

Evaluating the Impact of Reallocating Georgia's Funding for Local Public Health Infrastructure.

Submitted by: **Phaedra S. Corso, PhD**
Samir P. Desai, MHA
Justin B. Ingels, MPH

Date: 09/15/2014

General Grant-in-Aid (GGIA), the core funding allocation from the Georgia Department of Public Health (DPH) to all 159 county health departments, plays a vital role in strengthening local public health infrastructure by ensuring adequate levels of personnel, materials, and equipment needed to support local services. After more than forty years, beginning fiscal year (FY) 2012, the DPH began a 7-year phase-in of a revised GGIA allocation formula. These changes have the potential to contribute significantly towards our knowledge of how state funding decisions impact local public health infrastructure, especially as GGIA accounted for 27% to 37% of total annual revenue between FY2008 and FY2013. Cross-sectional regression analyses were conducted on the change in per capita county-level expenditures and revenues, and select service-level outcomes from FY2011 to FY2012 and FY2012 to FY2013. From FY2011 to FY2012, GGIA had a statistically significant ($p < 0.001$) relationship with both personnel and operating expenditures; from FY2012 to FY2013, GGIA was significantly ($p < 0.001$) associated with personnel expenditures only. No significant associations were found between GGIA funding changes and select health services. Ultimately, this study may provide evidence that will inform policy decisions about the allocation of funding for the public health infrastructure at the local level.

Methods

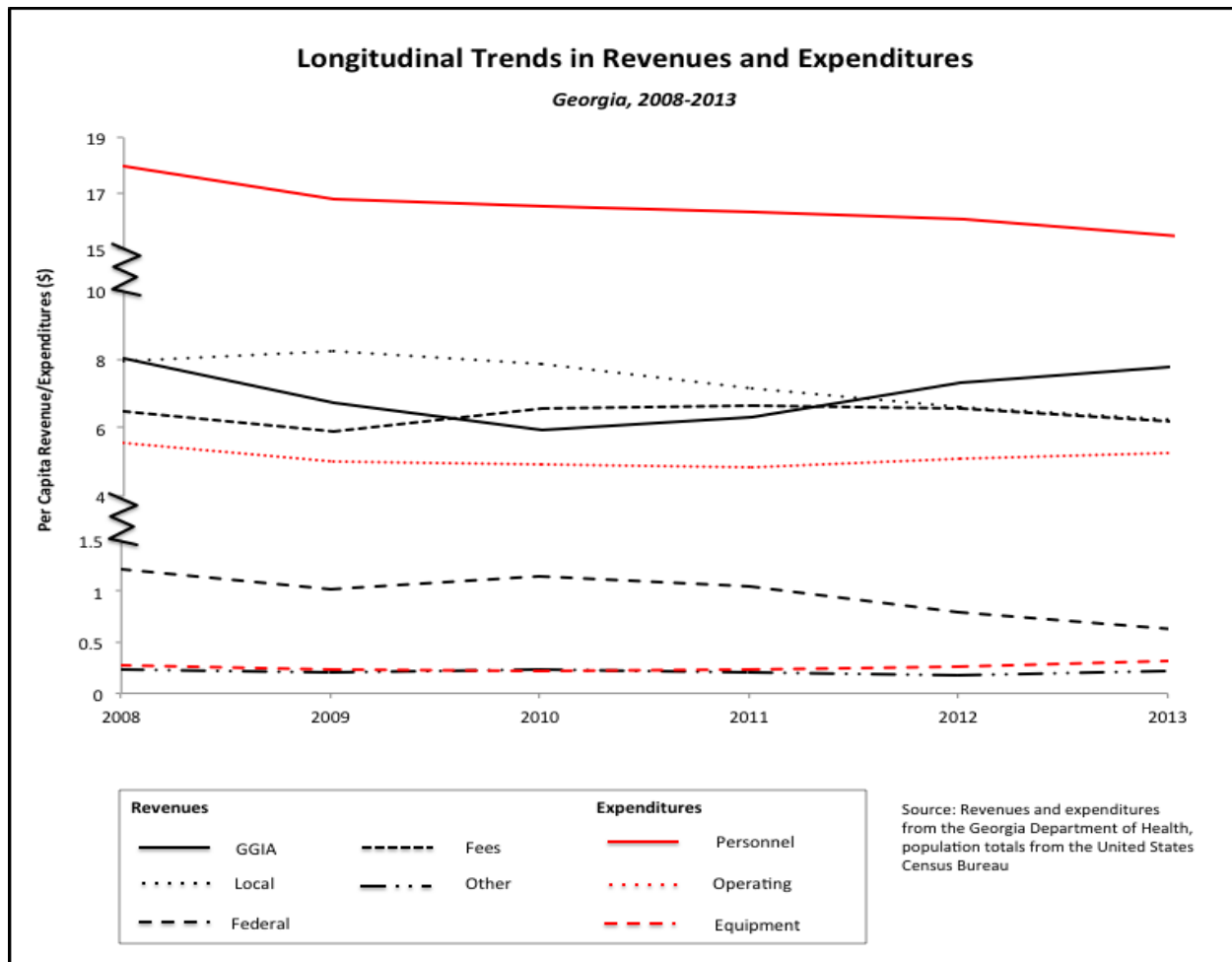
The study population includes 159 local health departments (LHDs) that provide public health services to each county in the state of Georgia. The study timeframe extended from FY2008 to FY2013: four years pre-GGIA formula change and two years post-GGIA formula change. Annual revenue and expenditure data were obtained from the Georgia DPH for each LHD and were converted to per capita estimates using the respective county-level population data. Expenditure data were grouped into three categories: Personnel, Operating, and Equipment. Revenue data included several budget line items which were grouped on the basis of the source, in consultation with the Georgia DPH, into the following five categories: Local, Federal, Fees, GGIA, and Other. Select service-level data, including mammography screenings, Pap screenings, and immunizations, were collected for each LHD and converted to per capita estimates based on the population served. Service-level data were only available through FY2012.

In order to estimate the impact of the revised GGIA allocation formula at the county-level, a series of cross-sectional regression analyses were performed on the change in per capita revenues and expenditures from both FY2011 to FY2012 and FY2012 to FY2013. In these regression analyses, the change in each per capita expenditure category was treated as a dependent variable, while the changes in the per capita revenue categories were the independent variables. All analyses were conducted using STATA version 12.¹

Results

Figure 1 shows state-level trends in revenue and expenditures over the study timeframe. Per capita personnel expenditures steadily decreased during this period, whereas per capita expenditures on operating and equipment increased during the in FY2012 and FY2013. With the exception of GGIA, most of the revenue sources decreased from FY2010 and onward. GGIA funding increased from \$6.2 million in FY2011 to \$7.2 million in FY2012, and \$7.7 million in FY2013. This significant increase, subsequent to the implementation of the revised GGIA allocation formula, can be attributed to 1) the ‘hold harmless’ provision which provides a reprieve to counties facing a loss of GGIA funding by holding them constant at pre-GGIA formula levels and 2) the additional GGIA funding directed towards counties that gained GGIA funding due to the revised formula.

Figure 1: Longitudinal trends in per capita expenditure and revenue utilization from FY2008 to FY2013



Results of the cross-sectional regression analyses are reported in Table 1. Statistically significant and positive relationships were found between the change in per capita GGIA revenue and both personnel and operating expenditures for FY2011 to FY2012. For FY2012 to FY2013, a statistically significant ($p < 0.001$) association was found between the change in per capita GGIA revenue and personnel expenditures.

Table 1: Results of cross-sectional regression analyses for change in per capita revenue and expenditures (n=157)

Exp Rev	FY11 to FY12			FY12 to FY13		
	Personnel <i>Coefficient</i>	Operating <i>Coefficient</i>	Equipment <i>Coefficient</i>	Personnel <i>Coefficient</i>	Operating <i>Coefficient</i>	Equipment <i>Coefficient</i>
GGIA	0.25*	0.79**	-0.06	1.07**	-0.07	0.00
Local	1.04**	-0.07	0.03*	0.64**	0.33**	0.03
Federal	1.22**	-0.22	0.00	0.98**	0.05	-0.03
Fees	0.78**	0.14	0.07**	0.72**	0.24*	0.04
Other	1.08**	-0.05	-0.03	-0.08	0.97*	0.11

* $p < 0.05$

** $p < 0.001$

Regression analyses were also conducted between each of the revenue streams and the select health service-level data; however, GGIA revenue was not significantly associated with any of these variables. It is important to note that GGIA funding is exclusively directed towards supporting public health infrastructure, which is primarily meant for providing core public health services such as surveillance, infectious disease investigation, and environmental health services. Therefore, establishing a direct causal link between GGIA funding and the select service-level data available in this study may not be appropriate.

Implications

A number of studies have found a significant relationship between public health spending, public health infrastructure, and services delivered. Mays & Smith conducted an aggregate analysis of spending by reviewing data from census surveys in 1993, 1997, and 2005. From these data, the authors estimated a decrease in the mortality rate between 1.1 percent and 6.9 percent for each 10 percent increase in public health spending.² In a second study, Erwin et al. found that increases in LHD expenditures were significantly associated with decreases in most negative health indicators, including smoking, infectious disease morbidity, infant mortality, mortality from cardiovascular disease and cancer, and years of potential life lost.³ However, there has not been a focus on the impact of funding changes on the public health infrastructure at the local level. Most of the published literature consists of retrospective studies of funding changes using aggregate data. A unique aspect of our project is the ability to evaluate, in a prospective manner, funding changes using data from all participating counties within a state.

The total amount of GGIA revenue has significantly increased in the two years following the implementation of the revised GGIA allocation formula. From approximately \$6.2 million in FY2011, GGIA funding increased to \$7.2 million in FY2012, and \$7.7 million in FY2013. As an increasing proportion of the revised GGIA formula is phased-in over the next five years, many counties will continue to experience an increase in their public health infrastructure revenue. It is imperative that public health leaders and policymakers in Georgia closely monitor the utilization patterns of these funds and their ultimate impact on local public health outcomes.

One of the limitations of this study is that local public health accounting systems do not connect revenue streams to specific expenditures, making it difficult to make any concrete judgments regarding the specific impact that GGIA may have on the public health infrastructure. Another limitation was the availability of reserve fund data at the LHD level that was not reportable to the state and therefore not included in this analysis. With increasing budget constraints faced by LHDs, local reserve funds play a key role in the maintenance of the public health infrastructure and these data, if available, could have helped further refine the conclusions of this study. It is also important to note that a time lag likely exists between funding changes and their impact on health outcomes. As GGIA funding changes continue to be phased in, future research will detect the impact of funding changes on additional health services and health outcomes in a more tangible manner.

Summary Box:

What is Already Known about This Topic? Past research has examined the relationship between expenditures on PH infrastructure and its influence on health outcomes. However, a prospective analysis of PH infrastructure spending at the county-level and its subsequent impact on health services and outcomes is lacking.

What is Added by this Report? Georgia has the unique distinction of being one of the few states that has a highly transparent mechanism of PH infrastructure funding. This study represents a rare glimpse into the impact of changes in PH infrastructure funding on expenditures and health services by providing preliminary results of a prospective, cross-sectional analysis of 159 local/county-level health departments.

What are the Implications for Public Health Practice, Policy, and Research? This report summarizes the impact of changes in resource allocations for PH infrastructure on local health departments in Georgia. Continuation of this research will help inform policymakers and PH leaders regarding the long-term effect of such allocation decisions on PH services and outcomes in the state.

References

1. StataCorp. 2011. *Stata Statistical Software: Release 12*. College Station, TX: StataCorp LP.
2. Mays, GP, Smith SA. Evidence Links Increases In Public Health Spending To Declines In Preventable Deaths. *Health Affairs*. 2011; 30(8): 1585-1593.
3. Erwin PC, Greene SB, Mays GP, Ricketts TC, Davis MV. The association of changes in local health department resources with changes in state-level health outcomes. *Am J Public Health*. 2011; 101(4): 609-615.