

Capacity to Pay: Highlights

Presentation to the Override Study Committee

January 22, 2018

- 1) The percent of Brookline Households paying more than 30% of income for housing is very close that of the state as a whole, save for those aged 65 and over; here it is lower in Brookline for owners and higher for renters.
- 2) Real estate taxes per household relative to income are slightly below those of peer cities and towns.
- 3) Taxes per household relative to housing wealth are well below those of peers.
- 4) Taxes have been rising since 2010 in inflation-adjusted dollars and at about the same rate in Brookline as for peers.
- 5) Income per household, in inflation-adjusted dollars, has been falling in Brookline since 2010 but has been rising for peers.
- 6) Value per housing unit has been rising in inflation-adjusted dollars and at a much more rapid rate than for peers.
- 7) Brookline's population has been rising in student-age categories and among those 65 and over but has been falling in the prime working-age categories.
- 8) Brookline's number of homeowners has declined since 2010 and its number of rental households has increased.

Draft Report on Capacity to Pay, for consideration by the Brookline Override Study Committee

Harold Petersen, 1/20/18

The obvious question in any override proposal is the balance between the need for additional money and the ability to pay. The terms "need" and "ability to pay" are both ambiguous. Programs, including both town and school programs, can be provided at different levels, and the more relevant question is how much money is required to maintain programs at a given level of quality. Do we want to be at the top in both municipal programs and in the schools, and if so, how much will it cost? Or would we prefer to settle for "good" rather than "excellent," and if so, how much would that cost?

Ability to pay is highly nuanced. Some residents are stretched very thin already and can barely pay the taxes increasing at 2 1/2 per cent per year, let alone paying more than that. Others could pay more if they were willing to sacrifice something but that something may be as important to them as the difference between "good" and "excellent" town and/or school programs. Others are determined to maintain excellent programs and are willing to cut back elsewhere in order to do so. And a few, of course, might be able to pay what it takes without any notable difference in their standard of living.

Even those able to pay for a substantial override may well ask whether a yes vote would do more to enhance the value of their properties than would a no vote. This may be a huge factor for owners who are either thinking of leaving Brookline within a few years, and thus contemplating a sale without a local repurchase, or people who intend to stay in their homes but wish to leave a substantial bequest to their heirs. We have no good evidence on whether higher property taxes enhance or depress property values. Higher taxes which enhance services may well increase property values, whereas higher taxes that lead to waste and inefficiency may well reduce values.

There is no easy answer to the question of whether Brookline has the capacity to pay for a substantial override. What we can do is provide data on taxes, incomes, and property values for Brookline and for those communities we have looked to as "peers" in the 2014 override study report and also for a more recent group of school peers as identified by the Brookline School Committee.

Housing Costs over 30% of Income

The 2014 Override Study Committee report included a section called "Capacity to Pay," in which it began with a discussion of how many homeowners and renters paid more than 30% of their incomes in housing costs. This threshold has been commonly used as a measure of whether people are "financially stressed" by housing costs with little left to spend on other goods and services. They found that 30% of owner households and about 50% of rental households are cost burdened already, and presumably would find it difficult to bear additional taxes. The report did not give the percentages for other cities or towns in Massachusetts, and it strikes us that this is worth doing.

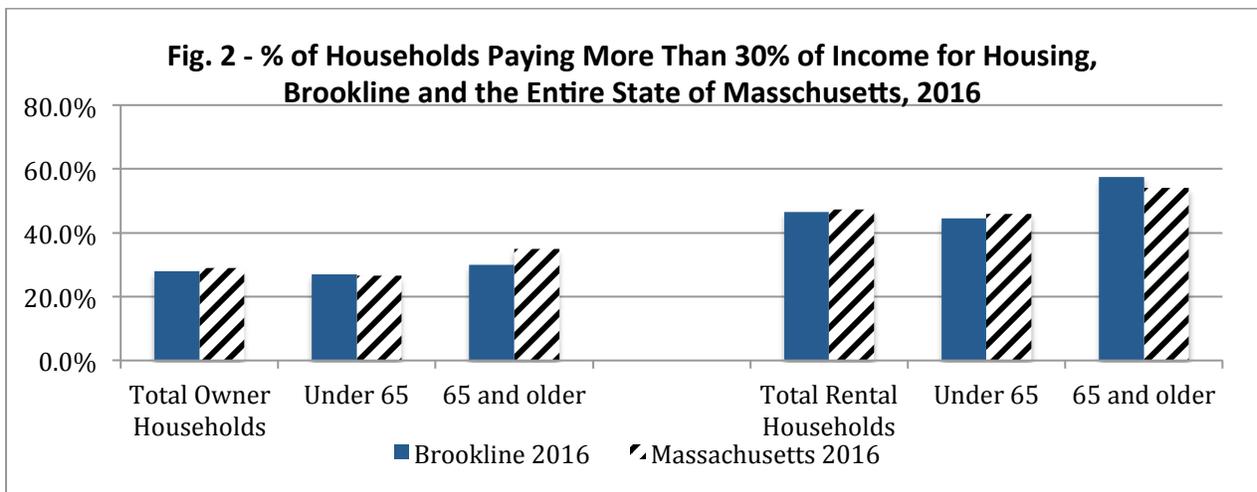
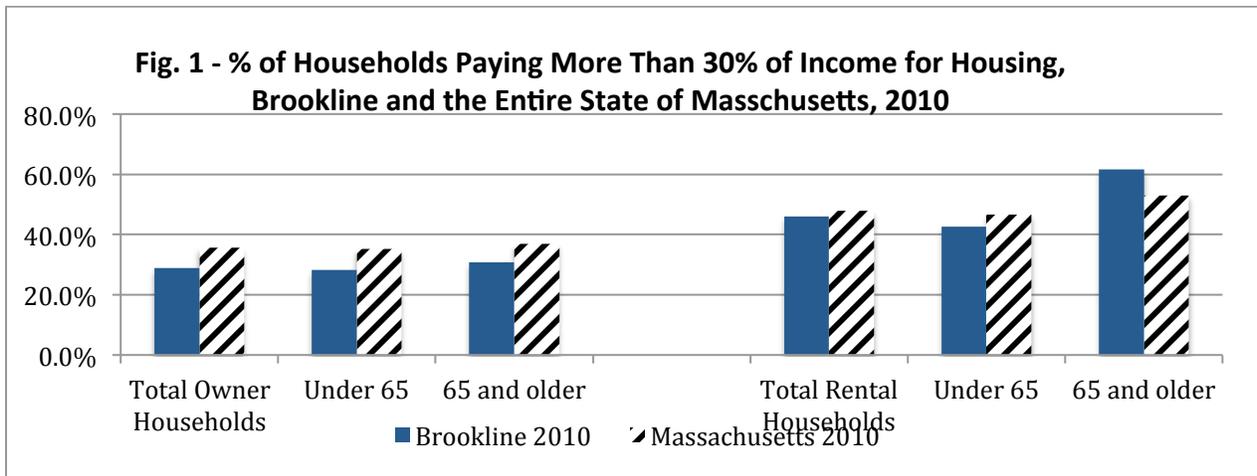
Table 1 gives these percentages for 2010 and 2016 for both Brookline and the entire state of Massachusetts. We see that although the percentages are high in Brookline they are

slightly below those for the state as a whole save for elderly rental households (those with a head of household aged 65 and over). Elderly renters appear to be the ones who are most cost-burdened by housing. The percentages are also shown as charts in Figs. 1 and 2, for those who find charts easier to read.

Table 1 - Percent of Households Paying More than 30% of Income for Housing

	Brookline 2010	Brookline 2016	Massachusetts 2010	Massachusetts 2016
Total Owner Households	28.8%	27.9%	35.6%	28.90%
Under 65	28.2%	27.0%	35.2%	26.50%
65 and older	30.8%	30.0%	36.9%	35.00%
Total Rental Households	46.0%	46.6%	47.8%	47.40%
Under 65	42.6%	44.5%	46.7%	45.93%
65 and older	61.6%	57.5%	53.0%	54.00%

Source: American Community Survey.



What is most notable in the data is that the proportion of "housing stressed" in 2016 is not notably different in Brookline than in the entire state of Massachusetts. Thus it is a concern in Brookline as it is throughout the state; Brookline is not unique.

It is a bit puzzling that the percentage of 'housing stressed' has gone down in Brookline for the elderly, most particularly for elderly renters, given that rents have been rising rapidly in Brookline as well as throughout the state over the past six years. Table 2 is an effort to provide some insight on this.

Table 2 - Number of Brookline Households, 2010 and 2016, Total, by Owners vs. Renters, by Age, and by % Housing stressed

	Total Number			Hous. Costs >30% of Inc.		
	2010	2016	Δ	2010	2016	Δ
Total Number of HHs	24475	24741	266	9127	9251	124
Owners	12395	12184	-211	3570	3399	-171
Renters	12080	12557	477	5557	5852	295
Total under age 65	19634	18960	-674	6974	6961	-13
Owners	9701	8423	-1278	2740	2271	-469
Renters	9933	10537	604	4234	4690	456
Total 65 and over	4841	5781	940	2153	2290	137
Owners	2694	3761	1067	830	1128	298
Renters	2147	2020	-127	1323	1162	-161

Source: American Community Survey

The table shows that over the six years 2010 to 2016 Brookline lost 211 owner-occupied households but gained 477 rental households, for a net increase of 266. This is in line with national data showing a reduction in the percentage of homeowners since the financial crisis. In Brookline this largely reflects an increase in the number of investor-owned condominiums.

Among those 65 and over, however, the number of owners increased substantially and the number of renters fell. It is not quite clear why this has happened, but it is notable that this was the group (renters 65 and over) that was the most "housing stressed" in both 2010 and 2016. It may be that some have been forced out by high rents, or it may be that more of the elderly have chosen to stay in their homes rather than move to rental housing.

Taxes and Income, Brookline and Peer Communities.

It has been the custom in looking at taxes in Brookline to compare ourselves with so-called peer communities. The 2014 Override Study report did this with 11 school peers and 10 municipal peers, which are identified in Table 3. The school peers at that time included a number of towns with much higher incomes than Brookline, including Dover, Weston, Wellesley, and Carlisle. As of Fall, 2017, the School Committee was using a different set of

peers, identified in the table as 2017 School Peers. Table 3 gives data for Brookline and all of these peers on taxes and on income.

Table 3 - Residential Tax Levy per Household Unit and Household Income

Municipality	2014 Sch. Peer	2014 Mun Peer	2017 Sch. Peer	Res. Levy per HU FY2011	Res. Levy per HU FY2017	%Δ FY11-17	Mean HH Inc. 2010	Mean HH Inc. 2016	%Δ FY10-16
Brookline	x	x	x	5,024	6,373	26.85%	147,140	145,131	-1.37%
Acton			x	7,172	7,994	11.46%	130,786	158,428	21.14%
Arlington		x	x	4,049	5,396	33.27%	101,307	125,046	23.43%
Belmont		x	x	6,330	7,960	25.75%	131,030	157,073	19.88%
Boxborough			x	6,279	6,236	-0.69%	119,845	138,580	15.63%
Cambridge			x	1,966	2,648	34.67%	97,296	119,288	22.60%
Carlisle	x			12,393	13,848	11.74%	189,989	241,742	27.24%
Concord	x			9,073	10,505	15.79%	183,250	192,909	5.27%
Dedham		x		4,660	5,529	18.63%	103,588	114,541	10.57%
Dover	x			13,462	14,904	10.71%	240,516	299,943	24.71%
Framingham		x		3,265	3,766	15.35%	83,730	91,252	8.98%
Lexington	x	x	x	8,287	11,154	34.60%	173,165	197,029	13.78%
Lincoln	x			9,469	10,450	10.36%	174,002	195,926	12.60%
Medford		x		2,700	3,622	34.13%	82,381	97,242	18.04%
Natick		x	x	4,444	5,517	24.15%	112,583	130,005	15.47%
Needham		x	x	6,659	8,727	31.05%	158,686	191,789	20.86%
Newton	x	x	x	6,403	7,968	24.43%	158,916	185,174	16.52%
Sherborn	x			12,869	14,812	15.09%	190,251	216,125	13.60%
Sudbury	x			10,635	11,552	8.62%	183,902	221,434	20.41%
Wayland	x			10,467	11,264	7.62%	185,407	199,541	7.62%
Wellesley	x	x	x	9,767	12,549	28.48%	213,666	264,145	23.63%
Weston	x			15,293	17,542	14.71%	276,835	288,740	4.30%
Winchester			x	7,632	9,959	30.48%	162,211	204,878	26.30%
				FY2011	FY2017	%ΔRes.Levy	2,010	2,016	%ΔMean Income
Brookline				5,024	6,373	26.85%	147,140	145,131	-1.37%
Ave., FY14 School Peers				10,738	12,413	16.56%	197,264	227,519	15.43%
Ave., FY14 Municipal Peers				5,657	7,219	26.98%	131,905	155,330	17.12%
Ave., FY17 School Peers				6,272	7,828	25.24%	141,772	170,130	19.93%
U.S. Cons.Price Index (Dec of FY)				215.9	241.4	11.81%			

Sources of Data: Residential Levy from the Massachusetts Department of Revenue, Municipal Data Bank. Number of Housing Units and Mean and Median Household Income from the American Community Survey, 2016 and 2010.

Table 3 cont'd - Residential Tax Levy per Household Unit and Household Income

Municipality	Ave.Levy/ Mean inc FY2011	Ave.Levy/ Mean inc FY2017	Med. HH Inc. 2010	Med. HH Inc. 2016	%Δ FY11- FY17	Ave.Levy/ Med. inc FY2011	Ave.Levy/ Med. inc FY2017
Brookline	3.41%	4.39%	95,448	102,175	7.05%	5.26%	6.24%
Acton	5.48%	5.05%	105,523	131,099	24.24%	6.80%	6.10%
Arlington	4.00%	4.31%	82,771	98,103	18.52%	4.89%	5.50%
Belmont	4.83%	5.07%	95,197	114,141	19.90%	6.65%	6.97%
Boxborough	5.24%	4.50%	102,222	103,556	1.31%	6.14%	6.02%
Cambridge	2.02%	2.22%	64,865	83,122	28.15%	3.03%	3.19%
Carlisle	6.52%	5.73%	155,000	167,400	8.00%	8.00%	8.27%
Concord	4.95%	5.45%	119,858	138,661	15.69%	7.57%	7.58%
Dedham	4.50%	4.83%	80,865	87,108	7.72%	5.76%	6.35%
Dover	5.60%	4.97%	164,583	189,265	15.00%	8.18%	7.87%
Framingham	3.90%	4.13%	64,061	70,706	10.37%	5.10%	5.33%
Lexington	4.79%	5.66%	130,637	152,872	17.02%	6.34%	7.30%
Lincoln	5.44%	5.33%	121,104	130,870	8.06%	7.82%	7.99%
Medford	3.28%	3.72%	70,102	79,607	13.56%	3.85%	4.55%
Natick	3.95%	4.24%	87,568	104,372	19.19%	5.07%	5.29%
Needham	4.20%	4.55%	114,365	139,477	21.96%	5.82%	6.26%
Newton	4.03%	4.30%	107,696	127,402	18.30%	5.95%	6.25%
Sherborn	6.76%	6.85%	145,250	158,250	8.95%	8.86%	9.36%
Sudbury	5.78%	5.22%	153,295	164,013	6.99%	6.94%	7.04%
Wayland	5.65%	5.64%	129,805	157,500	21.34%	8.06%	7.15%
Wellesley	4.57%	4.75%	139,784	171,719	22.85%	6.99%	7.31%
Weston	5.52%	6.08%	148,512	191,744	29.11%	10.30%	9.15%
Winchester	4.71%	4.86%	121,572	149,321	22.83%	6.28%	6.67%
	FY2011	FY2017	2,010	2,016	%ΔMed. Income	FY2011	FY2017
Brookline	3.41%	4.39%	95,448	102,175	7.05%	5.26%	6.24%
Average of							
FY14 Sch. Peers	5.42%	5.45%	137,775	159,063	15.57%	7.73%	7.75%
FY14 Mun. Peers	4.20%	4.56%	97,305	114,551	16.94%	5.64%	6.11%
FY17 Sch. Peers	4.35%	4.50%	104,745	125,017	19.48%	5.81%	6.08%

The table shows the residential levy per household for FY2011 and FY2017, and both mean and median household income for 2010 and 2016. It is presumed that, other things being equal, which they are not, there is a greater capacity to pay with greater income, and a greater capacity to pay with an increase in real income; i.e., income adjusted for the change in the cost of living. The table has a maze of numbers. It might be easier to interpret the

numbers by looking at charts derived from the table. Then the tables can be used to look back at data for the individual cities and towns.

Fig. 3 below shows the residential levy per household unit for Fiscal Years 2011 and 2017 for Brookline and then the average for its peer communities. It shows the levy going up by just about the same amount for the peers as for Brookline. Thus, although Brookline had a substantial override over this period, many of the peer communities did so as well.

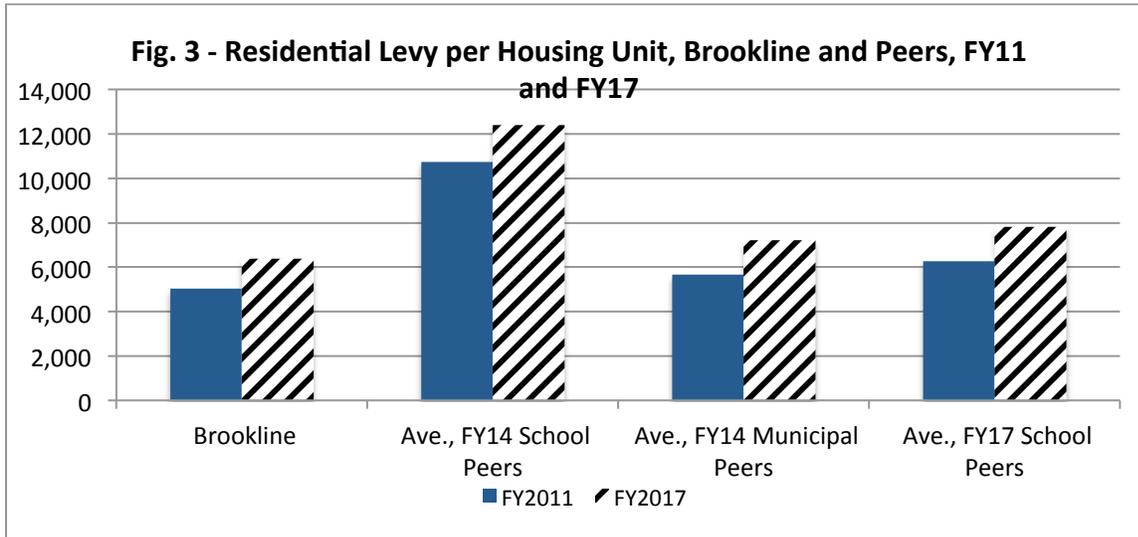


Fig. 4 shows mean household income for Brookline and peers for FY11 and FY17. We see that income for Brookline actually fell slightly, and if adjusted for inflation fell significantly, whereas for the peers it rose. The mean, for those who could use a statistics tutorial, is what we commonly call the average—it simply adds together all the incomes and divides by the number of households. It is thus pulled up by very large incomes at the top and thus may not be reflective of the middle, or median household. It is included here because the levy, or tax, per household is only available for the peer communities as a mean.

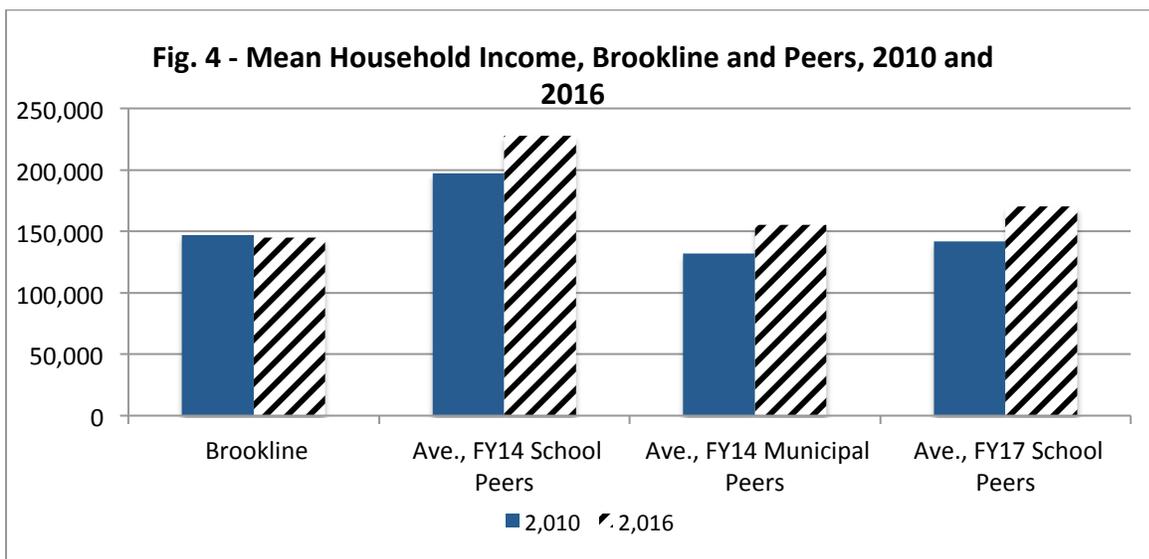


Fig. 5 gives the median household income for Brookline and its peers for FY11 and FY17. The median household income is the one in the middle, if all incomes were ranked from lowest to highest. This is the number commonly posted on the Town Website as an indication of income in Brookline. Median household income did rise slightly from 2010 to 2016, but it rose less for Brookline than for its peers.

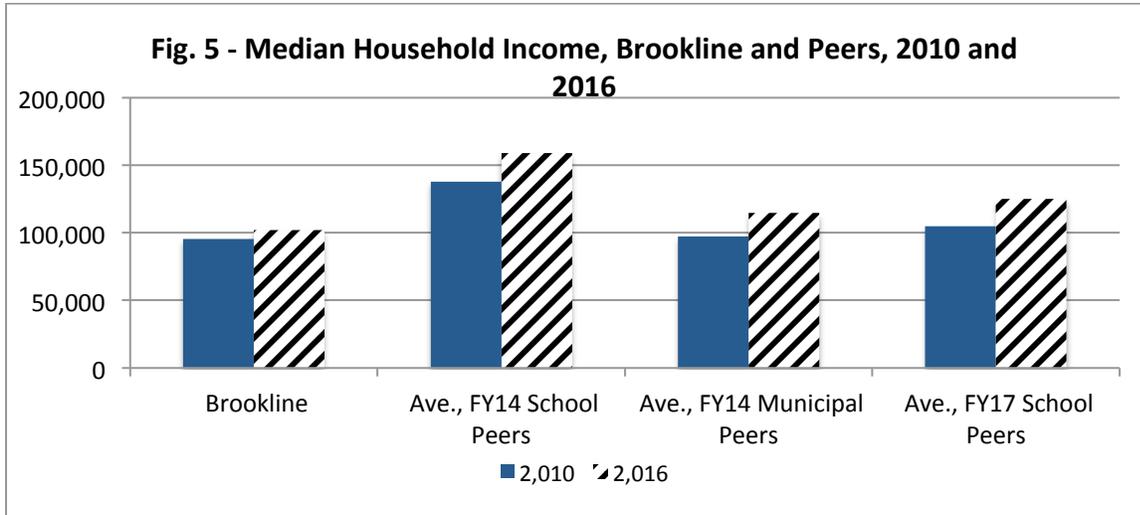


Fig.6 shows the percentage change in the average tax bill and in average income from FY11 to FY17 for Brookline and its peers, and it also shows the change in the consumer price index over this same period of time. Here we see that taxes rose a bit more than did the price index both for Brookline and its peers. But income actually fell in Brookline, whereas for the peer communities it rose by a bit more than the consumer price index. This is puzzling. It is important to note that there is a sizeable margin of error in the income numbers, as taken from the American Community Survey. The report will have a bit more to say in succeeding pages as to why real income, Income (income adjusted for inflation) might have fallen in Brookline.

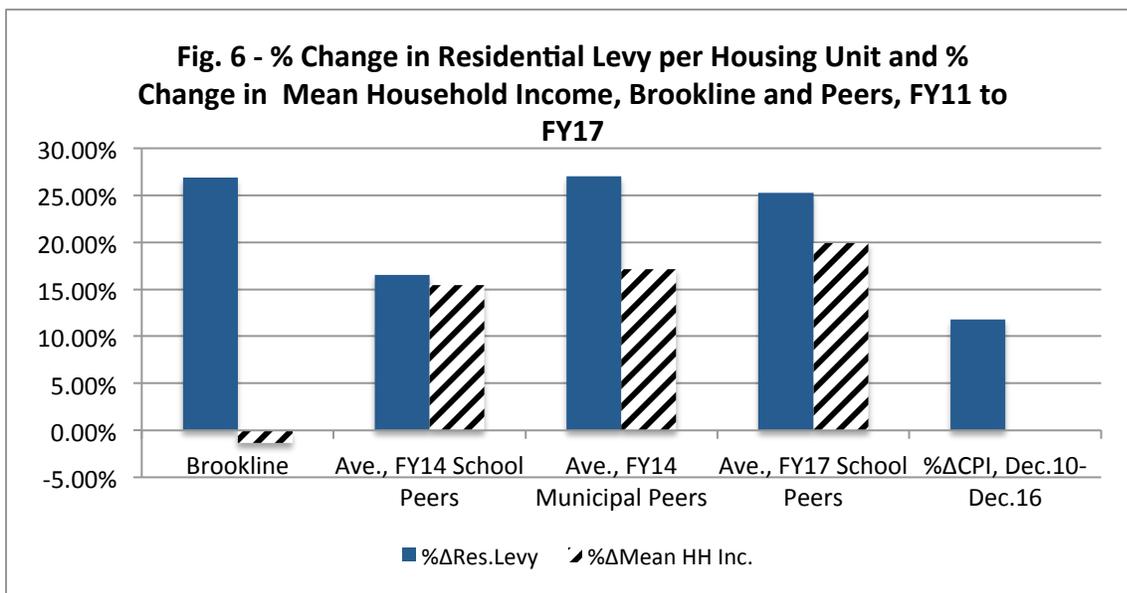
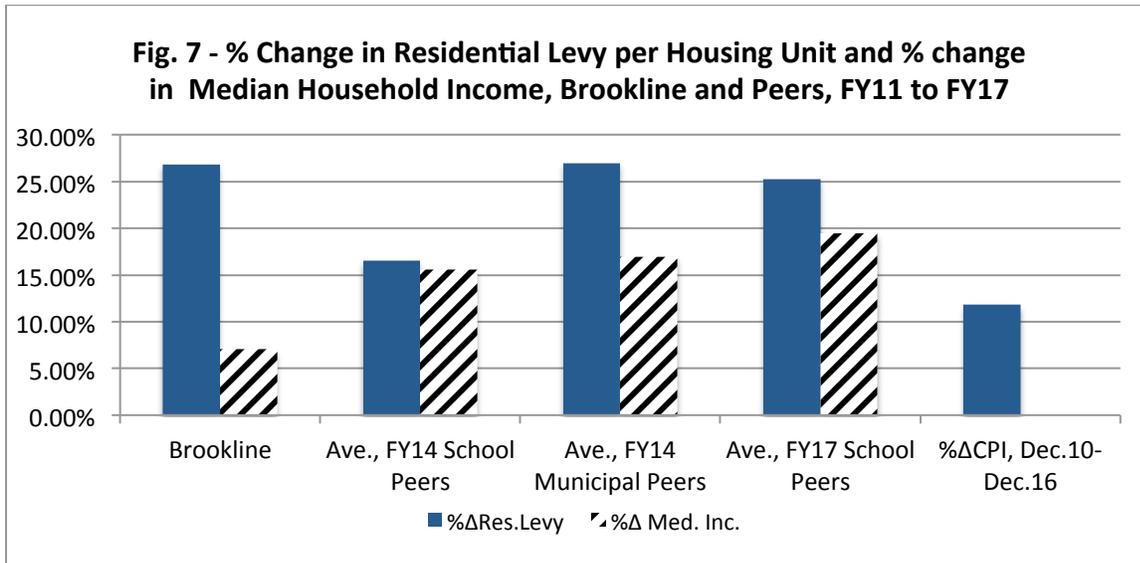
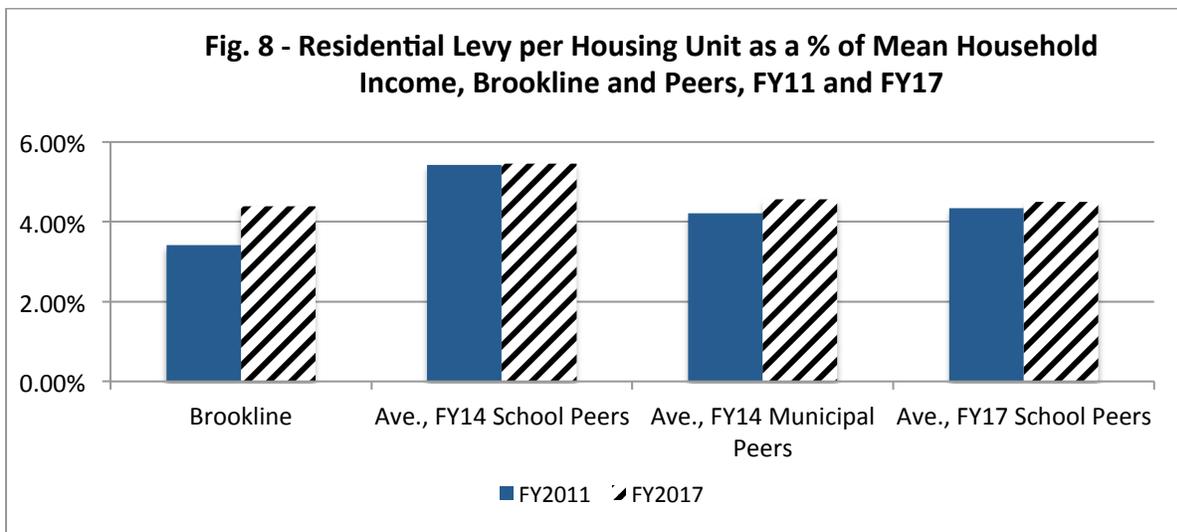
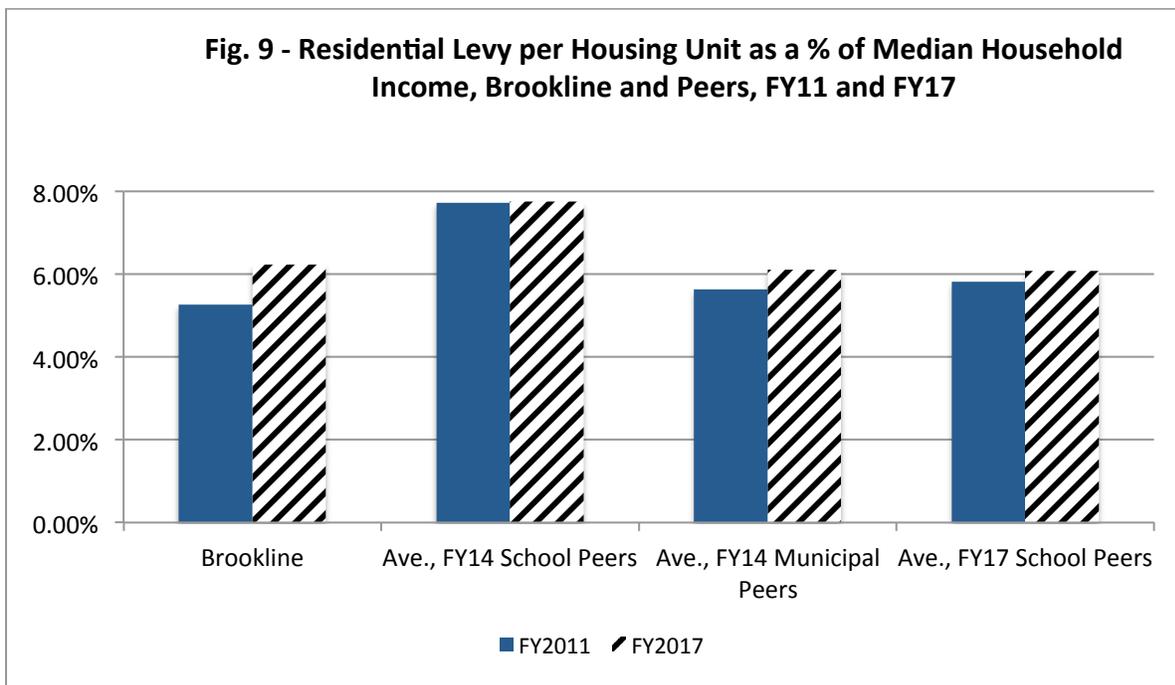


Fig. 7 shows the change in taxes and the change in median income. Bear in mind that in this case we are comparing a mean with a median, but it is useful to look at the change in median household income. As before, we see that taxes rose at about the same rate as those of the municipal peers and the FY17 school peers, whereas median income rose, but at a lesser rate than for the peers and at a lesser rate than the consumer price index.

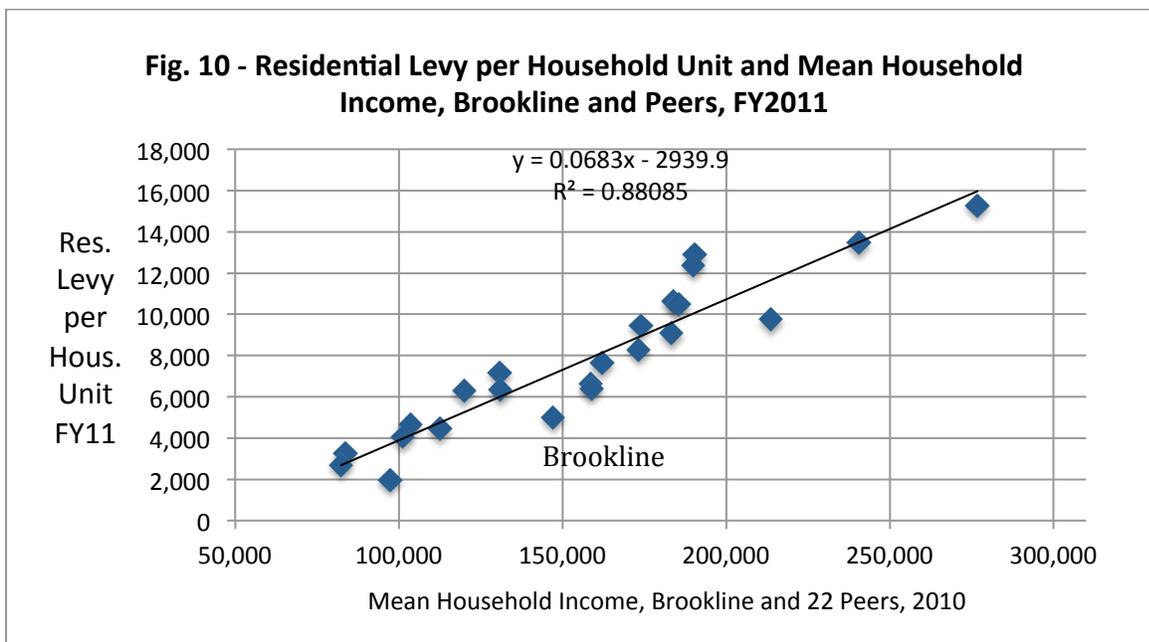


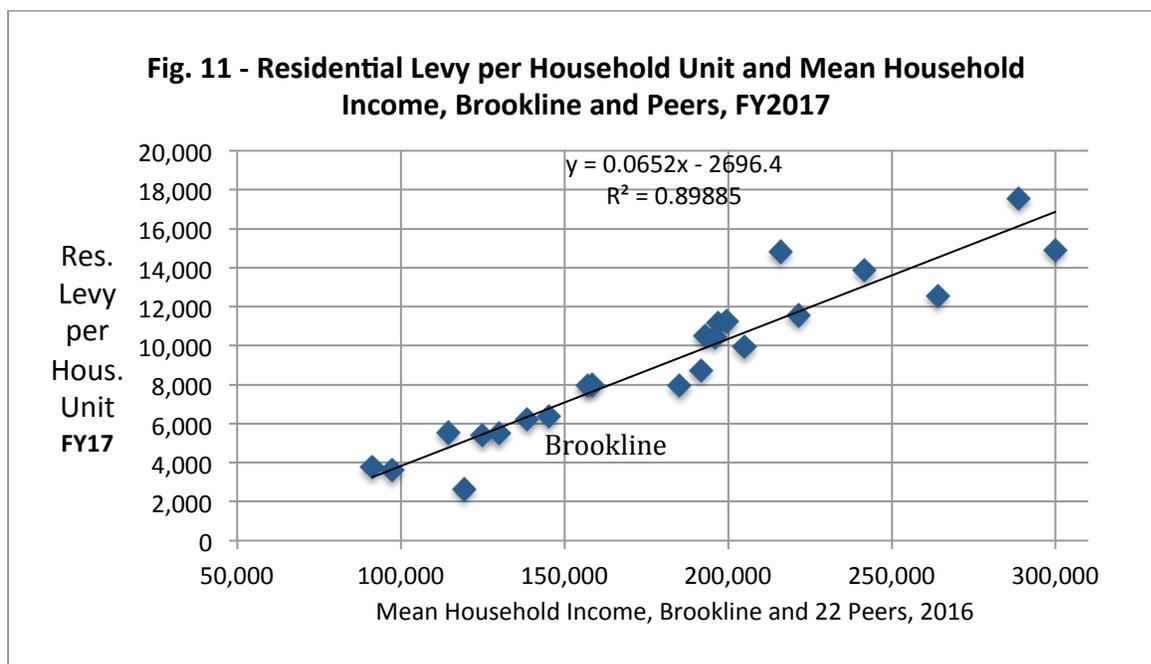
Figs. 8 and 9 show the average tax levy as a percent of mean and median income for Brookline and its peers for FY11 and FY17. By this measure, Brookline was a low-tax community in FY11 but had caught up to its peers, save for the FY14 school peers, by FY17.





Figs. 10 and 11 are scatter diagrams showing taxes and income for all of the towns listed as peers in Table 3, with a linear regression line fitted to the points. Brookline is the one with a mean household income of \$147,140 in FY11 and \$145,131 in FY17. By this measure, in terms of whether we are above or below the regression line, Brookline was a low-tax community in FY11 but by FY17 was on a par with the others.





So what do we make of all of these charts. If we believe that capacity to pay is greater with a higher level of income, at least for a community if not for individuals, then Brookline has about as much capacity to pay as does its peer communities. But if we believe that capacity to pay additional taxes depends very much on the recent change in real income, then Brookline has very little capacity to pay additional taxes at this point.

Why might capacity to pay, meaning capacity to pay more, depend more on recent changes in income than on level of income? Over time households tend to adjust their spending to their levels of income. If taxes rise, even by more than incomes, it is far easier to pay the additional taxes out of rising real incomes, since this can be done without cutting back elsewhere. When real incomes are falling, then the additional taxes come precisely at a time when households are being forced to cut back elsewhere.

Taxes and Property Values, Brookline and Peer Communities.

Capacity to pay may depend not just on income in a community but upon wealth as well. We have good measures of property values across cities and towns but do not have good measures of wealth beyond those of real estate. Table 4 gives data similar to that of Table 3 but with property value per housing unit substituted for average household income.

Once again, it might be helpful to look at what we find in terms of charts rather than a massive array of numbers. Fig. 12 (immediately following Table 4) is simply a repeat of Fig. 3 above, showing that Brookline's taxes per household were a bit below those of its peers in FY11 but had about caught up by FY17, save for those of its FY14 School Peers, which included a number of high-income, high-tax communities.

**Table 4 - Residential Tax Levy and Residential Assessed Value,
Brookline and Peers, Fiscal Year 2011 and Fiscal Year 2017**

Municipality	2014 Sch. Peer	2014 Mun Peer	2017 Sch. Peer	Res. Levy per HU FY2011	Res. Levy per HU FY2017	%Δ FY11- FY17	Res.Value per HU FY2011	Res.Vaue per HU FY2017	%Δ FY11- FY17
Brookline	x	x	x	5,024	6,373	26.8%	513,056	736,149	43.5%
Acton			x	7,172	7,994	11.5%	396,686	419,394	5.7%
Arlington		x	x	4,049	5,396	33.3%	326,245	429,582	31.7%
Belmont		x	x	6,330	7,960	25.7%	478,133	627,301	31.2%
Boxborough			x	6,279	6,236	-0.7%	361,282	370,964	2.7%
Cambridge			x	1,966	2,648	34.7%	296,988	503,787	69.6%
Carlisle	x			12,393	13,848	11.7%	768,346	785,945	2.3%
Concord	x			9,073	10,505	15.8%	687,838	746,614	8.5%
Dedham		x		4,660	5,529	18.6%	324,305	374,570	15.5%
Dover	x			13,462	14,904	10.7%	1,150,615	1,142,069	-0.7%
Framingham		x		3,265	3,766	15.3%	203,692	225,395	10.7%
Lexington	x	x	x	8,287	11,154	34.6%	575,471	769,764	33.8%
Lincoln	x			9,469	10,450	10.4%	765,488	762,790	-0.4%
Medford		x		2,700	3,622	34.1%	232,596	343,009	47.5%
Natick		x	x	4,444	5,517	24.2%	352,659	408,955	16.0%
Needham		x	x	6,659	8,727	31.0%	610,944	733,956	20.1%
Newton	x	x	x	6,403	7,968	24.4%	587,477	716,508	22.0%
Sherborn	x			12,869	14,812	15.1%	726,252	723,934	-0.3%
Sudbury	x			10,635	11,552	8.6%	624,492	654,419	4.8%
Wayland	x			10,467	11,264	7.6%	540,909	620,932	14.8%
Wellesley	x	x	x	9,767	12,549	28.5%	854,533	1,064,350	24.6%
Weston	x			15,293	17,542	14.7%	1,342,691	1,414,713	5.4%
Winchester			x	7,632	9,959	30.5%	630,773	810,954	28.6%
				FY2011	FY2017	%Δ Res. Levy	FY2011	FY2017	%Δ Res. Value
Brookline				5,024	6,373	26.8%	513,056	736,149	43.5%
Ave., FY14 School Peers				10,738	12,413	16.6%	784,010	854,731	10.4%
Ave., FY14 Municipal Peers				5,657	7,219	27.0%	454,605	569,339	25.3%
Ave., FY17 School Peers				6,272	7,828	25.2%	497,381	623,229	26.0%
U.S. Cons.Price Index (Dec of FY)				215.9	241.4	11.8%			

Sources of Data: Residential Levy and Residential Assessed Value from the Massachusetts Department of Revenue, Muncpal Data Bank. Number of Housing Units from the American Community Survey, 2016 and 2010.

Table 4 cont'd - Residential Tax Levy and Residential Assessed Value

Municipality	Levy per HU/ Value per HU	Levy per HU/ Value per HU
	FY2011	FY2017
Brookline	0.98%	0.87%
Acton	1.81%	1.91%
Arlington	1.24%	1.26%
Belmont	1.32%	1.27%
Boxborough	1.74%	1.68%
Cambridge	0.66%	0.53%
Carlisle	1.61%	1.76%
Concord	1.32%	1.41%
Dedham	1.44%	1.48%
Dover	1.17%	1.30%
Framingham	1.60%	1.67%
Lexington	1.44%	1.45%
Lincoln	1.24%	1.37%
Medford	1.16%	1.06%
Natick	1.26%	1.35%
Needham	1.09%	1.19%
Newton	1.09%	1.11%
Sherborn	1.77%	2.05%
Sudbury	1.70%	1.77%
Wayland	1.93%	1.81%
Wellesley	1.14%	1.18%
Weston	1.14%	1.24%
Winchester	1.21%	1.23%
	FY2011	FY2017
Brookline	0.98%	0.87%
Ave., FY14 School Peers	1.41%	1.50%
Ave., FY14 Municipal Peers	1.28%	1.30%
Ave., FY17 School Peers	1.27%	1.29%

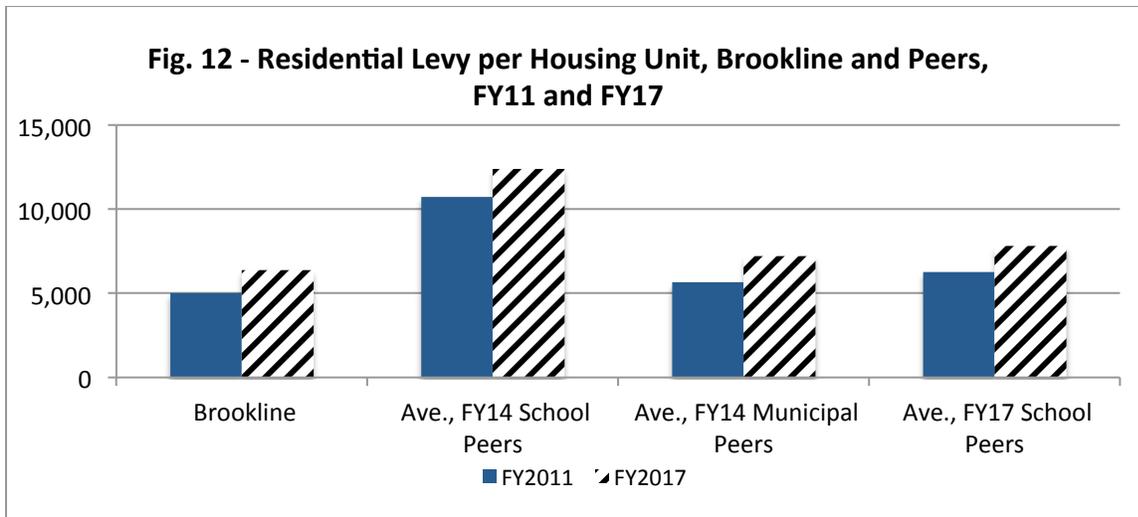


Figure 13 shows the residential value per housing unit. Here we see that assessed values were higher in Brookline than in its peers save those of the FY14 school peers, and values rose by more in Brookline than in its peer communities over the six-year period FY11 to FY17. The more rapid increase in Brookline is at least in part because it has a greater number of apartments and condominiums in its housing mix than in the average of its peers, and it is these units that rose the most in value in the years following the housing crisis.

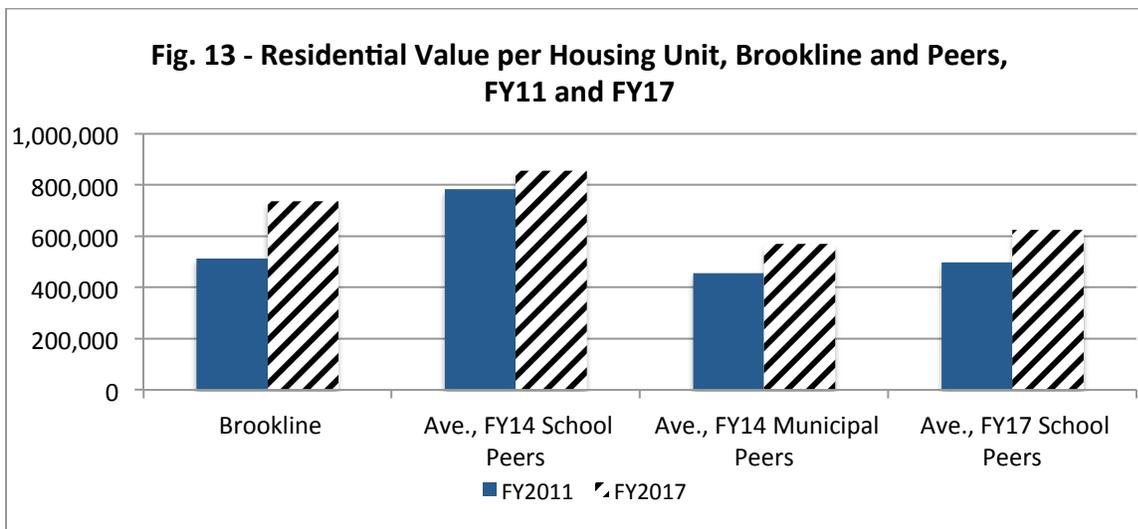
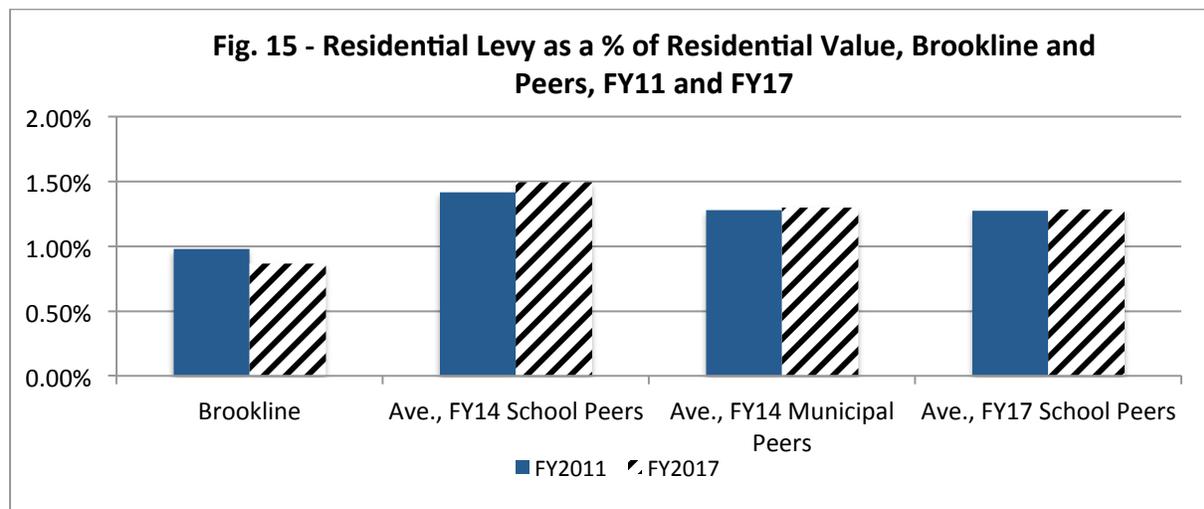
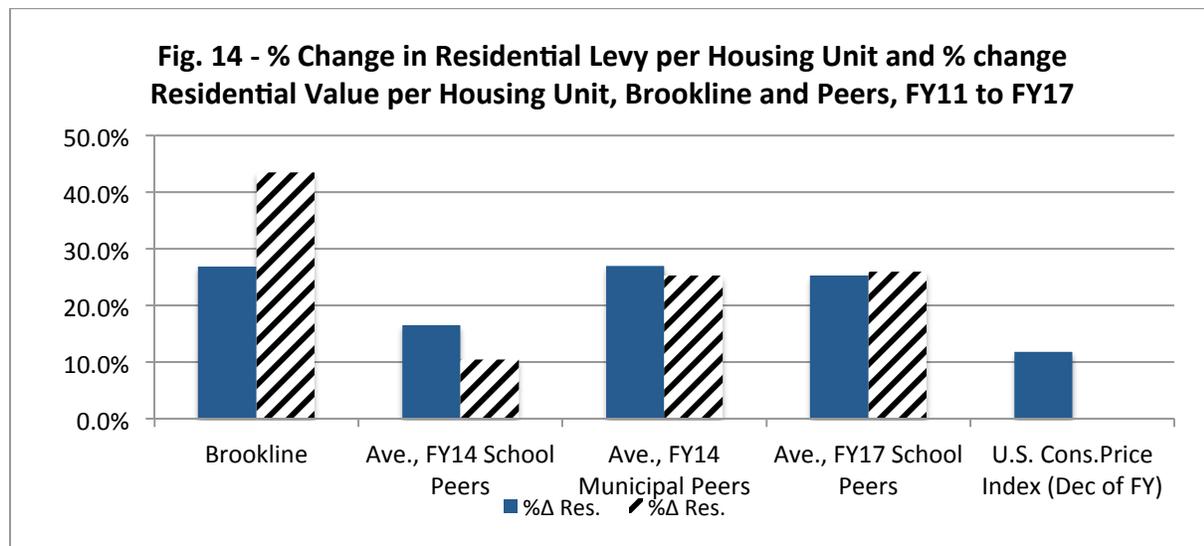


Figure 14 shows the percentage change in housing values and the percentage change in taxes for Brookline and peer communities over the six-year period FY11 to FY17, and it also shows the change in the consumer price index. Property values rose much faster in Brookline than in the peer communities, and they rose in real terms.

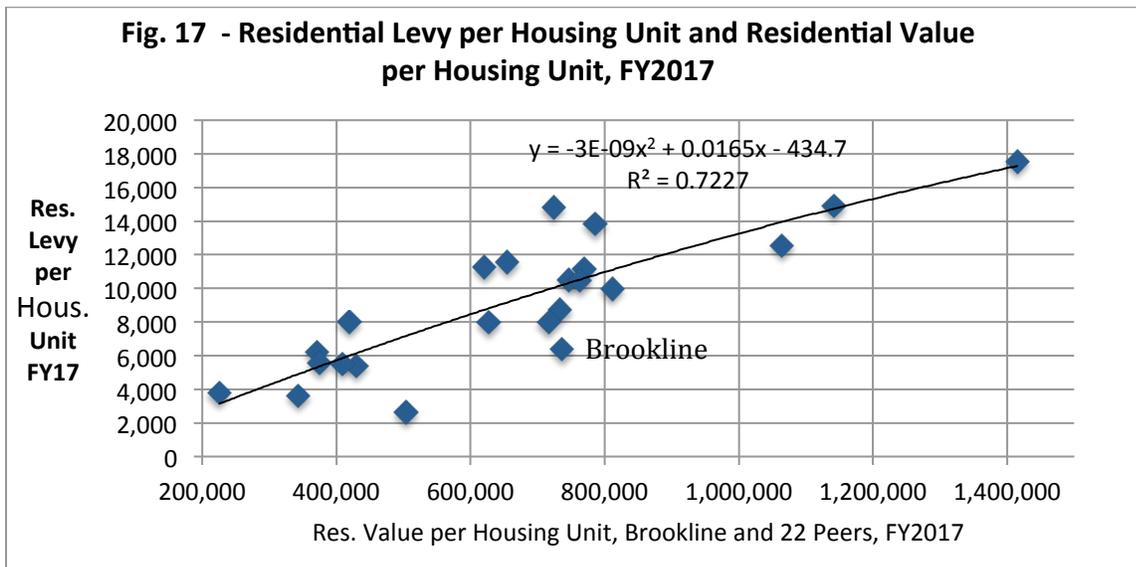
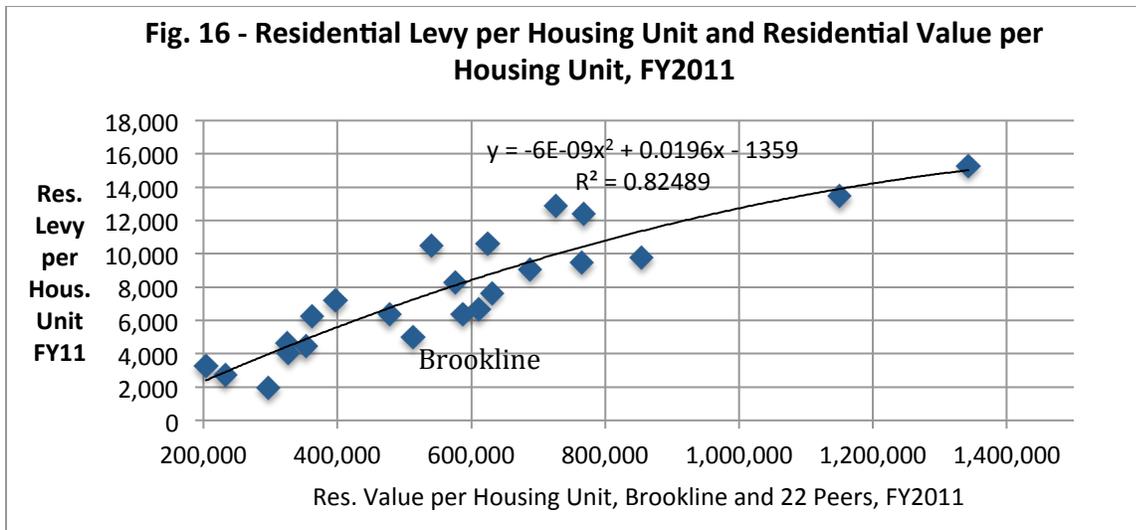
Figure 15 shows the average residential levy as a percent of the average residential value for Brookline and its peers. This number is nothing more nor less than what the tax rate would be without a residential exemption. By this measure, a measure of wealth as

reflected in property values, Brookline is a low-tax town relative to its peers and is becoming more so. By this standard Brookline does have a greater capacity to pay additional taxes than does its peers if, and this is a big if, property owners are willing and able to tap the increase in their housing equity in order to pay additional taxes.



Owners may be reluctant to tap their equity, even if it were easy to do so, either because they want to hold onto the gains or because the gains are only on paper until or unless the property is sold. Values could go down as well as up, most particularly in light of recent changes in Federal tax law. Of course incomes could also go down as well as up, as indeed they did in Brookline over the recent past, as least as measured by data from the American Community Survey.

Figures 16 and 17 show plots of taxes against assessed values, again with lines of goodness of fit (this time second-order polynomials) rather than linear. Brookline is below the regression line in FY11 (the point with an average value of \$513,000), and is even further below the line in FY17 (the point with an average value of \$736,000). By this measure, Brookline was a low-tax town in FY11 and was even more a low-tax town in FY17.



What then, of Capacity to Pay?

The use of both income and property values as measures of capacity to pay has a precedent in their use for determining chapter 70 state aid to schools, where personal income and property values are given equal weight in determining a foundation budget. Chapter 70 is the major Massachusetts program for providing state aid to schools and the foundation budget establishes a minimum requirement for the municipality's spending on schools.

This report has simply made an effort to present the best and most recent data available on taxes, income, and property values for Brookline and its peers as that term has been used by both the town and the schools in the recent past. The data from the Massachusetts Department of Revenue are as thorough and accurate as we can get. The data from the American Community Survey are based on sample surveys and are subject to a fairly wide margin of error.

Did Household Income Really Decline in Brookline from 2010 to 2016?

The numbers showing that household income in Brookline failed to keep pace with inflation over the period 2010 to 2016, and in fact fell by a substantial amount in real terms, are surprising. Clearly some people in Brookline are hurting, but are more hurting now than in 2010? And are more hurting in Brookline than in peer communities? And if so, how have people managed to stay in Brookline, where both rents and housing prices have risen by more than inflation? And if more people are hurting in Brookline, why don't we see this in terms of the percentage of households that are "housing stressed?"

This is puzzling and is worthy of further examination. A first thought on looking at the data was that it might be due to sampling error. Perhaps the group of households chosen for the sample, and responding, just happened to include more high-income people in 2010 and more low-income people in 2016. The sampling is carefully done, with rigorous Census Bureau standards, but the numbers are subject to fairly large margins of error. The margins of error would be lower for an average of the peers, since errors in one direction would tend to cancel out errors in the other, but they could be large for any one town, such as Brookline.

As check against this, the differences in income for Brookline were also noted for the six-year period beginning and ending one year earlier, 2009 to 2015. The results are shown in Table 5 below, with changes noted both in nominal terms and in real terms as deflated by the U.S. consumer price index.

**Table 5 - Change in Brookline's Mean and Median Household Income.
2010-2016 and 2009-2015**

	2010	2016	%Δ	2009	2015	%Δ
Mean HH Income	147,140	145,131	-1.37%	140,800	136,441	-3.10%
Consumer Price Index	218.056	240.007	10.07%	214.537	237.017	10.48%
Real Mean HH Inc. (2016\$)	161,952	145,131	-10.39%	157,516	138,162	-12.29%
	2010	2016	%Δ	2009	2015	%Δ
Median HH Income	95,448	102,175	7.05%	92,451	95,518	3.32%
Consumer Price Index	218.056	240.007	10.07%	214.537	237.017	10.48%
Real Med. HH Inc. (2016\$)	105,056	102,175	-2.74%	103,427	96,723	-6.48%

The table shows that real household income declined by even more when observed over the period one year earlier. Since the observations are from different samples in each of the years noted, it is unlikely that the downward changes are due to margin of error. It does appear that for some reason, Brookline has not kept up with its peers in terms of income growth over the recent past.

What then might account for the fall in real income among Brookline households? The data should not be interpreted as meaning that people who have lived here continuously over this time period, and have continued to be employed full time, have suffered a loss of real income. (We do not have good data on this.) The more likely cause is that through deaths, retirements, in-migration and out-migration, that higher-income households have been replaced by lower-income households. This could be either because of a change in the age structure of Brookline households, or because of an increase in renters relative to homeowners.

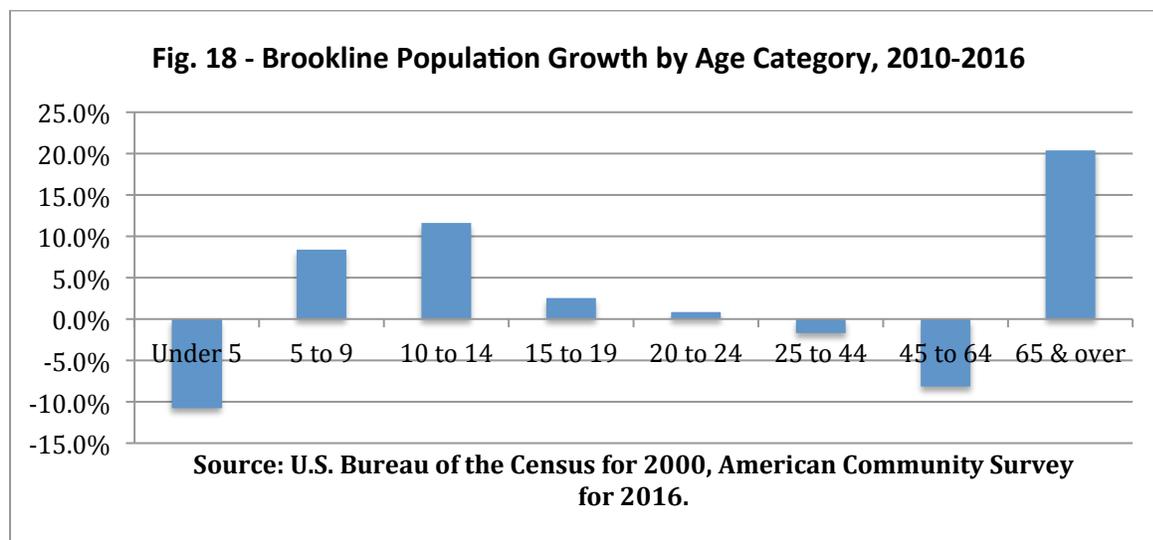
A first question to be asked is whether we have had more rapid growth among either the younger or older households than among those in the prime earnings years.

Table 6 shows the population distribution by age for Brookline in 2010 and 2016, and Figure 18 shows the percentage changes in the form of a chart.

Table 6 - Brookline Population by Age, 2010 and 2016

Age	2010	2016	Δ	% Δ
Total	58732	59180	448	0.8%
Under 5	3209	2864	-345	-10.8%
5 to 9	3031	3286	255	8.4%
10 to 14	2606	2909	303	11.6%
15 to 19	2817	2888	71	2.5%
20 to 24	6618	6674	56	0.8%
25 to 44	19,724	19385	-339	-1.7%
45 to 64	13,233	12151	-1082	-8.2%
65 & over	7,494	9023	1529	20.4%

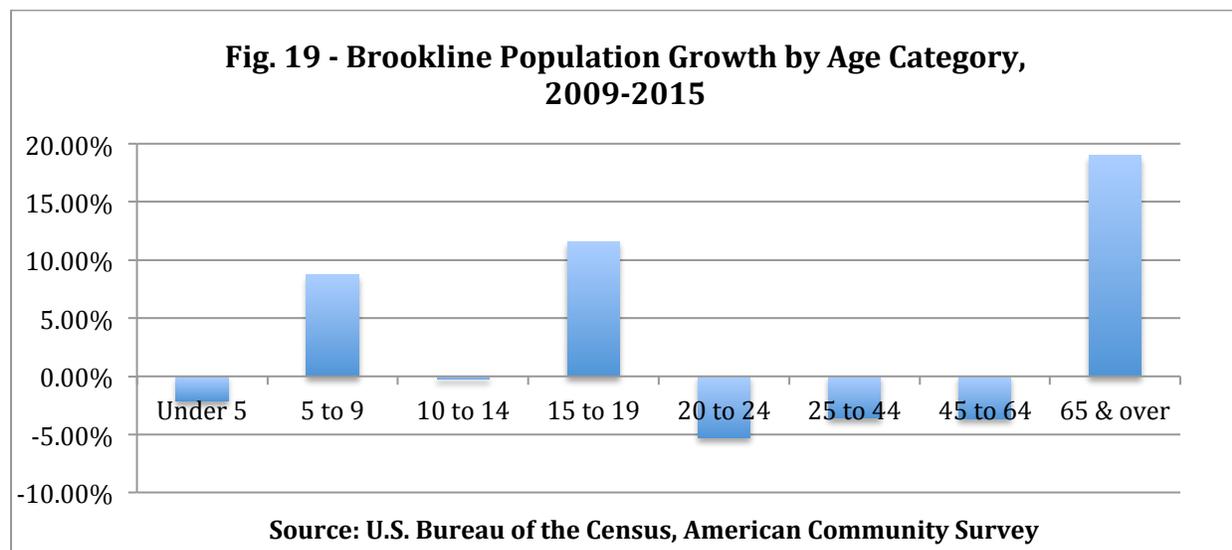
Source: American Community Survey, Census Data for 2010, American Community Survey Estimates for 2016.



The data show a substantial decline in Brookline's population under 5 years of age, which is very different from the large increase between 2000 and 2010 (not shown here). Then we see growth in the school-age population, ages 5 to 19, and a slight increase in the young adult group aged 20 to 24. Then we see a marked decrease in the prime working-age population between 25 and 64. Finally, we see a very large growth in Brookline's population aged 65 and over.

If the data are correct, Brookline has shown substantial growth in its population of students and of the elderly and a decline in its population of prime working age. This could well account for at least some of the reported decline in average household income. It is possible of course that the survey for 2016 just happened to pick a disproportionate number of households with school-age children and elderly, but the pattern of a decline in prime working-age population and a large increase in the 65 & over category, is there in looking at changes over 2009-2015 as well. This is shown in Fig. 9 below.

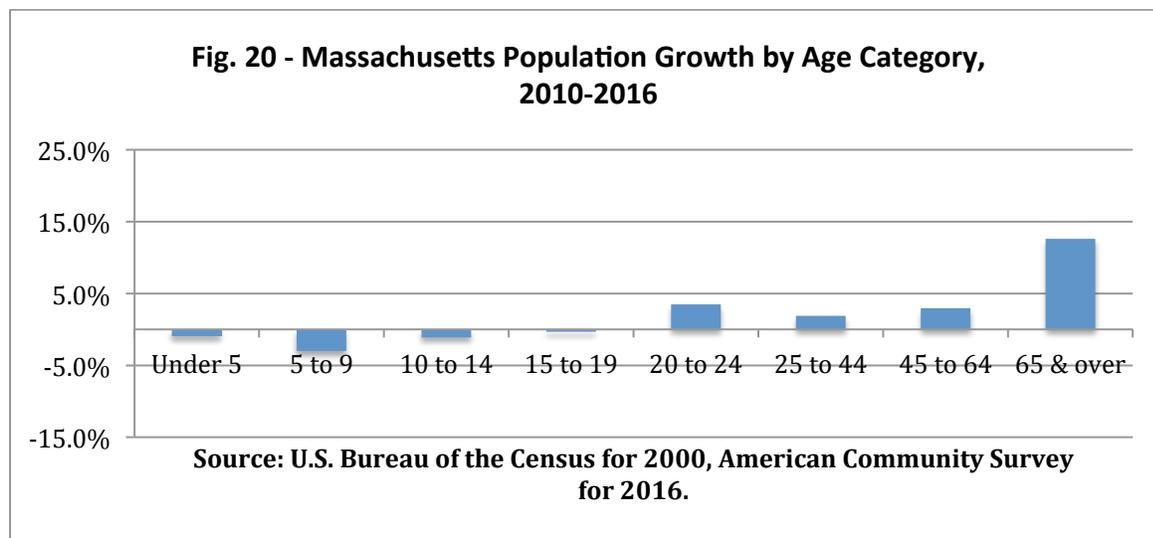
The reported decline in the population under 5 years of age is substantially lower in the period one year earlier (shown in Fig. 18). The difference in this category between Fig. 18 and Fig. 19 is likely due to sampling error in a narrow age category, where we have much smaller samples.



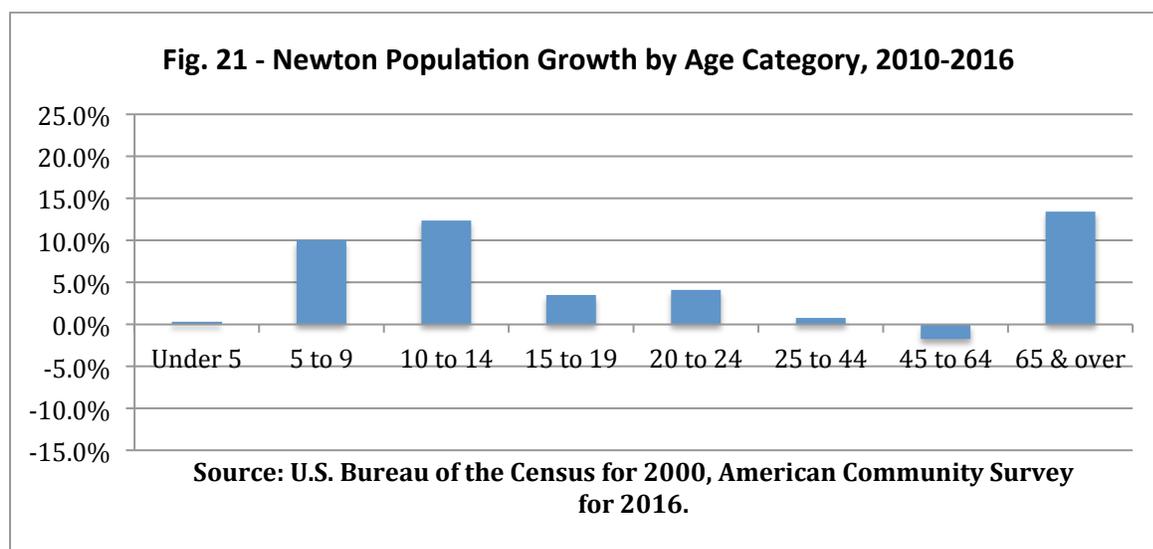
It is of some interest to compare this with what we might expect from the number of births reported in the Brookline town census for the prior five years, as of 2016-17 and 2010-11. The birth numbers, as employed by the school committee in its Preliminary Enrollment Report for 2017, yield a five-year total for School Year ending in 2016-17 that is 4.7% lower than the five year total for school year ending in 2010-11. The latter is the change we would expect in this youngest age category if we had no deaths or in-migration or out-migration. This number, as used by the school committee, is based on a count of the population, to the extent reported in the town census, rather than on a sample, and is likely to be the more accurate number.

Is Brookline unique in its demographic change, or are other communities showing the same pattern. We don't have the annual population estimates for all of the peer communities, but we do have them for Massachusetts as a whole and for the larger cities and towns near Brookline. Figs. 20-23 show the demographic change for the state of Massachusetts and for Newton, Cambridge, and Boston.

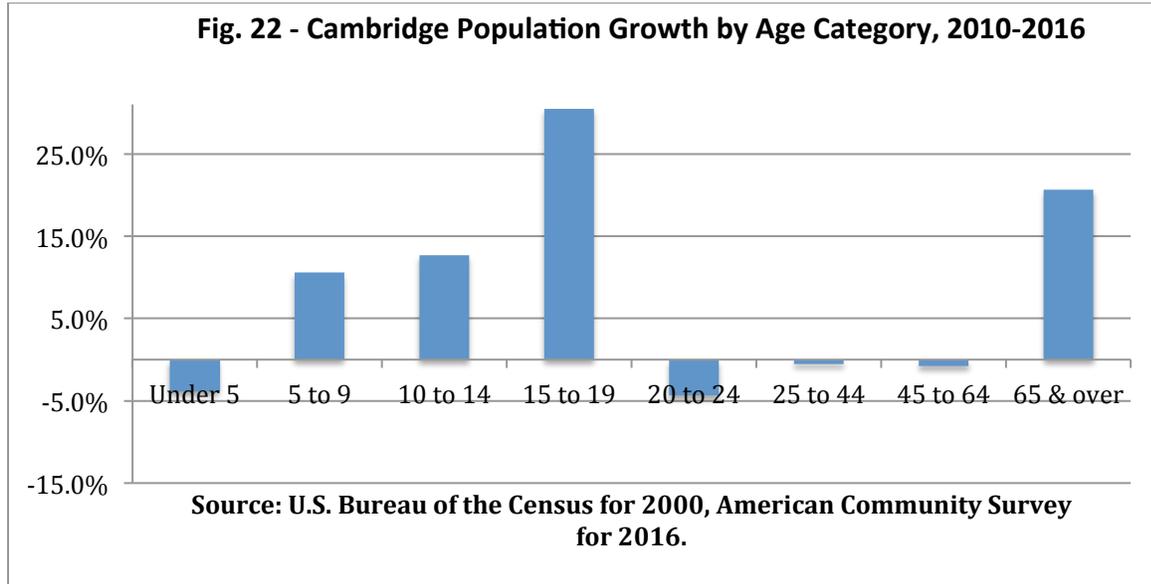
For Massachusetts as a whole we see a decline in the school age population and a slight increase in the prime working-age population. We see a substantial increase in the population 65 and over but not nearly to the degree that we see in Brookline.



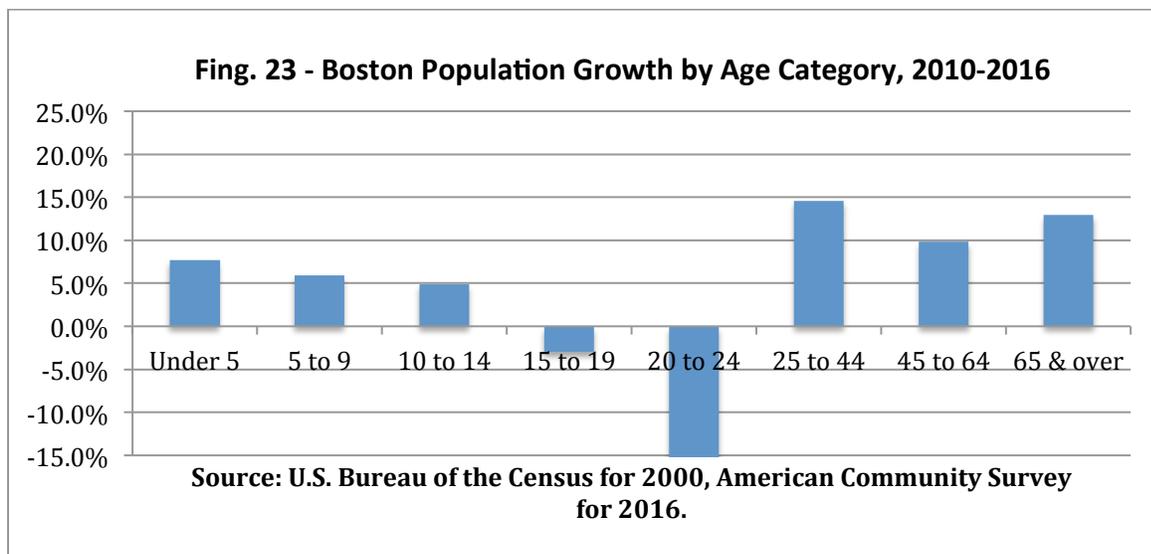
Newton shows an increase in its school-age population that is similar to that of Brookline and a slight decrease in its prime working-age population. It shows an increase in its population 65 and over but at a rate more similar to that of the state as a whole than to that of Brookline.



Cambridge shows a pattern similar to that of Brookline, with growth in both the school-age population and that of those aged 65 and over.



Finally, Boston shows modest growth in its school-age population, a significant drop in its population aged 20 to 24, and a large rise in its population of prime working age, 25 to 64. Boston shows a rise in its population aged 65 and over that is closer to that for the state as a whole than it is to Brookline.



If the data are to be believed, the people in the prime working years are choosing Boston over Brookline, and the elderly are choosing Brookline over Boston.

Renters vs. Owners

Might the decline in real income in Brookline (both mean and median) be due in part to an increase in the number of renters relative to owners? Between 2010 and 2016, in the wake

of the financial crisis, the homeownership rate in Massachusetts fell from 65.3% to 59.7%. In Brookline it fell by less, from 50.6% to 49.2%, using numbers from the American Community Survey, as shown in Table 2 earlier in this report. The numbers for both 2010 and 2016 are lower in Brookline because, even after a wave of condo conversions, Brookline has a larger share of rental housing than does the state as a whole.

The change in Brookline is less than for the state as a whole, and this may be due in part to the fact that home prices stayed robust in Brookline throughout the financial crisis, providing some protection against people being forced out due to foreclosure. The homeownership among the elderly in Brookline actually rose substantially over this period of time, from 55.6% to 65.1%, whereas for those under 65 years of age it fell by five points, from 49.4% to 44.4%. It appears that elderly owners managed to stay in their homes, whereas elderly renters may have been forced out by rapidly rising rents. (We have no direct information on this.) Nonetheless, Brookline did experience a net reduction of 211 owner-occupied units and a net increase of 477 renter-occupied units. Owners have higher incomes than renters, on average, and thus the move to more rental units is likely to have had some impact on the change in household income.

A Longer-Term Look at Household Income and Taxes

Finally, it is of interest to ask whether the fall in real income in Brookline over this period is a continuation of a longer-term pattern or perhaps a reversal of what we had in prior years. Fig. 24 shows median household income for Brookline and for peer communities for 1999 and for the years 2009 through 2016. Incomes are in real terms, deflated by the U.S. Consumer Price Index, and shown indexed to 1999=100.

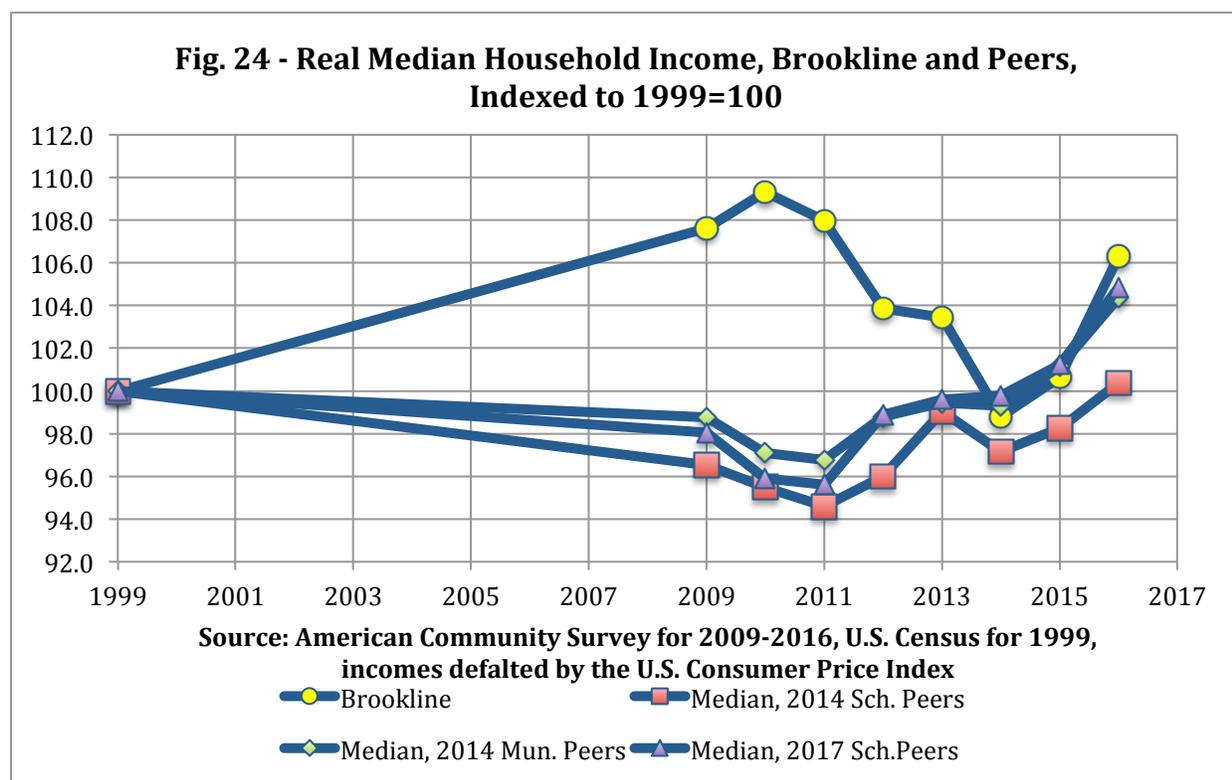


Fig. 24 shows a very different income pattern for Brookline than for the medians of its peers, at least until 2015, when income turns up for Brookline and for the peers.

In Brookline median household income rose substantially from 1999 to 2010, while that of its peers fell. Then from 2010 to 2014, roughly, income fell in Brookline but rose in the other communities. Then income rose in both Brookline and the peers from 2014 to 2016. Over the entire period, Brookline slightly outpaced its peers in terms of growth of median household income. At least part of the reason for this dramatic difference in the income patterns may be a shift from renting to owning over the earlier period and then back a bit to renting in the later years.

Brookline had almost no growth in the total number of housing units over the period 2000 to 2016, but it did have a substantial increase in the number of condominiums, most of which was due to condo conversion rather than to new construction. Table 7 shows the total number of housing units in Brookline over these years, as taken from the decennial census and from the American Community Survey. The numbers are higher than those shown for households in Table 2 because they include vacant as well as occupied units.

Table 7 - Number of Housing Units in Brookline

Year	Number of Housing Units
2000 (Census)	26,413
2010 (Census)	26,448
2010 (Amer. Comm. Survey)	26,412
2016 (Amer. Comm. Survey)	26,458

Table 8 shows the number of condominium units in Brookline for Fiscal Years 2000, 2010, and 2016, and the number of such units with and without the residential exemption.

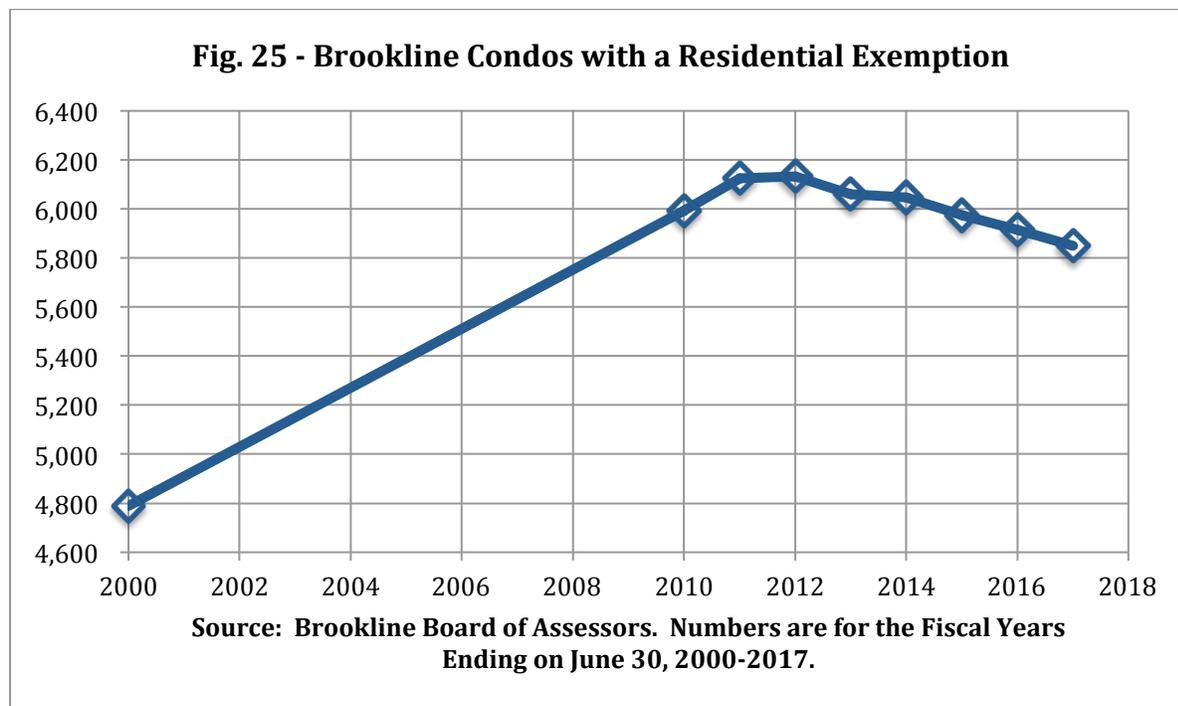
Table 8 - Number of Residential Condominiums in Brookline

Year	Total Condos	With the Res. Exemption	Without the Res. Exemption
2000	7,480	4,789	2,691
2011	9,706	6,126	3,580
2017	10,074	5,851	4,223
Δ , 2000-11	2,226	1,337	889
Δ , 2011-17	368	(275)	643

Source: Brookline Board of Assessors.

The number of condos rose substantially, even as the total number of housing units barely changed. Thus the number of new condos can be taken as a rough measure of the loss of rental apartments, some of which of course came back on the rental market through purchase by investors. The change in the number of condos with a residential exemption is thus a rough measure of the net change in number of rental units. This was a net loss of rental units of 1337, by this measure, over the earlier period, and then a net gain of 275 rental units over the later period.

Figure 23 shows the number of Brookline condos with a residential exemption over the fiscal years for which income is plotted over calendar years in Figure 22 above.

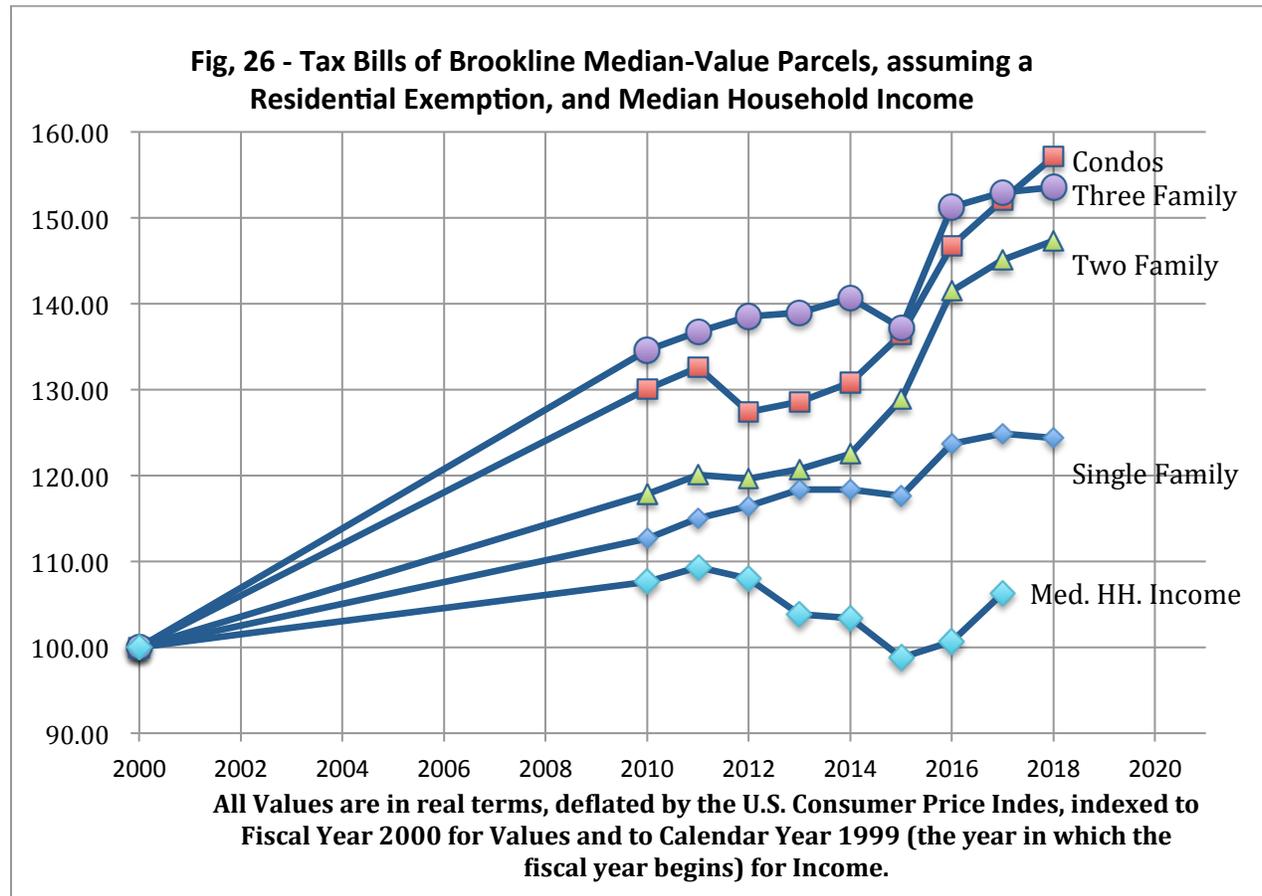


The chart shows roughly the same pattern for residential condos as for income. Assuming that one can enter Brookline with less income as a renter than as an owner, this shift from renting to owning, and then back to renting, may partially explain the rise and fall of median household income. To buy a condo, for those who need a mortgage to do so, requires a substantial amount of income, most particularly following the financial crisis of 2008. To rent a condo one needs first and last months rent and a security deposit along with some assurance of continuing income.

That said, the pattern of income change is something of a mystery. What is quite clear is that real household income in Brookline rose sharply in Brookline from 2000 to 2010, then fell sharply until the two the most recent years, when it rose once again. Over the entire period, 1999 to 2016, median household income, adjusted for inflation, rose by just a bit more in Brookline than it did for an average of the peer communities.

And what about tax bills and real income over the longer period? Fig. 26 shows the Brookline tax bills on a median-value property, for single-family homes, condos, two-family, and three-family homes along with median household income, all in real terms as deflated

by the U.S. consumer price index. Tax bills did rise by a good deal more than did income, even in the period when income was rising, and the gap widened considerably from 2010 to date.



It is notable that tax bills rose by much for condos and twos and threes than for single-family homes. This holds both for tax bills of median-value properties, and for the values as well. (Values are not shown directly here.) In the earlier period, the era of the housing boom leading to the financial crisis, it was easier to speculate by purchasing a condo than a single-family home, and two and three family homes were attractive because of their potential for condo conversion as condo prices rose. In the later period, as housing demand shifted from owning to renting, both condos and two and three family homes were attractive to investors for their rental income.

Federal Tax Law Changes and the Impact on Housing Prices and Tax Bills

The tax bill passed by Congress and signed into law this past December makes two changes that might substantially impact property values and tax bills in Brookline. First, for those who itemize, the maximum deduction for state and local taxes, including income, sales, motor vehicle excise, and real estate taxes, will be limited to \$10,000. Moreover this amount will not be indexed to inflation, under the bill as passed, but rather will stay at a flat \$10,000. For taxpayers who exceed this threshold, the allowable deduction will be reduced and even with a decrease in tax rates, as included in the recent legislation, their

federal tax bills may go up. Moreover, any increase in taxes will be an out-of-pocket increase, dollar for dollar, rather than being partially subsidized by the federal tax code.

A second provision of the recent legislation is the near doubling of the standard deduction. This will induce some homeowners to switch from itemizing to taking the standard deduction, in which case any increase in property taxes will be an out-of-pocket increase, dollar for dollar. Many of these taxpayers, who switch from itemizing to taking the standard deduction, will get a net tax reduction due to a combination of decreases in the tax rates and the higher standard deduction. But for all of them, including those who already took the standard deduction, any increase in property taxes will be an out-of-pocket increase, dollar for dollar.

These two changes—the limit on the state and local tax deduction and the increase in the standard deduction—will make homeownership less advantageous, relative to renting, and for those who are on the margin between buying and renting will tilt them toward renting. We should expect to see a reduction in demand for single-family homes, which are designed to appeal largely to owners, and an increase in demand for rental housing. Other things being equal, we might expect the prices of single-family homes to fall and those of apartment buildings and two and three family homes to rise. The impact on condominiums is less certain, since many of them are investor-owned and thus in the rental market.

Of course other things are never equal. The tax law changes are coming precisely at a time when the pendulum for owning versus renting has been swinging back to home ownership following a move toward renting from 2008 through 2016 in the wake of the financial crisis. (U.S. homeownership rates for the first three quarters of 2017 are up slightly from the same numbers of a year ago, as reported by the U.S. Census Bureau.) It is possible that the momentum of this move back toward ownership will offset the impact of a dramatic reduction in the tax subsidy for home ownership.

Should single-family home prices fall relative to those of apartment buildings and condominiums, then taxes will rise by a lower percentage for single-family homes than for apartments and condos. Single-family home owners would realize smaller gains in their home values, or even suffer declines, but to the extent this happens they would see smaller increases in their tax bills, or perhaps even declines (save for the impact of an override).