Peer Town Analysis Dec 20, 2021

Prepared by Rob Carver for the December 21, 2021 meeting of the Town Meeting Subcommittee

Introduction:

Since our previous meeting, with thanks to David Wluka, I downloaded some very helpful data from the MAPC Data Common (https://datacommon.mapc.org/) and then reanalyzed the available data to discover attributes that accounted for voter participation in the 2018 Gubernatorial election. I've used that election as a proxy measure for citizen engagement. Among the new available variables were some factors that we had identified in our discussions, such as labor force participation, % of non-citizen residents, commuting times, and levels of education.

Interestingly, the number of housing units in a community was more informative in predicting voter turnout than the size of the population. Using the attributes that were informative for voter engagement plus a couple of factors that we expect to influence Town Meeting participation, I then performed several cluster analyses to rank all communities (except Boston) according to their similarity to Sharon.

The next few pages show the main finding of the analysis in 6 tables:

- Table 1 lists 33 towns most similar to Sharon as well as the predictor attributes for each.
- Table 2 and 3 summarize the legislative and Select Board sizes among the 33 towns
- Tables 4, 5, and 6 list the 10 towns most similar to Sharon for each of the three legislative forms

Table 1: 33 towns most like Sharon (~10% of state—arbitrary cutoff)

Legis	Charter Yr	Name	Select Size	Reg Voters/ Pop %	Total Housing Units	FY 2018 EQ Val percap	% residents receiving assistance	non-Citzn 18+ %	Employed 16+ / labor force %	% with commute 1 hr +	% with Bachelors+ plus	White%	Cluster Distance*
OTM		Sharon	3	66.40%	6581	193548	4.7	7.3	86.80%	26.8	73.0	66.80%	0
OTM		Hopkinton	5	66.70%	6645	211613	3.7	6.8	85.70%	23.4	71.9	73.20%	0.79
OTM		Boxborough	5	60.50%	2362	184394	2.5	9.4	85.80%	21.4	66.2	67.10%	1.33
OTM		Andover	5	67.20%	13541	232212	3	7.6	86.30%	18.8	74.5	73.20%	1.54
OTM		Southborough	5	73.20%	3763	253902	2.7	5.9	86.50%	19.3	66.5	75.50%	1.64
OTM		Holliston	3	71.90%	5562	178702	3.9	5.6	87.60%	22.2	66.2	84.20%	1.71
OTM	1969	Acton	5	64.80%	9219	193695	6.8	13.6	88.70%	19.2	74.9	63.10%	1.88
OTM		Hamilton	5	74.30%	2925	199256	5.6	6.9	86.30%	24.8	69.3	88.90%	1.95
OTM		Westford	5	70.00%	9237	196511	4.2	6.3	89.10%	15.3	67.4	71.10%	1.99
OTM		Sherborn	5	74.50%	1562	304915	1.3	3.2	86.40%	30.4	83.6	81.70%	2.02
OTM	1970	Northborough	5	75.50%	5897	197475	2.8	6.7	86.40%	16.8	64.1	75.70%	2.02
RTM	1973	Walpole	5	72.10%	10042	187871	5.1	6.8	87.70%	21.4	53.2	82.90%	2.05
OTM	1972	Medfield	3	69.30%	4450	217102	2.6	3.4	82.80%	26.4	73.7	87.50%	2.07
RTM	1969	Swampscott	5	73.20%	6362	197117	6.6	4.4	86.60%	22.6	57.3	85.80%	2.09
OTM	1920	Mansfield	5	71.10%	9282	159005	4.9	3.5	88.20%	21.5	54.8	82.90%	2.11
OTM	1970	Westwood	3	70.80%	5801	292301	3.2	4.6	84.10%	17.9	71.5	82.80%	2.11
OTM		Ashland	5	66.30%	7495	158396	5	11.2	90.80%	17.4	58.6	68.50%	2.12
OTM	1994	Sudbury	5	66.00%	6556	244359	3.3	4.5	84.80%	16.1	80.5	80.90%	2.18
OTM		Norfolk	3	60.20%	3601	150638	2.2	4.2	87.30%	26.4	50.5	84.10%	2.18
OTM		Wayland	5	74.40%	5296	277157	2.5	3.7	85.10%	16.5	80.7	76.80%	2.22
OTM	1986	No Andover	5	65.00%	11914	160763	6.4	4.7	87.10%	15.7	59.7	78.70%	2.26
OTM		Foxborough	5	73.90%	7682	187298	8.4	3.5	86.70%	22.4	52.8	83.60%	2.29
OTM		Canton	5	69.70%	9930	216310	5.9	4.8	89.60%	15.8	55.1	72.90%	2.31
RTM	1975	Winchester	5	68.50%	8135	336137	2.4	7.9	89.50%	13.7	77.3	74.60%	2.31
Counc(9)	1978	Franklin		70.20%	12551	162552	4.6	4.1	85.90%	18.9	55.7	85.10%	2.36
OTM		Littleton	5	70.20%	3889	192290	6	5.3	85.20%	16.8	56.0	83.10%	2.37
OTM		Upton	3	70.90%	2995	151601	2.9	2.6	83.60%	20.8	60.1	86.60%	2.39
RTM	1927	Milton	5	77.90%	9844	218694	5.3	5.8	88.10%	14.7	61.0	71.00%	2.40
OTM		Lincoln	3	70.60%	2771	337241	6.3	2.4	82.30%	16.4	74.8	76.20%	2.42
RTM	1980	Natick	5	64.30%	15680	235341	3.7	12.5	88.30%	15.2	68.8	75.60%	2.43
OTM		Medway	5	72.10%	4826	155043	2.4	2.2	88.50%	21.2	59.0	88.30%	2.45
OTM	1957	Concord	5	70.70%	7295	342119	2.9	5.2	82.60%	15.5	74.2	81.80%	2.46
OTM		Hingham	3	73.80%	9930	309659	2.9	2	85.60%	30.8	71.2	91.50%	2.47
OTM	1987	Grafton	5	69.60%	7760	137479	6.2	4.5	88.00%	16.2	50.4	79.30%	2.48

* Cluster Distance is a constructed index of similarity to Sharon across the 9 attributes. The smaller the Cluster Distance, the more like Sharon. The absolute numbers are not very informative, but in this table, we can infer, for example, that Sharon and Hopkinton have far more in common than Sharon and Grafton.

Table 2: Legislative bodies among the top 33

Legislative Bodies	COUNT	%	Statewide %
OTM	28	82	74
RTM	5	15	9
Council	1	3	17

Table 3: Select Board sizes among the top 33

Select Board sizes	COUNT	%	Statewide %
3	8	24	50
5	25	76	50

Table 4: 10 Most similar OTM towns

Distance Rank	Charter Yr	Name	Select Size
1		Hopkinton	5
2		Boxborough	5
3		Andover	5
4		Southborough	5
5		Holliston	3
6	1969	Acton	5
7		Hamilton	5
8		Westford	5
9		Sherborn	5
10	1970	Northborough	5

Table 5: 10 Most similar RTM towns

Distance Rank	Charter Yr	Name	Select Size
11	1973	Walpole	5
13	1969	Swampscott	5
23	1975	Winchester	5
27	1927	Milton	5
29	1980	Natick	5
34	1986	Reading	5
38		Needham	5
42		Lexington	5
54		Burlington	5
56		Shrewsbury	5

Table 6: 10 Most similar with Councils

Dist Rank	Legislative	CharterYr	Name
24	Council (9)	1978	Franklin
37	Council (9)		Braintree
47	Council (11)		Melrose
63	Council (11)	1919	Newburyport
69	Council (9)		Beverly
84	Council (11)	1999	Weymouth
101	Council (9)		No. Attleborough
102	Council (9)	1980	Watertown
106	Council (9)		Bridgewater
109	Council (11)		Salem

	Registered voters	Actual voters	Percent of registered voters participating
AVERAGE		**2539**	**21.1%**
MEDIAN		**2254**	**18.4%**
17/5/2022	13129	1923	14.6%
18/5/2021	13365	2500	18.7%
23/6/2020	12874	1958	15.2%
19/11/2019	12719	4001	31.5%
21/5/2019	12691	3145	24.8%
15/5/2018	12588	2228	17.7%
16/5/2017	12852	917	7.1%
17/5/2016	12418	2975	24.0%
19/5/2015	12195	1005	8.2%
20/5/2014	12398	2279	18.4%
21/5/2013	12424	1551	12.5%
15/5/2012	12369	1245	10.1%
17/5/2011	12182	878	7.2%
18/5/2010	12313	3478	28.2%
19/5/2009	12206	1017	8.3%
20/5/2008	11853	1811	15.3%
15/5/2007	11630	4137	35.6%
23/1/2007	11495	1743	15.2%
16/5/2006	11548	3051	26.4%
17/5/2005	11351	1874	16.5%
18/5/2004	11969	1804	15.1%
2/3/2004	11926	4489	37.6%
6/5/2003	11705	2129	18.2%
7/5/2002	12070	5978	49.5%
5/2/2002	11959	2058	17.2%
1/5/2001	12089	3450	28.5%
13/2/2001	12030	3222	26.8%
2/5/2000	11802	2508	21.3%
4/5/1999	11470	3629	31.6%
5/5/1998	10998	1297	11.8%
6/5/1997	11315	4210	37.2%
28/1/1997	11213	2762	24.6%

Data source: Sharon Town Clerk's Office

	Attendance	Registered voters	Percent of registered voters attending
AVERAGE	**426**		**3.6%**
MEDIAN	**239**		**2.0%**
2/5/2022	193	13132	1.5%
2/5/2021	186	13365	1.4%
12/10/2020	217	12874	1.7%
5/11/2019	463	12719	3.6%
4/11/2019	1308	12719	10.3%
6/5/2019	740	12691	5.8%
8/5/2018	1234	12588	9.8%
7/5/2018	252	12588	2.0%
7/11/2017	158	12852	1.2%
6/11/2017	993	12852	7.7%
2/5/2017	203	12852	1.6%
1/5/2017	292	12852	2.3%
12/12/2016	281	12416	2.3%
3/5/2016	208	12416	1.7%
2/5/2016	534	12416	4.3%
4/5/2015	193	12195	1.6%
17/11/2014	117	12398	0.9%
5/5/2014	374	12398	3.0%
4/11/2013	159	12424	1.3%
6/5/2013	220	12424	1.8%
3/12/2012	225	12369	1.8%
8/5/2012	96	12369	0.8%
7/5/2012	265	12369	2.1%
14/11/2011	196	12182	1.6%
3/5/2011	112	12182	0.9%
2/5/2011	465	12182	3.8%
8/11/2010	134	12313	1.1%
3/5/2010	202	12313	1.6%
10/11/2009	301	12206	2.5%
9/11/2009	920	12206	7.5%
4/5/2009	166	12206	1.4%
17/11/2008	239	11853	2.0%
5/5/2008	178	11853	1.5%
6/11/2007	124	11630	1.1%
5/11/2007	900	11630	7.7%
9/5/2007	129	11630	1.1%

8/5/2007	220	11630	1.9%
7/5/2007	1420	11630	12.2%
12/3/2007	1964	11495	17.1%
14/11/2006	120	11548	1.0%
13/11/2006	754	11548	6.5%
8/5/2006	118	11548	1.0%
2/5/2006	184	11548	1.6%
1/5/2006	595	11548	5.2%
15/11/2005	104	11351	0.9%
14/11/2005	414	11351	3.6%
9/5/2005	109	11351	1.0%
3/5/2005	155	11351	1.4%
2/5/2005	364	11351	3.2%
19/10/2004	99	11969	0.8%
18/10/2004	287	11969	2.4%
10/5/2004	177	11969	1.5%
4/5/2004	186	11969	1.6%
3/5/2004	267	11969	2.2%
9/12/2003	790	11705	6.7%
29/5/2003	209	11705	1.8%
20/5/2003	177	11705	1.5%
19/5/2003	383	11705	3.3%
13/5/2003	267	11705	2.3%
12/5/2003	311	11705	2.7%
15/5/2002	168	12070	1.4%
14/5/2002	260	12070	2.2%
13/5/2002	2183	12070	18.1%
3/12/2001	635	12030	5.3%
10/5/2001	93	12030	0.8%
9/5/2001	233	12030	1.9%
8/5/2001	504	12030	4.2%
7/5/2001	764	12030	6.4%
20/11/2000	304	11802	2.6%
14/11/2000	572	11802	4.8%
13/11/2000	1761	11802	14.9%
9/5/2000	65	11802	0.6%
8/5/2000	677	11802	5.7%
24/1/2000	315	11802	2.7%
10/5/1999	279	11470	2.4%
16/12/1998	153	10998	1.4%
11/5/1998	235	10998	2.1%
15/12/1997	171	11315	1.5%
13/5/1997	206	11315	1.8%

12/5/1997	1548	11315	13.7%
3/2/1997	710	11213	6.3%

Data source: Sharon Town Clerk's Office

Excludes meetings of 6/11/02, called only to dissolve meeting (turnout, 21), and 12/8/03 (snow emergency, 3)
2020 annual meeting held in October due to pandemic

Identifying Comparable Towns

Rob Carver

Prepared for Sept. 22, 2021 meeting

Governance Study Committee

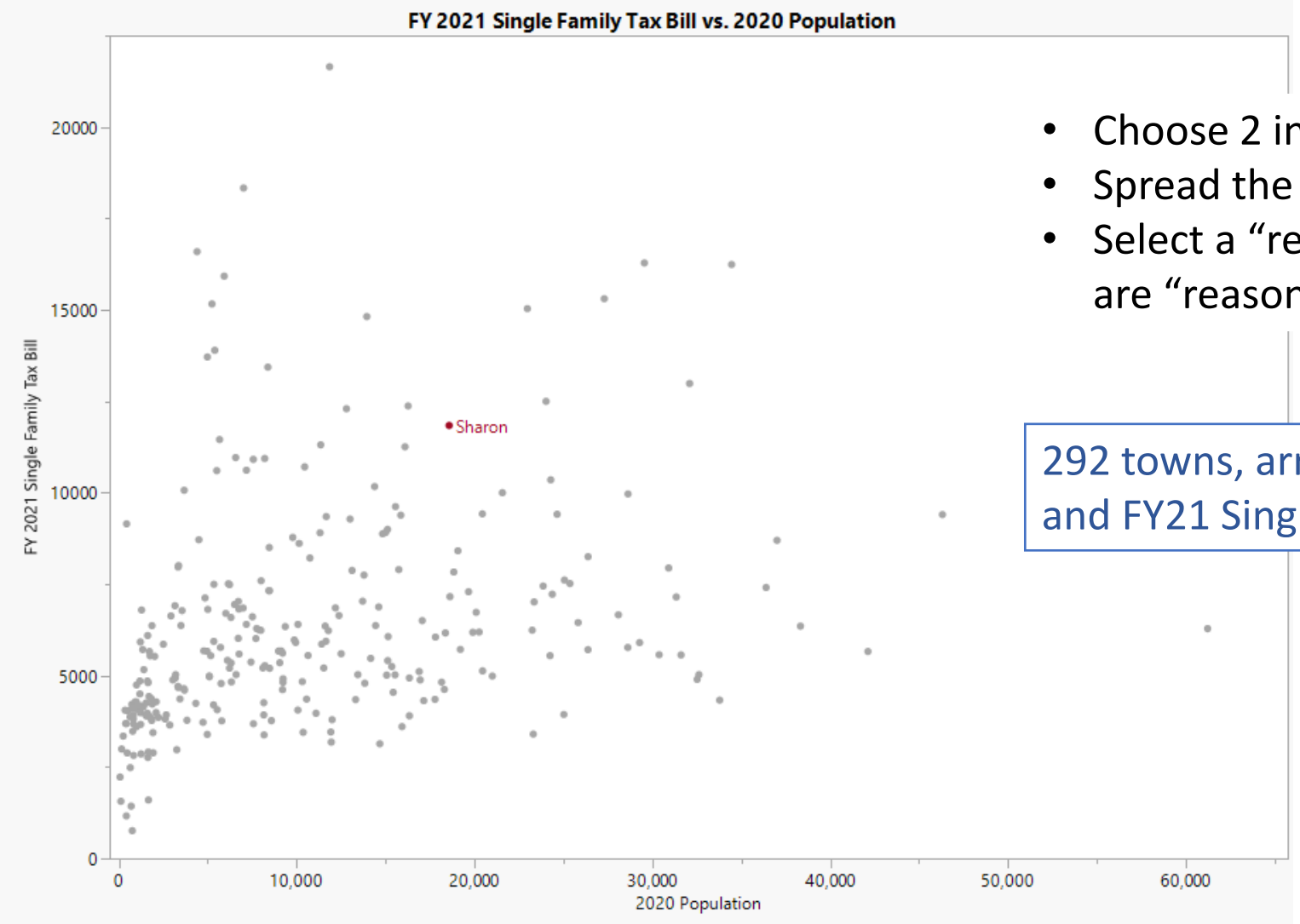
With thanks to Melissa Imbaro and Lauren Barnes

Sharon
Stoughton
Canton
Norwood
Walpole
Foxborough
Mansfield
Easton
Wayland
Duxbury
Pembroke
Concord
Scituate
Hanover
Sudbury
Medway
Westford
Hopkinton
Holliston
Hingham
Medfield
Westwood
Lynnfield

"Study – Comparative & Neighboring Communities 2021"

- Prepared by Lauren Barnes, 23 towns chosen by Finance Committee
  - Purpose: wage and salary comparisons
  - Populations range from 12,955 to 29,725
    - Sharon was 18,895, right in the middle (median)
- Some Questions
  - Is this a useful comparison group for our mission?
  - What might/should we do with a list like this?
  - How is Sharon similar/different in terms of governance?
- What other factors might be informative for our work?

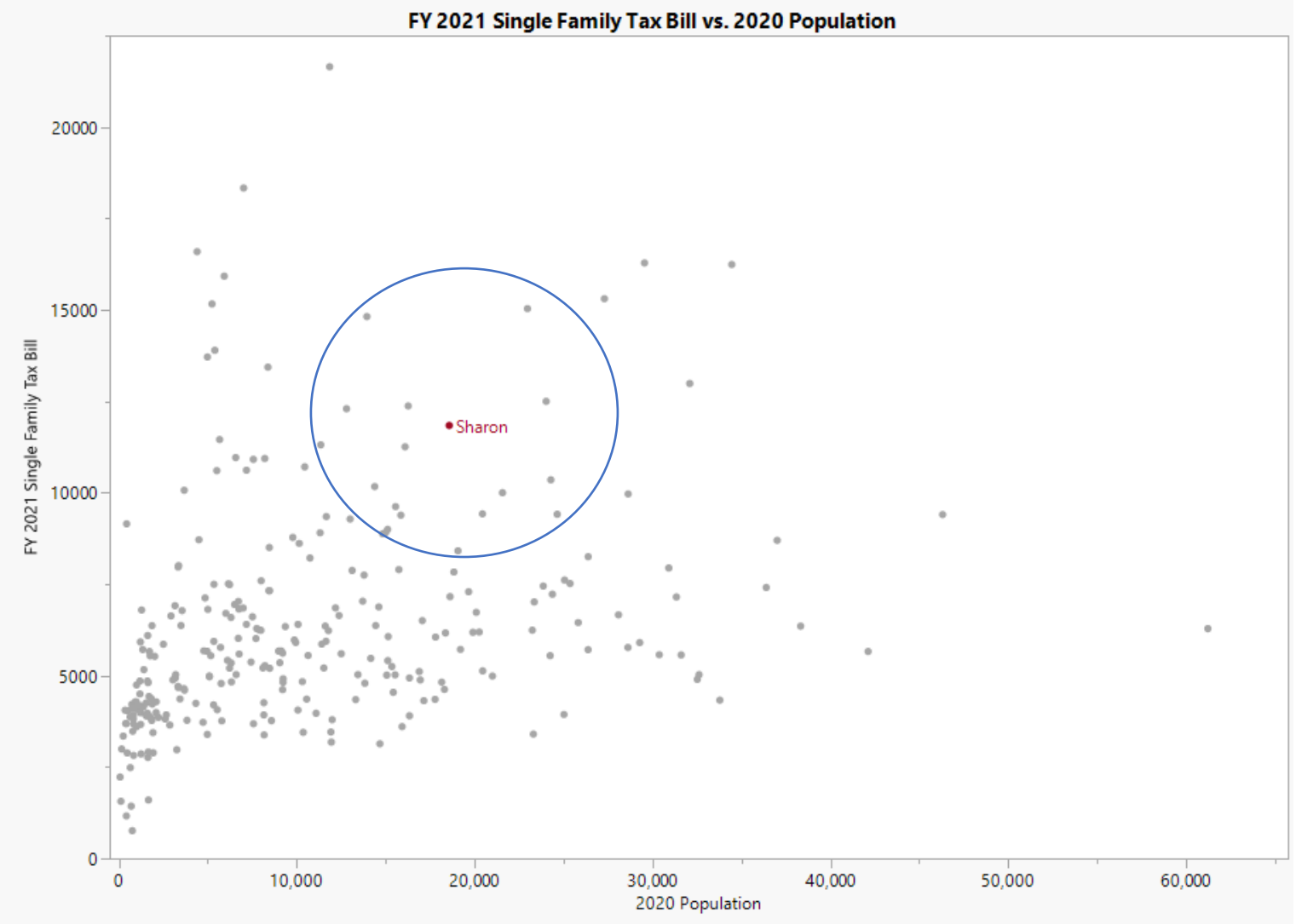
Idea of 2-dimensional similarity



- Choose 2 informative attributes
- Spread the towns out along the 2 dimensions
- Select a "reasonable" number of towns that are "reasonably" close to Sharon.

292 towns, arrayed by 2020 Population and FY21 Single Family tax bill

Idea of 2-dimensional similarity

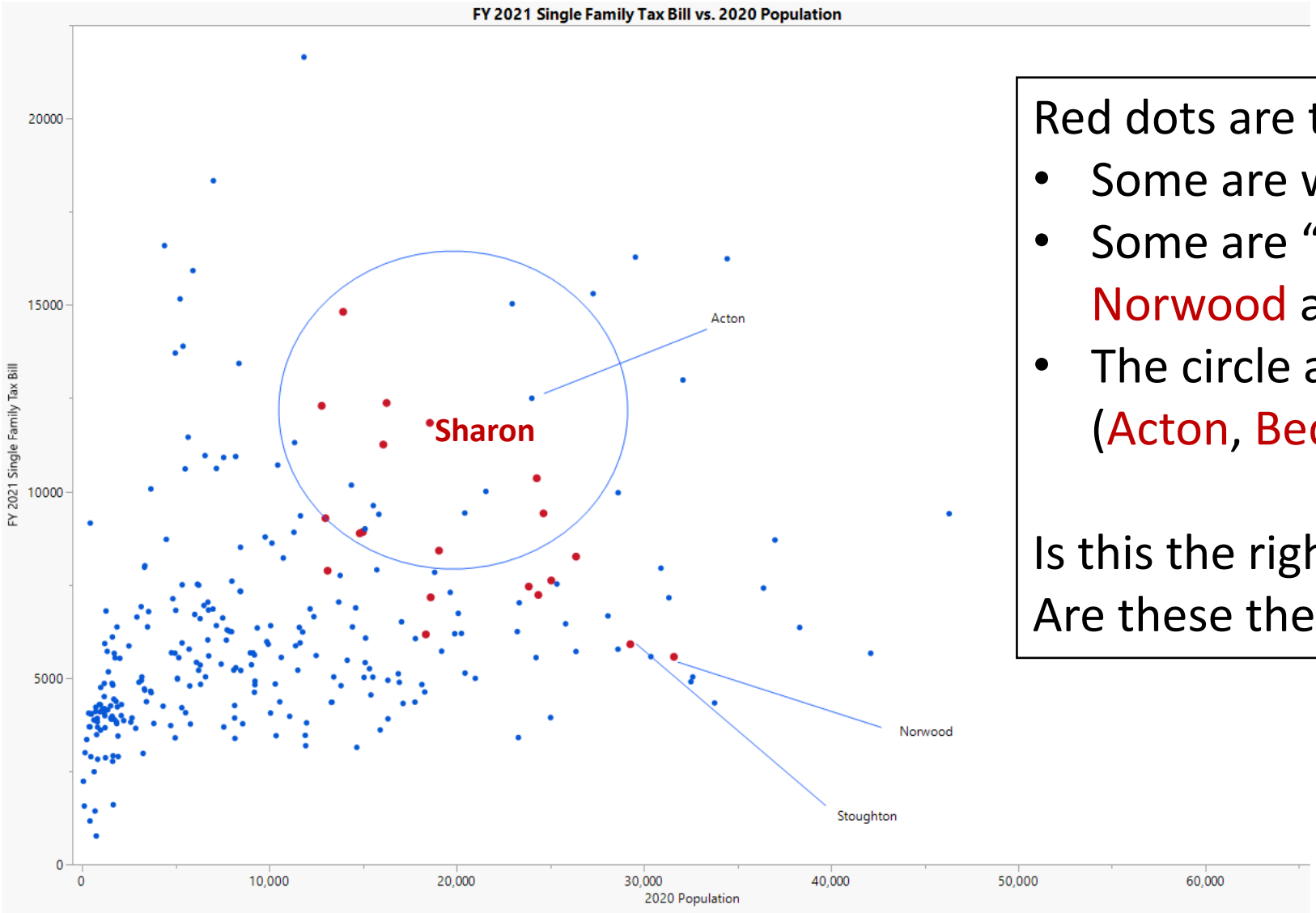


Towns within this circle

Sharon
Acton
Duxbury
Westwood
Winchester
Westborough
Marblehead
Scituate
Medfield
Norwell
Bedford
North Reading
Hanover
Swampscott
Longmeadow
Westford
Hingham
Westborough

Sharon
Stoughton
Canton
Norwood
Walpole
Foxborough
Mansfield
Easton
Wayland
Duxbury
Pembroke
Concord
Scituate
Hanover
Sudbury
Medway
Westford
Hopkinton
Holliston
Hingham
Medfield
Westwood
Lynnfield

But…



Red dots are towns on the FinComm list

- Some are within the circle
- Some are "far" from the circle, like Norwood and Stoughton
- The circle also includes blue dots (Acton, Bedford, Longmeadow, etc)

Is this the right circle?
Are these the right variables?

Good news: We can choose more than two dimensions

- There are techniques to identify “clusters” of towns that are similar along *multiple* dimensions
- These techniques extend the 2-dimensional logic with numeric data
- Combination of judgment and computation
- Different dimensions (variables) can generate very different lists.
- Here are two examples

One illustrative Model with 4 variables

- 2020 Population
- Pop change from 2010
- Income per capita
- Commercial/Industrial Property as % of assessed value

- Underlined towns are on the FinComm list

Town	Pop 2020	Pop Change 2010-20	Income per cap	CIP %
Bolton	5665	15.7%	75140	6.43
Boxford	8203	3.0%	104605	3
Carlisle	5237	7.9%	111636	1.97
Cohasset	8381	11.1%	107369	6.91
Duxbury	16090	6.8%	84188	3.76
Groton	11315	6.3%	68739	5.67
Holliston	14996	10.7%	56421	13.07
Lincoln	7014	10.2%	121195	3.56
Longmeadow	15853	0.4%	68390	6.14
Lynnfield	13000	12.1%	75692	13.51
Manchester-By-The-Sea	5395	5.0%	127809	6.73
Marblehead	20441	3.2%	85643	4.9
Medfield	12799	6.4%	92181	5.59
Norwell	11351	8.0%	89034	14.23
Scituate	19063	5.1%	61387	4.06
Sharon	**18575**	**5.5%**	**64477**	**7.77**
Southborough	10450	7.0%	110329	19.7
Stow	7174	8.9%	67147	6.97
Swampscott	15111	9.6%	67570	7.14
Topsfield	6569	8.0%	77781	7.45
Wayland	13943	7.3%	147695	4.59
Westwood	16266	11.3%	114844	14.73

Bigger Model – 12 variables (2020)

- Expenditures per Capita
- % Low Income Students
- FY 2021 Single Family Tax Bill
- Total Expenditures
- Res as % of total Assessed Value
- Education % of expend
- Debt % of expend
- Fixed expense % of expend
- 2020 Population
- Pop. Change from 2010
- Black% residents
- Asian% residents

Towns and 4 Attributes

Town	Pop 2020	Pop Change 2010-20	Educ %	Asian %
Acton	24021	9.6%	65.6%	25.1%
Bedford	14383	8.0%	45.5%	15.6%
Belmont	27295	10.4%	49.5%	18.5%
Boxborough	5506	10.2%	57.4%	21.5%
Hopkinton	18758	25.7%	56.0%	17.8%
Sharon	**18575**	**5.5%**	**59.4%**	**21.2%**
Shrewsbury	38325	7.6%	54.5%	24.6%
Westborough	21567	18.0%	52.3%	25.8%
Westford	24643	12.3%	55.0%	21.4%

NOTE that this list has no overlap with the prior list!

Takeaways and Next Steps

- Choice of variables heavily influences resulting list
- We can/should think about attributes that are relevant to our mission
- Master Plan is one guide (changing demographics, appeal of Open Space, Education, etc.)
- What other data would be helpful?
- Who else wants to work on this aspect?

Identifying Comparable Towns (II)

Rob Carver

Prepared for Nov 29, 2021 meeting

Town Meeting Subcommittee of Governance Study Committee

Recall: “Study – Comparative & Neighboring Communities 2021”

Sharon
Stoughton
Canton
Norwood
Walpole
Foxborough
Mansfield
Easton
Wayland
Duxbury
Pembroke
Concord
Scituate

Hanover
Sudbury
Medway
Westford
Hopkinton
Holliston
Hingham
Medfield
Westwood
Lynnfield

- Variables considered (DOR/ MTF data)
  - Population
  - Median Household Income
  - Res/Open Space land as % of total valuation
  - Eq. Valuation per capita
  - Student enrollment % of population
  - Population Density
  - Total Road miles

Takeaways and Next Steps

- Choice of variables heavily influences resulting list
- We can/should think about attributes that are relevant to our mission
- Master Plan is one guide (changing demographics, appeal of Open Space, Education, etc.)
- What other data would be helpful?
- Who else wants to work on this aspect?

Question raised in prior meeting

- Can we identify factors that account for variation in Town Meeting attendance?
- Problem: no readily accessible centralized records of TM turnout across state

2-stage Analysis Plan for this round

- Stage 1: Use available data to model **Voter Turnout in 2018 Gubernatorial** election, as a *proxy* for citizen engagement
  - Statewide median turnout 64% (Range 33 - 77)
  - Sharon turnout 68%
  - Data sources:
    - NY Times election results
    - Mass. Dept of Revenue
    - Mass Taxpayers Foundation
  - Find variables most strongly associated with election turnout, using several standard methods
- Stage 2: Use those variables to identify peer communities using *cluster analysis*
- Omitted Boston, but included all other 350 cities and towns
- Caveats: Data from different years, some towns have incomplete data

5 Variables Selected in Turnout Analyses

- **Income per capita (2020)**
- *Equalized Valuation per Capita (2018)*
- *Population 2020 (projected)*
- *Low Income Students % (2020)*
- *White% 2020*

16 Peer Town Candidates

Acton
Westford
Bedford
Boxborough
Milton
Canton
Ashland
Belmont
Hopkinton
Westborough
Burlington
Harvard
Andover
Shrewsbury
Natick
Grafton

Profiles

Variable	Sharon	Peer Towns Median	Rest of State Median
EQV per capita	$ 193,548	$ 211,613	$ 146,462
Population 2020 (est)	17,656	22,506	9,750
Income Per Capita	$ 64,477	$ 60,301	$33,617
Low Income Students %	9.8 %	11 %	29 %
White %	67 %	71 %	88 %

Governance 17 towns

Name	Legis	Charter	SelectSize
Sharon	OTM		3
Acton	OTM	1969	5
Westford	OTM		5
Bedford	OTM	1974	5
Boxborough	OTM		5
Milton	RTM	1927	5
Canton	OTM		5
Ashland	OTM		5
Belmont	RTM	1926	3
Hopkinton	OTM		5
Westborough	OTM	1974	5
Burlington	RTM		5
Harvard	OTM		5
Andover	OTM		5
Shrewsbury	RTM		5
Natick	RTM	1980	5
Grafton	OTM	1987	5

Feature	Count
OTM	12
RTM	5
3-member	2
5-member	15
Charter	7

Available variables

- Population % over Age 18
- Population 2018
- Population 2020
- Population Density (2018)
- Population Growth (2010-2020)
- Income per capita (2020)
- Low Income Students % (2020)
- White%
- Asian%
- Black%
- Total Road Miles (2018)
- Housing Occupancy Rate
- Population % living non-group housing
- Total Housing Units
- Comm/Indust as % of total value
- Debt% of expend
- Educ % of expend
- Equalize Valuation per Capita (2018)
- Res/Open Space as % of total value
- Single Family Tax Bill (2020)
- Single Family Tax Bill (2021)
- Tax Levy as % of budget
- Total Expenditures (2018)
- Reg voters as % of population
- RegVoters 2018
- Turnout in 2018 election

Liaison Assignments and Draft Template for Board/Committee Discussions

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Board/Committee	Liaison
Planning Board	Arguimbau
Finance Committee	Carver
Nominating Committee of the Finance Committee	Carver
Sharon Standing Building Committee	Geller
School Committee	Pietal
Diversity, Equity & Inclusion Committee	Keenan
Capital Outlay Committee	King
Library Trustees	Monahan
Personnel Board	Pietal
Council on Aging Board	Rangarajan
Zoning Board of Appeals	Silverlieb
Board of Health	Wluka