The Worcester of 1771

A Profile Drawn from Tax Valuations

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Worcester in the early 1770s, during the run-up to the Revolution, has been called the place where it all started, a year or more ahead of the clash at Concord. The best known exponent of this argument is Ray Raphael, whose book *The First American Revolution* won a lot of praise when it came out in 2002.*

* See bibliography below.

Aside from what is known from the political perspective, what was Worcester like at that time, nearly 250 years ago? Such a broad question could lead to lots of answers. All that is intended here is to make use of some available data on taxable property valuations to create a kind of profile of the town, one centered around alternative ways of making a living, mostly but not entirely by means of farming. It could be called an *economic* profile.

In the late 1970s, a Harvard University graduate student, as part of her Ph.D. dissertation project, Bettye Hobbs Pruitt encoded the colony's 1771 tax list as a computerized database, which she then used for her analysis. The results of the survey were published as *The Massachusetts Tax Valuation List of 1771* (924 p.), under her name as editor. In 1984, she published an article based on the data in *The William & Mary Quarterly*, believed to have represented her principal analytical findings.

* Pruitt, Bettye Hobbs (ed.), *The Massachusetts Tax Valuation List of 1771*, Boston: G. K. Hall, 1978.
---------- "Self-Sufficiency and the Agricultural Economy of Eighteenth Century Massachusetts," *The William and Mary Quarterly* V.41 No.3 (July , 1984), pp. 333-364.

The purpose of the survey was to establish a basis for taxation, and its successful completion was required of all town assessors. For each identified real property, the survey recorded counts of several aspects of agricultural scale, such as numbers of different breeds of animals, acreage in various uses, and products measured in bushels, tons, or barrels, and there was also a small amount of information on other ways of making a living, including the operation of mills or shops of various kinds, retail stores, and money lending at interest.

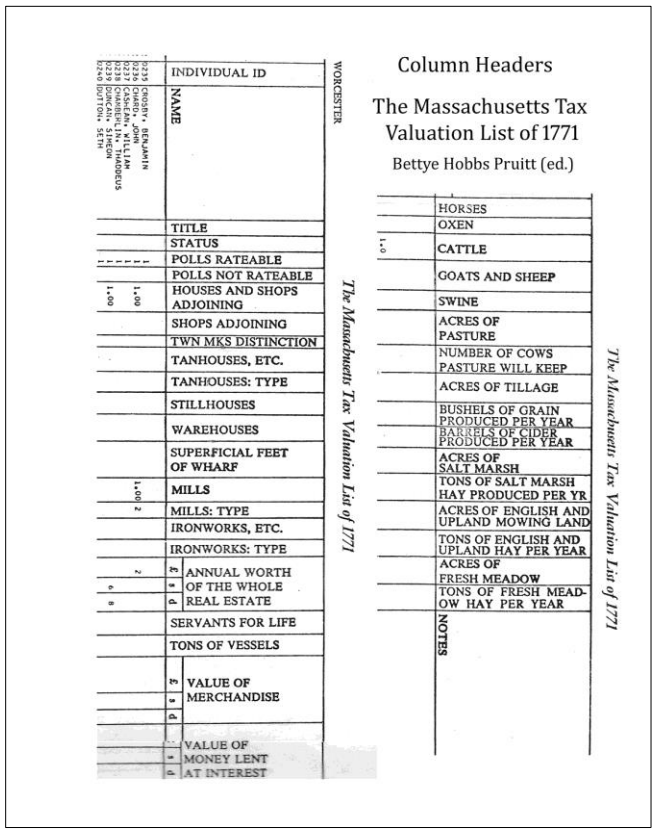
Pruitt's preface and introduction, with code lists and explanations, as well as sample pages of the results, can be seen *here* in an online transcription provided by the University of Massachusetts, Amherst. At the website, the *select page* pull-down menu is where the preface, introduction, code lists, and sample pages showing the column headers can be found.

(In case of link failure, the address is:
http://www.memorialhall.mass.edu/collection/itempage.jsp?itemid=5849&level=advanced&transcription=0&img=0)

Whether the data for any selected town can be downloaded in database format is unknown. Data from the author's printout version of the results for Worcester were entered into an Excel spreadsheet which may be made available on request for research or teaching purposes.

The intention of this essay is merely to offer a descriptive account of those aspects of the town's overall profile that can be gleaned from the taxable properties survey of 1771.

Column headers in the record of the survey:



See Pruitt's introduction for her explanation of the mis-coding of the fifth and sixth columns, "Houses and shops adjoining" and "Shops adjoining." Not used in Worcester were questions related to stillhouses, iron works, and salt marshes.

Bibliography on Early Worcester

(Pruitt's works cited above)

Lincoln, William, *History of Worcester* Worcester: Charles Hersey, 1836; and Lincoln and Hersey, 1862, the latter a re-publication of Lincoln's history plus an addendum by Hersey covering 1836-1862.

Moynihan, Kenneth J., *A History of Worcester 1674-1848* Charleston, SC: The History Press, 2007.

Nutt, Charles, *History of Worcester and its People*, New York: Lewis Historical Publishing Co., 1919.

Raphael, Ray, *The First American Revolution: Before Lexington and Concord*, New York: The New Press, 2002

Wall, Caleb, *Reminiscences of Worcester 1657-1877*, Worcester: Tyler & Seagate, 1877.

Polls, Households, and Population

The survey was not a census. Its subject was not the population but taxable properties and the valuations placed on such properties. The closest it came to a tally of persons was its count of *rateable polls* who were resident at the property.

Number of taxable entities (properties): 332 (equals number of records in the dataset)

Each entity has a name attached, being the person recognized as the owner of the property and responsible for payment of taxes levied upon it.

Number of houses: 228

The number of houses is assumed to be the same as the number of households, usually families, sometimes with unrelated others, such as farm hands. The terms *houses, households,* and *families* are used interchangeably here, even though they were not necessarily identical in number. A house, for example, could have been empty for a short time after a death, or might have been in bad physical shape and left abandoned (which, because the town was so young, would not be likely unless it had been built for temporary use). The numbers of such cases are presumed to have been small and their tenures short. A household is not necessarily the same as a family, but the difference here is unimportant.

In the Worcester of 1771, according to the tax survey, there were 228 houses, attributed to 217 different taxable entities - their owners. Whether or not the figure 228 represents all the houses in the town at the time is unknown. It is possible that there were a small number of cases of people occupying houses which they did not own and to which no taxable valuation was assessed. An example might be the town minister, who, in 1771 was Thaddeus Maccarty. His name did not appear in the survey.

Subtracting the 217 entities with a house from the total of 332 leaves 115 taxable entities with no house. Most of these individuals presumably resided in another listed property and may have been relatives of the family, or boarders, or farm-help rooming there. However, nothing in the dataset allows connections of such persons to particular households.

Estimate of the population of Worcester in 1771:

A simple method for estimating the population is to multiply a known ratio of population to rateable polls (or simply *polls*) by the number of polls in 1771. The 1790 census population of Worcester was 2,095; the number of polls in 1791, from Lincoln and Hersey (p.262) was 486. That yields a ratio of 4.31, which translates to 431 persons for every 100 polls.

A definition of a rateable poll from Ronald M. Peters, *The Massachusetts Constitution of 1780: A Social Compact*, University of Massachusetts Press, 1978:

> *A rateable poll… was a person who met the eligibility requirements for the suffrage…. Each voter had to be twenty-one years old, a resident of the town or district in which he wished to vote, and possessed of a freehold within the town or district of 3 pounds or a rateable estate of 60 pounds."*

However, Bettye Pruitt, in her preface, said the age was 16, rather than 21. Which is correct is unknown, but it doesn't affect the rough calculations used here to derive an estimate of the

population. (That said, some calculations based on the ratio itself, suggest that 21 is more likely than 16 to have been correct.)

The ratio of 4.31, multiplied by the number of polls in 1771 (395), yields a calculated population of 1,703. We'll call it between 1600 and 1800, or "about 1700."

Servants-for-Life:

Shamefully, Worcester had a small population of enslaved people in 1771, categorized as "servants for life." Massachusetts and other northern colonies and states tolerated the practice for a time before abolishing it.

Seventeen slaves were reported, representing one percent of the town population, listed as the chattel of ten taxable property-owners. Households with "servants-for-life" included the extended Chandler family with six, John and Adam Walker with three, Timothy Paine with two, Timothy Bigelow with two, and four others with one each -- Samuel Brooks, Jacob Hemingway, James Putnam, and Lemuel Rice.

Earning a Living

The survey provided data (to the imperial authorities) on five means of earning a livelihood upon which to base taxation: *agriculture, mills, shops, stores,* and *lending-at-interest.* At least two very important sources of income were omitted from the survey, and possibly from taxation as well, unless there were other provisions of tax law to pick up such sources. One was professional fees (e.g., legal services) and the other was profit on the sale of assets (e.g., land, or items sold at retail). As a result of these omissions, the overall portrait of the wealth of the community is deficient to this extent and should be taken with more than a grain of salt.

Agriculture

Here the objective is an estimate of the number of families (or households) for whom farming was the primary source of sustenance. Later, the topic of agriculture will return for a closer look.

The survey listed 202 properties having one acre or more in productive agricultural use, defined as being in any of the four uses of farm land shown here:

	Pasture	In Tillage	Hay Upland Mowing	Hay Fresh Meadow	Four Combined
Number of acres	1,888	1,243	1,286	1,177	5,594
Average of 202 owners	9.4 acres	6.2 acres	6.4 acres	5.8 acres	27.7 acres

Worcester land in productive use totaled 5,594 acres. The average was 27.7 acres per property, the median 24. Most farms of any significant size (for farming) had some acreage in each of the four types

of use. Tillage was by far the most labor intensive, as it involved plowing, requiring the pulling power of oxen or horses, as well as substantial human effort. Grains in tillage also meant harvesting in the Fall, as did growing hay. The distinction between fresh meadow and upland mowing hay obviously was well understood by farmers and assessors at the time, but it is not by this suburbanite of the modern era. One online source implied that fresh meadow hay was preferred for feed grains, due to its consisting of a healthier variety of grasses and wildflowers, but we'll leave that subject to others.

In some cases there was acreage in productive use but no house on the property, meaning someone was farming the land, or having it done for them, while living somewhere else – probably, but not necessarily, in Worcester. There were 15 such cases, totaling 268 acres. One of them was James Putnam, Esq., who had 86 acres, one of the larger farms in the town. An attorney and member of the aristocratic elite of the town, Putnam lived in a mansion in the town center and had someone else operating the farm (but not residing there). Some of the other no-house properties probably were linked to houses owned by people of the same surname; for example, Thomas Brown, who had 13 acres to his name but no house, probably lived in one of the four houses attributed to Samuel Brown (probably Thomas' father).

Most land owners had some woodland acres as well, from which they harvested wood to be burned for heat and cooking, or milled into lumber, and if they needed more open land they could clear-cut to convert wooded to "improved" land. The 1771 survey, however, did not include data on woodland or other unimproved land. It also excluded land around the farmhouse, which would have been used for gardens, fruit trees, barns, sheds and other out-buildings, plus chicken coops, henhouses, pigpens, a goat or two, and the like.

The five largest farms in town, by acreage in productive use were

Ebenezer Stearnes, Jr. - 146 acres, Nathaniel Adams & Nathan Patch (partnership)- 130 acres, John Chandler - 100 acres, James Putnam - 86 acres, and Samuel Mower - 85 acres.

Twelve more properties had more than twice the town-wide average of 55 acres, bringing the total to 17, or eight percent of all properties with any land in use.

This list of the largest farms by acreage is somewhat misleading because of the probability that some extended families, having multiple properties in the tax list, were actually operating in concert or in literal combination with each other. For example, the five Chandler properties, along with those of Timothy Paine and James Putnam, who were linked by several marriages,* most likely were component parts of a single agricultural enterprise, one with over 300 acres in productive use, operated by hired farm managers and workers, including slaves.

* See Lincoln, Wall, or Moynihan on the marital connections among these families.

There were other extended families with multiple properties and likely some combined interests, as well, including the Stearnes (9 properties, 7.5 houses , 216 acres), the Rices (13 properties, 8.5 houses, 206 acres); and the Moores (9 properties, 10 houses, 202 acres). (Obviously, which of these families of common surname were actually associated with others is unknown.)

How large a farm was large enough? How large did a farm need to be to support a household as its primary or only source of sustenance?*

* The question is not about *self-sufficiency*, the concept of everything the family needs being grown or raised or made on the farm. Rather, it pertains to the ability to grow, raise, or make enough to sell (or trade) some surplus products in order to be able to purchase other needed goods, the result being sufficiency – but not *self*-sufficiency. The various shops of the town existed for the purpose of making and selling various goods that were not practical for all farmers to make. Thus they were among the core elements of the inter-connectedness of the farms of the area.

The question of how large a farm had to be to support an average household is "beyond the present scope," but just for a rough measure, if it is defined as 15 acres or more then 150 properties met the test of a *sustaining farm*. The 150 farms averaged 31.7 acres (median 29), with about the same pattern of land usage seen for all properties. (Change the requirement to 20 acres and the number of self-sustaining farms falls to 123. Call it ten acres and the number rises to 171.)

Placing our chips on 15 acres and 150 sustaining farms, that leaves 52 properties having at least an acre in use. Most of them probably had to rely upon other sources of income, such as operating a shop, a mill, or a store, or by labor for pay. Of the 52 properties, there was a house at 43 of them, leaving nine small properties to be owned by someone living elsewhere. Six of them had a shop, two had stores, four were small lenders, and none had a mill. Most likely, a substantial number of the smallest farms had one or more members of the family employed on someone else's farm, or some other kind of establishment.

Agriculture's share of town land.

Another perspective on the agricultural use of land concerns the percentage of the land of the town that agriculture was consuming. The total acreage in the four kinds of use, according to the survey, was 5,594 acres, which amounted to 8.74 square miles (640 acres in a square mile). Add a few acres for the farmhouse lots, and a few more for town use for roads or other purposes, and the area of cleared land rises above ten square miles, maybe to eleven.

The town consisted then of about 40 square miles,* a portion of which would have been unusable for agriculture due to water coverage, steep slopes, wetlands, bogs, inadequate topsoil, and the like. If we assume something like 36 square miles of potentially usable land, the result is a rate of land clearance of approximately 24 percent – call it one quarter of the available land in agricultural use.

* In 1778, a little over 3.5 square miles (2250 acres) of land in the southwest corner was removed from Worcester by the General Court and given to the new town of Ward, now Auburn. (See Wall, p.250) Later a couple of square miles were added to Worcester by adjustment of the southern boundary with Millbury and Grafton. The current estimate is about 38 square miles.

The remaining land was in deeded ownership, whether in private or public hands, by the town or the colony, and much of it was wooded. Whether woodland or otherwise unimproved acreage was taxable is not known, but it was not included in the 1771 survey. Data from the tax list made ten years later, 1781, as reported in Lincoln's *History of Worcester (p. 262),* showed 14,912 acres as woodland, more than twice the other four agricultural uses combined. At that time, the proportion of all town land in agricultural use was approximately 30 percent. Some of the increase in the rate of usage may have resulted from the loss of the 3.5 square miles ceded to the town of Ward.

* * *

The taxable property survey was mostly concerned with property of an agricultural nature, but it also reported some information concerning four ways besides farming that people could have made a living: mills, shops, stores, and lending.

Mills

The survey identified ten mills in town: 5 saw mills, 4 grist mills, and one fulling mill.

No information was provided on how many people were employed, or how big or how profitable the operations were.

Mills (viewed by the assessors as buildings) seem to have been given moderate-to-low valuations. Most important is that it appears to have been the building, rather than the value of the business, that was being assessed.

Mill type codes, from the survey (Pruitt):

7. MILLS:TYPE

1 = Gristmill
2 = Fulling mill
3 = Sawmill
4 = Gristmill + fullingmill
5 = Gristmill + sawmill
6 = Sawmill + fullingmill
7 = Two or more mills, not specified (value under "Mills" a sum)
8 = Sawmill + gristmill + fullingmill

For an explanation of Code 7, see above, under "Tanhouses: type."

Sawmills: The five sawmill owners were Samuel Wesson, James Trowbridge, Micah Johnson, Benjamin Flagg, and the partnership of Jacob Stevens, Gershom Rice, and John Boydon. A map of the town drawn in 1833 by H. Stebbins, online at the Library of Congress, shows five sawmill locations. They might not have been exactly the same as the five of 1771 but the chances are most of them were. (It is not possible to reproduce the map here.) The five were:

1. on Howard Brook (later Great Brook), near the Great Brook Valley housing complex;
2. on Broad Meadow Brook, between Massasoit and Granite Streets;
3. on the Middle River, east of Holy Cross College (the intersection of Millbury, Providence, and McKeon);
4. on Beaver Brook at what became Newton Square; and
5. on Tatnuck Brook, where Mill St. crosses, west of Tatnuck Square.

Which proprietor owned which mill is not known.

From the collections of Worcester Historical Museum, Worcester, Mass.

This photograph shows the sawmill at Newton Square, as it looked in the 1890s. It was taken by Edward M. Woodward, son of the caretaker of the house in the background, was shown in the *Sunday Telegram* (November, 1941), and is shown here courtesy of the Worcester Historical Museum.

The mill was at the base of the hills to the west, extending to Tatnuck and beyond. That land comprised the watershed into Beaver Brook, which ran southerly from Holden, through the area between Salisbury and Pleasant Streets, passing through the Newton Square area (and the mill), then westerly toward New Worcester (Webster Square) where it fed into a pond which has since been drained and replaced by Coes Pond. The house was about where the tennis courts are now, and Newton Hill is to the right.

Grist mills: Owners of the four grist mills were Daniel Biglow, Jr.,* who owned two mills; Nathaniel Bixby; and Thomas Denny & son.

* Daniel Bigelow, Jr. was one of three brothers in Worcester at the time, along with David and Timothy, and they had two first cousins here as well - Joshua and Nathaniel Bigelow. The name was usually spelled *Bigelow* but was *Biglow* in every instance in the survey.

Four grist mills found on the Stebbins map were located on Tatnuck Brook, south of the fulling mill; on Mill Brook, near today's Millbrook Street off Gold Star Blvd.; on Mill Brook at today's Kelley Square; and on the Blackstone River, near Quinsigamond Village. The Stebbins map also shows the grist mill of John Wing, dated 1684, on the Mill Brook, near Lincoln Square.

Fulling mill: The town's only fulling mill was owned by John Chard. It was located on Tatnuck Brook, somewhere on the nine-hole course of the Tatnuck Country Club, and north of the sawmill and the grist mill. Use of wool for making felt or an early form of woolen cloth was presumably the beginning of the wool trade in Worcester. To some unknown extent, Mr. Chard likely would have purchased shorn wool from local farmers, but quantities needed and the nature of the market for wool at the time are unknown.

Shops

What we can learn from the survey about the various trade shops that existed in the town is limited due to a fault in the coding of various types of shops. Item 6 on the questionnaire was called "tanhouses," and referred to types of buildings used as shops of different kinds, "such as 'tanhouses, etc.'" The code list below shows the numeric codes that were supposed to be used to indicate the nature, or type, of shop in each recoded case of a shop.

The problem was that most of the shops were designated as just that – *shop* – number three in the code list, rather than any of the *types* of shops. The net result was the identification of four potash works and 25 unspecified types of shops.

In general, shops appear to have been assigned low valuations, by comparison with farm assets. The figures reflected their value as buildings, rather than the value of the business that was being conducted in the buildings.

6. TANHOUSES: TYPE (TYPES OF BUILDINGS UNDER "TANHOUSES, ETC.")

01 = Tanhouse
02 = Slaughterhouse
03 = Shop
04 = Potash works
05 = Blacksmith shop
06 = Cordwainer/shoe shop
07 = Joiner shop
08 = Cooper shop
09 = Wheelright shop
10 = Malthouse
11 = Ropewalk
12 = Bake shop
13 = Office
14 = Shop + tanhouse + potashworks
15 = Shop + tanhouse
16 = Shop + slaughterhouse
17 = Shop + potash works
18 = 2 shops + potash
19 = Tanhouse + currying shop
20 = Tanhouse + currying shop + potash works
21 = Spermaceti/candle works
22 = Masthouse
23 = Candleworks + other, unidentified
24 = Tanhouse + potash
25 = Weaver shop
26 = Gunsmith
27 = Shop + ropewalk
28 = Shop + other, unidentified
29 = Tailor shop
30 = Two or more separate buildings, not specified (value under "Tanhouses, etc." is a sum)
31 = Potash + other unidentified
32 = Shop + pearlash
33 = Sadler shop

Code list from Pruitt's introduction.

This list should be of some value in itself, regardless of the flaw in its application to Worcester, because it shows the various types of shops that were thought at that time likely to be found in agricultural communities. One notable omission is the apothecary shop.

One recognized name identified as a shop owner was Timothy Biglow (as spelled in the survey), the Colonel of Revolutionary War fame, who is well known to have been a blacksmith. Another was Nathan Baldwin, a saddler by trade (although not so indicated in the survey), and another of the leading figures in the early rise of anti-British sentiment. (See Moynihan.) Some of the other shop proprietors probably could be determined by reference to the histories cited above.

Stores

The column header for stores was "value merchandise," which is presumed to have meant the total value of all merchandise sold within the year. The figures would seem to make little sense if thought of as the inventory value of merchandise in the store on a given date. Exactly how it was defined is not important for the purposes of this profile. The figures given are assumed to have represented a measure of the size and value of the establishment.

The survey reported 12 properties with one pound or more of merchandise value, totaling 2,792 pounds. The five largest stores in town, shown below, accounted for 2,650 pounds, or 95 percent of the business. It is not clear how or whether sales of items made in shops, such as leather goods, wagon wheels, or barrels, were counted in this category. (Pounds abbreviated *p.*)

Top Five Store Proprietors:

Andrew Duncan	1000 p.
Stephen Salisbury	550 p.
Clark Chandler	500 p.
Levi Shepard	300 p.
Elijah Din	300 p.

The 228 households in the town averaged 11.9 pounds of merchandise each, but purchasing power was unlikely to be that equally distributed. No doubt the wealthy bought more and the poor less, but how much in useful goods a pound could purchase is unknown.

Stephen Salisbury, the best-known and most recognized name on the list, came to Worcester about 1767 to open a branch of his family's business. He was able to establish a large operation quickly because he had all the investment capital he needed, and because his business included a considerable amount of importing from England, based on catalogs, in addition to off-the-shelf merchandising. In

the politics of the day, Salisbury was firmly attached to the cause of independence, which would work greatly to his advantage in the years ahead.

Clark Chandler, also well known to students of colonial Worcester, was the Clerk of the Town, as well as keeper of its third largest store, and, like the rest of his family, did not fare well in the political struggles of the era. Because of their Tory sympathies and their active roles in opposition to the rebellion, the Chandlers, plus Timothy Paine and James Putnam and their families were driven out of town and dispossessed. (See Lincoln, Wall, Moynihan)

The largest storekeeper, though less well-known than the others, was Andrew Duncan, a Scotsman who came to Worcester in 1768, along with his business partner, William Campbell. Both were loyal to the British. By 1771, Campbell had left town because of the discomforts arising from the political storms, and he never returned to Worcester. The survey listed him with a status code denoting that he did not live here at the time, that he was not a rateable poll, and that his taxable interests were reflected in the holdings of his partner. Andrew Duncan remained in Worcester in some discomfort as a Tory, but survived it, and died by drowning in 1787.

Lending:

As there were as yet no authorized banks, nor other institutions for borrowing, it appears that certain individuals, having the assets to lend, took up the needed function. The survey identified 38 individuals with any amount "lent at interest," 13 of whom had 100 pounds or more outstanding. The total amount out on loan was 4,084 pounds , of which 2,580 pounds were by the top seven lenders:

Gardiner Chandler - 800 p.; Adams & Patch - 400 p.; John Barnard - 350 p.; Gershom Rice, Jr. - 330 p.; Joseph Clark - 300 p.; Sarah Chandler - 200 p.; Jonathan Knight - 200 p.

Legal Services:

Only four people were denoted in the survey as attorneys bearing the title "Esquire." They were John and Gardiner Chandler, Timothy Paine, and James Putnam.

Another Look at Agriculture

It was shown earlier that the average farm, defined as a property having one or more acres in productive agricultural use, had 27.7 such acres. Using the same denominator, average sizes by type were 9.3 acres for pasture land, 6.2 acres in tillage, 6.4 acres in upland mowing hay, and 5.8 in fresh meadow hay.

The products of tillage, mostly wheat, corn, rye, or other basic grains, were used for animal feed and human consumption, the latter part being sent to the the local grist mill for conversion to edible form and returned in sacks. The survey gave only a number of "bushels of grain produced per year." For the 189 properties with land in tillage the average crop was 93 bushels, or 14.1 bushels per acre.

Another crop was cider, measured in barrels, made from apples grown in orchards of varying sizes on 149 properties. Presuming that surpluses were sold (or traded) to families which didn't have any or enough cider, the average works out to about 10 barrels per household for the year. Two questions remaining are how large the barrels were and how much of the cider was "hard."

As for hay, both kinds gave similar yields: 1,028 tons of upland mowing hay from 1,286 acres, or 0.8 tons per acre; and 1,047 tons of fresh meadow hay from 1,177 acres, or 0.9 tons per acre.

Farm animals

Animals used for work: pulling carts, wagons, plows, stumps, logs, and whatever other heavy work needed to be done.

Horses: The survey reported a total of 270 horses in town, owned by 195 different people (or properties). Forty-three of them owned two horses, ten had three, four people had four, and no one had more than four horses.

Oxen: There were 368 oxen owned by 144 different people. Most common was to own two, and some 69 different owners had three or more, while only three owners had a single ox. Unlike horses, a large number of oxen were kept on a small number of farms, presumably for leasing out for plowing and other jobs on farms, such as stump and log pulling, and jobs for the town, such as road building, and there must have been a good number of other jobs as well. Leasing out oxen may have been one of the sources of the wealth of the Chandler family, as John had 14 and his brother Gardner had six, while brother-in-law Timothy Paine had four, and James Putnam had another four, making a total of 28 owned by the Chandler-Paine-Putnam clan. Four other farms had five or more oxen, and 23 persons owned four each.

Animals for which the primary purpose was their by-products or their consumption: Cows and goats gave their milk, sheep gave their wool, and pigs gave their lives for meat and lard.

Cattle: Presumably the town as a whole amounted to a more-or-less closed circle of supply and demand: cattle raised in Worcester serviced the needs of the people who lived in Worcester, despite trading across town boundaries, which probably balanced out to little effect. It follows that there would have been approximately enough cattle to provide the milk, cream, butter, and cheese needed by the families of the town. A surplus here would be met by a need there. Some farmers would sell or trade surplus milk to others specializing in dairy work, who would process the milk into the needed quantities of cream, butter, and cheese to sell on a retail basis.

The survey reported a total of 866 cattle. Dividing that figure by 228 households amounts to the average household consuming dairy products of 3.8 cows per household. Thus, on average, having more than four cows amounted to raising surplus milk (and the products made from it). The number of farms having five or more cows was 68, and ten had ten cows or more. The largest herd of cattle was that of John Chandler with 20, followed by Ebenezer Stearnes with 14. The practice of raising surplus cattle was widespread; Worcester was not a town of large herds or concentration in few hands.

Swine: The survey counted 428 swine, which divided by 228 households comes to 1.88, or about two pigs per year per family. How these numbers translated to food on the table is unclear, since the figure represents an inventory at a given date, while pigs are being born and raised, and later slaughtered at rates which presumably maintain a more or less normal inventory. It is also presumed that the "swine trade" was similar to the cattle market, since some farmers would have extra while others had not enough. The assumption is that enough pigs were raised to meet the needs (or "demand") of the town, and that exporting to or importing from other towns was of little significance.

Goats and Sheep: It is unfortunate that these two animals were grouped in the survey, since the reasons for having each differ greatly. Goats are somewhat like cows in that they provide milk (and "mow the lawn" around the house). Sheep, on the other hand, would be grown for their wool, the annual product of shearing, and household need for it would depend on spinning and weaving in the home. It has been said that it was considered patriotic in the pre-war period to do so because under the British it was illegal. They wanted their colonies to be captive markets for their cloth and finished garments. Beyond such home consumption, shorn wool would seem to have been intended primarily for sale to the local fulling mill or to buyers wherever it was in demand.

The survey reported 1,512 sheep-or-goats, owned by 150 different persons, over 90 percent of whom had three or more, with 68 having ten or more. Many of the town's farmers appear to have been raising surplus sheep. In a local area, such as colonial Worcester, it was essential to sell something to the "outside world," whether it be England or someplace closer to home, in order to bring in money from elsewhere which could then be used to purchase goods made (or grown or raised) elsewhere. It was similar to the concept of foreign exchange, wherein one needs some of *their* money to but *their* goods. Sheep may have been raised in Worcester at least partly, if not primarily, for the purpose of sale of wool as an export – presumably to the British as was expected under Imperial rule.

***Valuation*:** "Annual Worth of the Whole Real Estate"

This was the closest thing in the survey to an overall indicator of the total economic value of the property. Unfortunately, what the recorded valuations meant is unclear (at least to the writer). They seem much too low to represent market values of the estates. The amounts may have been what was assessed in taxes, based on real valuations. In any case, it is clear that higher figures meant greater value, so the data offer a helpful perspective on the relative values of properties in the town.

On 234 properties for which any valuation was recorded, the total valuation was 1,412 pounds, the average was six pounds, and the median was five pounds and a few shillings. The spread of valuations from low to high approaches, more or less, the shape of a normal distribution, as would be expected.

Numbers of Properties by Valuation in pounds:

Less than 1	1 to 3	3 to 8	8 to 20	20 or more
19	47	102	60	6

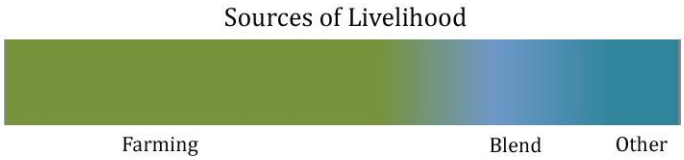
The highest valuation by far was on the estate of John Chandler, at 40 p., and second was the partnership of Nathaniel Adams and Nathan Patch at 22 p. However, the reservations expressed in regard to the largest farms also apply here. Combined operations of extended family farms, if and when they occurred, would alter these figures considerably. For example, the combined "annual worth" of the extended Chandler-Paine-Putnam family was 102 pounds (7.2% of the townwide total).

It also seems worth re-stating that these valuations did not account for all of the wealth, or the sources of new wealth, of the town. The omission of professional fees and profits on sales (of land, as well as items in stores or shops) undoubtedly resulted in an understatement of the wealth of a small number of individuals. The names Chandler, Paine, Putnam, Duncan, and Salisbury come to mind.

A Summary Estimate of the Economic Profile of the Town

In the Worcester of 1771, the proportion of families making their livings entirely or mainly by farming ran in the range of about two-thirds, and there were others with farms that were probably too small to be considered fully "sustaining," in the sense of being enough to support the family adequately. The numbers and percentages of such families are products of "fuzzy math," which is necessarily the case, due to the difficulties involved in trying to estimate how much farm would be enough to be called "sustaining" (which, again, is not the same as self-sufficient). Families lacking enough farming resources likely had to supplement their earnings by having one or members of the household working elsewhere for pay, whether it be on another farm, in a shop, a mill, or a store or whatever.

From the other end of the spectrum, with about one quarter of families depending mainly or entirely on other sources – again, mills, shops, stores, etc. – some of them had small amounts of acreage in agriculture, amounting to a means of supplementing their incomes. A reasoned guess might be 60-65% full-time farming, 15% full-time other occupations or business interests, and the remainder a blend consisting of about 20-25%, as is depicted in the graphic below. Unfortunately, the data from the survey allow for only a very sparse summary of the non-agricultural means of livelihood, especially regarding the nature and function of the various shops. There were about a dozen owners of mills (all of whom also farmed to some extent), 27 shop owners, eight-to-ten owners of stores large enough to be significant, five-to-eight money lenders, four lawyers, and the town minister.



The average size of a farm, in terms of acreage in productive use, was 27.7 acres, distributed fairly evenly across the four major uses of land: pasture, tillage, upland mowing hay, and fresh meadow hay, plus an acre or two in apple trees to yield about 11 barrels of cider. An average "full-time" farm would have had a few more acres, bringing the total into the low 30s. Many, and probably most, farms also

had acreage in woodland, allowing for clearance as needed to add to the size of the farm, and for lumber and fuel.

A considerable amount of the town was in private ownership but not in active use, but the numbers of owners and the amounts owned by each were not included in the survey. A few wealthy people had acquired large tracts of land, including the Chandlers and local luminaries, including those named Paine, Putnam, and Salisbury. (The Lincolns had not yet come to Worcester.)

Just a few years later, turmoil would overtake the town and several Tory families would be forced to leave, and Worcester would gain the services and the employment opportunities of the largest newspaper and printing enterprise in the country upon the relocation of Isaiah Thomas from Boston.

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Don Chamberlayne