

# RURAL-URBAN ISSUES AND RESEARCH NEEDS

by

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## Introduction

People at the interface between rural and urban places are increasingly at odds over how resources will be used. There are disputes over the mix of services (and dis-services) that flow from the land and water and over the rules that govern how and by whom the mix is determined. The challenge is to design and maintain an institutional structure that achieves a satisfactory balance among the many interests involved.

There are various root causes of rural-urban stress – basically demographic trends that bring more people from cities and suburbs out to the countryside to live and economic changes to farming that profoundly alter the interface between farm and non-farm residents. Population mixing at the fringe increases the incidence of contact between farm and non-farm residents with differing resource preferences, and changes to farm production systems heighten the intensity of the conflict when it occurs.

This paper considers the most important rural-urban issues, what we know about those issues and what we need to know through better research. The three issue clusters examined here are increasing demand for protection of farmland and open space at the rural-urban fringe, the environmental costs of large-scale animal agriculture, and the inadequacy of rural institutions to cope with change. A brief overview of the salient demographics sets the stage for discussion of the issues.

## Population and Land Use Trends

The National Resources Inventory conducted by the U.S. Department of Agriculture remains the best and most consistent indicator of land cover trends on the private lands in rural America. Until 2001, land cover data were collected every five years from 800,000 data points throughout the lower 48 states and Hawaii. Beginning with the 2001 NRI, remote land cover data are gathered annually on about 200,000 sites, permitting only national level analysis until several years of data are in hand for state and regional trends. These data say nothing about who is on the land, only how the land is being used.

A particularly valuable product of the NRI is the data on conversions among the primary cover categories – cropland, forest, pasture, range and developed land. These conversions are indicators of the economic forces at play in rural areas, as land in crops goes into

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pasture, range and development for example. Over the past 20 years, an area about the size of Illinois (34 million acres) was converted to large (>10 acres) and small (< 10 acres) urban areas and transportation uses. There was also some developed land in 1982 that converted to an agricultural use by 2001. Net developed area has increased about 2 million acres a year between 1997 and 2001, a substantial increase over the annual rate between 1982 and 1992. As evident from Figure 1, forested land is consistently the primary source for development, and the proportion from cropland decreased in the '97-'01 period from the proportion in '92-'97 (NRCS, 2001).

A reasonable question at this point is “so what?” Increases in developed land have been occurring for many decades in the U.S. as cities expanded and numbers of farms and farmers declined with improvements in production technology. The policy issue for the rural-urban fringe is the *pattern* of that development. The amount of developed land has increased more rapidly than population, meaning that some people are seeking more space around their residences. Only 17 of the 281 metropolitan areas in the U.S. had an increase in population density between 1982 and 1997. Those having the most local government units tended to have the lowest density, because they compete for new development and growth control is fragmented (Fulton, et al. 2001). Heimlich and Anderson report in an ERS study (2001) that the number of households is increasing more rapidly than population as well. Both the grandparents and the children are setting up their own households for greater independence, with average household size declining from 3.7 in 1950 to 2.6 in 2001. At the same time, average lot size in newly developing areas outside of metropolitan communities is nearly 3 acres. More rural residences are scattered on 5 to 10 acre parcels or in large lot subdivisions. This development pattern is an issue only because people differ about the services of land and some feel that their quality of life is diminished by a more land-intensive development pattern at the rural-urban fringe. They may seek policy changes that discourage large lot development to protect the services of undeveloped open land. More about that in the next section.

This trend toward rural living is evident in Ohio where the 2000 census shows that there are more people living in unincorporated townships than in large (>50,000) or small cities of the state (Figure 2). And there are 15 standard metropolitan areas in Ohio, so plenty of urban area. Not all of the townships are rural, of course, but most are. This disaggregation of Ohio is startling and is likely evident in other states as well. As more people “vote with their feet” in choosing the open space life style at the fringe, supply of the amenities of open land declines, driving up the price and increasing the demand for rule changes to protect what is left.

National policies of various types have accelerated this move outward. U.S. transportation policy seems to emphasize building or widening roads to accommodate people who have moved to the country and want to work in a city, rather than a more balanced mix of roads and mass transit that could shape the development pattern. Americans rely more on private cars than is true of populations in most other developed nations (Lincoln Institute, 1995), sustained by relatively cheap fuel with low fuel taxes. Similarly, sewer and water extensions tend to accommodate rather than guide new development. The “American dream” of a new detached single family home with a large

lawn and enough parking space for cars for everyone has been largely created and sustained by federally supported lending institutions – Federal Housing Administration, Veterans Administration, Federal National Mortgage Association and the income tax deduction for interest and taxes on private homes (see Rusk, 1999; and Richmond, 2000). All of these programs have valid purposes, but also unintended side effects on development patterns.

### **Farmland and Open Land Retention**

Farmland produces a variety of services that people value. While total supply of land is fixed by the surface of the globe in some absolute sense, it has value because of the mix of services possible from a particular parcel. It is generally true that “we aren’t making more land,” but economic supply available at any time is a function of the services it can provide. Land price reflects the discounted present value of those land services over a reasonable planning horizon. Some services are private, available for a price and responsive to price change. Others are high exclusion cost services, essentially public goods that can be acquired only through policy (see Libby and Irwin, 2003). Land at the rural-urban interface provides three distinct categories of service – the productive “factory” for crops, location for a surface activity relative to other activities, and as a consumption good with intrinsic value to the owner or others. Much of the stress at the rural-urban fringe involves conflicts among these use categories.

*Estimating the Non-Market Value of Farmland.* Since farmland provides some services that are widely available with high exclusion cost, there is less land in farming than is socially optimal. Land price does not reflect the value of these services since they cannot be withheld from non-payers. People wanting to have those farmland amenities will seek policy change to alter land markets accordingly. Several studies have documented attitudes and preferences toward farmland retention. There is a range of environmental, habitat and aesthetic services that people say they prefer from farmland and other rural open space. They range from protecting family farming as a way of life in America, to access to locally grown produce, to attractive rural countryside with active farms. People are able to express their willingness to pay to protect lands that provide those services (Hellerstein, et al. 2002). These estimates lack the discipline of private economic action to implement preferences for open land, but do indicate what people feel those services are worth. And people consistently vote to tax themselves for farmland and open space easement purchase programs to provide these high exclusion cost services for all. A recent survey of counties with farmland easement programs found that more than 500,000 acres have been protected and substantial funds remain for additional easement purchases (Bowers, 2004).

Analysis of several stated preference studies using contingent valuation or contingent choice methods reveals that marginal willingness to pay for farmland protection increases as farmland becomes more scarce in an area and decreases as more farmland is protected or substitutes such as public parks are available. Further, people are willing to pay more for highly productive land than marginal land suggesting that food production is valued. There is also greater support for protected land that will provide direct access for the

public in some way and has significant ecological features (Swallow, 2002). But people generally do not value preservation of concentrated livestock operations (Bergstrom and Ready, 2003). Many of these farms have significant disamenities that offset any amenity services involved. Roe, Irwin and Morrow-Jones conclude from their conjoint analysis of housing location preferences that the presence of farmland, whether preserved through farmland easements or not, will attract people to relocate from suburbia to the countryside even at a substantial increase in commute time (2004).

Economists have also estimated “revealed preference” for the amenity services of active farmland (Bergstrom and Ready, 2003). These case studies reveal what people do pay for proximity to farmland of various types. Using hedonic price methods, analysts isolate the increment in land price that can be attributed to location relative to farmland and open space (Irwin, 2002)

*Policy Directions.* The current policy experience with farmland retention is well documented (American Farmland Trust, 1997; Daniels and Bowers, 1997; Libby, 2005). Every state and virtually every county has policies or laws to encourage retention of farmland and open space for the private and public goods those lands generate. Tools include land use zoning directed at farmland, tax reductions to make farming more sustainable in the face of urban pressure, and purchase of development rights that keeps those lands from being developed in perpetuity.

One of the arguments against use of the police power (zoning) to protect farmland is that it is “unfair” to a landowner to take away his/her development potential on behalf of the general public. Legal research suggests that zoning to retain farmland is generally an acceptable exercise of the police power so long as economic options remain for the owner (Cordes, 2002). The actual effect of zoning on land value depends on how that regulation influences market expectations for the land. If amendments or variances are routinely granted or regulations are not enforced, zoning will have little effect on market price. In some cases, zoning may actually increase willingness to pay by someone seeking a protected rural estate (Bowers, 2002). In other cases, urban growth boundaries and open space regulations have reduced willingness to pay in the land market (Libby and Irwin, 2003). Even permanent easements may not be considered *really* permanent and therefore will not reduce market value by the full development value increment (Nickerson and Lynch, 2001).

Future land use policy at the rural-urban fringe will likely see strengthening of local regulatory authority for the open land amenities people value, but also increasing emphasis on market-like techniques. The right to develop open land has definite value to the owner. There is sentiment for compensating owners for the value of the amenity services of open land that people value. The development value may be purchased through state or local PDR programs whereby taxpayers pay for open land protection. Most PDR programs grant priority for limited funds to those owners who donate a portion of the development value, thereby sharing in the cost of protection. Density transfer techniques are increasingly attractive ways to grant increased density in some parts of a community in return for open land protection elsewhere. Formal transfer of

development rights (TDR) programs are being established in states that have adequate authorizing legislation, though there are difficulties of coordination across community boundaries (Libby and Hall, 2003). In other cases, local officials may craft agreements with specific developers to protect open areas in return for higher density in another part of the community. Communities are using “conservation development” methods that provide needed housing and commercial development while retaining the natural character of a place. Effective local zoning can help identify where farming has the brightest future, provide the “sending areas” for TDR, and provide context for informal density transfer.

Landpooling offers a private sector approach to protecting the various public good services of farmland while enabling the owners to benefit from the mix of farmland private goods that can be marketed. Land owners in an area form a limited liability company or cooperative to develop and market the various services that their land generates – farm crops, wildlife viewing or hunting, camping and other recreation, wetland services retained through public payments, secondary treatment of municipal waste, farmers markets and agri-tainment, as well as residential development on a portion of the land pool. Owners share in the returns based on their investment in the company (Renkert, 2004)

*Research Needs.* Suggestions here are preliminary to the contributions of the “housing and environment” consortium members.

1. Additional research is needed on the full costs and benefits of alternative residential development patterns. There is evidence that linear or sprawling development costs more to service than more compact developments, though additional empirical examination of those costs is needed for specific cases. There is increasing interest in the effects of alternative development patterns on human health (Frumkin, 2001; McCann and Ewing, 2003) and on the viability of wildlife habitat. A fragmented rural countryside can destroy certain wildlife communities that people value (Rodewald, (2003)
2. Additional work is needed on the impacts of selected transportation policies, lending policies by government-supported mortgage companies, water and sewer financing, etc. for development patterns that are more costly to sustain. These and other policies form the context within which land markets function. There is no such thing as a totally “free” land market, without public incentives and sanctions that shape private choices. The real question is what mix of rules leads to market results that is preferred by the majority of citizens
3. There is a rich experience with various policy instruments for retaining farmland and open space, though little real analysis of their performance. That is, what do PDR, TDR, zoning, and tax incentive programs cost to administer, what is the distribution of that cost among residents and taxpayers, and what is the observable impact of those instruments on development patterns?

4. We need to know more about the implementation of the 50 or so independently funded local PDR programs and the 22+ state programs. How well are these easements held by governments, land trusts or other eligible organizations being monitored, and how are payments to the farmers being spent? What is the performance implication of the various weighting schemes used to set purchase priorities?
5. More work is needed on defining the specific attributes of farmland that people value. To what extent is long term food security, for example, a motivator for supporters of farmland protection millages and other local actions?
6. Motivations behind a person's decision to move to the rural-urban fringe need to be better understood. Are people drawn to the open spaces, seeking schools that are better than those downtown or "escaping" some aspect of urban life?
7. Geographic information systems (GIS) provide useful tools for setting land use priorities in a community or region. Further work on integrating economic, social and ecological data about land services and use options can be valuable for local planning.
8. Farmers adapt to the changing preferences of the rural population by changing or adding enterprises that appeal to the local population. Better documentation of these adaptation strategies, market and budget characteristics of "agri-tainment" and other farm-related enterprises would be useful.
9. Local governments in many areas are reluctant to participate in regional or multi-jurisdictional approaches to growth management and farmland retention. More work is needed on the costs and benefits of regions as decision, or at least planning, units. Is home rule really compromised by regional collaboration?

### **Consolidation of Agricultural Production**

Farming is a different activity than it was a few decades ago, and those changes affect the nature and frequency of issues at the rural-urban fringe. People move to the countryside at least partly for the relatively placid open spaces provided by large numbers of family-operated farms. Large scale industrial farming may change that picture. Consolidation and the economics of size and scale are particularly notable in animal agriculture.

Number of farms has declined from the peak of 7 million in 1935 to less than 2 million today with 98% still owned by families. Farms larger than 500 and less than 50 acres in size have both increased since 1974 while mid-sized farms have decreased in number. Average farm size has increased during that period, but 92% of all farms are categorized by the Economic Research Service as small family farms with sales less than \$250,000. Of those small farms, some are classified as retirement and residential-lifestyle farms that essentially lose money in farming and depend heavily on off-farm income. But these small farms are what non-farmers think of when they move to the country. The larger

farms control most of the cropland, while small farms tend toward pasture, woodlots and beef production (Hoppe and Wiebe, 2002).

For animal agriculture, number of hog producers declined 92% between 1959 and 1997 while total sales increased by 76%. Operations with more than 2000 head accounted for 75% of the total national inventory in 2001, and only about 38% of the total in 1994, a doubling in seven years (McBride and Key, 2003). There were similar trends for dairy, poultry and cattle (Hoppe and Wiebe, 2002, p.23-29). These large industrial operations are more vertically integrated with heavy reliance on contracting both for inputs and marketing. The environmental impacts of these very large livestock and poultry operations are a major and growing issue at the rural-urban fringe. Part of the problem is separation of animal production from the cropland where waste may be applied, particularly in southeastern U.S.

*Animal Agriculture and the Environment.* Environmental attorney J.B. Ruhl has pointed out that agriculture has been systematically exempted by Congress from most of the important environmental laws of the nation (Ruhl, 2000). He has identified agricultural “safe harbors” in the Clean Water Act, Clean Air Act, Federal Insecticide, Fungicide and Rodenticide Act, Resource Conservation and Recovery Act. Right to Farm laws in all states protect farmers to some extent from nuisance suits brought by neighbors moving into a farming area.

Animal agriculture does have some environmental limits, however. Large scale confined animal feeding operations are considered point sources of pollution under the Clean Water Act, subject to permitting and control under U.S. Environmental Protection Agency (EPA) guidelines. Nutrient management plans are required under recent revisions to those permitting procedures for animal agriculture.

The first skirmishes between farm and non-farm residents at the rural-urban fringe frequently revolve around the odor of large scale animal agriculture. The greater the concentration of animals, the bigger is the problem. Odor is just one form of air pollution but is often the first indicator of a larger issue. Large scale poultry, hog and dairy operations have generated political reaction in many states, based mostly on the odors and flies but then leading to other concerns. Recent influx of large dairies from the Netherlands to Ohio, Indiana and other Midwestern states have led to sharp disputes that start with existing or anticipated pollution problems and get into nasty disputes about “foreigners” changing the local social fabric. The real reasons behind such conflicts are unclear – it is partly fear of how such large scale operations will affect local markets, but there seems to be less outcry when a local producer expands than when an outsider brings a large new operation to the area. Taxpayers often object when their local government offers tax breaks through “rural enterprise zones” or tax increment financing to attract the large dairies (Ziegler, 2000).

EPA generally does not consider livestock agriculture a “major source” of air pollution and therefore exempts these operations under the Clean Air Act. States do have authority to establish their own “State Implementation Plans” for air quality, but most exempt

agriculture. North Carolina, North Dakota, Missouri, Nebraska and Colorado have developed enforceable air quality standards that include agriculture (Osterberg and Melvin, 2002). In California environmental groups have sued EPA to enforce air quality standards against large livestock farms because of serious air pollution problems in the San Joaquin Valley (Yengoyan, 2003). USEPA is currently in the process of developing federal emission standards for animal agriculture, involving producers' voluntary collection of emission data in return for immunity from prosecution for pollution violations during the data collection phase (Janofsky, 2004). A National Academy of Sciences (NAS) panel has recommended recently that the science for measuring air pollution emissions from animal agriculture operations be strengthened to support any regulations or management requirements developed. They admonish both USDA and EPA to give higher priority to the research on air pollution from animal agriculture. The panel further recommends that all emissions from animal agriculture be integrated in a more comprehensive environmental quality improvement strategy that includes air, water, and land impacts of modern production systems (NAS, 2004). Objective standards for odor as an air pollutant are more difficult, but procedures are in place by which designated "sniffing specialists" categorize air samples from animal operations. Odors do affect human health, both physical and psychological (Thorne, 2002).

Water pollution from large scale animal production is a problem as well. Success in containing animal waste in lagoons depends in large part on the soil characteristics around the lagoon. Soil fractures and permeability affect the risk of groundwater contamination and surface sources may be polluted by run-off from the lagoon or from land application. Nitrogen and Phosphorus from animal waste are the primary sources nutrient enrichment in surface water (Williams, 2002).

*Research Needs.* People are displacing farms and farmland at the rural-urban fringe, while farm production levels continue to climb in response to new production and management technologies. We need to better understand the economics of consolidation within specific sectors and the consequences of consolidation for rural communities. Those communities are more diverse economically and socially than in previous decades, less reliant on agriculture. Some communities flourish in the new rural economy, others wither and die (Johnson, 2000). We also need more research on the causes and character of specific conflicts between animal agriculture and non-farm rural people. The following list is preliminary:

1. We know that farm commodity programs influence the economic decisions of farm managers that affect farm size and consolidation. But additional empirical work on specific farm programs would be useful, to clarify the effects of farm income protections on the structure of U.S. agriculture. Further work is needed on the effect of specific new technologies for genetic manipulation of animal traits, information management, precision farming, waste management and other features of modern agriculture on farm size and consolidation.
2. Air pollution, particularly odors, from animal agriculture is at the top of the list for rural-urban conflict. Improved air quality data for different types of production systems are essential for any policy

changes to capture some of those uncounted costs of animal production.

3. Policy options range from greater regulation, to cross compliance linking a farmer's eligibility for commodity programs to actions to reduce off-site pollution, to cost sharing control practices, to "green payments" for good actions by the farmers. Costs and consequences of the options for air quality management in agriculture must be analyzed. Using an agricultural sector simulation model, Claassen, et al. at ERS conclude that targeted incentives are far more efficient than regulations or taxes in achieving agro-environmental goals, and environmental purposes should not be blended with income support in program design (2001).
4. We must have a better understanding of the roots of community conflict over large scale farming, especially animal agriculture. Exactly what are people worried about when a large dairy or poultry operation moves to the outskirts of town. Odor is the most obvious, with water supply and quality close behind. But these physical changes may proxy for deeper social concerns about the changing community and the farming way of life.
5. Are there additional opportunities for converting animal waste to a nutrient source or other product or service with a positive value? Composted manure may be mixed with urban lawn residues to produce a soil amendment that can restore roadsides and mined areas or aid the home gardener. Constructed wetlands or "living systems" can provide service while treating waste. Organic wastes have potential for production of bio-energy (CAST, 2002). Any of these options can eliminate most of the negatives of animal waste and produce something of real economic value. Research can clarify production options for these products and services and their market potential.

### **Inadequacy of Legal Infrastructure at the Rural-Urban Fringe**

Laws that establish relationships between neighbors were enacted in a simpler time when those neighbors were all farmers and were spatially separated. Given attention here are laws on the location and maintenance of line fences, trespass, and drainage. These are examples of a much larger set. New arrivals may consider the wide open spaces of the adjacent farm part of their playground, fences as just the farmer's problem, and not anticipate the effects of a tile drain system.

*Drainage.* Farmers in Ohio and other relatively humid states depend on drainage systems to make their land more accessible for planting and harvest. Many lands are farmed only because of extensive draining. Wetland protection programs of the past 25 years have limited further conversions to cropland, but continued drainage is important to over half of the cropland in Ohio, with similar conditions in other states of the midwest, southeast and northeast. Rural parts of these regions generally follow the "civil law" doctrine that both uphill and downhill property owners have rights to "reasonable use" of

their property which includes some natural flow of excess water to the downhill owner. The lower property may reasonably restrict flow down the hill, however. Homeowners on the downhill side may think they can obstruct any incursion from above, but that is not the case. Further, states in these regions have laws by which landowners can construct, modify and improve drainage ditches for their land with cost allocated among the owners. When streets and parking areas replace farmland, the stormwater run-off problem is exacerbated and reasonable use more difficult to define, yet the legal infrastructure remains largely unchanged. Courts are continuously revising the bounds of acceptable behavior by uphill and downhill owners seeking to influence the flow of diffuse surface water (Brown and Stearns, 1991).

An added difficulty with rural drainage systems is the effect of farm run-off on water quality. Drainage programs were established to get rid of excess water, not meet water quality goals. Stormwater run-off including farm drainage remains a significant pollution source. Townships, counties and municipalities smaller than 100,000 population are required to develop stormwater management plans that control water pollution. All streams are classified according to their “beneficial use,” including agricultural drainage channels and ditches as “limited resource waters” and further degradation of quality is prohibited.

The over-riding problem here is that the changing population and land use mix at the rural-urban fringe creates points of conflict over farm run-off, both from flooding and pollution. Existing law and policy are generally inadequate to the task, requiring modernization. Often the farm community has sought exemption from laws to control stormwater and reduce water pollution from farms. In Ohio, for example, “historically channelized ditches” are exempted from non-degradation requirements of state law on the basis that they are too far gone to have any positive habitat qualities anyway. There have to be ways to have drainage *and* water quality, with adequate attention to the issue. There are both technical and institutional possibilities that deserve attention.

*Line fences.* All states have laws regarding the construction and maintenance of partition or line fences that mark property lines and reduce the cross-over of activity from one property to another. A major reason for fencing historically is to contain livestock. In earlier simpler times, livestock roamed free and a person not wanting these animals on their property had to fence them out (open range law). That gradually changed to require livestock owners to constrain their animals. Fences in rural areas have largely been to separate one farm from another. If one farmer wants a fence he or she can build one and compel the neighbor who presumably also benefits to pay half of the cost to construct and maintain it. This obligation prevails regardless of the use to which the adjoining land is being put, and whether or not that neighbor really wants a fence. This forced payment has produced many law suits but courts have generally upheld fence law on the basis that both neighbors gain from reduced trespass. There are always exceptions of course – when cost to the neighbor is far out of line with benefit and the law does not apply to neighbors in a municipality or a platted subdivision. There are also procedures for appeal to local officials and neighbors may agree to some splitting of cost other than 50/50 (Hall, 2000).

As with drainage law, the problem with fence law in most places is that it hasn't adapted to the reality of the rural-urban interface. A homeowner who selects a lot next to a farm for the open space may not be happy with paying for a fence that provides her no obvious benefit. This has apparently been a persuasive argument, as several states have recently modified their line fence law to reduce the burden for the neighbor who neither wants nor needs a fence. An appellate court in Pennsylvania determined in 1997 that the only real purpose of a line fence is to keep livestock from trespassing on a neighbor's property. In the absence of livestock, the neighbor is not obliged to pay half of the cost of the fence as had been required under the 1893 law (Knowlton, 2003).

Missouri revised its 1808 line fence law in 2001 to require that a neighbor pay half the cost only if he has livestock against the fence. When both neighbors have livestock, they must share the cost, or each pay for half of the fence. If only one neighbor has livestock, the party with livestock pays for the fence. If the fence is inadequate and trespass occurs, the livestock owner is liable for damages under this "closed range" statute. When there is a dispute over paying for a fence, three "fence-viewers" examine the situation and establish an allocation of cost (Mathews, 2001).

The Ohio Farm Bureau led review of the 1904 fence law in that state, with recommendations similar to the recent changes in Missouri. The three elected township trustees serve as fence-viewers in the Ohio system, and they prefer to retain that authority. The Ohio Line Fence Task Force recommended that cost sharing between neighbors be continued in cases where a fence already exists. But the cost should be shared equitably rather than equally, as defined by the township trustees. Where there is no fence, the person wanting a fence pays for it entirely. If the non-paying neighbor subsequently has livestock "against the fence," he is responsible for half of the cost as defined in an affidavit filed by the person who built the fence (Ohio Farm Bureau, 2004).

Most states badly need an overhaul of line fence law to bring it in line with 21<sup>st</sup> century land use realities. Other areas of law needing an update are:

1. Trespass. In an earlier simpler time neighbors with similar understanding of private property respected property lines with or without a line fence. New arrivals who lack experience with agriculture may consider the adjacent farm their private playground, open for their use. Property owners bear risk of liability claims by trespassers who feel the owner has been negligent by not marking hazards. Degree of liability depends on whether the owner knows there are trespassers or not. If trespass is known, the owner has an obligation to mark dangerous places or inform the trespassers. In most states, the land operator or owner is immune from liability for a recreator on the land with permission but without paying a fee (Hall, 2000). In other cases, a new owner of rural property may find that hunters consider that land available to them with or without permission. The owner concerned about trespass and related liability for accidents on his land may yield to local custom and ignore the trespass just to avoid conflict. The doctrine of adverse possession by a certain trespasser over 10 years or more could cost the real owner some property.

2. Zoning. The regulatory power of local governments has been used largely to limit mixing of residential and industrial land uses to protect the health and safety of residents. In many states, the law has not been revised adequately to permit zoning to protect agriculture and discourage non-farm development in farm areas. Local governments need clear authority to protect the health, safety and general welfare through effective land regulation. They may choose not to use zoning, but should at least have the authority.
3. Density transfer. Various land use tools come under this general heading involving the relocation of development value from one parcel of land to another. Transfer of Development Rights is the most common version, though there are less involved variations on the theme, including development mitigation. States need to revise their land use enabling laws to give local governments the powers they need.
4. Water rights. Modern agriculture can be very water-intensive with wide variations in use from year to year. Non-farm residents in the rural area have become alarmed about adequacy of groundwater, and withdrawal from lakes and streams. The “reasonable use doctrine” generally prevails with both surface and ground waters east of the Mississippi River. Western states have strict allocation rules based mostly on “first come, first served.” Florida has granted authority to regional water management districts. Development at the rural-urban fringe can upset the process, requiring revision of water allocation rules.
5. Agricultural nuisance/ “right to farm.” Many new rural residents have relied on nuisance claims to protect themselves from the odors, noise and dust of farming. Right to Farm statutes in all states are a “thumb on the scale of justice” on behalf of farmers. These laws typically deny neighbors the right to sue a farmer who is following generally accepted farming practices. The argument is that new arrivals “came to the nuisance” in the farming community and should have known better. The Iowa Right to Farm Law has been declared unconstitutional by the state supreme court for implicitly imposing an easement on the neighbor, denying the owner certain enjoyment of the property without just compensation ( Supreme Court of Iowa, 1998 ). The entire structure of agricultural nuisance and right to farm law needs work.

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Figure 2

## Population of Ohio Townships, Villages and Cities, 1960-2000

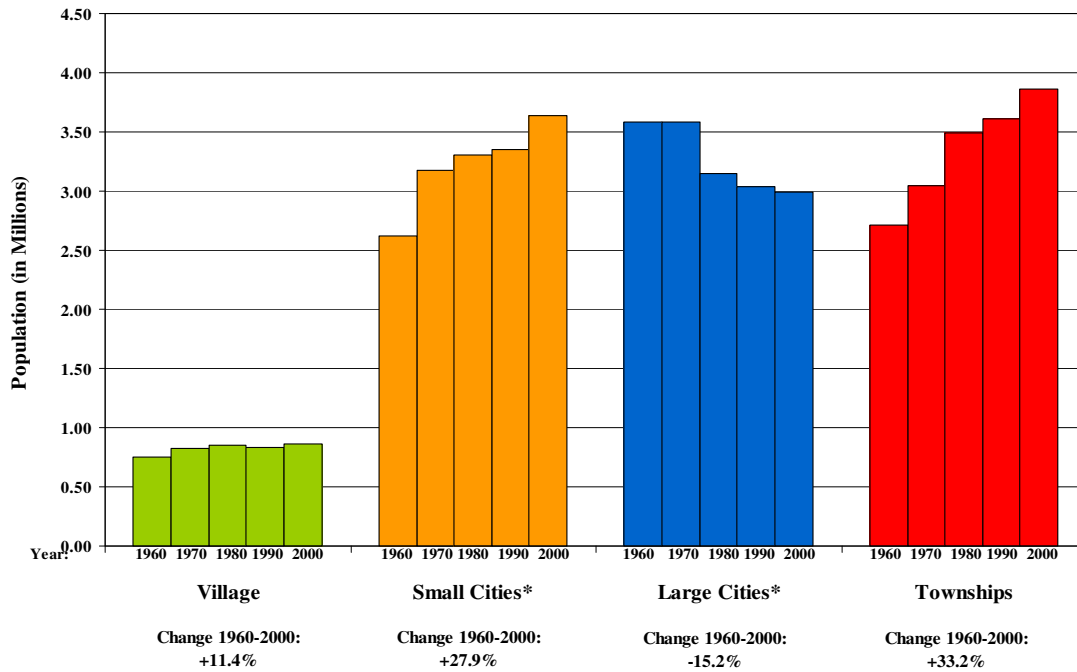
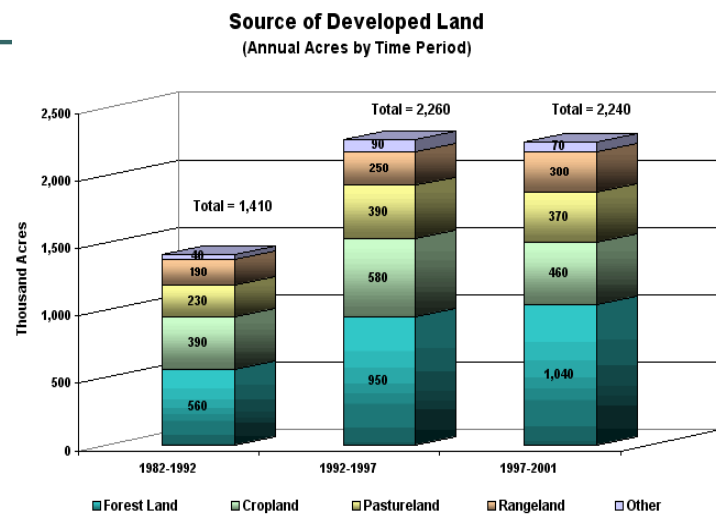


Figure 1



Source: NRCS/USDA/NRI