A Sectoral Analysis of the Coffee Industry in the US
Memorandum #3
Urban Planning 237A
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Source: *Los Angeles Times* - 08/18/2016

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This memo details the structure and composition of the coffee retail sector in Los Angeles County. We analyze the production process, levels of productivity, and recent trends to understand the composition of the sector and the direction it is heading. In addition, we attempt to explain regional market characteristics of the coffee retail sector. While this memo addresses the sector at large, we rely often on examples from Starbucks (NASDAQ: SBUX), which is both the region's and nation's predominant coffee retailer and is responsible for setting trends in the marketplace.

Industry structure

NAICS definition and code/s

The NAICS code for the coffee shop industry is 722515 (Snack and Non-alcoholic Beverage Shops), officially defined as:

> *"Establishments primarily engaged in (1) preparing and/or serving a specialty snack, such as ice cream, frozen yogurt, cookies, or popcorn, or (2) serving nonalcoholic beverages, such as coffee, juices, or sodas for consumption on or near the premises. These establishments may carry and sell a combination of snack, nonalcoholic beverage, and other related products (e.g., coffee beans, mugs, coffee makers)."*[1]

The composition of this code has not changed in the past 10 years.[2] Firms in this industry sometimes integrate horizontally and/or vertically, such that some of their operations involve NAICS codes further up the supply chain (e.g., NAICS 311920, "Coffee and Tea Manufacturing").[3] Firms in other areas of food service (e.g., fast food, NAICS 722513, "Limited-service Restaurants") also make ventures into areas of the market that may overlap with the coffee shop industry, such as drive-through coffee.[4] NAICS code 722515 has not changed since 2012 (see full table from the U.S. Census reproduced in Appendix Table 1); nor have other NAICS codes beginning with 7225.

We argue that the NAICS code is a workable, but too-broad fit for our research: all coffee shops would be subsumed under 722515, but not every establishment under 722515 is a coffee shop. To the first point, no business operations excluded from NAICS 722515 are establishments that serve coffee as their principal function. Both mobile beverage vendors (NAICS 722330) and establishments that serve coffee as a secondary operation, such as fast food restaurants (NAICS 722513) and convenience stores (NAICS 445131 and 457110), are categorized under other NAICS codes.

[1] U.S. Census Bureau.
[2] Ibid.
[3] Starbucks example
[4] McDonald's report on drive thru coffee

However, to the latter point, some business establishments included in NAICS 722515 do not serve coffee as their principal function. Some have other outputs: pastries, desserts, non-coffee beverages; the index entries under NAICS 722515 include “bagel shops, on premise baking and carryout service,” “ice cream parlors," and “juice bars, nonalcoholic, fixed location,” among others.[5] Even the primary index entry for coffee shops, “beverage (e.g., coffee, juice, soft drink) bars, nonalcoholic, fixed location” can include establishments that don’t serve coffee, namely juice bars and tea shops.

The breadth of the NAICS code could pose a serious problem, if most of the establishments categorized within it were not coffee shops. Were this the case, it would be implausible to claim that conclusions drawn from analyses of the NAICS code are attributable to real trends in the coffee shop industry, instead of to other types of businesses in the NAICS code. To assess whether this would be a concern within our region of interest, Los Angeles County, we avail ourselves of data scraped from Yelp to estimate the number of coffee shops, and compare against the total number of establishments under NAICS 722515.

We made use of a dataset scraped from the Yelp API in April 2019,[6] selecting all businesses located within Los Angeles County that are listed in the “coffee” category. Filtering these data to establishments whose first (i.e., primary) listed category is either “coffee” or “coffee roasteries” yields 2,111 establishments or 67.0% of the total 3,149 LA County establishments that were classified under NAICS 722515 in 2019. Given that an estimated two-thirds majority of NAICS 722515 establishments in LA County are coffee shops, we propose that it is fairly safe to guess that trends gleaned from data relying on the NAICS code reflects changes within the coffee shop industry specifically.

However, with 33% of establishments being something else—researchers may not be able to detect emergent trends in the coffee shop industry, which may be diluted in the data by non-coffee shop 722515 establishments. Put another way, estimates of where the industry stands suffer in precision because 1 in every 3 establishments (categorized as NAICS 722515) in LA County—and an unknown proportion in other counties—are outside of the industry. We also note that having to corroborate trends with other data is one drawback of the current NAICS classification. With respect to data drawn from crowdsourced review apps (e.g., Yelp, Foursquare, Google Maps,) which can be used for this purpose of corroboration, we offer the additional caveat that such data will be also be imprecise for a few reasons: how apps or reviewers (a self-selected user base of consumers using each app) categorize an establishment do not necessarily abide by a consistent set of standards, and it may undercount newer establishments while retaining businesses that have closed. As such, many of our

[5] US Census Bureau.
[6] Duong, “Complete Data Set of Coffee Shops in Los Angeles County.”

analyses regard the sectors included in the general 722515 NAICS code, and are approximate, rather than exact, indicators of metrics for the coffee retail sector, for example in sales revenue and employment.

Key trends

Employment

Examination of data on employment trends in the coffee shop industry reveal growth over the past decade, with consistent seasonal fluctuations, and larger fluctuations after the inception of the COVID-19 pandemic. Examining U.S.-Wide monthly data for all private establishments under NAICS 722515 since January 2012 reveals that every year prior to 2020, employment increases entering the summer, and decreases as winter approaches (see Fig. 1). Notably, employment plummeted in March 2020, before rebounding in the summer, and fully recovering by April of the next year. Employment has since surpassed pre-pandemic level, nearing a million workers employed in NAICS 722515 establishments as of June 2022.

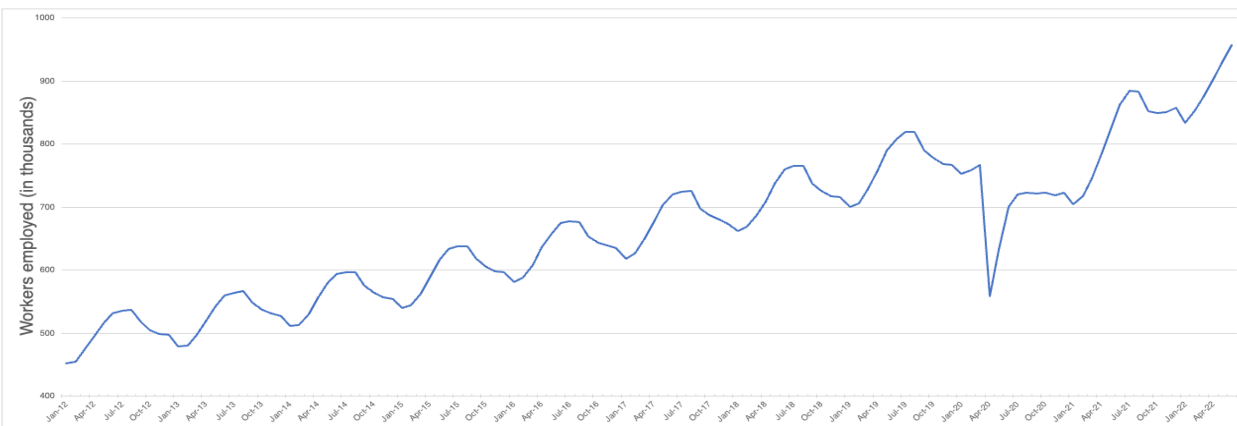


Fig. 1. The U.S. total of workers employed in private establishments under NAICS 722515 from January 2012 to June 2022. Data are *not* adjusted for seasonal fluctuations. *Source: BLS QCEW.*

Data for employment in Los Angeles County reflect the national trend, although monthly data are not available, and the count for total employment in the year 2022 is yet to be released (see Fig. 2).

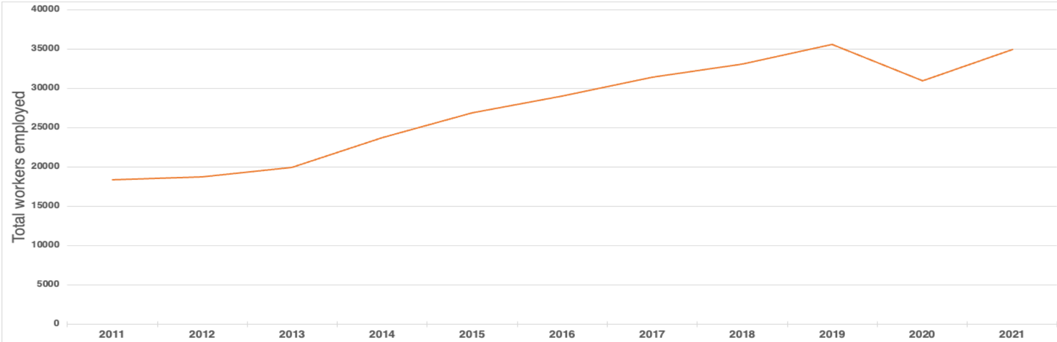


Fig. 2. The total number of workers (annual average) employed in private establishments under NAICS 722515 in LA County, from 2011 to 2021. *Source: BLS QCEW.*

Sales

In the U.S., snack and non-alcoholic beverage bars (NAICS 722515) made $38.8B in sales in 2017.[7] Of these sales, the large majority ($37.1B) were beverages and other foods (meals, snacks) prepared for immediate consumption, with the next largest product categories containing soft drinks, the same food items prepared for catered events, and retail sales of other types of foods (prepackaged snacks, baked goods).[8] Table 1 displays annual sales by North American Product Classification System (NAPCS) codes, and by the number of establishments that sell each type of product. The state of California accounted for 20.4% of all nationwide sales, or $7.95B sales from snack and non-alcoholic beverage bars. Los Angeles County in turn constituted 28.1% of all statewide sales, or $2.23B (see Table 2).

2017 NAPCS collection code	Meaning of NAPCS collection code	Number of establishments	Sales, value of shipments, or revenue of NAPCS collection code ($1,000)
7000025000	Meals, snacks, other food items, and nonalcoholic beverages, prepared and served or dispensed, for immediate consumption	63,247	37,076,131
5000250000	Retail sales of soft drinks and nonalcoholic beverages	9,871	224,256
7000060000	Meals, snacks, other food items, and beverages prepared for catered events	5,755	245,471
5002000000	Retail sales of other goods, not elsewhere classified	5,561	121,551
5000225000	Retail sales of food dry goods and other foods purchased for future consumption	4,863	320,850
5000200000	Retail sales of candy, prepackaged cookies, and snack foods	4,656	129,784
5000860000	Retail sales of household and personal goods, not elsewhere classified	4,018	93,947
5000125000	Retail sales of baked goods	3,883	220,755
5000150000	Retail sales of perishable prepared foods	2,529	92,631

[7] U.S. Census Bureau: Economic Census 2017.
[8] Ibid.

Table 1. Nationwide annual sales of products (by NAPCS code) within the snack and nonalcoholic beverage bar sectors (NAICS 722515). *Source: U.S. Census Bureau: Economic Census 2017.*

Region	Total sales, value of shipments, or revenue ($1,000)
United States	38,811,460
California	7,947,489
Los Angeles County	2,232,090

Table 2. Total annual sales by establishments within NAICS 722515, by region. *Source: U.S. Census Bureau: Economic Census 2017.*

Firms

While employment was drastically affected by the onset of the COVID-19 pandemic, firms were less impacted by the pandemic. Nationwide, the number of establishments in the snack and beverage shop sectors continued to increase throughout 2020 (see Fig. 3). By contrast, the number of establishments in LA County experienced a minor decrease (less than one percentage point) from 2019 to 2020, with a rebound in numbers by 2021 (see Fig. 4). While the number of establishments did not suffer much of an absolute decrease, the rate of growth prior to 2020 appears to have flattened since. We note that records of Paycheck Protection Program (PPP) loans show that 27,226 loans were made to businesses in these sectors, with an average loan amount of $52,386, which may have aided in the relative robustness of the establishment count to pandemic-related shocks.[9]

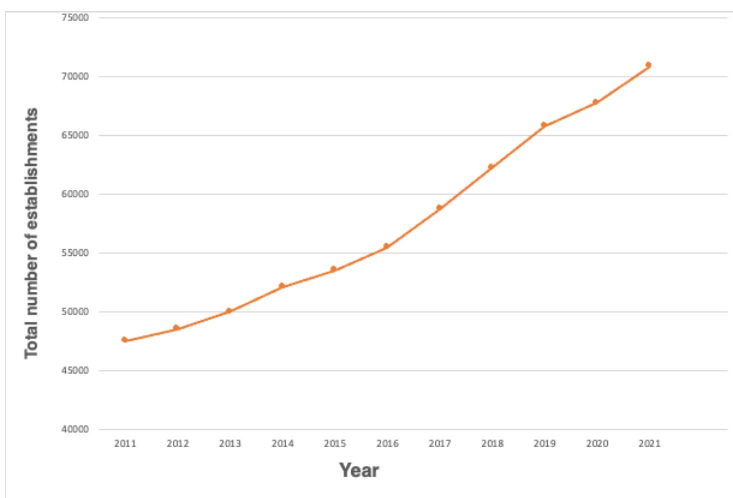


Fig. 3. The number of establishments (NAICS 722515) in the U.S. for the last 10 years. *Source: BLS.*

[9] FederalPay.org.

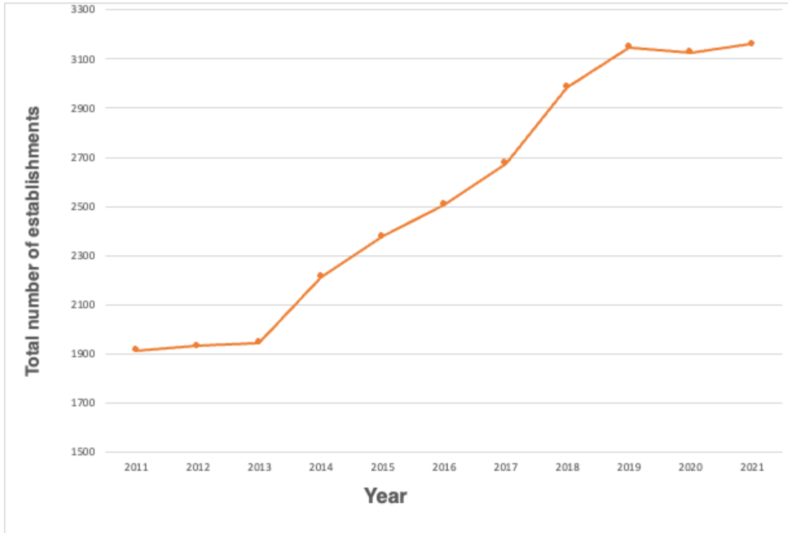


Fig. 4. The number of establishments (NAICS 722515) in LA County for the last 10 years. *Source: BLS.*

Examination of longitudinal data on the composition of the sector by size of establishments also reveals that the pandemic may have had a slight negative impact on establishments (see Appendix: Table A2 and Figure A1). Specifically, establishments with less than 5 employees decreased (from 35.86% to 32.94%) in the share of establishments of all sizes in LA County. Taken at face value, these data suggest that smaller establishments were impacted more by the pandemic, and consequently forced to shutter. However, it's unclear how much of this change is explained by the smallest establishments closing, or from hiring additional employees in the later months of 2020, after the initial shock of the pandemic.

Here, we also note that, by examining location quotients, coffee retail establishments are slightly, but not substantially more concentrated in Los Angeles County and the state of California relative to other regions. For all private establishments (NAICS 722515) California has a location quotient of 1.42, and LA County has a location quotient of 1.39, calculated using employment. These numbers experience modest fluctuations from year to year, which we again interpret as slight rather than substantive (see Fig. 5).

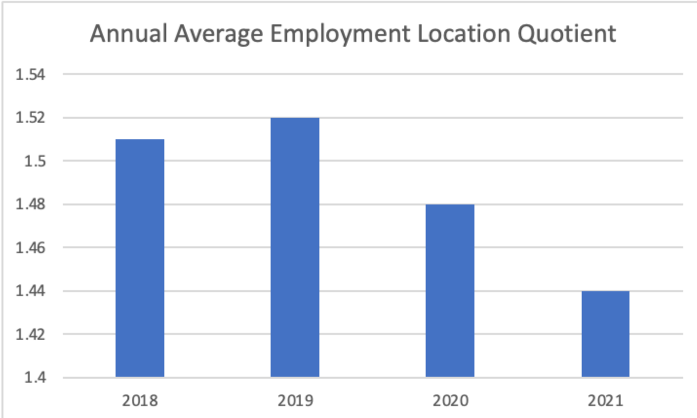


Fig. 5. Average location quotient for LA County over the past four years, as calculated using average employment. Numbers are roughly the same when calculating the quotient using weekly or quarterly wages, or employment in the most recent month, instead of annual average employment. Source: Bureau of Labor Statistics.

Subcontracting and outsourcing

Large firms within the coffee retail sector also sell foods beyond beverages made for on-site consumption, such as prepackaged snacks sold in stores, as well as bottled beverages. For instance, Starbucks has partnerships with Keurig Dr. Pepper (NASDAQ: KDP) and PepsiCo. (NASDAQ: PEP),[10] companies which occupy large shares of food manufacturing sectors and have capacities for large-scale bottling and packaging. Starbucks itself also partners with Nestle (OTCMKTS: NSRGY),[11] which handles the licensing of the Starbucks brand and the sale of Starbucks-branded coffee equipment to other businesses. As discussed in later subsections on new technologies and automation, companies like Starbucks and Dunkin contract with firms that develop new technologies like artificial intelligence (AI) to explore innovations at limited locations.

Offshore subsidiaries

Coffee retail is not a globalized sector itself but relies on the globalized trade of coffee beans.[12] Most coffee retail firms operate solely within the US, sourcing their inputs from coffee roasters and packaging plants that are often also located in the US. The exception to this trend is Starbucks which in 2021 had more outlets internationally (9,735) than in the US (6,965), and controls several steps in its supply chain.[13] The company even owns a farm in Costa Rica although this does not significantly contribute to its purchasing requirements. Starbucks' control of multiple steps in the supply chain

[10] Starbucks. *Mergent Online*, accessed Jan 22, 2023.
[11] Ibid.
[12] Thomas, The Retail Market for Coffee," p.25
[13] Starbucks Corporation, "Form 10-K: Annual Report, 2022," p.8

such as roasting and packaging provides multiple advantages for the company such as reducing purchasing costs and providing greater supply chain certainty. Moreover, many of these steps in the supply chain are incorporated as subsidiaries. Figure 5 below provides a snapshot of the many subsidiaries that Starbucks has across the world. In the past, this allowed Starbucks to reduce its tax burden by paying its offshore subsidiaries inflated rates for supplies to shift its income to the lower-taxed country where the subsidiary is located. This dynamic erupted into a scandal in the UK in 2012 when it was revealed that Starbucks had been shirking its tax obligations through these complex international pricing strategies in concert with its subsidiaries abroad.[14]

Entity Name	Organized Under the Laws of:
AmRest Coffee s.r.o.	Czech Republic
AmRest Coffee Sp. z o. o.	Poland
AmRest Kavezo Kft.	Hungary
Association Centro de Assessoria e Suporte da Starbucks Brazil	Brazil
Bay Bread LLC	Delaware
Beijing Starbucks Coffee Co., Ltd.	China
Centro de Apoyo al Productor de Starbucks Guatemala, Limitada	Guatemala
Chengdu Starbucks Coffee Company Limited	China
Conifer Ventures Limited	United Kingdom
Corporacion Starbucks Farmer Support Center Colombia	Colombia
Emerald City C.V.	Netherlands
Farmer Support Center, Asociacion Civil (Mexico)	Mexico
Guangdong Starbucks Coffee Company Limited	China
High Grown Investment Group (Hong Kong) Ltd.	Hong Kong
Holding Company International Limited	United Kingdom
Hubei Starbucks Coffee Company Limited	China
Koffee Sirena LLC	Russia
North American Coffee Partnership	New York
Olympic Casualty Insurance Company	Vermont
Princi Global Limited	United Kingdom
Qingdao American Starbucks Coffee Company Limited	China

Fig. 5. Partial list of Starbucks Corporation subsidiaries. Source: Starbucks Corporation, Form 10-K: Annual Report, 2022. P.139

Firm life cycles

Data sources are not available that specifically document the lifespan of firms in the coffee retail sector. Bizminer data does document cessation rates, however, which provides the proportion of firms that ceased operation from 2018–2019. In 2019, 8.95% of coffee shops designated as “small businesses” ceased operations, as did 4.65% of coffee shop “startups,” which are those businesses younger than 2 years. In comparison, branches of coffee chains have a 3.67% cessation rate for 2019, demonstrating the benefits made possible by likely greater profits, vertical integration of the supply chain, and economies from scale that chain coffee retailers can achieve. The limits of this dataset are the lack of definition of what a small business exactly constitutes. However, what the data for 2019 does show is the faster rate at which smaller coffee shops close their doors relative to chains. Despite this, the market share of small businesses has increased from 13.17% in 2019 to 17.02% in June 2022,

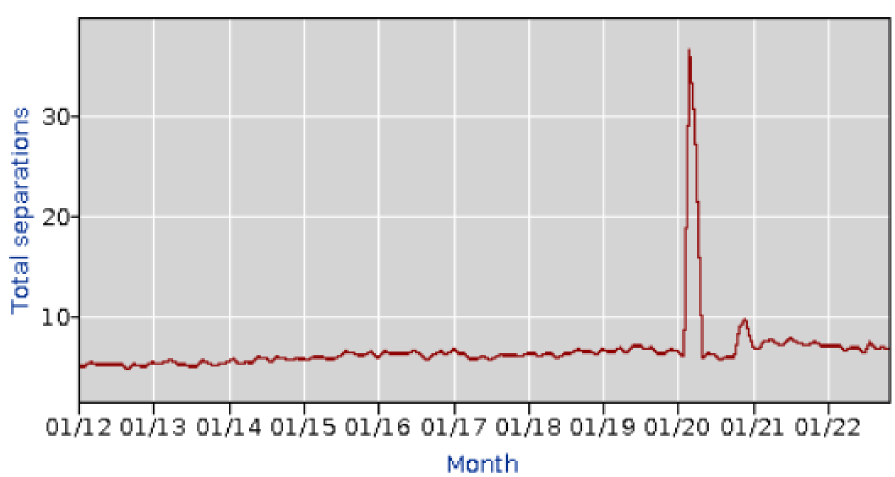
[14] Katherine Campbell & Duane Helleloid University of North Dakota,“Starbucks: Social Responsibility and Tax Avoidance,” *UND Scholarly Commons*, September 2016. P.6
https://commons.und.edu/cgi/viewcontent.cgi?article=1000&context=man-fac

possibly due to businesses that were once considered "startups" crossing the boundary of 2 years and becoming considered small businesses in the data.[15] Moreover, data available between 2019 and 2022 from the same dataset shows that LA County experiences new coffee shops entering the market at a greater rate than national data, albeit only commanding a market share of 3.62% in June of 2022 in LA County.[16]

Exact figures on the lifespan of coffee retailers in LA County are unavailable, but nationwide the coffee retail sector is considered mature in its life-cycle. Companies no longer experience the explosive growth that characterized companies such as Starbucks in the late 20th century. However, the sector overall is expected to contribute an annualized 1.9% of GDP until 2027. The volatility of COVID-19 notwithstanding, the industry is relatively stable and continues to rely on the same commoditized input (coffee beans). Regionally, levels of competition vary, but major players such as Starbucks and Dunkin' Donuts occupy nearly half of the market share nationwide.[17]

COVID-19 pandemic impact on firms, employment, sales

As noted above, the COVID-19 pandemic had a large impact on employment in the sector, with modest impacts on establishments. Presented another way, rate of turnovers/separation in the accommodation and food services industries over time. Examination of Job Openings and Labor Turnover Survey (JOLTS) from 2012 to 2022 reveals a relatively stable rate for total separations (encompassing layoffs and discharges, quits, and other separations) outside of the inception of the pandemic, reflected by a spike in the separation rate to 36.6% and 28.5% during March and April 2020, respectively, up from a baseline between 5% and 7%.



[15] Bizminer, "Industry Market Profile," p.6
[16] Bizminer, "Industry Market Profile," p.15-16
[17] Brigette Thomas, "The Retail Market for Coffee," *IBIS World*, April 2021. P.15

Fig. 6. Rate of total separations in the accommodation and food services industries, within the U.S., from 2012 to 2022. Data are adjusted for regular seasonal fluctuations in employment. Source: Bureau of Labor Statistics.

Disaggregating the types of separations within the data reveals that quit rates rose after the pandemic began (see Fig. 7). Following a brief dip from March to June 2020, the quit rate increased from pre-pandemic levels hovering around 5%, up to 7%, a rate that has continued throughout 2021 and into 2022. Further research could explore reasons behind quitting. We note here that food service sectors experienced disproportionate increases in mortality in the first year of the pandemic,[18] and that workers' decisions to quit may be influenced by deaths in their workplaces and consequent dissatisfaction with their working conditions. In California specifically, statewide public health data reveal that the restaurant/food service industries were among the top 10 job supersectors with the highest increases in death between 2019 and 2020.[19,20] We also note that nationwide quit rates increased across many sectors, and could not be explained by labor market tightening alone, reflecting overall job dissatisfaction.[21]

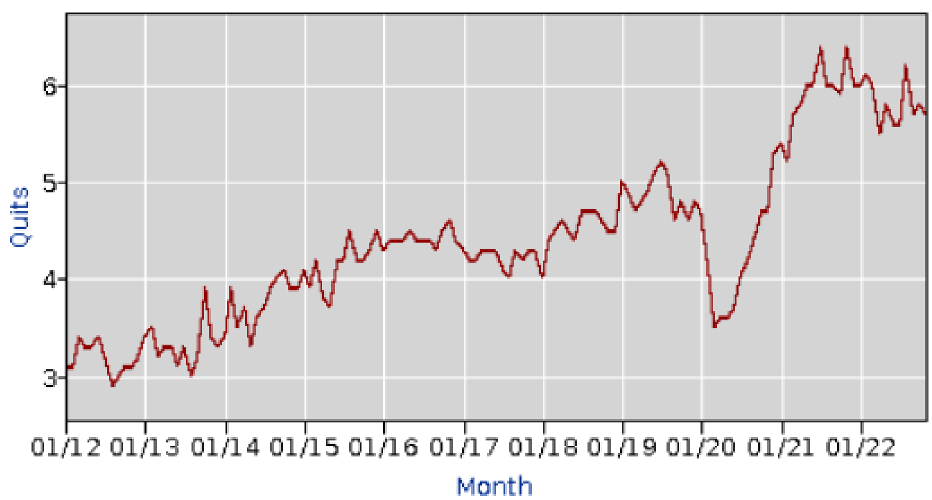


Fig. 7. Rate of quits in the accommodation and food services industries, within the U.S., from 2012 to 2022. Data are adjusted for regular seasonal fluctuations in employment. Source: Bureau of Labor Statistics.

Qualitatively speaking, major firms have made marked changes in their strategy since the pandemic began. As consumer preferences for drive-thru and mobile ordering increased,[22] firms also demonstrated increased investment in technologies and business strategies that prioritized more on-the-go consumer experiences; notably, in

[18] Chen et al.
[19] Ibid.
[20] UC Merced Community & Labor Center (2021).
[21] Bureau of Labor Statistics, Monthly Labor Review.
[22] Bluedot (2020).

2022, Starbucks announced to investors its priorities in expanding to pick-up, delivery-only, and drive-thru only locations.[23] In the broader umbrella of food service in general, ventures into artificial intelligence (AI) technologies have also explored the possibility of reducing human labor in facets of food service like ordering or making food (see new technologies and equipment section).

Internal composition of the sector

Production: How are services/goods made?

In the following subsections, we detail the means through which the coffee sector produces value: how do firms turn coffee beans into the goods and services that customers purchase? We pay special attention to emerging technology in automation, and its implications for labor.

Key processes and technologies

The main processes for production in the coffee retail sector are: service provision, maintenance of equipment and premises, production of beverages, and management of labor. Service provision primarily involves taking and managing orders, although this process has been significantly altered with the rise of online ordering through digital apps, particularly for larger chains such as Starbucks. However, service provision and customer service still play an important role for coffee retail employees. Service provision takes place alongside beverage and food preparation which typically requires use of equipment such as espresso machines. This requires detailed knowledge of increasingly complicated beverages that often change seasonally. Cleaning of the equipment and establishments are necessary to adhere to health and safety standards that regulate the restaurant industry. Training employees to operate these machines represents a sizable time cost, such that innovations in automation qualify their gains in terms of training hours saved.[24] Lastly, staffing and scheduling are necessary, as these are primarily hourly paid jobs that operate in shifts that must be organized.

New technologies: Automation and equipment

While production processes for coffee retail are not prone to introductions of disruptive technology, the confluence of COVID-19 and changing consumer preferences have spurred companies to adopt digital technologies to improve customer convenience. The adoption of digital ordering and of partnering with food delivery services follows the larger restaurant industry trend in the region.[25] In January 2023,

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[23] Starbucks press release. Reinvention Plan. Sept 13, 2022.
[24] E.g., Klein, "“Why AI is a ‘Differentiator for the Future’ at Starbucks.”
[25] TouchBistro, “The State of Restaurants in 2022: Los Angeles Report”, p.21

Starbucks partnered with DoorDash (NYSE: DASH) to provide deliveries for customers in locations nationwide, a strategy in keeping with the company phasing out its traditional store-centered “third place” policy for a “digital third place” policy.[26] The former policy, which had been central to the company for decades, promoted stores as comfortable places in which patrons could work or socialize.

Now, Starbucks is moving towards customer convenience through digital ordering, food delivery, and increasing the proportion of drive-thru stores. According to CEO Howard Schultz, “drive-thru and Mobile Order & Pay (MOP) activity have surged, together now generating over 70% of our U.S. store volume." Moreover, Starbucks has now committed to building drive-thrus at 90% of its new stores in an effort to improve customer convenience.[27] Even prior to the pandemic, Dunkin’ Brands also noted MOP was “clearly a winning proposition,” citing that more than 25% of transactions during peak hours were through MOP, and indicating firms’ attention to the capacity of digital ordering to streamline ordering process and expand production capacity during peak hours.[28] Though Dunkin’ is no longer publicly traded, and information about their near-future plans are harder to access, one news story about their Dunkin Innovation Lab points to development of AI face recognition devices to offer order suggestions based on customers’ demographics, digital ordering kiosks, and order pickup lockers, as some potential developments for coffee retail.[29]

In the coffee shop sector, developments in automation technology will likely impact both service provision (ordering) and the manufacture of goods (on-site production of drinks), as well as management (e.g., staff scheduling). Starbucks recently announced $450 million in automation technology such as a new machine making it quicker for employees to prepare ice for drinks such as Frappuccinos, along with other investments in equipment to reduce labor time on drink preparation.[30] Starbucks itself presents these equipment innovations as ones that will be “unlocking productivity gains and ultimately freeing up time for partners to connect with customers.”[31]

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[26] “Starbucks to Go Nationwide with DoorDash by March,” *QSR Magazine*, January 17, 2023. Retrieved January 22, 2023 from:
https://www.qsrmagazine.com/news/starbucks-go-nationwide-doordash-march
Starbucks Corporation, “Form 10-K: Annual Report 2022,” p.7
[27] Anna Wolfe, “Starbucks Billion Dollar Investment,” *Hospitality Technology*, May 5, 2022. Retrieved January 22, 2023 from: https://hospitalitytech.com/starbucks-billion-dollar-investment
[28] Dunkin’ Brands 2019 Q2 Earnings Call.
[29] Tyler, “Dunkin’ testing AI ordering technology”.
[30] Anna Wolfe, “Starbucks Reveal Roadmap for Invention,” *Hospitality Technology*, September 13, 2022. Retrieved January 22, 2023 from: https://hospitalitytech.com/starbucks-reveals-roadmap-reinvention
Joanna Fontozzi, “Starbucks is investing in automation to halve the time to make your Frappuccino” *Nation’s Restaurant News*, September 13, 2022. Retrieved January 22, 2023 from:
https://www.nrn.com/top-500-restaurants/starbucks-investing-automation-halve-time-it-takes-make-your-frappuccino
[31] Starbucks press release. Reinvention Plan. Sept 13, 2022.

These trends also generally track with those in related food service sectors that share similar production processes, namely in fast-casual or fast food restaurant sectors. In one example, Panera Bread (NASDAQ: PNRA), a fast-casual chain, recently adopted an AI-powered coffee system, and automated drive-thru voice ordering.[32] In April of 2022, Panera Bread announced that they would be testing Miso Robotics's "CookRight Coffee" system.[33] Miso Robotics also sells to other fast-casual chains—they supply Chipotle (NYSE: CMG) with their automated tortilla chip fryer, "Chippy".[34] Panera Bread also piloted an AI-assisted drive-thru ordering system at two locations, in partnership with OpenCity, which sells its AI technology to a variety of fast food and fast casual chains (e.g., Popeye's, Chipotle, Shake Shack).[35]

Inputs

The primary input for coffee retailers are roasted coffee beans, approximately 75% being arabica beans, and the remaining 25% being lower-quality robusta beans.[36] Inputs constitute the greatest cost for coffee retailers, accounting for 48.8% of revenue in 2021 as seen in the Industry graph in Figure 8 below.[37] Green coffee beans are sourced globally as they are grown throughout Latin America, Africa, and Asia. They are then typically imported to the U.S., where they are roasted and then packaged to be shipped to coffee retailers to brew on-site, or to be sold, typically in 1lb bags. Other inputs for the sector include snacks, dairy and non-dairy beverages, and tea. Most smaller coffee retailers enter into contracts with companies down the supply chain while bigger firms such as Starbucks are vertically integrated, roasting and packaging their own beans.

[32] Coley, "Panera Starts Testing Automated Voice Ordering."
[33] Ibid.
[34] Miso Robotics.
[35] QSR.
[36] https://tradingeconomics.com/commodity/coffee
[37] Thomas, "The Retail Market for Coffee," p.23

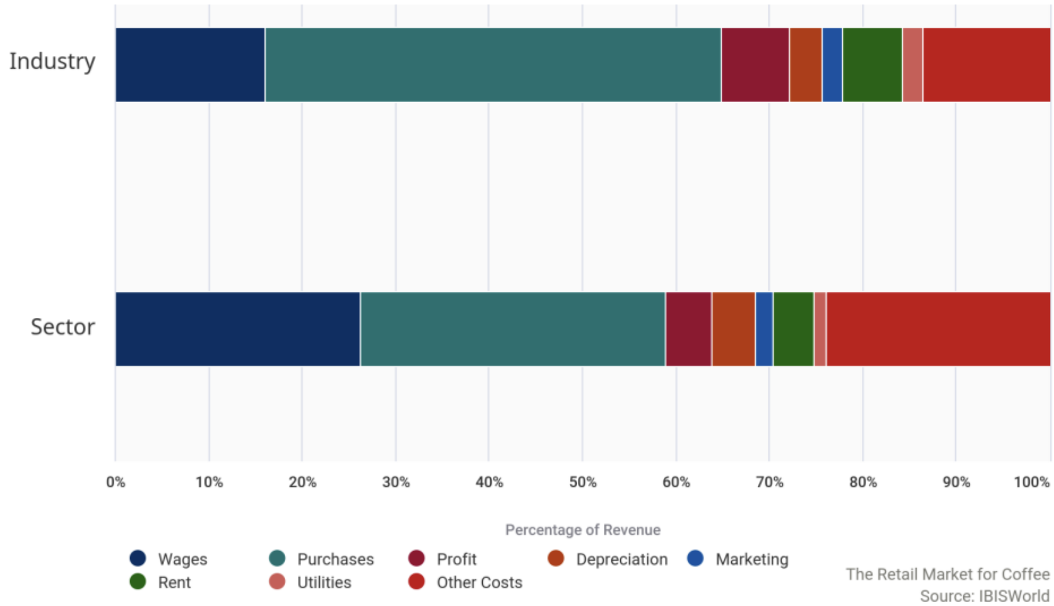

Fig. 8. Cost structure for coffee retail industry in 2021.Source: Brigette Thomas, "The Retail Market for Coffee," *IBIS World.* April 2021. p.22

Capital expenditures

Capital expenditures in the coffee retail sector consist of items such as espresso machines, refrigerators, blenders, water filtration systems, furniture, and commercial coffee bean grinders. Sometimes, coffee retailers roast their own beans using machines that often cost roughly $15,000.[38] These outlays along with permit and other costs, contribute to initial expenditures that can entail between $50,000 and $300,000 to open a coffee retail establishment depending on whether it is a coffee truck, a kiosk, a drive thru, or provides seating.[39]

Capital and labor intensity

The coffee retail sector is primarily labor-intensive as evidenced by the large proportion of costs that wages incur, from annual revenues that have been generally increasing in the industry over the past several years (see Fig. 9). While coffee retail relies on capital investment in equipment such as espresso machines and freezers, baristas must perform the tasks of ringing up customers, brewing the drinks, cleaning the equipment, and managing the flow of the store. Depreciation of capital equipment represented 3.4% of revenue, constituting a smaller proportion of revenue than wages

[38] Jesse Neugarten, "How to Run Your Coffee Shop," *Investopedia*, March 20, 2022. Retrieved January 23, 2023 from: https://www.investopedia.com/articles/personal-finance/010816/economics-owning-coffee-shop.asp
[39] Ginelle Testa, "How to start a coffee shop," *Toast*. Retrieved January 23, 2022 from: https://pos.toasttab.com/blog/on-the-line/how-to-start-a-coffee-shop

which reached 16.1% of revenue nationwide in 2021. In relational terms, IBIS World analyst Brigette Thomas reports that nationwide "in 2021, for every dollar spent on labor, the industry incurs an estimated $0.21 on capital expenditures."[40] In LA County, wages and salaries accounted for 15.01% of revenue in 2021, but rose to 17.26% by Q2 of 2022, the most recent financial quarter for which local data are available.[41] Bizminer data shows a slightly lower capital-intensity ratio for LA County, with 1.9% of revenue accounting for depreciation, amortization, and depletion in 2021, rising to 3.09% by Q2 in 2022. These figures are relatively stable over the past several years, both nationwide and locally with wages hovering between 14% and 17% of revenue within LA County.

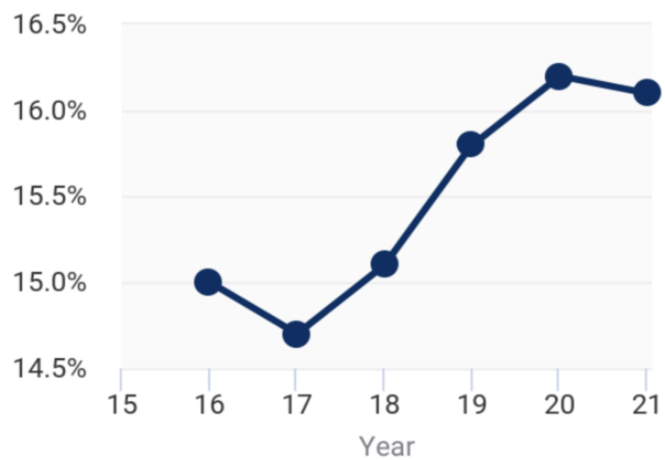

Fig. 9. Wages as a share of revenue for the coffee retail sector nationwide 2016—2021. Source: Brigette Thomas, "The Retail Market for Coffee," *IBIS World,* p.23.

While these figures representing the relative labor intensity of the coffee retail sector have remained fairly stable, moves by large firms to invest more heavily in equipment and new technologies, may impact the proportional cost of labor. For instance, Starbucks announced intentions to invest more heavily in its equipment in 2023, e.g, its "Siren System" and "Clover Vertica" equipment, which reduce the time and steps to make cold and hot beverages, respectively, under its Reinvention Plan.[42,43] Relatedly, as coffee retailers invest more in digital platforms such as contactless pickup and online ordering, they could see a reduction in labor performed by employees, also shifting the capital intensity ratio.

[40] Thomas, "The Retail Market for Coffee," p.31
[41] Bizminer, "Industry Financial Profile," p.6
[42] Creswell (2022).
[43] Starbucks press release. Reinvention Plan. Sept 13, 2022.

Rent

While not among the higher-cost expenditures such as purchases and wages, rent accounts for a significant portion of revenue, hovering between 6% and 7% in LA County and nationwide for the coffee retail sector. The relatively high proportion of this operating expense is partially due to the trend of locating coffee shops in high-population areas to increase customer traffic in shops. Due to increased demand, these areas typically command higher rents. However, coffee shops are increasingly located along commuting routes and nearby office complexes—otherwise sparsely populated areas. IBIS World reports that these locations also increase the rent cost although little information is available publicly to better understand the relationship of coffee retail locations to rent prices.[44] Here, we note that Starbucks' recent announcement that they plan to expand drive-thru and delivery only locations will likely affect where they choose to rent.[45]

Outputs

The outputs of coffee retailers are beverages, snacks, and depending on the retailer, meals. These sales constitute approximately 95.6% of sales in the snack and non-alcoholic beverage sectors.[46] Additionally, coffee beans are often sold on site, particularly by firms that use their own blend such as Starbucks and Dunkin' Donuts. Figure 10 details the breakdown of coffee products sold generally in the US, including in grocery stores, which accounts for the high proportion of ground and instant coffee.

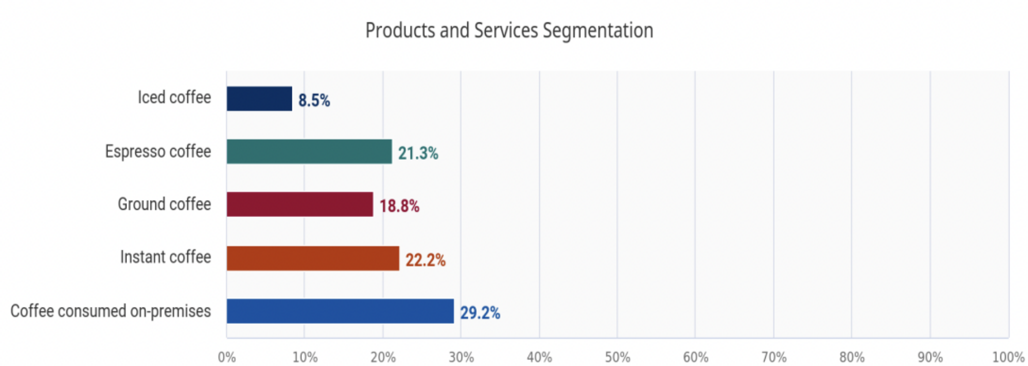

Fig. 10. Product and Services Segmentation in coffee retail sector nationwide project estimates for 2021. Source: Brigette Thomas, "The Retail Market for Coffee," *IBIS World,* p.16.

Value added: Measuring productivity

Productivity is primarily a measure of the value added to an input and the corresponding value it achieves as an output per hour of labor performed. It is a

[44] Thomas, "The Retail Market for Coffee," p.24
[45] Wolfe, "Starbucks Reveal Roadmap for Invention".
[46] U.S. Census Bureau. Economic Census 2017.

measure of efficiency of how much revenue can be achieved from input labor costs. Because goods are not comparable across industries, dollar values of outputs and inputs are analyzed for most goods and services. Sales revenue is typically divided by the price index to account for changes in pricing versus quantity of output.[47] Accounting for changes in price is particularly important in understanding how changes in productivity can also signal a change in the quality of a product.[48] Productivity can often be a weighted measure that accounts for multiple steps in the production process, accounting for how changes in the labor process increases output per hour of work or changes in capital machinery produces increased output relative to cost.

Exact measurements of productivity in LA County's coffee retail sector are difficult to approximate given scarcity of data. The BLS only provides national data and aggregates three NAICS codes to encompass all limited-service eating places, such that data for our NAICS code of interest, 722515 (snack and beverage shops) cannot be disaggregated from two other NAICS codes, 722513 (limited-service restaurants) and 722514 (cafeterias, grill buffets, and buffets).[49] Bizminer provides a productivity measurement for the sector by dividing sales revenue by employee for NAICS code 722515.01. While this does provide a rough measure of productivity, the number of hours worked would provide a stronger measure of productivity by accounting for variability among part-time and full-time employees. Nevertheless, Bizminer's productivity data shows higher rates of productivity in LA County than the US and increasing levels of productivity for both between 2019 and 2022 (see Fig. 11). Given that the sector is primarily labor-intensive and that the labor process appears consistent across regions, discrepancies between national data and county data could be a measure of greater levels of economic activity in LA County coffee shops which increases intensity of labor performed by employees. Additionally, increased sales revenue commanded by employees in LA County could be a measure of higher local coffee costs in proportion to labor costs, when compared nationally.

[47] Bureau of Labor Statistics, "Productivity 101" Retrieved January 22, 2023. https://www.bls.gov/k12/productivity-101/content/how-is-productivity-measured/output.htm#:~:text=To%20measure%20labor%20productivity%20for,gross%20 domestic%20product%20(GDP).
[48] Jerome Mark, "Measuring productivity in service industries," *Monthly Labor Review*, June 1982. P.4 https://stats.bls.gov/opub/mlr/1982/06/art1full.pdf
[49] Bureau of Labor Statistics.

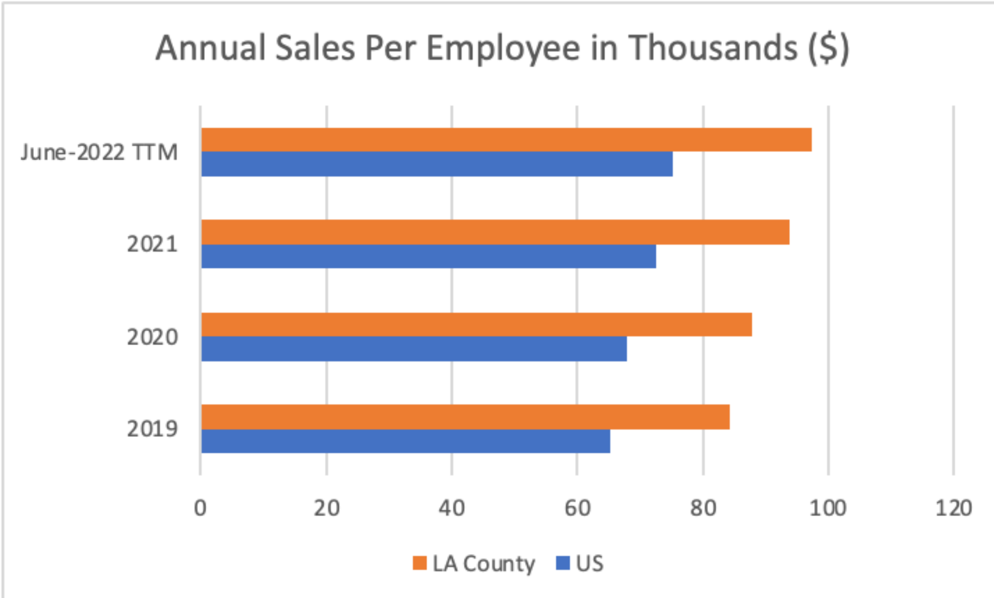

Fig. 11. Retrieved from Bizminer: Industry Market Profile, NAICS Code 722515.01 (coffee shops), 2022

Changes in business strategies, such as increasing drive-thru establishments and incorporating online ordering will likely affect labor productivity in the sector to the extent that they reduce labor time interacting with customers. For one instance, consider the aforementioned Starbucks' partnership with Doordash: the outsourcing of the part of food service that involves getting the beverage to the hands of customers truncates the segment of the production process that Starbucks workers are involved in (to making the beverages to order).[50] Additionally, Starbucks' investment in new equipment, such as its ice machines, reduces the time to make its Frappuccinos by nearly two-thirds, allowing for increasing sales revenue per hour worked.[51]

[50] Starbucks to Go Nationwide with DoorDash by March," *QSR Magazine.*
[51]Joanna Fantozzi, "Starbucks is investing in automation to halve the time it takes to make your Frappuccino," *Nation's Restaurant News*, Sept 13, 2022. Retrieved January 22, 2023 from: "https://www.nrn.com/top-500-restaurants/starbucks-investing-automation-halve-time-it-takes-make-your-frappuccino
Julie Creswell, "Starbucks Shares Shift in Strategy, to Automation and Expansion," *New York Times*, Sept 13, 2022. Retrieved January 22, 2023 from: https://www.nytimes.com/2022/09/13/business/starbucks-reinvention-strategy-employees.html

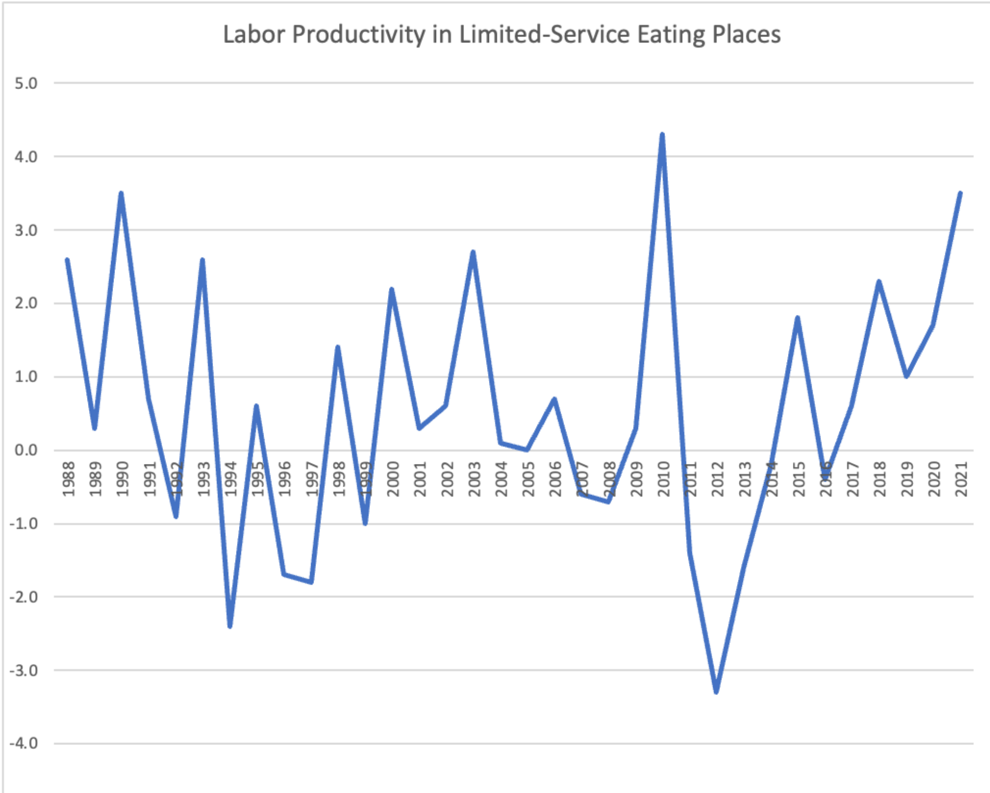

Fig. 12. Retrieved from Bureau of Labor Statistics: Labor Productivity and Cost Measures, January 2023, NAICS Codes 722513, 722514, 722515 (limited service eating places)

Productivity in the limited service eating-places shows a high level of variability in yearly productivity increases and decreases. While isolated national data for our NAICS code (722515) is unavailable, it is grouped with two additional codes, 722513 (limited service restaurants such as fast food and fast casual restaurants) and 722514 (cafeterias and buffet eating places), which share a measure of similarity with snack and non-alcoholic beverage firms. Both fast food enterprises and coffee shops, in particular, rely on capital investment in equipment for food and drink preparation, but both also require human labor to prepare items for customers. Moreover, processes such as ordering online and the use of drive-thrus, are shared between the NAICS codes, excluding 722514. Since their production processes are similar, they tend to be impacted by new developments in equipment, automation, and outsourcing around the same time—for example, Starbucks' began piloting partnerships with DoorDash shortly after McDonald's partnership with DoorDash, and announced a nationwide partnership 14 months later.[52,53]

The average productivity percent increase between 1987 and 2021 is 0.5%, demonstrating the difficulties of increasing productivity in the sector. It is unclear why

[52] McDonald's and DoorDash Announce Long-Term Global Strategic Partnership to Drive Growth of McDeliver. McDonald's press release. (Nov. 15, 2021).
[53] Starbucks to Go Nationwide with DoorDash by March," *QSR Magazine.*

productivity in the limited-service eating places sector has experienced such variability, particularly between 2009 and 2012. However, this could be explained by the Great Recession and either resulting changes in production processes or reduced revenue without a corresponding drop in employment hours. Overall, this low level of productivity follows the broader food services and drinking places sector which experienced productivity growth of 0.8% over the same period.[54] While the US generally has struggled to increase its labor productivity across industries in the aggregate, the low level of productivity increases in the limited service eating places sector points to the limits of rearranging the production process in this sector.[55]

[54]https://www.bls.gov/charts/productivity-service-providing-industries/long-term-percent-change-in-productivity.htm
[55] Robert Gordan, "Productivity and Growth Over the Years at BPEA," *Brookings Institute*, 2021. P.16 https://www.brookings.edu/wp-content/uploads/2021/03/BPEASP21_Gordon_conf-draft.pdf

Appendix

Corresponding Index Entries
Bagel shops, on premise baking and carryout service
Bakery cafes, on premise baking and selling for immediate consumption
Beverage (e.g., coffee, juice, soft drink) bars, nonalcoholic, fixed location
Canteens, fixed location
Coffee shops, on premise brewing
Confectionery snack shops, made on premises with carryout services
Cookie shops, on premise baking and carryout service
Doughnut shops, on premise baking and carryout service
Fixed location refreshment stands
Frozen custard stands, fixed location
Frozen yogurt shops
Ice cream parlors
Juice bars, nonalcoholic, fixed location
Pretzel shops, on premise baking and carryout service
Refreshment stands, fixed location
Smoothie shops
Snack bars (e.g., cookies, popcorn, pretzels), fixed location
Soft drink beverage bars, nonalcoholic, fixed location

Table A1. The complete corresponding index entries for NAICS Code 722515. Entries that could apply to coffee shops are highlighted. Note the many other kinds of establishments outside of these. *Source: U.S. Census.*

Establishment size (# of employees)	Year	Number of establishments	percentage of total establishments
All establishments	2020	3,242	
Less than 5 employees	2020	1,068	32.94%
5 to 9 employees	2020	753	23.23%
10 to 19 employees	2020	710	21.90%
20 to 49 employees	2020	664	20.48%
50 to 99 employees	2020	36	1.11%
100 to 249 employees	2020	7	0.22%
250 to 499 employees	2020	4	0.12%
All establishments	2019	3,288	
less than 5 employees	2019	1,179	35.86%
5 to 9 employees	2019	705	21.44%
10 to 19 employees	2019	870	26.46%
20 to 49 employees	2019	496	15.09%
50 to 99 employees	2019	28	0.85%
100 to 249 employees	2019	7	0.21%
250 to 499 employees	2019	3	0.09%
All establishments	2018	3,180	
less than 5 employees	2018	1,154	36.29%
5 to 9 employees	2018	634	19.94%
10 to 19 employees	2018	849	26.70%
20 to 49 employees	2018	511	16.07%
50 to 99 employees	2018	25	0.79%
100 to 249 employees	2018	5	0.16%

Table A2. Establishments (NAICS 722515) in LA County, disaggregated by number of employees, for the last three years that data are available. *Source:*

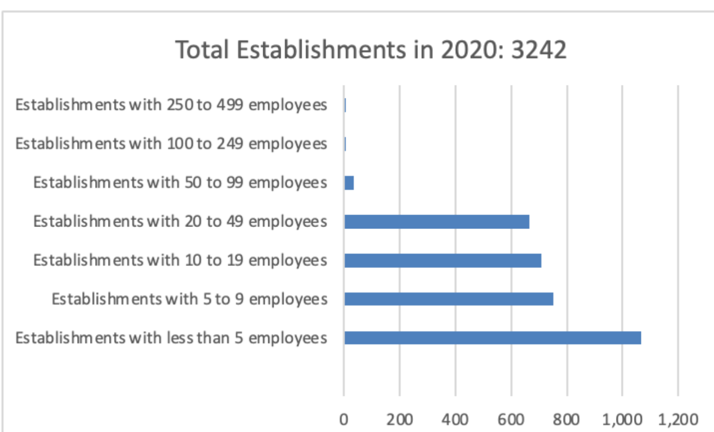

Fig A1. The number of snack and beverage establishments in LA County, by number of employees. Source: BLS

Bibliography

Baily, Martin. 2021. “Productivity and Growth Over the Years at BPEA.” Brookings Institution. https://www.brookings.edu/wp-content/uploads/2021/03/BPEASP21_Gordon_conf-draft.pdf.

Bizminer. 2022. “Industry Financial Profile: Coffee Shops - Los Angeles Metro Area.” Bizminer.

Bizminer. 2022. “Industry Market Profile: Coffee Shops - Los Angeles County.” Bizminer.

“Coffee - 2023 Data - 1-2022 Historical - 2024 Forecast - Price - Quote - Chart.” 2023. Trading Economics. https://tradingeconomics.com/commodity/coffee.

Coley, Ben. 2022. “Panera Starts Testing Automated Voice Ordering.” *QSR magazine*, August 29, 2022. https://www.qsrmagazine.com/fast-casual-16.

Creswell, Julie. 2022. “Starbucks Shares Shift in Strategy, to Automation and Expansion.” September 13, 2022. https://www.nytimes.com/2022/09/13/business/starbucks-reinvention-strategy-employees.html.

Engskov, Kris. 2016. “Starbucks: Social Responsibility and Tax Avoidance.” UND Scholarly Commons. https://commons.und.edu/cgi/viewcontent.cgi?article=1000&context=man-fac.

Fantozzi, Joanna. 2022. “Starbucks is investing in automation to make employees happier.” *Nation's Restaurant News*, September 13, 2022. https://www.nrn.com/top-500-restaurants/starbucks-investing-automation-halve-time-it-takes-make-your-frappuccino.

“How is productivity measured? : Output : U.S.” n.d. Bureau of Labor Statistics. Accessed January 23, 2023. https://www.bls.gov/k12/productivity-101/content/how-is-productivity-measured/output.htm.

Klein, Danny. 2019. "Why AI is a 'Differentiator for the Future' at Starbucks." *QSR magazine*, October, 2019. https://www.qsrmagazine.com/fast-food/why-ai-differentiator-future-starbucks.

Klein, Danny. 2022. "Panera to Test AI-Powered Coffee System from Miso Robotics." *QSR magazine*, April 12, 2022. https://www.qsrmagazine.com/technology/panera-test-ai-powered-coffee-system-miso-robotics.

Mark, Jerome. 1982. "Measuring productivity in service industries." *Bureau of Labor Statistics*, 1982. https://stats.bls.gov/opub/mlr/1982/06/art1full.pdf.

Neugarten, Jesse. n.d. "How to Run Your Own Coffee Shop - Business." Investopedia. Accessed January 23, 2023. https://www.investopedia.com/articles/personal-finance/010816/economics-owning-coffee-shop.asp.

Petre, Holly. 2022. "Why Starbucks entered the metaverse so late." *Nation's Restaurant News*, December 12, 2022. https://www.nrn.com/first-bite/why-starbucks-entered-metaverse-so-late.

Petre, Holly. 2023. "Behind the drama surrounding Starbucks rewards." *Nation's Restaurant News*, January 5, 2023. https://www.nrn.com/first-bite/behind-drama-surrounding-starbucks-rewards.

QSR magazine. 2023. "Starbucks to Go Nationwide with DoorDash by March." January 17, 2023. https://www.qsrmagazine.com/news/starbucks-go-nationwide-doordash-march.

Starbucks Corporation. 2022. "Form 10-K: Annual Report." https://s22.q4cdn.com/869488222/files/doc_financials/2022/ar/0bf5535f-877e-4550-aae7-610a8d843e5b.pdf.

Starbucks Corporation. 2022. "Starbucks Enters New Era of Growth Driven by an Unparalleled Reinvention Plan." Starbucks Stories.

https://stories.starbucks.com/press/2022/starbucks-enters-new-era-of-growth-driven-by-an-unparalleled-reinvention-plan/.

Testa, Ginelle. n.d. "How to Open a Coffee Shop: Starting a Coffee Shop Business Checklist (2023 Guide) - On the Line." Toast. Accessed January 23, 2023. https://pos.toasttab.com/blog/on-the-line/how-to-start-a-coffee-shop.

Thomas, Brigette. 2021. "The Retail Market for Coffee." IBIS World. https://my.ibisworld.com/download/us/en/industry-specialized/6098/1/0/pdf.

TouchBistro. 2022. "The State of Restaurants in 2022: Los Angeles." https://www.touchbistro.com/blog/la-state-of-restaurants-report/.

Wolfe, Anna. 2022. "Starbucks' Billion-Dollar Investment." *Hospitality Technology*, May 10, 2022. https://hospitalitytech.com/starbucks-billion-dollar-investment.

Wolfe, Anna. 2022. "Reimagining the Starbucks Experience." *Hospitality Technology*, August 2, 2022. https://hospitalitytech.com/reimagining-starbucks-experience.

Wolfe, Anna. 2022. "Starbucks to Launch Web3 Experience for Loyalty Members." *Hospitality Technology*, September 11, 2022. https://hospitalitytech.com/starbucks-launch-web3-experience-loyalty-members.

Wolfe, Anna. 2022. "Starbucks Reveals Roadmap for Reinvention." *Hospitality Technology*, September 13, 2022. https://hospitalitytech.com/starbucks-reveals-roadmap-reinvention.