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Improving Oral Health for Kansas Children: What Policy Tells Us

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Abstract

Improving access to health services for children, in this case dental services, has always proved vexing. The research examines the continuing problems of access from the perspective of providers, beneficiaries, advocates, and policy makers. The research concludes that the historically usual solution of improving the dental health workforce is short sighted. The research, albeit in one state, suggests that the access issue is much more complicated and that providers with sufficient alternatives will avoid Medicaid patients. Similarly, beneficiaries cite as their major problem gaining access to a providers practice. The paper concludes with some policy recommendations for states to consider.

As health care costs increase at rates not seen since the mid 1980s and many working people and their children join the ranks of the uninsured, the American model of reluctant government involvement in assuring health insurance for children continues to compound existing problems in access to oral health in Kansas and the nation. This is especially true among low-income families. Incremental initiatives over the years have led to some success in getting these services to some children. But it has proven difficult for the country to accomplish, on any meaningful scale, something as seemingly void of controversy as assuring access to dental services for children this in spite of major investment and impact of policies like Medicaid and SCHIP which have occurred during this time.

The inability to address coverage for children reflects a public policy problem that has plagued the United States through the entire last century and continues today. The problem is not unique to Medicaid or low-income segments of our society. It mirrors concern over widespread child labor and malnutrition that led to the establishment in 1912 of the Children's Bureau, the first national initiative to seek improvement in the

health status of children. Further involvement in children's health issues paralleled demographic changes created by the significant growth of baby boomers post World War II. Myriad categorical programs arose during the 1950s and 1960s including maternal and child health (MCH), children and youth (C&Y), and maternal and infant (M&I). Notable among these were Medicaid and EPSDT (Early Periodic Screening, Diagnosis and Treatment), both passed in 1965.

In spite of the recent attention to American children's oral health arising out of the Surgeon General's report,[1] research investigating the oral health landscape for children has not led to as many new or innovative policy recommendations as hoped. For many policy makers, the problem and its solution are rooted in workforce policy.[2] They argue that solutions to accessing oral health are through markets where supply is enhanced through government subsidies to encourage larger numbers of admissions to dental schools or incentives that encourage dentists to practice in an underserved area for a prescribed period of time. Other alternatives demand market forces that encourage greater participation by dentists through increased reimbursement to provide services for low-income children and their families. Yet investment in dental care among state Medicaid programs is low, seldom exceeding 6% of state Medicaid budgets. Most states, like Kansas, limit their dental expenditures to less than 3.5% of their total Medicaid expenditures, with the national average hovering close to 2%.[3]

The purpose of this paper is to investigate reasons why children eligible to receive dental benefits under Medicaid do not receive them, and to help understand the relationship of reimbursement and other factors to the willingness of dentists to participate in state Medicaid dental programs. We will discuss policy alternatives that states may consider in light of severe budgetary and political restraints, summarize results of research undertaken in Kansas which sought to understand obstacles to oral health for children enrolled in Medicaid, and discuss policy alternatives that may be especially relevant for states such as Kansas, now in the midst of considering expanding oral health initiatives for children in the face of budgetary and political restraints.

Dimensions of the Problem

Though Medicaid enrolled children have a legal right to comprehensive screening and treatment that includes dental care, national evidence indicates that only 20 to 30% receive any dental services at all.[4] In Kansas, our baseline survey indicated this rate is 31% among Kansas children enrolling in Medicaid and 35% among children eligible for the State Children's Health Insurance Program (SCHIP).[5] Not surprisingly, low-income publicly insured and uninsured children have been found to have much higher levels of unmet dental need than middle and upper income children[6], and several studies have shown dental care to be the service for which unmet need is highest.[7] Among children with decay, almost 50% go untreated.[8] One reason for this gap appears to be related to health priorities. Nationally, while approximately 2% of Medicaid expenditures for children are spent for dental care, 30% of children's health expenditures go towards inpatient and outpatient services.[9] Evidence from adults suggests that at least some of this inability to invest in preventive dental care translates to larger orthodontic medical expenditures at a later date. As reported by Drury,[10] persons with a dental visit in the past 12 months were 3.1 times less likely to have untreated coronal decay and 1.5 times less likely to have gingivitis than persons who did visit a dentist. A related study (Drury and Redford, 2000 also reported in the Surgeon General's Report) indicated that persons who had visited a dentist in the last 12 months were also at lower risk of pulpal pathologies and tended to retain their tooth roots at higher rates than those not visiting a dentist.[11] Using NCHS estimates based on the National Health Interview Survey, acute dental conditions accounted for 1,611,000 lost school days alone in 1996,[12] with costs of chronic craniofacial conditions estimated to be in the billions. In the face of state spending priorities, a strong case can be made that upstream investment in dental services for children can save states money currently spent on outpatient and inpatient services caused by limited access to dental care.

In addition to having the greatest access difficulties, low-income children also have the highest prevalence of dental disease. One of the most common childhood conditions, dental caries (tooth decay) affects 52% of children by age 8.[13] Twenty five percent of mostly low-income children account for 80 percent of the decay.[14] Access barriers contribute but are not the entire explanation for this disparity.

Oral health has unique characteristics distinct from medical conditions that contribute to the problem. Dental caries are regarded by many as a "biosocial" disease caused by a transmissible bacterial infection affected by nutrition, hygiene, fluoridation, and the availability of preventive services such as topical fluorides and sealants.[15] Poor oral health exacts a high price throughout life. At an early age, it can affect a child's ability to eat, speak, and attend to learning.[16] A National Institute of Dental Research Study found that

adults missed more than 20 million work days in 1989 because of dental treatment or problems.[17] It can affect productivity in both children and adults because the disease is often progressive. Research suggests that dental disease in adults may be linked to health risks such as premature labor and low birth weight in pregnant women and cardiovascular disease and strokes.[18]

The Surgeon General, in trying to present oral health as an integral part of overall health in his report issued in 2000, announced major new sources of public health funding to help develop new oral health delivery models that would become part of state plans. On July 1, 2001, five states and a U.S. Territory were awarded $1.2 million through cooperative agreements from the Centers for Disease Control and Prevention to expand their oral health programs. The money went to several projects for each state. Summaries of these initiatives are presented in Tables 1 and 2.

Another approach that has been tested in Washington and Iowa is ABCD (Access to Baby and Child Dentistry). This program utilizes a cooperative approach to involve state, local not-for-profit organizations, and professional organizations in establishing an oral health delivery network for children. ABCD uses resources from public and private sources to provide dental services directly to children enrolled in Medicaid. The Washington program provides extended benefits and higher fees for certified providers

Table 1
Recent CDC Funded State Oral Health Policy Initiatives

States funded in 2001	Policy Initiative
Arkansas	Implemented an oral health coalition to develop plans to increase access to oral health services and produce health education materials.
Illinois	Developed a statewide oral health surveillance system to collect and monitor data about the oral health of its citizens, employ a Fluoridation Program data manager, and develop a statewide oral health education and awareness program.
Michigan	Conducted a baseline assessment and establish an ongoing system to monitor the oral health of its residents, provide health education on the benefits of preventive treatment, and prepare a long-range oral health strategy for the state.
Nevada	Created a State Office of Oral Health to establish oral health policies, work with the dental community, recruit dental health professionals, identify and develop additional resources, and staff a statewide advisory committee.
New York	Developed a county-specific surveillance system to monitor trends in oral diseases and use of dental services and establish a statewide coalition to promote understanding of the importance of oral health and improve the quality of prevention programs.
States funded in 2002	**Policy Initiative**
Alaska	Established an oral health program within the state health department's Maternal, Child and Family Health section.
Alaska, Colorado, and North Dakota	Developed a statewide oral health surveillance system to collect and monitor data about each of the *Healthy People 2010* oral health objectives for the nation.
Oregon	Established a state oral health surveillance system; conduct a statewide oral health needs assessment in the first and last years of the project and promote community water fluoridation through health communications activities.
Rhode Island	Implemented a state surveillance system to monitor oral disease and identify disparities; develop a state oral health improvement plan as well as plan and implement prevention programs.
South Carolina	Conducted a needs assessment to determine the extent of oral disease and identify any oral health disparities; develop a state oral health surveillance system; and develop targeted prevention programs.
Texas	Strengthened its capacity to monitor trends in oral diseases; improve oral health prevention education in schools; and evaluate program efforts.

Table 2
Current Status of State Oral Health Plans, January 2003

Alabama	Has Plan
Alaska	Has Plan
Arizona	Under Development
Arkansas	Under Development
California	Has Plan
Colorado	Has Plan
Connecticut	No Plan
Delaware	No Plan
Florida	Has Plan
Georgia	Has Plan
Hawaii	Under Development
Idaho	No Plan
Illinois	Has Plan
Indiana	Has Plan
Iowa	Has Plan
Kansas	No Plan
Kentucky	See Objectives*
Louisiana	Under Development
Maine	Under Development
Maryland	No Plan
Massachusetts	Under Development
Michigan	No Plan
Minnesota	See Objectives*
Mississippi	Under Development
Missouri	Has Plan
Montana	No Plan
Nebraska	No Plan
Nevada	Has Plan
New Hampshire	Under Development
New Jersey	No Plan
New Mexico	No Plan
New York	No Plan
North Carolina	Has Plan
North Dakota	No Plan
Ohio	Has Plan
Oklahoma	No Plan
Oregon	Has Plan
Pennsylvania	No Plan
Rhode Island	Has Plan
South Carolina	Has Plan
South Dakota	No Plan
Tennessee	No Plan
Texas	Under Development
Utah	Has Plan
Vermont	No Plan
Virginia	Has Plan
Washington	Under Development
Washington, D.C.	No Plan
West Virginia	Has Plan
Wisconsin	No Plan
Wyoming	Under Development
Territories	
Republic of Palau	Has Plan

* In the absence of completed state health plans, some states have requested that their states' Healthy People 2010 objectives be posted to represent the activities and goals of their program.

in one county.[19] ABCD in Iowa has created a strong relationship between the dental professions and the early childhood education community with the intent of better linking oral health with well baby exams through guidelines of the American Academy of Pediatrics (AAP) and Early Periodic Screening Diagnosis and Treatment (EPSDT) as well as improving oral-health screening by providers and parents.[20]

Oral Health Services in Kansas

The focus of our research into this problem in Kansas was to survey four stakeholders' perspectives on ways to increase children's access to oral health services in Medicaid. Conducted in 1999-2000, the team employed both qualitative and quantitative methods to help understand access to oral health services for children enrolled in Kansas Medicaid from the perspectives of

- practicing dentists
- Medicaid beneficiaries
- advocates for improving low income families access to social services in general and oral health services in particular; and
- state policy makers or persons in positions to influence policy.

The research was intended to survey dentists and beneficiaries with a sufficient response to allow for generalizability about those two populations.

The mailed dental survey, begun in the spring of 1999 and consistent with experiences of similar surveys in other states,[21] had a response rate of 45%. Survey responses, additional comments to open ended questions and subsequent provider focus groups throughout the state reinforced many data implications to our responses that allowed us to qualitatively provide inference in areas that stood out. The beneficiary phone survey response was 80%, after accounting for possible respondents who did not have phones or had moved. Consistent with Kansas Medicaid outreach policy and the relatively low percentage of native Spanish speakers enrolled in Kansas Medicaid at the time, all phone surveys of beneficiaries were conducted in English.

Questionnaires were mailed to 1,206 dentists from a list provided to us by the Kansas Dental Association, representing all dentists practicing in Kansas during that spring of 1990. Except for dentists with out-of-state addresses and those associated with military bases or veterans hospitals, the sample was close to universal. The final sample included general practitioners,

pediatric dentists, oral surgeons, and other specialists. The eight-page instrument, encompassing 29 questions, many of which were broken into parts, used many questions developed and tested by colleagues in Missouri for an earlier state evaluation of dental access in that state. The survey instrument is available to readers upon request of the authors. The questions were developed around four broad domains—dentists' attitudes and opinions on policies that affect:

- adequacy of reimbursement,
- comprehensiveness of treatment and quality of care,
- dentists' behavior and willingness to treat; and
- demographics and personal information on the dental practice. Many of the content questions utilized Likert-type scales, where dentists were asked to agree or disagree on a scale of 1-4.

Examples of these questions included:

"It is difficult to provide comprehensive treatment to Medicaid patients."

"Oral health problems of Medicaid patients are more severe than those of other patients in my practice."

Follow-up questionnaires were sent to all non-respondents. Ultimately, the survey yielded 526 usable questionnaires. Just over one-third (35%, n = 186) of respondents indicated they were enrolled as Medicaid providers. The findings in Table 3 summarize the key policy relevant messages we received that we felt best illustrated the differences between actively participating Medicaid dentists and non-participants in the Medicaid program.

For beneficiaries, a telephone survey was conducted during February, 1999 under our guidance by the Institute for Public Policy and Business Research (IPPBR, now PRI). From a sample of 9,000 families with children enrolled in Medicaid and eligible for dental services provided by the Kansas Department of Social and Rehabilitation Services, 3,000 names were at random. The sample included beneficiaries in 74 of the state's 105 counties, with slight over-sampling in rural areas. The questionnaire was replicated from a mail-administered instrument used in Missouri in 1998, adapted for telephone use. The 18 questions used a multiple-choice and Likert-scale format and covered issues relevant to utilization, access to, and satisfaction with Medicaid dental services. Participants were asked to answer the questions for their oldest child.

Table 3
Participating and Nonparticipating Kansas Dentists' Attitudes Towards Medicaid, Summer, 2000 (n = 526)

Percent Who Agree:	Total %	Participants %	Nonparticipants %	p
It is difficult to provide comprehensive care to Medicaid patients.	86.1	74.5	92.8	.01
Medicaid patients make other patients in the office feel uncomfortable.	21.5	23.3	20.4	NS
Without the Medicaid program, low-income patients would not be able to get adequate care.	76.9	95.6	66.0	.01
I am concerned about having the only practice in the area that accepts Medicaid.	54.5	65.7	47.7	.01
The Medicaid program respects my professional judgment concerning patient care.	34.8	46.0	27.7	.01
Oral health problems of Medicaid patients are more severe than those of other patients in my practice.	68.2	69.8	67.2	NS
Dentists can have an impact on the policies of the Medicaid program.	35.1	37.1	33.9	NS
Low-income patients are more difficult to treat than others.	50.4	46.7	2.6	NS
Dentists have an ethical obligation to treat Medicaid patients.	33.4	56.5	20.0	.01

Note: Differences were computed using chi square analysis.

Although the survey was confidential, minimal demographic information were gathered, such as number of children in the household and their ages, respondent age and education level, and respondent relationship to the child for which they were answering.

From the sample of 3,000 families, 1,231 (41%) of the telephone numbers proved unusable for reasons ranging from disconnected lines to wrong numbers. Of the remaining 1,769 families, 622 (35%) were contacted within ten call-backs. Of respondents contacted, 499 agreed to complete the survey, for the final response rate of 80%. The margin of error for this survey was less than 4%.

Once both provider and beneficiary survey results had been analyzed, we met with stakeholders to discuss our findings further and probe the ranges of policy options that appeared possible. To help us understand the issue from the perspective of advocates for children's health within Kansas, we met for a half-day exchange with the leading advocacy group in Kansas, the Kansas Association for the Medically Underserved (KAMU). Approximately seventy five persons attended that meeting. Shortly afterwards, we interviewed nine policy makers (four elected and five administrative), representing legislators and their research analysts from both majority and minority parties with membership on Senate and House committees having jurisdiction over health related legislation. These interviews were conducted in an open-ended format. Each person was asked his/her opinion about barriers to dental care access for Medicaid recipients and how they might be reduced or eliminated.

Summary of Research Findings with Policy Implications

Providers

Our results, key findings of which are summarized in Table 3 (pg. 5), suggest to us that contrary to its perceived role as a social insurance "safety net," most dentists see Medicaid as a barrier to comprehensive care. They see Medicaid patients having more serious dental problems, being more difficult to treat, and less compliant. We also noted a fear that taking on greater Medicaid participation could drive away privately insured patients, leading to their being largely an all-Medicaid practice. Yet at the same time, many dentists told us that Medicaid children would simply not get care if more dentists didn't participate.

Dentists cited three main problems with Medicaid:

- low fees (33%)
- broken appointments (23%)
- complicated paperwork (17%)

When asked what would improve their participation, 56% of dentists cited "increasing reimbursement levels."

Participation data provided by the Kansas Department of Social and Rehabilitative Services reinforced our findings that very few dentists in the state (200, or 15%) served virtually the entire Medicaid population (95%). This suggests that in the absence of paying patients, a substantial majority of dentists in Kansas are reluctant to participate in Medicaid and if they do participate, they do by serving only limited numbers. Dentists mention reimbursement as the most important issue determining their participation but they also mention several other issues that suggest that money may mask other social factors contributing to limited participation. Many dentists are reluctant to participate even after reimbursement has been improved because they feel that rates will remain static for many years into the future. Additionally, some dentists were concerned about mixing Medicaid with private pay patients in their waiting rooms. The stigma of Medicaid appears to have an effect of creating barriers to access, rather than removing them.

Another reason that only a small percentage of dentists participate in Medicaid in Kansas may have to do with the ample supply of privately insured or out-of-pocket paying patients to provide them with adequate patients. Although there is an ample supply of dental hygienists in the state, in Kansas they still must perform all procedures under the supervision of a dentist. Changes in dentist supply have to be accompanied by changes in statute-defined practice that allows greater use of dental hygienists if greater outreach to underserved, low-income children in the state is to be achieved.

Beneficiaries

The telephone survey of 499 Medicaid beneficiaries listed "finding a dentist who would accept Medicaid patients" (31%) and "waiting for an appointment" (18%) as their leading problems. Most respondents who gained access to dental services rated their care as "excellent to good" (85%). Our data suggested that those beneficiaries who gain access to oral health for their children are happy with the services that they get. The problem is gaining access; finding providers who will see their children in a timely manner. Table 4 (pg. 7) summarizes key descriptive data from our beneficiary survey.

It was apparent from these data that an increased supply of dentists alone would not deal with many

Table 4
Kansas Medicaid Beneficiaries' Ratings of Dental Access Problems and Satisfaction (n = 499)

	Some Problem %	Not a Problem %
Couldn't find a dentist who would take a Medicaid patient.	31.1	68.9
Didn't have transportation.	9.0	91.0
Couldn't get off work.	11.3	88.7
Child was afraid to go to dentist.	16.6	83.4
Had to travel too far to see dentist.	11.6	88.4
Couldn't find a dentist of my own cultural/ethnic background.	3.7	96.3
Had to wait to get an appointment.	29.7	70.3
Child wouldn't cooperate for dental care.	11.4	88.6

	Excellent %	Very good %	Good %	Fair %	Poor %
Satisfaction with care	31.0	21.0	33.3	10.3	4.3
Treated with respect by office staff	35.8	21.2	30.7	8.3	4.0
Overall quality of care	33.0	22.6	36.1	6.9	1.4
Amount of time waiting in office	23.8	20.3	29.9	21.2	4.9
Ability to get an appointment when needed	26.1	19.5	29.0	15.8	9.5
Child's overall dental health	22.6	22.4	36.9	14.1	4.1

problems raised by beneficiaries. For mothers of children receiving Medicaid, supply has to be linked to access. Oral health providers, both general practice and specialists, have to be within reach. If a dentist is some distance away as is often the case in a geographically dispersed state like Kansas, that alone is a barrier to access. Perhaps more importantly, an increase in dentists does not necessarily mean an increase in acceptance of Medicaid beneficiaries. Much of our findings in talking with and surveying beneficiaries suggest that children's access to oral health services is dependent upon the dentist's image of or relationship with the state Medicaid program or people insured through it.

Advocates

Advocates, drawn from the State's Primary Care Association, the Kansas Association of the Medically Underserved, were outspoken in their criticism of dentists within the state. From their vantage, dentists were not interested in Medicaid and children's health. Those dentists that did participate accepted only a minimum number of children, leaving the overwhelming patient load to a few dentists.

Advocates saw the problem in two dimensions. First, they felt that dentists have little regard for people with few resources. They were strident in their criticism of dentists as a profession lacking recognition of the problem of Medicaid children access. Second, they were equally strident regarding the dental community's opposition to allowing dental extenders to practice in their clinics. Advocates saw dental hygienists with more flexible practice authority as a major step in alleviating the access problem. To advocates, dental workforce policy must include dental extenders to be effective.

Policy Makers

Policy makers' policy recommendations were unidimensional. Every policy maker that we interviewed defined the children's access problem in terms of dentist supply. Graduate more dentists and the access problem can be either solved or greatly mitigated. Over time and for whatever reason, it appears that policy makers have subscribed to a market view of the issue. The more supply, the fewer problems associated with demand. Moreover, policy makers do not appear to appreciate the many dimensions of access to dental services. Many policy makers may subscribe to the dentist supply answer because it has minimal impact on state budgets. Increasing Medicaid reimbursement and finding ways to improve access to

dental services require affirmative state action and financial resources. Policy makers also appeared to be reluctant to step into the issue of affording greater practice discretion to dental assistants. A workforce supply solution to the problem also was fairly straightforward and simple in framing the problem and solution, even as the potential for implementing changes to promote supply seem remote.

The Many Dimensions of Workforce Policy

These multidimensional perspectives suggest to us that increasing dental supply either by government intervention or through market forces will have a limited effect unless other variables related to access are considered. Conventional manpower approaches, by themselves, are problematic. Our findings suggest several policy initiatives to consider.

It seems clear to us that no single workforce policy will improve access to dental care for children in Kansas. Increasing the number of dentists and improving reimbursement are problematic without a change in attitude toward Medicaid. Trying to recruit dentists to underserved areas through regulation or managing markets will have marginal results without first soliciting greater beneficiary and provider input. Children's access to dental services has several dimensions that need to be approached in a tight tandem or simultaneously.

Provider participation in Medicaid, especially dental services, is problematic without a substantial restructuring of benefits and allowable services. Even with SCHIP, enrollment and disenrollment continues to be a problem.[22] An improvement in children's access to oral health services is problematic without a culture shift in dentists' attitude and their perception of Medicaid. Change cannot happen without the voluntary involvement and support of dentists. Dentists in Kansas have little incentive to serve Medicaid patients when there is an abundant supply of private pay patients available. The evidence suggests that substantial increases in the workforce will not create greater access to dental care even with increases in hygienists. Evidence also suggests that a substantial increase in Medicaid reimbursement alone remains problematic. Increased reimbursement appears to have marginal influence on dentist's overall practice behavior.

The greater integration of oral health as a state public health priority is important to help wean the perception of dental health for low income children as one that is overly connected to "welfare." A comprehensive effort is necessary to educate the public about the efficacy and importance of oral health**.** Our work demonstrates the lack of understanding of the value of oral health by many prospective Medicaid beneficiaries, connected to the difficulties dentists have with serving low income children. Education, at a broader level, to both parties offers a clear opportunity to improve overall health status and save state's money.

Conclusion

Recently, Karen Davis argued that "…resourceful states can take the lead in developing new solutions (to health care problems), using a pragmatic mix of strategies…when national health policy seems paralyzed by division."[23] Our research suggests five options that policy makers may want to consider as states move forward with oral health initiatives:

1. Changes are needed in the way that preventive services are delivered to children. The issues here are several. *Means have to be found that effectively draw parents and their children into a screening system.* That system has to bring a trained clinician and the child together for an assessment and referral. If any part of the cooperative effort fails, the system fails. The difficulty of delivering preventative and restorative oral health services is a classic example of trying to create a system out of disparate parts. The closest "system" states have is EPSDT or the more narrowly constructed ABCD program in Washington and Iowa currently.

2. Reimbursement, rightly or wrongly, is seen by dentists to be inadequate, cumbersome, and unreliable. Dentists, especially in Kansas, don't like the system. It is below what they consider to be fair payment, in spite of their reluctance to participate even when fees are raised. Its payment process is cumbersome and unduly complex, in spite of Medicaid's efforts to create an electronic pay system. It is also unreliable because when fees are raised, they remain static for years. *Dentists are critical to an effective screening system also, especially for secondary and tertiary care. A sustainable system has to be created around them, perhaps using global budgets as a starting point.*

3. Legislatures across the country have experimented increasing the size of dental school classes and scholarship support and other means to increase the number of dentists and entice them into underserved areas. All of this effort has resulted in marginal change. An absolute increase in the number of dentists is more of a national issue, leaving states with the more indirect strategy of scholarships. *If dentist supply is problematic, consider*

increasing the number, authority, and training of extenders.

4. As difficult as it may be in these pressing budgetary times, *oral heath association with Medicaid should be minimized, creating greater linkages to SCHIP, public health agencies, or private dental insurers.* Dentists don't like Medicaid, beneficiaries are discriminated against because of this association, and it is a lightning rod to them as example of waste and abuse.

5. A portion of the problem is that parents, children, providers, and policy makers are not informed about the efficacy and importance of oral health. *A coordinated education effort focused in an office in state government with the full support of the public health and professional communities is an improvement.* This strategy is easily marginalized with a small education investment. Oral health education offers a clear opportunity to improve health and same money. It should receive adequate attention.

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A Looming Economic Threat to the Kansas Beef Industry: Federal Country of Origin Labeling Regulations

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This paper was funded by a grant from the Center for Applied Economics at The University of Kansas School of Business, Lawrence, Kansas.

Introduction

The Kansas beef industry faces a potential $1.692 billion threat from one of the most controversial policy issues being debated within agriculture—mandatory country of origin labeling (COOL) for meat and other agricultural products. If this requirement is implemented as the current statute is written, the United States will become the only country in the world that requires an animal to be born, raised, and slaughtered in the country before it can be labeled as a product of that country.

Kansas is one of the nation's leading beef cattle states, ranking second in beef cows sold (2002 Census of Agriculture) and second in cattle on feed (2003, USDA). More importantly, Kansas has a beef-market structure that is particularly vulnerable to the COOL mandate. The potential $1.692 billion impact on the Kansas economy has two components—annual compliance costs and a one-time loss of economic opportunity. The compliance costs could amount to an estimated $234 million annually. The economic opportunity costs could amount to $1.458 billion. The large opportunity costs occur because COOL will likely motivate Mexico and Canada to export beef rather than cattle to the U.S. That outcome would reduce the economic opportunities of foraging, feeding, slaughtering the cattle, and processing and shipping their beef. These are all activities that Kansas' beef sector is relatively more reliant upon than it is upon breeding and calving.

Assessing the impact of COOL is a complex process with a great number of variables to consider. Evidence of that complexity can be found in the various estimates of the compliance costs, which range from less than $70 million (J. Van Sickle, et al., University of Florida) for all covered commodities (beef, pork, fresh fruits and vegetables, peanuts, and seafood) to more than $4.6 billion to the beef sector alone (E. Davis, Texas A&M University). In their study, *Impact of Mandatory Country of Origin Labeling on U.S. Pork Exports*, Hayes and Meyer write, "any projection of the likely impact will be fraught with error, but it also means that it is important to get some sense of the impact."

Among the many previously conducted studies, there are two basic hypotheses on the ways in which mandatory COOL affects the livestock/meat value chain. Those are:

- adding compliance costs to production, processing, and retailing through regulation; and
- forcing changes in production and processing patterns, especially within North America.

The base assumptions of this analysis are:

- Packers and retailers will find the least expensive way to comply and, following the laws of economics, livestock producers will bear most of the costs because comparatively their assets are most fixed.
- Moreover, COOL generally makes a more stringent standard for importing live cattle and live swine into the U.S. than it does importing beef and pork. From a compliance cost perspective, therefore, COOL provides a marginal incentive to import beef and pork (i.e. meat) rather than live feeder pigs and feeder calves.
- A top beef cattle producing state, Kansas will be most affected by the impact COOL has on beef and cattle.

Background on COOL

The 2002 farm bill, officially known as the Farm Security and Rural Investment Act of 2002 (Public Law 107-171) provided for mandatory country of origin labeling (COOL) for muscle cuts (including ground) of beef, veal, lamb, and pork, as well as other non-meat commodities. The mandate prescribed labeling to have begun by 30 September 2004, with voluntary labeling allowable until that time. In order for a meat product to be labeled as U.S. origin, the animal must be born, raised, and slaughtered in the U.S.

On 23 January 2004, the President signed the fiscal year 2004 omnibus appropriations bill (P.L. 108-99), which incorporated the agriculture appropriations bill. That legislation provided for a two year delay in implementing mandatory COOL for meat, thus delaying the effective date to 30 September 2006.

A total of 43 countries have some sort of COOL provision, however, according to the American Farm Bureau Federation, the United States is the only country in the world that requires an animal to be born, raised, *and* slaughtered in the country before it can be labeled as a product of that country. By comparison, this is a much more restrictive standard than the World

WTO Agreement on Rules of Origin

Although country of origin labeling falls under the Agreement on Technical Barriers to Trade, WTO members agreed under Article 9 to certain notable guidelines in terms of determining the country of origin of a particular good for the purpose of tariff application. The purpose of the agreement was to ensure that rules of origin do not become obstacles to trade. Following are some of the principles that were established for rules of origin:

- They should be objective, understandable and predictable, with equal application.
- Origin is either where the good was obtained or, where the last substantial transformation* has been carried out.
- They should not be instruments to pursue trade objectives directly or indirectly.
- They should not create restrictive, distorting, or disruptive effects on international trade.

*Substantial transformation is defined as value added to the point that the product changes in tariff classification.

Trade Organization (WTO) rules for country of origin for tariff purposes.

Precedent

Currently, the Tariff Act of 1930, as amended, requires that every imported item, subject to certain exemptions that have been applied primarily to agricultural products, be required to indicate to the "*ultimate purchaser*" its country of origin. Hence, imported retail items, including food products that are packaged for sale to consumers, must be labeled. However, the U.S. Customs Service has determined that products imported into the United States that undergo a "substantial transformation" in the U.S. are exempt from this labeling requirement. The Customs Service considers processors and manufacturers to be the "*ultimate purchaser*" of the imported products, which therefore ends the requirement for labeling at the retail level.

The Tariff Act exempts from labeling requirements items that would be "economically prohibitive" to label, including livestock, vegetables, fruits, nuts, and fish—all commodities that are covered under the COOL provision of the 2002 farm bill statute. The assessment of "economically prohibitive" is what is at the heart of the controversy over COOL. For example, proponents of COOL point out, for veterinary health reasons all live cattle imported from Mexico destined for further feeding must bear a brand (M for steers; Mx for heifers). All swine imported into the U.S. must have health certificates which reference a mark, such as an ear tag or a tattoo that can identify individual animals. These labeling programs are administered by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS).

Statutory Requirements of COOL

Specifically, under the COOL provisions of the 2002 farm bill, retailers are required to inform consumers, at the final point of sale of the commodities covered by the statute, of the country of origin of the commodity.

Meat commodities covered by COOL include beef (muscle cuts and ground) and pork (muscle cuts and ground). Poultry is NOT included in COOL.

In order to display a label indicating U.S. origin, beef and pork must be derived exclusively from animals born, raised, and slaughtered in the U.S. Imported products will be labeled in conformance with existing federal law, such as the Tariff Act of 1930, applicable at the time the product arrives at the U.S. port of entry.

In the case of beef products from animals that crossed U.S. borders, those products are to be labeled with the processing steps that occurred in the exporting country and the processing steps that occurred in the U.S. For example:

- A fed cow from Canada, processed in the U.S. would read either "*Product of Canada*" or "*Born and raised in Canada, processed in the U.S.,*" depending upon whether Canada would allow such a product to be labeled a "*Product of Canada.*" (Canada has commented to the USDA that "*Product of Canada*" is the intellectual property of Canada and thus COOL should not dictate its use.)
- A feeder cow from Mexico fed and processed in the U.S. would be labeled as "*Born in Mexico, raised and processed in the US.*"

For mixed beef products, such as hamburger, which are made from beef of mixed origin and which include

meat from multiple animals, must be labeled as to the country of origin of each animal in the product in alphabetical order. For example:

> *Australian Born, raised and slaughtered, Born in the United States, raised in Canada, and slaughtered in the United States.*

Retailers and their suppliers are required to maintain a verifiable recordkeeping audit trail to verify claims as to country of origin. The records must be kept for at least two years. Items that do not meet the definition of U.S. product do not need any additional information other than the origin of that product. Thus, there is a higher standard of compliance to gain the U.S. label than any other, as the meat must be proven to have come from an animal born, raised, and slaughtered in the U.S. This of course, places a great cost-of-compliance burden on the U.S. beef retailers and their suppliers.

Finally, the statute does not cover food service or processed commodities. Approximately 50 percent of all beef is sold through these channels, which means the total cost of the COOL mandate must be born by the beef marketed through the retail channel.

The Questionable Economic Theory Motivating COOL Proponents

Proponents of COOL explicitly argue that U.S. consumers would seek U.S. meat products, and possibly be willing to pay a premium for U.S. meat, if it were branded as such. According to Jay Miller, marketing chairman of the Ranchers-Cattlemen's Action Legal Fund United Stockgrowers of America (R-CALF USA):

> Labeling will allow consumers to choose between U.S. beef and foreign beef. If they choose U.S. beef, demand for U.S. beef should increase causing the demand for domestic live cattle to also increase. Increased demand for domestic live cattle should trans-late into higher domestic live cattle prices for U.S. producers.

The work most frequently cited by COOL proponents in supporting the hypothesis that consumer's would react favorably to COOL is the study from the Universities of Colorado and Nebraska-Lincoln, "Country of Origin Labeling of Beef Products: US Consumers Perceptions," authored by Wendy J. Umberger and Dillon M. Fuez. This study has been used by R-CALF USA, the leading agricultural producer group who has lobbied Congress on behalf of COOL.

Key Arguments
Country of Origin Labeling of Beef Products: U.S. Consumers' Perceptions

Survey Data from June/July 2002

- 73 percent of surveyed consumers in Denver and Chicago were willing to pay an 11 percent premium for the price of steaks and a 24 percent premium for hamburger labeled with COOL.
- In a study test auction, consumers were willing to pay a 19 percent premium for steak labeled "Guaranteed USA: Born and Raised in the U.S."
- Origin information and a labeling source, a desire to support U.S. producers, beliefs that U.S. beef was of higher quality, as well as other factors, were the most common reasons consumers preferred country of origin labeled products.

Upon analysis, the following are points of concern about the applicability of this study as a projection for the mandatory COOL requirement:

- the great disparity in the survey results of what respondent consumers said they were willing to pay in a survey, and what they did pay in an economic behavioral experiment—11 cents versus 19 cents; and
- the surprising result that consumers would pay a larger (percentage) premium for hamburger than steak.

Moreover, the survey respondents expressly suggest that an expectation of higher quality was a reason they would pay more for a "USA" label. However, a mandatory COOL requirement would negate that expectation. For example, a steak from a U.S. origin cutter/canner grade cull cow would be required by law to carry the USA label, while a premium grade steak from a grain fed steer would not be able to carry a USA label if that steer was born in Canada or Mexico. This would undoubtedly undermine consumers' expectation of quality from U.S. beef.

Despite these questions, this study remains the primary definitive research upon which the proponents of COOL rely. The costs estimates of COOL, for example, provided by Van Sickle, are based on this study. Citing the Umberger and Fuez study, Van Sickle states:

The nation's 275 million consumers ate an average of 29.36 pounds of ground beef per year. Assuming a 24.3% increase in the $1.25 per pound price assumed in the Colorado State study, the aggregate willingness to pay is $1.7 billion. However, a more accurate ground beef price comes from USDA scanner data for January 2003, which shows a higher price of $2.16 per pound. If we adjust for the USDA scanner data, the result is an aggregate annual willingness to pay of $3.1 billion.

It is far from clear, however, that consumer willingness to pay can be expected to be completely price inelastic, as Van Sickle does. He applies the same "willingness to pay" premium expressed as a percentage of price even though his calculation increases the price of ground beef by nearly 73 percent. Mathematically, Van Sickle's argument is can be explained as follows:

- At $1.25/lb hamburger, the willingness to pay for COOL info is: $0.30375/lb
- At $2.16/lb hamburger, the willingness to pay for COOL info is: $0.52488/lb

While it could be argued that for some consumers, willingness to pay for COOL info increases as the price of beef increases, generally, beef is demonstrated to have a negative price elasticity[1] especially when compared to chicken, which is exempt from COOL.

Figure 1 shows the volume of ground beef sold (compared to 2001 as the index year), given changes in price for the month of July (a major month for retail ground beef sales) over the most recent three year period. This empirical data also suggests a negative price elasticity for ground beef.

Indeed, negative price elasticity would call into question Van Sickle's calculations, as it would Umberger's and Fuez's own base data. Their survey data was based on hamburger prices of $1.25 per pound, actual prices during the time of the survey were up to 84 percent higher than those levels—a gap wide enough to potentially affect the results of the survey. Respondents were queried about their willingness to pay a premium to a hypothetical base price that was significantly lower than what they would have reasonably understood to expect (see Table 1).

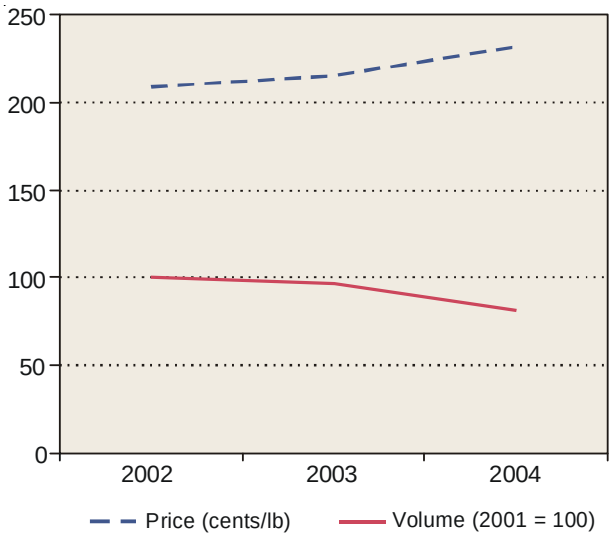
In response to the citation of their paper by COOL proponents, Umberger, Fuez, et al, issued on 15 May 2003, a fact sheet "to clarify the appropriate use of the data" presented by their study, noting specifically:

> … this paper has been cited many times as "overwhelming evidence" of the benefits of country of origin labeling (COOL). However, difficulties occur when the data are extrapolated beyond the population tested or when the premiums are broadly applied to estimate economic impacts of mandatory COOL.

The fact sheet also stated:

> The research was not conceived to support or refute COOL. Rather it was conducted…to examine if, in isolation of other beef attributes, consumers cared about COOL. Briefly, the research indicated a portion of consumers expressed interest in COOL although the rating for importance of COOL to their purchase decision caused it to be ranked 8 out of 17 items.

Figure 1
U.S. Ground Beef Sales in July 2002- July 2004



Source: Livestock Marketing Information Center.

Table 1
Retailer Scanner Prices for Ground Beef (2002)

Month	BLS Price	Pct under Retail Sale Feature	Feature Weighted Price
June	$2.29/lb	53	$1.93/lb
July	$2.30/lb	46	$2.09/lb

Source: Livestock Marketing Information Council.

The fact sheet also included the statement: "Clearly issues of freshness and food safety inspection were far more important to the consumers whom we studied." This finding is in keeping with another survey conducted by North Carolina State University (Wimberly) cited by R-CALF USA. In that survey four of five respondents believe that food grown in the U.S. is fresher and safer (80 and 79 percent respectively) than imported food. That corresponds with the response of 68 percent of the respondents who said they would pay more for food grown in the U.S. rather than abroad. Interestingly, a slightly higher number—71 percent—indicated a willingness to spend more for locally produced food from within the U.S.

General Consumer Attitude Research

General consumer research on labeling information conducted in August 2002—the month after Umberger and Fuez conducted their survey—by the International Food Information Council (IFIC) shows that most consumers do not seek country of origin labeling. Those seeking more information are typically seeking nutrition information and not seeking country of origin.

Similarly, the Food Marketing Institute (FMI) annually asks a national sample of supermarket shoppers to volunteer suggestions for "improving your primary supermarket," and it then probes for multiple answers. In a typical year, the Institute receives more than 60 separate suggestions at the level of one percent of the respondents or higher. In more than 20 years of this open-ended questioning of American shoppers, a request for country-of-origin labels has never been made.

It should be noted that the FMI and IFIC research—both of which are conducted annually—are "open-ended" when it comes to COOL. They do not suggest COOL; they ask consumers' opinion.

While this result indicates that consumers are not seeking origin-related information, it by no means rules out the possibility that consumers would react favorably to COOL.

Meat Industry Position

While the primary producer group, the National Cattlemen's Beef Association (NCBA), and the U.S. meat packing industry both support the move to beef branding, they do not see mandatory COOL as adding value. Specifically, they argue that the mandatory nature of COOL negates any of the benefit of differentiation—as mentioned previously regarding the quality grades of beef. Thus NCBA has promoted as an alternative, a voluntary COOL program structured as was proposed by an industry coalition in 2000.

Petitioning USDA in 2000 were the NCBA, American Meat Institute, Food Marketing Institute, National Meat Association and the American Farm Bureau Federation (who now supports mandatory COOL). Such a system would allow a packer or retailer the option of using a label which states "*Beef: Made in the US*" if an animal is identifiably in the U.S. for 100 days prior to harvest.

R-CALF USA opposes the voluntary system, and supports mandatory COOL. According to R-CALF USA's Jay Miller, in a paper delivered to the American Agricultural Economics Association, voluntary COOL would extend the "status quo" that provides "economic benefits (which packers and retailers) have long enjoyed by not disclosing the origin of beef sold in the United States." Without mandatory COOL, packers and retailers have an "enviable and profitable status of being able to capture consumer demand signals and subsequently satisfying those signals with products originating from the country of their choosing."

This choice of words "capturing consumer demand signals" is most interesting in light of the FMI survey data which, after 20 years, has not registered any support for COOL. Moreover, contrary to Miller's assessment, it can be demonstrated that, because of the nature of the beef sector, imports can—and do—actually benefit U.S. beef values. Specifically, that when packers and retailers satisfy consumer demand signals for certain types of beef with imported beef and beef from imported cattle, U.S. beef values are boosted. This argument is based on two points:

- First, imports of meat allow more U.S. beef to target higher value markets (e.g. steaks and roasts), rather than lower valued uses (such as hamburger), and
- Second, imports of live animals allow economies of scale in clustering that particularly benefit Kansas.

In other words, rather than "causing the demand for domestic live cattle to … increase," the applied economics of COOL would have unintended consequences that would imposed an economic burden on US beef. This burden is a result of

- the segmented physical structure of beef production, and
- the economic structure of how beef is valued.

Furthermore, the burden would outweigh any potential economic benefits to U.S. cattlemen from COOL in terms of consumers' willingness to pay. The preceding analysis the consumer research shows that any expected benefits from consumers willingness to pay are questionable at best.

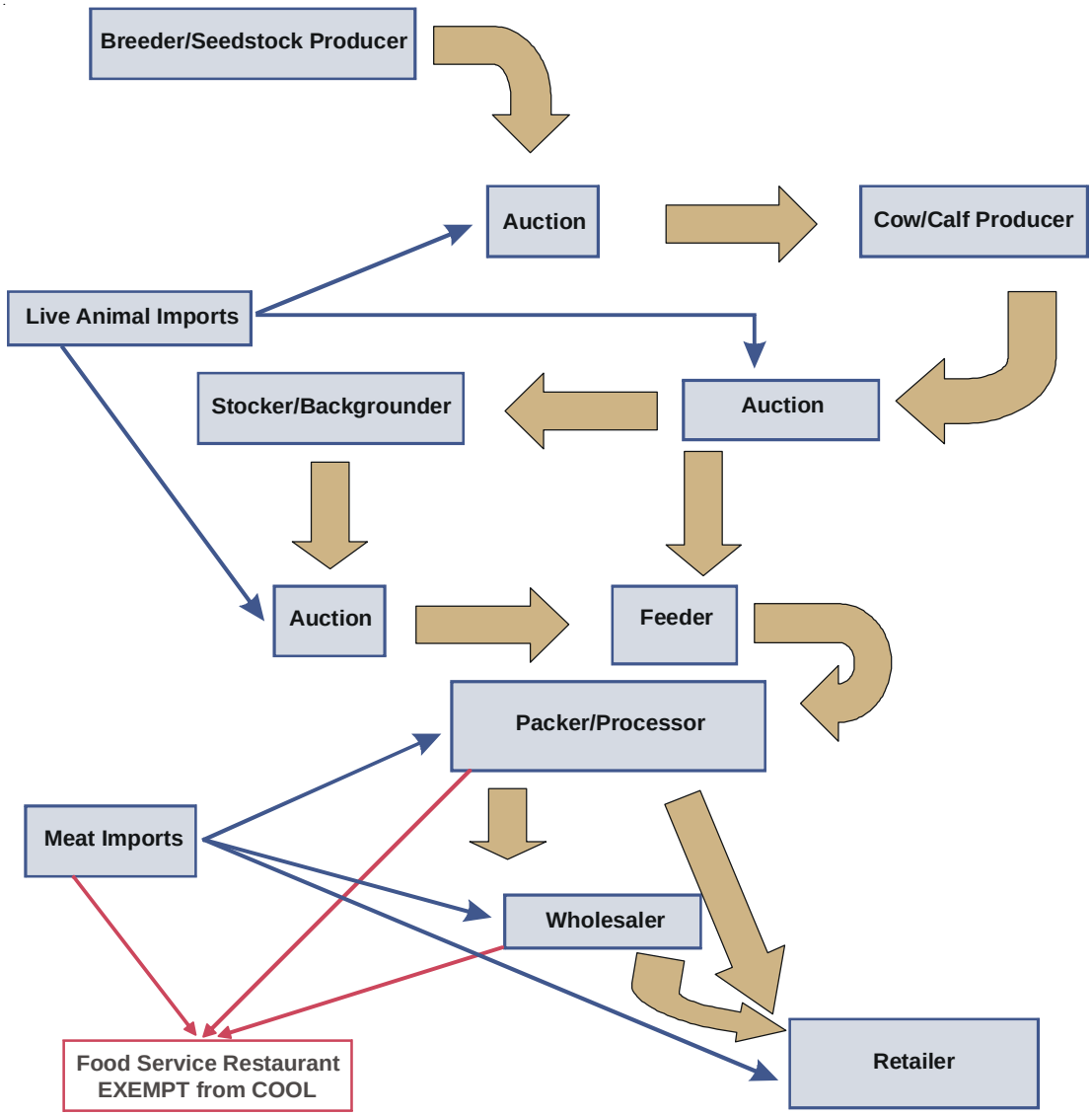
COOL Impact on Beef

Beef is Highly Segmented

According to USDA's Economic Research Service (ERS), almost 75 percent of total cattle production comes from small farms (i.e. farms with gross sales of $249,000 or less); moreover, an annual average 58 percent of the calves born each year are shipped to another destination for feeding or breeding. Approximately 85 percent of those cattle move through at least one auction barn, where changes in ownership complicate record keeping related to satisfying the COOL mandate. This contrasts to the movement of swine, which typically move in lots consisting of several animals.

As illustrated in Figure 2, U.S. cattle can move up to 10 times through various segments of the value chain. Moreover, their meat may be co-mingled with imported meat at the processing/fabrication stage in the packing plant. Virtually all analyses agree that beef will by hit harder by the COOL mandate than pork.[2] That is largely due to the fact that the beef value chain is the most segmented livestock sector. In contrast to pork, less than 15 percent of cattle are marketed through any

Figure 2
Beef Value Chain: Potential Movements



kind of alliance. Specifically within the sector, ground beef—the lowest value product—will bear the greatest burden of COOL as it relies on multiple animals and boneless beef imports for mixing.

Structure of U.S. Beef Producing Sector

The U.S. calf crop is relatively dispersed throughout various regions. However, feeding and slaughter are highly concentrated. Most states produce more calves than they slaughter; of the top 25 calf producing states, 15 slaughter less than they produce.

In general, cattle move because it is easier to ship the livestock than it is to ship the amount of grain needed to finish out a steer or heifer. Moreover, however, since a substantial part of fattening cattle relies on grazing, climate and forage availability also plays a key role, from the regional differences in the Southeast and Midwest, and even within semi-arid areas like the West where cattle will move from winter to summer grazing areas. Unlike poultry and swine, it is not cost effective to have a closed production system for cattle. Some part of the production cycle needs to rely on open space and certain resources, such as climate, grass, land availability. The immobility of these resources and the mobility of cattle lead to a great deal of segment specialization in cattle defined by region. Feeding is highly concentrated near feed supplies, primarily coarse grains—almost 75 percent of all cattle on feed are in four states: Kansas, Texas, Colorado, and Nebraska.

According to the Kansas Livestock Association, the state's competitive advantage as a location for beef cattle production, includes:

- Feedyards have economical access to grains; Kansas ranks at the top in the nation for the production of every high quality grain used to feed cattle, including corn, milo, wheat, and barley.
- Plentiful supplies of roughages exist like silage, alfalfa, and other hays.
- A moderate climate allows for more predictable cattle performance.
- Packer competition exists because the top four firms all operate packing plants in Kansas.

Contrary to the theory behind COOL, which assumes that long term scarcity of cattle managed by regulation will sustain high prices, the "clustering" of cattle feeding actually benefits cattle prices. These higher prices exist for a number of reasons, including economies of scale. Moreover, other geographical areas are further away from the infrastructure and thus local market prices there must incorporate a transportation discount, known as "basis." Indeed, according to USDA, feeder calf prices are highest in areas where feeding is most concentrated; generally prices are 13 percent higher in the four states where feeding is clustered than are prices for feeder cattle in the Southeast market. Additionally, calf prices average consistently higher in Kansas than the U.S. average (see Figure 3).

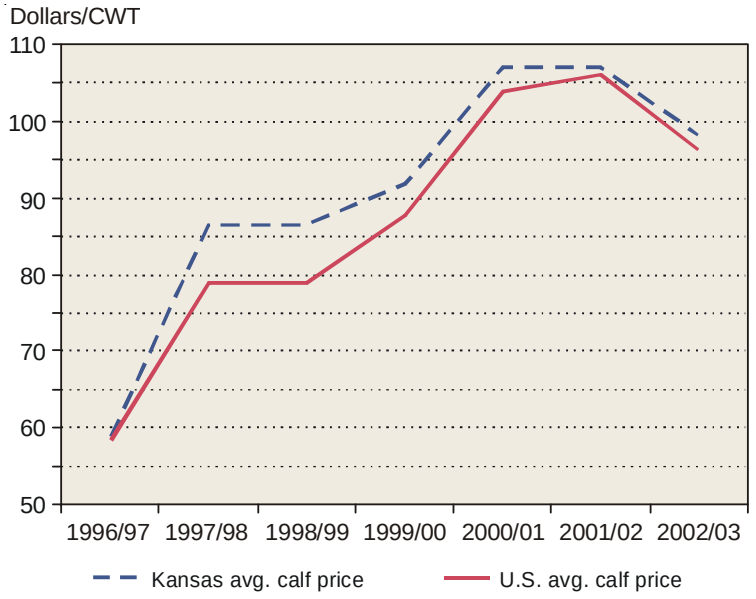
Imports of Cattle

For the same reasons that there is a substantial movement of cattle within the U.S., there is also substantial movement across the U.S. and Canadian border, and across the U.S. and Mexican border. In many ways, the North American market is integrated and COOL places an artificial barrier to the normal economic movement of cattle and beef within North America.

Mexico

Statistics show that most of the Mexican feeder cattle that are imported into the U.S. move into Texas. Many of those cattle ultimately move to Kansas for feeding.[3] Indeed, the numbers support this assertion. In

Figure 3
Comparison of Average Annual Calf Prices, Kansas vs. U.S.



2001, 918,000 cattle from Mexico moved into Texas, according to USDA; a total of 330,725 cattle moved from Texas to Kansas, implying a transfer of cattle from Mexico. Additionally, Kansas received another 11,230 cattle directly from Mexico (only six states—Texas, Kansas, Idaho, Colorado, Nevada, California received cattle from Mexico in 2001; excepting Texas, only Idaho with 10,515 received more than Kansas). All of the cattle received from Mexico in the last two years have been feeder cattle (see Table 2).

Depending on rainfall, feed availability, the Mexican cattle cycle, U.S. cattle market prices, and exchange rates, Mexico has shipped between 3 to 5 percent of its herd north to the U.S. for each of the past 8 years.

Table 2
Imports of Cattle from Mexico

Year	Feeder Cattle	Fed Cattle
2002	796,329	0
2003	1,224,936	0

Source: USDA.

Canada

While the U.S. border has been closed to Canadian cattle since May of 2003 because of the discovery of bovine spongiform encephalopathy (BSE), or "Mad Cow" disease, traditionally both feeder and slaughter cattle move into the U.S. from Canada. The number of cattle varies from year to year depending on market and production conditions. The USDA's Animal Plant Health Inspection Service in October 2003 projects that when the borders re-open, approximately 800,000 slaughter cattle will enter the U.S., and approximately 500,000 feeder cattle will enter the U.S. According to USDA's Economic Research Service, a substantial amount of the Canadian cattle that are imported into the U.S., move into the Mountain States, then to the Plains region for slaughter. In 2001, Kansas received 11,795 head of cattle from Canada directly—about 10.6 percent of all the cattle it shipped that year.

Structure of the Beef Market

There are two basic components of the beef market. The first is the high-value, grain-fed premium meat market; the other is the ground beef market. According to Tom Elam of the Center for Global Food Issues of the Hudson Institute (*The U.S. Ground Beef Market: Why Imports Help*), the beef that makes up the ground beef supply is usually from two sources: the first is a supply of 50 percent lean trimmings from grain-fed cattle; the second is 90 percent lean trimmings from mostly grass-fed cattle. These two types of beef are blended together to make hamburger.

The supply of lean trimmings for hamburger frequently comes from two sources outside the U.S. beef chain—culled dairy cattle and imported grass fed beef or beef from grass fed cattle imported from Canada. More and more, the industry has relied on imported boneless beef in the hamburger market. By doing so, it has enabled the U.S. beef industry to focus on greater production of fed-beef for the domestic market and for export. According to Elam, the value of a grain-fed heifer is approximately $400-$600 higher than the value of a grass-fed cow.

Indeed, in 2003, the U.S. imported 2.9 billion pounds (carcass weight) of beef valued at $2.064 billion while it exported 2.66 billion pounds (carcass weight) worth $2.66 billion. In other words, U.S. beef exports earned $1.00 per pound while imports cost $0.72 per pound—a net difference of $0.28 on each pound of beef (see Figure 4, pg. 18).

This value difference underscores the notion that beef imported under market incentives can actually help maintain higher valued beef. It does so by preserving a supply for export markets and leading to a greater processing of fed beef in the U.S.

From 1995 to 2001, ground beef as a percent of total domestic consumption of beef remained very steady, and dropped slightly in 2002. At the same time, imports of boneless beef, most of which is for the processing of ground beef, grew 64 percent (see Figure 5, pg. 18).

Indeed, imported lean beef is filling a larger portion of the lower end cow market in the U.S., allowing more U.S. fed cattle to be processed (see Table 3, pg. 19).

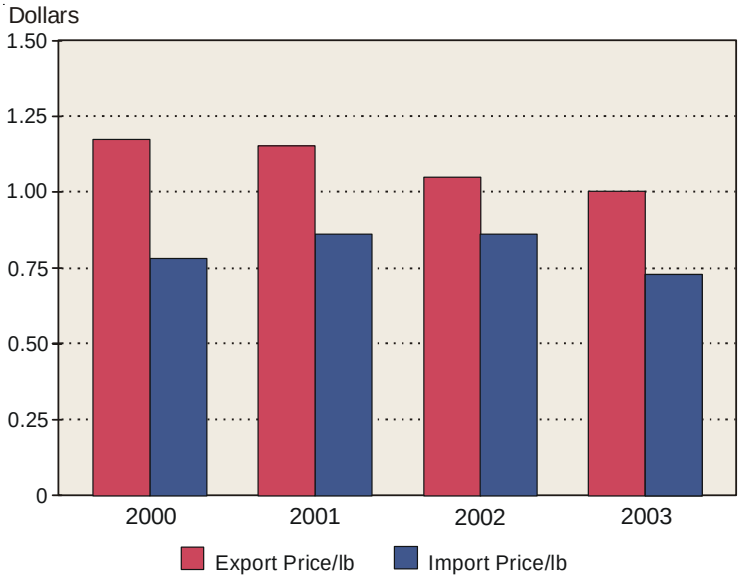
This trend upward of fed cattle slaughter benefits Kansas, as Kansas supplies fed cattle to the marketplace.

Market Situation

In 2003, however, imports were limited, and cow slaughter numbers increased to their highest level since 1997, at 6.4 million. This was indicative of some greater circumstances disturbing the general trends in beef.

- BSE in Canada resulted in a drop in the number of cattle coming in from Canada since May 2003—about 35 percent are for the supply of 90 percent lean trimmings.
- Because of demand and supply balance and low herd numbers in U.S., cattle are being fed to lighter weights, reducing the supply of 50 percent trimmings.

Figure 4
Beef Import Prices vs. Beef Export Prices, 2000-2003

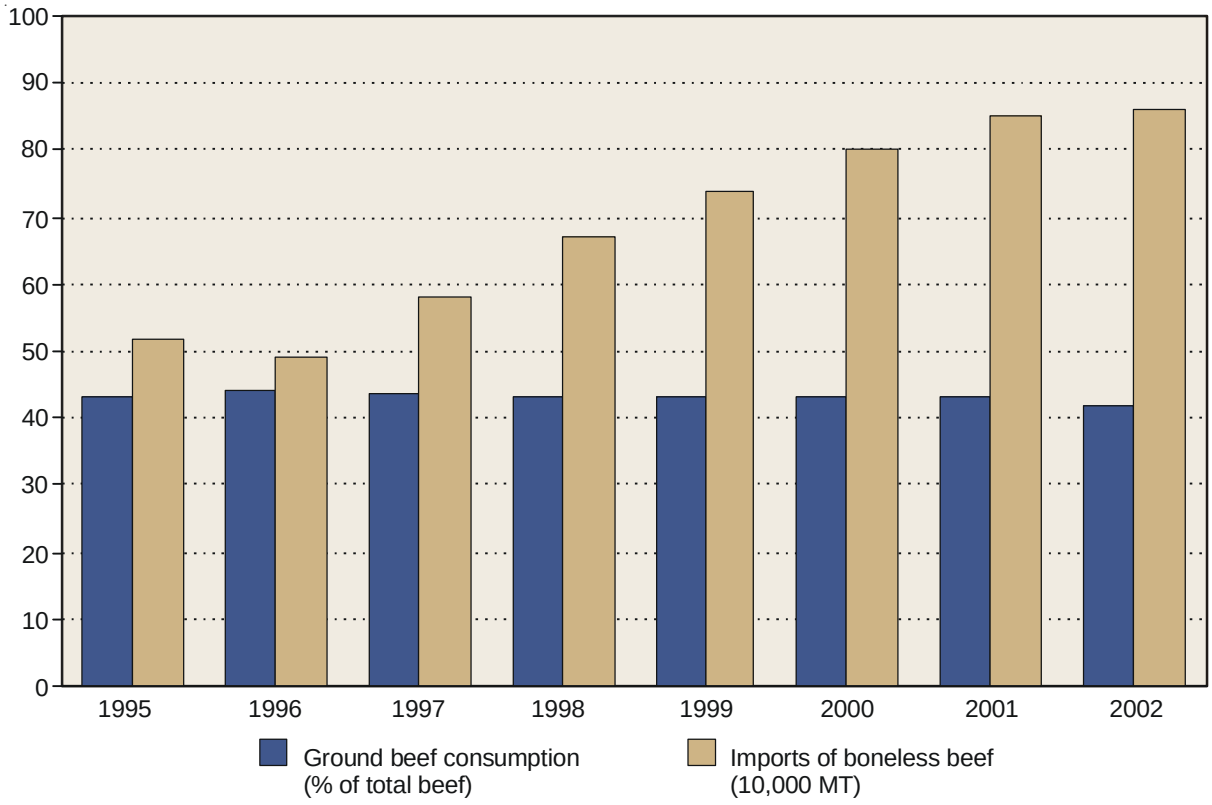


Source: USDA.

- Foot and Mouth outbreaks in South America reduced the supply of boneless beef for 90 percent trimmings.
- Drought in Australia also reduced the supply of boneless beef for 90 percent trimmings.

The result has been a suddenly imposed short beef supply that caused record prices, and significant implications to the beef herd. The January 2004 USDA *Cattle* report estimated that the number of cattle and calves on farms on 1 January were 1 percent lower, at nearly 94.9 million head. The number of beef heifers retained for breeding was down nearly 2 percent and the number expected to calve was also down 2 percent. At 37.9 million head, the calf crop in 2003 was nearly 1 percent lower than the previous year, and was the smallest calf crop since 1951. Additionally, according to USDA, conditions for

Figure 5
U.S. Ground Beef Consumption vs. Imports of Boneless Beef



Source: USDA.

Table 3
Cattle Slaughter by Type
(million head)

Year	Total Slaughter	Fed Cattle	Percent of Total	Cows	Percent of Total
1975	40.9	21.4	52.3	11.5	20.4
1985	36.3	26.8	73.8	7.4	16.0
1995	35.6	27.4	77.0	6.3	14.1
2000	36.2	28.1	77.6	5.5	12.9
2001	35.4	26.9	76.1	5.8	13.6
2002	35.7	27.4	76.7	5.7	13.6

Source: Center for Global Food Issues, Hudson Institute.

retaining heifers in 2004 have not been favorable and cattle liquidation could well continue for a ninth year. Winter wheat conditions were poor and the number of cattle reported to be grazing wheat pasture in the three reporting states of Kansas, Oklahoma, and Texas were down 22 percent compared with a year earlier.

In short, COOL is scheduled to be implemented at—or very near—the bottom of the cattle cycle, when U.S. beef production is low and, normally, reliance on imported feeder calves and lean beef slaughter cows would be crucial. Moreover, COOL will impose additional costs on an already smaller-than-normal supply of U.S. beef cattle.

While the artificial shortage of beef has boosted prices in the short run, high prices typically induce more long term supply and ultimately bring down those prices.

Meatpacker Strategies for COOL

Most packers indicate that competitive price is the first and predominant point of information sought by the consumer. Therefore, should COOL impose more costs on sourcing live cattle from both Canada and Mexico for feeding and slaughter in the U.S., slaughtering in those countries may be more cost effective. The result would be more imports of beef, rather than live animals, and a loss of the value-added economic activity from feeding and processing those animals in the U.S. Note that beef exports from both Canada and Mexico are not limited by a beef quota, as they are from other countries.

Another strategy packers indicate they will employ to minimize the cost of COOL is to target the food service sector with imported beef to the extent possible for ground beef. Because food service is exempt from COOL, packers and the retailer customers will be able to avoid the regulatory burden of identifying and labeling foreign sources for ground meat to that extent. About half of all beef is sold through the food service sector so if beef and animals can be segregated for food service versus retail at a lower cost than being traced and tracked for labeling, then most packers will adopt such a strategy (in 2003, 3.2 bln lbs, an amount equal to about 12 percent of the U.S. beef production, was imported).

The result of these packer strategies could mean there would be little to no foreign beef on retail shelves. However this would not reduce the costs of compliance to U.S. producers of beef. In order to gain a "U.S." label, the source verification and traceability must be able to show that the beef was from an animal born, raised, and slaughtered in the U.S. Thus, contrary to R-CALF USA's assertion, mandatory COOL would not necessarily "allow consumers to choose between U.S. beef and foreign beef" but it effectively would put the economic burden of COOL almost entirely on U.S. beef, and force about half the beef supply—that destined for retail—to carry that burden.

Cost of Compliance

There are a number of estimates for the per-head costs of compliance. The most frequently discussed figure is the estimate from the USDA in publication of the proposed rule. USDA's Agricultural Marketing Service estimates the total costs to the beef sector to be $1.7 billion. Assuming that 33.3 million head (6 percent less than last year, according to USDA projections) are processed, that would be a per head cost of $51.

Another widely referenced cost estimate was calculated by Sparks Companies. That study concluded that cost of compliance for beef production was $47.13-$51.63 per head. The USDA estimates are largely based off the Sparks report which was submitted to USDA. In fact, the proposed rule, as issued by USDA states: USDA concludes that most industry participants will likely incur the types of costs identified in the Sparks/CBW study. These cost estimates may be overstated, however, as the Sparks report authors acknowledge that their calculations were based on a worst case scenario.

The Sparks study was conducted with the *Cattle Buyers Weekly* (CBW) industry trade magazine and a consortium organized by that publication. From its research, CBW provided a lessened cost estimate range[4] than the worst case scenario contemplated in the Sparks/CBW report. According to CBW, "one

integrated beef company that has one of the most comprehensive source-verified tracking systems in the industry" indicated the costs could be as low as $30 per head. Moreover, "another private estimate given to CBW put the cost at $33 per head."

Therefore, assuming that the compliance cost of COOL is about $30/head, and assuming that about 33.3 million head of cattle are processed, that's a total of $999,000,000—or roughly $1 billion. Total production in 2003 was 26 billion pounds; exports were 10 percent of that at 2.6 billion pounds, leaving 23.4 billion pounds in the U.S. market. If half of all beef is sold domestically through food service and half through retail, then 11.7 billion pounds of beef—or half the domestic supply—essentially have to bear the regulatory cost of $1 billion. That equates to $8.50/cwt on a carcass weight basis.

Impact on Kansas

Because Kansas is a major cattle and beef producing state, COOL is likely to have a disproportionate impact on the state (see Table 4).

Compliance Costs

In 2003, about 35.4 million head of cattle were slaughtered; approximately 7.4 million head, or 21 percent, of those cattle were slaughtered in Kansas. The average dressed weight of all cattle slaughtered in 2003 was 746 pounds. Thus at a discount of $8.50/cwt for about half of the beef produced, the total compliance cost of COOL for Kansas can be assumed to be more than $234 million.

Opportunity Costs

But compliance costs do not calculate the additional opportunity costs of COOL. Indeed, as noted previously, the additional impact of COOL is that it makes it relatively easier to import beef rather than live cattle—and because there is a quota on beef imports from other non-North American countries—there is likely to be an interruption of imports of Mexican and Canadian feeder calves with the implementation of COOL and an increase in beef. A shift from cattle imports to meat imports reduces the number of U.S. cattle slaughtered and the number of cattle on feed in the U.S.—outcomes that affect Kansas as the second leading state for both cattle on feed and number of head of cattle slaughtered.

Of the cattle that move to new locations for feeding, no single state accepts more cattle than Kansas, which receives in-shipments of more than 4 million head of cattle each year, averaging 4.37 mln head since 1996/97. Twice during that period in-shipments have exceeded 4.6 million, including in 2002/03.

Table 4
State Rankings for Cattle

State	Cattle on Feed	Head of Cattle Slaughtered
Texas	1	3
Kansas	2	2
Colorado	4	4
Nebraska	3	1

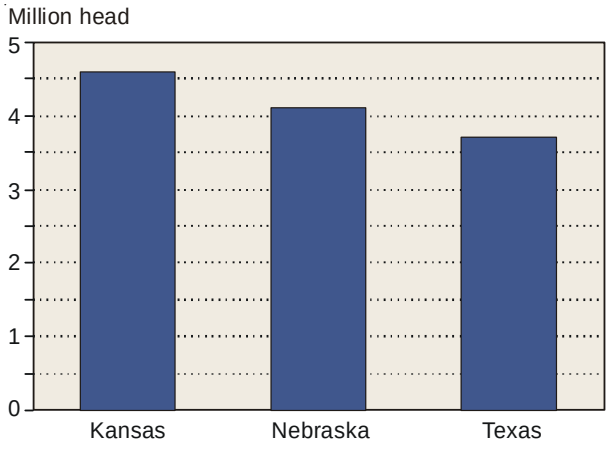
Source: USDA.

Table 5
Top Five Cattle States Annual Calf Crop

State	Calf Crop	Inshipments	Calf Crop as a % of Total Cattle
Texas	5.1 mln	3.74 mln	58
Iowa	1.12 mln	1.32 mln	46
Nebraska	1.77 mln	4.09 mln	30
Colorado	730,000	1.96 mln	27
Kansas	1.55 mln	4.58 mln	25

Source: USDA.

Figure 6
2003 Top Three States Receiving Cattle Not for Slaughter



Moreover, among the top five cattle states, Kansas has the smallest annual calf crop (and the second largest herd) which makes the Kansas beef sector—feedlots and packing plants—most dependent on inshipments of cattle (see Table 5 and Figure 6).

For the sake of illustration, assume that there is a total feeder cattle supply reduction of 1 million head from lost Canadian and Mexican imports in the U.S.—which would represent a two-thirds reduction from what would be expected once the U.S. border re-opens to Canada. As Kansas represents about 23.5 percent of all cattle on feed, a proportional reduction could mean the loss of 235,000 head (see Figure 7).

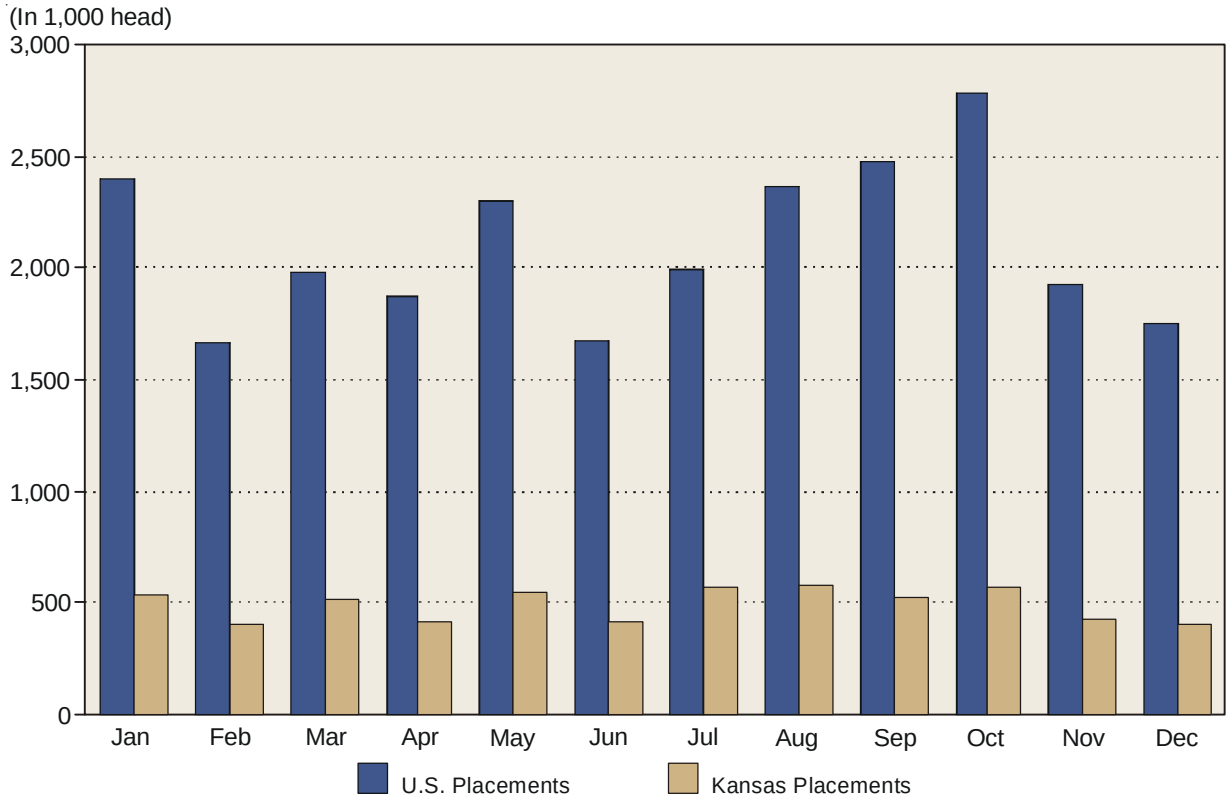
Such a loss in terms of opportunity costs, would manifest itself in various ways, including:

- loss of cattle marketings
- loss of meat sales
- loss of exports to Canada and especially Mexico (while Mexico ships a sizeable number of cattle to the U.S., the U.S. feeds and processes those cattle into beef which is shipped back to Mexico; traditionally Mexico is the second largest export customer for U.S. beef at an average of about 45 million pounds per year over the past five years)
- loss of feed consumption which impacts grains and oils seeds produced in Kansas
- loss of economic multipliers from payroll and business spending and investment from feedyards and the packing industry.

According to the Nebraska Cattlemen's Association, (Nebraska Bureau of Business Research) the total gross economic impact of a 20,000 head feedyard is estimated to be $121.5 million (of that, the income affect for local merchants and workers is estimated at $1.1 million). The research indicates that these economic impact figures are proportional to the size of a feedyard. For example, the impact of a 10,000/head feedyard for the categories mentioned above would be approximately half that of a 20,000/head feedyard, and the impact of a larger feedlot would be greater.

The potential loss of feeder cattle projected above, i.e. 235,000 head, from the implementation of COOL could be equivalent to the loss of up to 12 feedyards of 20,000 head capacity. Extrapolating the above Nebraska Bureau of Business Research's calculations the projected loss of cattle inshipments, and the Kansas opportunity cost of COOL implementation could reach $1.458 billion.

Figure 7
Monthly Placements of Cattle on Feed (1,000 head feedlot capacity)



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Notes

1. Huang, K.S., "Nutrient Elasticities in a Complete Food Demand System," American Journal of Agricultural Economics. 78 (February 1996):21-29, is a widely cited calculation of beef price elasticity which estimates that beef has a price elasticity of -0.62.

2. In its assessment of the COOL regulation, the USDA's Agricultural Marketing Service estimates the first year costs of compliance at about 2.5 times higher for beef than pork and more than 50 times greater for beef than lamb, as detailed in the *Federal Register*, October 30, 2003, (Volume 68, Number 210) Proposed Rules, pp 61943-61985. These estimates are based on the body of literature at the time of the federal rule making, including most of the references cited above.

3. Personal communication with NCBA staff and USDA staff.

4. *Cattle Buyer's Weekly* (CBW), an industry publication, estimates used various proprietary reports from industry sources to provide a range of estimates of costs in a fact sheet by Steve Kay, published October 14, 2002.

The Costs and Benefits of Growth: Lawrence, Kansas, 1990-2003

Joshua L. Rosenbloom

Abstract

Since 1990 employment in the city of Lawrence, Kansas has grown by 34 percent, nearly three times as fast as the state as a whole. Such rapid growth both creates economic benefits for residents and increases the cost of city services. This paper shows that the main beneficiaries of rapid growth were homeowners, who realized capital gains because of the increasing real estate values. Local workers experienced little or no improvement in relative wage levels or reduced chances of unemployment because job growth resulted in substantial population migration. On the cost side, city expenditures nearly doubled in real terms since 1990. This rise in spending was financed primarily through increased sales tax revenues and higher charges for city services. Thus the burden of increased spending was distributed more widely than the benefits of rising property values. The extent to which the rise in city expenditures is directly attributable to increased population cannot be determined without further investigation into the changes in the quality of city services provided.

Introduction

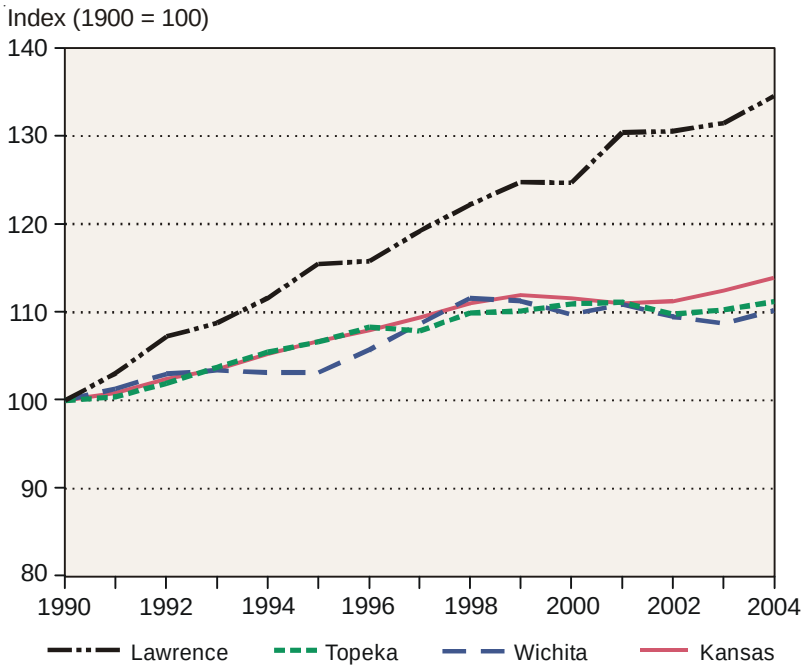
Few local political issues are as contentious as those that revolve around economic development policy. Economic development officials compete actively to attract new businesses and retain existing ones, often by offering tax abatements and other financial incentives. Many citizens, however, believe that these incentives are too large, and the costs associated with the resulting population growth fall disproportionately on current residents.

Despite, or perhaps because of, the highly contentious debate about economic development, much of the discussion takes place with little reference to the facts. This article examines the experience of one community, Lawrence, Kansas, over the period since 1990.

Over the past several decades Lawrence has experienced relatively rapid growth, expanding much more quickly than the state as a whole, and outpacing larger cities like Topeka and Wichita. Figure 1 compares employment growth in Lawrence with that in Topeka, Wichita, and the state as whole from 1990 through 2004. While employment in the state grew by about 13 percent over this period, Lawrence's employment grew more than 30 percent. In contrast, Topeka and Wichita both experienced employment growth slightly below that of the state.

What are the costs and benefits of Lawrence's rapid growth? Economic development strategies begin from the premise that attracting new businesses and new jobs is on balance a good thing for a community. But population growth also imposes costs on the community. Both businesses and residents require a range of city services, and increased services cost more money to provide. Moreover, population growth imposes a variety of less tangible impacts on current residents through increased congestion, reductions in open space, and changes in the built environment.

Figure 1
Employment Growth in Lawrence, Wichita, Topeka, and Kansas, 1990-2004



Sources: U.S. Bureau of Labor Statistics, Current Population Survey.
Note: Employment in each location is shown relative to its 1990 level

To disentangle these impacts and attempt to quantify them, it is necessary to begin by laying out a more formal conceptual framework. As the next section makes clear, the impacts of job creation will be reflected not just in labor markets, but in housing prices and the cost of city services. After laying out this chain of events, I turn to the evidence to document the magnitudes of these effects in Lawrence.

Conceptual Framework

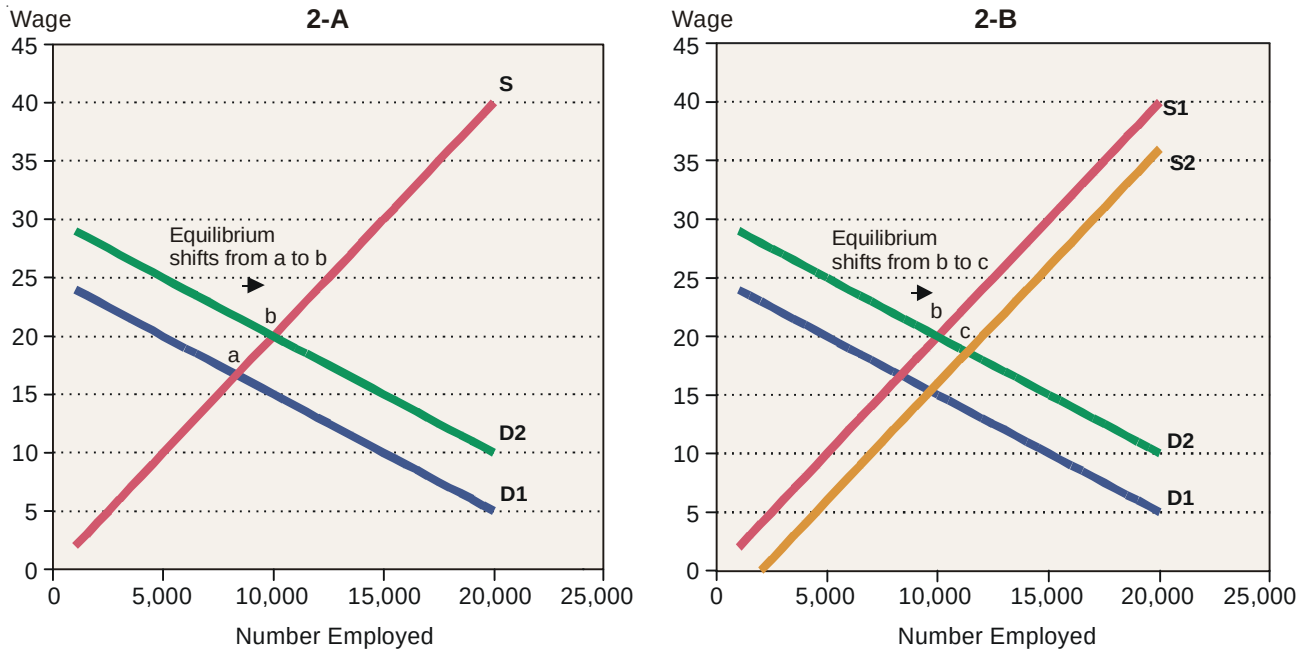
Imagine that because of the attraction of a new employer or expansion of an existing employer, 20 new jobs are created in the community. These positions can be filled by workers already employed in the community, by residents of the community who are currently unemployed or out of the labor force, or by migrants from outside the community.

In the first case, the movement of workers creates new vacancies that must be filled from the remaining two sources. Thus, ultimately an increase in jobs will result in some combination of reductions in unemployment (as unemployed or out of the labor force workers take jobs), and increases in the population as new workers move into the community. If there is a large pool of unemployed workers available or if workers from other communities are willing to migrate from other places, then rising employment need not increase wages in the community. If, however, these sources of relatively "elastic" labor supply are not available, then local wages may need to rise to induce more workers to enter the labor force either from within the community or from more distant places.

The direct effects of increased employment in turn result in additional demand for locally produced services that generates further employment growth. These multiplier effects arise because of spending on locally produced goods and services by the new business and its employees. The resulting increase in sales will induce local providers of these goods and services to expand their workforce to meet additional demand.

The labor market effects of new job creation are illustrated in Figure 2. In figure 2-A the local labor supply is labeled "S." The supply curve shows the amount of labor that local residents will supply as a function of the wage rate. It is upward sloping because at higher wages those already working will supply more effort, and some non-workers will be induced to enter the labor force. Curve D1 denotes the initial demand for labor. It slopes downward, showing that employers will demand more labor at lower wages. Curve D2 denotes labor demand after the addition of 20 new jobs. As a result of the shift from D1 to D2, employment rises and wages rise. In figure 2-B the response of non-residents to the improved employment conditions in Lawrence causes the supply curve to

Figure 2
Labor Market Effects of New Job Creation



shift to the right, from S1 to S2. As a result of this migration response, employment increases and wages decline.

Beyond its labor market effects, new job creation has several other positive impacts on the community. To the extent that new jobs are filled through migration into the community or a reduction in migration out of the community, job creation will contribute to increased housing demand. Higher housing demand will tend to increase the price of the existing stock of housing, and encourage new construction. Local government revenues will rise as a result of increased housing values and through increased local retail sales caused by population growth.

New job creation also imposes a variety of direct costs on the community. The new or expanded business may require additional city services, and new residents attracted to the community will place additional demands on sanitation, water-supply, roads, schools, and public-safety provision. All of these will necessitate increases in city spending.

Impacts on the Local Labor Market

As Figure 1 illustrated, over the past decade and a half employment in Lawrence grew much faster than it did in Kansas generally or in other larger cities such as Topeka and Wichita. Where did new labor market entrants come from? We cannot directly link migration trends with employment growth, but a variety of labor market evidence indicates that the rapid expansion of employment was met largely by migration into Lawrence. Rapid employment growth has not produce an increase in relative pay in Lawrence, or reduced the local unemployment rate.

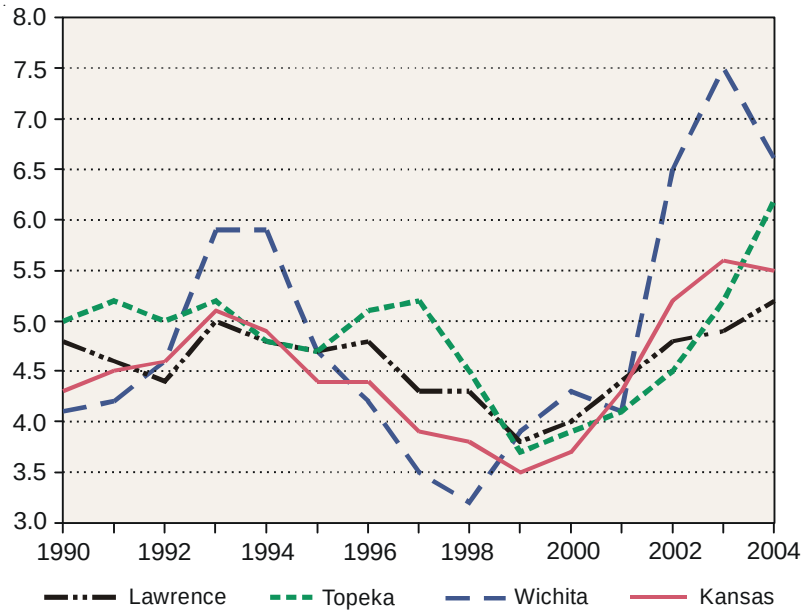
In 1990, average annual wages in Lawrence were $16,248—equivalent to 70 percent of the U.S. average, or 80 percent of the statewide average. By 2002, wages in Lawrence had increased to $23,124, but this growth had not kept pace with wage trends nationally or in the state. In 2002, average wages in Lawrence had slipped to just 66 percent of the national average and had fallen to 77 percent of the statewide average (see Table 1).

Table 1
Average Wages in Lawrence, Topeka, Wichita, Kansas, and the U.S., 1990 and 2002

	Average Wage		Average Annual Rate of Growth	Relative Wage (U.S. = 100)	
	1990	2002		1990	2002
Lawrence	$16,248	$23,124	3.21	69.91	65.91
Topeka	$20,459	$29,526	3.33	88.04	84.16
Wichita	$22,670	$31,788	3.07	97.55	90.61
Kansas	$20,173	$30,169	3.66	86.80	86.00
U.S.	$23,239	$35,082	3.74	100.00	100.00

Source: 1990-2001 from Harvard Business School, Institute for Strategy and Competitiveness, Cluster Mapping Project; 2001-2002 from U.S. Census Bureau, County Business Patterns.
Note: Average wage is the ratio of total annual payroll and total employment of all private businesses.

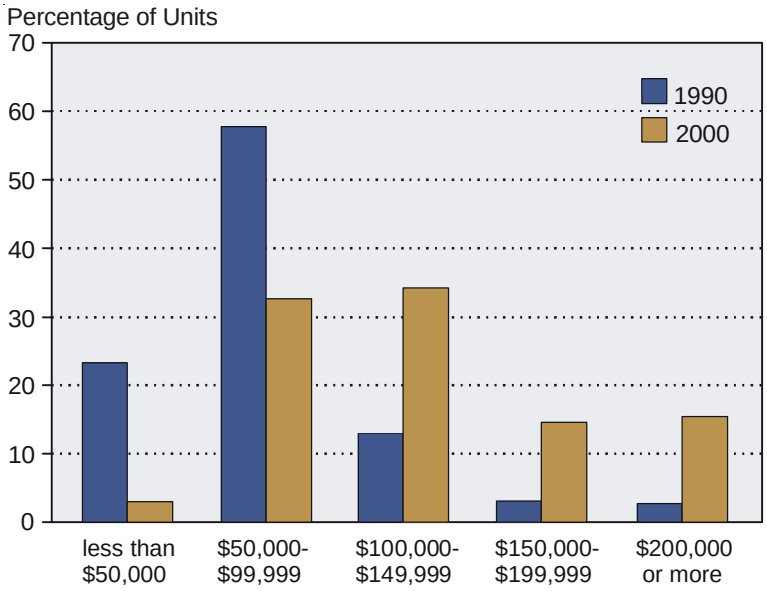
Figure 3
Unemployment Rate in Lawrence, Topeka, Wichita, and Kansas, 1990-2004



Sources: US Bureau of Labor Statistics, Current Population Survey.
Note: Average annual unemployment rates.

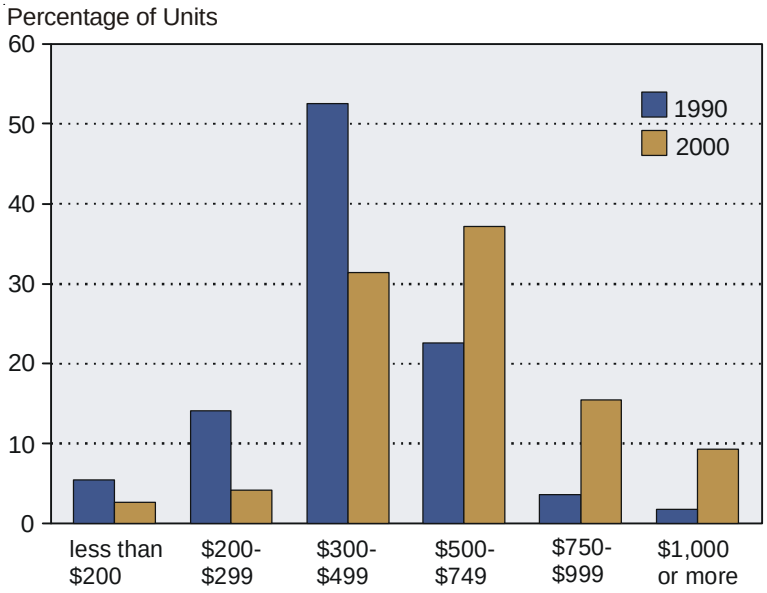
Similarly, Lawrence's unemployment rate has closely tracked movements in the state unemployment rate since 1990 (see Figure 3). Thus, the rapid growth of employment did not substantially benefit unemployed or out-of-the-labor-force workers in Lawrence. Rather, growth in employment has been met almost entirely

Figure 4
Distribution of Values of Owner-Occupied Housing, Lawrence, Kansas, 1990 and 2000



Sources: U.S. Census Bureau, 2000 Population Census, Table DP-1; and 1990 Population Census Summary Tape File3.
Notes: In 1990 there were 9,489 owner occupied housing units; in 2000 there were 12,347.

Figure 5
Distribution of Gross Rent for Renter-Occupied Units, Lawrence, Kansas, 1990 and 2000



Sources: U.S. Census Bureau, 2000 Population Census, Table DP-1; and 1990 Population Census Summary Tape File 3.
Notes: In 1990 there were 12,963 renter occupied housing units; in 2000 there were 16,999.

through the migration of labor into the community.[1]

Impacts on Local Real Estate Markets

If rising labor demand did not produce rising pay and falling unemployment for local workers, it did contribute to a 31 percent increase in population, which fueled increased housing demand. The result was a marked rise in the price of residential real estate. Unlike labor, which is relatively mobile, land is fixed. As population increases the demand for land, the result is rising prices for this fixed resource.

Data from the 1990 and 2000 Censuses document the sharp rise in average home values in Lawrence over this period. Figure 4 plots the distribution of values of owner-occupied residences in both years. In 1990 only about one in five houses in Lawrence was valued at more than $100,000. By 2000, more than two-thirds of houses were worth more than $100,000. As a result of this shift, the median value of owner occupied housing rose from $68,500 to $118,400 over the 1990s.

How one experiences the effect of rising housing prices depends on whether one is a homeowner or not. For new entrants or those who do not own their residence, rising housing prices are a negative, raising the cost of living. For homeowners, however, while the implicit cost of housing rises, the major effect is that the value of their assets rises resulting in capital gains as the value of their real estate assets rise in value.

The divergence between the costs of housing per se and the capital gains associated with property ownership is evident in the slower growth of rental rates over the 1990s. Again using data from the 1990 and 2000 censuses, it is apparent that the rental rates rose more slowly than did house prices (Figure 5).[2] Indeed the median rent increased from $415 per month to $555 per month (an increase of only 33 percent as compared to the 77 percent increase in median house prices). In general rents will increase less than the prices of owner-occupied real estate

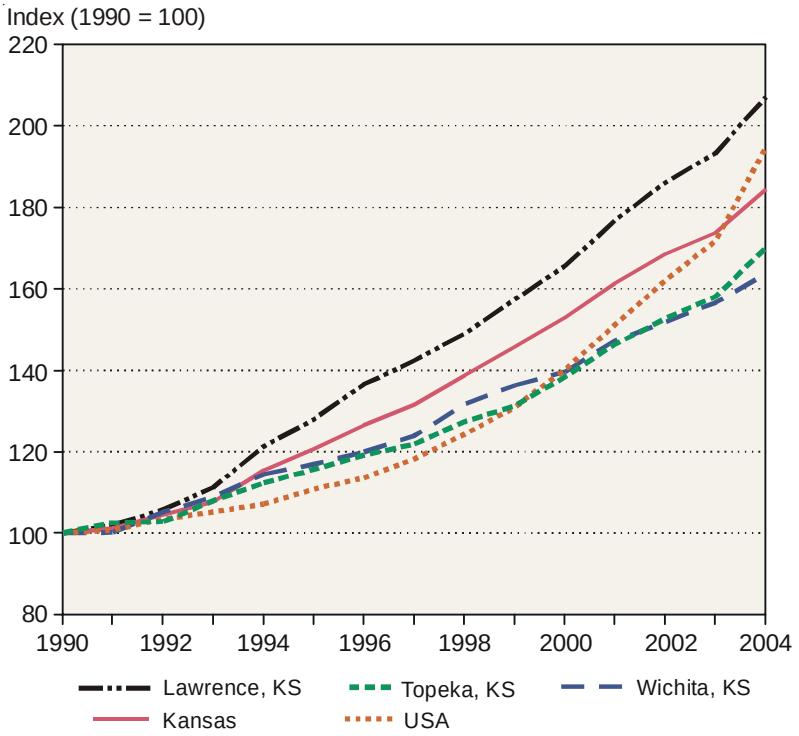
because renters do not expect to capture any of the expected future capital gains associated with a booming real estate market.

The past 15 years have seen a boom in real estate prices not just in Lawrence but in other communities as well. So separating that part of rising prices that is attributable to Lawrence's above average growth requires establishing some baseline of comparison. One possibility is to compare house prices in Lawrence with those in other, more slowly growing communities.

Figure 6 compares housing prices in Lawrence with those in Kansas and with Topeka and Wichita, as well as for the nation as a whole. Between 1990 and 2004 house prices in Lawrence increased by 107 percent. But even in slowly growing Wichita prices increased 63 percent over the same period, and prices rose more quickly in Topeka, and statewide. These comparisons suggest that had Lawrence grown more slowly, housing prices would have increased between 13 and 26 percentage points less than they actually did.

For the owner of a house valued at $68,500 in 1990—which was the median value of owner-occupied units in that year—this difference in growth rates translates into a difference of between $16,000 and $30,000 dollars in capital gains. Obviously the benefits of these capital gains were not distributed equally, since only property owners participated in this increase.

Figure 6
Housing Price Indexes in Lawrence, Topeka, Wichita, Kansas, and U.S., 1990-2004



Sources: Office of Federal Housing Enterprise Oversight, House Price Index.
Notes: Annual changes in house prices are computed each quarter based on repeat sales of sample property. I have used changes from the 3rd quarter of each year to calculate the change in overall housing prices.

Impacts on the Cost of Local Government

As local population increased, the costs of providing city services also increased substantially. Adjusting for inflation, city expenditures approximately doubled between 1990 and 2003, increasing substantially faster than city population. This growth took place in both general fund expenditures, city services supported primarily by tax revenue, and in enterprise fund expenditures, city services such as water and sewers that are supposed to be funded by fees charged to their users.[3]

Adjusted for inflation, general fund expenditures more than doubled, rising from $29.5 million in 1990 to $61.3 million in 2003. Since population increased by 31 percent over these years, this increase resulted in a substantial rise in per capita costs of government. In 1990 city expenditures worked out to $449 per person (in 2003 prices); by 2003 expenditures had risen to $713 per head.

More insight about this rise in general fund expenditures can be obtained by looking at separate categories of expenditures, as detailed in Table 2 (pg. 28). There was relatively little increase in per capita costs for public works, debt service, or capital outlays, suggesting that growth did not result in significant increases in the cost of these activities. On the other hand, increases in spending on public safety ($115 per capita), and general government ($81 per capita) account for the bulk of the rise in costs of general fund expenditures.

Enterprise fund expenditures are a substantial share of the total cost of government. In 2003 expenditures for services covered by enterprise funds totaled $35.7 million, or about 58 percent as much as general fund expenditures. Water and sewer, and sanitation are by far the largest component of these expenditures,

Table 2
Real General Fund Expenditures and Real General Fund Expenditures per Capita, Total and by Function, City of Lawrence, 1990-2003

Panel A: Real Expenditures

Year	GDP Deflator	Total Expenditure	Debt Service	General Government	Public Safety	Public Works	Capital Outlay	All Other
1990	77.0	$29,455,853	$5,870,909	$4,042,472	$8,286,046	$4,349,032	$565,007	$6,342,386
1991	79.7	31,621,871	4,888,563	4,747,729	10,349,298	4,470,358	1,044,304	7,165,922
1992	81.5	34,077,906	5,046,464	5,579,663	10,848,766	4,685,633	1,359,155	7,917,380
1993	83.4	31,259,053	4,273,441	5,131,128	10,467,695	5,027,304	1,276,874	6,359,484
1994	85.2	33,988,499	4,405,522	4,281,491	11,685,327	4,693,431	2,839,865	8,922,728
1995	86.9	41,797,583	4,741,643	4,701,816	12,509,643	4,686,969	5,708,328	15,157,511
1996	88.5	44,365,453	5,589,298	4,879,114	13,238,545	4,836,799	4,242,190	15,821,697
1997	90.0	49,771,749	7,445,335	6,243,384	15,355,925	5,263,743	4,777,453	15,463,363
1998	91.0	53,241,602	8,247,889	6,867,633	16,105,607	5,062,037	4,753,157	16,958,436
1999	92.3	49,261,663	7,400,439	7,516,705	16,172,347	5,164,168	4,462,388	13,008,003
2000	94.3	52,552,815	7,732,772	8,537,267	16,962,385	5,603,867	5,133,407	13,716,524
2001	96.6	59,260,892	8,244,696	13,843,520	17,971,069	5,916,690	4,050,999	13,284,917
2002	98.2	59,276,827	8,507,077	11,486,998	19,768,839	6,526,900	3,373,608	12,987,013
2003	100.0	61,307,127	9,308,568	12,286,275	20,760,197	6,554,869	1,690,388	12,397,218

Panel B: Real Per Capita Expenditures

Year	Population	Total Expenditure	Debt Service	General Government	Public Safety	Public Works	Capital Outlay	All Other
1990	65,608	$449	$89	$62	$126	$66	$9	$97
1991	66,794	473	73	71	155	67	16	107
1992	68,017	501	74	82	160	69	20	116
1993	69,203	452	62	74	151	73	18	92
1994	71,316	477	62	60	164	66	40	125
1995	74,784	559	63	63	167	63	76	203
1996	77,325	574	72	63	171	63	55	205
1997	79,190	629	94	79	194	66	60	195
1998	80,843	659	102	85	199	63	59	210
1999	81,560	604	91	92	198	63	55	159
2000	80,098	656	97	107	212	70	64	171
2001	83,495	710	99	166	215	71	49	159
2002	85,282	695	100	135	232	77	40	152
2003	86,040	713	108	143	241	76	20	144
Change 1990-2003		$264	$19	$81	$115	$10	$11	$47

Sources: City of Lawrence, Comprehensive Annual Financial Report for 2000 and 2003.

accounting for 88 percent of enterprise expenditures in 2003, and are the only categories of expenditures for which historical data are readily available. Between 1990 and 2003 expenditures for waters and sewers and sanitation adjusted for inflation increased from $17 million to $31.7 million an increase of 81 percent. In per capita terms this is an increase of $98, from $259 per person in 1990 to $357 per person in 2003. Throughout this period spending on these two services grew at nearly the same rate, so sanitation accounted for approximately the same share of the total in 1990 (25 percent) as it did in 2003 (26 percent).

Table 3
Real Revenues and Real Revenues per Capita Total and by Source, City of Lawrence, 1990-2003

Panel A: Real Revenues

Year	Total	Taxes			Inter-governmental Transfers	Licenses and Permits	Charges for Services	All Other
		Total	Real property	Sales				
1990	$30,255,940	$17,541,415	$8,788,283	$3,996,808	$5,066,178	$354,503	$957,894	$6,335,950
1991	33,119,869	20,039,780	8,122,343	7,763,673	6,914,907	355,617	990,792	4,818,772
1992	33,370,507	20,334,674	8,820,214	7,757,330	7,546,686	451,057	1,188,394	3,849,696
1993	34,570,355	22,088,133	9,165,148	8,732,022	7,241,569	499,323	1,123,985	3,617,345
1994	36,286,584	23,661,878	9,515,958	9,298,871	7,349,464	723,909	1,202,912	3,348,421
1995	48,537,538	24,608,093	9,959,341	9,893,589	16,865,204	570,986	1,871,724	4,621,531
1996	49,083,618	24,055,018	9,182,186	9,752,992	18,131,142	758,187	1,923,911	4,215,359
1997	53,254,929	24,739,830	9,701,193	10,138,478	19,074,080	594,655	4,243,566	4,602,798
1998	55,791,938	25,948,925	10,412,206	10,747,068	19,106,193	675,254	4,379,648	5,681,918
1999	51,585,107	26,873,905	11,078,550	11,037,308	15,220,730	715,731	3,317,203	5,457,538
2000	55,326,850	28,814,666	12,554,885	11,300,405	16,402,846	628,976	3,504,886	5,975,475
2001	60,285,723	29,886,067	13,222,431	11,384,264	20,136,991	699,425	4,277,804	5,285,436
2002	57,522,063	31,103,841	14,542,943	11,158,202	16,410,691	799,927	4,590,545	4,617,060
2003	61,501,631	32,656,686	15,814,366	11,392,376	17,248,387	1,024,587	4,534,620	6,037,351

Panel B: Real Per Capita Revenues

Year	Total	Taxes			Inter-governmental Transfers	Licenses and Permits	Charges for Services	All Other
		Total	Real property	Sales				
1990	$46	$267	$134	$61	$77	$5	$15	$97
1991	496	300	122	116	104	5	15	72
1992	491	299	130	114	111	7	17	57
1993	500	319	132	126	105	7	16	52
1994	509	332	133	130	103	10	17	47
1995	649	329	133	132	226	8	25	62
1996	635	311	119	126	234	10	25	55
1997	672	312	123	128	241	8	54	58
1998	690	321	129	133	236	8	54	70
1999	632	329	136	135	187	9	41	67
2000	691	360	157	141	205	8	44	75
2001	722	358	158	136	241	8	51	63
2002	674	365	171	131	192	9	54	54
2003	715	380	184	132	200	12	53	70

Sources: City of Lawrence, Comprehensive Annual Financial Report for 2000 and 2003.

Without historical data on other enterprise funds it is not possible to precisely calculate the increase in total city spending. But even if one assumes that other enterprise funds did not grow at all, the total of all city spending—general fund and enterprise funds combined—would have increased at least 89 percent since 1990. If the other enterprise fund expenditures had grown at the same rate as water and sewer and sanitation expenditures, then total spending would have increased by 97 percent in real terms.[4]

Without further evidence we cannot link these increases in government expenditures directly to rising

population. In part rising expenditures may reflect an increase in the quantity or quality of services provided, or they may reflect a general increase in the relative cost of government provided services that are not directly related to increased population. To identify the part of rising expenditures attributable to growth per se, we would need to establish what the increase in the government spending would have been had population growth been slower. Establishing this "counterfactual" cost estimate is a complicated matter that is beyond the scope of the present analysis. Data on costs of government in other communities, however, provide some baseline for comparison.

Despite increased city spending in Lawrence, the cost of local government services remained below that in Topeka ($748 per capita) and Wichita ($1,269 per capita) in 2003. So it is possible that some of the growth in costs of government in Lawrence reflects a process of catching up in terms of provision of city services. It is certainly the case that in the early 1990s Lawrence's spending on public safety was, in per capita terms, well below the levels in Topeka and Wichita. In 1994 (the first year data was available these other cities) Lawrence spent $164 per capita on public safety while Topeka spent $284 and Wichita $212. Without measuring the level of service provided, however, it is difficult to tell whether the subsequent convergence in spending reflects an increase in the level of safety in Lawrence, or is a consequence of rising population.

While the expenditure data indicate that the costs of local government have risen substantially in Lawrence, we must turn to data on revenues to understand how the burden of these rising costs has been distributed. Increased enterprise fund spending was financed largely through increased fees charged to users. The sources of increased general fund expenditures are detailed in Table 3 (pg.29) in both absolute and per capita terms. The column labeled "intergovernmental transfers" consists of a variety of items, but the primary source of these funds is a countywide sales tax that was enacted in 1995.

The two major sources of funds and the two primary sources of growth in revenues over this period are taxes and intergovernmental transfers. A number of different sources contribute to the city's tax revenues, but the two largest sources are property taxes and sales taxes. In 1990, property taxes contributed 29 percent of government revenues. By 2003, their share in the total had fallen to 25.7 percent. In per capita terms, property taxes increased $50, from $134 to $184 (in 2003 prices) between 1990 and 2003, while sales tax revenues increased $72 dollars per capita and intergovernmental transfers increased by $123 per capita. Thus, it seems reasonable to conclude that much of the burden of the rising cost of government was borne by consumers, through the sales tax, rather than by homeowners, through rising property taxes.[5]

Conclusion

Over the past decade and a half Lawrence has experienced much more rapid growth than the state of Kansas or other large communities in the state. The primary beneficiaries of this growth have been local property owners, who have seen house prices rise considerably faster than the state as a whole. On the other hand, the community's relatively rapid growth has not produced major gains for workers. Local wages have actually grown somewhat more slowly than wages in other communities and the state, while the unemployment rate has closely tracked the statewide rate.

Growth has been associated with a pronounced increase in the costs of local government services. Even after adjusting for inflation, local government spending has approximately doubled over the period, far outpacing the growth in population. While property owners have been the main beneficiaries of rapid growth, the share of rising government costs borne by property holders has been relatively small. Rather, the bulk of rising costs have been covered from sales tax receipts, and charges for city services such as water and sanitation. Thus, the costs of government have been spread more widely among city residents generally (whether or not they own property) and non-residents who shop in the city.

At this point it is premature to draw any conclusions about the relative size of the costs and benefits of growth. In particular, without better information about changes in the level of service provided by city government it is risky to draw conclusions about the extent to which rising expenditures can be treated as the consequence of growth per se, rather than increased discretionary expenditures designed to increase the quality or quantity of city services. What is clear, however, is that the costs of general government and public safety have risen substantially with increasing city size, and further examination of the reasons for this growth would be of considerable interest.

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Notes

1. This observation should not be interpreted to mean that there were no benefits to local residents arising from the rapid expansion of employment. In a community with slowly growing employment some current workers might well be obliged to migrate elsewhere in search of employment opportunities. To the extent that rapid growth makes such migration unnecessary local residents' welfare may be said to have improved.

2. In Lawrence, rental properties were overbuilt in this period. Excess capacity contributed to the small rise in rental rates and reduced capital gains for owners of rental properties.

3. Other enterprise fund expenditures besides water and sewers are sanitation, parking, storm water, and the municipal golf course.

4. Some growth in other expenditures seems likely since the golf course was not established until the mid-1990s.

5. Upendran and Darling (2004) report that the retail pull factor in Lawrence in 2003 was 1.08, indicating that retail sales tax collections in the city were 8 percent greater than its share of the state population. Thus, it is possible that reliance on sales tax revenue in effect spread the rising cost of government to non-residents. But because retail pull-factors do not adjust for difference in community spending levels no firm conclusions can be drawn about the extent to which costs were actually shifted.

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