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# City Schools of Decatur: A Study of the Senior Homestead Exemption

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## Introduction

The Center for State and Local Finance (CSLF) at Georgia State University was hired by the City Schools of Decatur (CSD) to provide a study evaluating the impact of property tax exemptions on the CSD's tax digest. This study focuses on the 2016 senior homestead exemption, which exempts all residents age 65 and over from school property tax liabilities. The primary intent of this exemption was to improve the balance between school enrollment and tax digest growth. In Decatur there was a concern that seniors were selling smaller single-family homes to builders and investors who then replaced them with larger new homes, appealing to families with school age children. Providing tax relief to allow low income seniors to age in place was a means by which CSD hoped to slow enrollment growth. This study evaluates the impact of the senior homestead exemption on CSD revenues, school enrollment, senior population levels and tax digest growth. Based on the study findings, CSLF has recommend exemption adjustments that meet the goals of CSD.

The CSLF team has access to a unique dataset which proved ideal for undertaking this project. Using data from CoreLogic, DataQuick and other sources, the CSLF team created a data set containing several million observations from home sales in the 20-county Metro Atlanta area from 2003 to 2017, including those in the city of Decatur. As part of the construction of this data set, these data were matched with Georgia voter files to create an expansive data set that provides estimates of a homeowner's age and race. We used this unique data set, combined with the CSD data on school enrollments, to estimate the effects of the senior homestead exemption on home values and the migration patterns in and out of the city of Decatur of various age groups.

In addition, sophisticated statistical models, including difference in differences models were employed to estimate the causal effects of the exemption on the outcomes of interest. These models allow us to establish a "counterfactual world" (the one that would have existed without the 65 and over exemption) and measure the actual observed outcomes against those that would have been likely to occur in this counterfactual world--in the absence of this policy change.

It is important to note that this analysis focused on linking cause and effect and not merely identifying correlations in the data. For instance, the recent increase in the appreciation of property values in the city of Decatur coincides with the adoption of the senior homestead exemption. A naive correlation analysis would have just stopped there, stating that property values rising faster than expected accounted for the difference between the estimated loss and the actual loss of revenue from the senior homestead exemption. However, this naive analysis would fail to account for many other policy-relevant issues. Perhaps the senior exemption caused more wealthy seniors to move into Decatur or allowed those that did move in to purchase more expensive homes than they might have bought without the exemption. Other policy-relevant changes in behavior by other home buyers in Decatur could have also played a role in the higher than expected loss of property tax revenue. Using our unique data set of home sales in the metro Atlanta area over some 15 years, as well as the sophisticated statistical techniques pointed out above allow us to answer the important policy questions posed by CSD.

## Question 1: What effect has the senior homestead had on the population of homeowners eligible for the exemption?

### METHODOLOGY

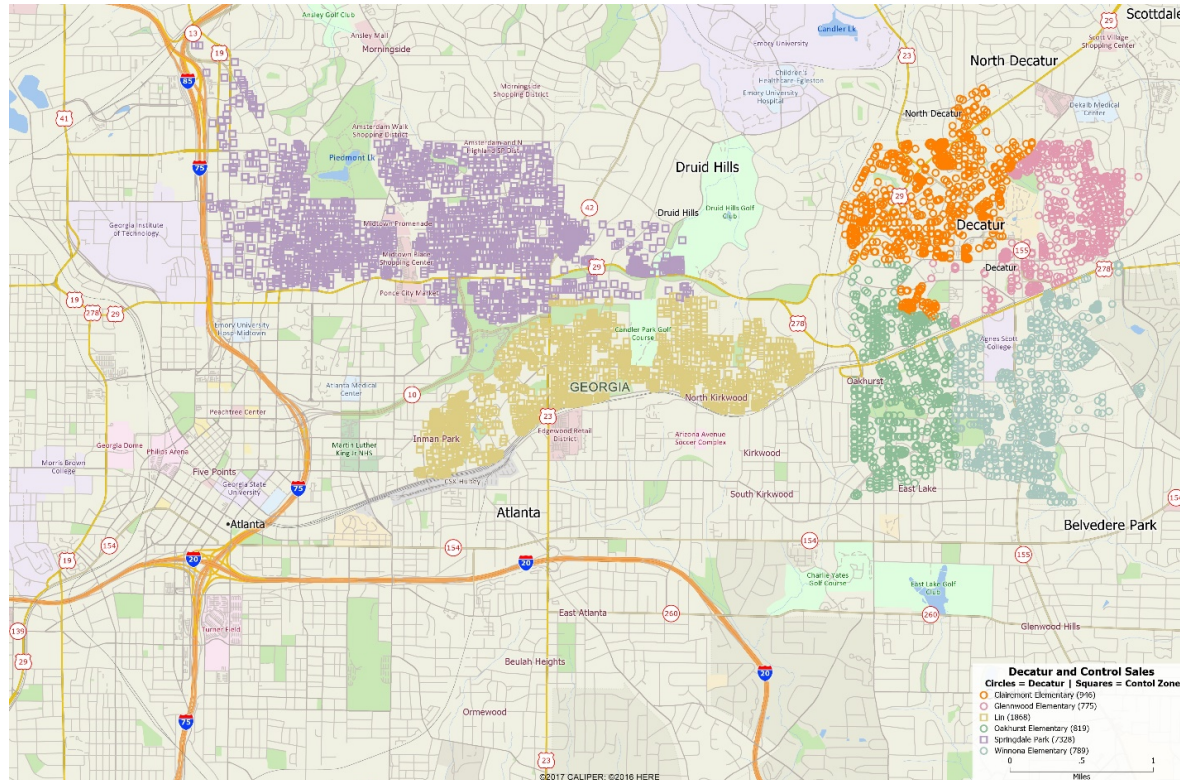
To answer this question, we model the probability that a person age 65 or older moves into or sells an owner-occupied home in Decatur before and after the implementation of the senior homestead exemption in the city. A difference in differences model is used, which is designed to isolate the effect of the 2016 exemption, allowing us to measure the impact of the exemption on senior population levels in Decatur. An important aspect of this model is the selection of a representative counterfactual area that enables us to measure the actual outcomes against those that would have been likely to occur in the absence of the enactment of the senior homestead exemption. The data used for this model are discussed next.

### *Data Sources*

To implement our estimation strategy, several data sources are used. The first step is to isolate the sales that occurred within the city of Decatur and a control group, using home and neighborhood characteristics from Core logic. These data were used to identify the location, date and price for more than 200,000 arms-length residential homes sales. These data include home characteristics such as: number of bedrooms and bathrooms, square feet, and condition, and land area.

To create a control group of home sales, we selected two elementary school attendance zones that shared similar demographic, school achievement, as well as a proximity to downtown Atlanta and other relevant amenities (including transit and recreation opportunities). Figure 1 and Table 1 show the similarities of the home sale and residents of the three districts, Mary Lin Elementary, Springdale Park Elementary, and city of Decatur attendance zones.

**Figure 1. Map of the City of Decatur and Control Zone Sales**



## SUMMARY STATISTICS

Table 1 shows the summary statistics for all observations as well as the home sales in the city of Decatur and the home sales in the nearby comparison area. The data set consists of 11,943 home sales from 2013-2018. The treatment and control group contain 3,167 and 8,776 sales observations, respectively (see Tables 2 and 3). Home prices and square footage are similar among both groups, however homes in the control group on average are smaller and more expensive per square foot. The average home in Decatur sold for \$227 per square foot and had 2,067 square feet of living space (see Table 2). In the control group the average home sold for \$268 per square foot and had 1,402 square feet of living space (see Table 3).<sup>1</sup>

<sup>1</sup> It is important that the treatment and control group be similar, in this case in housing stock and location, as an additional control such that unobserved events that could affect home prices would be expected have similar impacts on both groups. However, the statistical model is designed to produce reliable results despite differences in these observable characteristics. See Appendix 2 for a more complete discussion of the difference in difference hedonic price model.

**Table 1. Home Sale Data Summary Statistics**

	OBS.	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Log Sales Price	11,943	12.70	0.62	8.81	16.06
Price Per Square Foot	11,943	\$258	\$127	\$2.83	\$7,797
Living Square Feet	11,943	1,578	901	400	8,499
Year Built	11,943	1973	35.23	1860	2017
Total Bathroom Calculated	11,943	2.12	1.16	0.00	8.00
Bedrooms	11,943	2.31	1.22	0.00	11.00
Total Rooms	11,943	4.13	2.74	0.00	25.00
Land Square Feet	11,943	104,722	1,836,388	30	57,600,000
Garage Dummy	11,943	0.29	0.45	0	1
Average Condition Indicator	11,943	0.43	0.50	0	1
Excellent Condition Indicator	11,943	0.11	0.31	0	1
Fair Condition Indicator	11,943	0.01	0.12	0	1
Good Condition Indicator	11,943	0.19	0.39	0	1
Poor Condition Indicator	11,943	0.00	0.03	0	1
Unknown Condition Indicator	11,943	0.22	0.41	0	1
Unsound Condition Indicator	11,943	0.00	0.01	0	1
Very Good Condition Indicator	11,943	0.04	0.19	0	1

Note: Data from Corelogic and Dataquick transaction records from 1/2013-8/2018 and authors' calculations

**Table 2. Home Sale Data Summary Statistics – Decatur Only**

	OBS.	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Log Sales Price	3,167	12.88	0.57	10.13	14.88
Price Per Square Foot	3,167	\$227.03	\$113.34	\$12.04	\$3,152.84
Living Square Feet	3,167	2,067	873.77	560	6,067
Year Built	3,167	1971	34.71	1860	2017
Total Bathroom Calculated	3,167	2.77	1.18	1.00	6.00
Bedrooms	3,167	3.08	1.10	0.00	7.00
Total Rooms	3,167	3.12	3.24	0.00	14.00
Land Square Feet	3,167	222,696	1,812,440	52	19,600,000
Garage Dummy	3,167	0.56	0.50	0	1
Average Condition Indicator	3,167	0.65	0.48	0	1
Excellent Condition Indicator	3,167	0.00	0.00	0	0
Fair Condition Indicator	3,167	0.04	0.19	0	1
Good Condition Indicator	3,167	0.15	0.36	0	1
Poor Condition Indicator	3,167	0.00	0.03	0	1
Unknown Condition Indicator	3,167	0.08	0.27	0	1
Unsound Condition Indicator	3,167	0.00	0.02	0	1
Very Good Condition Indicator	3,167	0.08	0.27	0	1

Note: Data from Corelogic and Dataquick transaction records from 1/2013-8/2018 and authors' calculations

**Table 3. Home Sale Data Summary Statistics – Control Zone Only**

	OBS.	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Log Sales Price	8,776	12.63	0.62	8.81	16.06
Price Per Square Foot	8,776	\$268.81	\$129.21	\$2.83	\$7,797.03
Living Square Feet	8,776	1,402.06	843.86	400.00	8,499.00
Year Built	8,776	1974	35.39	1890	2017
Total Bathroom Calculated	8,776	1.89	1.06	0	8.00
Bedrooms	8,776	2.03	1.14	0	11.00
Total Rooms	8,776	4.49	2.43	0	25.00
Land Square Feet	8,776	62,148	1,843,202	30	57,600,000
Garage Dummy	8,776	0.19	0.39	0	1
Average Condition Indicator	8,776	0.35	0.48	0	1
Excellent Condition Indicator	8,776	0.15	0.36	0	1
Fair Condition Indicator	8,776	0.01	0.07	0	1
Good Condition Indicator	8,776	0.21	0.40	0	1
Poor Condition Indicator	8,776	0.00	0.03	0	1
Unknown Condition Indicator	8,776	0.27	0.44	0	1
Unsound Condition Indicator	8,776	0.00	0.01	0	1
Very Good Condition Indicator	8,776	0.02	0.14	0	1

Note: Data from Corelogic and Dataquick transaction records from 1/2013-8/2018 and authors' calculations

While there are stable differences between the price, size, and characteristics of homes in Decatur in comparison to the control zone, our analysis controls for these stable differences and it also requires strong evidence of consistent trends in the two areas (Decatur and the control zone) before the establishment of the senior homestead exemption in Decatur. We note, that both areas experienced sharp appreciation in sale prices from 2013-2018, as shown in Figure 2. Early in 2013, homes in Decatur (the “treated area”) sold for \$175 per square foot while homes in the control area sold for \$190 per square foot. By the end of 2018 prices increased to \$312 per square foot in the treatment area and \$348 per square foot in the control area.<sup>2</sup>

Note the share of homes sold by over 65 sellers does differ between city of Decatur and the comparison elementary school zones. The city of Decatur share of over 65 sellers was roughly 23 percent on average in the years prior to the exemption enactment and roughly 28 percent on average in the years after. The control group share of over 65 sellers was roughly 8 percent on average in the years prior to the exemption enactment and roughly 13 percent on average in the years after. However, what is important for our model is that these shares maintained the same difference before the establishment of the senior homestead exemption in Decatur as after it (see Figure 2).<sup>3</sup> Thus, whatever unobserved forces acting to

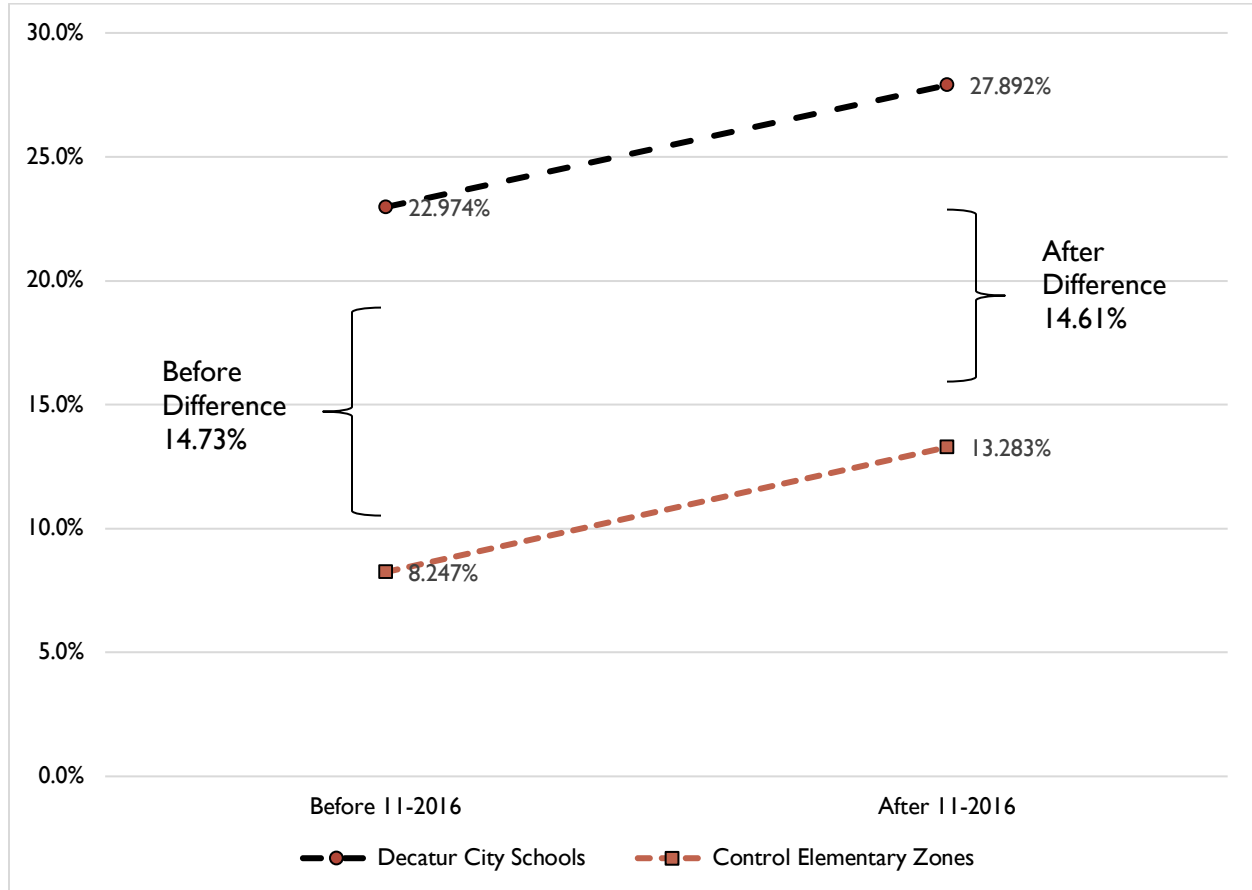
<sup>2</sup> These are nominal dollars in order to reflect the price changes faced by potential homebuyers. Any inflation adjustment would be the same between Decatur and the control zone.

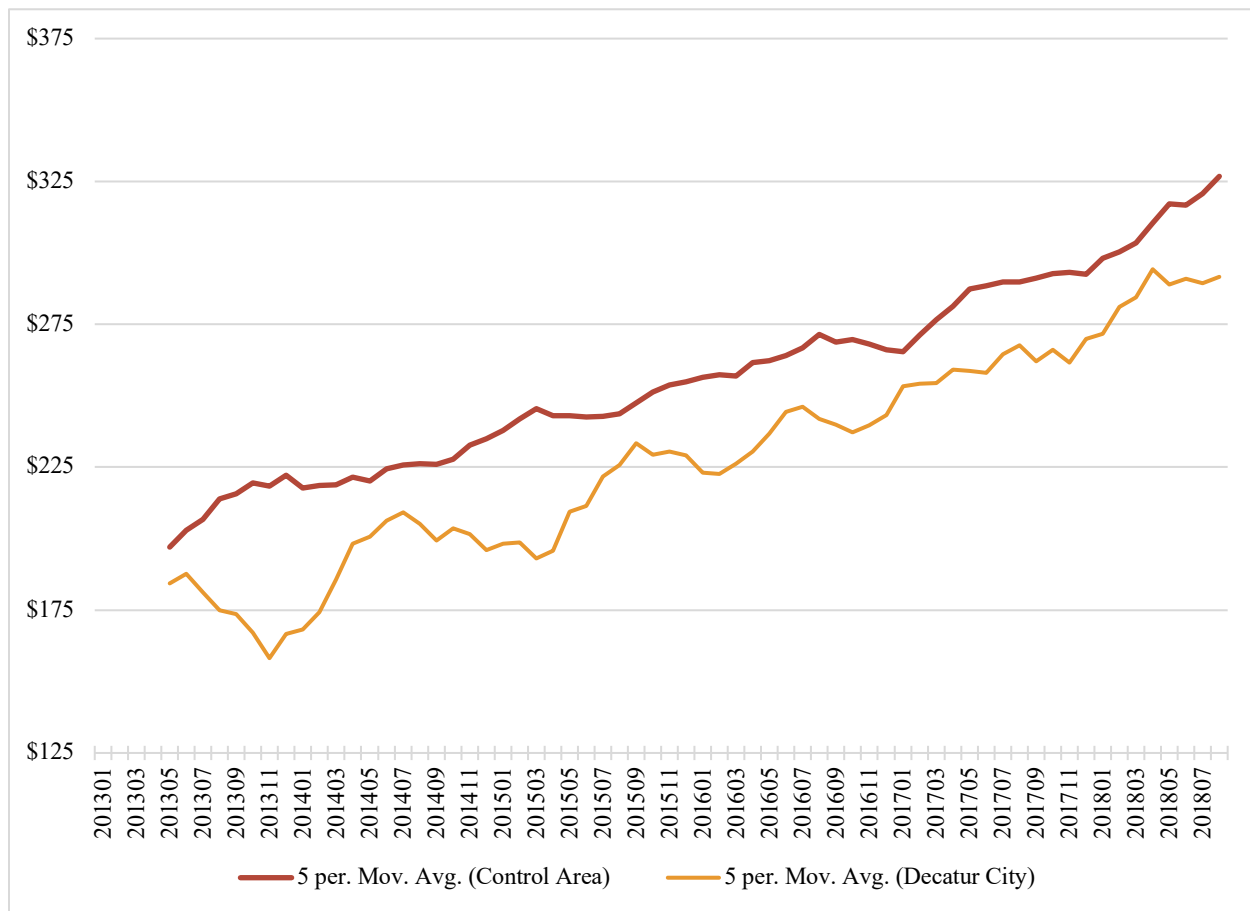
<sup>3</sup> We include several decimal places in this figure to illustrate that the similarity in differences before and after the exemption are not just an artifact of rounding.



raise the share of senior sellers in Decatur also appear to be acting on the share of senior sellers in the control group.

**Figure 2. Before and After Shares of Sales by 65+**



**Figure 3. Median Per-Square-Foot Sales Price by Month**

### Empirical Methods

To test for the potential effects the homestead exemption may have had on the probability of seniors purchasing homes in city of Decatur, we initially test our model using home price for sales inside the city of Decatur and the control zone as our variable of interest, to see if the relationships discussed above are verified by the model. The hedonic price model is widely used for analysis of this type of issues.<sup>4</sup> It explains the sales price of a home as a function of observed home structural and locational characteristics. (For a detailed discussion of this model, see Appendix 2.)

To test for the potential effect that the senior homestead exemption may be having on senior's migration patterns we use the merged age data from the Georgia voter file to estimate the home buyers' and sellers' age at the time of the home sale. (See Appendix 3 for details on this merger and the importance of using the voter file.) We create an indicator variable which is equal to one for a sale if at least one of the homebuyers was over 65 years old. We then change the variable of interest to the indicator variable and re-estimate the model now using a logistic regression form; in this latter specification form, the

<sup>4</sup> See Bartholomew, K., & Ewing, R. (2011). Hedonic price effects of pedestrian-and transit-oriented development. *Journal of Planning Literature*, 26(1), 18-34.

dependent variable is dichotomous—taking a value of one if at least one of the homebuyers was over 65 years old and it is zero otherwise. Similarly in the third specification, we create an indicator variable for a seller being older than 65 at the time of sale for an additional logistic regression model. The interpretation of the variable of interest in these models is the marginal change in the probability of a home selling to an over 65 year old or a home sold by an over 65 year old within the city of Decatur after the passage—thus as a consequence of the senior homestead exemption (see Figure 2 for details on the probability of seniors buying and selling homes in both treatment and control group).

### **ATLANTA REGION COUNTY-LEVEL ANALYSIS**

We first examine the results from the initial regression on sales price to verify our model specification. As seen in the results tables below, our difference in difference hedonic price model explains 68.5 percent of the variation in home sales prices in this sample, while the vector of home characteristics is statistically significant with the appropriate signs (see Table 4).<sup>5</sup> The indicator variable, “After November 2016,” is positive indicating generally increasing prices, consistent with the per square foot price time plot. The Decatur indicator, representing the average price in Decatur compared to the control zone is negative, also consistent with our per square foot time plot. Not shown, to avoid confusion and undo clutter in our results, the variable relating to the month year, block group, and property condition indicators are all statistically significant as well. These results confirm our prior observations of the data and provide ample evidence that our model is well specified.

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<sup>5</sup> For a more thorough explanation of the statistical importance of the model explaining 68.5 percent of the variation in home sales prices in this sample, see Appendix 2.

**Table 4. Linear and Logistic Difference in Difference Regression Results**

VARIABLES	LOG SALES PRICE	LOGIT 1 = OVER 65 BUYER	LOGIT 1 = OVER 65 SELLER
Difference in Difference Interaction	0.0869*** (0.0176)	-0.139 (0.260)	-0.211 (0.179)
After	0.613*** (0.0599)	1.734** (0.757)	0.790 (0.592)
Decatur	-0.0305 (0.101)	-11.19*** (1.448)	-12.96*** (1.091)
Living Square Feet	0.000300*** (1.08e-05)	3.67e-06 (0.000132)	0.000313*** (7.87e-05)
Year Built	-0.00148*** (0.000146)	0.00549** (0.00259)	-0.000932*** (0.000228)
Bathrooms by Fraction	0.0808*** (0.00631)	0.107 (0.101)	-0.0442 (0.0623)
Bedrooms	0.0503*** (0.00713)	-0.413*** (0.103)	0.0358 (0.0634)
Total Rooms	0.0441*** (0.00208)	0.0301 (0.0298)	0.0331* (0.0181)
Land Square Feet	-3.17e-09 (2.09e-09)	1.84e-08 (2.76e-08)	1.45e-08 (1.54e-08)
Garage Indicator	0.101*** (0.00952)	-0.323* (0.172)	-0.0809 (0.102)
Block Group Fixed Effects	Yes	Yes	Yes
Month-Year Fixed Effects	Yes	Yes	Yes
Property Condition Indicators	Yes	Yes	Yes
Observations	11,937	8,379	7,555
R-squared	0.685	Pseudo 0.154	Pseudo 0.133

Robust standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Interestingly, we find evidence that the 65 and over full homestead exemption did result in the increased sales prices for homes in Decatur. The difference in difference coefficient  $\delta$ , which has a value of 0.0869 with a robust standard error of 0.0176, rejects the null hypothesis of no effect (of the 65 and over exemption) at the 99 percent level (see Table 4). This coefficient can be interpreted as the expected percent change in the sales price of a home as a result of the senior homestead exemption in Decatur compared to our control zone. At the median home sale price in our Decatur sample of \$366,000, this represents an 8.69 percent increase in the sale price, or on average \$31,000. Note that an increase in sales price for single-family residences does not necessarily mean an increase in assessed value and thus more tax revenue. Assessments lag sales and a change in sales price will not be perfectly reflected in a changed assessment. Thus, the effect that this finding has on the digest value and subsequent tax revenues for CSD should be treated cautiously. We note that due to this effect some of the loss due to the full homestead exemption may be offset by higher home values in the remainder of the single family home digest.

For the probability of a senior purchasing or selling a home as a function of the 65 and over full homestead exemption we find no effect on the buying and selling patterns of seniors. Our coefficients are not statistically significantly different from zero (see Table 4). Other coefficients in the model are statistically significant and shed light on the home buying preferences of seniors in these areas. Based on our findings, seniors became more interested in living in these areas (Decatur and the control zone) after the exemption passed. Seniors also preferred to purchase in the control zone over Decatur across the full sample but sellers were not more or less likely to be in Decatur (with respect to the control zones). Home buyers 65 and older preferred newer homes and homes with fewer bedrooms compared to younger homebuyers.<sup>6</sup> Home sellers 65 and older were more likely to sell a home with more square feet but less likely to sell a home with more rooms.

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<sup>6</sup> Restricting our sample to higher ranked matched pairs of home sales with the voter information did not noticeably change the size or sign of any of the statistically significant independent variables, nor did it change the explanatory power of the models overall.

## Question 2. Has the senior exemption policy had any impact on CSD enrollments?

### METHODOLOGY

We examine two data sources to answer this question. We first decomposed the various sources of change in CSD enrollments and looked for any significant changes in these components after the exemption. Second, we create a forecasting model calibrated to best fit CSD enrollments prior to 2016. The model's prediction of CSD enrollments in the absence of the senior exemption will be compared to the actual enrollments to estimate the effects of the exemption on district enrollments.

**Figure 4. Sources of Student Enrollment Growth**

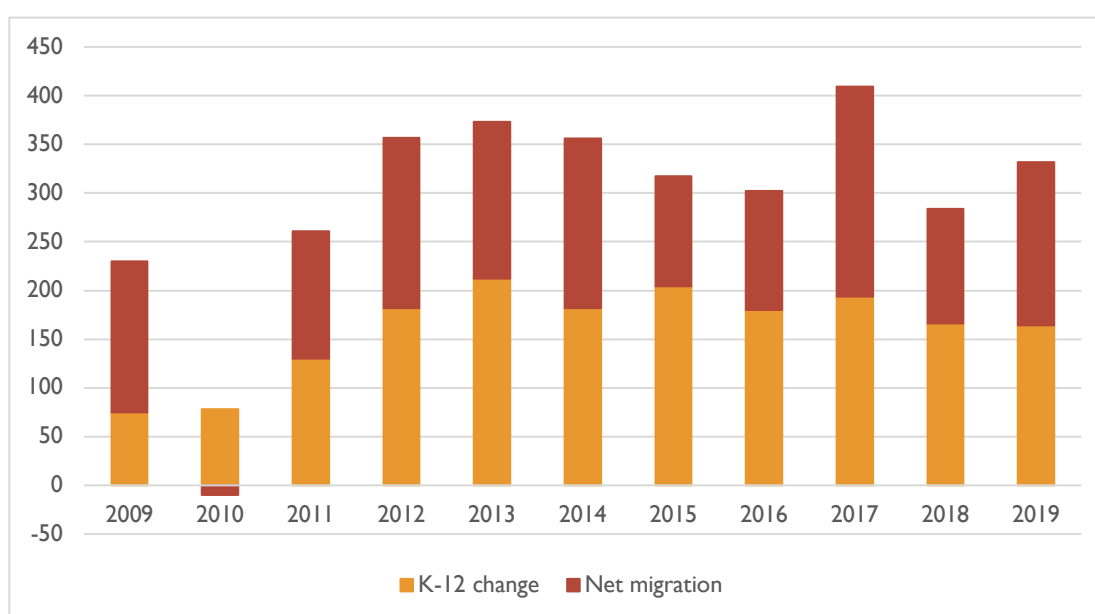
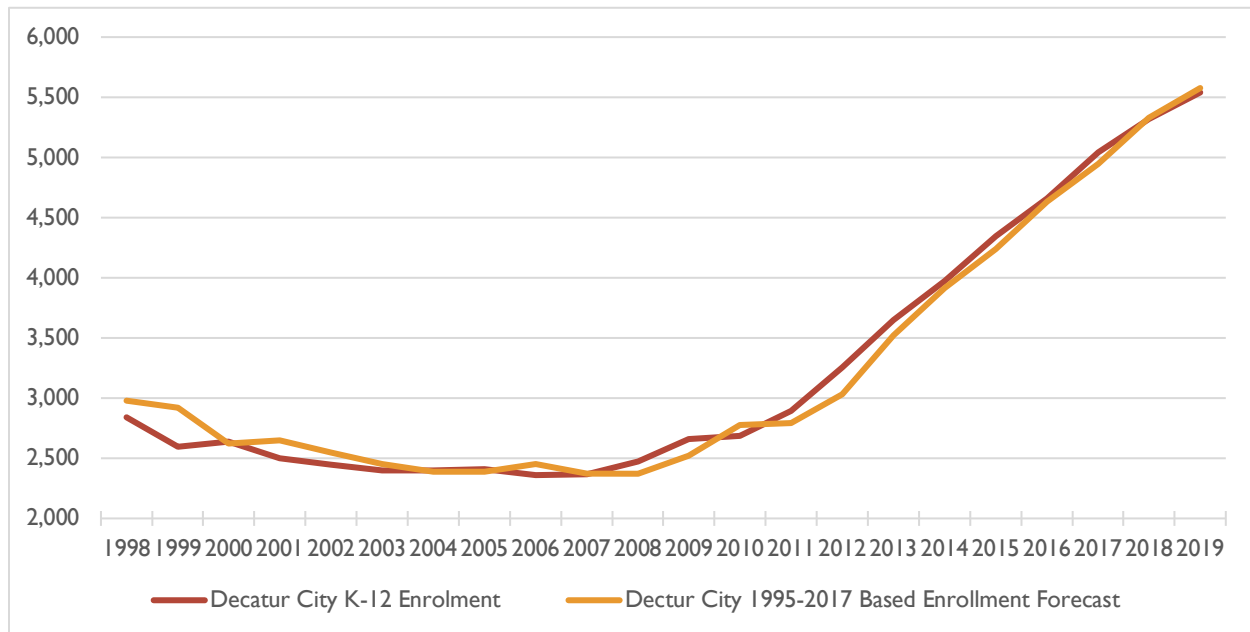


Figure 4 shows district year over year changes in student enrollment in two categories. The first, is the year over year change due to the difference in the graduation of seniors from high school in the prior school year and the enrollment of incoming kindergarten class for the current school year. This provides one source of enrollment growth, as all the incoming kindergarten cohorts are larger than the prior year's exiting senior class. A second source of change in enrollments is the result of net migration in the middle grades, the difference between new students enrolling in CSD and those that exit the district.<sup>7</sup> In all years except 2010, this has also been a source of enrollment growth in the district. As Figure 4 shows, these two sources of growth have been fairly consistent for the school years 2009-2019. Average growth for the period has been roughly 300 students. With the exception of 2017, in which growth peaked at 406 students, the growth in enrollment has been fairly close to the average before and after the exemption

<sup>7</sup> The purpose of this table is to consistently track components of student enrollment growth. Because the data are taken from different sources at several times in the school year, they will differ from K-12 August enrollment year-over-year changes.

was put in place in the fall of 2016. Thus, Figure 4 does not appear to provide evidence that the 65 and over full homestead exemption had any effect on these two components of district enrollment growth.

**Figure 5. Decatur City K-12 Enrollment from DOE with Forecast**



We next use a forecasting model that uses the number of pre-k students, the number of four-year-old children in the population, and student enrollment in prior grades to predict future year student enrollment. As one would expect, the prior year grade enrollment is a very good predictor of subsequent grade enrollment. This forecasting technique, widely implemented to predict enrollments called the "cohort-survival method" is calibrated to predict student enrollment growth up to 2016 just before the 65 and over homestead exemption was put in place.<sup>8</sup> Using this calibrated model, we forecast enrollments for 2017 and 2018 and compare them to the actual student enrollments for those years. If the 65 and over homestead exemption had any effect on student enrollments we would expect to observe differences in the forecast predicted enrollments and the actual enrollments, which we did not find (see Figure 5). The model continues to accurately predict enrollments in the years after the policy change, providing statistical evidence that the homestead exemption did not have an effect on student enrollments. (For a detailed breakdown of student counts by land use category, as well as those receiving some type of aged based property tax exemption, see Appendix 1: Table 2.8.)

<sup>8</sup> Sweeney, S. H., & Middleton, E. J. (2005). Multiregional cohort enrolment projections: Matching methods to enrolment policies. *Population, Space and Place*, 11(5), 361-380.

### Question 3. What was the actual tax loss realized from the implementation from the senior tax exemption and what adjustments, if any, should be made before renewal?

To isolate the tax loss due to the 65 and over full homestead exemption we calculated the net taxable assessed value for each parcel with and without the full 65 and over exemption. In the absence of this exemption many residents would qualify for other age-based exemptions, thus the loss of the 65 and over full homestead exemption does not equal the full assessed value of the parcels qualifying (see footnote for a discussion of valuation terminology used in this report).<sup>9</sup> For instance, the 70 and over \$50,000 homestead exemption would remain in place for all those 70 and over.

Applying the 2018 millage rate of 18.66 to the estimated digest value that would be recovered should the full homestead exemption sunset, yields a cost to CSD of \$3.41 million per year or a 1.97 change in the annual millage rate. Applying the appropriate millage rate to the 2017 value of the recovered digest yields a cost to CSD of \$3.24 million per year or a 1.92 change in the annual millage rate.

Using the data above it is possible to estimate various scenarios for the CSD tax digest based on alternative formations of the exemption based on age, income or exemption amount. Using the [Tableau web tool](#), the results of these changes can be viewed. The tool allows for the examination of different alternatives based on age, exemption amount and income. Note the income data used in this tool is based on city of Decatur residents Georgia state individual income tax filings. These filings are only available to researchers, deidentified and thus cannot be linked to individual parcels. As such, the level of confidence in these age-adjusted estimates is lower than the estimates without an income cut off. The chosen level of income is federal adjusted gross income (AGI).<sup>10</sup> Federal AGI is the preferred income measure as it can be best tailored to meet the goals of the CSD, in helping lower- and middle-income seniors stay in their homes.<sup>11</sup>

The policy options available to CSD to examine in the Tableau tool are included as many of the combinations meet the stated goal of keeping the cost of the exemption at \$1.2 million or less. If a policy goal of CSD is to keep the exemption available to those 65 and older, the exemption limit needs to be \$100,000 or below and the income cutoff must be at \$40,000 and below to maintain the \$1.2 million or less cost of the exemption. This policy would allow the first \$200,000 of appraised home value to be exempt from CSD property tax. This exemption would be worth \$2,000 to the homeowner assuming a

<sup>9</sup> In our discussions of property tax digest valuation, several terms are used to refer to the value of property. The first is the appraised value, which by Georgia state law must reflect the fair market value of the property. The second term is the assessed value, which in the city of Decatur is 50 percent of the appraised value. The third term is net taxable assessed value, which reflects the assessed value of the digest after all exemptions have been taken for qualified property.

<sup>10</sup> Federal AGI is currently used by the city of Decatur for the 80 and over homestead exemption, which is currently not tracked due to the 65 and over full exemption with no income limit.

<sup>11</sup> In contrast, many counties use Georgia AGI as an income limit for homestead exemptions, which excludes roughly \$68,000 per couple of retirement income, a limit set by the Social Security Administration.



millage rate of 20. When only those 70 and over are eligible for the exemption the value of the exemption can rise to \$125,000 and the income limit to \$75,000 before the cost of the exemption exceeds the goal of \$1.2 million or less. This policy would allow the first \$250,000 of appraised home value to be exempt from CSD property tax. This exemption would be worth \$2,500 to the homeowner assuming a millage rate of 20.

Note that these estimates include all homes regardless of assessed value. Structuring the exemption this way avoids the policy problem of having a cap on eligibility in which a homeowner with property assessed at \$1.00 over the cap fails to qualify for the exemption. The downside of this policy is that it is possible for high valued property owners to qualify. For instance, if a person living in \$500,000 home meets the age and income levels they would qualify for the exemption.

Another possible criterion for eligibility is the length of time a senior has lived in the home. After examining the data, a tenure criterion might not advance the policy goals of the exemption, for several reasons. First, 70 percent of Decatur seniors have lived in their homes for more than 5 years, with over 50 percent having lived in their homes for more than 10 years. Thus, any criteria based on tenure that would have meaningful impact on exemption eligibility would seem somewhat arbitrary. For instance, it is unclear how offering the exemption to a senior homeowner that has lived in her home for 10 years but denying it to a homeowner with only 9 years of tenure advances the policy goals of keeping lower and middle-income seniors in their homes. Second, such a tenure requirement may have the unintended consequence of discouraging those close to retirement age from purchasing homes in Decatur as they would not qualify for the exemption upon reaching the relevant age. This would work against the policy goal of the exemption of making Decatur more appealing to seniors and thus slowing the growth in student enrollment.

It is understandable that seniors that are long term residents of Decatur would like to benefit from the exemption. The cap on income would seem to indirectly foster this policy. Given current property valuations, it seems more likely that higher income seniors would be purchasing homes in Decatur and thus would not qualify for the exemption, indirectly favoring longer term residents over newer owners.

**Table 5. Changes in Property Tax Exemptions Claimed by Type and Land Use Category**

TAX YEAR	65+ CHANGE	ALL OTHER EXEMPTION CHANGE	NET CHANGE	NET CHANGE AS SHARE OF ALL EXEMPTIONS
<i>Low Density Residential</i>				
2011	-	-	-	-
2012	42	114	156	3%
2013	-71	-99	-170	-3%
2014	57	11	68	1%
2015	12	102	114	2%
2016	-16	36	20	0%
2017	183	-168	15	0%
2018	56	-51	5	0%
<i>Medium Density Residential</i>				
2011	-	-	-	-
2012	20	38	58	4%
2013	-12	-43	-55	-3%
2014	24	-19	5	0%
2015	-4	6	2	0%
2016	-9	12	3	0%
2017	49	-51	-2	0%
2018	20	-9	11	1%
<i>Institutional</i>				
2011	-	-	-	-
2012	14	33	47	5%
2013	-10	-36	-46	-4%
2014	18	-15	3	0%
2015	5	10	15	1%
2016	-2	-12	-14	-1%
2017	27	-30	-3	0%
2018	16	-14	2	0%
<i>Commercial High Density Residential</i>				
2011	-	-	-	-
2012	0	32	32	4%
2013	-4	-26	-30	-4%
2014	10	-4	6	1%
2015	1	43	44	6%
2016	1	33	34	4%
2017	31	-34	-3	0%
2018	12	-2	10	1%

Our analysis of the number and type of exemptions taken by year shown in Appendix Table 2.6, suggests why preliminary estimates of the cost of the full exemption were understated. It appears that a sizable share of Decatur city residents were 65 and older but had not filed for any age-based property tax relief prior to 2016. Table 5 shows that the YOY net change in all homestead exemptions filed for had little to no change in the years 2014-2018. In the years prior to 2017, the changes in age-based homestead exemptions and all other exemptions appear to be unrelated.<sup>12</sup> However, in 2017 and 2018, we observe a large shift from all other homestead exemptions into the 65 and over homestead exemption (now the full exemption). This shift is almost a one for one. For instance, in low density residential property in 2017, the first year of the full exemption, there is an increase of 183 full exemptions for 65 and over and a decline in all other exemptions of 168. This pattern is similar in other types of properties and in the year 2018. Thus, the 65 and over full homestead exemption appears to have incentivized the older residents that had not previously filed for an age-based property tax exemption to file for one.<sup>13</sup>

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<sup>12</sup> The 65 and over exemptions include all age-based exemptions available to a homeowner 65 years old and over (GH-2 and S-4) as well as the age-based exemptions available to a homeowner 70 years old and over (S-2 and S-3). The all other exemptions category includes the remaining exemptions: The exemptions available to those 62 and older based on income (GS-1 and S-1); The general homestead exemption (GH-1); The disabled veteran exemption (DV).

<sup>13</sup> Note this finding is not evidence that the senior homestead exemption encouraged seniors to age in place, as the policy was previously found to have no statistical effect on a senior's decision to sell a house in Decatur.

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## Conclusion

In summary, this analysis provides evidence that the 65 and over full homestead exemption introduced in November of 2016, did not change the buying or selling behavior of those that would qualify for the exemption in the city of Decatur. Nor did it alter the growth in enrollments in CSD that has been ongoing since 2010. Rather, the policy incentivized the older residents that had not previously filed for an age-based property tax exemption to file for one. This shift from other homestead exemptions to the 65 and over full homestead exemption can account for much of the unexpected loss in revenues due to the 65 and over policy change.

To better meet the original goals of the policy, it is recommended that CSD consider several changes to the exemption criteria for age, amount of the exemption, and the resident income level for eligibility. Should CSD desire to maintain the qualifying age at 65, the exemption amount will need to be \$100,000 or less with a qualifying income of \$40,000 or less based on federal AGI to meet the desired goal of a cost of \$1.2 million or less to the CSD. If the qualifying age were to increase to 70, the exemption amount could increase to \$125,000 or less with a qualifying income of \$75,000 or less based on federal AGI. While we found no effect of the full exemption on the behavior of eligible buyers and sellers at all income levels, it is possible that offering a limited exemption available to lower income residents might impact decisions to buy or sell a home in Decatur. Due to data constraints, we were unable to examine this scenario. Thus, it is an open question as to whether income limited age-based property tax exemption policy is likely to alter the path of CSD growth in student enrollments. Should the policy be enacted its impact could be studied after several years.

## Appendix 1: Additional Questions

This section contains a list of the questions proposed by CSD. Generally, all that is required to answer the question is the data table created. However, some questions required more nuanced analysis, which is explained when necessary.

1. Provide an economic analysis of the effectiveness and cost of the senior homestead tax exemption.

See Questions 1-3 in the main report.

2. Determine and report the following items for the school district for each tax year 2013 to present.

When asked to break down data by land use category include a breakdown for Low Density Residential (RL) and Medium Density Residential (RM) unless Industrial (I) and Commercial (C) are specifically included. (Note: RL includes Single Family R-85, R-60, R-50, and RM includes medium density single family and multi-family R-17, R-18, R-22, R-43). Refer to the City of Decatur website for further land use and zoning descriptions: <http://www.decaturga.com/city-government/city-departments/planning-and-zoning-redesign/permits-and-zoning/land-use-zoning>). Make note if there are significant values of appealed assessments that are yet unresolved which would have a measurable impact on total values.

**Table 2.1 – Total Assessed Value and Annual Growth of All Land Use Categories (RL, RM, I and C)**

TAX YEAR	FINAL ASSESSMENT	ANNUAL % CHANGE
2011	\$1,346,266,466	-
2012	\$1,310,275,721	-3%
2013	\$1,168,667,117	-11%
2014	\$1,326,878,098	14%
2015	\$1,592,905,027	20%
2016	\$1,668,051,649	5%
2017	\$1,745,715,683	5%
2018	\$1,998,304,618	14%

Note: Final assessment in nominal dollars

**Table 2.2 – Total Assessed Value and Annual Growth Broken Down by Land Use Category (RL, RM, I and C)**

<b>TAX YEAR</b>	<b>FINAL ASSESSMENT</b>	<b>ANNUAL % CHANGE</b>
<i>Low Density Residential</i>		
2011	\$780,336,288	-
2012	\$770,925,341	-1%
2013	\$717,199,871	-7%
2014	\$821,163,620	14%
2015	\$997,071,245	21%
2016	\$1,053,207,059	6%
2017	\$1,079,592,620	3%
2018	\$1,208,035,598	12%
<i>Medium Density Residential</i>		
2011	\$199,304,391	-
2012	\$192,679,496	-3%
2013	\$182,770,676	-5%
2014	\$196,862,601	8%
2015	\$231,124,433	17%
2016	\$243,733,776	5%
2017	\$250,075,413	3%
2018	\$287,928,019	15%
<i>Institutional</i>		
2011	\$191,077,028	-
2012	\$180,409,977	-6%
2013	\$135,689,868	-25%
2014	\$153,436,760	13%
2015	\$178,019,900	16%
2016	\$185,814,883	4%
2017	\$210,684,739	13%
2018	\$238,710,413	13%
<i>Commercial High Density Residential</i>		
2011	\$175,548,760	-
2012	\$166,260,908	-5%
2013	\$133,006,702	-20%
2014	\$155,415,117	17%
2015	\$186,689,449	20%
2016	\$185,295,931	-1%
2017	\$205,362,911	11%
2018	\$263,630,589	28%

Note: Final assessment in nominal dollars

**Table 2.3 – Total Assessed Value and Annual Growth by Exemption Type and Land Use Category**

TAX YEAR	65 AND OVER EXEMPTION		ALL OTHER EXEMPTIONS	
	FINAL ASSESSMENT	ANNUAL % CHANGE	FINAL ASSESSMENT	ANNUAL % CHANGE
<i>Low Density Residential</i>				
2011	\$75,776,807	-	\$704,559,481	-
2012	\$82,249,910	9%	\$688,675,431	-2%
2013	\$77,903,099	-5%	\$639,296,772	-8%
2014	\$88,278,494	13%	\$732,885,126	13%
2015	\$110,864,300	26%	\$886,206,945	17%
2016	\$107,850,779	-3%	\$945,356,280	6%
2017	\$148,012,138	37%	\$931,580,482	-1%
2018	\$177,188,787	20%	\$1,030,846,811	10%
<i>Medium Density Residential</i>				
2011	\$16,805,570	-	\$182,498,821	-
2012	\$18,481,330	10%	\$174,198,166	-5%
2013	\$17,992,600	-3%	\$164,778,076	-6%
2014	\$21,860,750	21%	\$175,001,851	6%
2015	\$24,959,865	14%	\$206,164,568	15%
2016	\$24,896,395	0%	\$218,837,381	6%
2017	\$33,836,278	36%	\$216,239,135	-1%
2018	\$43,009,475	27%	\$244,918,544	12%
<i>Institutional</i>				
2011	\$11,689,138	-	\$179,387,890	-
2012	\$13,363,049	14%	\$167,046,928	-7%
2013	\$12,070,732	-10%	\$123,619,136	-35%
2014	\$14,534,868	20%	\$138,901,892	11%
2015	\$18,490,830	27%	\$159,529,070	13%
2016	\$17,849,800	-3%	\$167,965,083	5%
2017	\$21,871,405	23%	\$188,813,334	11%
2018	\$27,602,258	26%	\$211,108,155	11%
<i>Commercial High Density Residential</i>				
2011	\$8,037,500	-	\$167,511,260	-
2012	\$7,702,900	-4%	\$158,558,008	-6%
2013	\$7,439,305	-3%	\$125,567,397	-26%
2014	\$8,997,035	21%	\$146,418,082	14%
2015	\$10,948,220	22%	\$175,741,229	17%
2016	\$11,143,940	2%	\$174,151,991	-1%
2017	\$16,144,751	45%	\$189,218,160	8%
2018	\$20,870,383	29%	\$242,760,206	22%

Note: Final assessment in nominal dollars

For Table 2.3, note that there are many property tax exemptions, and they can often overlap. For instance, a 70-year-old Decatur resident would qualify for both the 65 and over exemption and the 70 and over exemption. In addition, the data in the later years for overlapping exemptions is likely inaccurate, as there are irregularities in the county data for the exemptions for those 70 and over in Decatur. As the focus of this study is the effect of the full 65 and over homestead exemption on the taxable Decatur city digest, we classify properties by two types: all those that qualified for some type of 65 and over property tax exemption either at the city or county level and all other exemptions. It is necessary to examine the county-level exemptions to capture all those 65 and over prior to 2016 living in Decatur. See the exemptions used in the table listed below.

The 65 and over exemptions include all age-based exemptions available to a homeowner 65 years old and over. These are:

- The exemptions available to those 65 and older (GH-2 and S-4)

- The age-based exemptions available to a homeowner 70 years old and over (S-2 and S-3)

The all other exemptions category include the remaining exemptions:

- The exemptions available to those 62 and older based on income (GS-1 and S-1)

- The general homestead exemption (GH-1)

- The disabled veteran exemption (DV)



**Table 2.4a – Total Annual Tax Loss by Exemption Type and Land Use Category**

TAX YEAR	65+ EXEMPTION		ALL OTHER EXEMPTIONS	
	SCHOOL EXEMPTION	ANNUAL % CHANGE	SCHOOL EXEMPTION	ANNUAL % CHANGE
<i>Low Density Residential</i>				
2011	\$75,776,807	-	\$704,559,481	-
2012	\$82,249,910	9%	\$688,675,431	-2%
2013	\$77,903,099	-5%	\$639,296,772	-7%
2014	\$88,278,494	13%	\$732,885,126	15%
2015	\$110,864,300	26%	\$886,206,945	21%
2016	\$107,850,779	-3%	\$945,356,280	7%
2017	\$148,012,138	37%	\$931,580,482	-1%
2018	\$177,188,787	20%	\$1,030,846,811	11%
<i>Medium Density Residential</i>				
2011	\$16,805,570	-	\$182,498,821	-
2012	\$18,481,330	10%	\$174,198,166	-5%
2013	\$17,992,600	-3%	\$164,778,076	-5%
2014	\$21,860,750	21%	\$175,001,851	6%
2015	\$24,959,865	14%	\$206,164,568	18%
2016	\$24,896,395	0%	\$218,837,381	6%
2017	\$33,836,278	36%	\$216,239,135	-1%
2018	\$43,009,475	27%	\$244,918,544	13%
<i>Institutional</i>				
2011	\$11,689,138	-	\$179,387,890	-
2012	\$13,363,049	14%	\$167,046,928	-7%
2013	\$12,070,732	-10%	\$123,619,136	-26%
2014	\$14,534,868	20%	\$138,901,892	12%
2015	\$18,490,830	27%	\$159,529,070	15%
2016	\$17,849,800	-3%	\$167,965,083	5%
2017	\$21,871,405	23%	\$188,813,334	12%
2018	\$27,602,258	26%	\$211,108,155	12%
<i>Commercial High Density Residential</i>				
2011	\$8,037,500	-	\$167,511,260	-
2012	\$7,702,900	-4%	\$158,558,008	-5%
2013	\$7,439,305	-3%	\$125,567,397	-21%
2014	\$8,997,035	21%	\$146,418,082	17%
2015	\$10,948,220	22%	\$175,741,229	20%
2016	\$11,143,940	2%	\$174,151,991	-1%
2017	\$16,144,751	45%	\$189,218,160	9%
2018	\$20,870,383	29%	\$242,760,206	28%

Note: School exemptions in nominal dollars

For Table 2.4a, note that there are many property tax exemptions, and they can often overlap. For instance, a 70-year-old Decatur resident would qualify for both the 65 and over exemption and the 70 and over exemption. In addition, the data in the later years for overlapping exemptions are likely inaccurate, as there are irregularities in the county data for the exemptions for those 70 and over in Decatur. As the focus of this study is the effect of the full 65 and over homestead exemption on the taxable Decatur city digest, we classify properties by two types: all those that qualified for some type of 65 and over property tax exemption either at the city or county level and all other exemptions. It is necessary to examine the county-level exemptions to capture all those 65 and over prior to 2016 living in Decatur. See the exemptions used in the table listed below.

The 65 and over exemptions include all age-based exemptions available to a homeowner 65 years old and over. These are:

- The exemptions available to those 65 and older (GH-2 and S-4)

- The age-based exemptions available to a homeowner 70 years old and over (S-2 and S-3)

The all other exemptions category include the remaining exemptions:

- The exemptions available to those 62 and older based on income (GS-1 and S-1)

- The general homestead exemption (GH-1)

- The disabled veteran exemption (DV)

Table 2.4b – Maximum Exemption Amount by Exemption Type

		GS-1 (\$50K)		S-1 (\$10K)		S-2 (FULL)		S-3 (\$50K)		DIS. VETS^ (\$77.3K)		S-4 (FULL)	
		MAX		MAX		MAX		MAX		MAX		MAX	
PARCEL	EXEMPT	PARCEL	EXEMPT	PARCEL	EXEMPT	PARCEL	EXEMPT	PARCEL	EXEMPT	PARCEL	EXEMPT	PARCEL	EXEMPT
COUNT	AMT*	COUNT	AMT	COUNT	AMT	COUNT	AMT	COUNT	AMT	COUNT	AMT	COUNT	AMT
<i>Low Density Residential</i>													
2011	317	\$15,850,000	345	\$3,450,000	193	\$23,540,535	531	\$26,550,000	3	\$231,921			
2012	331	\$16,550,000	353	\$3,530,000	205	\$25,054,750	560	\$28,000,000	4	\$309,228			
2013	312	\$15,600,000	345	\$3,450,000	193	\$24,256,595	531	\$26,550,000	4	\$309,228			
2014	292	\$14,600,000	346	\$3,460,000	193	\$28,086,535	532	\$26,600,000	4	\$309,228			
2015	282	\$14,100,000	350	\$3,500,000	194	\$36,114,345	535	\$26,750,000	4	\$309,228			
2016	253	\$12,650,000	350	\$3,500,000	194	\$37,444,353	535	\$26,750,000	4	\$309,228			
2017	247	\$12,350,000	350	\$3,500,000	194	\$38,079,678	535	\$26,750,000	5	\$386,535		765	\$148,012,138
2018	234	\$11,700,000	350	\$3,500,000	192	\$43,595,208	533	\$26,650,000				821	\$177,188,787
<i>Medium Density Residential</i>													
2011	48	\$2,400,000	76	\$760,000	32	\$3,480,778	157	\$7,850,000	3	\$231,921			
2012	50	\$2,500,000	78	\$780,000	34	\$3,597,150	164	\$8,200,000	3	\$231,921			
2013	48	\$2,400,000	76	\$760,000	32	\$3,638,150	158	\$7,900,000	3	\$231,921			
2014	50	\$2,500,000	76	\$760,000	32	\$4,602,400	158	\$7,900,000	2	\$154,614			
2015	48	\$2,400,000	76	\$760,000	32	\$5,598,850	158	\$7,900,000	3	\$231,921			
2016	44	\$2,200,000	76	\$760,000	32	\$5,425,855	158	\$7,900,000	4	\$309,228			
2017	42	\$2,100,000	76	\$760,000	32	\$5,415,655	158	\$7,900,000	4	\$309,228		215	\$33,836,278
2018	42	\$2,100,000	76	\$760,000	32	\$6,795,950	158	\$7,900,000				236	\$43,122,825
<i>Institutional</i>													
2011	32	\$1,600,000	50	\$500,000	27	\$3,264,530	101	\$5,050,000	0				
2012	38	\$1,900,000	53	\$530,000	32	\$3,642,450	108	\$5,400,000	0				
2013	33	\$1,650,000	50	\$500,000	27	\$3,569,515	101	\$5,050,000	0				
2014	35	\$1,750,000	50	\$500,000	27	\$3,824,000	101	\$5,050,000	0				
2015	36	\$1,800,000	51	\$510,000	27	\$4,844,050	101	\$5,050,000	0				
2016	32	\$1,600,000	51	\$510,000	27	\$5,445,890	101	\$5,050,000	0				
2017	33	\$1,650,000	51	\$510,000	27	\$5,522,240	101	\$5,050,000	0			135	\$21,871,405
2018	35	\$1,750,000	51	\$510,000	27	\$6,418,100	101	\$5,050,000				151	\$27,602,258
<i>Commercial High Density</i>													
2011	19	\$950,000	34	\$340,000	13	\$1,636,400	66	\$3,300,000	1	\$77,307			
2012	20	\$1,000,000	35	\$350,000	14	\$1,706,800	67	\$3,350,000	1	\$77,307			
2013	18	\$900,000	34	\$340,000	13	\$1,568,250	66	\$3,300,000	1	\$77,307			
2014	16	\$800,000	34	\$340,000	13	\$1,602,000	66	\$3,300,000	2	\$154,614			
2015	14	\$700,000	34	\$340,000	14	\$2,449,075	66	\$3,300,000	2	\$154,614			
2016	14	\$700,000	34	\$340,000	14	\$2,414,320	66	\$3,300,000	2	\$154,614			
2017	18	\$900,000	34	\$340,000	14	\$2,414,320	66	\$3,300,000	2	\$154,614		101	\$16,144,751
2018	17	\$850,000	34	\$340,000	14	\$2,632,900	66	\$3,300,000				113	\$20,870,383

\* Maximum Exemption Amount

^ Disabled Veterans

For Table 2.4b, note that there are many property tax exemptions, and they can often overlap. For instance, a 70-year-old Decatur resident would qualify for both the 65 and over exemption and the 70 and over exemption. In addition, the data in the later years for overlapping exemptions are likely inaccurate, as there are irregularities in the county data for the exemptions for those 70 and over in Decatur. The parcel counts and exemptions amounts are deemed the maximum due to this exemption overlap. If an exemption is repealed, some of its value will still be captured by other exemptions. Thus, these values should be used cautiously, as a rough guide to the number of parcels and their value that are eligible for a particular exemption.

**Table 2.5 – Tax Loss Distribution of Assessed Property Values by Exemption Type and Land Use Category**

LAND USE CATEGORY	10TH PERCENTILE	25TH PERCENTILE	MEDIAN	75TH PERCENTILE	90TH PERCENTILE
<i>All Properties</i>					
Commercial High Density Residential	\$0	\$108,500	\$173,000	\$250,000	\$369,600
Institutional	\$0	\$89,950	\$152,300	\$220,975	\$326,750
Low Density Residential	\$58,150	\$170,000	\$222,600	\$300,000	\$382,000
Medium Density Residential	\$63,050	\$113,350	\$170,025	\$225,200	\$312,100
<i>Getting 65+ Full Exemption</i>					
Commercial High Density Residential	\$132,300	\$145,050	\$168,650	\$211,450	\$281,200
Institutional	\$92,600	\$145,650	\$164,200	\$229,250	\$291,950
Low Density Residential	\$146,450	\$167,900	\$200,000	\$250,850	\$306,600
Medium Density Residential	\$113,200	\$131,550	\$166,450	\$220,400	\$293,550
<i>Qualified For S3 70+ Full Exemption</i>					
Commercial High Density Residential	\$122,500	\$146,000	\$168,975	\$188,150	\$265,350
Institutional	\$122,300	\$153,400	\$180,600	\$278,600	\$335,000
Low Density Residential	\$149,800	\$168,850	\$202,300	\$290,200	\$389,050
Medium Density Residential	\$113,350	\$125,650	\$154,200	\$215,000	\$312,950

Note: All properties for tax year 2018

**Table 2.6 – Number of Properties by Exemption Type and Land Use Category**

TAX YEAR	65+ HOMESTEAD EXEMPTION PROPERTIES		ALL OTHER HOMESTEAD EXEMPTION PORPERTIES	
	COUNT	ANNUAL % CHANGE	COUNT	ANNUAL % CHANGE
<i>Low Density Residential</i>				
2011	558	-	4,295	-
2012	600	8%	4,409	3%
2013	529	-12%	4,310	-2%
2014	586	11%	4,321	0%
2015	598	2%	4,423	2%
2016	582	-3%	4,459	1%
2017	765	31%	4,291	-4%
2018	821	7%	4,240	-1%
<i>Medium Density Residential</i>				
2011	147	-	1,369	-
2012	167	14%	1,407	3%
2013	155	-7%	1,364	-3%
2014	179	15%	1,345	-1%
2015	175	-2%	1,351	0%
2016	166	-5%	1,363	1%
2017	215	30%	1,312	-4%
2018	235	9%	1,303	-1%
<i>Institutional</i>				
2011	83	-	945	-
2012	97	17%	978	3%
2013	87	-10%	942	-4%
2014	105	21%	927	-2%
2015	110	5%	937	1%
2016	108	-2%	925	-1%
2017	135	25%	895	-3%
2018	151	12%	881	-2%
<i>Commercial High Density Residential</i>				
2011	62	-	667	-
2012	62	0%	699	5%
2013	58	-6%	673	-4%
2014	68	17%	669	-1%
2015	69	1%	712	6%
2016	70	1%	745	5%
2017	101	44%	711	-5%
2018	113	12%	709	0%

For Table 2.6, note that there are many property tax exemptions and they can often overlap. For instance, a 70-year-old Decatur resident would qualify for both the 65 and over exemption and the 70 and over exemption. As the focus of this study is the effect of the full 65 and over homestead exemption on the taxable Decatur city digest, we classify properties by two types, all those that qualified for some type of 65 and over property tax exemption either at the city or county level and all other exemptions. It is necessary to examine the county-level exemptions to capture all those 65 and over prior to 2016 living in Decatur. See the exemptions used in the table listed below.

The 65 and over exemptions include all age-based exemptions available to a homeowner 65 years old and over. These are:

- The exemptions available to those 65 and older (GH-2 and S-4)

- The age-based exemptions available to a homeowner 70 years old and over (S-2 and S-3)

The all other exemptions category include the remaining exemptions:

- The exemptions available to those 62 and older based on income (GS-1 and S-1)

- The general homestead exemption (GH-1)

- The disabled veteran exemption (DV)

**Table 2.7 – Number of Properties Sold by Exemption Type and Land Use Category**

TAX YEAR	PARCELS SOLD – ALL		PARCELS SOLD – WITH 65+ EXEMPTION		PARCELS SOLD – WITH STUDENTS	
	COUNT	SHARE OF TOTAL PARCELS	COUNT	SHARE 65+ OF TOTAL SOLD	COUNT	SHARE OF TOTAL SOLD
<i>Low Density Residential</i>						
2011	229	5%	19	8%	45	20%
2012	290	6%	33	11%	60	21%
2013	375	8%	54	14%	72	19%
2014	330	7%	32	10%	71	22%
2015	396	8%	45	11%	102	26%
2016	358	7%	43	12%	81	23%
2017	316	6%	30	9%	95	30%
2018*	273	5%	24	13%	59	31%
<i>Medium Density Residential</i>						
2011	52	3%	1	2%	7	13%
2012	75	5%	1	1%	9	12%
2013	127	8%	12	9%	24	19%
2014	129	8%	18	14%	19	15%
2015	141	9%	14	10%	30	21%
2016	126	8%	18	14%	27	21%
2017	98	6%	12	12%	22	22%
2018*	104	5%	13	18%	19	26%
<i>Institutional</i>						
2011	49	5%	6	12%	7	14%
2012	53	5%	3	6%	6	11%
2013	54	5%	8	15%	5	9%
2014	62	6%	8	13%	6	10%
2015	67	6%	11	16%	10	15%
2016	83	8%	7	8%	8	10%
2017	57	6%	8	14%	8	14%
2018*	59	6%	11	28%	9	22%
<i>Commercial High Density Residential</i>						
2011	26	4%	6	23%	1	4%
2012	18	2%	2	11%	1	6%
2013	44	6%	3	7%	7	16%
2014	40	5%	8	20%	8	20%
2015	72	9%	6	8%	4	6%
2016	55	7%	4	7%	3	5%
2017	55	7%	5	9%	8	15%
2018*	49	6%	6	17%	3	9%

2018 values have been adjusted to represent a full year of sales.

**Table 2.8 – Student Enrollment Totals by Exemption Type and Land Use Category**

TAX YEAR	ALL HOMES WITH STUDENTS NOT RECEIVING A 65+ EXEMPTION		HOMES RECEIVING A 65+ EXEMPTION WITH STUDENTS		UNMATCHED INCLUDED
	COUNT	ANNUAL % GROWTH	COUNT	ANNUAL % GROWTH	COUNT
<i>Low Density Residential</i>					
2011	1,649	-	145	-	1,728
2012	1,906	16%	150	3%	1,985
2013	2,093	10%	196	31%	2,172
2014	2,287	9%	157	-20%	2,366
2015	2,535	11%	132	-16%	2,614
2016	2,793	10%	115	-13%	2,872
2017	3,014	8%	119	3%	3,093
2018	3,230	7%	134	13%	3,309
<i>Medium Density Residential</i>					
2011	277	-	12	-	694
2012	351	27%	15	25%	768
2013	404	15%	18	20%	821
2014	437	8%	18	0%	854
2015	477	9%	16	-11%	894
2016	581	22%	13	-19%	998
2017	662	14%	18	38%	1,079
2018	702	6%	25	39%	1,119
<i>Institutional</i>					
2011	138	-	14	-	349
2012	182	32%	21	50%	393
2013	208	14%	22	5%	419
2014	229	10%	22	0%	440
2015	244	7%	24	9%	455
2016	272	11%	18	-25%	483
2017	303	11%	14	-22%	514
2018	307	1%	24	71%	518
<i>Commercial High Density Residential</i>					
2011	87	-	1	-	193
2012	97	11%	2	100%	203
2013	96	-1%	4	100%	202
2014	108	13%	3	-25%	214
2015	118	9%	5	67%	224
2016	134	14%	7	40%	240
2017	164	22%	10	43%	270
2018	175	7%	13	30%	281



Table 2.8 was created using data from 2011-18 school year containing relevant information on the address and school year for 37,313 student observations. The data was cleaned and then merged with data containing the land use code by the student's address. This method yielded 27,659 matched records. This distribution is shown in the table for those that do not receive a 65 and over property tax exemption and those that do. The year-over-year change for both groups is also included.

Of the remaining student level records, 3,151 were determined to have addresses outside of the city of Decatur and, thus, not relevant for our table. This left 6,503 student observations that could not be matched to parcel-level tax data. Of these observations, 5,871 had a unit number as part of the address. We took this as evidence that these students lived in a multifamily dwelling. To distribute these observations across the various multifamily classifications in Decatur, we used the distribution of the 27,659 students and parcels from column 2. As this data has some uncertainty as to accuracy of address by year, we allocate by annual average across the years 2011-18. Thus, column 6 shows the sum of the Column 2 and this 8-year average value for the 6,503 unmatched students. We note that this process allocates an additional 734 students to multi-family housing on average per year compared to an additional 79 students to low density residential on average per year.

**Table 2.9 – Age, Income of Property Owners and Years of Current Property Ownership by Exemption Type and Land Use Category**

TAX YEAR	65+ EXEMPTION RECIPIENTS		ALL OTHERS	
	AGE	AVERAGE INCOME	AGE	AVERAGE INCOME
<i>Low Density Residential</i>				
2011	69	\$138,656	45	\$140,585
2012	70	\$135,538	46	\$137,268
2013	70	\$135,509	46	\$136,525
2014	71	\$136,720	47	\$138,647
2015	72	\$139,972	48	\$141,548
2016	73	\$139,738	49	\$142,633
2017	73	\$141,278	49	\$144,448
2018	73	\$142,507	49	\$146,019
<i>Medium Density Residential</i>				
2011	70	\$118,090	44	\$120,869
2012	70	\$114,970	44	\$118,209
2013	71	\$115,111	46	\$117,993
2014	71	\$116,033	46	\$118,906
2015	71	\$118,082	47	\$121,015
2016	73	\$118,462	48	\$121,706
2017	73	\$120,924	48	\$123,149
2018	73	\$122,035	49	\$124,552
<i>Institutional</i>				
2011	72	\$127,985	51	\$130,385
2012	73	\$124,336	51	\$127,274
2013	73	\$123,994	52	\$123,643
2014	75	\$123,692	53	\$125,463
2015	75	\$126,272	53	\$127,610
2016	76	\$125,840	54	\$128,773
2017	76	\$126,815	54	\$132,388
2018	77	\$127,478	54	\$134,466
<i>Commercial High Density Residential</i>				
2011	72	\$140,794	46	\$149,724
2012	71	\$137,233	47	\$146,259
2013	72	\$137,194	48	\$142,807
2014	73	\$137,945	49	\$145,850
2015	74	\$140,295	49	\$148,921
2016	75	\$139,904	50	\$147,668
2017	74	\$141,528	50	\$151,023
2018	75	\$142,717	51	\$157,829

**Table 3.6 – Percentage of Eligible Households of RL and RM Homes Taking the Senior Homestead Exemption**

TAX YEAR	DID NOT FILE FOR 65+ EXEMPTION*	FILED FOR 65+ EXEMPTION	SHARE OF ALL 65+ TAKING EXEMPTION	ALL PARCELS	SHARE OF ALL LAND USE PARCELS WITH 65+ OWNER
<i>Low Density Residential</i>					
2011	125	558	82%	4853	14%
2012	146	600	80%	5009	15%
2013	166	568	77%	4878	15%
2014	159	586	79%	4907	15%
2015	185	598	76%	5021	16%
2016	174	582	77%	5041	15%
2017	117	765	87%	5056	17%
2018	112	821	88%	5061	18%
<i>Medium Density Residential</i>					
2011	44	147	77%	1516	13%
2012	50	167	77%	1574	14%
2013	56	161	74%	1525	14%
2014	50	179	78%	1524	15%
2015	64	175	73%	1526	16%
2016	66	166	72%	1529	15%
2017	44	215	83%	1527	17%
2018	47	235	83%	1538	18%
<i>Institutional</i>					
2011	66	83	56%	1028	14%
2012	75	97	56%	1075	16%
2013	74	89	55%	1031	16%
2014	74	105	59%	1032	17%
2015	85	110	56%	1047	19%
2016	85	108	56%	1033	19%
2017	74	135	65%	1030	20%
2018	70	151	68%	1032	21%
<i>Commercial High Density Residential</i>					
2011	28	62	69%	728	12%
2012	27	62	70%	760	12%
2013	33	60	65%	732	13%
2014	34	68	67%	736	14%
2015	34	69	67%	780	13%
2016	36	70	66%	814	13%
2017	28	101	78%	811	16%
2018	24	113	82%	821	17%

\*Determined from 65+ residents in voter file data who were not present in exemption file data

3. What has been the annual and cumulative financial impact on CSD of the loss of revenue from the 2016 senior homestead exemption? What would be the projected annual and total impact over 10 years if no changes are made?

See Question 3 in the report and See Tableau Model ([link here](#)). Due to the limitations in the baseline forecast for the city of Decatur, our projections can only extend out until 2025.

3.1. How can CSD best track and quantify the effect of the 2016 senior homestead exemption?

See Question 3 in the report.

3.2. Have more residents in RL homes without enrolled students stayed in place since passage of the 2016 senior homestead exemption?

See Table 3.6.

3.3. Is there a correlation between residents staying in place in RL and passage of the 2016 senior homestead exemption?

No, see question 1 from the report.

3.4. Since the senior homestead exemption, how many seniors have moved to Decatur into RL and RM homes? How does this compare to a similar time frame before the exemption?

Table 3.6 shows the share of all parcels owned by a senior 65 and over. Prior to the exemption in 2017, the average year over year growth in the number of seniors is 15, for low density residential and 8 for medium density residential. After the exemption, the average year over year growth in the number of seniors is considerably higher, 89 for low density residential and 25 for medium density. However, as our previous results found, the exemption had no effect on actual buying and selling behavior of seniors. Thus, this difference must be due to existing senior residents signing up for the now more valuable homestead exemption. This is consistent with our findings from question 3 as well.

See Table 3.6.

3.5. How many residents qualifying for the senior homestead exemption in both RL and RM homes have students enrolled?

See Table 2.8.

3.6. What percentage of eligible households of RL and RM homes are taking the senior homestead exemption?

See Table 3.6.

3.7. What are the income levels of those taking the senior homestead exemption in RL and RM homes?

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See Table 2.9.

- 3.8. Are there other data points on age, income, or other potential tax exemption qualifiers that would be helpful in assessing and targeting the effectiveness of homestead tax exemptions?

If the exemption had an income component to it, then the applicant would have to provide data on current or past income. This would be very helpful in better understanding usage and targeting. This might also reduce the cost of the exemption.

- 3.9. Provide property specific case study examples of the “before” and “after” impact to demonstrate the typical expected impact of proposed changes.

See Tableau Model ([link here](#)).

4. Provide recommendations.

See question 3 in the report.

- 4.1. Provide options, recommendations, and impact projections for adjustments to and/or alternatives including but not limited to possible tiered options to the homestead tax exemptions which would improve its effectiveness, contain costs, and where in keeping with the preceding goals better target tax relief at a cost not to exceed a loss of tax revenue of approximately \$1,200,000 relative to 2016 values as originally anticipated and communicated to taxpayers.

See question 3 in the report.

- 4.2. Provide a model with which we can run scenarios based on recommendations and possible tiered tax exemption options to predict anticipated impact.

See Tableau Model ([link here](#)).

- 4.3. How should we structure changes to the senior homestead exemption in order not to preclude possible future considerations of other forms of tax relief?

See question 3 in the report.

## Appendix 2: Difference in Difference Hedonic Price Model

Equation one ( $E1$ ) is the base difference in difference hedonic price model. In the equation below:  $\mathbf{X}$  represents a vector of home characteristics including living square feet, number of bedroom rooms, number of bathrooms, lot size, garage, condition indicators, and indicator for recent renovation.  $\mathbf{MY}$  are the set of the month year indicators and  $\mathbf{CT}$  are a set of census tract neighborhood indicators.  $\beta_1$  represents the after effect of being after the passage of the senior homestead exemption in Decatur.  $\beta_2$  represents the average difference between Decatur and the control zone in all time periods. The interaction of the after and Decatur variables  $\mathbf{DiD}$  is the difference in difference estimator and is our variable of interest and  $\delta$  can be interpreted as the effect of the policy for home sales in Decatur over the control zone.

$$E1: \ln(P_{hmy}) = \delta \mathbf{DiD} + \beta_1 \mathbf{After} + \beta_2 \mathbf{Decatur} + \beta \mathbf{X}_h + \alpha \mathbf{MY} + \gamma \mathbf{CT} + \varepsilon$$

It is important that the treatment and control group be similar, in this case in housing stock and location, as an additional control such that unobserved events that could affect home prices would be expected have similar impacts on both groups. However, the statistical model is designed to produce reliable results despite differences in these observable characteristics. The model relies on a fixed effects estimation protocol, which utilizes the variation over time in the variables in smaller geographies of census block groups. Thus, the model controls for the observed differences in full sample averages in the larger geographies of Decatur and the control group.

Another statistical measure that helps to validate the model's results is that the model has high measure of goodness of fit, 68.5 percent. This means that the hedonic variables used in the model explain 68.5 percent of the variability of the observed home sale prices around the mean home sale price. While there are other factors that are not in the model that effect home price, roughly 70 cents of every dollar in home price can be explained by our model.

## Appendix 3: Fuzzy Match Details

To estimate the effect that the senior homestead exemption has on home sales in Decatur, the voter file is necessary to identify the ages of homeowners in both Decatur and the control group. The voter file identifies a far greater number of seniors than any data available from either Fulton or Dekalb Counties using existing age-based property tax exemptions. Many age-based exemptions have income restrictions, thus higher-income seniors do not apply. This group of higher income seniors are an important component of all home sellers and thus excluding them from the study would bias our results. The fuzzy matching procedure for matching home buyers to the Georgia voter registration list proceeded as follows:

1. Both data files were Geocoded based on their addresses and each home sale and voter residence as assigned to a census tract.
2. The data sets were combined using the Stata “joinby” command to generate a new data set with all homes sales and voter combinations within each census tract included in our study area.
3. A concatenated variable was constructed composed of the property address, the name of the homebuyer, and similarly constructed variable with the voter file data.
4. A Jaccard similarity score was calculated, based on the bigram string matching method, for each observation across these two variables using Stata’s “matchit” command.
5. The similarity score calculation was repeated for a second homebuyer, if necessary.
6. A visually inspection of string fields was conducted to determine the similarity score threshold.
7. All pairs of home buyer-voter combinations with a similarity score above the threshold were kept.

Bounded between zero and one, the Jaccard similarity score is the ratio of the number of individual positions within the string that matched to the square root of the number of positions from each string multiplied together. For our data the most common reason for a failed match (a score below 0.6) was businesses purchasing a home, presumably as rental or investment property. Any homebuyer voter combination with a similarity score above 0.6 appeared to represent the same individual frequently, but not exclusively. Similarity scores above 0.7 the vast majority of matches appear to represent the same individual. Similarity scores above 0.8 the matches were clearly representing the same individual in virtually all cases. For the 11,943 homes sales, 8,379 (75.2 percent) were matched with an over 0.6 similarity score, with the missing sales being comprised mostly as business purchasers, and 51.9 percent matched with a similarity score of over 0.7.

We check for any bias in our results by running the model by increasingly stringent similarity cutoffs. Recall that from the full sample of home sales, we could not match 25 percent of sales to the voter information at all. For the 8,379 matches, 48.1 percent matched with a lower range similarity score of 0.6-0.7. Running the model allowing for fewer and fewer less confident fuzzy match observations provides evidence that the coefficients are consistent to these changes. Also changing these cutoffs changes the size and composition of the missing observations. If the probability of not matching were in some way correlated with our outcome of interest, either home price or probability of selling, our findings would change as the sample varied.



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## About the Authors

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