

Counting Danes

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Abstract

In Denmark we have five complete machine readable individual level nominal censuses, 1787, 1801, 1834, 1840 and 1845. Some of them are also completely coded and standardised while the rest is in the process of becoming so. This gives us an excellent opportunity to play around with and entire population and describing demographic change in the pre-industrial Danish society. Even these early censuses are of excellent quality and thus they give us a very clear picture of the population.

The presentation will focus on the two first census years. I will look at age distributions in the light of occupation and urbanisation and household complexity over time.. Such analysis on the entire population goes far beyond what was possible before we made the machine readable editions. Though the population remains predominantly agrarian in the period we are looking for effects of termination of adscription (“ophævelse af stavnsbåndet”) (1788).

Danish census taking at the end of the 18th century

The design and procedure applied for the 1787 census were clearly based on the experience from the 1769 census. In 1769 processing had been carried out locally and name lists were either not produced or with few exceptions have been lost. The 1769 census was taken on August 15th ¹. The 1787 census was also taken in midsummer on July 1st and name lists were produced and submitted to the central administration (“rentekammeret”) ². In the central administration the data were analysed and tabulated and used for internal purposes. The census was not published and it was never the intension to do so. It was after all still in an age where population size belonged to the military secrets.

The 1787 census was generally considered to be very complete, but there was some concern that perhaps too many people were away from home at the time of the census. Thus it was decided when planning the next census that it should be taken in mid winter on 1st February. This happened in 1801. The 1801 census became the only full census of Denmark, Norway and the Duchies ³. In Denmark and Norway the census was taken by the recently founded Dansk-Norsk Tabelkontor. In 1787 as well as 1801 the actual data collection was carried out by the clerical authorities in the rural areas and by the taxation authorities in the cities. The census forms were very similar. There was a slight rephrasing of some questions.

¹ Samfundet og Statistikken. Et historisk Rids 1769-1950, København 1949, p. 7

² Ole Degn: Alle skrives i mandtal, København 1991, p. 7 ff.

³ The Duchies is a common term for Schleswig and Holstein

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Opptegnelse

aa
Folketallet i *Narvikherred* *Præstegjæ* Sogn under *Ordnere* Amt, saaledes som det befandtes
at være den 1ste Julii 1787, tilligemed Forklaring om enhver Person's Stand, Embede og
NæringsVet, med videre.

| Navnet og Embedets Navn, samt Familiernes Aantal. | Personernes fulde Navn samt enhver Familie. | Had enhver Person et Kvindeligt Barn som om Børn ne tre eller nogle af serne, under eller hullet Egteskab. | Personernes Alder det sindes Alders Aar beregnet | Uglet eller gift, og hvorside de have va- ret i Egteskab eller Eftersind. | Personernes Titel, Embede, Forretning, Haandværk eller Næ- ringsVet. | Summa paa Folketallet i hver Sog og Sogne, med videre. |
|---|--|--|---|---|---|--|
| | | | | | | 6725 |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>43</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Ordføreren</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>42</i> | <i>gift</i> | <i>Ordfører</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>7</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>2</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>4</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>20</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>14</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>18</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>15</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>12</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>60</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>80</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>40</i> | <i>gift</i> | <i>Prebost</i> | |

Figure 1: Census list from a rural parish 1787

In 1787 (Figure 1) it should be reported if children were born in or out of wedlock and of which number marriage. This information was not asked in 1801, though often given anyway because the enumerators did not read the forms that closely.

Opptegnelse

aa
Folketallet i *Narvikherred* *Præstegjæ* Sogn under *Ordnere* Amt, saaledes som det befandtes
at være den 1ste Febr. 1801, tilligemed Forklaring om enhver Person's Stand,
Embede og NæringsVet, m. v.

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|---|--|--|---|---|---|--|
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>44</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>13</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>19</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>16</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>38</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>18</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>11</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>8</i> | <i>gift</i> | <i>Prebost</i> | |
| <i>Prebosten</i> | <i>Johan Porsild</i> | <i>gift</i> | <i>5</i> | <i>gift</i> | <i>Prebost</i> | |

Figure 2: census list from a rural parish 1801

In 1801 (Figure 2) the occupation question was expanded from asking for title, appointment, business, trade or “næringsvej”⁴ to also asking for “what they live of”.

The census forms also existed in a version for cities which only differed slightly from the rural ones shown above. In some special cases handwritten forms were used instead of the pre-printed ones. Those handwritten forms resembled the pre-printed ones closely. Essentially then there were two versions of the forms from each of the two census years, but the four forms were very similar.

The form header gave the name of the place recorded and the date of the census. The Census date was pre-printed while the place name was filled in by hand. In rural parishes the name were given as parish name and the name of the *amt*⁵. In the cities just the name of the city was given. Below the header the census contained seven columns:

1. Address which contained place name, probably the type of dwelling (a house, a farm) and probably a family number in rural areas and Street name and house number maybe a floor and perhaps a family number in the cities.
2. Name which contained the persons name.
3. Household position which in 1787 was also supposed to give information about the children being born in and out of wedlock and of which number marriage. That information occurs in both censuses but perhaps more often in 1787 when it was asked for.
4. Age given as 1 for a new born i.e. one higher than achieved age which is more commonly used today.
5. Marital status which should also record number of marriage
6. Occupation which could also contain title, form of housing, subsidies, handicaps or other comments
7. Sum of persons a column set aside for counting the people on each page and each place. Occasionally also used for comments.

Unlike the 1787 census the 1801 census was actually published but the publication was much delayed by lack of resources at the table office. The official publication happened as comparison tables in the publication of the 1834 census which came out in 1835⁶.

Making the censuses machine readable

The two censuses were made machine readable through a project, the Source Entry Project, KIP, where a number of hobby historians cooperate with the DDA with the purpose of making sources machine readable. This project has received material from more than 1200 hobby historians. The most productive has delivered more than 850,000 person records. Through the work of KIP more than 12,750,000 person records have been typed in and delivered to the DDA. This comprises the complete Danish censuses of 1787, 1801, 1834, 1840 and 1845 and the census of Slesvig 1803. Other censuses are well underway and parish registers are starting.

⁴ Næringsvej is more or less synonymous to trade and business

⁵ Amt is an administrative divide roughly the size on English county. Amt is often imprecisely translated with region, but that would be awkward here because I intend to speak about *landsdele* as regions later on.

⁶ Statistisk Tabelværk, 1. Række, bind 1, Copenhagen 1835

The basic philosophy of KIP is that everything found in the sources has to be entered as found. There are few exceptions to this rule such as standardised spelling of civil status. Apart from sex no information not given the sources is asked for. If the data entry person has something to report this can either be done in a designated comments field or in any other text field contained in square brackets. The resources assigned to this project in DDA are actually quite limited given the size of the operation, so standardisation and automation plays a major role in coping with this task.

The census data received are promptly put on the internet where they are searchable under ddd.dda.dk. The complete finished censuses are published as cd-roms ⁷.

Almost all the hobby historians are using a piece of software WinKIP, which is freeware, for making the data entry. WinKIP supplies forms for the censuses and ensures that the output confirms with DDA-standards. Thus the files that were received with the 1787 and 1801 censuses should contain:

1-7: Background information identifying the entry that the record belongs to

8: record number in the entry

9: Source reference Usually page in source

10: Place name (from 1st column of the census)

11: Household/family number (from 1st column of the census)

12: Address (from 1st column of the census)

13: Name of person (from 2nd column of the census)

14: Sex usually not given in the census but almost always easy to deduce when you are looking at a specific record

15: Household position (from 3rd column of the census)

16: Age (from 4th column of the census)

17: Marital status (from 5th column of the census)

18: Number of marriage (from 5th column of the census)

19: Occupation (from 6th column of the census)

20: Comment. User comments in square brackets [], source comments in citation marks “”

Coding and standardisation

Cleaning, coding and standardising the data has become an on going challenge and as very few resources are available for that purpose it is lagging far behind the data entry. Some cleaning exercises are trivial and caused by the data entry people deviating from the instructions. Thus sex was only filled in on about half of the records but most of that could be solved by automated methods.

First of all each year was combined into one table and a unique record number was added. Then sex was cleaned up. Then a record for coded marital status was added and filled in. Naturally the marital status that was supposed to be standardised contained many different values. Then a column for age given as number was added. Some ages were given in words like “two months old” or alike. These were recoded to a decimal value in the new column.

⁷ The latest cd-rom, the 1840 census was published with support from Max-Planck-Institut-für-Demografische-Forschung.

A new code for number of persons was added given the number of persons covered by a given record in the data set. This can be zero when the record is an empty house or a reference to a person counted elsewhere. It could also be more than one like for instance 26 soldiers ⁸.

Household position was coded into a new column with an integer code. I use a coding scheme with 330 codes giving the relation to head of household. This relation can be quite complicated as we shall see below. The household position codes are ruled by an other table which also contains other codes such as generation, links from head and family code which are useful for analytical purposes.

Each household was given a unique number and a specific household table was constructed with one record for each household. Information on household type was also recorded in the household table. There are four household types. (See below page 13)

The occupations are given as a string of text. This string often contains more than one occupation or title, actually up to six. Thus the occupations are coded into an other table which contains one record for each term in the occupation field of the census table. The occupations table then contains a reference to the record id in the census table, a standardised version of the occupation term, a number giving the position of the term in the original occupation string and an occupation code. The occupation code refers to my own occupation coding scheme which has 2,880 codes. This coding scheme is found in a table given the occupation term, the code, the corresponding Hisco ⁹ code and other qualifying and explanatory information. The reason for not using Hisco directly is that Hisco lacks detail in some sectors especially agriculture where the censuses are very detailed. Thus the information loss involved in coding directly into hisco would be unacceptable. The occupation code table also divides the occupations into the occupational groups used below. There are nine occupational groups: Other, Farmer, Cottager, Day labourer, Craftsman, Servant, Forrester, Sailor, Trade and Military. In the calculations below Farmer and Cottager are added to yield Agriculture. Occupation coding is complete for 1801 but still lacks 7.5 % in 1787.

When making analysis on occupations I use genuine occupations which are the occupations that refer to a Hisco code larger than zero. For each person the number of genuine occupations is counted and in summations each term is given a weight of one divided with the number of genuine occupations. Thus if a person has two occupations like cottager and blacksmith he counts a one half cottager and one half blacksmiths in the tabulations.

The administrative references in the census table connects to a system of geographical tables. In these table you find information on geographical hierarchies, so that you can draw all person records belonging to a particular divide. The divisions are *amt*, *herred*¹⁰, *sogn*¹¹, *landsdel* and urbanisation. The geographical tables are also used for administrative purposes in the project. It is necessary to ensure that the hobby historians does not do the same entry twice and that all the parts of a particular geographical unit are in fact covered before it is declared finished.

⁸ Record number 578208 of the 1787 census

⁹ Hisco codes are documented in M.H.D. van Leeuwen, Ineke Mass and Andrew Miles: HISCO, Historical International Standard of Occupations, Leuven 2002.

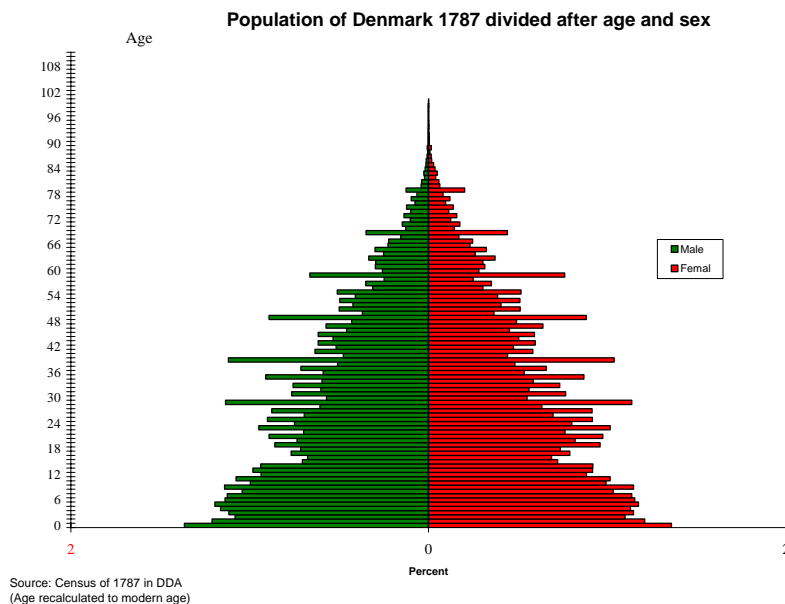
¹⁰ Often translated district

¹¹ Parish

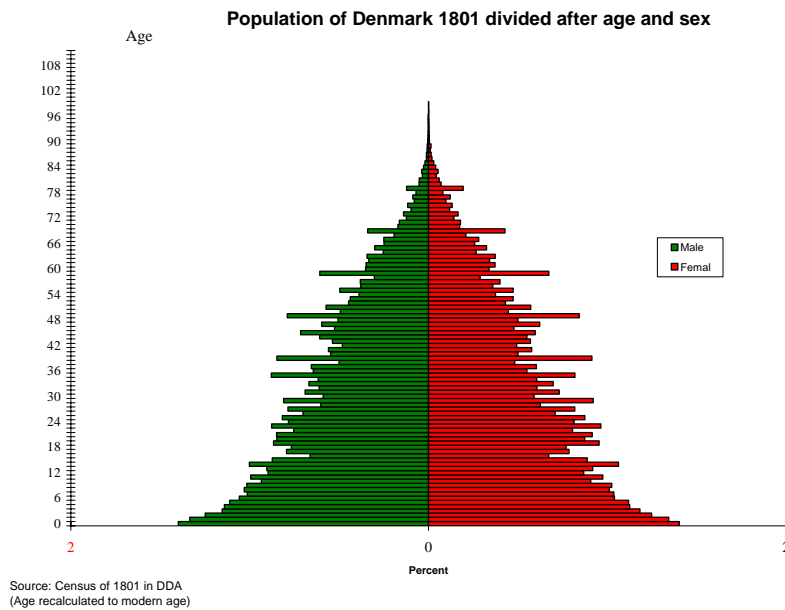
The census tables has also been enriched with references to spouses and parents. These references are used for analysis and quality control.

Age pyramids for the two years

The age pyramids for the whole population are given below. In all the population pyramids I use modern or achieved age to avoid confusion. Achieved age is very dominant when speaking about age today. The ages actually given in the census forms were one higher though. Thus age grouping is on 9 achieved age because it correspond to 0 census age.



There is a very obvious gap in the pyramid for the ages of 15 and up. This seems to express the very violent outbreak of typhoid fever that struck Denmark and especially Copenhagen in 1771-72. Likewise you have a gap with the ages two and up. There are reports of small pocks and measles in 1785 which could explain that gap.



In the 1801 age pyramid you still see the gap after the 1772 epidemics at the ages around and above 16 and 29. When looking at the two age pyramids from 1787 and 1801 it seems that the age grouping is less in 1801. A measure for age grouping is the Whipple index ¹². In the Whipple index the population of ages between 23 and 62 with full multiples of 5 are measured as percent of the total population of that age group. Calculating like that you get a Whipple index of 125 for 1787 and 116 for 1801. But looking at the Danish numbers you actually find that ages ending on 5 is usually less frequent than average. The grouping is actually on the ages ending on 0. Thus a modified Whipple index measuring ages between 26 and 65 ending on 0 against the whole population of that age group would actually be more appropriate. This modified index gives 168 for 1787 and 143 for 1801. Age grouping for 1787 is also shown and commented by Hans Christian Johansen in his study of 26 rural parishes ¹³ but though the age grouping shows up very clearly for both censuses in his subset the difference between the census years is not that apparent.

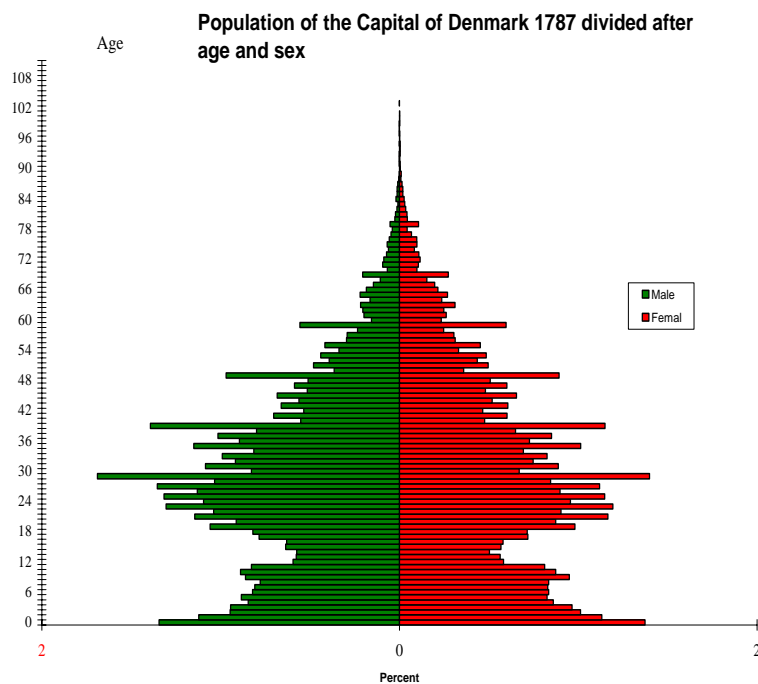
The reduced age grouping in 1801 compared with 1787 can be seen as a symptom of an increased quality of the census.

Age and sex over urbanisation and time

Below the age and sex distribution is illustrated with specific population pyramids for each year and level of urbanisation. There are three pyramids for each year corresponding to the three levels of urbanisation: The capital, the cities and the rural areas.

¹² K. A. Willigan and J. D. Lynch: Sources and methods of historical demography, New York 1982, p. 84 f.

¹³ Hans Chr. Johansen: Befolkningsudvikling og familiestruktur i det 18. århundrede, Odense 1975. p. 49 f.



Source: Census of 1787 in DDA
(Age recalculated to modern age)

It is visually apparent that the age distribution for the capital have a different shape than for the whole population. There are less children and more young and adult. The age grouping in the capital is about the same level as for the whole population. The modified Wipple index (ten year) gives 166 for the capital, which compares with 168 for the whole population. The age grouping makes it difficult to compare age frequencies. If you group in ten year age groups (0-9, 10-19 etc) you get a surplus for both sexes in the age groups between 20 and 49. At which age exactly between 10 and 19 the surplus starts is blurred by the big age grouping. The combined surplus for the ages 17-49 amounts to 7.4 %¹⁴ for of the total male population while it for females amounts to 3.2 %. The 7.4 % of the male population of Copenhagen amounts to about 3,400 persons. When you look at occupation groups you can see that the percentage of military occupations for males with occupations in Copenhagen was 23.65 % compared with a country average of 11.69 %¹⁵. That gives a surplus of 11.97 % of the males in Copenhagen with occupations. If you look at the sailors in the same way you get a surplus of about 7.66 %. And naturally you find surpluses in trades (8.09 %) and crafts (15.47 %) and a major deficit in agriculture (47.12 %).

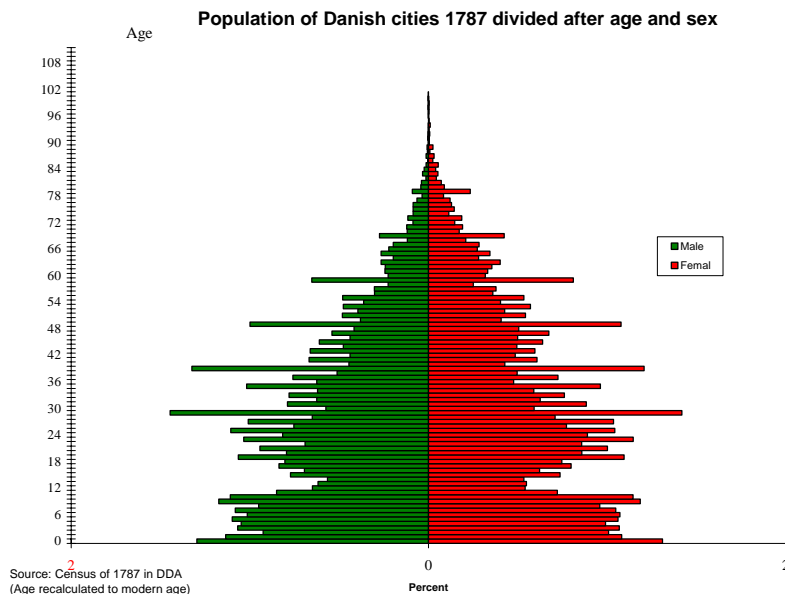
For women the 3.2 % surplus amount to about 1,400 persons. They basic explanation is a surplus of about 19.62 % of the occupied women in the capital employed in service (probably usually domestic service). The big deficits in occupation for women in Copenhagen are agriculture (15.85 %) and day labour (4.27 %).

There is a very big deficit of children. The age group 0-9 is missing 2.2 % of the whole male population of boys and 2.0 % of the whole female population of girls. This is partly explained by a

¹⁴ Here and in the following comparisons % means percentage points

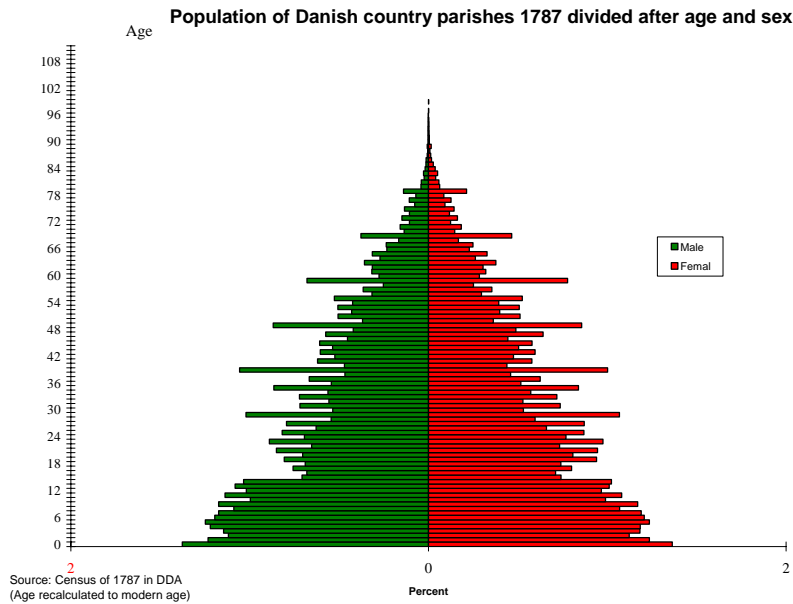
¹⁵ Unfortunately these percentages can not be recalculated to numbers as there are still 7.55 % of the occupations that has to be coded.

lower proportion of married women. In the whole population 56.5 % of the women aged 18 to 55 are married in Copenhagen it is 50.5 %.

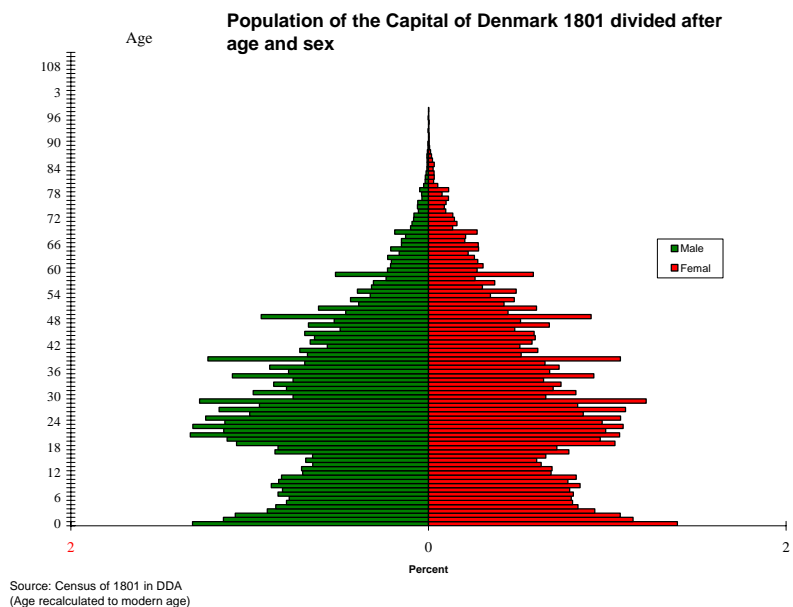


As in the Capital there is a surplus of adults in the cities. But the problem of large age grouping is even more apparent in the cities the modified Wipple index for the cities is 185 as opposed to 168 for the whole population. If you look at the ten years age groups there is a surplus for males in the cities between 20 and 39. The surplus probably actually starts at 15 and ends at 43). The total surplus for the years 15 to 43 for males amounts to 1.9 % which is about 750 persons. Looking at occupation groups you get a surplus of 7.93 % of the occupied males in the cities for military, 18.93 % for crafts, 7.07 % for trade, 3.20 % for sailors and 3.01 % for service. You get a deficit of 44.03 % for agriculture. For women there is a surplus from 20 to 89. After 89 the numbers becomes small and the difference negligible. The total surplus for women aged 17 to 89 is 2.9 % which is about 1250 persons. There is a surplus of about 12.34 % of the occupied women in the cities in service and 2.02 % in trade and a deficit of 15.61 % in agriculture.

There is a remarkable absence of children in the cities in the age group 0-9 you are missing 0,78 % of the boys and 0,81 % of the girls this amounts to about 315 boys and 340 girls. The deficit of children is probably related to the lower proportion of married women. In the age between 18 and 55 there are 47.5 % married women in the cities as opposed to 56.5 % for the whole country.



The rural population was 79.4 % of the whole population. For that reason alone it resembles the total population more. But the surplus of population of certain age groups in the urban population naturally shows up as a deficit in the rural population. If you look at the ten years age groups you have a deficit between 20 and 49 for both sexes. The first age with a deficit is 17 for males and 19 for females. At age 50 the population share in the rural areas is almost equal to the share in the whole population. For males there is a total deficit of 1.2 % in the age group from 17 to 49. For females the deficit is 0.7 % in the same age group. This amounts to a combined deficit of about 4,000 males and 2,400 females. When you look at occupations compared to the total population you get a surplus for males in agriculture of 17.27 % of all occupied men in the rural areas and deficits of 2.55 % in trade, 5.70 % in crafts, 3.38 % in military and 1.88 % of sailors. For women you get a surplus of 1.00 % of day labourers, 8.95 % in agriculture and 0.34 % in crafts. You get a deficit of 0.75 % in trade and 9.15 % in service.

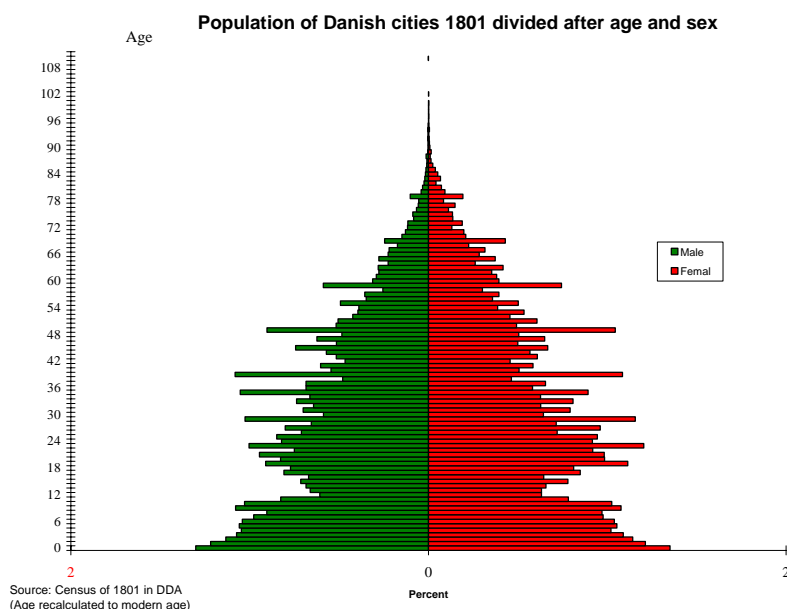


When you look at Copenhagen in 1801 the population pyramid show a very marked bulge at the middle (it almost looks like the present day Danish population pyramid). The age grouping is also very significant. The modified Wipple index is 154 as opposed to 143 for the whole country. If you look at ten years age groups you find a surplus in the age groups from 20 to 49 for both sexes. Actually the surplus starts at 17 for males and 19 for female and end at about 49 for both sexes. The total surplus in the age 17-49 is 7.1 % for males and 3.2 % for females. Compared to 1787 this is a slight reduction of the surplus for males and the same level for females.

The 7.1 % of the male population of Copenhagen amounts to about 3,650 persons. When you look at occupation groups you can see that the percentage of military occupations for males is 19.43 % compared with a country average of 9,95 %. That gives a surplus of 9,48 % which is about 3,150 persons. The sailors show a surplus of 4.58 % or about 1,525 persons ¹⁶. There are further surpluses in trade (9.59 %, 3,175 persons) and crafts (17.75 %, 5,875 persons). There were deficits in agriculture (45.75 %, 15,175 persons) and day labourers (2.13 %, 700 persons).

The 3.2 % of the female population of Copenhagen amounts to about 1,575 persons. When you look at occupation groups you see surpluses in service (27.64 %, 1,700 persons) and trade (2.53 % 150 persons). There are deficits for agriculture (19.34 %, 1,200 persons) and day labourers (3.47 %, 225 persons).

There are very few children in the capital. There is a share of 2.1 % missing for both sexes in the age group 0-9 compared to the whole population. This also correspond to a lower proportion of married women 48.9 % of the age group 17 to 54 in Copenhagen as opposed to 57.9 % in the whole population.

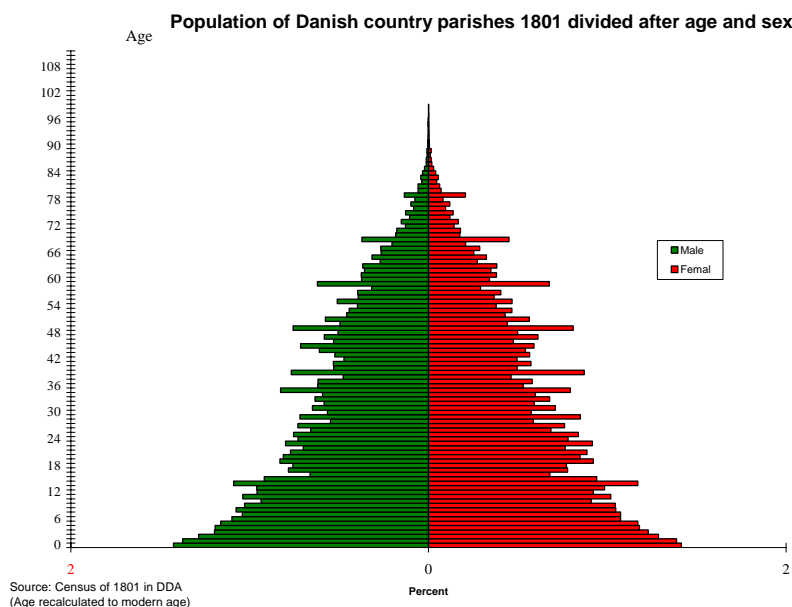


¹⁶ The percentages of occupied persons in does not compare reasonably with the corresponding percentages from 1787 because the percentages of the male population with at quoted occupation was very different in Copenhagen it was 53.5 % in 1787 and 64.5 % in 1801

In 1801 the cities shows a surplus population in the adult years just like in 1787. The surplus shows up in the ten year age group of 20 to 49 for males and all over 20 for females. At the ages over 49 the surplus is minimal though. Essentially there is a surplus for both sexes in the ages from 17 to 49. For males the surplus is 1.3 % of the total male population for females the surplus is 2.4 % of the total female population. For males this is about 575 persons for females it is about 1,125 persons. The age group from 11 to 15 years is missing 1.2 % for both sexes. In the capital the same age group is missing 1.1 % for males and 1.3 % for females. In the rural areas there is a surplus 0.3 % for both sexes. These amounts to the same number of persons ¹⁷. In the age group from 0 to 9 years you miss 0.7 % boys and 0.6 % girls.

Looking at occupations you find surpluses among the males of 18.8 % (4,624) craftsmen, 9.5 % (2,450) traders, 3.6 % (900) servants, 2.8 % (675) sailors and 1.2 % (300) military and a deficit of 42.5 % (10,500) farmers. For females you have surpluses of 9.9 % (575) service, 5.7 % (325) crafts and 3.1 % (375) trade and a deficit of 18.4 % (1,075) agriculture.

The age grouping in the cities 1801 is very marked. It gives a modified Wipple index of 161. It is more than the 143 for the whole population but less than 185 for the cities 1787.



The rural population of 1801 shows up in the population pyramid with a nice pyramidal shape. Looking at the ten years age groups you find surplus for both sexes in 0 to 19, deficit for both sexes 20 to 49, surplus for the men aged over 49. For the women about equal most ten years age groups over 49 but a surplus in the group 60 to 69. This gender difference mirrors to some extend the gender difference in the cities. It seems that some women goes to the city as young adults and never return to the country side again while the men return in their mature years.

The deficit for the men in the age group from 17 to 49 is 1.1 % corresponding to 4,125 persons while it for women is 0.7 % corresponding to 2,725 persons. When you look at occupations you get

¹⁷ This is a trivial mathematical fact to begin with

surplus for the males for agriculture (16.26%, 25,650) and deficits for crafts (6,66 %, 10,525), trade (3,5 %, 5,525), military (2.18%, 3,450) and sailors (1.40 %, 2,200). For women there are surpluses for agriculture (10.84 %, 2,250) and day labourers (1.24 %, 250) and deficits for servants (10.93 %, 2,275) and trade (1.61 %, 350)

The modified Wipple index for the rural areas is 139 which compares to 143 for the whole country and 166 for 1787. Though we still have a considerable age grouping matters have improved since the last census.

Households in the census

Basically the enumerators tried to make everything in the census look like families. And most groups of people actually were. The enumerators picture of a family was something with a husband and a wife in the beginning and then a group of people related to them following that. Very often they managed to put the groups of people into that pattern with some obvious deviations in family structure. But in some cases it became too difficult to use that pattern and then they created units of a different structure. Most units found in the census fits into one of four descriptions: A family, An institution, A group of soldiers (often a barracks) or a group of people living together without a household head (typically a group of servants mending a property while the owner lives somewhere else).

Below you find tables summarising the households types as found in the two censuses.

| Type | Description | Households | Persons | Size |
|-------------|--------------------|-------------------|----------------|-------------|
| 1 | Family | 171,774 | 834,045 | 4.9 |
| 2 | Institution | 172 | 3,450 | 20.1 |
| 3 | Soldiers | 76 | 1,853 | 24.4 |
| 4 | Without head | 82 | 508 | 6.2 |

Table 1: Household types 1787

In the first column of Table 1 you find the numeric codes for the four household types. These codes are controlled by a specific table. In the second column you find the description belonging to that specific code. The English language descriptions are found in the household type table. In the third column you find the count of the households having the household type code belonging to that row. In the fourth column you find the sum of the number of persons found in the records belonging to the households that have the type belonging to the row. In the fifth column you find the number of persons divided with the number of households for each row. Thus giving the average size of the households of the specific type.

| Type | Description | Households | Persons | Size |
|-------------|--------------------|-------------------|----------------|-------------|
| 1 | Family | 190,740 | 914,275 | 4.8 |
| 2 | Institution | 177 | 6,030 | 34.1 |
| 3 | Soldiers | 159 | 3,066 | 19.3 |
| 4 | Without head | 284 | 1,615 | 5.7 |

Table 2: Household types 1801

Table 2 is constructed exactly as Table 1 but covering 1801 instead of 1787..

In Table 1 and Table 2 you see a very similar pattern. It seems though that the institutions and barracks have grown over time and the average family household size may have diminished slightly. Actually much of the difference could be explained by more soldiers being counted in family households. The total amount of soldiers in the census is a little larger in 1801 but of the same magnitude. Many soldiers were quartered in private homes.

The family type household was very dominant. And as the other household types are a little odd and does not contribute much to general picture I will restrict the rest of the analysis to the family type households. They cover more than 99,7 % of the households in both years.

Household size

The family type households differed very much in size in 1787 the largest had 68 persons in 1801 the largest had 108.

Below you find tables of urbanisation against household size. Where household size is grouped.

| Household size | Copenhagen | Cities | Rural |
|----------------|------------|--------|-------|
| 1 | 5.31 | 5.80 | 3.23 |
| 2 | 17.29 | 15.53 | 14.85 |
| 3 | 20.12 | 18.01 | 15.36 |
| 4-5 | 30.49 | 29.55 | 30.46 |
| 6-9 | 21.10 | 24.01 | 32.03 |
| 10+ | 5.69 | 7.10 | 4.07 |

Table 3: Household size and urbanisation 1787

The rows of Table 3 divide the data after household size. The size of each household is found as the sum of the number of people covered by each record belonging to that household. The sizes are then coded with the six values given in the first column of Table 3. The households are then split after the urbanisation code of the place they belong to. This gives the three next columns. The values of the three last columns are given as column percent.

| Household size | Copenhagen | Cities | Rural |
|----------------|------------|--------|-------|
| 1 | 8,08 | 3.88 | 2.76 |
| 2 | 17.57 | 16.00 | 15.34 |
| 3 | 18.68 | 19.08 | 16.62 |
| 4-5 | 28,99 | 30.77 | 30.63 |
| 6-9 | 20.71 | 23.89 | 30.75 |
| 10+ | 5.98 | 6.40 | 3.90 |

Table 4: Household size and urbanisation 1801

Table 4 is constructed exactly as Table 3, but covering 1801 instead of 1787.

When looking at Table 3 and Table 4 the similarities are much more obvious than the differences. There are more single person households in Copenhagen in 1801 than in 1787 and there are slightly

fewer large households in the cities. In absolute numbers the single person households increase from 1013 to 1689 and households 10 and over decrease from 1232 to 1197. It is also interesting to see that apparently the proportion of single person households drop in the cities and in the rural areas.

Household positions

As told above the household positions are coded according to a coding scheme with over 300 different codes. The 25 most common codes are given in Table 5.

| Percentage with household position per year | Year | |
|---|--------|--------|
| | 1787 | 1801 |
| Position | 1787 | 1801 |
| Common child of head of household | 24,73% | 28,70% |
| Head of household | 20,59% | 20,86% |
| Spouse of head of household | 17,20% | 17,61% |
| Servant of head of household | 17,61% | 15,57% |
| Separate child of head of household | 6,63% | 4,97% |
| Separate child of spouse of head of household | 2,40% | 2,03% |
| Lodger of head of household | 1,36% | 1,56% |
| Parent of head of household | 1,22% | 1,22% |
| Parent of spouse of head of household | 0,77% | 0,92% |
| Sibling of head of household | 0,77% | 0,75% |
| Foster-child of head of household | 0,70% | 0,73% |
| Sibling of spouse of head of household | 0,37% | 0,42% |
| Resident by head of household | 0,30% | 0,36% |
| Child of sibling of head of household | 0,35% | 0,35% |
| Child of common child of head of household | 0,21% | 0,33% |
| Room-renter by head of household | 0,72% | 0,32% |
| Quartered by head of household | 0,66% | 0,30% |
| Child of separate child of head of household | 0,16% | 0,27% |
| Journeyman of head of household | 0,26% | 0,24% |
| Child of sibling of spouse of head of household | 0,22% | 0,23% |
| Apprentice by head of household | 0,17% | 0,17% |
| In-house by head of household | 0,21% | 0,15% |
| Child of lodger of head of household | 0,17% | 0,14% |
| Widow by head of household | 0,13% | 0,10% |
| Child of servant of head of household | 0,09% | 0,10% |

Table 5: 25 most common household positions (column %)

The first column of Table 5 gives the English language titles belonging to some household position codes drawn from my household position code table. For each code belonging to that table the sum of the number of persons of the records having that code and belonging to family type households is calculated for each census year. The resulting numbers were put in column two and three. Then the column percentages were calculated for those two column. The rows were sorted after the column percentage for the 1801 column, and finally the 25 rows were selected to be shown here. The household positions in Table 5 are 98.0 % of all persons in 1787 and 98.4 % of all persons in 1801.

The most striking differences are that there are a larger proportion of servants in 1787 and more separate children of head in 1787. The last could probably be result of that the 1787 census ask specifically of from which marriage the children comes. The larger proportion of servants seen together with the smaller proportion of children in 1801 compared with 1787 is to a large extent explained by the time of year of census taking. In the winter (1801) some children were at home while they were out serving in the summer time (1787).

Household Complexity

Most family households were simple with just parents, children, foster children and servants. In 1787 this description fitted 77.0% in 1801 it was down to 72.1 %. This suggests that there could be a development in household complexity. One way of looking at complexity is to look at generation span. The people that belong to the family has a generation compared with the head of household attached to their household position code. I have coded generation with numerical codes attaching 0 to the head, spouse, siblings etc. +1 to children, -1 to parents etc. In that way the family of the head and spouse get generation codes. The people that are not in family as servants, lodgers etc does not get generation codes.

| Column percentage of persons | Year | |
|------------------------------|--------|--------|
| | 1787 | 1801 |
| Generation | | |
| -2 (Grandparent) | 0.01% | 0.01% |
| -1 (Parent) | 2.20% | 2.41% |
| 0 (Sibling) | 38.87% | 39.74% |
| 1 (Child) | 35.17% | 37.31% |
| 2 (Grandchild) | 0.45% | 0.71% |
| 3 (Great Grandchild) | 0.00% | 0.00% |
| Not in family | 23.30% | 19.83% |

Table 6: Generation relative to head. Column percentages of number of persons

The first column of Table 6 shows the generation code found in the household position table. Generation codes are only given for people with a family relation to the head or the spouse of the head. The codes in Table 6 are the ones that are actually found in at least one of the two census tables. Records that does not correspond to a generation code are counted here as Not in family. For each year the proportion of the number of people found in family type households is calculated. These proportions are given as percentages in the last two columns of Table 6.

In Table 6 you see that more persons in the 1801 census had a family relation to the head than in 1787 (Less had no relation.). This probably is the result of increased quality of the 1801 census. Using the generation codes you can calculate generation span within a household as highest generation minus lowest generation plus one. Thus a household with parents and children and nothing more distant get a generation span of $1-0+1 = 2$. Using the results thereof you can divide the households after generation span within the households.

| Number of households | Year | |
|----------------------|--------|--------|
| | 1787 | 1801 |
| Generation span | | |
| 1 | 25.67% | 24.21% |
| 2 | 65.88% | 65.59% |
| 3 | 8.38% | 10.11% |
| 4 | 0.07% | 0.08% |

Table 7: Households divided after generation span (Column percent)

In the first column of Table 7 you find the generation spans actually found in the two census years. The values are from 1 to 4. No household has more than 4 generations¹⁸. In the to next columns to find the proportions of the sum of the number of people found in the family type households for each year. The proportions are given as row percentages.

In Table 7 you see a development. There is a tendency towards more multigenerational households from 1787 to 1801. A partial explanation for this could be a slight increase in living age. The average age for all persons is 29.52 years in 1801 compared to 29.22 in 1787. This also expresses itself in an increased proportion of over 50 years old 18.4 % in 1801 as opposed to 17.3 % in 1787. Another part of the explanation is that it is a simple consequence of more family relations being expressed in the census.

Another way of measuring complexity of relations within a household could be to look at how many links it takes to express the relation to head of household where a single link relationship would be to

- spouse, fiancé etc
- child,
- parent,
- family relation of unknown nature,
- residence, lodging, nursing or other nonworking relationship,
- employment or co-ownership

Of course the number of links you get between two persons is very much dependant on what you accept as a link. In this case the definitions are such that a link can not be expressed by other link definitions. Thus sibling is not part of the definition because it can be expressed by parents child. The most distant relationship found in 1801 according to this definition is “Child of great-grandchild of sibling of parent of head of household”. There are only one of those. This represents a complexity of seven links away from head of household.

¹⁸ Actually there is one household in 1787 where you could argue that it had five generations but that argumentation would use a modern interpretation of the word ”oldefader” which is clearly not found elsewhere in the census.

| Percentage of households | Year | |
|--------------------------|--------|--------|
| | 1787 | 1801 |
| Links from head | | |
| 0 | 3.71% | 3.46% |
| 1 | 75.59% | 76.06% |
| 2 | 15.68% | 15.01% |
| 3 | 3.73% | 4.05% |
| 4 | 1.24% | 1.34% |
| 5 | 0.05% | 0.08% |
| 6 | 0.00% | 0.01% |
| 7 | 0.00% | 0.00% |

Table 8: Links from head (column %)

In the first column of Table 8 you find the codes for distance from head in links. The codes goes from 0 to 7. Where 0 is identity. For each household the person with the highest distance from head is found. The household is the assigned that persons distance at highest distance from head. Then the households are divided for each year according to highest distance from head. The result of that divide is found in the two last columns as column percentages.

As seen in Table 8 the vast majority of the households are simple families as for instance head, wife, children and employees. This is seen from the number of links being one or less. This is true for 79.3 % of the households in 1787 and 79.5 %. That is hardly a development. Less than a quarter of the households have something more complicated like grandchildren, employees wife etc. Naturally there is a basic dependence of complexity on size. A household of one must have complexity zero. Actually this dependence is double sided because a family household with a size of more than one must have a complexity of more than zero, because there is somebody in that household who is not the head. When you look at the more complex relations (three or more links) they cover 5 % in 1787 and 5.5 % in 1801. This could be the result of a development. The very complex relations are usually family relations, so this again is an indication that perhaps families were moving together from 1787 to 1801. This is also consistent with the reduction in the proportion of single person households (zero links).

Conclusions

On the basic parameters investigated the developments are slight. The population pyramids for the whole population shows us a picture with very recent epidemics in 1787 while there has been no population disasters between the two censuses so the 1801 census simply have more children. The age grouping is somewhat reduced in 1801 showing the result of improved quality of the enumeration. The separate population pyramids for the three urbanisation levels show us the same general picture of girls moving to Copenhagen and other cities to take up domestic service and boys moving the same way to become soldiers or craftsmen. You also find an interesting surplus of children in the rural areas for both years probably explained with that people in the rural areas had more children, which again could be related to a higher proportion of rural women being married.

In both years the vast majority of households are family type households. Which is not surprising. That is probably true in any society at any time. The average size of the family type household may

have declined slightly between the census years. There seem to be a shift in the proportion of one person households in the urban areas in Copenhagen they increase from 5.3 % to 8.1 % and in the other cities they decline from 5.8 % to 3.9 %. In the rural areas they decline from 3.2 % to 2.8 %

The developments in the two household complexity measures (generation span and links from head) both point to a possible shift in the direction of more family members living together. The developments are slight though and could be partly explained with increased quality of the enumeration..

It is a little disappointing that the changes are so slight. Especially it would have been nice to see a shift in migration patterns as a result of the young men being allowed to leave the manor where they were born without having to apply for the permission of the squire. Another phenomenon that does not show up is all the young men that were building seaward defences in 1801 to meet the Royal Navy that was expected with the coming of spring. These young men are correctly counted at their normal place of residence so their activity at census day does not show.

There clearly is a limit to how large changes you can expect in a 14 year period. 69.5 % of the people found in the 1801 census were also living in 1787 and they constitute 76.6 % of the persons living in 1787. And as many people were actually simply carrying on with what they were doing from one census to next. The part of the population that created the changes was a minority.

New and interesting possibilities will present themselves if and when the two censuses are submitted to record linkage. When a large proportion of the 640,000 persons that are in both censuses are identified it will be possible to make more explicit statements about migration, social mobility etc.

An other natural expansion of the analysis is the 1834 census which is now 91.9 % household coded and 20 % occupation coded and naturally also the 1840 and 1845 censuses where household coding is far progressed and occupation coding has started.

So all together there is no prospect of idle hands in the immediate future of the activities around the old Danish censuses.

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