



**Immigration, Meat Packing, and Trade:
Implications for Iowa**

by

Wallace E. Huffman* and John A. Miranowski**

December 1996
Staff Paper #285

*478C Heady Hall/ISU/Ames IA 50011-1070
515-294-6359
whuffman@iastate.edu

**266B Heady Hall/ISU/Ames IA 50011-1070
515-294-6741
jmirski@iastate.edu

ABSTRACT: The paper examines changes in employment and wage patterns, industrial restructuring, and foreign competition that affect opportunities of recent immigrants to the non-metropolitan Midwest, especially to Iowa. The focus is on food and kindred products where meat and poultry packing and processing are major components. Although total employment in this industry declined between 1980 and 1990, a significant increase in employment of Hispanic- and Asian- origin persons occurred in Iowa. As unions weakened and the real wage rate declined sharply during 1980-85 in meat and poultry packing and processing, new job opportunities for recent immigrants became available. These jobs provided full-time year-round work at significantly above the minimum wage and made regular schooling for their children and frequently home ownership possible.

Copyright © 1997 by Wallace E. Huffman and John A. Miranowski. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided this copyright notice appears on all such copies.

IOWA STATE IS AN EQUAL OPPORTUNITY EMPLOYER

Immigration, Meat Packing, and Trade: Implications for Iowa

By Wallace E. Huffman and John A. Miranowski*
Iowa State University

The objective of this paper is to examine changes in employment and wage patterns, industrial restructuring, and foreign competition that affect job opportunities of recent immigrants to the nonmetropolitan Midwest, especially to Iowa. The food and kindred products industry which includes meat packing and poultry slaughtering and processing is a significant employer of recent immigrants. The meat packing industry has a long history of employing immigrants, especially Irish and Polish immigrants during the first half of the 20th century. U.S. meat packing has undergone significant technical change and geographical relocation during the past 25 years. During 1945 to 1968, unions gained considerable wage advantage for hourly meat packing workers relative to other manufacturing workers. These relatively high wage rates of the unionized packing house workers were undoubtedly one of the contributing factors to these changes. The technical changes that occurred were somewhat unusual in that technical advances replaced a major component of skilled labor, the meat cutters, in meat packing and opened packing house employment again to less skilled workers, including recent immigrants. Hispanics, Asians, and Sudanese are groups represented in the Midwest.

*Wallace E. Huffman is professor of Economics at Iowa State University and John A. Miranowski is professor of Economics and Chair of the Economics Department at Iowa State University.

Recent Changes in Employment and Opportunities for Immigrant Labor

During the past decade, rapid immigration of minority groups into California, Texas, and Florida has caused a significant increase in the supply of low-skilled (-educated) workers and in households that have less than U.S. average income. These changes are impacting small towns and cities. In Iowa (and some other Midwestern states), immigrants from minority groups are a much smaller share of the total workforce than in border states, but rapid increases in their numbers have occurred during the past decade. Although the Iowa labor force decreased 2.3 percent over 1980 to 1990, large increases in Spanish-origin/Hispanics and Asian-origin population occurred. The increase in the labor force for Asian-origin individuals has been much larger than for Hispanics (60% versus 17% during 1980-90). No change has occurred in the number of blacks in the Iowa labor force over this time period. See table 1, section A.

For persons over 25 years of age who are recorded in the U.S. Census of Population, the Spanish origin/Hispanic population in Iowa has about twice as large of share of individuals who have completed ≤ 8 years of schooling as for the total population. Among those who have completed more than 8 years of schooling, the distribution across schooling completion levels is similar to the total population of Iowa over 25 years of age (see table 2). Thus, there is a significant share of Spanish origin/Hispanics who have gone to college.

By coming to Iowa, recent immigrants seem to be seeking jobs giving a higher real income (e.g., less competition from recent immigrants for jobs, a wage rate that is higher than in the border states and the cost of living that is lower than in California), a low-drug and low-crime

environment (e.g., a “peaceful” environment), and modest but relatively inexpensive housing. These individuals do not seem to be attracted to the most rural locations or the largest cities but rather to small cities some of which are close to large urbanized areas. For example, between 1980 and 1990, employment in the Iowa food and kindred products industry grew 2.6 percent in areas that were outside SMSAs and not rural, but other areas had significant declines. The rate of decline of employment in this industry inside SMSAs and rural areas was greater than 15 percent (see table 3).

Although expectations based on border state outcomes might lead us to hypothesize that recent immigrants to Iowa are employed largely in agriculture, this is not the case. In 1990, a small share of Hispanics worked in agriculture (less than 1.4% of them and a smaller share of Asian-origin individuals). Food and kindred products, an agricultural related industry, is an important employer of minorities. In 1990, 16 % of Hispanics, 9% of Asian-origin, and 6% blacks were employed in this industry. See table 1, section B. Other industries employing a large share of minorities in Iowa are retail trades, services, and other manufacturing. Hence, the employment of Hispanics, Asian-origin, and blacks in Iowa is diffused among industries.

The industrial composition of employment in nonmetropolitan areas of Iowa, as well as in the so-called Heartland States in general, tends to be tied to supplying inputs for and processing the products of primary industries, such as agriculture (Barkley, 1996). In 1991, the principal manufacturing sectors with significant nonmetro employment in Iowa included food products (20.5%), machinery (16.8%), electrical equipment (10.7%), and fabricated metals (10.3%). Barkley goes on to point out that even though the employment growth in the 1981-91 period was not spectacular in the nonmetro counties of the Heartland, it substantially exceeded the

employment change that would have existed if the nonmetro industries' employment had grown or declined at the national rate. For example, if Iowa's nonmetro employment had changed at the national rate, it would have declined 8.3 percent instead of growing 6.4 percent. The growth in nonmetro employment opportunities in these primary-related manufacturing industries requiring less-skilled labor, coupled with recent low unemployment rates in Iowa (3.5% or less), have created significant opportunities for immigrant labor in nonmetro manufacturing as well as in the retail trade and service sectors. Although meat packing and processing jobs are most numerous, other job opportunities are important in attracting immigrants to nonmetro areas in Iowa and elsewhere in the Heartland.

Meat Packing

The U.S. meat products industry has a long history of being labor intensive and it has undergone major changes over the past 25 years. The industry consists of three subindustries: meat packing, sausage and prepared meats (meat processing) and poultry slaughtering and processing. Through the 1950's, meat packing plants were located in larger cities close to consumers and labor. This worked well when refrigeration was poor and swine and beef production occurred in many small, somewhat scattered units. Slaughter animals were shipped/trucked to the large cities for meat packing. Over time, refrigeration, processing, and packaging for meat improved greatly so fresh and processed meats could be easily shipped long distances without spoilage and production of beef, swine, and poultry became concentrated in generally large, specialized operations. As a result, meat packers and poultry processing operations have moved to sites close to production and located largely in small cities during the past two decades. Because the cost of living is lower in small cities and towns than large cities

and many small cities and towns have lost other employers, meat packing and poultry processors found wage rate advantages associated with location in small compared to large cities.

Environmental concerns associated with meat packing are also generally reduced in less densely populated areas, too.

Recent Trends

Many changes have occurred. From 1960-95, there was steady positive average annual growth of production workers in the meat products industry (1.2%), but the growth rate in meat packing was negative (-0.9%). A large positive growth rate occurred in poultry slaughtering and processing (3.3% per year 1972-95), and total employment in poultry slaughtering and processing has exceeded meat packing since 1983. See figure 1. Meat processing employment has also experienced a positive long term growth rate. Hence during 1960-90, a major reallocation of employment in the meat products industry occurred away from meat packing and toward poultry slaughter and processing and meat processing.

Significant changes in the wage/compensation structure for production workers in the U.S. meat products industry have occurred since 1960. Average real hourly earning in meat packing and meat processing rose from 1960 to about 1980, with the rate being higher in meat packing, then real average hourly earnings in these subindustries started a 15 year decline, where the rate of decline was slower in meat processing than meat packing (see figure 2). Since 1981, average hourly earnings in meat processing have exceeded the rate for meat packing. Real average hourly earnings in poultry slaughtering and processing have been basically unchanged over 1972-1995 and significantly below the rate for meat packing and meat processing. A notable long term trend is the decline of the real average hourly earning of meat packing and meat

processing toward the level of poultry slaughter and processing (see figure 2). The decline in red meat consumption during the early 1980s led to excess capacity in meat packing and downward pressure on input prices, especially wage rates.

Unionized labor has been working in U.S. meat packing since the turn of the century, but the strength of the unions (United Packing House Workers of America and Amalgamated Meat Cutters) grew steadily during 1946-68. By 1968, 95 percent of the hourly workers in multiplant meat packing operating outside the South were represented by these two unions. They were negotiating nearly uniform changes in master agreements throughout the industry during 1950-79 (Craypo). Figure 3 shows the trend in the unionization index for meat product workers (meat packing, sausage and prepared meats, and poultry slaughter and processing). The period 1978-88 is one where large changes in the unionization rate for labor in meat products occurred. There was a slight negative trend from 1963 to 1978. During the period 1978-84, the rate of decline about doubled from the previous period. The rate of decline was quite dramatic after 1984, and by 1988 the unionization rate for workers in meat products had fallen about 55% from its 1963 level.

Union strength peaked in meat packing during the 1960s and mid-1970s (Craypo). This is reflected in the high unionization rate of workers and the average hourly earnings of production workers in meat packing being about 17 percent above the all manufacturing rate up to 1979 (see figures 3 and 4). However, during 1979-84 radical changes in meat packing occurred with geographical relocation, technical change, and a dramatic drop in U.S. meat demand. The unionization rate dropped dramatically and average hourly earnings of production workers dropped to about 85 percent of the rate for all manufacturing. Real (at the 1992 price level)

hourly compensation, which includes benefits, of meat packing production workers peaked in 1980 at about \$19 per hour, fell dramatically during 1981-84 (25%) and was significantly lower in 1995 (about \$12 per hour) than in 1960 (see figure 5). Labor's value-added cost share also dropped significantly in the 1980s.

Packer Cost Functions

Melton and Huffman (1995) provide an extensive examination of the effects of unionization, technical change, and structural change on cost and input demand for U.S. meat packing during 1963-88. The basic service provided by the meat packing industry has remained unchanged. It is primarily a labor-intensive disassembly process where the slaughter animal is processed into saleable products and the balance goes into waste. Meat packing cost is best conceived on a value-added basis, e.g., annual packing cost less the cost of the slaughter animals. The major input categories are labor, capital services, packaging, and other (utilities).

Interesting trends in real value-added cost per pound and in input shares have occurred. Real average beef packing costs have risen slightly since 1963, but they have remained fairly stable in the range of about \$.05 to \$.10 per pound of slaughter weight processed (Melton and Huffman 1995, figure 2). Pork packing has historically had a greater degree of postslaughter processing, with significantly greater average cost per pound of slaughter weight processed than beef. Between 1963 and 1971, real pork packing costs increased from about \$.15 to over \$.25 per pound of slaughter weight, then fluctuated in a range of about \$.20 to \$.25 per pound of slaughter weight before beginning a dramatic fall in about 1976. As a result of this nearly \$.15 per pound cost decline, average real pork packing costs were nearly 30 percent less in 1988 than 1963 and less than half of their 1971 highs.

In both beef and pork packing, labor has been the single largest input cost share (see figure 6), but its share in beef packing is larger than in pork. Some of the differences in capital intensity - postslaughter processing of pork being more capital intense than beef. Examples of this are the automated or semiautomated postslaughter processing required to cure hams and package pork products. The cost share for packaging materials has also been greater in pork packing than beef, although both have shown marked increases since the mid-1970s. Major factors contributing to this increase include the introduction of boxed beef (about 1976),¹ and the absorption by packers of many other postslaughter fabricating and processing functions traditionally performed by local butchers and retailers.

Economists believe that union activities increase costs through collective bargaining agreements which are intended to increase wage rates and protect jobs of union members. These agreements frequently cover nonwage aspects broadly defined as working conditions (e.g., minimum working hours, packer chain-line speed, size of workers' locker rooms, and sometimes even the number of parking spaces). These agreements also typically specify a minimum number of workers to perform a given task, and that full pay (for an eight hour shift) be received for as little as three hours of work. Melton and Huffman (1995), however, concluded that during 1963-88 the unionization rate of labor did not affect significantly the compensation rate for meat packer workers, but it did have a significant effect on cost through noncompensation factors, i.e. working conditions and arrangements..

Most collective bargaining agreements are for three- to five-year terms. Hence, management in meat packing has an incentive to reduce future union power. Management can sometimes change input use or technology such that other inputs (e.g., capital, packaging

material, replacement workers, etc.) are substituted for experienced labor. Management may also change output rates to reduce its labor cost. Over longer periods, management can and has relocated packing plants to areas where labor unions are weak in order to further expand the range of possible technologies.

New technologies have been introduced in meat packing (e.g., automated chain-lines, boxed beef in vacuum-packed plastic wrap (starting in the 1960s), mechanical hide pullers, electric knives, low-fat slaughter animals). The incentives for adopting these technologies included rising real wage rates (up to 1980), unionization (especially before 1980), and consumer preferences. Technology adoption appears to have been faster in nonunion plants [see Kimle and Hayenga, U.S. Department of Labor (USDOL) 1982].

Union power and labor cost can also be affected by plant size and location. The industry is such that capital shares and capital investments for packing plants are small relative to either sales or other costs, and the opportunity cost of abandoning an existing, partially depreciated facility in the face of declining animal availability or rising labor costs is small. Thus, as cattle feeding relocated from the Corn Belt to the Southern High Plains, cattle availability and labor costs were undoubtedly prime determinants of (optimal) plant location and size.

In the mid-1990s, new competition for U.S. meat packing is on the horizon through competition with Mexico enhanced largely by NAFTA. Even with the major change in U.S. meat packing during the past 15 years, Mexican meat packers have a large potential cost advantage over current U.S. meat packers (see Huffman and Melton 1996; Huffman 1995).

Potential Mexican Competition

U.S. beef packing has attributes that make a significant part of it transferable to Mexico in the long-run. It is labor intensive (accounting for about 50 percent of U.S. packing cost on a value added basis), it uses relatively low-skilled labor, and in the U.S. it remains significantly more unionized. Furthermore, the wage elasticity of packing labor is quite low, and although the capital investment for a new packing plant is large, capital service's cost share is small (see Melton and Huffman, 1995). Hence, there is a potential cost advantage to meat packing in Mexico relative to the U.S. and a relatively small capital cost is associated with such a transfer. Thus far, Mexico has not had the level of technology, capital, and infrastructure needed to capitalize on its low wage rates in beef processing. However, NAFTA will have effects that extend beyond trade. NAFTA also lowers barriers to capital investments and technology transfers between the countries. In the long-run, these technology transfers could alter the comparative advantage of beef production and processing in ways that affect both the magnitude and direction of trade between the countries.

Cost advantages in beef packing could also be re-enforced by the Mexican leather industry. Whereas Mexico currently imports beef hides to support its leather industry, the U.S. leather industry has declined steadily for over 30 years (i.e., the proportion of hides domestically processed has fallen from about 80 percent in the mid-1960s to less than 30 percent by 1990). Locally available hides would bear less freight cost and thereby increase their relative value to domestic suppliers in Mexico.

Melton and Huffman (1996, 1995) examine potential NAFTA effects on the U.S.-Mexican beef cattle industry under the likely scenario that in the long-run full beef industry technology will

be transferred to Mexico. This means that U.S.-Canadian beef cattle genes for larger sized adult animals, cattle finishing in confinement (feedlots) on high energy diets using feed grains and plant protein, and large modern semi-automated U.S.-Canadian type meat packing plants will be transferred to Mexico. Associated with this transfer will be a need for enhanced management skills to make these sectors function efficiently.

In all three likely scenarios, Melton and Huffman 1996 show that Mexico would dramatically expand the size of its cow herd (nearly double). The expanded supply and lower postslaughter processing cost in Mexico give it a comparative advantage in beef production, despite the fact that most of its feed grain requirement will be met by imports from the U.S. As a result, Mexico is able to expand its exports of feeder calves to the U.S. by about 3.5-4 million head when technology is transferred (relative to a 1987-90 base level) and when Mexican real income also increases by 10 percent. Mexico is also able to become a beef exporter (750 million pounds per year) and beef prices in both countries decrease. Hence, under NAFTA, U.S. meat packers are expected to experience continued cost pressure.

Location of Iowa Plants

Many pork and some beef and poultry packing plants operate in Iowa. A large share of the beef slaughter capacity moved to the High Plains of Texas, Oklahoma, Kansas, Colorado, and Nebraska during the 1970s and 80s, but 25 beef packing plants continue to operate in Iowa and the surrounding states (Lawrence 1996). There are four plants in Iowa (IBP in Denison and Tama, Packerland in Hospers, and AgriProcessors in Postville). Monfort closed its Des Moines plant in May 1996. Historically, pork production and processing has been highly concentrated in Iowa and surrounding states, but North Carolina has been rapidly growing in production and

packing. In 1995, there were 23 pork packing plants in Iowa and the surrounding states with 11 of them in Iowa (Lawrence et al. 1995). IBP operated 5 plants (Perry, Columbus Junction, Council Bluffs, Storm Lake, and Waterloo), and Monfort, Morrell, Excel, Farmland Foods, Iowa Packing Co., Sioux Preme Packing, and Rochell Food operated one each. The Monfort plant in Marshalltown is relatively large (daily slaughter capacity exceeding 12,000 hogs and employing about 1,600 workers) and the IBP's Waterloo plant is relative new and large (daily slaughter capacity about 17,000 hogs and 2,100 employees).

In 1993, Iowa had 18,750 workers employed in meat packing, an additional 4,100 workers employed in meat processing, and 2,800 in poultry slaughtering and processing. Employment in meat packing was larger than in 1985 but less than in 1980.

Conclusions

This paper has focused on several issues that affect the job opportunities in the nonmetro Midwest for recent immigrants. In the face of a large percentage decline in the employment in the food and kindred products industry between 1980 and 1990, a large percentage increase in employment of nonblack minorities occurred. Meat and poultry processing are subindustries that have received considerable attention in the popular press as sources of this employment, but growth in employment of Hispanic- and Asian-origin persons is of a much broader base than this industry. With the Immigration Act of 1986 providing much of the impetus to new immigrant flows coming into the 1990s, it will be interesting to see what the next decade holds for the Midwest.

We showed that the U.S. meat packing industry has undergone major changes during the past 25 years. Forces for change included relatively high wage rates in meat packing and a drop in demand for red meat and excess capacity in the meat packing industry at the start of the period and strong price competition from a rapidly growing low-cost broiler growing and processing industry in the late 1960s and 1970s. Technical advances in meat packing became a substitute for high cost skilled labor, largely skilled meat cutters, and this has opened up new job opportunities for low-skilled immigrants and others. Also, there has been a major reallocation of employment in the meat products industry away from meat packing toward meat processing and poultry slaughtering and processing. The removal of tariffs and other trade barriers under NAFTA will continue to keep U.S. meat packers under pressure to reduce costs into the 21st century.

As we look to the next decade, we see nonmetro Midwest continuing to provide good employment opportunities for Hispanic and Asian immigrants. With modern communications and relative cheap transportation, low- to medium-skilled relatively labor intensive industries will find real wage costs of rural Midwest (and Southern) areas attractive. Although new immigrants may find some aspects of the nonmetro Midwest to be a culture shock, they will also find relatively good quality schools, low crime and drug problems, and strong emphasis on family. For many immigrant families these are good attributes of a new home area.

References

- Barkley, David. "Turmoil in Traditional Industry: Prospects for Nonmetropolitan Manufacturing," *Economic Force Shaping the Rural Heart Lands*, Kansas City Federal Reserve, April 1996.
- Connor, J.M. "Empirical Challenges in Analyzing Market Performance in the U.S. Food System," *Amer. J. Agr. Econ.* 72(Dec. 1990):1219-26.
- Craypo, Charles. "Meat packing: Industry Restructuring and Union Decline," in *Contemporary Collection Bargaining in the Private Sector*, Industrial Relation Research Series, 1994, pp. 63-96.
- Huffman, Wallace E. "U.S.-Mexican Immigration and Agricultural Labor: Pre- and Post-NAFTA and GATT Effects." Dept. Econ., ISU, April 1995.
- Kimle, K. and M. Hayenga. "Agricultural Input and Processing Industries," Iowa State University Agr. and Home Econ. Exp. Sta. Rep #RD-05, 1992.
- Lawrence, John. "The Expected Impact on Cattle Prices of the Monfort Closing," ISU Extension Service, SP-31, May 1996.
- Lawrence, J., Z. Wang, M. Hayenga, and L. Sternweis. "The Changing Hog Slaughter Industry and Buyer Competition in Iowa," ISU Extension Service, PM-1356, July 1995.
- Melton, Bryan E. and Wallace E. Huffman. "Beef and Pork Packing Costs and Input Demands: Effects of Unionization and Technology," *Am. J. Agr. Econ.* 77(Aug. 1995):471-485.
- Melton, Bryan E. and Wallace E. Huffman. "NAFTA and U.S.-Mexican Beef Trade: Long-Run Implications for Changes in Trade Flows from Technology Transfers," Dept. Econ., Iowa State University, June 1996.
- Meyer, Steve. "U.S. Hog Slaughtering Capacity, February 1996," in *1996 Pork Industry Economic Review*, March 1996, pp. 67-72.
- Purcell, W.D. "Economics of Consolidation in the Beef Sector: Research Challenges," *Amer. J. Agr. Econ.* 72(Dec. 1990):1210-18.
- U.S. Department of Labor. *Technology and Labor in Four Industries*, BLS Bulletin 2104, January 1982.

Endnotes

1. With boxed beef technology, the carcass of the slaughter animal is cut up into thick cuts of chucks, round, and loins; thin cuts of brisket, steaks, and short ribs; and ground beef. The final cuts are shrink-packed in vacuum-protected bags, placed in sealed containers, and shipped in refrigerated trucks to retail stores and restaurants. The process reduces dehydration and shrinkage and improves shelf life of the meat. It also reduced the need for skilled meat cutters in meat packing plants.