

AN APPLIED ECONOMIC ANALYSIS OF
THE DEMAND FOR PORK PRIMAL CUTS

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by

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ABSTRACT

This study estimates domestic disappearance equations for the six main pork primal cuts (belly, butt, ham, loin, picnic, and rib) to determine the own-price, cross-price, and income elasticities for each cut. These equations were utilized to develop an economic model of the pork industry that was used to determine the impacts that various trade scenarios could have on monthly disappearance, production, exports, and cutout values both for each primal cut and pork as a whole. It was found that the own-price elasticity of bellies was most inelastic and of loins was least inelastic. Of the primal cuts, decreasing exports of bellies had the most detrimental impact on the pork cutout value. Of the main pork exports markets, decreasing exports to China had the most detrimental impact on the pork cutout value.

Chapter 1: Introduction

The average consumer can effectively observe the differences among pork cuts and make purchasing decisions based on these differences. Few American families dive into a pork jowl on Thanksgiving whereas a Thanksgiving ham is commonplace. Furthermore, a fast-food restaurant may top their most widely requested hamburger with a couple strips of bacon, but they would never consider replacing that bacon with, say, a loin roast.

Differences in cuts of pork go far beyond the contrasting appearances, customary uses, and complimentary food pairings, however. Varying pork cuts also come with varying price tags, which also play a role in determining if consumers will choose ham or turkey, or perhaps choose both, at Thanksgiving dinner this year.

Interestingly, much of the research examining demand for pork that has been pursued up to this point has disregarded separability, or the fact that the commodity of pork is actually an amalgamation of various cuts that comprise the whole carcass of a hog. Each of the cuts could have different demand elasticities. By treating cuts as separate commodities, vital insight may be gained into how pork prices move. The objective of this research is to estimate own-price, cross-price, and income elasticities for the six main pork primal cuts: belly, butt, ham, loin, picnic, and rib. These elasticity estimations are then used to develop an economic model of the pork industry that can estimate the implications various trade scenarios could have on the U.S. pork cutout value.

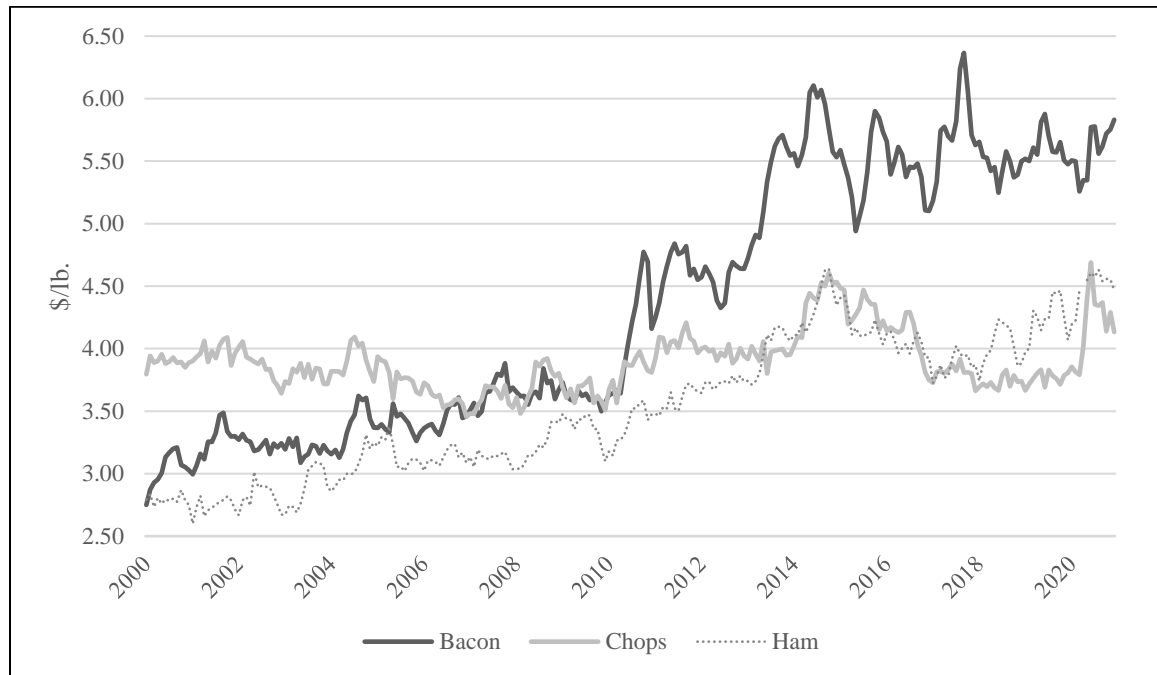
Chapter 1.1 U.S. Pork Demand

To understand the prices of pork cuts and their drivers today, it is imperative to be familiar with how the demand for various pork products has evolved over time, and more generally, the basic history of the pork industry as a whole. First, consider pork

consumption in the United States. Ask U.S. consumers their favorite pork product and myriad answers may ensue. From pork chops to sausage to ribs, pork carcasses offer consumers a gamut of delicious options. However, one product will most likely surface as the frontrunner. Over the past couple decades, the love consumers possess for bacon has skyrocketed. Gone are the days when bacon was solely a breakfast staple. Bacon has successfully found a way to permeate breakfast, lunch, and dinner, and sometimes even the snacks in between. Bacon cheeseburgers, bacon nachos and even bacon ice cream have become offerings on menus in the U.S. In fact, 70 percent of restaurants in the U.S. report serving bacon in some form to their patrons.¹ This has not always been the case. As can be seen in Figure 1, the bacon frenzy is a relatively current phenomenon that picked up steam in the past decade. Bacon's retail price in the U.S. has more than doubled as compared to what it was in 2000.

¹ Russell, A. (2019, November 12). "Is A Bacon Shortage Coming?" *Texas A&M AgriLife*.

Figure 3. U.S. Retail Pork Prices



Source: U.S. Bureau of Labor Statistics CPI Average Price Data, U.S. city average

Some attribute bacon's newfound demand surge to the leanness of the modern pork carcass. This characteristic change in pork carcasses leads to leaner bacon that is exceptionally palatable for consumers.² Pork carcasses have evolved to be leaner over time in response to pricing incentives that reward producers for producing a leaner product. According to the United States Department of Agriculture (USDA) Economic Research Service, "As the popularity of carcass pricing programs grew, leaner hogs became available at more desirable weights. Producers introduced new genetics, improved nutrition, and enhanced management that increased growth rates, feed

² Blythe, B. (2019, June 4). "Bacon Demand Is Higher Than Ever as Price Volatility Grows." *CME Group*.

efficiency, and lean meat composition.”³ Today’s pork has on average 16 percent less fat and 27 percent less saturated fat as compared to what it had in 1991.⁴

Production consolidation in the pork industry also has an impact on the value of pork in the U.S. In 1980 the average U.S. hog operation consisted of about 97 hogs, with a total of 666,500 farms producing hogs across the country. Over the following four decades, the number of hog operations decreased greatly, with the average number of hogs per operation notably increasing. The 2017 USDA Census of Agriculture reported the average number of hogs per operation was nearly 1,100, and the total number of operations in the U.S. was only 66,439.⁵ As operations have grown in size, the level of investment required to begin and maintain these operations has also increased. This could have implications on the supply elasticity of pork. If producers have a great deal invested in their operations, this could result in them being reluctant to increase or decrease production in response to changes in price, which ultimately effects the value of pork in the U.S.

Others claim bacon’s rise is due to restaurants’ evolving menus. For example, McDonald’s reported a 4.5 percent jump in sales in the first quarter of 2019 when they added “Big Mac Bacon” and “Quarter Pounder Bacon” options to their lineup. Their tagline stated, “Because There’s No Such Thing as Too Much Bacon.” Moreover, according to Blythe, bacon ranked third on the National Restaurant Association’s

³ Martinez, S. and K. Zering. (October 2004). *Pork Quality and the Role of Market Organization*. Economic Research Service, United States Department of Agriculture.

⁴ National Pork Board. (2021). “Fat In Pork.”

⁵ USDA National Agricultural Statistics Service. (2020). “Hogs – operations with inventory, Hogs – Inventory.”

“What’s Hot Culinary Forecast” in 2018. This forecast is developed from feedback given by 700 professional chefs.⁶

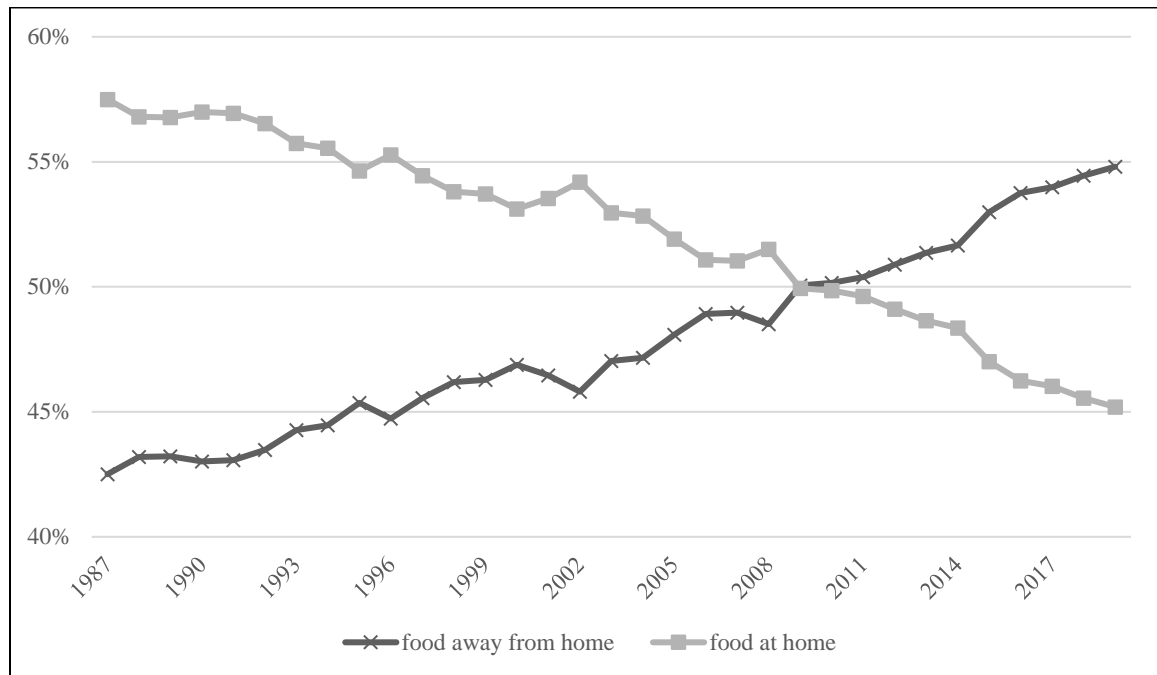
What restaurants choose to include on their menus may have more influence on the demand for pork cuts today than in the past. Over the past three decades, U.S. consumers have grown to rely more heavily on the convenience of food prepared outside of the home. In 1987, consumers’ spending on food prepared at home (FAH) accounted for 56 percent of food expenditure and food away from home (FAFH) accounted for the remaining 44 percent. However, spending on FAFH surpassed spending on FAH for the first time in 2010, and its share continues to increase.⁷ In fact, the shares of FAFH and FAH today have nearly flipped as compared to what they were in 1987, as can be seen in Figure 2. According to the USDA Economic Research Service, U.S. expenditure on food in 2019 totaled \$1.77 trillion, and FAFH accounted for 54.8 percent of that, totaling about \$970 billion. FAH accounted for the remaining 45.2 percent, roughly \$800 billion in food expenditure.⁸

⁶ Blythe, B. (2019, June 4). “Bacon Demand Is Higher Than Ever as Price Volatility Grows.” *CME Group*.

⁷ Saksena et al. (2018). “America’s Eating Habits: Food Away from Home.” Economic Research Service, United States Department of Agriculture.

⁸ USDA Economic Research Service. (2020). “U.S. food-away-from-home spending continued to outpace food-at-home spending in 2019.” Food Expenditure Series.

Figure 4. Total U.S. Food Expenditure



Source: USDA Economic Research Service Food Expenditure Series

The transition of consumers' food expenditure away from their households could have marked effects on the demand for individual pork cuts. Consumers going to the meat case and comparing meat prices to determine what products to purchase holds less of an influence now than in the past. Today, consumers are choosing restaurants with selected meat options, which inherently predetermines which meat cuts they will ultimately consume. This means restaurants possess a great deal of power in determining the demand for various pork products. Of course, restaurants consider what consumers demand when selecting food items to include on their menu. Nevertheless, the myriad of options and ability to easily substitute among meat cuts offered with the grocery store experience is often not the case when purchasing food from a restaurant.

It is worth noting, however, that the Covid-19 pandemic did cause some changes to this trend beginning in the first quarter of 2020 and continuing to present. As restaurants were

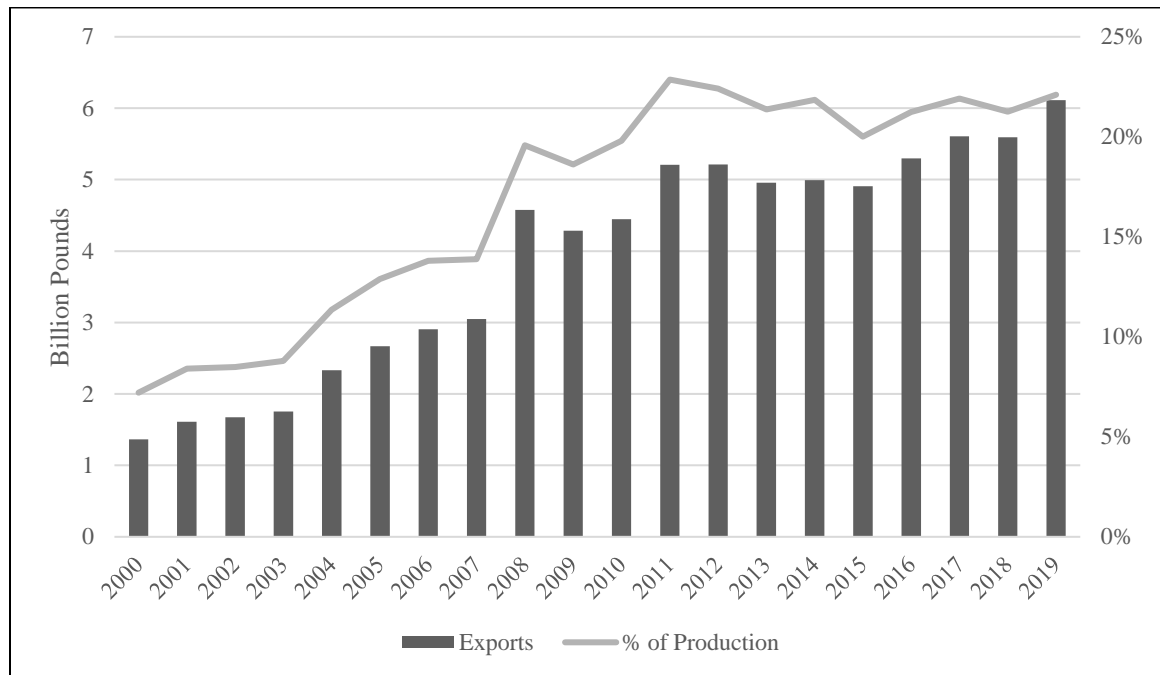
ordered to transition to to-go orders, restrict their seating capacities, or close their doors completely to slow the spread of the virus, consumers increased their food at home consumption. It is unknown the effect that this will have on consumer behavior long term, but it is likely that consumers will resume their spending on food away from home once it is safe to do so and restaurants are able to fully function.

Bacon's all-star status has implications on the broader value of the pork carcass, which in turn affects the price producers receive for their product as well as the price consumers pay in restaurants and grocery stores. After all, bacon is just one retail cut taken from a larger pork carcass. Specifically, bacon is taken from the belly primal cut. If belly demand drives the value of a carcass, what does that mean for the value of other primal cuts like loins and picnics? These cuts can see decreases in value as a result of an overall increase in the production of pork due to producers trying to fill the demand for bellies. How should pork producers target their demand building efforts in order to maximize the value of a whole pork carcass? Questions such as these can be addressed if one dives further into the specifics of the pork carcass to better understand the demands unique to each primal cut.

Chapter 1.2 U.S. Pork Export Markets

Analyzing pork cuts as individual commodities rather than considering pork as a whole has potential to be of great value considering all that is currently happening in pork markets around the world. First, consider the role that exports play in the demand for U.S. pork. Over the past couple decades, export markets have become increasingly vital to bolstering the value of U.S. pork. As can be seen in Figure 3, pork exports have grown from about 7 percent of total U.S. production in 2000 to over 20 percent in 2019.

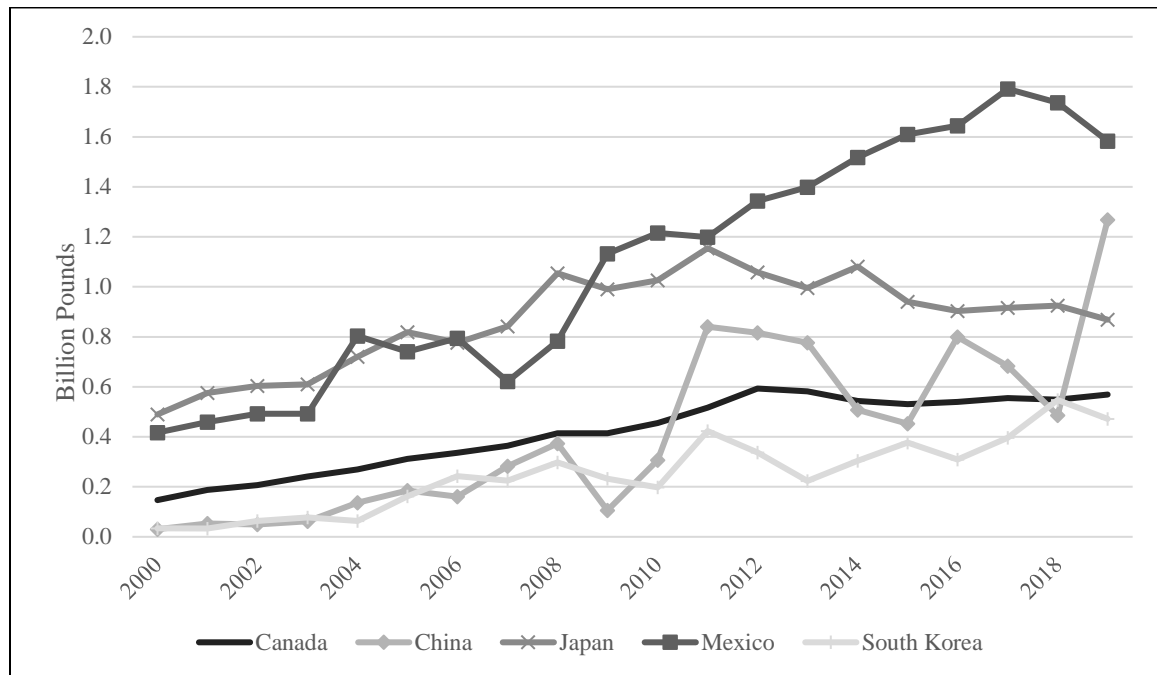
Figure 5. U.S. Pork Exports



Sources: USDA Foreign Agricultural Service Global Agricultural Trade System & USDA National Agricultural Statistics Service

Much of this growth can be attributed to increased demand in a few key markets. In 2019, Canada, China, Japan, Mexico, and South Korea accounted for about 78 percent of U.S. pork exported. As can be seen in Figure 4, steady demand growth in the U.S.’s border countries, Canada and Mexico, has been fundamental in increasing U.S. pork exports over the past twenty years. Likewise, the emergence of Asian markets, namely China and South Korea, has played a colossal role in providing export opportunities for U.S. pork.

Figure 6. U.S. Pork Exports to Key Markets



Source: USDA Foreign Agricultural Service Global Agricultural Trade System

China's demand for pork is especially relevant today. In August 2018, China's hog herd was hit with African swine fever (ASF), which is a deadly disease that currently has no treatment or vaccine available. ASF has wreaked havoc on China's pork industry, with pork production in 2020 down nearly 40 percent as compared to 2018 levels.⁹

Consequently, China needs pork imports now more than ever. In addition, the United States and China have an ongoing trade battle that looms over the situation. In April 2018, the United States imposed tariffs on \$50 billion of Chinese products. To retaliate, China placed tariffs on U.S. products valued at \$50 billion. Among these was an additional 25 percent tariff on U.S. pork. Over the next eighteen months, additional retaliatory tariffs were placed on U.S. pork, and by September 2019, some U.S. pork

⁹ Haley, M. and F. Gale. (2020, February 3). "African Swine Fever Shrinks Pork Production in China, Swells Demand for Imported Pork." Economic Research Service, United States Department of Agriculture.

exports to China were facing up to a 72 percent duty.¹⁰ In October 2019, it was announced that the U.S. and China had reached a Phase 1 deal that implied China should be purchasing \$36.5 billion in U.S. agricultural products in 2020 and \$43.5 billion in 2021. Although China imports of U.S. agricultural products expanded in 2020, they fell short of reaching the 2020 target; reaching the 2021 target seems similarly unlikely.¹¹

The situation in China is complex and everchanging and has the potential to be either a substantial opportunity or a crushing blow for U.S. pork producers depending on what happens in the coming months and years. Similarly, the Covid-19 pandemic has introduced another layer of uncertainty. Covid-19 has impacted pork markets around the world. The U.S. has seen supply chains disrupted, and restaurants have had to close their doors, leading to more demand for food at home and less demand for food away from home. Food systems, including those for pork, have been shocked in one way or another impacting who eats what and how much of it. The effects of the pandemic will undoubtedly be experienced well into the future.

As one can see, the U.S. pork industry is in a unique position. The decisions being made today will prove to be paramount to the vitality of the U.S. pork industry into the future. If pork is solely considered as a whole commodity, a great deal of useful information may be overlooked. Take for example the demand for U.S. pork in China as mentioned above. Because Chinese consumers demand different cuts of pork than U.S. consumers, it is careless to assume that a change in demand for pork in China would impact the U.S. pork

¹⁰ United States Meat Export Federation. (2020, March 2.) “Retaliatory Duties on U.S. Beef and Pork Products as of March 2, 2020.”

¹¹ Westhoff, P. (2020, October 8). “U.S.-China agricultural trade dispute and the Phase 1 deal.” [PowerPoint slides]. University of Missouri Food and Agricultural Policy Research Institute.

cutout value the same way a change in demand for pork in the U.S. would. These disparities are the crux of the current work. The following research estimates the demand for pork primal cuts and develops a model that utilizes these estimates to show the potential impacts various scenarios could have on the U.S. pork cutout value. The information garnered can be used to influence decision making from the farmer to the consumer and the numerous stakeholders in between by providing vital insights into the intricacies of pork demand in the United States and beyond.

Chapter 2 reviews the existing literature on pork demand. Chapter 3 outlines the data used in the research, and chapter 4 summarizes the estimation results. In chapter 5, scenarios are run and explained. Chapter 6 summarizes the research and offers a conclusion.

Chapter 2: Review of the Literature

Economic theory provides a framework to understand the decision-making process of consumers, and more importantly, what factors affect consumers' demand for goods and services. Put simply, consumers purchase a large number of goods and services. Some of these, as this research will dive further into, are food items. Others include household items, automobiles, and so forth. Most of the time, the decision for consumers to purchase an item, such as a cut of meat, is not made independently of their total bundle of purchases. Rather, consumers make purchasing decisions with reference to the purchase of other items due to the budget constraint they face. With a fixed amount of money to spend, consumers attempt to maximize utility by choosing the optimal bundle of goods and services they are able to purchase.¹²

Because of the restrictive nature of their budget, consumers often face tradeoffs. As the price of one good increases, they may choose to substitute that good with a similar, less expensive good, or they may choose to forgo purchasing that type of good altogether. Conversely, as a good becomes cheaper, consumers may add it into their bundle in the place of a more expensive good. Furthermore, consumers' budgets can vary over time with changes in income. As consumers' incomes increase, they have more freedom in choosing their optimal bundle of goods and services, and they can purchase more goods and services. Additionally, it is important to note that each consumer has his or her own tastes and preferences that influence final purchasing behaviors. A consumer who prefers vegetarian options may purchase no meat products but purchase a great deal of beans,

¹² Smallwood, D., Haidacher, R.C., and Blaylock, J.R. (1987). *A review of the research literature on meat demand*. Economic Research Service, United States Department of Agriculture.

nuts, and grains to substitute for the protein that meat would have provided in a diet.

Ultimately, the described decision-making process implies that the quantity demanded of a good or service is a function of the price of the good or service, the price of every other good or service, the income of consumers, and the consumers' tastes and preferences.¹¹

In economics, elasticities are calculated to describe how consumers alter their consumption choices in response to changes in prices and income. Own-price elasticities measure the percentage change in the quantity demanded of a good or service in response to the percentage change in price of the good or service. Goods with own-price elasticities greater than one are considered price elastic, meaning that as the price of a good increases by one percent, the quantity demanded decreases by more than one percent. On the other hand, goods with own-price elasticities less than one indicate they are price inelastic, which means that a one-percent increase in the price of a good translates to a less than one percent decrease in the quantity demanded of that good.¹³

Similarly, cross-price elasticities measure the demand responsiveness of a good to the change in price of another good. If the demand for a good increases as the price of another good increases, then the cross-price elasticity is positive, and the goods are substitutes. On the other hand, negative cross-price elasticities imply that the goods are complements, which means that as the price of one good increases, the demand for another good decreases.¹²

Income elasticities measure the demand responsiveness of a good to a change in income. Positive income elasticities indicate the good is normal; as consumers' incomes increase,

¹³ Hall, R.E., and M. Lieberman. (2005). *Microeconomics: Principles and Applications*. (3rd ed.). Mason, Ohio: Thomson South-Western. pp. 99-100.

they demand more of a good. Negative income elasticities indicate the good is inferior. An increase in consumers' incomes results in less of a good being demanded.¹²

Developing demand equations and calculating elasticities provide economists with a greater understanding of consumers' purchasing behavior, which, in turn, can aid stakeholders in making sound decisions in creating policies, allocating resources, and much more.

Chapter 2.1 Review of Pork Research

Numerous economists have conducted research that seeks to understand U.S. pork demand. Dating back to the post-World War II era, the body of work that exists exploring this topic is abundant. However, the majority of the relevant work completed in this field was published in the 1980s and 1990s, and there is little new research available that describes recent changes in consumer behavior for pork.

Leuthold and Nwagbo used both monthly and quarterly data from 1964 to 1975 to estimate demand elasticities for beef, pork, and broilers from single equation models. The study found that estimated monthly and quarterly demand elasticity for pork were -0.83 and -0.82, respectively. Estimated monthly and quarterly cross-price elasticity with respect to beef were 0.24 and 0.29, respectively. Estimated monthly cross-price elasticity of pork with respect to broilers was 0.12. Quarterly cross-price elasticity of pork with respect to broilers was not statistically different from zero. The estimated monthly and quarterly income elasticities for pork were 0.53 and 0.48, respectively.¹⁴

¹⁴ Leuthold, R.M., and E. Nwagbo. (1977). "Changes in the Retail Elasticities of Demand for Beef, Pork, and Broilers." *Illinois Agricultural Economics*, 17(2), 22-27.

Likewise, Nyankori and Miller used quarterly data from 1965 to 1979 to construct single equation models and computed the own-price elasticity of pork to be -0.39 over the period and the income elasticity to be 0.60. Cross-price elasticities of pork with respect to beef and chicken were -0.28 and 0.20, respectively.¹⁵

Haidacher et al. used annual data spanning from 1950 to 1977 to estimate domestic demand elasticities for meats using a demand system. This study found that the own-price elasticity for pork was -0.73; the cross-price elasticities of pork with beef and chicken were 0.16 and 0.10, respectively. This indicates at least some degree of substitutability among pork and other prominent meats demanded in the U.S. The estimated income elasticity of pork was found to be 0.50, which suggests pork is a normal good.¹⁶

Huang created a demand system for forty food items and one non-food item using data from 1953 through 1983 to illustrate the interdependent nature of food demand at the disaggregated level. Similar to the work of Haidacher et al., this system estimated the own-price elasticity for pork to be -0.73. Cross-price elasticities of pork with respect to beef and chicken were 0.19 and 0.09, respectively, which indicates substitutability with each of the meat products. The income elasticity of pork, estimated to be 0.44, suggests pork is a normal good.¹⁷

Chavas developed a method for investigating structural change within the meat sector, which resulted in the average estimated own-price elasticity of pork throughout the 1970s

¹⁵ Nyankori, J.C.O., and G.H. Miller. (1982). "Some Evidence and Implications of Structural Change in Retail Demand for Meats." *Southern Journal of Agricultural Economics*, 14(2), 65-70.

¹⁶ Haidacher, R.C., J.A. Craven, K.S. Huang, D.M. Smallwood, and J.R. Blaylock. (1982). "Consumer Demand for Red Meats, Poultry, and Fish." Economic Research Service, United States Department of Agriculture. Report No. AGES820818.

¹⁷ Huang, K.S. (1986). "U.S. Demand for Food: A Complete System of Price and Income Effects." Economics Research Service, United States Department of Agriculture. Technical Bulletin No. 1714.

at -0.71. The average estimated income elasticity was 0.44, and the average estimated cross-price elasticities with respect to beef and chicken were 0.20 and 0.07, respectively. Additionally, his work found that, unlike poultry and beef, little structural change had occurred in the elasticities for pork during the decade of the 1970s.¹⁸

¹⁸ Chavas, J.P. (1982). "Structural Change in the Demand for Meat." *American Journal of Agricultural Economics*, 65(1), 148-153.

In summary, Table 1 encompasses the notable research that includes estimated elasticities of pork:

Table 1. Summary of Pork Demand Elasticities

Study	Estimation Period	Own-Price Elasticity	Income Elasticity	Cross-Price Elasticity	Cross-Price with respect to
Leuthold and Nwagbo (1977) ¹	1964-1975	-0.83	0.53	0.24	Beef
				0.12	Broilers
Nyankori and Miller (1982) ²	1965-1979	-0.39	0.60	-0.28	Beef
				0.20	Chicken
Haidacher et al. (1982) ³	1953-1977	-0.73	0.48	0.16	Beef
				0.10	Chicken
Huang (1986) ⁴	1953-1983	-0.73	0.44	0.19	Beef
				0.09	Chicken
Chavas (1982) ⁵	1970-1979	-0.71	0.44	0.20	Beef
				0.07	Chicken

¹ Single equation model estimated monthly per capita consumption as a function of the deflated retail price of beef, pork, and broilers, the deflated personal income per capita, and a set of dummy variables to account for regular monthly shifts in demand otherwise unquantified. Data used in the model came from the U.S. Department of Agriculture (USDA) and the U.S. Department of Commerce.

² Single equation model estimated quarterly per capita consumption quantity of each commodity as a function of own price, prices of other meats, income, and a seasonal dummy variable. Retail level data from several issues of *Food Consumption, Prices and Expenditures*, and *Livestock and Meat Statistics* were used.

³ Demand system model contained 42 food commodities and nonfood. Quantity variables are based on annual USDA per capita disappearance data and price variables are the corresponding BLS price indices.

⁴ Demand system model was comprised of 40 food items and 1 nonfood item. Annual data used came from USDA, U.S. Department of Commerce, and U.S. Department of Labor.

⁵ Linear model was based on the Kalman filter using annual data from 1950-1970. Data used to estimate this model are U.S. per capita consumptions of poultry, beef, and pork and per capita disposable income. Prices are retail prices for poultry, beef, and pork. Prices for other commodities in the budget are measured by a single price index.

The majority of the research estimates demand for meat commodities holistically rather than recognizing that consumers may demand certain cuts of a meat commodity more than others. Eales and Unnevehr identified this gap and published work that sought to determine if individual subgroups, distinct from the aggregate commodity, have significantly different elasticities and how disaggregation of composite meat groups into

component subgroups allows for the identification of sources of structural change in meat demand. Using annual data from 1965 to 1985 and two dynamic almost ideal demand systems, one with aggregated meat products and one with disaggregated meat products, it was found that the disaggregated model revealed more complex relationships among meat products than the aggregated model. Additionally, the compensated own-price and income elasticity of pork in the aggregate meat demand system were -0.762 and 0.278, respectively. In the disaggregated model, the compensated own-price and income elasticity of pork were -0.565 and 0.040, respectively.¹⁹

Capps et al. built off the work of Eales and Unnevehr and published a study that estimated the elasticities of twelve beef cuts at the wholesale level. Using data spanning from 1980 through 1990, it was estimated that the own-quantity flexibilities for all cuts are negative, as expected. The cross-product flexibilities for beef cuts with respect to pork are positive and significant, except for fresh 50 and fresh 90 trimmings, which does not support the notion of substitution between beef and pork. The research also revealed that the composite quantity of other beef cuts was not typically a significant factor affecting individual wholesale beef cut prices, which is probably due to the fixed proportion of cuts to each carcass.²⁰

Parcell and Pierce examined factors affecting wholesale poultry prices to provide poultry processors and producers more understanding into how consumer purchasing patterns impact the price of poultry. Their work found that own-cut and cross-cut flexibilities

¹⁹ Eales, J.S., and L.J. Unnevehr. (1988). "Demand for Beef and Chicken Products: Separability and Structural Change." *American Journal of Agricultural Economics*, 70(3), 521-532.

²⁰ Capps, O., Jr., D.E. Farris, P.J. Byrne, J.C. Namken, and C.D. Lambert. (1994). "Determinants of Wholesales Beef-Cut Prices." *Journal of Agricultural and Applied Economics*, 26(1), 183-199.

were unique to individual cuts and that there were seasonal differences among the prices of cuts.²¹

Lusk et al. published work that estimated meat retailer own-price and cross-price demand elasticities for USDA Choice and Select boxed beef in order to determine price sensitivity of the USDA beef quality grades as well as the substitutability between the grades and among other meat products. Using monthly data from July 1987 through December 1999, it was found that meat retailers have more elastic demand for lower quality graded beef and that retail beef price has a strong positive relationship with Choice and Select boxed beef demand and a strong negative relationship with wholesale pork and chicken demand. They estimated a wholesale pork demand elasticity of -0.471, which is consistent with the traditional concept of derived demand where one would expect wholesale demand elasticities to be lower in absolute value than retail demand elasticities. In addition, they found that pork is a substitute for both Choice and Select beef and chicken.²²

Parcell examined pork at the primal level. This research sought to estimate the wholesale pork primal demand relationship to determine own-quantity price flexibilities. Using monthly data from February 1989 to December 1999, the study estimated the following primal cut own-quantity price flexibilities²³:

- Pork loin: -0.49
- Butt: -0.49

²¹ Parcell, J. and V. Pierce. (2001) "Factors Affecting Wholesale Poultry Prices." *Journal of Agricultural and Applied Economics*, 32(3), 471-478.

²² Lusk, J.L., T.L. Marsh, T.C. Schroeder, and J.A. Fox. (2001). "Wholesale Demand for USDA Quality Graded Boxed Beef and Effects of Seasonality." *Journal of Agricultural and Resource Economics*, 26(1), 91-106.

²³ Parcell, Joe L. (2003). "An Empirical and Analysis of the Demand for Wholesale Pork Primals: Seasonality and Structural Change." *Journal of Agricultural and Resource Economics*, 28(2), 335-348.

- Belly: -0.27
- Picnic: -0.24
- Rib: 0.03
- Ham: 0.05

It is important to note that estimated flexibilities for rib and ham were not statistically significant. The main conclusion from the work was that disaggregated price flexibilities are significantly different from aggregate wholesale price flexibilities reported in previous research. If one assumes that the lower limit of elasticities can be derived from taking the inverse of price flexibilities, then the price elasticities of the primal cuts estimated by Parcell are more elastic than the aggregate price elasticity estimated by Lusk et al. of -0.471. This is consistent with economic theory that asserts that aggregates are typically less elastic due to having fewer options for substitutes.²⁴

Chapter 2.2 Changing Dynamics

As mentioned in the introduction, consumers are transitioning away from food prepared at home and are instead opting to consume food away from home. Therefore, using more current data to estimate demand for pork may lead to different results than in the past and has the potential to uncover new, valuable information that could ultimately impact the future of the pork industry.

Furthermore, updating the research in this field is especially worthwhile considering the triumphs and perils facing America's pork producers and the pork industry today. From African swine fever plaguing some of the United States' most prominent pork export markets to the Covid-19 pandemic affecting consumers' purchasing choices both

²⁴ Parcell, Joe L. (2003). "An Empirical and Analysis of the Demand for Wholesale Pork Primals: Seasonality and Structural Change." *Journal of Agricultural and Resource Economics*, 28(2), 335-348.

domestically and abroad, those who raise and market swine have ample challenges as well as opportunities on their horizon. Since 1986, U.S. pork producers have effectively funded a checkoff program whose aim is to strengthen the position of pork in the marketplace and to meet past and current marketing challenges. The three main pillars of the pork checkoff program are education, promotion, and research.²⁵ While there is no single most-effective method to allocating the expenditure of checkoff funds, analysis of demand data can shed light on the nuances of domestic pork disappearance and the copious factors that contribute to the overarching trends. Estimation of own-price, cross-price, and income elasticities for each of the six primal cuts will be advantageous as the pork industry determines where to focus demand-building efforts in order to provide the greatest value to pork producers into the future. Therefore, while this work is focused on researching pork demand, it has the potential to influence the promotion arm of the checkoff program, as well.

²⁵ Pork Promotion, Research, and Consumer Information Act of 1985. 7 U.S.C. § 4801-4819 (1985).

Chapter 3: Data

In order to derive domestic disappearance, historic monthly supply and utilization tables were developed for each of the six primal cuts. Including the remaining cuts in a category labeled “variety cuts” was considered. However, unlike the six main cuts, the USDA does not estimate a primal cutout value for variety cuts. Additionally, consider the market for variety cuts. In 2020, nearly 60 percent of exported pork variety cuts went to China. However, pork variety cuts only accounted for 4 percent of all the pork that was exported to China in 2020.²⁶ The impact of pork variety cuts on the pork cutout value is most likely not substantial. Thus, a variety cut category was ultimately not included in this work.

The developed tables span from January 2010 through August 2020, resulting in 128 observations per primal cut. These tables are included in the Appendix. Domestic disappearance is calculated as the sum of beginning stocks, production, and imports less exports and ending stocks.

Beginning and ending stock data and total pork production data were provided by USDA’s National Agricultural Statistics Service (NASS). Production of the six primal cuts was calculated by multiplying total pork production by carcass yields published by USDA’s Agricultural Marketing Service (AMS). These yields can be found in Table 2 and are based on the results of an AMS survey of U.S. pork packers that was completed in July 2019. As shown, the six main primal cuts comprise over 92 percent of the carcass. The remaining 7.71 percent includes variety meats as well as cut loss.²⁷ The assumption

²⁶ USDA Foreign Agricultural Service Global Agricultural Trade System. (2021). Available at <https://apps.fas.usda.gov/gats/default.aspx>. [Accessed March 2021].

²⁷ USDA Agricultural Marketing Service. (Jan 2020). “A User’s Guide to USDA’s Pork Carcass Cutout.”

was made that the cutout yields of the average pork carcass have not changed drastically over the past decade. While it is possible that there has been some variation in cutout yields over the years, most likely the changes have been minor and would not have a considerable impact on the results of this research.

Table 2. Primal Cutout Yields for Composite Cutout

Primal Yield to Carcass	
Belly	16.43%
Butt	10.27%
Ham	24.56%
Loin	25.12%
Picnic	11.25%
Rib	4.66%
Jowl	1.47%
Neck Bones	1.77%
Tail	0.18%
Front Feet	1.03%
Hind Feet	1.34%
Cut Loss	1.92%

Source: USDA Agricultural Marketing Service

Import and export trade data were provided by USDA's Foreign Agricultural Service's (FAS) Global Agricultural Trade System. These data follow harmonized system (HS) codes that can be vague and do not always seamlessly align with the six primal cuts. With help from industry experts at U.S. Meat Export Federation and National Pork Board, assumptions were made to convert the data from HS codes to each of the primal cuts. Table 3 summarizes these assumptions.

Table 3. HS Code to Pork Primal Conversions

HS Code	Belly	Butt	Ham	Loin	Picnic	Rib
203110000	16.43%	10.27%	24.56%	25.12%	11.25%	4.66%
203192000						
203192090						
203194000						
203194090						
203210000						
203292000						
203294000						
210190000						
210190090						
1602492000						
1602494000						
1602497000						
1602499000						
203121000		22.29%	53.30%		24.41%	
203121020						
203129000						
203129020						
203221000						
203229000						
210110000						
210110020						
1602422000		47.72%			52.28%	
1602422020						
1602422040						
1602424000						
203194010	100%					
210120020						
210120040						
203121010			100%			
203129010						
210110010						
1602411000						
1602412000						
1602412020						
1602412040						
1602419000						
210190010				100%		
1601002010					100%	
1601002090						
203192010						100%

Some of the assumptions were straightforward. HS code 210120020, for example, is used to label bacon. It was easy to classify all imports and exports with this HS code as bellies. Many of the HS codes were more complicated to convert to primal cuts, and the primal yields outlined in Table 2 were again utilized. Take for example HS code 203292000. This HS code refers to processed and frozen meat of swine not elsewhere specified or indicated. Because this description is ambiguous and does not allude to any specific cut, exports and imports classified as this code were broken down according to the carcass yields.

On the ambiguity spectrum, some HS codes fell between the past two examples. HS code 203121020 labels processed hams and shoulders. This narrows the focus to three cuts: butts, hams, and picnics. In order to convert this code to primal cuts, the carcass yields of the three cuts were aggregated. Each cut's yield was then divided by that total in order to derive percentages to allocate the export and import volumes. In this case, the percentages for butt, ham, and picnic were 22.29, 53.30, and 24.41, respectively.

Unfortunately, this systematic approach undoubtedly possesses imperfections, but a best effort was made to allocate the vague HS codes into primal cut categories as accurately as possible so that the domestic disappearance for each cut could be derived and demand equations could be estimated.

Livestock Marketing Information Center (LMIC) provided monthly USDA estimated pork primal cutout values for each of the six cuts. These values are based on negotiated sales (FOB plant). It is important to note that these prices were reported on a voluntary basis until January 2013 when mandatory price reporting was implemented. When examining the data, significant differences between data from the two reporting periods

were not found, so voluntarily reported data from January 2010 through December 2012 and mandatorily reported data thereafter were utilized.

LMIC also supplied monthly average national weekly boxed beef cut prices, monthly retail composite chicken prices, monthly retail whole frozen turkey prices, and monthly retail ground beef prices. LMIC compiled the boxed beef prices from USDA Agricultural Marketing Service data; the retail prices were compiled by LMIC from reports of the U.S. Bureau of Labor Statistics. These prices were used to calculate cross-price elasticities of meat substitutes and complements for the pork primal cuts.

The Federal Reserve Bank of St. Louis provided monthly data for U.S. real disposable income, U.S. population, and U.S. consumer price index (CPI). Income and population data were used to calculate income elasticities for each of the six primal cuts.

Additionally, the population data were used to calculate per capita disappearance for each of the cuts. CPI data were used to convert the nominal wholesale and retail meat values outlined above into real values in order to account for inflation over the observation period.

Chapter 4: Estimation

Individual demands for the six main pork primal cuts were estimated using single equation ordinary least squares (OLS) regressions. Calculating OLS estimators defines the slope and intercept of a regression by minimizing the sum of the squared residuals in order to come to a “best fit” solution.²⁸ While single equation models may fit data better than other functional forms, they often do not conform to demand theory that suggests demand for a product is a function of all prices and income.²⁹ For this reason, some may argue that this research would be better suited as a demand system, which would be consistent with demand theory. However, given that the focus of this work is estimating pork demands at the primal level, the extension of primal demand estimation using a system approach is outside the scope of this thesis.

Using the data outlined in Chapter 3, regression models were estimated for disappearance per capita for each pork primal and are summarized in Table 4. For this analysis, equations are specified as the natural logarithm of the variables. The logarithmic form was chosen so that the parameter estimates are own-price, cross-price, and income elasticities, excluding the intercept and dummy variables. Note also that substitution among pork primal cuts was considered, and loins proved to be a statistically significant substitute for each of the other cuts. This is potentially caused by loins comprising the greatest percentage of the pork carcass. However, when loins were included as substitutes

²⁸ Stewart, Brandon. (2016, October 10). “Simple Linear Regression.” [PowerPoint slides]. Princeton University. Available at <https://scholar.princeton.edu/sites/default/files/bstewart/files/lecture5slides.pdf> [Accessed February 2021.]

²⁹ Okrent, A. M., & Alston, J. M. (2011). “Demand for food in the United States: A review of literature, evaluation of previous estimates, and presentation of new estimates of demand.” Giannini Foundation of Agricultural Economics, University of California.

in the estimations, the own-price elasticity estimates became problematic, so loins were ultimately dropped from the equations assuming multi-collinearity between loin and the other cut price was creating estimation issues.

*Table 4. Pork Primal Per Capita Disappearance Estimate Equations:
 $\ln(\text{Dependent Variable}) = \ln(\text{Disappearance/Capita of Pork Primal Cut})$*

Variable	Belly	Butt	Ham	Loin	Picnic	Rib
Intercept	1.604*** (<0.01)	0.422* (0.09)	1.390*** (<0.01)	0.334 (0.24)	0.205 (0.48)	-0.134 (0.75)
$\ln(\text{Primal Cutout Value/CPI})$	-0.039* (0.10)	-0.175*** (<0.01)	-0.095*** (<0.01)	-0.269*** (<0.01)	-0.140*** (<0.01)	-0.185*** (<0.01)
$\ln(\text{Complement or Sub Value/CPI})$	-0.031 [^] (0.33)	---	---	0.033 [♦] (0.36)	---	0.029 [™] (0.49)
$\ln(\text{Per Capita Income})$	0.522*** (<0.01)	0.372*** (<0.01)	0.356*** (<0.01)	0.079 (0.31)	0.276*** (<0.01)	0.433*** (<0.01)
Jan (dummy)	0.029 (0.20)	-0.040* (0.07)	-0.151*** (<0.01)	0.007 (0.69)	-0.030 (0.20)	0.052* (0.09)
Feb (dummy)	-0.067*** (<0.01)	-0.132*** (<0.01)	-0.202*** (<0.01)	-0.090*** (<0.01)	-0.138*** (<0.01)	-0.087*** (<0.01)
Mar (dummy)	0.027 (0.23)	-0.012 (0.57)	-0.029 (0.25)	0.012 (0.47)	-0.033 (0.15)	0.091*** (<0.01)
Apr (dummy)	-0.065*** (<0.01)	-0.090*** (<0.01)	-0.221*** (<0.01)	-0.061*** (<0.01)	-0.120*** (<0.01)	0.087*** (<0.01)
May (dummy)	-0.069*** (<0.01)	-0.095*** (<0.01)	-0.256*** (<0.01)	-0.052*** (<0.01)	-0.124*** (<0.01)	0.290*** (<0.01)
Jun (dummy)	-0.022 (0.33)	-0.078*** (<0.01)	-0.218*** (<0.01)	-0.040** (0.03)	-0.103*** (<0.01)	0.320*** (<0.01)
Jul (dummy)	-0.028 (0.23)	-0.126*** (<0.01)	-0.227*** (<0.01)	-0.074*** (<0.01)	-0.127*** (<0.01)	0.046 (0.13)
Aug (dummy)	0.042* (0.07)	-0.033 (0.13)	-0.146*** (<0.01)	0.002 (0.93)	-0.046** (0.04)	0.154*** (<0.01)
Sep (dummy)	-0.002 (0.92)	-0.051** (0.03)	-0.141*** (<0.01)	-0.027 (0.13)	-0.059** (0.01)	-0.041 (0.19)
Oct (dummy)	0.078*** (<0.01)	-0.036 (0.11)	0.070*** (<0.01)	0.064*** (<0.01)	0.057** (0.01)	0.003 (0.91)
Nov (dummy)	0.003 (0.90)	-0.027 (0.23)	0.096*** (<0.01)	-0.025 (0.14)	0.001 (0.99)	-0.033 (0.29)
R ²	0.60	0.68	0.83	0.82	0.70	0.79
Durbin-Watson	2.10	2.23	2.03	2.60	2.09	2.26

[^] Complement: Ground Beef 90

[♦] Substitute: Beef Tenderloin

[™] Substitute: Beef Shortribs

Single, double, and triple asterisks (*) denote statistical significance of the coefficients at the 10%, 5%, and 1% levels, respectively. Numbers in parentheses are p-values.

As shown in Table 4, own-price elasticities for each cut are statistically significant at the 10th percentile or less. Bellies are the most inelastic with an own-price elasticity of -0.039. Loins are the most elastic with an own-price elasticity of -0.762. By aggregating the own-price elasticities of each of the cuts, weighing each elasticity by carcass yields outlined in Table 2, one can derive a monthly own-price elasticity for the pork cutout of -0.139. While this elasticity is more inelastic than those outlined in the review of the literature, it is important to note that because this is a monthly elasticity it will inherently be more inelastic than annual results.

Income elasticities for each primal cut are statistically significant at the 1 percent level except for loins. Bellies have the highest income elasticity at 0.522; loins have the lowest at 0.079. Aggregating the income elasticities by again weighing each by the carcass yields in Table 2, an aggregate monthly income elasticity for the pork cutout of 0.282 is derived. This suggests that pork is a normal good, which is consistent with the literature.

Cross-price elasticities are calculated for the belly, loin, and rib cuts. The cross-price elasticity of bellies with respect to ground beef is -0.031. This suggests that ground beef is a complement to pork bellies. This alludes to the popular bacon cheeseburger pairing mentioned in the introduction. The cross-price elasticity of pork loins with respect to beef tenderloins is 0.033, which suggests the two are substitutes. Finally, the cross-price elasticity of ribs with respect to beef short ribs is 0.029, which suggests that they are substitutes, as well.

January through November monthly dummy variables are included to account for the seasonality of demand for the cuts. Hams, for example, typically see demand spikes in March, in preparation for the Easter holiday, and in October and November leading up to

Thanksgiving and Christmas holidays. Figure 5 illustrates how consumers increase consumption around these times. Similarly, ribs usually experience an increase in demand in May and June in preparation for the summer grilling months as can be seen in Figure 6.

Figure 7. Monthly Ham Disappearance

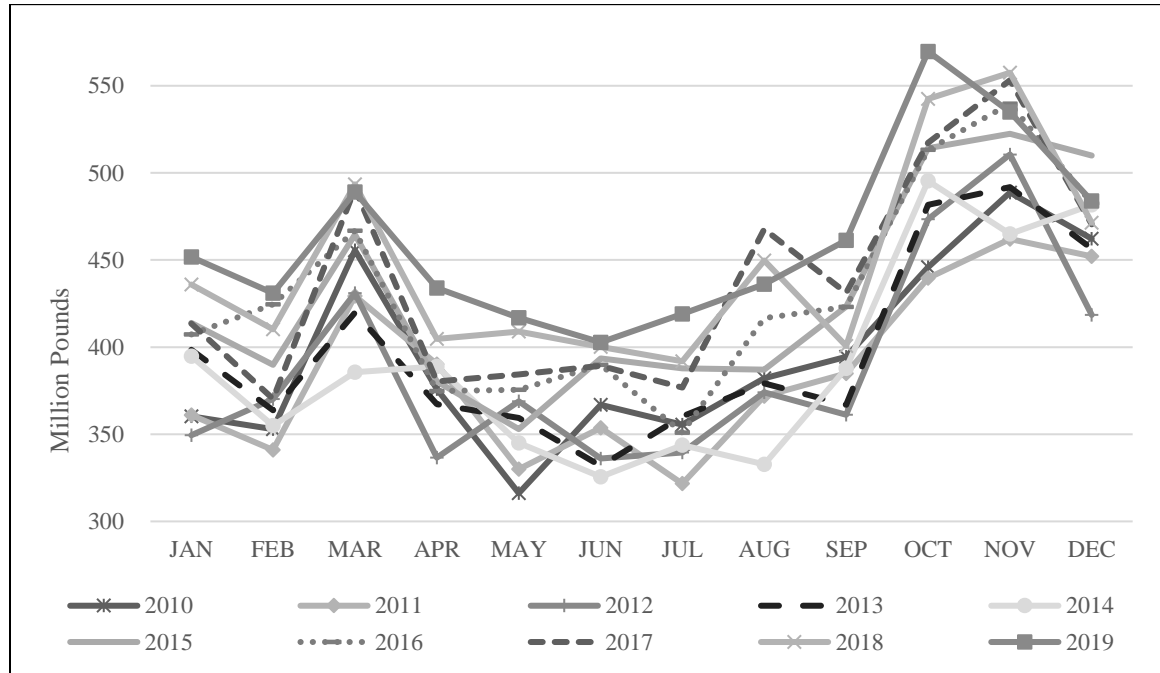
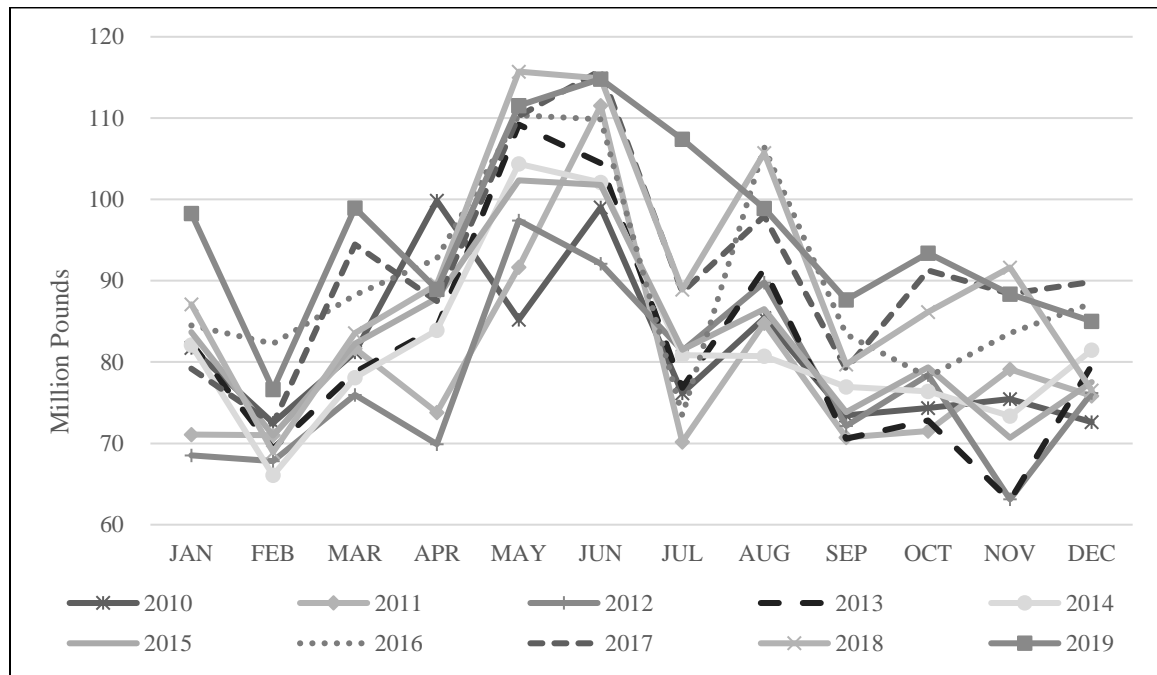


Figure 8. Monthly Rib Disappearance



The R^2 of an equation quantifies how much lower the sum of squared residuals is compared to the total sum of squares. An R^2 of one means the equation has a perfect linear fit. On the other hand, an R^2 of zero implies there is no relationship between the dependent and independent variables.³⁰ Of the equations summarized in Table 4, the ham equation has the best fit, with an R^2 of 0.83. The belly equation has the worst fit with an R^2 of 0.60. Figure 7 displays the fit of the butt equation over the period of fit, which spans from January 2010 to August 2020. Figure 8 shows the fit of the butt equation in the four months immediately following the period of fit. As shown, the values predicted by the butt equation closely follow the actual values.

³⁰ Stewart, Brandon. (2016, October 10). "Simple Linear Regression." [PowerPoint slides]. Princeton University. Available at <https://scholar.princeton.edu/sites/default/files/bstewart/files/lecture5slides.pdf> [Accessed February 2021.]

Figure 9. Per Capita Butt Disappearance over Period of Fit, Jan 2010 - Aug 2020

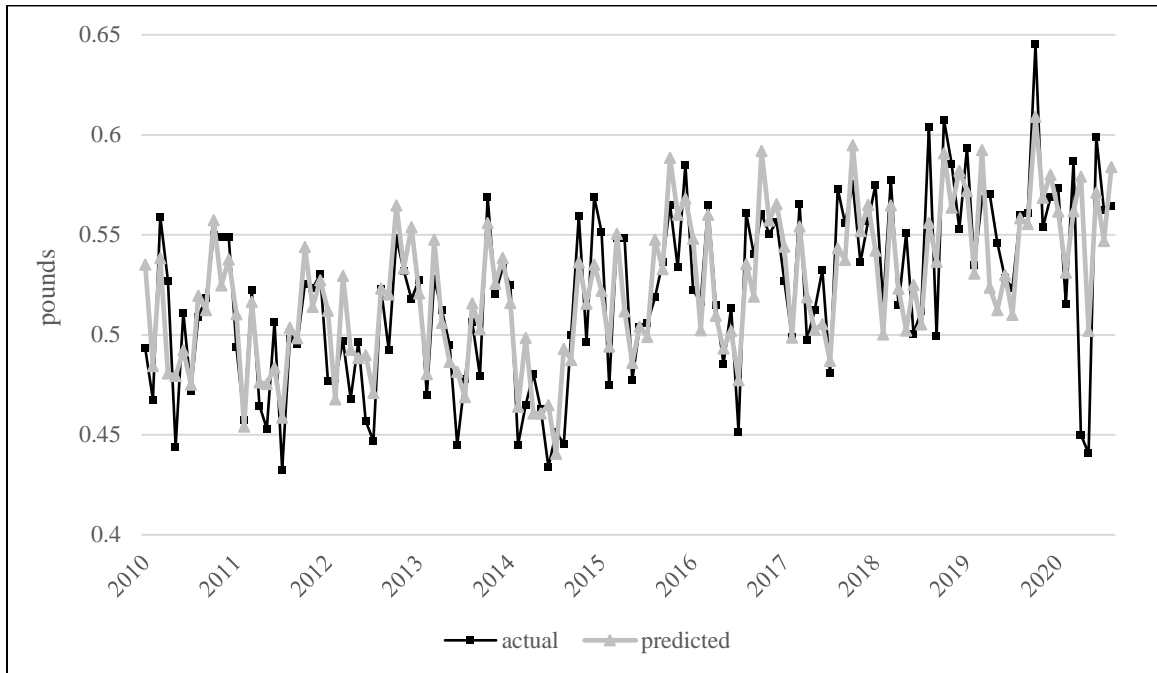
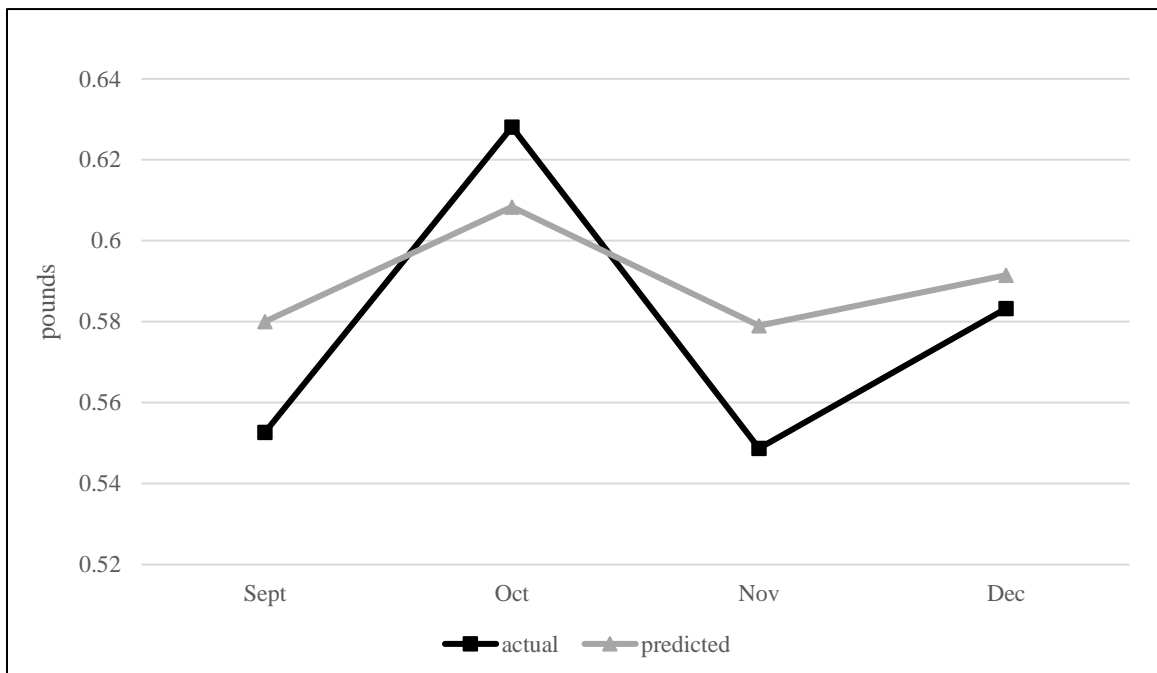


Figure 10. Per Capita Butt Disappearance outside Period of Fit, Sept 2020 – Dec 2020



The Durbin-Watson test is used in statistical analysis to detect first-order autocorrelation in the residuals of regressions. The results of the test determine whether the error term in

one period is positively or negatively correlated with the error term in the previous period. Durbin-Watson test statistics range from 0 to 4. A value of 2 indicates no autocorrelation. Values less than 2 indicate positive autocorrelation; values greater than 2 indicate negative autocorrelation.³¹ As outlined in Table 4, the equations' Durbin-Watson test statistics are all near 2 or slightly greater, which means they are all within an acceptable range of little to no autocorrelation.

Using the estimated parameters outlined in this chapter, an economic model of the pork industry was created to estimate the implications that various scenarios could have on the U.S. pork cutout value. This model and the scenarios are explained in the next chapter.

³¹ Pennsylvania State University Department of Statistics. "Testing and Remedial Measures for Autocorrelation." Accessed Feb 2021. Available at <https://online.stat.psu.edu/stat501/lesson/14/14.3>.

Chapter 5: Scenarios

The demand equations estimated in chapter 4 do not represent the full structure of the pork industry. To run shocks that show the overall industry effects of changing exports requires a more complete system. To simulate system wide effects, this research mimics other research efforts to have a full U.S. pork industry system. This scenario analysis exogenously considers competing meat markets like beef and chicken and feed markets and only estimates reduced form export equations for countries outside of the U.S.

The production equation used in the model, outlined in Table 5, mimics the equation used in the U.S. livestock model of the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri. Individual pork primal cut production numbers were derived by multiplying the total production estimate by the carcass yields outlined in Table 2.

Table 5. Production Estimate Equation: (Dependent Variable = Pork Production*)

Variable		Coefficient
Intercept		75
Production, t-1		0.02
Production, t-8		0.95
Pork Cutout Value		1.4
Feed Cost ⁺		-0.4
Seasonality	Jan	225
	Feb	75
	Mar	300
	Apr	15
	May	15
	Jun	-265
	Jul	-225
	Aug	-50
	Sep	-75
	Oct	325
	Nov	75
	Dec	200

* Production estimated in million pounds

(t): current period

⁺ Feed cost = (80% *corn price) + (20%*soybean meal price)

Export equations for each primal cut were estimated for Canada, China, Japan, and South Korea. The remaining countries were amalgamated into the rest of the world (ROW), and an export elasticity of -0.8 was used. This elasticity was chosen based on existing research and was, similar to the production equation, adapted from the MU FAPRI model.

The model is used to construct a baseline case that estimates values for the endogenous model variables based on assumptions about the remaining exogenous variables used in the system. Baseline values begin in September 2020 and follow through December 2025. The following shocks were enacted from January 2021 through December 2025, with January 2021 through December 2021 representing the short run, January 2022 through December 2024 representing the medium run, and January 2025 through

December 2025 representing the longer run. In each scenario, values of the endogenous variables determined by the model are compared to the corresponding baseline values to determine the impacts of the scenario.

Chapter 5.1 Decrease in Belly Exports

The first scenario run was a 10 percent decrease in belly exports from the baseline values for each month spanning from January 2021 through December 2025. The impacts of this scenario on each cut and pork as a whole are summarized in Table 6.

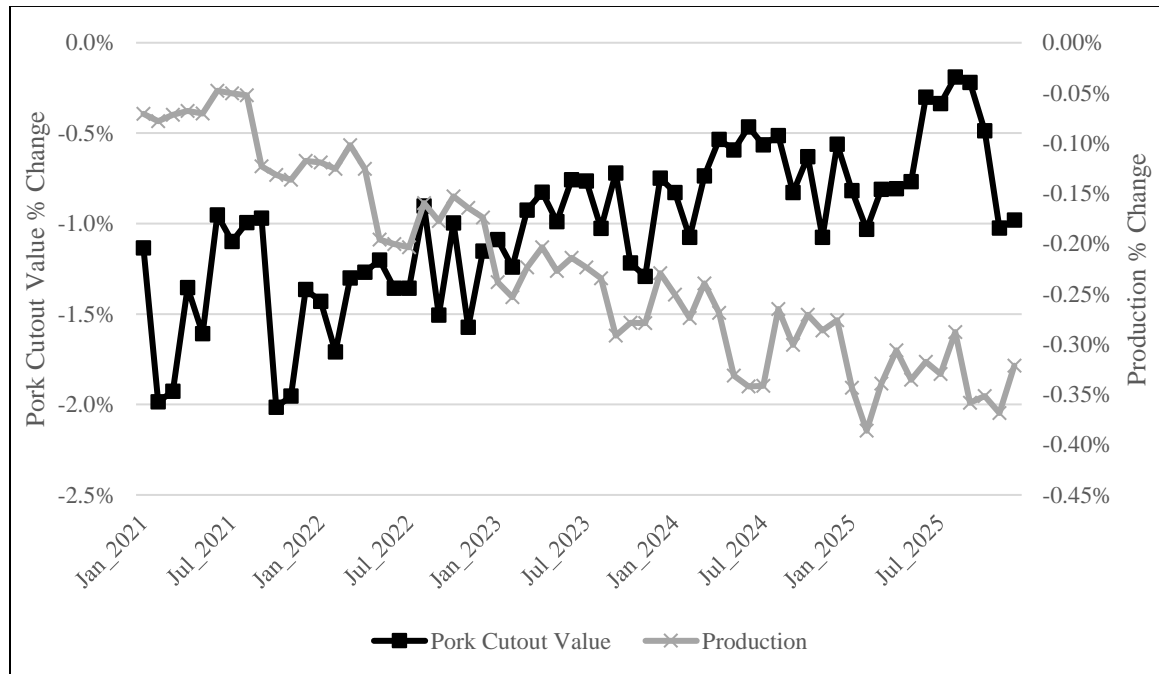
Table 6. Impacts of Monthly 10 Percent Decrease in U.S. Belly Exports from Baseline Values, January 2021 – December 2025

	Short Run Year 1	Medium Run Years 2-4	Longer Run Year 5
Belly			
Average % change in cutout value	-4.88	-4.67	-4.79
Average % change in exports	-2.32	-3.78	-4.50
Butt			
Average % change in cutout value	0.28	0.68	0.96
Average % change in exports	-0.19	-0.58	-0.92
Ham			
Average % change in cutout value	0.29	0.66	0.86
Average % change in exports	-0.25	-0.81	-1.36
Loin			
Average % change in cutout value	0.26	0.66	0.93
Average % change in exports	-0.16	-0.56	-0.96
Picnic			
Average % change in cutout value	0.30	0.69	0.92
Average % change in exports	-0.21	-0.69	-1.14
Rib			
Average % change in cutout value	0.31	0.76	1.08
Average % change in exports	-0.27	-0.80	-1.27
Total			
Average % change in cutout value	-1.45	-0.99	-0.65
Average % change in exports	-0.43	-1.01	-1.55
Average % change in production	-0.08	-0.23	-0.34

Note that although a 10 percent decrease was imposed, belly exports did not decrease by a full 10 percent. This demonstrates how the model accounts for the decrease in exports, which results in a decrease in the pork cutout value, which then leads to increases in exports, thus offsetting a portion of the original decrease in exports. Table 6 also shows that decreases in exports of bellies leads to increases in the cutout value of each of the other cuts. Pork producers cannot simply decrease the production of one cut. Decreases in production mean fewer carcasses going to market. If demand for the other cuts does not change, their price increases as a result of the decrease in supply.

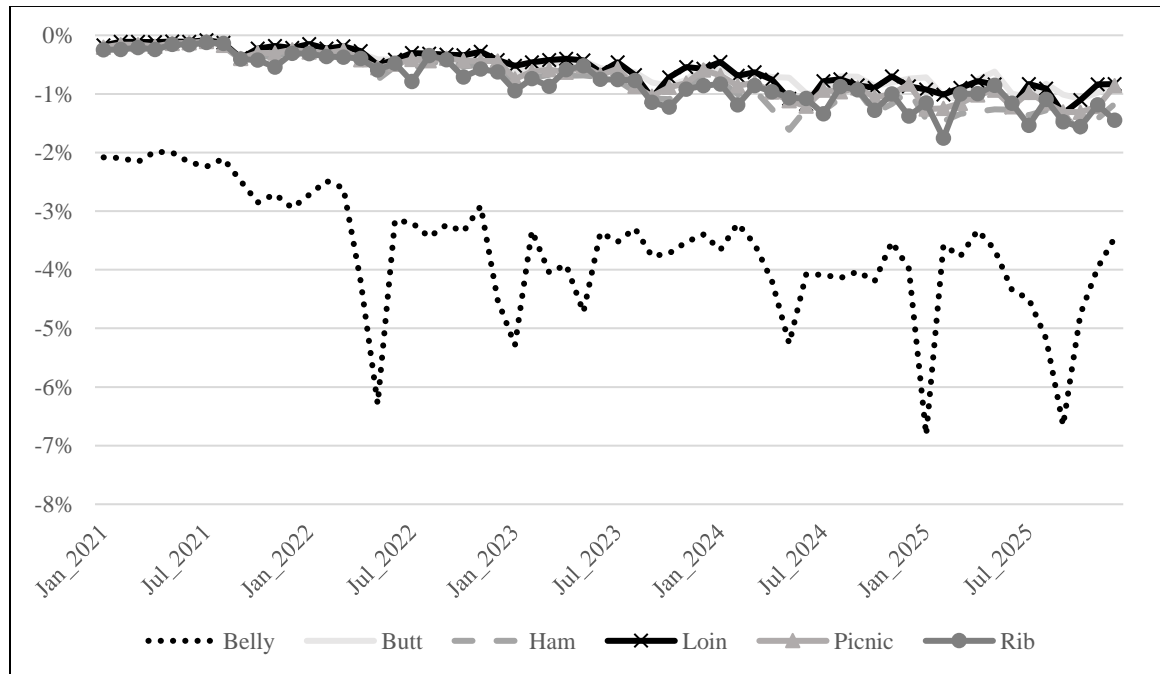
Figure 9 displays the initial decrease in cutout value due to the loss in export demand for bellies. Producers respond to lower prices by decreasing production, which eventually leads to increases in the cutout value.

Figure 11. Percentage Change in Pork Cutout Value and Production as Result of Monthly 10 Percent Decrease in U.S. Belly Exports from Baseline Values, Jan 2021 – Dec 2025



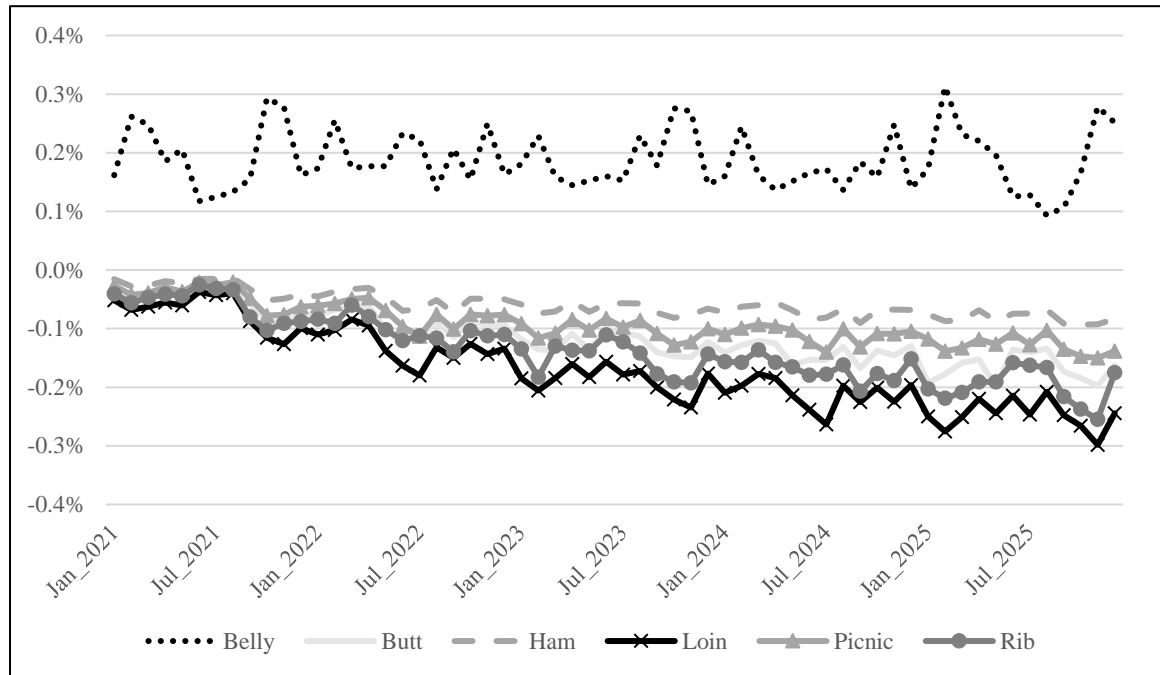
Furthermore, decreasing belly exports similarly decreases exports of the other cuts but to a lesser extent. As explained above, producers will pull back production which increases cutout values. In turn, less of each of the cuts will be exported. This is shown in Figure 10.

Figure 12. Percentage Change in Exports as Result of Monthly 10 Percent Decrease in U.S. Belly Exports from Baseline Values, Jan 2021 – Dec 2025



Finally, consider domestic disappearance. As shown in Figure 11, domestic disappearance of bellies increases while disappearance of each of the other cuts decreases.

Figure 11. Percentage Change in Domestic Disappearance as Result of Monthly 10 Percent Decrease in U.S. Belly Exports from Baseline Values, Jan 2021 – Dec 2025



Chapter 5.2 Decrease in Butt Exports

Similarly, a 10 percent decrease in butt exports from the baseline values for each month spanning from January 2021 through December 2025 was run. The impacts of this scenario on each cut and pork as a whole are summarized in Table 7.

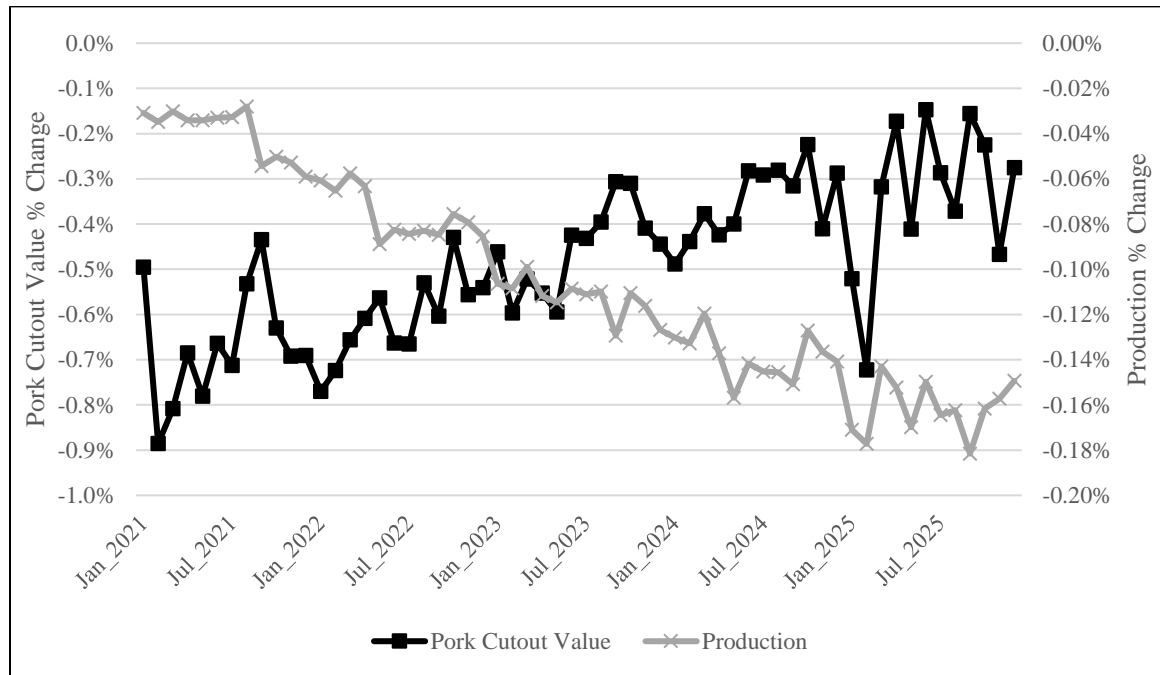
Table 7. Impacts of Monthly 10 Percent Decrease in U.S. Butt Exports from Baseline Values, January 2021 – December 2025

	Short Run <i>Year 1</i>	Medium Run <i>Years 2-4</i>	Longer Run <i>Year 5</i>
Belly			
Average % change in cutout value	0.15	0.39	0.59
Average % change in exports	-0.31	-0.90	-1.30
Butt			
Average % change in cutout value	-6.89	-6.34	-6.04
Average % change in exports	-4.11	-4.24	-4.53
Ham			
Average % change in cutout value	-0.03	0.08	0.17
Average % change in exports	-0.16	-0.46	-0.75
Loin			
Average % change in cutout value	-0.07	0.02	0.12
Average % change in exports	-0.39	-0.80	-1.10
Picnic			
Average % change in cutout value	0.08	0.23	0.34
Average % change in exports	-0.12	-0.37	-0.60
Rib			
Average % change in cutout value	0.10	0.29	0.42
Average % change in exports	-0.17	-0.48	-0.73
Total			
Average % change in cutout value	-0.67	-0.47	-0.34
Average % change in exports	-0.77	-1.12	-1.43
Average % change in production	-0.04	-0.11	-0.16

Again, note that the 10 percent decrease in butt exports did not result in butt exports decreasing by a full 10 percent. However, the percentage decrease in butt exports, about 4 to 5 percent, is closer to the 10 percent than the 2 to 4 percent decrease in belly exports in the belly scenario. Because bellies are more inelastic than butts, changes in belly prices have less of an impact on the quantity of bellies demanded than that of butts.

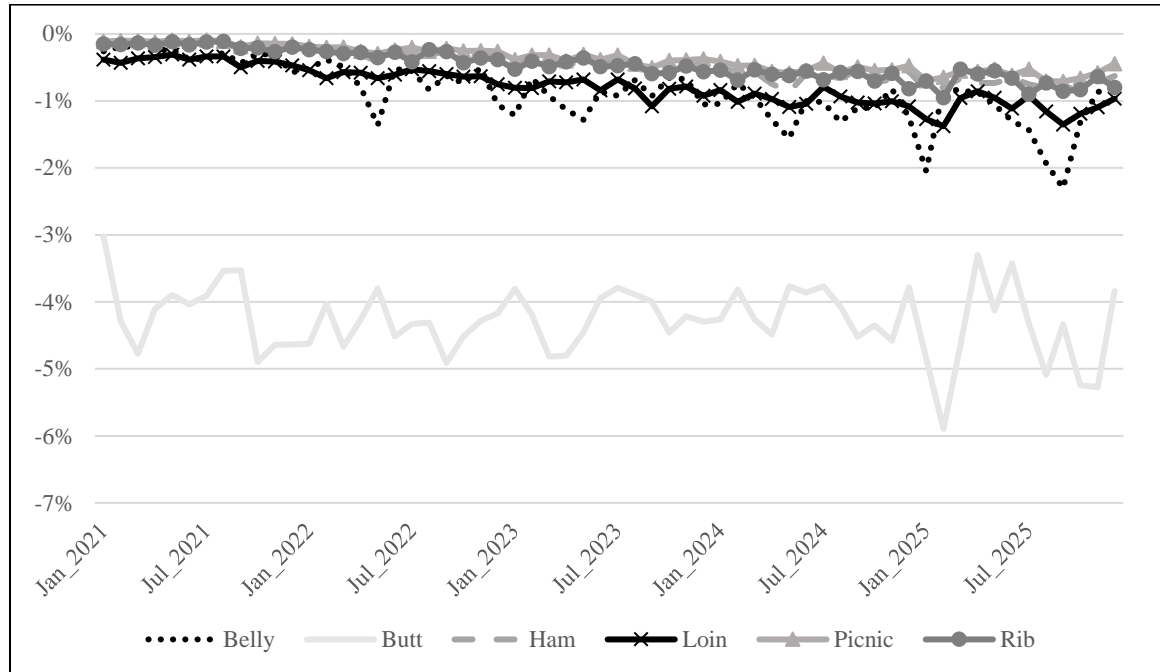
Figure 12 displays the initial decrease in cutout value due to the loss in export demand for butts and the response by producers to scale back pork production.

Figure 12. Percentage Change in Pork Cutout Value and Production as Result of Monthly 10 Percent Decrease in U.S. Butt Exports from Baseline Values, Jan 2021 – Dec 2025



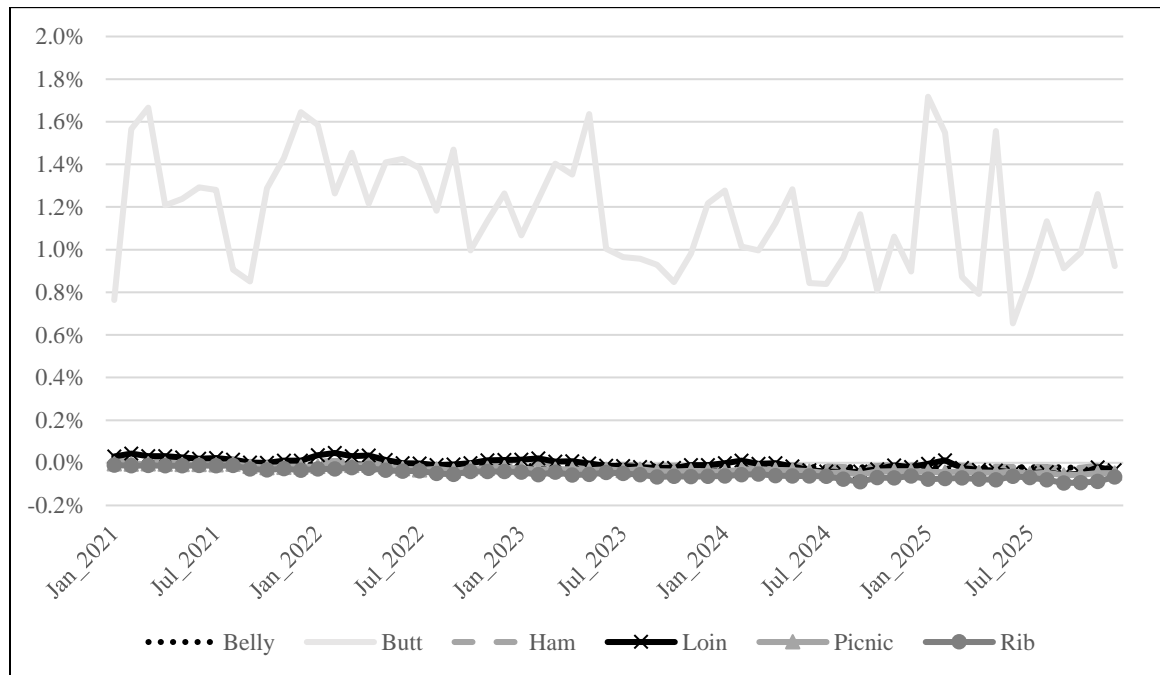
Decreasing butt exports similarly decreases exports of the other cuts but to a lesser extent as shown in Figure 13.

Figure 13. Percentage Change in Exports as Result of Monthly 10 Percent Decrease in U.S. Butt Exports from Baseline Values, Jan 2021 – Dec 2025



While domestic disappearance of butts increases due to the decrease in prices caused by the decrease in export demand, disappearance of the other cuts remains largely unchanged as shown in Figure 14.

Figure 14. Percentage Change in Domestic Disappearance as Result of Monthly 10 Percent Decrease in U.S. Butt Exports from Baseline Values, Jan 2021 – Dec 2025



Chapter 5.3 Decrease in Ham Exports

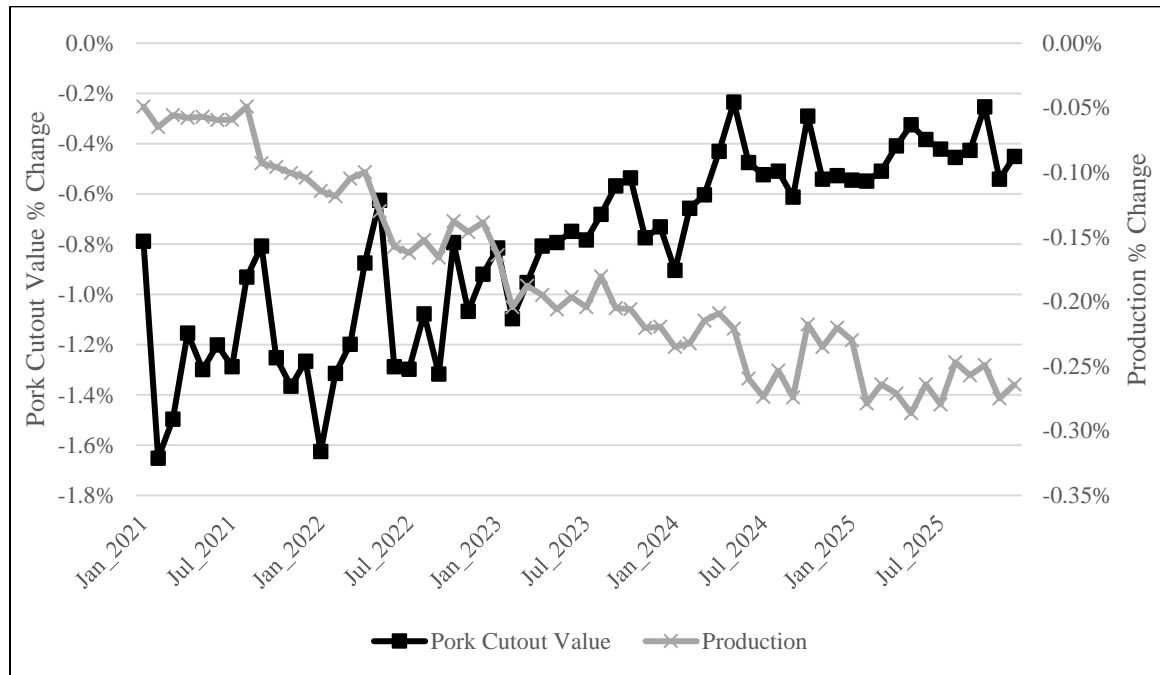
The impacts of a 10 percent decrease in ham exports from the baseline values for each month spanning from January 2021 through December 2025 are summarized in Table 8.

Table 8. Impacts of Monthly 10 Percent Decrease in U.S. Ham Exports from Baseline Values, January 2021 – December 2025

	Short Run <i>Year 1</i>	Medium Run <i>Years 2-4</i>	Longer Run <i>Year 5</i>
Belly			
Average % change in cutout value	0.28	0.71	1.00
Average % change in exports	-0.56	-1.56	-2.06
Butt			
Average % change in cutout value	0.23	0.57	0.75
Average % change in exports	-0.16	-0.48	-0.72
Ham			
Average % change in cutout value	-7.63	-6.73	-5.19
Average % change in exports	-2.54	-3.16	-3.51
Loin			
Average % change in cutout value	0.17	0.48	0.66
Average % change in exports	-0.22	-0.58	-0.88
Picnic			
Average % change in cutout value	0.25	0.57	0.72
Average % change in exports	-0.17	-0.57	-0.89
Rib			
Average % change in cutout value	0.23	0.60	0.80
Average % change in exports	-0.25	-0.71	-1.04
Total			
Average % change in cutout value	-1.21	-0.81	-0.44
Average % change in exports	-1.06	-1.55	-1.84
Average % change in production	-0.07	-0.19	-0.26

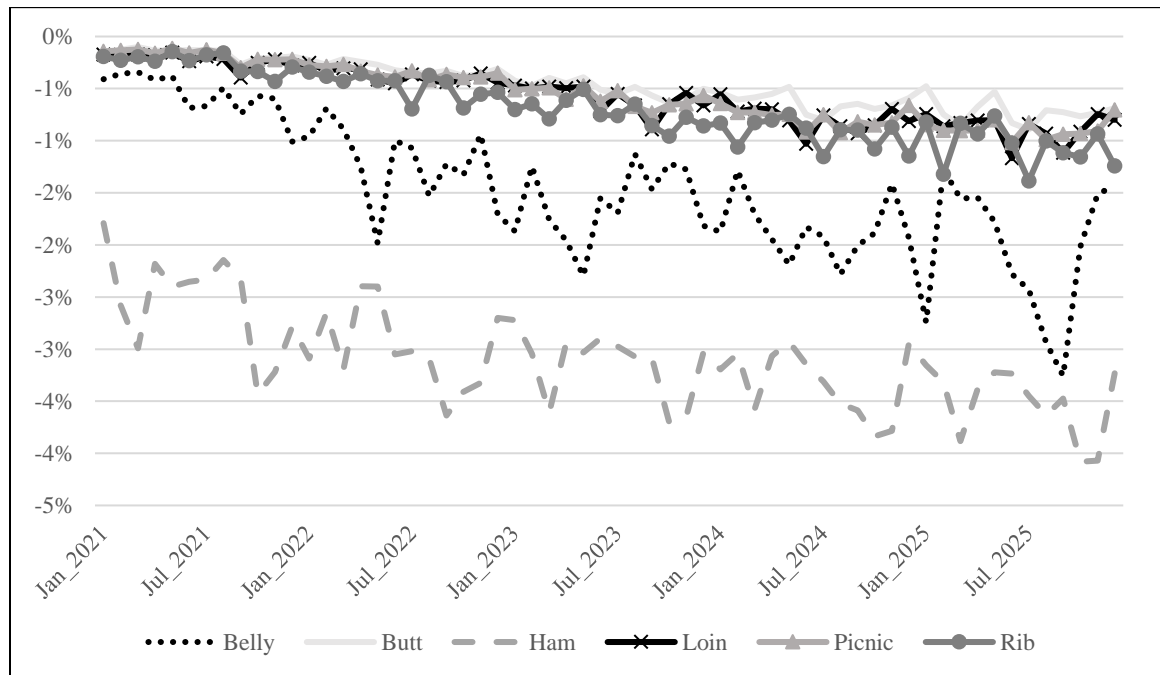
Figure 15 displays the initial decrease in cutout value due to the loss in export demand for hams and the response by producers to scale back pork production as prices decrease.

Figure 15. Percentage Change in Pork Cutout Value and Production as Result of Monthly 10 Percent Decrease in U.S. Ham Exports from Baseline Values, Jan 2021 – Dec 2025



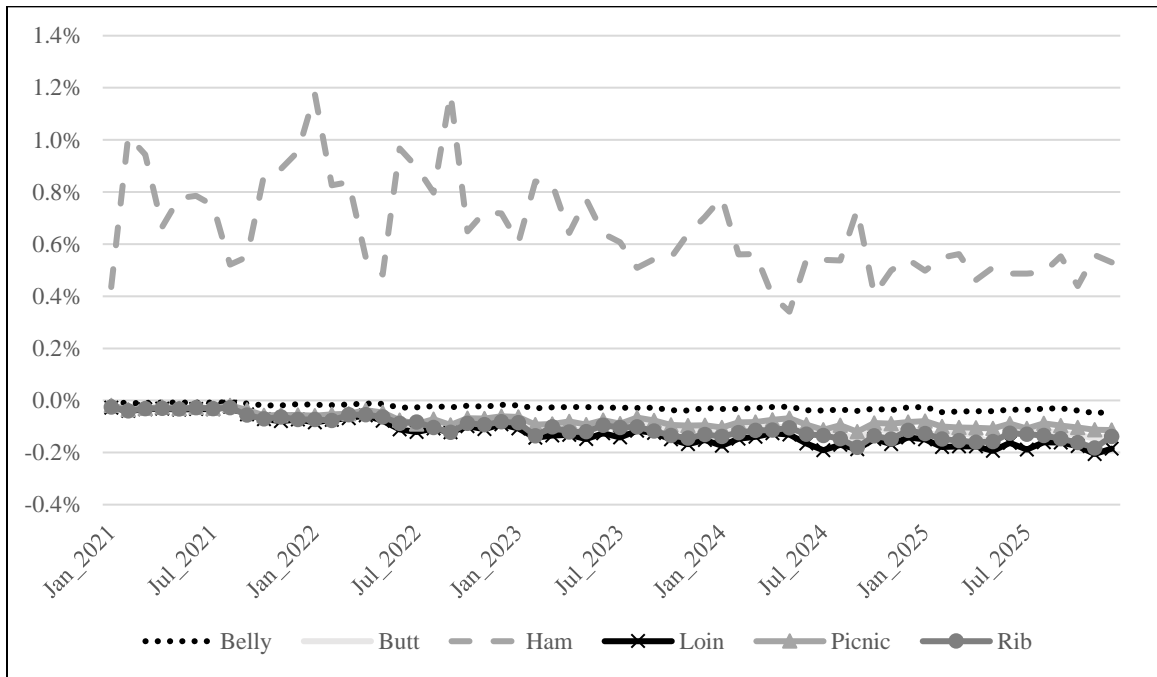
Decreasing ham exports decreases exports of the other cuts, as well, as shown in Figure 16. Most notably, bellies sustain the greatest decrease in exports after hams which is due to strong domestic demand for the cut.

Figure 16. Percentage Change in Exports as Result of Monthly 10 Percent Decrease in U.S. Ham Exports from Baseline Values, Jan 2021 – Dec 2025



In this scenario, domestic disappearance of hams increases, and disappearance of the other cuts only slightly decreases as shown in Figure 17.

Figure 17. Percentage Change in Domestic Disappearance as Result of Monthly 10 Percent Decrease in U.S. Ham Exports from Baseline Values, Jan 2021 – Dec 2025



Chapter 5.4 Decrease in Loin Exports

Table 9 summarizes the impacts of a 10 percent decrease in loin exports from the baseline values for each month spanning from January 2021 through December 2025.

Table 9. Impacts of Monthly 10 Percent Decrease in U.S. Loin Exports from Baseline Values, January 2021 – December 2025

	Short Run <i>Year 1</i>	Medium Run <i>Years 2-4</i>	Longer Run <i>Year 5</i>
Belly			
Average % change in cutout value	0.09	0.37	0.59
Average % change in exports	-0.45	-1.20	-1.63
Butt			
Average % change in cutout value	0.17	0.41	0.56
Average % change in exports	-0.12	-0.35	-0.54
Ham			
Average % change in cutout value	0.17	0.39	0.50
Average % change in exports	-0.15	-0.49	-0.80
Loin			
Average % change in cutout value	-4.36	-3.76	-3.10
Average % change in exports	-7.51	-7.87	-7.97
Picnic			
Average % change in cutout value	0.15	0.38	0.51
Average % change in exports	-0.15	-0.43	-0.69
Rib			
Average % change in cutout value	0.13	0.38	0.55
Average % change in exports	-0.23	-0.59	-0.86
Total			
Average % change in cutout value	-0.87	-0.58	-0.36
Average % change in exports	-1.68	-2.04	-2.27
Average % change in production	-0.05	-0.14	-0.20

Notice that as loins are the most elastic of the cuts, a 10 percent shock accounts for over a 7 percent decrease in loin exports. Figure 18 displays the percentage changes in cutout value and production caused by the decrease in loin exports.

Figure 18. Percentage Change in Pork Cutout Value and Production as Result of Monthly 10 Percent Decrease in U.S. Loin Exports from Baseline Values, Jan 2021 – Dec 2025

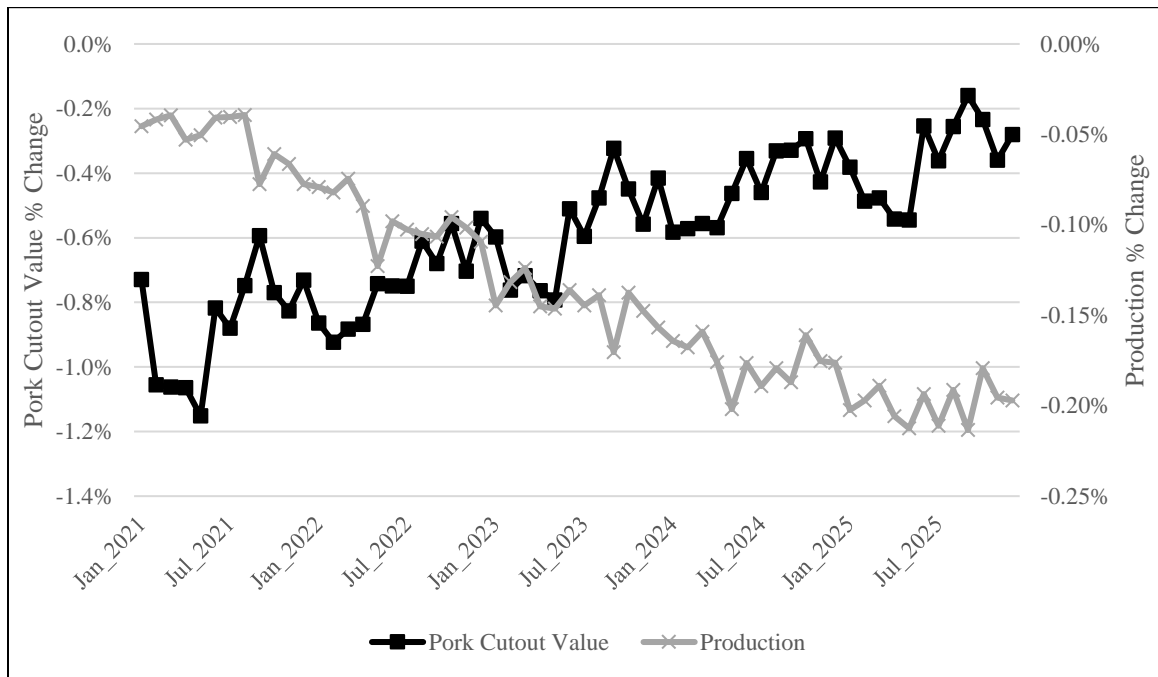


Figure 19 displays the decreases in exports of each of the cuts caused by decreasing the exports of loins.

Figure 19. Percentage Change in Exports as Result of Monthly 10 Percent Decrease in U.S. Loin Exports from Baseline Values, Jan 2021 – Dec 2025

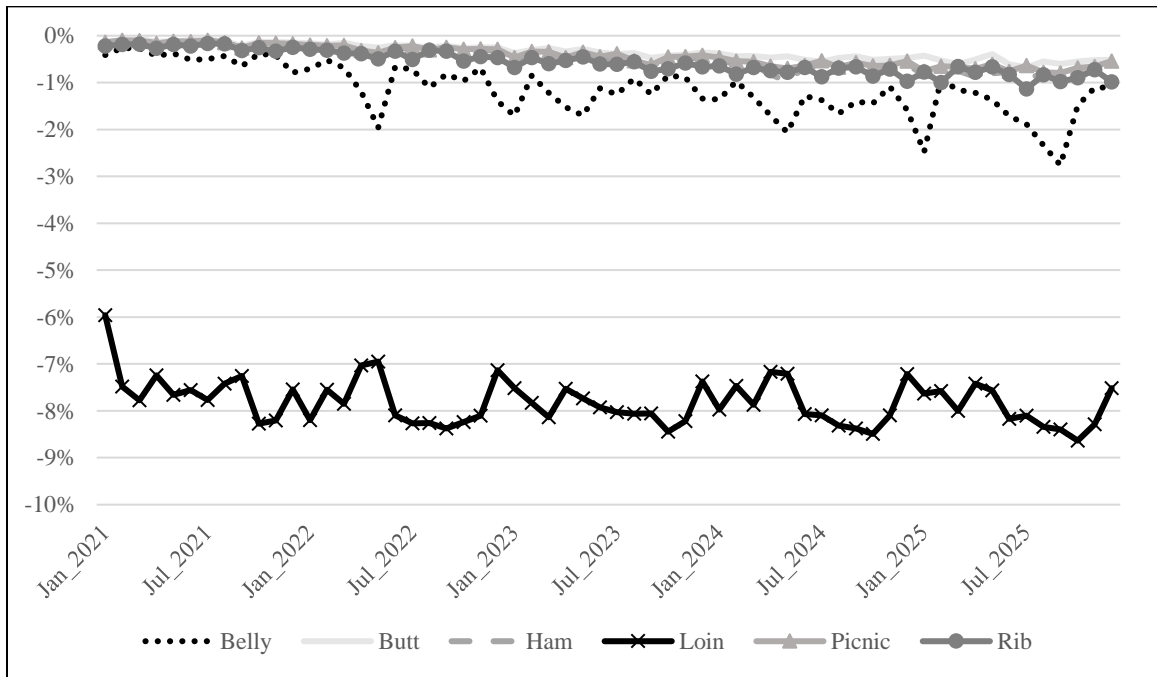
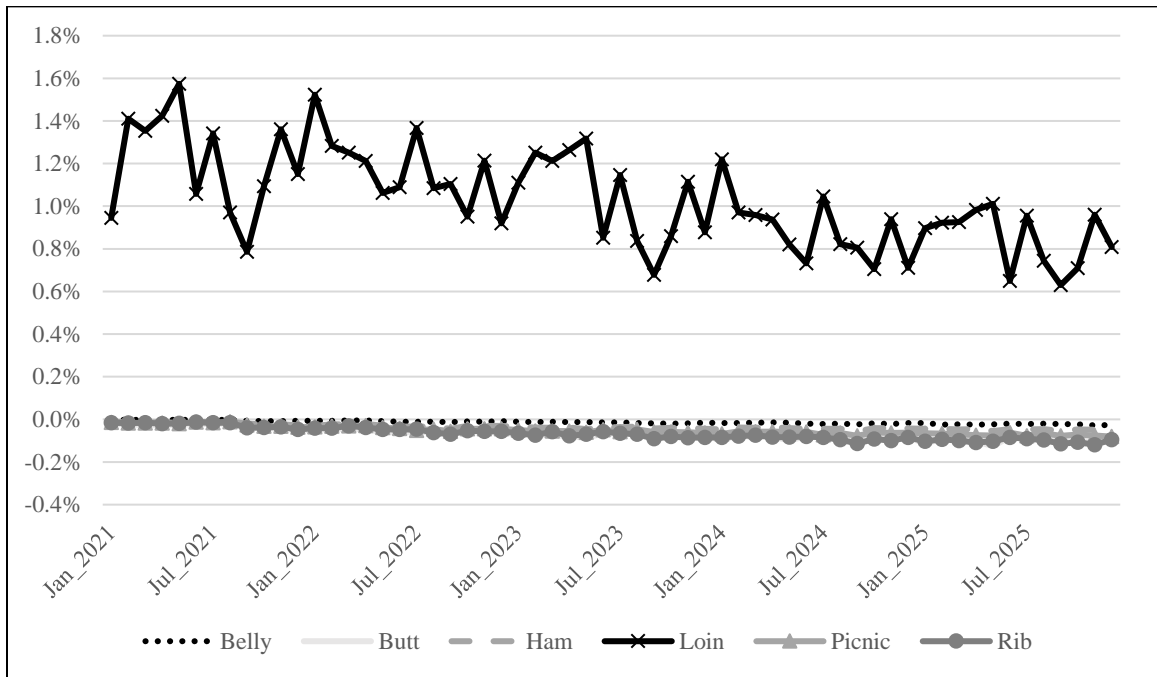


Figure 20 displays that domestic disappearance of loins increases while disappearance of the other cuts is essentially unchanged.

Figure 20. Percentage Change in Domestic Disappearance as Result of Monthly 10 Percent Decrease in U.S. Loin Exports from Baseline Values, Jan 2021 – Dec 2025



Chapter 5.5 Decrease in Picnic Exports

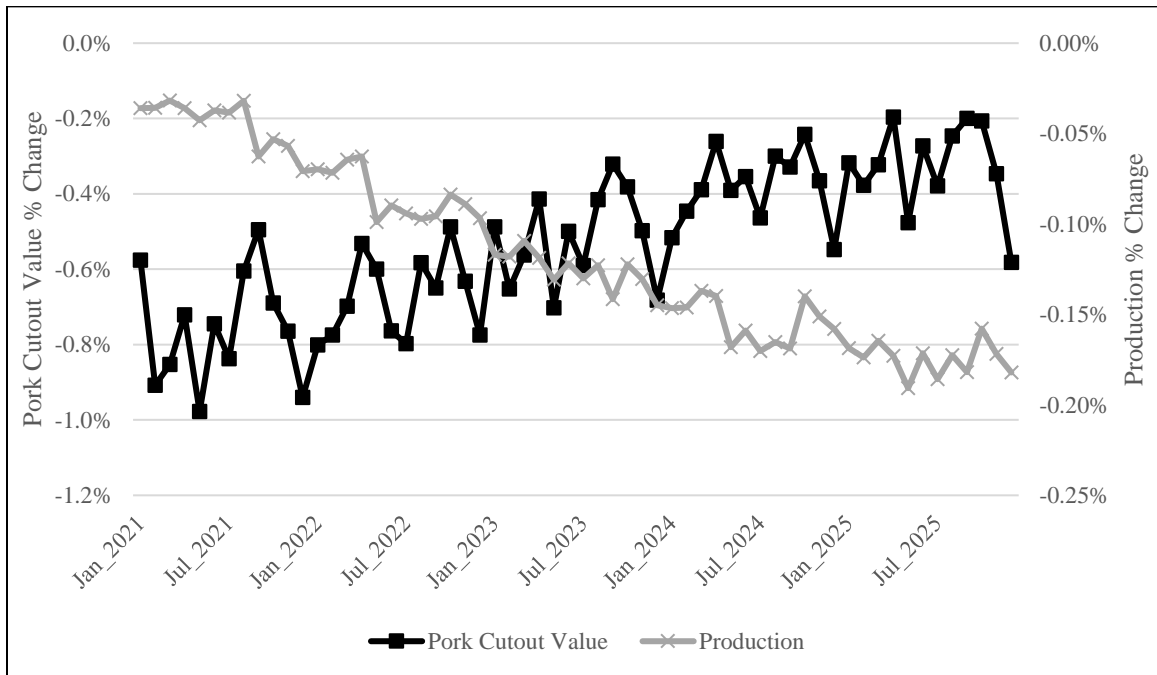
The impacts of a 10 percent decrease in picnic exports from the baseline values for each month from January 2021 through December 2025 are summarized in Table 10.

Table 10. Impacts of Monthly 10 Percent Decrease in U.S. Picnic Exports from Baseline Values, January 2021 – December 2025

	Short Run Year 1	Medium Run Years 2-4	Longer Run Year 5
Belly			
Average % change in cutout value	0.16	0.43	0.64
Average % change in exports	-0.36	-1.01	-1.39
Butt			
Average % change in cutout value	-0.14	-0.03	0.10
Average % change in exports	-0.26	-0.53	-0.71
Ham			
Average % change in cutout value	-0.47	-0.38	-0.23
Average % change in exports	-0.31	-0.67	-0.97
Loin			
Average % change in cutout value	-0.13	0.10	0.24
Average % change in exports	-0.51	-0.74	-0.97
Picnic			
Average % change in cutout value	-9.69	-8.23	-6.89
Average % change in exports	-4.45	-4.72	-4.85
Rib			
Average % change in cutout value	-0.05	0.14	0.29
Average % change in exports	-0.38	-0.75	-1.00
Total			
Average % change in cutout value	-0.76	-0.53	-0.33
Average % change in exports	-1.01	-1.33	-1.56
Average % change in production	-0.04	-0.12	-0.17

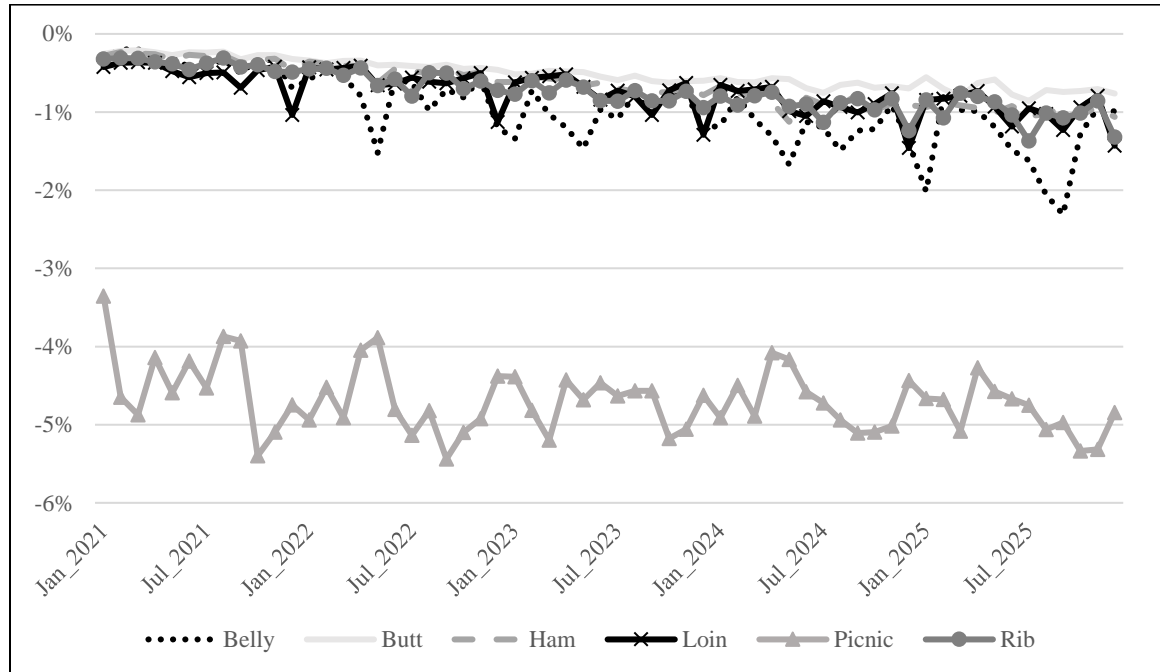
Figure 21 shows the initial decrease in cutout value due to the loss in export demand for picnics and the response by producers to scale back pork production as prices decrease.

Figure 21. Percentage Change in Pork Cutout Value and Production as Result of Monthly 10 Percent Decrease in U.S. Picnic Exports from Baseline Values, Jan 2021 – Dec 2025



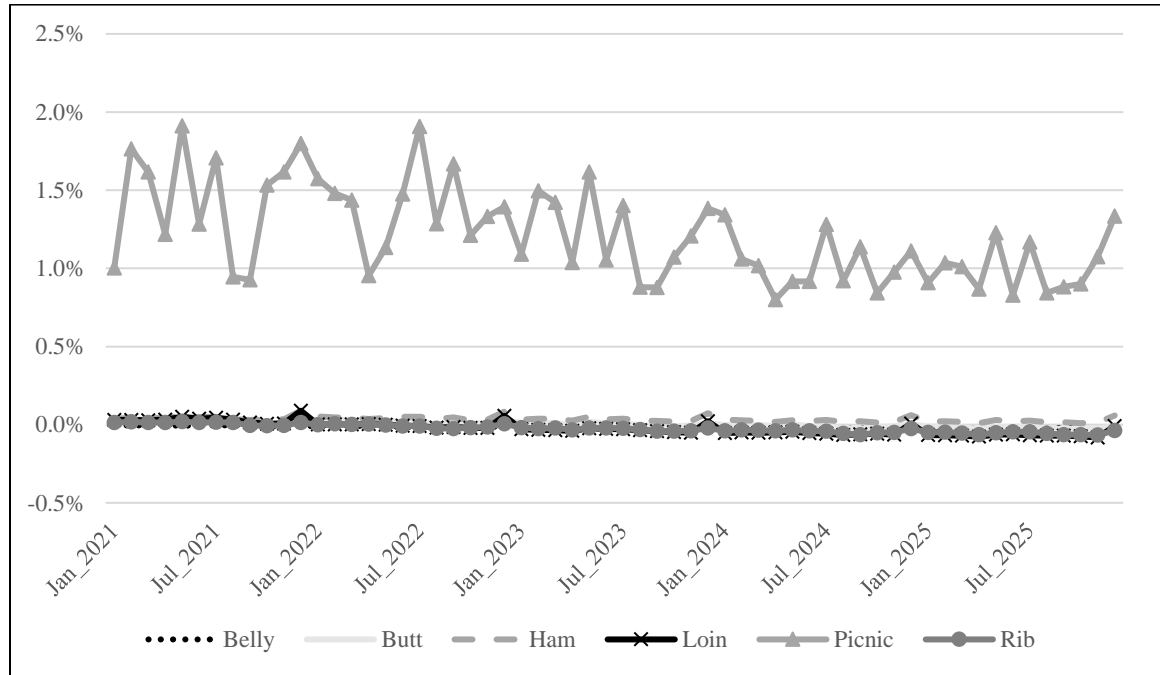
Decreasing picnic exports decreases exports of the other primal cuts as shown in Figure 22.

Figure 22. Percentage Change in Exports as Result of Monthly 10 Percent Decrease in U.S. Picnic Exports from Baseline Values, Jan 2021 – Dec 2025



Decreasing picnic exports causes domestic disappearance of picnics to increase;
disappearance of the other cuts is nearly unchanged as shown in Figure 23.

Figure 23. Percentage Change in Domestic Disappearance as Result of Monthly 10 Percent Decrease in U.S. Picnic Exports from Baseline Values, Jan 2021 – Dec 2025



Chapter 5.6 Decrease in Rib Exports

Table 11 summarizes the effects of a 10 percent decrease in rib exports from the baseline values for each month from January 2021 through December 2025.

Table 11. Impacts of Monthly 10 Percent Decrease in U.S. Rib Exports from Baseline Values, January 2021 – December 2025

	Short Run <i>Year 1</i>	Medium Run <i>Years 2-4</i>	Longer Run <i>Year 5</i>
Belly			
Average % change in cutout value	0.08	0.19	0.30
Average % change in exports	-0.15	-0.45	-0.64
Butt			
Average % change in cutout value	0.04	0.10	0.16
Average % change in exports	-0.06	-0.17	-0.26
Ham			
Average % change in cutout value	0.06	0.15	0.20
Average % change in exports	-0.06	-0.19	-0.32
Loin			
Average % change in cutout value	-0.01	0.04	0.09
Average % change in exports	-0.16	-0.34	-0.48
Picnic			
Average % change in cutout value	0.07	0.16	0.22
Average % change in exports	-0.05	-0.16	-0.27
Rib			
Average % change in cutout value	-4.65	-4.78	-4.50
Average % change in exports	-5.64	-6.41	-6.60
Total			
Average % change in cutout value	-0.32	-0.24	-0.16
Average % change in exports	-0.29	-0.47	-0.62
Average % change in production	-0.02	-0.05	-0.08

Figure 24 displays the percentage changes in cutout value and production caused by the decrease in rib exports.

Figure 24. Percentage Change in Pork Cutout Value and Production as Result of Monthly 10 Percent Decrease in U.S. Rib Exports from Baseline Values, Jan 2021 – Dec 2025

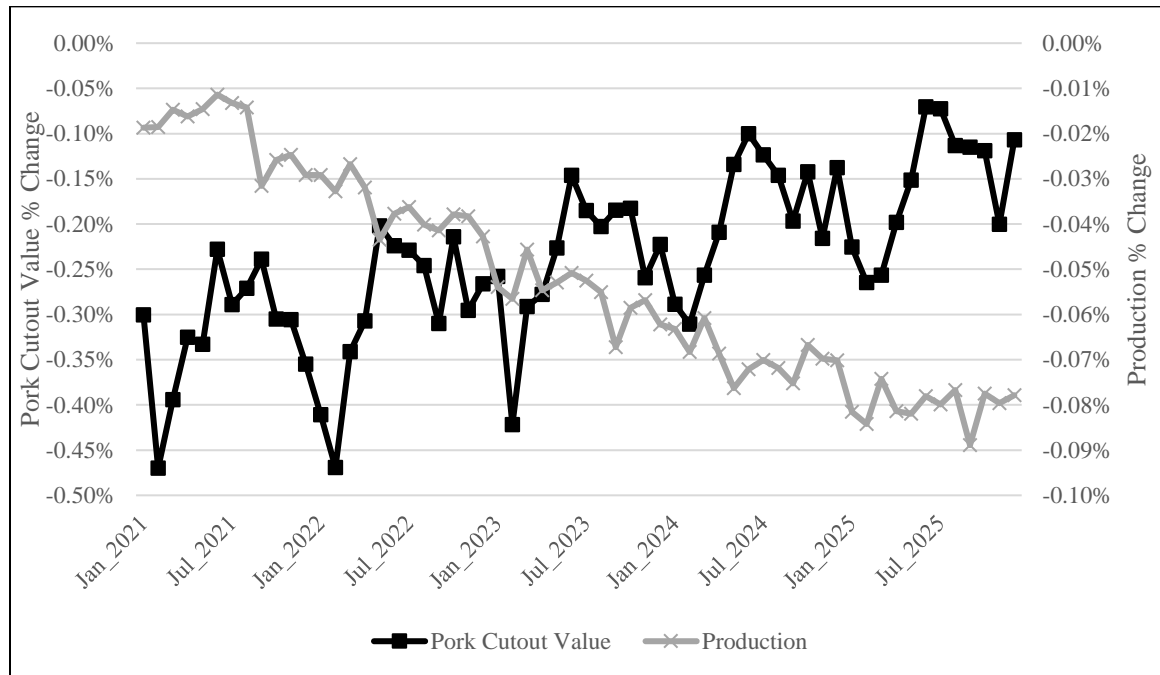
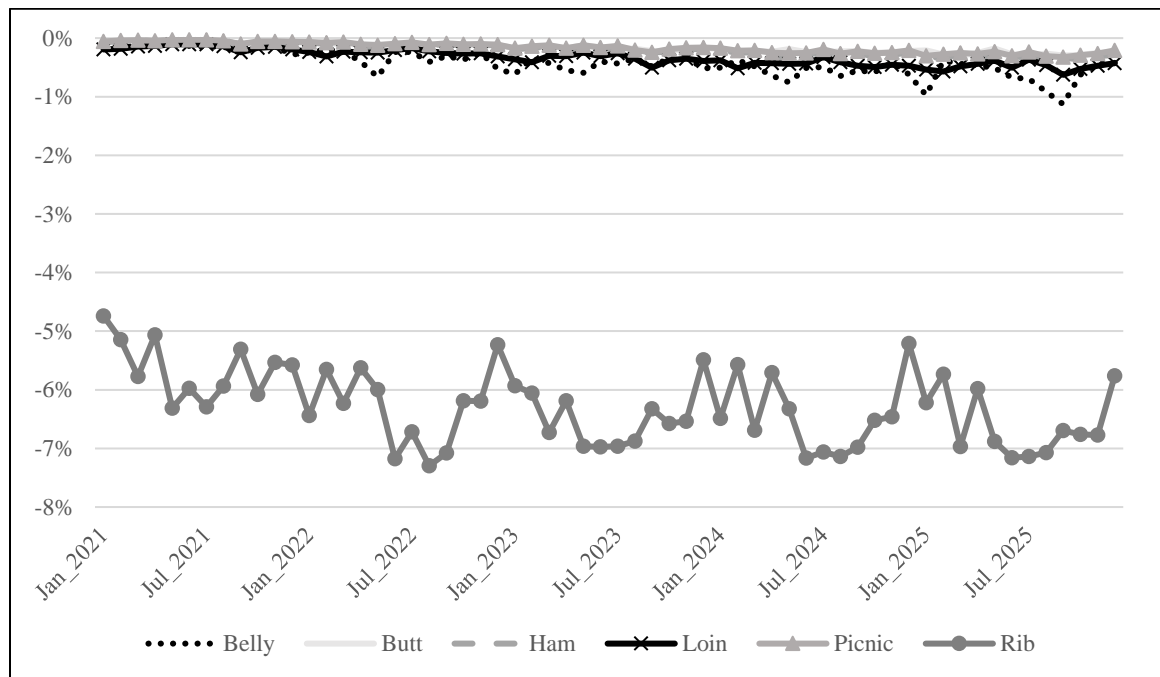


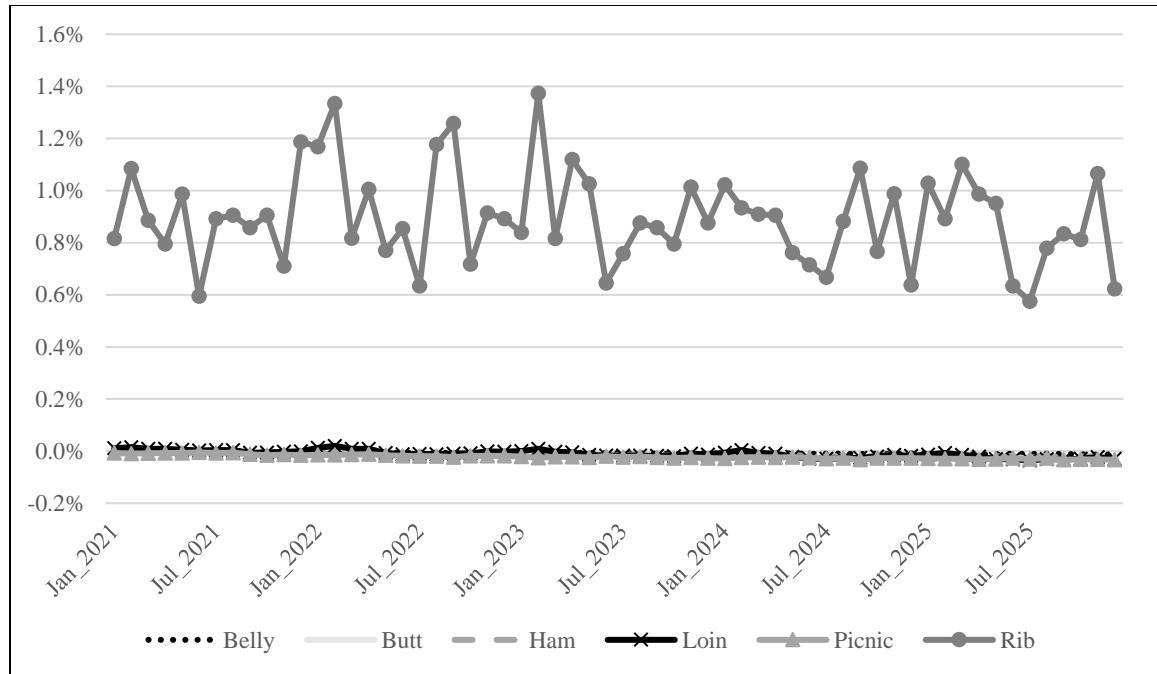
Figure 25 displays the decreases in exports of each of the cuts caused by decreasing the exports of ribs. While ribs see decreases in exports of up to 7 percent, the other cuts see little change in export amounts. Most likely, this is due to ribs comprising less than 5 percent of the pork carcass.

Figure 25. Percentage Change in Exports as Result of Monthly 10 Percent Decrease in U.S. Rib Exports from Baseline Values, Jan 2021 – Dec 2025



Finally, consider changes in domestic disappearance as shown in Figure 26. Ribs experience an increase in disappearance while the other cuts are left essentially unchanged.

Figure 26. Percentage Change in Domestic Disappearance as Result of Monthly 10 Percent Decrease in U.S. Rib Exports from Baseline Values, Jan 2021 – Dec 2025



In summary, decreasing export demand for each of the cuts individually has disparate effects on domestic pork markets. Figure 27 displays the percentage change in production as a result of a 10 percent decrease in exports of each primal cut. Decreasing belly exports causes producers to decrease production the most because decreasing belly exports has the most detrimental impact on the pork cutout value as shown in Figure 28. Decreasing rib exports, on the other hand, has the least negative impact on production and the pork cutout value. Thus, export markets that have strong demands for belly cuts are the most vital to maintain in order to support the pork cutout value.

Figure 27. Percentage Change in Production by Primal as Result of Monthly 10 Percent Decrease in U.S. Primal Exports from Baseline Values, Jan 2021 – Dec 2025

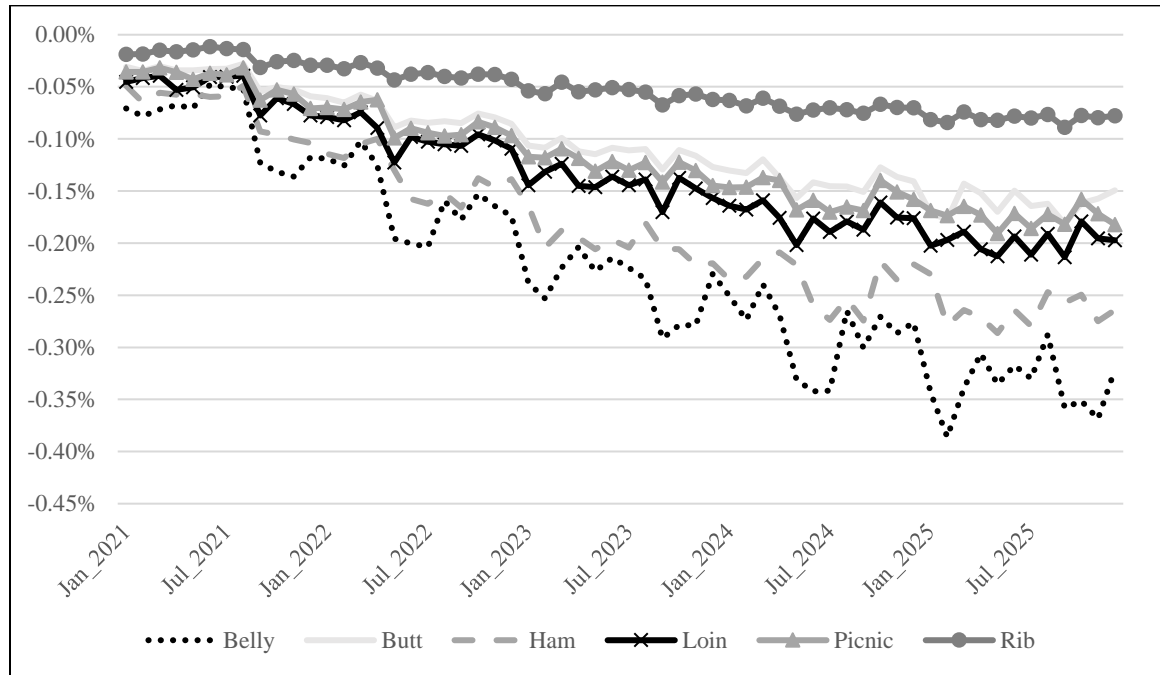
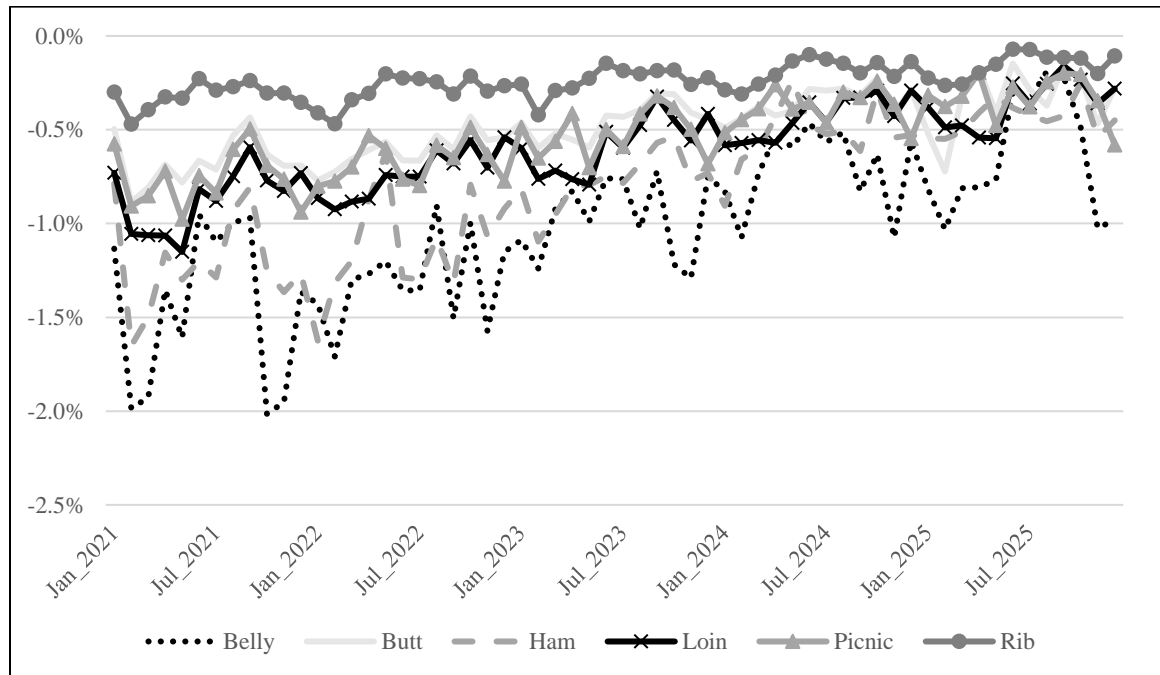


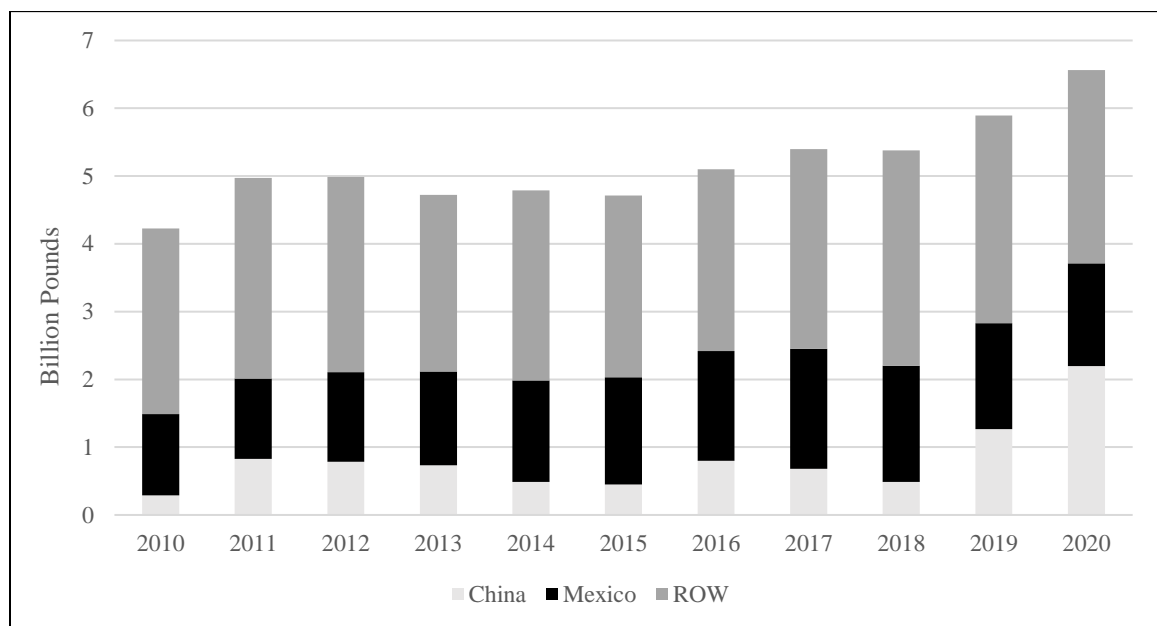
Figure 28. Percentage Change in Pork Cutout Value by Primal as Result of Monthly 10 Percent Decrease in U.S. Primal Exports from Baseline Values, Jan 2021 – Dec 2025



Chapter 5.7 U.S. Pork Exports to China and Mexico

The final two scenarios focus specifically on exports to China and Mexico. These two countries were chosen because of the increasingly vital role they play in U.S. pork exports as shown in Figure 29. In 2020, for example, nearly 57 percent of U.S. pork exports went to these two countries.³² To put that into perspective, 13 percent of the pork produced in the United States in 2020 was exported to either China or Mexico.³³

Figure 29. U.S. Pork Exports to China, Mexico, and Rest of World (ROW)



Sources: USDA Foreign Agricultural Service Global Agricultural Trade System & USDA National Agricultural Statistics Service

The two markets vary greatly in the pork primal cuts they import from the United States, however. The majority of exports to Mexico are hams, whereas China has a more balanced mix. The U.S. Meat Export Federation (USMEF) estimated the breakdown of pork primal export shares to China and Mexico in 2020.³⁴ They are summarized in Table

³² USDA Foreign Agricultural Service Global Agricultural Trade System. (2021). Available at <https://apps.fas.usda.gov/gats/default.aspx>. [Accessed March 2021].

³³ USDA National Agricultural Statistics Service. (2021). "Pork, slaughter, commercial - production, measured in lb." Available at <https://quickstats.nass.usda.gov/>. [Accessed March 2021].

³⁴ U.S. Meat Export Federation. (2020). "U.S. pork export primal share estimates." [Excel spreadsheet].

12. China is currently demanding a great deal of carcasses, most likely in an effort to efficiently fulfill the increase in demand caused by African swine fever (ASF) ravaging their domestic hog herd.

Table 12. USMEF Estimated U.S. Pork Primal Export Shares to China and Mexico in 2020

Country	Belly	Butt	Ham	Loin	Picnic	Rib	Carcasses
China	0%	15%	20%	0%	15%	5%	45%
Mexico	2%	4%	70%	5%	17%	1%	1%

Both markets are clearly important to the U.S. pork cutout value. The following two scenarios explain the implications of decreasing exports to each market.

Chapter 5.8 Decrease in China Exports

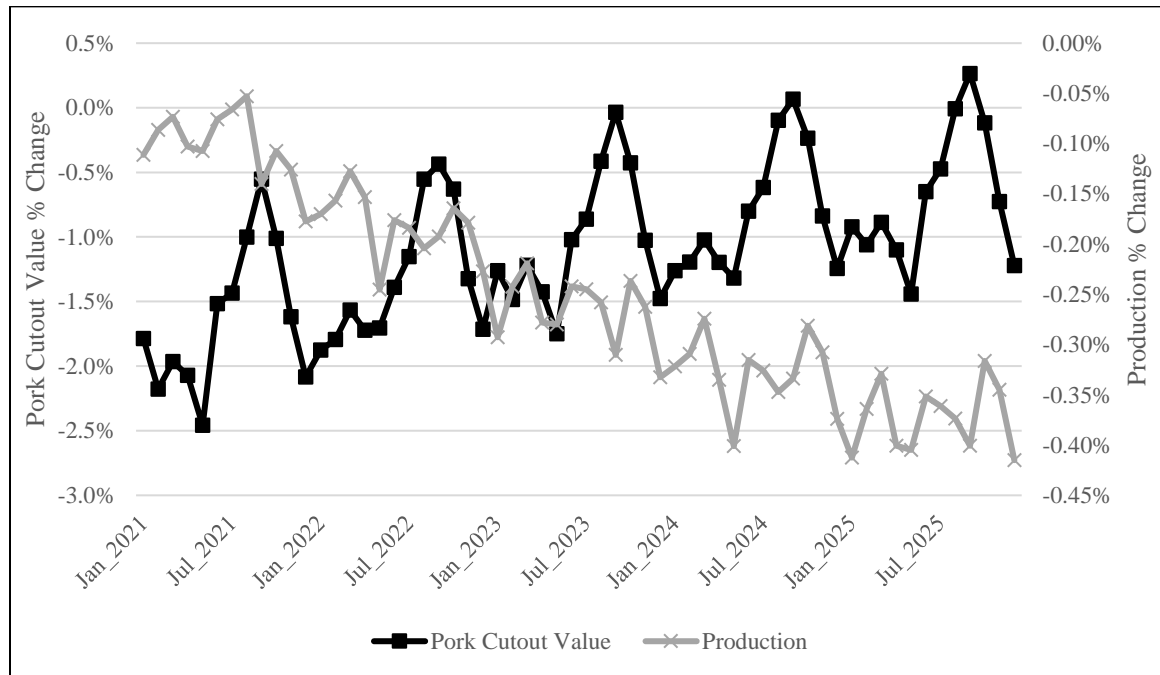
Table 13 summarizes the impacts of decreasing the baseline values of exports to China by 10 percent for each month spanning from January 2021 through December 2025.

Table 13. Impacts of Monthly 10 Percent Decrease in U.S. Exports to China from Baseline Values, January 2021 – December 2025

	Short Run Year 1	Medium Run Years 2-4	Longer Run Year 5
Belly			
Average % change in cutout value	-1.43	-0.79	-0.51
Average % change in exports	-1.39	-2.77	-3.53
Butt			
Average % change in cutout value	-1.94	-1.43	-1.05
Average % change in exports	-1.49	-1.90	-2.27
Ham			
Average % change in cutout value	-2.08	-1.63	-1.13
Average % change in exports	-0.99	-1.70	-2.33
Loin			
Average % change in cutout value	-1.22	-0.61	-0.28
Average % change in exports	-2.61	-3.00	-3.58
Picnic			
Average % change in cutout value	-2.71	-1.90	-1.43
Average % change in exports	-1.52	-2.07	-2.59
Rib			
Average % change in cutout value	-1.43	-0.75	-0.38
Average % change in exports	-2.37	-2.86	-3.39
Total			
Average % change in cutout value	-1.64	-1.06	-0.70
Average % change in exports	-1.57	-2.20	-2.77
Average % change in production	-0.10	-0.26	-0.37

Figure 30 shows the percentage changes in cutout value and production caused by the decrease in exports to China.

Figure 30. Percentage Change in Pork Cutout Value and Production as Result of Monthly 10 Percent Decrease in U.S. Exports to China from Baseline Values, Jan 2021 – Dec 2025



Changes in cutout values for the primal cuts are shown in Figure 31. Note that all cuts see decreases in cutout value, but picnics, hams, and butts sustain the greatest decreases.

Figure 31. Percentage Change in Pork Primal Cutout Values as Result of Monthly 10 Percent Decrease in U.S. Exports to China from Baseline Values, Jan 2021 – Dec 2025

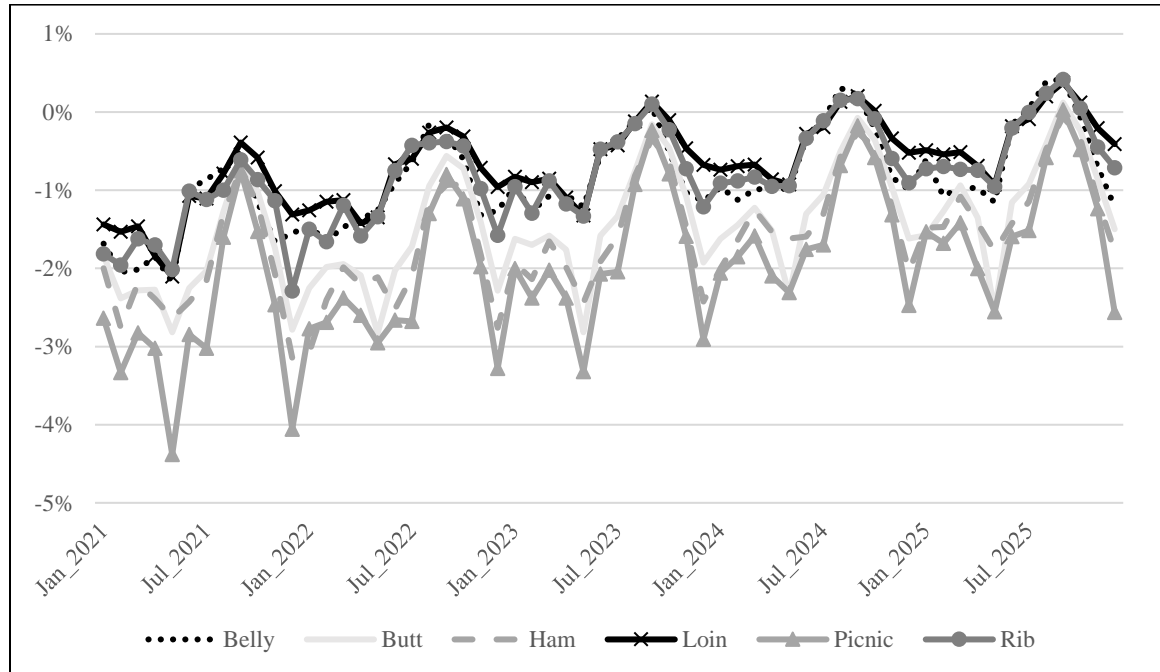
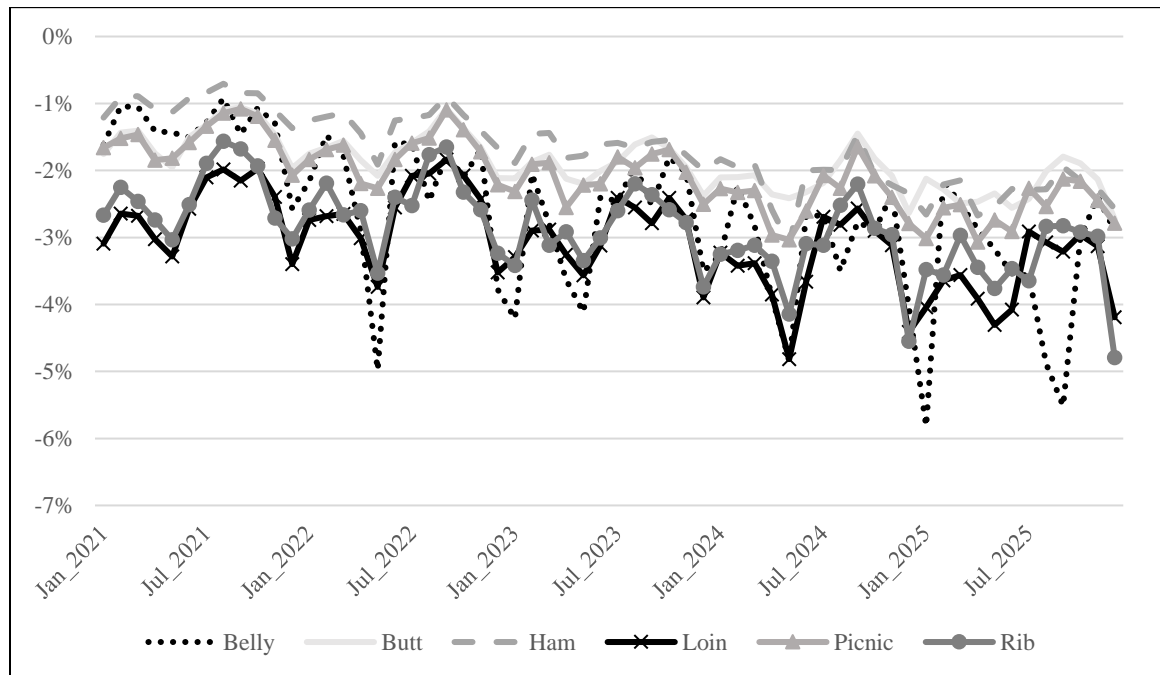


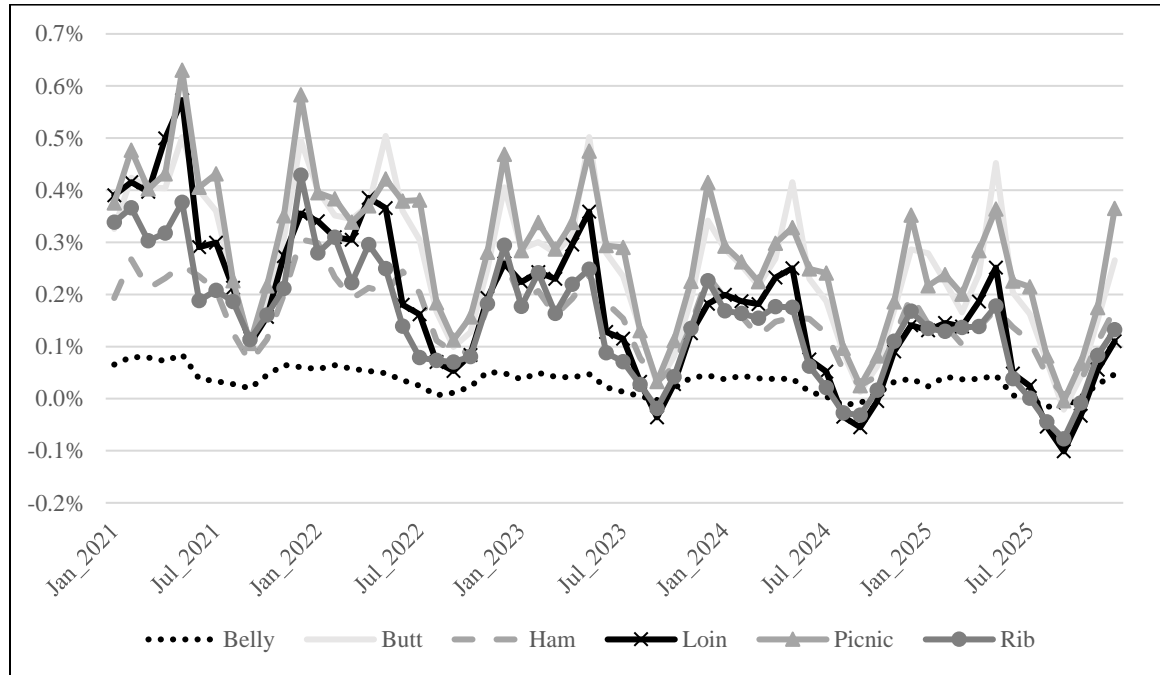
Figure 32 displays the decreases in exports of each of the cuts caused by decreasing the exports to China. Each of the cuts experiences decreases in exports, with bellies, loins, and ribs experiencing the greatest decreases.

Figure 32. Percentage Change in Exports as Result of Monthly 10 Percent Decrease in U.S. Exports to China from Baseline Values, Jan 2021 – Dec 2025



Finally, consider changes in domestic disappearance as a result of decreasing exports to China. Figure 33 shows that disappearance increases for each of the cuts.

Figure 33. Percentage Change in Domestic Disappearance as Result of Monthly 10 Percent Decrease in U.S. Exports to China from Baseline Values, Jan 2021 – Dec 2025



It is safe to say that losing even 10 percent of exports to China would be detrimental to the U.S. pork industry as evidenced by this scenario. Exports of bellies, loins, and ribs would be the most negatively impacted if China scales back their purchases. The cutout values for butts, hams, and picnics would see the greatest percentage decreases of the cuts. Overall, China is a key player in U.S. pork markets, and the shares of pork primal cuts they demand play a role in determining the U.S. pork cutout value.

Chapter 5.9 Decrease in Mexico Exports

Export equations for Mexico were not estimated. Therefore, to run a 10 percent decrease in exports to Mexico, the ROW export equation was used. Using USMEF's export share and accompanying export volumes, the shares of ROW exports that went to Mexico of

each of the primal cuts were calculated. These shares are summarized in Table 14. The 10 percent shock was imposed by decreasing each cut's ROW baseline export values by 10 percent of their respective total export share percentages outlined in Table 14.

Table 14. USMEF Estimated Mexico Shares of ROW Exports in 2020

Belly	Butt	Ham	Loin	Picnic	Rib
65%	36%	73%	47%	34%	21%

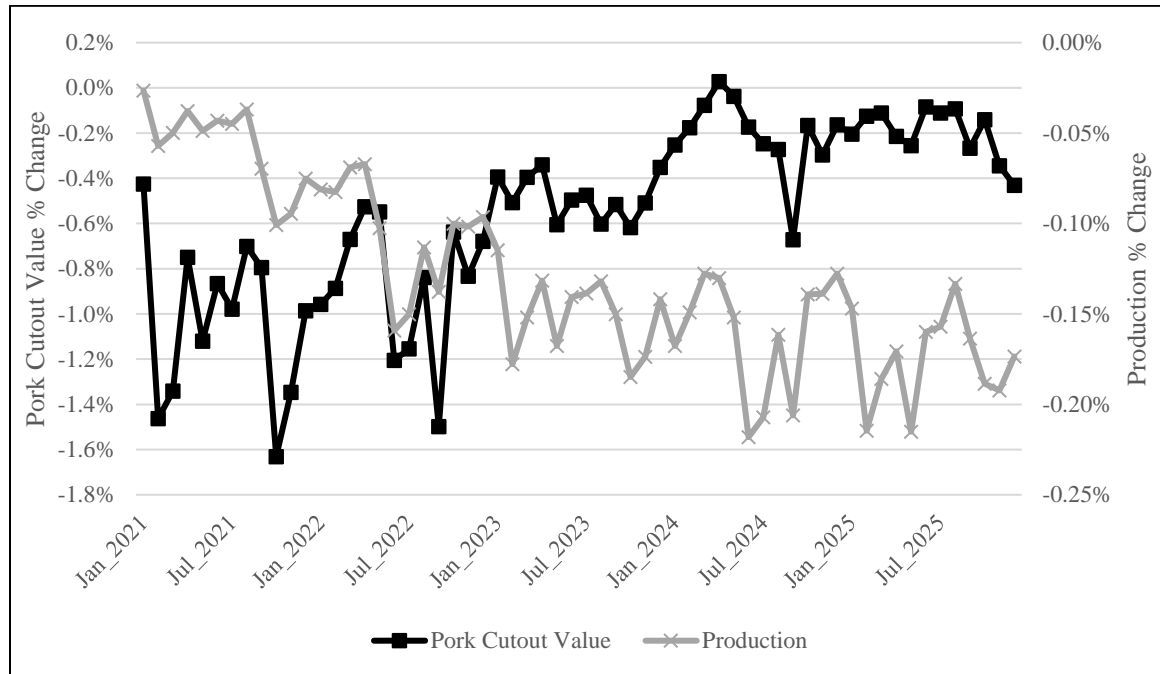
As shown in Table 15, decreasing exports to Mexico is the most detrimental to the ham cutout value. Losing 10 percent of the Mexican markets results in a nearly 3 percent decrease in ham cutout value in the first year.

Table 15. Impacts of Monthly 10 Percent Decrease in U.S. Exports to Mexico from Baseline Values, January 2021 – December 2025

	Short Run Year 1	Medium Run Years 2-4	Longer Run Year 5
Belly			
Average % change in cutout value	-0.42	-0.14	-0.13
Average % change in exports	-0.62	-1.34	-1.55
Butt			
Average % change in cutout value	-1.23	-0.80	-0.49
Average % change in exports	-0.91	-1.04	-1.06
Ham			
Average % change in cutout value	-2.92	-1.73	-0.74
Average % change in exports	-1.06	-1.17	-1.19
Loin			
Average % change in cutout value	-0.59	-0.17	0.10
Average % change in exports	-1.34	-1.34	-1.26
Picnic			
Average % change in cutout value	-1.36	-0.68	-0.28
Average % change in exports	-0.80	-0.94	-1.01
Rib			
Average % change in cutout value	-0.16	0.15	0.32
Average % change in exports	-0.61	-0.86	-0.97
Total			
Average % change in cutout value	-1.03	-0.52	-0.20
Average % change in exports	-0.99	-1.15	-1.19
Average % change in production	-0.06	-0.14	-0.18

While the pork cutout value experiences sharp decreases in the first two years as shown in Figure 34, it does nearly recover by years four and five as producers back off production to account for the loss in exports to Mexico.

Figure 34. Percentage Change in Pork Cutout Value and Production as Result of Monthly 10 Percent Decrease in U.S. Exports to Mexico from Baseline Values, Jan 2021 – Dec 2025



Changes in cutout values for the primal cuts are shown in Figure 35. Note that hams see the greatest decrease in cutout value followed by picnics. Interestingly, however, the belly, loin, and rib cuts see small increases in cutout values over time.

Figure 35. Percentage Change in Primal Cutout Values as Result of Monthly 10 Percent Decrease in U.S. Exports to Mexico from Baseline Values, Jan 2021 – Dec 2025

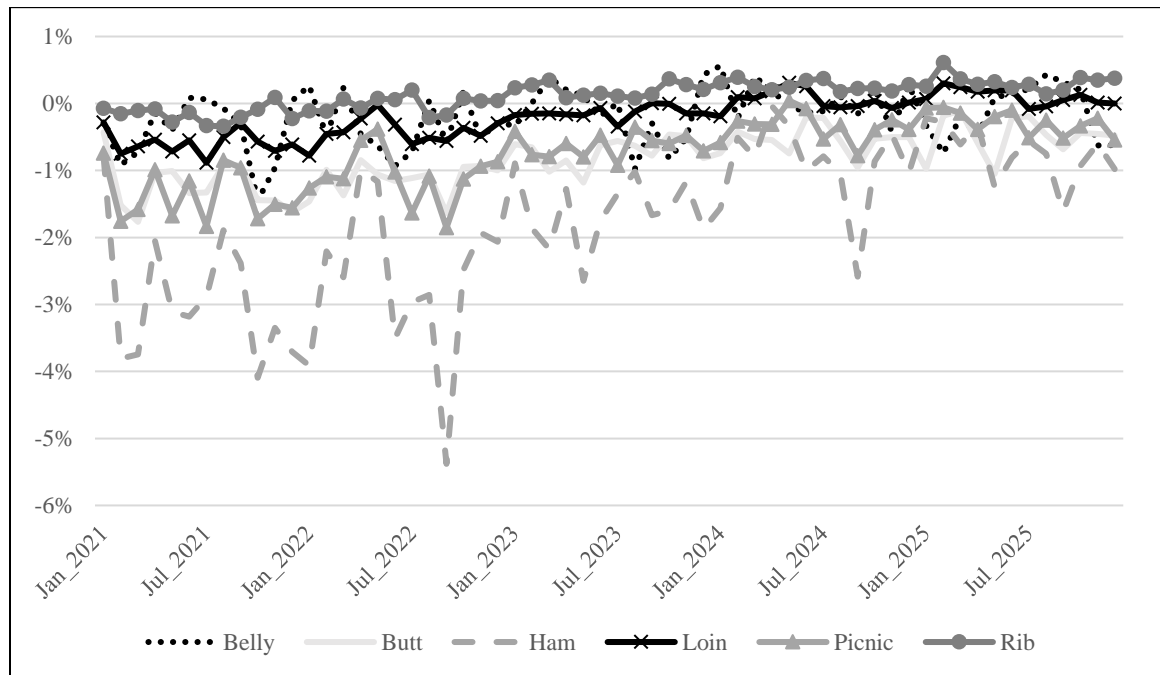
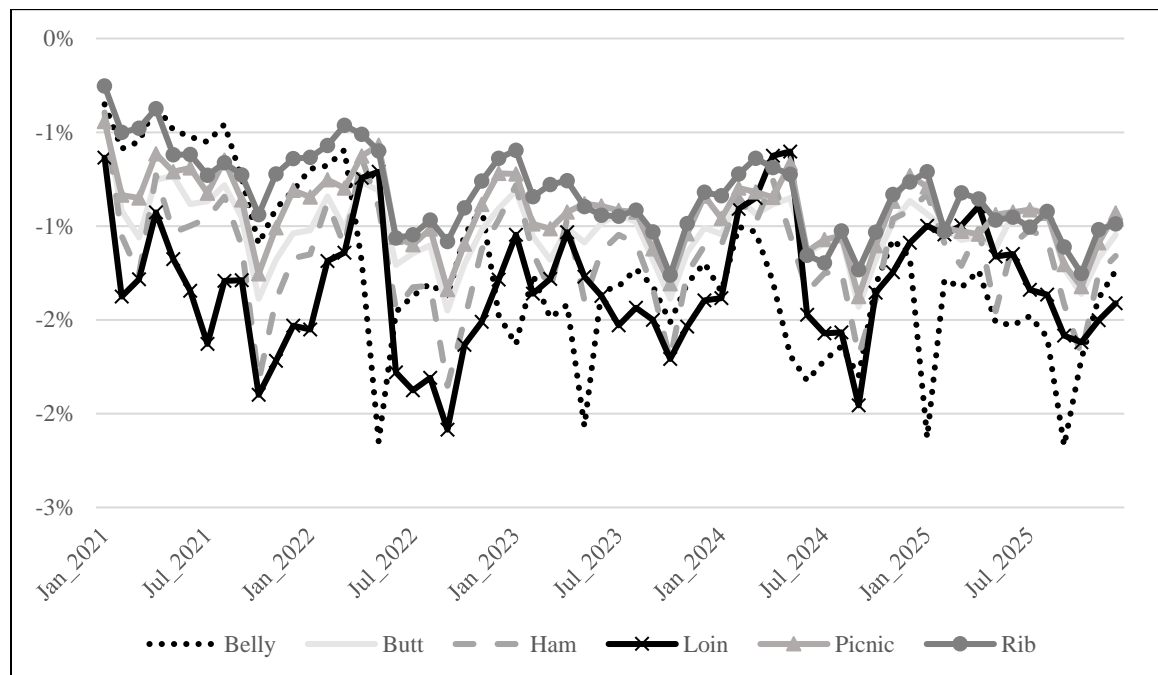


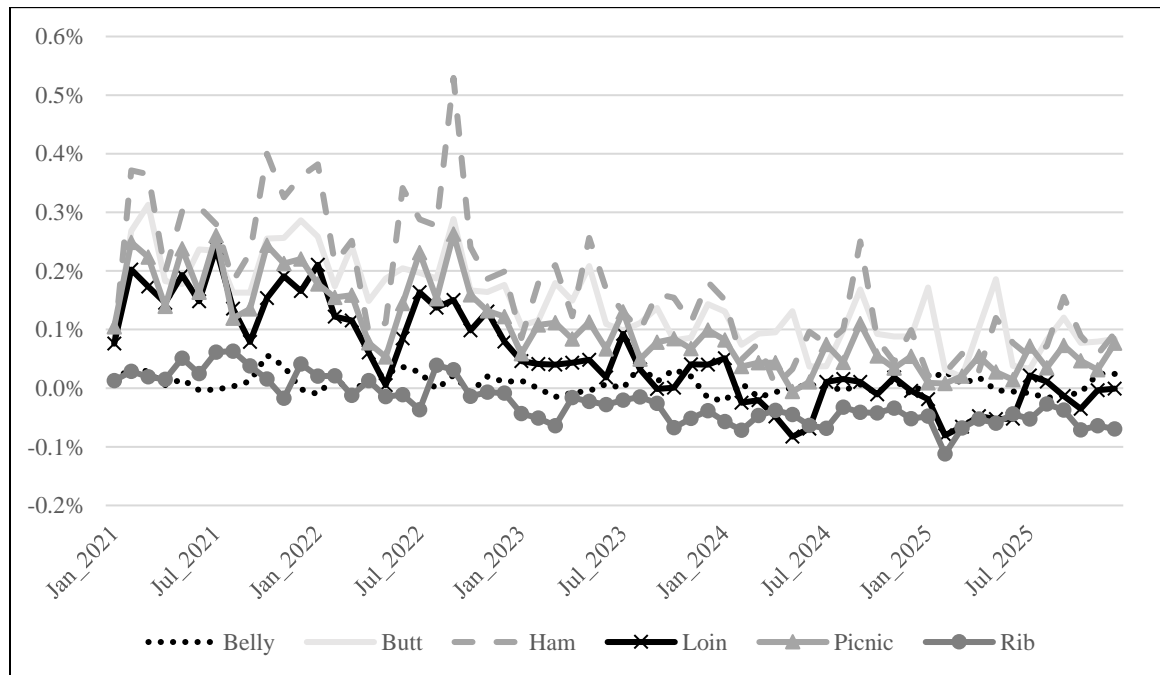
Figure 36 displays the detrimental impact that losing 10 percent of the Mexican market has on exports of the primal cuts. Belly, ham, and loin exports are the most negatively impacted.

Figure 36. Percentage Change in Exports as Result of Monthly 10 Percent Decrease in U.S. Exports to Mexico from Baseline Values, Jan 2021 – Dec 2025



Domestic disappearance of butts, hams, and picnics increases the most as a result of decreasing exports to Mexico. The remaining cuts see slight decreases in domestic disappearance over time as shown in Figure 37.

Figure 37. Percentage Change in Domestic Disappearance as Result of Monthly 10 Percent Decrease in U.S. Exports to Mexico from Baseline Values, Jan 2021 – Dec 2025



Overall, Mexico is obviously a key market for U.S. pork, and the share of primal cuts that they demand matters. A 10 percent decrease in pork exports to Mexico results in a major market loss for U.S. hams. As discussed above, this has repercussions on the ham cutout value as well as the pork cutout value as a whole.

Chapter 6 Conclusion

Chapter 5 results encompass the purpose of identifying the nuances of pork by investigating further than just at the commodity level. This research found that there are indeed differences among demands for pork primal cuts and those differences can translate into disparate impacts on primal cutout values and the pork cutout value as a whole. Being able to demonstrate, for example, in Figure 35 that decreasing exports to Mexico actually increases the cutout value of belly, loin, and rib cuts over time is the crux of this study.

Oftentimes, producers, reporters, and even analysts can misstate the implications of increasing or decreasing exports to various countries because the demands for products, such as the various primal cuts of pork, are not fully understood. This study aimed to shed light on some of the information that can be gleaned if one makes the effort to dig deeper and better understand the situation at hand.

Of course, there were difficulties encountered along the way, such as the ambiguous trade data codes. It is impossible to capture all the industry specifics in an economic model, but this is the best effort to include more detail at the specific cut level to comprise an educated estimate that in turn enabled the desired research to be completed. Moving forward and in a perfect world, it would be fantastic if information could be more harmonized among U.S. departmental agencies and international entities. While this hindrance is detrimental to the accuracy and ease of work in this field, it does not stifle it completely.

Hopefully, future research can be completed using the methods and knowledge garnered from this study to analyze other scenarios, such as effects of an ASF outbreak in the United States or decreasing domestic demand due to decreased incomes as a result of the pandemic. Ultimately, this economic model has potential to influence decision making from the farmer to the consumer and the numerous stakeholders in between, and my hope is that it will be used to do so.

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Appendix

Table A1. Belly Supply & Utilization

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2010	JAN	56,764,000	296,066,920	16,779,839	28,888,404	53,584,000	287,138,354
2010	FEB	53,584,000	287,527,000	16,185,933	36,696,132	55,552,000	265,048,802
2010	MAR	55,552,000	333,760,360	17,669,413	36,387,672	58,762,000	311,832,101
2010	APR	58,762,000	302,512,760	16,800,979	36,488,658	49,656,000	291,931,081
2010	MAY	49,656,000	265,244,680	16,953,498	37,420,667	44,201,000	250,232,511
2010	JUN	44,201,000	299,666,120	19,092,742	35,283,008	35,369,000	292,307,854
2010	JUL	35,369,000	278,479,920	17,750,263	32,464,318	21,380,000	277,754,865
2010	AUG	21,380,000	296,983,080	19,739,409	29,592,101	7,202,000	301,308,388
2010	SEP	7,202,000	308,140,600	20,559,060	32,476,195	4,817,000	298,608,465
2010	OCT	4,817,000	327,641,720	18,895,180	33,561,244	23,248,000	294,544,656
2010	NOV	23,248,000	338,324,800	18,111,574	39,950,298	37,696,000	302,038,075
2010	DEC	37,696,000	336,263,440	16,862,215	39,234,453	50,677,000	300,910,202
2011	JAN	50,677,000	310,218,320	17,680,024	36,696,234	51,326,000	290,553,109
2011	FEB	51,326,000	289,261,160	18,559,242	39,800,162	50,900,000	268,446,240
2011	MAR	50,900,000	336,099,840	24,559,041	50,299,747	52,487,000	308,772,134
2011	APR	52,487,000	292,958,520	19,856,282	43,405,254	53,185,000	268,711,549
2011	MAY	53,185,000	287,886,920	18,731,315	41,116,840	57,123,000	261,563,395
2011	JUN	57,123,000	297,752,000	18,682,271	39,443,229	48,645,000	285,469,042
2011	JUL	48,645,000	267,829,560	17,937,915	40,010,125	29,503,000	264,899,350
2011	AUG	29,503,000	309,547,560	20,866,802	45,158,617	15,162,000	299,596,744
2011	SEP	15,162,000	319,739,840	18,629,299	45,628,443	9,297,000	298,605,696
2011	OCT	9,297,000	332,631,520	20,712,755	49,349,098	8,734,000	304,558,177
2011	NOV	8,734,000	341,384,120	21,320,811	51,813,580	26,599,000	293,026,351
2011	DEC	26,599,000	337,932,160	19,072,103	48,601,451	41,469,000	293,532,812
2012	JAN	41,469,000	325,122,280	20,764,174	50,904,529	53,685,000	282,765,926
2012	FEB	53,685,000	308,058,800	20,990,010	46,234,982	61,577,000	274,921,827
2012	MAR	61,577,000	325,187,720	21,911,219	48,269,423	66,031,000	294,375,516
2012	APR	66,031,000	301,334,840	18,336,659	44,954,467	74,927,000	265,821,032
2012	MAY	74,927,000	315,224,480	18,521,123	44,683,704	65,648,000	298,340,899
2012	JUN	65,648,000	286,381,800	18,030,462	40,626,180	49,034,000	280,400,082
2012	JUL	49,034,000	281,702,840	19,478,953	39,162,746	27,962,000	283,091,048
2012	AUG	27,962,000	326,889,160	20,630,264	41,058,326	14,210,000	320,213,098
2012	SEP	14,210,000	312,672,320	18,763,065	42,053,598	15,668,000	287,923,787
2012	OCT	15,668,000	361,670,520	18,987,651	48,379,197	18,720,000	329,226,975
2012	NOV	18,720,000	340,157,120	19,864,901	46,015,790	23,837,000	308,889,231
2012	DEC	23,837,000	319,707,120	19,462,445	42,184,642	36,037,000	284,784,923
2013	JAN	36,037,000	337,817,640	21,120,542	42,402,152	36,425,000	316,148,030
2013	FEB	36,425,000	290,946,240	21,591,854	40,282,645	42,976,000	265,704,448
2013	MAR	42,976,000	316,075,200	22,904,242	39,981,045	51,473,000	290,501,397
2013	APR	51,473,000	317,514,880	22,363,481	38,089,667	56,352,000	296,909,694
2013	MAY	56,352,000	310,660,040	20,890,860	41,521,026	54,829,000	291,552,874

Table A1. Belly Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2013	JUN	54,829,000	274,242,680	19,303,045	38,508,481	42,033,000	267,833,244
2013	JUL	42,033,000	301,073,080	21,582,554	38,030,290	28,177,000	298,481,344
2013	AUG	28,177,000	317,122,240	21,925,105	39,968,389	19,335,000	307,920,956
2013	SEP	19,335,000	301,498,440	23,238,686	38,793,259	23,491,000	281,787,867
2013	OCT	23,491,000	354,848,400	22,961,832	41,685,580	26,674,000	332,941,653
2013	NOV	26,674,000	333,727,640	25,549,378	43,288,583	48,298,000	294,364,435
2013	DEC	48,298,000	337,899,440	24,015,142	42,094,259	80,367,000	287,751,323
2014	JAN	80,367,000	341,220,520	21,902,856	43,895,710	87,171,000	312,423,666
2014	FEB	87,171,000	301,711,120	19,958,446	42,269,312	87,675,000	278,896,254
2014	MAR	87,675,000	303,379,840	25,265,951	47,665,973	79,721,000	288,933,818
2014	APR	79,721,000	312,639,600	24,785,291	45,581,865	83,579,000	287,985,025
2014	MAY	83,579,000	304,148,760	24,532,664	44,540,164	85,888,000	281,832,260
2014	JUN	85,888,000	283,682,400	22,771,156	43,247,502	83,936,000	265,158,054
2014	JUL	83,936,000	294,447,280	24,218,498	39,365,727	64,644,000	298,592,050
2014	AUG	64,644,000	286,659,920	23,282,911	35,508,323	45,562,000	293,516,509
2014	SEP	45,562,000	306,242,840	23,524,560	33,941,016	34,311,000	307,077,384
2014	OCT	34,311,000	347,879,040	26,382,473	38,447,151	29,006,000	341,119,363
2014	NOV	29,006,000	309,236,720	22,961,611	37,946,635	35,894,000	287,363,696
2014	DEC	35,894,000	345,899,480	26,208,559	39,327,414	47,455,000	321,219,625
2015	JAN	47,455,000	344,296,200	23,808,241	35,769,906	53,507,000	326,282,535
2015	FEB	53,507,000	318,234,720	22,254,333	39,595,802	67,794,000	286,606,252
2015	MAR	67,794,000	345,490,480	26,651,093	43,952,428	68,297,000	327,686,145
2015	APR	68,297,000	338,144,840	24,196,409	47,829,819	70,412,000	312,396,430
2015	MAY	70,412,000	304,606,840	22,091,566	42,818,623	64,805,000	289,486,783
2015	JUN	64,805,000	326,529,240	25,533,034	37,697,799	44,432,000	334,737,475
2015	JUL	44,432,000	322,766,440	23,286,822	38,943,242	23,634,000	327,908,020
2015	AUG	23,634,000	318,872,760	23,488,766	38,185,636	13,738,000	314,071,890
2015	SEP	13,738,000	333,073,240	24,785,083	42,372,694	10,872,000	318,351,629
2015	OCT	10,872,000	354,881,120	25,928,774	40,422,252	17,853,000	333,406,642
2015	NOV	17,853,000	340,418,880	25,939,856	41,355,220	41,160,000	301,696,516
2015	DEC	41,160,000	361,097,920	26,457,061	40,840,465	53,392,000	334,482,516
2016	JAN	53,392,000	340,975,120	27,183,141	37,895,408	60,698,000	322,956,854
2016	FEB	60,698,000	327,347,240	24,887,652	38,369,539	61,433,000	313,130,353
2016	MAR	61,433,000	350,954,720	28,232,519	46,183,383	65,028,000	329,408,856
2016	APR	65,028,000	327,232,720	22,176,492	40,838,746	72,592,000	301,006,465
2016	MAY	72,592,000	318,856,400	24,068,326	42,753,745	77,683,000	295,079,981
2016	JUN	77,683,000	329,408,600	21,872,173	40,747,721	62,921,000	325,295,052
2016	JUL	62,921,000	298,488,200	23,169,983	37,657,236	50,733,000	296,188,947
2016	AUG	50,733,000	351,674,560	22,482,194	40,231,677	32,053,000	352,605,077
2016	SEP	32,053,000	347,862,680	21,638,345	40,006,916	25,084,000	336,463,109
2016	OCT	25,084,000	359,641,880	25,146,476	43,734,911	20,386,000	345,751,446
2016	NOV	20,386,000	366,513,080	25,132,309	48,146,063	18,526,000	345,359,326
2016	DEC	18,526,000	361,408,760	24,011,736	45,170,691	17,986,000	340,789,805
2017	JAN	17,986,000	352,525,280	21,332,559	43,325,866	13,995,000	334,522,973
2017	FEB	13,995,000	325,171,360	22,416,564	42,952,870	16,153,000	302,477,055
2017	MAR	16,153,000	370,979,360	26,723,639	50,515,449	20,570,000	342,770,550
2017	APR	20,570,000	325,269,520	25,661,643	45,234,382	33,536,000	292,730,781

Table A1. Belly Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2017	MAY	33,536,000	342,889,240	23,221,572	48,719,789	31,589,000	319,338,023
2017	JUN	31,589,000	335,903,520	22,010,732	42,951,152	22,291,000	324,261,101
2017	JUL	22,291,000	305,097,640	21,976,090	40,095,272	17,602,000	291,667,459
2017	AUG	17,602,000	361,637,800	22,359,125	42,362,833	19,213,000	340,023,093
2017	SEP	19,213,000	354,177,640	22,498,812	41,564,168	20,897,000	333,428,284
2017	OCT	20,897,000	378,979,400	21,971,747	48,010,757	32,268,000	341,569,390
2017	NOV	32,268,000	367,249,280	19,775,378	50,368,246	35,164,000	333,760,411
2017	DEC	35,164,000	365,646,000	20,770,116	48,499,814	39,620,000	333,460,302
2018	JAN	39,620,000	374,660,360	21,607,192	46,070,315	43,810,000	346,007,237
2018	FEB	43,810,000	336,705,160	21,964,992	47,637,441	49,012,000	305,830,711
2018	MAR	49,012,000	375,756,480	21,437,227	53,331,360	59,202,000	333,672,348
2018	APR	59,202,000	350,414,840	20,863,061	52,169,512	64,563,000	313,747,389
2018	MAY	64,563,000	355,731,840	20,369,687	49,304,701	61,234,000	330,125,826
2018	JUN	61,234,000	328,606,960	18,918,033	45,481,684	53,279,000	309,998,309
2018	JUL	53,279,000	324,827,800	19,292,704	42,936,132	38,556,000	315,907,372
2018	AUG	38,556,000	378,946,680	18,722,129	43,139,459	34,805,000	358,280,350
2018	SEP	34,805,000	329,310,440	18,137,390	42,312,259	30,354,000	309,586,572
2018	OCT	30,354,000	400,901,800	19,470,442	47,131,577	26,690,000	376,904,665
2018	NOV	26,690,000	384,132,800	20,043,576	49,903,497	36,859,000	344,103,879
2018	DEC	36,859,000	365,171,560	20,076,633	52,364,313	42,251,000	327,491,880
2019	JAN	42,251,000	388,320,960	20,129,088	45,679,585	53,736,000	351,285,463
2019	FEB	53,736,000	354,603,000	19,418,623	43,919,294	53,771,000	330,067,329
2019	MAR	53,771,000	375,821,920	22,313,411	51,239,046	58,783,000	341,884,285
2019	APR	58,783,000	371,175,680	18,461,595	50,275,617	61,110,000	337,034,658
2019	MAY	61,110,000	362,962,960	17,535,027	50,911,377	64,124,000	326,572,610
2019	JUN	64,124,000	348,075,360	17,412,336	50,527,404	56,468,000	322,616,291
2019	JUL	56,468,000	361,670,520	18,091,697	57,034,565	52,647,000	326,548,653
2019	AUG	52,647,000	369,425,160	17,433,330	53,030,517	45,723,000	340,751,973
2019	SEP	45,723,000	366,005,920	16,897,490	47,771,336	40,543,000	340,312,074
2019	OCT	40,543,000	426,374,320	18,189,038	56,032,208	45,920,000	383,154,150
2019	NOV	45,920,000	397,351,680	17,360,571	65,977,172	54,416,000	340,239,079
2019	DEC	54,416,000	399,674,800	17,632,386	71,552,227	68,015,000	332,155,960
2020	JAN	68,015,000	417,719,880	18,086,468	68,940,216	70,872,000	364,009,132
2020	FEB	70,872,000	377,294,320	17,202,242	68,903,673	74,270,000	322,194,889
2020	MAR	74,270,000	419,879,400	17,585,757	73,582,054	78,157,000	359,996,103
2020	APR	78,157,000	332,238,880	12,668,043	65,924,265	80,728,000	276,411,659
2020	MAY	80,728,000	307,502,560	17,545,686	62,810,939	60,322,000	282,643,307
2020	JUN	60,322,000	392,705,440	17,307,603	48,172,059	53,840,000	368,322,985
2020	JUL	53,840,000	388,010,120	16,515,661	51,299,860	42,374,000	364,691,921
2020	AUG	42,374,000	383,020,320	17,776,916	49,702,173	30,533,000	362,936,063

Table A2. Butt Supply & Utilization

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2010	JAN	20,066,000	182,960,670	4,643,995	32,948,815	21,868,000	152,853,850
2010	FEB	21,868,000	177,683,250	4,667,367	34,971,118	23,973,000	145,274,499
2010	MAR	23,973,000	206,254,110	5,229,007	36,619,564	25,202,000	173,634,553
2010	APR	25,202,000	186,944,010	5,107,904	34,198,119	19,210,000	163,845,796
2010	MAY	19,210,000	163,913,430	5,239,558	35,998,481	14,028,000	138,336,507
2010	JUN	14,028,000	185,184,870	5,626,880	37,141,902	8,636,000	159,061,849
2010	JUL	8,636,000	172,092,420	5,476,414	32,972,755	6,295,000	146,937,078
2010	AUG	6,295,000	183,526,830	5,882,987	31,198,404	6,181,000	158,325,413
2010	SEP	6,181,000	190,421,850	5,346,848	31,148,250	9,312,000	161,489,448
2010	OCT	9,312,000	202,472,970	5,781,826	33,655,685	12,564,000	171,347,111
2010	NOV	12,564,000	209,074,800	5,307,605	40,419,801	15,102,000	171,424,604
2010	DEC	15,102,000	207,800,940	5,222,467	40,494,747	16,143,000	171,487,660
2011	JAN	16,143,000	191,705,820	4,865,499	36,890,492	21,476,000	154,347,827
2011	FEB	21,476,000	178,754,910	4,445,034	37,376,333	23,902,000	143,397,611
2011	MAR	23,902,000	207,699,840	5,450,214	46,436,655	26,672,000	163,943,398
2011	APR	26,672,000	181,039,770	5,097,803	40,068,907	26,884,000	145,856,667
2011	MAY	26,884,000	177,905,670	4,973,712	40,093,046	27,463,000	142,207,337
2011	JUN	27,463,000	184,002,000	4,663,041	36,932,526	20,247,000	158,948,515
2011	JUL	20,247,000	165,510,810	4,403,315	37,648,066	16,484,000	136,029,059
2011	AUG	16,484,000	191,291,310	4,691,390	41,397,797	14,335,000	156,733,903
2011	SEP	14,335,000	197,589,840	4,416,218	41,131,697	19,150,000	156,059,360
2011	OCT	19,150,000	205,556,520	4,843,921	45,246,638	18,607,000	165,696,803
2011	NOV	18,607,000	210,965,370	5,102,660	47,639,960	21,879,000	165,156,070
2011	DEC	21,879,000	208,832,160	4,762,752	48,633,573	19,585,000	167,255,339
2012	JAN	19,585,000	200,916,030	4,502,488	47,365,203	26,869,000	150,769,315
2012	FEB	26,869,000	190,371,300	4,503,380	42,743,863	27,822,000	151,177,817
2012	MAR	27,822,000	200,956,470	5,225,597	45,290,934	31,532,000	157,181,133
2012	APR	31,532,000	186,216,090	4,649,179	42,265,319	32,074,000	148,057,949
2012	MAY	32,074,000	194,799,480	4,604,269	42,823,592	31,657,000	156,997,157
2012	JUN	31,657,000	176,975,550	4,808,765	39,612,386	29,345,000	144,483,929
2012	JUL	29,345,000	174,084,090	4,911,271	39,805,681	27,126,000	141,408,679
2012	AUG	27,126,000	202,007,910	4,721,371	41,798,491	26,557,000	165,499,790
2012	SEP	26,557,000	193,222,320	4,237,944	43,351,825	24,664,000	156,001,439
2012	OCT	24,664,000	223,501,770	4,567,047	49,292,200	29,391,000	174,049,617
2012	NOV	29,391,000	210,207,120	4,834,720	45,472,908	30,049,000	168,910,933
2012	DEC	30,049,000	197,569,620	4,658,136	42,082,912	25,881,000	164,312,843
2013	JAN	25,881,000	208,761,390	4,766,069	40,815,399	31,091,000	167,502,060
2013	FEB	31,091,000	179,796,240	4,365,480	37,208,997	28,710,000	149,333,724
2013	MAR	28,710,000	195,325,200	4,753,318	36,663,131	24,458,000	167,667,387
2013	APR	24,458,000	196,214,880	4,709,603	38,806,602	23,854,000	162,721,882
2013	MAY	23,854,000	191,978,790	5,253,361	41,766,622	21,804,000	157,515,528
2013	JUN	21,804,000	169,473,930	4,867,871	38,288,170	16,165,000	141,692,631
2013	JUL	16,165,000	186,054,330	5,304,355	39,800,695	15,639,000	152,083,990
2013	AUG	15,639,000	195,972,240	4,945,917	38,530,246	16,737,000	161,289,912

Table A2. Butt Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2013	SEP	16,737,000	186,317,190	5,232,613	37,776,704	17,756,000	152,754,099
2013	OCT	17,756,000	219,285,900	5,241,810	41,783,646	19,058,000	181,442,064
2013	NOV	19,058,000	206,233,890	5,366,446	44,606,185	19,887,000	166,165,152
2013	DEC	19,887,000	208,811,940	5,035,583	45,390,648	17,979,000	170,364,875
2014	JAN	17,979,000	210,864,270	4,882,751	44,764,263	21,179,000	167,782,758
2014	FEB	21,179,000	186,448,620	4,331,349	43,440,738	26,094,000	142,424,231
2014	MAR	26,094,000	187,479,840	5,300,324	49,618,215	20,163,000	149,092,949
2014	APR	20,163,000	193,202,100	5,544,036	45,158,425	19,771,000	153,979,711
2014	MAY	19,771,000	187,955,010	6,154,861	43,787,014	21,732,000	148,361,856
2014	JUN	21,732,000	175,307,400	5,584,029	43,483,923	19,999,000	139,140,506
2014	JUL	19,999,000	181,959,780	5,403,247	41,496,199	21,116,000	144,749,828
2014	AUG	21,116,000	177,147,420	6,005,947	37,777,420	23,778,000	142,713,948
2014	SEP	23,778,000	189,249,090	6,564,737	37,313,940	22,035,000	160,242,886
2014	OCT	22,035,000	214,979,040	7,251,010	41,321,474	23,458,000	179,485,576
2014	NOV	23,458,000	191,099,220	6,412,794	38,923,110	22,549,000	159,497,904
2014	DEC	22,549,000	213,755,730	7,532,777	41,618,876	19,567,000	182,651,631
2015	JAN	19,567,000	212,764,950	6,562,991	36,688,648	25,104,000	177,102,293
2015	FEB	25,104,000	196,659,720	6,091,504	39,336,000	35,641,000	152,878,224
2015	MAR	35,641,000	213,502,980	7,579,817	46,786,210	33,656,000	176,281,587
2015	APR	33,656,000	208,963,590	6,506,739	47,137,204	25,234,000	176,755,125
2015	MAY	25,234,000	188,238,090	5,770,944	45,150,933	20,177,000	153,915,101
2015	JUN	20,177,000	201,785,490	6,955,069	44,508,568	22,018,000	162,390,991
2015	JUL	22,018,000	199,460,190	6,182,318	41,699,576	22,876,000	163,084,932
2015	AUG	22,876,000	197,054,010	6,535,468	39,113,083	20,053,000	167,299,395
2015	SEP	20,053,000	205,829,490	6,457,403	40,252,464	18,793,000	173,294,429
2015	OCT	18,793,000	219,306,120	6,894,533	42,802,578	19,648,000	182,543,075
2015	NOV	19,648,000	210,368,880	7,066,967	45,703,394	18,897,000	172,483,453
2015	DEC	18,897,000	223,147,920	7,528,093	45,420,242	15,029,000	189,123,770
2016	JAN	15,029,000	210,712,620	6,914,729	40,314,737	23,288,000	169,053,612
2016	FEB	23,288,000	202,290,990	6,799,555	39,650,044	25,586,000	167,142,501
2016	MAR	25,586,000	216,879,720	7,491,516	44,957,575	21,925,000	183,074,661
2016	APR	21,925,000	202,220,220	6,507,384	44,582,387	19,172,000	166,898,217
2016	MAY	19,172,000	197,043,900	6,788,588	49,153,000	16,340,000	157,511,488
2016	JUN	16,340,000	203,564,850	6,619,047	44,721,587	15,057,000	166,745,310
2016	JUL	15,057,000	184,456,950	6,830,841	43,534,345	16,197,000	146,613,446
2016	AUG	16,197,000	217,324,560	6,717,668	42,839,262	15,310,000	182,089,966
2016	SEP	15,310,000	214,968,930	6,398,176	42,745,279	18,295,000	175,636,828
2016	OCT	18,295,000	222,248,130	6,883,144	45,715,316	19,351,000	182,359,958
2016	NOV	19,351,000	226,494,330	7,199,428	51,969,919	21,654,000	179,420,839
2016	DEC	21,654,000	223,340,010	6,666,626	52,221,078	18,075,000	181,364,558
2017	JAN	18,075,000	217,850,280	6,646,938	47,505,054	23,243,000	171,824,164
2017	FEB	23,243,000	200,946,360	6,435,052	45,822,410	22,052,000	162,750,001
2017	MAR	22,052,000	229,254,360	7,817,045	52,674,530	21,925,000	184,523,875
2017	APR	21,925,000	201,007,020	7,244,403	46,581,689	21,264,000	162,330,733
2017	MAY	21,264,000	211,895,490	6,961,290	52,814,883	19,862,000	167,443,897
2017	JUN	19,862,000	207,578,520	7,342,581	45,859,155	15,057,000	173,866,947
2017	JUL	15,057,000	188,541,390	7,076,843	39,096,539	14,502,000	157,076,694

Table A2. Butt Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2017	AUG	14,502,000	223,481,550	7,372,996	41,804,533	16,308,000	187,244,013
2017	SEP	16,308,000	218,871,390	6,876,438	43,084,198	17,247,000	181,724,630
2017	OCT	17,247,000	234,198,150	7,724,920	49,521,696	21,249,000	188,399,373
2017	NOV	21,249,000	226,949,280	7,473,576	54,053,176	25,799,000	175,819,681
2017	DEC	25,799,000	225,958,500	7,798,397	53,078,085	23,883,000	182,594,812
2018	JAN	23,883,000	231,529,110	7,936,839	49,394,546	25,477,000	188,477,403
2018	FEB	25,477,000	208,073,910	7,270,261	49,246,540	22,503,000	169,071,630
2018	MAR	22,503,000	232,206,480	8,079,208	52,472,719	20,629,000	189,686,969
2018	APR	20,629,000	216,546,090	8,289,400	55,460,523	20,904,000	169,099,968
2018	MAY	20,904,000	219,831,840	7,474,182	51,944,652	15,313,000	180,952,369
2018	JUN	15,313,000	203,069,460	6,642,809	44,755,120	15,734,000	164,536,148
2018	JUL	15,734,000	200,734,050	6,969,409	42,063,188	13,218,000	168,156,271
2018	AUG	13,218,000	234,177,930	6,562,170	44,079,699	11,498,000	198,380,400
2018	SEP	11,498,000	203,504,190	6,111,775	43,496,071	13,282,000	164,335,893
2018	OCT	13,282,000	247,745,550	6,387,822	50,517,850	17,014,000	199,883,522
2018	NOV	17,014,000	237,382,800	6,386,691	50,306,715	17,623,000	192,853,776
2018	DEC	17,623,000	225,665,310	6,424,746	50,604,036	16,749,000	182,360,020
2019	JAN	16,749,000	239,970,960	6,999,951	47,726,664	20,527,000	195,466,248
2019	FEB	20,527,000	219,134,250	6,767,355	44,859,254	25,290,000	176,279,352
2019	MAR	25,290,000	232,246,920	7,078,121	51,112,703	26,271,000	187,231,338
2019	APR	26,271,000	229,375,680	6,115,084	52,443,640	21,164,000	188,154,123
2019	MAY	21,164,000	224,300,460	5,800,670	49,738,013	21,189,000	180,338,117
2019	JUN	21,189,000	215,100,360	5,514,458	50,036,397	17,218,000	174,549,421
2019	JUL	17,218,000	223,501,770	5,865,029	54,938,229	18,363,000	173,283,570
2019	AUG	18,363,000	228,293,910	5,806,172	50,955,189	16,200,000	185,307,893
2019	SEP	16,200,000	226,180,920	5,535,115	46,818,876	15,494,000	185,603,160
2019	OCT	15,494,000	263,486,820	6,132,170	50,912,933	20,580,000	213,620,057
2019	NOV	20,580,000	245,551,680	5,519,176	61,655,834	25,933,000	184,062,022
2019	DEC	25,933,000	246,987,300	4,993,927	67,852,682	20,702,000	189,359,545
2020	JAN	20,702,000	258,138,630	5,172,119	67,202,430	26,028,000	190,782,320
2020	FEB	26,028,000	233,156,820	4,785,790	65,167,426	26,892,000	171,911,184
2020	MAR	26,892,000	259,473,150	5,062,439	68,226,321	27,615,000	195,586,268
2020	APR	27,615,000	205,313,880	4,491,670	60,655,969	26,374,000	150,390,581
2020	MAY	26,374,000	190,027,560	6,578,860	58,686,329	17,152,000	147,142,091
2020	JUN	17,152,000	242,680,440	6,542,604	54,560,620	13,161,000	198,653,425
2020	JUL	13,161,000	239,778,870	6,035,595	58,739,396	13,557,000	186,679,069
2020	AUG	13,557,000	236,695,320	6,400,774	54,786,619	14,520,000	187,346,475

Table A3. Ham Supply & Utilization

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2010	JAN	50,419,000	445,367,170	21,569,641	84,344,334	72,736,000	360,275,477
2010	FEB	72,736,000	432,520,750	22,860,097	90,048,920	85,153,000	352,914,927
2010	MAR	85,153,000	502,068,610	22,757,969	92,760,145	61,579,000	455,640,434
2010	APR	61,579,000	455,063,510	18,969,556	83,343,458	76,469,000	375,799,608
2010	MAY	76,469,000	399,001,930	19,863,411	86,188,675	92,951,000	316,194,666
2010	JUN	92,951,000	450,781,370	25,389,010	89,160,762	113,009,000	366,951,618
2010	JUL	113,009,000	418,911,420	26,752,212	80,144,738	122,987,000	355,540,894
2010	AUG	122,987,000	446,745,330	30,430,739	75,899,113	142,071,000	382,192,957
2010	SEP	142,071,000	463,529,350	28,428,187	77,047,473	162,465,000	394,516,064
2010	OCT	162,465,000	492,864,470	27,046,743	81,951,140	154,527,000	445,898,073
2010	NOV	154,527,000	508,934,800	25,939,409	99,566,396	101,097,000	488,737,813
2010	DEC	101,097,000	505,833,940	22,271,776	98,958,050	67,965,000	462,279,666
2011	JAN	67,965,000	466,654,820	18,361,005	90,509,286	101,485,000	360,986,539
2011	FEB	101,485,000	435,129,410	16,822,192	91,118,686	121,311,000	341,006,917
2011	MAR	121,311,000	505,587,840	21,122,087	113,605,300	105,065,000	429,350,627
2011	APR	105,065,000	440,691,270	19,600,267	98,125,075	76,988,000	390,243,462
2011	MAY	76,988,000	433,062,170	19,010,937	96,488,200	102,658,000	329,914,907
2011	JUN	102,658,000	447,902,000	18,157,201	89,813,330	125,265,000	353,638,872
2011	JUL	125,265,000	402,890,310	20,342,399	92,471,964	134,397,000	321,628,746
2011	AUG	134,397,000	465,645,810	22,406,567	100,813,159	149,821,000	371,815,218
2011	SEP	149,821,000	480,977,840	20,397,060	102,512,969	163,789,000	384,893,931
2011	OCT	163,789,000	500,370,520	21,207,540	111,445,468	134,373,000	439,548,592
2011	NOV	134,373,000	513,536,870	26,606,182	117,735,739	94,747,000	462,033,313
2011	DEC	94,747,000	508,344,160	24,039,386	119,214,247	55,726,000	452,190,298
2012	JAN	55,726,000	489,074,530	19,962,003	115,732,180	99,643,000	349,387,353
2012	FEB	99,643,000	463,406,300	21,104,731	103,772,977	110,238,000	370,143,054
2012	MAR	110,238,000	489,172,970	23,436,733	111,719,661	80,087,000	431,041,041
2012	APR	80,087,000	453,291,590	19,673,295	105,016,832	111,492,000	336,543,053
2012	MAY	111,492,000	474,185,480	19,016,060	106,897,302	128,859,000	368,937,237
2012	JUN	128,859,000	430,798,050	20,365,769	96,474,862	147,445,000	336,102,957
2012	JUL	147,445,000	423,759,590	23,239,224	97,026,966	157,822,000	339,594,848
2012	AUG	157,822,000	491,732,410	22,816,198	102,340,299	195,930,000	374,100,309
2012	SEP	195,930,000	470,346,320	17,624,586	107,635,732	215,129,000	361,136,174
2012	OCT	215,129,000	544,053,270	22,338,542	121,924,010	186,177,000	473,419,802
2012	NOV	186,177,000	511,691,120	24,324,879	113,926,971	97,683,000	510,583,028
2012	DEC	97,683,000	480,928,620	22,680,070	103,610,891	79,266,000	418,414,799
2013	JAN	79,266,000	508,171,890	20,659,621	101,191,377	108,450,000	398,456,135
2013	FEB	108,450,000	437,664,240	21,565,685	93,153,091	110,763,000	363,763,834
2013	MAR	110,763,000	475,465,200	20,836,989	92,783,129	94,487,000	419,795,060
2013	APR	94,487,000	477,630,880	20,804,773	98,674,154	126,931,000	367,317,499
2013	MAY	126,931,000	467,319,290	23,865,878	104,689,249	153,979,000	359,447,919
2013	JUN	153,979,000	412,537,430	22,895,302	95,963,257	161,648,000	331,800,475
2013	JUL	161,648,000	452,897,830	26,107,449	99,634,835	180,677,000	360,341,444
2013	AUG	180,677,000	477,040,240	25,162,160	96,735,725	207,006,000	379,137,675

Table A3. Ham Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2013	SEP	207,006,000	453,537,690	23,457,094	95,561,589	221,633,000	366,806,195
2013	OCT	221,633,000	533,790,900	24,107,227	104,959,971	192,947,000	481,624,156
2013	NOV	192,947,000	502,019,390	25,518,394	112,572,824	116,076,000	491,835,961
2013	DEC	116,076,000	508,294,940	22,660,151	113,698,825	76,773,000	456,559,267
2014	JAN	76,773,000	513,290,770	19,360,606	108,371,167	106,183,000	394,870,209
2014	FEB	106,183,000	453,857,620	17,810,811	105,394,393	117,464,000	354,993,038
2014	MAR	117,464,000	456,367,840	23,786,956	122,484,438	89,452,000	385,682,358
2014	APR	89,452,000	470,297,100	22,905,416	111,892,376	81,785,000	388,977,139
2014	MAY	81,785,000	457,524,510	23,964,743	108,286,402	109,999,000	344,988,851
2014	JUN	109,999,000	426,737,400	22,841,640	107,519,309	126,493,000	325,565,731
2014	JUL	126,493,000	442,930,780	25,306,473	102,068,121	148,905,000	343,757,132
2014	AUG	148,905,000	431,216,420	25,220,377	93,210,997	179,483,000	332,647,800
2014	SEP	179,483,000	460,674,590	35,471,761	93,699,749	194,077,000	387,852,601
2014	OCT	194,077,000	523,307,040	43,807,495	103,779,405	162,035,000	495,377,130
2014	NOV	162,035,000	465,178,220	33,120,406	99,043,750	96,397,000	464,892,876
2014	DEC	96,397,000	520,329,230	37,101,934	105,836,600	66,349,000	481,642,564
2015	JAN	66,349,000	517,917,450	33,283,036	93,270,021	110,404,000	413,875,464
2015	FEB	110,404,000	478,713,720	29,175,052	100,762,252	127,712,000	389,818,520
2015	MAR	127,712,000	519,713,980	33,216,530	118,019,784	98,031,000	464,591,725
2015	APR	98,031,000	508,664,090	27,260,773	117,415,389	136,222,000	380,318,473
2015	MAY	136,222,000	458,213,590	27,602,879	110,210,913	158,882,000	352,945,556
2015	JUN	158,882,000	491,190,990	32,194,114	108,286,550	180,473,000	393,507,555
2015	JUL	180,473,000	485,530,690	28,133,591	100,747,166	205,549,000	387,841,116
2015	AUG	205,549,000	479,673,510	32,182,414	93,761,337	236,531,000	387,112,587
2015	SEP	236,531,000	501,034,990	31,303,094	98,464,197	247,145,000	423,259,888
2015	OCT	247,145,000	533,840,120	34,317,962	104,653,512	196,460,000	514,189,569
2015	NOV	196,460,000	512,084,880	34,319,838	111,382,201	109,042,000	522,440,517
2015	DEC	109,042,000	543,191,920	35,495,125	110,006,999	67,813,000	509,909,045
2016	JAN	67,813,000	512,921,620	33,242,397	95,544,687	111,142,000	407,290,331
2016	FEB	111,142,000	492,421,490	31,698,727	94,901,768	115,780,000	424,580,448
2016	MAR	115,780,000	527,933,720	29,245,404	109,713,753	96,511,000	466,734,371
2016	APR	96,511,000	492,249,220	24,880,127	108,690,933	130,217,000	374,732,414
2016	MAY	130,217,000	479,648,900	28,402,822	118,664,687	144,060,000	375,544,035
2016	JUN	144,060,000	495,522,350	25,643,831	109,018,669	166,451,000	389,756,513
2016	JUL	166,451,000	449,009,450	29,605,048	105,658,978	188,441,000	350,965,521
2016	AUG	188,441,000	529,016,560	30,362,389	105,009,853	226,070,000	416,740,095
2016	SEP	226,070,000	523,282,430	28,436,651	105,743,015	248,972,000	423,074,066
2016	OCT	248,972,000	541,001,630	27,080,998	112,456,333	191,430,000	513,168,295
2016	NOV	191,430,000	551,337,830	32,710,926	129,651,029	106,101,000	539,726,727
2016	DEC	106,101,000	543,659,510	31,989,982	130,350,426	68,821,000	482,579,066
2017	JAN	68,821,000	530,296,280	26,244,627	116,447,818	95,365,000	413,549,089
2017	FEB	95,365,000	489,148,360	23,791,658	112,827,563	125,167,000	370,310,455
2017	MAR	125,167,000	558,056,360	28,235,994	130,273,770	90,193,000	490,992,584
2017	APR	90,193,000	489,296,020	26,814,154	113,208,987	112,815,000	380,279,187
2017	MAY	112,815,000	515,800,990	28,847,664	129,538,314	143,641,000	384,284,340
2017	JUN	143,641,000	505,292,520	31,626,688	112,998,024	178,311,000	389,251,184
2017	JUL	178,311,000	458,951,890	30,818,171	96,296,791	194,968,000	376,816,270

Table A3. Ham Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2017	AUG	194,968,000	544,004,050	35,952,620	103,378,783	203,887,000	467,658,888
2017	SEP	203,887,000	532,781,890	31,897,854	105,312,914	232,034,000	431,219,829
2017	OCT	232,034,000	570,090,650	33,074,707	122,538,072	195,327,000	517,334,285
2017	NOV	195,327,000	552,445,280	36,187,534	132,528,876	98,224,000	553,206,938
2017	DEC	98,224,000	550,033,500	32,180,855	128,897,431	81,082,000	470,458,924
2018	JAN	81,082,000	563,593,610	31,254,108	121,653,330	118,407,000	435,869,388
2018	FEB	118,407,000	506,498,410	28,242,724	120,263,362	122,743,000	410,141,772
2018	MAR	122,743,000	565,242,480	30,512,371	128,774,894	96,339,000	493,383,957
2018	APR	96,339,000	527,121,590	29,377,248	135,935,493	112,145,000	404,757,345
2018	MAY	112,145,000	535,119,840	28,584,674	127,559,652	139,295,000	408,994,863
2018	JUN	139,295,000	494,316,460	25,581,818	110,404,243	148,657,000	400,132,034
2018	JUL	148,657,000	488,631,550	26,875,142	104,717,524	167,563,000	391,883,168
2018	AUG	167,563,000	570,041,430	25,397,067	108,506,424	204,763,000	449,732,073
2018	SEP	204,763,000	495,374,690	23,414,551	108,268,070	214,628,000	400,656,171
2018	OCT	214,628,000	603,068,050	26,352,135	125,470,886	176,109,000	542,468,299
2018	NOV	176,109,000	577,842,800	24,683,589	124,775,996	96,375,000	557,484,394
2018	DEC	96,375,000	549,319,810	23,072,559	124,267,839	73,118,000	471,381,530
2019	JAN	73,118,000	584,142,960	24,334,544	117,151,142	112,660,000	451,784,362
2019	FEB	112,660,000	533,421,750	22,951,070	110,251,235	127,740,000	431,041,585
2019	MAR	127,740,000	565,340,920	25,514,382	126,129,060	103,486,000	488,980,242
2019	APR	103,486,000	558,351,680	21,981,658	128,649,493	121,331,000	433,838,845
2019	MAY	121,331,000	545,997,460	21,899,616	122,254,465	150,109,000	416,864,612
2019	JUN	150,109,000	523,602,360	22,149,488	124,503,674	168,599,000	402,758,174
2019	JUL	168,599,000	544,053,270	25,321,799	136,294,512	182,555,000	419,124,557
2019	AUG	182,555,000	555,718,410	26,223,502	125,945,919	202,454,000	436,096,992
2019	SEP	202,454,000	550,574,920	24,963,864	115,525,290	201,258,000	461,209,495
2019	OCT	201,258,000	641,385,820	26,660,864	125,845,664	173,760,000	569,699,020
2019	NOV	173,760,000	597,727,680	24,688,160	150,651,482	110,635,000	534,889,358
2019	DEC	110,635,000	601,222,300	21,544,191	164,625,953	84,981,000	483,794,538
2020	JAN	84,981,000	628,367,130	22,362,085	162,947,442	114,618,000	458,144,772
2020	FEB	114,618,000	567,555,820	20,305,753	158,468,180	114,534,000	429,477,393
2020	MAR	114,534,000	631,615,650	21,666,126	166,207,767	88,308,000	513,300,009
2020	APR	88,308,000	499,779,880	18,038,899	147,970,281	113,328,000	344,828,498
2020	MAY	113,328,000	462,569,560	28,074,735	142,414,961	107,550,000	354,007,334
2020	JUN	107,550,000	590,738,440	24,188,712	132,270,135	122,993,000	467,214,018
2020	JUL	122,993,000	583,675,370	21,866,263	142,761,935	136,621,000	449,151,698
2020	AUG	136,621,000	576,169,320	22,902,604	132,707,763	148,055,000	454,930,161

Table A4. Loin Supply & Utilization

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2010	JAN	35,884,000	454,777,610	7,927,873	36,868,607	34,440,000	427,280,877
2010	FEB	34,440,000	441,659,750	8,115,086	46,966,550	37,017,000	400,231,286
2010	MAR	37,017,000	512,677,130	9,384,261	47,847,592	40,704,000	470,526,800
2010	APR	40,704,000	464,678,830	8,947,702	48,567,588	35,261,000	430,501,944
2010	MAY	35,261,000	407,432,690	8,857,142	50,150,294	27,987,000	373,413,538
2010	JUN	27,987,000	460,306,210	9,366,945	47,914,103	24,187,000	425,559,052
2010	JUL	24,187,000	427,762,860	8,926,548	43,145,493	17,460,000	400,270,915
2010	AUG	17,460,000	456,184,890	9,752,423	38,102,917	15,454,000	429,840,395
2010	SEP	15,454,000	473,323,550	8,982,202	42,965,120	17,766,000	437,028,633
2010	OCT	17,766,000	503,278,510	9,254,588	44,504,741	23,469,000	462,325,358
2010	NOV	23,469,000	519,688,400	8,930,789	52,886,678	36,532,000	462,669,511
2010	DEC	36,532,000	516,522,020	9,154,021	51,994,118	37,119,000	473,094,923
2011	JAN	37,119,000	476,515,060	8,582,818	48,246,550	38,604,000	435,366,329
2011	FEB	38,604,000	444,323,530	7,553,885	54,591,221	37,664,000	398,226,194
2011	MAR	37,664,000	516,270,720	9,684,682	68,587,367	38,218,000	456,814,035
2011	APR	38,218,000	450,002,910	9,171,012	59,128,287	35,121,000	403,142,635
2011	MAY	35,121,000	442,212,610	8,434,375	55,206,826	30,702,000	399,859,159
2011	JUN	30,702,000	457,366,000	7,738,272	52,770,380	27,496,000	415,539,892
2011	JUL	27,496,000	411,403,230	7,272,920	53,595,654	21,715,000	370,861,496
2011	AUG	21,715,000	475,484,730	7,780,068	59,647,752	22,540,000	422,792,046
2011	SEP	22,540,000	491,140,720	7,528,963	61,092,452	26,077,000	434,040,232
2011	OCT	26,077,000	510,943,160	8,787,946	67,793,549	31,545,000	446,469,557
2011	NOV	31,545,000	524,387,710	8,287,199	69,535,750	39,423,000	455,261,159
2011	DEC	39,423,000	519,085,280	8,444,434	64,426,497	42,041,000	460,485,217
2012	JAN	42,041,000	499,408,490	7,785,196	69,431,802	48,851,000	430,951,884
2012	FEB	48,851,000	473,197,900	8,155,629	63,251,775	43,440,000	423,512,754
2012	MAR	43,440,000	499,509,010	9,364,039	66,849,651	43,782,000	441,681,397
2012	APR	43,782,000	462,869,470	8,274,804	61,297,690	44,677,000	408,951,584
2012	MAY	44,677,000	484,204,840	7,750,654	59,835,103	40,029,000	436,768,391
2012	JUN	40,029,000	439,900,650	8,186,602	52,744,351	31,449,000	403,922,901
2012	JUL	31,449,000	432,713,470	8,390,185	51,313,829	28,190,000	393,048,825
2012	AUG	28,190,000	502,122,530	7,789,908	54,935,685	32,369,000	450,797,753
2012	SEP	32,369,000	480,284,560	7,358,819	56,258,161	32,217,000	431,537,218
2012	OCT	32,217,000	555,548,910	7,833,206	66,145,494	31,983,000	497,470,622
2012	NOV	31,983,000	522,502,960	8,329,300	63,783,922	48,999,000	450,032,338
2012	DEC	48,999,000	491,090,460	8,003,676	55,691,013	41,364,000	451,038,122
2013	JAN	41,364,000	518,909,370	8,173,477	56,565,908	43,989,000	467,891,939
2013	FEB	43,989,000	446,911,920	7,876,368	54,470,049	42,347,000	401,960,238
2013	MAR	42,347,000	485,511,600	8,401,407	54,069,264	42,949,000	439,241,743
2013	APR	42,949,000	487,723,040	8,174,961	51,865,470	46,140,000	440,841,531
2013	MAY	46,140,000	477,193,570	8,323,603	55,919,844	38,630,000	437,107,329
2013	JUN	38,630,000	421,254,190	7,651,835	52,156,935	28,845,000	386,534,089
2013	JUL	28,845,000	462,467,390	8,941,657	52,528,369	25,688,000	422,037,678
2013	AUG	25,688,000	487,119,920	8,674,941	54,554,504	24,938,000	441,990,357

Table A4. Loin Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2013	SEP	24,938,000	463,120,770	9,314,032	51,617,201	23,662,000	422,093,600
2013	OCT	23,662,000	545,069,700	9,635,353	57,115,555	28,448,000	492,803,499
2013	NOV	28,448,000	512,626,870	9,703,636	58,123,084	40,298,000	452,357,422
2013	DEC	40,298,000	519,035,020	9,296,178	57,297,146	44,700,000	466,632,052
2014	JAN	44,700,000	524,136,410	9,327,027	60,477,456	42,796,000	474,889,981
2014	FEB	42,796,000	463,447,460	8,708,008	57,803,430	45,373,000	411,775,038
2014	MAR	45,373,000	466,010,720	10,477,978	66,460,606	41,470,000	413,931,092
2014	APR	41,470,000	480,234,300	10,554,511	62,062,101	45,950,000	424,246,710
2014	MAY	45,950,000	467,191,830	11,808,718	58,694,440	39,462,000	426,794,108
2014	JUN	39,462,000	435,754,200	10,601,176	56,196,633	27,591,000	402,029,743
2014	JUL	27,591,000	452,289,740	9,899,651	52,295,607	24,275,000	413,209,785
2014	AUG	24,275,000	440,327,860	11,498,961	46,736,059	20,913,000	408,452,763
2014	SEP	20,913,000	470,408,470	11,986,166	44,685,280	20,267,000	438,355,356
2014	OCT	20,267,000	534,364,320	12,974,347	52,192,600	23,525,000	491,888,067
2014	NOV	23,525,000	475,007,260	10,871,086	49,496,976	33,369,000	426,537,370
2014	DEC	33,369,000	531,323,590	13,120,065	49,755,545	37,799,000	490,258,110
2015	JAN	37,799,000	528,860,850	11,574,563	46,688,709	39,775,000	491,770,704
2015	FEB	39,775,000	488,828,760	11,240,807	52,550,632	45,884,000	441,409,935
2015	MAR	45,884,000	530,695,340	14,784,890	55,171,105	42,498,000	493,695,125
2015	APR	42,498,000	519,411,970	13,016,366	63,761,106	44,634,000	466,531,231
2015	MAY	44,634,000	467,895,470	11,260,648	56,801,882	39,360,000	427,628,236
2015	JUN	39,360,000	501,569,670	12,974,421	50,445,581	37,408,000	466,050,510
2015	JUL	37,408,000	495,789,770	11,638,442	51,157,547	33,968,000	459,710,665
2015	AUG	33,968,000	489,808,830	12,579,693	48,402,887	31,399,000	456,554,635
2015	SEP	31,399,000	511,621,670	12,443,218	53,752,878	30,012,000	471,699,010
2015	OCT	30,012,000	545,119,960	13,793,781	54,199,130	28,905,000	505,821,611
2015	NOV	28,905,000	522,905,040	13,494,600	53,780,789	44,033,000	467,490,851
2015	DEC	44,033,000	554,669,360	14,246,242	52,491,209	46,221,000	514,236,393
2016	JAN	46,221,000	523,759,460	13,578,185	49,993,015	46,702,000	486,863,630
2016	FEB	46,702,000	502,826,170	13,532,748	50,738,818	42,735,000	469,587,100
2016	MAR	42,735,000	539,088,760	15,320,620	59,590,877	47,917,000	489,636,503
2016	APR	47,917,000	502,650,260	12,351,980	54,580,754	43,536,000	464,802,486
2016	MAY	43,536,000	489,783,700	13,015,150	55,743,735	39,115,000	451,476,115
2016	JUN	39,115,000	505,992,550	12,928,090	54,449,337	37,898,000	465,688,303
2016	JUL	37,898,000	458,496,850	13,251,627	48,932,155	33,659,000	427,055,323
2016	AUG	33,659,000	540,194,480	12,885,462	51,717,162	31,277,000	503,744,780
2016	SEP	31,277,000	534,339,190	11,848,892	51,557,225	31,928,000	493,979,857
2016	OCT	31,928,000	552,432,790	12,926,069	57,611,926	36,219,000	503,455,933
2016	NOV	36,219,000	562,987,390	13,226,094	64,600,557	40,813,000	507,018,927
2016	DEC	40,813,000	555,146,830	12,274,790	59,430,939	38,307,000	510,496,681
2017	JAN	38,307,000	541,501,240	12,944,663	56,033,982	39,705,000	497,013,921
2017	FEB	39,705,000	499,483,880	12,674,543	55,820,658	38,155,000	457,887,765
2017	MAR	38,155,000	569,847,880	15,748,436	65,828,277	36,361,000	521,562,039
2017	APR	36,361,000	499,634,660	14,422,654	58,563,632	42,872,000	448,982,682
2017	MAY	42,872,000	526,699,670	14,537,667	63,686,896	40,357,000	480,065,441
2017	JUN	40,357,000	515,969,160	15,168,152	55,683,205	39,897,000	475,914,108
2017	JUL	39,897,000	468,649,370	14,340,425	49,218,580	33,878,000	439,790,215

Table A4. Loin Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2017	AUG	33,878,000	555,498,650	14,738,964	52,658,512	32,641,000	518,816,102
2017	SEP	32,641,000	544,039,370	13,700,488	52,549,746	34,291,000	503,540,112
2017	OCT	34,291,000	582,136,450	15,020,232	63,393,271	36,927,000	531,127,411
2017	NOV	36,927,000	564,118,240	14,109,211	67,818,082	36,440,000	510,896,369
2017	DEC	36,440,000	561,655,500	13,858,083	64,282,564	35,129,000	512,542,019
2018	JAN	35,129,000	575,502,130	14,421,631	60,847,506	40,773,000	523,432,255
2018	FEB	40,773,000	517,200,530	14,188,702	62,351,960	38,740,000	471,070,272
2018	MAR	38,740,000	577,185,840	15,489,025	70,891,952	39,553,000	520,969,913
2018	APR	39,553,000	538,259,470	16,319,052	68,841,893	39,830,000	485,459,628
2018	MAY	39,830,000	546,426,720	15,409,979	65,630,127	36,519,000	499,517,572
2018	JUN	36,519,000	504,761,180	13,911,098	59,731,819	31,949,000	463,510,459
2018	JUL	31,949,000	498,956,150	14,156,914	55,413,172	26,614,000	463,034,892
2018	AUG	26,614,000	582,086,190	13,788,471	56,284,245	30,575,000	535,629,416
2018	SEP	30,575,000	505,841,770	12,538,624	54,539,884	33,763,000	460,652,511
2018	OCT	33,763,000	615,810,650	13,821,252	63,796,438	34,216,000	565,382,464
2018	NOV	34,216,000	590,052,400	13,531,286	67,164,487	33,923,000	536,712,199
2018	DEC	33,923,000	560,926,730	13,622,275	71,046,850	34,092,000	503,333,155
2019	JAN	34,092,000	596,485,680	14,471,962	61,260,641	34,945,000	548,844,001
2019	FEB	34,945,000	544,692,750	13,835,796	58,379,881	38,648,000	496,445,665
2019	MAR	38,648,000	577,286,360	15,832,929	66,323,153	41,627,000	523,817,135
2019	APR	41,627,000	570,149,440	13,838,337	67,860,836	43,125,000	514,628,941
2019	MAY	43,125,000	557,534,180	12,755,007	68,470,847	45,790,000	499,153,340
2019	JUN	45,790,000	534,665,880	11,696,409	64,578,848	46,678,000	480,895,441
2019	JUL	46,678,000	555,548,910	12,375,345	75,451,614	46,329,000	492,821,641
2019	AUG	46,329,000	567,460,530	11,756,246	72,544,050	42,371,000	510,630,726
2019	SEP	42,371,000	562,208,360	10,888,435	64,434,472	39,695,000	511,338,323
2019	OCT	39,695,000	654,938,060	11,982,293	74,818,730	41,986,000	589,810,623
2019	NOV	41,986,000	610,357,440	10,859,720	89,666,400	48,719,000	524,817,760
2019	DEC	48,719,000	613,925,900	10,273,883	99,563,369	49,651,000	523,704,413
2020	JAN	49,651,000	641,644,290	10,355,388	95,926,118	50,109,000	555,615,560
2020	FEB	50,109,000	579,548,060	9,497,928	96,797,856	48,981,000	493,376,132
2020	MAR	48,981,000	644,961,450	10,288,492	103,373,960	46,326,000	554,530,982
2020	APR	46,326,000	510,340,040	8,901,923	93,940,411	40,517,000	431,110,552
2020	MAY	40,517,000	472,343,480	12,718,449	88,051,241	27,502,000	410,025,688
2020	JUN	27,502,000	603,220,520	12,834,263	65,039,388	32,187,000	546,330,395
2020	JUL	32,187,000	596,008,210	11,527,705	68,530,214	37,189,000	534,003,701
2020	AUG	37,189,000	588,343,560	13,029,264	67,301,608	39,714,000	531,546,216

Table A5. Picnic Supply & Utilization

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2010	JAN	8,889,000	203,229,310	5,481,181	36,087,350	8,223,000	173,289,142
2010	FEB	8,223,000	197,367,250	5,788,335	38,303,256	9,400,000	163,675,329
2010	MAR	9,400,000	229,103,230	6,456,485	40,108,776	12,607,000	192,243,939
2010	APR	12,607,000	207,653,930	6,323,382	37,457,012	8,304,000	180,823,300
2010	MAY	8,304,000	182,071,990	6,477,620	39,429,086	5,470,000	151,954,524
2010	JUN	5,470,000	205,699,910	6,908,468	40,680,804	7,339,000	170,058,574
2010	JUL	7,339,000	191,157,060	7,149,304	36,114,351	6,623,000	162,908,013
2010	AUG	6,623,000	203,858,190	7,513,299	34,170,649	6,434,000	177,389,840
2010	SEP	6,434,000	211,517,050	7,239,121	34,116,298	6,592,000	184,481,873
2010	OCT	6,592,000	224,903,210	7,550,636	36,862,476	6,108,000	196,075,370
2010	NOV	6,108,000	232,236,400	6,997,506	44,270,960	5,053,000	196,017,946
2010	DEC	5,053,000	230,821,420	6,609,314	44,352,917	6,845,000	191,285,816
2011	JAN	6,845,000	212,943,260	6,223,363	40,405,392	9,148,000	176,458,230
2011	FEB	9,148,000	198,557,630	5,971,378	40,938,266	11,172,000	161,566,742
2011	MAR	11,172,000	230,709,120	7,142,525	50,862,110	11,254,000	186,907,535
2011	APR	11,254,000	201,095,610	6,522,156	43,887,538	9,458,000	165,526,227
2011	MAY	9,458,000	197,614,310	6,592,976	43,913,555	11,482,000	158,269,730
2011	JUN	11,482,000	204,386,000	5,858,048	40,452,023	12,403,000	168,871,025
2011	JUL	12,403,000	183,846,330	5,373,371	41,235,728	9,707,000	150,679,973
2011	AUG	9,707,000	212,482,830	5,841,038	45,342,939	7,239,000	175,448,929
2011	SEP	7,239,000	219,479,120	5,844,342	45,051,639	9,293,000	178,217,824
2011	OCT	9,293,000	228,328,360	6,108,942	49,558,865	8,615,000	185,556,437
2011	NOV	8,615,000	234,336,410	6,395,180	52,179,970	10,499,000	186,667,619
2011	DEC	10,499,000	231,966,880	5,766,256	53,267,542	9,337,000	185,627,594
2012	JAN	9,337,000	223,173,790	5,579,074	51,879,118	10,898,000	175,312,746
2012	FEB	10,898,000	211,460,900	5,778,049	46,817,556	12,068,000	169,251,393
2012	MAR	12,068,000	223,218,710	6,332,605	49,607,252	9,311,000	182,701,063
2012	APR	9,311,000	206,845,370	5,634,371	46,293,137	11,619,000	163,878,604
2012	MAY	11,619,000	216,379,640	5,720,021	46,904,325	15,297,000	171,517,335
2012	JUN	15,297,000	196,581,150	5,881,205	43,386,930	13,784,000	160,588,425
2012	JUL	13,784,000	193,369,370	5,897,822	43,598,353	9,785,000	159,667,839
2012	AUG	9,785,000	224,386,630	6,044,530	45,781,185	11,396,000	183,038,975
2012	SEP	11,396,000	214,627,760	5,590,659	47,482,355	10,705,000	173,427,065
2012	OCT	10,705,000	248,261,610	5,713,223	53,988,994	8,086,000	202,604,839
2012	NOV	8,086,000	233,494,160	6,080,507	49,806,200	8,512,000	189,342,467
2012	DEC	8,512,000	219,456,660	5,514,060	46,092,791	7,839,000	179,550,930
2013	JAN	7,839,000	231,888,270	5,918,011	44,704,721	12,267,000	188,673,560
2013	FEB	12,267,000	199,714,320	5,538,595	40,755,035	16,814,000	159,950,880
2013	MAR	16,814,000	216,963,600	5,842,563	40,157,212	16,544,000	182,918,951
2013	APR	16,544,000	217,951,840	5,902,470	42,504,256	21,152,000	176,742,054
2013	MAY	21,152,000	213,246,470	6,313,207	45,746,300	16,265,000	178,700,378
2013	JUN	16,265,000	188,248,490	5,849,303	41,936,609	13,669,000	154,757,184
2013	JUL	13,669,000	206,665,690	6,561,168	43,593,130	12,719,000	170,583,727
2013	AUG	12,719,000	217,682,320	6,307,932	42,201,939	13,808,000	180,699,313

Table A5. Picnic Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2013	SEP	13,808,000	206,957,670	6,629,471	41,376,405	13,115,000	172,903,736
2013	OCT	13,115,000	243,578,700	6,845,071	45,765,246	11,192,000	206,581,525
2013	NOV	11,192,000	229,080,770	6,716,768	48,856,374	8,810,000	189,323,164
2013	DEC	8,810,000	231,944,420	6,304,807	49,715,272	7,889,000	189,454,955
2014	JAN	7,889,000	234,224,110	6,004,914	49,029,740	9,920,000	189,168,284
2014	FEB	9,920,000	207,103,660	5,568,976	47,580,009	11,716,000	163,296,627
2014	MAR	11,716,000	208,249,120	6,298,568	54,346,386	9,080,000	162,837,302
2014	APR	9,080,000	214,605,300	6,669,091	49,461,952	13,204,000	167,688,439
2014	MAY	13,204,000	208,776,930	7,645,926	47,959,684	9,413,000	172,254,173
2014	JUN	9,413,000	194,728,200	6,977,671	47,627,407	7,638,000	155,853,464
2014	JUL	7,638,000	202,117,540	6,539,948	45,449,940	6,909,000	163,936,547
2014	AUG	6,909,000	196,772,060	7,602,515	41,376,718	8,505,000	161,401,856
2014	SEP	8,505,000	210,214,370	7,807,753	40,868,880	10,513,000	175,145,244
2014	OCT	10,513,000	238,794,720	8,882,438	45,258,401	10,893,000	202,038,756
2014	NOV	10,893,000	212,269,460	7,656,270	42,631,588	10,860,000	177,327,142
2014	DEC	10,860,000	237,435,890	8,940,989	45,583,747	8,827,000	202,826,132
2015	JAN	8,827,000	236,335,350	8,080,951	40,184,212	12,811,000	200,248,089
2015	FEB	12,811,000	218,445,960	7,323,379	43,084,123	19,339,000	176,157,215
2015	MAR	19,339,000	237,155,140	9,291,675	51,243,327	19,582,000	194,960,488
2015	APR	19,582,000	232,112,870	7,849,109	51,628,716	16,239,000	191,676,262
2015	MAY	16,239,000	209,091,370	7,036,268	49,452,991	10,867,000	172,046,647
2015	JUN	10,867,000	224,139,570	8,559,871	48,748,773	8,757,000	186,060,668
2015	JUL	8,757,000	221,556,670	7,712,335	45,672,787	9,680,000	182,673,219
2015	AUG	9,680,000	218,883,930	7,945,974	42,840,009	11,767,000	181,902,896
2015	SEP	11,767,000	228,631,570	7,973,150	44,088,175	10,490,000	193,793,545
2015	OCT	10,490,000	243,601,160	8,659,912	46,880,921	8,816,000	207,054,152
2015	NOV	8,816,000	233,673,840	8,761,629	50,057,638	10,972,000	190,221,831
2015	DEC	10,972,000	247,868,560	9,031,939	49,747,444	10,634,000	207,491,054
2016	JAN	10,634,000	234,055,660	8,118,753	44,155,987	10,705,000	197,947,425
2016	FEB	10,705,000	224,701,070	8,674,911	43,428,204	11,142,000	189,510,777
2016	MAR	11,142,000	240,905,960	9,191,268	49,241,455	10,420,000	201,577,772
2016	APR	10,420,000	224,622,460	8,078,127	48,830,208	11,470,000	182,820,379
2016	MAY	11,470,000	218,872,700	8,363,938	53,835,705	9,914,000	174,956,933
2016	JUN	9,914,000	226,116,050	8,051,444	48,982,444	7,959,000	187,140,049
2016	JUL	7,959,000	204,891,350	8,487,118	47,681,680	8,022,000	165,633,787
2016	AUG	8,022,000	241,400,080	8,419,835	46,920,735	8,446,000	202,475,180
2016	SEP	8,446,000	238,783,490	8,070,252	46,817,766	8,512,000	199,969,976
2016	OCT	8,512,000	246,869,090	8,715,709	50,070,958	11,294,000	202,731,842
2016	NOV	11,294,000	251,585,690	8,924,320	56,921,339	8,980,000	205,902,671
2016	DEC	8,980,000	248,081,930	8,194,084	57,195,722	8,321,000	199,739,291
2017	JAN	8,321,000	241,984,040	8,135,810	52,030,690	8,993,000	197,417,159
2017	FEB	8,993,000	223,207,480	7,821,256	50,187,975	8,437,000	181,396,761
2017	MAR	8,437,000	254,651,480	9,601,617	57,693,109	8,783,000	206,213,988
2017	APR	8,783,000	223,274,860	9,046,884	51,020,059	7,210,000	182,874,685
2017	MAY	7,210,000	235,369,570	8,815,122	57,846,681	7,741,000	185,807,011
2017	JUN	7,741,000	230,574,360	9,052,419	50,228,193	7,698,000	189,441,587
2017	JUL	7,698,000	209,428,270	8,609,186	42,821,606	6,648,000	176,265,849

Table A5. Picnic Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2017	AUG	6,648,000	248,239,150	9,120,985	45,787,682	8,176,000	210,044,453
2017	SEP	8,176,000	243,118,270	8,335,613	47,189,034	8,745,000	203,695,849
2017	OCT	8,745,000	260,142,950	9,769,410	54,240,166	8,055,000	216,362,194
2017	NOV	8,055,000	252,091,040	9,732,767	59,203,297	6,866,000	203,809,510
2017	DEC	6,866,000	250,990,500	9,445,847	58,134,935	5,982,000	203,185,412
2018	JAN	5,982,000	257,178,230	9,884,964	54,100,472	7,074,000	211,870,722
2018	FEB	7,074,000	231,124,630	9,055,112	53,938,704	8,644,000	184,671,037
2018	MAR	8,644,000	257,930,640	9,993,413	57,472,745	11,314,000	207,781,308
2018	APR	11,314,000	240,535,370	10,338,588	60,744,329	10,094,000	191,349,629
2018	MAY	10,094,000	244,185,120	9,331,038	56,893,710	10,110,000	196,606,448
2018	JUN	10,110,000	225,565,780	8,332,224	49,019,680	7,268,000	187,720,324
2018	JUL	7,268,000	222,971,650	9,123,543	46,070,971	8,157,000	185,135,222
2018	AUG	8,157,000	260,120,490	8,348,387	48,279,556	8,874,000	219,472,321
2018	SEP	8,874,000	226,048,670	7,948,509	47,640,035	8,375,000	186,856,145
2018	OCT	8,375,000	275,191,150	8,818,186	55,330,814	7,879,000	229,174,521
2018	NOV	7,879,000	263,680,400	8,676,939	55,100,022	6,644,000	218,492,317
2018	DEC	6,644,000	250,664,830	8,223,228	55,426,142	6,832,000	203,273,916
2019	JAN	6,832,000	266,555,280	8,739,707	52,273,849	7,067,000	222,786,138
2019	FEB	7,067,000	243,410,250	8,900,233	49,133,360	6,742,000	203,502,123
2019	MAR	6,742,000	257,975,560	9,351,048	55,982,579	8,019,000	210,067,030
2019	APR	8,019,000	254,786,240	8,495,020	57,440,281	9,926,000	203,933,979
2019	MAY	9,926,000	249,148,780	7,600,505	54,477,413	7,561,000	204,636,872
2019	JUN	7,561,000	238,929,480	7,432,661	54,803,740	7,920,000	191,199,401
2019	JUL	7,920,000	248,261,610	7,663,910	60,173,113	7,940,000	195,732,407
2019	AUG	7,940,000	253,584,630	8,092,359	55,810,908	10,063,000	203,743,081
2019	SEP	10,063,000	251,237,560	7,326,901	51,280,196	8,582,000	208,765,265
2019	OCT	8,582,000	292,676,260	8,502,693	55,764,903	9,923,000	244,073,050
2019	NOV	9,923,000	272,754,240	7,204,245	67,531,469	7,506,000	214,844,016
2019	DEC	7,506,000	274,348,900	6,781,766	74,319,031	7,991,000	206,326,635
2020	JAN	7,991,000	286,735,590	7,051,205	73,606,427	10,559,000	217,612,369
2020	FEB	10,559,000	258,986,260	6,450,779	71,377,931	12,164,000	192,454,108
2020	MAR	12,164,000	288,217,950	7,126,649	74,728,633	10,807,000	221,972,966
2020	APR	10,807,000	228,058,840	6,230,684	66,437,042	13,453,000	165,206,482
2020	MAY	13,453,000	211,079,080	8,286,063	64,279,326	10,402,000	158,136,816
2020	JUN	10,402,000	269,564,920	8,969,473	59,758,258	8,694,000	220,484,135
2020	JUL	8,694,000	266,341,910	8,315,082	64,334,910	7,089,000	211,927,082
2020	AUG	7,089,000	262,916,760	9,255,111	60,006,068	7,610,000	211,644,802

Table A6. Rib Supply & Utilization

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2010	JAN	96,000,000	83,608,140	2,295,317	6,839,479	93,298,000	81,765,978
2010	FEB	93,298,000	81,196,500	2,269,564	8,712,744	95,530,000	72,521,321
2010	MAR	95,530,000	94,252,620	2,490,850	8,876,185	102,190,000	81,207,284
2010	APR	102,190,000	85,428,420	2,357,568	9,009,752	81,134,000	99,832,236
2010	MAY	81,134,000	74,904,060	2,223,249	9,303,359	63,762,000	85,195,950
2010	JUN	63,762,000	84,624,540	2,189,662	8,888,524	42,662,000	99,025,678
2010	JUL	42,662,000	78,641,640	2,323,338	8,003,901	39,452,000	76,171,077
2010	AUG	39,452,000	83,866,860	2,613,011	7,068,455	33,462,000	85,401,416
2010	SEP	33,462,000	87,017,700	2,465,808	7,970,440	41,515,000	73,460,068
2010	OCT	41,515,000	92,524,740	2,604,934	8,256,055	54,023,000	74,365,620
2010	NOV	54,023,000	95,541,600	2,241,682	9,810,984	66,559,000	75,436,298
2010	DEC	66,559,000	94,959,480	2,384,600	9,645,406	81,626,000	72,631,675
2011	JAN	81,626,000	87,604,440	2,202,527	8,950,196	91,404,000	71,078,771
2011	FEB	91,404,000	81,686,220	1,862,244	10,127,193	93,825,000	71,000,271
2011	MAR	93,825,000	94,913,280	2,457,681	12,723,612	96,818,000	81,654,350
2011	APR	96,818,000	82,730,340	2,366,983	10,968,862	97,143,000	73,803,460
2011	MAY	97,143,000	81,298,140	2,183,814	10,241,394	78,730,000	91,653,560
2011	JUN	78,730,000	84,084,000	2,146,557	9,789,410	43,646,000	111,525,147
2011	JUL	43,646,000	75,634,020	2,027,080	9,942,506	41,199,000	70,165,594
2011	AUG	41,199,000	87,415,020	2,202,226	11,065,228	34,972,000	84,779,018
2011	SEP	34,972,000	90,293,280	2,141,668	11,333,233	45,339,000	70,734,714
2011	OCT	45,339,000	93,933,840	2,316,447	12,576,351	57,494,000	71,518,936
2011	NOV	57,494,000	96,405,540	2,212,260	12,899,546	64,096,000	79,116,254
2011	DEC	64,096,000	95,430,720	2,223,539	11,951,731	73,956,000	75,842,528
2012	JAN	73,956,000	91,813,260	2,095,316	12,880,263	86,457,000	68,527,314
2012	FEB	86,457,000	86,994,600	2,126,393	11,733,809	96,043,000	67,801,185
2012	MAR	96,043,000	91,831,740	2,399,500	12,401,249	101,893,000	75,979,991
2012	APR	101,893,000	85,095,780	2,228,925	11,371,307	107,954,000	69,892,398
2012	MAY	107,954,000	89,018,160	2,209,412	11,099,983	90,665,000	97,416,589
2012	JUN	90,665,000	80,873,100	2,260,841	9,784,581	71,933,000	92,081,360
2012	JUL	71,933,000	79,551,780	2,427,562	9,519,206	62,992,000	81,401,136
2012	AUG	62,992,000	92,312,220	2,362,011	10,191,094	57,690,000	89,785,136
2012	SEP	57,690,000	88,297,440	2,331,014	10,436,426	65,736,000	72,146,028
2012	OCT	65,736,000	102,134,340	2,273,154	12,270,621	79,458,000	78,414,872
2012	NOV	79,458,000	96,059,040	2,558,708	11,832,527	103,126,000	63,117,221
2012	DEC	103,126,000	90,284,040	2,366,213	10,331,215	109,235,000	76,210,038
2013	JAN	109,235,000	95,398,380	2,564,302	10,493,516	114,370,000	82,334,165
2013	FEB	114,370,000	82,162,080	2,370,784	10,104,715	119,439,000	69,359,149
2013	MAR	119,439,000	89,258,400	2,505,146	10,030,365	122,396,000	78,776,181
2013	APR	122,396,000	89,664,960	2,385,218	9,621,540	120,593,000	84,231,637
2013	MAY	120,593,000	87,729,180	2,404,717	10,373,665	91,153,000	109,200,231
2013	JUN	91,153,000	77,445,060	2,181,444	9,675,610	56,652,000	104,451,894
2013	JUL	56,652,000	85,021,860	2,524,933	9,744,514	57,631,000	76,823,279
2013	AUG	57,631,000	89,554,080	2,663,484	10,120,382	48,298,000	91,430,182

Table A6. Rib Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2013	SEP	48,298,000	85,141,980	2,823,693	9,575,484	56,107,000	70,581,189
2013	OCT	56,107,000	100,207,800	2,840,777	10,595,481	75,746,000	72,814,096
2013	NOV	75,746,000	94,243,380	2,611,556	10,782,387	98,853,000	62,965,549
2013	DEC	98,853,000	95,421,480	2,510,916	10,629,168	106,589,000	79,567,228
2014	JAN	106,589,000	96,359,340	2,620,636	11,219,146	112,246,000	82,103,830
2014	FEB	112,246,000	85,202,040	2,202,664	10,723,089	122,859,000	66,068,615
2014	MAR	122,859,000	85,673,280	2,487,532	12,329,077	120,606,000	78,084,735
2014	APR	120,606,000	88,288,200	2,498,925	11,513,113	115,957,000	83,923,012
2014	MAY	115,957,000	85,890,420	3,007,742	10,888,379	89,596,000	104,370,783
2014	JUN	89,596,000	80,110,800	2,768,415	10,425,012	59,943,000	102,107,202
2014	JUL	59,943,000	83,150,760	2,601,358	9,701,335	55,140,000	80,853,784
2014	AUG	55,140,000	80,951,640	2,942,611	8,669,985	49,621,000	80,743,266
2014	SEP	49,621,000	86,481,780	3,104,677	8,289,546	53,957,000	76,960,911
2014	OCT	53,957,000	98,239,680	3,258,479	9,682,226	69,374,000	76,398,933
2014	NOV	69,374,000	87,327,240	2,736,580	9,182,162	76,897,000	73,358,658
2014	DEC	76,897,000	97,680,660	3,126,985	9,230,129	87,020,000	81,454,516
2015	JAN	87,020,000	97,227,900	2,943,331	8,661,202	94,863,000	83,667,030
2015	FEB	94,863,000	89,868,240	2,757,890	9,748,644	106,781,000	70,959,486
2015	MAR	106,781,000	97,565,160	3,507,535	10,234,767	115,372,000	82,246,928
2015	APR	115,372,000	95,490,780	2,638,009	11,828,294	113,832,000	87,840,495
2015	MAY	113,832,000	86,019,780	2,322,868	10,537,292	89,290,000	102,347,356
2015	JUN	89,290,000	92,210,580	2,650,456	9,358,137	73,022,000	101,770,899
2015	JUL	73,022,000	91,147,980	2,348,753	9,490,214	75,533,000	81,495,520
2015	AUG	75,533,000	90,048,420	2,520,103	8,979,198	72,626,000	86,496,325
2015	SEP	72,626,000	94,058,580	2,467,337	9,971,672	85,335,000	73,845,244
2015	OCT	85,335,000	100,217,040	2,731,916	10,054,456	98,871,000	79,358,499
2015	NOV	98,871,000	96,132,960	2,809,177	9,976,850	117,148,000	70,688,287
2015	DEC	117,148,000	101,972,640	2,925,887	9,737,621	134,777,000	77,531,906
2016	JAN	134,777,000	96,290,040	2,628,387	9,274,182	139,914,000	84,507,245
2016	FEB	139,914,000	92,441,580	2,719,842	9,412,536	143,396,000	82,266,887
2016	MAR	143,396,000	99,108,240	2,931,843	11,054,677	146,135,000	88,246,406
2016	APR	146,135,000	92,409,240	2,408,392	10,125,251	138,117,000	92,710,381
2016	MAY	138,117,000	90,043,800	2,535,245	10,340,995	109,997,000	110,358,050
2016	JUN	109,997,000	93,023,700	2,546,130	10,100,872	85,635,000	109,830,958
2016	JUL	85,635,000	84,291,900	2,720,672	9,077,382	90,139,000	73,431,189
2016	AUG	90,139,000	99,311,520	2,515,981	9,594,028	75,957,000	106,415,474
2016	SEP	75,957,000	98,235,060	2,486,545	9,564,358	83,729,000	83,385,247
2016	OCT	83,729,000	101,561,460	2,492,585	10,687,563	98,916,000	78,179,482
2016	NOV	98,916,000	103,501,860	2,534,841	11,984,020	109,413,000	83,555,680
2016	DEC	109,413,000	102,060,420	2,372,877	11,025,007	115,590,000	87,231,290
2017	JAN	115,590,000	99,551,760	2,462,538	10,394,839	128,029,000	79,180,459
2017	FEB	128,029,000	91,827,120	2,419,294	10,355,265	139,525,000	72,395,149
2017	MAR	139,525,000	104,763,120	3,012,188	12,211,774	140,639,000	94,449,533
2017	APR	140,639,000	91,854,840	2,758,547	10,864,113	136,875,000	87,513,274
2017	MAY	136,875,000	96,830,580	2,805,085	11,814,528	114,460,000	110,236,137
2017	JUN	114,460,000	94,857,840	2,880,932	10,329,766	85,993,000	115,876,005
2017	JUL	85,993,000	86,158,380	2,752,001	9,130,517	77,182,000	88,590,864
2017	AUG	77,182,000	102,125,100	2,756,106	9,768,657	74,341,000	97,953,549

Table A6. Rib Supply & Utilization (continued)

Year	Mo.	Beg. Stocks	Production	Imports	Exports	Ending Stocks	Disappearance
2017	SEP	74,341,000	100,018,380	2,569,899	9,748,480	88,032,000	79,148,799
2017	OCT	88,032,000	107,022,300	2,821,887	11,760,058	94,859,000	91,257,130
2017	NOV	94,859,000	103,709,760	2,623,566	12,580,902	100,218,000	88,393,424
2017	DEC	100,218,000	103,257,000	2,577,421	11,925,030	104,264,000	89,863,391
2018	JAN	104,264,000	105,802,620	2,685,932	11,287,794	114,366,000	87,098,759
2018	FEB	114,366,000	95,084,220	2,638,533	11,566,884	131,600,000	68,921,869
2018	MAR	131,600,000	106,112,160	2,957,836	13,151,134	143,957,000	83,561,862
2018	APR	143,957,000	98,955,780	3,125,478	12,770,829	143,717,000	89,550,429
2018	MAY	143,717,000	100,457,280	3,005,709	12,175,016	119,286,000	115,718,973
2018	JUN	119,286,000	92,797,320	2,753,073	11,080,823	88,871,000	114,884,570
2018	JUL	88,871,000	91,730,100	2,768,000	10,279,673	84,171,000	88,918,427
2018	AUG	84,171,000	107,013,060	2,760,277	10,441,265	77,803,000	105,700,072
2018	SEP	77,803,000	92,995,980	2,405,877	10,117,669	83,403,000	79,684,187
2018	OCT	83,403,000	113,213,100	2,726,773	11,834,849	101,369,000	86,139,024
2018	NOV	101,369,000	108,477,600	2,550,968	12,459,654	108,324,000	91,613,914
2018	DEC	108,324,000	103,123,020	2,537,424	13,179,870	124,310,000	76,494,574
2019	JAN	124,310,000	109,660,320	2,767,070	11,364,434	127,110,000	98,262,956
2019	FEB	127,110,000	100,138,500	2,817,697	10,830,026	142,606,000	76,630,171
2019	MAR	142,606,000	106,130,640	3,276,743	12,303,579	140,780,000	98,929,804
2019	APR	140,780,000	104,818,560	2,809,821	12,588,833	146,859,000	88,960,548
2019	MAY	146,859,000	102,499,320	2,632,872	12,701,996	127,769,000	111,520,196
2019	JUN	127,769,000	98,295,120	2,384,614	11,979,993	101,647,000	114,821,741
2019	JUL	101,647,000	102,134,340	2,489,486	13,996,995	84,867,000	107,406,831
2019	AUG	84,867,000	104,324,220	2,543,996	13,457,614	79,353,000	98,924,602
2019	SEP	79,353,000	103,358,640	2,196,330	11,953,210	85,287,000	87,667,760
2019	OCT	85,287,000	120,406,440	2,408,239	13,879,589	100,828,000	93,394,090
2019	NOV	100,828,000	112,210,560	2,269,918	16,633,974	110,333,000	88,341,504
2019	DEC	110,333,000	112,866,600	2,175,686	18,469,956	121,907,000	84,998,330
2020	JAN	121,907,000	117,962,460	2,269,255	17,795,211	125,938,000	98,405,504
2020	FEB	125,938,000	106,546,440	2,029,981	17,956,927	138,615,000	77,942,494
2020	MAR	138,615,000	118,572,300	2,079,909	19,176,857	132,658,000	107,432,352
2020	APR	132,658,000	93,822,960	1,786,820	17,426,844	116,043,000	94,797,936
2020	MAY	116,043,000	86,837,520	2,646,725	16,334,346	79,133,000	110,059,899
2020	JUN	79,133,000	110,898,480	2,574,760	12,065,428	64,857,000	115,683,812
2020	JUL	64,857,000	109,572,540	2,292,380	12,713,010	63,169,000	100,839,911
2020	AUG	63,169,000	108,163,440	2,685,921	12,485,091	62,593,000	98,940,269