Overview

This Iowa Policy Research Organization (IPRO) report will examine several case studies, actions, and empirical analysis on county consolidation and county service delivery collaboration in which states are making an attempt to make local government more efficient, more cost effective and improve services.

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Definitions

*Economies of Scale*: as more units of services are provided, average cost drops.

*Collaboration*: using joint purchasing mechanisms, combining multiple county or municipality jurisdictions’ staffing or resources, or the creation of alliances across multiple governments to provide services in a more cost effective manner.

*Regions*: two or more counties, municipalities, or a county and overlapping municipality using collaboration to improve local government services to its citizens.

*Service Delivery*: providing what local governments are required by law to give to its citizens (e.g. mental health, maintenance of city roads, water service).
Part I: City-County Collaboration in Service Delivery

This section will examine city-county collaborations on service delivery in an effort to make local government more efficient.

Case Study in Iowa

Proposed Des Moines – Polk County Consolidation

The most recent vote to merge the city of Des Moines and Polk County failed in 2004. A study by the City/County Consolidation Commission found that that same level of services could be maintained while realizing five million dollars in savings through city-county consolidation, which eliminated duplication in service delivery. The merger was seen by some as a way to allow the city of Des Moines to share a regional tax base (with the suburbs) so services could be distributed more equitably. Residents outside the city of Des Moines, however, were more resistant to the merger. The merger proposal required the mandatory inclusion of minor municipalities and unincorporated townships into the merged government. More affluent suburb residents felt they did not share a common economic vision with the central city.

City-county consolidation efforts when proposed have only succeeded one fourth of the time nationally. A study by researchers from Iowa State University and the University of North Carolina at Charlotte found that between their sample of twelve city-county consolidation attempts where the argument for consolidation was based on “efficiency” and economies of scale, the referenda failed. In instances framing the policy change emphasized “economic development” and a “stronger economy,” the referenda were successful. This held even in instances with weak consolidation opposition movements. The Des Moines effort was framed in terms of potential gains in efficiency, which is why the authors claim the effort failed.

The report suggests there is little evidence that consolidation actually results in cost savings, or the reduction of metropolitan fiscal disparities. Even if there were, they claim, it would be difficult to convince voters who are skeptical of government being more efficient in any form. Nevertheless, city-county consolidation can improve economic development and spur economic growth.

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4 Ibid
Costs

Unrealized Cost Savings

City-county and county consolidation is often proposed as a cost saving measure. Proponents point to potential economies of scale found through consolidation. However, some empirical studies have failed to find such economies of scale because city or county services experience a U-shaped cost curve, in which costs initially fall but then rise. Over the last 15 years, cost saving through economies of scale, reduced duplication of efforts, and increased technical capacity in service provision for city-county consolidation has not been supported by empirical research. Average costs initially fall when consolidation occurs, flatten, and then rise. One estimate suggests economies of scale potential exist for populations of up to 15,000 and after which costs are constant or rise as services increase. Evidence of economies of scale in city to county consolidation efforts is mixed, compared to county-to-county collaboration in service delivery. This may be because cities and counties perform different functions in many areas.

While there is a consensus among economists that consolidation can result in cost savings, many public services such as education, police, and garbage collection have been found to limit economies of scale. With the exception of labor, cities and counties purchase a very diverse group of factors, few of which are purchased in large enough quantities to receive major price concessions. Studies have found the number of employees is not always reduced and wages of the entity with lower pay are raised to equal the wages of the entity with higher pre-consolidation pay. Larger, consolidated governments can require an extra costly layer of management. A report by Iowa State University professor Alfred Ho concludes that tax savings is not a significant justification for consolidation, especially if it will involve large political and re-organizational costs.

Personnel Challenges

Morale problems among employees can emerge after separate regional government entities are merged due to consolidation. Compensation scales, employee classification systems and differences in policies are potentially sensitive topics that must be dealt with carefully. The difficult process of combining the separate governments results in uncertainty among staff, and these problems can persist for years. The skillfulness in addressing these issues can be an important factor in the success of any consolidation.

5 Hardy, Pat. “The Consolidation of City and County Governments: A Look At the History and Outcome-Based Research of These Efforts,” University of Tennessee Institute for Public Service, 2005.
7 Hardy, Pat. “The Consolidation of City and County Governments: A Look At the History and Outcome-Based Research of These Efforts,” University of Tennessee Institute for Public Service, 2005.
9 Ibid
10 Ibid
Benefits

Potential Cost Savings
Potential monetary savings is often the most commonly cited reason for regional service delivery collaboration, with economies of scale being the rationale. Consolidated local governments can avoid duplicating services and more efficiently use government resources. The workforce after consolidation can be streamlined and better technology can be purchased. Lower costs can potentially be realized through more bargaining power as a result of increased market share. While it has been previously mentioned that consolidation does not always result in cost savings, there is a consensus among economists that it can.

Economic Development
Consolidation can contribute to more efficient allocations of public goods. Increased regional cooperation from consolidation can help in attracting businesses. Environmental issues such as sprawl and traffic congestion can also be better addressed.

Services
City-county consolidation can lead to quicker decision-making and higher quality services. More centralized coordination and planning leads to greater effectiveness of services. While some reports claim gains in efficiency are unlikely, perceived gains in service quality are more likely.

Consolidated governments have greater financing available, allowing it to provide higher quality and increased services. A larger tax base allows for more debt issuance for expanding development and infrastructure.

Part II: County-to-County Service Delivery Collaboration
This section examines several case studies where states have created service delivery regions to make local government more efficient.

Overview
All 99 counties in Iowa have an elected official under the positions of attorney, auditor, recorder, sheriff, three to five supervisors, and treasurer. Iowa compared to other states in the Midwest has a

16 Ibid
low expenditure local government with fewer governmental units (See Figure 2). County service collaboration has occurred in a variety of ways across the United States. Many of which is still being studied or enacted in pilot programs to ensure the results are beneficial.

Iowa

County Service Delivery Collaboration
As an example of a possible consolidation of counties in Iowa, consider combining Winneshiek, Allamakee, Fayette, and Clayton Counties. Together they had an estimated population of 73,000 in 2008 and 34 elected county officials with salaries totaling $1.4 million. If those 34 positions could be reduced to 10, nearly $1 million could be saved.

Cost and Benefits of Service Delivery Collaboration

Without incentives for local government to collaborate, statewide efforts could prove poorly. This could result in an uneven implementation of service delivery, thus hurt the quality of service delivery especially in rural areas with large geographic distances between counties. Where there is no financial or legal incentive for local governments to collaborate, the results of cost savings are mixed. Leaving little potential for cost savings to be realized. Iowa school districts are funded on a per capita basis, creating a natural incentive for schools districts to consolidate when enrollments plummet. Likewise, statewide legislation could fund county government on a per capita basis, creating incentives at the local level for collaboration in service delivery.

Costs

Constituent Services
Closing county courthouses and service centers can pose inconveniences for some citizens who will need to travel further for services. Consolidation of counties may also make it more difficult to be responsive to local demands. However, more county services (e.g. bill paying, service requests) are now being offered online.

Legal Costs
Efforts to oversee consolidation of service delivery projects create costs to state governance in unnecessary legal or front-end costs at a time when fiscal budgets are tightening (e.g. Georgia mediation or legal costs to local governments mandated to create service delivery strategies).

Unintended Consequences
The unintended consequences of taking the wrong steps to collaboration could hinder cost savings. There must be a clear result based initiative by state governments so that local governments can act effectively or the process of collaboration could prove more costly than the current model.

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25 Ibid
27 Ibid
Additionally, cost savings may only appear in the long term creating a non-supportive environment for collaboration efforts at times in some cases.28,29

**Political Costs**

Policies for county service delivery collaboration are contentious as many elected officials and local government employees may feel that their jobs are being threatened through the process. Since much of the actions to collaborate services and coordinate on a regional level are voluntary it makes policy change difficult and slow. This is a result of passionate stakeholders who are generally more willing to build alliances in defeating or hindering the process of county service collaboration.30,31

**Benefits**

**Costs Savings and Economic Development**

Service delivery collaboration not only benefits the long term fiscal budgets, but the spillover benefit found in a Kent State University Study for local governments in Ohio was that there are economic development benefits which has emerged from the existence of a more operational and communicative “regional governance.”32 Unlike the case of city to county consolidation of services, there is empirical evidence that county collaborations lead to cost savings.

**Best Practices**

Service delivery collaboration may provide a model for other states that will establish collaborative local government policies to ensure that collaboration has the best outcome, because of best practices being established by other states.

**Improving the Quality of Services**

This policy may enhance the quality of services to citizens through greater networks of multiple governments providing more professional and specific task oriented services. According to a Wright State University study, “local governments might enjoy dividends in the form of intangible benefits by engaging in these transactions,” giving evidence of higher quality service through local government collaboration – benefiting rural areas in particular.33

**Common Sense**

Service collaboration and consolidation is a realistic measure that many local government officials acknowledge can happen. According to a survey on service delivery consolidation or collaboration, 88.8% of counties surveyed in North Carolina could indentify two or more services to consolidate.

29 Hoornbeek, John. "Local Government Collaboration in Ohio: Are We Walking the Walk or Just Talking the Talk?," Kent State University, 2009.
32 Hoornbeek, John. "Local Government Collaboration in Ohio: Are We Walking the Walk or Just Talking the Talk?," Kent State University, 2009.
Tax collection, building inspections, centralized dispatching, and animal control all garnered over 50% of responses in areas where those services could be consolidated or collaborated.34

State Action and Case Studies

Georgia is the only state to enact statewide legislation creating 12 service delivery regions and collaborating county government services across local government jurisdiction boundaries. Additionally, Indiana, Ohio, and Wisconsin state legislatures and other local governance partnerships have studied improving service delivery. Many local governments are acting before state governments.

Nebraska

Nebraska has 93 counties, originally established to serve Nebraska’s once dominant rural agrarian population. A report compiled in 2005 by the legislature’s Government, Military and Veterans Affairs Committee estimated that county consolidation and centralizing administration in metropolitan areas could reduce the current cost of local government by as much as 20 percent.35 The Legislature’s Government, Military and Veterans Affairs Committee killed a bill (LB826) in February 2010 that would have established a commission to develop a plan to reduce the number of counties to 30 through consolidation.36

Several legislators and political action groups raised a variety of concerns and points of opposition to the bill. Nebraska’s constitution states that the legislature cannot force consolidation; only counties can choose to consolidate themselves. The actions of LB826 appeared to be a “top-down” approach, instead of a “bottom-up,” grassroots approach. They were unable to find any instances of counties actually having consolidated in the United States (although one has been added in Colorado), and there exists a large body of literature that does not support county consolidation.37 The Nebraska counties that have the lowest tax rate have a population of only 1,447.38 Legislators were also concerned about the effects of removing county courthouses on small, local economies.39

Kansas

Kansas has 104 county governments. A report by Hugo Wall School of Public Affairs at Wichita State University found the alternative structure with the greatest potential cost savings was based on 25 regional districts. If enacted, this proposal could reduce statewide county expenditures by $826 million. General Expenditures could be reduced by $662 million, salaries by up to $317 million, hospital costs by up to $230 million, utility costs by $178 million, highway costs by $130 million, sewerage costs by $79 million, natural resource costs by $66 million, police protection costs by $45 million, health costs by $33 million, and interest costs by up to $33 million. The level of debt incurred could also be reduced by as much as $437 million.  

North Dakota

North Dakota has 53 counties. A proposal to consolidate the counties into 15 ‘super’ counties could achieve cost savings of five percent for the four service categories. Road and highway expenditures could be reduced by three percent, general government by 10 percent, and health and welfare services by 15 percent. However, public safety expenditures would increase by 25 percent. An alternative 26 county proposal would result in less cost savings, but increased expenditures would also be less.  

Georgia

While Georgia implemented service delivery regions to collaborate services the intentions behind these actions were to improve delivery quality and not cost effectiveness. Georgia Service Delivery regions date back to 1957 and were fully implemented for Great Society Programs during the 1960s. By 1989, the service delivery regions primary objective was for economic development. While some cost savings have been made over the years no figure has been calculated.  

Action

Georgia had 159 counties operating under 16 service delivery regions. Georgia State Assembly in the late 1990s after an extensive study by a local government commission made a two-fold action in collaborating service delivery in local governments. First, the state required local governments to create service delivery strategies. Second, develop service delivery regions to better facilitate service delivery strategies.  

The State Assembly passed House Bill 489 (Local government service delivery strategy agreement) in 1997. Local government service delivery strategies were required to be created by local governments (i.e. county, city) to ensure they were “most efficient, effective, and responsive.” The

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service delivery strategy gave flexible framework for local governments to figure out the best practices in providing base level services to citizens through a three-step process.\textsuperscript{44, 45}

Service delivery strategies were to be submitted to the Georgia Department of Community Affairs (DCA) within a two-year period.\textsuperscript{46} The consequence of municipal governments not submitting a service delivery strategy was a loss of state financial support. If strategies did not meet specific criteria, they would also lose some or all of state funding.\textsuperscript{47}

Georgia State Assembly established the 16 service delivery regions in 1998 with House Bill 1650 to create the 16 Service Delivery regions. Further, in 1999, the Georgia State Assembly passed House Bill 699, which established further service delivery strategy criteria along with creating specific financial assistance once strategies were submitted.\textsuperscript{48, 49}

In 2007, Governor Perdue established the \textit{Commission for a New Georgia}, which recommend further improvements on county service collaboration. Over the last three years, the state legislature and governor have enacted legislation and agreements to the actions recommended. Some were:

-Replacing the 16 service delivery regions with 12.\textsuperscript{50}
-Increased coordination and accountability across all the regions.\textsuperscript{51}
-Creating Regional Commissions (RC) for better governance and funding structures.\textsuperscript{52}
-Reducing the population and service delivery quality disparity across regions (e.g. having a minimum population level of 300,000 per region).\textsuperscript{53}

\textbf{Results}

Georgia Service Delivery intentions for creation and improvements over the years was intended to improve the quality of services and economic development, not for the purpose of cost-efficiency. The lack of available data on cost savings for Georgia’s policy has been confirmed by the Georgia Department of Community Affairs, History of Regions, October 2010. <http://www.dca.state.ga.us/regions/history/>. Additional information: Special mediation rules were set-up if counties and municipalities could not agree to strategies. The DCA along with the Georgia Department of Economic Development (DEcD) were tasked to bring resources closer and foster regional collaboration.

\textsuperscript{45} Ibid; Three Step Process: (1) identifying services currently provided and who has the present authority over those services. (2) Determining who has assigned authority in the future that will provide the services. (3) Explanation of funding sources for services in the future.
\textsuperscript{46} Georgia Department of Community Affairs, History of Regions, October 2010. <http://www.dca.state.ga.us/regions/history/>. Additional information: Special mediation rules were set-up if counties and municipalities could not agree to strategies. The DCA along with the Georgia Department of Economic Development (DEcD) were tasked to bring resources closer and foster regional collaboration.
\textsuperscript{51} Ibid
\textsuperscript{53} Ibid
DCA, Commission for a New Georgia, and the University of Georgia Carl Vinson Institute of Government.\textsuperscript{54, 55, 56} However, there is general cost efficiencies gained that the Commission for a New Georgia has highlighted (see footnote for comments on efficiencies).\textsuperscript{57}

\textit{Indiana}

Since 2007, Indiana has produced two significant reports regarding local government reform and service delivery consolidation. In 2007, Governor Daniels called for the \textit{Indiana Commission on Local Government Reform} (also known as the \textit{Kernan-Shepard Report}). In 2009, \textit{Ball State University} produced a study on local government reform in Indiana in which supports many of the key findings found in the \textit{Kernan-Shepard Report}.\textsuperscript{58}

\textit{Local Government Reform in Indiana (Ball State University Report) Key Findings}\textsuperscript{59}

\begin{itemize}
  \item The reports found that Indiana state and local governments could save an estimated $400 million to $622 million per year from various county consolidation and collaboration actions. This is a $62-97 per capita savings using United States Census 2009 population estimates.\textsuperscript{60}
  \item “Consolidation increases the prospects for regional cooperation in economic development.”
  \item “Estimates suggest that for each local government within a county, per capital capita costs rise by $1.29 annually” for other services (i.e. sewerage, solid wastes management, public welfare, administration, health services, and libraries).
  \item For public safety, “each additional local government within a county leads to more than $1.75 per person in public safety costs due solely to these inefficiencies.”
  \item “For larger municipalities (greater than a population of 50,000), police expenditures increase as the population becomes less dense.”
\end{itemize}

\textit{Wisconsin}

Wisconsin has not implemented legislation regionalizing service delivery collaboration, however in a recent study by the \textit{Local Government Institute} it indentified many ways Wisconsin local governments

\begin{itemize}
  \item \textsuperscript{54} Hudson, Betty. "Public Service Associate for Governmental Services and Research," Georgia Service Delivery Cost Savings, Nicholas Pottebaum, November 2010.
  \item \textsuperscript{55} Stafford, Saralyn. "Assistant Division Director at the Georgia Department of Community Affairs," Georgia Service Delivery Regions Cost Savings, Nicholas Pottebaum, November 2010.
  \item \textsuperscript{56} McMahon, Sharon. "Manager of Information & Strategic Services," Georgia Service Delivery Regions History and Goals, Nicholas Pottebaum, November 2010.
  \item \textsuperscript{57} Ibid; Additional information: (1) “Efficiency of shared services, accountability, county participation in funding and other measures certainly result in bigger bang for the taxpayer dollar.” (2) “A well-organized and functioning regional system will direct the right resources to local governments to build competitiveness for economic growth, which is the basis of prosperity.” (3) “The new regional map aligns districts for human resources, health and other state services, streamlining the infrastructure for better customer service.”
  \item \textsuperscript{58} Indiana Commission on Local Government Reform, "Streamlining Local Government," Indiana University, 2007.
  \item \textsuperscript{59} Faulk, Dagney; Hicks, Michael. "Local Government Reform in Indiana," Ball State University College of Business, 2009.; Additional Information: “Bulk of savings occurs in the largest counties […] in counties beneath the median size of roughly 33,000 resides to comprise less than $10 million. For counties above the median of 33,000 residents […] smallest total estimate savings of $422 million that could be realize due to consolidation […] of this $422 million in savings more than $371 million of potential total savings occur in counties with population greater than 50,000 residents.”; “Assuming that for each of the roughly 5,800 elected officials eliminated through the implementation of the Kernan-Shepard report, total support costs are $35,000 annually. This includes salary and benefits, office expenditures, travel, and other costs not transferred to other administrative or elected bodies, then the savings […] exceed $200 million.”
  \item \textsuperscript{60} United States Census Bureau, "Indiana 2009 Estimated Population," Population Division, November 2010 <http://www.census.gov/popest/estimates.html>. 
\end{itemize}
are presently collaborating and can improve service delivery in the future. In February 2010, The Local Government Institute published A Roadmap for Government Transformation Study on how Wisconsin local governments could improve governance in a more efficient and cost-effective way. The primary outcome of the study was “the need to enhance service or better position a region” for economic development. The study focused on a “broader” and “collaborative” local governance structure (Figure 2 highlight’s the report’s findings).

The institute found a number of ways local governance could improve in Wisconsin some of which were:

- “Create a broader mechanism for communities to overcome capital cost barriers whether at the state or regional level.”
- “Facilitate Intergovernmental Collaboration Councils at the multijurisdictional or regional level.”

Ohio

In 2008, the Ohio General Assembly passed House Bill 562 to establish the Ohio Commission on Local Government Reform and Collaboration to study ways to collaborate local governments. Ohio like Wisconsin has not performed a statewide action on local government service collaboration. The study discussed incentivizing local government collaboration through state funding in order to motivate innovation in areas of service delivery collaboration. The idea was to use carrots or incentives in state funding to encourage regional collaboration in service delivery.

In 1998, the state of Ohio pass legislation to further encourage regional collaboration in service delivery with the Joint and Cooperative Purchasing Option for Counties initiative. This allowed joint-use of county contract purchasing agreements on materials and equipment to get the least expensive expenditure at a competitive bid.

Summary

County to county collaboration in service delivery appears to provide an improvement in the quality of government services. Additionally, economic development through regional collaborations has been a key benefit from these actions. There is some evidence of cost savings. It should be noted

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62 Ibid
63 Ibid
64 Ibid
65 Ohio Commission on Local Government Reform, "Building a Better Ohio: Creating Collaboration in Governance," 2010.; Additional information: The commission supported the adoption of “…regional economic development plans to stress and promote each region’s respective economic strengths…” through the idea of alternative service delivery modeling. Developing strong economic regional structure would increase the likeliness of successful regional collaboration.; The legality of local governing structures just does not allow county and municipality collaboration so the commission stressed the idea of statewide legislation that would create a “‘home rule’ statute that empowers local political subdivisions to freely and voluntarily collaborate on service delivery…”
66 Hoornbeek, John. "Local Government Collaboration in Ohio: Are We Walking the Walk or Just Talking the Talk?," Kent State University, 2009.; Additional information: The commission found that there was a need to incentivize local government collaboration or else the nature of not collaborating would not exist. Finding that “to change this behavior, the Commission recommends incentivizing further collaboration […] using seed funding to support start-up and transitions costs.” The incentivizing of state funding could motivate innovation in areas of service delivery collaboration according to a Kent State University study.
67 County Advisory Bulletin (Columbus, Ohio: County Commissioners Association of Ohio, 1998).
that the intention in Georgia was not to save money, but to improve the quality of service. In the process of collaborating on service delivery some cost savings have occurred. Ohio county-to-county procurement methods point to further action where purchasing goods from a cheaper agreement can save money as well. Similar arguments apply to county to city consolidation, but with less empirical support for cost savings, and more in terms of economic development. County to country collaboration in service delivery in Iowa would be built on (a) cost savings, (b) improved quality of services, and (c) economic development and growth through regional collaborations. State legislation could follow the Georgia model or the Ohio model; one is top down and the other bottom up respectively.

Part III: Analysis of Regional Service Delivery in Iowa

Empirical Analysis of Cost Savings

As part of our study, we performed a multivariate regression analysis to determine the potential cost savings from consolidation of county services in Iowa. As the basis for the regression model, we analyzed total county expenditures per person for the 99 counties in Iowa as the outcome variable. The sample excludes Iowa’s three most urban counties of Linn (Cedar Rapids), Polk (Des Moines) and Scott (Davenport), where cost savings in these highly dense counties is not expected to be realized by rural counties. The budget expense data used in the model is broken down into the categories below. All data was retrieved from The Iowa Department of Management for the 2009 fiscal year.

- Administration
- Capital Projects
- Debt Service
- Environment and Education
- Government Services to Residents
- Mental Health
- Non-program Current
- Operating Transfers Out
- Physical Health and Social Services
- Public Safety and Legal Services
- Roads and Transportation

An initial analysis of cost trends shows a markedly higher expense on services per person for counties with smaller populations. Those with less than 25,000 people incur expenditures of more than $1,000 per person annually. This figure drops significantly as population increases. Counties with greater than 100,000 people have per capita expenditures on services of nearly half that of small population counties ($585). With 75% of the counties in Iowa having fewer than 25,000 people, it is clear that the state is not achieving optimal service delivery at the county level.

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68 Iowa Department of Management, "County Budgets," County Budget Summary FY09, <http://www.dom.state.ia.us/local/county/county_budgets.html>.
<table>
<thead>
<tr>
<th>County Population</th>
<th>Expenditures per Person</th>
<th>Expenditures per Person without Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 25,000</td>
<td>$1,036</td>
<td>$750</td>
</tr>
<tr>
<td>25,000 to 50,000</td>
<td>$700</td>
<td>$563</td>
</tr>
<tr>
<td>50,000 to 100,000</td>
<td>$603</td>
<td>$520</td>
</tr>
<tr>
<td>Greater than 100,000</td>
<td>$585</td>
<td>$545</td>
</tr>
</tbody>
</table>

Two regression analyses were performed on total expenditures per person. The cost of roads was included in the first model and excluded from the second one. We are doubtful that improved service delivery from larger counties would lead to reductions in road costs given geographic areas; this is the reason we isolate this expense and assume it would not change in our second model.

The regressions model per capita county expenditures on total services as a function of county population size (and population size squared to model nonlinear effects), median age (and median age squared, again to model nonlinear relationships), median income, percent high school graduates and racial diversity (percent black and Latino populations). Appendix Table 1 reports the regression results for total expenditures per person including roads. We find a nonlinear relationship between population size and per capita expenditures on services, with a decrease in expenditures occurring for counties with a population up to 100,000. Beyond that, the savings levels off. The optimal size for a service delivery region is between 50,000 and 100,000 population. The model explains 53% of the variation in expenditures per capita on services across Iowa’s nonurban counties with county population size, median age, income, educational attainment, and the percent black and Latino in the county.

[Appendix Table 1 and Figure 1 here]

The regression that includes road costs found a relationship of -.018 in expenses per person for each additional person in the county (see Appendix Table 1 and Figure 1). In other words, as the population of a county increases by one person, the expenditures per person fall by $.018. When taking road expenditures out of the regression, the relationship drops to -.01.

This relationship was applied to the expense data to project cost savings from county consolidation. Cost estimates were bracketed into target points of 50,000, 75,000, and 100,000 people per county. As population nears 100,000, there are no longer cost savings to be gained by grouping even more people into the county.

The estimates were made as follows: for counties with populations less than the targeted population (50,000, 75,000, or 100,000) the cost per person was adjusted to what it would be if it had the targeted population. For instance, a county with 40,000 people and expenses of $1,000 per person would be analyzed as follows:

\[ \text{Cost per Person} - \text{Regression Relationship} \times (\text{Targeted Population} - \text{Actual Population}) \]
\[ = 1,000 - .018 \times (50,000 - 40,000) \]
\[ = 1,000 - 180 \]
\[ = 820 \]

\[ \text{Population} \times (\text{Cost per Person} - \text{New Cost per person}) = \text{Savings} \]
40,000 *($1,000 - $820)  
$7,200,000

This methodology was applied to all counties for the targeted population sizes. If a county already had a population larger than the targeted amount, no cost savings were calculated. Also, floors were placed on per person expenditures at each population level. The expense per person was not allowed to drop below this floor, except in the rare case that the county already had a cost level below the floor. In that case, no expense savings were calculated.

The expense floors were set by calculating the average per person expense for existing counties near the targeted population size. For instance, counties with populations of 25,000-50,000 have an average per person expense of $700. When targeting county populations of 50,000, it is assumed that the savings will not reduce expenditures below a floor of $700 per person.

Based on the analysis performed, we calculated the following ranges for cost savings:

<table>
<thead>
<tr>
<th>Target of …</th>
<th>Savings on Total Expenditures</th>
<th>Savings without Road Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>50,000 Residents</td>
<td>$338,508,119</td>
<td>$215,619,388</td>
</tr>
<tr>
<td>75,000 Residents</td>
<td>$483,954,660</td>
<td>$241,273,566</td>
</tr>
<tr>
<td>100,000 Residents</td>
<td>$504,620,469</td>
<td>$260,122,740</td>
</tr>
</tbody>
</table>

We believe the regression model that assumes unchanged road and transportation expenditures is the more accurate of the two (second column). This model puts the range of cost savings at $215 million to $260 million annually for the state of Iowa. This represents roughly 10% of the $2.35 billion of county expenditures in 2009. The data reflects that the bulk of the savings can be achieved by targeting counties with a population of 50,000 or less.

Note: Median age also has a non-linear effect on county expenditures per person on services. As median age in a county increases, expenditures initially fall up to a tipping point, where counties with an aging population have significantly higher expenditures per person. For counties with aging populations, a one-year increase in median age leads to a $4.5 dollar increase in the per capita cost of service delivery. Many sparsely population Iowa counties also have aging populations.
Appendix

Table 1:
Impact of Population on Total Expenditures on Service Delivery Per Capita Across Iowa’s Nonurban Counties (Excluding Polk, Linn and Scott)—OLS Regression Estimates

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>b (standard error)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population in 2010</td>
<td>-0.0181</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>(.004)</td>
<td></td>
</tr>
<tr>
<td>Population Squared</td>
<td>0.0000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td></td>
</tr>
<tr>
<td>Median age (2000)</td>
<td>-301.9743</td>
<td>.032</td>
</tr>
<tr>
<td></td>
<td>(138.714)</td>
<td></td>
</tr>
<tr>
<td>Median age squared (2000)</td>
<td>4.6666</td>
<td>.016</td>
</tr>
<tr>
<td></td>
<td>(1.892)</td>
<td></td>
</tr>
<tr>
<td>Median income 2008 (lower bounds)</td>
<td>0.0039</td>
<td>.507</td>
</tr>
<tr>
<td></td>
<td>(.006)</td>
<td></td>
</tr>
<tr>
<td>Percent High School Graduate</td>
<td>-443.9972</td>
<td>.683</td>
</tr>
<tr>
<td></td>
<td>(1085.329)</td>
<td></td>
</tr>
<tr>
<td>Percent Black Population</td>
<td>-1516.8379</td>
<td>.648</td>
</tr>
<tr>
<td></td>
<td>(3315.571)</td>
<td></td>
</tr>
<tr>
<td>Percent Latino Population</td>
<td>1020.4589</td>
<td>.316</td>
</tr>
<tr>
<td></td>
<td>(1012.860)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>6117.8498</td>
<td>.041</td>
</tr>
<tr>
<td></td>
<td>(2951.377)</td>
<td></td>
</tr>
<tr>
<td>Number of counties</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Adjusted R Square (Variance Explained)</td>
<td>.53</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 Note: Unstandardized OLS regression coefficients with standard error in parentheses. Probabilities based on two-tailed significance tests.
**Figure 1:**
Predicted Per Capita Expenditures on Service Delivery Across Iowa’s Non-Urban Counties (Excluding Linn, Polk and Scott Counties) as County Population Size Increases (based on regression model above)
This report was prepared in Fall 2010 by the Iowa Policy Research Organization (IPRO), a non-partisan public policy undergraduate group at the University of Iowa. For additional research on this or other issues, please visit our website at http://www.uiowa.edu/~ipro/ or contact caroline-tolbert@uiowa.edu.

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