

March 2003

LUPR 03-02



# Land Use and Planning Report

Colorado  
State  
University

Extension

Department of Agricultural and Resource Economics, Fort Collins, CO 80523-1172

<http://dare.colostate.edu/pubs>

## RURAL LAND USE AND YOUR TAXES: THE FISCAL IMPACT OF RURAL RESIDENTIAL DEVELOPMENT IN COLORADO<sup>1</sup>

Roger Coupal<sup>2</sup> and Andy Seidl<sup>3</sup>

- *Results suggest that crop and rangelands contributions to county revenues are greater than to expenditures.*
- *Results also suggest urban population and acres of agricultural land positively influence school district budgets.*
- *Dispersed rural residential development in Colorado costs county government and schools \$1.65 in expenditures for every dollar of new revenue received.*
- *62 of 63 Colorado counties show a negative net fiscal impact of dispersed rural residential development.*

### I. Introduction

Homes, businesses, crops and pasture are all common uses of private lands in Colorado. County and municipal leaders must make decisions that guide the use of the lands within their jurisdictions. One of the factors

that guide community land use decisions is its relative contribution to the tax base. Different land uses command different tax rates and generate different amounts of tax revenues. However, different land uses also demand different amounts of community services. As a result, the net effect of land use alternatives on the tax base is of interest to community leaders.

In many rural areas of the United States, including Colorado, agricultural lands are under pressure to convert to rural residential uses. In Colorado, residential tax rates are higher than agricultural rates. Rural residential land use implies greater population density than agriculture, but less density than urban residential land use. Relative to agriculture, residential land use typically implies greater demand for community services, including police, emergency services, and schools and transportation infrastructure. Cows and corn don't go to school, as they say.

In this report, we analyze the relative cost of providing community services to agricultural lands versus rural

<sup>1</sup> Financial support for this project provided in part by Colorado Open Space Alliance, Colorado State University Cooperative Extension and University of Wyoming Cooperative Extension. Responsibility for the content of this report remains solely with the authors.

<sup>2</sup> Assistant Professor and Extension Specialist—Community Development, Department of Agricultural and Applied Economics, University of Wyoming, Laramie, Wyoming.

<sup>3</sup> Corresponding author. B312 Clark Building, Assistant Professor and Extension Specialist—Public Policy, Department of Agricultural and Resource Economics, Colorado State University, Ft. Collins, CO, 80523-1172. E: [Andrew.Seidl@colostate.edu](mailto:Andrew.Seidl@colostate.edu). T: 970-491-7071. F: 970-491-2067.

Extension programs are available to all without discrimination.

residential development across the state of Colorado. The study focuses on measuring the net impacts of rural residential development on the fiscal structure of Colorado county governments and school districts. The analysis presents estimates of the fiscal impacts of rural residential development using an econometric model of county revenues, county expenditures, school district revenues, and school district expenditures. This approach reveals incremental as well as average costs, and can make possible projections about cost and revenues of future development. The scale of analysis is at the county level, where many of the impacts of rural residential development are felt and where many land use decisions are made. As among the most significant public service demands of residential development, this report summarizes the statistical analysis of school revenues and school expenditures, in addition to total county revenues and expenditures for Colorado counties.

## **II. Relevant Literature: Approaches and Results**

The conversion of crop, pasture and forest land into rural residential development is a widespread phenomenon in many Colorado counties and throughout the United States. Counties located in isolated, but amenity-rich areas are confronted with issues similar to those experienced by counties near growing urban areas (Heimlich and Anderson, 2001). A recent study by the American Farmland Trust (2002) estimates that 11 percent of all prime ranchlands (those with rural development densities, located near to public lands, year-round water availability, mixed grass and tree cover, and high variety of vegetation classes) are susceptible to conversion to residential development. Current and presumed future community preferences help guide local elected officials to make informed decisions about the use of these lands.

Farmland preservation advocates have taken a variety of approaches to make their case. They have argued for the importance of national, regional and/or local food security and of rural communities, against the irreversible loss of high quality soils and wildlife habitat, and for the importance of fiscal stability and responsibility (American Farmland Trust, 1995). Farmland preservation advocates have essentially argued that land markets fail to reflect society's values for these productive and nonproductive attributes of agricultural lands. Market failure in local, regional, state or national land markets provides a justification for governmental policies of various types (e.g., zoning,

density regulations, incentives, taxes, land purchases) and scales of intervention to redress this disparity.

As is common in public policy debates, critics of formal government programs for farmland preservation are also in evidence. Most often, critics of farmland preservation programs question the notion of loss of value (Gordon and Richardson, 1998). They argue that the benefits of farmland preservation are overstated in part because preserving farmland has the potential for restricting the supply of developable land, thereby increasing land prices, reducing the stock of affordable housing, and potentially depressing economic development. They also have maintained that the allocation of scarce public funds to open space preservation amounts to a subsidy to the rich and potentially takes away from programs targeted to the poor. Daniels (1999) contends that fears surrounding threats to U.S. food supply are unwarranted. However, he also makes the case that there are areas where dispersed development can cause fiscal and environmental problems. He argues that planners and policy makers need to be "strategic" and "aim for balanced growth". The ultimate "solution" for any single community, as always, depends. It depends on community human and natural resources, on its economic base, its social and cultural traditions, and its plans for the future.

Farmland preservation advocates and critics largely agree that transitions to higher intensity land uses from lower intensity land uses should "pay for themselves" from a public policy perspective. That is, new land development that creates an additional tax burden on current residents on a per capita basis should be viewed skeptically. Rural residential development may be clustered or dispersed. Dispersed rural residential development tends to have a more pronounced negative effect on the desirable attributes of open landscapes valued by both owners and non-owners of these lands including viewscapes, wildlife habitat, open space, rural lifestyle, flood control, community buffers. It is logical that if these desirable features of the landscape are lost, tax revenues may be reduced due to a decrease in the value of the total housing stock relative to what it might have been under a development design that would maintain or enhance these desirable attributes.

The American Farmland Trust (AFT) has been a leader in investigating the fiscal impacts of agricultural land conversion through the publication of dozens of "cost

of community services”(COCS) studies across the United States (AFT, 2000). In a review of 70 COCS studies the AFT reports that, on average, residential development requires \$1.15 in community services for every \$1 of tax revenues it contributes. They report that farm and forest land uses require only \$0.35 in services for every \$1 of tax revenue generated, while commercial or industrial uses demand even less (\$0.27: \$1) relative to their contribution. Studies reviewed from the Western United States include Haggerty (1996, Montana), Hartmans and Meyer (1997, Idaho), Snyder and Ferguson (1994, Utah), and the AFT (1999, Washington). All were supportive of the general national results, although in Idaho agricultural and forest land uses were greater net contributors per acre to county revenues than commercial and industrial uses (1:0.48 versus 1:0.83 on average, respectively). The USDA (2001) reviewed 88 COCS studies and reported that, on average, residential development required \$1.24 in community services for every \$1 of tax revenue generated, while agriculture demanded only \$0.38 in services per \$1 of tax revenue contributed. In sum, commercial, industrial, agricultural and forest uses of lands pay for themselves from a public policy perspective and residential development, on average, is a net drain on county coffers.

There are a number of reasons why these results might be observed. First, residential development and commercial development tend to demand a high level of services while agricultural and forestlands tend to demand fewer services on a per acre basis. Commercial and industrial land uses counter these high per acre service demands by paying a high tax rate generating high tax revenues. However, residential tax rates are lower and agricultural tax rates lower still, diminishing the tax revenue generated per acre. The “bottom line” accounting is positive for commercial, industrial, agricultural and forestland use, but not for residential uses. The traditional logic has been that taxing both the place of business and the places where the employees of the business reside amounts to a sort of double taxation. This logic is supportable so long as the business and the residences lie within the same tax district. However, conflicts can arise when net revenue generating commercial properties and net service consuming residential properties lie in different tax districts. Anecdotal evidence of this calculus abounds in Colorado as many municipalities are annexing commercial property as fast as they can get it, paying little attention to residential needs. Debates across county lines

surround who has to house the commuters to whose commercial and industrial sectors.

As intuitively appealing as these results may be, the AFT approach has been criticized as methodologically inadequate and as advocacy research rather than objective science (e.g., Deller, 2002; Kelsey, 1996; Ladd, 1998; Heikkila, 2000). The principal criticisms of the typical COCS techniques are as follows: 1) The AFT approach is largely a non-statistical accounting categorization of rural and urban fiscal flows (AFT, 1999). Such case study approaches can be unsystematic and party to subjective assignment of service demands of the various land uses. 2) Case studies tend to be resource intensive (expensive) and their results are often nontransferable to other communities. 3) Moreover, these reports are taken at a particular point in time rather than over an appropriate period of years to account for public investment and variation in service demands over time. 4) They ignore potential economies of scale and the public good aspects of public services. That is, once the school building is built, each additional student doesn't cost nearly as much as the first students to occupy the building, at least until capacity is reached. Or, the cost of public transportation and emergency services for a community of 100,000 is quite likely less than 10 times the cost of these services for a community of 10,000. Each additional person/family does not imply a greater need for police services. Such services are affected after response times decrease and services suffer due to many more people. 5) Finally, and related to the last criticism, typical COCS studies report average rather than incremental (marginal) fiscal impacts. That is, there may be infrastructural capacity sufficient to accommodate the first 100 residences at little additional cost, but not for the 101<sup>st</sup>, which throws the accounting to negative as new large fixed infrastructure costs are encountered (Deller 2002).

In this report we endeavor to address these principal criticisms of the COCS literature in the following ways: 1) An econometric analysis is used. 2) Secondary data are employed. 3) The analysis extends across all Colorado counties. 4) The data and analysis incorporate six years of annual revenue and expenditure data. 5) The approach allows for both average and incremental effects to be evaluated.

### **III. Methodological Approach and Data**

The econometric model employed here is derived from Coupal, McLeod and Taylor (2002) and Heikkila

(2000). The analysis addresses changes in the distribution of county revenues and expenditures due to a change in land use. Four equations are specified to understand two important fiscal relationships: county revenues (CREV), county expenditures (CEXP), school district revenues (SCHREV) and school district expenditures (SCHEXP). All monetary variables were represented in real 1998 dollars. The hypothesis to test is whether rural residential development exacts a higher cost to the taxpayer as land is moved from agriculture or forest to residential uses.

The expectation is that county revenues should balance county expenditures over time and that school district revenues should balance school district expenditures over time. Municipal government is not considered in this modeling framework since the issue relates to policies in unincorporated areas of counties. Urban school districts are included because it was impossible to separate out urban versus rural attendance. School districts and county governments have jurisdictional control in rural areas.

The arguments in each function are proxies that represent the user groups who contribute to revenues and exact a demand for services. The county revenue equation is estimated as a function of rural personal income (RUPINC), urban personal income (URPINC), acres of private rangeland (RANAC), acres of cropland (CROPAC), and county total assessed valuation of private property (TOTVAL). The county expenditures equation substitutes government employment (EMPL), a proxy for the provision of government services, for TOTVAL, a proxy for the basis upon which county revenue is generated. School district revenue and expenditure equations are estimated as a function of rural population (RURPOP), urban population (URPOP), acres of private agricultural land (AGLAND) and total assessed valuation (TOTVAL). School employment data were not available to proxy school service provision in a direct analogy to the county revenue and expenditures estimates.

Total assessed valuation is included to account for overall wealth effects. Rural and urban personal income is used instead of rural and urban population, where possible, in order to capture both income and population effects without incurring statistical problems; urban population and personal income are strongly correlated when they are used as separate arguments in the equations. Rural and urban personal income is calculated by multiplying average county per

capita income by the respective populations. Comparing household incomes in urban census districts and primarily rural census districts within counties tested the differences between rural and urban income. The average difference between districts within counties was less than five percent.

County revenues come from property taxes, sales tax recapture and intergovernmental transfers. Intergovernmental transfers and sales tax recapture are largely a function of population. Tax revenues (severance and federal mineral royalties) from mineral activities (coal, oil, gas, trona, and other minerals) are distributed based upon changes in population. So the model takes into account increases in these revenue categories through population change.

The model was transformed from a linear function to a log-log structure in order to account substantial size differences in Colorado's 63 (now 64) county governments. The log-log performs best, statistically speaking, when compared to the linear and log-linear specifications, as revealed through an F-test. The parameter estimates in a log-log specification are interpreted as percent changes in both the dependent and independent variables. That is, a one percent change in an independent variable is correlated with the parameter value percent change in the dependent variable.

The modeling effort also had to contend with substantial variation in county size, developable area (private land), amount of agricultural acreage, size of urban population, and imprecise data of various sorts. Early estimation attempts incorporated the potential effect of public land acreage, regional variation (east, west and front range metropolitan), number of business establishments, and proximity to the metro core. The inclusion of these variables did not improve the explanatory power of the estimations, typically due to a lack of variation over the time period under analysis (e.g., public land acreage, proximity to metro core). The results detailed here were the best obtainable given these considerations and the quality of the available data.

Data were assembled from the Colorado Department of Local Affairs (DOLA), Division of Property Taxation and the Colorado Department of Education for the years 1994 to 1999. Total expenditures are operating expenditures only. Urban and personal incomes are estimated based upon the 1990 Census estimates of per capita income in rural versus urban census tracts.

Agricultural land acreages are taken from the DOLA Division of Property Taxation. Valuation data are collected from the county assessors offices by DOLA. Counties with particularly active open space programs may hold significantly more public land in agriculture or forestry than counties with less active open space programs. Unfortunately, available data did not allow consideration of nonfederal public lands used in agricultural activities or forestry.

#### IV. Results

##### Interpretation of the Econometric Estimations

The four estimated relationships can be meaningfully interpreted individually and in appropriate pairs. All of the parameter values for independent variables in all of the estimated equations were of the expected positive sign. Rural personal income (RUPINC) was a statistically significant predictor of county revenues (CREV) and county expenditures (CEXP). Total assessed value (TOTVAL) was a statistically significant predictor of CREV, CEXP and school expenditures (SCHEXP). Government employment (EMPL) was a significant predictor of county expenditures. Rural population (RURPOP) was marginally statistically correlated with school revenues (SCHREV) and SCHEXP. Urban personal income (URPINC) was predictive of SCHEXP. Acres of agricultural land (AGLAND) was only tenuously predictive of SCHREV and SCHEXP. When acres of agricultural land were broken out into cropland (CROPAC) and rangeland (RANAC), each variable was less statistically significant than the more aggregated variable, but their inclusion retained the expected signs and significance on the other predictive variables, whereas AGLAND did not.

The estimated coefficient on RUPINC in the CREV equation implies that a 1% increase in average rural personal income, either driven by an increase in rural population or income, is associated with a 0.19% increase in county revenues. However, the estimated coefficient on RUPINC in the CEXP equation implies that a 1% increase in RUPINC, presumably driven by rural population rather than income growth, is also associated with a 0.41% increase in county expenditures. A 1% increase in TOTVAL implies a 0.52% increase in CREV, while a 1% increase in county government employment implies a 0.32% increase in CEXP. Assuming that county revenues and expenditures balance over time, these results imply that an increase in rural personal income results in a net drain on county fiscal health. The results also suggest that for crop and rangelands, the marginal contributions to revenues are

greater than those to expenditures. This would validate the supposition that rural residential development is a net fiscal loss to the county government and schools while agricultural land is a net fiscal gain.

On the other hand, the coefficient on URPINC in the CREV equation is not significantly different than its coefficient in the CEXP equation. This suggests that city dwellers payment to county tax rolls is not an unencumbered source of revenues. Urbanites pay taxes to and receive services from both the city and county. Since local governments often function under balanced budget provisions, the implication is that city population increases should generate revenues for county government such that county government can increase the quality and quantity of services provided. Counties often regard municipal population growth as a draw on their resources, particularly in rural areas, since the county provides law enforcement, health, and other public services that very small communities cannot or do not provide.

The estimated coefficient on TOTVAL in the SCHREV equation implies that a 1% increase in county total assessed valuation is associated with a 0.53% increase in school revenues. The parallel coefficient in the SCHEXP equation implies a 0.58% increase in school expenditures, due to a 1% increase in total assessed valuation. Similarly, a 1% increase in rural population (RURPOP) is associated with a 0.054% increase in school revenues and a 0.056% increase in school expenditures, implying that a marginal increase in rural population is a net drain on school district fiscal health. Assuming that school revenues and expenditures balance over time, these results would imply that an increase in total assessed valuation and rural population result in a net drain on county fiscal health. The results also suggest urban population (URPOP) and acres of agricultural land (AGLAND) tend to influence school district budgets positively on balance, generally supportive of the central hypothesis.

While the negative net effect of rural residential development was expected, the effect of total assessed value may seem counter-intuitive. One explanation is that wealthier communities, those with greater total assessed value, spend a greater proportion of their tax dollars on public education than the average Colorado county. Alternatively, counties with higher total assessed values may be growing more quickly than average and may have found it necessary to invest in

new school infrastructure, throwing the school district into deficit over the focal period of this study, at a greater rate than the average Colorado county. However, the most persuasive explanation for this result may be that wealthier and/or faster growing counties have a greater tendency to be experiencing sprawled rural residential development and that this type of development may increase total assessed value, but also results in service demands greater than the tax revenues it generates.

However, literal interpretation of these results should proceed with caution since none of these pairs of coefficients are clearly statistically distinct from one another. As a result, it can only be confidently asserted that changes in TOTVAL, URPOP, RURPOP, and AGLAND are fiscally neutral with respect to school finance. These equations show that the average difference between school revenues and expenditures is found in the intercept term rather than in the explanatory variables. This implies that a constant proportion of school revenues is spent and that Colorado school districts are, on average, operating in budget surplus by a constant proportion of revenues.

### **Simulated Effect of Dispersed Rural Residential Development**

The econometrically estimated relationships can be used to simulate the fiscal impact of particular development scenarios in Colorado. One useful scenario would be to calculate the predicted fiscal impact of dispersed rural residential development in Colorado using ratios similar to those commonly found in the published literature.

Thirty-five acres of agricultural land are replaced by one new rural household in the county to evaluate the relative role that rural residential development plays in a county fiscal structure. Average county household income, home value and family size are assumed for the simulated change. Thirty-five acres are used for two reasons. First, a smaller acreage expansion (e.g. one or even five acre expansions) is usually connected with subdivision development which, while fragmentation nonetheless, can begin to approximate cluster development. This can allow for population growth without the more egregious consequences of fragmentation. Baseline analysis uses family sizes for rural populations equal to the average family size specific to the county. Likewise, county-wide average incomes are used. The scenario assumes a new rural residence that is approximately the same size and generating the

same income as the average household in the specific county. As a result, the actual effect of any particular rural residential development will depend upon the extent to which the development is or is not consistent with these county averages. More expensive homes, higher incomes, and smaller families than the county average would tend to increase the revenue contributions and decrease the service expenditure demands of any particular rural residential development.

The models are used to calculate changes in revenues and expenditures for both county government and schools. County rural population (RURPOP), rural personal income (RUPINC), and assessed valuation (TOTVAL) rise as a result of the new household. Agriculture's contribution through total assessed valuation declines by a small amount. The predicted net changes in both revenues and expenditures are used to calculate average ratios of total county expenditure (CEXP and SCHEXP) changes to total county revenue (CREV and SCHREV) changes. On average, this simulation indicates that dispersed rural residential development in the conversion of 35 acres of agricultural land in Colorado costs county government and schools \$1.65 in expenditures for every dollar of new revenue received. All Colorado counties, except Elbert County (\$0.536:1), show a negative net fiscal impact of dispersed rural residential development and the majority lie within a range consistent with AFT (1999) findings (Figure 1 and Table 4). It was impossible to calculate this ratio for Denver County since there is no private agricultural land within the jurisdiction.

However, there is substantial variation across counties. Rio Blanco (\$1.052:1) and Sedgwick (\$1.097: 1) Counties demonstrate the least negative fiscal impact of land conversion. Jefferson (\$5.775: 1), La Plata (\$5.145: 1), Summit (\$4.758: 1), Clear Creek (\$3.519: 1), San Juan (\$2.23: 1), Larimer (\$2.217: 1) and Gilpin (\$2.195: 1) illustrate strongly negative fiscal impacts of agricultural land conversion to rural residential development, and lie somewhat outside of the currently published range. One explanation for these latter results, potentially appropriate for all except Larimer County, is that a combination of large proportion of federal, state or local public land and a small proportion of private agricultural land relative to the Colorado average would have a greater tendency to generate such ratios and that they are misleading. An alternative explanation, potentially appropriate for all except San Juan County, is that the population growth rate of these counties was substantially faster than the

Colorado average over this period causing forward thinking local governments and school districts to invest in service and educational infrastructure at a rate somewhat greater than the state average and causing expenditures to be higher than average over the short term. This would imply that the ratios are accurate, but the analysis too short term to reflect the true cost of development over time.

## **VI. Summary & Conclusions**

The amount of land in a county is essentially fixed. Land can be converted from relatively low intensity uses (e.g. cropland, forestland, pastureland, idle land) to higher intensity uses (e.g., residential, commercial and industrial), but not the converse. As a result, county level economic development decisions affecting land use are largely irreversible.

Higher intensity land uses commonly require more government services than lower intensity uses on a per acre basis. Higher intensity land uses commonly require higher quality roads and more road maintenance, water and sewer infrastructure, and greater communications infrastructure. Higher intensity land uses, particularly residential land use, may also require greater school expenditures, emergency medical services, fire services, and public transportation services than lower intensity land uses. Generally speaking, these publicly provided human service costs increase with distance and dispersion on a per capita basis. That is, you need less sewer pipe and fewer ambulances to serve a dense development within the city limits than a widely spread development far from the city center.

On the other hand, higher intensity land uses tend to generate greater income, employment and tax revenues than lower intensity uses. This is particularly the case in Colorado where agricultural land uses are taxed based upon their value in production rather than their “best and highest” use, which is often nonagricultural. The basic question facing community government leaders is whether a proposed land use generates more or less tax revenue than it demands in services. Fiscally responsible governance may require a positive revenue balance to justify approval of a proposed land use in the absence of nonpecuniary objectives. A corollary question is whether a proposed land use generates the greatest amount of tax revenue relative to services demanded among all possible uses of the land; is this the highest and best use of the land from a public finance perspective, *ceteris paribus*?

Policy makers are right to be concerned about rural residential development. The abundance of AFT-

type studies and this research also, suggest that rural residential development in the aggregate is a net fiscal loss to county governments. What these results suggest though is that the character and type of development should be studied before one can say that a particular development is itself a net fiscal loss.

Rural residential development poses several policy questions for state and local policymakers. Rural residential development affects wildlife, public land access, open spaces, and ultimately fiscal structure of the county. The fiscal impact model developed in this research partially validates the AFT results that rural residential development costs taxpayers more than it contributes in revenues; and conversely, that agricultural land contributes more to county coffers than it asks for in services. However, relying on simple averages to make the case is risky. County land use and planning policy should encourage agricultural land protection in order to capture the fiscal savings as well as the attending flows of public goods associated with non-fragmented lands.

Both the school district and county budget results suggest that the type of rural residential development may affect the fiscal impact to the county. Development distance from public service nodes, the composition of the in-migrating households, the density of development and the natural resource land base all may be important factors to integrate into a fiscal impacts model. Such data should be obtained and analyzed in order to assist county officials with planning strategies.

The AFT cost of community service methodology provides a simple way of calculating ratios that can be used in public policy formation that protects open spaces. It is important that the community leaders and policy makers use the ratios with caution. The results of the general test suggest that there is not a significant difference between rural residential revenues and public expenditures attributed to rural residents. However the results of the simulation indicate that rural residential development costs taxpayers more than it contributes on average but not necessarily at the margin. The mix of services and service recipients in this case are simply re-allocated in order for county budgets to balance.

It is important to point out that this estimate does not include the broad array of other public good values associated with agricultural land, which includes wildlife habitat, water quality, and viewsheds. Thus this fiscal value estimate is a conservative measure of the cost and benefit disparity resulting from dispersed rural residential development

## VII. Bibliography

- American Farmland Trust. 1995. "Alternatives for Future Growth in California's Central Valley", Davis, California, American Farmland Trust.
- American Farmland Trust. 1999. "Cost of Community Services Studies", <http://www.farmlandinfo.org/>.
- American Farmland Trust. 2002. "Strategic Ranchland in the Rocky Mountain West: Mapping the Threats to Prime Ranchland in Seven Western States", <http://www.farmlandinfo.org/>.
- Deller, S. 2002. "Urban Growth, Rural Land Conversion and the Fiscal Well-Being of Local Municipalities." Paper presented at the Research Workshop on Land Use Problems and Conflicts, Orlando, Florida, February 21-22, 2002.
- Coupal, Roger, Donald McLeod, and David T. Taylor. August 2002. "The Fiscal Impacts of Rural Residential Development: An Econometric Analysis of the Cost of Community Services". Under review in *Planning and Markets*, <http://www-pam.usc.edu/>.
- Daniels, Tom. 1999. "A Cautionary Reply for Farmland Preservation", <http://www-pam.usc.edu/2>.
- Grosskopf, S., K. Hayes, and J. Hirshberg. 1995. "Fiscal stress and the production of public safety: A distance function approach", *Journal of Public Economics*, 57, 2:277-296.
- Gordon, P. and H. Richardson. "Farmland Preservation and Ecological Footprints: A Critique", *Planning & Markets* <<http://www-pam.usc.edu/>>, 1.
- Hausman, 1978. "Specification Tests in Econometrics", *Econometrica*, 46, 1:1251-72.
- Heikkila, E. 2000. *Economics of Planning*, New Brunswick, NJ: Center for Urban Policy Research.
- Heimlich, R. and W. D. Anderson. June 2001. "Development at the Fringe and Beyond", *Economic Research Service, USDA/AER No. 803*.
- Kelsey, T.W. 1996. "The fiscal impacts of alternative land uses: What do cost of community service studies really tell us?" *Journal of the Community Development Society*. 27(1): 78-89.
- Ladd, H. 1998. Local Government Tax and Land Use Policies in the United States: Understanding the Links. Edward Elgar Publishing: Northampton, MA.
- State of Colorado, Division of Property Taxation, Colorado Department of Local Affairs, Annual Report, 1995, 1996, 1997, 1998, 1999, and 2000.
- U.S. Census Bureau. August. 2002. "County Population Estimates and Demographic Components of Population Change: Annual Time Series, July 1, 1990 to July 1, 1999". [http://eire.census.gov/popest/archives/county/co\\_99\\_8.php](http://eire.census.gov/popest/archives/county/co_99_8.php)
- U.S. Census Bureau. August 2002. "Annual Time Series of Population Estimates Incorporated Places (Sorted Within County)" <http://eire.census.gov/popest/archives/place/placeco.php>
- U.S. Dept of Commerce. Bureau of Economic Analysis. 2002. "Regional Economic Information System". CD-Rom. Washington, D.C. <http://www.bea.doc.gov/>



## VIII. Tables

**Table 1: Explanatory Variables for the estimated equations**

Variable	Definition	Expected Sign
CREV	County operating revenue	Endog.
CXPE	County operating expenditure	Endog.
SCHREV	School district revenues	Endog.
SCHXPE	School district expenditures	Endog.
RUPOP	Rural population, population in unincorporated areas in a county	+
URPOP	Urban population, population in incorporated areas in a county	+
RUPINC	County average personal income (earned and unearned) x rural population	+
URPINC	County average personal income (earned and unearned) x urban population	+
EMPL	Local (county) government employment, full time equivalents	+
AGLAND	Acres of private agricultural land	+
RANAC	Acres of private range land	+
CROPAC	Acres of private crop land	+
TOTVAL	Total assessed valuation in county	+

Sources: RURPOP, URPOP, personal income, and EMPL, U.S. Census Bureau, August 2002. "County Population Estimates and Demographic Components of Population Change: Annual Time Series, July 1, 1990 to July 1, 1999". [http://eire.census.gov/popest/archives/county/co\\_99\\_8.php](http://eire.census.gov/popest/archives/county/co_99_8.php), U.S. Census Bureau, August 2002. "Annual Time Series of Population Estimates Incorporated Places (Sorted Within County)" <http://eire.census.gov/popest/archives/place/placeco.php>, U.S. Dept of Commerce. Bureau of Economic Analysis. 2002. "Regional Economic Information System". CD-Rom. Washington, D.C. <http://www.bea.doc.gov/>. CREV, CXPE, SCHREV, SCHXPE, AGLAND, RANAC, CROPAC, TOTVAL, State of Colorado, Division of Property Taxation, Colorado Department of Local Affairs, Annual Report, 1995, 1996, 1997, 1998, 1999, and 2000.

**Table 2: Fiscal impact model results**

<b>Var</b>	<b>Coef.</b>	<b>Std. Error</b>	<b>t-Stat</b>	<b>P-Value</b>	<b>F</b>	<b>df</b>
<b>County Revenues</b>					476.55	366
<b>CONSTANT</b>		3.3102	0.3918	8.4481		0.000
<b>RUPINC</b>		0.1869	0.0346	5.4043		0.000
<b>URPINC</b>		0.0360	0.0294	1.2241		0.222
<b>RANAC</b>		0.0205	0.0216	0.9495		0.343
<b>CROPAC</b>		0.0163	0.0123	1.3197		0.188
<b>TOTVAL</b>		0.5225	0.0306	17.0815		0.000
<b>County Expenditures</b>					7173.07	366
<b>CONSTANT</b>		8.3901	0.4337	19.345		0.000
<b>RUPINC</b>		0.4093	0.0564	7.2571		0.000
<b>URPINC</b>		0.0497	0.0632	0.7862		0.432
<b>RANAC</b>		0.0026	0.0158	0.1614		0.872
<b>CROPAC</b>		0.0023	0.0163	0.1391		0.889
<b>EMPL</b>		0.3187	0.0829	3.8449		0.000
<b>School Revenues</b>					21109.36	373
<b>CONSTANT</b>		2.2213	0.6335	3.5062		0.001
<b>RURPOP</b>		0.0540	0.0353	1.5273		0.128
<b>URPOP</b>		0.3970	0.0404	9.8228		0.000
<b>AGLAND</b>		0.0421	0.0292	1.4440		0.150
<b>TOTVAL</b>		0.5282	0.0360	14.678		0.000
<b>School Expenditures</b>					22352.50	373
<b>CONSTANT</b>		1.5271	0.6001	2.5449		0.011
<b>RURPOP</b>		0.0556	0.0342	1.6260		0.105
<b>URPOP</b>		0.3717	0.0389	9.5587		0.000
<b>AGLAND</b>		0.0378	0.0279	1.3535		0.177
<b>TOTVAL</b>		0.5779	0.0338	17.0902		0.000

**Table 3. Data and ratios for Colorado Counties**

<b>Counties</b>	<b>2000 Urban population</b>	<b>2000 Rural Population</b>	<b>Household size</b>	<b>Agricultural land as of 2000</b>	<b>County Government Ratio (including schools)</b>
Adams	285,529	78,328	2.81	611,936	1.67
Alamosa	8,083	6,883	2.56	284,431	1.33
Arapahoe	338,262	149,705	2.53	302,240	1.17
Archuleta	1,591	8,307	2.47	234,819	1.29
Baca	2,749	1,768	2.33	1,382,971	1.53
Bent	2,758	3,240	2.53	786,911	1.62
Boulder	245,993	45,295	2.47	93,745	1.11
Chaffee	8,165	8,077	2.26	57,478	1.42
Cheyenne	1,263	968	2.5	1,086,891	1.61
Clear Creek	3,535	5,787	2.31	11,458	3.52
Conejos	3,984	4,416	2.8	250,009	1.22
Costilla	1,130	2,533	2.44	252,939	1.98
Crowley	2,103	3,415	2.59	431,352	1.39
Custer	929	2,574	2.36	196,438	1.30
Delta	13,965	13,869	2.43	271,009	1.21
Denver	554,636	0	2.27	1,806	NA
Dolores	903	941	2.35	201,762	1.45
Douglas	48,952	126,814	2.88	251,147	1.74
Eagle	20,087	21,572	2.73	148,715	1.24
Elbert	2,648	17,224	2.93	1,058,495	2.13
El Paso	386,957	129,972	2.61	668,837	0.54
Fremont	20,746	25,399	2.43	311,967	1.59
Garfield	24,446	19,345	2.65	404,710	1.23
Gilpin	633	4,124	2.32	14,268	2.19
Grand	5,643	6,799	2.37	231,230	1.31
Gunnison	7,874	6,082	2.3	335,686	1.24
Hinsdale	375	415	2.2	15,153	1.35
Huerfano	5,106	2,756	2.25	637,091	1.49
Jackson	734	843	2.37	327,807	1.27
Jefferson	345,390	181,666	2.52	81,955	5.78
Kiowa	897	725	2.4	1,061,562	1.51
Kit Carson	5,459	2,552	2.5	1,305,828	1.26
Lake	2,821	4,991	2.59	197,588	5.14

**Table 3 cont. Data and ratios for Colorado Counties**

<b>Counties</b>	<b>2000 Urban population</b>	<b>2000 Rural Population</b>	<b>Household size</b>	<b>Agricultural land as of 2000</b>	<b>County Government Ratio (including schools)</b>
La Plata	16,140	27,801	2.43	130,601	1.81
Larimer	182,675	68,819	2.52	479,449	2.22
Las Animas	9,900	5,127	2.4	2,041,545	1.17
Lincoln	3,411	2,676	2.44	1,502,647	1.25
Logan	12,600	7,904	2.45	1,033,770	1.38
Mesa	51,882	64,373	2.47	476,942	1.77
Mineral	377	454	2.2	26,846	1.18
Moffat	9,508	3,676	2.58	1,082,463	1.33
Montezuma	9,953	13,877	2.54	328,255	1.74
Montrose	15,286	18,146	2.52	368,566	1.42
Morgan	18,249	8,922	2.8	718,423	1.14
Otero	14,492	5,819	2.49	439,676	1.38
Ouray	1,526	2,216	2.36	134,139	1.29
Park	789	13,734	2.45	212,935	1.40
Phillips	3,285	1,195	2.47	410,582	1.11
Pitkin	8,465	6,407	2.14	37,005	1.83
Prowers	11,151	3,332	2.67	972,083	1.14
Pueblo	102,646	38,826	2.52	1,058,187	1.60
Rio Blanco	4,338	1,648	2.5	456,291	1.05
Rio Grande	6,867	5,546	2.59	171,700	1.58
Routt	12,741	6,949	2.44	707,154	1.33
Saguache	3,142	2,775	2.56	330,455	1.33
San Juan	531	27	2.06	153	2.23
San Miguel	3,775	2,819	2.18	250,669	1.44
Sedgwick	1,988	759	2.31	301,679	1.10
Summit	9,576	13,972	2.48	30,667	4.76
Teller	8,121	12,434	2.56	92,936	1.61
Washington	2,245	2,681	2.46	1,491,336	1.18
Weld	139,104	41,832	2.78	2,009,181	1.59
Yuma	5,750	4,091	2.55	1,462,803	1.20

**Table 4. County Personal Income. (Source: U.S. Dept. of Commerce)**

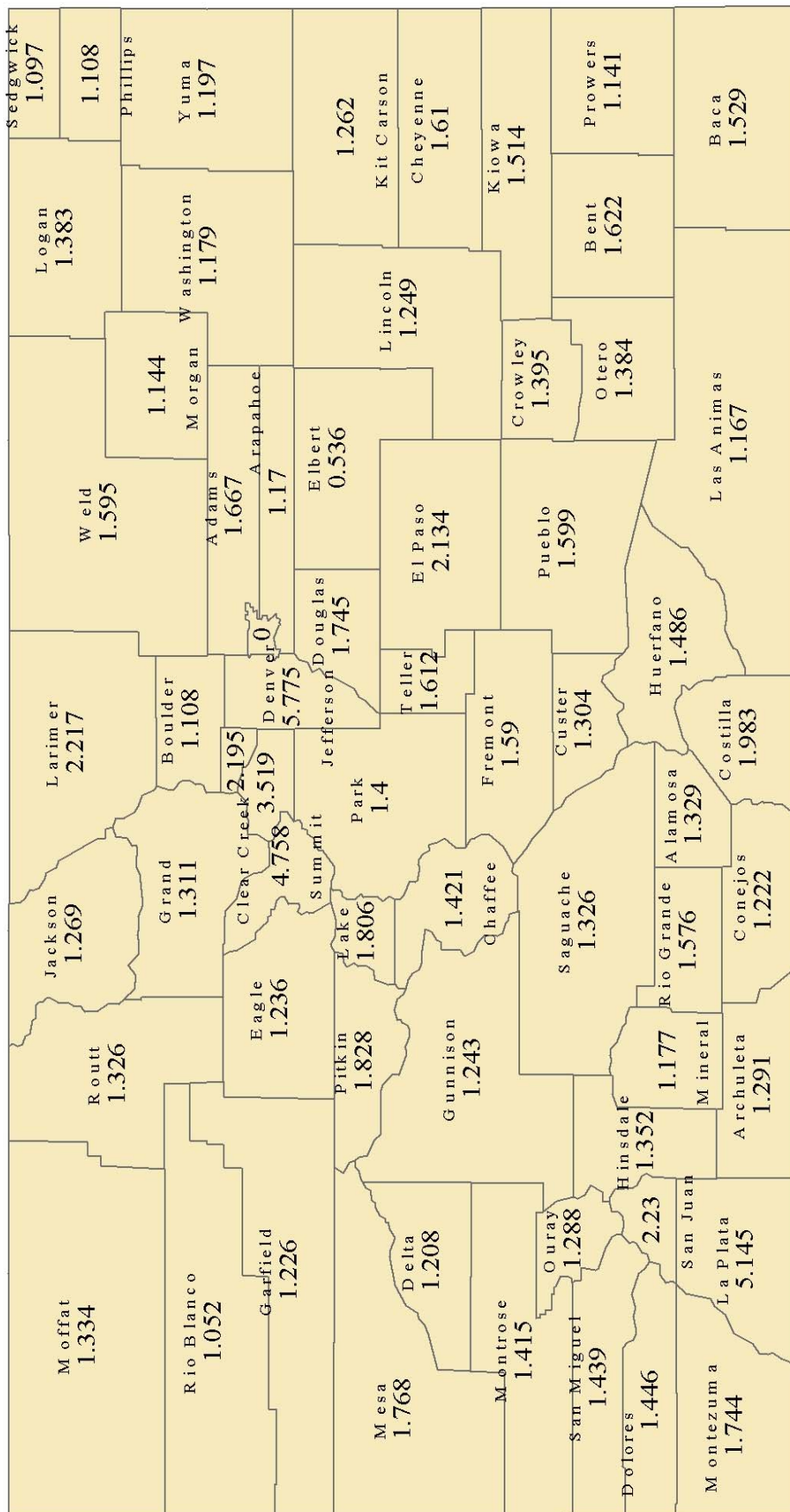
Year	1994	1995	1996	1997	1998	1999	2000
Adams	5587131	5953169	6311421	6919637	7474220	8203425	920985
Alamosa	225724	241545	260995	270172	295336	309058	31758
Arapahoe	12874010	13936788	15130797	16478728	18017186	19612682	2161487
Archuleta	100077	109221	121659	138302	152315	169188	18292
Baca	73078	82419	88494	92097	111459	120541	10406
Bent	83181	84676	89760	93323	97206	98664	10148
Boulder	7087625	7396391	7928951	8679018	9487409	10391544	1152146
Chaffee	216616	243627	258464	277854	300364	326301	34566
Cheyenne	44269	58036	42763	50400	58968	67068	5411
Clear							
Creek	185037	199976	210319	240280	261160	285812	31623
Conejos	89282	98416	101689	109715	112187	118321	12691
Costilla	47252	51523	53843	55280	58084	62227	6546
Crowley	52830	59535	60560	69191	77238	90033	8685
Custer	42597	47915	52545	60202	65570	69297	7509
Delta	370010	398112	418505	462584	489168	505717	54666
Denver	14190861	15388595	16324949	17572966	19011759	20166048	2233125
Dolores	26135	27458	27015	31340	33098	36355	3548
Douglas	2514266	3001144	3446070	4106883	4819648	5506731	639126
Eagle	774357	893440	981409	1133645	1243657	1344509	146621
El Paso	9273409	10114954	10952703	11689432	12886643	13737987	1495669
Elbert	264433	301173	346673	386185	432329	491197	57295
Fremont	564441	606813	648245	701718	744296	780070	83858
Garfield	675563	733602	781946	860231	856328	1031432	14285
Gilpin	82474	88683	97004	110077	120086	131432	14285
Grand	185811	202379	219307	238278	255194	278478	30197
Gunnison	203977	212741	224085	248000	270475	284774	30096
Hinsdale	12899	13671	14046	14920	15784	16163	1761
Huerfano	89996	97514	105182	117290	129766	132555	13812
Jackson	24322	24917	24510	27422	27590	30843	3256
Jefferson	12040130	12994371	13973548	15145188	16274689	17493533	1924569
Kiowa	33525	40991	38954	47763	56455	56118	5531
Kit							
Carson	140343	154800	168660	166904	202457	212207	19445
La Plata	777151	839560	899644	968542	1047016	1092748	117165
Lake	109229	121490	131163	142265	152619	162278	17272
Larimer	4484099	4873784	5325865	5804309	6218884	6670139	737636
Las							
Animas	203150	224905	224870	239638	262173	271642	28925
Lincoln	79778	95701	91004	91416	100367	108234	11055
Logan	341872	377545	408153	425127	446880	494645	51335
Mesa	1885892	2051428	2173486	2391217	2562284	2708833	288469
Mineral	12773	12189	13052	14351	15292	16533	1745

**Table 4. County Personal Income. (Cont.)**

<b>Year</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Moffat	227022	242299	247752	257736	262882	273362	283066
Year	1994	1995	1996	1997	1998	1999	2000
Montezuma	367213	382577	396330	422755	463156	483719	507080
Montrose	492481	534488	561178	596198	629337	661509	709283
Morgan	427473	455304	487652	513284	540960	586650	594685
Otero	338442	359793	371391	394503	411418	426836	445381
Ouray	58266	62071	65182	72127	78631	85747	91117
Park	187827	211912	239704	272206	293817	335453	388280
Phillips	77903	73773	93441	98671	102184	106183	111436
Pitkin	586311	598514	657847	731173	811580	865207	1014080
Prowers	223291	245177	257220	286930	326632	351180	337590
Pueblo	2204982	2406851	2521097	2714603	2861165	2984598	3145555
Rio Blanco	118114	123508	122771	133221	138742	141358	155714
Rio Grande	186922	203668	216744	214053	236823	251420	253040
Routt	400874	426320	460813	497503	544197	598098	629997
Saguache	68078	70949	74643	75721	84131	92655	88282
San Juan	10047	10221	10417	10695	11118	12245	12761
San Miguel	122740	134357	140954	155710	172944	190090	202116
Sedgwick	48347	52645	61075	58200	66624	71381	66393
Summit	451910	507266	552060	606053	682650	746003	806193
Teller	344221	387834	427569	471408	501527	536209	562358
Washington	83678	100315	105305	105963	108779	116468	101062
Weld	2600974	2743454	2964464	3195770	3521443	3821817	4125887
Yuma	169013	158054	204326	208667	218544	229165	228673

## XI. Figures

**Figure 1** Estimated net cost of converting 35 agricultural acres to one county average household, ratio of services demanded to tax revenues generated (\$).



## X. Appendices

**Table A1. County Revenues**

County	1994	1995	1996	1997	1998	1999
Adams	123,644,195	132,352,211	140,947,493	140,527,607	138,953,976	160,409,514
Alamosa	9,308,565	9,985,773	10,510,321	10,214,612	9,990,642	10,766,828
Arapahoe	125,926,858	128,051,011	137,127,928	144,204,617	145,408,554	147,548,229
Archuleta	5,825,447	6,572,860	7,067,284	7,270,450	8,105,384	8,971,438
Baca	4,177,549	4,284,908	5,431,642	5,646,814	4,957,899	5,331,578
Bent	4,435,268	4,598,992	4,826,302	5,281,500	5,611,834	6,237,549
Boulder	106,780,263	112,516,640	120,164,774	123,026,473	132,274,569	149,663,660
Chaffee	7,006,086	8,052,456	7,873,501	9,055,658	8,908,492	10,127,025
Cheyenne	3,477,303	3,438,277	3,479,850	3,543,868	3,736,250	3,730,265
Clear Creek	7,312,079	7,899,738	8,556,900	9,667,100	10,826,499	11,937,511
Conejos	5,245,212	5,766,742	5,812,719	5,762,713	5,269,017	5,719,785
Costilla	5,123,232	5,815,576	6,019,202	6,085,939	5,799,331	6,472,635
Crowley	2,400,650	2,545,798	2,471,825	2,610,979	3,056,499	3,295,530
Custer	2,208,682	2,750,609	2,799,740	3,049,751	3,351,414	3,311,536
Delta	11,456,962	11,225,459	12,269,300	13,173,492	13,056,416	13,358,989
Denver	788,983,000	820,966,000	866,226,000	889,231,000	935,832,000	989,427,000
Dolores	2,938,556	2,556,076	2,745,206	2,574,744	3,386,863	3,172,219
Douglas	31,479,136	39,050,913	60,337,258	69,816,840	86,074,494	95,742,829
Eagle	22,939,353	24,901,096	30,778,476	34,887,182	37,710,149	41,617,033
El Paso	6,564,774	6,632,370	7,264,313	8,386,560	9,341,697	9,887,030
Elbert	143,890,841	153,485,605	165,594,357	154,530,700	155,395,282	167,881,044
Fremont	13,410,220	14,414,988	15,471,419	14,119,936	15,710,409	16,466,837
Garfield	15,401,774	15,432,474	16,841,202	21,704,467	24,746,224	27,043,323
Gilpin	6,553,620	7,352,440	8,762,126	8,101,275	9,645,562	11,223,464
Grand	10,158,297	10,871,522	11,422,110	11,741,171	13,859,219	15,411,325
Gunnison	10,837,184	10,847,576	10,931,974	10,883,515	11,471,686	12,373,290
Hinsdale	1,678,880	1,580,779	1,766,392	1,616,049	2,021,687	1,920,471
Huerfano	5,769,675	5,496,398	5,867,249	6,070,816	6,237,765	6,311,623
Jackson	2,271,515	2,473,029	2,413,538	2,793,204	2,676,653	2,545,849
Jefferson	194,195,122	209,650,195	220,488,186	230,585,679	223,746,583	228,252,191
Kiowa	2,994,010	3,211,578	3,128,462	3,080,992	3,332,259	3,270,296
Kit Carson	5,787,875	5,896,494	6,134,156	6,680,565	7,767,634	7,156,945
La Plata	5,125,606	5,456,328	5,486,318	5,381,658	6,056,997	6,642,061
Lake	21,234,683	22,296,633	24,588,480	24,954,527	26,986,822	31,417,591
Larimer	74,568,630	79,581,021	90,840,310	99,227,185	114,427,176	130,918,702
Las Animas	8,795,194	8,210,960	8,629,618	8,431,556	10,646,842	10,095,053
Lincoln	6,651,207	6,554,764	6,695,177	7,278,918	7,060,781	7,224,257
Logan	10,740,062	10,739,658	12,201,244	12,657,535	11,828,117	13,025,470
Mesa	57,578,933	60,661,890	66,573,838	68,735,413	70,487,776	75,075,235
Mineral	1,321,369	1,423,396	1,666,464	1,484,471	1,688,877	1,719,213
Moffat	13,801,448	14,662,755	14,921,265	15,283,324	16,583,725	17,190,266
Montezuma	10,704,388	10,791,051	11,403,894	11,674,584	14,800,319	12,683,330
Montrose	17,005,855	19,300,545	19,607,291	20,014,891	19,620,198	20,719,294
Morgan	14,693,018	17,421,399	17,016,517	17,112,330	17,424,140	18,000,440
Otero	9,875,286	10,900,120	10,417,274	10,549,069	10,425,622	11,896,228
Ouray	2,290,978	2,621,016	2,810,239	3,312,194	3,790,337	3,659,249
Park	9,173,912	9,885,991	11,692,173	12,518,862	13,156,803	13,740,757
Phillips	2,761,116	2,943,373	2,967,563	3,262,588	3,136,470	3,661,460



**Table A1. Continued.**

<b>County</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
Pitkin	27,238,529	27,101,587	29,106,185	32,429,933	35,796,668	35,603,127
Prowers	8,478,044	9,431,792	9,214,148	9,164,970	10,183,834	12,737,039
Pueblo	66,003,333	72,245,063	72,850,542	63,596,037	67,894,524	70,374,489
Rio Blanco	8,983,228	9,325,491	9,183,049	8,822,221	9,434,123	10,174,606
Rio Grande	6,966,798	6,736,613	6,895,188	7,207,146	7,149,182	6,762,581
Routt	13,707,794	14,825,226	15,685,263	18,821,780	19,231,382	22,143,231
Saguache	5,265,432	5,325,048	5,501,042	5,649,583	5,912,079	5,970,079
San Juan	1,060,229	1,047,718	1,139,863	1,277,979	1,199,613	1,523,019
San Miguel	7,960,352	7,769,375	8,391,843	8,512,008	9,157,216	9,636,025
Sedgwick	2,702,065	2,908,924	2,995,964	3,110,766	3,582,486	3,772,047
Summit	19,340,131	20,404,062	23,005,976	24,303,574	27,075,227	30,608,058
Teller	10,287,009	10,880,236	11,745,451	12,233,426	13,365,199	13,522,454
Washington	5,265,915	5,417,263	6,141,323	6,160,112	6,709,508	6,578,948
Weld	75,772,997	79,236,897	80,448,485	95,393,304	81,637,757	88,568,829
Yuma	5,970,021	6,703,563	6,505,414	7,021,625	7,301,660	7,964,492

**Table A2. County Expenditures**

<b>County</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
Adams	106,068,209	105,733,559	109,556,048	107,667,635	101,657,469	112,328,846
Alamosa	7,603,637	8,136,772	8,976,744	8,502,890	8,354,314	8,937,062
Arapahoe	104,897,173	110,070,556	118,304,187	122,561,178	121,759,299	133,123,566
Archuleta	4,560,995	5,052,981	5,195,638	5,508,322	6,074,746	6,695,293
Baca	3,453,238	3,794,778	4,067,964	4,339,441	4,202,552	4,355,938
Bent	3,420,283	3,741,960	4,072,621	4,403,716	5,111,724	5,176,086
Boulder	91,774,291	91,432,489	94,489,383	94,622,111	101,960,119	117,130,015
Chaffee	5,502,245	5,971,750	6,195,000	6,918,543	6,679,007	7,599,286
Cheyenne	2,717,913	2,784,719	2,834,701	2,611,152	2,874,736	2,891,202
Clear Creek	5,653,863	6,359,531	7,285,118	8,468,548	9,177,474	9,998,552
Conejos	4,288,370	4,984,739	5,072,774	5,010,066	4,587,736	4,789,869
Costilla	4,487,187	4,948,075	5,902,332	5,709,688	5,039,484	5,289,393
Crowley	2,051,220	2,135,548	2,207,781	2,079,418	2,161,004	2,443,585
Custer	1,855,733	2,039,799	2,269,007	2,433,865	2,583,937	2,717,651
Delta	9,430,035	9,430,574	10,117,269	10,450,642	9,742,207	10,859,064
Denver	631,805,000	664,248,000	702,949,000	721,253,000	722,181,000	790,637,000
Dolores	2,102,360	1,952,524	2,208,236	2,083,541	2,377,897	2,400,858
Douglas	22,668,514	25,180,611	28,903,782	33,171,230	41,149,927	49,829,797
Eagle	15,135,157	16,342,432	18,562,956	21,111,643	24,670,738	26,105,771
El Paso	5,828,842	5,773,392	5,773,900	6,021,517	6,195,652	8,283,534
Elbert	126,763,600	131,053,433	140,898,515	133,869,295	139,070,743	145,428,910
Fremont	11,270,810	12,652,185	13,620,052	12,410,720	13,110,846	14,544,126
Garfield	12,296,093	12,225,848	13,380,168	16,158,209	18,130,855	19,159,124
Gilpin	3,650,371	4,468,697	5,086,061	6,058,183	6,499,729	7,388,877
Grand	7,892,111	8,348,008	9,951,403	10,136,470	11,241,059	11,782,883
Gunnison	7,148,697	8,567,265	8,718,479	8,642,596	8,867,537	9,462,181
Hinsdale	1,232,416	1,225,521	1,514,475	1,540,869	1,511,064	1,663,242
Huerfano	4,983,532	5,080,139	5,338,017	4,866,473	5,061,184	5,341,461
Jackson	1,719,128	1,887,570	2,043,509	1,994,605	2,022,638	2,251,652
Jefferson	140,400,374	145,081,029	156,891,636	154,839,444	136,468,961	153,028,651
Kiowa	2,159,513	2,203,657	2,199,746	2,200,322	2,442,106	2,319,828
Kit Carson	4,539,798	4,452,534	4,833,577	4,508,553	5,372,818	5,572,941
La Plata	4,516,426	4,991,268	5,038,151	4,924,672	5,623,009	5,997,892
Lake	13,909,764	15,595,971	16,087,290	17,646,707	17,660,810	19,297,564
Larimer	64,779,014	66,867,859	75,100,390	81,053,245	86,560,366	98,902,840
Las Animas	7,610,330	7,039,362	7,452,357	7,399,858	7,821,995	7,966,691

**Table A2. Continued**

<b>County</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
Lincoln	4,529,293	4,577,095	4,775,102	4,707,445	4,820,789	5,220,461
Logan	8,407,978	8,417,990	9,197,536	10,222,503	9,566,039	9,975,950
Mesa	42,280,871	46,810,144	50,480,385	50,795,984	50,594,478	56,047,344
Mineral	1,018,846	1,110,185	1,293,176	1,073,839	1,272,475	1,252,265
Moffat	11,940,764	12,762,932	12,638,730	12,932,565	14,329,982	14,721,693
Montezuma	9,514,800	8,843,260	9,468,550	9,183,210	11,463,060	10,363,059
Montrose	12,527,090	12,403,933	14,358,464	16,066,971	15,542,861	17,600,408
Morgan	10,658,363	12,243,771	12,445,319	12,745,386	12,564,049	14,129,108
Otero	8,786,588	9,287,615	9,435,564	9,341,678	8,972,647	10,066,395
Ouray	1,979,138	2,258,718	2,565,139	2,864,127	3,136,496	3,012,321
Park	8,009,591	7,931,788	9,900,700	11,025,482	10,916,942	11,186,839
Phillips	2,250,124	2,592,213	2,456,610	2,449,046	2,323,457	2,499,587
Pitkin	15,472,111	15,837,324	14,692,440	14,907,397	16,307,825	20,686,888
Prowers	6,678,508	6,916,196	7,746,250	8,001,930	8,190,556	9,755,794
Pueblo	57,754,575	60,687,951	62,183,959	50,472,480	56,343,928	61,022,442
Rio Blanco	4,867,183	5,465,629	5,544,795	5,681,235	6,384,175	7,380,560
Rio Grande	5,100,196	5,127,415	5,581,198	5,290,908	4,979,496	4,994,083
Routt	10,486,497	11,404,347	13,211,121	14,022,547	16,008,575	18,603,722
		4,588,731				
Saguache	4,490,927	5,017,903	5,910,165	5,306,221		5,459,384
San Juan	862,727	844,160	1,047,506	1,116,941	1,066,596	1,179,340
San Miguel	5,417,291	5,589,629	7,204,992	7,153,360	7,653,560	7,949,648
Sedgwick	1,805,062	1,961,682	2,166,211	2,214,266	2,229,679	2,321,639
Summit	12,647,229	13,914,341	15,697,097	16,418,206	18,775,919	23,241,988
Teller	8,378,944	8,781,660	9,910,447	10,392,871	10,560,851	11,821,432
Washington	4,176,264	4,084,998	4,805,354	4,402,777	4,574,274	4,941,641
Weld	69,581,796	69,184,509	71,879,940	76,667,232	72,696,194	77,444,694
Yuma	4,780,513	5,067,936	4,786,285	4,928,577	5,296,319	5,438,625

**Table A3. School District Operating Revenue by County**

<b>County</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
Adams	286,365,190	342,517,480	327,339,258	372,757,135	411,144,134	391,690,706
Alamosa	14,640,844	28,316,412	18,483,994	18,141,923	17,856,175	18,291,475
Arapahoe	512,773,045	753,937,954	573,236,723	614,260,532	682,464,101	876,518,098
Archuleta	7,792,920	8,494,701	9,799,003	10,179,160	10,906,398	10,744,145
Baca	6,534,694	6,941,422	7,147,879	7,244,001	7,674,775	8,099,215
Bent	6,152,117	6,639,883	6,502,225	6,644,332	6,987,123	7,636,438
Boulder	323,073,859	247,970,476	252,417,788	443,394,552	368,193,041	316,477,722
Chaffee	12,207,484	13,100,072	14,891,748	22,444,005	16,566,633	16,582,210
Cheyenne	3,746,214	3,789,349	4,354,959	4,612,333	4,466,962	4,560,491
Clear Creek	8,526,898	8,572,453	8,823,090	9,332,287	10,695,978	30,951,466
Conejos	16,973,899	11,712,298	12,469,734	12,843,900	13,190,397	13,773,359
Costilla	4,443,263	9,077,044	6,032,059	6,126,770	6,203,370	6,133,077
Crowley	3,252,296	3,495,655	3,967,752	4,406,314	4,052,896	4,292,216
Custer	2,463,514	2,659,797	2,749,013	2,784,475	2,851,885	3,010,540
Delta	26,568,243	30,926,540	29,145,537	25,052,366	33,654,706	30,490,423
Denver	392,205,036	411,307,176	479,162,468	843,411,157	771,520,314	554,237,646
Dolores	2,129,644	2,296,643	2,480,207	3,150,897	2,663,501	2,739,334
Douglas	230,330,661	144,223,516	148,547,655	259,453,171	275,789,782	253,684,025
Eagle	53,436,101	28,343,350	31,661,597	33,025,110	108,440,217	43,497,344
El Paso	475,227,324	509,440,839	22,611,274	23,808,704	39,344,907	636,850,733
Elbert	19,808,429	19,374,197	506,043,296	585,794,009	607,117,496	36,239,744
Fremont	30,177,948	34,044,651	34,199,367	36,158,157	38,790,992	38,669,203
Garfield	99,952,969	59,882,357	53,689,065	54,951,759	59,041,436	61,206,688
Gilpin	3,203,446	2,908,924	3,315,014	3,003,225	23,401,116	5,805,554
Grand	10,564,110	11,371,856	12,397,340	33,418,705	15,958,536	19,867,419
Gunnison	8,556,592	33,187,589	12,273,089	13,140,486	12,164,098	12,100,735
Hinsdale	542,822	566,363	628,239	669,613	838,610	1,031,034
Huerfano	7,330,595	7,332,243	7,775,192	8,012,434	7,863,715	8,003,922
Jackson	2,166,083	2,604,847	2,369,498	2,428,832	2,822,774	2,526,507
Jefferson	466,968,227	487,147,867	503,050,109	1,138,039,677	610,704,376	635,913,831
Kiowa	2,778,459	2,881,030	3,005,735	3,187,801	3,164,415	3,240,252
Kit Carson	10,600,357	10,809,229	11,342,800	12,668,540	20,157,459	15,395,173
La Plata	51,127,318	43,286,570	9,099,716	8,932,215	9,819,256	52,361,443
Lake	8,532,303	8,053,230	47,306,718	47,337,171	66,362,145	10,124,677
Larimer	185,808,553	203,936,698	226,658,367	233,555,838	310,420,694	265,720,294
Las Animas	16,909,240	19,216,105	17,531,318	18,052,399	18,082,248	19,714,940

**Table A3. Continued.**

<b>County</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
Lincoln	5,797,271	5,939,262	6,469,554	6,592,339	9,228,103	9,927,651
Logan	24,232,398	21,015,750	22,187,240	24,298,663	24,324,369	24,095,731
Mesa	93,445,305	99,476,758	106,965,628	111,585,079	123,502,419	123,059,782
Mineral	1,217,692	1,234,066	1,386,710	1,380,766	1,491,876	1,577,927
Moffat	15,163,572	14,685,442	15,374,635	16,752,933	17,356,820	17,963,311
Montezuma	36,705,872	27,284,210	27,909,189	32,169,034	30,361,148	29,807,857
Montrose	29,871,148	30,766,670	31,231,014	32,424,250	33,372,703	34,416,460
Morgan	35,448,790	33,080,749	34,269,212	33,660,215	48,417,392	38,188,043
Otero	27,922,668	34,050,069	28,773,054	28,872,345	30,807,835	30,501,819
Ouray	5,294,477	6,940,177	4,578,785	4,887,560	5,052,698	5,217,972
Park	11,409,832	20,536,973	13,795,560	15,155,536	29,828,995	16,457,956
Phillips	5,721,423	6,038,494	6,184,746	9,429,856	6,807,817	7,032,398
Pitkin	10,138,934	15,689,441	12,406,568	12,336,932	14,801,129	16,361,541
Prowers	16,807,816	17,570,939	18,083,984	18,536,955	19,036,585	20,200,272
Pueblo	128,678,416	129,936,567	123,480,832	145,309,192	138,770,045	177,116,096
Rio Blanco	10,797,840	9,881,387	9,513,256	10,446,739	16,503,391	11,336,985
Rio Grande	14,519,636	19,775,674	15,915,962	16,676,452	17,230,147	17,572,610
Routt	17,502,691	17,804,808	19,239,086	47,838,942	24,519,862	25,472,265
Saguache	8,944,975	7,570,257	8,343,367	10,275,542	9,045,769	9,269,419
San Juan	1,037,390	1,116,156	1,152,368	1,019,208	1,191,696	1,154,564
San Miguel	7,113,266	10,023,568	8,045,694	12,889,691	13,920,133	10,310,166
Sedgwick	3,375,069	3,454,860	4,101,475	3,980,567	4,053,203	4,233,670
Summit	41,044,431	61,285,150	21,473,789	21,766,226	24,275,581	25,666,390
Teller	22,095,260	20,660,583	20,645,740	27,478,848	26,163,684	26,730,906
Washington	8,188,668	9,053,450	8,672,566	10,122,946	9,310,483	9,437,344
Weld	158,317,075	170,195,299	164,032,190	197,773,671	189,807,268	218,532,558
Yuma	12,030,649	12,761,692	13,732,113	13,603,260	15,034,683	15,393,268

**Table A4. School Operating Expenses by County**

<b>County</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
Adams	301,228,195	292,934,111	320,858,725	394,211,613	415,379,431	422,689,533
Alamosa	14,023,484	16,064,393	26,594,251	22,117,502	17,836,645	18,494,063
Arapahoe	511,239,960	546,723,800	637,919,145	699,047,198	682,173,171	720,772,804
Archuleta	6,965,861	7,541,212	9,433,214	18,212,096	11,789,107	9,977,060
Baca	6,077,856	6,610,831	7,141,231	7,479,947	7,748,477	8,147,139
Bent	6,338,347	6,390,847	6,260,654	7,109,198	6,943,307	7,180,212
Boulder	239,923,879	264,381,188	287,177,489	359,185,093	319,618,547	400,856,263
Chaffee	11,790,108	13,113,074	15,353,467	22,067,619	22,165,067	16,926,270
Cheyenne	3,497,624	4,054,897	3,948,450	4,242,797	4,284,730	4,330,514
Clear						
Creek	8,442,740	8,688,117	8,710,257	9,101,378	10,228,876	10,804,562
Conejos	9,752,055	10,581,600	11,555,542	12,480,408	12,564,284	13,993,390
Costilla	4,200,733	4,986,481	7,068,363	7,970,250	6,120,553	6,208,513
Crowley	3,144,344	3,276,285	4,279,394	4,415,318	3,806,961	4,057,875
Custer	2,705,480	2,467,507	2,795,528	2,632,752	2,806,735	2,946,506
Delta	25,999,986	28,436,240	32,820,650	25,230,100	31,210,428	31,987,490
Denver	414,192,879	421,537,122	459,722,451	856,702,864	534,393,852	567,468,073
Dolores	2,235,144	2,192,343	2,287,269	2,328,267	2,458,960	2,433,516
Douglas	153,902,513	205,557,843	182,916,011	226,822,390	234,053,587	290,237,526
Eagle	32,410,167	48,248,044	43,389,376	36,941,714	59,406,688	58,860,979
El Paso	414,656,193	463,023,783	23,311,392	26,375,412	29,489,569	621,251,270
Elbert	15,959,320	8,629,599	562,019,897	605,168,682	661,037,706	44,626,821
Fremont	29,325,071	33,324,273	35,980,111	36,045,085	37,683,552	36,309,781
Garfield	52,912,112	86,905,309	63,578,596	54,339,710	58,540,063	59,892,843
Gilpin	2,665,246	3,156,479	3,214,341	3,331,835	4,850,821	15,684,270
Grand	10,601,729	11,375,299	12,494,901	16,695,809	29,654,748	22,260,906
Gunnison	8,736,143	12,128,790	30,736,367	13,984,155	12,649,726	12,514,894
Hinsdale	537,777	596,099	658,441	731,715	711,463	970,526
Huerfano	6,606,273	7,159,203	7,414,036	7,858,812	7,973,276	7,797,764
Jackson	1,962,941	2,446,547	2,425,864	2,499,157	3,007,323	2,553,066
Jefferson	589,398,127	586,800,581	552,587,876	865,559,687	627,689,976	822,282,024
Kiowa	2,559,165	2,960,353	3,071,627	3,313,676	3,291,527	3,330,234
Kit						
Carson	10,283,204	10,858,546	11,825,673	11,674,328	13,741,567	18,606,778
La Plata	49,796,973	47,796,544	8,698,504	9,779,225	9,131,205	53,758,087
Lake	8,270,740	7,900,760	54,910,447	49,815,528	58,007,476	10,911,413
Larimer	225,991,155	204,633,074	215,574,049	252,065,962	326,451,950	276,808,720
Las						
Animas	16,535,243	16,401,681	20,003,605	17,382,196	17,857,653	19,690,928

**Table A4. Continued.**

<b>County</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
Lincoln	5,262,832	6,002,278	6,185,101	6,474,726	7,536,956	10,029,361
Logan	19,007,746	23,793,359	23,560,172	24,181,143	25,012,426	24,128,862
Mesa	91,347,515	101,114,229	106,470,885	144,916,404	124,335,695	125,301,990
Mineral	1,036,085	1,170,994	1,602,662	1,361,965	1,472,050	1,579,017
Moffat	16,362,458	16,958,822	16,447,798	15,360,321	15,969,511	18,353,447
Montezuma	24,558,081	32,780,054	30,246,702	31,781,541	30,105,805	30,567,789
Montrose	26,512,776	32,759,345	33,307,329	35,975,514	34,025,507	36,641,384
Morgan	27,795,662	34,132,316	38,015,311	34,944,969	35,357,249	46,695,779
Otero	25,081,089	28,191,305	34,962,423	30,244,306	30,943,544	29,441,280
Ouray	3,304,436	6,279,434	6,391,650	5,416,416	4,691,217	4,883,389
Park	10,996,588	14,366,618	16,551,544	16,019,344	18,545,331	26,177,441
Phillips	5,381,341	5,579,220	6,007,178	6,804,042	8,532,429	7,478,017
Pitkin	11,645,402	11,685,407	14,331,796	12,845,254	14,232,058	17,333,829
Prowers	16,028,106	17,299,352	18,291,994	17,917,863	19,449,478	19,239,855
Pueblo	115,530,996	130,142,205	131,726,726	146,878,785	135,902,362	146,175,058
Rio Blanco	11,822,296	10,250,547	10,036,343	10,855,875	10,606,886	14,984,348
Rio Grande	13,843,787	15,498,882	18,412,380	18,078,680	17,668,367	17,610,665
Routt	16,414,355	17,053,402	20,452,287	24,565,686	41,207,711	29,028,571
Saguache	6,683,674	9,775,398	8,636,162	10,818,674	9,202,458	9,562,105
San Juan	915,668	1,057,903	1,221,483	1,196,621	1,333,841	1,201,805
San Miguel	14,072,794	12,902,525	7,403,229	8,331,270	11,867,451	12,273,612
Sedgwick	3,151,600	3,539,762	4,063,184	3,934,537	4,148,303	4,634,803
Summit	20,521,827	50,437,031	45,411,023	23,036,975	23,539,379	24,946,088
Teller	18,070,663	24,248,029	21,579,485	28,006,776	25,097,407	25,549,668
Washington	7,503,498	8,823,707	8,986,370	10,023,739	10,811,830	9,267,839
Weld	129,439,328	166,016,011	177,775,550	185,804,712	233,193,566	235,471,548
Yuma	12,428,644	13,416,116	13,813,964	13,413,562	13,609,444	14,294,207