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Is it a Jungle Out There?: Meat Packing, Immigrants and Rural Communities

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Is it a Jungle Out There?: Meat Packing, Immigrants and Rural Communities

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Over the past 35 years, meatpacking plants have moved from urban to rural areas. These plants can represent a significant share of a rural community's employment. As a traditional employer of immigrants, these plants can also alter significantly the demographic composition of a rural community. These changes have led to numerous controversies regarding whether meatpacking plants impose social or economic costs on their host communities. This study uses comments culled from various media to identify where there exist sharp differences of opinion on how local meatpacking presence affects local language problems, social service expenses, special needs schooling and the mix of foreign- and native-born citizens. These opinions are used to formulate testable hypotheses regarding the true impact of local packing plants on these indicators. The study shows that while meatpacking has had some large impacts on the demographic composition of rural communities, the industry has not imposed large costs in the form of increased provision of social services or special needs schooling.

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Is it a Jungle Out There?: Meat Packing, Immigrants and Rural Communities

On May 12, 2008, Immigration and Customs Enforcement arrested nearly one-third of the 968 employees of Agriprocessors, the largest employer in the rural community of Postville, Iowa. According to the affidavit, over three-quarters of the plant's employees were alleged to have been using fraudulent documents. This raid followed by 17 months a raid initiated on similar charges at Swift & Company meatpacking plants in six states. Almost 1,300 workers or approximately 10% of Swift's employees were arrested in the largest immigration raid in U.S. history.[1] The controversies and vast media attention paid to these arrests reinforced a negative image of the meatpacking and processing industry as a user and exploiter of illegal labor and as poor corporate citizens for their communities.

Meatpacking has long been a source of employment for immigrants, documented by Upton Sinclair's 1906 novel *The Jungle*. The industry continues to be an important provider of entry-level opportunities for low-skilled labor and new immigrants to the country (Huffman and Miranowski 1996). Data from the Public Use Microdata Sample of the 2000 Census reports that 29.2 percent of those employed in the animal slaughtering and processing industry are foreign born. This may underreport the true share due to undocumented workers. Jeffrey Passel, of the Pew Hispanic Center, estimates that 27 percent of the nation's butchers and other meat, poultry and fish processing workers are undocumented (2006).

There are a host of commonly-held views about the U.S. meatpacking industry and immigration, many of which are negative. One of the major concerns is the allegation that a new meatpacking plant lowers local wages. A report prepared by William Whitacre for the Congressional Research Service claims that meatpacking plants moved from urban to rural areas

in “a quest for lower labor costs: to leave behind the urban unions and their collective bargaining agreements and to operate as nearly as possible, in a union-free environment. This initiative involved a low-wage strategy, allowing for employment of lower skilled and low-wage workers.” A second concern is that meatpacking plants hire immigrants at the expense of native workers. There is a perception that meatpacking plants deliberately hire immigrants, legal or illegal, in order to break unions and depress wages. The Federation for American Immigration Reform (2006) stated that, “in the last 20 years, the meatpacking industry has completely reorganized around the use of immigrant rather than native labor. IBP, the nation’s leading meatpacking company, recruits workers from Mexico and directly along the border. As a result, the proportion of the labor force protected by union contracts and the share of natives in meat processing has dropped dramatically.”

Beyond concerns regarding the workers themselves, the controversy surrounding recent expansion of the meat packing and processing industry in non-metropolitan areas extends to concerns about how an influx of new immigrant workers might affect rural communities. A common perception is that the addition of a meat packing facility will bring a large number of immigrant workers to a community along with a host of social problems including higher levels of crime, increased welfare loads, heavier burdens on public services such as schools and low-income housing and the inconvenience of bilingual commerce. Existing case study research supports some of these views (Broadway 1990; Broadway, Stull, and Podraza 1994; Broadway 2000; Grey 1997a; Grey 1997b). However, these case studies have tended to focus on the most egregious cases or on very large plants and often fail to provide comparisons to other communities lacking these plants. That makes it difficult to assess whether the positive or negative social or economic outcomes in one case are actually atypical. To take one example,

although meatpacking has experienced decreases in unionization in the period in which Hispanic immigration has increased, those decreases match declines in unionization experienced in manufacturing as a whole. In fact, union coverage in the animal slaughtering and processing industry is 20.4%, well above the 12.3% coverage rate of nondurable goods manufacturing as a whole (Hirsch and Macpherson 2007). For another example, despite individual cases that have claimed that meatpacking raised criminal activity and local government expenditures, a study that compares outcomes between counties with and without a meatpacking plant found no evidence of an impact on local crime rates or local government spending (Artz, Orazem and Otto 2007).[2]

The goal of this paper is to examine the validity of some popular beliefs regarding the social consequences of having a meatpacking plant in a rural community. This study takes a comprehensive approach rather than relying on individual cases, including data on rural counties in 23 Midwestern and Southern states. Four commonly held views about the meatpacking industry, immigrants and communities are analyzed. First, the extent to which the meatpacking industry attracts immigrant labor and changes local population dynamics is explored. Then three alleged impacts of a rising immigrant population are examined: 1) immigrants burden local schools, 2) immigrants increase government spending and use public assistance programs, and 3) immigrants place burdens on local communities because they do not speak English.

This study focuses on rural areas for three important reasons. First, meatpacking has been expanding in rural areas and leaving urban areas (McGranahan 1998; Drabenstott et al. 1999) Second, because rural areas have lower levels of foreign-born residents than urban areas, meatpacking growth is more likely have an observable impact on the proportion of immigrants in rural areas (Martin 1997). Third, because meatpacking plants are atypically large relative to

other rural employers, growth in meatpacking can influence the overall economy of a rural area to a much greater extent than its impact in urban areas. For these reasons, if meatpacking does have adverse affects, they would likely be largest in rural areas.

Empirical Strategy

This study takes a difference-in-differences approach to measuring the impact of meatpacking on social indicators. The general strategy is summarized by Equation (1).

$$\frac{Y_{i,1}}{Y_{i,0}} = \alpha_0 + \sum_{j=1}^{5} \delta_j M_{i,0}^{j} + \beta_1 pop_{i,0} + \beta_2 fpop_{i,0} + \varepsilon_i \qquad (1)$$

$Y_{i,t}$ measures an outcome for county i at time t. The proportional change in the outcome is measured by the ratio of the end-of-period value relative to the base period value. $M_{i,0}^{j}$ is a series of dummy variables reflecting increasing meatpacking intensity in county i at the start of the period. The base case includes the counties that had no meatpacking in the base period. Least squares estimation of equation (1) is unbiased assuming the error term ε_i is identically and independently normally distributed. The coefficient δ_j captures the impact on the change in $Y_{i,t}$ of the j^{th} meatpacking intensity relative to not having a meatpacking plant. The sign, magnitude and significance of δ_j will provide information on whether having meatpacking jobs is correlated with a particular social outcome.

To make our estimation easier to interpret, the results in tables 1 through 4 are converted into conditional average proportional changes in each outcome for a given category of meatpacking presence. The constant term, α_0, reflects the average proportional change in the outcome for counties that had no meatpacking jobs in 1990, conditional on other control variables included in the regression. These include 1990 levels of total population ($pop_{i,0}$) and foreign-born population ($fpop_{i,0}$) in our base formulation.[3] The conditional average proportional change in the

outcome for counties with meatpacking presence j is $\alpha_j = \alpha_0 + \delta_j$. Comparing the relative size of the conditional mean values of α_0 and α_j tells us whether the counties with the level of meatpacking presence *j* experienced faster or slower growth of the outcome over the period. We also report the t-statistic on δ_j to indicate whether the conditional mean for meatpacking group *j* differs significantly from the conditional mean for the counties without a meatpacking plant.

Data

Equation (1) is applied to data from non-metropolitan counties in twenty-three Midwestern and Southern states to test four hypotheses regarding the impacts of local meatpacking and processing firms on local immigration and other social outcomes.[4] The dependent variables are compiled from the U.S. Decennial Census, the U.S. Census of Governments, or the National Center for Educational Statistics. The specific starting and ending dates for the relative change in outcomes depends on data availability. For measures based on the the U.S. Decennial Census, the start and end dates are 1990 and 2000, respectively. For data culled from the Census of Governments, the start and end years are 1992 and 2002. For the education measures, demographic changes are taken from 1990 to 2000, but some measures are only available between 2000 and 2005.[5]

Several outcome measures had a large number of zero values in the base period. For example, many counties had no migrant students in 1990, so the proportional change measure is undefined. For most indicators the problem is relatively modest. In these cases, the analysis drops the counties for which the proportional change is undefined. An alternative strategy is used when the problem occurs in over 15% of the sample. For these indicators, the change is measured in levels: $Y_{i,t}$ - $Y_{i,0}$. Because the estimated coefficients will now reflect level changes rather than relative changes, the coefficients are standardized by the average value of the

dependent variable in the base period. This makes the results comparable to the coefficients from direct estimation of equation (1).

Data from the Bureau of Labor Statistics' Longitudinal Database (LDB) spanning 1990 to 2000[6] are used to identify the location and size of meat packing and processing facilities in a county.[7] Meatpacking is measured in two ways. First is a series of dummy variables indicating that a county had meatpacking employees continuously over the 1990-2000 period; gained a meatpacking plant from a base of none 1990; lost all meatpacking plants from a base of at least one in 1990; or both gained and lost meatpacking plants between 1990 and 2000. The reference group is counties that never had meatpacking or processing jobs during the decade. If meatpacking has an effect, it should be evident from the coefficients on counties that continuously housed or gained meatpacking plants over the period. The second meatpacking measure indicates the intensity of meatpacking employment in the county. The measure is based on the meat packing share of all county employment. Four dummy variables are assigned according to levels of intensity from a base of no meatpacking employees: share less than 1%; share between 1% and 5%; share between 5% and 10%; and share over 10%. The greater the industry share, the more likely it is to have an impact on the local community.

Hypothesis Statements and Tests

A. Meatpacking plants change the population demographics

The first common belief is that the shift of meatpacking plants from urban to rural areas changed the demographics of host communities. Certainly, immigrants comprise a significant share of the labor force in meatpacking and processing plants. A case study of an IBP plant in Lexington, Nebraska, claims that Latino immigrants make up between 70 and 80% of the plant's employees (Gouveia and Stull 1997). On an industry-wide level, "between 1980 and 2000, the

Hispanic share of meat-processing workers increased from less than one tenth to nearly one third," according to the U.S. Department of Agriculture. At the same time, the percentage of non-Hispanic whites working at meat processing plants dropped from three fourths to barely one half, according to the USDA" (Bowman 2008).

But in the past, meatpacking jobs were located in cities. As the industry has shifted into rural areas, the effect of its immigrant labor force on local demographics is more pronounced. According to the Maynard Institute, the "twin phenomena of a shrinking white population and the emergence of Iowa and Nebraska as the Ellis Islands of the Midwest are spawning a dramatic transformation of small towns, schools and churches, as well as products on grocery shelves" (Bowman 2008).

There is no consensus about whether this is good or bad for rural communities. On the positive side, claims about the declining native-born population emphasize the need for immigrants. According to Phil Davies (2004), "immigrants keep the wheels of industry turning, especially in areas where native-born workers are scarce or otherwise unwilling to get their hands dirty for modest wages." Gouveia and Stull (1997) add that many towns are actively recruiting immigrants because "both processing plants and their host communities have become increasingly dependent on Latino immigrants for their economic survival."

Hypothesis A: *The presence of meatpacking plants attracts foreign-born workers and decreases the native-born population.*

To examine this hypothesis, the impact of meatpacking on the proportionate change in a county's total population, white population, Hispanic population, Asian population, native-born population, foreign-born population are analyzed. Table 1 reports the results.

The evidence in support of Hypothesis A is mixed. There was significant growth in the foreign-born population in rural counties with meatpacking plants. The impact was larger in

counties where meatpacking's employment share was larger. This increase took place largely among the Hispanic population, which grew during this time period. The Asian population, however, did not increase significantly. Despite claims of a strong out-migration of whites and native-born workers, the estimates in table 1 do not reflect a significant decrease in either population. There is some evidence that total population grows in counties where the presence of meatpacking plants is large. While individual counties may have experienced some more dramatic changes, on the whole, these data show that meatpacking plants do attract immigrants, especially Hispanics, but do not significantly alter the size of the native-born population.

B. Immigrants burden local schools

Another common belief is that immigrants who are attracted by meatpacking jobs impose burdens on local schools. One concern relates simply to increases in the number of students. According to Steven Camarota, Director of Research at the Center for Immigration Studies, "Immigration accounts for virtually all of the increase in the school-age population in the United States over the last few decades. More importantly, without a change in immigration policy, the number of children in our already overtaxed schools will continue to grow. The absorption capacity of American public education is clearly an important issue that needs to be taken into account when formulating a sensible immigration policy. Failure to consider this capacity may have very real consequences for public education in the United States." While this highlights some schools' struggle with problems stemming from burgeoning enrollments, many rural schools face the opposite threat of closure or consolidation due to declining enrollments. For these schools immigrant populations may represent an investment rather than a burden: "Reopening shuttered schools, closed in waves of district consolidations, and recruiting new teachers can reinvigorate a slumping economy" (Jensen and Duncan 2006).

More specifically, immigrants are thought to burden schools by increasing the number of students requiring special programs or assistance. Migrant students can cause large swings in the number of children requiring school services and are thought to pose additional problems because of large numbers of new students unfamiliar to the local schools. In Columbus Junction, Iowa, Linda Lantor Fandel (2007) reported that there is "roughly 30% turnover in school enrollment annually." Immigrant students may have language barriers and require additional assistance and expenditures. Zehr reported that, "many of Nebraska's K-12 Latino students are from families attracted to jobs in meatpacking and are English-language learners. In meat-packing communities such as Schuyler, Neb., for example, 30 percent of students are English-language learners, most of whom are Latino". In Lexington, Nebraska, "the in-town schools, with an enrollment of 2,500, have 804 students learning English as a second language, and 1,172 who are getting a free or reduced-price lunch" (Bauer 2005) While there are concerns that immigrants exploit the Free/Reduced Lunch Program, there are also people who feel that they do not use it enough. A 2001 publication by Iowa State University Extension describes the issue: "Immigrant families normally don't qualify for many low-income support services. After the initial month or two of a child's entry into school, the family's income may be too high to qualify for free school lunches. Also, many immigrant families will choose not to ask for reduced fee lunches even though they would qualify, for the same reason many rural families refuse to accept the help. This has caused some funding problems with the school districts because many support services programs are funded based on the number of free and reduced price meals."

Hypothesis B*: Schools in communities with meatpacking plants face a large and costly influx of students, especially those requiring special programs.*

Table 2 reports the results from the analysis of hypothesis B. For this hypothesis, the impact of meatpacking on the following outcomes are examined: the proportionate change in a county's total number of students, students by race/ethnicity (white, Hispanic, Asian), number of migrant students, number of students receiving free and reduced lunches, and number of English Language Learners (ELL) or Limited English Proficiency (LEP) students.

Meatpacking plants do not seem to increase significantly the number of students in rural counties. The number of white and Asian students as well as the total number of students did not show any significant increase. There was, however, an increase in the number of Hispanic students between 1990 and 2000 for counties which had a continuous presence of meatpacking plants. The data show no evidence of an increase in the number of migrant students in counties where meatpacking has a strong presence.

Meatpacking plants may lead to a significant increase in some special programs for students in rural communities. On the one hand, from 2000-2005, there was a significant increase in the number of English Language Learners (ELL) or Limited English Proficiency (LEP) students in counties with a continuous presence of meatpacking. The increase is greater, the larger meatpacking's employment share. On the other hand, meatpacking's presence seems to impose little additional burden on programs such as Free and Reduced Lunches. Only in counties where industry presence is very large (greater than 20% of total employment) do the data reflect a significant increase in the number of students using such programs between 2000 and 2005.

Given the sometimes heated denouncements of immigrant workers as adding social service costs to communities, the lack of significant increases in migrant students or other added costs may seem surprising. It is useful to explain why meatpacking does not add more strain to

local school service provision. Meatpacking jobs are typically full-time, year-round jobs, and so they do not attract transient workers whose children would enter and leave school frequently. The pay is sufficiently high that the workers would not qualify for subsidized lunches. The only consistent added cost is the need to handle a larger number of non-native English learners.

C. Immigrants increase government spending and use public assistance programs

Some people fear that immigrants in rural communities are a burden, requiring public assistance and increased local government spending. Reporting from a RAND Institute publication, the Federation for American Immigration Reform (2002a) states: "That immigration does not help the economy should come as no surprise, since, in a sense, we are importing poverty. One out of every five poor people is an immigrant. Furthermore, the earning power of these poor immigrants is deteriorating and is likely to remain low throughout their working lives." The same website concludes that, "the average immigrant imposes a net lifetime fiscal cost on state and local governments of $25,000." Adds Lou Dobbs, immigrants place "a tremendous burden on hospitals, schools and other social services." Others disagree. Bowman (2008) stated that "new immigrants are re-populating small towns, starting new businesses and generating more money for local school systems." Writers for the Hate Free Zone Washington stated that immigrants, far from being a drain on the economy, instead "provide a net economic benefit of as much as $10 billion each year. In the case of the social security system in particular, new legal immigrants will provide a net benefit of $611 billion over the next 75 years."

Hypothesis C: *Meatpacking plants attract poor immigrants who need public assistance and increased government spending on services.*

Table 3 reports the results from the analysis of Hypothesis C. The measures examined for this hypothesis are the proportionate change in a county's total number of people below the

poverty line, number of people receiving public assistance, and local government spending per capita on education, health, police, corrections and welfare.

There is not a consistent relationship between local meatpacking presence or intensity and local poverty. Poverty incidence fell in all county groups except counties where meatpacking represented more than 10% of employment. In addition, in counties where meatpacking's employment share is between 5-10%, the number of people in poverty fell more slowly than in the control group counties. However, in counties that gained meatpacking plants during the decade, the number of people in poverty actually fell significantly between 1990 and 2000 relative to counties without the industry.

It is possible that counties where meatpacking has an unusually large employment share are counties whose other sectors are relatively weak as opposed to having meatpacking sectors that are atypically strong. The weakness in the rest of the non-meatpacking areas of the local economy may be driving the higher incidence of poverty. In fact, County Business Patterns data show that the counties with high concentrations are counties with very large meatpacking plants. Large meatpacking plants are correlated with higher incidence of poverty.

This begs the question whether meatpacking imposes related fiscal costs on these counties. Despite the higher poverty levels, meatpacking is not associated with higher numbers of households on public assistance or higher government spending on welfare. Other estimates on government spending per capita do reflect some increased spending associated with the presence of meatpacking. The proportionate growth in spending for counties with a continuous presence of the industry was higher in all expenditure categories but welfare. Yet counties gaining meatpacking during the decade saw no significant increase in per capita spending.

Government spending in most categories was higher for counties with a small share of industry employment. The estimated impact of meatpacking on government spending per capita declines as the share of meatpacking employment rises. One plausible interpretation of these estimates is that there are costs associated with the presence of meatpacking in a county, but, per capita, these costs decline as the share of population served rises. For example, the No Child Left Behind Act requires school districts to provide services to limited English proficient students whether ELL learners number five or fifty.[8] Another example is provided by the community of Storm Lake, Iowa. Faced with growing Hispanic and Laotian immigrant populations, the police department hired bilingual community service officers to provide language translation services and cultural education to the existing police force (Prosser 2008). Such specialization in the workforce would not have been possible with smaller immigrant populations, necessitating the hiring of translators from temporary service providers, apparently at higher cost per beneficiary. It appears that most communities with a meatpacking plant and immigrant workforce incur some costs of hiring specialized services, but communities with a higher number of immigrant workers are able to spread the costs further.

D. Immigrants do not speak English

Another common concern is that new immigrants do not speak English well. This communication barrier can cause problems in the communities and often raises accusations that immigrants are not willing to assimilate into American culture. The Federation for American Immigration Reform (2002b) contends that, "business and social transaction costs rise as time, effort, and money are spent overcoming language and cultural barriers. Communication becomes difficult, often due to language barriers." Economist Lowell Gallaway estimated that, "poor English skills among foreign-born residents cost more than $75 billion a year in lost

productivity, wages, tax revenue and unemployment compensation." Others acknowledge that first-generation immigrants have poor English skills, but they claim this does not affect assimilation because subsequent generations speak English well. Hakimzadeh and Cohn (2007), writing for the Pew Center, estimated that "fewer than one-in-four (23%) Latino immigrants report being able to speak English very well. However, fully 88% of their U.S.-born adult children report that they speak English very well. Among later generations of Hispanic adults, the figure rises to 94%. Reading ability in English shows a similar trend"

Hypothesis D*: Meatpacking plants attract people who do not speak English.*

Indicators relevant for this hypothesis include the number of county households and population over age 5 that speak English "less than very well" in total and by selected ethnicity/race (Hispanic and Asian). Table 4 reports the results. The estimates reflect an increase in the total number of people with limited English proficiency in counties with the greatest presence of meatpacking. This rise appears attributable to an increase in the Hispanic population. Consistent with the estimates in table 1, table 4 shows significant increases in the Hispanic population related to the presence and size of meatpacking plants. Furthermore, increases in the Hispanic population that speaks English "less than very well" are positively related to the relative size of the industry. No significant changes related to meatpacking are observed in the Asian population.

Conclusions

While there are many strong opinions about the effects of meatpacking plants on immigration and host communities, the results from this analysis suggest that generalizations made from studies of extreme cases are largely inappropriate. What is clear is that meatpacking plants, especially large ones, change the demographics of their communities. Meatpacking

plants are associated with increases in the foreign born population and Hispanic population. The most significant difficulty and potential source of added costs imposed on communities by immigrants relates to the increase in the population, and hence number of students, with limited English proficiency.

Roughly fourteen percent of the counties in the sample gained meatpacking employment during the 1990s. Interestingly, this analysis shows no impact of meatpacking on demographics, schools, social spending or language proficiency in these counties. The only statistically significant change evident in these counties is a lower rate of poverty relative to counties without meatpacking.

This study adds to our understanding of the impacts of meatpacking and immigration on rural communities in the U.S. Previous research finds meatpacking presence lowers wage growth, but boosts employment growth, so that the overall impact on total income in communities is unclear (Artz, Orazem and Otto 2007). Most counties with meatpacking jobs experienced falling poverty rates over the decade, as did counties that attracted meatpacking jobs for the first time in the 1990s. Only in counties where meatpacking has an unusually large share of local employment did poverty incidence rise, but these counties did not experience an atypical increase in the costs of social services.

An increase in immigrants, especially those with limited English proficiency, poses challenges to rural communities. However, the effects of this process may not be as dramatic as commonly portrayed in case studies. On the one hand, case studies with their focus on huge plants, can provide warnings, or perhaps lessons, to other communities. On the other hand, the danger is that these examples are not applicable to all situations. These results show that the

examples of dramatic burdens and community changes given in popular case studies are the exception rather than the rule.

References

Artz, Georgeanne. Immigrants, Meat Packing and Processing Industries, and Communities in the Midwestern United States. Invited presentation at the conference on Immigration and Agriculture, Washington, DC, June 14-15, 2006.

Artz, Georgeanne M., Peter F. Orazem and Daniel M. Otto. 2007. Measuring the Impact of Meat Packing and Processing Facilities in the Nonmetropolitan Midwest: A Difference-in-Differences Approach. *American Journal of Agricultural Economics* 89(3): 557-570.

Bauer, Scott. 2005. Nebraska Fears Segregation in Schools. *Associated Press*, (February 18), http://www.freerepublic.com/focus/f-news/1346283/posts (accessed April 1, 2008).

Bowman, Bobbi. 2008. Meat Packing Industry. Robert C. Maynard Institute for Journalism Education.http://www.maynardije.org/columns/bowman/070613_mp_industry (accessed April 1, 2008).

Broadway, Michael.1990. Meatpacking and Its Social and Economic Consequences for Garden City, Kansas in the 1980s. *Urban Anthropology* 19(4):321-344.

__. 1994. Beef Stew: Cattle, Immigrants and Established Residents in a Kansas Beefpacking Town. In. *Newcomers In the Workplace: Immigrants and the Restructuring of the U.S. Economy,* eds. L. Lamphere, A. Stepick and G. Grenier, 25-43. Philadelphia, PA: Temple University Press.

__. 2000. Planning for change in small towns or trying to avoid the slaughterhouse blues. *Journal of Rural Studies* 16:37-46.

Broadway, Michael, Donald D. Stull and Bill Podraza. 1994. What Happens When the Meat Packers Come to Town? *Small Town,* January-February: 24-27.

Camarota, Steven. 2001. Immigration and Illegal Aliens are More of a Burden than a Blessing—the Impact of Immigration on U.S. Population Growth. Testimony prepared for the House Judiciary Committee, Subcommittee on Immigration and Claims. July 19.

Davies, Phil. 2004. Bring us your tired, huddles masses (we've got job openings). *Fedgazette* (September), http://www.minneapolisfed.org/pubs/fedgaz/0409/jobs.cfm (accessed April 1, 2008).

Dobbs, Lou. 2006 Dobbs: Radical groups taking control of immigration movement. CNN May 1. http://www.cnn.com/2006/US/05/01/dobbs.immigrant protests/index.html. (accessed April 1, 2008).

Drabenstott, M., M. Henry and K. Mitchell. 1999. Where Have All the Packing Plants Gone? The New Meat Geography in Rural America. *Economic Review*, Third Quarter, Kansas City Federal Reserve Bank, pp. 65-82.

Duara, Nigel, William Petroski and David Elbert. 2008. Iowa Meatpacking Plant Raided in ID Theft Investigation. *Des Moines Register*, May 12.

Federation for American Immigration Reform. 2006. Immigration and Job Displacement. http://www.fairus.org/site/PageServer?pagename=iic_immigration issuecentersd1fb.

Federation for American Immigration Reform. 2002a. Immigration and the Economy. http://www.fairus.org/site/PageServer?pagename=iic_immigrationissuecentersfa6e

Federation for American Immigration Reform. 2002b. How Mass Immigration Impedes Assimilation. http://www.fairus.org/site/PageServer?pagename=iic_immigrationissuecenters641a

Feser, Edward J. and Stuart H. Sweeney. 1998. "Out-migration, Population Decline, and Regional Economic Distress." Economic Development Administration, December.

Gouveia, Lourdes and Donald D. Stull. 1997. Latino Immigrants, Meatpacking and Rural Communities: A Case Study of Lexington, Nebraska. Julian Samora Research Institute. Michigan State University. Research Report No. 26. August. http://www.jsri.msu.edu/RandS/research/irr/rr26.pdf

Grey, M.A. 1997a. Secondary Labor in the Meatpacking Industry: Demographic Change and Student Mobility in Rural Iowa Schools. *Journal of Research in Rural Education* 13: 153-164.

__. 1997b. Storm Lake, Iowa, and the Meatpacking Revolution: Historical and Ethnographic Perspectives on a Community in Transition. In *Unionizing the Jungles: Labor and Community in the Twentieth-Century Meatpacking Industry,* S. Stromquist and M. Bergman, eds., 242.261. Iowa City, IA: University of Iowa Press.

Hackenberg, R.A. 1995. Conclusion: Joe Hill Died For Your Sins: Empowering Minority Workers in the New Industrial Labor Force. In *Any Way You Cut It: Meat Processing and Small-Town America*, D. Stull, M. Broadway and D. Griffith, eds., 231-264. Lawrence, KS: University of Kansas Press.

Hakimzadeh, Shirin and D'Vera Cohn. 2007. English usage among Hispanics in the United States. Pew Hispanic Center. November 29 http://pewresearch.org/pubs/644/englishlanguage-usage-hispanics (accessed April 1, 2008).

Hate Free Zone Washington. Immigrants, Wages, and the Economy: Myth vs. Fact. http://www.hatefreezone.org/documents/Immigrants%20Wages%20and%20Economy.pdf (accessed April 2008).

Hirsch, Barry T. and David A. MacPherson. 2007. Union Membership, Coverage, Density and Employment by Industry, 2006. http://www.trinity.edu/bhirsch/unionstats.

Huffman, W.E. and J.A. Miranowski. 1996. Immigration, Meat Packing, and Trade: Implications for Iowa. Department of Economics, Iowa State University, Staff Paper #285.

Iowa State University Extension. 2001. The Impact of Immigration on Small-to Mid-Sized Iowa Communities: A Citizens'Guide for Change. http://www.extension.iastate.edu/Publications/PM1879.pdf (accessed April 1, 2008).

Jensen, Leif and Cynthia M. Duncan. 2006. Rural Immigration Can Work. *Philadelphia Inquirer*, October 6.

Lantor Fandel, Linda. 2007.. In Columbus Junction, Anglos, Latinos build community together—and apart. *Des Moines Register*, November 25.

Leistritz, F.L. and R.S. Sell. 2001. Socioeconomic Impacts of Agricultural Processing Plants. *Journal of the Community Development Society* 32:130-159.

MacDonald, J.M., and M. Ollinger. 2005. Technology, Labor Wars, and Producer Dynamics: Explaining Consolidation in Beefpacking. *American Journal of Agricultural Economics* 87:1020-1033.

Martin, P. 1997. Immigration and the changing face of rural America. *Increasing Understanding of Public Problems and Policies*. p. 201-212.

McGranahan, David A. 1998. Can Manufacturing Reverse Rural Great Plains Depopulation? *Rural Development Perspectives*, 13:35-45. http://www.ers.usda.gov/publications/rdp/rdp298/rdp298f.pdf.

Ollinger, M., J.M. MacDonald, and M. Madison. 2005. Technological Change and Economics of Scale in U.S. Poultry Processing. *American Journal of Agricultural Economics* 87:116-129.

Orazem, P., D. Wolgemuth, and T. Huang. 2002. The Causes and Consequences of Rural Immigrant Population Growth, 1950-1990, unpublished manuscript, Iowa State University, May.

Otto, D.M., P.F. Orazem and W.E. Huffman. 1998. Community and Economic Impacts of the Iowa Hog Industry. In *Iowa's Pork Industry – Dollars and Scents*, 25-28. Ames, IA: Agriculture and Home Economics Experiment Station. PM-1746.

Passel, J.S. 2006. The Size and Characteristics of the Unauthorized Migrant Population in the U.S. Estimates Based on the March 2005 Current Population Survey. Pew Hispanic Center, March 7.

Prosser, Mark. 2008. "Policing a Diverse Community". *Police Chief Magazine*, June.

Schlosser, E. 2002. Fast Food Nation. New York, NY: Perennial.

U.S. Dept. of Commerce, Bureau of the Census. CENSUS OF POPULATION AND HOUSING, 2000 [UNITED STATES]: PUBLIC USE MICRODATA SAMPLE: 1-PERCENT SAMPLE [Computer file]. ICPSR release. Washington, DC: U.S. Dept. of Commerce, Bureau of the Census [producer], 2003. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2003.

U.S. General Accounting Office. 1998. *Community Development: Changes in Nebraska's and Iowa's Counties with Large Meatpacking Plant Workforces*. GAO/RCED-98-62, Washington, DC, February.

Whittaker, William G. 2006. Labor Practices in the Meat Packing and Poultry Processing Industry: An Overview. Congressional Research Service Report. October 27. http://www.nationalaglawcenter.org/assets/crs/RL33002.pdf (accessed April 1, 2008).

Table 1. Estimated Proportionate Change in Indicators Related to Hypothesis A

	Presence or Absence									
	Never Had n=674	Continuous n=465	Gained n=91	Lost n=111	Gained & Lost n=66	no industry n=807	Less than 1% n=393	Less than 5%, greater than 1% n=119	Less than 10%, greater than 5% n=47	Greater than 10% n=41
Hypothesis A: Population Demographics										
Total Population										
mean (n=1407)	1.069*	1.074	1.056	1.053	1.080	1.067*	1.059	1.052	1.099	1.128*
t-stat	171.92	0.57	0.84	1.14	0.61	179.970	0.940	1.140	1.560	2.840
White Population										
mean (n=1407)	1.043*	1.041	1.024	1.029	1.051	1.04*	1.033	1.021	1.065	1.067
t-stat	165.41	0.25	1.23	1.02	0.46	172.690	0.850	1.370	1.210	1.240
Hispanic Population										
mean (n=1376)	4.117*	6.335*	4.655	4.327	3.538	3.910*	4.172	4.419	13.299*	11.953*
t-stat	10.01	3.94	0.54	0.23	0.51	10.290	0.480	0.600	7.380	5.890
Asian Population ℓ										
mean (n=1407)	0.799*	0.966	0.651*	0.756	-8.621	0.793*	0.888	1.079*	1.102	0.982
t-stat	2.220	0.840	1.990	0.700	0.220	2.830	0.400	2.050	1.640	0.620
Native born Population										
mean (n=1407)	1.058*	1.054	1.044	1.042	1.066	1.057*	1.048	1.036	1.073	1.069
t-stat	177.56	0.54	0.91	1.20	0.49	185.41	1.050	1.610	0.800	0.590
Foreign born Population										
mean (n=1394)	2.886*	3.710*	3.512	2.907	2.567	2.830*	2.656	3.213	5.142*	7.535*
t-stat	17.79	3.68	1.61	0.03	0.70	18.800	0.800	1.130	4.530	8.660

Notes: * indicates significance at the .10 level of significance or higher. Data reflect the average proportionate change in the outcome from 1990 to 2000 by meatpacking category, conditional on control variables. † indicates the outcome is measured from 2000 to 2005; ℓ denotes outcomes measured in level difference due to excess zeros in the base year. In these cases, the reported t-statistic refers to the coefficient in the level change. See text for further explanation.

Table 2. Estimated Proportionate Change in Indicators Related to Hypothesis B

	Presence or Absence									
	Never Had n=674	Continuous n=465	Gained n=91	Lost n=111	Gained & Lost n=66	No industry n=807	Less than 1% n=393	Less than 5%, greater than 1% n=119	Less than 10%, greater than 5% n=47	Greater than 10% n=41
Hypothesis B: Schools										
Students										
mean (n=1401)	1.034*	1.023	0.988	0.994	1.028	1.028*	1.011	1.003	1.036	1.058
t-stat	40.280	0.300	0.750	0.700	0.090	41.84	0.48	0.46	0.09	0.34
White Students ℓ										
mean (n=1401)	1.166*	1.076	1.029	1.341*	1.131	1.152*	1.148	1.068	1.233	1.101
t-stat	2.22	0.08	0.70	2.28	0.37	2.32	1.32	-0.02	1.09	0.14
Hispanic Students ℓ										
mean (n=1401)	1.217	2.001*	1.086	1.612	1.008	1.010	1.051	2.172*	4.695*	2.876*
t-stat	0.06	5.01	0.07	0.79	0.18	0.04	0.02	3.48	6.86	8.37
Asian Students ℓ										
mean (n=1401)	0.834	1.102	0.773	2.841*	1.030	0.954	1.545*	1.063	1.358	1.190
t-stat	0.28	0.07	0.21	3.68	0.15	-0.10	2.24	0.02	0.59	0.43
Migrant Students ℓ										
mean (n=802)	0.916	0.951	0.936	1.058	0.789	0.915	0.856	1.045	1.120	1.022
t-stat	0.60	0.16	0.01	0.40	0.74	0.70	-0.07	0.06	1.37	0.37
Free Lunch†										
mean (n=1273)	1.109*	1.145	1.083	1.124	1.086	1.103*	1.133	1.119	1.146	1.212*
t-stat	70.520	1.620	0.700	0.410	0.520	73.19	1.34	0.46	0.85	2.05
Reduced Lunch †										
mean (n=1271)	0.995*	0.991	0.998	1.027	0.952	0.994*	0.986	1.003	1.047	1.015
t-stat	52.060	0.140	0.070	0.720	0.790	54.20	0.03	0.22	0.86	0.34
ELL† ℓ										
mean (n=1198)	0.853	1.207*	0.946	1.198	0.746	0.800*	0.738	1.116*	1.341*	1.381*
t-stat	0.70	3.50	0.12	1.05	0.57	1.18	1.16	1.68	5.01	5.19

Notes: * indicates significance at the .10 level of significance or higher. Data reflect the average proportionate change in the outcome from 1990 to 2000 by meatpacking category, conditional on control variables. † indicates the outcome is measured from 2000 to 2005; ℓ denotes outcomes measured in level difference due to excess zeros in the base year. In these cases, the reported t-statistic refers to the coefficient in the level change. See text for further explanation.

Table 3. Estimated Proportionate Change in Indicators Related to Hypothesis C

	Presence or Absence									
	Never had n=674	Continuous n=465	Gained n=91	Lost n=111	Gained & Lost n=66	No industry n=807	Less than 1% n=393	Less than 5%, greater than 1% n=119	Less than 10%, greater than 5% n=47	Greater than 10% n=41
Hypothesis C: Govt Spending and Public Assistance										
Below Poverty Level										
Mean (n=1406)	0.861*	0.873	0.808*	0.835	0.880	0.853*	0.828*	0.839	0.912*	1.078*
t-stat	78.73	0.78	1.99	1.07	0.63	82.56	-1.65	-0.06	1.65	6.01
Public Assistance										
Mean (n=1407)	0.468*	0.435	0.456	0.453	0.495	0.468*	0.454	0.475	0.454	0.642
t-stat	53.05	0.27	0.57	0.77	0.84	55.40	1.13	0.38	0.47	0.57
Government Expenditures Per Capita - Corrections‡										
mean (n=1173)	3.99*	9.16*	4.27	5.19	5.886	4.05*	10.50*	5.72	2.21	0.73
t-stat	3.80	3.13	0.09	0.44	0.55	4.19	3.86	0.65	0.45	0.77
Government Expenditures Per Capita Health‡										
mean (n=1342)	6.78*	14.13*	4.99	3.310	15.530	6.53*	12.56*	16.96*	7.81	3.08
t-stat	3.83	2.68	0.36	0.76	1.52	4.01	2.17	2.38	0.19	0.47
Government Expenditures Per Capita Education‡										
mean (n=1381)	1.46*	2.51*	1.878	1.818	1.627	1.49*	2.428*	2.75*	1.94	1.327
t-stat	12.99	5.92	1.32	1.23	1.70	14.43	5.25	4.50	1.06	0.36
Government Expenditures Per Capita Welfare‡										
mean (n=1172)	39.87*	30.57	16.38	17.66	44.56	35.48*	37.51	27.21	10.81	3.20
t-stat	5.57	0.83	1.16	1.19	0.20	5.37	0.18	0.46	0.87	1.11
Government Expenditures Per Capita Police ‡										
mean (n=1393)	2.71*	4.04*	2.299	2.598	2.997	2.63*	4.07*	3.77	2.25	2.08
t-stat	9.47	2.98	0.51	0.15	0.30	9.97	3.18	1.61	0.35	0.48

Notes: * indicates significance at the .10 level of significance or higher. Data reflect the average proportionate change in the outcome from 1990 to 2000 by meatpacking category, conditional on control variables. † indicates the outcome is measured from 2000 to 2005; ‡ indicates the outcome is measured from 1992 to 2002; ℓ denotes outcomes measured in level difference due to excess zeros in the base year. In these cases, the reported t-statistic refers to the coefficient in the level change. See text for further explanation.

Table 4. Estimated Proportionate Change in Indicators Related to Hypothesis D

	Presence or Absence									
	Never Had n=674	Continuous n=465	Gained n=91	Lost n=111	Gained & Lost n=66	No industry n=807	Less than 1% n=393	Less than 5%, greater than 1% n=119	Less than 10%, greater than 5% n=47	Greater than 10% n=41
Hypothesis D: English										
Population Greater than 5										
Mean (n=1406)	1.067*	1.077	1.065	1.066	1.171*	1.070*	1.057	1.054	1.087	1.157*
t-stat	103.32	0.66	0.10	0.04	3.60	108.17	0.92	0.72	0.5	2.43
Population Greater than 5, no English										
Mean (n=1405)	1.544*	1.678	1.505	1.453	1.991*	1.536*	1.360*	1.564	1.948*	2.880*
t-stat	25.44	1.59	0.26	0.67	2.63	27.08	2.12	0.21	2.12	6.48
Hispanic Population Greater than 5										
Mean (n=1397)	2.697*	3.330*	3.143	2.554	2.370	2.640*	2.355	3.056	7.070*	6.200*
t-stat	23.17	3.95	1.60	0.56	1.01	24.61	0.59	0.56	3.95	9.15
Hispanic Population Greater than 5, no English										
Mean (n=1346)	1.057*	1.036*	1.055	1.041	1.020	4.011*	3.726	4.427	8.441*	10.832*
t-stat	11.56	2.94	0.81	1.17	1.00	11.70	0.06	0.06	3.95	5.72
Asian Population Greater than 5 ℓ										
mean (n=1406)	0.528*	0.996	0.665	0.743	0.692	0.548*	0.919	1.808	1.074	1.020
t-stat (for difference)	30.38	1.61	0.02	0.49	1.18	2.47	1.17	1.34	0.94	0.75
Asian Population Greater than 5, no English ℓ										
mean (=1406)	0.357*	0.900	0.542	0.755	0.541	0.392*	0.833	1.048	1.055	0.968
t-stat	2.89	1.27	0.06	0.74	0.05	3.06	0.84	1.51	1.04	0.72

Notes: * indicates significance at the .10 level of significance or higher. Data reflect the average proportionate change in the outcome from 1990 to 2000 by meatpacking category, conditional on control variables. † indicates the outcome is measured from 2000 to 2005; ℓ denotes outcomes measured in level difference due to excess zeros in the base year. In these cases, the reported t-statistic refers to the coefficient in the level change. See text for further explanation.

Endnotes

[1] Details taken from Duara et al, 2008

[2] That study also found that the meatpacking and processing industry had a net positive impact on employment growth but not on wage growth (Artz, Orazem and Otto, 2007).

[3] Additional controls did not significantly change the estimates. Results from these more complete specifications are available from the authors upon request.

[4] The states included in the study are Alabama, Arkansas, Colorado, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Minnesota, Mississippi, Missouri, Nebraska, Ohio, Oklahoma, South Carolina, South Dakota, Virginia, and Wisconsin.

[5] While the Decennial Census data appeared to be complete, the data from the Census of Governments and the National Center for Educational Statistics had fewer observations due to counties that did not report their information. The decreased number of observations has a greater potential to skew results and must be taken into consideration with the interpretation of this data.

[6] The data are not publicly available, but research using the data was permitted upon approval of an application to the Department of Labor. Only the aggregated results can be released to the public. The research was carried out at the Bureau of Labor Statistics (BLS) in Washington, D.C. in between 2004 and 2006. (See http://www.bls.gov/bls/blsresda.htm for more details.)

[7] The industries we consider are Animal (except poultry) Slaughtering (NAICS 311611), Meat Processed from Carcasses (NAICS 311612), Rendering and Meat Byproduct Processing (NAICS 311613), Poultry Processing (NAICS 311615) and Frozen Specialty Food Manufacturing (NAICS 311412)

[8] U.S. Department of Education, Office of English Language Acquisition
http://www.ed.gov/about/offices/list/oela/index.html