# Are Special Districts Strategic Complements or Strategic Substitutes?<sup>\*</sup>

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What happens to general-purpose local government spending for service provision when a special district enters the public service market? Theoretically, special districts can act either as complements by supplementing existing service provision spending or as substitutes by supplanting current service provision spending. We find a substitution effect using fixed effects regression on urban counties in the United States from 1972 to 2017. Special districts replace spending for public service provision by county governments; however, we find no similar result for municipal governments. But the results are nuanced–findings are confined mainly to public services that tend to cover large land areas like fire protection, sewerage, and solid waste management. Furthermore, we find evidence that day-to-day operations drive observed substitution, and that county size is an important factor depending on the functional service area.

Keywords: Special Districts, Public Service Provision, Local Government, Complements vs. Substitutes

## INTRODUCTION

Special districts are the fastest growing and most numerous individual form of local government in the United States (Goodman 2019). These districts are often single function in nature, providing a single service<sup>1</sup> to a fixed geographic area by spending resources levied from within its boundaries. Additionally, special districts are dynamic–many are created each year, and a percentage of existing districts are eliminated each year by dissolution or merger (Goodman 2020). The special district landscape changes often; however, even with its prominence in U.S. federalism, little is known about the systematic effects on spending for service delivery in local areas.

Specialization is a hallmark of special district service delivery (Foster 1997); however, special districts are not necessarily the only service provider within a specific policy domain in a geographic area. What happens to general-purpose local government spending for service provision when a special district increases or decreases its spending in the same policy area? Are some general-purpose governments (like counties and larger municipalities) less reactionary and more instrumental in special district formation by actively altering their spending for service delivery when special districts are formed? Theoretically, spending for service provision by special districts can substitute for general-purpose local government spending, lowering general government spending in the policy area. Or special districts can complement general-purpose local government spending, raising spending in the same policy area. However, there is little empirical evidence on which force dominates.

This analysis examines the relationship between special district spending and general-purpose local government spending in various functional service areas to determine the dominant nature of the abovementioned relationships. Drawing on the empirical literature on the interaction between municipalities and homeowners' associations (a type of quasi-public organization with features like special districts), we

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analyze a panel of 660 urban counties in the contiguous U.S. from 1972 to 2017 in 5-year increments using fixed effects regression while controlling for important demand-related factors. Our analysis suggests special district spending can substitute for general-purpose local government spending; however, the results depend upon which kind of local government is examined. County governments appear to be the most common target for substitution-particularly for services that tend to cover large land areas like fire protection, sewerage, and solid waste management.

Much of the empirical literature on the strategic interaction of local governments focuses on the relationship between horizontally arranged governments, e.g., local governments that do not overlap or share a similar tax base. These governments compete for residents and mobile capital in various ways, including yardstick competition and tax mimicry. The theory of yardstick competition can apply to tax setting in which voters consider tax burdens of neighboring jurisdictions when evaluating tax policy and performance of incumbent politicians of their home jurisdictions (Besley and Case 1995) or to budgetary and fiscal policy interdependence in which governments' levels of expenditures are influenced by the expenditure levels of neighboring governments (Case, Rosen, and Hines 1993). Tax mimicry occurs when public officials consider the tax burdens of neighboring jurisdictions when making policy decisions about tax burdens imposed upon their own residents (Ladd 1992). Our contribution focuses on vertically arranged governments that overlap and share a common tax base. Although the Advisory Commission on Intergovernmental Relations (ACIR) expressed interest long-ago in identifying the optimal level of government vertically to provide common municipal services (Advisory Commission on Intergovernmental Relations 1963, 1976), to our knowledge, the extant literature has not directly examined this relationship outside of homeowners' associations. As such, and combined with the absence of the ACIR's work (due to its disbandment) during the past several decades of special district proliferation and public service transformation, we are left with a severe knowledge gap in this particular aspect of intergovernmental relationships in our system of fiscal federalism.

The analysis proceeds as follows. First, the relevant literature on the proliferation and dissolution of special districts and the functional responsibilities of local governments is discussed. We then turn our attention to the local public economies literature on governments as substitutes versus complements to define the theoretical constructs underlying our research. Next, the data and empirical strategy are explained. Finally, results are presented, including several robustness checks, and policy implications are discussed.

## **PREVIOUS LITERATURE**

## Special District Proliferation and Dissolution

The first official Census of Governments survey reported 12,340 special districts in the U.S. in 1952 (Goodman 2020). By the 2017 Census of Governments survey, there were 38,542 independent special districts in the United States (U.S. Census Bureau 2019), constituting a 212% increase or annualized growth rate of 1.7% (Goodman 2020). This proliferation compares to the growth in general-purpose governments (e.g., counties, municipalities, and towns/townships) of only 4.64% overall or 0.07% annually (Goodman 2020). Much of this growth in special districts occurred between 1962 and 1992–a 68% increase in the number of special districts overall and a 152% increase in the number of special districts in metropolitan areas, including both single-purpose special districts (57% increase) and multipurpose special districts (713% increase)—when there was a commensurate increase in functional responsibilities and professionalization of governments (Stephens and Wikstrom 1998). At the same time, however, the number of county governments remained the same, there was only a modest increase in municipalities, and we saw a decrease in towns and townships (Stephens and Wikstrom 1998).<sup>2</sup>

More recently, Clark (2014) noted that while the number of special districts nearly tripled between 1952 and 1997, the growth of special districts slowed to less than half this rate and even declined in some areas in the fifteen years since, despite continued population growth across the nation. Through a survey of more than 40 practitioners, government administrators, and local government experts in 30 states, Clark (2014) found that the most common explanation for the decline in special district growth was mergers and consolidations in attempts to reduce costs. There is some consensus that special districts are too small to realize economies of scale and operate efficiently, so their existence creates duplication of services and competition for general-purpose governments (Clark 2014). Special district dissolutions have also been associated with changes in service demands, local government autonomy, fiscal capacity of the districts, and stewardship by elected officials (Bauroth 2010), as well as newness of the districts and constituents' willingness to pay for services, particularly in fragmented service delivery systems (Moldogaziev, Scott, and Greer 2019).

Special district dissolution is not always a reverse process of special district creation, as the procedures guiding special district dissolution are often very different from those governing incorporation (Bauroth 2010; Clark 2014; Moldogaziev, Scott, and Greer 2019) Although most states have codified statutes governing the formation of special districts, few states have a statutory process for mergers and dissolutions of special districts (see, for example, Hudson 1982). However, special districts must often meet state-level criteria related to local government administrative and fiscal responsibilities and rules embedded in their enabling documentation before they can dissolve (Moldogaziev, Scott, and Greer 2019). For example, in Texas, fiscal rules placed upon special districts prevent those with outstanding revenue- and tax-backed debt from dissolving (Moldogaziev, Scott, and Greer 2019). In Florida, the county or municipality might be required to demonstrate the ability to provide the services offered by the special district prior to its dissolution (Hudson 1982). These statutory provisions reiterate that the survivability of special districts depends upon important institutional constraints and the division of functional responsibilities for service provision such that dissolution is not simply a reversal of special district creation (Bauroth 2010).

#### **Functional Responsibilities of Local Governments**

Local governments of the same type, cities for instance, often vary considerably in the number and intensity of public services they provide. Even within the same state or same metropolitan area, local governments provide a broad array of services from very few to a great many. In some ways, this arrangement is predicted by Tiebout (1956), who suggested that numerous local governments will compete by providing a diverse array of public services at different tax prices. A small literature emerged in the late 1970s and early 1980s in attempts to quantify the differences in functional responsibilities of municipalities across states and metropolitan areas (Liebert 1974; Dye and Garcia 1978; Clark, Ferguson, and Shapiro 1982). The methodologies developed during this period and the subsequent research sought to understand changes in the number and quantity of services provided in an area. However, many of these analyses were explicitly focused on comparing areas horizontally, that is, non-overlapping city to non-overlapping city. In fact, much of the comparison was between cities over long geographical distances, such as comparing New York City to Chicago or Los Angeles. So, although the literature has considered how functional responsibilities are assigned, extant research often fails to consider the vertical dimension of local service delivery.

Much of this prior literature is based on research conducted by the Advisory Commission on Intergovernmental Relations (ACIR) in the 1960s and 1970s. The ACIR was concerned with identifying the optimal level of government vertically to provide common municipal services (Advisory Commission on Intergovernmental Relations 1963, 1976). Specifically, ACIR (1963) attempted to chronicle the assignment of responsibilities and examine whether those assignments were optimal given a list of criteria. ACIR (1976) took this further to examine how states and localities transferred functional responsibilities between governments, both horizontally and vertically. This examination is particularly important for our analysis because ACIR (1976) found a relatively large amount of service transferring between cities, counties, special districts, and their respective state. Specifically, ACIR (1976) reported that 19% of all service responsibilities transferred were moved to special districts. This represents the second largest recipient of transferred services behind county governments. Further, this finding suggests some substitution of service delivery between general-purpose local governments and special districts. León-Moreta (2018) hypothesized a similar relationship-the entry of new special districts should decrease municipal governments' functional responsibility; however, he found no empirical support for this substitution hypothesis.

## **GOVERNMENT AS SUBSTITUTES VS. COMPLEMENTS**

We rely on the local public economies literature (Oakerson and Parks 2011; Ostrom, Tiebout, and Warren 1961) to define the theoretical constructs underlying our research. A key distinction in this literature is the difference between the *provision* and *production* of public services. *Provision* refers to various decisions about the appropriate level of spending on public services, how much revenue to raise, and how to provide such public services. *Provision units* are organized to make these decisions. Important to our analysis, nearly all forms of local government are considered provision units. Counties, municipalities, and special districts all make decisions about the relative level of spending for service provision to satisfy their constituents' preferences with the available resources. In other words, provision units seek to maximize the welfare of their residents. We also recognize that provision units are strategic–existing in a complex network with other provision units, attempting to internalize (albeit often imperfectly) the decisions of other units.

Different provision units have different foci. General-purpose local governments (cities and counties) are multifunctional, financing numerous public services for a diverse constituency. Though counties differ from municipalities because counties are 'default' provision units while municipalities are 'optional' units (Oakerson 1999). Counties provide a baseline level of service provision, whereas municipalities provide a broader range of services. Maximizing general welfare in this system involves tradeoffs since these units may not possess sufficient scale or size to efficiently fund one or more public services. As such, these provision units may alter their *production* arrangements (translating inputs to outputs) to spend for public services more efficiently. Special districts are, by definition, more limited provision units specializing in providing a single public service. The welfare maximization process for these single-function units is significantly simpler, requiring no tradeoffs between service provision decisions. Special districts can choose alternate production approaches but can also alter their boundaries to achieve the appropriate scale for efficient public service production (Mullin 2009).

What follows is a series of propositions or proposals about how general-purpose governments and special districts can interact, given certain assumptions about the theoretical constructs. These are not intended to be falsifiable hypotheses but rather to guide our analysis of the empirical results that follow.

## Substitution

Using the theoretical constructs presented above, substitution is a common reaction for overlapping general purpose and specialized local governments. Due to their flexibility and specialized nature, special districts are often better suited to capture economies of scale, both in terms of customers and revenue generation, for a particular public service. General-purpose local governments, particularly municipalities, are often constrained by inadequate tax bases or fiscal limitations, making the "outsourcing" of public services to special districts attractive (Park and Park 2021). Similarly, functional transfers of authority between counties and special districts may allow citizens to re-sort service responsibilities consistent with their preferences (Oakerson 1999) Helsley and Strange (1998, 2000) contend that homeowners associations (another quasipublic provision unit with characteristics like special districts) are perfect substitutes for municipalities. If a more specialized provision unit finances a public service, there is little incentive for a general-purpose local government to expend resources for the same service (Helsley and Strange 1998). Helsley and Strange refer to this phenomenon as "strategic downloading."

There is little direct evidence of substitution in the extant literature. However, Cheung (2008) examines the theory proposed by Helsley and Strange (1998, 2000). Cheung finds that a 10% increase in the prevalence of planned developments in a city leads to an average decrease of 1.51% in per capita public expenditures, particularly in the categories of police and parks, but not infrastructure. As such, the author contends that public and private governments are perfect substitutes in consumption, which makes their spending strategic substitutes. In equilibrium, public governments provide less public service in response to private governments. In extending these findings to special districts, we make the following proposition.

*Proposition 1: Special district spending is a strategic substitute for general-purpose local government spending.* 

## Complementarity

In the context of the local public economies literature, a complementary relationship may arise due to the nested nature of provision units (Oakerson and Parks 2011), which occurs when they overlap. Special districts can take on nearly any geographic form (Bollens 1957), from hyper-local and internal to a municipality, to coterminous to another government's borders, to multi-county or metro-wide. The cross-boundary nature of many special districts makes them attractive alternatives for outsourcing a portion of public service production that general-purpose local governments find inefficient or cost-ineffective. For example, suppose two neighboring municipalities operate independent sewer systems but lack the capacity or scale to operate two separate sewage treatment plants efficiently. In that case, they may turn to a special district to overcome this challenge. The municipalities maintain local autonomy over the decision to expand or contract the geographic footprint of their respective sewer systems and outsource the portion of production that they cannot provide efficiently. In this way, sewerage spending is complimentary. Coincidentally, the ACIR recommended the usage of special districts in this manner in 1987 (Hawkins 1987).

Complementarity may also arise from the satisfaction of preferences. The members of a special district may prefer higher spending levels on the relevant public service than the general-purpose local government is willing to provide. Using within-district resources, a special district may augment spending in this area to satisfy its residents' preferences. Turnbull and Djoundourian (1993) examine the demand relationship between activities of overlapping county and municipal governments and found a complementary relationship except for police and infrastructure expenditures. Specifically, the authors found a public sector

expansionary effect such that county service provision is reinforced by greater municipal spending. While there is limited empirical evidence on the complementarity between general-purpose and specialized local governments, the theoretical and adjacent empirical evidence leads us to the following proposition.

*Proposition 2: Special district spending is a strategic complement for general-purpose local government spending.* 

# Independence

A third possibility also flows from the local public economies literature (Parks and Oakerson 1989). Special districts may serve as an "institutional overlay," providing public services where municipalities or counties are legally prohibited from doing so or are otherwise absent (Oakerson 2004). In this sense, special districts provide new spending or additional functional areas absent from the general-purpose government landscape. An (2021) illustrates this dynamic by examining Community Service Districts (CSDs) in unincorporated areas of California.<sup>3</sup> CSDs act as a stopgap between limited service provision by county governments and full incorporation as a municipality. In this sense, a CSD offers new services, and there is little interaction between general-purpose local governments and special districts. More broadly, if special districts act as an institutional overlay, filling in the gaps in legal authority or political will of general-purpose local governments, as Oakerson (2004) contends, the relationship between such governments and special districts will be independent or unrelated.

*Proposition 3: Special district spending is independent of general-purpose local government spend-ing.* 

Given the lack of empirical evidence in extant research, determining which proposition is likely to dominate is an empirical question. One might expect one proposition to dominate for a particular functional area or with a certain combination of nested governments. We outline the data and methodology next, followed by the main empirical results, and conclude with a series of extensions of our propositions that attempt to paint a clearer picture of the circumstances under which the propositions hold or do not hold.

# **DATA & METHODOLOGY**

# **Empirical Strategy**

To examine the question of whether special district spending is a strategic substitute or strategic complement to general-purpose local government (city and/or county) spending, the following equation is specified.

$$lng_{it}^{genpurp} = \beta g_{it}^{spdist} + \delta X_{it} + d_i + d_t + d_{rt} + \varepsilon_{it}$$
<sup>(1)</sup>

Where *i* indicates counties, *r* indicates MSAs, and *t* indicates years. The dependent variable is the natural log of per capita direct public spending  $(g_{it}^{genpurp})$  at the general-purpose local government (municipality and/or county) level. Our primary variable of interest is per capita special district spending  $(g_{it}^{spdist})$ . We focus exclusively on spending (as opposed to revenues or numbers of services provided or other service provision measures) because spending is the only measure that allows us to draw strict comparisons between general-purpose governments and special districts in terms of their functional responsibilities since

many general-purpose government services are financed with general revenues that would not necessarily match up with special district revenues levied for a single function or service. The null hypothesis is  $\beta = 0$  or no relationship between special district spending and general-purpose local government spending. If we fail to reject the null hypothesis, our findings will support our third proposition of independence between general-purpose governments and special districts. However, if the null hypothesis is rejected, then the sign of  $\beta$  will indicate which of our first two propositions dominates. When  $\beta > 0$ , special district spending is a strategic substitute.  $X_{it}$  is a vector of control variables as outlined below.

Our analysis contains three sets of fixed effects. First,  $d_i$  is a county-level fixed effect that controls for any unmeasured county-specific heterogeneity. This includes unchanging factors such as geography, prior infrastructure investments, and other unmeasured items that could lead a county to higher or lower public spending levels. Second,  $d_t$  is a year fixed effect controlling for any time-varying factors that jointly affect counties in the sample. This primarily includes business cycles; however, it is not limited to such factors. Lastly,  $d_{rt}$  is an MSA-year fixed effect controlling for regional shocks that jointly influence all local governments within the MSA but not between MSAs. These include items such as localized natural disasters, MSA-specific business patterns, and other MSA-specific factors. Identification is based on within county changes in special district spending. Additionally, standard errors are clustered on the county.

#### Data

The primary data for this analysis come from the Census of Governments, a full census survey conducted by the U.S. Census Bureau in every five years ending in "2" and "7". Using these data, we adopt the Census Bureau's definition of a governmental unit—one that has administrative and fiscal autonomy from other government units (U.S. Census Bureau 2019). This ensures that both general-purpose local governments and special districts are not controlled by a third party and can make decisions without outside interference. Our dataset includes all information on all county, municipal, and special district governments in the contiguous United States from 1972 to 2017. However, our inclusion of MSA-specific fixed effects (explained above) limits these data to only those counties included in an MSA in 1999. The final dataset includes 5,925 observations across 660 urban county areas in 45 of the 48 contiguous states.<sup>4</sup> As described below, spending is aggregated at the county level, and all other variables are observed at the same level.

The dependent variable is aggregated general-purpose local government per capita total direct expenditures, which includes all current, construction, and capital outlays but excludes utilities and intergovernmental expenditures. For a robustness check, in subsequent analyses, we disaggregate total direct expenditures to focus exclusively on current expenditures (excluding construction and capital outlays), which best reflect day-to-day operations. In addition, following the approaches of Carroll and Calabrese (2017), who examined the connection between expenses of nonprofit charities and aggregate direct expenditures of state and local governments, and of Brien, Eger III, and Matkin (2021), who studied the impact of various fiscal stressors on aggregate general expenditures by county governments in Florida, we also disaggregate total direct expenditures by function to examine how different kinds of special districts may influence generalpurpose local government spending. Like these esteemed researchers and others (Foster 1997), we believe this approach of disaggregating spending by function is essential to highlight the nuances of potential differential fiscal responses across various service provision categories that get obscured by studies only analyzing total aggregate spending. However, this disaggregation requires the general-purpose governments and special districts to provide the service, which effectively excludes two major local government functions–public education and policing.<sup>5</sup> The remainder of the functions can be seen in table 1 and figure 1.

Figure 1 plots the seven functions across time. Aggregate general-purpose local government direct expenditures are increasing for most functions; however, some (largely more expensive) functions are growing at a faster rate than others.



Figure 1: Mean Expenditure by Category (All General-Purpose Local Governments)

Table 1 shows our primary variable of interest-per capita special district spending. Overall, special district spending is a small fraction of general-purpose local government spending; however, some functions demonstrate near parity between the two service delivery arrangements when the data are disaggregated by function. This is particularly true for housing and community development and natural resource management. Table 1 also outlines the control variables for this analysis. They include measures of community wealth and population characteristics.

Variable	Source	Units	Mean	St. Dev.	Min	Max
GP spending, all categories	CoG	\$, per capita	1617.606	1639.451	0.000	52610.461
GP spending, fire protection	CoG	\$, per capita	65.578	76.111	0.000	1980.578
GP spending, housing & community devel-	CoG	\$, per capita	36.164	121.137	0.000	3572.541
opment						
GP spending, libraries	CoG	\$, per capita	16.424	20.954	0.000	337.701
GP spending, natural resources	CoG	\$, per capita	10.593	36.622	0.000	1738.628
GP spending, parks & recreation	CoG	\$, per capita	57.265	64.759	0.000	918.469
GP spending, sewerage	CoG	\$, per capita	90.015	101.824	0.000	2029.267
GP spending, solid waste management	CoG	\$, per capita	45.065	52.078	0.000	1054.499
SD spending, all categories	CoG	\$, per capita	212.234	390.211	0.000	7151.815
SD spending, fire protection	CoG	\$, per capita	10.072	27.558	0.000	350.176
SD spending, housing & community devel-	CoG	\$, per capita	33.218	58.801	0.000	1051.500
opment						
SD spending, libraries	CoG	\$, per capita	8.188	20.740	0.000	335.668
SD spending, natural resources	CoG	\$, per capita	9.333	59.869	0.000	1881.960
SD spending, parks & recreation	CoG	\$, per capita	7.208	28.787	0.000	475.896
SD spending, sewerage	CoG	\$, per capita	22.039	70.268	0.000	1489.938
SD spending, solid waste management	CoG	\$, per capita	3.589	18.830	0.000	416.071
Personal income, per capita	REIS	\$1,000S	37.504	11.626	15.470	183.568
Population	Census	1,0005	229.355	395.082	3.617	5367.293
Population density	Census	per square	0.644	2.758	0.000	71.431
		mile				
Population growth	Census	Constant	1.350	1.714	-19.294	17.450
		annual rate				
% 19 and younger	SEER	Proportion	0.292	0.040	0.150	0.467
% 65 and older	SEER	Proportion	0.125	0.037	0.009	0.360
Ethnic fractionalization	SEER	Index	0.204	0.156	0.002	0.585

## Table 1: Summary Statistics

*Notes*: GP=General-purpose Government; SD=Special District; COG = Census of Governments; REIS = Regional Economic Information System; Census = U.S. Census Bureau; SEER = Surveillance Epidemiology and End Results program. N=5925

## **REGRESSION RESULTS**

## **Aggregated Local Government Direct Expenditures**

The results of our analysis of total aggregated direct expenditures for all local governments are presented in table 2. For most functional expenditure categories, we fail to reject the null hypothesis on our variable of interest, per capita special district spending. This result of hypothesis testing indicates that special district spending is unrelated to aggregate general-purpose local government spending when considering all types of direct expenditures (i.e., current, construction, and capital outlay). Therefore, we can conclude at this level of expenditure aggregation that special districts are neither complements nor substitutes but rather independent service providers.

An important caveat to this finding is fire protection and housing and community development functions. For these two functions, we reject the null hypothesis that  $\beta = 0$  and conclude that special district spending on these functions is a substitute for aggregate general-purpose local government spending because of the negative sign on the coefficients. As shown in table 2, a \$1 per capita increase in special district fire protection expenditures (roughly equivalent to 10% of mean spending in this category) is associated with a 1.15% decrease in general-purpose local government spending. Put into elasticity terms,<sup>6</sup> for a county area with average aggregate local government fire protection spending of approximately \$10 per capita, the elasticity of general-purpose local government spending on fire protection with respect to special district spending is -0.116. This suggests that a 10% increase in special district fire protection spending is associated with a 1.2% decline in general-purpose local government spending on the same function. The effect size for housing and community development is half as large, with a \$1 increase in special district functional expenditures associated with a 0.5% decrease in aggregate general-purpose local government spending. For the average county, the elasticity of general-purpose local government spending on housing and community development with respect to special district spending is 0.176, suggesting that a 10% increase in special district spending is associated with a 1.8% decrease in general-purpose local government spending in the same functional area.

## **Disaggregated City & County Expenditures**

Three further questions linger, given the results presented above. First, are municipalities or counties driving the general-purpose local government results presented? The results in table 2 aggregate these two forms of government together; however, they may display distinct patterns of complementarity or substitution. The second is whether the effect is driven by operating or capital expenditures–a popular use for special districts. Finally, are larger central counties or more suburban or exurban peripheral counties driving the results? We explore these questions in tables 3, 4, and 5, respectively.

Turning to the first question, table 3 presents the same empirical approach as table 2; however, the aggregations change–one is for municipalities (top), and one is for counties (bottom). As seen in the top panel, there is generally no relationship between special district spending (by function) and municipal spending on the same function. The one exception is solid waste management, where a \$1 increase in special district spending in this area is associated with a 0.68% increase in municipal spending. The positive sign indicates a complementary relationship-special district spending spurs additional municipal expenditures. However, the elasticity is low at 0.024. This complementary result may indicate a collaborative relationship where providers specialize. In the example of solid waste management, it is conceivable that one actor is the

	All		Housing & Community		Natural	Parks &		Solid Waste
	Expenditures	Fire Protection	Development	Libraries	Resources	Recreation	Sewerage	Management
Per capita special district spending in same functional area	0.0000	-0.0115*	-0.0053**	-0.0159	0.0014	-0.0008	-0.0021	0.0041
	(0.000 0)	(0.004 6)	(0.001 9)	(0.008 3)	(0.001 0)	(0.0010)	(0.001 6)	(0.0027)
Personal income per capita	0.0057**	-0.0018	0.0115	0.0157	0.0179	0.0134	0.0234	-0.0033
	(0.001 8)	(0.008 6)	(0.027 6)	(1 610.0)	(0.0268)	(0.0102)	(0.0186)	(0.0110)
Population (1000s)	0.0000	0.0003	6000.0-	-0.0011*	0.0001	0.0000	-0.0010	0.0001
	(0.000 1)	(0.000 3)	(0.001 0)	(o.ooo 5)	(0.000 9)	(0.0003)	(0.000 6)	(0.000 4)
Population density	-0.0099	-0.1147	0.5953	0.3704	0.1190	-0.0132	-0.0269	-0.2855
	(0.021 9)	(0.1346)	(0.3767)	(0.6504)	(0.3917)	(0.1583)	(0.3332)	(0.4418)
Population growth	-0.0202**	0.0146	-0.3004**	-0.1388	-0.0726	-0.0516*	-0.0976	+0200.0−
	(0.005 1)	(0.029 5)	(0.101 6)	(0.072 8)	(0.081 0)	(0.0238)	(0.060 6)	(0.041 0)
% 19 and younger	-0.6342	1.6714	-2.7480	4.3609	-2.0930	-4.7012	-5.9944	-0.8603
	(0.7883)	(5.5171)	(13.2598)	(13.6525)	(11.1336)	(5.6290)	(8.7871)	(6.2437)
% 65 and older	-1.1452	7.6151	-2.0959	4.5500	-15.6997	0.7546	3.8365	-1.3187
	(0.6742)	(4.4203)	(9.5856)	(8.3365)	(9.5081)	(4.2101)	(7.5229)	(5.7287)
Ethnic fractionalization	0.0971	-0.9152	-3.4617	1.0740	4.9845	$-3.8737^{**}$	-4.7567	-2.7831
	(0.223 1)	(1.1762)	(3.0794)	(2.6412)	(2.8555)	(1.3001)	(2.8895)	(1.4366)
Constant	7.2382**	2.4539	1.1922	-2.3206	0.2268	4.9505*	5.1764	4.2824
	(0.271 1)	(2.001 8)	(4.382.6)	(4.3397)	(3.932.9)	(1.9459)	(3.0260)	(2.3047)
County FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MSA-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ν	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925
Dependent variable: Log per capita r	real direct expendit	ures on various catego	ories. Robust standa	d errors clustered o	on the county in pare	entheses. + p<0.1,* ]	p<0.05, ** p<0.01.	

Table 2: All General-Purpose Local Government Spending

			Table 3: Subg	roup Analysi	is			
			Dependent Va	ıriable: Log of per c	apita spending by <b>m</b>	unicipalities		
	All Expenditures	Fire Protection	Housing & Community Development	Libraries	Natural Resources	Parks & Recreation	Sewerage	Solid Waste Management
Per capita special district spending in same functional area	0.0000	-0.0087	-0.0038	-0.0083	0.0006	-0.0018	-0.0005	0.0068*
	(0.000.0)	(0.004 8)	(0.002 1)	(0.005 3)	(0.001 5)	(0.0014)	(0.001 4)	(0.003 2)
			Dependent	: Variable: Log of p	er capita spending by	y counties		
			Housing &					
	All		Community		Natural	Parks &		Solid Waste
	Expenditures	Fire Protection	Development	Libraries	Resources	Recreation	Sewerage	Management
Per capita special district spending in same functional area	0.0000	-0.0190**	-0.0034	-0.0166*	0.0011	0.0002	-0.0053**	-0.0119*
	(0.000 1)	(0.005 9)	(0.002 6)	(0.0084)	(0.001 0)	(0.0073)	(0.0019)	(0.005 4)
County FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MSA-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Z	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925
Robust standard errors clustered on	the county in paren	itheses. + p<0.1, * p<	0.05, ** p<0.01.					

garbage collector while the other is the garbage processor. Given the fragility of these results, more research is necessary.

The bottom panel of table 3 demonstrates that the aggregate analysis presented in table 2 was masking important underlying variation related to county governments. While there is no relationship for overall spending, fire protection, libraries, sewerage, and solid waste management demonstrate a negative relationship between special district spending and county government spending on the same function. The negative signs suggest a substitutive relationship. However, the elasticities range between 0.05 and 0.2, indicating far from a one-to-one substitution. These functions tend to be spatial in nature, providing the service over a large land area. Nonetheless, the increased prevalence of special district spending, likely of a regional nature, supplants county spending in the same area.

Table 4 respecifies the analyses from tables 2 and 3 with current expenditures rather than total direct expenditures. This change focuses the service provision arrangement on the day-to-day operations of both kinds of governments and eliminates concerns that capital expenditures drive any prior findings. The top panel of table 4 examines all general-purpose local governments, the middle panel examines municipalities only, and the bottom panel examines county governments only. Overall, the results are like those found in tables 2 and 3, suggesting that capital expenditures do not drive those findings. The statistically significant elasticities of general-purpose local government current expenditures with respect to special district spending are -0.107 for fire protection, -0.192 for housing and community development, and -0.177 for libraries. Elasticities for fire protection and housing and community development are nearly identical to those found in the total direct expenditure models in table 2. The finding for libraries is new, suggesting the inclusion of capital expenditures masked the more nuanced operating expenditures relationship between special districts and libraries. The sign is negative, indicating a substitutive effect.

The middle panel of table 4 indicates no relationship between special district spending and municipal spending in any spending category. The result is similar to what is found in table 3. Paired with the findings in the bottom panel of table 4, the results suggest the relationship between special district spending and general-purpose local government spending is related mainly to county governments. The county-specific results from table 3 are largely replicated in table 4, indicating a substitutive effect across the statistically significant functional areas. Combining all the results thus far, it appears the relationship between special district spending and general-purpose local government spending is a substitutive one confined largely to county governments, particularly in functional areas that tend to cover large land areas like fire protection, sewerage, and solid waste management.

Finally, table 5 explores the potential for the size of the county to impact the preceding analyses. Here, we disaggregate the results in tables 2 and 3 by the size of the county in 1970.<sup>7</sup> The first column of each grouping replicates the findings from tables 2 and 3 for the appropriate grouping. Focusing specifically on the prior findings for county governments, small to mid-sized county governments drive the findings for fire protection. Large counties, likely the home of central cities, do not see the same substitution effect. Perhaps an unsurprising finding given that central city municipal governments likely provide fire protection services in most large county areas. We find the opposite to be true with respect to libraries. The observed substitution effect appears driven solely by large counties. The prior finding of substitution for sewerage services seems to be driven by both small counties and large county-size component. Overall, the results in table 5 provide important explanations for what appears to be a rather nuanced relationship between special districts and counties. The prior county government findings replicate; however, the size of the county drives many of these results.

All     Housing & Community       Per capita special district spending     0.000     0.0005 \$)     Development       Per capita special district spending     0.000     0.0005 \$)     0.002 3)       Per capita special district spending     0.000     0.0005 \$)     0.002 3)       Per capita special district spending     0.000     0.0005 \$)     0.002 3)       Per capita special district spending     0.0001     0.0005 8)     0.002 4)       Per capita special district spending     0.0001     0.0005 8)     0.002 4)       Per capita special district spending     0.0001     0.005 8)     0.002 4)       Per capita special district spending     0.0001     0.005 8)     0.002 4)       Per capita special district spending     0.0001     0.005 8)     0.002 4)       Per capita special district spending     All     Housing & Housing & Housing & All     Housing & Housing & Housing & All     Per capita special district spending       Per capita special district spending     0.0000     -0.0210**     -0.0048	a special district spending unctional area	All Expenditures 0.0000 (0.000 0) All Expenditures	Fire Protection -0.0130* (0.005 5)	Housing & Community Development -0.0072**		1IN			
Per capita special district spending $0.0000$ $-0.0130^{*}$ $-0.0072^{**}$ in same functional area $(0.0000)$ $(0.0023)$ $(0.0023)$ $(0.0001)$ $(0.0055)$ $(0.0023)$ $(0.0023)$ Per capita special district spending $0.0001$ $-0.0095$ $-0.0028$ Per capita special district spending $0.0001$ $-0.0055$ $-0.0024$ Per capita special district spending $0.0001$ $-0.0058$ $(0.0024)$ Per capita special district spending $0.0000$ $(0.0058)$ $(0.0024)$ Per capita special district spending $0.0000$ $-0.0210^{**}$ $-0.0048$ In same functional area $(0.0002)$ $(0.001)$ $(0.001)$ $(0.001)$	a special district spending unctional area	o.oooo (o.ooo o) All Expenditures	-0.0130* (0.005 5)	-0.0072**	Libraries	INATURAL Resources	Parks & Recreation	Sewerage	Solid Waste Management
In same functional area (0.000 (0.005 5) (0.002 3) Expendent Varia Dependent Varia Housing & All Expenditures Fire Protection Development Development 0.0001 -0.0055 -0.0028 in same functional area (0.000 0) (0.005 8) (0.002 4) Per capita special district spending 0.000 0) (0.005 8) (0.002 4) Per capita special district spending & 0.000 0) (0.005 8) (0.002 4) Per capita special district spending & 0.000 0) (0.005 8) (0.002 4) Per capita special district spending & 1000 0) (0.005 8) (0.002 4) Per capita special district spending & 0.000 0) (0.002 10, 0.003 1) (0.003 1)	unctional area	(o.ooo o) All Expenditures	(0.005 5)	×	-0.0255*	0.000	-0.0006	-0.0042	0.0018
Per capita special district spending     All     Dependent Varia       Per capita special district spending     All     Housing & Housing & Community       Per capita special district spending     0.0001     -0.0095     -0.0028       In same functional area     (0.000 0)     (0.005 8)     (0.002 4)       Per capita special district spending     0.0001     -0.005 8)     (0.002 4)       Per capita special district spending     All     Expendintures     Housing &		All Expenditures		(0.002 3)	(0.012 1)	(0.001 4)	(0.0015)	(0.0053)	(0.003 1)
Per capita special district spending       All       Housing & Community         Per capita special district spending       0.0001       -0.0095       -0.0028         in same functional area       0.000 0)       (0.005 8)       (0.002 4)         In same functional area       (0.000 0)       (0.005 8)       (0.002 4)         Per capita special district spending       All       Expenditures       Housing & Housing		All Expenditures	- - -	Dependent Variable	:: Log of per capita	ι spending by <b>muni</b> c	ipal governments		
Expenditures     Fire Protection     Development       Per capita special district spending     0.0001     -0.0095     -0.0028       in same functional area     (0.000 o)     (0.005 8)     (0.002 4)       (0.002 4)     (0.000 0)     (0.005 8)     (0.002 4)       Per capita special district spending     All     Housing & Ho		Expenditures	-	Housing & Community		Natural	Parks &		Solid Waste
Per capita special district spending     0.0001     -0.0095     -0.0028       in same functional area     (0.000 o)     (0.005 8)     (0.002 4)       (0.000 o)     (0.005 8)     (0.002 4)     (0.002 4)       Per capita special district spending     All     Housing & All       Per capita special district spending     0.0000     -0.0210**     -0.0048       In same functional area     (0.0002)     (0.0071)     (0.0031)			Fire Protection	Development	Libraries	Resources	Recreation	Sewerage	Management
Per capita special district spending Per capita special district spending Per capita special district spending (0.000 2) (0.005 8) (0.002 4) (0.002 4) (0.002 4) (0.002 4) (0.002 1) (0.003 1)	a special district spending	0.0001	-0.0095	-0.0028	-0.0115	0.0010	-0.0023	-0.0005	0.0049
Per capita special district spending     All     Housing & Ho		(0.000 0)	(0.005 8)	(0.002 4)	(0.007 4)	(0.002 2)	(0.0019)	(0.0047)	(0.003 1)
Per capita special district spending       All       Housing & Housing & Housing & Housing & Housing & Community         Per capita special district spending       0.0000       -0.0210**       -0.0048         In same functional area       (0.0002)       (0.0071)       (0.0031)				Dependent Variat	le: Log of per capi	ita spending by <b>cou</b> n	ty governments		
All     Community       Expenditures     Fire Protection     Development       Per capita special district spending     0.0000     -0.0210**     -0.0048       in same functional area     (0.0002)     (0.0071)     (0.0031)				Housing &			P.		
Expenditures         Fire Protection         Development           Per capita special district spending         0.0000         -0.0210**         -0.0048           in same functional area         (0.000 2)         (0.007 1)         (0.003 1)		ЧIJ		Community		Natural	Parks &		Solid Waste
Per capita special district spending         0.0000         -0.0210**         -0.0048           in same functional area         (0.000 2)         (0.007 1)         (0.003 1)		Expenditures	Fire Protection	Development	Libraries	Resources	Recreation	Sewerage	Management
(0.0002) $(0.0071)$ $(0.0031)$	a special district spending unctional area	0.0000	-0.0210**	-0.0048	-0.0262*	0.0001	-0.0004	-0.0153**	-0.0188**
		(0.000 2)	(0.007 1)	(0.003 1)	(0.012 8)	(0.001 3)	(0.0073)	(0.005 0)	(0.0073)
County FE Yes Yes Yes	E	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE Yes Yes Yes Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MSA-Year FE Yes Yes Yes	r FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N 5,925 5,925 5,925		5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925

Table 4: Current Expenditures

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	All Ge	neral-Purpose	: Local Govern	ıments		Municipal G	overnments			County Gov	vernments	
			Mid-size				Mid-size				Mid-size	
	IIA	Small	Counties	Large	All	Small	Counties	Large	All	Small	Counties	Large
	Urban	Counties	(80,000 -	Counties	Urban	Counties	(80,000 -	Counties	Urban	Counties	(80,000 -	Counties
	Counties	(<80,000)	300,000)	(>300,000)	Counties	(<80,000)	300,000)	(>300,000)	Counties	(<80,000)	300,000)	(>300,000)
All Expenditures	0.0000	0.0000	0.0000	-0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	-0.0004	0.0003	-0.0001
	(0.000.0)	(0.000.0)	(0.000 0)	(0.000.0)	(0.000.0)	(0.0001)	(0.000.0)	(0.000 1)	(0.000 1)	(0.000 3)	(0.000 2)	(0.000 1)
Fire Protection	-0.0115*	-0.0167*	0.0042	-0.0028	-0.0087	-0.0134	0.0071	0.0016	-0.0190**	-0.0176*	-0.0263**	0.0013
	(0.0046)	(0.0069)	(o.oo7 o)	(0.001 7)	(0.0048)	(0.0072)	(o.oo7o)	(0.005 0)	(0.005 9)	(0.008 5)	(0.0088)	(0.0242)
Housing & Community	-0.0053**	0.0012	-0.0022	-0.0035	-0.0038	0.0006	-0.0017	-0.0051	-0.0034	0.0035	-0.0039	-0.0045
Development												
	(0.001 9)	(0.0026)	(o.oo5 o)	(0.002.6)	(0.002 1)	(0.0030)	(0.0056)	(o.oo3 o)	(0.002 6)	(0.003 0)	(0.0080)	(0.005 3)
Libraries	-0.0159	-0.0078	-0.0161	-0.0218	-0.0083	0.0002	-0.0206	0.0028	-0.0166*	-0.0109	-0.0010	$-0.1242^{*}$
	(0.0083)	(0.0118)	(0.013 3)	(0.020 8)	(0.005 3)	(0.0064)	(0.0147)	(0.0133)	(0.0084)	(0.0113)	(0.0154)	(0.060 6)
Natural Resources	0.0014	-0.0005	0.0015	-0.0507	0.0006	-0.0011	0.0128*	-0.0173	0.0011	0.0000	-0.0045	-0.0328
	(0.001 0)	(0.0021)	(0.001 8)	(0.033 6)	(0.001 5)	(0.0026)	(0.0052)	(0.0386)	(0.001 0)	(0.0023)	(0.0028)	(o.044 o)
Parks & Recreation	-0.0008	0.0014	-0.0002	-0.0010	-0.0018	-0.0025	-0.0001	-0.0015	0.0002	-0.0001	0.0273	-0.0044
	(0.001 0)	(0.0016)	(0.0014)	(0.001 1)	(0.0014)	(0.0029)	(0.0010)	(0.001 0)	(0.007 3)	(0.006 0)	(0.0193)	(0.0173)
Sewerage	-0.0021	-0.0103*	-0.0029	0.0027*	-0.0005	-0.0049	0.0016	0.0031*	-0.0053**	-0.0109*	-0.0119	-0.0079*
	(0.001 6)	(0.0045)	$(0.002\ 1)$	(0.001 3)	(0.0014)	(0.0037)	(0.0027)	$(0.001\ 2)$	(0.001 9)	(0.005 2)	(0.0062)	(0.003 4)
Solid Waste Management	0.0041	0.0039	-0.0001	0.0055	0.0068*	0.0032	0.0017	0.0112	-0.0119*	-0.0167	-0.0075	-0.0188
	(o.002 7)	(0.0079)	(o.oo2 7)	(0.008 9)	(0.003 2)	(0.0071)	(0.0036)	(0 600.0)	(0.005 4)	(0.0115)	(0.0084)	(0.025 5)
Region x time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of counties	660	403	111	45	660	403	111	45	660	403	111	45
Robust standard errors clu.	stered on the	county in pare	entheses. + p<	0.1, * p<0.05, ** p	<0.01.							

Table 5: County Size Disaggregation

## CONCLUSION

This article sought to understand the relationship between special district service provision and service provision by other general-purpose forms of local government. The literature suggests two potential relationships: complementarity or substitution. The theoretical literature largely points to a substitution effect–spending by special districts lowers spending by other general-purpose local governments. Our results suggest a substitution effect between special districts and county governments, largely confined to public services that tend to cover large land areas like fire protection, sewerage, and solid waste management. These findings appear driven by current expenditures, indicating that the trade-off among service providers is for day-to-day operations and not capital expenditures. However, the elasticity of substitution is small–ranging between 0.05 and 0.2–far from the theoretically assumed elasticity of one (perfect substitution). The county-specific results are nuanced, with some functional areas only demonstrating substitution in certain population groupings. We largely fail to reject the null hypothesis when comparing special districts to municipal governments and conclude no systematic relationship between special district spending and municipal spending.

The analysis as presented is not with limitations. Due to a lack of data on the exact shape of special districts, the analysis relies on a rough approximation of overlap between districts and other forms of local government. We cannot be certain exactly which special districts overlap each general-purpose local government. Therefore, the results presented are subject to some bias introduced by the geographical approximation. It is difficult to put a sign on the bias; however, the potential problem is the smallest for our strongest results–the ones related to county governments. This data issue is not limited solely to the analysis presented but to almost all special district research.

State policymakers often decry the growth of the number of local governments, and much of this growth over the last 60 years has been from special districts (Goodman 2019). However, much of the concern for the growth in the number of governments are concerns over new or additional spending at the local level. If special district spending substitutes for other general-purpose local government spending, these concerns are lessened. We find evidence of such an arrangement between special districts and county governments in urban areas; however, the elasticity of substitution is far below one–indicating much less than perfect substitution. While our results suggest substitution does occur, it occurs at a level too low to sufficiently offset additional spending.

These results leave concerned policymakers with two avenues. First, policymakers could encourage or mandate additional substitution between special districts and county governments. This likely involves additional collaboration between the two kinds of local governments and could take the form of separating production from provision to find efficiencies in service provision (Ostrom, Tiebout, and Warren 1961). Second, state policymakers could decree which forms of local governments have exclusive domain over what policy areas. This recommendation refers to the debates over the functional assignment of service responsibilities (Advisory Commission on Intergovernmental Relations 1976). Given how small the elasticity of substitution is, clearly delineating functional roles would likely lower local public expenditures by eliminating service duplication.

This research is among the first empirical studies to examine the tradeoff in service provision between general-purpose local governments and special districts—an explicitly vertical relationship. Prior research has considered how municipalities and counties might interact (e.g., Turnbull and Djoundourian 1993) or the connection between general-purpose governments and school districts (Brien 2018); however, special districts are an important and growing service provider in the local intergovernmental sphere. Given this growing influence on service provision, more attention should be paid to how special districts interact (or do

not interact) with other governments in local areas. Voluminous literature exists on the spatial relationship between similar forms of government (see Brueckner 2003); however, the vertical relationship has not been completely explored. Future studies should focus on the sub-state level, where data quality is higher, more robust geospatial data can be brought to bear, and more nuanced and complex theoretical relationships can be explored.

#### Notes

<sup>1</sup>A more recent development since 2012 is the proliferation of multipurpose districts, such as development districts studies by Carter, Deslatte, and Scott (2019). Multipurpose districts possess a wider range of service provision responsibility, are often formed by private citizens, and typically exist within unincorporated areas outside of municipal boundaries, compared to traditional special districts with singular service provision responsibility and formed by government officials either within or outside of existing municipalities. Due to these fundamental differences, multipurpose districts are not included in our analysis.

<sup>2</sup>The limited body of research examining the creation of special districts offers mixed evidence on the fiscal autonomy and health of general-purpose local governments and how special districts might be formed to circumvent fiscal constraints imposed by states or to alleviate tax burdens during times of fiscal stress. See, for example, Bollens (1957), MacManus (1981), Nelson (1990), McCabe (2000), Carr (2006), Berry (2009), Carr and Farmer (2011), Billings and Carroll (2012), Bauroth (2015), Shi (2017), Goodman (2018), Greer, Moldogaziev, and Scott (2018), Zhang (2018), Goodman and Leland (2019).

<sup>3</sup>The example presented is illustrative, however, imperfect. CSDs are multifunction special districts, while we focus exclusively on single-function districts. We contend the dynamics are similar.

<sup>4</sup>We chose 1999 to define MSAs because it is roughly the midpoint of the time series. Additionally, New Hampshire, Montana, and Wyoming did not contain any counties in a metropolitan area in 1999. Urbanized areas in these states are micropolitan in nature.

<sup>5</sup>We follow Park and Shi's (2021) expenditure-based approach rather than their service functions approach to ensure compatibility between special district and general-purpose local government spending since they are derived from the same Census Bureau survey.

<sup>6</sup>Calculated as the relevant coefficient multiplied by the mean spending on the function from Table 1.

<sup>7</sup>The population ranges roughly approximate a o<sup>th</sup> to 50<sup>th</sup> percentile, 50<sup>th</sup> to 80<sup>th</sup> percentile, and 80th to 100th percentile in 1970. While no grouping is perfectly defendable, the 80<sup>th</sup> percentile is roughly the cut-off point for membership in the National Association of Counties Large Urban Counties Caucus. The 50<sup>th</sup> percentile cut point is arguably more arbitrary; however, given the right skew of county population, we believe the median makes most sense.

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