

# On the Impact of Existing and Future Apartment Complexes on the Stoughton Public School District

By  
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## Purpose of this Study

- Reliable data necessary to project how many students each new apartment complex will add to Stoughton student population are not available
- Prevalent community perception that developer projections are generally inaccurate
- Reliable data are needed to prepare Stoughton schools for anticipated student population growth.

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## Approach

- Select Stoughton's four largest apartment complexes housing school aged children
- Find out how many 1, 2, 3 and 4 bedroom units each complex possesses
- Determine how many students from each apartment complex are registered to Stoughton Public Schools

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## Compiled Data

Complex Name	# of Bedrooms				Total Number of Units	Registered Students (October 2009)
	1 BR	2 BR	3 BR	4 BR		
North Stoughton Village	69	22	9	0	100	41
Presidential Courts	16	53	27	8	104	50
Wentworth Manor	36	33	33	0	102	45
Quail Run	24	72	36	0	132	58
<b>OVERALL</b>	<b>145</b>	<b>180</b>	<b>105</b>	<b>8</b>	<b>438</b>	<b>194</b>

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## Financial Impact of Existing Stock

(Residential Tax Rate: \$11.01 per K\$, Per Pupil Spending: \$10,718)

Complex Name	2009 Assessment	2009 Tax	# of Students	Associated Education Expense
North Stoughton Village	\$7,896,700	\$86,943	41	\$439,438
Presidential Courts	\$3,598,500	\$39,619	50	\$535,900
Wentworth Manor	\$6,408,800	\$70,561	45	\$482,310
Quail Run	\$10,500,000	\$115,605	58	\$621,644
<b>OVERALL</b>	<b>\$28,404,000</b>	<b>\$312,728</b>	<b>194</b>	<b>\$2,079,292</b>

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## #SRS Estimation Methodology

(SRS = Public School Registered Children)

- Assume a complex has N1 one-bedroom units, N2 two-bedroom units, N3 three-bedroom units, and N4 four-bedroom units
- Assume an average of X1 SRS (School Registered Children) reside in each one-bedroom unit, while X2, X3, and X4 SRS reside in 2, 3, and 4 bedroom units respectively
- Then, the total SRS for the complex is:

$$\#SRS = N1 \cdot X1 + N2 \cdot X2 + N3 \cdot X3 + N4 \cdot X4$$

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## Selecting Appropriate X values

- Obvious first choice is the Census Data
- 1990 Census results for Southeastern Massachusetts (Source: UMASS Donahue Institute):

$$X1 = 0.0335$$

$$X2 = 0.2978$$

$$X3 = 1.2234$$

$$X4 = 1.0929$$

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## SRS Estimates based on 1990 Census Data

Complex Name	Bedrooms				Total Number of Units	Registered Students (October 2009)	Census'90 Estimate of #SRS
	1 BR	2 BR	3 BR	4 BR			
North Stoughton Village	69	22	9	0	100	<b>41</b>	<b>19.9</b>
Presidential Courts	16	53	27	8	104	50	58.1
Wentworth Manor	36	33	33	0	102	45	51.4
Quail Run	24	72	36	0	132	58	66.3

**Conclusion: Census'90 data underestimates SRS occupancy rate in smaller units (and vice versa).**

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## Improved X Values for Stoughton

- Calculate the X vector to match the #SRS estimate to actual (2009) SRS occupancy at each of the four apartment complexes examined.
- Four linear equations to solve four unknowns.
- Coefficient matrix determinant is finite.
- There is one and **only one** set of X values

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## X Values for Stoughton

	Census'90 (SE Mass.)	This Study (Stoughton SRS Data)
X1	0.0335	0.3943
X2	0.2978	0.4147
X3	1.2234	0.5187
X4	1.0929	0.9629

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## SRS Estimates based on Stoughton X Values

Complex Name	Bedrooms				Total Number of Units	Registered Students (October 2009)	Stoughton Estimate of #SRS
	1 BR	2 BR	3 BR	4 BR			
North Stoughton Village	69	22	9	0	100	<b>41</b>	<b>41.0</b>
Presidential Courts	16	53	27	8	104	50	50.0
Wentworth Manor	36	33	33	0	102	45	45.0
Quail Run	24	72	36	0	132	58	58.0

**As intended, SRS predictions made using  
Stoughton X values match Stoughton SRS data**

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## SRS Estimate for Woodbridge Crossing

- Total number of units: 208
- No 3-bedroom and 4-bedroom units,  
hence  $N_3 = N_4 = 0$
- All 1-bedroom and 2-bedroom units, but  
ZBA does not know  $N_1$  and  $N_2$  yet (for  
now assume  $N_1 = N_2 = 108$ )
- Thus, our best estimate for the number of  
Woodbridge students is:

$$0.3943 \cdot 108 + 0.4148 \cdot 108 = \underline{\underline{\mathbf{84\ Students}}}$$

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## Estimated Distribution of Additional Students (Assuming uniform age distribution)

	Additional Students	Explanation
Elementary School	<b>39</b>	= $84.1 * 6 / 13$
Middle School	<b>19</b>	= $84.1 * 3 / 13$
High School	<b>26</b>	= $84.1 * 4 / 13$

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## Conclusions

- Stoughton's rental apartment complex experience reveals a strong impact on the School District.
- Data compiled and the estimation methodology described in this work forecast that Woodbridge apartments will add 84 students to the District.
- This would translate into \$900,000 of additional education expense per year (using the 2007 figure for per pupil expenditure).
- Additional capital improvements and redistricting are likely to be needed to accommodate the additional students.

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