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COVID-19 Working Paper:

COVID-19 and the U.S. Meat and Poultry Supply Chains

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Abstract

The Coronavirus (COVID-19) pandemic disrupted the U.S. meat industry in 2020 as social distancing and stay-at-home orders led to a decline in food-away-from-home (FAFH) purchases. In addition, worker illnesses at packing plants led to a slowdown in slaughtering and some plant shutdowns, particularly at pork and beef packing facilities, which caused problems for animal producers that had nowhere to send animals that were ready for slaughter. This paper uses data from a variety of sources to describe the changes to meat and poultry supply chains in 2020. At the beginning of 2020, cattle and hog slaughter rates were higher than in 2019, but they began to decline in April, reaching a low the week ending May 2, 2020, when slaughter for cattle and hogs was only 65 percent of that week's 2019 slaughter. Slaughter rates rebounded by June, although a backlog of animals still needed to be processed. From mid-April to mid-June 2020, the fall in slaughter rates combined with an increase in retail demand drove a large margin between wholesale meat and livestock prices. Retail purchases of meat at grocery stores surged the week ending March 15, 2020, to 75 percent above that week's 2019 meat sales. At the same time, food purchases at restaurants and other food-service establishments plummeted. High cold storage stocks of meat in early 2020 may have helped grocery retailers maintain high levels of sales during the supply disruptions in April and May 2020. Retail purchases remained higher for most remaining weeks of 2020 compared to 2019.

Keywords: COVID-19, pandemic, coronavirus, meat processing, slaughter, livestock, poultry, supply chains, wholesale prices, retail prices, food-at-home, food-away-from-home, IRI data, cold storage.

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Summary

What Is the Issue?

This study covers two primary impacts of the Coronavirus (COVID-19) pandemic on the U.S. meat industry. First, consumer purchases shifted from foodservice and restaurants toward grocery stores. Second, meat-packing plants faced labor constraints as workers fell ill, which led to a slowdown in slaughtering. The simultaneous supply and demand shifts affected the entire supply chain from feedlots that had nowhere to send their finished animals, to consumers who faced limited supplies and higher prices at grocery stores. This paper outlines the impacts of COVID-19 on U.S. red meat and poultry supply chains in 2020, describing how the industry reacted to the onset of the pandemic and adapted during the ongoing crisis.

What Did the Study Find?

Slaughter rates of hogs, cattle, and broilers began higher in 2020 compared with early 2019. However, by April 2020, hog and cattle slaughter rates fell sharply; during the week ending May 2, 2020, slaughter rates for both hogs and cattle were only 65 percent of the rates in the same week in 2019. For cattle, the reduction in slaughter rates was greater for steers and heifers in feedlots (fed cattle) than for cows and bulls. Starting in June 2020, slaughter rates rebounded and were back to above 90 percent of 2019 weekly rates for cattle (fed cattle, cows, and bulls) and hogs. Slaughter rates at beef and pork facilities remained close to 2019 levels for the rest of the year. The reductions in slaughter rates meant that livestock producers could not send their finished animals to packing plants; animal backlogs persisted even after slaughter capacity recovered. For broilers, slaughter rates fell in April and May 2020, reaching a low point in May 2020 about 9 percent below 2019 May slaughter rates. Rates for broilers recovered by June.

From mid-April to mid-June 2020, the decrease in slaughter rates—combined with a surge in retail demand—drove a large margin between wholesale meat and livestock prices. Wholesale beef and pork prices rose, while hog and cattle prices remained low. The wholesale prices for some beef and pork cuts rose more than for others. For instance, the wholesale prices of beef chuck cuts rose more than the wholesale prices of beef loin cuts. This may have been due to differences in demand for cuts based on what is more commonly consumed in restaurants versus cooked at home. By mid-June, wholesale prices generally returned to within the range for the prior 5 years.

The shift in consumption toward food consumed at home put stress on supply chains because food destined for foodservice markets may not easily be sold in retail markets due to differences in packaging sizes, product type, etc. Total nominal expenditures on food consumed at home were higher in every month of 2020 than in 2019, while expenditures on food consumed away from home were lower in each month of 2020 than 2019 after February 2020. During the week ending March 15, 2020, the quantity of meat sold at grocery stores increased sharply to 75 percent above that week's 2019 sales volume. By July 2020, retail sales were steadier and mostly remained above 2019 sales. High cold storage stocks of meat in early 2020 may have helped grocery retailers maintain high levels of sales during and after the supply disruptions in April and May 2020. Cold storage levels of chicken and pork declined throughout the latter months of 2020 likely due to reduced slaughter rates in the spring, as well as high retail demand for these products. On average, retail meat prices were higher in 2020 than they were in 2019.

How Was the Study Conducted?

This study used a variety of data sources to examine the responses among producers and consumers along the U.S. meat and poultry supply chains to the COVID-19 pandemic in 2020. Slaughter data from USDA, National Agricultural Statistics Service (NASS) was analyzed with livestock and wholesale price data from USDA, Agricultural Marketing Service (AMS) to show how prices shifted as slaughter capacity changed in spring 2020. USDA, AMS data on wholesale prices were used to calculate price ratios for different products and to show how the relative values of different cuts varied during the year. Using proprietary data from Information Resources, Inc. (IRI), the percentage change between 2019 and 2020 sales was calculated for different categories of meat products. Finally, researchers analyzed retail purchases and cold storage using data from AMS and NASS.

Introduction

The Coronavirus (COVID-19) pandemic, officially declared by the World Health Organization (WHO) on March 11, 2020, created a sudden, major shock to the U.S. meat and livestock sector, disrupting business in two ways. First, U.S. consumers, who spent over half of their food dollars on food away from home (FAFH) prior to the pandemic, rapidly switched to preparing and consuming most of their meals at home. Between 2019 and 2020, household nominal FAFH purchases fell by 17 percent, the first decline since 2009 (USDA, ERS, 2021a). This shift to food-at-home (FAH) consumption was problematic because the supply chains for FAFH and FAH are often separate, with different production processes. For example, products for the FAH market often have different packaging sizes and labeling requirements than products destined for the FAFH market (Hobbs, 2021). This shift also likely had heterogeneous demand effects on different meat products since some cuts of meat are more commonly consumed at restaurants than at home. Second, on the production side, processing plants struggled to maintain output and slaughter capacity at the start of the COVID-19 pandemic, forcing many facilities to dramatically slow production or even temporarily shut down altogether, leading to a drop in the supply of meat, particularly beef and pork.[1]

These disruptions to food consumption patterns and meat processing brought about by the start of the pandemic affected livestock producers, retailers, and consumers. For producers, particularly of cattle and hogs, production backed up because they could not sell their finished animals to the processing plants. The delay in slaughtering increased variable costs for farmers who had to keep and continue to feed animals (Martinez et al., 2021; Weersink et al., 2021). At grocery stores, consumers sometimes faced empty shelves or purchase limits for certain items (Cannon, 2020).

This working paper describes many of the ways that meat and poultry supply chains reacted and adapted to the COVID-19 crisis in 2020. The paper is organized as follows: First, it describes the COVID-19 crisis as it related to the meat industry and then explores how various supply chain actors responded to the onset of the pandemic. For each supply chain node, the recovery trajectory through 2020 is explained. Specifically, meat processing, livestock producers, wholesale markets, the cold storage stocks of meat, and retail markets are examined in the context of COVID-19.

[1]A recent paper by Beckman and Countryman (2021) examined changes to agricultural production and trade from 2019 to 2020 and the impact of the agricultural sector on the economy-wide impact of COVID-19. They concluded the agricultural sector was resilient during the pandemic but that related industries, including industries tied to food away from home (FAFH), were affected by COVID-19.

The COVID-19 Crisis

The COVID-19 crisis stemmed from the spread of a novel coronavirus. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 to be a global pandemic. Around this time, public health officials began to recommend social distancing to slow the spread of the virus (Schuchat et al., 2020), and most U.S. States implemented stay-at-home orders. Cases of COVID-19 in the United States temporarily declined during June 2020 and some restrictions and behaviors were relaxed. However, the spread of COVID-19 continued throughout the rest of 2020 and 2021.

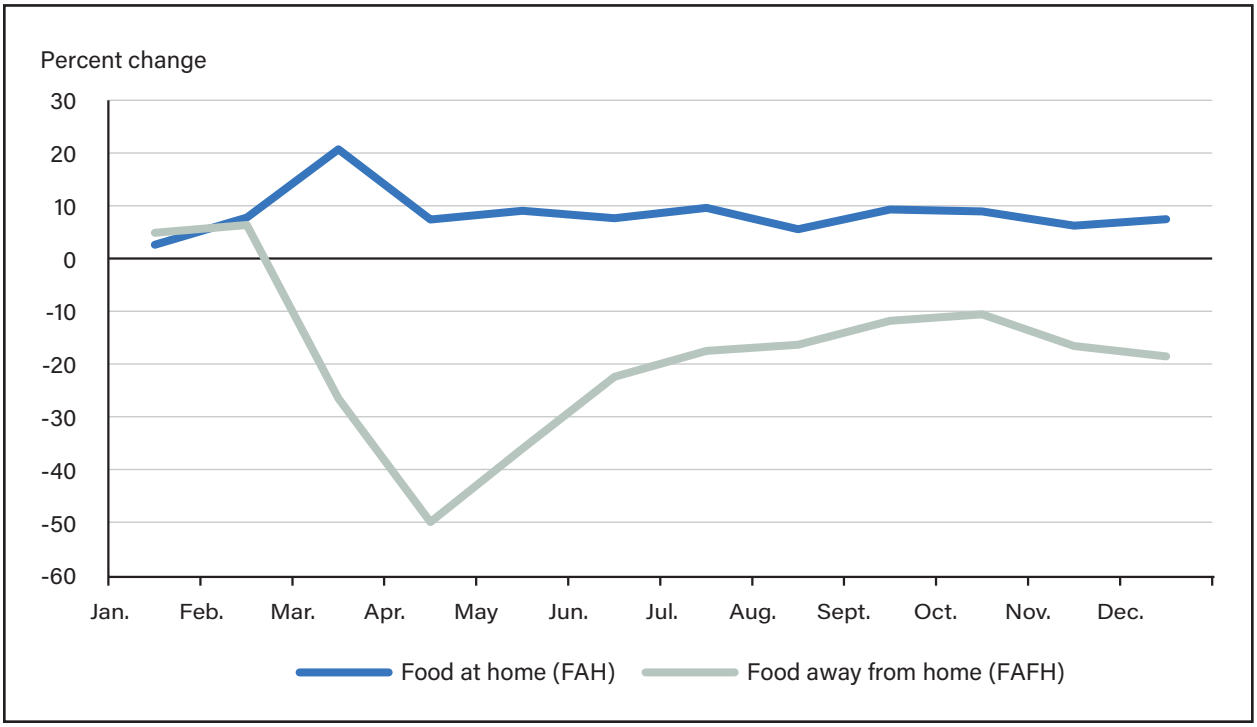
Sudden Shift to Food at Home (FAH) and Meat Consumption

Between January and February 2020, 51.5 percent of all nominal food expenditures in the United States were spent on food away from home (FAFH) (USDA, ERS, 2021a). This includes food purchases at restaurants or foodservice establishments, even if it is consumed at home. In March 2020, many schools, offices, and dine-in services began closing to reduce the spread of COVID-19. The FAFH share fell to 40 percent in March 2020 and 34 percent in April 2020, after which the FAFH share began to rise but never again exceeded 47 percent in 2020 (USDA, ERS, 2021a). This represented a significant shift in food consumption trends during the pandemic.

Figure 1 shows a month-by-month comparison of 2020 and 2019 Food at Home (FAH) and FAFH nominal expenditures. Monthly FAH expenditures were higher in 2020 than 2019 in all months. The largest relative monthly increase was in March 2020, when FAH expenditures were over 20 percent higher than in March 2019. This reflects the surge in retail demand immediately after the WHO declared COVID-19 a global pandemic.

After February 2020, monthly FAFH expenditures were lower than in 2019 for each month. The biggest relative decline was in April 2020, when FAFH expenditures were 50 percent lower than in April 2019; this reflects the height of COVID-19 stay-at-home restrictions. FAFH expenditures remained 11 to 36 percent lower than 2019 expenditures for the remaining months of 2020.

Figure 1
Food at home (FAH) and food away from home (FAFH) expenditures, 2020 compared with 2019



Source: USDA, Economic Research Service, Food Expenditure Series (2021a).

Production lines are often differentiated early for either the FAH or FAFH market. For instance, broiler production is specialized at the company and/or plant level toward either foodservice or retail because of differences in bird sizes and processing between the two markets (Maples et al., 2021). Foodservice-bound poultry is typically frozen in 40-pound units, while poultry for retail sale is more often sold fresh and in trays of a few pounds at most. In addition, some products are more popular at foodservice establishments than at home. Because of this specialization in production, the shift in consumption toward FAH was disruptive to producers that could not automatically market products to retail outlets meant for foodservice (Hobbs, 2021).

Between 2013 and 2016, approximately 38 percent of the quantity of meat consumed in the United States was consumed away from home; this was the highest of any commodity group (tied with fats and oils) (Lin, 2020). Thus, meat and poultry supply chains may have been disproportionately affected by the shift in consumer habits toward FAH, though fast food purchases of these commodities may have mitigated the effects (Lin, 2020). While full-service restaurant nominal expenditures declined by 29 percent from 2019 to 2020, limited-service restaurant expenditures declined by 4 percent (USDA, ERS, 2021a). Fast food establishments were already accustomed to providing take-out food, which did not suffer the same restrictions as full-service dining. However, the increase in work-from-home policies likely affected these establishments. Because fewer people were commuting to work, fast food restaurants served fewer customers.

COVID-19 Labor Crisis in the Meatpacking Industry

The Centers for Disease Control and Prevention (CDC) reported several characteristics of employment at a processing facility that increased workers' vulnerability and the likelihood of the virus spreading (Waltenburg et al., 2020). These characteristics included close and prolonged contact for long shifts in shared workspaces (within 6 feet for more than 15 minutes), as well as shared transportation and housing among workers. Leave policies for workers and attendance bonuses may have also encouraged employees to work while sick, which could contribute to disease spread (Dyal et al., 2020).

As of May 31, 2020, 16,233 workers contracted COVID-19 and 86 workers died from the virus across 239 meat (beef, pork, poultry, bison, and lamb) processing plants in 23 states (Waltenburg et al., 2020). Taylor et al. (2020) found a positive correlation in spring and early summer of 2020 between beef, pork, and poultry processing plants and community transmission of COVID-19 after controlling for confounding factors. Similarly, Saitone et al., (2021) found that within 150 days of COVID-19 emergence in a county, large beef, pork, and chicken packing plants increased county transmission rates by 110 percent, 160 percent, and 20 percent, respectively. Over time, however, COVID-19 infection rates in counties with meatpacking plants became similar to rates in counties without meatpacking plants (Saitone et al., 2021).

Plants implemented many safety protocols to prevent the spread of COVID-19, such as requiring face coverings, educating workers on community spread, staggering shifts, testing workers, and installing physical barriers between workers (Waltenburg et al., 2020).

The authors used graphical analysis to compare slaughter volumes in 2020 and 2019 and describe changes in livestock and wholesale meat prices in 2020. Most discussion focuses on livestock and wholesale prices on beef and pork as these industries were primarily affected by the pandemic.[2] A limitation of this analysis is that the effect of COVID-19 cannot be separated from other factors driving markets or provide detailed information on the types of products meat packing plants process. Available data only permitted the study of changes in total animal slaughter.

Data

Data used are weekly slaughter data (for hogs and cattle) and monthly (for broilers) collected through USDA, National Agricultural Statistics Service (NASS) (USDA, NASS, 2021a); livestock price data from USDA, Agricultural Marketing Service (AMS) *Livestock, Poultry, and Grain Market News* (USDA, AMS, 2021a; USDA, AMS, 2021b); and cutout data for beef, pork, and broilers from USDA, AMS *Livestock, Poultry, and Grain Market News* (USDA, AMS, 2021c; USDA, AMS, 2021d; USDA, AMS, 2021e). Table 1 defines each price used in the analysis.

Table 1
List of prices with units and definition

Price	Unit	Definition
Steer price (dressed-delivered, carcass-weight price)	USD/cwt	Negotiated price between the packer and feedlot
Hog price (carcass-weight price)	USD/cwt	Average base price paid the week of the sale for producer-sold hogs (51–52 percent base lean hog)
Choice beef and pork carcass cutout price	USD/cwt	Negotiated price between packers and wholesalers
Wholesale broiler price	cents/pound	National composite weighted average for the whole broiler

Notes: USD = U.S. dollar. cwt = hundredweight. Many hogs are sold on a grade and yield basis. Packers pay a base price per pound for the carcass an animal produces. Packers weigh a hog's carcass and evaluate carcass quality. The net price that the producer gets for each hog is its base price plus premiums and minus discounts for the carcass's qualities. A small percentage of hogs are sold using negotiated prices. As with cattle, some prices could be set 2 weeks or more prior to purchase, but most hog prices are based on formulas derived from current negotiated hog prices or pork cutouts. Pork packers report the base price on the day of slaughter. The day after slaughter, packers can report the net price paid.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "5 Area Weekly Weighted Average Direct Slaughter Cattle," 2021a; "National Daily Base Lean Hog Carcass Slaughter Cost," 2021b; "National Weekly Boxed Beef Cutout and Boxed Beef Cuts—Negotiated Sales," 2021c; "National Weekly Pork Report FOB Plant—Negotiated Sales," 2021d; "Weekly National Whole Broiler/Fryer Report," 2021e.

The difference between the cutout value and the livestock price provides a crude estimate of the price margin between livestock and wholesale prices. The estimate is crude as the cutouts are based on a specific carcass composition. The animals priced may not closely match a specific carcass; in fact, the quality of the average animal varies over time. Beef comparisons are further complicated because not all steers grade Choice.

[2]Some analysis for poultry is omitted because not all price data are available.

Beef

For the study of beef, authors compared weekly slaughter rates of cattle in 2020 with 2019 rates and described weekly changes in the 2020 steer and Choice cutout prices (figure 2). Cattle slaughter volume in the early weeks of 2020 was higher than in the corresponding weeks of 2019. In the week ending March 28, 2020, slaughter was 111 percent of 2019 slaughter, but then it began to decline; 2 weeks later, it was below 2019 levels. This decline can be largely attributed to the loss of slaughter capacity associated with the start of COVID-19. The lowest period was the week ending May 2, 2020, when slaughter was only 65 percent of that week's slaughter in 2019.[3] By early June, slaughter levels for total cattle[4] were above 90 percent of 2019 levels and continued to rise. They remained at near-2019 levels for most of the remaining weeks in 2020. The sharp movement up and down in slaughter levels in September 2020, and the drop in December 2020, were likely because Labor Day and Christmas fell on different weeks in 2020 when compared with 2019.

Steer prices began 2020 at just under $200 per hundredweight (cwt) and gradually declined almost through the end of March 2020 when they increased slightly and then declined again. Steer prices fell to $154 per cwt the weeks ending April 25 and May 2, 2020, coinciding with the steepest decline in slaughter rates. Prices rebounded slightly but fell again to below $154 per cwt in early July 2020, their lowest point of the year. For several weeks in spring and summer 2020, the steer price was lower than any recorded prices for those weeks in the previous 5 years, although prices had been historically high in the last 5 years (figure A1).

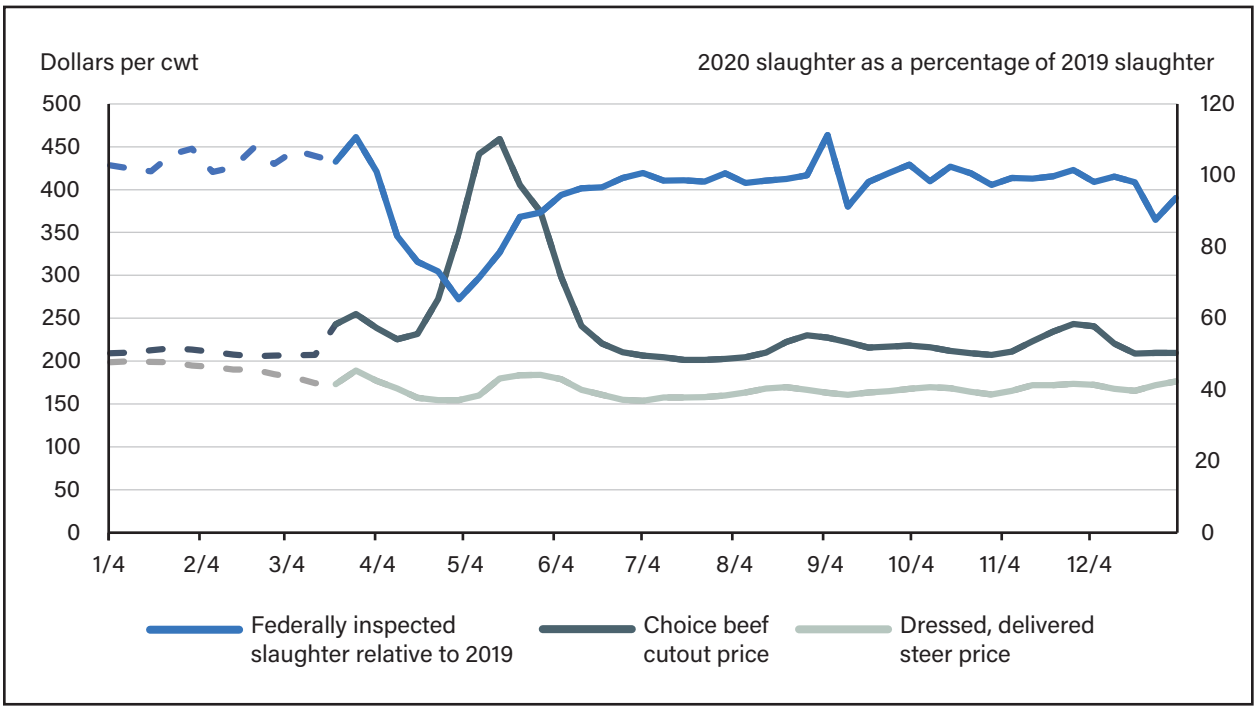
The Choice beef cutout price increased in late March. It then fell for the next few weeks and started to increase again the first week of May, as slaughter rates hit their lowest year-over-year rate. The price peaked at $459 per cwt in mid-May 2020. For several weeks in the spring, wholesale beef prices were historically high, higher than the maximum price from 2014–19 (figure A2). This rise was likely due to tightening supplies due to reduced slaughter volumes from late April to early May 2020. The increase in the wholesale beef price combined with the relatively low steer prices caused a large price margin between the two. At the start of 2020, the price margin was about $10-$15 per cwt but rose through the early months of 2020. In mid-May, the margin peaked at $282 per cwt.

Economic theory supports these price movements and the widening of the price margin. First, as slaughter capacity fell, the demand for live animals declined; therefore, the price for livestock decreased (Hobbs, 2021; Lusk et al., 2021). Simultaneously, the reduced supply of meat combined with rising retail demand led to an increase in wholesale meat prices. As wholesale prices fell and leveled out by the end of June 2020, so did the price margin which hovered between around $40 and $70 per cwt for the remainder of the year.

[3]This figure is for total cattle; fed cattle slaughter was 59 percent of that week's slaughter in 2019, while it was 92 percent for cows and bulls.

[4]Fed cattle slaughter rates were also above 90 percent of 2019 levels.

Figure 2
Wholesale beef and cattle prices (left axis) versus slaughter capacity (right axis)



Notes: Year prior for 1/2/2021 is week of 1/4/2020. The solid lines represent data after the week ending March 14, the week the World Health Organization (WHO) declared COVID-19 to be a global pandemic. cwt = hundredweight.

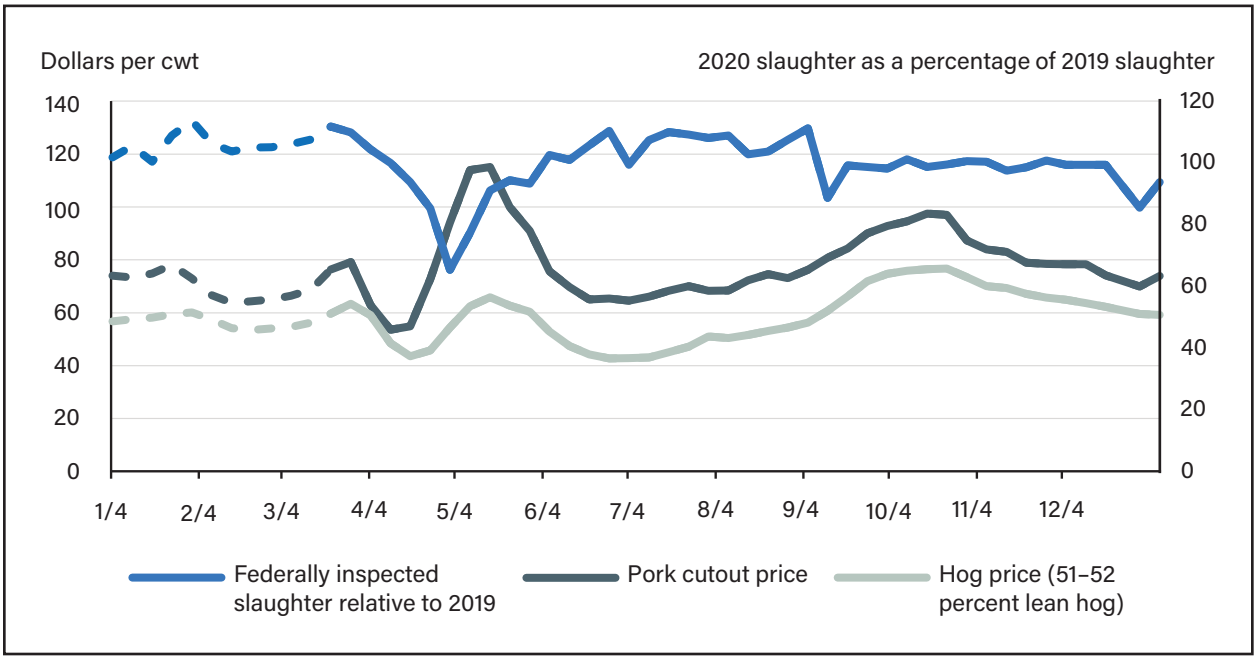
Source: USDA, Economic Research Service calculations based on USDA, National Agricultural Statistics Service "Livestock Slaughter 2020 Summary" (2021a) and USDA, Agricultural Marketing Service "5 Area Weekly Weighted Average Direct Slaughter Cattle," (2021a) and National Weekly Boxed Beef Cutout and Boxed Beef Cuts—Negotiated Sales," (2021c).

Pork

Pork slaughter followed a similar pattern to beef (figure 3). Weekly year-over-year slaughter was higher than 2019 at the beginning of 2020. Slaughter began to decline in April, reaching a low of 65 percent of 2019 slaughter in the week ending May 2, 2020. By early June 2020, hog slaughter volume was on par with 2019 levels.

The price of hogs increased slightly at the start of the pandemic until late March. It then fell and rose again, peaking at $66 the week ending May 16, 2020. The price mostly stayed below the 2014–19 price minimum throughout spring and summer until it began to rise in August 2020 (figure A3). The carcass cutout price followed a similar trend as the hog price but fell more sharply in early April than the price of hogs, briefly narrowing the price spread to approximately $5 per cwt in the first 2 weeks of April 2020. The cutout price then sharply increased, reaching a high of $115 per cwt in the week ending May 16, 2020. The largest price spread occurred the previous week, at $51 per cwt.

Figure 3
Wholesale pork and hog prices (left axis) versus slaughter capacity (right axis)



Notes: cwt = hundredweight. Year prior for 1/2/2021 is week of 1/4/2020. The solid lines represent data after the week ending March 14, the week the World Health Organization (WHO) declared COVID-19 to be a global pandemic.

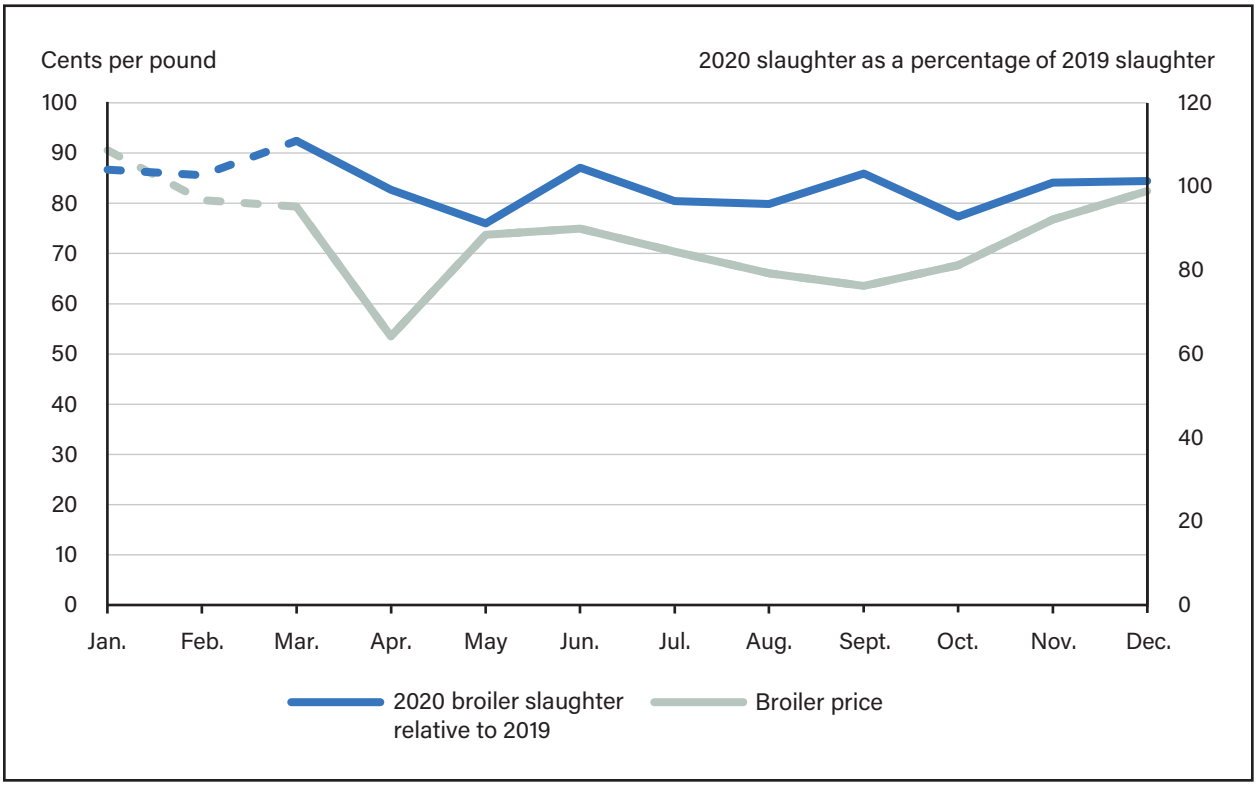
Source: USDA, Economic Research Service calculations based on USDA, National Agricultural Statistics Service "Livestock Slaughter 2020 Summary" (2021a) USDA, Agricultural Marketing Service "National Daily Base Lean Hog Carcass Slaughter Cost" (2021b) and "National Weekly Pork Report FOB Plant—Negotiated Sales" (2021d).

Broilers

In January and February 2020, broiler slaughter rates were close to 2019 levels, and in March, they were about 11 percent above 2019 levels (figure 4). Rates relative to 2019 fell during the next 2 months, reaching a low of 91 percent of 2019 slaughter in May 2020. Slaughter then rebounded and fluctuated between 93 and 105 percent of 2019 slaughter in the remaining months of 2020. Lusk et al. (2020) suggest that broiler slaughter never declined as sharply as cattle and hog slaughter because of higher automation, lower worker density, and the geographic location of plants.

The wholesale price of broilers had its highest 2020 value in January at 91 cents per pound. In March 2020, the wholesale price fell to 79 cents per pound and then decreased again in April to 54 cents per pound. But while relative slaughter rates continued to fall between April and May, the wholesale price increased to 74 cents per pound in May. It fell gradually from June to September, and then rose through the end of the year—ending at 82 cents per pound in December. The wholesale price of broilers was below the 5-year minimum price throughout most of 2020 (figure A5).

Figure 4
Wholesale chicken price (left axis) versus slaughter capacity (right axis)



Notes: cwt = hundredweight. The solid lines represent data during and after March, the month the World Health Organization (WHO) declared COVID-19 to be a global pandemic.

Source: USDA, Economic Research Service calculations based on USDA, National Agricultural Marketing Service "Livestock Slaughter Summary" (2021a) and USDA, Agricultural Marketing Service "Weekly National Whole Broiler/Fryer Report" (2021e).

Upstream Supply Chain Problems

The just-in-time nature of meat production made it challenging for feedlots to respond to the sudden downturn in slaughter. Studies of cattle and hog supply generally find that short-run livestock supply is inelastic (Hahn, 1996), meaning producers are unable to quickly reduce the production of animals. For descriptions of cattle, hog, and broiler production, see USDA's ERS Sector at a Glance webpages (USDA, ERS, 2021b; USDA, ERS, 2021c; USDA, ERS, 2021d).

When slaughtering plants slowed production, livestock producers had to keep finished animals. This led to backups throughout the production chain. For cattle, feedlots sold some animals at lower prices and kept some for longer than normal, which increased live cattle weights. Hog producers also had to keep hogs that could not be sold to slaughter plants, modifying their diets to slow growth (Weersink et al., 2021). Similarly, broilers had to be kept longer on feed, which increased the production cost per bird (Weersink et al., 2021).

For the beef industry, the web of routes between an animal's birth and its entry into a feedlot for slaughter provided the industry with ways to adjust to the crisis. For instance, if feedlots are not financially encouraged to purchase calves, calves may be shifted to stocker operations and/or spend more time in the stocker phase. They can also be backgrounded or fed maintenance rations and/or not given growth hormones to maintain weight. Although this increases costs, it allows producers to hold cattle when prices are low or if slaughter slots are unavailable. University extension offices published guidelines to help producers manage cattle feed to slow growth (Iowa State University Extension Beef Specialists et al., 2020). Producers have more flexibility with calves and feeder cattle than with finished cattle that are ready for market (Tonsor and Schulz, 2020).

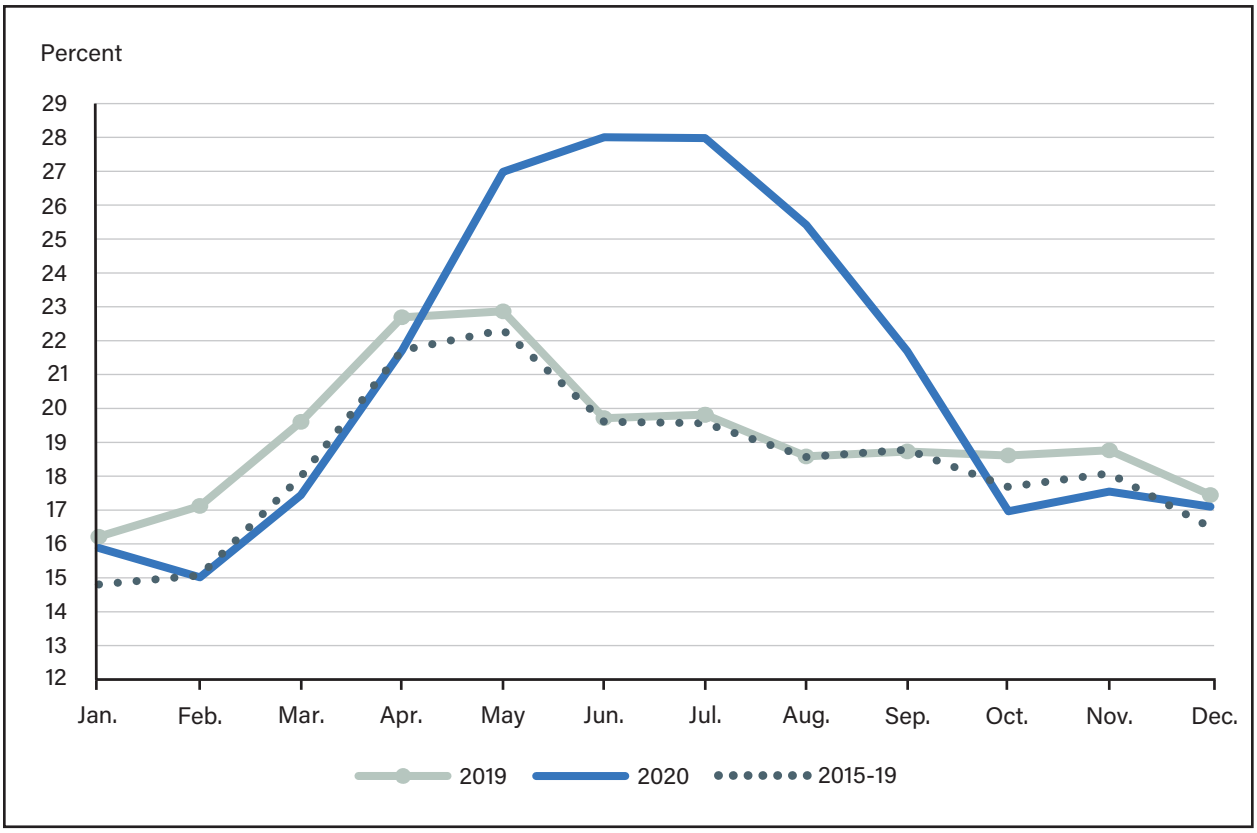
Given that hogs' birth-to-slaughter cycle is shorter than the cattle cycle, hog producers had fewer options to adjust the number of ready-to-slaughter animals or those in the production pipeline. During the pandemic, they adopted a range of measures, including dietary intakes that slowed animals' growth, increasing the number of animals housed in a pen, or housing animals in additional facilities. Some of the animals were donated or sold through non-traditional outlets. In some extreme cases, euthanasia occurred (Hayes et al., 2020).

In addition, the high level of slaughter of beef and pork in early 2020 and the ramp up in March may have helped cattle feedlots and hog finishers. Hayes et al. (2020) analyzed this in-depth for the pork industry. In March, futures prices of pork fell as markets anticipated further disruptions, while the cash market remained more stable (Hayes et al., 2020). Thus, immediately prior to the pandemic, there was a large positive basis (the difference between cash prices and future prices) that encouraged producers to market their hogs and take the basis prices. Hayes et al. (2020) interpreted this basis-driven signal as a forewarning of potential future supply chain problems. This signal was stronger for producers that hedged their animals (sold futures).

By the time slaughtering capacity ramped back up in June, a backlog of animals needed to be slaughtered (Martinez et al., 2020). Figure 5 shows the percentage of cattle on feed that were on feed for more than 150 days during 2020 and 2019, and it shows the average from 2015–19. In the first four months of 2020, this percentage was lower or about the same as in previous years. However, from May to September, the 2020 values were higher than in past years. This indicates it took at least 6 months (until October) for the slaughter backlogs that arose from supply disruptions in April 2020 to move through the system.

Figure 5

Cattle on feed over 150 days



Source: USDA, Economic Research Service calculations from USDA, National Agricultural Statistics Service "Cattle on Feed" (2021b).

Wholesale Prices by Product

Meat packers typically sell cuts of meat rather than whole carcasses to their customers. The shift from FAFH to FAH may have changed product demand, and thus, the relative prices of these cuts. USDA-AMS reports wholesale prices for beef and pork. AMS summarizes these cut prices and publishes "cutouts" by primals and for the whole carcass (USDA, AMS, 2021c; USDA, AMS, 2021d).[5] An animal's carcass is cut into primals before further processing to wholesale cuts. The carcass cutout is a weighted average of the primal cutouts. There are six pork primals: butt, picnic, loin, belly, sparerib, and ham. There are seven beef primals: chuck, brisket, rib, plate, loin, flank, and round. Pork primals are sometimes sold whole at the retail level, but for beef products and some pork products, the primals are further processed into smaller cuts.[6] Prices for wholesale broiler parts (bone-in breasts, boneless skinless breasts, thighs, drumsticks, and wings) are also provided by USDA, AMS (2021f).

A series of graphs compares prices of primals using data from USDA, AMS. A few of the many products are highlighted here. (Graphs for remaining products are included in figures A6-A8.) Two graphs for each primal explain changes in the 2020 price and the ratio between the primal value and the carcass cutout. Both graphs compare the values in 2020 to the range of values in the previous 5 years, 2014–19.

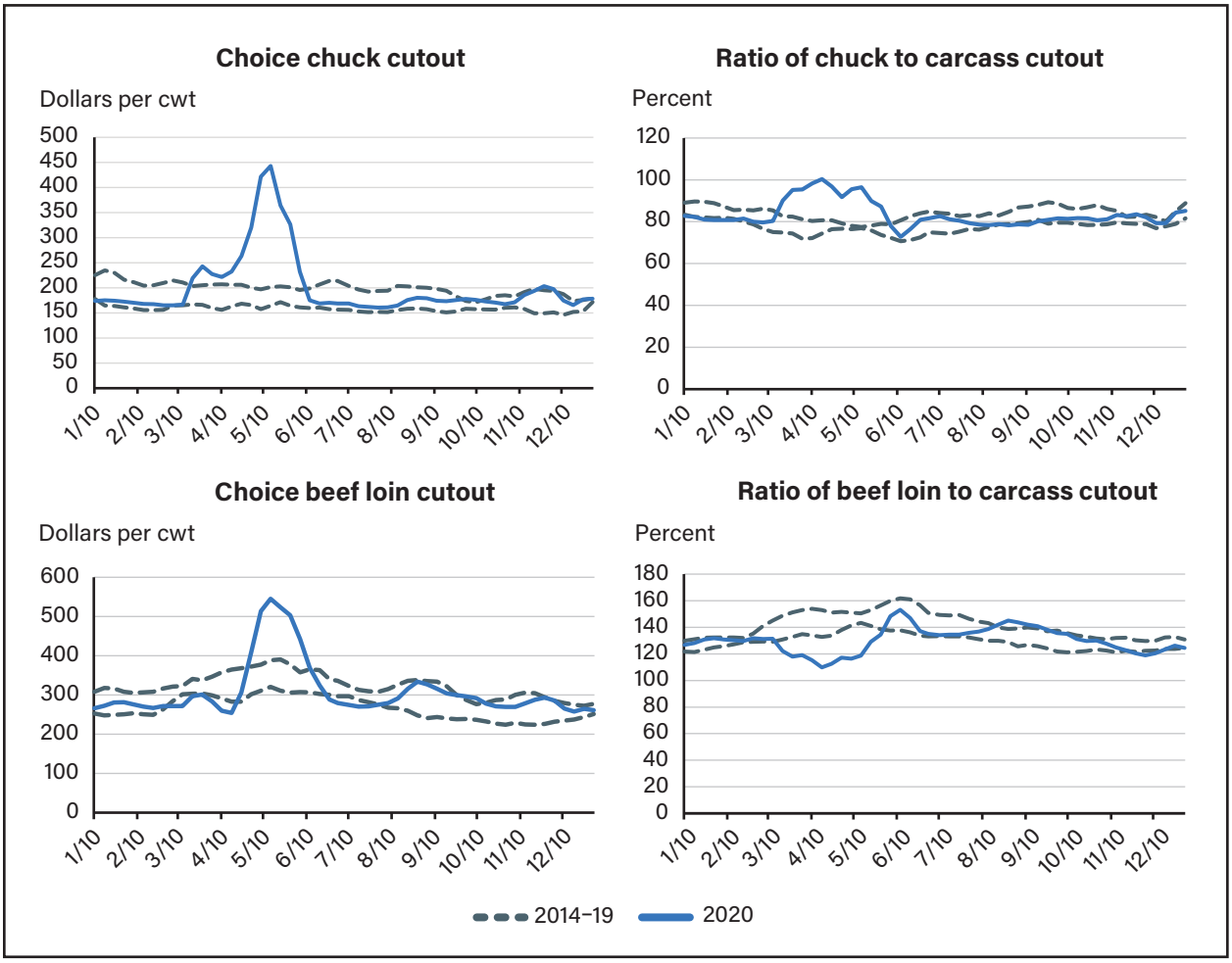
Beef graphs illustrate chuck and loin. Chuck is typically turned into roasts, making it popular with home cooks. Loin is a more expensive cut of meat used to make steaks that are popular at full-service restaurants, which suffered large losses of business during the pandemic. Chuck maintained high prices relative to earlier levels and high prices relative to the carcass cutout during the spring (figure 6). By contrast, the loin price also increased, but its relative value to other cuts fell during the spring.

[5]The USDA's Agricultural Marketing Service publishes Institutional Meat Purchase Specifications (IMPS) for use by the meat industry. These are guides to pork and beef cuts and where the cuts are made to make the primal.

[6]Appendix B provides detailed descriptions of these primals.

Figure 6

Beef product cutout values, 2020 versus 2014–19 range

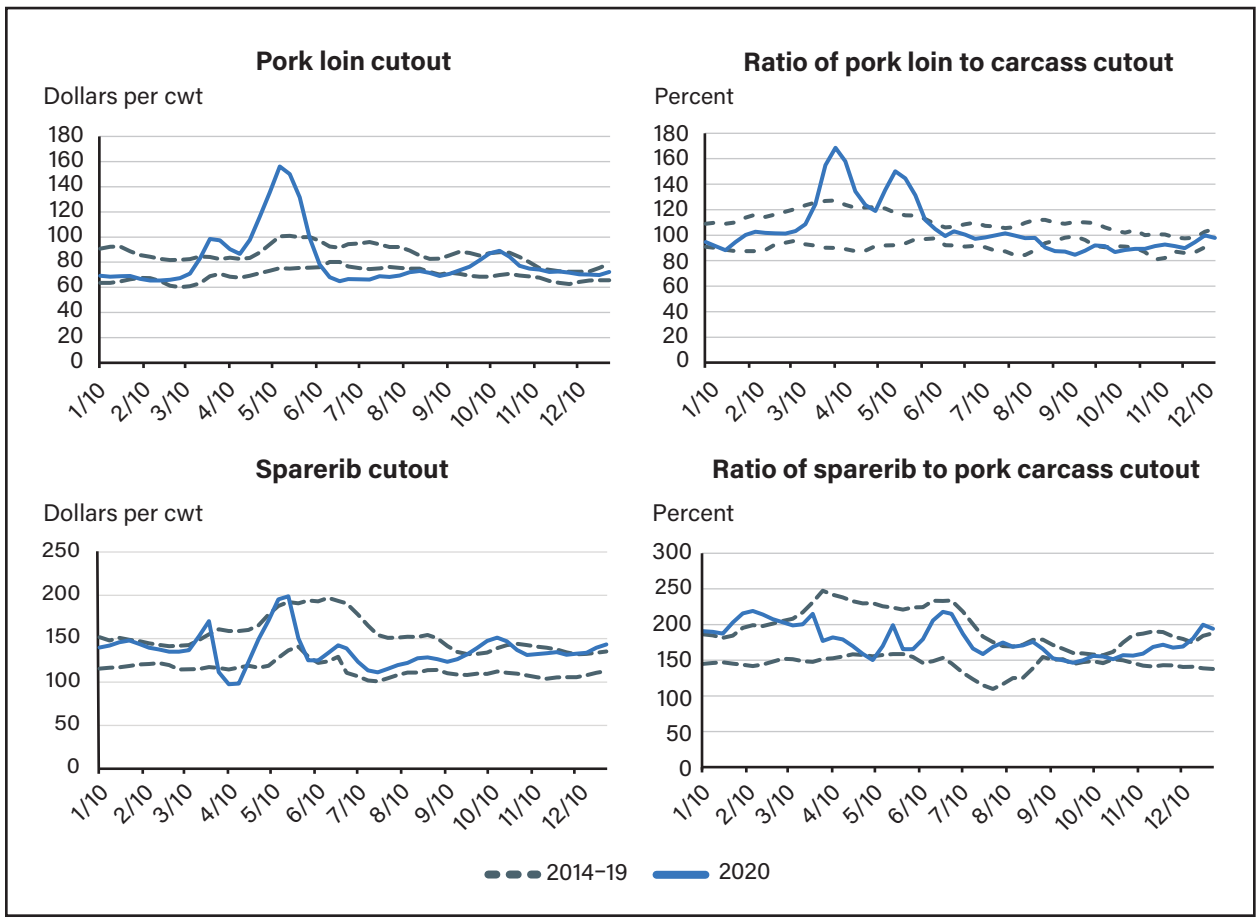


Note: cwt = hundredweight.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "National Weekly Boxed Beef Cutout and Boxed Beef Cuts—Negotiated Sales." (2021c).

For pork, figure 7 compares prices of loin and spareribs. Loin is the source of pork chops, an item that can be easily cooked at home, while spareribs are popular in foodservice. The prices of both loin and spareribs followed the same basic pattern as the pork cutout prices in the spring. However, the price of spareribs fell sharply after the initial price increase, while pork loin dipped slightly. As a result, the ratio of loin price to carcass cutout mostly stayed above its 2014–19 maximum price in the spring. For spareribs, the value stayed within the 2014–19 range.

Figure 7
Pork product cutout values, 2020 versus 2014–19 range



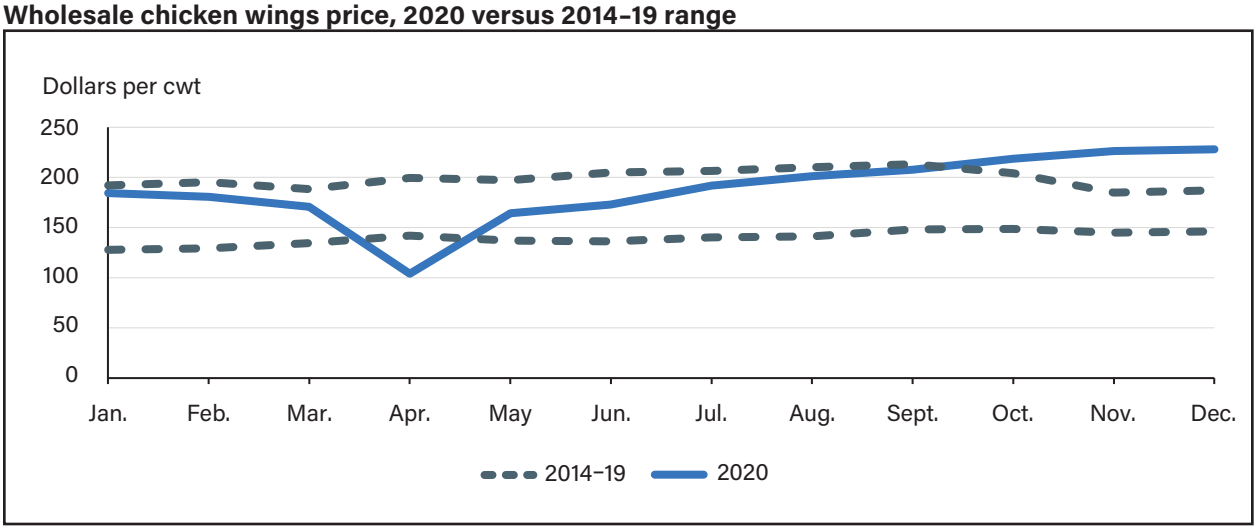
Note: cwt = hundredweight.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "National Weekly Pork Report FOB Plant—Negotiated Sales" (2021d).

The price of chicken wings fell from March to April 2020, possibly due to the decline in foodservice (figure 8). They then increased throughout the rest of the year, while the prices of other chicken parts remained steadier or declined (figure A8). Prices likely increased because wings are a popular food for delivery and take-out and may have gained popularity with home cooks as U.S. consumers cooked more food at home in 2020.

Figure 8

Wholesale chicken wings price, 2020 versus 2014–19 range



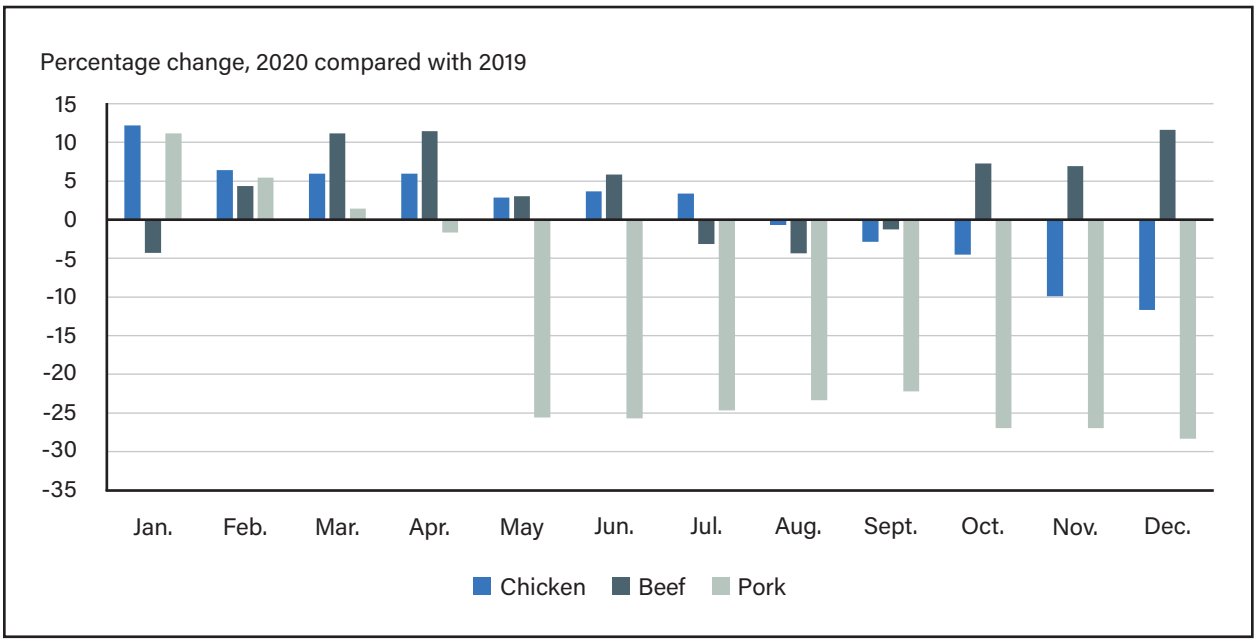
Note: cwt = hundredweight.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "Monthly Northeast Broiler/Fryer Parts Report" (2021f).

Cold Storage

USDA, NASS tracks reserve food stocks in commercial and public warehouses using its Cold Storage survey. In the first 3 months of 2020, cold storage stocks of pork and chicken were higher than in 2019 (figure 9); in fact, cold storage stocks of chicken were near a 10-year high (USDA, NASS, 2021c). Beef cold storage stocks were also higher than 2019 levels from February to June. This meant U.S. supply chains had a supply buffer of meat when slaughter disruptions began. When hog slaughter rates fell in April and May 2020 so did cold storage stocks of pork, which remained more than 20 percent below 2019 levels after April. Beef cold storage stocks also declined, dropping below 2019 levels from July to September 2020, but rebounded later in the year possibly due to increased imports relative to 2019 (USDA, ERS, 2021e). Chicken cold storage stocks also declined; by the end of December 2020, they were almost 12 percent below December 2019 levels. Cold storage stocks of pork and chicken relative to 2019 likely declined due to reduced slaughter rates in the spring, as well as high retail demand for these products.

Figure 9
Cold storage for chicken, beef, and pork, 2020 versus 2019



Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service "Cold Storage" (2021c).

Retail Market Reactions

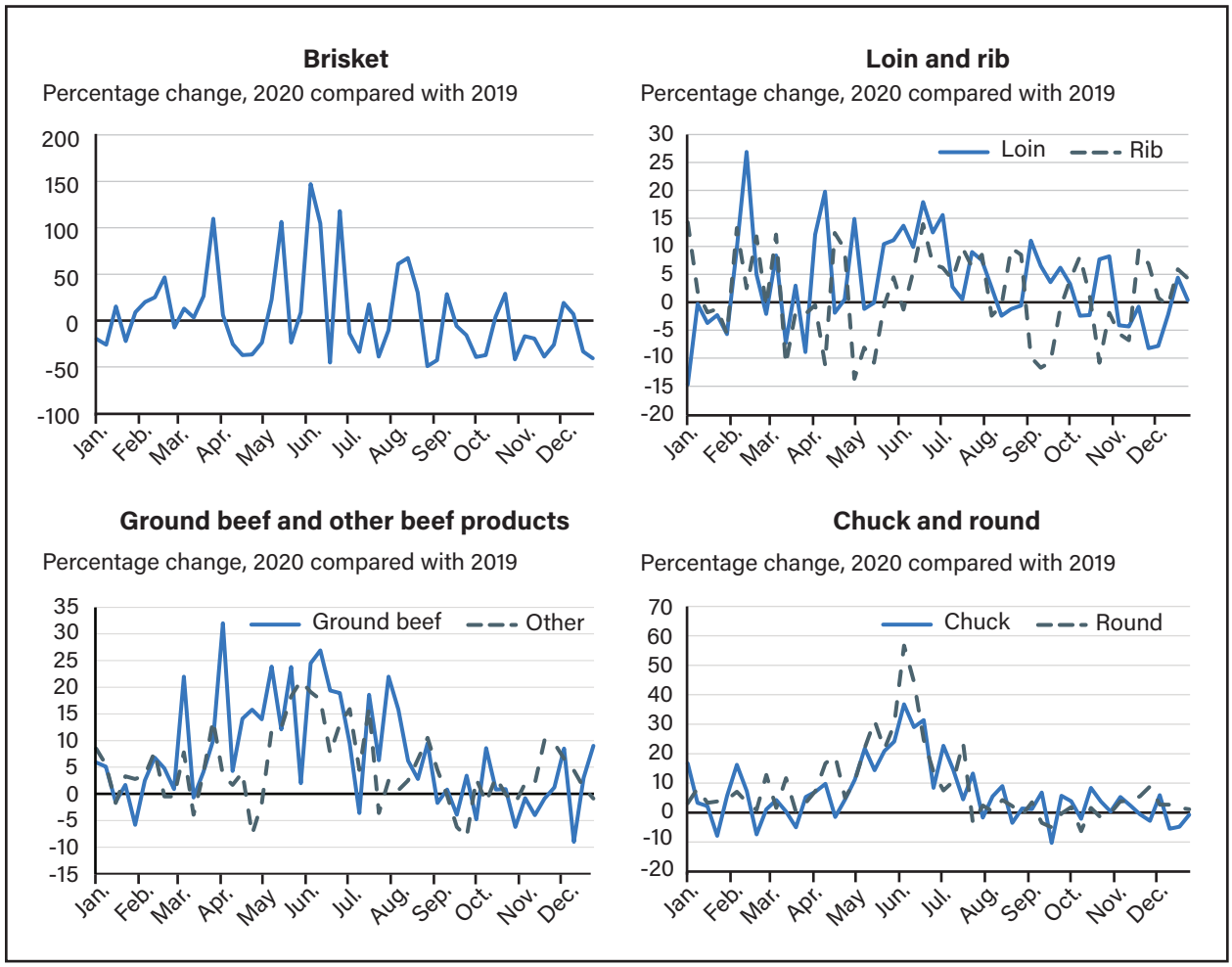
Retail prices

Authors used weekly USDA, AMS reports on advertised prices at major retail supermarket outlets for beef, pork, and chicken (USDA, AMS, 2021g; USDA, AMS, 2021h; USDA, AMS, 2021i)[7] in this section. The reports summarize data for several types of meat products grouped into main categories. The next graphs depict the percentage change in the weighted average price by type of meat between 2020 and 2019.

Beef

For beef, AMS weekly retail data comprises seven main categories, with each category containing several items. The categories are rib, loin, round, chuck, brisket, ground beef, and other. The average price for beef overall was 5 percent higher in 2020 than in 2019.[8]

Figure 10
Agricultural Marketing Service weekly average retail beef prices percentage change, 2019–20



Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "National Retail Report—Beef" (2021g).

[7]USDA, Agricultural Marketing Service gathers publicly available information on the number of stores that feature a type of meat, reports a weighted average price, and summarizes it into the national retail reports for pork, beef, and poultry.

[8]For each main meat category, we compute a weighted average price where the price of each item is weighted by the number of stores that featured the item.

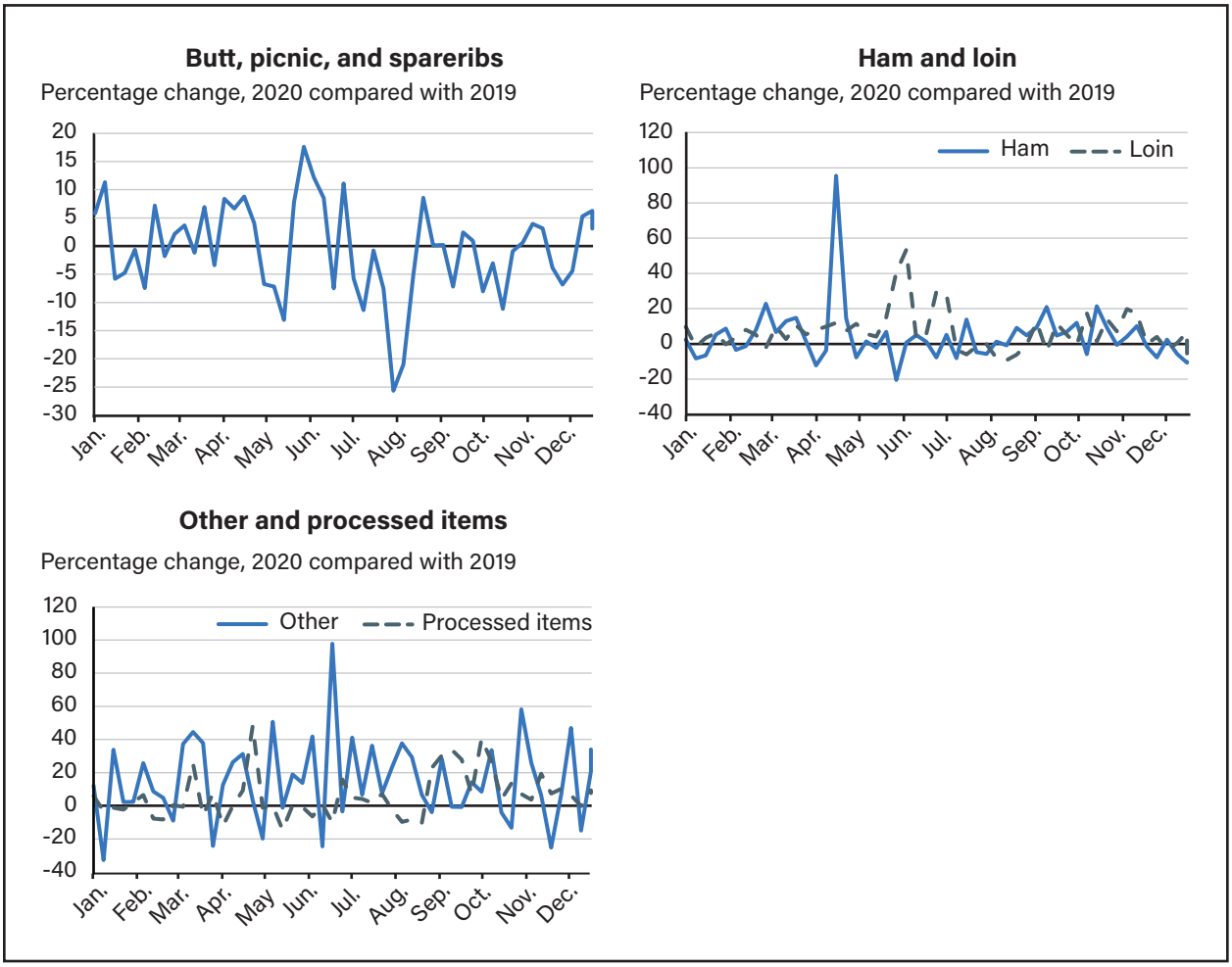
Prices for brisket were volatile in the spring; the price spiked to nearly 110 percent of the 2019 price in the last week of March 2020, but then fell and spent most weeks of April 2020 below the 2019 price. Brisket continued to fluctuate throughout the year and averaged 5 percent higher in 2020 than 2019 (figure 10). Prices of other beef products fluctuated as well but were not as volatile as brisket. On average, loin prices were 3 percent higher than in 2019, while rib prices were 1 percent higher than 2019 (figure 10). Prices for beef chuck and round steadily increased during April, May, and June relative to 2019 monthly prices, after which they generally declined (figure 10). Average 2020 prices were 7 and 8 percent higher than in 2019 for chuck and round, respectively. Ground beef prices were higher for most of 2020 compared with 2019, especially in March, April, June, and August (figure 10). Overall, 2020 ground beef prices were 7 percent higher than in 2019. The 2020 average price of the beef "other" category, which includes cube steaks and stew, was 5 percent higher than in 2019.

Pork

For pork, AMS weekly retail data is divided into five main categories, with each category containing several items. These categories are butt, picnic, and spareribs; ham; loin; other; and processed items. The average price for pork overall was 6 percent higher in 2020 than in 2019.

Prices for the butt, picnic, and spareribs category were relatively stable in 2020 compared with other pork products, mostly staying within 20 percent of 2019 weekly prices (figure 11). Featured prices for this category dropped in May and August 2020, increased at the beginning of summer and remained more stable for the rest of the year. On average, the 2020 prices for this category were on par with prices in 2019.

Figure 11
Agricultural Marketing Service retail average pork prices percentage change, 2019–20

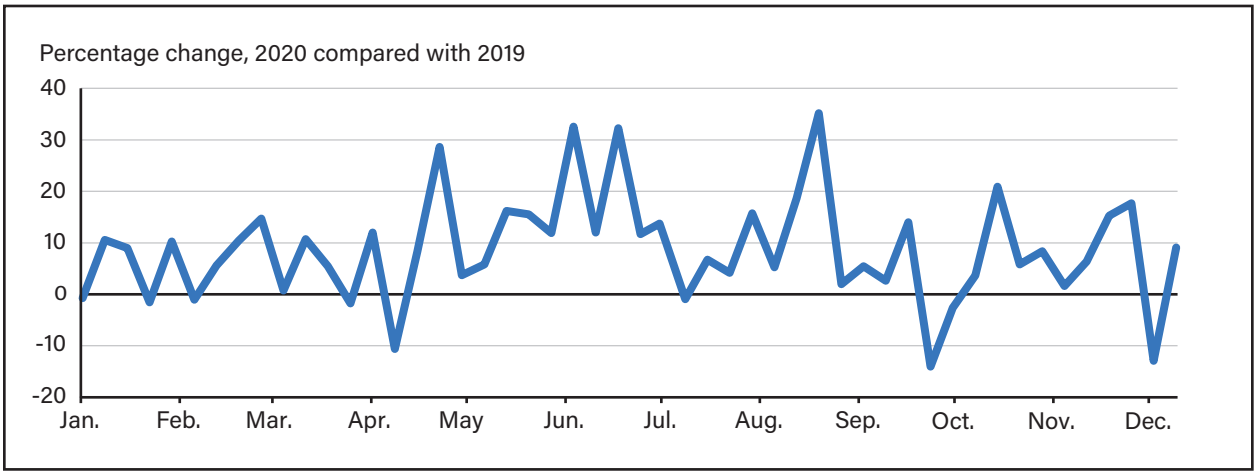


Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "National Retail Report—Pork"(2021h).

The 2020 featured prices for the pork loin category were, on average, 7 percent higher than 2019 retail prices, with the highest year-over-year increase in prices occurring in June (54 percent) and July 2020 (30 percent higher) (figure 11). The price of ham was highly volatile in the spring; in early April 2020, the price of ham fell to about 12 percent below the 2019 price but quickly spiked to nearly double the 2019 price in the week ending April 17, 2020. It then fell once more and was about 8 percent below the 2019 price by early May 2020. It was steadier for the remainder of the year. Overall, ham prices were 4 percent higher in 2020 than in 2019. The pork "processed items" category includes items such as sliced and precooked bacon, sausages, and ground pork. Overall, 2020 prices for this category were 6 percent higher than 2019 prices (figure 11). Prices increased 25 percent in the third week of March 2020 and by 48 percent in the last week of April 2020. Mid-summer decreases in prices were followed by increases throughout the rest of the year. The pork "other" category includes items such as deli cooked back ribs, pulled pork, and feet. Retail prices in 2020 for this category were, on average, 15 percent higher than in 2019 (figure 11). Prices followed a pattern of down-swings and upswings throughout the year, with the highest increases observed in March, May, June, October, and December.

The USDA National Retail Report—Chicken surveys conventional, organic, and specialty chicken products. Conventional chicken data includes fresh, frozen, and precooked chicken products. At the onset of the pandemic, chicken prices were on average, 6 percent higher than in 2019, but were 11 percent lower in the second week of April. Following that week, prices were higher than in 2019 for most of the summer weeks. On average, 2020 chicken featured prices were 9 percent higher than in 2019, with the highest price occurring in June and August (32 and 35 percent above 2019 prices) (figure 12).

Figure 12
Agricultural Marketing Service retail weekly average chicken prices percentage change, 2019–20



Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "National Retail Report—Chicken" (2021i).

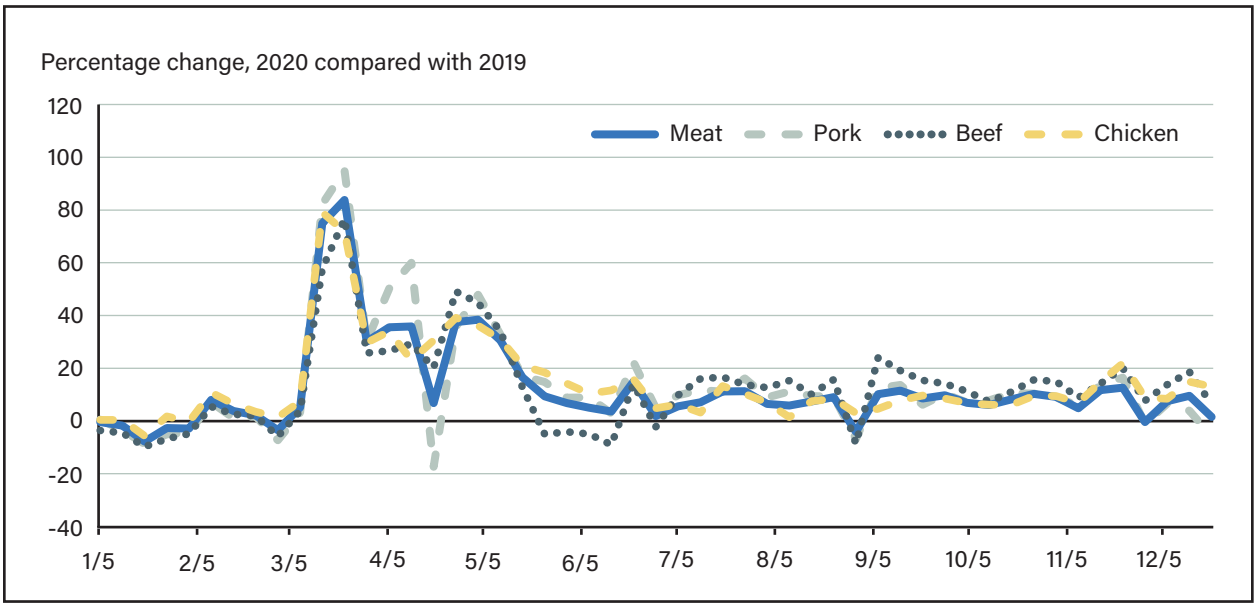
Retail Purchases

The graphs below show the percentage change in weekly retail sales by volume between 2020 and 2019 using Information Resources, Inc.'s (IRI) Weekly Retail and Household COVID-19 Response Data. Prior to mid-March 2020, total meat volumes purchased in grocery stores were close to 2019 values (figure 13). Retail meat sales spiked relative to 2019 sales in the week ending March 15, 2020, reflecting a surge in FAH demand immediately after WHO declared COVID-19 to be a global pandemic. Sales reached their peak in the following week at 84 percent above 2019 sales. Sales then declined, falling to 7 percent above 2019 sales in the week ending April 19, 2020. By this point, slaughter rates of hogs and cattle began to decline, but due to the delay in getting freshly slaughtered meat to grocery stores, it is unlikely the drop in sales that week reflects the decline in slaughter. It is more likely consumer demand dropped that week because people had purchased so much meat in the previous weeks, and partly because the Easter holiday was April 21,2019, 1 week earlier than in 2020. Total meat sales increased again in May, peaking at 38 percent above 2019 sales in the week ending May 3. After that, they fell and were more in line with 2019 sales for the rest of the year, though mostly stayed above 2019 levels. Figure 13 roughly follows the trend in total FAH expenditures in 2020 compared to 2019 (figure 1). FAH expenditures in 2020 peaked in March, at 20 percent higher than in 2019, and remained higher than 2019 for the rest of the year. This was offset by a decline in FAFH purchases in April and May. By June, as COVID-19 restrictions were lifted, FAFH expenditures partially rebounded, and FAH expenditures were closer to 2019 levels than in the spring.

Sales of beef, pork, and chicken followed similar patterns as overall meat sales with a few exceptions. Pork sales dipped 17 percent below 2019 sales in the week ending August 19, 2020, much lower than other meat types; this was almost entirely due to a drop in ham sales. Beef sales fell to below 2019 levels for 5 weeks between May and June (reaching a low of 9 percent below 2019 sales the week ending June 14, 2020); this could be partially due to the Memorial Day and Father's Day holidays when people often cook meat at home. It could also reflect reduced supplies of beef due to the decrease in slaughter rates in earlier weeks. By contrast, chicken sales remained above 2019 sales for every week of 2020 after January.

The high levels of cold storage stocks and beef and pork production in early 2020 may have helped the industry handle demand despite the disruptions to supply in April and May. In addition, the high levels of retail demand likely contributed to the decline in cold storage stocks of chicken and pork through the year. The shifting of products from the FAFH to retail markets also provided additional supply for grocery stores to the extent that supply chains were able to shift these products, which was challenging for reasons discussed earlier.

Figure 13
Percentage change in total sales by volume for all meat, pork, beef, and chicken, 2020 versus 2019



Note: "Meat" includes pork, beef, and chicken. It also includes other products not included in these categories, such as turkey, lamb, veal, and some processed products for which a single animal source could not be identified.

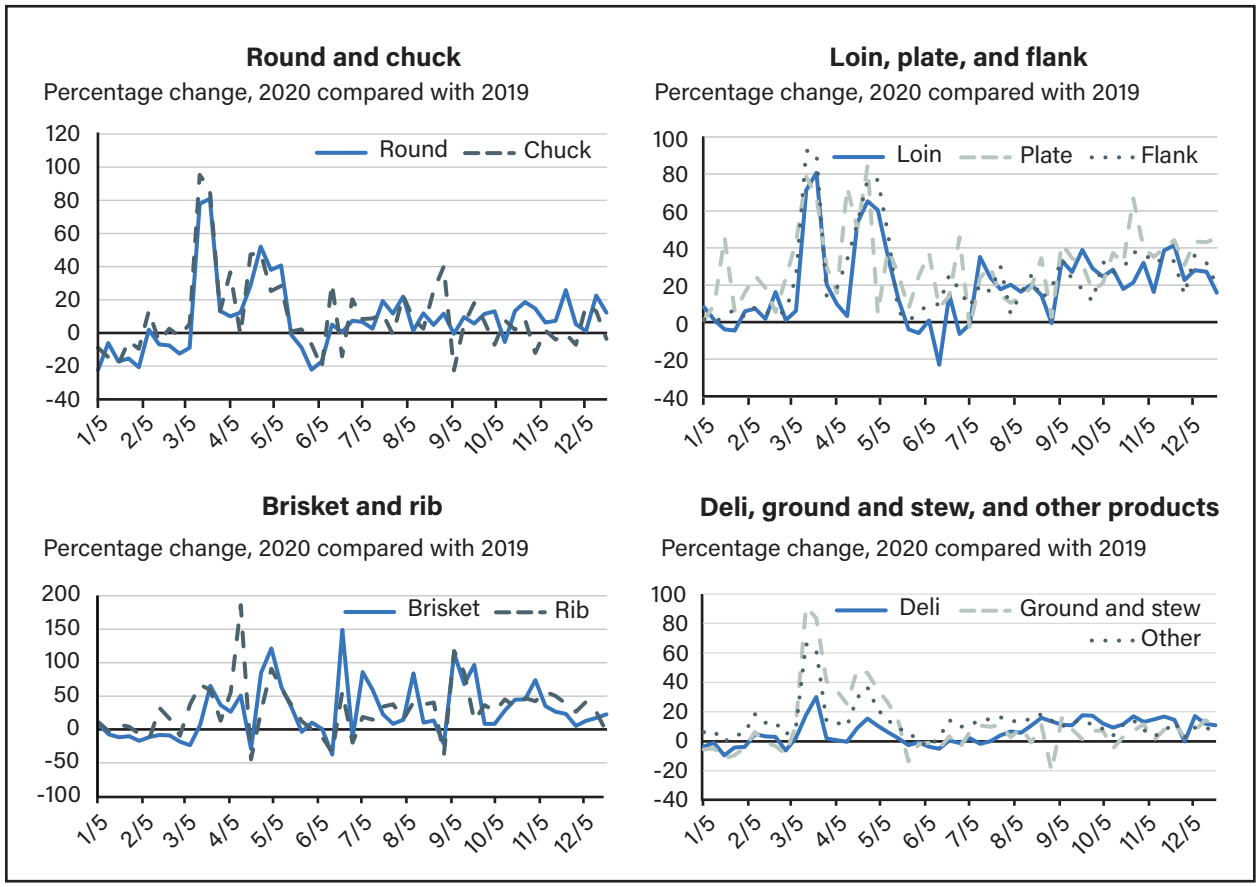
Source: USDA, Economic Research Service using data from Information Resources, Inc. Weekly Retail and Household COVID-19 Response Data (2021).

Beef Products

Sales of all beef products rose in mid-March 2020 relative to 2019, though the increases for brisket, ribs, and deli products were smaller than for other products (figure 14). For brisket and ribs, this could be because these products are more typically served in restaurants than cooked at home; grocery stores may not have heavily stocked these items; and/or consumer demand may not have been high. Brisket and ribs both had later spikes in April and May 2020; this could reflect supplies being shifted from foodservice markets to retail markets and/or a growing consumer interest in cooking them at home. Some beef products also had later spikes in the weeks ending June 21 and September 6, 2020, which was likely due to Father's Day and Labor Day, when home grilling is popular. For deli products, demand might have been stunted due to a reduction in deli counter service at grocery stores and/or a reduction in demand for deli meats as people had less need to pack lunches for work and school.

Between May and June 2020, sales of most beef products dipped below 2019 sales for at least 1 week. The biggest relative declines in sales were for brisket, loin, round, and ribs. The availability of these products may have temporarily declined following slaughter disruptions in late April to early May 2020. It is also possible that consumer demand simply declined after several weeks of purchasing high quantities of beef.

Figure 14
Percentage change in beef product sales by volume, 2020 versus 2019



Source: USDA, Economic Research Service using data from Information Resources, Inc. Weekly Retail and Household COVID-19 Response Data (2021).

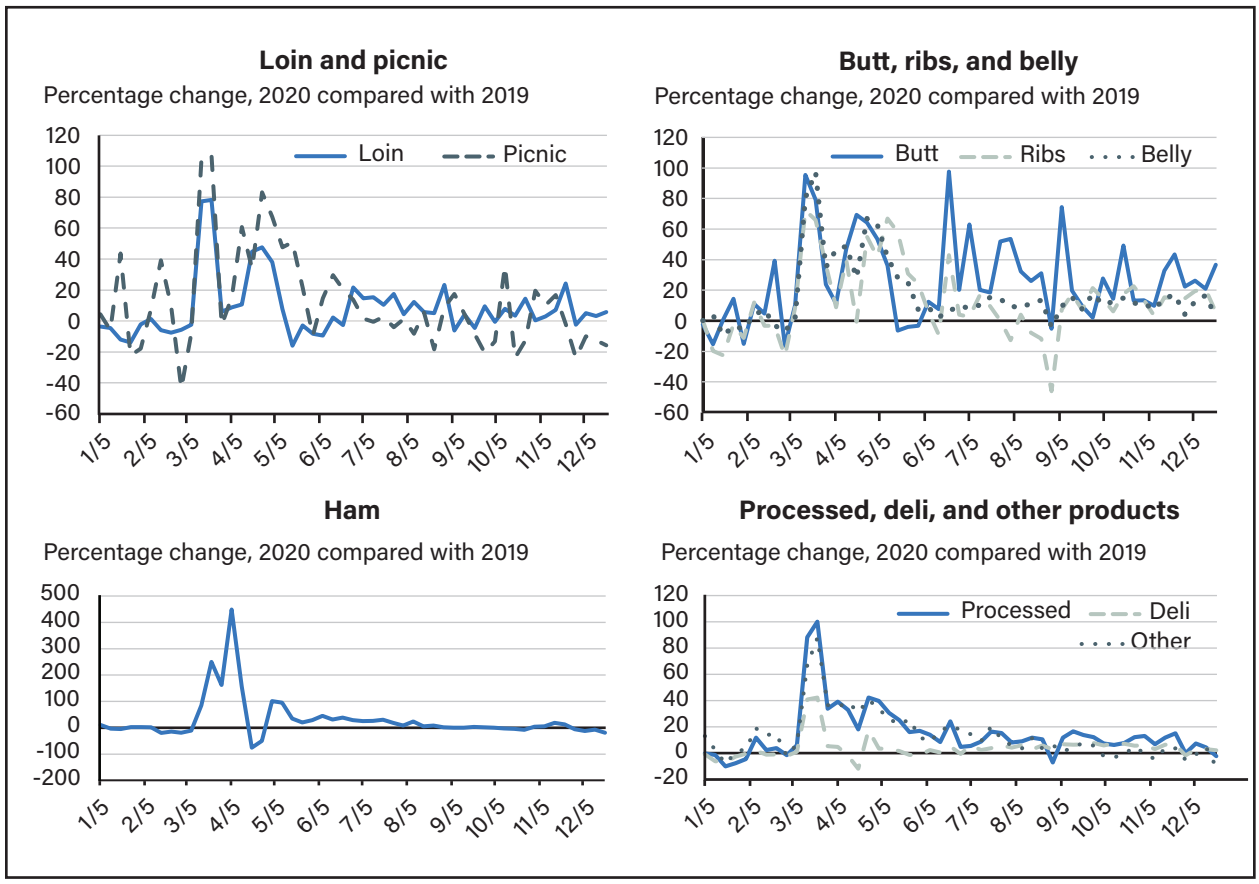
Pork Products

Sales of all pork products increased relative to 2019 in the week ending March 15, 2020. For most products, sales stayed elevated for 1 more week and then fell, mostly staying above 2019 levels but by a lesser amount (figure 15). Ham sales were the exception; after increasing 85 percent over 2019 sales in the week of March 15, 2020, they continued to climb for 3 more weeks, peaking about 449 percent above 2019 sales the first week of April 2020. This was the largest year-over-year increase of any meat product examined. Sales subsequently fell, bottoming out at 75 percent below 2019 sales just 2 weeks later (the week ending April 19, 2020). This accounts for most of the fall in overall pork sales relative to 2019 for that week. After peaking once more to double 2019 sales in the first week of May 2020, ham sales declined to near-2019 levels for much of the remaining year. The volatility in ham sales could be partially explained by the Easter holiday, which fell on April 12, 2020, but about 1 week later in 2019 (April 21). Grocery stores likely had high stocks of ham ahead of this holiday, which consumers may have started purchasing a few weeks early when the pandemic began.

The decline in relative sales the last 2 weeks of April 2020 could reflect high sales in those weeks of 2019 due to Easter falling later in the month.

Sales of pork butt spiked during holiday weeks in June and September 2020, similar to brisket and ribs, and likely due to its popularity for home grilling. Other products had steadier sales throughout the year after June. Overall, deli ham sales saw the lowest increases in demand of any pork product in the spring, similar to deli beef sales.

Figure 15
Percentage change in pork product sales by volume, 2020 versus 2019



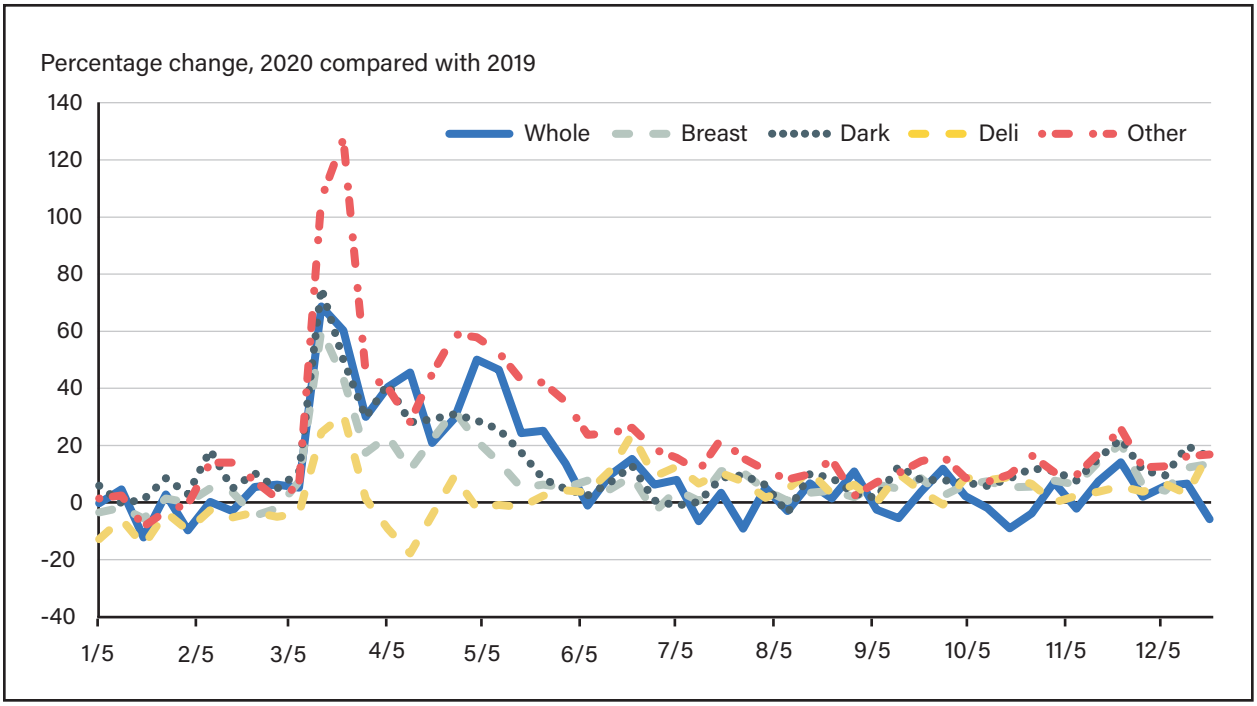
Source: USDA, Economic Research Service using data from Information Resources, Inc. Weekly Retail and Household COVID-19 Response Data (2021).

Chicken Products

The biggest increase in sales for chicken products in March 2020 was for "other" products, which includes most processed chicken. Sales stayed relatively high throughout the spring and early summer (figure 16). Deli sales increased the least in March 2020 and subsequently fell by more relative to 2019 prices than other chicken products, similar to pork and beef deli products.

Figure 16

Percentage change in sales of chicken products by volume, 2020 versus the same week in 2019



Source: USDA, Economic Research Service using data from Information Resources, Inc. Weekly Retail and Household COVID-19 Response Data (2021).

Conclusion

The onset of the COVID-19 pandemic was an unprecedented shock to the U.S. meat and poultry industries. Consumers suddenly shifted their purchases from foodservice to retail as they began to follow social distancing guidelines. Meanwhile, workers at many meatpacking plants fell ill with COVID-19, creating supply constraints as plants could no longer operate at full capacity. Together, these shifts in supply and demand caused reactions throughout the meat and poultry supply chains.

Slaughter of fed cattle and hogs fell dramatically as packing plants lost operational capacity. Slaughter rebounded quickly; by June 2020, slaughter rates of both hogs and cattle were back to above 90 percent of 2019 levels. Despite the fast rebound, a large backlog of animals still needed to be slaughtered, so supply chain problems persisted past the spring. Subsequent waves of COVID-19 did not cause additional disruptions to slaughter, though these waves were qualitatively different from the first wave because there was more known about how COVID-19 spreads. Plants had time to implement health protocols, and vaccines were eventually rolled out.

The changes in demand and supply in the early months of the pandemic resulted in price shifts of livestock and wholesale meat prices. Wholesale meat prices increased substantially, while livestock prices generally remained low. This generated historically large price margins between livestock and wholesale prices. Upstream from plants, the pandemic caused problems for U.S. beef and hog producers. As livestock prices fell and slaughtering slots disappeared, producers had to either try to sell their animals for low prices or hold on to them, driving up their costs.

Despite disruptions to animal slaughter, grocery stores supplied consumers with large amounts of meat in spring 2020. Weekly retail purchases of meat soared, reaching over 80 percent above 2019 sales volumes. Purchases of some products for some weeks in the spring and summer were lower than in 2019, a potential result of supply constraints. However, other products compensated for these declines, and total meat purchases remained above 2019 levels for most of 2020. This is consistent with the increase in total nominal food at home (FAH) and the reduction in food-away-from-home (FAFH) expenditures in 2020 compared with 2019. High cold storage availability of meat and high levels of animal slaughter in early 2020 likely helped supply the retail sector with large meat quantities. The subsequent decline in pork and chicken cold storage in mid-2020 suggests that high sales volumes may have depleted them.

Future research is needed to evaluate how meat and poultry supply chains can be strengthened so they suffer fewer disruptions in future crises. This could include research on what types of packing plants (e.g., small versus large) were more likely to close during the spring and what types of safety measures helped plants protect their workers. Other steps along the supply chain can also be considered; for example, how producers were able to slow the growth of their animals while waiting for slaughtering rates to increase. By focusing on all steps of the supply chain, research can yield important lessons for how the industry can be better prepared for future crises.

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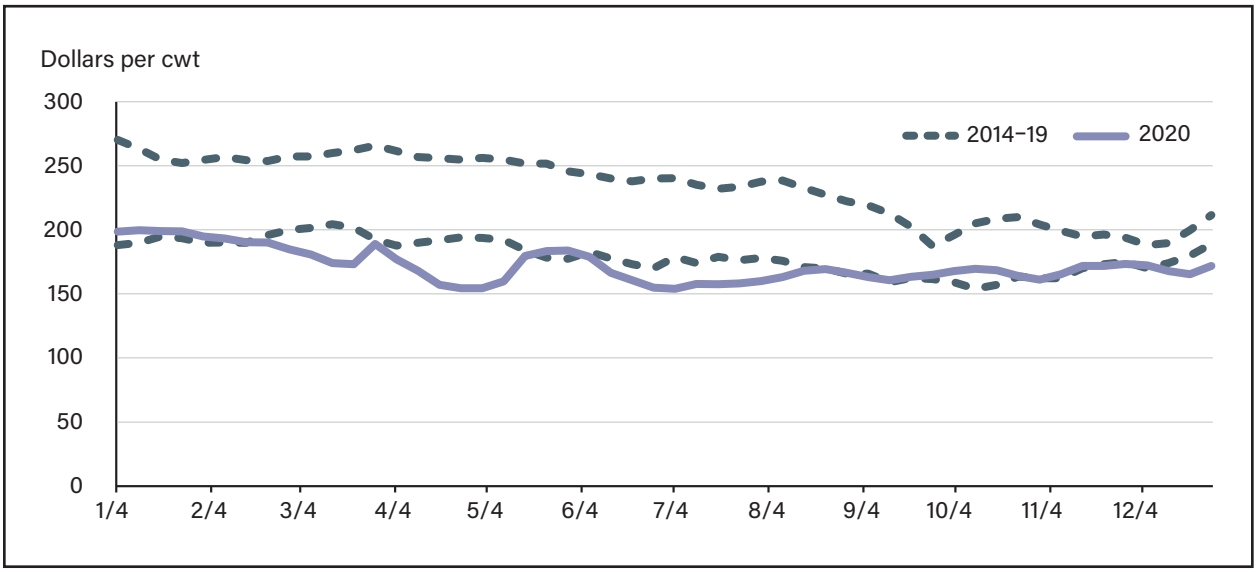
Appendix A: Additional Figures

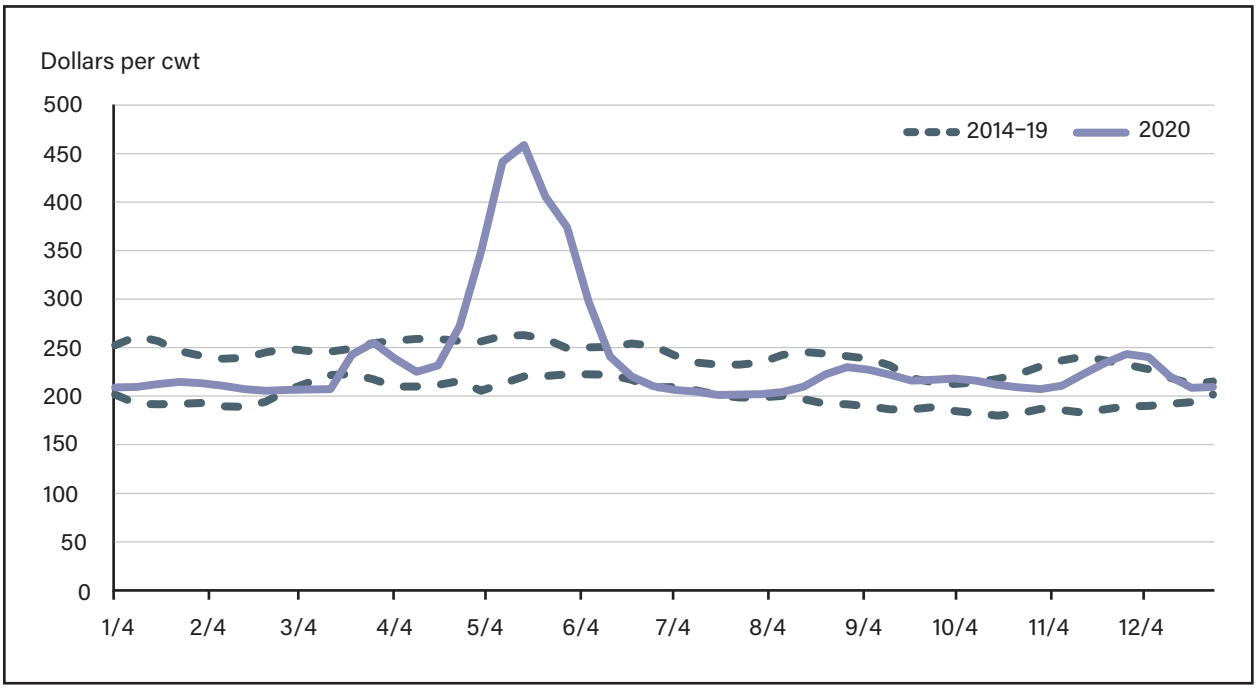
Figure A1
Dressed steer price in 2020 versus 2014–19 price range



Note: cwt = hundredweight.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "5 Area Weekly Weighted Average Direct Slaughter Cattle" (2021a).

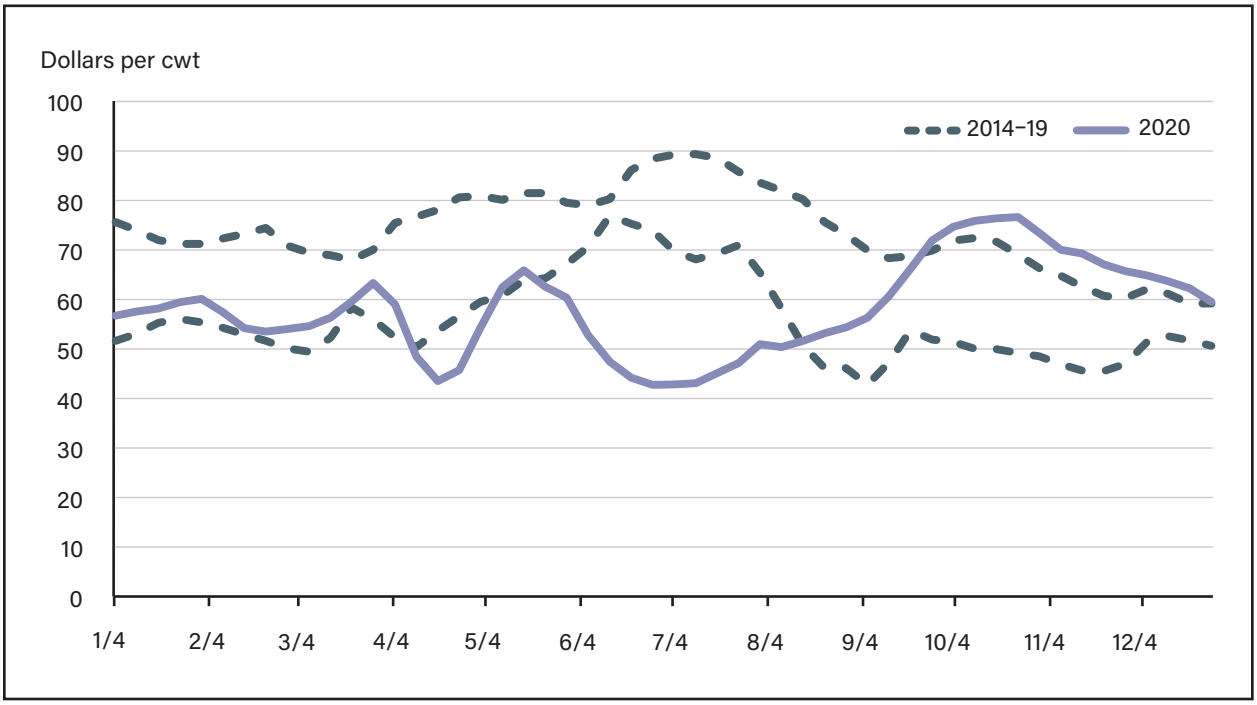
Figure A2
Choice beef carcass cutout price in 2020 versus 2014–19 price range



Note: cwt = hundredweight.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "National Weekly Boxed Beef Cutout and Boxed Beef Cuts—Negotiated Sales" (2021c).

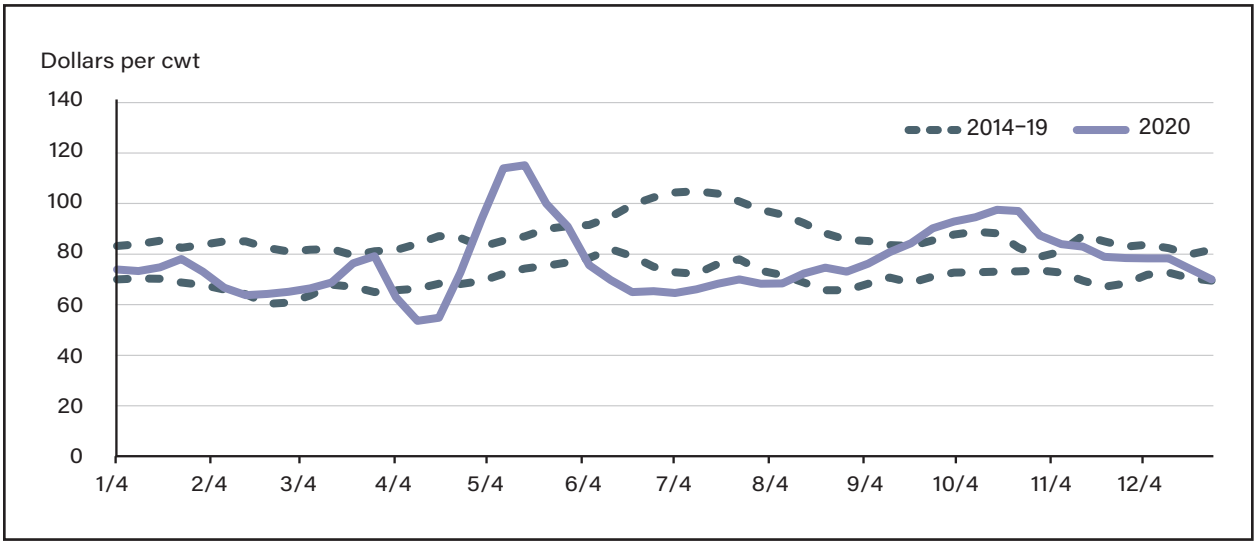
Figure A3
Hog price in 2020 versus 2014–19 price range



Note: cwt = hundredweight.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "National Daily Base Lean Hog Carcass Slaughter Cost" (2021b).

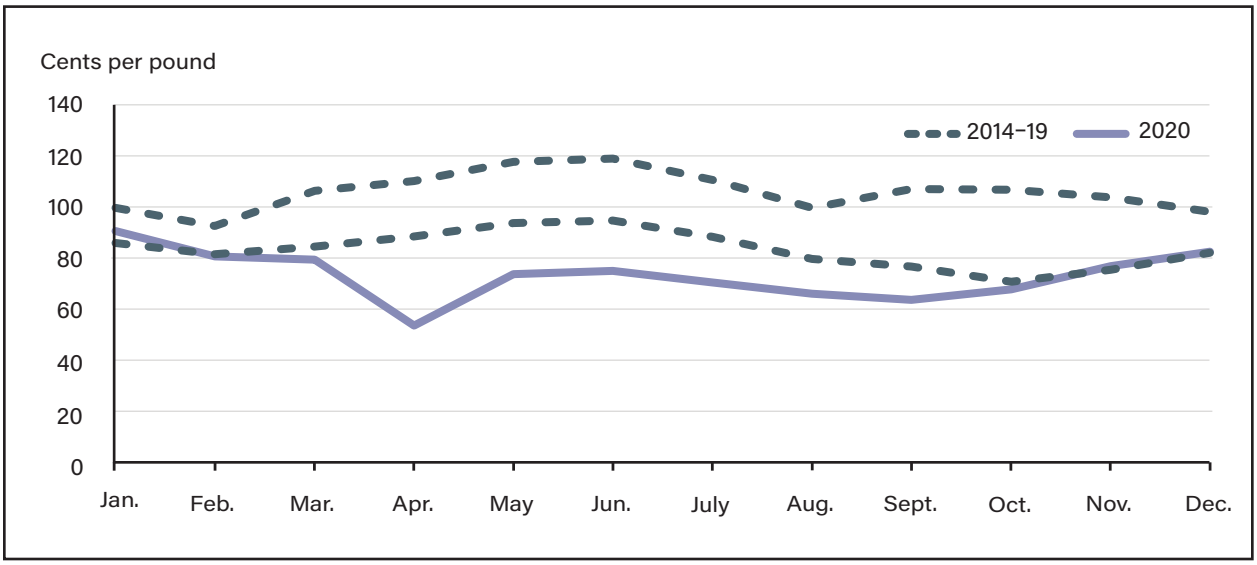
Figure A4
Pork carcass cutout price in 2020 versus 2014–19 price range



Note: cwt = hundredweight.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "National Weekly Pork Report FOB Plant—Negotiated Sales" (2021d).

Figure A5
Wholesale broiler price in 2020 versus 2014–19 price range



Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "Weekly National Whole Broiler/Fryer Report" (2021e).

Figure A6
Beef primal cutout prices and price ratio to carcass cutout in 2020 versus 2014–19 price range

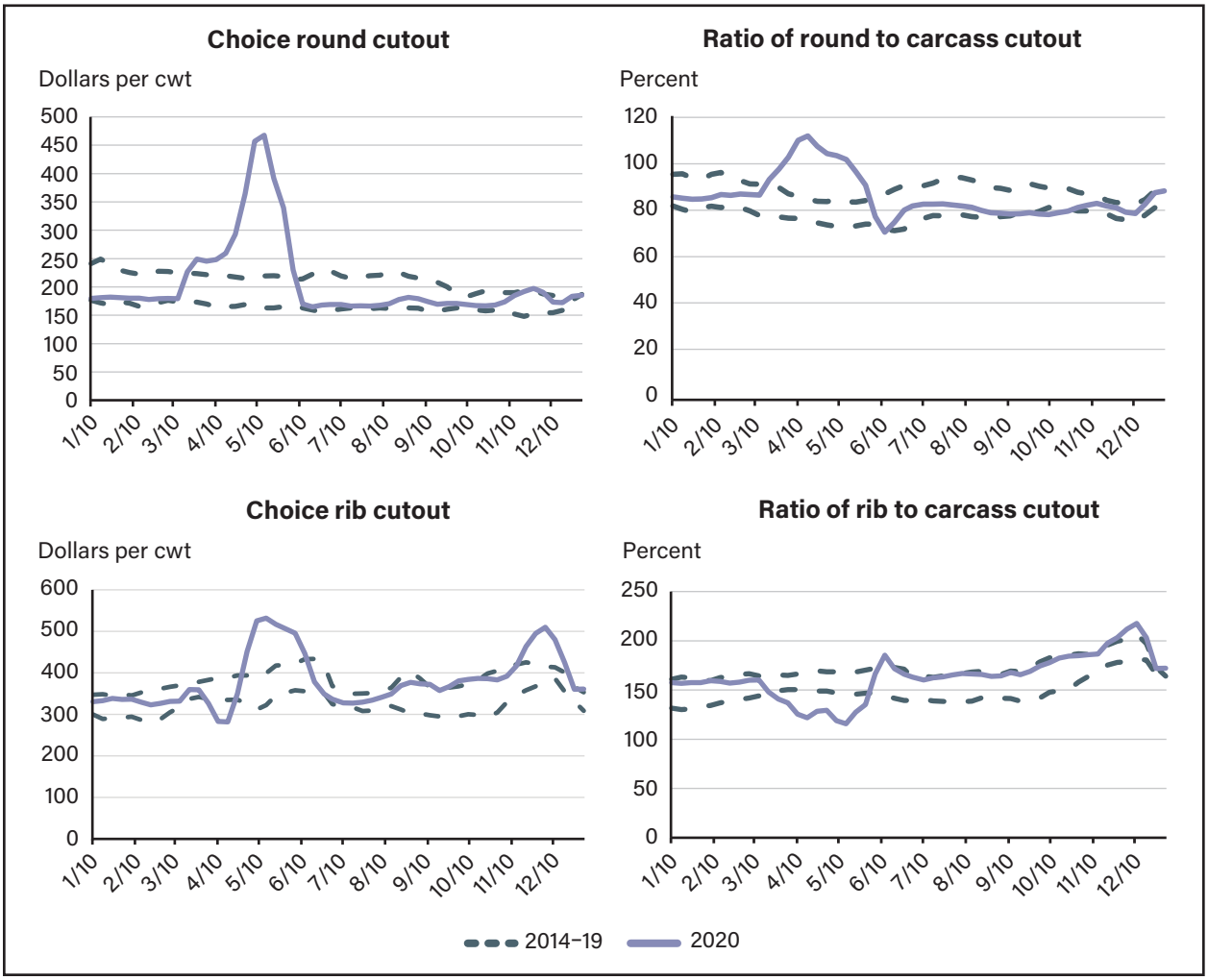


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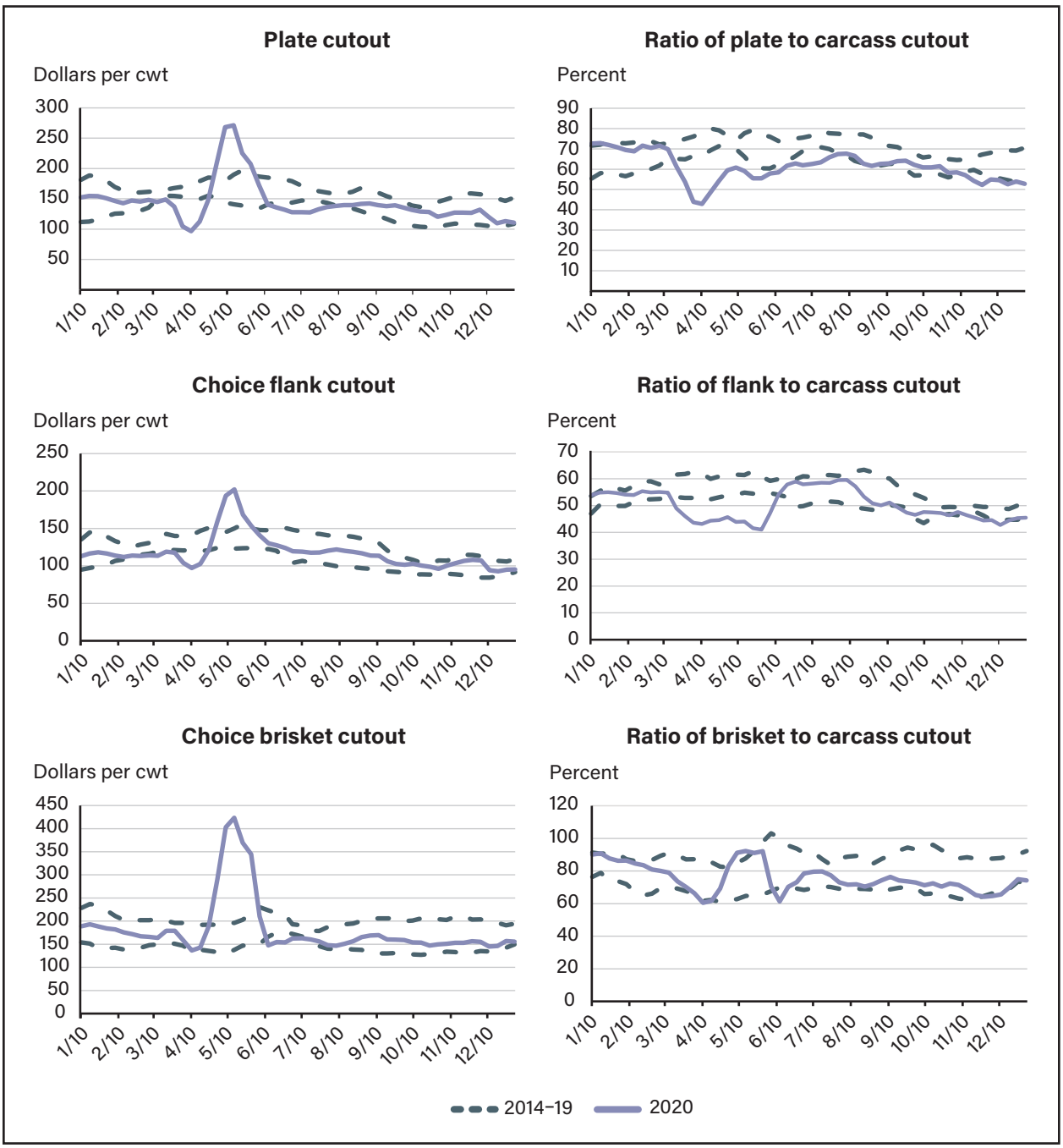
Figure A6

Beef primal cutout prices and price ratio to carcass cutout in 2020 versus 2014–19 price range



Note: cwt = hundredweight.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "National Weekly Boxed Beef Cutout and Boxed Beef Cuts—Negotiated Sales" (2021c).

Figure A7

Pork primal cutout prices and price ratio to carcass cutout in 2020 versus 2014–19 price range

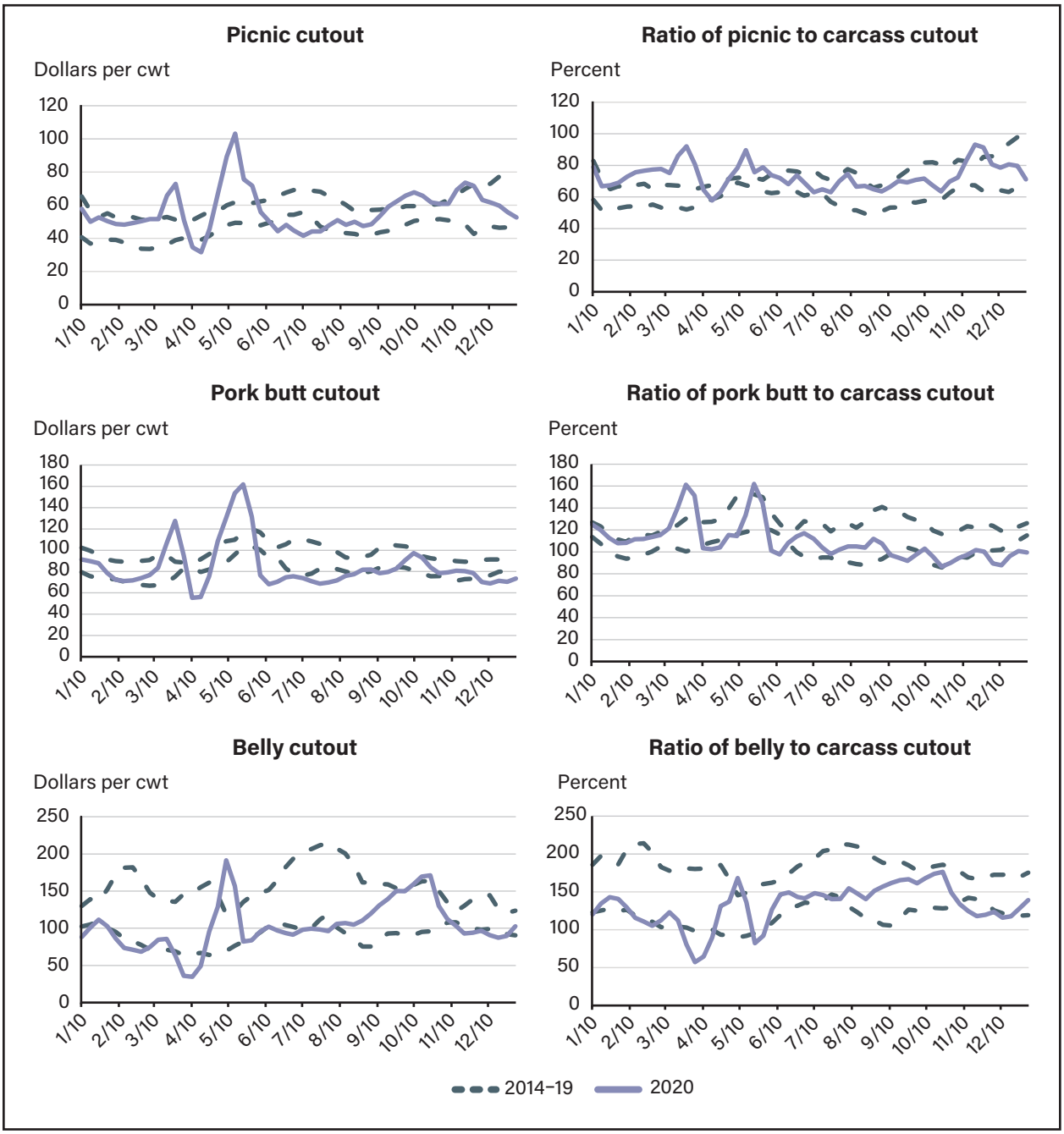


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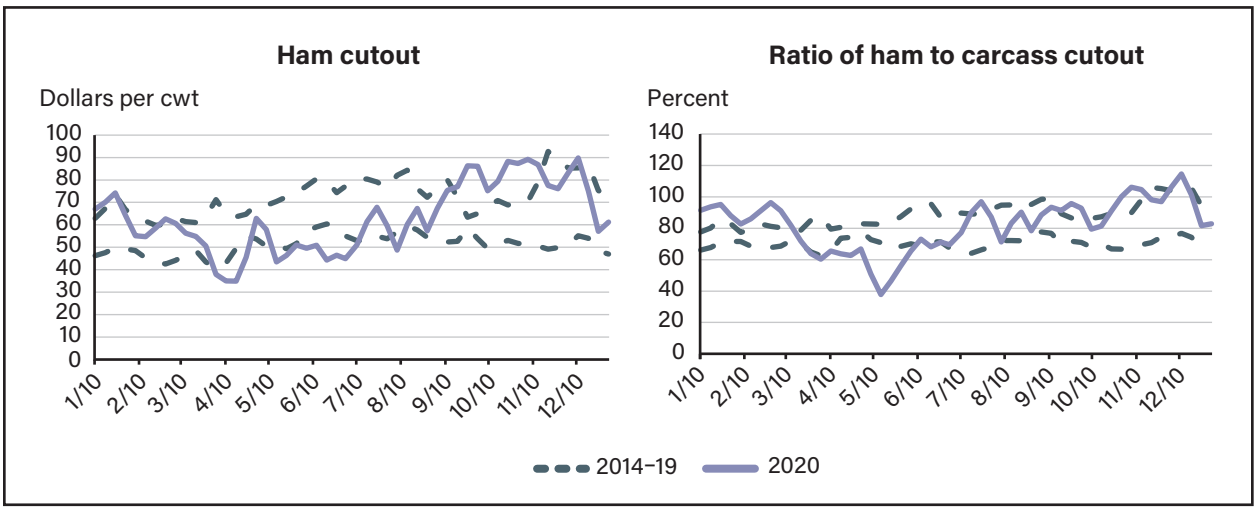
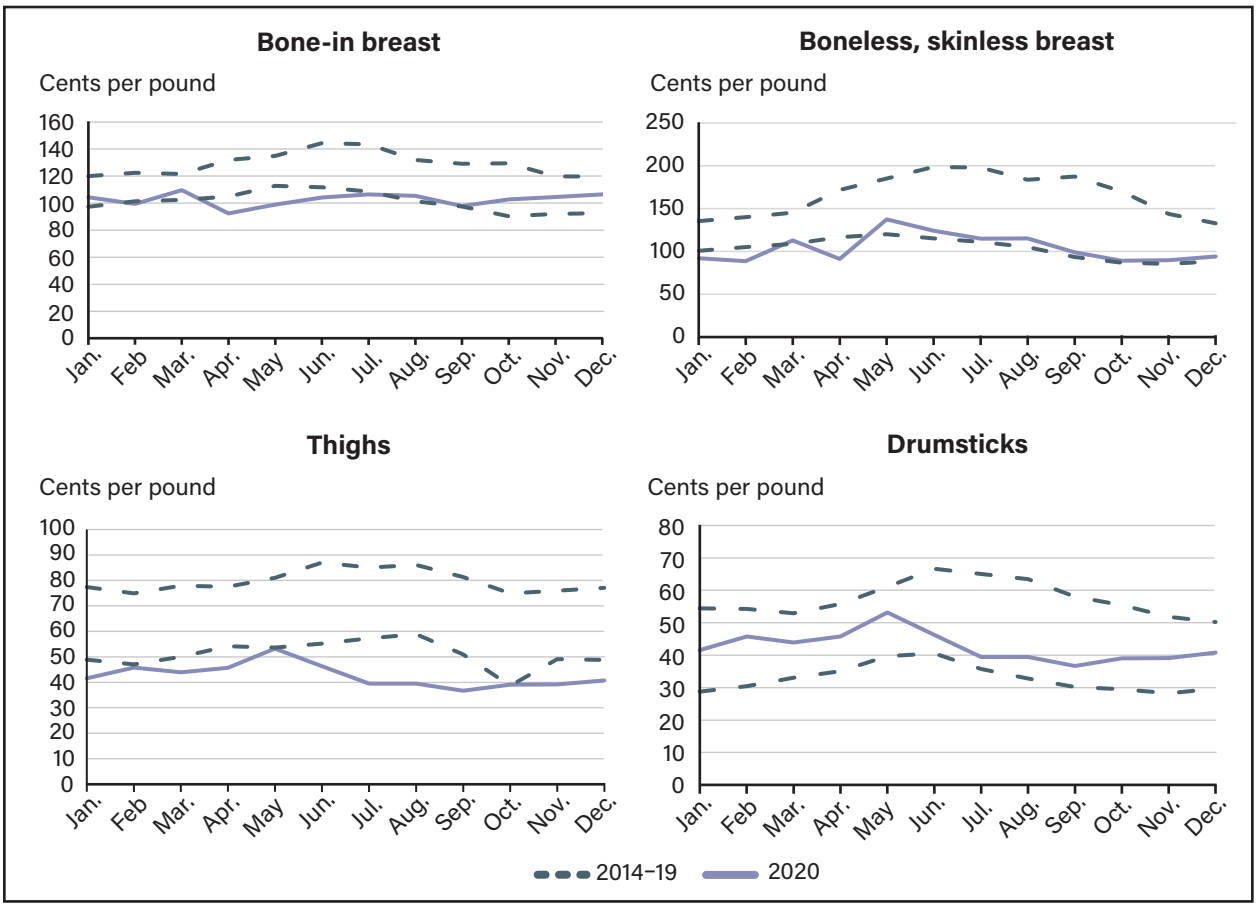
Figure A7
Pork primal cutout prices and price ratio to carcass cutout in 2020 versus 2014–19 price range



Note: cwt = hundredweight.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "National Weekly Pork Report FOB Plant—Negotiated Sales" (2021d).

Figure A8
Wholesale chicken part prices



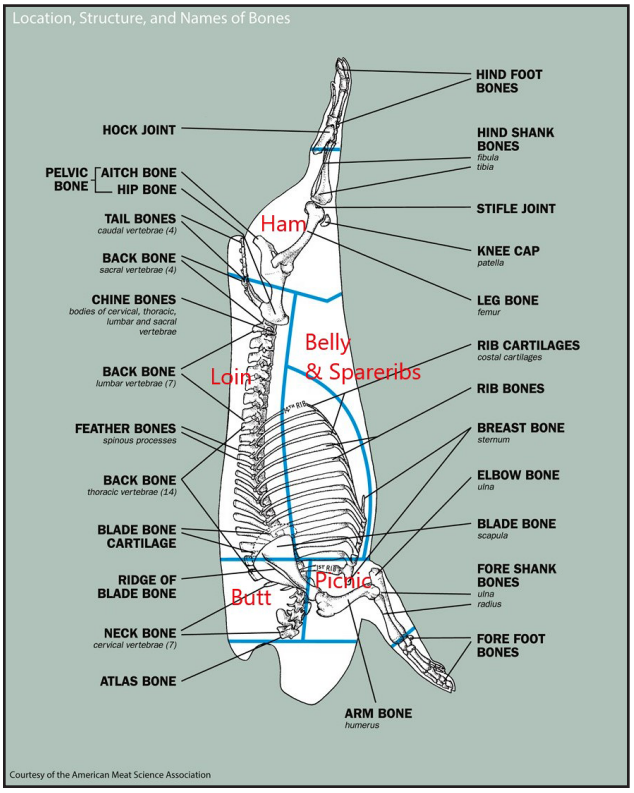
Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service "Monthly Northeast Broiler/Fryer Parts Report" (2021f).

Appendix B: Basic Guide to Pork and Beef Primal Cuts

The USDA's Agricultural Marketing Service publishes Institutional Meat Purchase Specifications (IMPS) for use by the meat industry (USDA, AMS, 2020a; USDA, AMS, 2020b). The figures below are taken from their guides to pork and beef cuts. Each illustration shows the major bones in the carcass and where the cuts are made to make the primal. Authors added the names for the primals to these figures.

AMS primals for pork are butt, picnic, loin, spareribs, belly, and ham. Pork packers sell some of their pork as whole primals. Packers also sell boneless and other value-added cuts.

Figure B1
Pork primal chart



Source: American Meat Science Association.

Hog carcasses are shaved after slaughter and placed in the cooler with skins on. Primal hams and picnics have some skin on them. In pork, the term "fresh" is used for products that have not been salted or cured. Prior to refrigeration, pork cuts are often packed in salt for preservation, i.e., salt pork. Salt pork, or fatback, is sometimes sold in stores. This is usually made from the fat and skin removed from the loin. Ham and bacon are usually sold cured and smoked. Cures are a combination of ingredients. The largest dry component of a cure is salt.

The whole butt contains part of the blade bone or scapula. Processors cut a layer of fat and skin off the butt. The neck bones are also removed from the butt. Pork butt is used in making pulled pork, pork roasts, and is sliced into pork steaks. In the grocery store, butt and the retail cuts from it are moderately priced pork.

Picnic has a layer of skin on it. It is a boney cut with a lot of connective tissue. Fresh picnic can be roasted. Some picnics are smoked and cured like ham. Picnics are often boned for use in sausage and other processed meat products. When available, fresh or smoked picnics tend to have lower prices than most pork cuts at the grocery store.

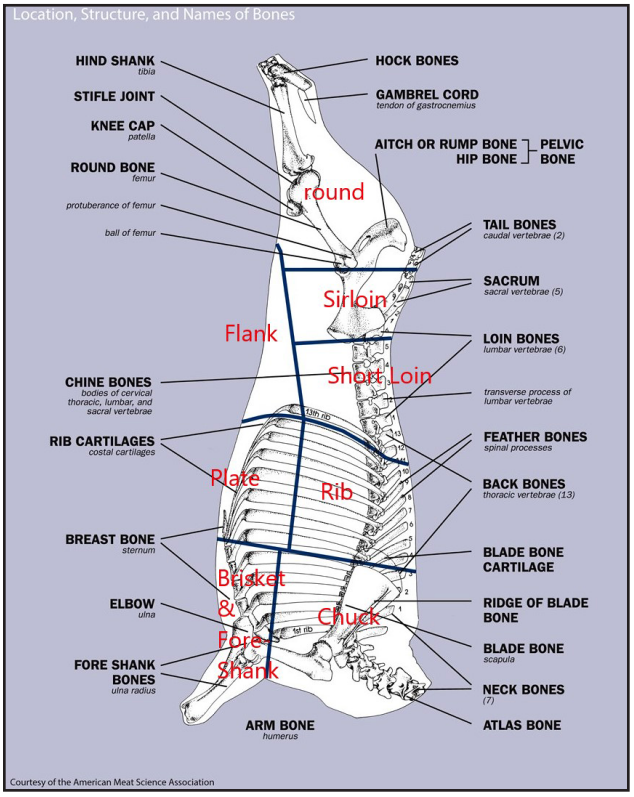
Loins are used to make pork chops. Sometimes people will cut larger pieces of bone-in or boneless loin for roasts. Loins are also a skinless cut. Pork chops tend to have higher retail prices than most other fresh pork cuts.

Belly, the flesh between the ribs and the skin, is used to make bacon, generally an expensive meat. At the wholesale level some bellies are sold with the skin on; most are skinned prior to sale or processing. Spareribs are the ribs inside the belly cut. Spareribs are a popular meat for barbecue. Both bacon and spareribs are big in foodservice. Cooking spareribs well is time-consuming and may require specialized equipment. Spareribs are also an expensive cut compared with other fresh pork cuts.

Most ham is cured and smoked. Sometimes stores carry fresh hams to be roasted. Ham is a commonly used meat in sandwich shops but also is a big seller at grocery stores. The name-brand boneless and sliced ham prices are high relative to most fresh pork cuts.

The USDA, AMS beef primals are chuck, brisket, rib, plate, loin, flank, and round. Figure B2 shows sirloin and short loin. These two cuts make the primal loin. Bone-in short loin is used to make loin, T-bone, and porterhouse steaks. If packers want to sell bone-in loins, they will split the short loin and sirloin. If they want to sell boneless steak cuts—for instance, strip loins and tenderloins—they will not split the short loin and sirloin.

Figure B2
Beef primal chart



Source: American Meat Science Association.

In figure B2, a large part of the brisket lies under the foreshank. The value of the shank meat is included in the chuck primal. Brisket is a popular barbecue item. It is also used in corned beef. Given its popularity in barbecue restaurants, brisket use is probably higher in foodservice than at home. The primal brisket has a thick layer of fat, the deckle, and part of the breastbone and the connecting ribs. AMS calculations assume that the brisket is nearly 23 percent fat and bone (AMS 2021j). The fat and bone are part of the brisket primal but have a relatively low value.

Chuck tends to be turned into roasts. Chuck roasts are best cooked slowly with moist heat or in slow cookers. Analysts believe large volumes of chucks are boned for use in ground beef or other processed meat. Chuck roasts are likely to be consumed at home. Chuck cuts tend to be among the lowest-priced beef cuts. Round is similar to chuck in that it used to produce beef roasts. When round prices are low, more rounds get turned into processing beef. Round roasts tend to be best cooked with high, dry heat. Round cuts are generally more tender and expensive than chuck cuts. Round cuts do not seem to be a large seller in foodservice.

The rib and loin are used to make steaks and the occasional rib roast. Rib and loin are expensive cuts at wholesale and retail. These steaks are big sellers at fine-dining restaurants but are also quick to grill or broil at home. The bone-in and boneless sirloin cuts tend to be less expensive at wholesale and retail than the rib and short loin cuts.

The plate is the classic source of short ribs. With the growth of boneless wholesale and retail beef production, some short ribs now come from chucks. Short ribs are not a big seller. When AMS last updated its cutout calculations, they assumed all plates are boned for processing beef (AMS 2021j). The Choice and Select cutouts for plate are the same because processing meat is not sold based on grades.

The flank is a small part of the carcass. Flank steak is a relatively valuable cut; however, over 50 percent of the flank primal is fat, which lowers its value as a primal (AMS 2021j).