PrintingOutlook2022

A survey of printing and communications executives about their business outlook and the industry's print and service offerings.

WhatTheyThink

Printing Outlook 2022

WhatTheyThink's Overview of the Current Economic State of the Industry

Prepared by: Richard Romano
Research Assistant/Chart Wrangler: Deborah Papineau
Cover design by Bobbi Burow

2038 Ford Pkwy #218
St. Paul, MN 55116
www.whattheythink.com

Table of Contents

Introduction: Once More, with Feeling

Let’s try this again, shall we?

There is a sense that 2022 feels like, à la *Groundhog Day*, our third attempt at starting 2020, building on the successes of 2019 before things went south. Last year’s *Printing Outlook* had been very much a COVID-centric survey—businesses were still licking their wounds from the year of lockdowns and quarantines and were uncertain about the future. In the current survey, the consensus is that it’s time to put the pandemic behind us (even though it is still very much in front of us) and get on with what had been planned pre-COVID.

So welcome to our *Printing Outlook 2022*. Preparing this report was a lot less surreal than last year, and came closer to the kinds of surveys we had been conducting in the Before Times. Still, some data points had a very much “ripped from the headlines” feel to them (see Business Challenges, for example).

How This Report Is Organized

Section 1 presents our Fall 2021 survey data about current (2021) and expected (2022) business conditions, specifically how print businesses fared *vis-à-vis* revenues, number of orders, and profits.

Section 2 presents our survey data on print businesses’ top challenges, opportunities, and planned investments.

Section 3 presents the results of our survey question asking about new application areas. To what extent have print businesses expanded into new technologies and products such as product ion inkjet, wide format, packaging, textiles, or 3D printing? And to what extent do they plan to?

Section 4 presents the results of our survey question about print businesses’ hiring plans. Do they have any and, if so, for which positions? We also asked about where they are looking for employees, as well as write-in comments on specific hiring issues printing companies have been having.

Section 5 rounds up a variety of printing industry data—establishments, shipments, profits, employment, and so on.

Section 6 provides the latest general macroeconomic data. These data are important to put industry data into the proper macroeconomic context.

Section 7 offers what we see as the hot, cold, and lukewarm trends for 2022, as well as WhatTheyThink’s economic and printing industry forecast.

The survey methodology is detailed in Appendix A. Our explanation of survivor bias is presented in Appendix B.

For More Information

For more information on this report or other WhatTheyThink products and services, please visit www.whattheythink.com.

1. Business Conditions

In November and December 2021, WhatTheyThink's Business Outlook Survey asked print business executives and owners about:

- perceptions of 2020 business conditions compared to 2020
- expectations of 2022 business conditions compared to 2021

Specifically, we asked about:

- revenues
- number of jobs/orders
- profits

In last year's survey, we added two additional ranges: to current business conditions, we had added "decreased by more than 25%" to capture the extent of business loss during the pandemic, and to expected business conditions, we added "increase by more than 25%" to capture expectations for a strong rebound. We included both of these ranges in this year's survey in both current and expected business conditions, to capture any residual pandemic extremes, but in next year's survey, we will likely retire these outlier categories and revert back to "more than 10%." Unless something horrible happens, which, unfortunately, is not out of the realm of possibility.

Revenues

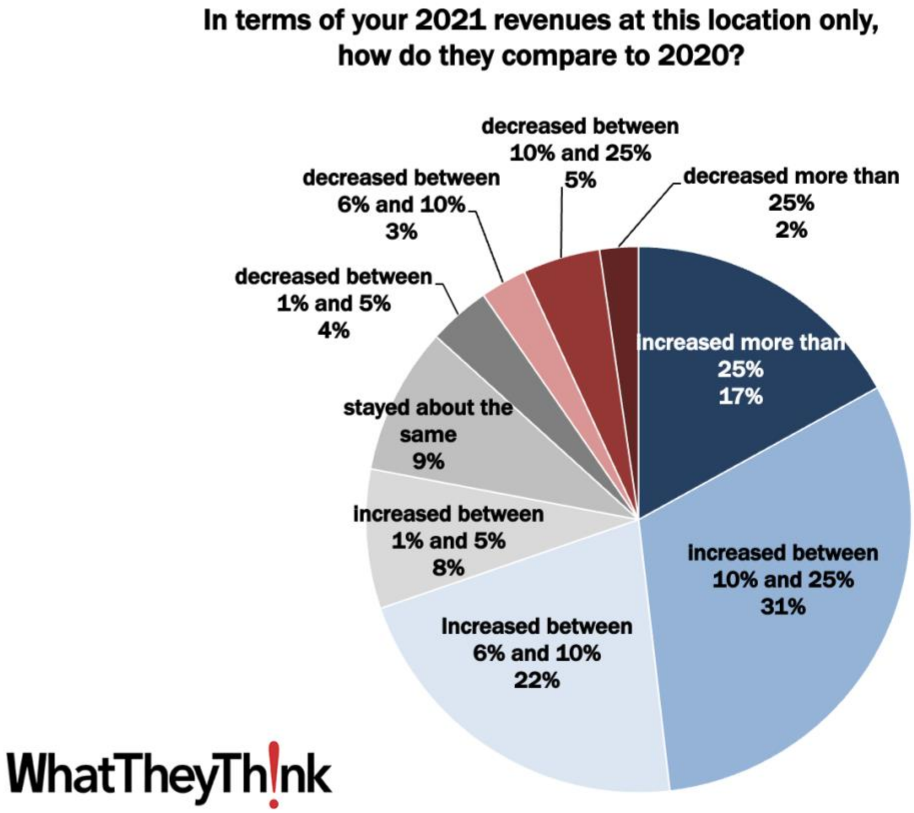
2021 Revenues

In terms of revenues, 17% of print businesses surveyed said that revenues for 2021 had increased more than 25% compared to 2020, and 31% said that revenues had increased between 10% and 25%. A further 22% said that revenues had increased between 6% and 10%. All told, more than three-fourths (78%) of print businesses surveyed reported an increase in revenues in 2021 compared to 2020. (Last year, 28% said revenues had *decreased* by more than 25% compared to 2019, so 2021 largely represents a regaining of lost business.)

We calculated an average change in revenues of +10.6% from 2020 to 2021.[1] We also adjusted the average change in revenues for inflation, backing -7.0% out of the average change in revenues.[2] So, adjusted for inflation, revenues only grew +3.6% from 2020 to 2021. That's still better than last year, where revenues had dropped -12.6% (-14.0% adjusted for inflation) from 2019 to 2020. Still, we feel the current inflation level is artificially high due to recovery from the pandemic and the "supply chain issues," although that is little comfort when looking at current balance sheets.

---

[1] The estimates were calculated using the mid-points of the percentage ranges and 30% for the "25% or more" ranges.
[2] Based on current CPI (https://www.bls.gov/news.release/pdf/cpi.pdf).



n=218

	1–9 employees	10–19 employees	20–49 employees	50+ employees
increased more than 25%	20%	19%	18%	14%
increased between 10% and 25%	23%	34%	33%	35%
increased between 6% and 10%	18%	16%	18%	28%
increased between 1% and 5%	7%	6%	16%	6%
stayed about the same	10%	6%	7%	10%
decreased between 1% and 5%	3%	9%	2%	2%
decreased between 6% and 10%	5%	3%	0%	2%
decreased between 10% and 25%	7%	6%	4%	2%
decreased more than 25%	7%	0%	2%	0%
Average change	+8.0%	+11.3%	+11.4%	+11.7%
Average change adjusted for inflation	+1.0%	+4.3%	+4.4%	+4.7%

If we look at survey results by establishment size, businesses did better as their size increased, although all but the smallest were fairly close to each other.

For 1–9-employee shops, 20% said that revenues had increased 25% or more from 2020 to 2020 and 23% said they had increased between 10% and 25%. They were the demographic group that reported the highest revenues decreases, which brought their average revenue change to +8.0% before inflation.

For 10–19-employee shops, 19% said that revenues increased 25% or more, but 34% said they had increased between 10% and 25%. They saw modest decrease in revenues in 2021, though none reported decreases greater than 25%. The average revenue change for these establishments was +11.3% before inflation.

Among 20–49-employee shops, 18% said that revenues had increased 25% or more, and 33% said revenues had increased between 10% and 25%. Six percent reported revenue decreases in 2020 (2% by more than 25%), so the average revenue change for these establishments was +11.4% before inflation.

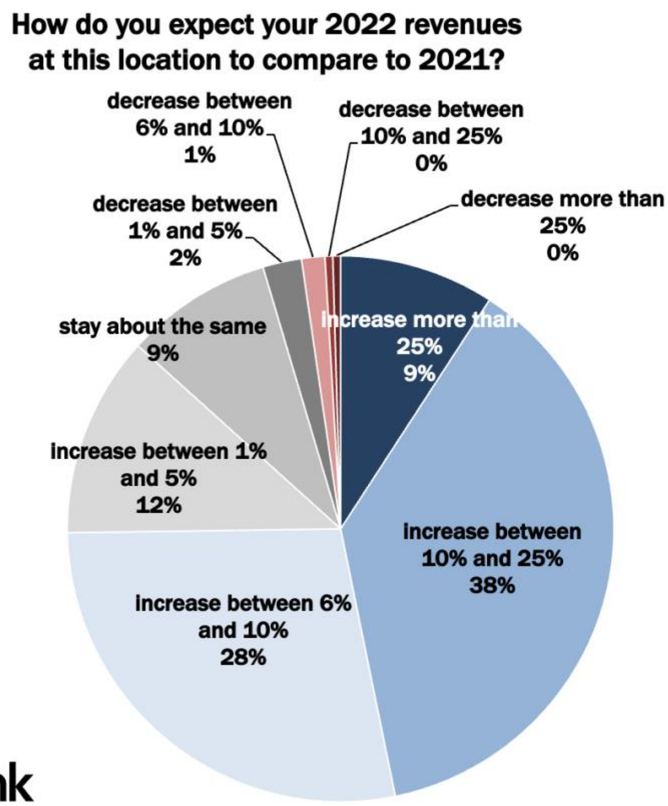
For 50+-employee shops, 14% said that revenues had increased 25% or more, and 35% said they had increased between 10% and 25%, and 28% said they had increased between 6% and 10%. Only 4% reported revenue decreases in 2021. The average revenue change for these establishments was +11.7% before inflation.

2022 Revenues

The general expectation is that 2022 will be a reprise of 2021, with about the same level of growth in revenues, although it's easy to see the 2022 revenues as reflecting more new business growth than reclaiming what was lost in 2020.

Nine percent of respondents expect revenues to increase by 25% or more in 2022 vs. 2021, 38% expect revenues to increase between 10% and 25%, and 28% expect revenues to increase between 5% and 10%. Only about 3% expect revenues to decrease in 2022 over 2021.

Overall, printing establishments expect an +11.3% change in revenues in 2022, or +4.3% if you adjust for inflation—or about what they did in 2021.



WhatTheyThink

n=218

	1–9 employees	10–19 employees	20–49 employees	50+ employees
increase more than 25%	15%	9%	2%	9%
increase between 10% and 25%	30%	31%	49%	40%
increase between 6% and 10%	18%	41%	31%	28%
increase between 1% and 5%	15%	16%	7%	11%
stay about the same	13%	3%	7%	9%
decrease between 1% and 5%	3%	0%	2%	2%
decrease between 6% and 10%	5%	0%	0%	0%
decrease between 10% and 25%	0%	0%	0%	1%
decrease more than 25%	0%	0%	2%	0%
Average change	+11.0%	+11.8%	+10.9%	+11.6%
Average change adjusted for inflation	+4.0%	+4.8%	+3.9%	+4.6%

For 1–9-employee shops, 15% expect revenues to increase 25% or more in 2022 compared to 2021, while 30% expect revenues to increase between 10% and 25% and 18% expect revenues to increase between 6% and 10%. Only 8% expect revenues to decrease in 2022. Overall, these businesses expect an average pre-inflation revenue growth of +11.0% in 2022.

For 10–19-employee shops, 9% expect revenues to increase 25% or more in 2022 compared to 2021, while 31% expect revenues to increase between 10% and 25% and 41% expect revenues to increase between 6% and 10%. No one in this demographic group expects revenues to decrease in 2022. Overall, these businesses expect an average pre-inflation revenue growth of +11.8% in 2022.

For 20–49-employee shops, 2% expect revenues to increase 25% or more in 2022, a whopping 49% expect revenues to increase between 10% and 25%, and 31% expect revenues to increase between 6% and 10%. Only 4% expect revenues to decrease in 2022—but then 2% by more than 25%. Overall, these businesses expect an average pre-inflation revenue growth of +10.9% in 2021.

For 50+-employee shops, 9% expect revenues to increase 25% or more in 2022, 40% expect revenues to increase between 10% and 25%, and 28% expect revenues to increase between 6% and 10%. Only 3% expect revenues to decrease in 2022. Overall, these businesses expect an average pre-inflation revenue growth of +11.6% in 2021.

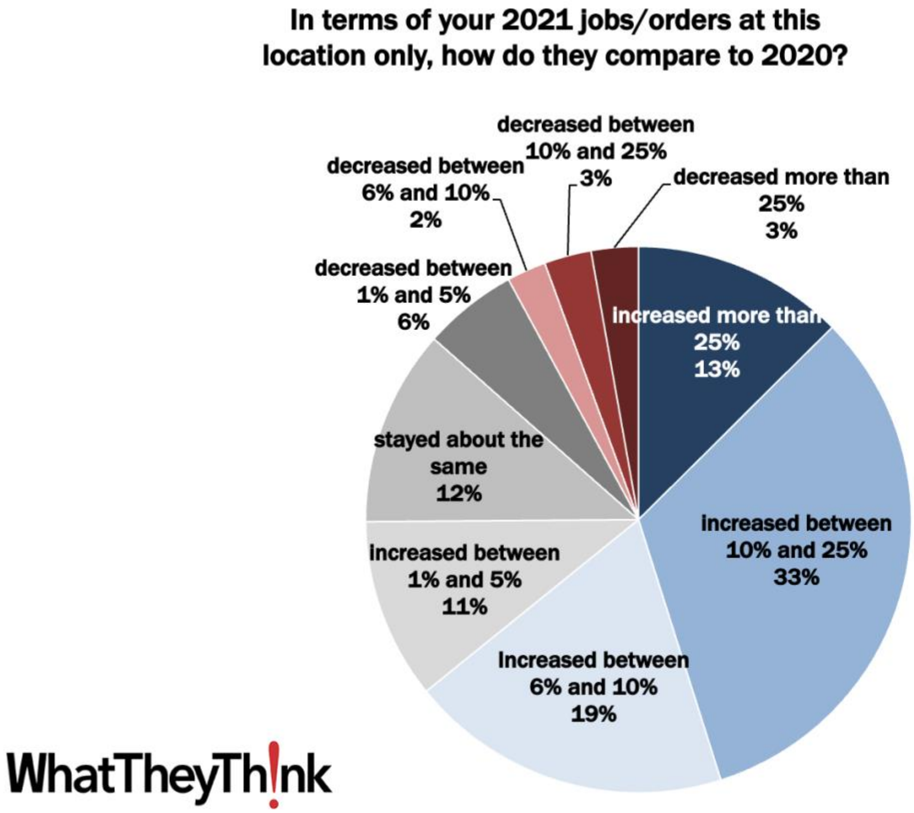
Jobs/Orders

There often tends to be a bit of a disconnect between the number of jobs/orders and revenues, which is reflective of challenges in pricing, although this year they seem to be a little bit more in alignment than is usually the case, the challenge of pricing (see Section 2) has led jobs/orders to lag revenues.

2021 Jobs/Orders

In terms of jobs/orders, 13% of print businesses surveyed said that jobs for 2021 had increased more than 25% compared to 2020. A further 33% said that jobs had increased between 10% and 25%, and 19% said jobs increased between 6% and 10%. Meanwhile, 14% said that the number of jobs had decreased in 2021 vs. 2020.

We calculated an average change in jobs of +9.5% from 2020 to 2021. Fortunately, we don’t need to adjust jobs for inflation.



n=215

	1–9 employees	10–19 employees	20–49 employees	50+ employees
increased more than 25%	12%	19%	11%	11%
increased between 10% and 25%	20%	29%	41%	39%
increased between 6% and 10%	15%	13%	23%	23%
increased between 1% and 5%	17%	10%	7%	9%
stayed about the same	12%	13%	9%	13%
decreased between 1% and 5%	8%	13%	2%	3%
decreased between 6% and 10%	3%	0%	2%	3%
decreased between 10% and 25%	7%	3%	0%	1%
decreased more than 25%	7%	0%	5%	0%
Average change	+5.0%	+11.1%	+10.8%	+11.5%

For 1–9-employee shops, 12% said that jobs/orders had increased 25% or more from 2020 to 2021, and a further 20% said jobs had increased between 10% and 25%. Twelve percent said that jobs had remained about the same, while one-fourth (25%) said jobs had decreased in 2021. The average job/order change for these businesses was +5.0%, less than half that of the other three demographic categories.

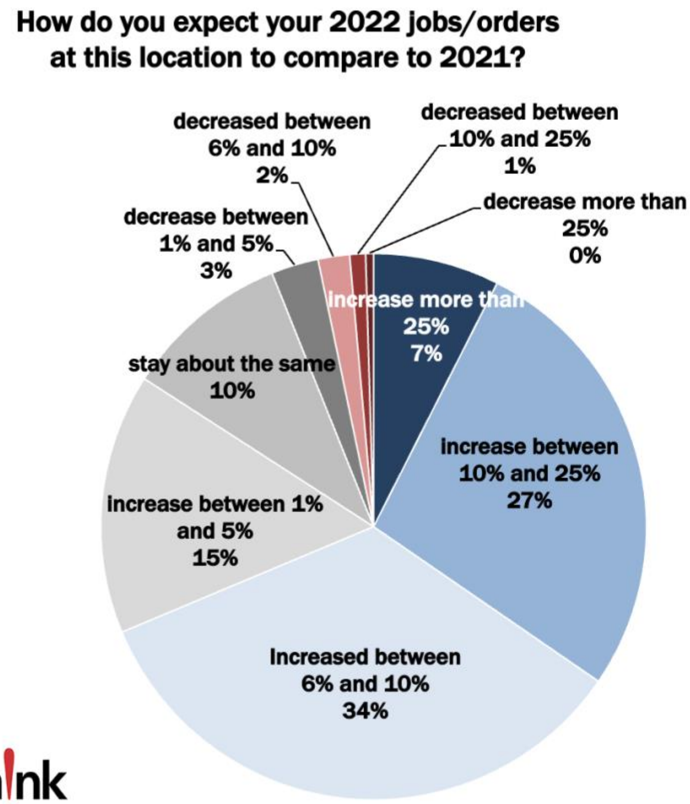
For 10–19-employee shops, 19% said that jobs/orders had increased 25% or more, and another 29% said jobs had increased between 10% and 25%. Sixteen percent reported a decrease in jobs in 2021, although for the bulk of them (13%) it was only between 1% and 5%. The average job/order change for these businesses was +11.1%.

For 20–49-employee shops, 11% said that jobs/orders had increased 25% or more in 2021, but 41% said jobs had increased between 10% and 25%, while another 23% said that jobs had increased between 6% and 10%. Only 9% said that jobs had decreased in 2021. The average job/order change for these businesses was +10.8%.

And for 50+-employee shops, they did the best jobs/orders-wise: 11% said that jobs/orders had increased 25% or more, but 39% said jobs had increased between 10% and 25% and another 23% said that jobs had increased between 6% and 10%. Thirteen percent said that jobs had remained about the same, while only 7% reported a decreased in jobs. The average job/order change for these businesses was +11.5%.

2022 Jobs/Orders

As for anticipated 2022 jobs/orders, shops are fairly conservative, certainly compared to pre-pandemic expectations for future job/order growth. Seven percent of respondents expect jobs/orders to increase by 25% or more in 2022, while 27% expect jobs to increase between 10% and 25%, 34% expect jobs to increase between 6% and 10%, and 15% expect jobs to increase between 1% and 5%. Ten percent expect jobs to stay about the same, and 6% expect jobs to decrease in 2022. The average expected change in jobs/orders is +9.5%, which is about what they had expected in 2020 for 2021 jobs—and they were a little conservative then, as well, compared to the actual growth they did experience.



WhatTheyThink

n=214

	1–9 employees	10–19 employees	20–49 employees	50+ employees
increase more than 25%	13%	7%	5%	5%
increase between 10% and 25%	20%	33%	32%	28%
increase between 6% and 10%	23%	40%	34%	40%
increase between 1% and 5%	17%	17%	16%	14%
stay about the same	15%	3%	7%	10%
decrease between 1% and 5%	3%	0%	5%	3%
decrease between 6% and 10%	7%	0%	0%	0%
decrease between 10% and 25%	2%	0%	0%	1%
decrease more than 25%	0%	0%	2%	0%
	100%	100%	100%	100%
Average change	+8.9%	+11.4%	+9.2%	+9.5%

Among 1–9-employee shops, 13% expect jobs/orders to increase 25% or more, 20% expect them to increase between 10% and 25%, 23% expect them to increase between 6% and 10%, and 17% expect them to increase between 1% and 5%. Fifteen percent expect jobs to stay about the same in 2022, while 12% expect to see jobs decrease. The expected change in jobs/orders for these businesses is +8.9%.

Among 10–19-employee shops—the most optimistic demographic category—7% expect jobs/orders to increase 25% or more, 33% expect them to increase between 10% and 25%, 40% expect them to increase between 6% and 10%, and 17% expect them to increase between 1% and 5%. Three percent expect jobs to stay about the same in 2022, while no one expects to see jobs decrease. The expected change in jobs/orders for these businesses is +11.4%.

Among 20–49-employee, only 5% expect jobs/orders to increase 25% or more, but 32% expect them to increase between 10% and 25%, 34% expect them to increase between 6% and 10%, and 16% expect them to increase between 1% and 5%. Seven percent expect jobs to stay about the same in 2021, while another 7% expect to see jobs decrease. The expected change in jobs/orders for these businesses is +9.2%.

And among 50+-employee shops, 5% expect jobs/orders to increase 25% or more, 28% expect them to increase between 10% and 25%, 40% expect them to increase between 6% and 10%, and 14% expect them to increase between 1% and 5%. Ten percent expect jobs to stay about the same in 2022, while 4% expect to see jobs decrease. The expected change in jobs/orders for these businesses is +9.5%.

Profitability

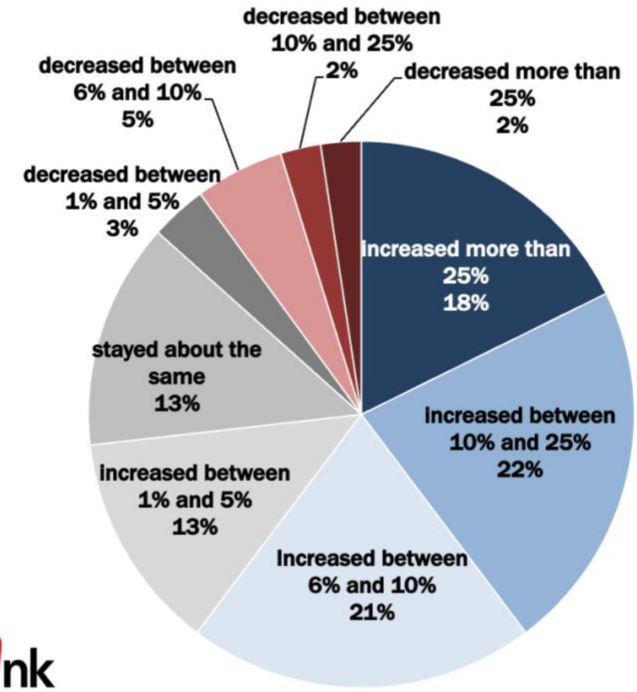
We usually take this opportunity to tell our “tale of two cities,” as there has traditionally been a profitability gap between large and small printers. That is, large printers (those with more than $25 million in assets) are seeing less profitability than small printers (those with less than $25 million in assets), driving down overall industry profitability. Last year’s data was a bit anomalous, but this year, we are seeing some signs that our usual profitability patterns are returning.

2021 Profits

Profits in 2021 were also up over 2022; 18% reported that profits increased 25% or more, 22% reported that profits had increased between 10% and 25%, 21% reported that profits had increased between 6% and 10%, and 13% that profits had increased between 1% and 5%. Thirteen percent said that profits had remained about the same, and 12% said that profits had decreased compared to 2021. (Note that these are not the *rates* of profitability, but are the change in the dollar value of total profits compared to the prior year.)

The average change in profits was +9.4% or, adjusted for inflation, +2.4%.

In terms of your 2021 profits at this location only, how do they compare to 2020?



WhatTheyThink

n=209

	1–9 employees	10–19 employees	20–49 employees	50+ employees
increased more than 25%	15%	17%	15%	22%
increased between 10% and 25%	14%	13%	32%	27%
increased between 6% and 10%	22%	20%	24%	18%
increased between 1% and 5%	10%	23%	7%	14%
stayed about the same	17%	7%	12%	14%
decreased between 1% and 5%	3%	7%	2%	3%
decreased between 6% and 10%	10%	10%	2%	1%
decreased between 10% and 25%	3%	3%	0%	3%
decreased more than 25%	5%	0%	5%	0%
Average change	+5.9%	+8.0%	+10.2%	+12.2%
Average change adjusted for inflation	-1.1%	+1.0%	+3.2%	+5.2%

Profitability improves as establishments get larger.

For 1–9-employee shops, 15% said that profits had increased 25% or more from 2020 to 2021, while 14% said profits had increased between 10% and 25%, and 22% said profits had increased between 6% and 10%. Seventeen percent said that profits stayed about the same, and 21% said profits had decreased. The average pre-inflation-adjustment change in profits for these businesses was +5.9%—but adjusted for inflation, profitability was down -1.1%, the only appearance of a negative number in our business conditions data this year.

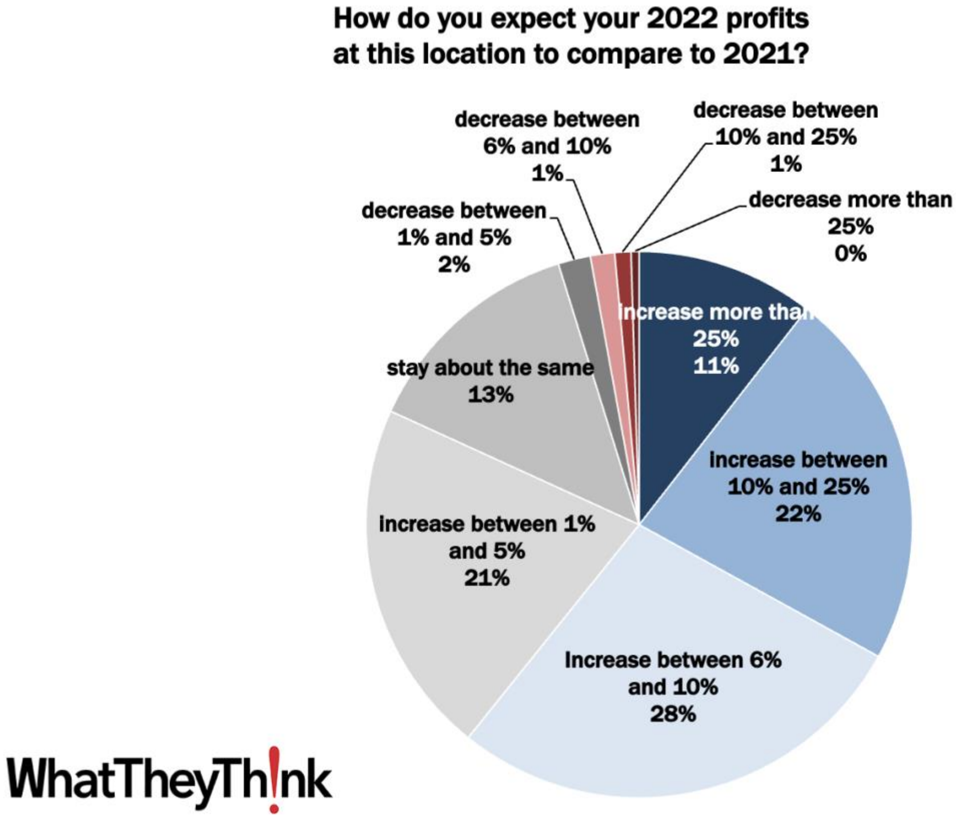
For 10–19-employee shops, 17% said that profits had increased 25% or more from 2020 to 2021, while 13% said profits had increased between 10% and 25%, and 20% said profits had increased between 6% and 10%. Seven percent said that profits stayed about the same, and 20% said profits had decreased. The average pre-inflation-adjustment change in profits for these businesses was +8.0%.

For 20–49-employee shops, 15% said that profits had increased 25% or more from 2020 to 2021, while 32% said profits had increased between 10% and 25%, and 24% said profits had increased between 6% and 10%. Twelve percent said that profits stayed about the same, and 9% said profits had decreased. The average pre-inflation-adjustment change in profits for these businesses was +10.2%.

For 50+-employee shops, 22% said that profits had increased 25% or more from 2020 to 2021, while 27% said profits had increased between 10% and 25%, and 18% said profits had increased between 6% and 10%. Fourteen percent said that profits stayed about the same, and 7% said profits had decreased. The average pre-inflation-adjustment change in profits for these businesses was +12.2%.

2022 Profits

Overall, 11% of respondents expect profits to increase 25% or more in 2022, 22% expect them to increase between 10% and 25%, 28% expect them to increase between 6% and 10%, and 21% expect profits to increase between 1% and 5%. Thirteen percent expect profits to stay about the same, while only 4% expect profits to decrease in 2022. The average pre-inflation expected change in profits is +9.4%.



n=209

	1–9 employees	10–19 employees	20–49 employees	50+ employees
increase more than 25%	14%	3%	12%	10%
increase between 10% and 25%	19%	20%	24%	25%
increase between 6% and 10%	20%	53%	27%	24%
increase between 1% and 5%	27%	13%	27%	16%
stay about the same	14%	7%	10%	18%
decrease between 1% and 5%	3%	3%	0%	1%
decrease between 6% and 10%	3%	0%	0%	1%
decrease between 10% and 25%	0%	0%	0%	3%
decrease more than 25%	0%	0%	0%	1%
Average change	+9.3%	+9.0%	+10.8%	+8.8%
Average change adjusted for inflation	+2.3%	+2.0%	+3.8%	+1.8%

Among 1–9-employee shops—who, despite lackluster 2021 profits, are among the most optimistic for 2022—14% expect profits to increase 25% or more from 2021 to 2022, 19% expect them to increase between 10% and 25%, 20% expect them to increase between 6% and 10%, and 27% expect profits to increase between 1% and 5%. Fourteen percent expect profits to stay about the same, while only 6% expect profits to decrease in 2022. The average pre-inflation expected change in profits is +9.3%.

Among 10–19-employee shops, only 3% expect profits to increase 25% or more, 20% expect them to increase between 10% and 25%, a whopping 53% expect them to increase between 6% and 10%, and 13% expect profits to increase between 1% and 5%. Seven percent expect profits to stay about the same, while a scant 3% expect profits to decrease, and then only by 1% to 5%. The average pre-inflation expected change in profits is +9.0%.

Among 20–49-employee shops, 12% expect profits to increase 25% or more, 24% expect them to increase between 10% and 25%, 27% expect them to increase between 6% and 10%, and another 27% expect profits to increase between 1% and 5%. Ten percent expect profits to stay about the same, and no one in this demographic category expects profits to decrease in 2022. The average pre-inflation expected change in profits is +10.8%.

Among 50+-employee shops—strangely, the least optimistic—10% expect profits to increase 25% or more, 25% expect them to increase between 10% and 25%, 24% expect them to increase between 6% and 10%, and 16% expect profits to increase between 1% and 5%. Eighteen percent expect profits to stay about the same, while 6% expect profits to decrease in 2022. The average pre-inflation expected change in profits is +8.8%.

Business Conditions Summary

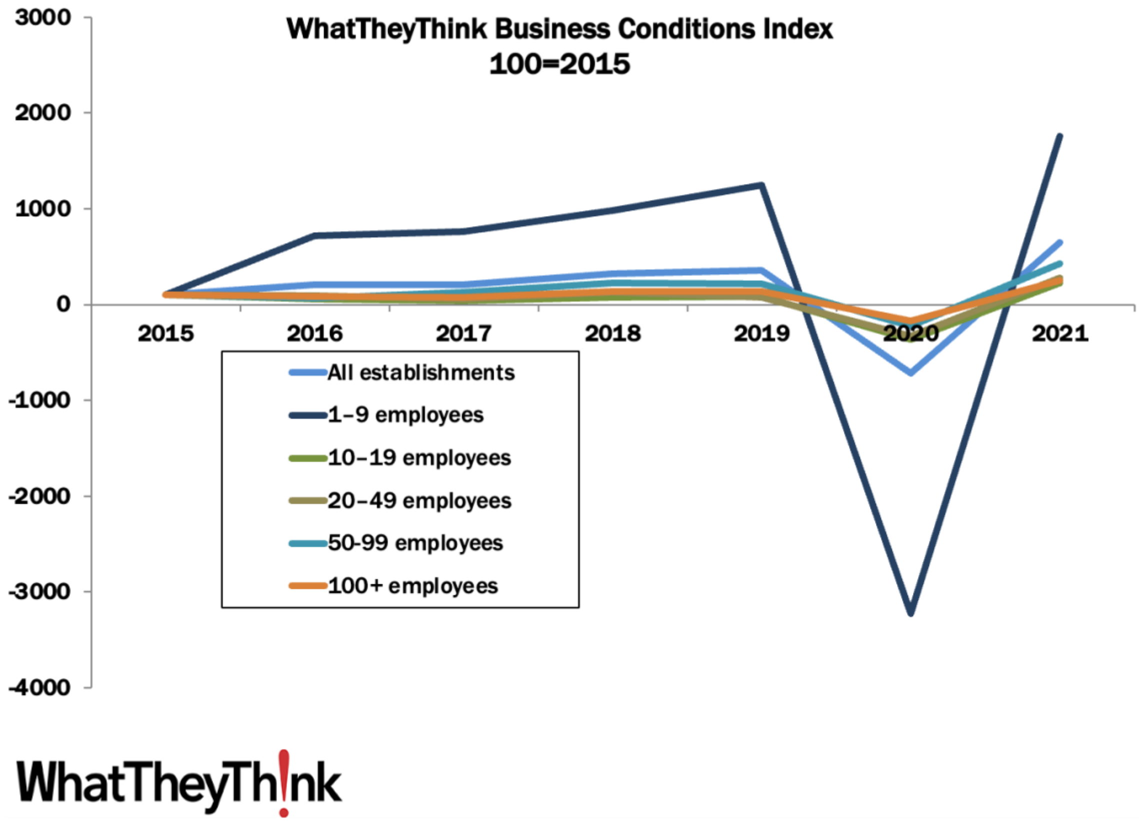
In the table below, we summarize our calculated average changes in revenues, jobs/orders, and profits by size category.

2021	All Responses	1-9 employees	10-19 employees	20-49 employees	50+ employees
Revenues					
Average change	+10.6%	+8.0%	+11.3%	+11.4%	+11.7%
Average change adjusted for inflation	+3.6%	+1.0%	+4.3%	+4.4%	+4.7%
Jobs/Orders					
Average change	+9.5%	+5.0%	+11.1%	+10.8%	+11.5%
Profits					
Average change	+9.4%	+5.9%	+8.0%	+10.2%	+12.2%
Average change adjusted for inflation	+2.4%	-1.1%	+1.0%	+3.2%	+5.2%

2022	All Responses	1-9 employees	10-19 employees	20-49 employees	50+ employees
Revenues					
Average change	+11.3%	+11.0%	+11.8%	+10.9%	+11.6%
Average change adjusted for inflation	+4.3%	+4.0%	+4.8%	+3.9%	+4.6%
Jobs/Orders					
Average change	+9.5%	+8.9%	+11.4%	+9.2%	+9.5%
Profits					
Average change	+9.4%	+9.3%	+9.0%	+10.8%	+8.8%
Average change adjusted for inflation	+2.4%	+2.3%	+2.0%	+3.8%	+1.8%

The WhatTheyThink Business Conditions Index

We have been conducting these surveys long enough that we have enough data points to resurrect a metric that dates back to the old TrendWatch days: the Business Conditions Index (BCI), which fell substantially in 2020—especially for small print shops.



We indexed business conditions[3] to 2015, the first year we began these regular surveys. Until 2020, 2015 was the gold standard for a pretty lousy year for the industry, so it had been easy to see improvement in the subsequent years. The "tale of two cities" looks pretty apparent, although the 1–9-employee firms appear to be a city unto themselves, leading the pack by far, at least in terms of revenues—and then plummeting even more dramatically in 2020, but rebounding just as dramatically in 2021.

In a normal year, smaller print businesses are able to transition to new products and technologies much more nimbly—or with more *agility*—than larger businesses and given that they are, for the most part, all-digital shops, helps them adapt to a changing product mix, as well as keep overhead low. And while all of these things were what helped many print businesses transition to new kind of products and services during the pandemic, smaller shops didn't always have the resources to do so, and even a modest disruption in their shop volume and cashflow caused great hardship for these businesses. Again, in a normal year, changes don't happen as rapidly as they did in 2020.

[3] We used our revenues data to create this index.

Looking Ahead

At the moment, business conditions are pretty good across the industry, and we seem to have rebounded from the doldrums of 2020. However, be careful about "survivor bias," which we suspect is a greater factor in this survey than in previous surveys. (We explain it in great detail in Appendix B.) The pandemic resulted in a loss of establishments, although how many, we have yet to determine; *County Business Patterns* data that includes 2020 will be coming out later this year, which should give us some idea of what happened to our industry demographically. The point being that the businesses that we lost were not around to fill out our survey, so those that are left may have provided an unrealistically rosy picture of the industry.[4]

Many businesses, though, made it through, and some did fairly well—some even thrived. Those that were deemed essential businesses early on, and those that could transition to new products that were in great demand, could keep themselves going, although for a lot of these businesses these materials were stopgap measures until normal volumes reappeared. For those print businesses that have events, travel, tourism, and related verticals as primary customers, the pain was especially acute, as these markets were shut down for virtually all of 2020, and the surge of new business we reported in this survey likely reflects the pent-up demand for graphics in the verticals that reopened in 2021.

You may also have noticed a bit of a disparity in the change rates among revenues, jobs/orders, and profits. We'll have more to say about this in the Challenges section, but even pre-pandemic we had been tracking a disconnect among these three business conditions metrics, which is largely a matter of pricing. Especially as print businesses have added new (or somewhat new) applications and products like wide format, there can be a mismatch between revenues and jobs (and ultimately profitability) as a lot of the kinds of bespoke projects in these new application areas don't have as clear pricing precedents as older, more established print work. We are seeing jobs trail revenues, which is some indication that shops are pricing jobs higher than they had in the past—which we also suspect is the case as (and this will be covered in another Business Challenge) the cost of materials has risen pretty dramatically since the pandemic.

At the end of the day, most print businesses are bullish on 2022, albeit not as much as is usually the case—although as our survey was in the field, the Omicron variant was rampant and cases were starting to surge again. That may have tempered some of the expectations for 2022.

[4] We also don't know what to make of the fact that, despite all our outreach and cajoling, we ended up with the smallest response rate in quite some time. Is everyone over-surveyed? Is everyone struggling to get those print volumes back up and don't have time for surveys? Is the response rate we get for any given survey proportional to the number of potential responding establishments at that time? It could be some combination of these factors. At any rate, we exceeded the minimum needed for a survey such as this to be statistically significant, but it is smaller than what we usually manage to obtain.

2. Challenges, Opportunities, and Investments

In this section, we take a look at what print businesses see as their top challenges and their biggest business and/or sales opportunities in the next 12 months, as well as what they're planning on buying to meet those challenges or pursue those opportunities.

These kinds of questions help qualify the data obtained in the business conditions part of the survey. After all, it's one thing to know what current and expected business conditions are, but quite another to understand *why* they are what they are. These questions' responses also help verify or refute business conditions data which, as you have probably seen, are not entirely objective measures of a company's performance.

Top Business Challenges

Last year, we had added two COVID-related items which—surprise surprise—debuted in the top two. It's also no surprise that they have dropped a bit this year. This year, one formerly low-ranking item leaped to the top of the list, which may also surprise no one: "consumables and supplies pricing," selected by 56% of respondents. This had been at 14% in last year's survey and 20% in 2019. The so-called "supply chain" disruptions have made many consumables and other materials (especially paper) either very hard to come by or more expensive (sometimes a lot more expensive) than they had been in the past. If you read our WhatTheyThink daily Newsfeed, you may have noticed that virtually every day a supplier somewhere has raised prices for some consumable or other.

This issue is not only making it harder to get jobs out the door (it's hard to print when you can't get paper), but has also led to issues with the number two challenge: "pricing," selected by 41% of respondents (it had been at 29% last year and at 26% in 2019, where it had been the number one challenge). To what extent can these price increases—as well as increases in employee salary and other compensation—be passed along to the customer? (Print Industries Affiliates' annual Wages & Benefits survey found that there has been little if any customer pushback to increased prices.[5] We'll look at this survey a bit more in Section 5.) In recent years, pricing had been an issue, but for different reasons: how to price new applications the company may have added, like wide-format printing and various types of display graphics? Now it's how to price jobs so that they can compensate for increased costs.

The other major problem impacting the industry is staffing, another of those problems that was nettlesome in the Before Times, but which the Great Resignation has only amplified is finding and/or retaining employees. Ergo, "finding qualified production personnel" is tied at number two, selected by 41%, up from 23% in 2020 and 19% in 2019. Finding production staff also impacts the ability to get jobs out the door. Solutions to this challenge often involve paying more for these positions (which then necessitates upping current employees' salaries to keep them from bolting) and/or increasing benefits. On top of consumables price increases, this is putting a great deal of pressure on profit margins—which, let's face it, were fairly narrow even at the best of times. So it's

---

[5] See our report on their report at https://whattheythink.com/articles/109161-good-help-getting-harder-find-keep-print-industries-affiliates-latest-wage-benefits-survey/.

understandable why, as we saw in the last section, expectations of profitability have taken a bearish turn.

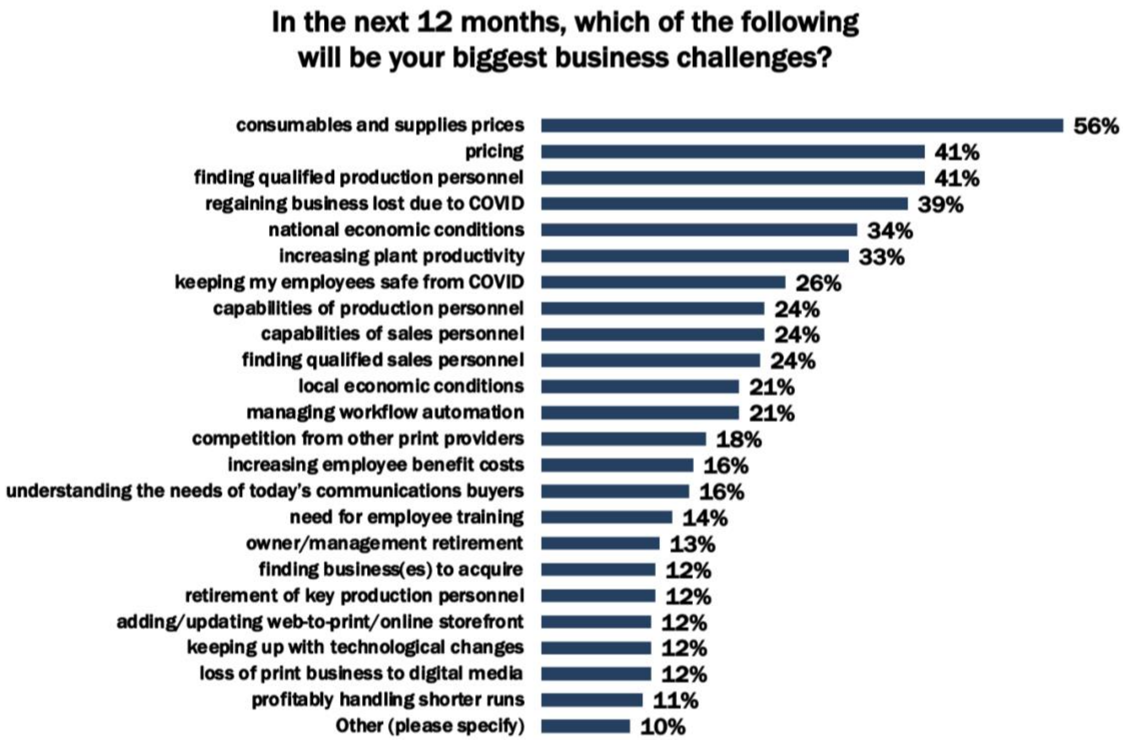
Number three is last year's number one, "regaining business lost due to COVID," down to 39% from 55% last year. As we saw in Business Conditions, this regaining of business has already largely happened, but shops still have some ground to make up, particularly among some of the vertical markets that were the last to re-open.

At number four is "national economic conditions," selected by 34%, down two percentage points from last year. As goes the economy, so goes the demand for print. And at present, as goes COVID, so goes the economy.

Rounding out the top five is "increasing plant productivity," selected by 33% of respondents—up from 30% last year and wa-a-a-a-ay up from 18% in 2019. Indeed, this is an all-time high for this challenge, and is in many ways, the culmination of the previous challenges. With staff shortages, scarce supplies, and more expensive supplies, how can we regain the remainder of the work lost to COVID?

Some of the more traditional challenges have been masked by the new COVID-related challenges, but remain: "capabilities of sales personnel"—a typical top five gripe—may be down at number eight, but at 24% is not far removed from where it was in the last two surveys. "Finding qualified sales personnel," is also at 24%, up two percentage points from last year and up from 15% in 2019.

One thing you may have noticed we didn't mention in the discussion of finding production staff above is automation. After all, one good way to, if not eliminate, than at least help ease the challenge of scarce staff is to automate as much as possible. And yet, here we find that "managing workflow automation" is way down the list at 21%, within one or two percentage points of where it has been since at least 2019.



n=221

Looking at the challenges by shop size can give us a little better handle on these concerns:

	1–9 employees	10–19 employees	20–49 employees	50+ employees
regaining business lost due to COVID	23%	56%	38%	33%
keeping my employees safe from COVID	2%	18%	22%	34%
transitioning the business to produce new kinds of print materials post-COVID (such as PPE, distancing signage, divisional graphics)	13%	0%	4%	5%
increasing plant productivity	15%	18%	49%	45%
managing workflow automation	17%	21%	20%	27%
competition from other print providers	17%	21%	22%	15%
capabilities of sales personnel	17%	26%	29%	26%
capabilities of production personnel	13%	18%	22%	33%
understanding the needs of today's communications buyers	50%	24%	16%	15%
consumables and supplies prices	28%	59%	49%	63%
national economic conditions	25%	38%	33%	37%
local economic conditions	7%	38%	22%	11%

	1–9 employees	10–19 employees	20–49 employees	50+ employees
financing costs of our equipment	5%	0%	2%	0%
finding capital for investments	7%	0%	4%	5%
need for employee training	17%	24%	2%	22%
finding qualified sales personnel	20%	21%	27%	28%
finding qualified production personnel	15%	41%	44%	55%
increasing employee benefit costs	12%	9%	20%	18%
profitably handling shorter runs	7%	15%	9%	10%
deciding whether to keep or discard our offset equipment	17%	12%	9%	5%
loss of print business to digital media	42%	18%	7%	9%
pricing	7%	47%	38%	40%
job tracking	3%	12%	0%	6%
print MIS implementation	0%	3%	4%	5%
migrating production to the cloud	5%	0%	2%	1%
migrating business functions to the cloud	3%	3%	2%	4%
migrating customer service and sales to the cloud	2%	6%	4%	4%
training employees to use cloud applications	8%	6%	2%	4%
keeping up with technological changes	2%	15%	7%	16%
making our facility/business more environmentally sustainable	7%	6%	0%	2%
owner/management retirement	3%	12%	20%	13%
retirement of key production personnel	5%	15%	18%	15%
selling our business	3%	3%	7%	5%
finding business(es) to acquire	10%	21%	7%	18%
adding/updating web-to-print/online storefront	7%	21%	11%	10%
getting web-to-print to work on smartphones and other mobile devices	2%	12%	7%	4%
adding wide-format equipment/services	0%	15%	4%	5%
adding packaging printing equipment/services	0%	3%	4%	6%
adding 3D printing equipment/services	2%	3%	0%	0%
transitioning jobs from offset to high-speed digital printing equipment	7%	18%	0%	10%
adding non-print media capabilities (web design, app development, social media management, etc.)	5%	6%	2%	5%
competing against digital media agencies	8%	9%	0%	7%
Other (please specify)	0%	6%	7%	13%

1–9 employees: The top three challenges are “understanding the needs of today’s communications buyers” (50%, up from 21% last year), “loss of print business to digital media” (42%, up from 32%), and “consumables and supplies prices” (28%, up from 14%). Since these smallest print businesses tend to be digital, they likely use fewer consumables (primarily ink and paper, vs. other offset-related consumables like plates) and may not be as impacted by increased prices.

10–19 employees: The top challenges are “consumables and supplies prices” (59%, up from 21%), “regaining business lost due to COVID” (56%, down from 76%), and “pricing” (47%, up from 33%).

20–49 employees: The joint number one challenges are “consumables and supplies prices” (49%, up from 15%) and “increasing plant productivity” (49%, up from 36%), followed by “finding qualified sales personnel” (44%, up from 32%) and “regaining business lost due to COVID” (38%, down from 53%).

50+ employees: The top three challenges are “consumables and supplies prices” (63%, up from 7%, so a little bit of a jump), “finding qualified production personnel” (55%, up from 32%) and “increasing plant productivity” (45%, up from 31%).

Business Opportunities

“Improving economic conditions” is again the top opportunity in this year’s survey. It was cited by 40% of respondents, down from 50% last year when it was the highest this opportunity had charted since the years right after the Great Recession. It’s one of those “rising tide lifts all boats” kinds of things and, as we saw in the Business Conditions section, a recovery from the pandemic-induced recession did indeed help bring volumes back. As we say, as the economy goes, so goes the industry, although unlike previous recessions, this was not one caused by a lack of demand, but rather by an inability to satiate that demand. As such, it was fairly easy to bounce back, which is very rarely the case.

At number two is “customers outsourcing more work to us,” 2019’s number one opportunity, back up to 37% and a high point for this item (it was at 34% in 2019 and dropped to 30% in 2020). There is always the danger that customers will be able to satisfy a substantial amount of their own printing needs in-house, whether that be “quick print” work or even some wide-format or other specialty printing. This is especially the case in the current environment, where businesses throughout the economy need to cut costs as much as possible. So the goal here is to convince potential print customers that they’ll save money in the long run by outsourcing work they might be considering doing in-house. And professional graphics reflect better on a customer’s “brand.”

Number three is the opportunity we added last year: “national recovery from COVID-19,” cited by 33%, down from 48% of respondents, which is like “improving economic conditions” in that it is awaiting external forces to create a better environment for print demand.

Number four is “helping customers integrate print and non-print marketing campaigns” at 19%, unchanged from last year, and down one point from 2019. This had been the number four opportunity in 2019 and number two in 2018.

Tied at number four is "hiring new salespeople" at 19%, down two points from last year, but still above the 15% it was in 2019. This had been a perennial top opportunity, and although it had been losing favor towards the end of the 2010s, it seems to be coming back. There has always been the sense that "if we had better sales guys—especially ones with books of business—we'd be golden." Unfortunately, print sales works less and less like that anymore. We do see "adding web-to-print/online storefront" is up three points to 10%, so that's a good thing.

Number five is a three-way tie at 18% among "partnering with other print providers" (a great way to add new products and services without an major capital investment, or at least until that kind of work reaches a critical mass), "customized, personalized, or variable-data printing jobs" (long a high-value print application…when done right), and—related to that—"adding digital printing equipment." We'll have more to say about this latter item in the Planned Investments and New Application Areas sections.

In the next 12 months, which of the following represent your best new business opportunities?

WhatTheyThink

n=221

Looking at the opportunities by shop size can give us a little better idea of what's going on:

	1–9 employees	10–19 employees	20–49 employees	50+ employees
improving economic conditions	42%	53%	40%	33%
national recovery from COVID-19	30%	44%	29%	34%
producing post-COVID print materials (such as PPE, distancing signage, divisional graphics)	3%	3%	0%	7%
customers outsourcing more work to us	33%	44%	33%	38%
increasing sales through print brokers	8%	12%	13%	10%
partnering with other print providers	23%	15%	20%	15%
helping clients get their websites to work on mobile devices	3%	3%	7%	2%
offering electronic/non-print services for customers (web design, app development, social media management, etc.)	2%	12%	9%	7%
offering interactive print technologies to customers (like QR codes, augmented reality)	17%	6%	13%	12%
helping customers integrate print and non-print marketing campaigns	15%	26%	13%	22%
using marketing automation for our business (like HubSpot, Eloqua, Marketo)	10%	9%	7%	10%
selling marketing automation services to our customers	8%	3%	2%	11%
adding additional offset printing equipment	0%	0%	4%	6%
adding digital printing equipment	12%	21%	16%	22%
customized, personalized, or variable-data printing jobs	15%	32%	13%	16%
disposing of offset equipment to concentrate on digital printing	5%	6%	4%	6%
broadening bindery/finishing equipment/services	3%	18%	16%	20%
adding "digital enhancement" finishing technologies (like Scodix, Highcon, MGI)	0%	6%	0%	1%
adding wide-format printing capabilities	7%	18%	11%	7%
adding textile/fabric printing for soft signage	2%	3%	0%	1%
adding textile/fabric printing for apparel	0%	0%	0%	0%
adding textile/fabric printing for décor/furnishings	0%	0%	0%	1%
adding packaging printing capabilities	5%	9%	11%	21%
adding digital label/wrapper printing capabilities	2%	9%	2%	5%

	1–9 employees	10–19 employees	20–49 employees	50+ employees
adding specialty or industrial printing capabilities	2%	3%	7%	1%
adding vehicle graphics/wrapping capabilities	2%	0%	0%	1%
adding traditional signage fabrication/construction capabilities	2%	3%	0%	2%
adding dynamic digital signage (DDS) capabilities	2%	3%	0%	2%
adding 3D printing capabilities	2%	3%	2%	1%
broadening fulfillment, shipping, mailing capabilities	3%	15%	9%	10%
automating production	5%	18%	24%	17%
adding web-to-print/online storefront	8%	18%	9%	7%
print MIS implementation	3%	3%	4%	5%
getting more customers using smartphones and other mobile devices	5%	6%	0%	2%
migrating production to the cloud	3%	0%	0%	1%
migrating business functions to the cloud	5%	0%	0%	4%
migrating customer service and sales to the cloud	2%	0%	0%	1%
training employees to use cloud applications	2%	3%	0%	2%
acquiring another company	5%	21%	13%	23%
selling our company	7%	0%	9%	6%
becoming part of a print or sign franchise (like Alphagraphics, FASTSIGNS)	0%	0%	0%	0%
hiring new salespeople	15%	24%	22%	17%
video production services	0%	0%	0%	1%
Other (please specify)	17%	0%	2%	6%

1–9 employees: The top three opportunities are "improving economic conditions" (42%, way down from 73% last year), "customers outsourcing more work to us" (33%, down from 49% last year), and "national recovery from COVID-19" (30%, down from 50%). Last year, "selling our company" spiked among this demographic group at 14%, but this year it has receded to 7%, its 2019 level.

10–19 employees: The top opportunities are "improving economic conditions" (53%, down from 58% last year), "national recovery from COVID-19" (44%, down from 73%), "customers outsourcing more work to us" (also at 44% but up from 33%, and "customized, personalized, or variable-data printing jobs" (32%, up from 30% and the highest this opportunity has ever been for this demographic category). Last year, we had remarked that this size category is the most likely to be seeing opportunities in expanding capabilities, although this year "adding digital printing equipment" stayed at a high of 21% and "broadening bindery/finishing equipment/services" only dropped a few points from 21% to 18%. At an all-time high of 26%, "helping customers integrate print and non-print marketing campaigns" was the highest among the demographic categories, as is "hiring new salespeople" at 24%—it had dropped to 9% last year from 26% in 2019.

20–49 employees: Again, no surprises in the top three—"improving economic conditions" is at 40%, down from 52%, "customers outsourcing more work to us" is at 33%, but up a few ticks from 29%, and "national recovery from COVID-19" tumbled from 52% to 29%. However, "automating production" spikes among this demographic category at 24%, up from 21% last year and an all-time high for these shops. We'll see in the Planned Investments section the extent to which they are pursuing this. "Hiring new salespeople" had been in the top three last year at 27%, but this year drops to 22%. Down in the Planned Investments section we note that flatbed wide-format printers and wide-format finishing equipment are top items, and we note that 11% selected "adding wide-format printing capabilities" as a business opportunity.

50+ employees: Among this group, some shuffling of the top three—"customers outsourcing more work to us" is on top at 38%, although it drops from 41%, "national recovery from COVID-19" (34%, down from 40%), and "improving economic conditions" (33%, down from 41%). Other opportunities for this size category include "acquiring another company" (23%, up one point from last year), "adding digital printing equipment" (22%, up from 19% last year but not as high as 30% in 2019), and "helping customers integrate print and non-print marketing campaigns" at 22%, up from 18% but, again, not as high as 34% in 2019. Last year, "automating production" was at 21% but drops to 17%, and "hiring new salespeople" was way up at 27% but also drops to 17%.

Planned Investments

What are print businesses planning to buy in 2022? Well, as has been the case for a few years, not a lot, or at least nothing that requires advanced planning and a formal investment process.

The overwhelming response—selected by nearly one-fourth (23%) of our respondents—was "we have no planned investments." Last year, 24% said they had no planned investments for 2021 and, in 2019, before COVID, 32% said they had no planned investments for 2020.

As has been the case for the past few surveys, the number one actual item is "finishing/bindery equipment for digital production" (19%, up a tick from 18% last year and from 16% in 2019). Companies have spent the past decade or so broadening their digital equipment capabilities and they have since seen the need to add inline or nearline finishing.

The number two investment item is "high-speed production inkjet printing equipment (like HP PageWide)" selected by 11% of respondents, an all-time high for this item (8% in 2020, 3% in 2019). We saw hints of this in the Business Opportunities section where "adding digital printing capabilities" was growing as an opportunity. Lest we think inkjet rules the roost here, "toner-based color digital press (like HP Indigo, Xerox iGen)" is also at 11%, up from 8% in 2020 and 10% in 2019.

There is a three-way tie for number three at 10%: "finishing/bindery equipment for offset/analog production," "additional space/new location," and "other," where the write-in responses were predominantly "envelope press" and "mailing equipment." (Note to self: add these to next year's survey.)

Last year, "workflow automation software" was a top three item. Where is it this year? It has dropped to 9% from 11% in 2020 and 14% in 2019.

Which of the following investment items have you budgeted for and plan to acquire in the next 12 months?

WhatTheyThink

n=221

Let's see who is specifically buying what:

	1–9 employees	10–19 employees	20–49 employees	50+ employees
COVID safety materials/equipment (like dividers, distancing graphics, PPE)	5%	0%	0%	7%
additional space/new location	5%	3%	7%	17%
color measurement equipment (densitometer, spectrophotometer)	5%	0%	2%	0%
color management software	2%	6%	2%	1%
computer-to-plate equipment	2%	0%	0%	1%
finishing/bindery equipment for offset/analog production	3%	3%	7%	21%
finishing/bindery equipment for digital production	18%	29%	11%	21%
cutting table for wide-format finishing	12%	12%	9%	6%

	1–9 employees	10–19 employees	20–49 employees	50+ employees
other finishing equipment for wide-format	5%	3%	4%	6%
laser cutting/etching equipment	5%	0%	4%	4%
toner-based color digital press (like HP Indigo, Xerox iGen)	17%	12%	7%	10%
high-speed production inkjet printing equipment (like HP PageWide, Canon Océ ColorStream/ImageStream)	8%	6%	9%	17%
sheetfed offset press	0%	3%	4%	5%
web offset press—new	0%	0%	0%	2%
rebuilding our web offset press	0%	3%	0%	4%
wide-format color printer (24 in.+)–solvent/eco-solvent (like Epson, Roland)	5%	0%	0%	1%
wide-format color printer (24 in.+)–latex rollfed or flatbed (like HP Latex)	0%	3%	2%	2%
wide-format color printer (24 in.+)–flatbed UV (like EFI VUTEk, Canon Océ Arizona)	3%	9%	9%	7%
CNC routers and/or other signmaking equipment	3%	9%	0%	6%
digital label printing equipment	0%	3%	2%	10%
transfer-based dye-sublimation printer	2%	3%	0%	1%
direct-to-textile dye-sublimation printer	3%	0%	0%	1%
direct-to-garment printer (like Ricoh/Anajet, Epson)	0%	6%	0%	1%
packaging press/printer–corrugated	0%	0%	0%	0%
packaging press/printer–folding carton	0%	0%	2%	0%
packaging press/printer–flexible packaging	0%	0%	0%	1%
3D printer	2%	0%	2%	0%
prepress RIP for our wide-format printers	0%	3%	2%	1%
prepress RIP for other devices	2%	0%	0%	1%
Management Information System (MIS)	3%	3%	4%	5%
Customer Relations Management (CRM) system	2%	6%	2%	6%
workflow automation software	5%	9%	4%	13%
personal protection equipment (PPE)	2%	0%	0%	2%
we have no planned investments	32%	24%	29%	12%
other (please specify)	15%	6%	9%	7%

1–9 employees: The top response is "we have no planned investments" (32%, down from 49% last year), but 18% are looking at "finishing/bindery equipment for digital production" (up one point from last year), and 17% are looking at "toner-based color digital press (like HP Indigo, Xerox iGen)" (way up from 4% last year). Top items last year were “finishing equipment for wide-format” but that dropped to 5% from 17%, and “cutting table for wide-format finishing” which dropped only two points to 12%.

10–19 employees: We saw in the Business Opportunities section that this demographic group was the most likely to be expanding products and services, and here we find that “we have no planned investments” is not the top selection (it is number two at 24%, up from 21%). Taking top honors is “finishing/bindery equipment for digital production” at 29%, although that is down a tad from 33% last year. These shops are still keen on “toner-based color digital press (like HP Indigo, Xerox iGen),” although not as avidly as last year (12% this year, down from 21%). Also at 12% was “cutting table for wide-format finishing,” up from 9% last year. “Workflow automation software” comes in at 9%, unchanged from last year.

20–49 employees: Three out of 10 shops in this demographic category (29%, up from 24%) have no planned investments, but 11% are looking at “finishing/bindery equipment for digital production” (down from 17%), 9% at “cutting table for wide-format finishing” (up from 5%), 9% at “wide-format color printer (24 in.+)–flatbed UV (like EFI VUTEk, Canon Océ Arizona)” (up from 6%), 9% at “high-speed production inkjet printing equipment (like HP PageWide, Canon Océ ColorStream/ImageStream)” (up from 8%), and 9% at “other,” which is primarily mailing equipment. Back in Business Opportunities, a top item for this group was “automating production,” and while “workflow automation software” was down at 4% in this survey, it was at 11% last year and 22% in 2019, so these folks have already made the investment and are still in the process of implementing it.

50+ employees: Only 12% of businesses in this category have no planned investments, but 21% are looking to invest in “finishing/bindery equipment for digital production” (up from 18%), 21% also in “finishing/bindery equipment for offset/analog production” (up from 12%), 17% in “high-speed production inkjet printing equipment (like HP PageWide, Canon Océ ColorStream/ImageStream) (up from 11%), 17% also in “additional space/new location” (up from 8%), and 13% in “workflow automation software” (up from 12%).

Looking Forward

We get the sense that the hunkering down is over, and even if New Business Opportunities data don’t show record-breaking highs in any category, one can look at what items have gone up and what the corresponding Planned Investment spikes are. Print businesses are expanding capabilities, mostly in digital printing (inkjet and toner) and finishing. Mid-size shops are expanding wide-format capabilities and even if they’re not new to it (see the next section), rollfed shops are adding flatbeds, and shops in general are adding cutting tables and other wide-format finishing. So as we emerge from the pandemic, shops are getting on with the plans they had made pre-pandemic.

3. New Products and Services

In each survey, we try to gauge the extent that print service providers are branching out into new product and service areas, such as wide-format printing and all the various applications that fall under that increasingly broad category. In this survey, we wanted to see the extent to which they had already added new products/services, and, if not, if they had a time frame for adding them—or if they were even on their radars at all.

For the following product areas...

- high-speed production inkjet (like HP PageWide, Canon Océ ProStream)
- wide-format printing (like signs, displays, banners)
- textile/fabric printing for soft signage
- textile/fabric printing for garment printing/decorating
- direct-to-garment printing
- specialty or industrial printing (like coffee mugs, golf balls, smartphone cases)
- corrugated packaging printing
- folding carton printing/converting
- flexible packaging printing/converting
- 3D printing
- printed electronics

...we asked if they...

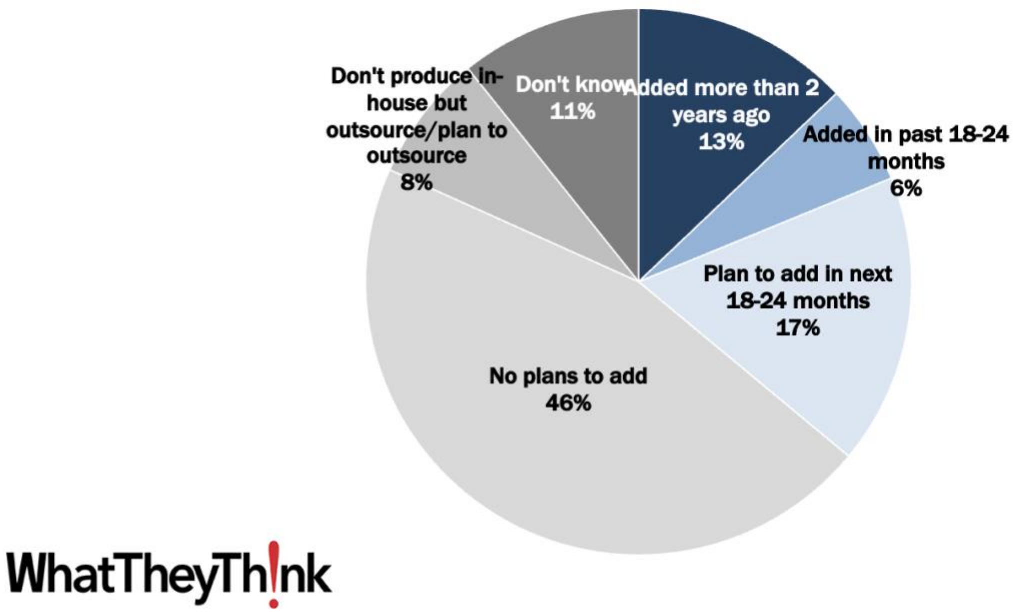
- added it more than 2 years ago
- added it in the past 18-24 months
- plan to add it in the next 18-24 months
- have no plans to add it
- don't produce it in-house but outsource/plan to outsource it
- don't know

High-Speed Production Inkjet

When it comes to high-speed production inkjet, 19% of our response base already added it, and a further 17% say they plan to add production inkjet in the next year or two. Eight percent plan to outsource it, if they don't already, and less than one-half (46%) say they have no plans to add production inkjet capabilities.

When we last asked this in 2019, 13% had already added production inkjet, 9% had planned to add it, and 55% had no plans to add it. Given what we have seen in the Business Opportunities and Planned Investment categories, this remains a growth area.

Have you added, or do you plan to add high-speed production inkjet (like HP PageWide, Canon Océ ProStream)?



n=186

	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	2%	7%	8%	25%
Added in past 18-24 months	2%	7%	6%	8%
Plan to add in next 18-24 months	12%	18%	14%	23%
No plans to add	57%	46%	53%	34%
Don't produce in-house but outsource/plan to outsource	16%	0%	6%	6%
Don't know	12%	21%	14%	4%

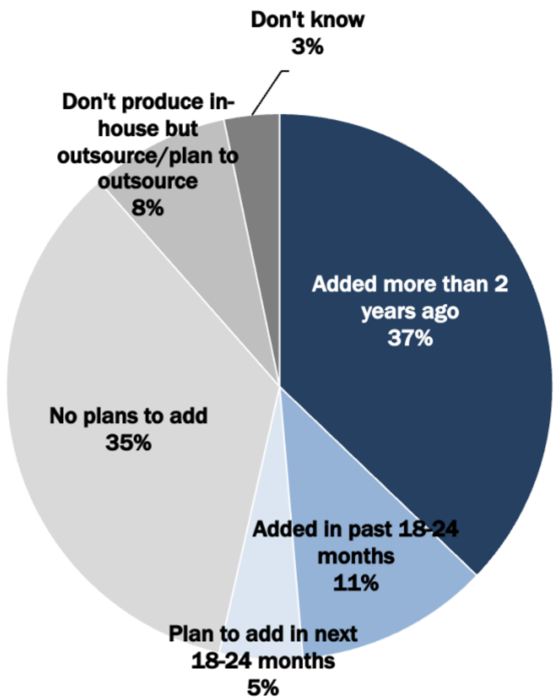
The high percentage of "no plans to add" come from the under 50+-employee end of the industry. At the moment, this is very much a large-establishment technology—33% of

50+-employee establishments already added it, and another 23% plan to add it. Still, 14% of 10–19-employee establishments already added production inkjet, as did 14% of 20–49-employee establishments. But then the 1–9-, 10–19-, and 20–49-employee shops are in double digits in the "plan to add" category. As we saw in the Business Opportunity and Planned Investment sections, there is some interest in this category at the smaller end of the industry.

Wide-Format Printing

When it comes to wide-format printing capabilities, nearly one-half (48%) have already added them, with a further 5% planning to add it in the next year or two. Eight percent plan to outsource it, if they don't already. Just over one-third (35%) have no plans to add wide-format capabilities. As has been the case for the past couple of years, anyone who planned to move into wide-format has already done so, and that one-third seems resolutely opposed to adding wide format. There may be a few stragglers who add some wide-format printing capabilities, but the big adoption trend is generally over.

Have you added, or do you plan to add wide-format printing (like signs, displays, banners)



n=183

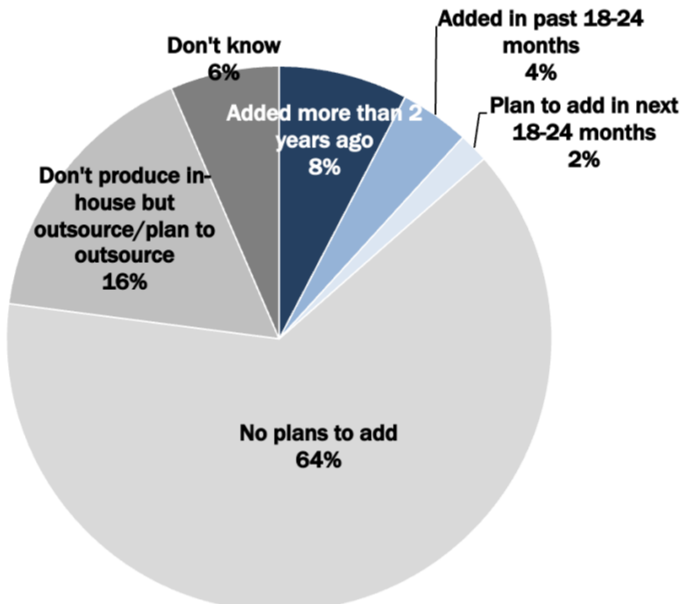
	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	29%	50%	41%	36%
Added in past 18-24 months	12%	18%	6%	12%
Plan to add in next 18-24 months	0%	7%	0%	10%
No plans to add	35%	25%	47%	33%
Don't produce in-house but outsource/plan to outsource	19%	0%	6%	4%
Don't know	6%	0%	0%	4%

Forty-one percent of 1–9-employee establishments, 68% of 10–19-employee establishments, 47% of 20–49-employee establishments, and 58% of 50+-employee establishments have already added wide-format capabilities. Seven percent of 10–19-employee establishments and 10% 50+-employee establishments have plans to add them in the next couple of years. The 10–19-employee establishments are the least likely to say they have no plans to add (25%)—the rest are in the 33–47% range.

Textile Printing for Soft Signage

Textile printing is not for everyone, but in terms of soft signage, only 12% of respondents have already added it (unchanged from when we asked this in 2019), with only 2% planning to add it in the next year or two (down from 8%). Interestingly, 16% plan to outsource it (unchanged from 2019). Still, nearly two-thirds (64%, up from 57%) have no plans to add textile printing for soft signage.[6]

Have you added, or do you plan to add textile/fabric printing for soft signage



n=170

	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	6%	7%	3%	11%
Added in past 18-24 months	2%	4%	3%	6%
Plan to add in next 18-24 months	2%	0%	0%	3%
No plans to add	60%	52%	88%	58%
Don't produce in-house but outsource/plan to outsource	23%	33%	6%	10%
Don't know	6%	4%	0%	11%

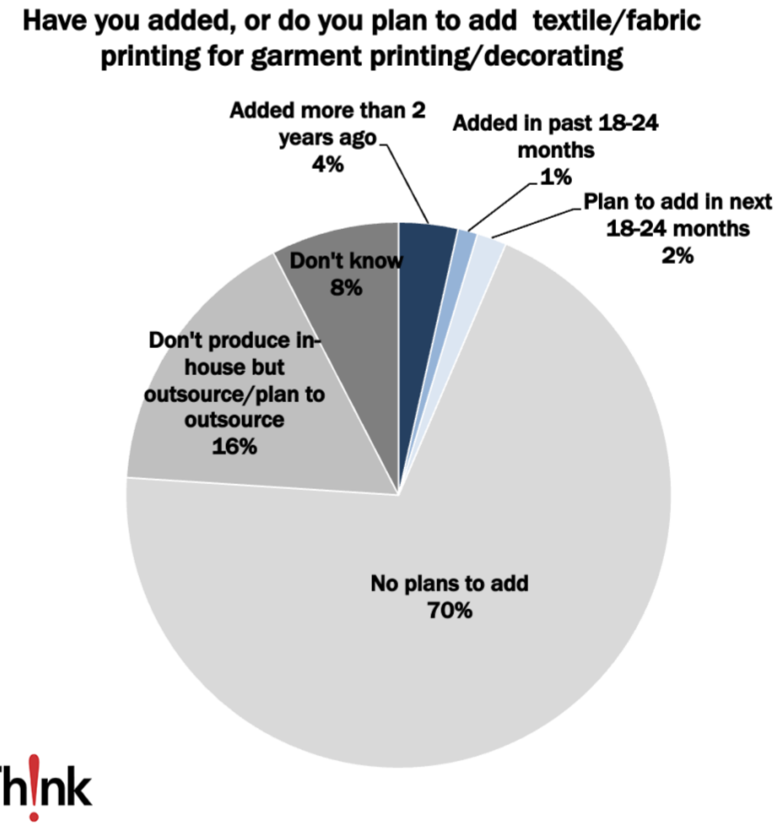
There are some pockets of interest in soft signage; 50+-employee establishments are the most likely to have added it already (17%) and they (3%) and 1-9-employee establishments (2%) are the most likely to say they will add it. Smaller shops are the most

[6] Just on a housekeeping note, respondents were only allowed to select one of these responses, so there is no overlap between "no plans to add" and "plan to outsource."

likely to outsource it, but at least half of all demographic breakdowns have no plans to add it, with 20–49-employee establishments the least interested (88%).

Textile/Fabric Printing for Garment Printing/Decorating

On the other hand, textile printing for garment printing and decoration is probably even less for everyone. Only 5% of respondents have already added it, and only 2% plan to add it. Sixteen percent plan to outsource it if they don't already (this is down from 24% two years ago). Seven out of 10 (up from 59%) have no plans to add it. The "no plans to add" folks are probably less likely to change their minds about garment printing than soft signage.



n=171

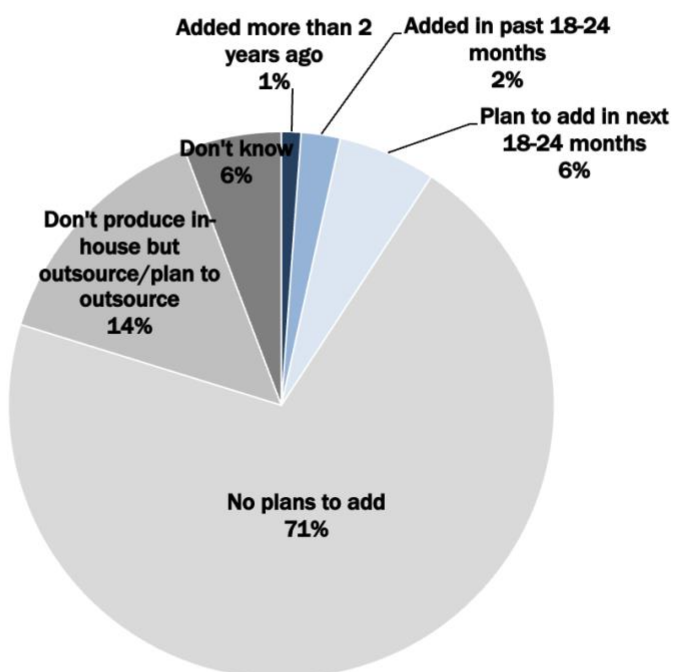
	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	4%	8%	3%	2%
Added in past 18-24 months	0%	0%	3%	2%
Plan to add in next 18-24 months	2%	0%	0%	3%
No plans to add	59%	54%	85%	76%
Don't produce in-house but outsource/plan to outsource	24%	31%	9%	8%
Don't know	10%	8%	0%	10%

There is some interest among mid-size printers in adding garment/fabric printing, even if only on an outsourced basis, but the larger shops seem pretty meh about it.

Direct-to-Garment Printing

Direct-to-garment (DTG) printing is a different beast than garment printing/decorating. The latter typically refers to printing on raw fabric which is then cut and sewn into the actual garment. DTG, on the other hand, involves printing onto pre-made apparel, such as T-shirts, shorts, caps, and even related items like tote bags. It is (usually) an inkjet technology, not dye-sublimation, and inexpensive units from Ricoh (acquired from Anajet), Epson, and Roland, among others, are easy to set up and use. That said, only 3% of respondents have already added DTG printing, and 6% plan to add it (down from 8% in 2019). Only 14% plan to outsource it if they don't already (down from 23%). Seven out of 10 (71%, up from 53%) have no plans to add it.

Have you added, or do you plan to add direct-to-garment printing?



n=173

	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	2%	4%	0%	0%
Added in past 18-24 months	2%	0%	3%	3%
Plan to add in next 18-24 months	8%	8%	0%	7%
No plans to add	60%	65%	88%	72%
Don't produce in-house but outsource/plan to outsource	23%	19%	9%	8%
Don't know	6%	4%	0%	10%

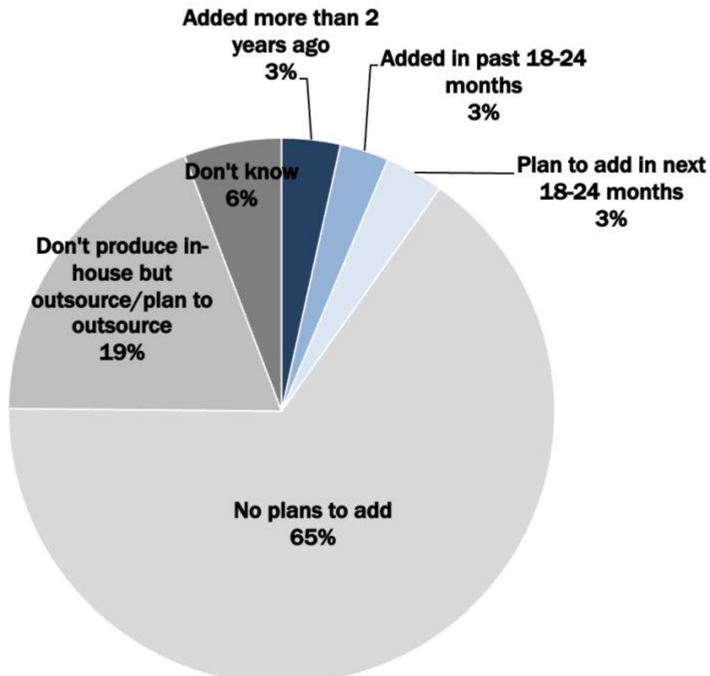
DTG printing finds its greatest favor among the small shops who can easily set up a T-shirt printing business. Small establishments also seem keen to outsource this kind of work. DTG is also popular in inplants, especially those in education, who can produce college swag for students, alumni, and parents. “Brokering” these kinds of products was popular during the 2020 COVID lockdown period, and some shops kept it as part of their strategy.

Specialty Printing

By specialty printing, we mean printing on three-dimensional items like coffee mugs, golf balls, smartphone cases. UV inkjet devices from the likes of Mimaki, Roland, and LogoJet have made this kind of printing just about as easy as DTG printing, and these are in-demand items used for marketing and promotion.

Still, only 6% of respondents have already added specialty printing, and 3% plan to add it (down from 9% two years ago). Nearly one-fifth (19%, down from 26%) plan to outsource it if they don’t already. (These items—also known as ad specialties—are often bought in bulk by end customers from distributors who have long specialized in these products. Digital direct-to-item printing may be seen as a disruptive technology to this long-entrenched market.) At any rate, nearly two-thirds (6%, up from 51%) have no plans to add specialty printing capabilities.

Have you added, or do you plan to add specialty or industrial printing (like coffee mugs, golf balls, smartphone cases)?



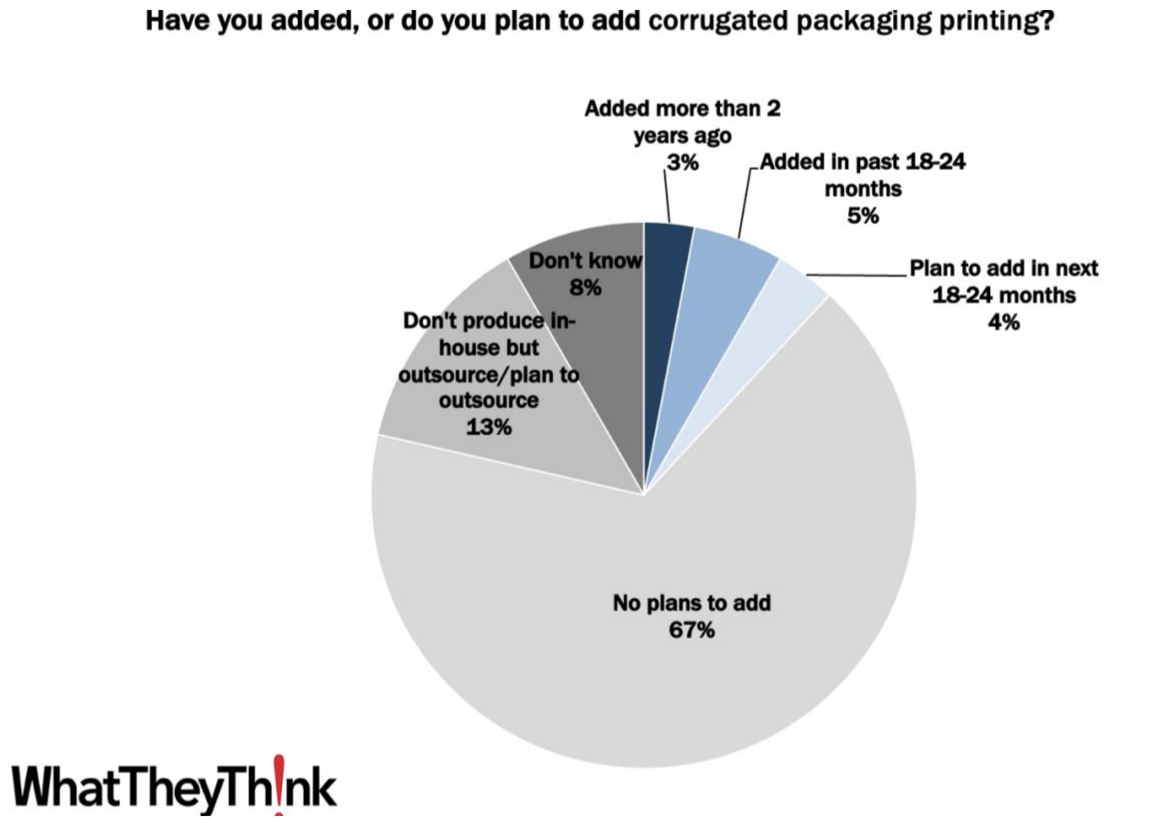
n=173

	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	4%	4%	0%	5%
Added in past 18-24 months	2%	4%	0%	5%
Plan to add in next 18-24 months	10%	0%	0%	2%
No plans to add	49%	58%	88%	70%
Don't produce in-house but outsource/plan to outsource	29%	31%	12%	10%
Don't know	6%	4%	0%	10%

This kind of printing generally falls off the radar the larger a shop gets, but smaller shops see it as at least outsourceable, with 10% planning to add this kind if printing in the next 18–24 months. (This type of printing is also popular among inplants.)

Corrugated Packaging Printing

Packaging has been a much-ballyhooed print application—digital (and hybrid digital/flexo) technologies are helping packaging printers and converters keep pace with trends in packaging production (short runs, more customization/personalization, etc.). Packaging is seen as a great growth application for printers—although not necessarily by printers—and the needle hasn't moved on this all that much over the years. Corrugated in particular is receiving a great deal of attention, and 8% of respondents have already added corrugated packaging printing, although 4% plan to add it (up from 1% two years ago). Thirteen percent plan to outsource it if they don't already (down from 19%). Two-thirds have no plans to add corrugated packaging capabilities.



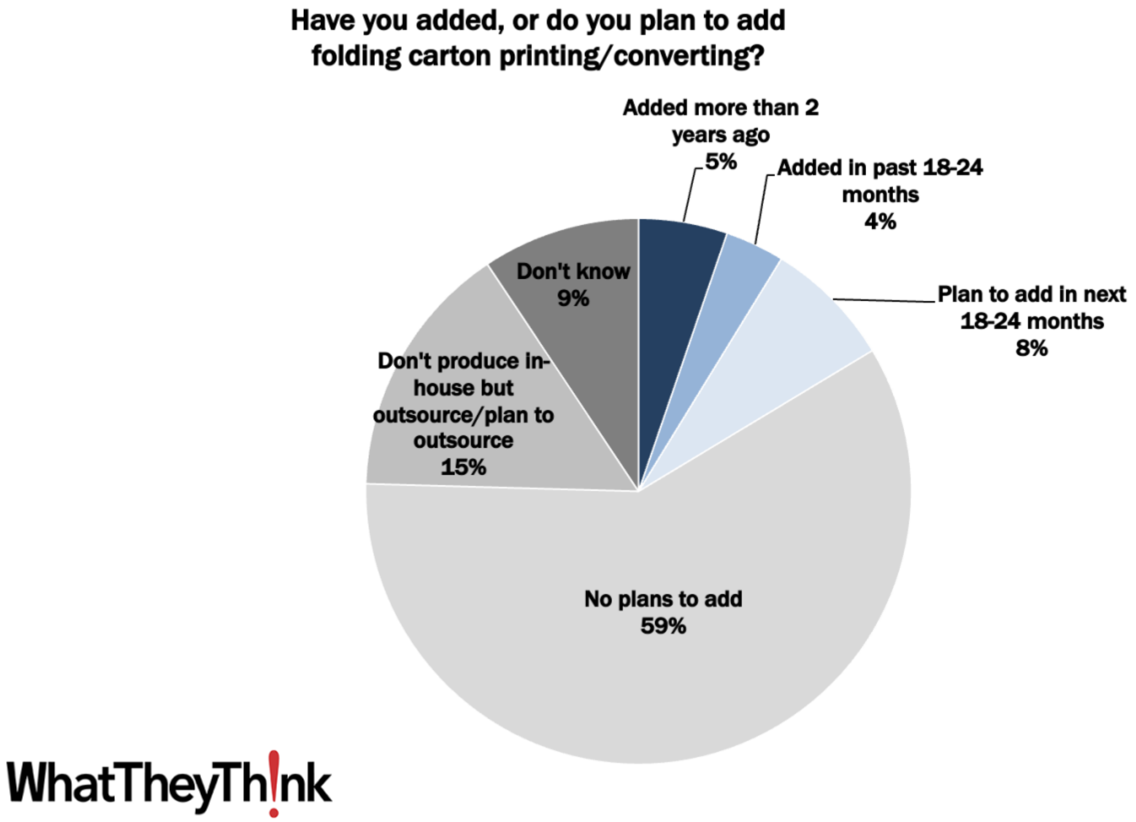
n=168

	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	2%	0%	3%	5%
Added in past 18-24 months	0%	8%	6%	8%
Plan to add in next 18-24 months	2%	0%	3%	7%
No plans to add	68%	62%	75%	63%
Don't produce in-house but outsource/plan to outsource	20%	19%	6%	8%
Don't know	8%	12%	6%	8%

Thirteen percent of large printers have already added some kind of corrugated printing, and a further 7% plan to add it. Smaller shops are keener than large shops on outsourcing it.

Folding Carton Printing/Converting

Likewise, only 9% of respondents have already added folding carton printing/converting, although 8% plan to add it (up from 2% in 2019). Fifteen percent plan to outsource it if they don't already (down from 20%). Nearly six out of 10 (58%) have no plans to add folding carton printing/converting capabilities, virtually unchanged from 2019.



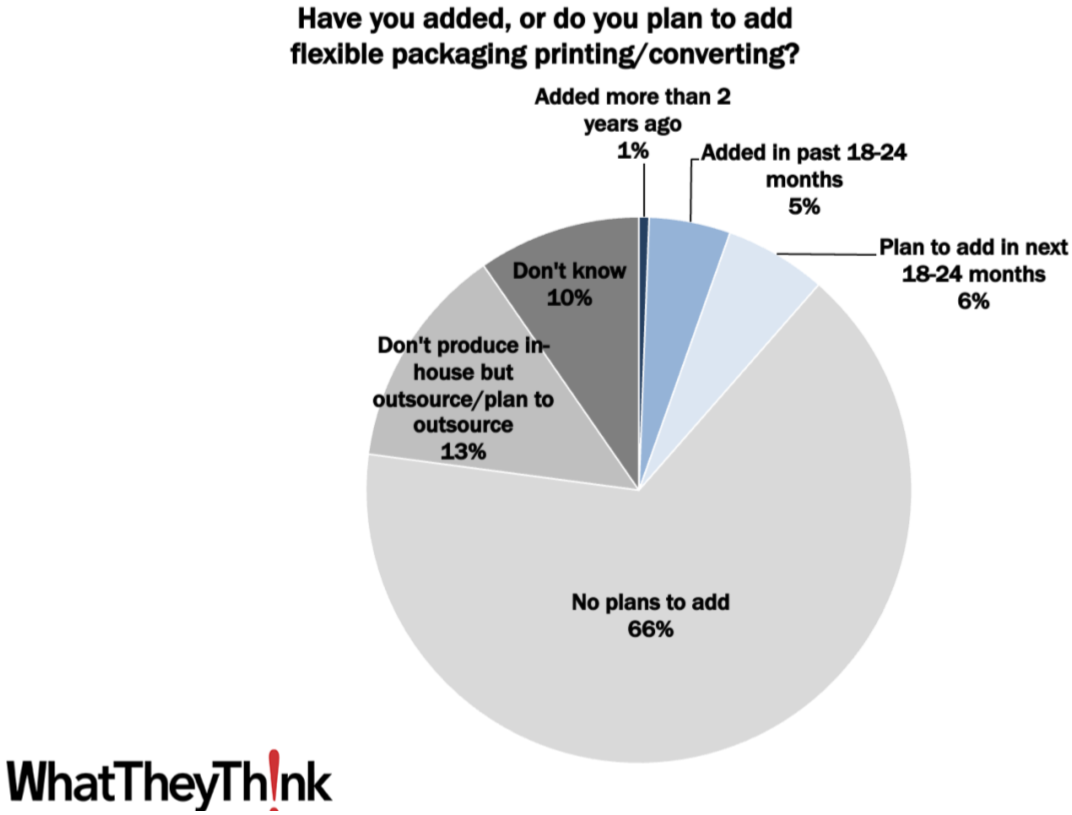
n=171

	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	2%	0%	3%	11%
Added in past 18-24 months	0%	0%	13%	3%
Plan to add in next 18-24 months	2%	0%	9%	14%
No plans to add	60%	65%	66%	52%
Don't produce in-house but outsource/plan to outsource	24%	23%	6%	10%
Don't know	12%	12%	3%	10%

Almost one-fourth of 1–9-employee shops say they outsource or plan to outsource folding carton printing (virtually unchanged from 2019), and 14% of 50+-employee establishments pan to add folding carton printing (up from 10%). With the advent of ecommerce and small boutique/craft product manufacturers/sellers, there is a greater and greater need for printed boxes in smaller and smaller runs. There is a great opportunity for shops than can serve these often small, local merchants.

Flexible Packaging Printing/Converting

Flexible packaging hasn't been quite as touted as corrugated or folding carton, but new digital technologies are also transforming flexible, creating new opportunities. However, only 6% of respondents have already added flexible packaging printing/converting capabilities, although 6% plan to add it (up from 2% in 2019). Thirteen percent (down from 19%) plan to outsource it if they don't already and, as with other forms of packaging production, two-thirds have no plans to add flexible packaging printing/converting capabilities.



n=166

	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	2%	0%	0%	0%
Added in past 18-24 months	0%	0%	6%	10%
Plan to add in next 18-24 months	0%	0%	6%	13%
No plans to add	64%	68%	79%	59%
Don't produce in-house but outsource/plan to outsource	23%	20%	3%	8%
Don't know	11%	12%	6%	10%

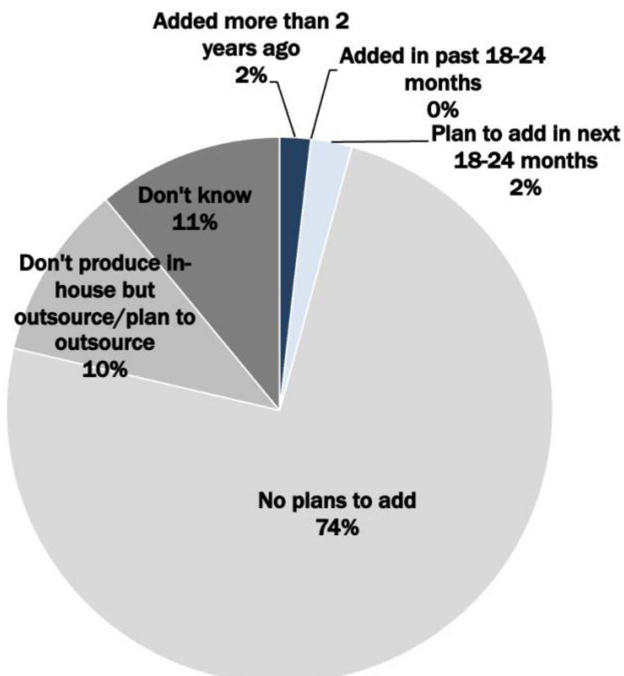
Again we see high outsource rates among the smallest shops, and high "don't know" rates among mid-size shops. It looks like flexible packaging might be hitting its sweet spot among 50+-employee establishments, with 10% having relatively recently added it, and another 13% planning to.

3D Printing

In previous surveys where we have asked this question, we haven't really expected to see a lot of interest in 3D printing, although we thought the needle might have moved a bit this time around as in the past couple of years entry-level machines have hit the market from the likes of Mimaki. But, alas not.

Only 2% of respondents have added 3D printing more than two years ago (none had added it in the past 18–24 months), although 2% plan to add it (down from 6% in 2019). Ten percent plan to outsource it if they don't already (down from 13%), but a full three-fourths have no plans to add 3D printing (up from 66%).

Have you added, or do you plan to add 3D printing?



n=164

	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	2%	0%	0%	3%
Added in past 18-24 months	0%	0%	0%	0%
Plan to add in next 18-24 months	0%	4%	0%	5%
No plans to add	76%	64%	91%	69%
Don't produce in-house but outsource/plan to outsource	11%	24%	3%	8%
Don't know	11%	8%	6%	15%

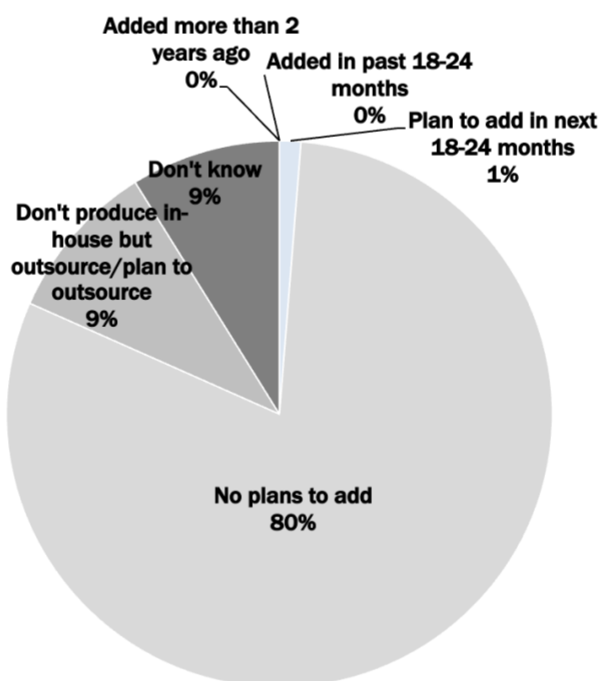
Smaller shops are at least interested in outsourcing 3D printing (especially 24% of 10–19-employee establishments). The largest establishments are the most likely to have added it or add it in the near future. Still, there is little interest in 3D printing out there…so far. We think it's time will come.

Printed Electronics

Printed electronics has also been touted as a good opportunity for printers, but it requires a degree of engineering and technical skill far beyond ink on paper. Some printing companies have managed to successfully branch into printed electronics (usually by creating a separate business as a greenfield project rather than squeezing in new equipment next to the offset or digital press), but for rank-and-file commercial printers, it requires more time and due diligence than they may have.

That's likely why none of our respondents has added printed electronics capabilities, and only 1% say they plan to add it (we're not even sure it was worth making a chart). Nine percent plan to outsource it if they don't already (down from 12% in 2019), but 80% (up from 66%) have no plans to add printed electronics. We could be wrong, but we doubt that printed electronics is going to be the big growth area for the industry.

Have you added, or do you plan to add printed electronics?



n=158

According to the World's Least Compelling Table below, there looks like there might be some interest in outsourcing this kind of work amongst the smaller establishments, this is really a niche application that a few print businesses may take advantage of, but we're not as sanguine about printed electronics as we are about, say, 3D printing.

	1–9 employees	10–19 employees	20–49 employees	50+ employees
Added more than 2 years ago	0%	0%	0%	0%
Added in past 18-24 months	0%	0%	0%	0%
Plan to add in next 18-24 months	0%	0%	0%	4%
No plans to add	80%	71%	94%	76%
Don't produce in-house but outsource/plan to outsource	11%	25%	0%	7%
Don't know	9%	4%	6%	13%

Other Application Areas

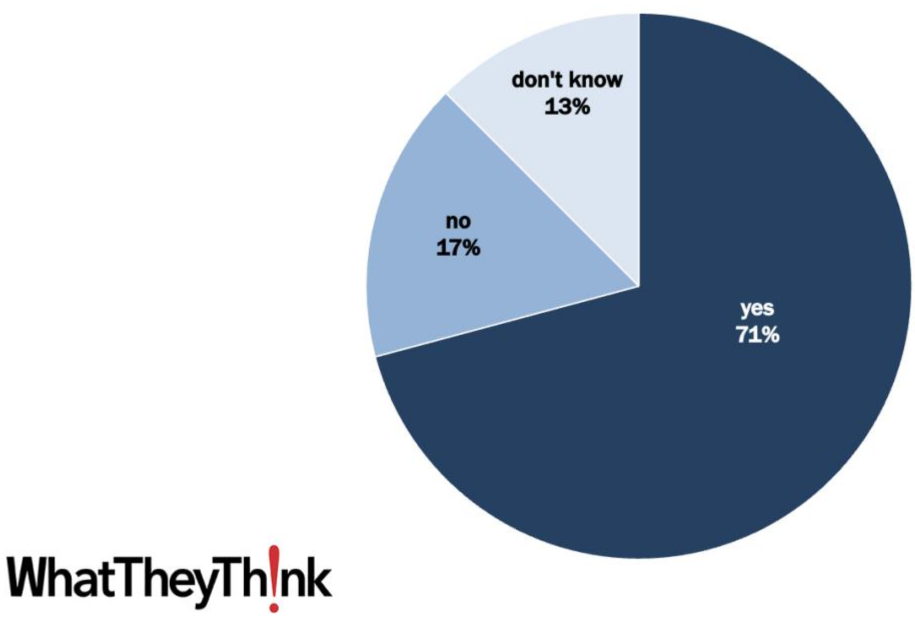
We included a space for survey respondents to write-in any other application areas they were expanding into, and of the five that did write something, two said "none" but one did mention that "[we] offer all of these products now from supplier partners." That's a good point, and the reason we include the "outsource these items" on the survey. We usually mean this in the context of partnering with another print business, but working with a distributors is also a great way to expand the products you offer without a major capital investment. In January 2022, we hosted a webinar on the topic of how to work with distributors to expand into new product areas. It is worth checking out at https://whattheythink.com/webinars/251/.

4. Hiring Plans

One of the most discussed topics last year was that of staffing and the problems that print businesses have been having in attracting employees. Finding qualified employees has been one of the perennial challenges in recent years, and our recent surveys—including the current one—have confirmed this. (For decades, print business owners complained about not being able to find decent sales people—or at least those with good books of business—but now finding production people has become a major challenge.)

Seven out of 10 (71%) print businesses are considering hiring staff in the next 12 months (up from 50% last year). Only 17% say they are not planning to hire, while 13% “don't know.”

Are you considering hiring/adding staff in the next 12 months?



n=192

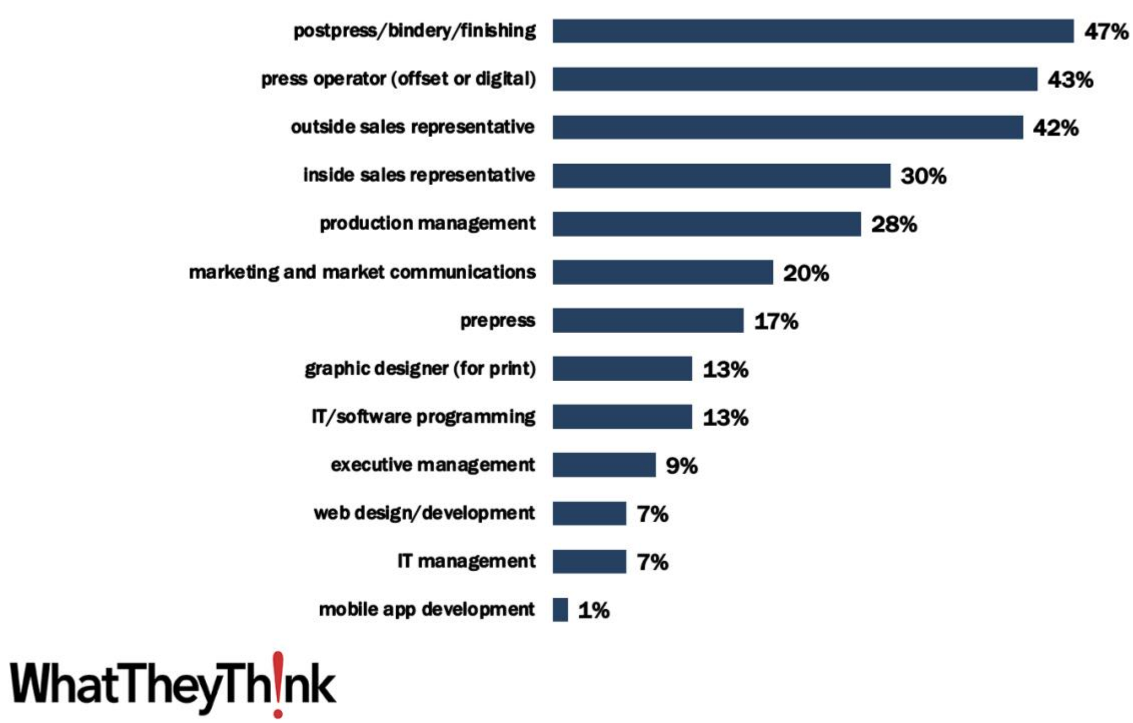
	1–9 employees	10–19 employees	20–49 employees	50+ employees
yes	52%	68%	70%	86%
no	39%	14%	14%	3%
don't know	9%	18%	16%	11%

Plans to hire increase with shop size—with mid-size printers the most likely to respond “don't know.”

Specific Positions

"Postpress/bindery/finishing" staff are the most sought-after employees in this year's survey, at 47%, up from 20% last year. This is followed by "press operator," be it offset or digital, at 43% (up from 20%) and "outside sales representative" at 42% (up from 22%). "Inside sales representative" is sought by 30% of respondents (up from 17%). "Production management" is up from 11% last year to 28%. Last year, "prepress" was in single digits at 8%, but this year it has climbed to 17%.

If yes, for what positions are you looking to hire?



n=152

	1–9 employees	10–19 employees	20–49 employees	50+ employees
executive management	6%	0%	3%	16%
inside sales representative	39%	37%	30%	24%
outside sales representative	30%	37%	40%	50%
marketing and market communications	21%	11%	10%	26%
prepress	9%	11%	10%	26%
production management	18%	26%	30%	31%
press operator (offset or digital)	12%	21%	43%	64%
postpress/bindery/finishing	18%	58%	50%	56%
IT management	0%	0%	7%	11%
IT/software programming	3%	0%	0%	26%
graphic designer (for print)	12%	16%	0%	17%

	1–9 employees	10–19 employees	20–49 employees	50+ employees
web design/development	3%	11%	3%	9%
mobile app development	0%	0%	3%	1%

Different size establishments have different hiring/staff needs. This year, the top two positions shops for which shops are looking to hire, broken down by size classification, are:

- 1–9 employees: Inside (39%, up from 6%) and outside (30%, up from 10%) sales representatives.
- 10–19 employees: Postpress/bindery staff (58%, up from 18%) and both outside (37%, up from 6%) and inside (37%, up from 12%) sales representatives.
- 20–49 employees: Postpress/bindery/finishing (50%, up from 17%) and press operator (43%, up from 18%).
- 50+ employees: Press operator (64%, up from 37%) and postpress/bindery/finishing (56%, up from 27%).

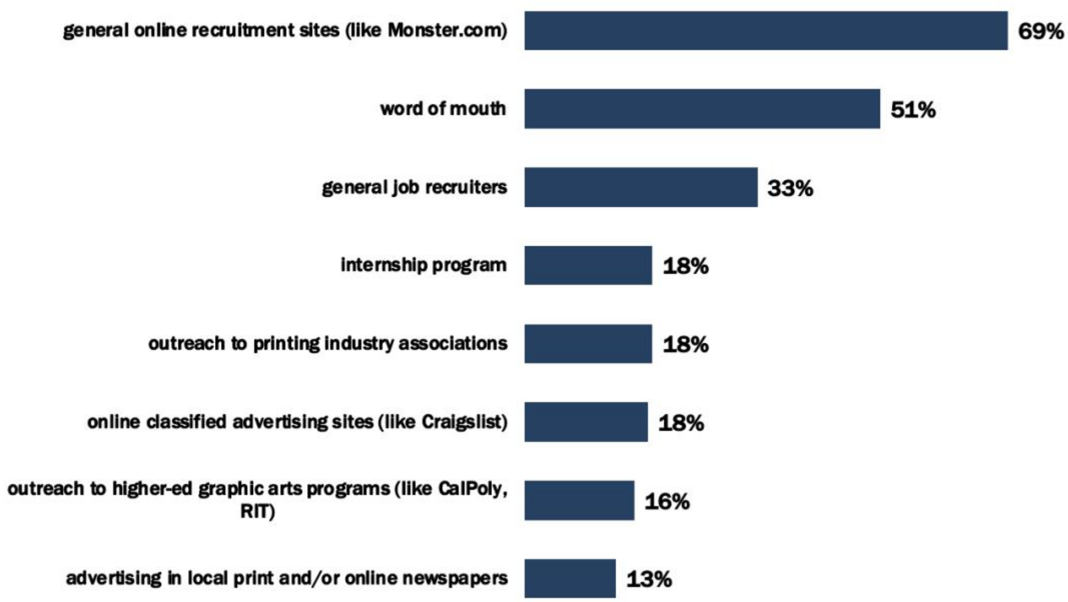
The employment situation is dire. Not only is finding staff a challenge, but keeping current staff is also a challenge. Companies are finding that they need to increase wages in order to attract qualified personnel and, in order to keep current staff, raise their pay as well—especially to compensate for inflation. After all, if inflation is 7% and you only raise pay 5%, that's technically a pay cut. Improving benefits is also a strategy to attract and retain employees.

We'll look at the Print Industries Affiliates' annual printing industry Wages & Benefits Survey in the next section.

Recruitment Sources

We also asked where/how print businesses are looking for employees. The top response, selected by 69% of respondents who are planning on hiring this year, said "general online recruitment sites," followed by "word of mouth" (51%), and, distantly at 33%, "general job recruiters." Eighteen percent have an internship program, and 18% also search by reaching out to industry associations. Only 16% reach out to specific graphic arts programs like those at RIT or CalPoly.

If yes, how are you searching for staff?



WhatTheyThink

n=153

	1–9 employees	10–19 employees	20–49 employees	50+ employees
general online recruitment sites (like Monster.com)	46%	76%	76%	77%
online classified advertising sites (like Craigslist)	11%	10%	34%	17%
advertising in local print and/or online newspapers	11%	19%	10%	14%
general job recruiters	16%	38%	21%	47%
outreach to higher-ed graphic arts programs (like CalPoly, RIT)	5%	10%	14%	24%
outreach to printing industry associations	11%	0%	21%	27%
internship program	11%	5%	14%	29%
word of mouth	43%	33%	66%	55%

Larger establishments are more likely to avail themselves of intra-industry sources like associations or graphic arts programs—and word of mouth. Still, general recruitment resources are the predominant way that print businesses find staff.

Specific Hiring Challenges

We added a write-in question to this survey, asking about respondents' experiences and challenges with hiring in the current environment. Here is a sampling of their responses:

- It's difficult to find competent staff.
- I prefer to keep my recruiting to education institutions and word of mouth (personal references).
- My employees have been with me over 15 years and are nearing retirement age. I am working very little and brokering some highly profitable work.
- I look for people with problem-solving skills and then train them in the specifics of the job.
- Limited labor pool in a low population community. A labor job is not very fashionable.
- It's always a crap shoot!
- We've had great success recruiting through our clients. Basically, we let all our clients know that we are hiring and then ask them if they know any great people. It's worked well on several accounts and we feel very fortunate.
- Unfortunately our industry is not real attractive to the highly motivated achievers, and doesn't produce the margins needed to hire and retain this type of talent. 2. Remaining talent pool is smaller than it has ever been due to a) government programs allowing many to avoid working, and b) very marginally employable because of weak skills.
- Finding skilled labor with experience or at least willing to learn. Have digital press operator that can run all of our bindery too. They'll be retiring in 3 years. Started looking now for someone to train.
- Quality limited. Work from home opportunities competing with our in location openings.
- Signs and Graphics not the most appealing industry for a candidate to get into from outside. Can generally be quite transactional and therefore "hard work" compared with other industries such as software sales where sales per capita and therefore salary potential much higher. People either "get it" or they don't. For those who do "get it" the industry is an exciting place to be.
- Hard to find skilled laborers willing to work. Got lucky and hired 5 new people to replace people that left in the last 4 months. Have more people now then prior to the pandemic and that is why we don't plan to hire next year.
- Qualified people that we can afford....
- Good staff are hard to find, but you can't let it get you down. I believe the days of cheap labor are over, so choose carefully, and pay them a decent wage, and develop a culture where they want to stay.
- Difficult to find people with actual production experience in the industry.
- We have had employees retire and replacing them has been very difficult. A lot of competition in town with UPS and Amazon.
- Values have shifted, and they are not always conducive to a manufacturing environment. (After working from home, more employees are looking for work from home positions. Additionally, the interest in "flexible" hours is another

challenge.) Employers will need to adapt to new workplace values as they search for new talent. The challenge is that our workforce is not willing to accept longer lead times for their food, entertainment, or business purchases. However, the same individuals who want their purchase to arrive same or next day, want to have more vacation time, and more flexible hours. The irony is that someone has to work in a warehouse or a manufacturing plant or a restaurant in order to get that product ready. In 2020, we began to see a rush of baby boomers retiring; it was inevitable. The pandemic was the catalyst for the mass, premature exit. SUPPLY CHAIN is going to continue to be a problem, and has been a challenge for more than a year. Going forward the ability to adapt to change will be a company's greatest asset.

- There are very few press operators or digital operators out there. The good ones are working and the others have aged out of the industry.
- No one reliable anymore. They leave with no notice, the first place to offer 10 cents more they take off.
- Most difficult and challenging in my 35+ years in the industry.
- We are not a pretty industry anymore
- Finding qualified staff at a price point the company can afford.
- Availability at all levels since COVID. Need an organized training process for press operators.
- Extreme shortage of prospective employees for manufacturing roles. Upward wage pressure at all levels
- The quality of personnel available is low. Everyone who wants a job has one. We have had some turnover which is not normal from us and that compounds the issue.
- Unrealistic compensation expectations. There is a major wage compression issue at play. Minimum wage feels like it is $20/hr.
- Can't find qualified people willing to work. Higher pay isn't attracting more candidates. But we've had to increase pay for existing workers to keep them from leaving.
- Finding qualified people and being able to compete with our facility neighbors like Amazon and their higher pay rates.
- Digital print has eliminated the number of craftsmen that we typically needed as an offset shop. Shifting to all digital has mostly eliminated expensive craftsmen openings.
- It has become increasingly difficult to find good people that are also experienced within the printing industry.
- Hard to find sales people interested in selling commercial print. Hard to find experienced bindery operators.
- The good prospective fits are satisfied with where they are currently working, and/or are getting counter-offers from their current employers.
- New hires often over-sell themselves and under-produce. It's very difficult to see a person's "true colors" until you have invested time and money in them.

- There are very few quality candidates applying for positions. Even if we find a few diamonds in the rough, getting them to show for the interview has been a challenge. We have had some success in this past year, but we dread the process.
- Very difficult to find entry to mid-level staff with experience in our industry. Senior level seems easier, but we need younger “next generation” leaders at almost every level in our company.
- Able to hire qualified candidates but at increased compensation. Difficult to attract and retain lower wage workers. Able to retain our existing staff but have increased wages, sometimes significantly.
- The last 22 months have been rough... With so many digital communication types talking about how our industry is no longer relevant, it’s very hard to find “young blood” to carry us forward into the next decade and beyond. We have moved many of our production positions to entry-level in an attempt to train our own staff. We have been recruiting based on mechanical and technical aptitude along with a strong work ethic and ability to learn. So far results are mixed, but positive more so than negative.
- Too few skilled labor candidates. Wages are not a problem right now due to increases in past two years.... just a lack of applicants.
- Very frustrating in our local market. We are having more success hiring for remote working positions out of state. We have also successfully relocated new hires from out of state.
- Very difficult to find qualified technical workers in a technical field. Most people are aging and others don't have the skills. There is a lack of schools for training our workforce.
- When we reduced production and indirect staff due to Covid, many have moved on and we are short press and CSR talent now that business is returning.

And there’s one in every bunch:

- My husband won’t let me add more dogs to the office which is unfortunate because those are the only staff I want to add at this point.

She must run Warren Bennis’s “factory of the future” (see Section 7).

5. Graphic Communications Industry Economic Trends

Let's pull back from our own survey and round up other industry data from our usual suspects (Bureau of the Census and other government sources). We will look at:

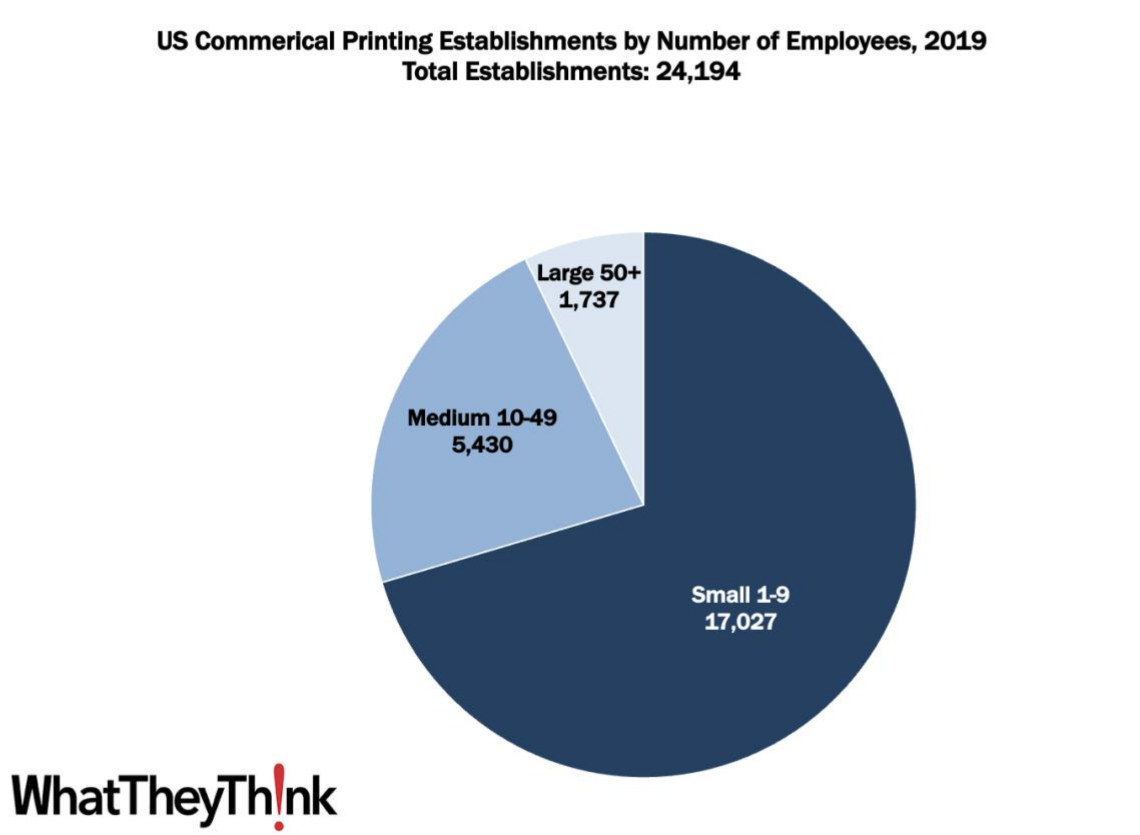
- Commercial printing establishments
- Printing industry shipments
- Printing industry employment
- Publishing revenues.

These are aggregate industry data, a combination of industry leaders, laggards, and everyone in between. When you see the trends, it's a baseline or an average. Always keep in mind that there are many profitable, healthy, and growing companies that are performing exceptionally well, and that underperforming businesses tend to drag down the average. Think of it as the opposite of survivor bias.

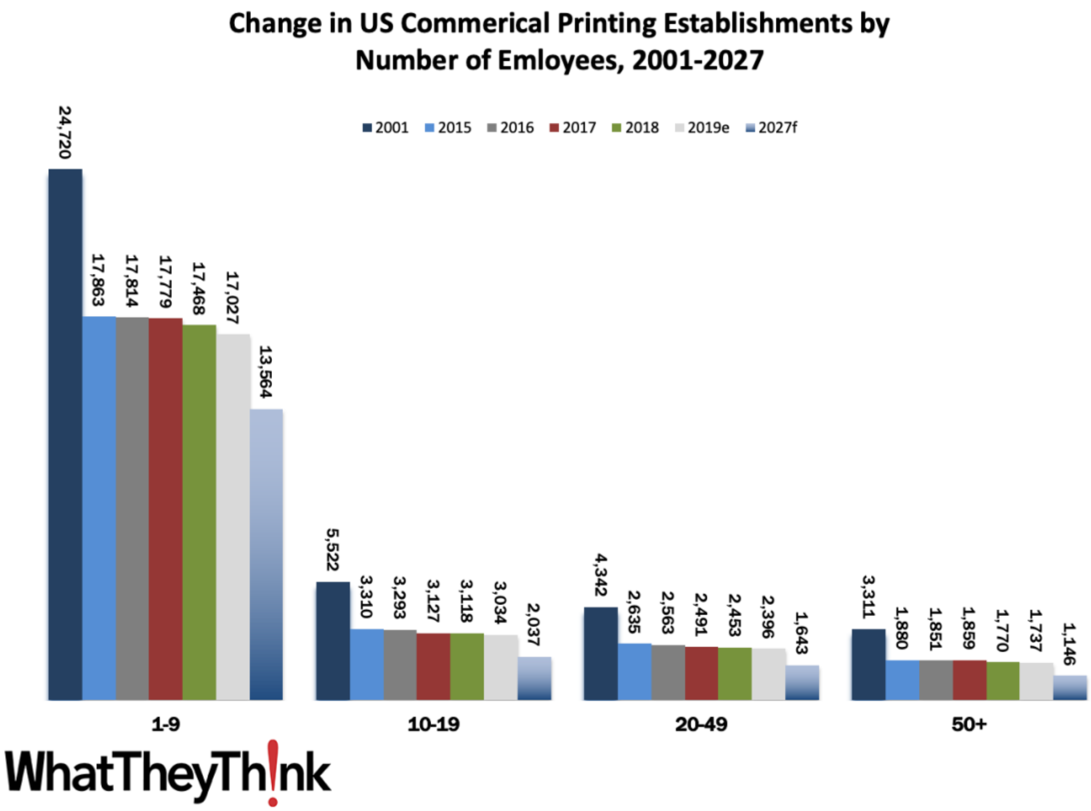
Printing Establishments

The composition of the printing industry—NAICS 323[7]—is predominantly small businesses; 70% of the 24,194 establishments counted in 2019 were those that had under 10 employees. Just under one-fourth (22%) are "medium" printers (10–49 employees), and only 7% are 50+-employee plants. Those 7% are very important: they still represent a large portion of industry revenues, and about 70% of the industry's capital investment. The two charts below have been updated with 2019 *County Business Patterns* data, which was released in 2020, as well as estimates from our own forecasts.

[7] "The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy" (http://www.census.gov/eos/www/naics/). NAICS 323 is "Printing and Related Support Activities."



The historical chart below includes a 2027 forecast:



Between 2019 and 2027, we are looking to continue to consolidate the smaller end of the industry by about 3,400 establishments, while at the higher end, we're looking at a decline of another 600 or so establishments.

There is one other trend we usually mention in this space when we consider changes in numbers of printing establishments. We have been seeing a kind of printing industry diaspora. As we mentioned above, all the government data we have historically tracked is from NAICS 323—Printing and Related Activities. However, not all businesses that we would consider printing today—or, more importantly, what *those* businesses would consider printing—are classified in 323. Sign manufacturers, for example, are largely in NAICS 339. Sign lettering and painting are classified in NAICS 541. Manufacturing and printing advertising specialties are classified in the Manufacturing sector according to the products made. Manufacturing die-cut paperboard displays are classified in NAICS 322. Packaging converters are in 322. You get the picture.

For last year's report, we did some playing around with Dun & Bradstreet data, looking up some of the print businesses we have profiled over the past couple of years, and while most are in 323, some threw us for a loop. One is classified in 517410 (Telecommunications Services), while another is 811111 (Consumer Services). We suspect these are outliers, but remember that it's the printers—and their tax accountants—who classify themselves and we doubt that the government goes out of its way to verify that the self-selected NAICS fits perfectly. Maybe if "Joe's Printing" selected Automobile Manufacturing someone at the Census may throw a flag, but beyond that we doubt there is too much vetting going on. We still believe that the vast majority of what we consider "the printing industry" is found in 323, but we do need to be cognizant of the fact that some percentage of it—and maybe even some of better-performing businesses—identify themselves elsewhere. This is an ongoing project for us.

M&As

We remarked last year that a side effect of the pandemic was a slowdown in M&A activity, which reversed itself in 2021. In September 2021, our M&A guru Mark Hahn of Graphic Arts Advisors offered his annual round up of deal activity[8] and found that the 12 months ended August 2021 saw approximately 13% more transactions than last year; "almost the exact match in the number of transactions during the pre-pandemic year: our data is based on 215 M&A transactions of interest for the TTM August 2021, versus 191 last year this same time, and 214 for the TTM August 2019," Hahn wrote.

Where are the hot spots? Packaging, for one:

> For the second year in a row, packaging has now surpassed commercial printing as the most active segment. There does not appear to be any let up in buyer appetite for packaging companies. As we noted recently, packaging deal activity is red hot, with a slew of private equity investment funds driving transaction multiples up as they compete to consolidate what has been a highly fragmented business, often family-owned and spanning two or more generations.

And wide format had been one, but things change:

> The wide-format market has matured. Gone are the days of the uniqueness of digitally printed banners and wraps, the cool factor of flatbeds and the easy margins that came with being first on the block to offer large inkjet prints. Pricing on entry-level equipment has come way down, finishing technology is automated, and overall barriers to entry are low. Differentiation has moved from first-mover advantage to more complex online direct-to-customer systems, robust installation capabilities, or value-added services such as framing prints for use as home or office décor.

In the general commercial printing segment, M&As are in kind of a holding pattern. Of the deals Hahn tracked in the 12 months ended August 2021, 48% were tuck-ins[9], up from 44% the previous year, but still down from 70% of the commercial printing deals that were tuck-ins during the 12 months ended August 2019. "This drop off from two years ago indicates to us that some of the excess capacity in the market, as evidenced by tuck-in transactional activity, has been wrung out," wrote Hahn. "However, at close to 50%, the number of tuck-ins tells us that the market signals are still flashing red in the commercial printing segment and there will be much more consolidation to come." Another top rationale for a commercial printing acquisition was to expand territory—this was even a more important rationale than expanding product and service offerings.

One bit of good news is that bankruptcies were down.

---

[8] Mark R Hahn, "The Target Report Annual Review—August 2021 TTM M&A Activity," WhatTheyThink, September 9, 2021, https://whattheythink.com/articles/107492-target-report-annual-reviewaugust-2021-ttm-m-activity/.

[9] "The buyer folds the acquired customers into their existing production capacity, hires selected qualified employees, with special focus on those people that touch the customer, and maybe cherry-picks some of the equipment. The seller is left to close up shop, sell off the remaining equipment and wind down the business entity."

> Despite the outbreak of Covid-19, the number of bankruptcies for the past twelve months across all segments decreased to 29 filings, down from 38 and 41 over the prior two years, respectively. We attribute this decrease to the huge cash infusions into businesses over the past year, structured as forgivable PPP loans and other forms of government stimulus. Another factor is likely the high cost of going through a bankruptcy proceeding versus simply winding down a business without the formal filing. As expected, even at the reduced level of bankruptcy filings, the commercial printing segment leads the pack

Printing Shipments

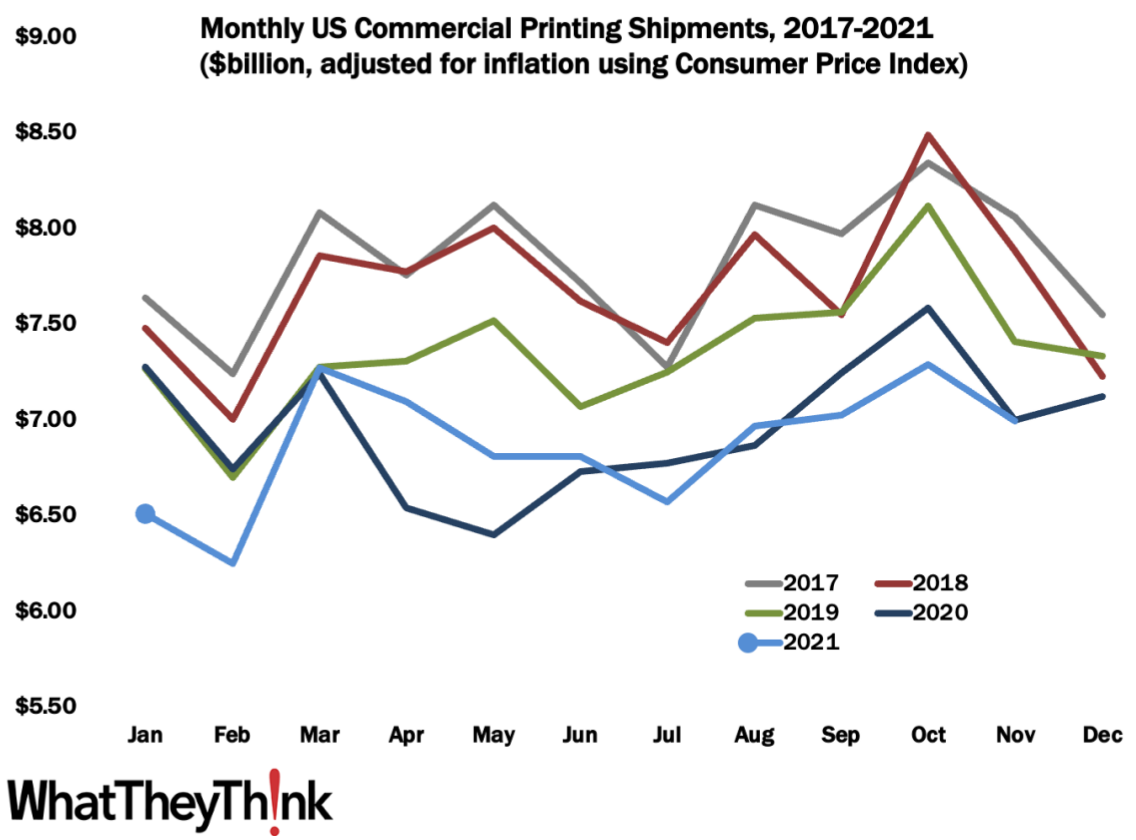
In this space in January 2020 we wrote:

> If you have been following our monthly tracking of printing shipments, you know that 2019 is shaping up to be best year for the industry in a long time. (And, as we saw earlier, our survey results bear this out as well.) It could be said that we're experiencing something of a "Printing Renaissance."

Sigh. Anyway, monthly shipments for 2020 show a great start to the year, a crash in the spring, a quick rebound in the summer, and what may be a normal, seasonal decline in the fall and winter. 2021 started off a little rough, but saw a rebound throughout the summer and fall.

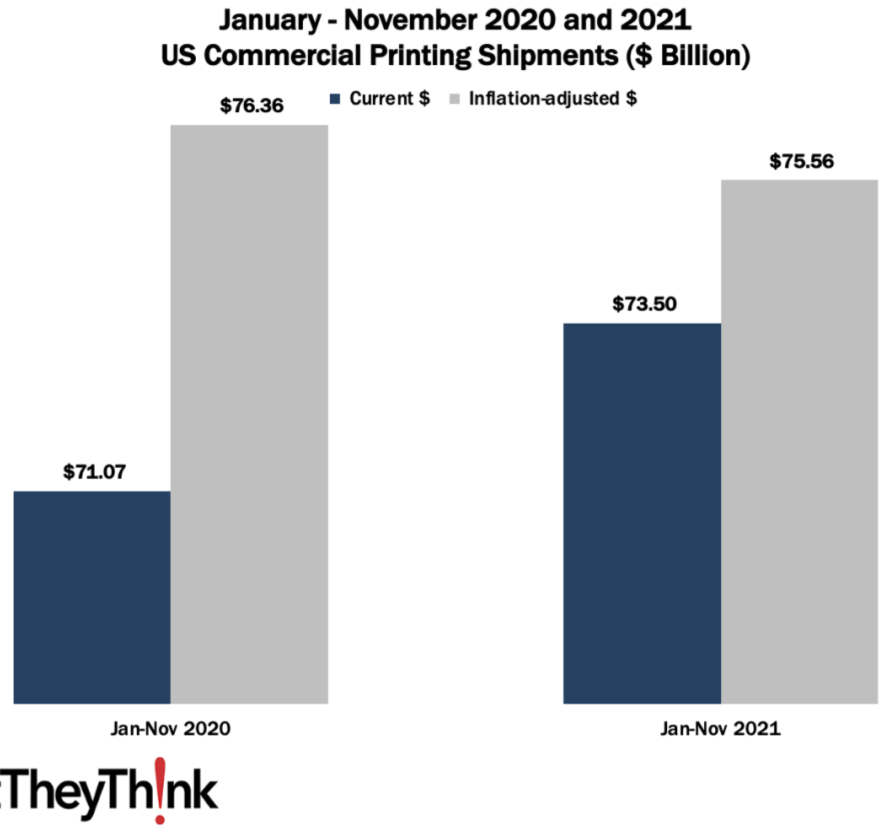
Monthly Shipments

We started the pandemic year on a high, with January shipments coming in at $7.31 billion. And then, there was the crash in April, and the remainder of 2020 and 2021 have been an attempt to claw back to we were before April 2020—not entirely successfully.



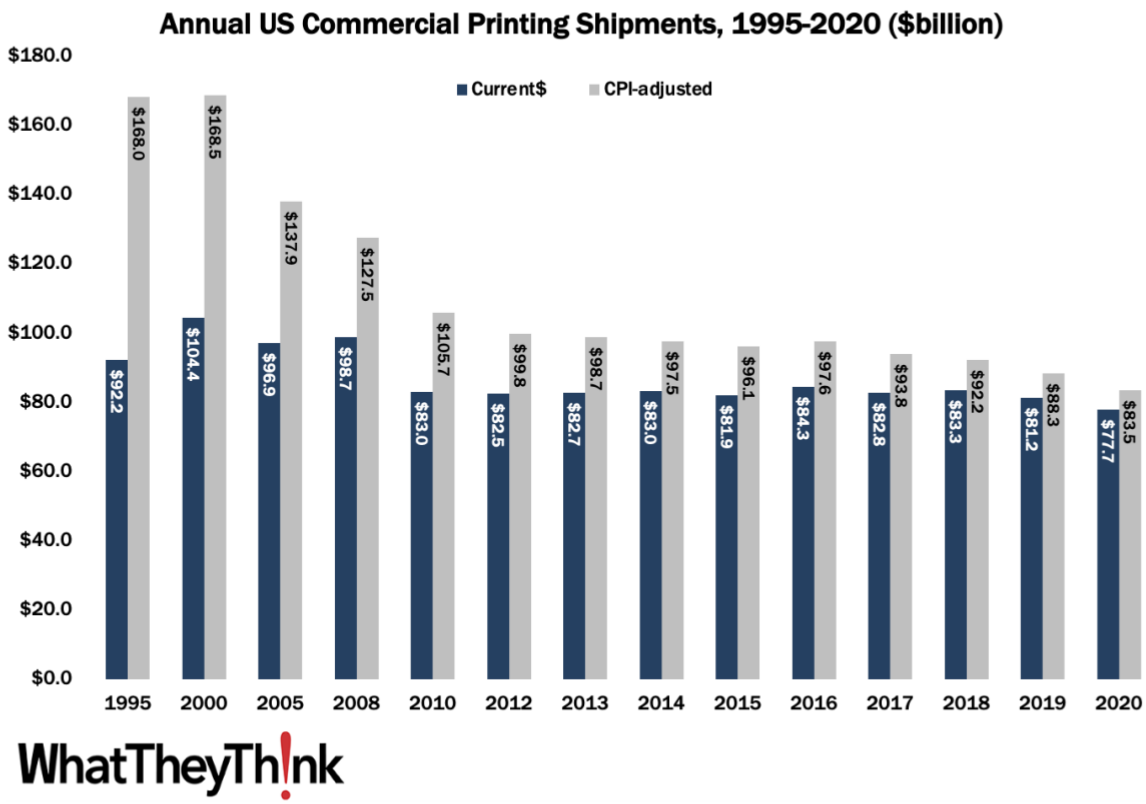
Year-to-Date Shipments

As a result, year-to-date shipments for 2021 are lagging 2020, but not by all that much, and if December shipments reflects a Christmas miracle, we may come out ahead. By the way, if you look at the chart below, on a current-dollar basis we did indeed beat 2020—but look what inflation adjustment does: we are still a billion or so off. January-to-November shipments for 2021 are at $75.56 billion compared to 2020's $76.36. If we look at previous seasonality, we could reasonably expect December shipments to come in around $7.0 billion, giving us an $83.4 billion year for 2021. If we're lucky, we might just be able to come out even with 2020.



Annualized Shipments

Looking at annualized shipments for selected years since 1995, we can see where we've been. It was a little over 20 years ago that the industry had a $169 billion year (in inflation-adjusted dollars)—and just 10 years later, we were down to $105 billion. The decline in shipments had been slowing and 2019 was a watershed year. Fortunately, 2020 was such an outlier that, unlike the past 20 years, the forces that dragged down shipments were unrelated to what we as an industry actually do. The industry lost so much of its value since 2000 because the Internet and electronic media drastically reduced the demand for printed materials (although the 2010 recession didn't help). That is not the case now. As we have said, this was a cataclysmic event whose effects have been steadily reversed over the course of 2021. We still have a ways to go—and of course there are other forces at work, like price increases and "supply chain issues," but we are on track more or less fully recover in 2022.



If we look at printing shipments as a percentage of GDP, since 1997 (see the chart on the next page), the value of printing shipments went from around 1% of GDP all the way down to just under 0.3%. (These figures are not inflation-adjusted so as to avoid disagreements about which inflation adjustment to use; we're just looking for an overall pattern.) We probably won't be getting back to anywhere close to 1% again, and if we do it will only be because GDP tanked, which, as we saw in Q2 2020, is something that can happen.

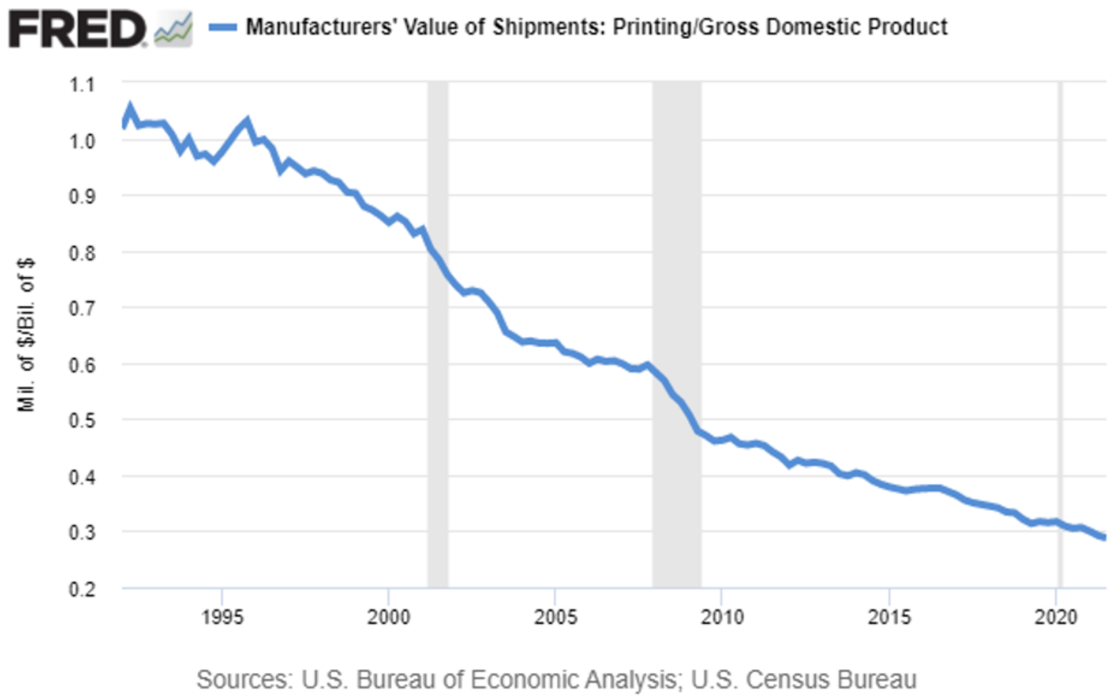
Looking beyond the current pandemic, we again warn that this chart is essentially the story of technology. Printing shipments as a percentage of GDP started to plummet when the Internet truly arrived circa 1996 and while we can blame the recession for some of the drop after 2008, and the pandemic for 2020, remember also that this was also the period that saw the advent of social media, the smartphone, and mobile media. Every major advancement in electronic media has disrupted print's standing in the overall scheme of media.

We should be wary of the coming of 5G, which started rolling out in January 2021[10]. "5G" stands for fifth-generation cellular wireless and will offer faster speed, lower

[10] To the consternation of the airlines, as 5G uses frequencies that are close to those used by older aircraft altimeters. They anticipated flight delays and all sorts of airline calamities, none of which have yet come to pass.

latency and thus less lag, and the ability to connect a lot more devices at once. This will boost things like gaming, video streaming, and other high-bandwidth applications, all of which compete with print in various capacities.

Printing Shipments as a Percentage of Current-Dollar GDP, 1992–2020



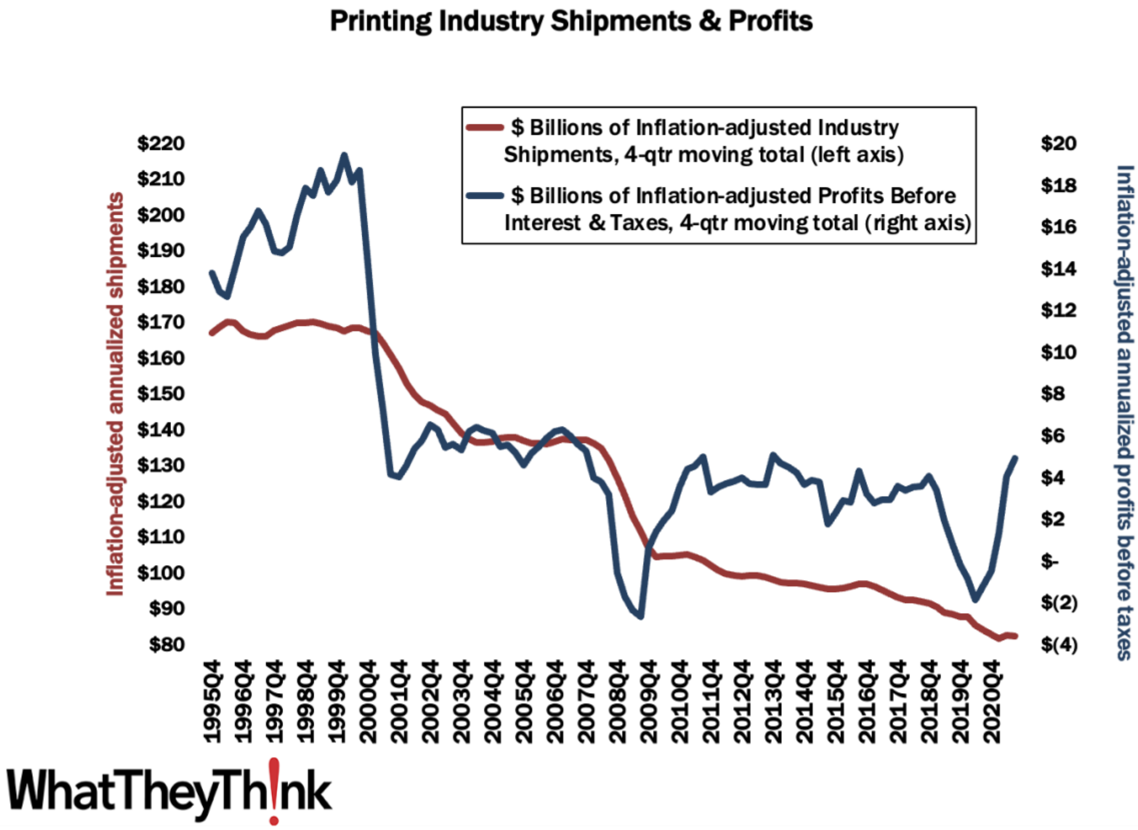
Industry Profits

So shipments haven't been all that bad, all things considered. However, profits have taken a sharp upturn as of the middle of 2020. Annualized profits for Q3 2021 came in at $4.96 billion, up from $4.07 billion in Q2.

We also look at printing profits by asset class: large printers (more than $50 million in assets) and small printers (less than $50 million in assets).

So, in Q3 2021, for large printers (those with more than $50 million in assets), profits before taxes had been +3.06% of revenues, a decided improvement from all quarters going back to at least Q4 2019. For smaller printers (less than $50 million in assets), profits before taxes in Q3 were +12.12% of revenues, an increase from Q2 2021, but not quite at the anomalously high level of $14.08% in Q1. We had been referring to the disparity between "big" and "small" printers as our "Tale of Two Cities" since there had been a great profit disparity between those two asset classes, although the Census Bureau's adjustment to $50 million as the break point (see below) now disrupts that narrative a bit. So in Q3 2021, big printers did a little worse profitwise, while smaller printers did a little better, which means that, for the industry on average, profits before taxes were +6.76% of revenues, down from Q2's +8.55%. For the last six quarters, profits have averaged +3.61% of revenues.

The asset class division is based on the breakdowns in the Census Bureau's *Quarterly Services Report*, whence we get our profits data. Starting with the Q4 2019 *Quarterly Services Report*, the Census Bureau changed their asset class breakdowns from more/less than $25 million to more/less than $50 million.



Printing Profits by Assets, Q2 2020–Q3 2021

Net Income Before Taxes	2Q 2020	3Q 2020	4Q 2020	1Q 2021	2Q 2021	3Q 2021	Simple average, last six quarters
All commercial printers	**-4.80%**	**2.42%**	**2.78%**	**5.96%**	**8.55%**	**6.76%**	**3.61%**
<$50 million in assets	-1.29%	8.84%	8.26%	14.08%	10.66%	12.12%	8.78%
>$50 million in assets	-6.64%	-1.71%	-0.35%	0.62%	7.22%	3.06%	0.37%

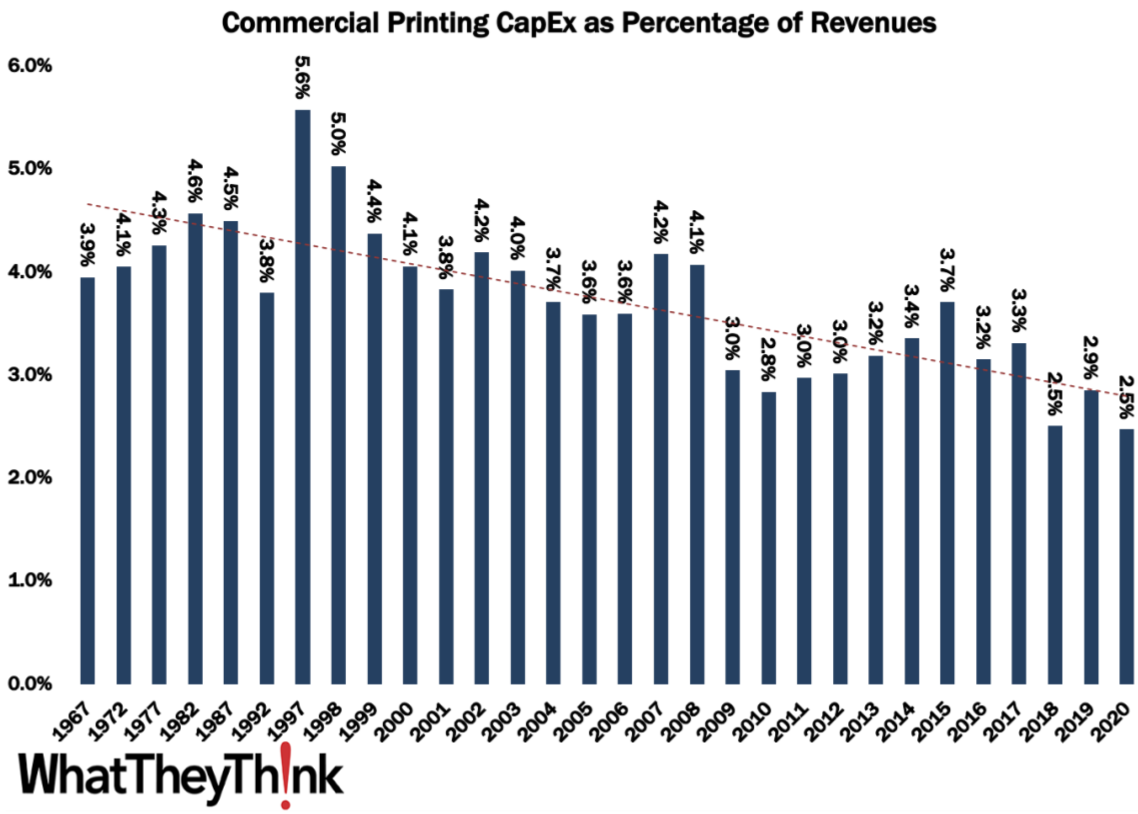
NOTES: Approximate breakpoint for $50 million is 100 employees. Data are from the Department of Commerce *Quarterly Financial Report* released June, 2021. Data analysis ©2021, WhatTheyThink

NOTES: Approximate breakpoint for $25 million is 100 employees. Data are from the Department of Commerce Quarterly Financial Report released December, 2020. Data analysis ©2020, WhatTheyThink.

Capital Expenditures

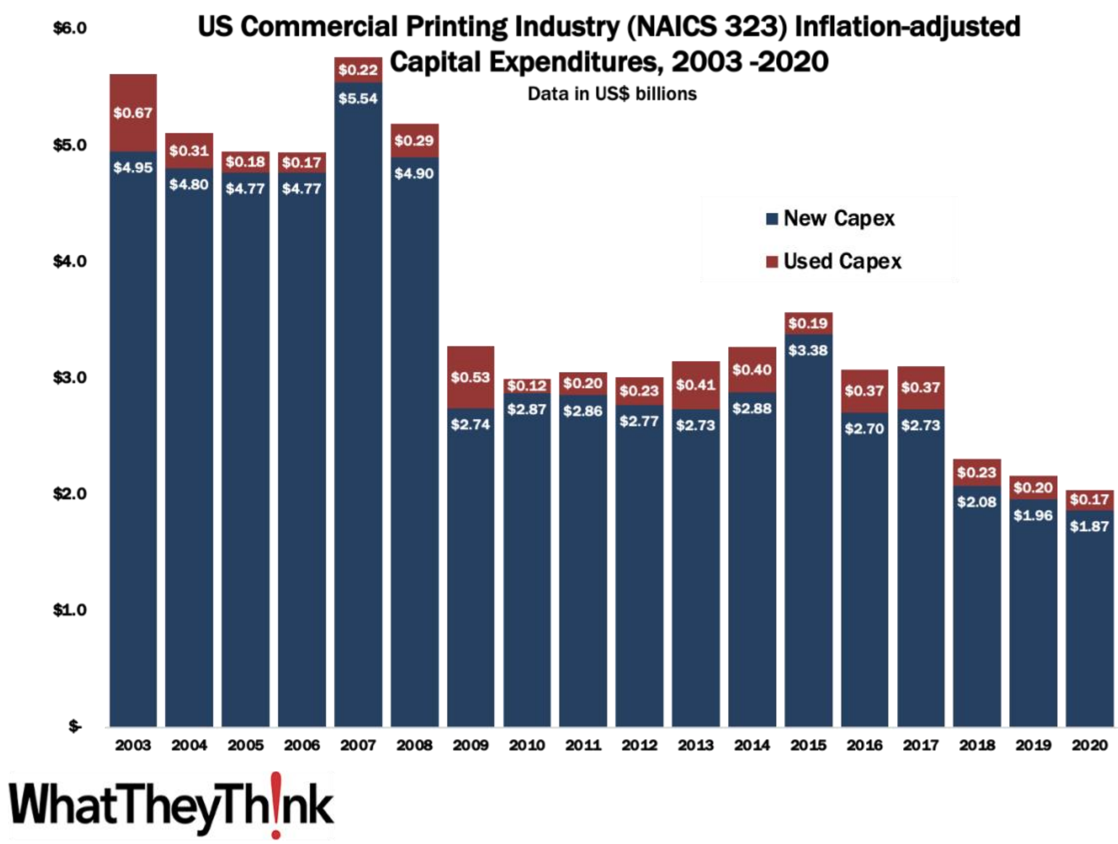
As we saw in Section 2, print businesses don't have many big investment plans; recall that number one on the Planned Investment list was "we have no planned investments." This had been the case going back a few years and is not a COVID-related phenomenon. As we remarked earlier, we are seeing some increased investment plans to increase digital printing capabilities, add new products, and especially expand binding and finishing capabilities, especially on the digital side.

According to the Census Bureau's *Annual Capital Expenditures Survey*, about 2.5% of revenues are being spent on capital expenditures—which can also include things like moving or expanding their location. The big spike in 1997 and 1998 represents the effect of PRINT 97, where a slew of digital, Direct Imaging, and computer-to-plate systems was introduced. At PRINTING United 2019, people said it reminded them of PRINT 97, at least in terms of people being excited to be in, and investing in, the printing industry. And although 2019 doesn't show a huge spike, there was a slight climb from 2019 before the inevitable drop in 2020.



Source: U.S. Census Bureau, 2018 Annual Capital Expenditures Survey

The chart below looks at new vs. used capex, and while it confirms that capital expenditures started declining considerably in 2018, it also shows a dwindling interest in used equipment, the result of a shift to digital and the desire, when investing in digital equipment, to have the latest and greatest.



Graphic Arts Employment

There is another way of looking at the employment situation that complements our own survey results, and that is the monthly employment report from the Bureau of Labor Statistics. Typically, when we report low employment numbers for the industry, it can be interpreted as the industry simply not hiring. In lieu of what we saw in Section 4, we're wondering if the low rates we have been seeing throughout 2021 are simply due to print businesses not being able to find employees. Although we have been seeing record low unemployment rates in the economy in general, not all industries are recovering from the pandemic at the same rate. (Agriculture, for example, has an unemployment rate of 9.8%, compared to 4.0% nationally.)

In December 2021, the most recent month for which we have data, overall printing employment was up +0.6% from November, with production employment up +0.2%, and non-production printing employment up +1.4%. We have been seeing these numbers in this range for most of 2021. If you look at the year-over-year changes, early 2021 saw a return of the workers that had been shed or furloughed during the pandemic, which had started to slow over the summer and continued through the fall. December 2021 production employment was up +4.9% over November 2020, with non-production employment lagging, in this case by being down -1.8% from November 2020.

Publishing employment has been improving, with general publishing employment up +3.3% from November. Digging into the specific publishing segments (the reporting of which lags a month), things don't look quite so good: from October to November, periodical publishing employment was up +0.3% while newspaper publishing employment declined -0.1%.

The creative markets are similarly low. Graphic design employment was up +0.3% from October to November, and ad agencies (less PR) were up +1.0%. Usually the leader, PR employment took a tumble, with November employment down -0.8% from October. Usually the laggard, direct mail advertising employment has been on a growth streak, with November employment up +2.5% (it was up +4.8% from August to September).

Employment in thousands of workers	November 2020	November 2021	Y/Y Change	December 2020	December 2021	Y/Y Change
Printing, all	373.1	383.1	2.7%	374.9	385.3	2.8%
Printing, production	253.8	267.0	5.2%	255.0	267.6	4.9%
Printing, less production	119.3	116.1	-2.7%	119.9	117.7	-1.8%
Publishing	758.2	777.8	2.6%	761.7	786.5	3.3%
Periodicals	70.6	67.5	-4.4%	70.3		
Newspapers	107.8	105.5	-2.1%	107.0		
Publishing, ex-newspaper	650.4	672.3	3.4%	654.7		
Graphic design	56.4	62.6	11.0%	57.1		
Public relations	57.8	63.8	10.4%	58.6		
Ad agencies, includes PR	437.5	458.1	4.7%	443.6	460.4	3.8%
Ad agencies, less PR	379.7	394.3	3.8%	385.0		
Agency (incl PR) + design	493.9	520.7	5.4%	500.7		
Direct Mail Advertising	37.8	37.1	-1.9%	38.0		

Here's the dichotomy: the employment situation in the economy overall has been at record highs—we'll take a closer look at the general employment data in the next section—but we as an industry have not been sharing in that largesse.

Employees Per Establishment

Last year, we began to see a disconnect between our traditional data series and the current state of the industry. Our industry demographic data are based on the Bureau of the Census and/or *County Business Patterns* data, which has a two-year lag in data reporting. In the Before Times, this was not a major problem: things change, but not so fast that two years makes much difference. However, 2020 changed all that, such that 2018 might as well be the 19th century. Even including up through 2019, our regular tracking of employees per establishment may be a bit of an anachronism. Still, as we say repeatedly, the pandemic has largely amplified or accelerated trends that were already underway, so most of these data series are still worth looking at.[11]

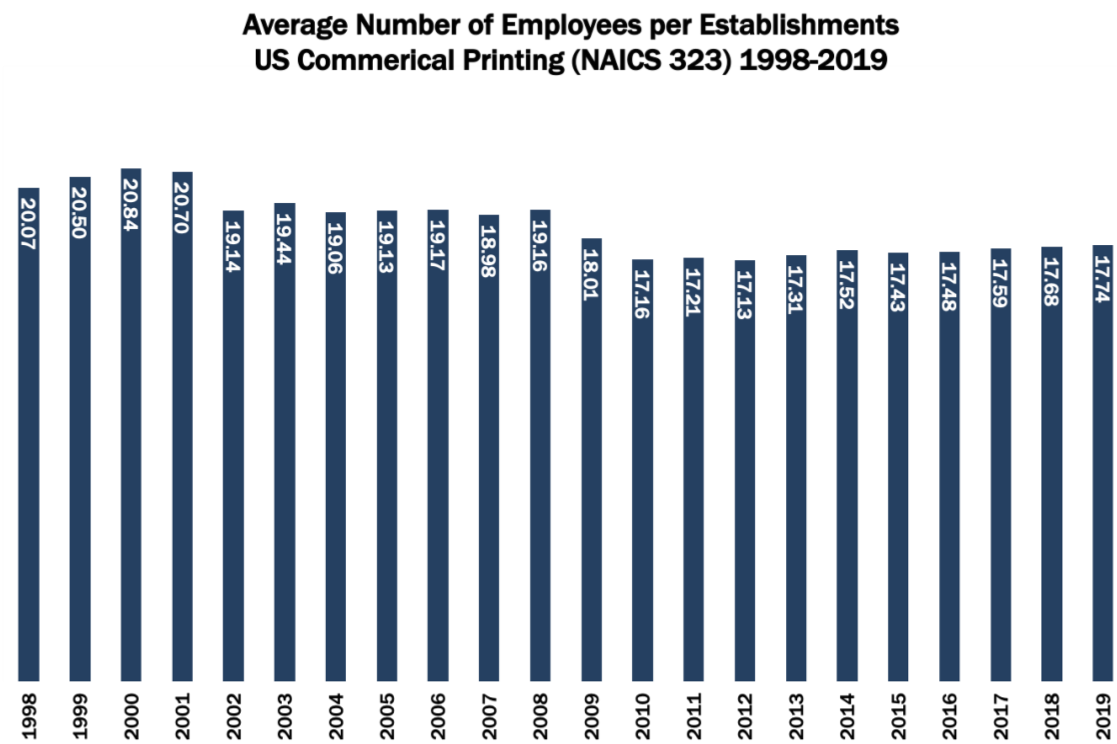
Here's our boilerplate text for this section. Every 10 years, there is a sharpish decline in the average number of employees per establishment, and then a period of relative stability. The story behind these periodic declines is one of technology and the gradual elimination of prepress functions as discrete stages of production. Shops still have one or two prepress experts, but they don't need strippers, separators, and platemakers like they used to. Computer-to-plate helped reduce staff, and then digital printing continued that

[11] The new *County Business Patterns* that includes 2020 data comes out later this year.

trend. We have also started to see the same kind of thing happening in postpress; not that it is being absorbed into the printing process (although for inline finishing, that can be the case), but rather it is increasingly being done in-house instead of outsourced to a specialty finishing house. This is a reflection of the fast-turn nature of today's jobs. Who has time to send out finishing work any anymore? As we have seen in the investments and opportunities data, shops have been adding binding and finishing and, as we saw in recent surveys (and especially the current one), need people to run this equipment. However, as finishing becomes more and more automated, fewer dedicated finishing staff are required—and, in fact, in highly digital shops, one employee can run the press and run the finishing equipment.

The pandemic has accelerated these employment trends and while the chart below—the most recent data for which is from 2019—shows a generally stable, if gradually increasing, number of employees per establishment, we expect our 10-year decline to kick in when get 2020 data, only partially due to the pandemic, at least in terms of production employees.

Prior to the current production staff crisis, there had been a shift in the kinds of employees print businesses are looking for. We saw in pre-2020 survey data that IT and programming employees were highly sought-after. That shifted in the couple of years prior to the pandemic to sales people and some production staff, and as of 2019 to mostly sales people. As automation continues—and as production staff becomes harder to find—we may not see average number of employees per establishment go down, but the composition of those staffs will likely change from being production-centric to sales/marketing/business development- and IT-centric. But as web-to-print and e-commerce continue, shops may find that the nature of print sales is changing and even sales people may not be as in-demand as they currently are, especially if more and more work starts coming in via an online storefront. Sure, a lot of "boutique" and bespoke printing work and complex projects may still come in through traditional sales routes, but more and more commodity print will come in via an online portal—or should.



Wages and Benefits

It is worth citing here the results of Print Industries Affiliates' annual printing industry Wages & Benefits Survey. Having been conducted since the 1970s, this report is one of the most extensive and reliable labor management reports in the industry. This year, nearly 500 companies participated, and more than 17,000 employee data points were gleaned reflecting more than 130 industry positions.

What is happening with industry wages? When comparing median wages for all job positions from 2020 to 2021, the average increase was +3.8%. Digging down, in job categories that saw a less than +4% increase, the average increase for salaried positions was +1.175%, while for hourly employees, the average increase was +3%. However, in those job categories that saw a *more* than +4% increase, the average increase for salaried positions was +8.7%, while for hourly employees, the average increase was +9.5%.

As for wage increases for selected positions, for those that saw increases greater than +4%:

- Sales manager/sales VP: median increase of +12%
- Marketing/business development manager: median increase of +13%
- Customer service manager: median increase of 7%
- HR managers: median increase of +5%

What position saw the biggest wage increase? Continuous improvement specialist. Although this position only exists in a small subset of reporting companies, the median increase was +30%. This is reflective of the job description of “continuous improvement specialist,” which is not one that is printing industry-specific. That is, this kind of employee can easily transition from one manufacturing industry to another, which means that printing companies are now competing not just with other printing companies, but other manufacturing companies throughout the economy. Environmental health and safety is another position for which competition across industries will be tough. Likewise purchasing specialists (+8%) and programmers or database managers (+7%).

As for press operators, it’s easy to see why companies are moving to digital. Depending on size of press, wage increases for offset press operators are generally in the +15–19% range, while for inkjet presses the wage increase was only +6%. On the flexo side, wage increases have been in the +10–16% range. One recent trend is more flexo presses being installed in commercial print businesses, bringing with it more competition within the industry for these operators.

The survey also turned up some changes in the shift differential—for example, people want to work days more than had been the case in the past, so there has been a sudden increase in what companies had to pay to get people to work the third shift.

Some other overall findings from the survey include:

- Paid parental leave increased nationwide, but most notably in the southeast (+11%), although it did decline in the West (-7%).
- Four-day work weeks are on the rise (+4%), especially in the Southeast (+11%).
- Sick day accumulation increased 17%.
- Profit sharing/simple IRA matching increased 18%.

Indeed, more employee benefits have been added to retain and recruit those employees. And it has worked; employee turnover decreased from 73% to 40% compared to last year.

And no self-respecting contemporary survey ignores COVID-19 impacts. Companies that did not offer wage adjustments dropped from 45% in 2020 to 27%—which is a good thing, as it means the economy is improving. However, the percentage of workers taking off due to illness increased, primarily due to the need to take care of children or other family members that are sick. And positive COVID cases were up 52%. And at the same time, 52% of survey participants had qualified for the second stimulus.

So what does this all mean?

As of the end of 2021, business was pretty good for the industry. There’s a lot of pent-up economic demand, and, as well see in the next section, it’s certainly an employees’ job market, so we’re likely to see further wage increases in 2022, especially as “The Great Resignation” continues, driven by burnout, lingering COVID fears, the ability to pursue other opportunities, and even early retirement. The downside of course is that with such high quit rates and reduced staff, it’s getting more difficult to get products out the door and deadlines are slipping.

Adding all of this on top of "supply chain issues" and increased costs for supplies and consumables (as we saw in Section 2), there can be a cost crunch. However, there is one strategy that many businesses resist, but when in Rome: pass along the price increases related to the labor shortage as well as the cost of materials to the customer. And the survey found that most customers haven't pushed back. Companies have also been implementing hiring and/or referral bonuses at levels we have not seen before, as well as continued increases in wages and benefits and a re-look at the company culture and try to prevent employee burnout.

Ultimately, wage increases and job losses are not going away any time soon. But by being proactive with pay raises, being competitive with salaries for new hires, and by experimenting with the extent these increases can be passed along to customers, employment challenges can be kept at bay.[12]

Productivity

A traditional challenge for the industry has been "increasing productivity" and if we look at the BLS's productivity data for NAICS 3231 (Printing and Related Activities), we see that productivity had been on the rise in the industry until about 2018, when it took a tumble. Productivity can also be somewhat of a gauge of automation, although not a 100% reliable one. If we look at the period from 2015 to 2017/2018, we saw productivity rise even as the average number of employees per establishment remained relatively stable. The drop in productivity likely reflects the pre-pandemic challenge of finding production workers—and recall how "increasing pant productivity" was always a top challenge. Here is some third-party corroboration of that.

It's funny: there has been a worry in the general economy that automation will displace workers—and it would be quite the luxury if we had that problem. In the printing industry, we have the opposite problem: we need automation because we can't find humans, at least for production jobs.

Automation can have some negative effects; remember when "color separators" was an entire business class? It even had its own NAICS and everything. But the entire color separator business was eliminated by a single command in Photoshop. Trade typography also used to be a business class; now anyone can use InDesign or QuarkXPress (or even Word) for typesetting. But today, it may be a good thing, or at least a better one than it had been.

[12] The Wages & Benefits Report can be downloaded at https://printindustries.org/intro-2021-survey.

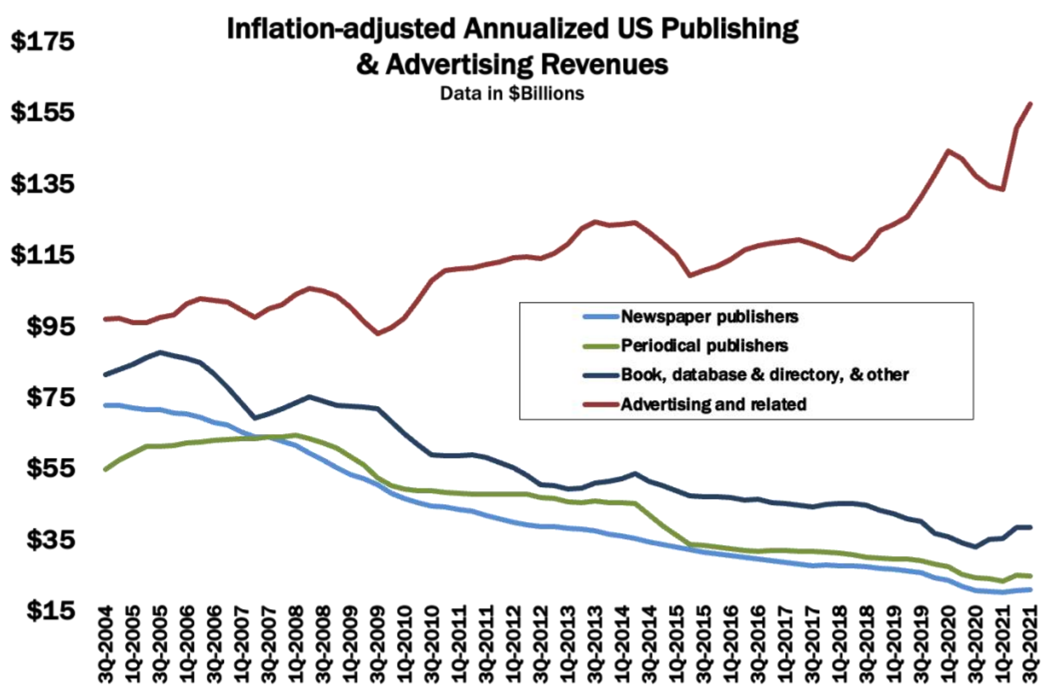
Source: Bureau of Labor Statistics

In some sense, automation is like the weather: everyone talks about but no one ever does anything about it. There is a lot of interest in automation, but little actual wholesale implementation. Which is a shame, because automation changes the nature of the employees that are sought. The erosion of prepress as a specific step in the production process changed the demand for prepress employees to press operators and/or binding and finishing employees. Automating these processes thus shifts the demand to things like sales and business development. Web-to-print doesn't as yet appear to have any impact on the demand for sales people in the industry, although we fully expect that to change, especially post-pandemic. And remember, there are some very successful print businesses that don't have *any* salespeople. They rely on highly effective search engine optimization (SEO) strategies to attract Googlers to a Web-to-print site, where customers may never have any actual interaction with an employee of the printing company. After all, this is the way people—especially younger people—increasingly like to buy things. This doesn't mean that those businesses don't have *any* employees; instead of salespeople they have programmers, Internet search experts, and customer service personnel for when there are questions or problems. This is a good thing; these are highly desirable jobs, especially on the part of younger people, and looking for software developers and search experts may help attract new blood to the industry.

Publishing and Advertising

Publishing has generally been having a rough time during the pandemic. In 2020, newspapers and to a slightly lesser degree periodicals saw advertising dry up, as local businesses—newspapers' primary adverting base—have been closed or struggling, although that may be alleviating as businesses have opened back up. A bright spot during the pandemic was book publishing, which saw sales and revenues rise during the pandemic, reflected in the chart below.

The figure below rounds up the latest revenue data for the various publishing segments as well as ad agencies. On an annualized basis, since 2004, newspaper publishing revenues have plummeted by more than $50 billion. Periodical publishers aren't in much better shape. Advertising fell in 2020, but has picked up substantially as the economy has recovered.



WhatTheyThink

Advertising revenues had flattened out over the course of the 2010s, which reflected the fact that revenues for the places that used to feature a lot of advertising—periodicals and newspapers—have dropped, in turn indicative of perhaps not just a shift to non-print forms of advertising, but other kinds of marketing initiatives than what we think of as "advertising." A lot of it is content marketing, a greater reliance on social media and other forms of digital marketing, and smarter use and negotiation of cable and TV. While traditional TV audiences are smaller, people continue to cut the cord faster, and streaming is the "new cable"—and largely advertising-free, as people are willing to pay extra for commercial-free versions of streaming services like Hulu, Disney+, and the other umpteen million other streaming services that have launched in the last couple of years. Especially during the pandemic, streaming movies and TV shows (oldies as well as streaming service originals) was one way to occupy oneself during lockdowns. But at the same time, there is no shortage of advertising on other platforms such as Spotify, YouTube, and other services that have both ad-supported (free) and premium (ad-free) options. Indeed, there are becoming precious few places where there is no advertising—even your car may not be an ad-free zone.[13]

Looking Forward

2021 was a year of recovery for the industry—if not for the economy as a whole—and unless there is another twist *vis-à-vis* the virus, 2022 should continue to build on that initial recovery. While we should not expect stellar increases in some of our favorite industry metrics—recovering from a crash is different than maintaining a steady recovery—we should see some continued progress.

In the next section, we'll zoom out (if you're not sick of Zoom) and have a look at me macroeconomic data, to give us some context for the industry data. Then we'll look at current trends and our forecast.

[13] See, if you dare, Andrew Liszewski, "Get Ready for In-Car Ads," Gizmodo, May 13, 2021, https://gizmodo.com/get-ready-for-in-car-ads-1846888390.

6. MACROECONOMIC DATA

In this section, we zoom out to get a larger sense of the general economy. As we all know, 2020 was rough on virtually every part of the economy, but 2021 saw a substantial rebound.

GDP

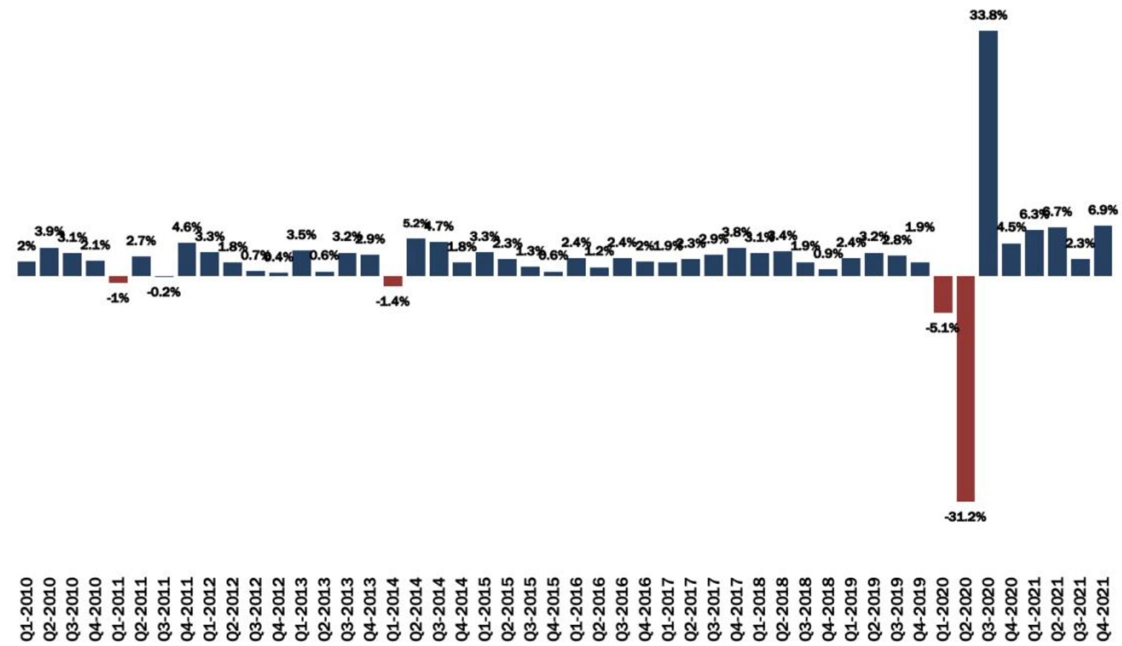
Said the BEA[14] in January 2022:

> Real gross domestic product (GDP) increased at an annual rate of 6.9 percent in the fourth quarter of 2021, according to the "advance" estimate released by the Bureau of Economic Analysis. In the third quarter, real GDP increased 2.3 percent....
>
> The increase in real GDP primarily reflected increases in private inventory investment, exports, personal consumption expenditures (PCE), and nonresidential fixed investment that were partly offset by decreases in both federal and state and local government spending. Imports, which are a subtraction in the calculation of GDP, increased.

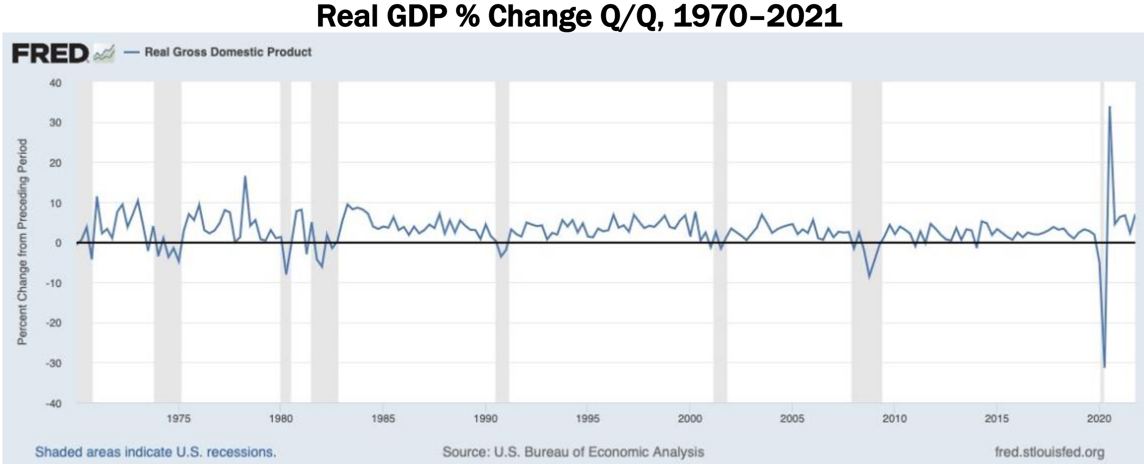
The BEA added, "**Real GDP** increased 5.7 percent in 2021 (from the 2020 annual level to the 2021 annual level), in contrast to a decrease of 3.4 percent in 2020." This 5.7% is the biggest annual increase in GDP since 1984, but a lot, if not most, of it just reflects climbing out of the 2020 hole. Still, this is nothing to sneeze at, and the 6.9% growth in Q4 was higher than economists generally expected.

[14] "Gross Domestic Product, Fourth Quarter and Year 2021 (Advance Estimate)," Bureau of Economic Analysis, https://www.bea.gov/news/2022/gross-domestic-product-fourth-quarter-and-year-2021-advance-estimate.

Real GDP Growth (Quarterly) 2010–2021



Real GDP % Change Q/Q, 1970–2021



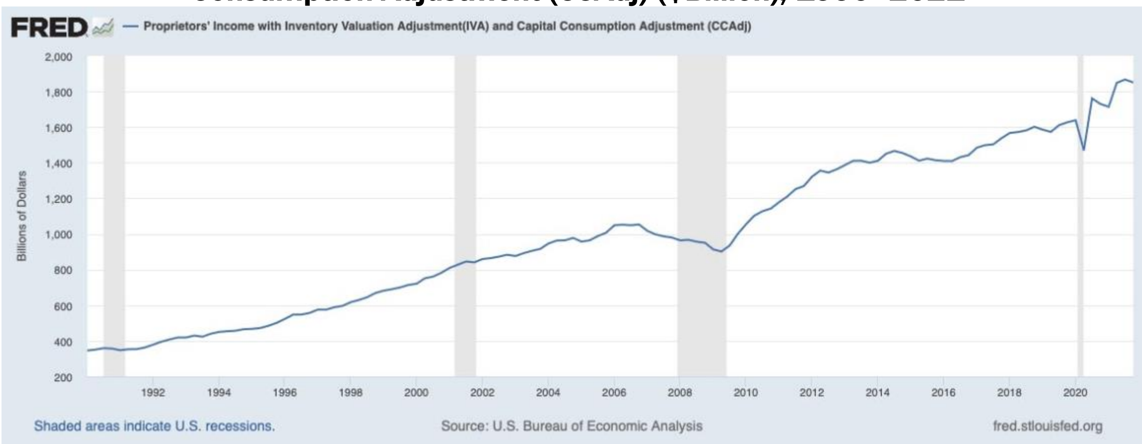
Proprietors' Income

The figure below shows proprietors' income for the past ~50 years. Proprietors' income is often seen as a surrogate for small business, and it tends to be out of phase with GDP as large businesses outsource work to small businesses at the beginning of recoveries and then make those services the first to be cut in expectations of a downturn.

Proprietors came out of the onset of the pandemic pretty strong; Q2 was a rough patch, but proprietors rebounded, including a lot of freelancers who generally were able to keep right on going through the pandemic. It also includes those working in construction and related services, which saw a bit of a slowdown during the worst of the pandemic, but were not as hard hit as other segments of the economy, like restaurants, retail, and others.

Proprietors' income is still close to record highs, even if it has declined ever so slightly in Q4 2021.

Proprietors' Income with Inventory Valuation Adjustment (IVA) and Capital Consumption Adjustment (CCAdj) ($Billion), 1990–2021



Corporate Cash Flow

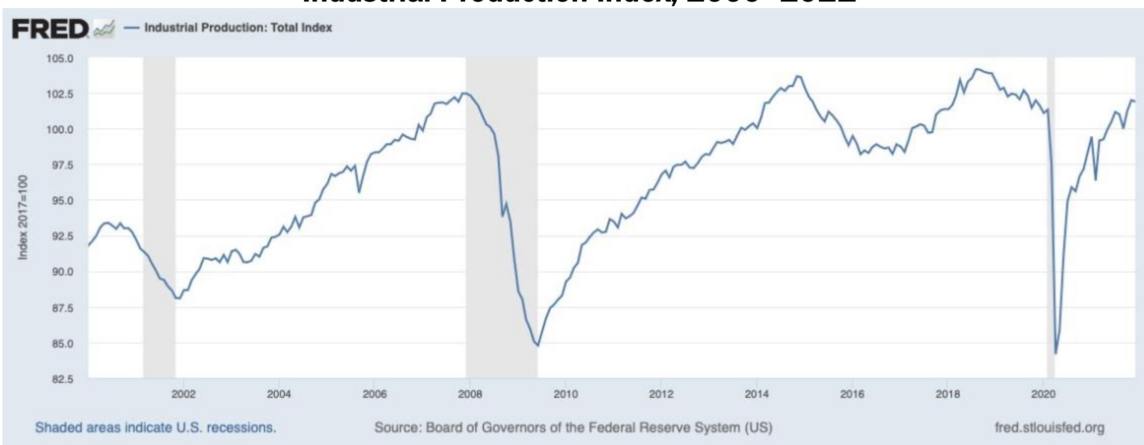
Corporate cash flow growth has been inconsistent for the majority of the 2010s. It was down in 2017, but ticked up in 2018 substantially thanks to tax repatriation and the cut in the corporate tax rate. It crashed again immediately thereafter thanks to the pandemic, but is now at record highs.

Corporate Cash Flow ($Billion), 1990–2021

Industrial Production Index

If we look at the industrial production index post-Great Recession, 2016 had been pretty bad, 2017 and 2018 were better, 2019 saw it drop a bit. And then…well… In Q3 2020, it started ticking back up again and while it has been choppy, the general trend is upward.

Industrial Production Index, 2000–2021



Durable Goods

Durable goods—items like appliances, home and office furnishings, lawn and garden equipment, consumer electronics, toys, small tools, sporting goods, and other items that last for at least three years (per the official definition)—had been getting generally better since 2016, although the data series is a bit noisy. They had been on a downward trend even before the pandemic, but along with everything else, fell off a cliff in early 2020. They have strongly rebounded, especially as everyone took the opportunity of the lockdown to mount home improvement projects, as well as improve their home technology infrastructures to support work-from-home and home schooling. This rapid rebound is one reason why it can be difficult to obtain big-ticket items like refrigerators, kitchen cabinets, etc., as quickly as one used to be able to.

Durable Goods Orders $Million), 2000–2020

Personal Income

Personal income is income that people get from wages and salaries, Social Security and other government benefits, dividends and interest, business ownership, and other sources.

This is one of the few indicators that increased during the pandemic, largely driven by CARES/PPP, extended unemployment benefits, and other disaster relief initiatives.[15] These initiatives ended in 2021, and hence the drop in this data series over the past few quarters.

Real Personal Income ($Billion), 2000–2021

Consumer Confidence

Consumer confidence is a hard thing to figure, as it seems to ebb and flow independent of what other data points would suggest. Of course, most consumers don't pore over economic data and pretty much go on "gut" instincts. Usually, those instincts are a little mysterious—but in 2020 and 2021, we have a pretty clear idea.

Consumer Sentiment Index

Consumer sentiment had been pretty much a mixed bag even before the pandemic, but took a nosedive in early 2020. It's bounced around a bit above the low point of the Great Recession but it will be a long climb back to 2015/2016 levels, given the uncertainty of the virus, the "supply chain issues," and inflation. Said the University of Michigan Consumer Sentiment Survey:[16]

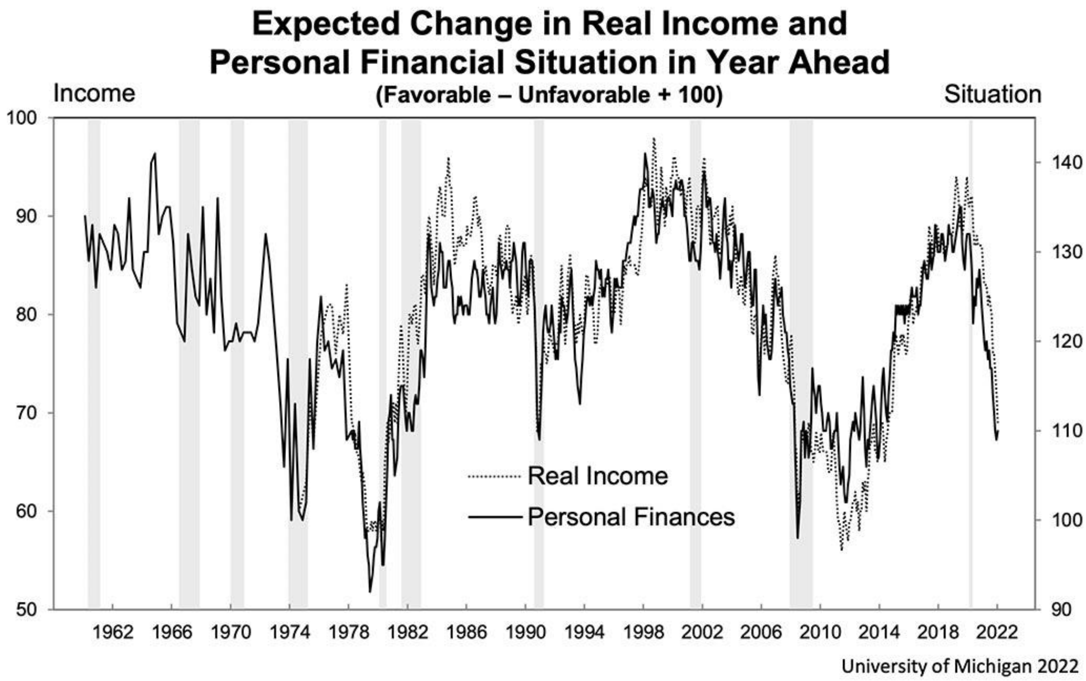
> Sentiment fell throughout January, posting a cumulative loss of 4.8%, sinking to its lowest level since November 2011. The current slump was due to two sharp declines separated by a brief interlude of rising optimism. The initial steep decline occurred in just two months, a 28.9% plunge in optimism from February to April 2020 due to the shutdown in the economy. Confidence recorded an equally strong recovery beginning in late-2020, rising 23.0% by April 2021. That upturn was reversed during the past nine months, with the Sentiment Index falling by 23.9%. The Delta and Omicron variants were largely responsible, but other factors, some of which were initially triggered by covid, have become independent forces shaping sentiment. While supply

---

[15] These kinds of government assistance initiatives are often referred to as "stimulus" packages, but in this case "disaster relief" is a perhaps more accurate term.

[16] Surveys of Consumers, University of Michigan, http://www.sca.isr.umich.edu.

chains and essential workers have sparked the initial increases in prices and wages, a wage-price spiral that has subsequently developed is no longer tied to those precipitating conditions.



Consumer Price Index

Here we go. The figure below shows the percent change in the Consumer Price Index from 2010 to 2021. Here's what we said in last year's Outlook report: "[CPI] has just come close to 2%. If there is one good thing about the pandemic, it has kept inflation pretty low." Hah! What a difference a year makes. In early 2021, it has been running as high as 7.1%.

Percent Change In CPI, 2010–2021

However, as Barry Ritholtz at The Big Picture points out, inflation isn't any one thing or any one number. He writes:[17]

> One's analysis and expectations about inflation can be too narrow, highly dependent upon the aspect of CPI data you choose to focus upon, the priors you bring to those observations, and (therefore) what it is you see in various prices.[2]
>
> This matters a great deal: Inflation is less than the simple binary question: *Is the CPI rising or not?* Rather, there are many factors driving the components that make up the Consumer Price Index. When we closely analyze these, we find a broad dispersion across various consumer goods and services. The nature of these inputs will determine how much inflation there is, how long-lasting it might be, and what can be done to combat it.

He considers the components that go into the calculation of CPI. For one, take automobiles. New cars were hard to purchase because of a chip shortage, triggering a surge in demand for used cars, which causes prices to rise. "Without the spike in car prices, that 7% consumer price increase would have been about a third less, closer to 5.5% had car prices been stable," Ritholtz comments. There has been a shortage of single-family homes, something that is at least a decade old. That has driven up housing prices. Wages have been going up, as we have seen in our own industry, and those increases are often passed along in the form of higher prices. And of course energy costs are up as well. And so on.

How will this play out?

> Some [price increases] are likely to be transitory. Of all of these rising prices, energy prices tend to be the most responsive to rising prices. On the other hand, it takes 4 to 6 months to construct a new home; an adequate supply of semiconductors is estimated to be at least 6 months, or as much as 24 months away; wages have reset higher – $15 is the new unofficial minimum wage – but the rate of increase could very well moderate towards late 2022. To build one of the giant container transport ships is a 3-year process. Last, the balance between goods and services will be determined by how long it takes us to get the pandemic under control.
>
> …Pricing in the global economy is dynamic, ever-changing, with lots of cross currents each responding to different inputs: Supply, demand, interest rates, fiscal stimulus, geopolitics, consumer sentiment, etc. This is the nature of a complex system. Investors should not engage in gross oversimplification, single variable analysis, or even thinking about inflation as a binary outcome. Instead, an awareness of the many factors affecting prices, and how they might play out is a rational approach.

Also we note that inflation has been a global phenomenon, not just a US one.

[17] See https://ritholtz.com/2022/01/inflation-the-elephant/.

Employment Cost Index

Here's a graph most print business owners will understand in a second. The Employment Cost Index includes the total compensation for all civilian workers, and had been rising moderately since about 2016, started to slow around 2019, and took a dive during the pandemic. Funny, we usually say about this data: "This is an indicator we'd like to see rise (it's a sign of a potentially improving employment market)." Be careful what you wish for! Note how it has climbed and climbed and climbed over the course of 2021. It could be argued that an employment market can improve too much—although that really depends on whether you are an employee or an employer.

Employment Cost Index, 2009–2020

Employment and Unemployment

Full-Time Employment

The employment situation had been phenomenal throughout 2021. Even if the headline unemployment rate tends to understate unemployment because of lower-than-optimal labor force participation, it's still pretty good. As we all know, employment tanked in early 2020, but started to rebound as PPP funding and subsequent business reopenings in the summer allowed a lot of businesses to hire a fair amount of their workforce back. (For the record, the unemployment rate as of January 2020 was 3.5%; in January 2021, it was 6.7%; and in January 2022, it was 4.0%.

Number of Employed Full-Time, 2010–2022

Number of Employed Full-Time Adjusted for Size of the Labor Force, 2010–2022

Part-Time Employment

We had been seeing a greater than usual percentage of part-timers. The reason for big jump around 1992/1993, by the way, was a redefinition of "part-time." If you look at the late 1990s, you can see what an economic boom does: it reduces part-time employment in favor of full-time jobs. We had been slowly getting back to that point. However, the pandemic took almost as much of a toll on part-time employment as full-time.

Of course, we shouldn't make the assumption that everyone who works part-time really wants a full-time job. Some do, sure, but some people choose to work part-time, either because they are raising a family (or home-schooling, in the case of the pandemic era), or because, thanks to the Affordable Care Act, they may not need a full-time job to get health care coverage. At the same time, during the lockdown when schoolkids were at home and being home-schooled at least part of the time, some parents opted to switch to part-time employment and some may have preferred that employment situation.

Part-Time Employed as a Percentage of the Workforce, 1970–2022

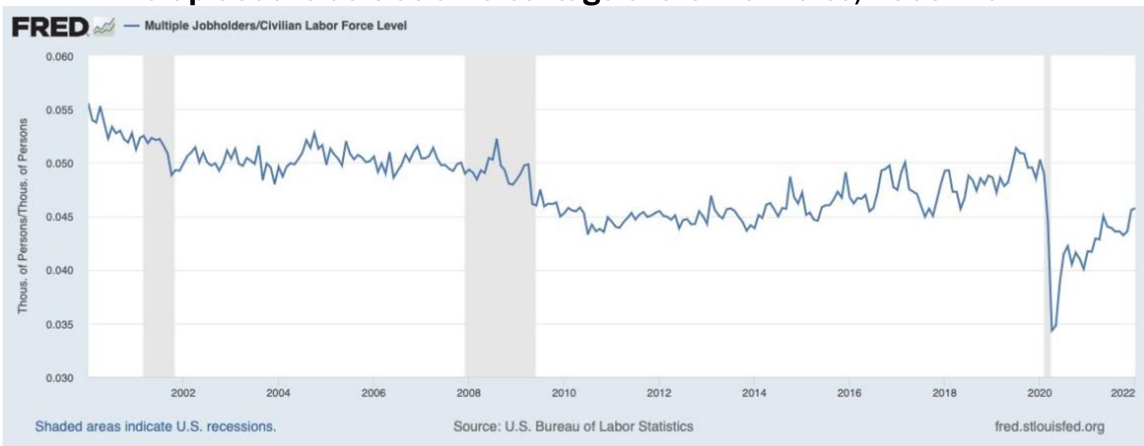
Multiple Jobholders

Multiple jobholders are typically an issue for the payroll employment data because the workers they tally can be double-counted. Payroll data count how many people are going to get W-2s (if you work more than one job, you get more than one W-2), whereas the household survey counts each worker once regardless of how many jobs they have.

Multiple jobholders had until recently been at a lower than usual level, but had been started to climb again, possibly because people needed multiple jobs in order to meet financial obligations for which a single job is inadequate. Look how high the number got just prior to the 1990s boom, during which it dropped. It's great when it's an employee's market, isn't it?

Multiple jobholders fell in early 2020 and have been slower to rebound than other kinds of employment, perhaps because with rising wages, people don't have to work two or more jobs at the rate they used to have to.

Multiple Jobholders as a Percentage of the Workforce, 2000–2022



Unemployment Rate

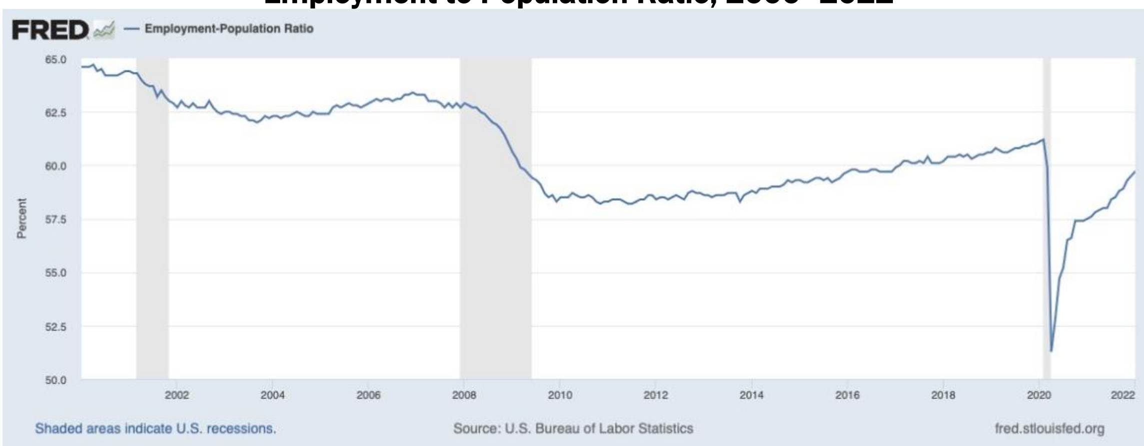
This chart is pretty much the reverse of the employment chart we saw a few pages ago. In the last employment report at the time of this analysis (January 2022), the headline unemployment rate was 4.0%. It had peaked at 14.7% in April 2020.

Unemployed as a Percentage of the Workforce, 2000–2022

Employment-to-Population Ratio

The employment-to-population ratio had been steadily improving over the course of the 2010s, until… you know. The pandemic took a lot of people out of the workforce, which is why the improving headline unemployment rate may not entirely as rosy as it seems. Sure, a lot of Boomers and maybe older Gen Xers took that opportunity to retire—and, well, thanks to the virus, a not insubstantial number "exited the workforce," to put it euphemistically. And others were/are skittish upon returning. So the overall employment-to-population ratio is still below its highest pre-COVID level.

Employment-to-Population Ratio, 2000–2022



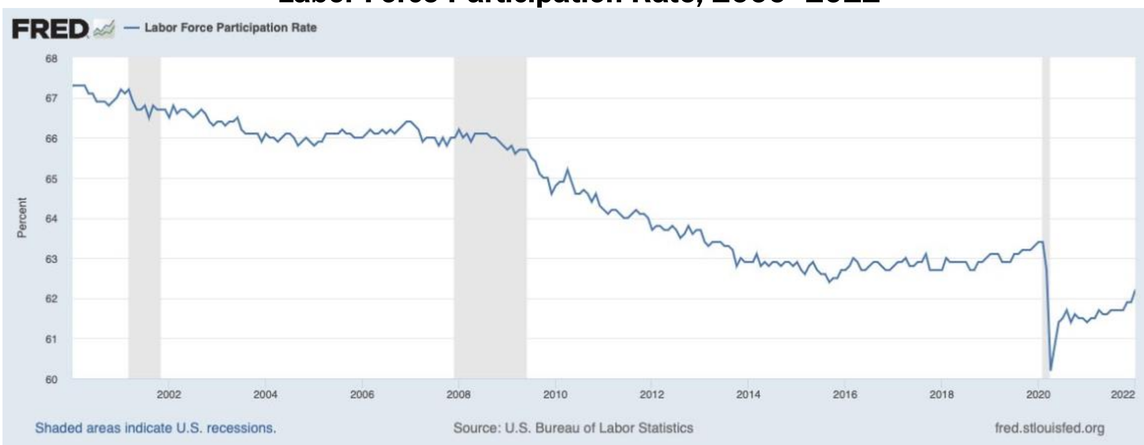
As with almost everyone else, labor force participation among prime-age workers (25 to 54 years old) plummeted in early 2020, but is still below the pre-COVID, pre-Great Recession, and even 1990s economic boom levels.

Employment-to-Population Ratio for 25- to 54-Year-Old Workers, 2000–2022

Labor Force Participation Rate

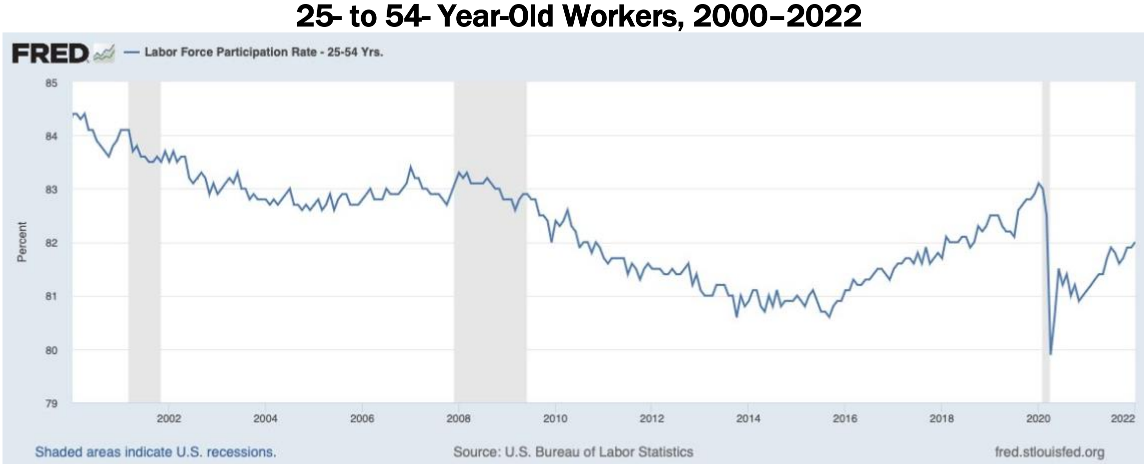
The labor force participation rate peaked in the late 1990s and started dropping between the two 2000s recessions, driven in so small part by Boomer retirement. The pandemic took quite a few folks out of the workforce who have yet to return (and many who may not). At 62.2%, the labor force participation rate is still below its pre-pandemic trough (62.4% in September 2015).

Labor Force Participation Rate, 2000–2022



At 82.0%, the labor force participation rate for prime-age workers is well above the general population, but still well below the pre-pandemic peak.

Labor Force Participation Rate for 25- to 54- Year-Old Workers, 2000–2022



Not In Labor Force

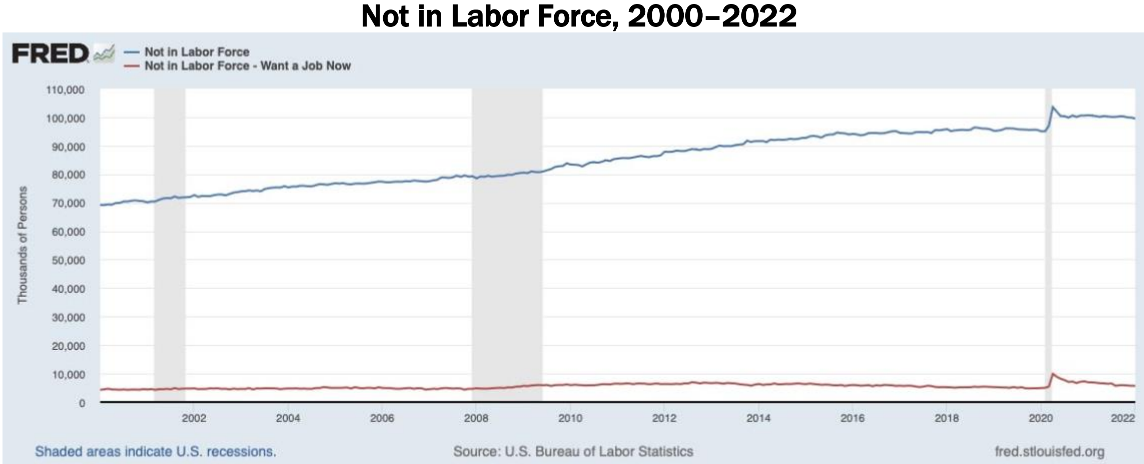
"Not in labor force" started its climb during the 1990s boom, and even between the two 2000s recessions, had started reaching abnormally high levels, which the Great Recession didn't appear to impact all that much (the line continued steadily upward). Some of this is due to retirees, but a lot of these folks should have been in the workforce even before the pandemic spike. It started to plateau in 2018/2019, but spiked in 2020. It now looks like it is starting to ebb back to trend.

Aggregate data don't tell us anything about individual situations, at least in the pre-pandemic period. Maybe a particular industry has been declining (do we know of any industries like that?) or has died or is in the process of dying and it's tougher to get work if that is someone's particular field of expertise, or at least basic skill. Maybe there is a general skills mismatch. Maybe someone is a prisoner of geography, stuck in an economically depressed area (it's not always easy for someone—especially if they have a family—to pull up stakes and relocate). And maybe available jobs pay far lower than what the market used to bear.

Post-pandemic, layoffs and furloughs saw a lot of people leave the workforce—perhaps for family reasons (with home schooling now a thing, for a lot of families perhaps it made sense for one parent to serve as full-time dad/mom) or perhaps for some of the reasons cited above, accelerated by the pandemic.

We thought it would be interesting to also plot "not in labor force, but want a job now," and it's remained fairly consistent over the past 20 pre-pandemic years. There was the expected spike in 2020, but it looks like it is quickly returning to trend.

Not in Labor Force, 2000–2022



Self-Employment

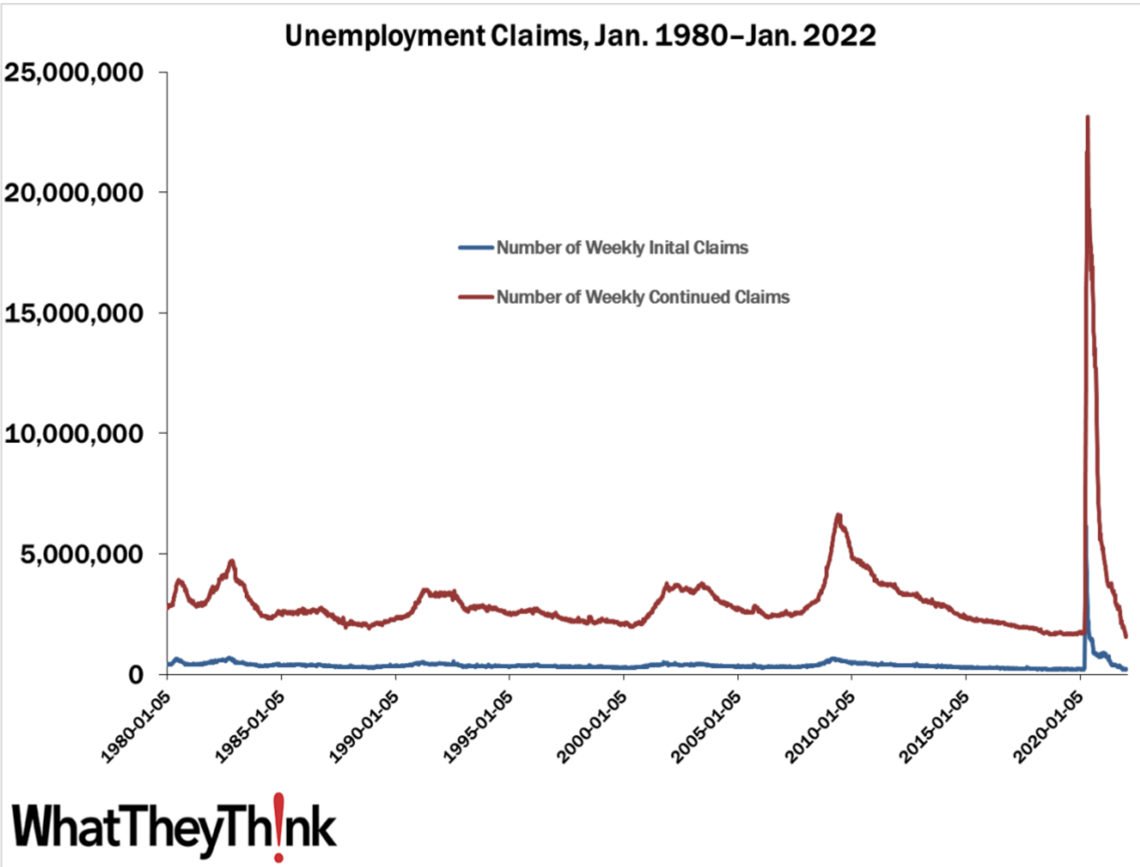
Because we're in graphic communications, we automatically think of the self-employed as writers, designers, web developers, and other "information workers," but as it happens, a hefty chunk of the self-employed are construction workers, which is why there was such a drop-off after the Great Recession, which was accompanied by the housing crash that took a toll on the construction industry for a time. Theoretically, you would see many of these workers come to the full-time or part-time workforce or be more entrepreneurial—which, admittedly, is not always possible, and not everyone is adept at being entrepreneurial. Then again, these data reflect self-employed but unincorporated, so it's entirely possible that some of them became S corporations or LLCs—especially as the 2016 tax law conferred tax advantages on being such a "pass-through" organization.

As we would expect, self-employment tanked then spiked in the early days of the pandemic but toward the end of 2021 started to come down again. It's possible the 1099 life was a stopgap measure until workers could return to full-time employment, even if that means work-from-home.

Self-Employed as a Percentage of the Workforce, 2000–2022

Unemployment Claims

One way we have been tracking the carnage throughout 2020 was via initial and continued unemployment claims. Employment watchers were shocked, *shocked*, back in late March when the first pandemic era unemployment claims report came out and weekly initial claims shot from 282,000 the week of March 14 to 3,307,000 the following week—then doubled a week later. It wasn't until August that initial weekly unemployment claims dropped below 1 million, a little longer for continued claims. (These figures did not include initial claims for Pandemic Unemployment Assistance [PUA].) Happily, both data series have returned to their pre-pandemic levels. By comparison, at the nadir of the Great Recession, continued claims peaked at 6,635,000.



The Economic Landscape

So, we're getting back to some semblance of normal. GDP growth has been good, employment has been good (maybe too good), and there is a lot of demand in the economy. If there is one dark cloud, it's the inflation situation, but many economists feel that the majority of the price increases we have seen are due to a surge in demand post-pandemic, coupled with the "supply chain issues." There are shortages of many products—or the raw materials to make many products—driving the prices up. (We know from our own industry how this works: suppliers can't get raw materials as easily and/or cheaply as they used to, they raise prices, and, coupled with higher labor costs, printers have to raise *their* prices. Unless we want to accept reduced profitability, price increases ripple throughout the supply and customer chains. Apply the same phenomena we are experiencing in the printing industry to other industries, and you see why inflation has been on the rise. These disruptions can't last forever, and it's expected that during 2022 a lot of these issues will be resolved, and we'll start to see inflationary pressure easing.

So, with this backdrop, what does all this mean for the printing industry in 2022? Will the "Printing Renaissance" we wrote about at the end of 2019 pick up where it left off? What does a post-COVID printing industry look like? That's a topic for the next section.

7. Industry Trends and Forecast

Virtually all the data points presented so far in this report show that the post-pandemic recovery is well underway. Even though the pandemic itself is far from over, and the virus will likely be with us in some form for the foreseeable future, many people and places have returned to business as usual (or usual-ish). This may or may not be completely advisable, but it's happening, and the economic recovery has been strong, and far quicker than the recovery from previous recessions. This makes sense, as the COVID recession was not one of insufficient demand; there was plenty of demand, it's just that there were few ways to satiate it. However, that is all water under the bridge. Where do we go from here?

Trends Affecting the Industry

To start...

Employment

How long the Great Resignation will last, and how long employees will be in the driver's seat remain to be seen. But even if it returns to something akin to normal, that may not help us much, because we had an employee crunch even before the pandemic. Ultimately, attracting people to a print business hinges on three basic things:

- Paying a competitive wage.
- Offering a competitive package of benefits—and clearly communicating them. (Decent health care, paid family leave, or paid child care may be more attractive than a higher wage elsewhere.)
- Providing an attractive company culture that makes workers feel appreciated.

These three things are not in any way unique to the printing industry. As it turns out, as we have learned when talking to our annual Top 100 Commercial Printer winners, the most successful printing companies already offer these things, and more. No one wants to work in a "dark satanic mill."

In our employee search section, we had a few respondents write-in that employees would agree to start, then never show up, or leave after a day if they got a better offer. That's a fair complaint—we saw a lot of that in the 1990s economic boom, the last time employees had the upper hand. It's doubtful that's the rule rather than the exception, but there does need to be good faith on both sides.

As for attracting people to the industry in general, we've been wrestling with this for years. One strategy would be to work more closely with industry associations that work closely with educational institutions to groom the next generation of graphic communications employees. The Print and Graphics Scholarship Foundation (PGSF)[18] provides undergraduate college and technical school scholarships and graduate fellowship assistance to those pursuing graphic communications careers. Their recipients include full time students as well as industry workers who seek additional education. They can be a good source of leads. (The PGSF will also be participating in a

[18] Visit them at https://www.pgsf.org.

LunchNLearn Webinar on this topic on March 23, 2022. Register—or, if you're reading this in the future, download a recording of the session—at whattheythink.com/webinars.) At EFI Connect in January we learned about the Mariano Rivera Foundation,[19] which helps at-risk youth better their lives and train for careers in a wide variety of industries. EFI has been working with the foundation to groom future graphic communications employees. They might be worth investigating.

Then there are the graphic arts programs at universities such as RIT, CalPoly, Clemson, Ryerson, and others. They likely have job placement departments that help match students with potential employees.

These might all be better options than a general recruitment site like Monster.com.

Another option that was highlighted in Print Industries Affiliates' Wages & Benefits Survey and Webinar was to "promote through the warehouse." According to their survey, print businesses print businesses received a lot of employee candidates interested in shipping and receiving, and warehouse work is pretty industry-agnostic. So these business can hire shipping and receiving workers and then cross-train and move them into pressroom skill sets. Obviously, that won't work with everyone, but you never know when you might have someone with higher aspirations working in the warehouse.

There is obviously no silver bullet to solving the worker crisis. Other ways around the problem involve varying types of automation. Few print businesses will ever get to the point of "lights out" automation, but new digital equipment is coming close to being "push-button" operated, which, combined with other forms of automation, could also ease the need for physical bodies. Also, too: robots. Especially in wide format, various kinds of robotics are serving functions such as board loading and unloading on flatbed presses. And cobots[20] are an up-and-coming technology that may also serve the function(s) that a human once used to serve. These are expensive options, and for the moment, only really practical in high-volume shops, but it's not hard to see a day when an entire, say, third shift could be robot-run.

Demographic Trends and New Business Formation

These employment trends may be playing havoc with hiring plans, but there is a way that savvy shops can use these trends to their advantage. Despite the perception that employees are hard to find because "people don't want to work," the fact is that a fair amount of the Great Resignation is driven by an entrepreneurial spirit. To wit: new business formation since the pandemic has been what *The Economist* called "bezonkers."[21] While some of these new businesses replaced those that failed during 2020, economists see it as one of the consequences of The Great Resignation: people taking stock of their lives and careers during the pandemic and pursuing a dream of business ownership, or at the very least of not being stuck in a job one hates. How much of this will persist beyond 2021/2022 remains to be seen, but this is important for print

[19] Visit them at https://themarianoriverafoundation.org.
[20] "Cobot," Wikipedia, https://en.wikipedia.org/wiki/Cobot, retrieved February 9, 2022.
[21] "New business formation in America goes bezonkers," *The Economist*, June 26, 2021, https://www.economist.com/united-states/2021/06/26/new-business-formation-in-america-goes-bezonkers.

businesses because new businesses often need a wide variety of printed materials—marketing and other collateral, as well as signage, décor, and display graphics for offices or storefronts. These are not all, or even mostly, home-based businesses; the top sector for new business creation is "retail trade," followed by "administrative and support."

Without a deep dive into the specific NAICS categories in which these businesses are forming, the best bet is to check your local or regional new business registrations. Another good place to start is the Census Bureau's Business Formation Statistics[22], which does indeed break down new businesses by industry.

At any rate, keeping an eye on new businesses in your area might be a good way to drum up new customers.

The "Supply Chain Crisis"

The causes of the disruption in getting products, supplies, and other materials in a timely manner are complicated, and actually predate the pandemic.[23] And as major problem has been that, especially since the pandemic, we have just been buying too much stuff, straining an already strained logistics system. Regardless of who and what caused it, when will the supply chain and prices return to normal? No one is entirely certain; in an International Sign Association (ISA) economics webinar last fall, analysts expected the majority of the problems to be alleviated by mid-2022, other analysts suggest 2022 may continue to be a tough one. We admit that this issue has no easy solution. We know from talking to the print and sign franchises last year that different centers were able to float each other on certain supplies, and that may be one way around supply scarcity: partner with other print businesses to share resources, much like you would outsource work to them.

Automation

There is a quote attributed to scholar, organizational consultant, and author Warren G. Bennis: "The factory of the future will have two employees: a man and a dog. The man will be there to feed the dog. The dog will be there to keep the man from touching the equipment." Our write-in question respondent in Section 4 must be aware of this quote!

What this refers to is automation. What do we mean by "automation"? In the printing industry, it can encompass many things. Just a few:

- Automatic estimating based on a customer selecting a set of standardized job specs and getting a price quote in seconds, rather than requiring a specialized Delphic oracle-like estimator (WhatTheyThink's legendary "Sally in the back") to read the tea leaves and come up with a price in a few days.
- Customers being able to access web store and order print products the way they would order something from Amazon—without ever needing to interact with a human.

---

[22] Business Formation Statistics, Bureau of the Census, https://bit.ly/3lPonlg.

[23] One good primer is Alexander Sammon, "We Were Warned About the Ports," *The American Prospect*, February 3, 2022, https://prospect.org/economy/we-were-warned-about-the-ports.

- Prepress and preflighting software automatically fixing problematic jobs and routing them through to the press itself.
- All binding and finishing specs are set up during prepress and the appropriate equipment is set up and ready to go by the time the printed materials get to it.
- Fulfillment is coordinated by software that prioritizes jobs based on UPS or FedEx shipping schedules.
- The ability to link all of these—and more—together so that jobs can proceed with as few human touches as possible, if there are any at all.

And there are other elements of what constitutes "automation." In wide format, that can involve robotics to automatically load and/or unload boards.

As our Software section editor Jennifer Matt pointed out, "Automation is about finding recurring patterns and then taking them out of the hands of humans and into the realm of software so that repetitive tasks can be done programmatically—and 'programmatically' automating anything in your business will inevitably involve your Print MIS."[24]

Automation has the potential to solve at least some portion of our employment problem, but as Jen Matt points out on a weekly basis, getting one's business to any level of automation has proven challenging. Many businesses still use legacy systems such as handwritten job tickets, PostIt Notes, and other "old ways of doing things" that work against the effective implementation of print MIS. Getting to any practical level of automation is going to require a complete change of company culture and an embrace of technology that only a few shops have managed. It may even require hiring a dog.

Sustainability

Over the past couple of years, we have heard a common industry refrain: "Print customers are increasingly requesting and specifying greener materials, helping their supply chains become more sustainable." Sustainability is one of those issues that often take a back seat when there are other, more pressing concerns. It achieved some momentum in the 2000s, but once the Great Recession hit, it became a less important issue. Over the course of the 2010s, it started to become a major issue again, until the pandemic. As we emerge from the pandemic, we are starting to see a renewed focus on sustainability, especially in packaging, but also in wide-format printing. In the former case, we're starting to see more sustainable packaging substrates and inks appear, and serious conversations about end-of-life issues, packaging recyclability, and other concerns. In wide format, we are seeing machines that use less electricity, curing that utilizes less heating, and also the emergence of greener substrates and materials. One can debate endlessly about which is the "greenest" wide-format printing technology—latex vs. UV vs. dye-sub (often left out of the mix is Canon's GreenGuard-certified UVgel, the subject of a recent white paper[25])—but the key (and this goes for all printing types) is look at all of your processes and not just ink technologies, or even substrates. Are you working hard to minimize waste? Do you recycle as much as possible? Are you disposing

[24] Jennifer Matt, "Automation Starts with Your Print MIS/ERP," WhatTheyThink, January 5, 2022, https://whattheythink.com/articles/108860-automation-starts-your-print-miserp/.
[25] Check it out at https://form.jotform.com/whattheythink/wideformat-green-guard.

of chemicals and other materials correctly? Are you using renewable power as much as possible? Are you certified by the Sustainable Green Printing Partnership (SGP)[26], the gold standard for sustainability in the printing industry?

And, at this stage, we should not be pursuing sustainability simply because customers are demanding it—although that helps—but because it's the right thing to do.

Related to sustainability is health and safety, and many locations such as schools, health care facilities, and other public spaces often require some kind of compliant materials (that is, inks and substrates) to be used for wallcoverings, signage, and other décor. So taking a bit of dive into health and safety certifications such as GreenGuard would go a long way to being able to take advantage of these kinds of applications.

New Application Areas

Time was wide-format printing was the hot new application area for commercial shops to get into, but as we have seen elsewhere in this report—and in the past few years' reports—wide format had decidedly matured. Over the past decade, virtually every printing company that was ever going to has adopted some kind of wide-format printing (remember from Section 3 that about 30% of the industry are the "never wides"). Especially as the equipment has become less expensive and easier to use, there is very little preventing print companies from seeking to take advantage of the high demand for wide-format and display graphics. If you have been in the sign and display market for a long time, you may be irked by all the upstarts muscling into your territory, but, hey, that's a market economy for you. But even if you're a relative newcomer, you still may find the market is a pretty crowded one, with many products like banners and posters becoming that dreaded word "commoditized."

As a result, looking for growing markets and applications to expand into is a sound strategy—after all, that's the exact same strategy that propelled the growth of wide format. What are these new application areas?

Packaging

Packaging has been cited by analysts throughout the industry as *the* place to be. Previous years' surveys have found few print businesses expanding into packaging, but there is some evidence this time that some are considering the possibilities. But hesitancy is understandable; it can be a difficult market to break into, and not just in terms of technology, but also in terms of, for lack of a better word, credibility. Consumer products companies—at least the major brands—often think of packaging printers and converters as proprietary partners, with bespoke workflows that are considered almost like trade secrets. And then there is the byzantine world of FDA (and sometimes EPA) regulations to navigate if you want to get involved in food packaging. But once you can master these issues, it gives you a substantial competitive edge—think of it like mastering postal rates and regulations to save clients money on mailing. It's the same basic principle.

And after all, there is a pretty healthy market for short- and midsize-run packaging that the major players in packaging and converting won't touch. Think of artisanal or craft

[26] Visit them at https://sgppartnership.org/.

foods, beverages, and condiments, to name just one area. The local farmer making and bottling their own artisanal salsa doesn't need a million boxes to ship product to supermarkets around the country. They may need only a few cartons for local health food or grocery stores—a quantity that can be difficult to obtain. So the next time you're at your local farmers market, strike up a conversation with a local craft producer and suss out what their packaging needs may be. After all, a lot of packaging can be produced on wide-format equipment—especially flatbeds—so you may not even need to make a major capital investment to at least dip your toes in the water.

Digital Textiles

Other up and coming application areas include textiles—not necessarily soft signage, which has been around for ages now—but things like T-shirts and other apparel for promotional materials, an expanding (or re-expanding) market now that events are starting to happen again. T-shirts, caps, tote bags, and other textile-based promotional items are always big giveaways at events in all types of verticals. These are great products to procure via distributors (aka brokers), if you are not interested in acquiring direct-to-garment or other textile printing equipment.

Then there's full-blown garment printing. Cary Sherburne and Debbie McKeegan, the twin quasars of WhatTheyThink's textiles coverage, wrote extensively throughout 2020 and 2021 about how the pandemic has completely shaken up the world of textiles and fashion, unclothing, so to speak, some of the fashion industry's worst practices, such as its propensity for waste, pollution, and a variety of other environmental ills. This has opened up substantial opportunities for the textile industry, because consumers, especially younger ones, are increasingly rethinking their relationship with fashion. 2022 and beyond are going to see an increased focus on environmental and climate change issues, and fashion is a very big part of that. A switch to digital production, and on-demand ordering of fashion are top ways that the industry is realigning itself in greener ways. This of course opens up new opportunities for print businesses that can adopt digital textile printing, especially given the plethora of new equipment hitting the market from the likes of EFI Reggiani, Kornit, Epson, and others.

3D Printing

We confess: we are bullish on 3D printing. And while we don't see 3D printing becoming a major top five business opportunity or investment category—at least not yet—it's possible 3D printing today is where wide-format printing was in, say, 2000: a niche market that was somewhat expensive and complex to break into, without a very large end-use market. And we all know how that changed.

3D printing has been seeing a minor explosion of new applications, from marketing and promotional materials (the specialty objects you used to print on you can now print from scratch) to industrial printing. There is even a burgeoning market in gaming[27]. Mimaki has stood out from the pack in introducing entry-level (or entry-level-ish) 3D printers that

[27] Richard Romano, "Mimaki in 3D," WhatTheyThink, July 21, 2020, https://whattheythink.com/articles/101705-mimaki-3d/.

can help you get started. At the high end of the market, Massivit has led the pack in terms of producing high-end 3D-printed objects for, largely, retail and event environments.

3D printing is in early adopter mode right now, at least in terms of the printing industry, and those getting involved now can take the lead before it becomes a more mainstream technology and produces a more competitive environment.

Interactive Print

QR codes have been around since the 1990s, but it took the pandemic for them to catch on. Dining and other retail establishments shifted quickly toward either disposable printed menus and/or scannable menus via QR codes or other means, and this has largely remained. Sure, Café Des Artistes is probably not going to be switching to QR menus any time soon, but for your average pub or café, it makes perfect sense. For printers, the advantage is helping print customers use QR codes effectively—programming them (it's not hard), testing then, and proofing them to make sure they work and go to the right destination. (We use QR codes in our print edition to link to videos—and they need to be proofed.)

There are other technologies that serve a similar purpose. In 2020, SpeedPro launched InfoLnkX:[28]

> Based on near-field communication (NFC), SpeedPro's InfoLnkX comprises a programmable chip attached to a restaurant's interior or exterior graphics that can allow patrons to access the restaurant's menu right from their phones—without having to handle germy multi-use menus or generate excess waste via single-use menus.

Then there is augmented reality (AR), which uses any of a variety of technologies to make print an interactive experience via a mobile device and related app. (There is also related "virtual reality [VR].) Heidi Tolliver-Walker presented a Webinar in 2021 that looked at some of the practical uses of AR and VR. In the accompanying article, she wrote:[29]

> Virtual reality requires wearing a headset and puts you into another reality. AR does the reverse, bringing computer graphics into the real world. Examples include putting a Baltimore Raven in your living room or allowing you to "walk around" and interact with a Lamborghini in your office. Although some AR can be accessed with a headset, these experiences are more likely to be viewed on a phone or tablet. XR, or "extended reality," encompasses all types of mixed reality regardless of the types of devices used to experience them.

While many of the examples of AR and VR are big, splashy applications that can only really be produced on a big-brand budget, there are smaller, more manageable, affordable, and equally effective solutions.

---

[28] Richard Romano, "SpeedPro Launches InfoLnkX for Contactless Restaurant Menus—and More," WhatTheyThink, July 7, 2020, https://whattheythink.com/articles/101523-speedpro-launches-infolnkx-contactless-restaurant-menus-more/.

[29] Heidi Tolliver-Walker, "Takeaways from WhatTheyThink's 'Interactive Print' Lunch-and-Learn," WhatTheyThink, September 8, 2021, https://whattheythink.com/articles/107466-takeaways-wtts-interactive-print-lunch-learn/.

> Image8creations uses both app-based AR and browser-based AR via QR Codes, although she is using more QR Codes than apps these days. Archuleta refers to these codes as "AR codes" rather than QR Codes so people know there is an AR experience behind them.
>
> … Top AR applications for image8creations? Trade shows, events, in-school presentations, fan engagement, and portals leading to 360-video, and more.
>
> Archuleta gives the example of an application that is very popular with nonprofits. She calls it "track the container," since it allows donors to track their donations supporting underserved communities, disaster relief, and similar projects from origin to destination.

There are even applications for printers themselves:

> Image8creations is increasingly working with printers using AR to market their own businesses, often using portals. In these applications, printers allow potential clients to drop AR portals into their homes or offices, walk through them, and be transported onto the printer's shop floor, where they can take a 360-degree video tour of their plant.

What helped QR codes take off was the fact that after a while you didn't need to download a separate app to read them—a smartphone camera will automatically recognize a QR code. AR hasn't quite reached that point yet, but is slowly starting to So there are opportunities for print businesses to help their customers use these kinds of technologies effectively.

The Thing

No one really knows what the COVID virus is going to do next. There is evidence that suggests that the Omicron variant, while being more communicable, is less severe (especially for those who are vaxxed and boostered), but new variants could keep emerging—we could get The Omega Variant, which would have been a great Robert Ludlum title). However, whether new variants will be more or less severe than past variants remains to be seen. An article in *Nature*[30] from December 2021 rounds up what virologists and epidemiologists know so far. COVID could become like measles: infection or vaccination provides lifetime protection, with new cases due to new births or lack of vaccination; decreased immunity and evolution of the virus allow new strains to appear on a regular basis, infecting many adults, but with mild symptoms because of childhood exposure; or it could become like the flu: seasonal outbreaks among adults, who can still come down with severe symptoms, with annual shots offering protection or decreased severity.

> It may be that the future of SARS-CoV-2 is still in human hands. Vaccinating as many people as possible, while the jabs are still highly effective, could stop the virus from unlocking changes that drive a new wave. "There may be multiple directions that the virus can go in," Rambaut says, "and the virus hasn't committed."

We're getting a little afield of print industry trends, so if you're interested, click through and read the whole thing.

---

[30] Ewen Callaway, "Beyond Omicron: what's next for COVID's viral evolution," *Nature*, December 7, 2021, https://www.nature.com/articles/d41586-021-03619-8.

At the end of the day, though, what the virus does next will determine the prevailing economic conditions—as we know all too well—which will determine the market for print and related materials, which is…

Ultimately: The Only Trend That Matters

We say this every year, and it bears repeating: there really is no trend more important than the fundamental demand for print in the marketplace. It doesn't matter whether digital or analog printing predominates, it doesn't matter how productive our workflows are, it doesn't matter if we have the greatest sales people in the world—if there is no demand for what we as an industry produce, business will be bad and we will lose establishments.

After all, this was the force that dominated the industry for the 20 years pre-pandemic, whittling down the industry to a third the size it was 20 years ago. The good news is that, over the past couple of years, demand for print has been on the rise—and that remains true in the Age of COVID. We just have to be especially aware of what *kinds* of print are in demand, which we hope we have identified sufficiently.

Industry Shipments Forecast

The limits of forecasting have never been made more plain. We always caution in these reports that any forecast can only ever predict the past, as it extrapolates existing data, although different forecast models do the extrapolating in different ways. Back in December 2019 when we did an initial forecast of 2020, neither the human analysts or forecasting software could have foreseen the pandemic. Granted, these sorts of cataclysmic events don't happen often (mercifully), but it's not unusual for more minor events to occur which can play havoc with forecasting attempts. As a result, our forecast below is a general roadmap based on existing trends, so be forewarned that it can go awry at any moment.

If you are familiar with our past forecast reports, you know we use three basic forecasting models to analyze time series—namely, printing shipments:

- Exponential Smoothing
- Curve
- Box Jenkins

We also average the three forecasts to see if the "hive mind" of the forecasting software exceeds the sum of its parts, and it doesn't really.

An obvious question is, "Well, if you have been doing these forecasts for so long, which of those models has been the most accurate?" Ah, if it were only that simple! If we look at historical shipments data and compare what ultimately came to pass with what the forecasts predicted, none has hit the mark with any consistency. Often, there were major changes in one particular year to which the forecasting model attached too much importance and which was not duplicated. Once a forecast model gets hold of an idea, it has a hard time letting go of it—but then a lot of humans do that, too.

Exponential Smoothing and Box Jenkins look to be the most accurate for 2021, but we find Exponential Smoothing too bullish in the long run and Box Jenkins too bearish.

Our own WTT forecasting model is more judgment-based, adding a human[31] perspective based on what we know about the industry, technology, and culture as opposed to what the "robotic" models know just from looking at past data and assuming that the past will repeat itself more or less aggressively.

We do have to be careful. Our initial 2020 forecast was based on 2019 and, as it turned out, ended up being far too rosy. In April 2020, we did a revised 2020 forecast and it was far too bleak (believe it or not). This time, we're splitting the difference.

We are forecasting a continuation of the recovery for 2022, but ultimately return to our regularly scheduled declines in printing shipments through 2031, with some years seeing steeper declines than others.

NAICS 323 Forecast Value of Shipments, 2020–2031
(2021 $US million)

	Exponential Smoothing	Curve	Box Jenkins	Average	WTT Forecast
2021	$80,507	$72,548	$80,301	$77,785	$83,400
2022	$84,580	$69,993	$81,937	$78,837	$85,200
2023	$88,654	$67,305	$82,341	$79,433	$84,800
2024	$92,727	$64,484	$82,416	$79,876	$84,100
2025	$96,800	$61,530	$82,410	$80,247	$82,300
2026	$100,873	$58,443	$82,391	$80,569	$81,200
2027	$104,947	$55,222	$82,373	$80,847	$79,800
2028	$109,020	$51,869	$82,359	$81,083	$79,100
2029	$113,093	$48,382	$82,350	$81,275	$78,200
2030	$117,166	$44,763	$82,343	$81,424	$77,400
2031	$121,239	$41,010	$82,338	$81,529	$76,800

Remember though, these are aggregate numbers, and there are going to be print businesses that far outperform the average (and those that far under-perform it). Data are not destiny, and it is fully within our own means to change our own destiny—part of it is that "agility" we mentioned earlier.

[31] Well, analyst.

Inflation Multipliers

Finally, here is our CPI multiplier table. It is helpful to look at your own business metrics and adjust for inflation so you know whether you're *really* making any money.

CPI multiplier table

Year	Multiplier
2015	1.179
2016	1.155
2017	1.131
2018	1.110
2019	1.085
2020	1.070
2021	1.000

The Last Word

2020 had been a rough year for the industry, but 2021 largely recouped a good chunk of what we had lost during the pandemic year. Still, as we write this, virus concerns have taken a back seat to employee and consumables pricing and availability. It's always something, right? Despite these challenges, we expect 2022 to continue along this same upward trajectory toward a full return to something akin to normality.

In the meantime, as always, WhatTheyThink looks forward to continuing to provide cutting-edge research, analysis, and commentary on these dynamic markets.

APPENDIX A. METHODOLOGY AND QUESTIONNAIRE

The number of respondents to the Fall 2021 Business Outlook Survey was 221 WhatTheyThink printing executives. These were gathered from a total of 224 respondents. The excluded questionnaires were from individuals in other industries that were not the survey target, only answered one or two questions, or were duplicates. Respondents were gathered from WhatTheyThink's and *Printing News*'s commercial printing subscribers, recruited through social media (Twitter, LinkedIn), and special appeals through the WTT newsletter.

Questionnaire

WhatTheyThink's Annual Business Outlook—Your Professional Opinion Is Requested

After the punch in the gut that was 2020, business 2021 started to get back to normal. Or did it? This is what we need to find out as we prepare our "Printing Outlook 2022" report. As a result, WhatTheyThink is conducting its annual survey of printing executives about how their business fared in 2021 and what their outlook and plans for 2022 and beyond are. While COVID-19 presented the industry with unprecedented challenges, the post-pandemic recovery has generated its own set of unique challenges. Knowing how print businesses have navigated these difficult times can help others in their attempts to rebound and recover.

This short survey will only take 5-7 minutes to complete.

To thank you for your assistance we will send you the executive summary of this project and you will be entered to win one of 10 premium memberships to WhatTheyThink or one of 5 $50 Amazon gift cards. Please enter your email address in the last question of the survey to receive the thank you items.

Thank you for your consideration and your help!

— Richard Romano

Privacy Notice
Your responses will be kept confidential. We will not release your name or answers to anyone; your responses will be combined with all of the others in survey totals. This is strictly a research project. Responses will not be used to create sales leads for advertisers or dealers.

1) What is the *primary business* at this location? (Choose *only the one that is the highest portion of 2021 sales*.)

quick printing
book printing
commercial multicolor sheetfed or web offset printing
commercial toner and/or inkjet digital color printing
screen printing
non-offset/non-screen commercial printing (gravure, letterpress, flexo, etc.)

specialty printing and promotional items (envelopes, business cards, stationery, greeting cards, novelties, etc.)
wide-format printing
sign fabrication/construction
textiles and apparel
prepress services
binding and finishing services
inplant printing department, corporate, government, education, or non-profit
newspaper publisher/printer, daily and non-daily newspapers
business forms/systems dealer
business forms printing
folding carton printing
other packaging (label & wrapper, flexible packaging, etc.)
print management company (like innerworkings)
independent print broker/distributor
other, please specify ________________

2) Are you part of a franchise, either print or sign (like Alphagraphics, FASTSIGNS)

yes
no

3) What kinds of products are printed at this location? (please click all that apply)

3D and Asymmetrical Parts
Additive/Subtractive
Adhesive Wall Graphics
Advertising Inserts & Specialty
Advertising Specialties/Promotional Products
Annual Reports
Apparel
Architectural Graphics
Art/Design/Creative
Awnings
Back-Lit Signs
Bags
Banners/Posters/Signage/Billboards
Binding and Finishing
Blankets/Towels
Books
Business Forms
Catalogs
Containers/Cylindrical Objects
Corrugated Containers
Data Management

Decorative Wallpaper/Laminates
Digital Displays
Dimensional Signage
Direct Mail
Engineering Drawings
Envelopes
Environmental Graphics
Experiential Graphics
Financial
Fine Art
Fleet Graphics/Transit Graphics
Flexible Packaging
Flexible Packaging
Fulfillment / Distribution
Functional Coatings
Greeting Cards
In-Plant
Instruments/Dials/Overlays
Decals
Labels/Tags/Tape
Mailing
Marketing Collateral
Marketing Services/Marketing Automation
Memorials/Bronze/Plaques
Neon
Folding Cartons
Patches/Appliques
Point-of-Sale/Point-of-Purchase
Pole Signs
Posters/Presentation Graphics
Pre-Printed Inserts
Printed Electronics
Publications / Periodicals
Routed/Carved Signs
Screen Printing - Garments
Screen Printing - Signage
Sign Installation
Specialty Glass/Metal/Ceramic/Composite
Home Decor
Trade Show/Museum Displays
Transaction/Transpromo
Vehicle Wraps/Graphics
Wall Graphics
Wide-Format Printing
Window Graphics

Other, please specify _______________

4) Where is this business located?

USA
Canada
Mexico or Central or South America
Europe
Asia
Africa
Australia/Oceania

5) How many employees are *at this specific location*?

1-4
5-9
10-19
20-49
50-99
100-249
250-499
500+

6) In terms of your *2021 revenues* at this location only, how do they compare to 2020?

increased more than 25%
increased between 11% and 25%
increased between 6% and 10%
increased between 1% and 5%
stayed about the same
decreased between 1% and 5%
decreased between 6% and 10%
decreased between 11% and 25%
decreased more than 25%

7) How do you expect your *2022 revenues* at this location to compare to 2021?

increase more than 25%
increase between 11% and 25%
increase between 6% and 10%
increase between 1% and 5%
stay about the same
decrease between 1% and 5%
decrease between 6% and 10%
decrease more than 10%

decrease between 11% and 25%
decrease more than 25%

8) In terms of your *2021 jobs/orders* at this location only, how do they compare to 2020?

increased more than 25%
increased between 11% and 25%
increased between 6% and 10%
increased between 1% and 5%
stayed about the same
decreased between 1% and 5%
decreased between 6% and 10%
decreased between 11% and 25%
decreased more than 25%

9) How do you expect your *2022 jobs/orders* at this location to compare to 2021?

increase more than 25%
increase between 11% and 25%
increase between 6% and 10%
increase between 1% and 5%
stay about the same
decrease between 1% and 5%
decrease between 6% and 10%
decrease more than 10%
decrease between 11% and 25%
decrease more than 25%

10) In terms of your *2021 profitability*, how did it compare to 2020?

increased more than 25%
increased between 11% and 25%
increased between 6% and 10%
increased between 1% and 5%
stayed about the same
decreased between 1% and 5%
decreased between 6% and 10%
decreased between 11% and 25%
decreased more than 25%

11) How do you expect your *2022 profitability* to compare to 2021?

increase more than 25%
increase between 11% and 25%
increase between 6% and 10%

increase between 1% and 5%
stay about the same
decrease between 1% and 5%
decrease between 6% and 10%
decrease more than 10%
decrease between 11% and 25%
decrease more than 25%

12) In the next 12 months, which of the following will be your biggest ***business challenges***? (please click all that apply)

regaining business lost due to COVID
keeping my employees safe from COVID
transitioning the business to produce new kinds of print materials post-COVID (such as PPE, distancing signage, divisional graphics)
increasing plant productivity
managing workflow automation
competition from other print providers
capabilities of sales personnel
capabilities of production personnel
understanding the needs of today's communications buyers
consumables and supplies prices
national economic conditions
local economic conditions
financing costs of our equipment
finding capital for investments
need for employee training
finding qualified sales personnel
finding qualified production personnel
increasing employee benefit costs
profitably handling shorter runs
deciding whether to keep or discard our offset equipment
loss of print business to digital media
pricing
job tracking
print MIS implementation
migrating production to the cloud
migrating business functions to the cloud
migrating customer service and sales to the cloud
training employees to use cloud applications
keeping up with technological changes
making our facility/business more environmentally sustainable
owner/management retirement
retirement of key production personnel
selling our business

finding business(es) to acquire
adding/updating web-to-print/online storefront
getting web-to-print to work on smartphones and other mobile devices
adding wide-format equipment/services
adding packaging printing equipment/services
adding 3D printing equipment/services
transitioning jobs from offset to high-speed digital printing equipment
adding non-print media capabilities (web design, app development, social media management, etc.)
competing against digital media agencies
other, please specify______________

13) In the next 12 months, which of the following represent your best ***new business opportunities***? (please click all that apply)

improving economic conditions
national recovery from COVID-19
producing post-COVID print materials (such as PPE, distancing signage, divisional graphics)
customers outsourcing more work to us
increasing sales through print brokers
partnering with other print providers
helping clients get their websites to work on mobile devices
offering electronic/non-print services for customers (web design, app development, social media management, etc.)
offering interactive print technologies to customers (like QR codes, augmented reality)
helping customers integrate print and non-print marketing campaigns
using marketing automation for our business (like HubSpot, Eloqua, Marketo)
selling marketing automation services to our customers
adding additional offset printing equipment
adding digital printing equipment
customized, personalized, or variable-data printing jobs
disposing of offset equipment to concentrate on digital printing
broadening bindery/finishing equipment/services
adding "digital enhancement" finishing technologies (like Scodix, Highcon, MGI)
adding wide-format printing capabilities
adding textile/fabric printing for soft signage
adding textile/fabric printing for apparel
adding textile/fabric printing for décor/furnishings
adding packaging printing capabilities
adding digital label/wrapper printing capabilities
adding specialty or industrial printing capabilities
adding vehicle graphics/wrapping capabilities
adding traditional signage fabrication/construction capabilities
adding dynamic digital signage (DDS) capabilities

adding 3D printing capabilities
broadening fulfillment, shipping, mailing capabilities
automating production
adding web-to-print/online storefront
print MIS implementation
getting more customers using smartphones and other mobile devices
migrating production to the cloud
migrating business functions to the cloud
migrating customer service and sales to the cloud
training employees to use cloud applications
acquiring another company
selling our company
becoming part of a print or sign franchise (like Alphagraphics, FASTSIGNS)
hiring new salespeople
video production services
other, please specify_____________

14) Which of the following investment items have you budgeted for and plan to acquire in the next 12 months? (please click all that apply)

COVID safety materials/equipment (like dividers, distancing graphics, PPE)
additional space/new location
color measurement equipment (densitometer, spectrophotometer)
color management software
computer-to-plate equipment
finishing/bindery equipment for offset/analog production
finishing/bindery equipment for digital production
cutting table for wide-format finishing
other finishing equipment for wide-format
laser cutting/etching equipment
toner-based color digital press (like HP Indigo, Xerox iGen)
high-speed production inkjet printing equipment (like HP PageWide, Canon Océ ColorStream/ImageStream)
sheetfed offset press
web offset press—new
rebuilding our web offset press
wide-format color printer (24 in.+)–solvent/eco-solvent (like Epson, Roland)
wide-format color printer (24 in.+)–latex rollfed or flatbed (like HP Latex)
wide-format color printer (24 in.+)–flatbed UV (like EFI VUTEk, Canon Océ Arizona)
CNC routers and/or other signmaking equipment
digital label printing equipment
transfer-based dye-sublimation printer (like Epson, Roland, Mimaki)
direct-to-textile dye sublimation printer
direct-to-garment printer (like Ricoh/Anajet, Epson)
packaging press/printer–corrugated

packaging press/printer–folding carton
packaging press/printer–flexible packaging
3D printer
prepress RIP for our wide-format printers
prepress RIP for other devices
Management Information System (MIS)
Customer Relations Management (CRM) system
workflow automation software
personal protection equipment (PPE)
we have no planned investments
other, please specify____________

15) Have you added, or do you plan to add, any of the following capabilities? (click all that apply)

	Added more than 2 years ago	**Added in past 18–24 months**	**Plan to add in next 18-24 months**	**No plans to add**	**Don't produce in-house but outsource/plan to outsource**	**Don't know**
high-speed production inkjet (like HP PageWide, Canon Océ ProStream)						
wide-format printing (like signs, displays, banners)						
textile/fabric printing for soft signage						
textile/fabric printing for garment printing/decorating						
direct-to-garment printing						
specialty or industrial printing (like coffee mugs, golf balls, smartphone cases)						
corrugated packaging printing						
folding carton printing/converting						
flexible packaging printing/converting						
3D printing						
printed electronics						

16) Are you considering hiring/adding staff in the next 12 months?

yes
no
don't know

17) If yes, for what positions are you looking to hire? (please check all that apply)

executive management
inside sales representative
outside sales representative
marketing and market communications
prepress
production management
press operator (offset or digital)
postpress/bindery/finishing
IT management
IT/software programming
graphic designer (for print)
web design/development
mobile app development
other, please specify_______________

18) If yes, how are you searching for staff? (please check all that apply)

general online recruitment sites (like Monster.com)
online classified advertising sites (like Craigslist)
advertising in local print and/or online newspapers
general job recruiters
outreach to higher-ed graphic arts programs (like CalPoly, RIT)
outreach to printing industry associations
internship program
word of mouth
other, please specify ______________________

19) Please tell us in your own words your experiences and challenges searching for staff:

____

20) If you would like to be placed into a drawing for one of 10 premium WhatTheyThink memberships or one of 5 $50 Amazon gift cards, please enter your e-mail address below:

Enter e-mail address _________________

Thank you very much!

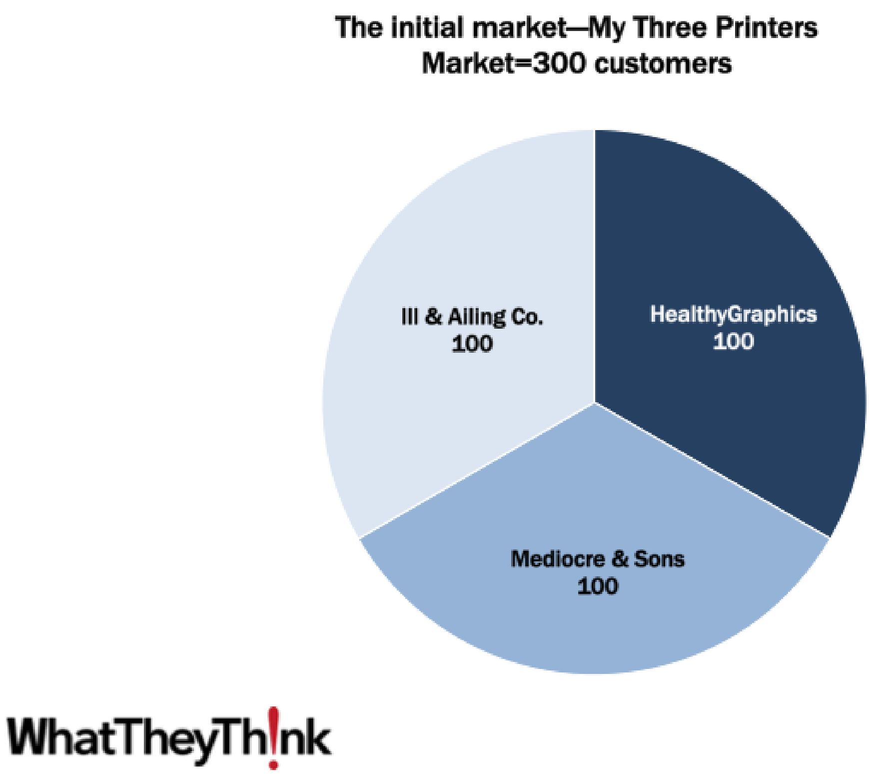
Appendix B. Survivor Bias

In our survey results, what we refer to as "survivor bias" plays a very important role, as it has in past surveys, and affects the interpretation of survey data. When an industry is growing, this type of bias is not an important statistical issue. But, as you know, the industry has *not* been growing—quite the opposite—so we need to bear survivor bias in mind, because it stems from the fact that really unhealthy print businesses have exited the industry (and thus have not taken our survey), and the ones that survived are naturally healthier than the ones who went—or are going—out of business. After all, businesses that are *really* ailing tend to disregard survey participation requests, since they're too busy trying to stay in business to bother answering a questionnaire.

Survivor bias is nothing unusual, nor is it unique to the printing industry; it's almost always what happens in markets.[32] But how they perceive the remaining print landscape may not be a true reflection of the overall market.

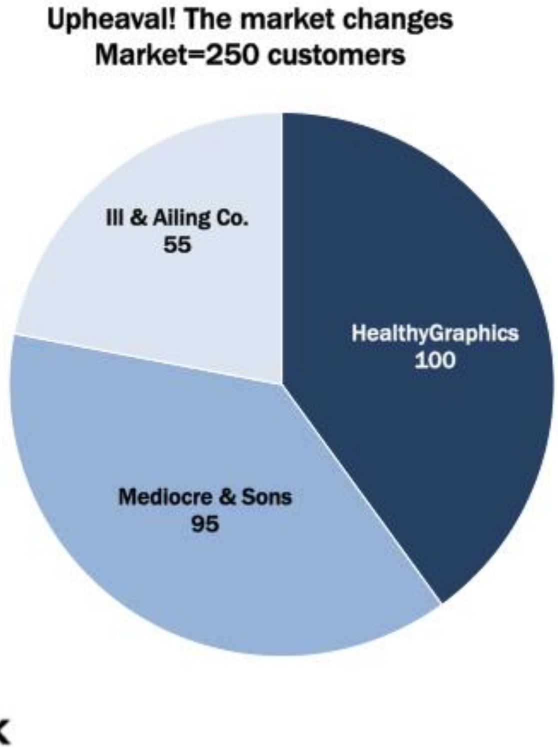
Here's what we mean.

Say you have a given print market with three printers. One is doing really well (HealthyGraphics), one is doing OK but not great ("Mediocre & Sons Printing"), and one is doing very badly ("Ill & Ailing Co."). Assume at the outset that in their region, the overall market for print is 300 print buyers, at this point in time, they each serve 100 customers:



[32] It's also common in medical and health research, where the term "survivor" is used a bit more literally.

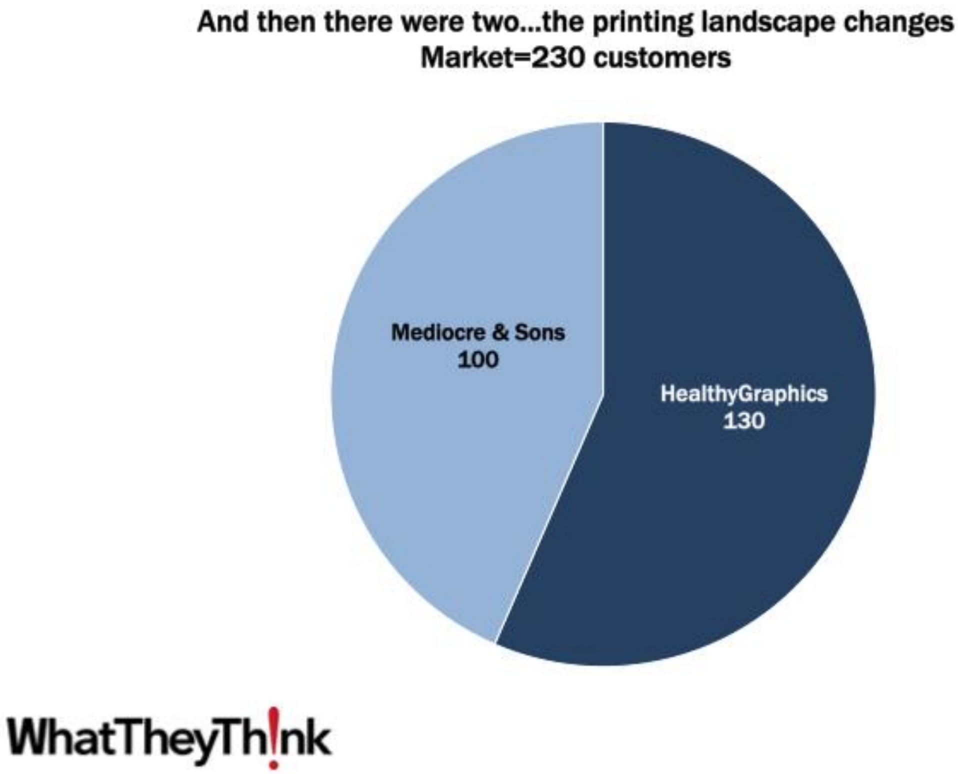
These three printers plug away merrily for a period of time. Now, say there is some sort of upheaval—50 of those customers are gone. Some may have moved away, some may have had their marketing budgets cut and thus stopped printing things, relying instead on digital or social media, and some may have gone out of business or been acquired. In a word, the market for print shrinks. When the smoke clears, there are only 250 customers spread among these three shops. The healthy printer keeps all its original customers, the mediocre printer loses a little bit, and the sick printer loses the most:



How does each of these printers describe the prevailing economy?

- HealthyGraphics: "Business isn't growing strongly, but we're holding steady." (What they say on our survey: "Business conditions have stayed about the same.")
- Mediocre & Sons: "Business is tough, but we've only lost 5% of our business." (What they say on our survey: "Business decreased up to 5%.")
- Ill & Ailing Co.: "We're in a recession. Things are terrible. We have to go out and sell harder." (What they say on our survey: "Business decreased more than 10%.")

Things go on like that for a bit and ultimately Harold Ill and Dennis Ailing of Ill & Ailing decide to pack it in, and the company exits the market (so it goes). As a result, both the healthy printer and the mediocre printer each pick up some of the volume from the I&A's customers. However, at the same time, another 20 of print customers have themselves left the market, or at least the print market:



How do the printers now describe the prevailing market?

- HealthyGraphics: "Business is great! We're up 30%." (What they say on our survey: "Business increased more than 10%.")
- Mediocre & Sons: "Hey, business is pretty good! We were down 10%, now we're up *more than 10%* from where we were since we went from 90 to 100 accounts. This is because we're smart. We're terrific executives. Next year will be even better." (What they say on our survey: "Business increased more than 10%.")
- Ill & Ailing: "I played a round of golf this morning, and Dennis is going sailing later today. Retirement is great!" (What they say on our survey: Nothing.)

When things are good, you're a genius. When things are bad, it's the economy. Right? However, neither of these things was the case in this example. Because look at what happened to the overall market for print:

The effects of survivor bias on market perception

	Time Period 1	Time Period 2		Time Period 3	
Market size/change (number of accounts)	300	250	-17%	230	-8%
Healthy printer	100	100	0%	130	+30%
Mediocre printer	100	95	-5%	100	+11%
Sick printer	100	55	-45%	-	-
What the market survey says	"All printers are doing the same"	"We did a survey and only one out of three printers said business was holding steady."		"Printers are doing great; survey respondents said that business is up 10%+!"	
What really happened	Flat market	Market shrank by -17%		Market shrank by -8%	

Even when aggregate business conditions were up, the print market still declined. So the survivor bias phenomenon leads to a false assessment of aggregate business conditions that ends up being reflected in the way participants in industry surveys answer questions about business performance. When we ask whether business increased in the past year, both the healthy printer and the mediocre printer would say, “yes,” skewing the results in a positive direction because the sick printer is lolling in the Florida sun and isn’t around any longer to select any of the “business is declining” survey options. None of these respondents were lying: they were reporting about their individual business, which is what they’re supposed to do.

Now, you might say, “Well so what? If the industry is left with healthy printers, isn’t that a good thing? Isn’t that what usually happens in a dynamic market?” If it were the case that the *only* variable in this example was the health of the printers, then yes, it would be a good thing. But that’s *not* the only variable. The more important variable is the number of print customers—the overall market for print. In our theoretical example, that kept declining, an effect that the relative health of the remaining printers masked. If that keeps declining, then the mediocre printer will become the sick printer, and the healthy printer a mediocre printer. Lather, rinse, repeat, and the next time there is a survey, the shops that are left are still in the roughly the same position as our example and will say the same basic things. It’s just that the numbers will be smaller. At some point, you may just have the healthy printer who has all the print business in the area. So he’ll be doing quite well. For a while...

Now, this is not to say that survey results are useless; if they were, we wouldn’t keep doing them. It’s only during times of consolidation that this becomes an issue. Over the years, we’ve done surveys where respondents were quite frank about how bad their business conditions were, and we’ve seen survey results that we felt accurately did reflect an industry that was in better shape than it had been previously.

Survey data need to be looked at in the context of what we know about the market both in terms of broader statistics like changes in monthly printing shipments and other general economic data, as well as anecdotal evidence gleaned from talking with printers and printers’ suppliers and vendors. Other data in the survey also help shed a light on business conditions data.

So think of this: industry-wide government data give us a “top-down” view of the marketplace. Survey data give us a “bottom-up” perspective. The job of the researcher is to reconcile the two truthful perspectives with analysis that reveals the dynamics of the industry.

There are telltale signs of survivor bias lurking in the data if you know where to look for them. It comes down to interpreting data that you know just can’t be true, or at least don’t tell the whole story. There is a bit of that in Section 4 of this report.

So keep this idea in mind as you read through the data in this report. You will see generally upbeat numbers for many respondents in the business conditions segment of the survey, even though industry shipments have taken a very bad turn since Fall 2016. Surveys are for winners, it seems. Printers having trouble staying afloat have to keep paddling; they don’t have time for surveys.

That’s the end of our lecture. Except perhaps for this comment: if you’re a printer who has been a survivor, stay vigilant. When business is great, everyone thinks they’re a genius. When business is bad, you really need to be one to adapt and reposition.