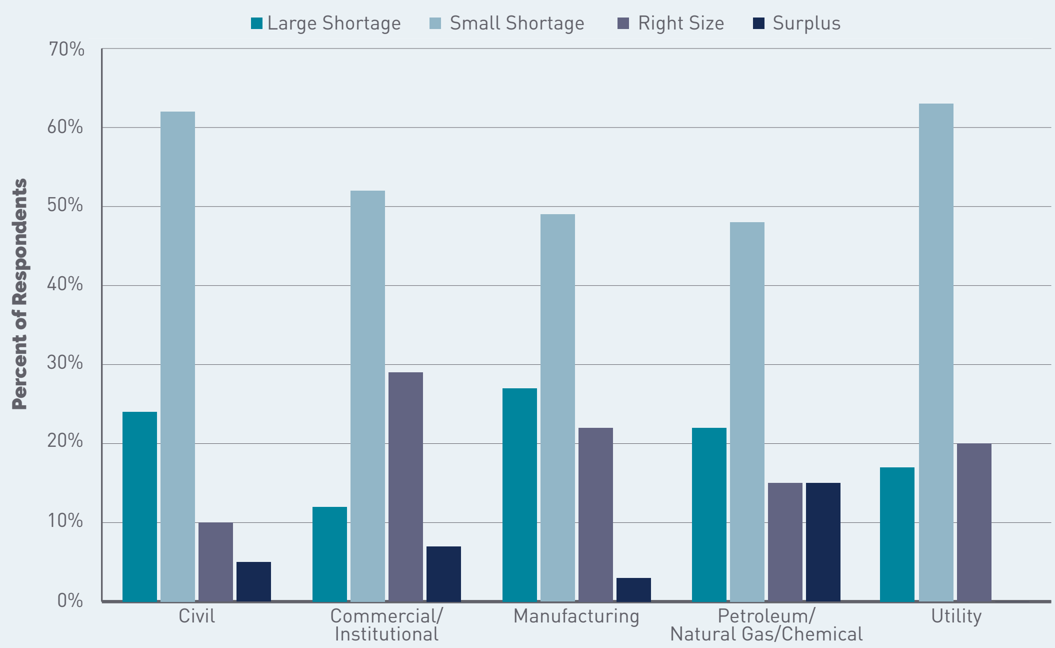


FIGURE 3.11 | WEST NORTH CENTRAL

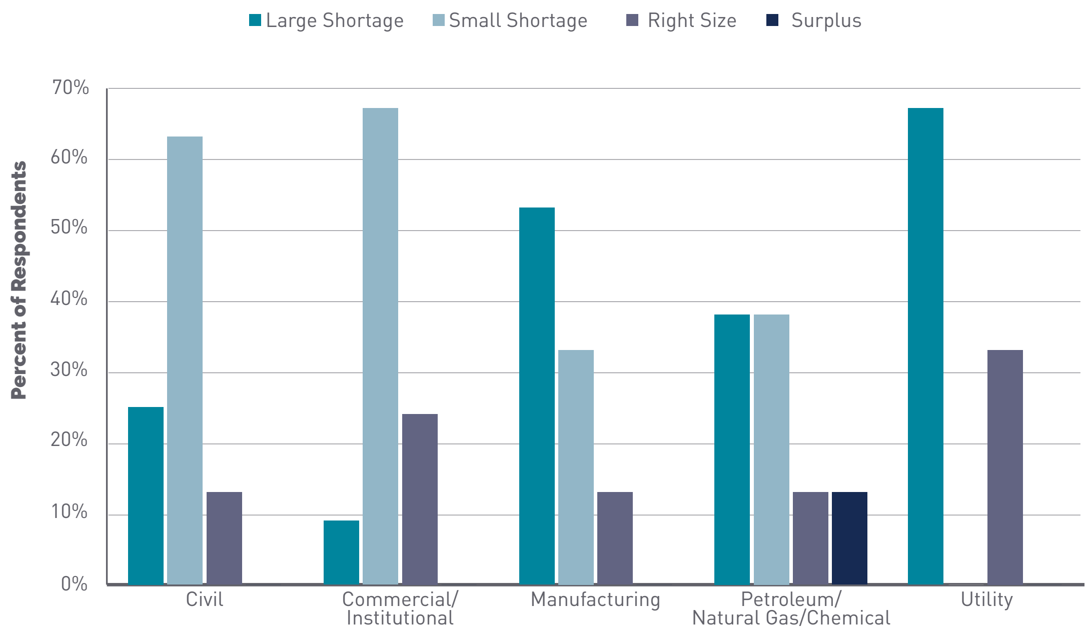


FIGURE 3.12 | SOUTH CENTRAL

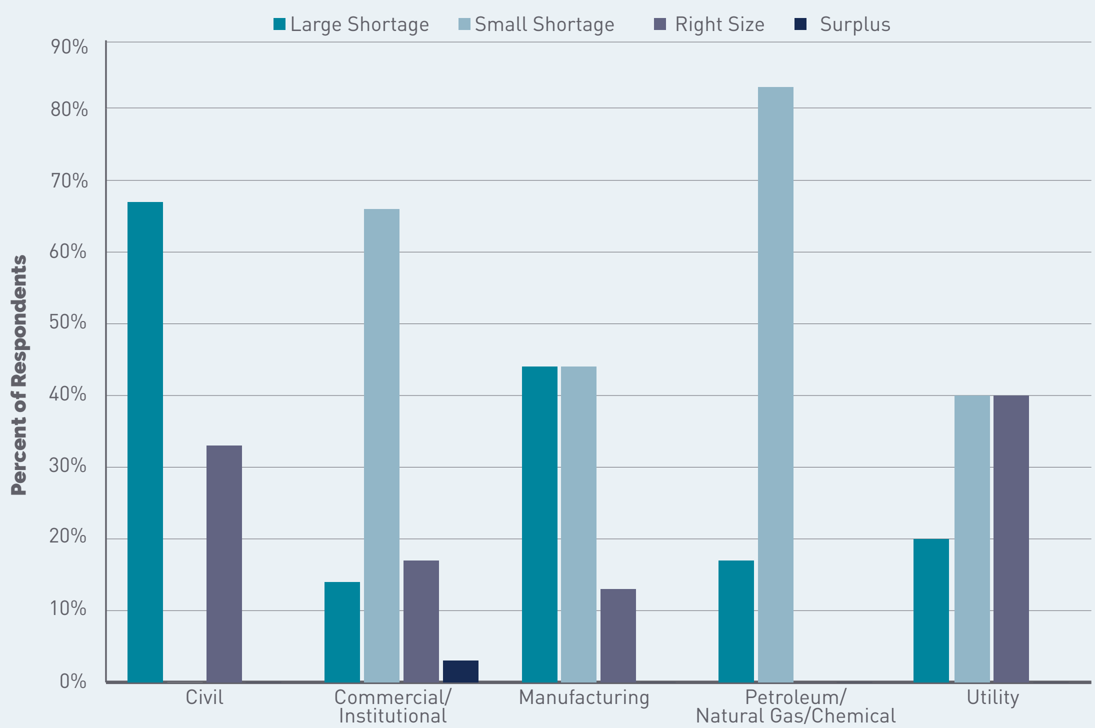


FIGURE 3.13 | MOUNTAIN NORTHERN PLAINS

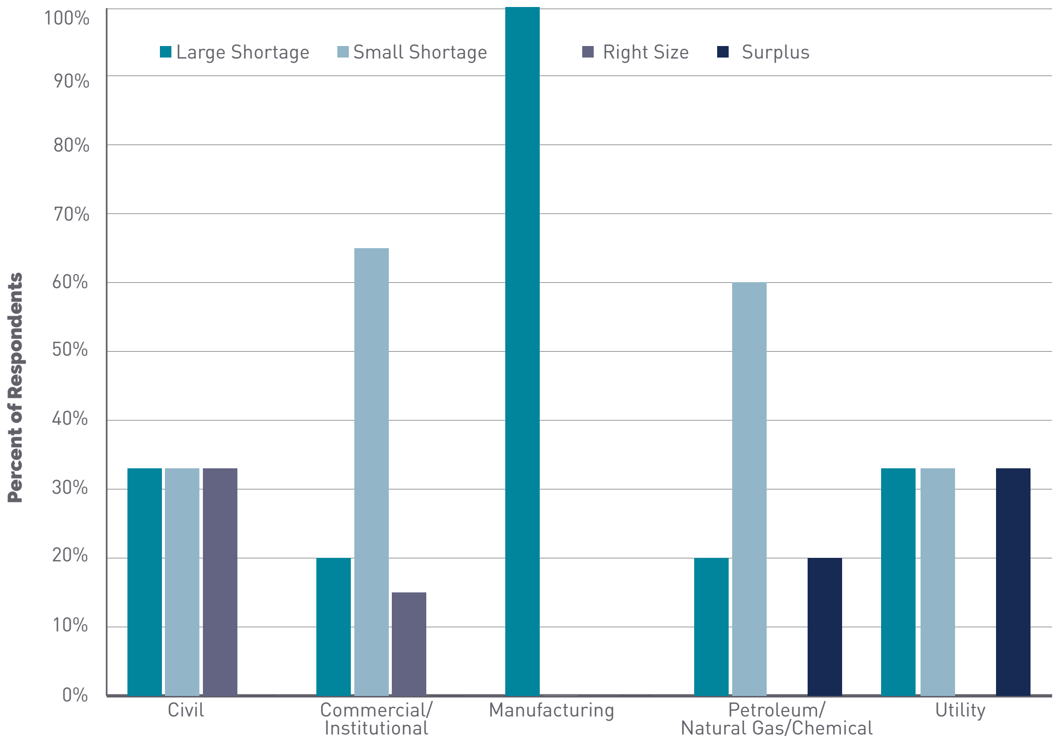


FIGURE 3.14 | NORTHWEST

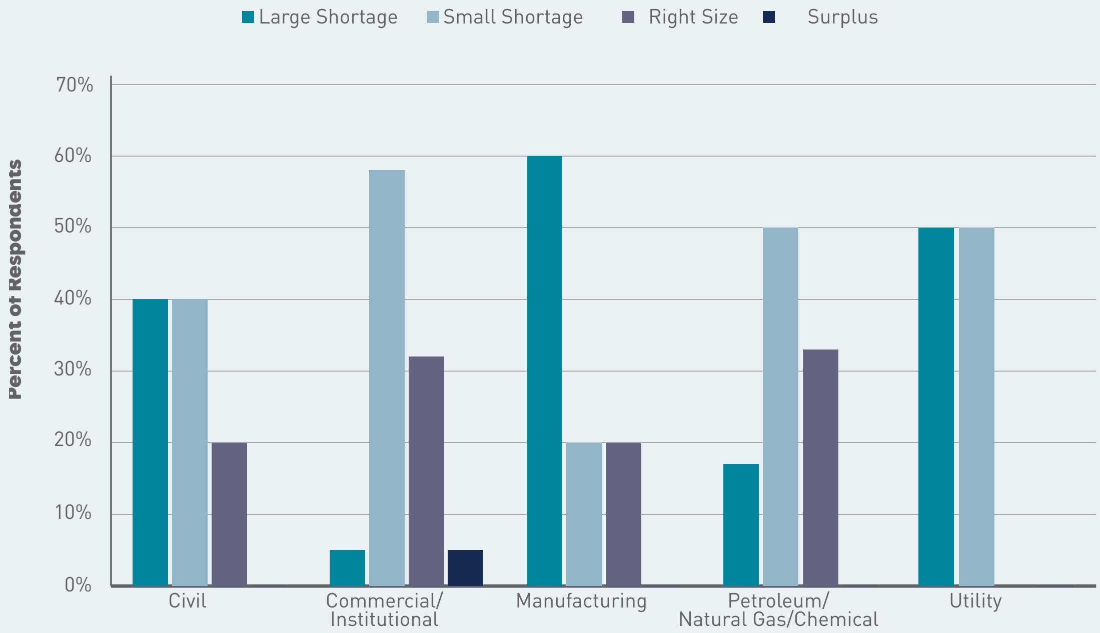
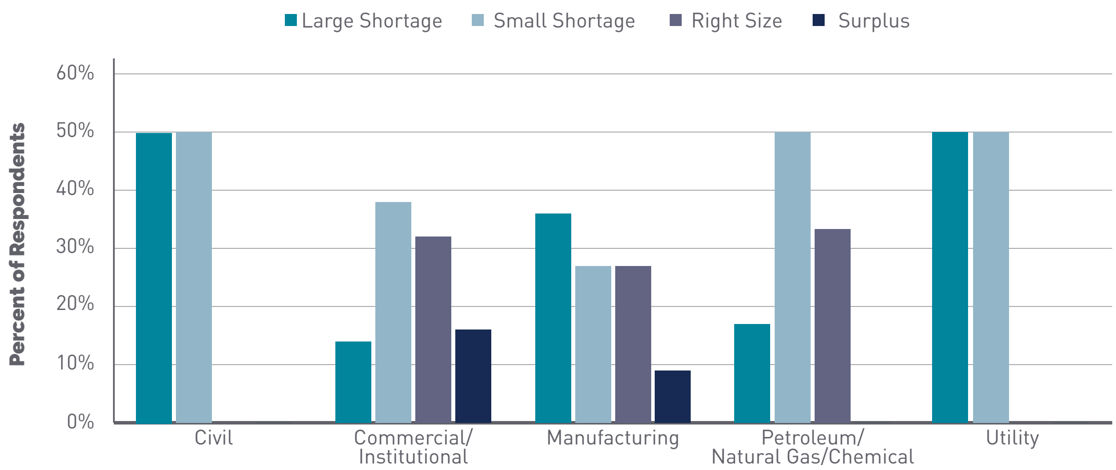


FIGURE 3.15 | SOUTHWEST



IV. UNION CRAFT LABOR SHORTAGE AND SURPLUS— CRAFT COMPARISON

The findings in **Section IV** are organized into five parts. Comparisons among the 14 crafts covered in this study will be shown for the first three parts.

- **Part 1.** Actual Shortage/Surplus in 2021
- **Part 2.** Projected Shortage/Surplus for 2022
- **Part 3.** Actual Shortage/Surplus in 2021 for Apprentices
- **Part 4.** Longitudinal Labor Supply Analyses: Juxtaposed Projections From Earlier Years vs. Actual From Ensuing Years
- **Part 5.** Difficult to Find, High Demand Skills

Within **Parts 1-3** listed above, results will be shown in two ways. First, by *prevalence* by listing the percent of the study participants for each craft whose ratings fell into four categories:

- Shortage (1% – 6%)
- Large Shortage (7% and greater)
- Surplus (1% – 6%)
- Large Surplus (7% and greater)

Second, by *intensity* by showing the average shortage/ surplus rating for each craft. Whereas the horizontally oriented shortage/surplus segmented bar charts described above show the percent of responses in each category (and do not include those who said their organization had neither a shortage nor a surplus), the vertically oriented bar charts convey the average rating and take all ratings into consideration in calculating the overall average, including those who said 0% (i.e., no shortage or surplus).

Figures 4.1a, 4.3 and 4.5 show the percent (prevalence) of responses falling into each surplus/ shortage category. Figures 4.2, 4.4 and 4.6 show the size of the shortage/ surplus. This can be called the intensity of the shortage/ surplus.

It is useful to note that the intensity values shown for **Figures 4.2, 4.4 and 4.6** are the average of all ratings—those reporting a shortage, those reporting a surplus and those reporting neither. Although these graphs are valuable because they concisely and accurately summarize all ratings, the shortage ratings (negative values in the analysis) and surplus ratings (positive values) tend to cancel each other out somewhat mathematically when calculating the average.

As a result, the averages contained in the line graphs look somewhat "muted." In other words, if the average were calculated separately for only those reporting a shortage the values would be much larger or more pronounced. Similarly, an average calculated only on a subset of the study sample containing just those reporting a surplus would be more pronounced as well.

The percentages shown in the **Figures 4.1, 4.3 and 4.5** in the segmented bars may not sum to 100% within each bar. This is because those who reported that there was neither a shortage nor a surplus in their organization are not shown.

Part 1. Actual Shortage/Surplus in 2021

Figures 4.1a, 4.1b and 4.2 focus on the union craft labor supply last year, in 2020, with comparison data for 2020.

Figure 4.1a illustrates, by craft, what percent of the ratings in this study fell into four rating categories:

- shortage
- large shortage
- surplus
- large surplus

This reflects the *prevalence* of the shortage/surplus. Data are sorted in descending order based on the percent reporting a union craft labor shortage in their organization in 2021. Results for 2020 are paired with the 2021 data for each craft as a useful point of comparison.

Results show that the most frequently reported shortages for 2021 were with Electricians and Carpenters & Millwrights, which have been the two highest rated crafts for at least three years. Interestingly, the percent of respondents reporting a shortage increased for every single craft. Most crafts saw an increase of around 15-20% in the percent of respondents who reported a shortage of that craft in their organization.

On average, 55% (up from 38% last year) of the sample for these craft specific items in **Section IV** said there had been a union craft worker shortage in their organization in 2021 and 8% said there was a surplus (down from 13% last year). An interesting point of comparison are the results in **Section III** for the more general question, "Did your organization experience a union craft labor shortage in 2021?"

For those results in **Section III,** 68% said there was a shortage in their organization (see **Figure 3.1**).

Thus, tallying data for each specific craft (**Section IV**) resulted in a lower percent (55%) reporting a shortage than when a general question about union craft labor shortage was asked (68% in **Section III**). The reason for this difference is that the data come from different questions with different rating scales. Additionally, respondents provided answers when thinking about each craft individually in **Section IV** rather than All Crafts combined as in **Section III**.

FIGURE 4.1a (PREVALENCE) | **SHORTAGE/SURPLUS BY CRAFT**

Contains results concerning prevalence, the percentage of the responses that fall into each of the four different shortage and surplus rating options, organized in descending order based on 2021 data.

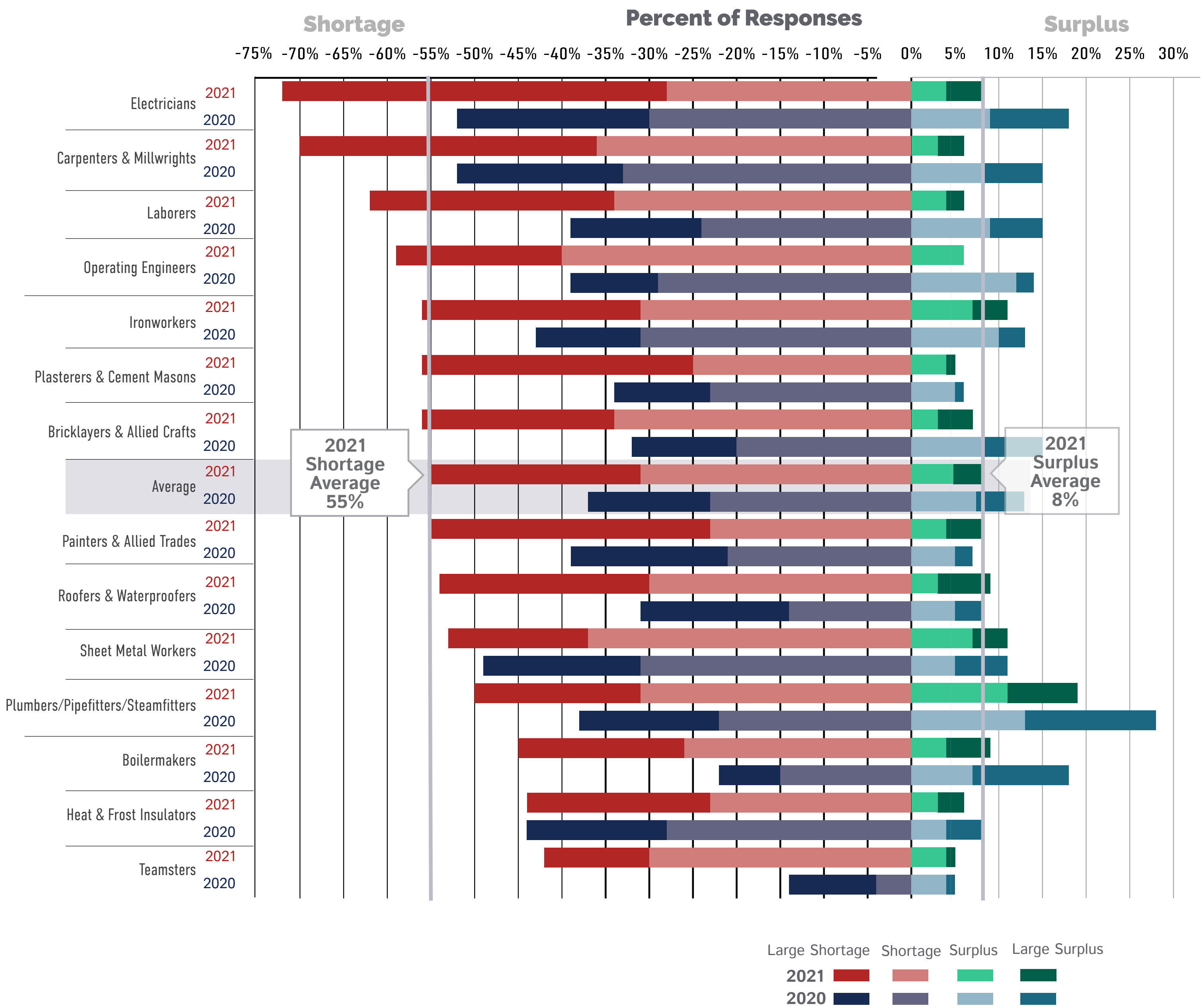


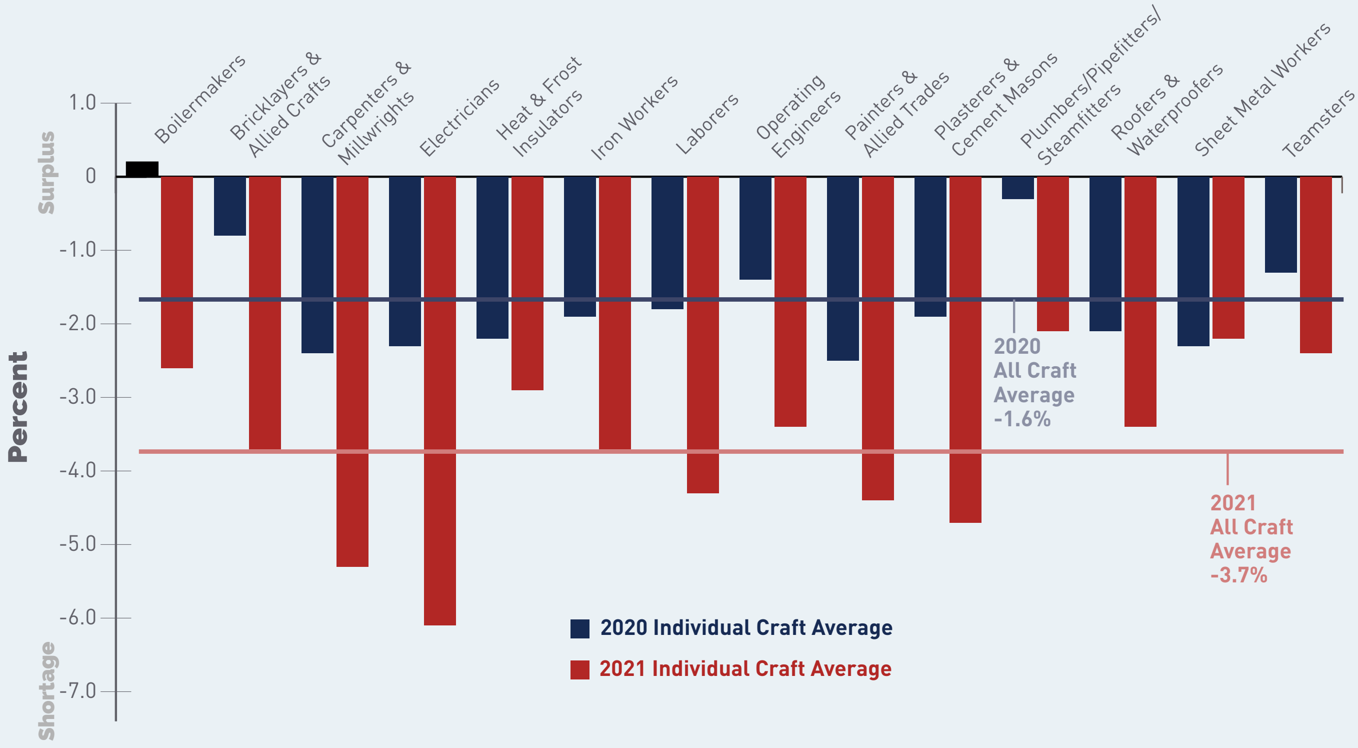
FIGURE 4.1b (PREVALENCE) | PERCENT REPORTING A SHORTAGE

Craft	2020	2021
Boilermakers	22%	45%
Bricklayers & Allied Crafts	32%	56%
Carpenters & Millwrights	52%	70%
Electricians	52%	72%
Heat & Frost Insulators	44%	44%
Ironworkers	43%	57%
Laborers	39%	61%
Operating Engineers	39%	59%
Painters & Allied Trades	39%	55%
Plasterers & Cement Masons	34%	57%
Plumbers/Pipefitters/Steamfitters	38%	51%
Roofers & Waterproofers	31%	54%
Sheet Metal Workers	49%	52%
Teamsters	14%	42%
Average	**38%**	**55%**

The table (**Figure 4.1b**) displays the data in **Figure 4.1a** in tabular form, in alphabetical order. This provides a simple, easy-to-read format for reviewing the union craft labor shortage data.

FIGURE 4.2 (INTENSITY) | AVERAGE SHORTAGE/SURPLUS BY CRAFT

As a complimentary analysis, **Figure 4.2** shows the average shortage or surplus rating for each craft, the intensity of the shortage. *The average shortage in 2021 was 3.7%, up significantly from 1.6% in 2020.*



Part 2. Projected Shortage/Surplus in 2022

Figures 4.3 and 4.4 focus on the projected union craft labor supply for the upcoming year, 2022.

Figures 4.1a, 4.1b, and 4.2 in Part 1 look back in time at union craft staffing levels in 2021. **Figures 4.3 and 4.4** provide a look ahead to respondent projections for 2022. These results are based on the study participants' replies to questions asking them to project the shortage/surplus of union craft labor in 2022 in their organization. The crafts are listed in descending order based on the 2022 data. Data from last year's report are included as points of comparison.

*The prevalence of the shortages for 2022 (**Figure 4.3**) was nearly the same as the actual results for 2021 (see **Figure 4.1a**) at the top of the chart — those crafts with the greatest shortage. Electricians and Carpenters & Millwrights were the two crafts garnering the most concern about a shortage for the coming year.* And, consistent with the theme throughout this report, for every craft there were more respondents anticipating a shortage this year than there were last year. For most crafts, about 20% to 30% more participants in the study projected a shortage for this coming year than last year.

However, the statistics this year were similar to data from two years ago, before the reprieve offered last year, in 2021, because of the coronavirus pandemic.

FIGURE 4.3 (PREVALENCE) | PROJECTED SHORTAGE/SURPLUS BY CRAFT

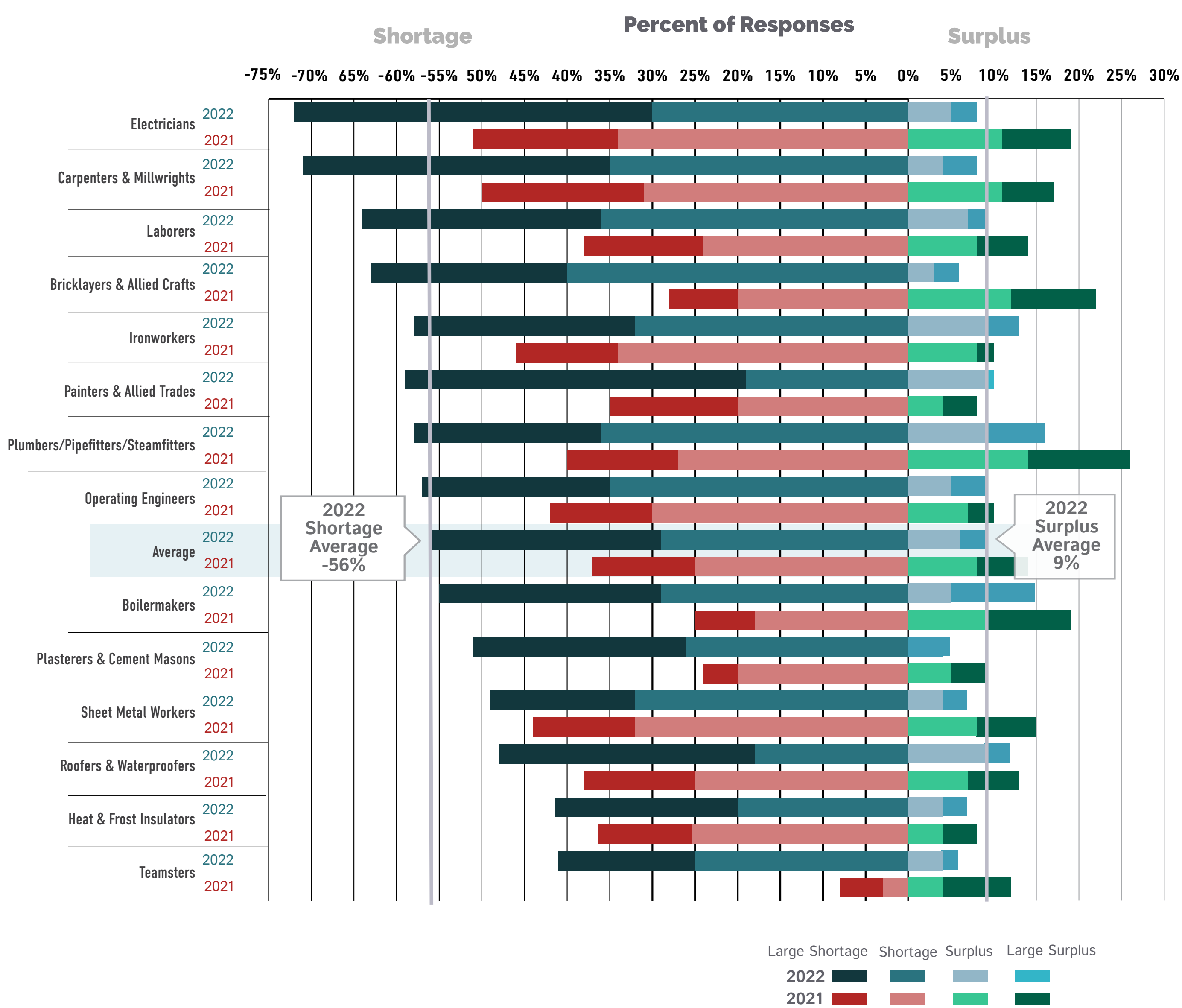
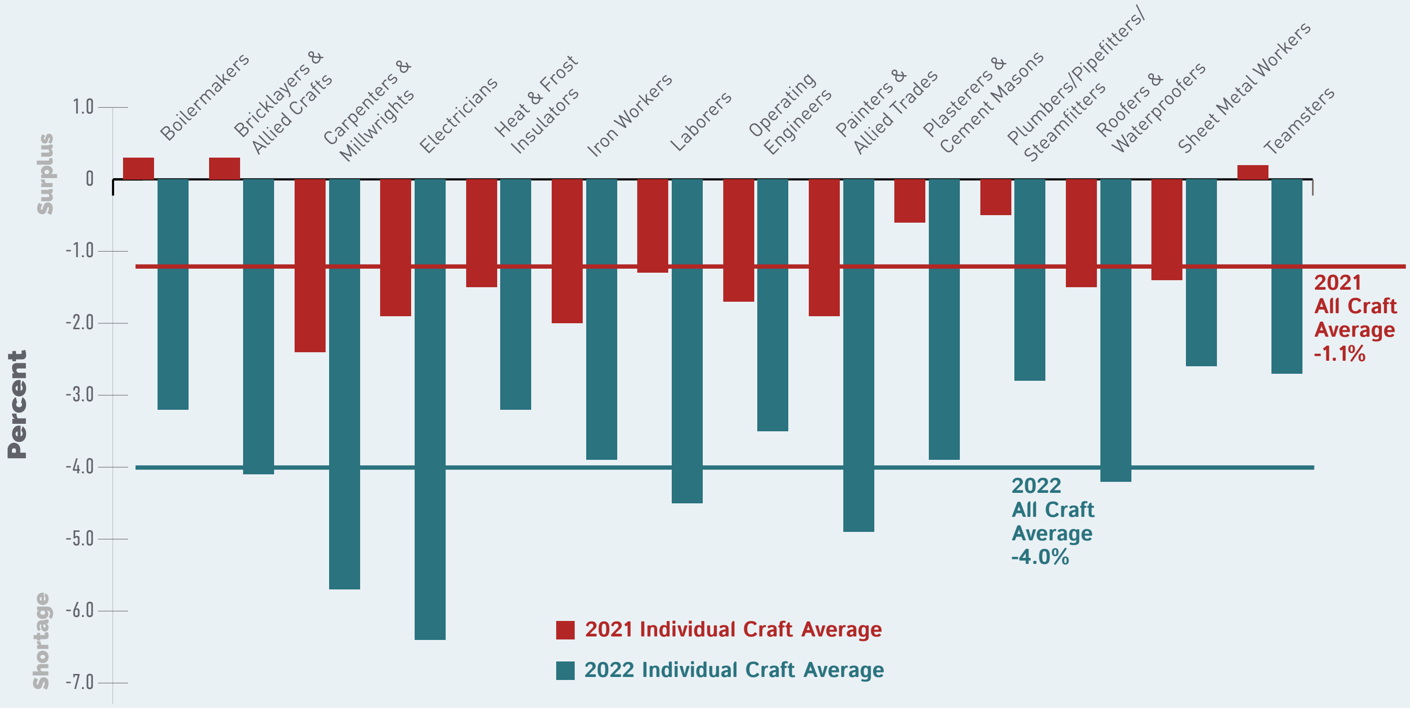


Figure 4.4 contains the average 2021 and 2022 ratings for projected union craft labor shortages/surpluses. *As expected, these results parallel those in **Figure 4.3** with Electricians and Carpenters & Millwrights having the greatest shortages. The intensity (i.e., size) of the shortages was greater this year than last year for every craft.*

The average shortage rating was 4.0% for 2022; it was 1.1% in 2021 and 2.7% in 2020.

FIGURE 4.4 (INTENSITY) | **PROJECTED SHORTAGE/SURPLUS BY CRAFT**



Part 3. Actual Shortage/Surplus in 2021 for Apprentices

Figures 4.5 and 4.6 focus on the union craft labor supply of *apprentices* last year, in 2021. These results are based on respondents' replies to questions asking them about union craft apprentice levels in their organization in 2021. The crafts are listed in descending order based on 2021 data. Data from last year's report are included as points of comparison.

The results for apprentices generally followed the pattern in **Figures 4.1a and 4.3***, which looked at journeyman data for 2021 and 2022, respectively. In particular, Electricians and Carpenters & Millwrights again had the strongest prevalence of a union craft labor shortage. Of note, the apprentice results were less than the results for 2021 and 2022, meaning fewer respondents reported a shortage of apprentices than journeymen.*

FIGURE 4.5 (PREVALENCE) | **SHORTAGE/SURPLUS OF APPRENTICES BY CRAFT**

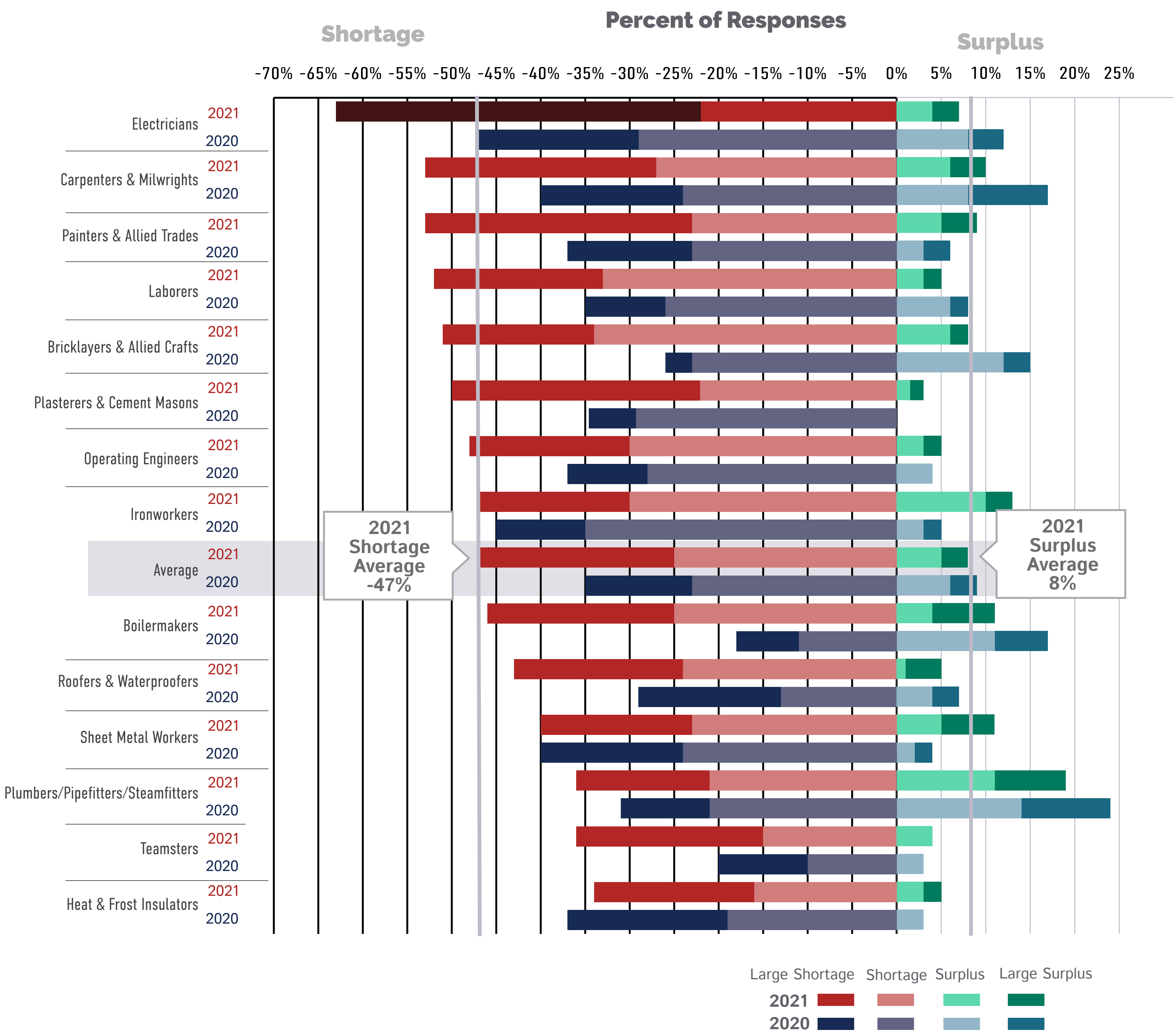


Figure 4.6 shows average apprentice shortage ratings. The average degree of shortage was 3.1% in 2021 and 1.6% in 2020. *Four crafts had the most significant shortage of apprentices when looking at intensity: Carpenters & Millwrights, Electricians, Painters & Allied Trades and Plasterers & Cement Masons.*

FIGURE 4.6 (INTENSITY) | AVERAGE SHORTAGE/SURPLUS FOR APPRENTICES BY CRAFT

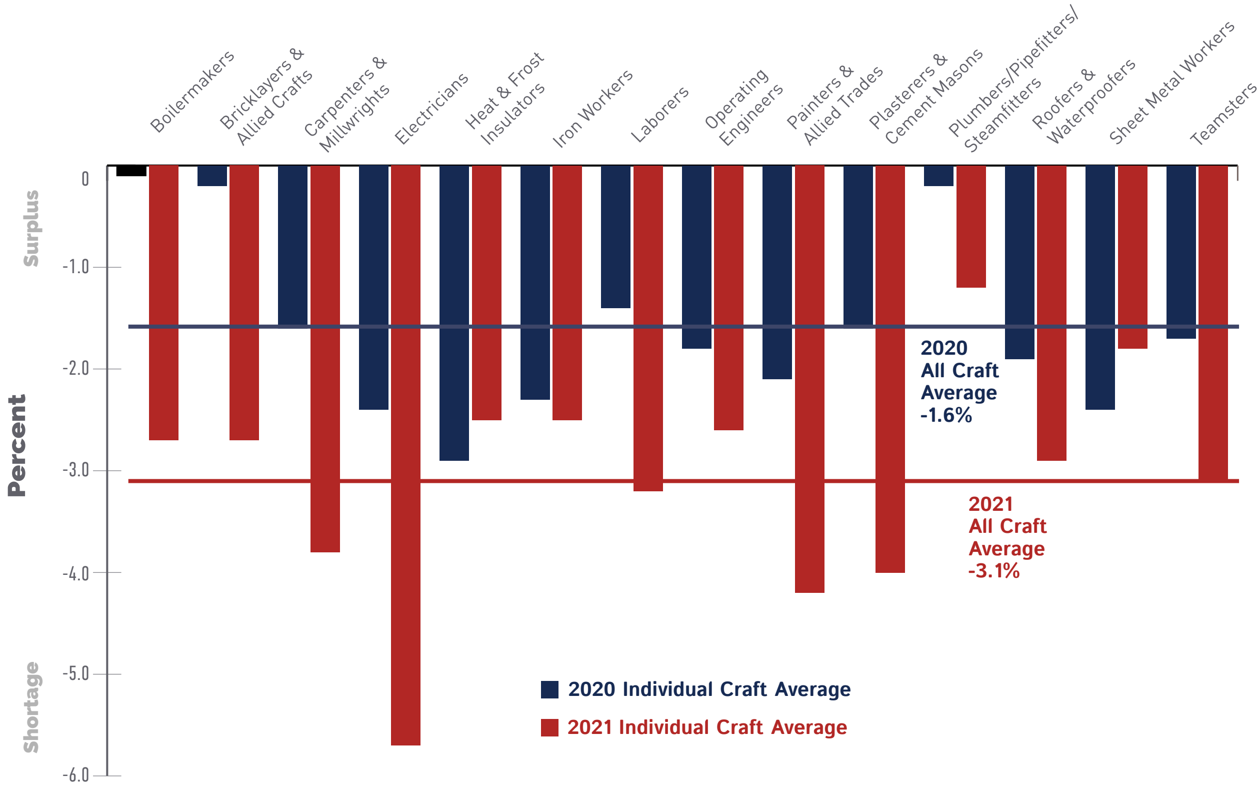


FIGURE 4.7 | COMBINED SHORTAGE/SURPLUS RESULTS

Summarizes the results for **Parts 1-3** in this section. The crafts are listed in alphabetical order, with results marking the percentage of respondents reporting a journeyman shortage for 2021, a projected journeyman shortage in 2022 and a shortage in 2021 for apprentices. Cells are colored according to the severity of the shortage, with teal and purples indicating a shortage, light red a larger shortage and dark red the greatest shortage.

	2021 Journeyman	2022 Journeyman	2021 Apprentice
Average	-55%	-56%	-47%
Boilermakers	-45%	-55%	-46%
Bricklayers & Allied Crafts	-56%	-63%	-51%
Carpenters & Millwrights	-70%	-71%	-53%
Electricians	-72%	-72%	-63%
Heat & Frost Insulators	-44%	-41%	-34%
Ironworkers	-57%	-58%	-47%
Laborers	-61%	-64%	-52%
Operating Engineers	-59%	-57%	-48%
Painters & Allied Trades	-55%	-58%	-53%
Plasterers & Cement Masons	-57%	-51%	-50%
Plumbers/Pipefitters/Steamfitters	-51%	-58%	-36%
Roofers & Waterproofers	-54%	-48%	-43%
Sheet Metal Workers	-52%	-49%	-40%
Teamsters	-42%	-41%	-36%

Part 4. Projections From Earlier Years vs. Actual From Ensuing Years

The data in **Figures 4.8 – 4.10** juxtapose predictions of worker shortages/surpluses of union craft labor next to the "actual" shortage/surplus ratings from the following year. For example, in the 2021 survey (administered January 2021), respondents were asked to indicate the degree of union craft shortage/surplus they anticipated in their organization for that year. These data were compared with reports of actual shortages reported the following year (2022). Of course, many factors intervene (e.g., different sets of respondents from year to year, unforeseen economic changes, and, of course, a pandemic) to make perfect predictions impossible; yet, this analytic exercise does serve a useful purpose as one method of vetting respondent accuracy.

FIGURE 4.8 | EMPLOYMENT PROJECTIONS VS. ACTUAL EMPLOYMENT 2021

The projected union craft labor shortage statistics for 2021 (from the 2021 survey) are compared with the actual shortage statistics for 2021 (from the survey this year, 2022). This type of comparison serves to test the consistency of predictions. The bars in the chart represent the percentage of the sample that reported a shortage in their organization for each craft.

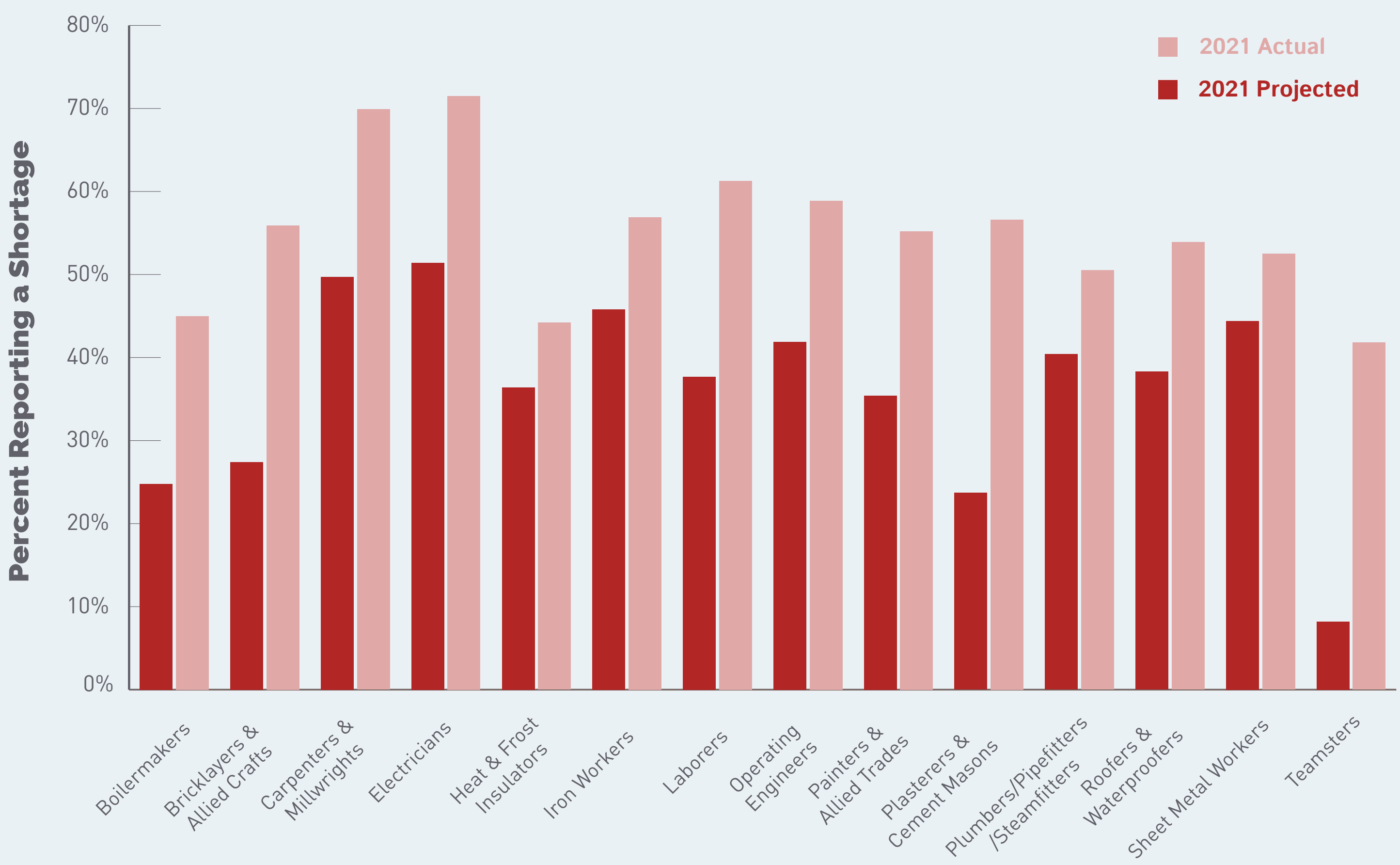


FIGURE 4.9 | CONSISTENCY OF EMPLOYMENT PROJECTIONS 2021

Charts the gaps between the projected shortage and the actual shortage reported the following year. In other words, **Figure 4.9** graphs the gaps in **Figure 4.8**. The larger the value, the *less consistent* the ratings. Thus, in 2021 the most consistent projections were for Heat & Frost Insulators, where the percent of the respondents projecting a shortage was within 7.8 percentage points of the percent reporting an actual shortage the following year. On the other hand, the lowest consistency was for Teamsters. Here, there was a 33.6 percentage point discrepancy between projections and actual.

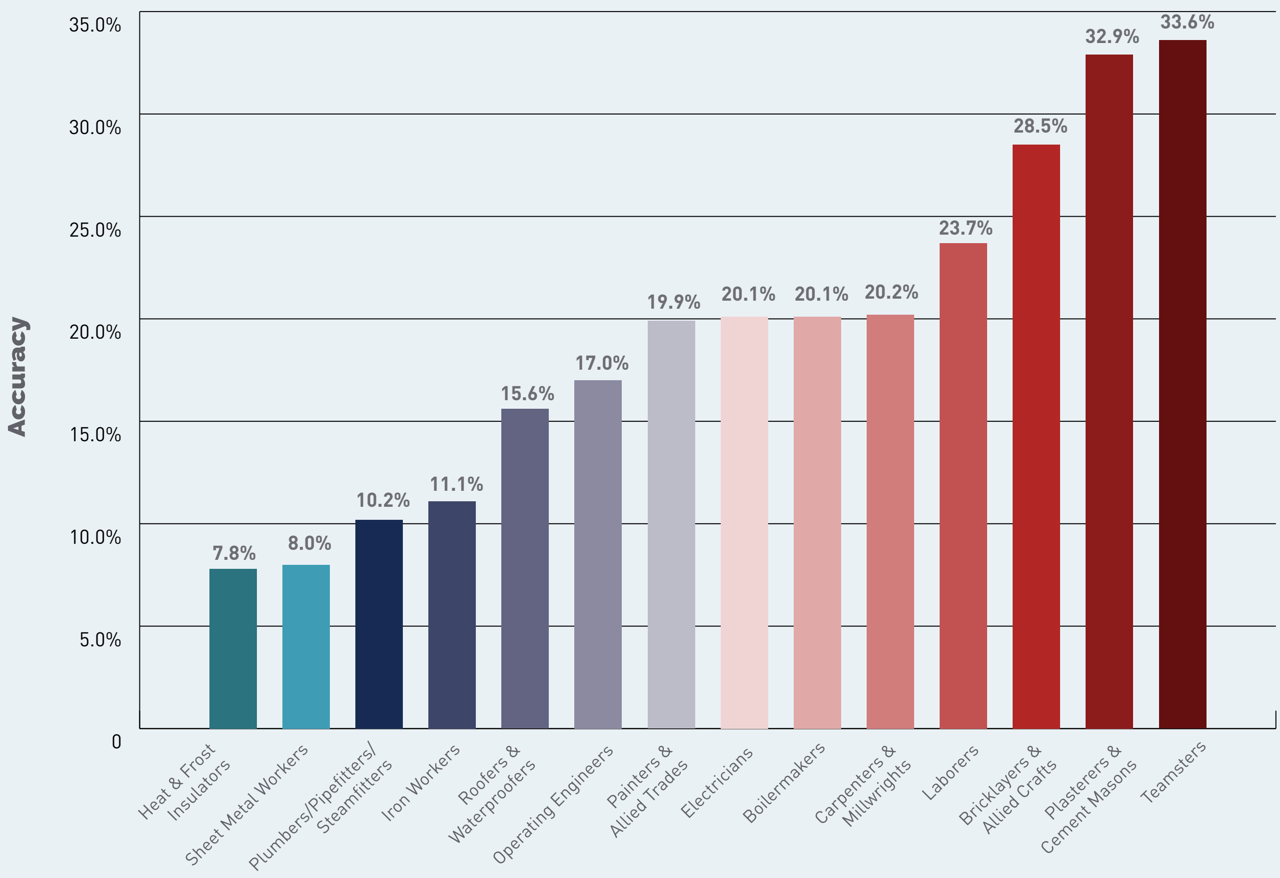
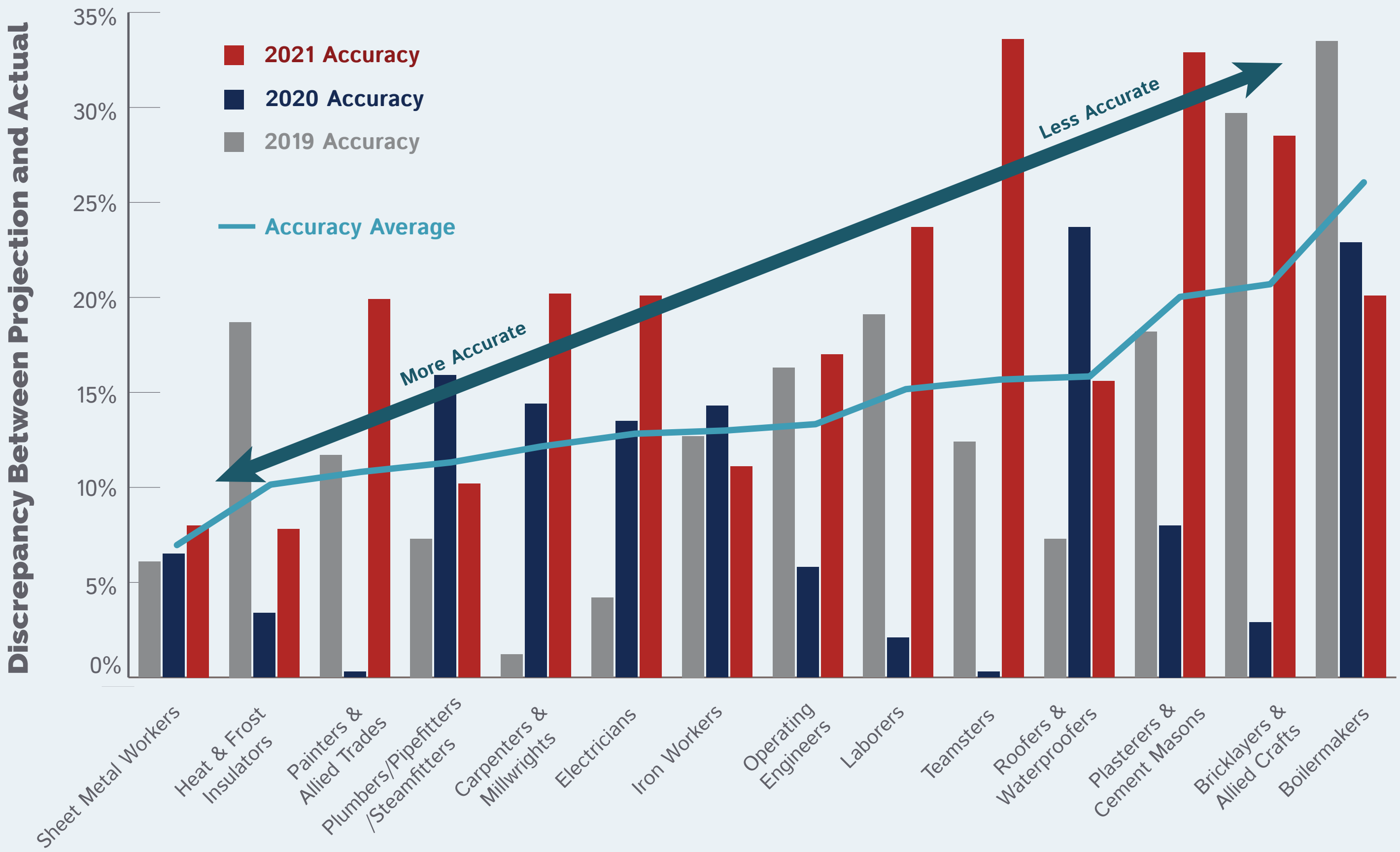


FIGURE 4.10 | GAP BETWEEN EMPLOYMENT PROJECTIONS AND ACTUAL EMPLOYMENT

Figure 4.10 illustrates two concepts. The bars show the gaps between projected and actual for 2019, 2020 and 2021. The line shows the average of the three years for each craft. The larger the value for the bars and the line, the less consistent the ratings. On the left side of the chart are the crafts with the most consistent projections in the study (e.g., Sheet Metal Workers); the right side reflects those crafts where respondents had a harder time projecting craft shortages (e.g., Boilermakers).



Part 5. Difficult to Find, High Demand Skills

Participants in the study had the opportunity to list, in an open-ended manner, the skills/tasks that were most difficult to fill in their organization, and thereby in high demand. **Figure 4.11** lists those in descending order based on the number of times that needed skill was identified by the respondents in 2022. Results for 2021 are also shown for comparison. Although the percentage of time it was mentioned fell in 2022, *the most highly demanded skill*, by far, *was welding*. Welding includes all types of welding (e.g., Mig, Tig, alloy, certified pipe).

Some items mentioned in 2021 were not mentioned in 2022, and some items mentioned in 2022 were not mentioned in 2021, as shown by the missing data dashes toward the bottom of the table.

FIGURE 4.11 | DIFFICULT TO FIND, HIGH DEMAND SKILLS

Needed High Demand Skills	2021	2022
Welder	**21%**	**23%**
Plumber	10%	12%
HVAC Technician	5%	7%
Pipefitter/Steamfitter	4%	7%
Electrician	9%	6%
Equipment Operator	7%	5%
Journeyman	6%	5%
Service Technician	6%	4%
Millwright	1%	4%
Carpenter	2%	3%
Ironworker	1%	3%
Medical Gas Fitter	1%	3%
Apprentice	3%	2%
Laborer	2%	2%
Foreman/Supervisor	5%	2%
Painter	-	2%
Boilermaker	1%	1%
Bricklayer	1%	1%
Cement Mason	1%	1%
Instrumentation	-	1%
Residential Work	-	1%
Roofer	1%	1%
Sheet Metal Worker	2%	1%
Detailer	1%	-
Inside Wireman	2%	-
Installer	1%	-
Insulator	1%	-
Mechanic	1%	-
Outside Lineman	1%	-

V. PERSPECTIVES ON CRAFT LABOR STAFFING AND EMPLOYEE HEALTH AND WELL-BEING

One intriguing aspect each year of the TAUC Union Craft Labor Supply Study entails assessing new, "hot ticket" topics. These topics are important to enhance understanding and guide decision-making. For the 2022 study, three timely topics were covered:

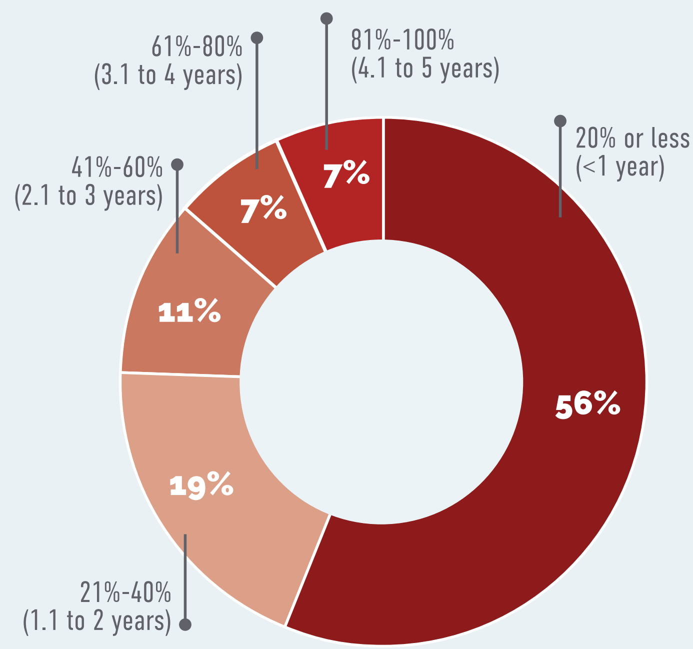
- **Part 1.** Additional Perspectives on Craft Labor Staffing
- **Part 2.** Employee Health and Well-Being
- **Part 3.** Labor Study Participation

Part 1. Additional Perspectives on Craft Labor Staffing

This part of the study, new for 2022, drilled down further into the craft labor shortage, with questions about the depth of the shortage, shortage levels pre-COVID-19 vs. current and the anticipated effect of the infrastructure bill on craft staffing.

One of the new questions this year asked about the percentage of time during the past five years that the respondent's organization had a craft labor shortage. Because of the publicity given to the craft labor shortage, findings for this question are interesting. As shown in **Figure 5.1**, *over half of the study participants (56%) said that just 20% of the time or less there was a craft shortage in their organization (one year or less during the past five years).* In fact, the longer the time frame for the shortage in the response options, the fewer the responses. Like Section III, these data bear out the thought in this report that the craft shortage exists, but is less pervasive and not as severe as what seems to be portrayed in the media.

FIGURE 5.1 | PERCENTAGE OF TIME WITH A CRAFT LABOR SHORTAGE



The status of union craft labor staffing pre-COVID-19 versus the current time frame was examined — **Figure 5.2** displays these results. *A majority (54%) reported currently having a surplus or no shortage* (divided among those who said they had a shortage pre-COVID-19 and those who did not). Those reporting a shortage pre-COVID-19 and a shortage currently totaled 39%.

In line with other sections of the report, Union/Labor Representatives reported much more favorable numbers regarding a worker shortage. Among this cohort, 56% reported no shortage pre-COVID-19 and no shortage currently, whereas for Contractors/Subcontractors less than half as many (25%) reported no shortages.

FIGURE 5.2 | COVID-19 AND UNION CRAFT LABOR STAFFING LEVELS

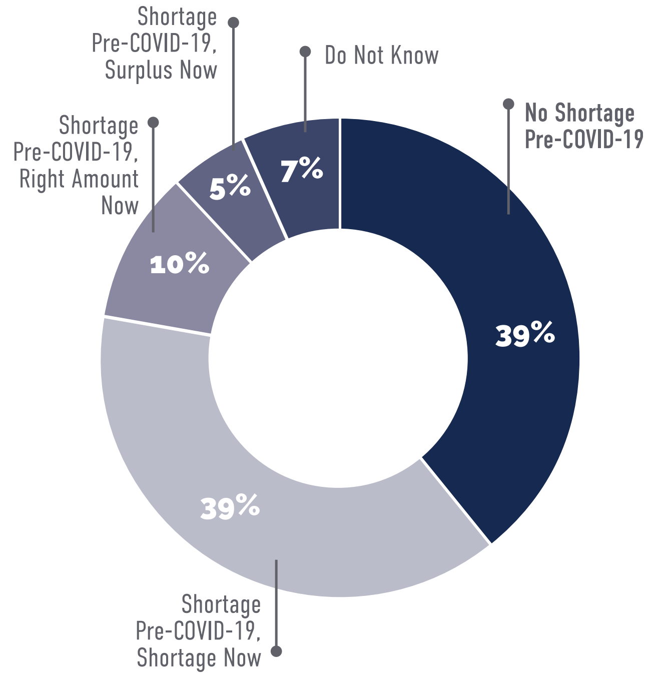
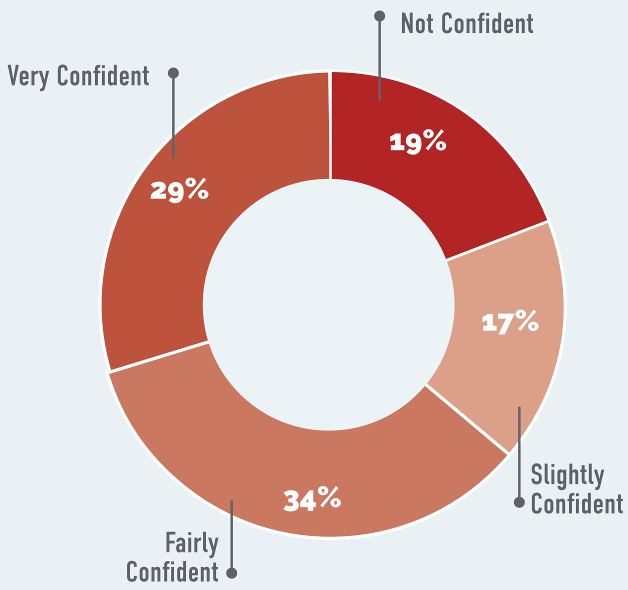


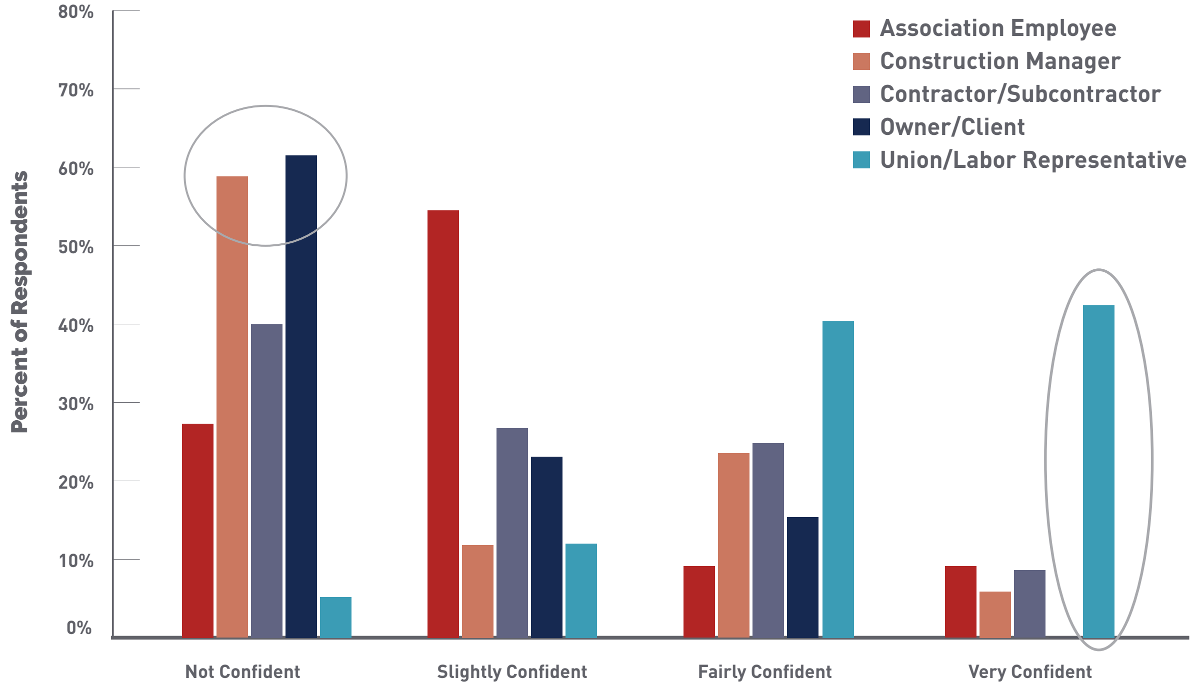
FIGURE 5.3 | CONFIDENCE IN ABILITY TO MEET CRAFT STAFFING NEEDS



Results in **Figure 5.3** illustrate the findings from a question that asked about respondent confidence in their organization's ability to meet craft labor staffing needs resulting from the infrastructure bill. The results were spread somewhat evenly among the response options, ranging from "Not Confident" (19%) to "Very Confident" (29%). *A plurality (34%) said they were "Fairly Confident" in their organization's ability to meet craft staffing needs considering the infrastructure bill.*

The responses were further examined by respondent role, shown in **Figure 5.4**. The least confident roles were Construction Manager and Owner/Client; the most confident role, by far, was Union/Labor Representative.

FIGURE 5.4 | CONFIDENCE IN ABILITY TO MEET CRAFT STAFFING NEEDS BY ROLE

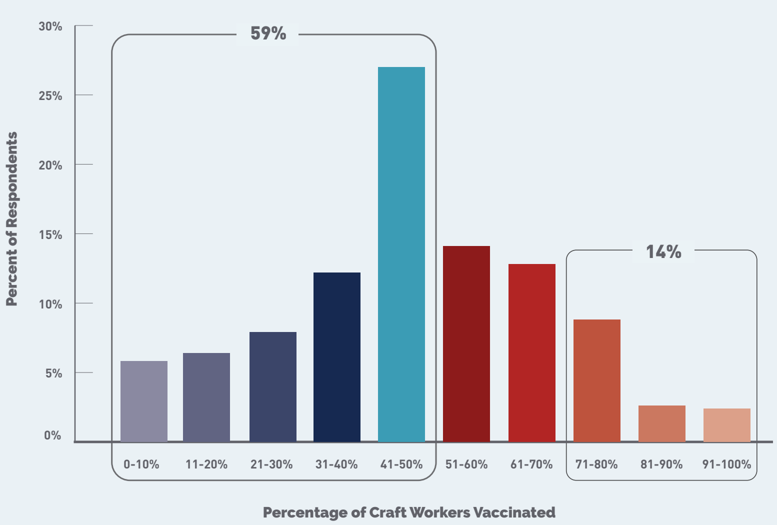


Part 2. Employee Health and Well-Being

Two important topics in today's environment are vaccination status and employee mental health. **Part 2** covers various key aspects of these critical topics.

Figure 5.5 focuses on the percentage of craft employees in the respondent's company that were vaccinated. Note, these results are based on respondent opinion and are not necessarily the actual percentage vaccinated. Clearly, vaccinations did not pervade the craft workforce. To that point, *59% of the survey respondents reported that no more than half of the craftworkers in their organization were vaccinated, and only 14% indicated that more than 70% of their craftworkers were vaccinated.*

FIGURE 5.5 | PERCENTAGE OF CRAFT EMPLOYEES VACCINATED



The results in **Figure 5.5** were further examined by role in **Figure 5.6**. *It is critical to note that this data cut refers to who provided the data, not who was vaccinated*. Association Employees reported that 44% of the craftworkers were vaccinated (NOT 44% of Association Employees were vaccinated). Union/Labor Representatives reported a higher percentage of craftworkers being vaccinated (52%).

FIGURE 5.6 | PERCENTAGE OF CRAFT EMPLOYEES VACCINATED AS REPORTED BY ROLE

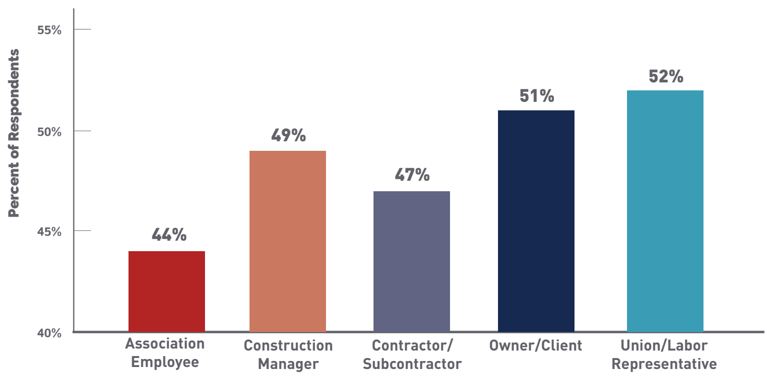
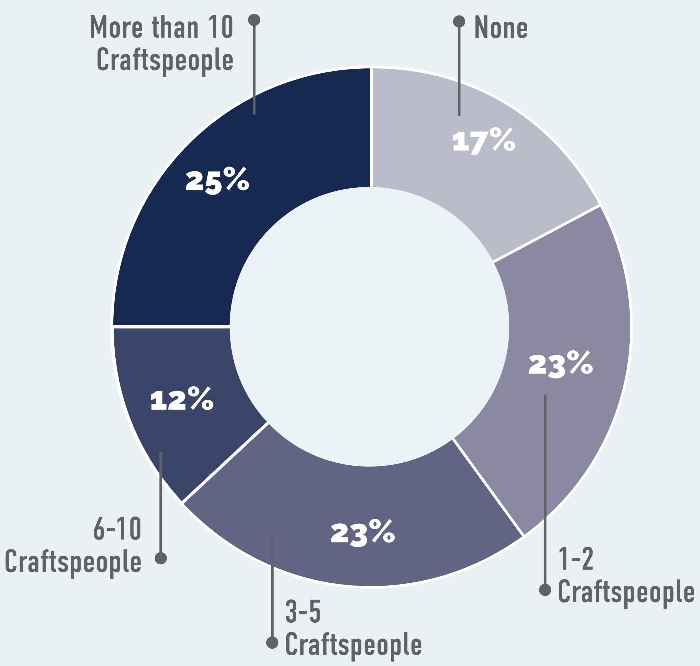
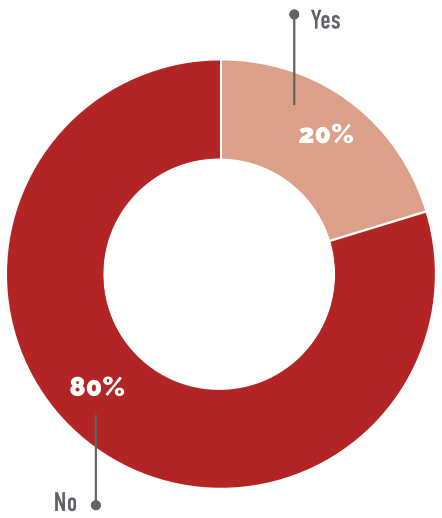


FIGURE 5.7 | SUBSTANCE ABUSE AND MISSED WORK AMONG CRAFTSPEOPLE



Participants in the study were asked how many craftspeople in their organization missed work or performed below expectations because of a substance abuse problem they had. As shown in **Figure 5.7**, results were fairly evenly distributed among the response options, ranging from "None" (17%) to "More than 10 Craftspeople" (25%).

FIGURE 5.8 | AWARE OF CRAFTSPEOPLE DYING BY SUICIDE



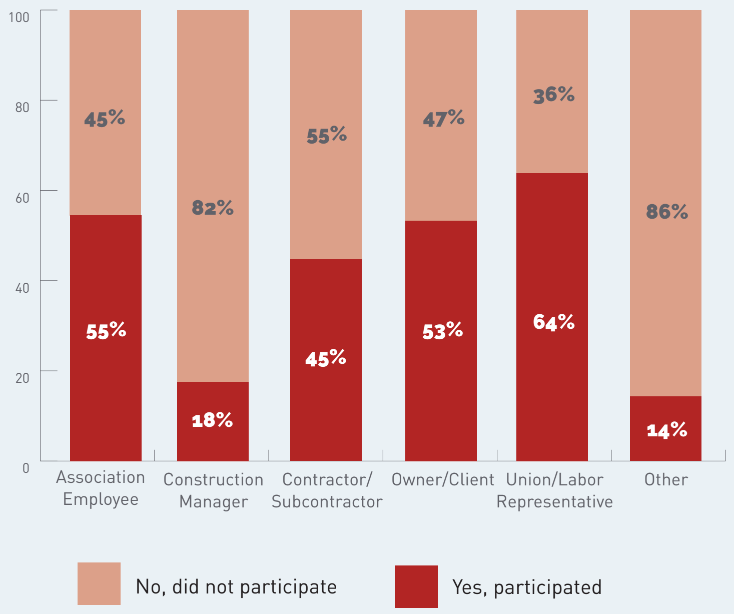
The solemn topic of suicide was also examined in the study this year. *A large majority (80%) were not aware of any craftspeople in their organization who died by suicide in 2021, as presented in* **Figure 5.8**. More Union Labor Representatives were aware of at least one craftsperson who died by suicide than any of the other roles.

Part 3. Labor Study Participation

To better understand the profile and continuity of participants in this study, a question simply asked if the respondent had participated in the survey last year.

A surprising number of people were new this year (but may have responded to surveys prior to last year), as presented in **Figure 5.9**. The role with the largest repeat percentage was Union/Labor Representative, where 64% participated last year and this year (36% had not participated last year). The role with the most new people this year that had not responded last year were Construction Manager (82%). Overall, nearly half, 46%, had not participated last year.

FIGURE 5.9 | PARTICIPATION IN THE SURVEY LAST YEAR BY ROLE



DETAILED INDIVIDUAL CRAFT RESULTS

Detailed results for each of the 14 crafts covered in this study are shown alphabetically in this section of the report. For each craft there are three areas of focus:

A. Historical Results: 2020 & 2021

This section shows results for questions where study participants were asked to report on the previous year. That is, the data for 2020 comes from last year's study (conducted early in 2021) where participants were asked to rate the actual/historical union craft labor shortage/surplus for the previous year. Data for 2021 came from this year's study (conducted early in 2022).

B. Projections for the Next Year: 2021 & 2022

This section shows results for questions where study participants were asked to project the union craft labor shortage/surplus for the upcoming year. Projections for 2021 came from last year's study (conducted early in 2021); projections for 2022 came from this year's study (conducted early in 2022).

C. Apprentices: 2020 & 2021

This section shows results for questions where study participants were asked to report on the status of apprentices from the previous year. That is, the data for 2020 comes from last year's study (conducted early in 2021) where participants were asked to rate the actual/historical union craft labor shortage/surplus of apprentices for the previous year. Data for 2021 came from this year's study (conducted early in 2022).

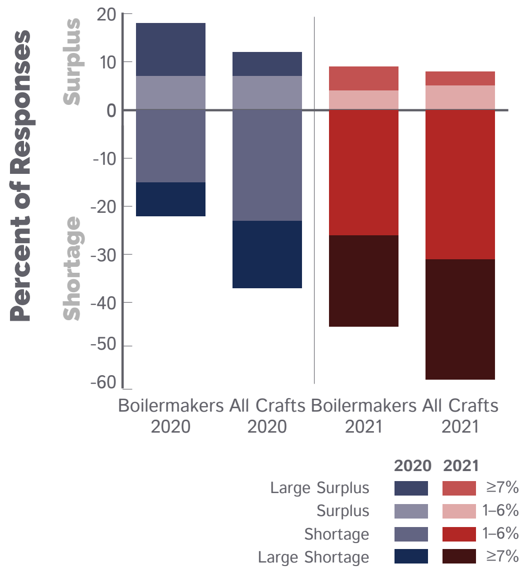
In each area of focus, two charts and a table are used to present the findings. Thus, for each craft there are nine presentations of the data, three (two bar charts and a table) for each area of focus listed above.

Additionally, results for All Crafts combined are included in the charts and tables so that each craft can be compared to the overall average of All Crafts included in this study.

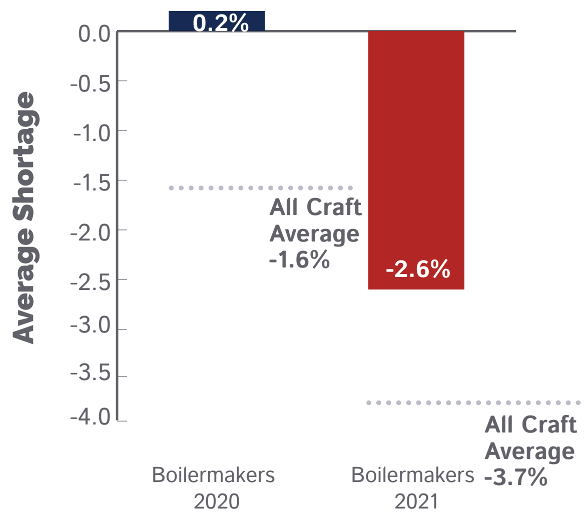
I. BOILERMAKERS

A. Historical Results: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Boilermakers



Average Shortage/Surplus—Boilermakers



Compared to Boilermakers in 2020, the percent of respondents who reported a:

- *shortage* of Boilermakers in 2021 was greater (2020: 22%, 2021: 45%).
- *surplus* of Boilermakers in 2021 was smaller (2020: 18%, 2021: 9%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Boilermakers in 2021 was smaller (Boilermakers: 45%, All Crafts: 56%).
- *surplus* of Boilermakers in 2021 was greater (Boilermakers: 9%, All Crafts: 8%).

Compared to Boilermakers in 2020:

- there was a *greater average shortage* of Boilermakers in 2021 in 2021 (2020: 0.2%, 2021: -2.6%).

Compared to All Crafts combined in 2021:

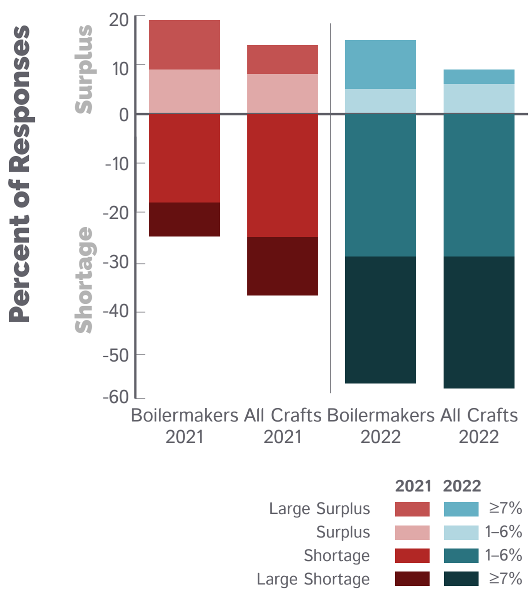
- there was a *smaller average shortage* of Boilermakers in 2021 (Boilermakers: -2.6%, All Crafts: -3.7%).

	2020		2021	
	Boilermakers	**All Crafts**	**Boilermakers**	**All Crafts**
Average	0.2%	-1.6%	-2.6%	-3.7%
Surplus	7%	7%	4%	5%
Large Surplus	11%	5%	5%	3%
Shortage	15%	23%	26%	31%
Large Shortage	7%	14%	19%	25%

I. BOILERMAKERS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting A Shortage/ Surplus—Boilermakers



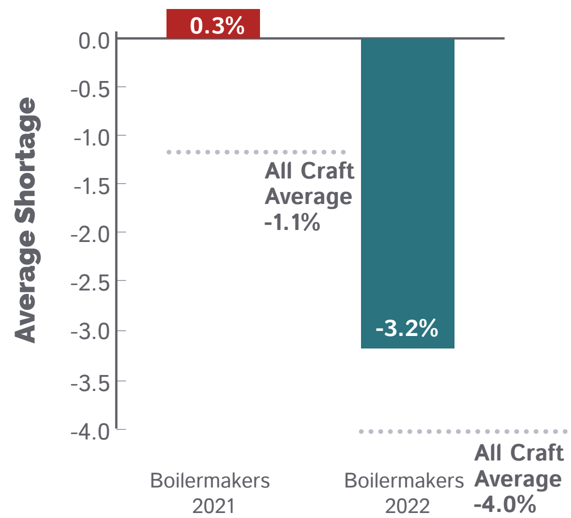
Compared to Boilermakers in 2021, the percent of respondents who projected a:

- *shortage* of Boilermakers in 2022 was greater (2021: 25%, 2022: 55%).
- *surplus* of Boilermakers in 2022 was smaller (2021: 19%, 2022: 15%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Boilermakers in 2022 was smaller (Boilermakers: 55%, All Crafts: 56%).
- *surplus* of Boilermakers in 2022 was greater (Boilermakers: 15%, All Crafts: 9%).

Average Shortage/Surplus Projections—Boilermakers



Compared to Boilermakers in 2021:

- there was a greater projected average *shortage* of Boilermakers in 2022 (2021: 0.3%, 2022: -3.2%).

Compared to All Crafts combined in 2022:

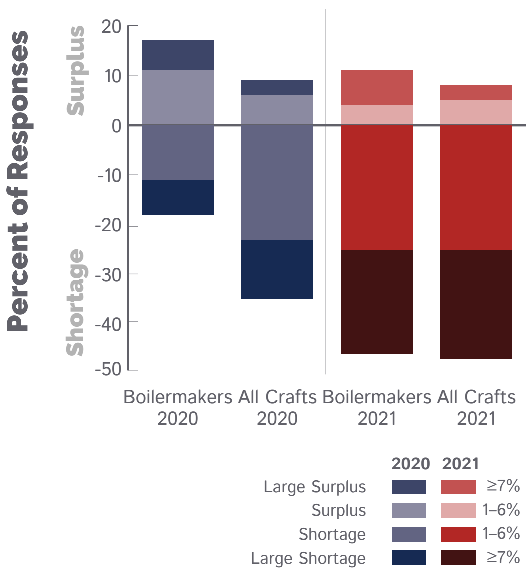
- there was a smaller projected average *shortage* of Boilermakers in 2022 (Boilermakers: -3.2%, All Crafts: -4%).

	2021		2022	
	Boilermakers	All Crafts	Boilermakers	All Crafts
Average	0.3%	-1.1%	-3.2%	-4.0%
Surplus	9%	8%	5%	6%
Large Surplus	10%	6%	10%	3%
Shortage	18%	25%	29%	29%
Large Shortage	7%	12%	26%	27%

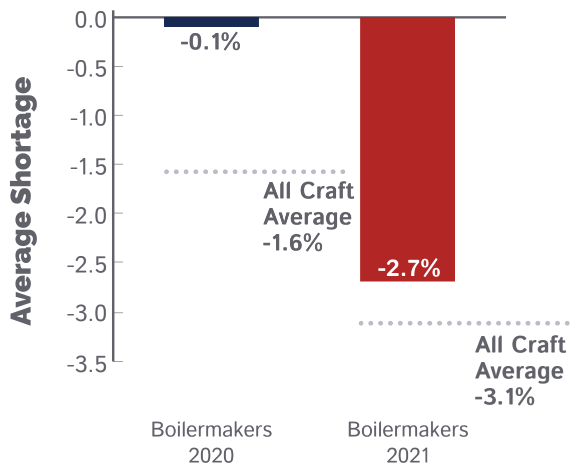
I. BOILERMAKERS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Boilermakers



Average Shortage/Surplus For Apprentices—Boilermakers



Compared to Boilermaker apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Boilermaker apprentices 2021 was greater (2020: 18%, 2021: 46%).
- *surplus* of Boilermaker apprentices in 2021 was smaller (2020: 17%, 2021: 11%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Boilermaker apprentices in 2021 was smaller (Boilermaker apprentices: 46%, All Crafts: 47%).
- *surplus* of Boilermaker apprentices in 2021 was greater (Boilermaker apprentices: 11%, All Crafts: 8%).

Compared to Boilermaker apprentices in 2020:

- there was a greater average *shortage* of Boilermaker apprentices in 2021 (2020: -0.1%, 2021: -2.7%).

Compared to All Crafts combined in 2021:

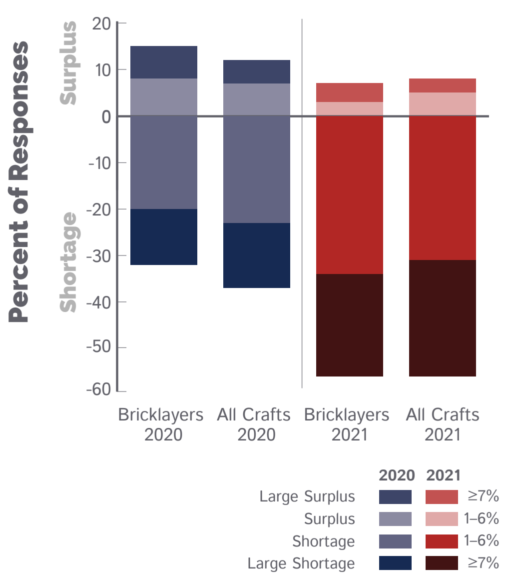
- there was a smaller average *shortage* of Boilermaker apprentices in 2021 (Boilermaker apprentices: -2.7%, All Crafts: -3.1%).

	2020		2021	
	Boilermakers	All Crafts	Boilermakers	All Crafts
Average	-0.1%	-1.6%	-2.7%	-3.1%
Surplus	11%	6%	4%	5%
Large Surplus	6%	3%	7%	3%
Shortage	11%	23%	25%	25%
Large Shortage	7%	12%	21%	22%

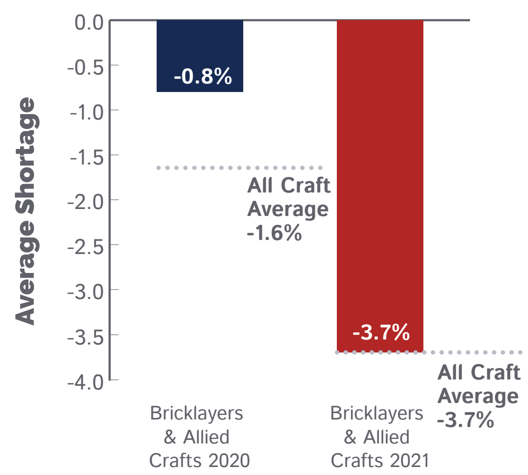
II. BRICKLAYERS & ALLIED CRAFTS

A. Historical Results: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Bricklayers & Allied Crafts



Average Shortage/Surplus—Bricklayers & Allied Crafts



Compared to Bricklayers & Allied Crafts in 2020, the percent of respondents who reported a:

- *shortage* of Bricklayers & Allied Crafts in 2021 was greater (2020: 32%, 2021: 56%).
- *surplus* of Bricklayers & Allied Crafts in 2021 was smaller (2020: 15%, 2021: 7%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Bricklayers & Allied Crafts in 2021 was the same (Bricklayers: 56%, All Crafts: 56%).
- *surplus* of Bricklayers & Allied Crafts in 2021 was smaller (Bricklayers: 7%, All Crafts: 8%).

Compared to Bricklayers & Allied Crafts in 2020:

- there was a greater average *shortage* of Bricklayers in 2021 (2020: -0.8%, 2021: -3.7%).

Compared to All Crafts combined in 2021:

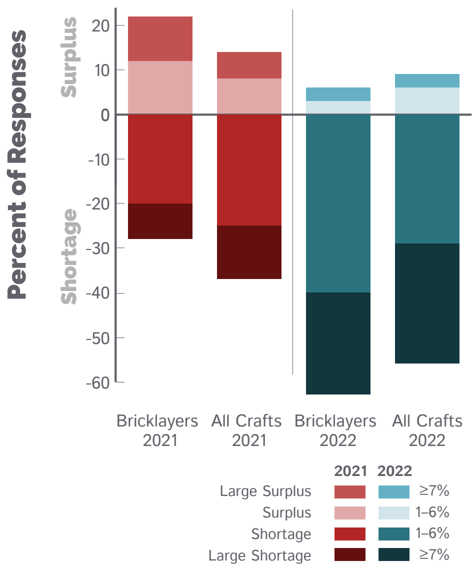
- there was the same average *shortage* of Bricklayers in 2021 (Bricklayers: -3.7%, All Crafts: -3.7%).

	2020		2021	
	Bricklayers & Allied Crafts	All Crafts	Bricklayers & Allied Crafts	All Crafts
Average	-0.8%	-1.6%	-3.7%	-3.7%
Surplus	8%	7%	3%	5%
Large Surplus	7%	5%	4%	3%
Shortage	20%	23%	34%	31%
Large Shortage	12%	14%	22%	25%

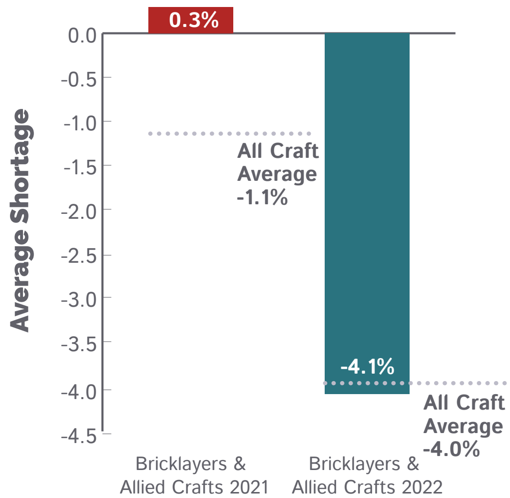
II. BRICKLAYERS & ALLIED CRAFTS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/ Surplus—Bricklayers & Allied Crafts



Average Shortage/Surplus Projections—Bricklayers & Allied Crafts



Compared to Bricklayers & Allied Crafts in 2021, the percent of respondents who projected a:

- *shortage* of Bricklayers & Allied Crafts in 2022 was greater (2021: 28%, 2022: 63%).
- *surplus* of Bricklayers & Allied Crafts in 2022 was smaller (2021: 22%, 2022: 6%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Bricklayers & Allied Crafts in 2022 was greater (Bricklayers: 63%, All Crafts: 56%).
- *surplus* of Bricklayers & Allied Crafts in 2022 was smaller (Bricklayers: 6%, All Crafts: 9%).

Compared to Bricklayers & Allied Crafts in 2021:

- there was a greater projected average *shortage* of Bricklayers in 2022 (2021: 0.3%, 2022: -4.1%).

Compared to All Crafts combined in 2022:

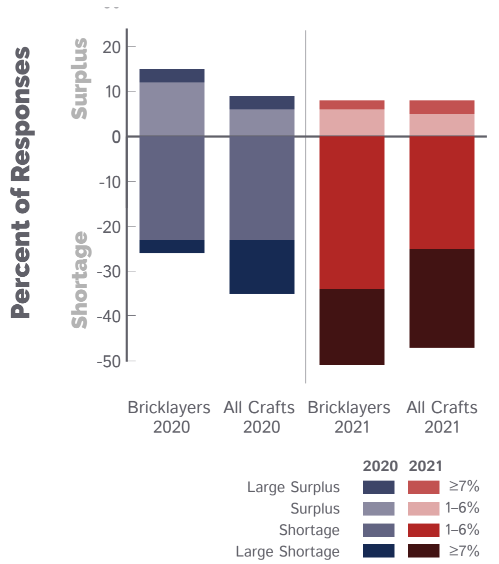
- there was a greater projected average shortage of Bricklayers in 2022 (Bricklayers: -4.1%, All Crafts: -4%).

	2021		2022	
	Bricklayers & Allied Crafts	All Crafts	Bricklayers & Allied Crafts	All Crafts
Average	0.3%	-1.1%	-4.1%	-4.0%
Surplus	12%	8%	3%	6%
Large Surplus	10%	6%	3%	3%
Shortage	20%	25%	40%	29%
Large Shortage	8%	12%	23%	27%

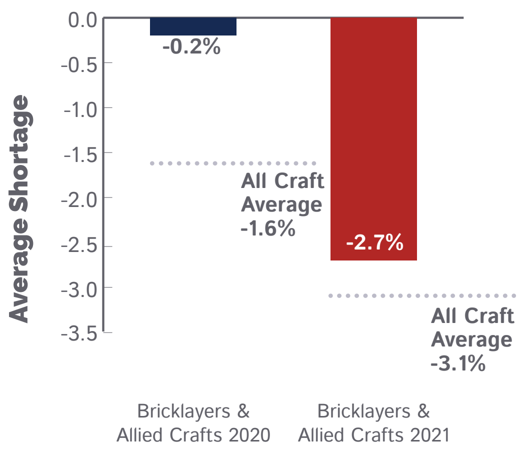
II. BRICKLAYERS & ALLIED CRAFTS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Bricklayers & Allied Crafts



Average Shortage/Surplus for Apprentices—Bricklayers & Allied Crafts



Compared to Bricklayer & Allied Craft apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Bricklayer & Allied Craft apprentices in 2021 was greater (2020: 26%, 2021: 51%).
- *surplus* of Bricklayer & Allied Craft apprentices in 2021 was smaller (2020: 15%, 2021: 8%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Bricklayer & Allied Craft apprentices in 2021 was greater (Bricklayer apprentices: 51%, All Crafts: 47%).
- *surplus* of Bricklayer & Allied Craft apprentices in 2021 was the same (Bricklayer apprentices: 8%, All Crafts: 8%).

Compared to Bricklayer & Allied Craft apprentices in 2020:

- there was a greater average *shortage* of Bricklayer apprentices in 2021 (2020: -0.2%, 2021: -2.7%).

Compared to All Crafts combined in 2021:

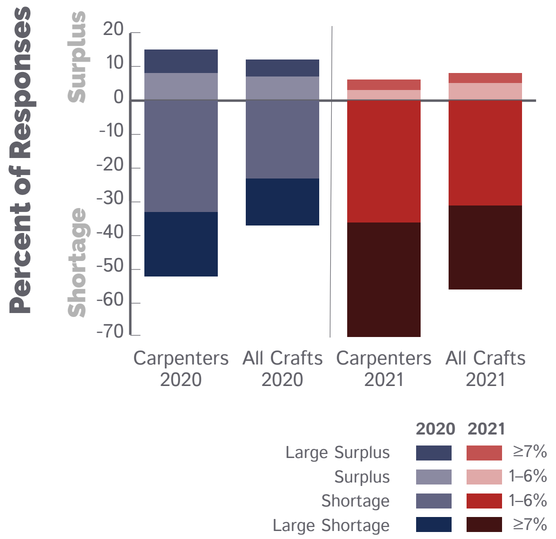
- there was a smaller average *shortage* of Bricklayer apprentices in 2021 (Bricklayer apprentices: -2.7%, All Crafts: -3.1%).

	2020		2021	
	Bricklayers & Allied Crafts	All Crafts	Bricklayers & Allied Crafts	All Crafts
Average	-0.2%	-1.6%	-2.7%	-3.1%
Surplus	12%	6%	6%	5%
Large Surplus	3%	3%	2%	3%
Shortage	23%	23%	34%	25%
Large Shortage	3%	12%	17%	22%

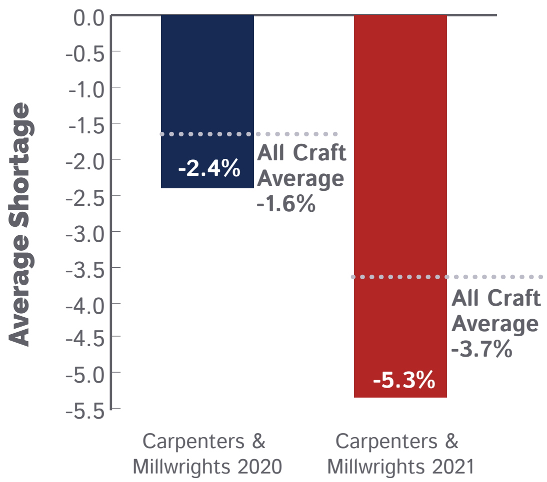
III. CARPENTERS & MILLWRIGHTS

A. Historical Results: 2020 & 2021

Percent of Responses Stating a Shortage/ Surplus—Carpenters & Millwrights



Average Shortage/Surplus—Carpenters & Millwrights



Compared to Carpenters & Millwrights in 2020, the percent of respondents who reported a:

- *shortage* of Carpenters & Millwrights in 2021 was greater (2020: 52%, 2021: 70%).
- *surplus* of Carpenters & Millwrights in 2021 was smaller (2020: 15%, 2021: 6%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Carpenters & Millwrights in 2021 was greater (Carpenters & Millwrights: 70%, All Crafts: 56%).
- *surplus* of Carpenters & Millwrights in 2021 was smaller (Carpenters & Millwrights: 6%, All Crafts: 8%).

Compared to Carpenters & Millwrights in 2020:

- there was a greater average *shortage* of Carpenters & Millwrights in 2021 (2020: -2.4%, 2021: -5.3%).

Compared to All Crafts combined in 2021:

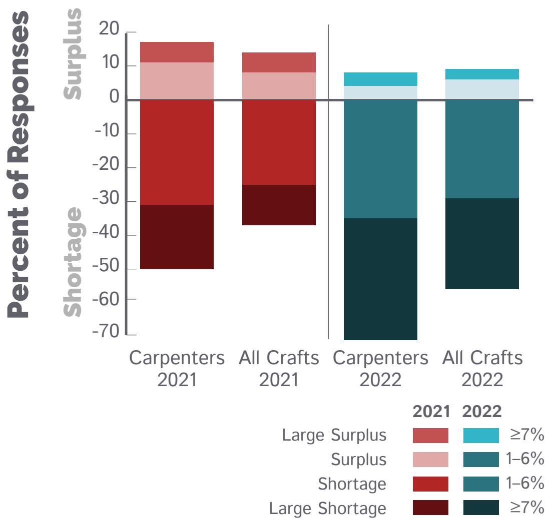
- there was a greater average *shortage* of Carpenters & Millwrights in 2021 (Carpenters & Millwrights: -5.3%, All Crafts: -3.7%).

	2020		2021	
	Carpenters & Millwrights	**All Crafts**	**Carpenters & Millwrights**	**All Crafts**
Average	-2.4%	-1.6%	-5.3%	-3.7%
Surplus	8%	7%	3%	5%
Large Surplus	7%	5%	3%	3%
Shortage	33%	23%	36%	31%
Large Shortage	19%	14%	34%	25%

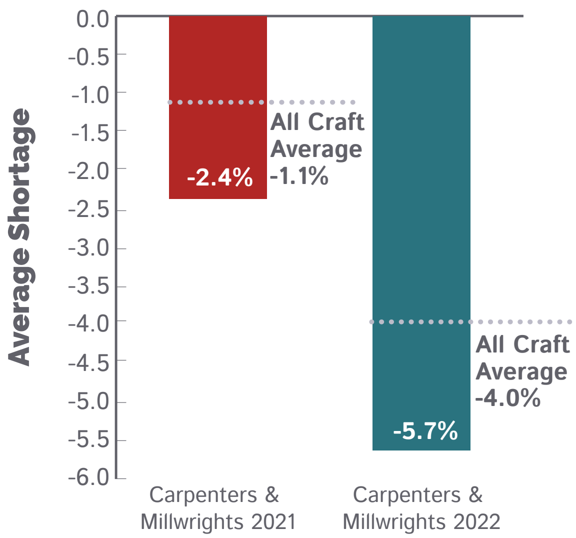
III. CARPENTERS & MILLWRIGHTS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/Surplus—Carpenters & Millwrights



Average Shortage/Surplus Projections—Carpenters & Millwrights



Compared to Carpenters & Millwrights in 2021, the percent of respondents who projected a:

- *shortage* of Carpenters & Millwrights in 2022 was greater (2021: 50%, 2022: 71%).
- *surplus* of Carpenters & Millwrights in 2022 was smaller (2021: 17%, 2022: 8%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Carpenters & Millwrights in 2022 was greater (Carpenters & Millwrights: 71%, All Crafts: 56%).
- *surplus* of Carpenters & Millwrights in 2022 was smaller (Carpenters & Millwrights: 8%, All Crafts: 9%).

Compared to Carpenters & Millwrights in 2021:

- there was a greater projected average *shortage* of Carpenters & Millwrights in 2022 (2021: -2.4%, 2022: -5.7%).

Compared to All Crafts combined in 2022:

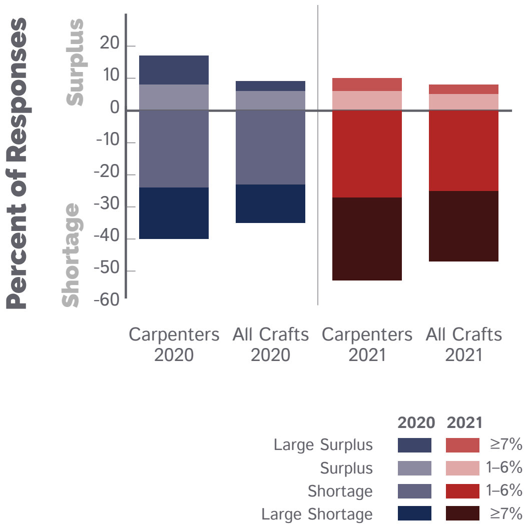
- there was a greater projected average *shortage* of Carpenters & Millwrights in 2022 (Carpenters & Millwrights: -5.7%, All Crafts: -4%).

	2021		2022	
	Carpenters & Millwrights	All Crafts	Carpenters & Millwrights	All Crafts
Average	-2.4%	-1.1%	-5.7%	-4.0%
Surplus	11%	8%	4%	6%
Large Surplus	6%	6%	4%	3%
Shortage	31%	25%	35%	29%
Large Shortage	19%	12%	36%	27%

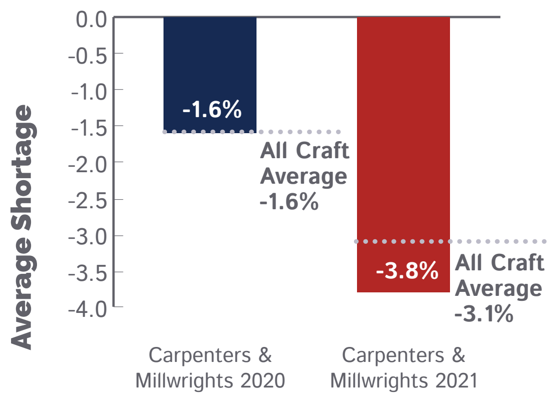
III. CARPENTERS & MILLWRIGHTS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/ Surplus—Carpenters & Millwrights



Average Shortage/Surplus for Apprentices—Carpenters & Millwrights



Compared to Carpenter & Millwright apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Carpenter & Millwright apprentices in 2021 was greater (2020: 40%, 2021: 53%).
- *surplus* of Carpenter & Millwright apprentices in 2021 was smaller (2020: 17%, 2021: 10%)

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Carpenter & Millwright apprentices in 2021 was greater (Carpenter & Millwright apprentices: 53%, All Crafts: 47%).
- *surplus* of Carpenter & Millwright apprentices in 2021 was greater (Carpenter & Millwright apprentices: 10%, All Crafts: 8%).

Compared to Carpenter & Millwright apprentices in 2020:

- there was a greater average *shortage* of Carpenter & Millwright apprentices in 2021 (2020: -1.6%, 2021: -3.8%).

Compared to All Crafts combined in 2021:

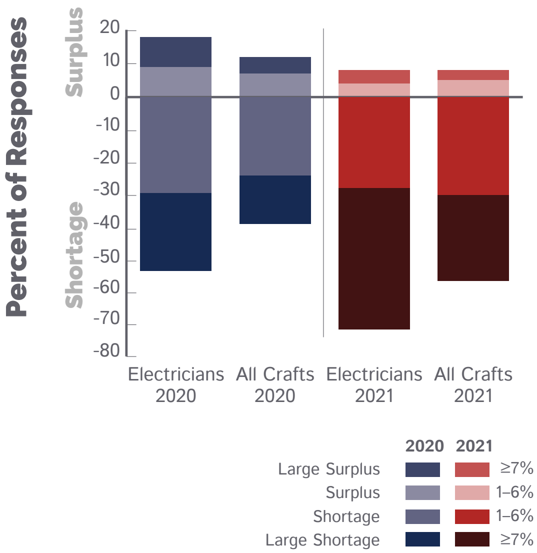
- there was a greater average *shortage* of Carpenter & Millwright apprentices in 2021 (Carpenter & Millwright apprentices: -3.8%, All Crafts: -3.1%).

	2020		2021	
	Carpenters & Millwrights	All Crafts	Carpenters & Millwrights	All Crafts
Average	-1.6%	-1.6%	-3.8%	-3.1%
Surplus	8%	6%	6%	5%
Large Surplus	9%	3%	4%	3%
Shortage	24%	23%	27%	25%
Large Shortage	16%	12%	26%	22%

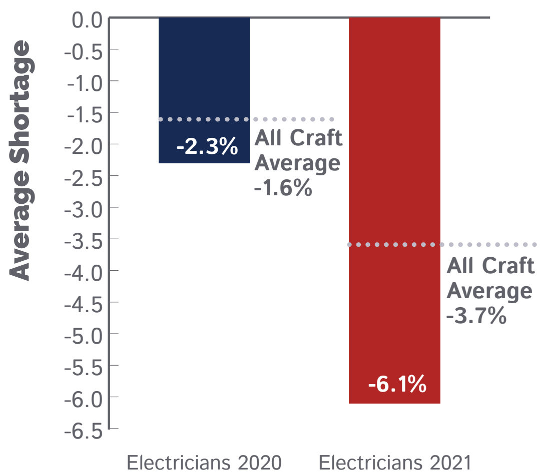
IV. ELECTRICIANS

A. Historical Results: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Electricians



Average Shortage/Surplus—Electricians



Compared to Electricians in 2020, the percent of respondents who reported a:

- *shortage* of Electricians in 2021 was greater (2020: 52%, 2021: 72%).
- *surplus* of Electricians in 2021 was smaller (2020: 18%, 2021: 8%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Electricians in 2021 was greater (Electricians: 72%, All Crafts: 56%).
- *surplus* of Electricians in 2021 was the same (Electricians: 8%, All Crafts: 8%).

Compared to Electricians in 2020:

- there was greater average *shortage* of Electricians in 2021 (2020: -2.3%, 2021: -6.1%).

Compared to All Crafts combined in 2021:

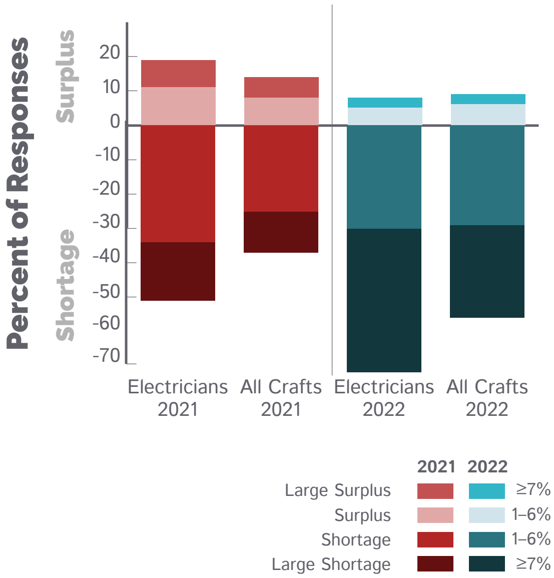
- there was a a greater average *shortage* of Electricians in 2021 (Electricians: -6.1%, All Crafts: -3.7%).

	2020		2021	
	Electricians	**All Crafts**	**Electricians**	**All Crafts**
Average	-2.3%	-1.6%	-6.1%	-3.7%
Surplus	9%	7%	4%	5%
Large Surplus	9%	5%	4%	3%
Shortage	30%	23%	28%	31%
Large Shortage	22%	14%	44%	25%

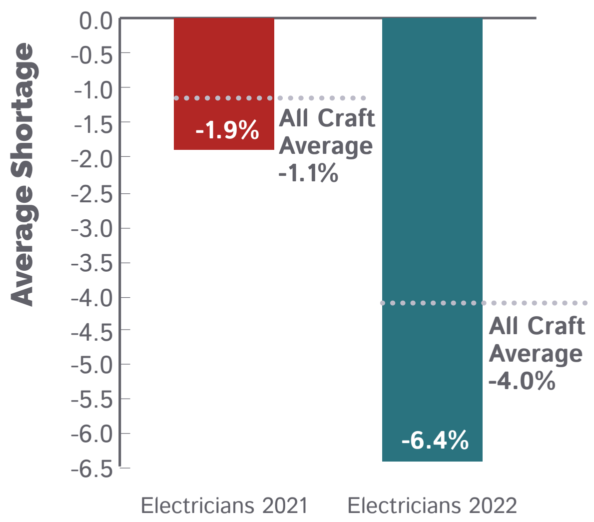
IV. ELECTRICIANS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/ Surplus—Electricians



Average Shortage/Surplus Projections—Electricians



Compared to Electricians in 2021, the percent of respondents who projected a:

- *shortage* of Electricians in 2022 was greater (2021: 51%, 2022: 72%).
- *surplus* of Electricians in 2022 was smaller (2021: 19%, 2022: 8%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Electricians in 2022 was greater (Electricians: 72%, All Crafts: 56%).
- *surplus* of Electricians in 2022 was smaller (Electricians: 8%, All Crafts: 9%).

Compared to Electricians in 2021:

- there was a greater projected average *shortage* of Electricians in 2022 (2021: -1.9%, 2022: -6.4%).

Compared to All Crafts combined in 2022:

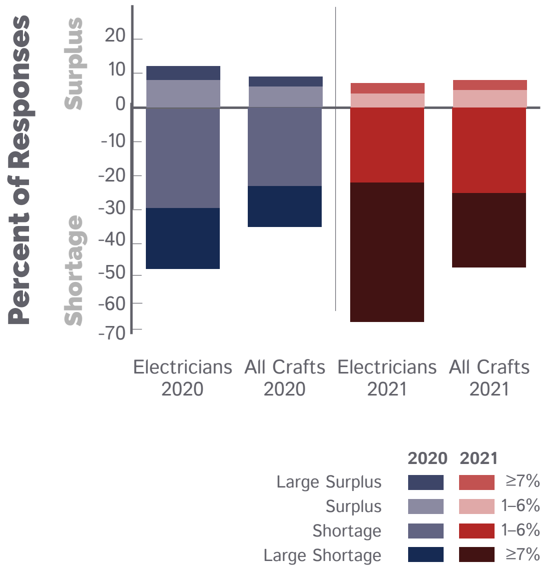
- there was a greater projected average *shortage* of Electricians in 2022 (Electricians: -6.4%, All Crafts: -4%).

	2021		2022	
	Electricians	All Crafts	Electricians	All Crafts
Average	-1.9%	-1.1%	-6.4%	-4.0%
Surplus	11%	8%	5%	6%
Large Surplus	8%	6%	3%	3%
Shortage	34%	25%	30%	29%
Large Shortage	17%	12%	42%	27%

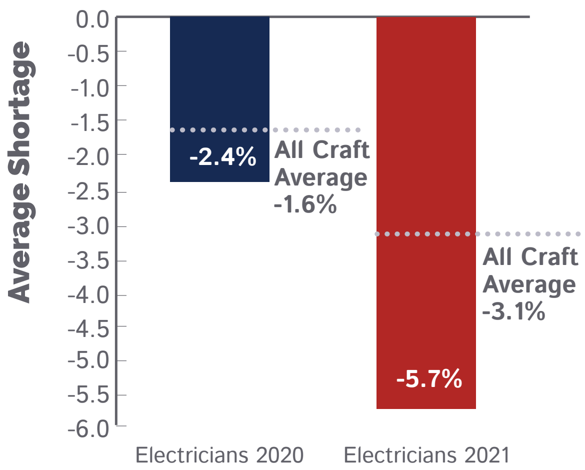
IV. ELECTRICIANS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/ Surplus—Electricians



Average Shortage/Surplus for Apprentices—Electricians



Compared to Electrician apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Electrician apprentices in 2021 was greater (2020: 47%, 2021: 63%).
- *surplus* of Electrician apprentices in 2021 was smaller (2020: 12%, 2021: 7%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Electrician apprentices in 2021 was greater (Electrician apprentices: 63%, All Crafts: 47%).
- *surplus* of Electrician apprentices in 2021 was smaller (Electrician apprentices: 7%, All Crafts: 8%).

Compared to Electrician apprentices in 2020:

- there was a greater average *shortage* of Electrician apprentices in 2021 (2020: -2.4%, 2021: -5.7%).

Compared to All Crafts combined in 2021:

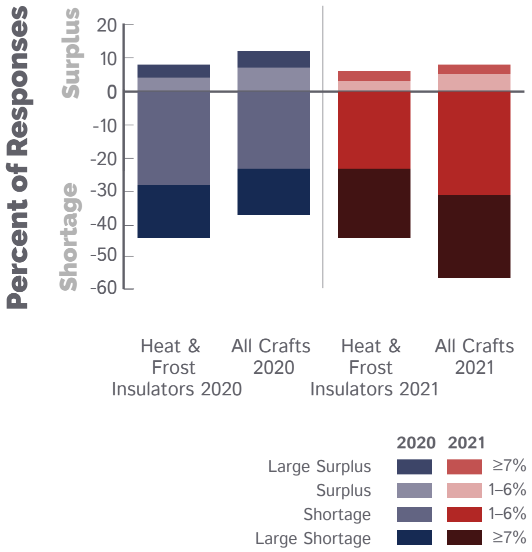
- there was a greater average *shortage* of Electrician apprentices in 2021 (Electrician apprentices: -5.7%, All Crafts: -3.1%).

	2020		2021	
	Electricians	All Crafts	Electricians	All Crafts
Average	-2.4%	-1.6%	-5.7%	-3.1%
Surplus	8%	6%	4%	5%
Large Surplus	4%	3%	3%	3%
Shortage	29%	23%	22%	25%
Large Shortage	18%	12%	41%	22%

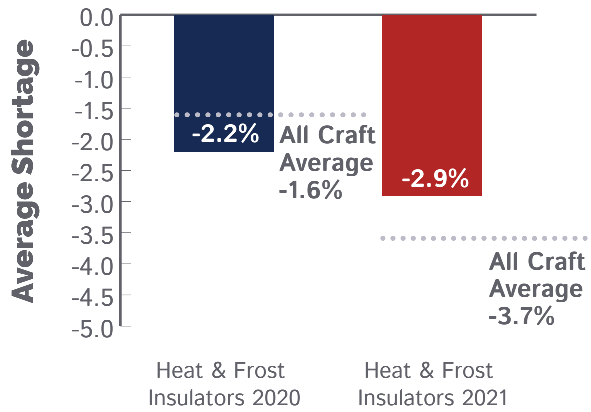
V. HEAT & FROST INSULATORS

A. Historical Results: 2020 & 2021

Percent of Responses Stating a Shortage/ Surplus—Heat & Frost Insulators



Average Shortage/Surplus—Heat & Frost Insulators



Compared to Heat & Frost Insulators in 2020, the percent of respondents who reported a:

- *shortage* of Heat & Frost Insulators in 2021 was the same (2020: 44%, 2021: 44%).
- *surplus* of Heat & Frost Insulators in 2021 was smaller (2020: 8%, 2021: 6%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Heat & Frost Insulators in 2021 was smaller (Insulators: 44%, All Crafts: 56%).
- *surplus* of Heat & Frost Insulators in 2021 was smaller (Insulators: 6%, All Crafts: 8%).

Compared to Heat & Frost Insulators in 2020:

- there was a greater average *shortage* of Insulators in 2021 (2020: -2.2%, 2021: -2.9%).

Compared to All Crafts combined in 2021:

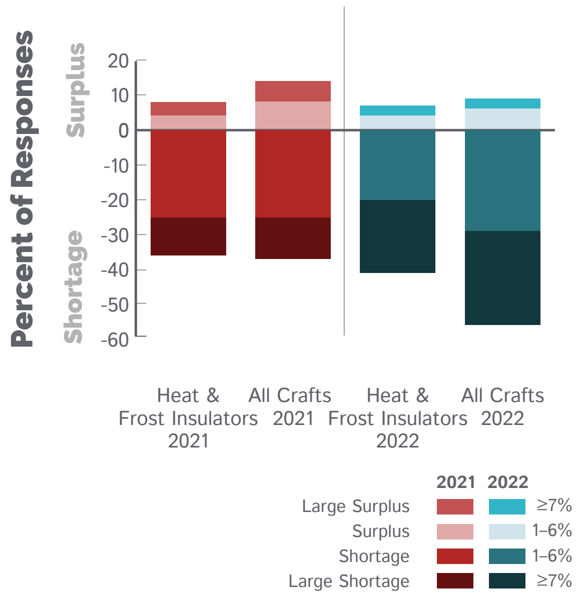
- there was a a smaller average *shortage* of Insulators in 2021 (Insulators: -2.9%, All Crafts: -3.7%).

	2020		2021	
	Heat & Frost Insulators	**All Crafts**	**Heat & Frost Insulators**	**All Crafts**
Average	-2.2%	-1.6%	-2.9%	-3.7%
Surplus	4%	7%	3%	5%
Large Surplus	4%	5%	3%	3%
Shortage	28%	23%	23%	31%
Large Shortage	16%	14%	21%	25%

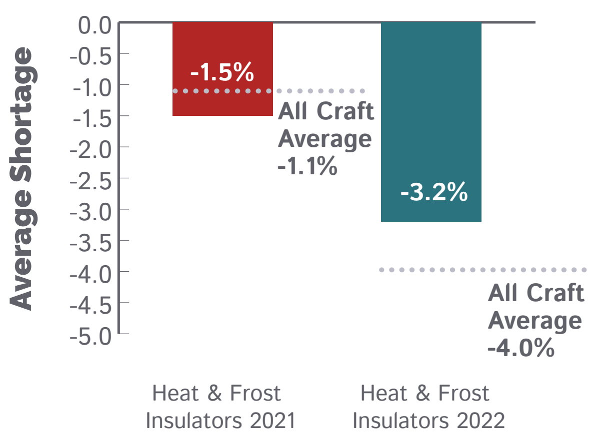
V. HEAT & FROST INSULATORS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/Surplus—Heat & Frost Insulators



Average Shortage/Surplus Projections—Heat & Frost Insulators



Compared to Heat & Frost Insulators in 2021, the percent of respondents who projected a:

- *shortage* of Heat & Frost Insulators in 2022 was greater (2021: 36%, 2022: 41%).
- *surplus* of Heat & Frost Insulators in 2022 was smaller (2021: 8%, 2022: 7%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Heat & Frost Insulators in 2022 was smaller (Insulators: 41%, All Crafts: 56%).
- *surplus* of Heat & Frost Insulators in 2022 was smaller (Insulators: 7%, All Crafts: 9%).

Compared to Heat & Frost Insulators in 2021:

- there was a greater projected average shortage of Insulators in 2022 (2021: -1.5%, 2022: -3.2%).

Compared to All Crafts combined in 2022:

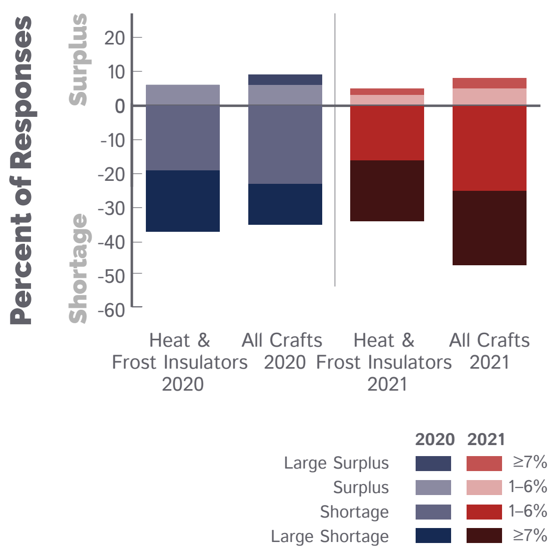
- there was a smaller projected average shortage of Insulators in 2022 (Insulators: -3.2%, All Crafts: -4%).

	2021		2022	
	Heat & Frost Insulators	All Crafts	Heat & Frost Insulators	All Crafts
Average	-1.5%	-1.1%	-3.2%	-4.0%
Surplus	4%	8%	4%	6%
Large Surplus	4%	6%	3%	3%
Shortage	25%	25%	20%	29%
Large Shortage	11%	12%	21%	27%

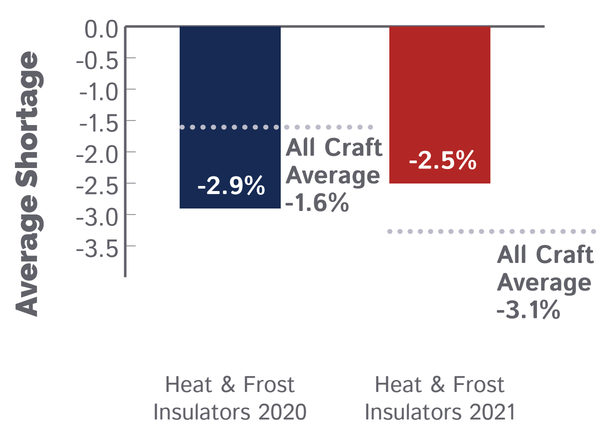
V. HEAT & FROST INSULATORS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/ Surplus—Heat & Frost Insulators



Average Shortage/Surplus for Apprentices—Heat & Frost Insulators



Compared to Heat & Frost Insulator apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Heat & Frost Insulator apprentices in 2021 was smaller (2020: 37%, 2021: 34%).
- *surplus* of Heat & Frost Insulator apprentices in 2021 was smaller (2020: 6%, 2021: 5%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Heat & Frost Insulator apprentices in 2021 was smaller (Insulator apprentices: 34%, All Crafts: 47%).
- *surplus* of Heat & Frost Insulator apprentices in 2021 was smaller (Insulator apprentices: 5%, All Crafts: 8%).

Compared to Heat & Frost Insulator apprentices in 2020:

- there was a smaller average *shortage* of Insulator apprentices in 2021 (2020: -2.9%, 2021: -2.5%).

Compared to All Crafts combined in 2021:

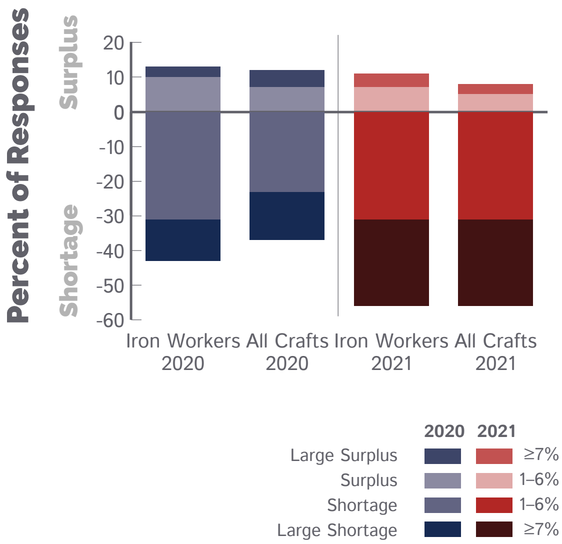
- there was a smaller average *shortage* of Insulator apprentices in 2021 (Insulator apprentices: -2.5%, All Crafts: -3.1%).

	2020		2021	
	Heat & Frost Insulators	All Crafts	Heat & Frost Insulators	All Crafts
Average	-2.9%	-1.6%	-2.5%	-3.1%
Surplus	6%	6%	3%	5%
Large Surplus	0%	3%	2%	3%
Shortage	19%	23%	16%	25%
Large Shortage	18%	12%	18%	22%

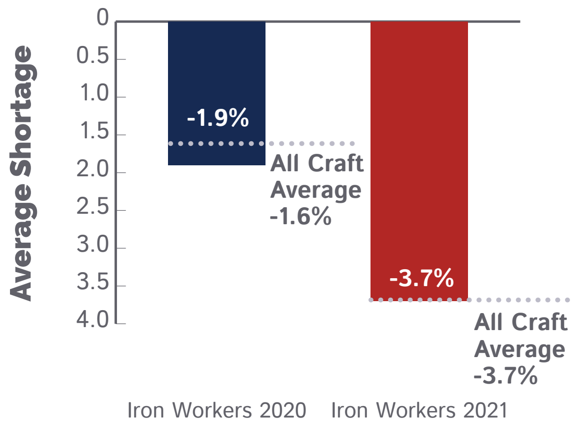
VI. IRONWORKERS

A. Historical Results: 2020 & 2021

Percent of Responses Stating a Shortage/ Surplus—Ironworkers



Average Shortage/Surplus—Ironworkers



Compared to Ironworkers in 2020, the percent of respondents who reported a:

- *shortage* of Ironworkers in 2021 was greater (2020: 43%, 2021: 56%).
- *surplus* of Ironworkers in 2021 was smaller (2020: 13%, 2021: 11%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Ironworkers in 2021 was the same (Ironworkers: 56%, All Crafts: 56%).
- *surplus* of Ironworkers in 2021 was greater (Ironworkers: 11%, All Crafts: 8%).

Compared to Ironworkers in 2020:

- there was a greater average *shortage* of Ironworkers in 2021 (2020: -1.9%, 2021: -3.7%).

Compared to All Crafts combined in 2021:

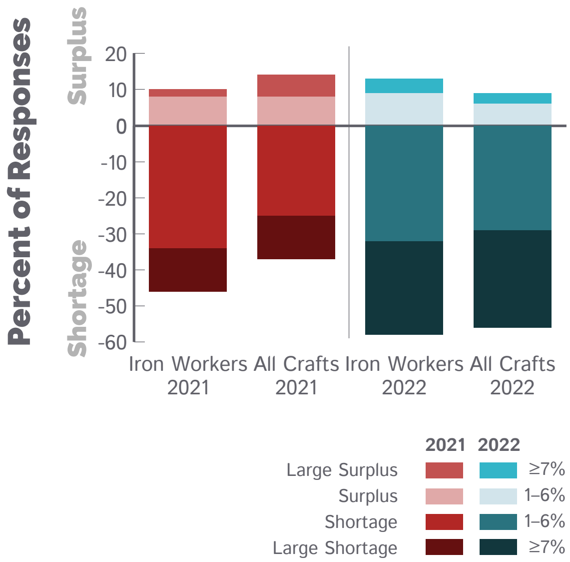
- there was the same average *shortage* of Ironworkers in 2021 (Ironworkers: -3.7%, All Crafts: -3.7%).

	2020		2021	
	Ironworkers	**All Crafts**	**Ironworkers**	**All Crafts**
Average	-1.9%	-1.6%	-3.7%	-3.7%
Surplus	10%	7%	7%	5%
Large Surplus	3%	5%	4%	3%
Shortage	31%	23%	31%	31%
Large Shortage	12%	14%	25%	25%

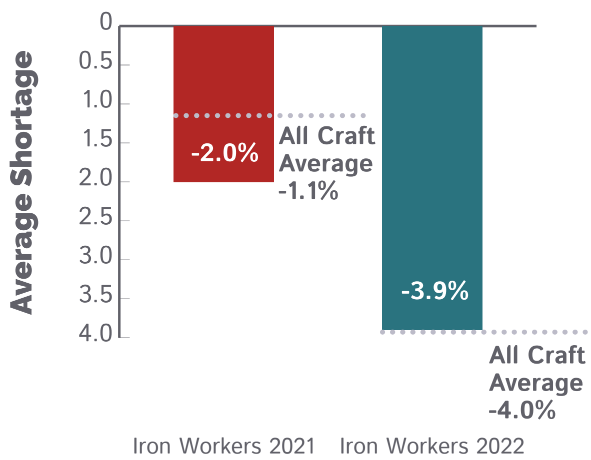
VI. IRONWORKERS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/ Surplus—Ironworkers



Average Shortage/Surplus Projections—Ironworkers



Compared to Ironworkers in 2021, the percent of respondents who projected a:

- *shortage* of Ironworkers in 2022 was greater (2021: 46%, 2022: 58%).
- *surplus* of Ironworkers in 2022 was greater (2021: 10%, 2022: 13%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Ironworkers in 2022 was greater (Ironworkers: 58%, All Crafts: 56%).
- *surplus* of Ironworkers in 2022 was greater (Ironworkers: 13%, All Crafts: 9%).

Compared to Ironworkers in 2021:

- there was a greater projected average *shortage* of Ironworkers in 2022 (2021: -2%, 2022: -3.9%).

Compared to All Crafts combined in 2022:

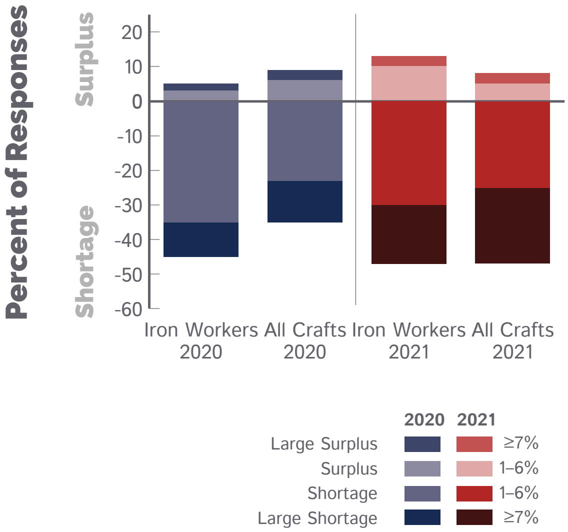
- there was a smaller projected average *shortage* of Ironworkers in 2022 (Ironworkers: -3.9%, All Crafts: -4%).

	2021		2022	
	Ironworkers	All Crafts	Ironworkers	All Crafts
Average	-2.0%	-1.1%	-3.9%	-4.0%
Surplus	8%	8%	9%	6%
Large Surplus	2%	6%	4%	3%
Shortage	34%	25%	32%	29%
Large Shortage	12%	12%	26%	27%

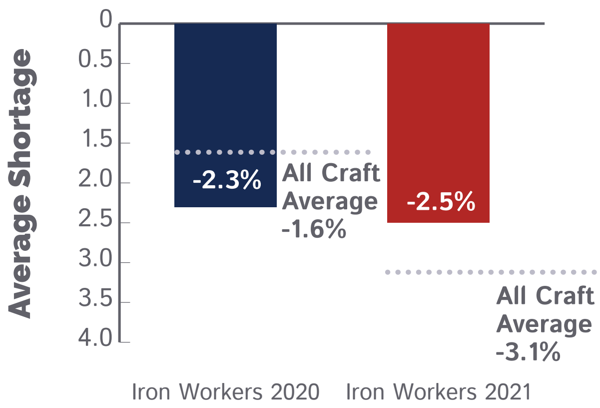
VI. IRONWORKERS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Ironworkers



Average Shortage/Surplus for Apprentices—Ironworkers



Compared to Ironworker apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Ironworker apprentices in 2021 was greater (2020: 45%, 2021: 47%).
- *surplus* of Ironworker apprentices in 2021 was greater (2020: 5%, 2021: 13%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Ironworker apprentices in 2021 was the same (Ironworker apprentices: 47%, All Crafts: 47%).
- *surplus* of Ironworker apprentices in 2021 was greater (Ironworker apprentices: 13%, All Crafts: 8%).

Compared to Ironworker apprentices in 2020:

- there was a greater average *shortage* of Ironworker apprentices in 2021 (2020: -2.3%, 2021: -2.5%).

Compared to All Crafts combined in 2021:

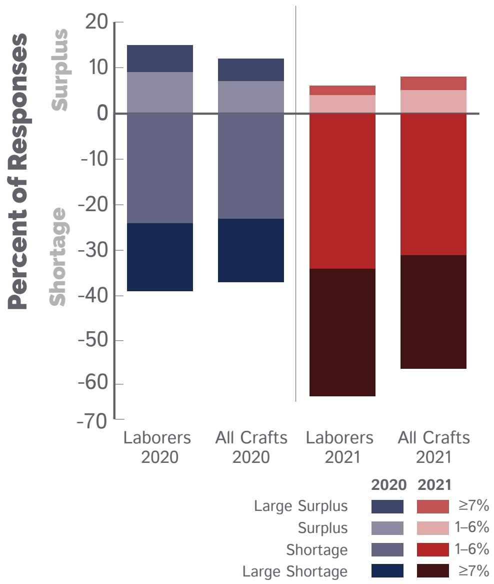
- there was a smaller average *shortage* of Ironworker apprentices in 2021 (Ironworker apprentices: -2.5%, All Crafts: -3.1%).

	2020		2021	
	Ironworkers	All Crafts	Ironworkers	All Crafts
Average	-2.3%	-1.6%	-2.5%	-3.1%
Surplus	3%	6%	10%	5%
Large Surplus	2%	3%	3%	3%
Shortage	35%	23%	30%	25%
Large Shortage	10%	12%	17%	22%

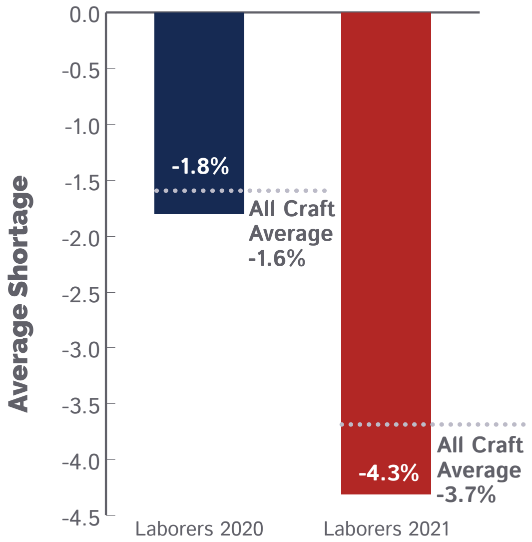
VII. LABORERS

A. Historical Results: 2020 & 2021

Percent of Responses Stating a Shortage/ Surplus—Laborers



Average Shortage/Surplus—Laborers



Compared to Laborers in 2020, the percent of respondents who reported a:

- *shortage* of Laborers in 2021 was greater (2020: 39%, 2021: 62%).
- *surplus* of Laborers in 2021 was smaller (2020: 15%, 2021: 6%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Laborers in 2021 was greater (Laborers: 62%, All Crafts: 56%).
- *surplus* of Laborers in 2021 was smaller (Laborers: 6%, All Crafts: 8%).

Compared to Laborers in 2020:

- there was a greater average *shortage* of Laborers in 2021 (2020: -1.8%, 2021: -4.3%).

Compared to All Crafts combined in 2021:

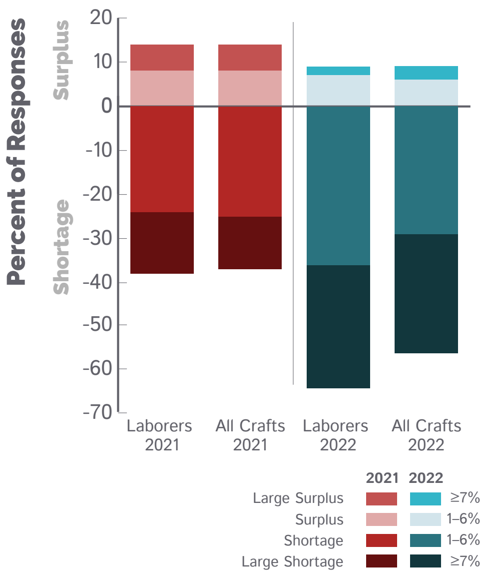
- there was a greater average *shortage* of Laborers in 2021 (Laborers: -4.3%, All Crafts: -3.7%).

	2020		2021	
	Laborers	All Crafts	Laborers	All Crafts
Average	-1.8%	-1.6%	-4.3%	-3.7%
Surplus	9%	7%	4%	5%
Large Surplus	6%	5%	2%	3%
Shortage	24%	23%	34%	31%
Large Shortage	15%	14%	28%	25%

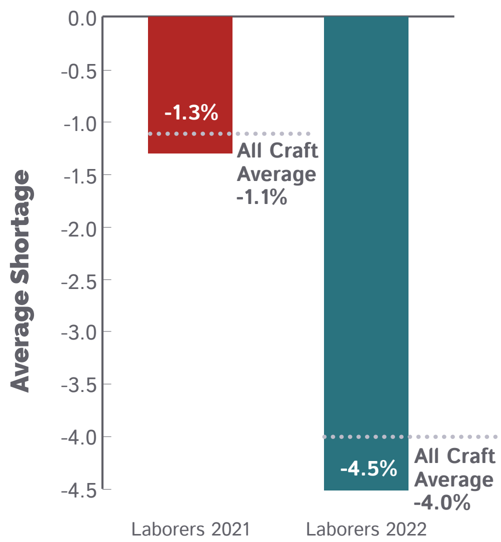
VII. LABORERS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/Surplus—Laborers



Average Shortage/Surplus Projections—Laborers



Compared to Laborers in 2021, the percent of respondents who projected a:

- *shortage* of Laborers in 2022 was greater (2021: 38%, 2022: 64%).
- *surplus* of Laborers in 2022 was smaller (2021: 14%, 2022: 9%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Laborers in 2022 was greater (Laborers: 64%, All Crafts: 56%).
- *surplus* of Laborers in 2022 was the same (Laborers: 9%, All Crafts: 9%).

Compared to Laborers in 2021:

- there was a greater projected average *shortage* of Laborers in 2022 (2021: -1.3%, 2022: -4.5%).

Compared to All Crafts combined in 2022:

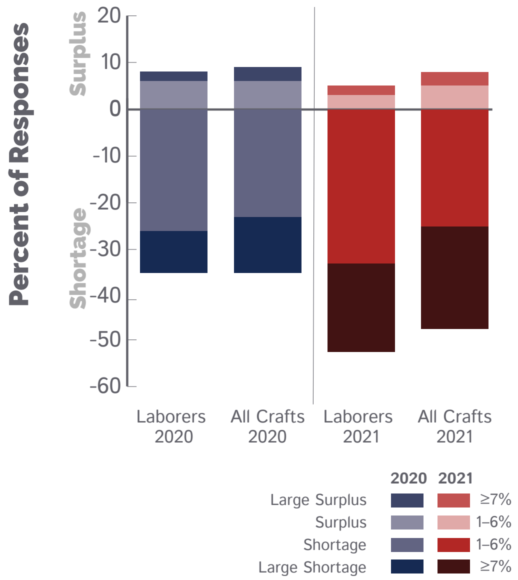
- there was a greater projected average *shortage* of Laborers in 2022 (Laborers: -4.5%, All Crafts: -4%).

	2021		2022	
	Laborers	All Crafts	Laborers	All Crafts
Average	-1.3%	-1.1%	-4.5%	-4.0%
Surplus	8%	8%	7%	6%
Large Surplus	6%	6%	2%	3%
Shortage	24%	25%	36%	29%
Large Shortage	14%	12%	28%	27%

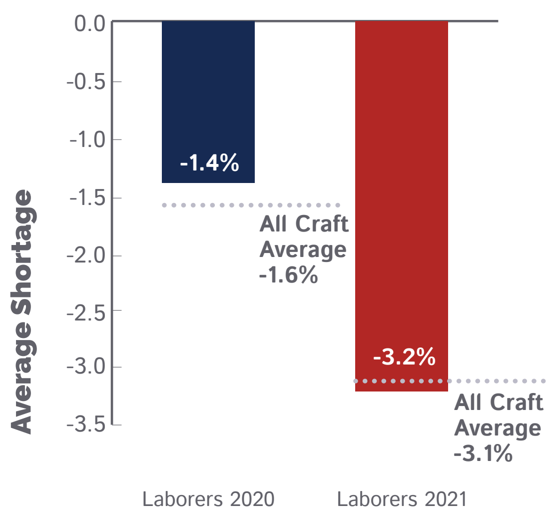
VII. LABORERS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/ Surplus—Laborers



Average Shortage/Surplus for Apprentices - Laborers



Compared to Laborer apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Laborers in 2021 was greater (2020: 35%, 2021: 52%).
- *surplus* of Laborers in 2021 was smaller (2020: 8%, 2021: 5%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Laborer apprentices in 2021 was greater (Laborer apprentices: 52%, All Crafts: 47%).
- *surplus* of Laborer apprentices in 2021 was smaller (Laborer apprentices: 5%, All Crafts: 8%).

Compared to Laborer apprentices in 2020:

- there was a greater average *shortage* of Laborer apprentices in 2021 (2020: -1.4%, 2021: -3.2%).

Compared to All Crafts combined in 2021:

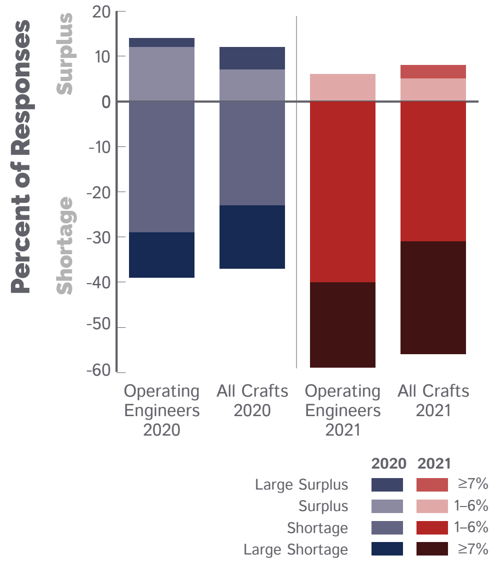
- there was a greater average *shortage* of Laborer apprentices in 2021 (Laborer apprentices: -3.2%, All Crafts: -3.1%).

	2020		2021	
	Laborers	All Crafts	Laborers	All Crafts
Average	-1.4%	-1.6%	-3.2%	-3.1%
Surplus	6%	6%	3%	5%
Large Surplus	2%	3%	2%	3%
Shortage	26%	23%	33%	25%
Large Shortage	9%	12%	19%	22%

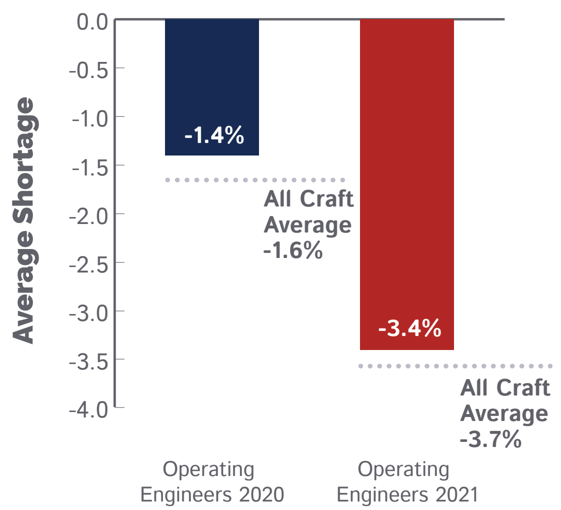
VIII. OPERATING ENGINEERS

A. Historical Results: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Operating Engineers



Average Shortage/Surplus—Operating Engineers



Compared to Operating Engineers in 2020, the percent of respondents who reported a:

- *shortage* of Operating Engineers in 2021 was greater (2020: 39%, 2021: 59%).
- *surplus* of Operating Engineers in 2021 was smaller (2020: 14%, 2021: 6%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Operating Engineers in 2021 was greater (Operating Engineers: 59%, All Crafts: 56%).
- *surplus* of Operating Engineers in 2021 was smaller (Operating Engineers: 6%, All Crafts: 8%)..

Compared to Operating Engineers in 2020:

- there was a greater average *shortage* of Operating Engineers in 2021 (2020: -1.4%, 2021: -3.4%).

Compared to All Crafts combined in 2021:

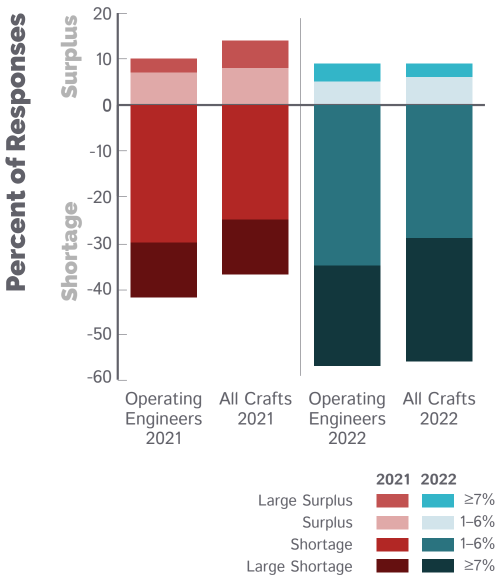
- there was a smaller average *shortage* of Operating Engineers in 2021 (Operating Engineers: -3.4%, All Crafts: -3.7%).

	2020		2021	
	Operating Engineers	All Crafts	Operating Engineers	All Crafts
Average	-1.4%	-1.6%	-3.4%	-3.7%
Surplus	12%	7%	6%	5%
Large Surplus	2%	5%	0%	3%
Shortage	29%	23%	40%	31%
Large Shortage	10%	14%	19%	25%

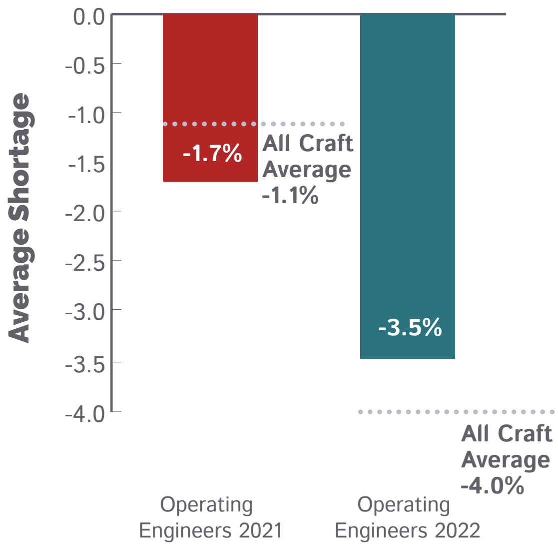
VIII. OPERATING ENGINEERS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/Surplus—Operating Engineers



Average Shortage/Surplus Projections—Operating Engineers



Compared to Operating Engineers in 2021, the percent of respondents who projected a:

- *shortage* of Operating Engineers in 2022 was greater (2021: 42%, 2022: 57%).
- *surplus* of Operating Engineers in 2022 was smaller (2021: 10%, 2022: 9%).

Compared to All Crafts combined in 2021, the percent of respondents who projected a:

- *shortage* of Operating Engineers in 2022 was greater (Operating Engineers: 57%, All Crafts: 56%).
- *surplus* of Operating Engineers in 2022 was the same (Operating Engineers: 9%, All Crafts: 9%).

Compared to Operating Engineers in 2021:

- there was a greater projected average *shortage* of Operating Engineers in 2022 (2021: -1.7%, 2022: -3.5%).

Compared to All Crafts combined in 2022:

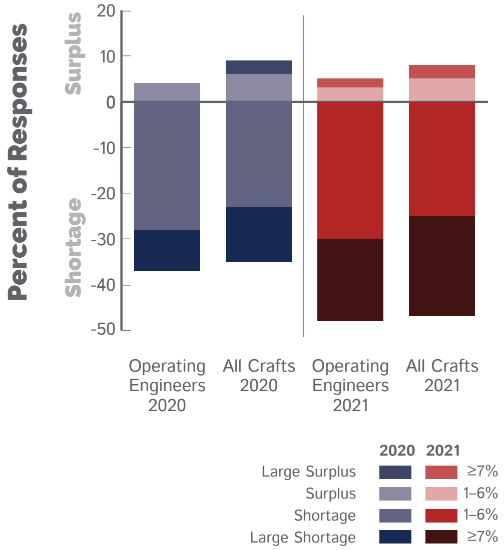
- there was a smaller projected average *shortage* of Operating Engineers in 2022 (Operating Engineers: -3.5%, All Crafts: -4%).

	2021		2022	
	Operating Engineers	All Crafts	Operating Engineers	All Crafts
Average	-1.7%	-1.1%	-3.5%	-4.0%
Surplus	7%	8%	5%	6%
Large Surplus	3%	6%	4%	3%
Shortage	30%	25%	35%	29%
Large Shortage	12%	12%	22%	27%

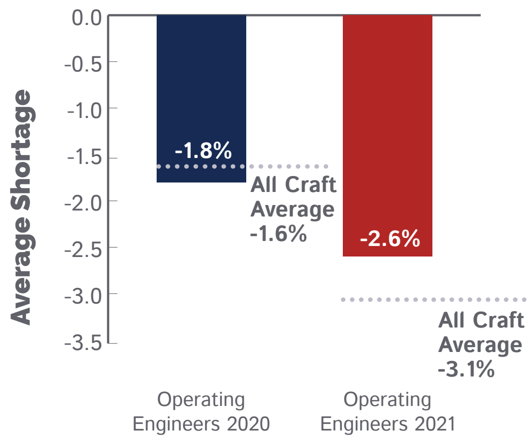
VIII. OPERATING ENGINEERS (continued)

C. Apprentices: 2020 & 2021

Percent Of Responses Stating A Shortage/ Surplus—Operating Engineers



Average Shortage/Surplus for Apprentices - Operating Engineers



Compared to Operating Engineer apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Operating Engineer apprentices in 2021 was greater (2020: 37%, 2021: 48%).
- *surplus* of Operating Engineer apprentices in 2021 was greater (2020: 4%, 2021: 5%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Operating Engineer apprentices in 2021 was greater (Operating Engineer apprentices: 48%, All Crafts: 47%).
- *surplus* of Operating Engineer apprentices in 2021 was smaller (Operating Engineer apprentices: 5%, All Crafts: 8%).

Compared to Operating Engineer apprentices in 2020:

- there was a greater average *shortage* of Operating Engineer apprentices in 2021 (2020: -1.8%, 2021: -2.6%).

Compared to All Crafts combined in 2021:

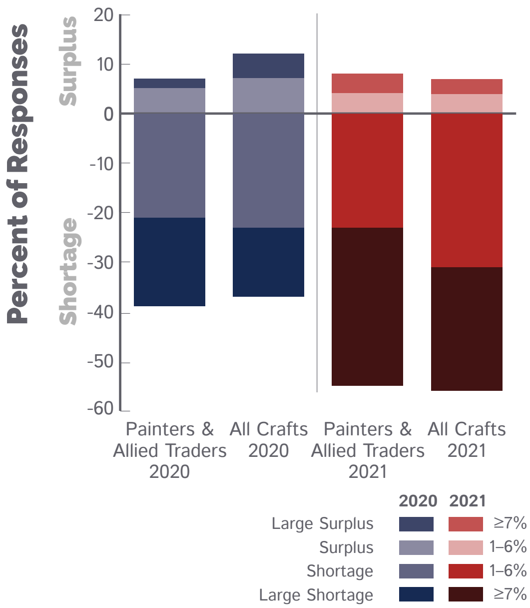
- there was a smaller average *shortage* of Operating Engineer apprentices in 2021 (Operating Engineer apprentices: -2.6%, All Crafts: -3.1%).

	2020		2021	
	Operating Engineers	All Crafts	Operating Engineers	All Crafts
Average	-1.8%	-1.6%	-2.6%	-3.1%
Surplus	4%	6%	3%	5%
Large Surplus	0%	3%	2%	3%
Shortage	28%	23%	30%	25%
Large Shortage	9%	12%	18%	22%

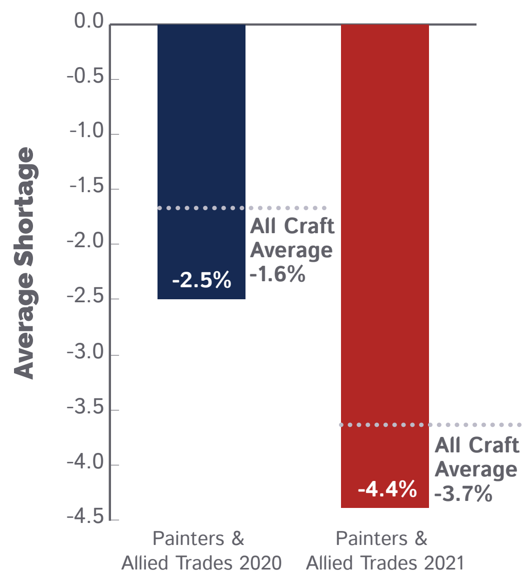
IX. PAINTERS & ALLIED TRADES

A. Historical Results: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Painters & Allied Trades



Average Shortage/Surplus—Painters & Allied Trades



Compared to Painters & Allied Trades in 2020, the percent of respondents who reported a:

- *shortage* of Painters & Allied Trades in 2021 was greater (2020: 39%, 2021: 55%).
- *surplus* of Painters & Allied Trades in 2021 was greater (2020: 7%, 2021: 8%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Painters & Allied Trades in 2021 was smaller (Painters: 55%, All Crafts: 56%).
- *surplus* of Painters & Allied Trades in 2021 was the same (Painters: 8%, All Crafts: 8%).

Compared to Painters & Allied Trades in 2020:

- there was a greater average shortage of Painters in 2021 (2020: -2.5%, 2021: -4.4%).

Compared to All Crafts combined in 2021:

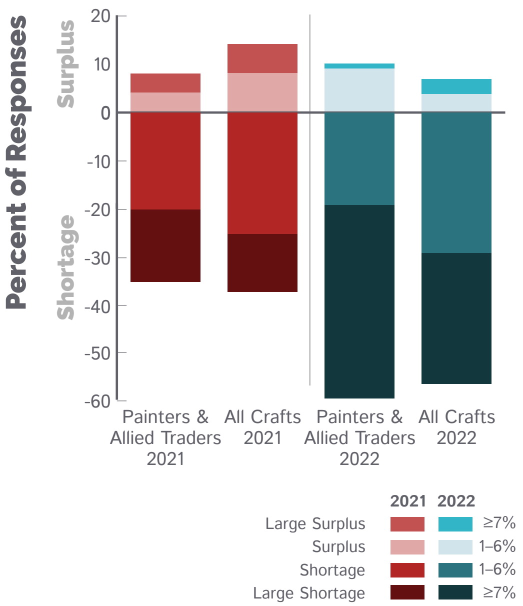
- there was a greater average shortage of Painters in 2021 (Painters: -4.4%, All Crafts: -3.7%).

	2020		2021	
	Painters & Allied Trades	**All Crafts**	**Painters & Allied Trades**	**All Crafts**
Average	-2.5%	-1.6%	-4.4%	-3.7%
Surplus	5%	7%	4%	5%
Large Surplus	2%	5%	4%	3%
Shortage	21%	23%	23%	31%
Large Shortage	18%	14%	32%	25%

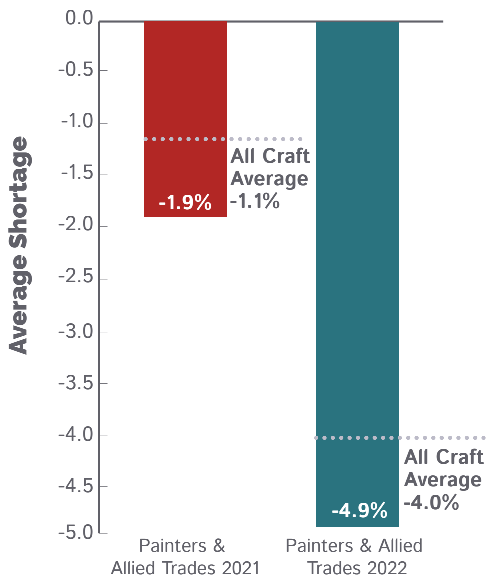
IX. PAINTERS & ALLIED TRADES (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/ Surplus—Painters & Allied Trades



Average Shortage/Surplus Projections—Painters & Allied Trades



Compared to Painters & Allied Trades in 2021, the percent of respondents who projected a:

- *shortage* of Painters & Allied Trades in 2022 was greater (2021: 35%, 2022: 59%).
- *surplus* of Painters & Allied Trades in 2022 was greater (2021: 8%, 2022: 10%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Painters & Allied Trades in 2022 was greater (Painters: 59%, All Crafts: 56%).
- *surplus* of Painters & Allied Trades in 2022 was greater (Painters: 10%, All Crafts: 9%).

Compared to Painters & Allied Trades in 2021:

- there was a greater projected average shortage of Painters in 2022 (2021: -1.9%, 2022: -4.9%).

Compared to All Crafts combined in 2022:

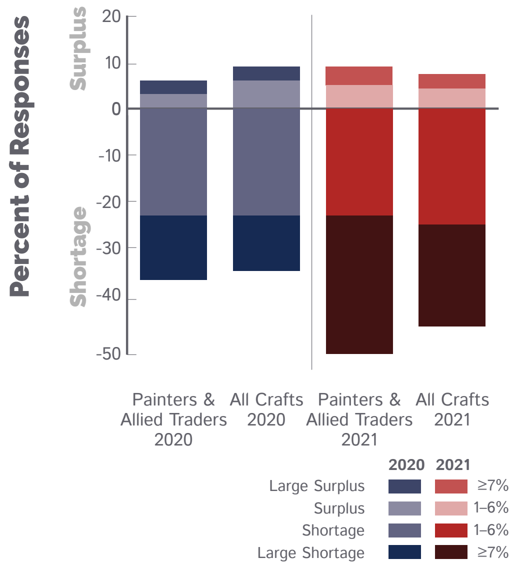
- there was a greater projected average shortage of Painters in 2022 (Painters: -4.9%, All Crafts: -4%).

	2021		2022	
	Painters & Allied Trades	All Crafts	Painters & Allied Trades	All Crafts
Average	-1.9%	-1.1%	-4.9%	-4.0%
Surplus	4%	8%	9%	6%
Large Surplus	4%	6%	1%	3%
Shortage	20%	25%	19%	29%
Large Shortage	15%	12%	40%	27%

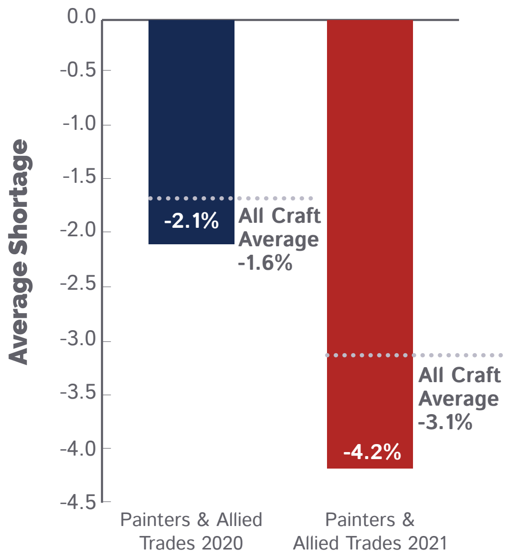
IX. PAINTERS & ALLIED TRADES (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Painters & Allied Trades



Average Shortage/Surplus for Apprentices—Painters & Allied Trades



Compared to Painter & Allied Trade apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Painter & Allied Trade apprentices in 2021 was greater (2020: 37%, 2021: 53%).
- *surplus* of Painter & Allied Trade apprentices in 2021 was greater (2020: 6%, 2021: 9%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Painter & Allied Trade apprentices in 2021 was greater (Painter apprentices: 53%, All Crafts: 47%).
- *surplus* of Painter & Allied Trade apprentices in 2021 was greater (Painter apprentices: 9%, All Crafts: 8%).

Compared to Painter & Allied Trade apprentices in 2020:

- there was a greater average shortage of Painter apprentices in 2021 (2020: -2.1%, 2021: -4.2%).

Compared to All Crafts combined in 2021:

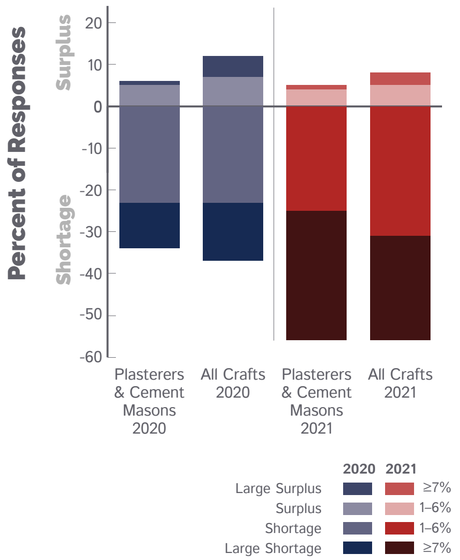
- there was a greater average shortage of Painter apprentices in 2021 (Painter apprentices: -4.2%, All Crafts: -3.1%).

	2020		2021	
	Painters & Allied Trades	All Crafts	Painters & Allied Trades	All Crafts
Average	-2.1%	-1.6%	-4.2%	-3.1%
Surplus	3%	6%	5%	5%
Large Surplus	3%	3%	4%	3%
Shortage	23%	23%	23%	25%
Large Shortage	14%	12%	30%	22%

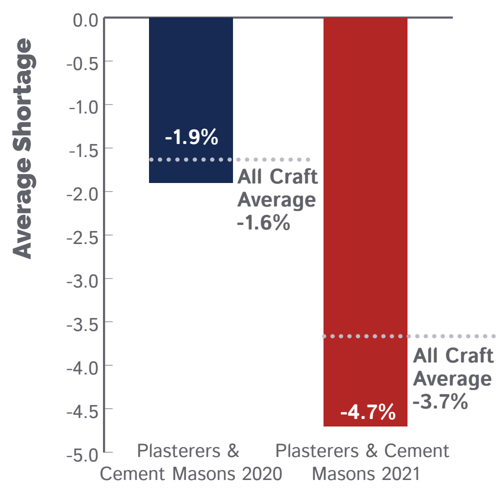
X. PLASTERERS & CEMENT MASONS

A. Historical Results: 2020 & 2021

Percent of Responses Reporting a Shortage/ Surplus—Plasterers & Cement Masons



Average Shortage/Surplus— Plasterers & Cement Masons



Compared to Plasterers & Cement Masons in 2020, the percent of respondents who reported a:

- *shortage* of Plasterers & Cement Masons in 2021 was greater (2020: 34%, 2021: 56%).
- *surplus* of Plasterers & Cement Masons in 2021 was smaller (2020: 6%, 2021: 5%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Plasterers & Cement Masons in 2021 was the same (Plasterers & Cement Masons: 56%, All Crafts: 56%).
- *surplus* of Plasterers & Cement Masons in 2021 was smaller (Plasterers & Cement Masons: 5%, All Crafts: 8%).

Compared to Plasterers & Cement Masons in 2020:

- there was a greater average *shortage* of Plasterers & Cement Masons in 2021 (2020: -1.9%, 2021: -4.7%).

Compared to All Crafts combined in 2021:

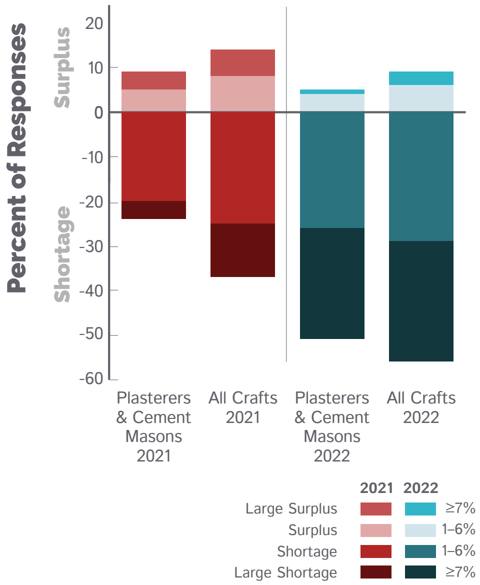
- there was a greater average shortage of Plasterers & Cement Masons in 2021 (Plasterers & Cement Masons: -4.7%, All Crafts: -3.7%).

	2020		2021	
	Plasterers & Cement Masons	**All Crafts**	**Plasterers & Cement Masons**	**All Crafts**
Average	-1.9%	-1.6%	-4.7%	-3.7%
Surplus	5%	7%	4%	5%
Large Surplus	1%	5%	1%	3%
Shortage	23%	23%	25%	31%
Large Shortage	11%	14%	31%	25%

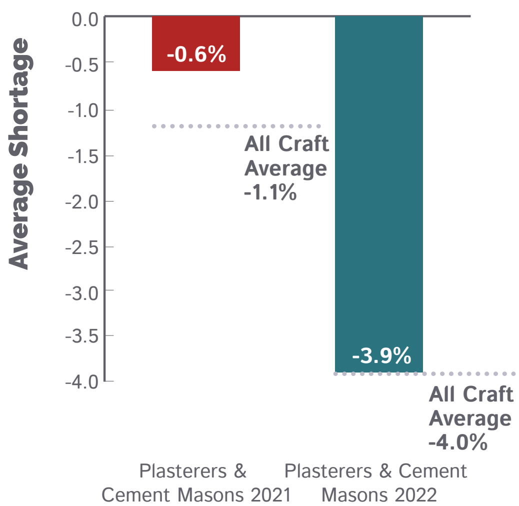
X. PLASTERERS & CEMENT MASONS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/Surplus—Plasterers & Cement Masons



Average Shortage/Surplus Projections—Plasterers & Cement Masons



Compared to Plasterers & Cement Masons in 2021, the percent of respondents who projected a:

- *shortage* of Plasterers & Cement Masons in 2022 was greater (2021: 24%, 2022: 51%).
- *surplus* of Plasterers & Cement Masons in 2022 was smaller (2021: 9%, 2022: 5%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Plasterers & Cement Masons in 2022 was smaller (Plasterers & Cement Masons: 51%, All Crafts: 56%).
- *surplus* of Plasterers & Cement Masons in 2022 was smaller (Plasterers & Cement Masons: 5%, All Crafts: 9%).

Compared to Plasterers & Cement Masons in 2021:

- there was a greater projected average shortage of Plasterers & Cement Masons in 2022 (2021: -0.6%, 2022: -3.9%).

Compared to All Crafts combined in 2022:

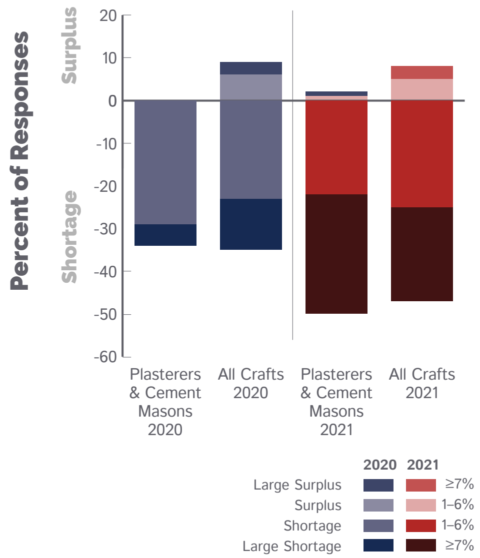
- there was a smaller projected average shortage of Plasterers & Cement Masons in 2022 (Plasterers & Cement Masons: -3.9%, All Crafts: -4%).

	2021		2022	
	Plasterers & Cement Masons	All Crafts	Plasterers & Cement Masons	All Crafts
Average	-0.6%	-1.1%	-3.9%	-4.0%
Surplus	5%	8%	4%	6%
Large Surplus	4%	6%	1%	3%
Shortage	20%	25%	26%	29%
Large Shortage	4%	12%	25%	27%

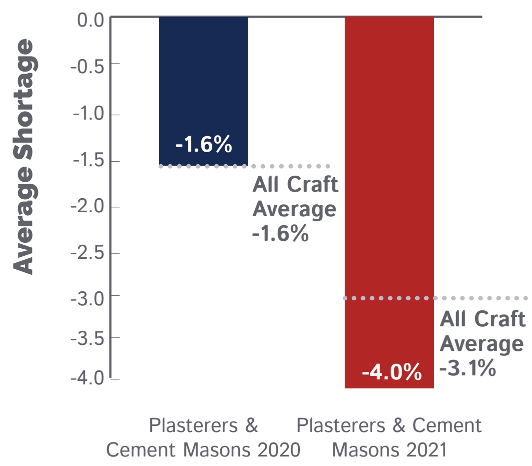
X. PLASTERERS & CEMENT MASONS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Plasterers & Cement Masons



Average Shortage/Surplus for Apprentices—Plasterers & Cement Masons



Compared to Plasterer & Cement Mason apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Plasterer & Cement Mason apprentices in 2021 was greater (2020: 34%, 2021: 50%).
- *surplus* of Plasterer & Cement Mason apprentices in 2021 was greater (2020: 0%, 2021: 2%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Plasterer & Cement Mason apprentices in 2021 was greater (Plasterers & Cement Mason apprentices: 50%, All Crafts: 47%).
- *surplus* of Plasterer & Cement Mason apprentices in 2021 was smaller (Plasterers & Cement Mason apprentices: 2%, All Crafts: 8%).

Compared to Plasterer & Cement Mason apprentices in 2020:

- there was a greater average *shortage* of Plasterer & Cement Mason apprentices in 2021 (2020: -1.6%, 2021: -4%).

Compared to All Crafts combined in 2021:

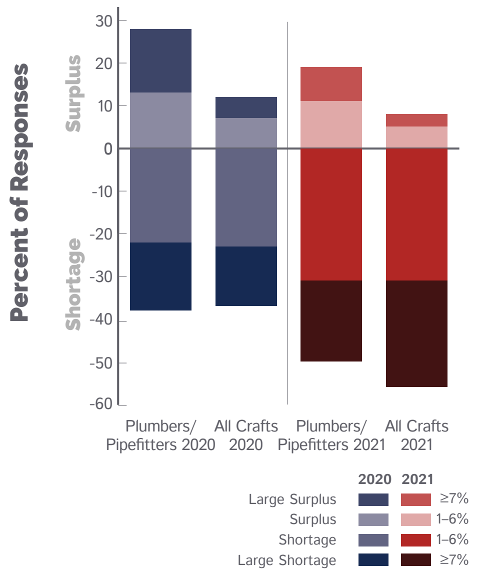
- there was a greater average *shortage* of Plasterer & Cement Mason apprentices in 2021 (Plasterers & Cement Mason apprentices: -4%, All Crafts: -3.1%).

	2020		2021	
	Plasterers & Cement Masons	All Crafts	Plasterers & Cement Masons	All Crafts
Average	-1.6%	-1.6%	-4.0%	-3.1%
Surplus	0%	6%	1%	5%
Large Surplus	0%	3%	1%	3%
Shortage	29%	23%	22%	25%
Large Shortage	5%	12%	28%	22%

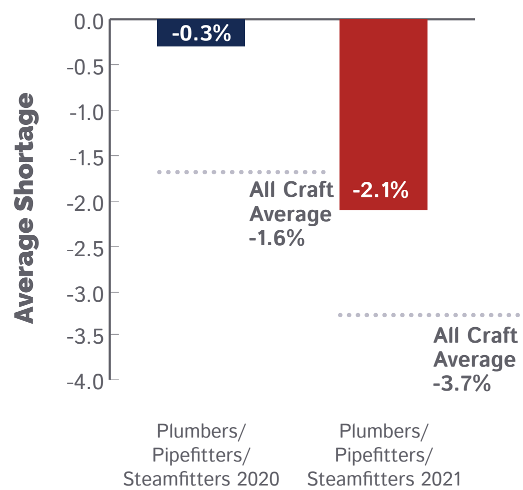
XI. PLUMBERS/PIPEFITTERS/STEAMFITTERS

A. Historical Results: 2020 & 2021

Percent of Responses Reporting a Shortage/Surplus—Plumbers/Pipefitters/Steamfitters



Average Shortage/Surplus—Plumbers/Pipefitters/Steamfitters



Compared to Plumbers/Pipefitters/Steamfitters in 2020, the percent of respondents who reported a:

- *shortage* of Plumbers/Pipefitters/Steamfitters in 2021 was greater (2020: 38%, 2021: 50%).
- *surplus* of Plumbers/Pipefitters/Steamfitters in 2021 was smaller (2020: 28%, 2021: 19%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Plumbers/Pipefitters/Steamfitters in 2021 was smaller (Plumbers/Pipefitters/Steamfitters: 50%, All Crafts: 56%).
- *surplus* of Plumbers/Pipefitters/Steamfitters in 2020 was greater (Plumbers/Pipefitters/Steamfitters: 19%, All Crafts: 8%).

Compared to Plumbers/Pipefitters/Steamfitters in 2020:

- there was a smaller average *shortage* of Plumbers/ Pipefitters/ Steamfitters in 2021 (2020: -0.3%, 2021: -2.1%).

Compared to All Crafts combined in 2021:

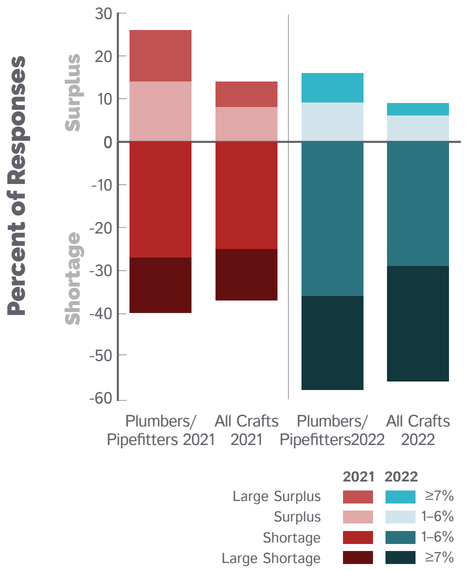
- there was a smaller average *shortage* of Plumbers/ Pipefitters/ Steamfitters in 2021 (Plumbers/Pipefitters/ Steamfitters: -2.1%, All Crafts: -3.7%).

	2020		2021	
	Plumbers/ Pipefitters/ Steamfitters	All Crafts	Plumbers/ Pipefitters/ Steamfitters	All Crafts
Average	-0.3%	-1.6%	-2.1%	-3.7%
Surplus	13%	7%	11%	5%
Large Surplus	15%	5%	8%	3%
Shortage	22%	23%	31%	31%
Large Shortage	16%	14%	19%	25%

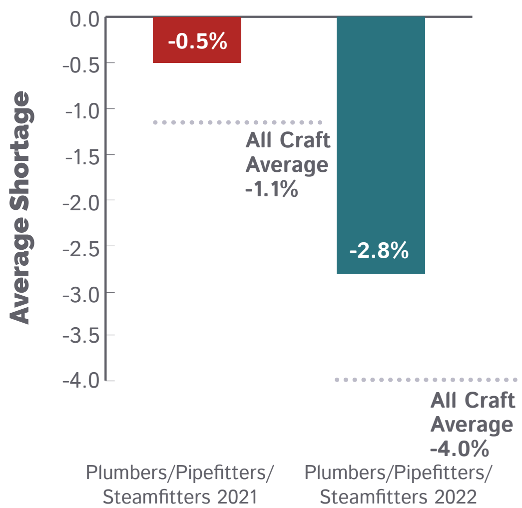
XI. PLUMBERS/PIPEFITTERS/STEAMFITTERS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/Surplus—Plumbers/Pipefitters/Steamfitters



Average Shortage/Surplus Projections—Plumbers/Pipefitters/Steamfitters



Compared to Plumbers/Pipefitters/Steamfitters in 2021, the percent of respondents who projected a:

- *shortage* of Plumbers/Pipefitters/Steamfitters in 2022 was greater (2021: 40%, 2022: 58%).
- *surplus* of Plumbers/Pipefitters/Steamfitters in 2021 was greater (2020: 26%, 2022: 16%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Plumbers/Pipefitters/Steamfitters in 2022 was greater (Plumbers/Pipefitters/Steamfitters: 58%, All Crafts: 56%).
- *surplus* of Plumbers/Pipefitters/Steamfitters in 2022 was greater (Plumbers/Pipefitters/Steamfitters: 16%, All Crafts: 9%).

Compared to Plumbers/Pipefitters/Steamfitters in 2021:

- there was a greater average *shortage* of Plumbers/Pipefitters/Steamfitters in 2022 (2021: -0.5%, 2022: -2.8%).

Compared to All Crafts combined in 2022:

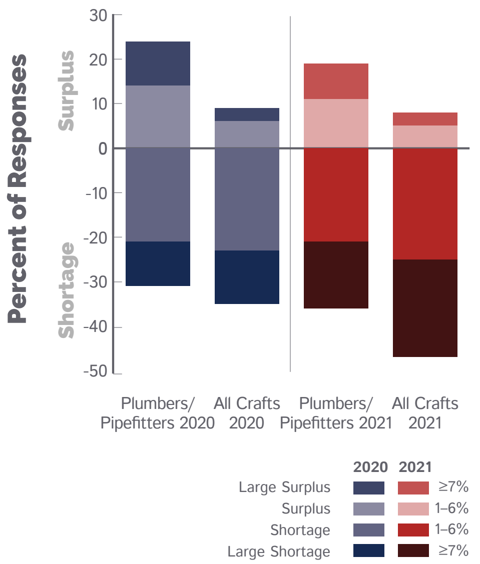
- there was a smaller average *shortage* of Plumbers/Pipefitters/Steamfitters in 2022 (Plumbers/ Pipefitters/Steamfitters: -2.8%, All Crafts: -4%).

	2021		2022	
	Plumbers/ Pipefitters/ Steamfitters	All Crafts	Plumbers/ Pipefitters/ Steamfitters	All Crafts
Average	-0.5%	-1.1%	-2.8%	-4.0%
Surplus	14%	8%	9%	6%
Large Surplus	12%	6%	7%	3%
Shortage	27%	25%	36%	29%
Large Shortage	13%	12%	22%	27%

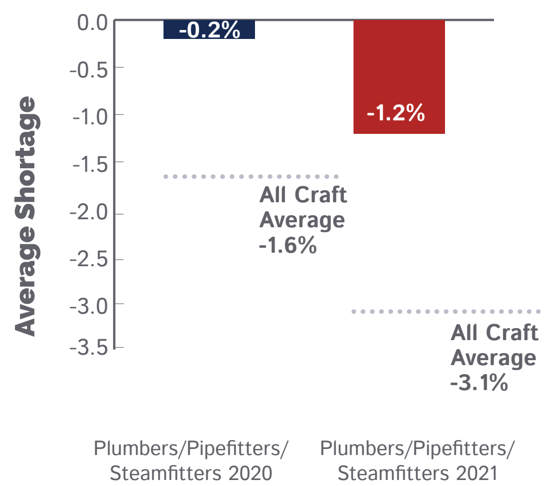
XI. PLUMBERS/PIPEFITTERS/STEAMFITTERS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Plumbers/Pipefitters/Steamfitters



Average Shortage/Surplus for Apprentices—Plumbers/Pipefitters/Steamfitters



Compared to Plumber/Pipefitter/Steamfitter apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Plumber/Pipefitter/Steamfitter apprentices in 2021 was greater (2020: 31%, 2021: 36%).
- *surplus* of Plumber/Pipefitter/Steamfitter apprentices in 2021 was smaller (2020: 24%, 2021: 19%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Plumber/Pipefitter/Steamfitter apprentices 2021 was smaller (Plumber/Pipefitter/Steamfitter apprentices: 36%, All Crafts: 47%).
- *surplus* of Plumber/Pipefitter/Steamfitter apprentices in 2021 was greater (Plumber/Pipefitter/Steamfitter apprentices: 19%, All Crafts: 8%).

Compared to Plumber/Pipefitter/Steamfitter apprentices in 2020:

- there was a greater average *shortage* of Plumber/Pipefitter/Steamfitter apprentices in 2021 (2020: -0.2%, 2021: -1.2%).

Compared to All Crafts combined in 2021:

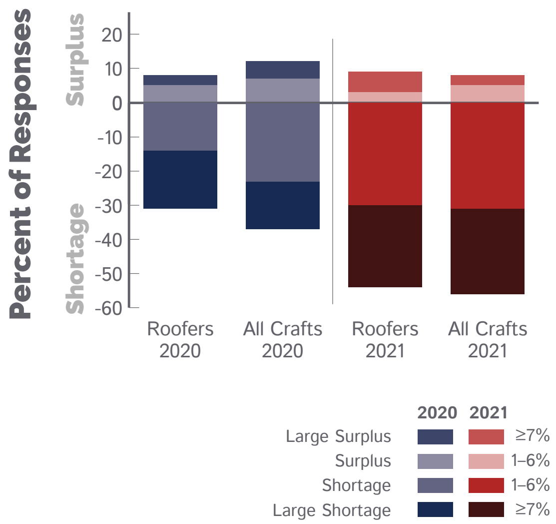
- there was a smaller average shortage of Plumber/Pipefitter/Steamfitter apprentices in 2021 (Plumber/Pipefitter/Steamfitter apprentices: -1.2%, All Crafts: -3.1%).

	2020		2021	
	Plumbers/ Pipefitters/ Steamfitters	All Crafts	Plumbers/ Pipefitters/ Steamfitters	All Crafts
Average	-0.2%	-1.6%	-1.2%	-3.1%
Surplus	14%	6%	11%	5%
Large Surplus	10%	3%	8%	3%
Shortage	21%	23%	21%	25%
Large Shortage	10%	12%	15%	22%

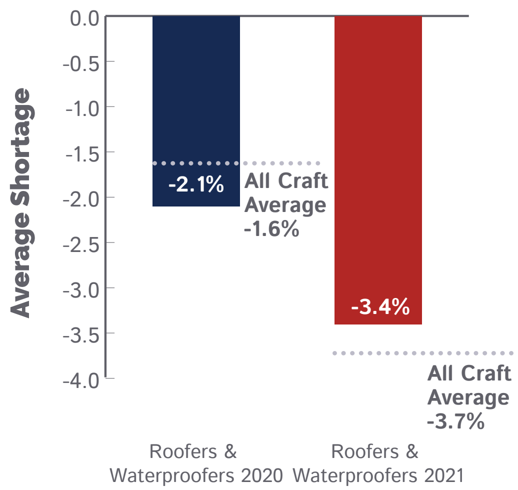
XII. ROOFERS & WATERPROOFERS

A. Historical Results: 2020 & 2021

Percent of Responses Reporting A Shortage/ Surplus—Roofers & Waterproofers



Average Shortage/Surplus—Roofers & Waterproofers



Compared to Roofers & Waterproofers in 2020, the percent of respondents who reported a:

- *shortage* of Roofers & Waterproofers in 2021 was greater (2020: 31%, 2021: 54%).
- *surplus* of Roofers & Waterproofers in 2021 was greater (2020: 8%, 2021: 9%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Roofers & Waterproofers in 2021 was smaller (Roofers & Waterproofers: 54%, All Crafts: 56%).
- *surplus* of Roofers & Waterproofers in 2021 was greater (Roofers & Waterproofers: 9%, All Crafts: 8%).

Compared to Roofers & Waterproofers in 2020:

- there was a greater average *shortage* of Roofers & Waterproofers in 2021 (2020: -2.1%, 2021: -3.4%).

Compared to All Crafts combined in 2021:

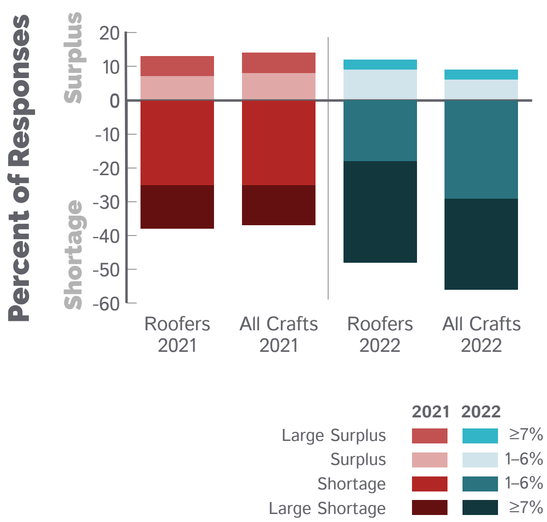
- there was a greater average *shortage* of Roofers & Waterproofers in 2021 (Roofers & Waterproofers: -3.4%, All Crafts: -3.7%).

	2020		2021	
	Roofers & Waterproofers	All Crafts	Roofers & Waterproofers	All Crafts
Average	-2.1%	-1.6%	-3.4%	-3.7%
Surplus	5%	7%	3%	5%
Large Surplus	3%	5%	6%	3%
Shortage	14%	23%	30%	31%
Large Shortage	17%	14%	24%	25%

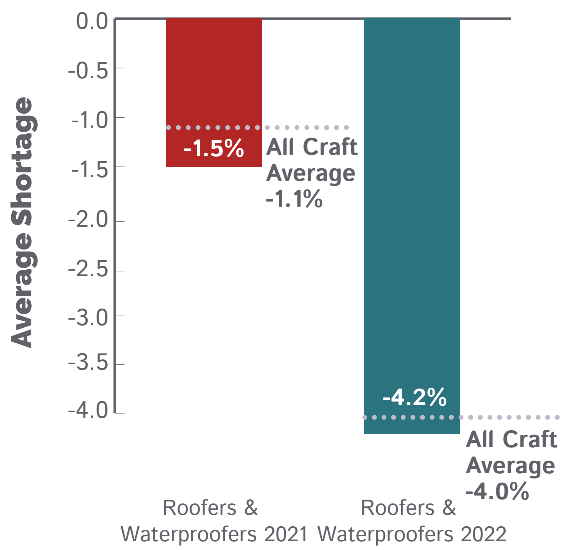
XII. ROOFERS & WATERPROOFERS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting A Shortage/ Surplus—Roofers & Waterproofers



Average Shortage/Surplus Projections—Roofers & Waterproofers



Compared to Roofers & Waterproofers in 2021, the percent of respondents who projected a:

- *shortage* of Roofers & Waterproofers in 2022 was greater (2021: 38%, 2022: 48%).
- *surplus* of Roofers & Waterproofers in 2022 was slightly smaller (2021: 13%, 2022: 12%).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Roofers & Waterproofers in 2022 was smaller (Roofers & Waterproofers: 48%, All Crafts: 56%).
- *surplus* of Roofers & Waterproofers in 2022 was greater (Roofers & Waterproofers: 12%, All Crafts: 9%).

Compared to Roofers & Waterproofers in 2021:

- there was a greater average *shortage* of Roofers & Waterproofers in 2022 (2021: -1.5%, 2022: -4.2%).

Compared to All Crafts combined in 2022:

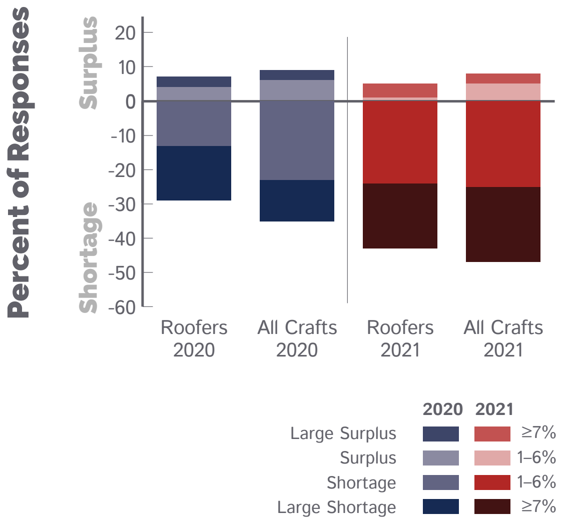
- there was a greater average *shortage* of Roofers & Waterproofers in 2022 (Roofers & Waterproofers: -4.2%%, All Crafts: -4%).

	2021		2022	
	Roofers & Waterproofers	All Crafts	Roofers & Waterproofers	All Crafts
Average	-1.5%	-1.1%	-4.2%	-4.0%
Surplus	7%	8%	9%	6%
Large Surplus	6%	6%	3%	3%
Shortage	25%	25%	18%	29%
Large Shortage	13%	12%	30%	27%

XII. ROOFERS & WATERPROOFERS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Roofers & Waterproofers



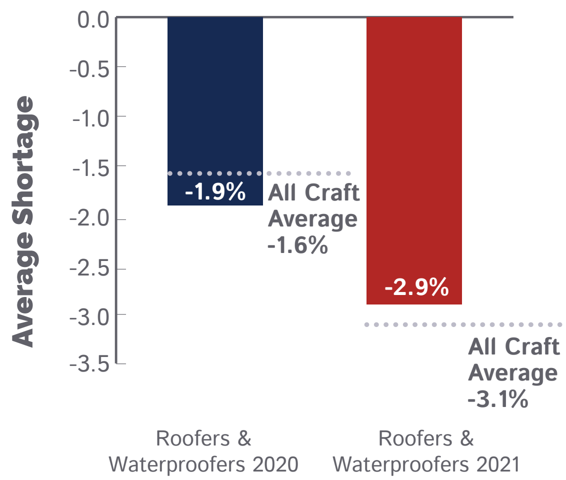
Compared to Roofer & Waterproofer apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Roofer & Waterproofer apprentices in 2021 was greater (2020: 29%, 2021: 43%).
- *surplus* of Roofer & Waterproofer apprentices in 2021 was smaller (2020: 7%, 2021: 5%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Roofer & Waterproofer apprentices in 2021 was smaller (Roofer & Waterproofer apprentices: 43%, All Crafts: 47%).
- *surplus* of Roofer & Waterproofer apprentices in 2021 was smaller (Roofer & Waterproofer apprentices: 5%, All Crafts: 8%).

Average Shortage/Surplus for Apprentices—Roofers & Waterproofers



Compared to Roofer & Waterproofer apprentices in 2020:

- there was a greater average *shortage* of Roofer & Waterproofer apprentices in 2021 (2020: -1.9%, 2021: -2.9%).

Compared to All Crafts combined in 2021:

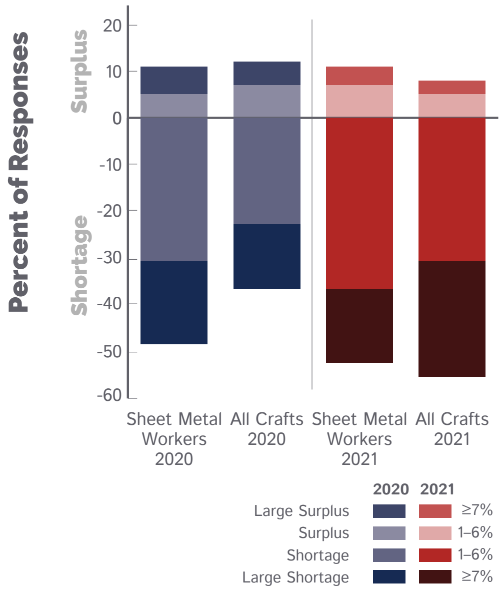
- there was a smaller average *shortage* of Roofer & Waterproofer apprentices in 2021 (Roofer & Waterproofer apprentices: -2.9%, All Crafts: -3.1%).

	2020		2021	
	Roofers & Waterproofers	All Crafts	Roofers & Waterproofers	All Crafts
Average	-1.9%	-1.6%	-2.9%	-3.1%
Surplus	4%	6%	1%	5%
Large Surplus	3%	3%	4%	3%
Shortage	13%	23%	24%	25%
Large Shortage	16%	12%	19%	22%

XIII. SHEET METAL WORKERS

A. Historical Results: 2020 & 2021

Percent of Responses Reporting a Shortage/ Surplus—Sheet Metal Workers



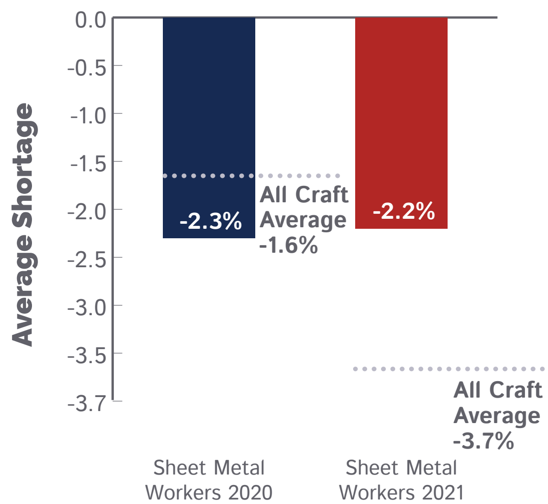
Compared to Sheet Metal Workers in 2020, the percent of respondents who reported a:

- *shortage* of Sheet Metal Workers in 2021 was greater (2020: 49%, 2021: 53%).
- *surplus* of Sheet Metal Workers in 2021 was the same (2020: 11%, 2021: 11%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Sheet Metal Workers in 2021 was smaller (Sheet Metal Workers: 53%, All Crafts: 56%).
- *surplus* of Sheet Metal Workers in 2021 was greater (Sheet Metal Workers: 11%, All Crafts: 8%).

Average Shortage/Surplus—Sheet Metal Workers



Compared to Sheet Metal Workers in 2020:

- there was a smaller average *shortage* of Sheet Metal Workers in 2021 (2020: -2.3%, 2021: -2.2%).

Compared to All Crafts combined in 2021:

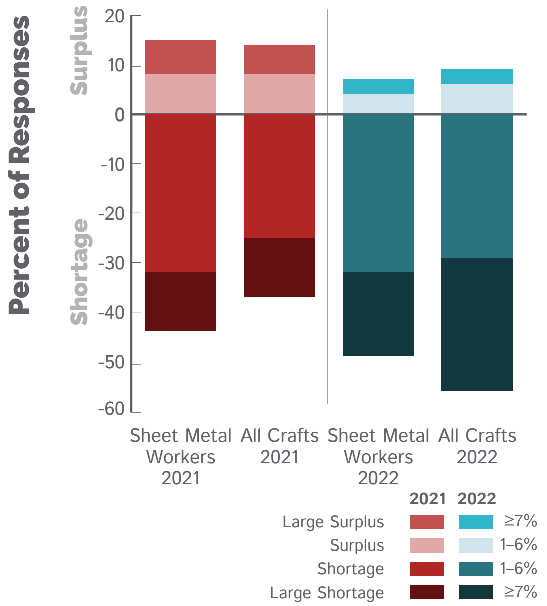
- there was a smaller average *shortage* of Sheet Metal Workers in 2021 (Sheet Metal Workers: -2.2%, All Crafts: -3.7%).

	2020		2021	
	Sheet Metal Workers	All Crafts	Sheet Metal Workers	All Crafts
Average	-2.3%	-1.6%	-2.2%	-3.7%
Surplus	5%	7%	7%	5%
Large Surplus	6%	5%	4%	3%
Shortage	31%	23%	37%	31%
Large Shortage	18%	14%	16%	25%

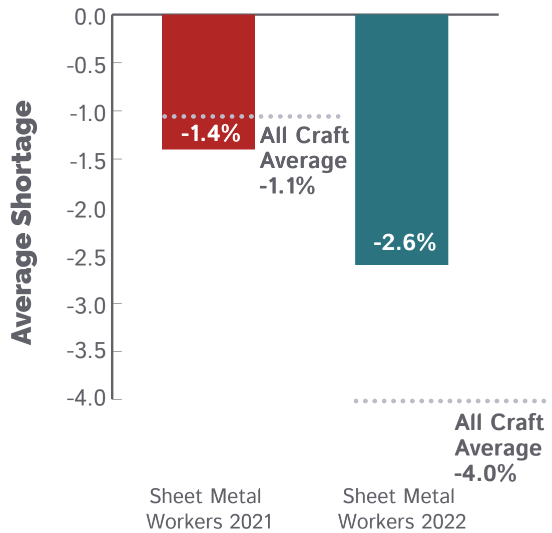
XIII. SHEET METAL WORKERS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/ Surplus—Sheet Metal Workers



Average Shortage/Surplus Projections— Sheet Metal Workers



Compared to Sheet Metal Workers in 2021, the percent of respondents who projected a:

- *shortage* of Sheet Metal Workers in 2022 was greater (2021: 44%, 2022: 49%).
- *surplus* of Sheet Metal Workers in 2022 was smaller (2021: 15%, 2022: 7%,).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Sheet Metal Workers in 2022 was smaller (Sheet Metal Workers: 49%, All Crafts: 56%).
- *surplus* of Sheet Metal Workers in 2022 was smaller (Sheet Metal Workers: 7%, All Crafts: 9%).

Compared to Sheet Metal Workers in 2021:

- there was a greater average *shortage* of Sheet Metal Workers in 2022 (2021: -1.4%, 2022: -2.6%,).

Compared to All Crafts combined in 2022:

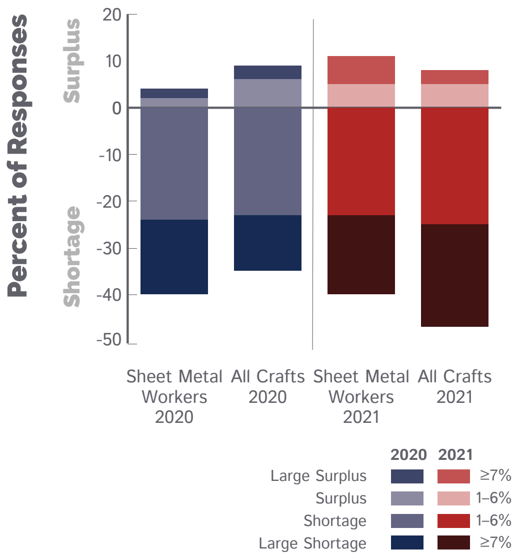
- there was a smaller average *shortage* of Sheet Metal Workers in 2022 (Sheet Metal Workers: -2.6%, All Crafts: -4%).

	2021		2022	
	Sheet Metal Workers	All Crafts	Sheet Metal Workers	All Crafts
Average	-1.4%	-1.1%	-2.6%	-4.0%
Surplus	8%	8%	4%	6%
Large Surplus	7%	6%	3%	3%
Shortage	32%	25%	32%	29%
Large Shortage	12%	12%	17%	27%

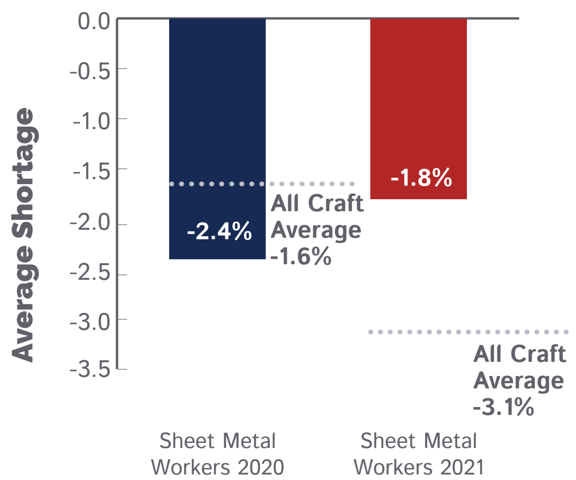
XIII. SHEET METAL WORKERS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/ Surplus—Sheet Metal Workers



Average Shortage/Surplus for Apprentices—Sheet Metal Workers



Compared to Sheet Metal Worker apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Sheet Metal Worker apprentices in 2021 was equal (2020: 40%, 2021: 40%).
- *surplus* of Sheet Metal Worker apprentices in 2021 was greater (2020: 4%, 2020: 11%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Sheet Metal Worker apprentices in 2021 was smaller (Sheet Metal Worker apprentices: 40%, All Crafts: 47%).
- *surplus* of Sheet Metal Worker apprentices in 2021 was greater (Sheet Metal Worker apprentices: 11%, All Crafts: 8%).

Compared to Sheet Metal Worker apprentices in 2020:

- there was a smaller average *shortage* of Sheet Metal Worker apprentices in 2021 (2020: -2.4%, 2021: -1.8%).

Compared to All Crafts combined in 2021:

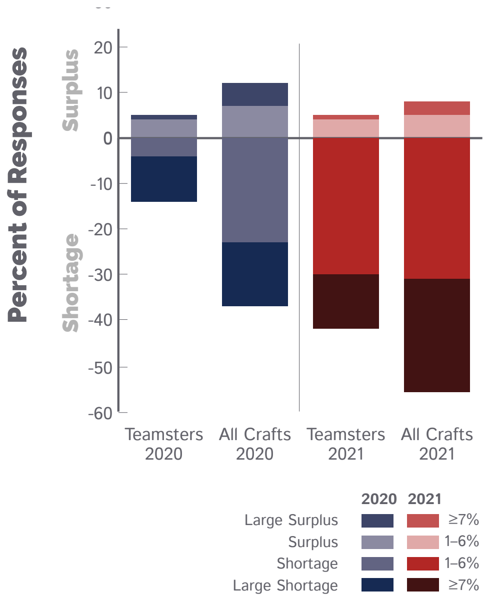
- there was a smaller average *shortage* of Sheet Metal Worker apprentices in 2021 (Sheet Metal Worker apprentices: -1.8%, All Crafts: -3.1%).

	2020		2021	
	Sheet Metal Workers	All Crafts	Sheet Metal Workers	All Crafts
Average	-2.4%	-1.6%	-1.8%	-3.1%
Surplus	2%	6%	5%	5%
Large Surplus	2%	3%	6%	3%
Shortage	24%	23%	23%	25%
Large Shortage	16%	12%	17%	22%

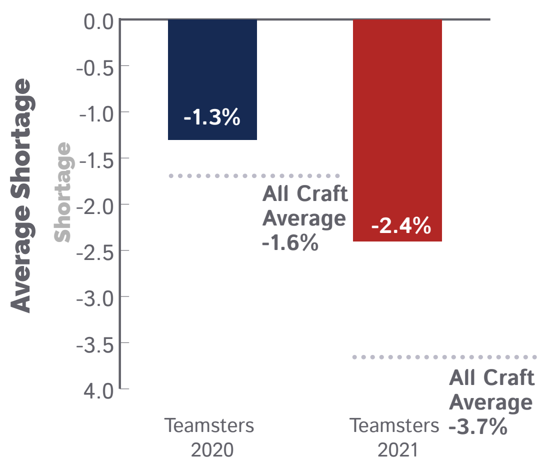
XIV. TEAMSTERS

A. Historical Results: 2020 & 2021

Percent of Responses Stating a Shortage/Surplus—Teamsters



Average Shortage/Surplus—Teamsters



Compared to Teamsters in 2020, the percent of respondents who reported a:

- *shortage* of Teamsters in 2021 was greater (2020: 14%, 2021: 42%).
- *surplus* of Teamsters in 2020 was equal (2020: 5%, 2021: 5%,).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Teamsters in 2021 was smaller (Teamsters: 42%, All Crafts: 56%).
- *surplus* of Teamsters in 2021 was smaller (Teamsters: 5%, All Crafts: 8%).

Compared to Teamsters in 2020:

- there was a greater average *shortage* of Teamsters in 2021 (2020: -1.3%, 2021: -2.4%).

Compared to All Crafts combined in 2021:

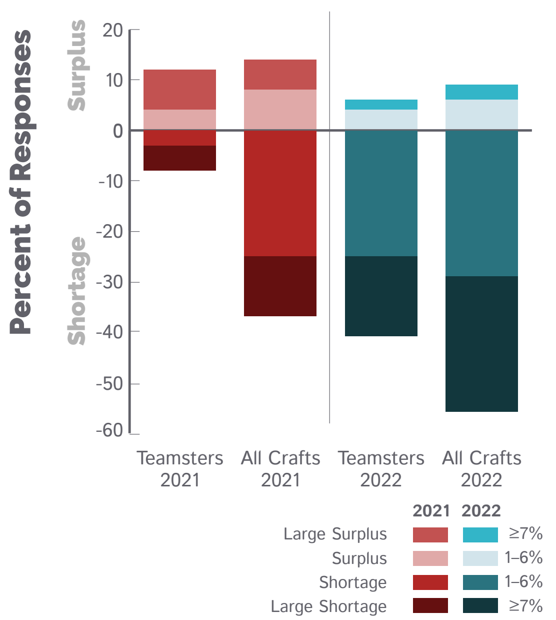
- there was a smaller average *shortage* of Teamsters in 2021 (Teamsters: -2.4%%, All Crafts: -3.7%).

	2020		2021	
	Teamsters	All Crafts	Teamsters	All Crafts
Average	-1.3%	-1.6%	-2.4%	-3.7%
Surplus	4%	7%	4%	5%
Large Surplus	1%	5%	1%	3%
Shortage	4%	23%	30%	31%
Large Shortage	10%	14%	12%	25%

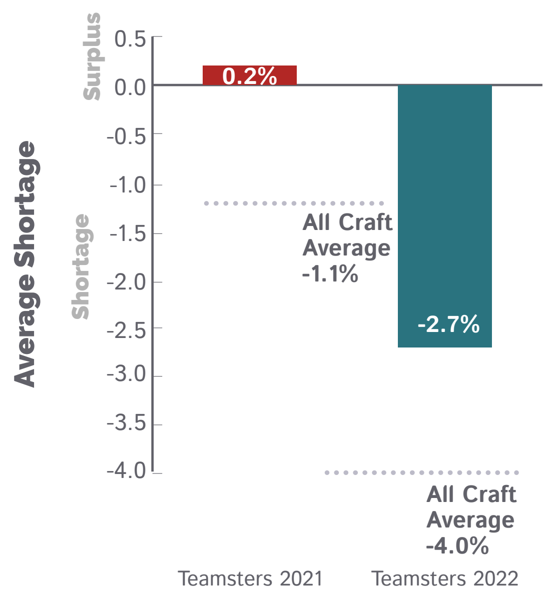
XIV. TEAMSTERS (continued)

B. Projections for the Next Year: 2021 & 2022

Percent of Responses Projecting a Shortage/Surplus—Teamsters



Average Shortage/Surplus Projections—Teamsters



Compared to Teamsters in 2021, the percent of respondents who projected a:

- *shortage* of Teamsters in 2022 was greater (2021: 8%, 2022: 41%).
- *surplus* of Teamsters in 2022 was smaller (2021: 12%, 2022: 6%,).

Compared to All Crafts combined in 2022, the percent of respondents who projected a:

- *shortage* of Teamsters in 2022 was smaller (Teamsters:41%, All Crafts: 56%).
- *surplus* of Teamsters in 2022 was smaller (Teamsters: 6%, All Crafts: 9%).

Compared to Teamsters in 2021:

- there was a greater average *shortage* of Teamsters in 2022, (2021: 0.2%, 2022 -2.7%).

Compared to All Crafts combined in 2022:

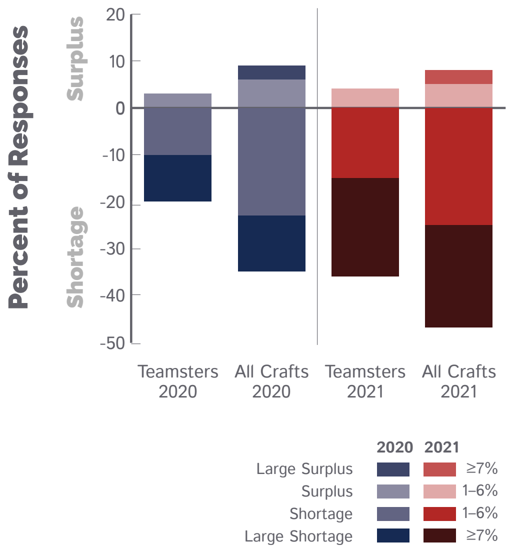
- there was a smaller average *shortage* of Teamsters in 2022, (Teamsters: -2.7%, All Crafts: -4%).

	2021		2022	
	Teamsters	All Crafts	Teamsters	All Crafts
Average	0.2%	-1.1%	-2.7%	-4.0%
Surplus	4%	8%	4%	6%
Large Surplus	8%	6%	2%	3%
Shortage	3%	25%	25%	29%
Large Shortage	5%	12%	16%	27%

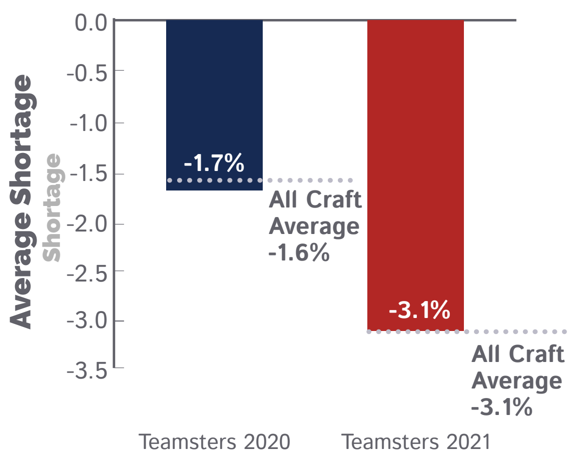
XIV. TEAMSTERS (continued)

C. Apprentices: 2020 & 2021

Percent of Responses Stating a Shortage/ Surplus—Teamsters



Average Shortage/Surplus For Apprentices—Teamsters



Compared to Teamster apprentices in 2020, the percent of respondents who reported a:

- *shortage* of Teamster apprentices in 2021 was greater (2020: 20%, 2021: 36%).
- *surplus* of Teamster apprentices in 2021 was greater (2020: 3%, 2021: 4%).

Compared to All Crafts combined in 2021, the percent of respondents who reported a:

- *shortage* of Teamster apprentices in 2021 was smaller (Teamster apprentices: 36%, All Crafts: 47%).
- *surplus* of Teamster apprentices in 2021 was smaller (Teamster apprentices: 4%, All Crafts: 8%).

Compared to Teamster apprentices in 2020:

- there was a greater average shortage of Teamster apprentices in 2021, (2020: 0-1.7% 2021: -3.1%).

Compared to All Crafts combined in 2021:

- there was an equal average shortage of Teamster apprentices in 2021 (Teamster apprentices: -3.1%, All Crafts: -3..1%).

	2020		2021	
	Teamsters	**All Crafts**	**Teamsters**	**All Crafts**
Average	-1.7%	-1.6%	-3.1%	-3.1%
Surplus	3%	6%	4%	5%
Large Surplus	0%	3%	0%	3%
Shortage	10%	23%	15%	25%
Large Shortage	10%	12%	21%	22%

TAUC
The Association of Union Constructors

CLRC
Construction Labor Research Council