Using 2001 Census Data In ArcView 3.3 and Census Data in Beyond 20/20 Tables

These procedures outline:

1. Downloading and opening the Cartographic Boundary Files (CBF)
2. Downloading and joining the attribute (data) files with the CBF

A. Importing an Arc Export File

Digital Cartographic Files are available for download from the **University of Toronto Data Library Services: Census 2001 Spatial Data Files**, located at the University of Toronto URL below:

http://0-www.chass.utoronto.ca.innopac.lib.ryerson.ca/datalib/cc01/geospat01.htm

This site provides the option to download either **Digital Boundary Files** (DBF) or **Digital Cartographic Files** (DCF) in Arc/Info or MapInfo formats. In this example, the Arc/Info digital cartographic file at the census tract level is used. Often Arc/Info Cartographic files(.e00 extension) are found in Arc Export File formats (.exe extension). In order to view a desired Arc Export file in ArcMap 9.0, follow the steps below.

***Note** – To access the files from a computer located off the Ryerson campus, you must be a Ryerson University student (full-time or continuing education), staff or faculty member and have a matrix (e-mail) account.

Example:

1. Scroll down to Hamilton (537) and *Download* the ***.exe file (gct_537b02a_e.exe) for Arc/Info to your disk.** (the file size of gct_535b02a_e should be 297KB)

2. Once this file has been downloaded, locate the file and unzip it in order to extract the file.

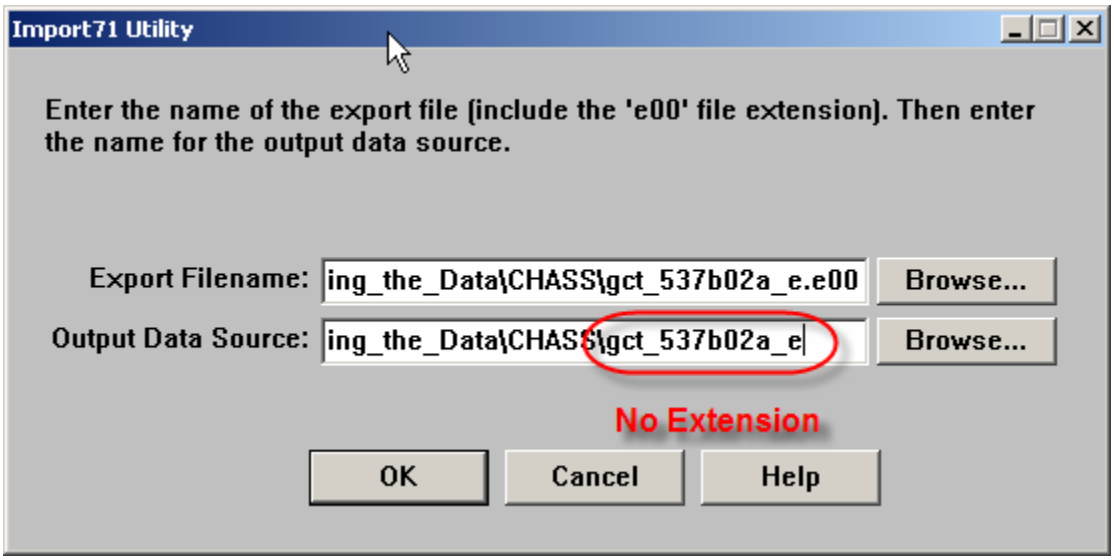
3. In order to convert the Arc/Info export file for use in ArcView, you will use **ArcView Import 71.** *Double-Click* on the **Import71** icon or *select* **Start > Programs > ESRI > ArcView GIS 3.3 > Import71**

4 (a). The **Import71 Utility** window will *open*.

4 (b). **(Figure 1)** In the **Export Filename** *select* **Browse** then locate the ***.e00** file in the directory you downloaded it to, *select* it, then *select* **Open.**
(Eg. C:\esri\tordcf\gct_537b02a_e.e00).

4 (c). In the **Output Data Source** *select* **Browse** and the destination location where you want the file to be extracted to. After the last **back slash (\)**, *type* in the **output file**

name with no extension (Eg. C:\esri\tordcf\ gct_537b02a_e. *Select* **OK**. *Click* **OK** when the **Import Complete** appears**.**



(Figure 1)

B. Opening the ArcInfo Coverage in ArcView 3.3

1. *Double-Click* on the **ArcView GIS 3.3** icon or *select* **Start > Programs > ESRI > ArcView GIS 3.3 > ArcView GIS 3.3**.

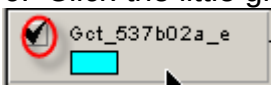
2. In the **Welcome to ArcView GIS window** *click* **with a new View**, then *click* **OK**.

3. In the **Add data window**, it asks you: "**Would you like to add data to the View now?"**, *click* **Yes**.

4. In the **Add Theme window**, browse to the boundary file **(Example C:\esri\tordcf\ gct_537b02a_e)**. *Click* **OK**.

5. *Maximize* the window titled **View1**, and *maximize* the window titled **ArcView GIS 3.3.**

6. *Click* the little grey box (a check mark will appear) left of the word **gct_537b02a_e**.



You now have a layer showing the Hamilton CMA with census tract boundaries. In ArcView this layer is called a **theme.**

C. Converting From a Coverage to a Shape-file

1. Make sure that **gct_537b02a_e** is *active* (by clicking on the file name). From the main menu *click* **Theme > Convert to Shapefile** and give it a name **(Eg. Hamct.shp).** *Select* **Yes**, when asked to **Add shapefile as theme to the view**.

2. Make **gct_537b02a_e** *active*, and from the main menu *select* **Edit > Delete Themes > Yes To All**.

3. Now display Hamct.shp and make it active by *clicking* on the file name and putting a check in the little grey box beside the Hamct.shp name.

D. Getting Attribute Census 2001 Data

1. You may download the data from **Census of Canada, 2001: Profile Series** located at the site listed below:

http://0-www.chass.utoronto.ca.innopac.lib.ryerson.ca/datalib/cc01/profil01.htm

There are 9 subject profiles:

1. Profile of language characteristics
2. Profile of aboriginal communities
3. Age and sex
4. Marital status, families & household living arrangements, and housing
5. Language, mobility, and migration
6. Citizenship, immigration, birthplace, generation status, ethnic origin, visible minorities and aboriginal peoples
7. Labour force activity, class of worker, occupation, industry, place of work, mode of transportation, language of work and unpaid work
8. School attendance, education, field of study, highest level of schooling and earnings
9. Profile of income of individuals, families and households, social and economic characteristics of individuals, families and households, housing costs, and religion

At the Census tract level there is also an “All Canada file” and a “CMA Toronto Subset” As you can see on the website, these files are available at many geographic levels that include:

A. Census Subdivision (CSD)
B. Dissemination Area (DA)
C. Forward Sortation Area (FSA)
D. Census Metropolitan Area (CMA) / Census Agglomeration (CA)
E. Census Tract (CT)
F. Federal Electoral District (FED)

***Note:** In order to continue this exercise, you must have a version of Beyond 20/20 that is version 6.2 or later. If you do not have this program, you can go to the website below and download it:

http://0-www.chass.utoronto.ca.innopac.lib.ryerson.ca/datalib/caq/b2020.htm

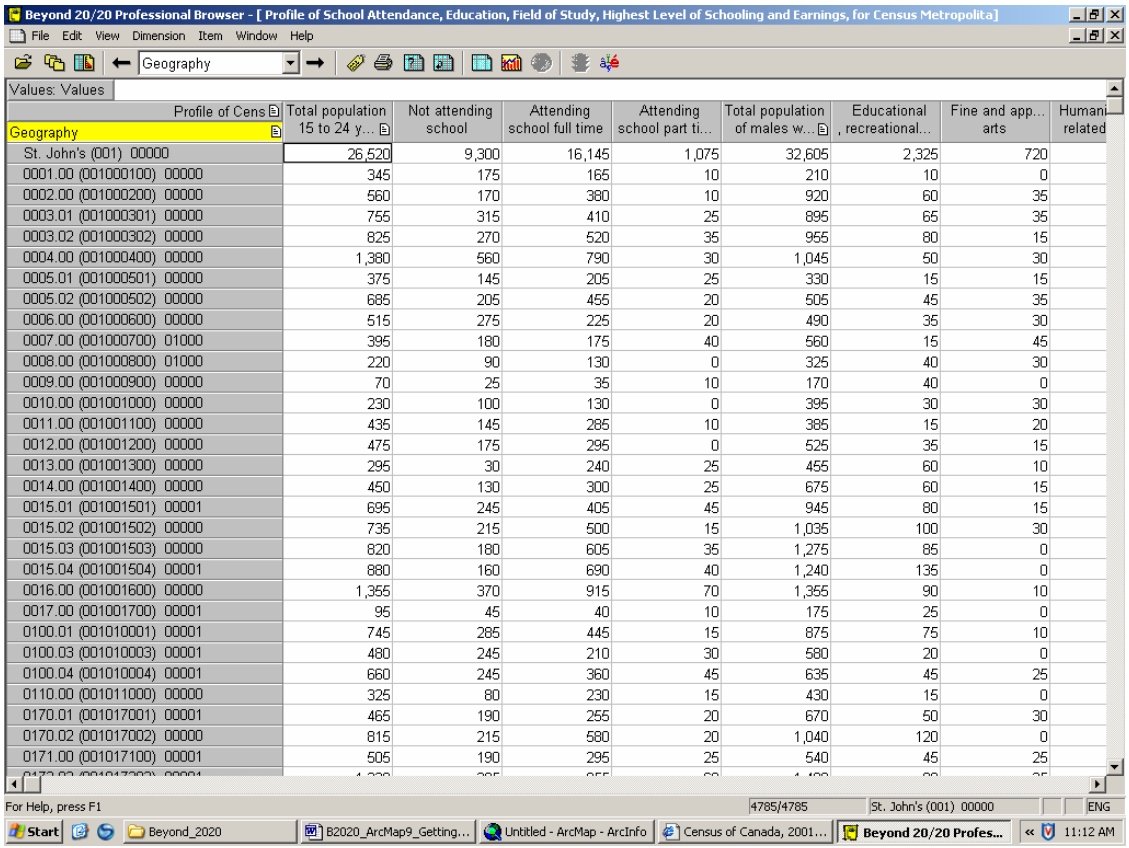
-Then select the link beyond-6-2.exe. when prompted to save, select a desired location and then save. The file will be compressed (zipped), thus you have to uncompress it in order to use it.

1(a). For this exercise we will use: **School attendance, education, field of study, highest level of schooling and earnings** at the **C. Census Tract (CT) Level**, therefore, *select* **95f0491xcb01005.**

1(b). Then *select* **Open**.

A **Beyond 20/20 Professional Browser version 6.2**, should *open*.

The first task is to *switch* the position of the **Columns** and the **Rows**. The **Census Metropolitan Areas** with their **census tract numbers** should be at the side, while the variables should be along the top.



(Figure 2)

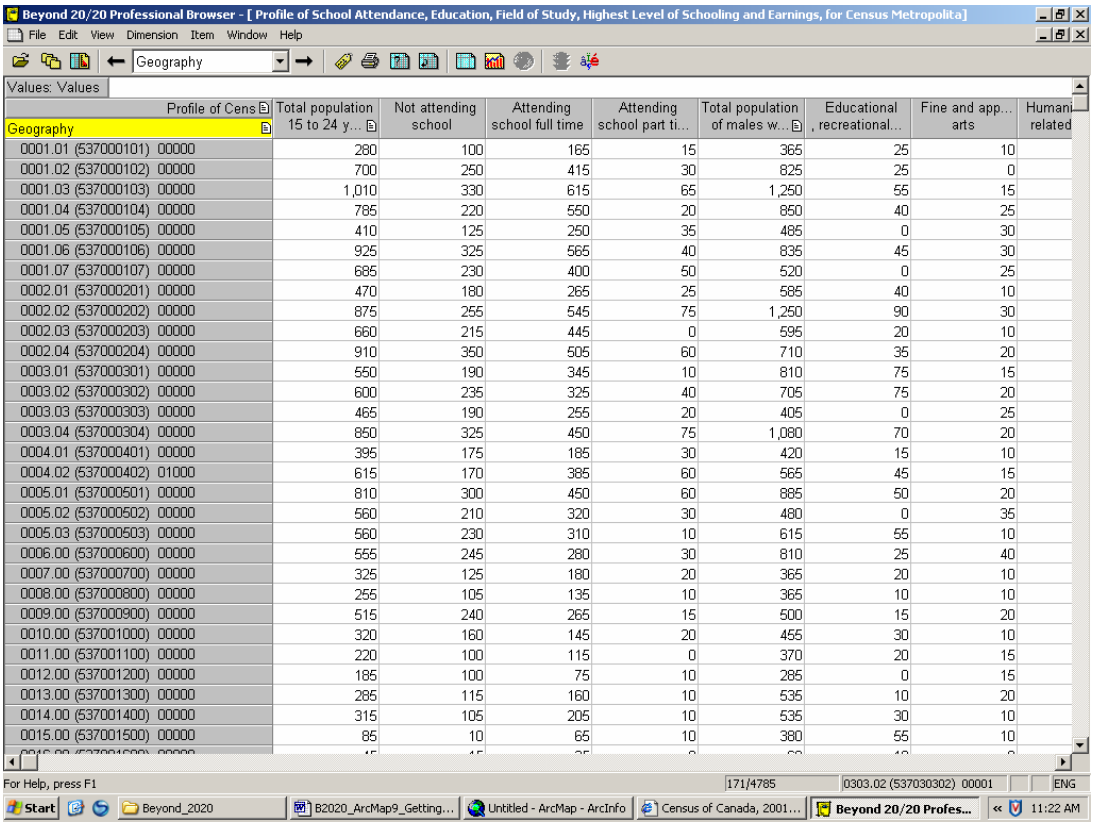
2. *Select* the **Geography** heading, now *hold* the **button** *down* and *drag* it over to the heading that says **Profile of Cens**. Then *release* the **button**, now the **Census Metropolitan Areas** with their **census tract numbers** are in the left column (your screen should look like **Figure 2**).

2(a). Make sure the **Geography** heading is *highlighted* in yellow. From the **Main Menu Bar** *select* **Dimension > Search**.

Field = English Desc
Text to Find = 537
Type of Selection = Reduce
OK

2(b). We only want **Census Tracts** which are within the **Hamilton Census Metropolitan Area**, so we will *hide* the extras.

Highlight **Hamilton (537) 00000**
From the **Main Menu** *select* **Item > Hide**
Now *scroll down* to the **bottom** of the **data** and *highlight* the **last 3 census tracts (0537.01, 0537.02, 0537.03)**
From the **Main Menu** *select* **Item > Hide**



The ones we have hidden don't start with **537** with the number in brackets, ie **0537.01 (602053701) 00000**. So now if you *scroll* the table from top to bottom there should only be **census tracts** that in the brackets start with **537**.

2(c). From the **Main Menu Bar** *select* **File > Save As > Ham01.dbf** (Make sure you *change* **List Files of Type to dBase File (*.dbf)**

2(d). *Select* **OK** and again **OK** when it says **"Duplicate code(s) detected, unique codes will be generated"** (You can now close the Beyond 20/20 program as it is not needed anymore).

3. *Open* **Microsoft Excel**

3(a). **File > Open >** (browse to the location of the saved **Ham01.dbf**) **> Open** (Make sure you *change* **Files of Type to dBase Files (*.dbf**)
3(b). *Select* **Column A** (Make sure the entire column is *highlighted*)

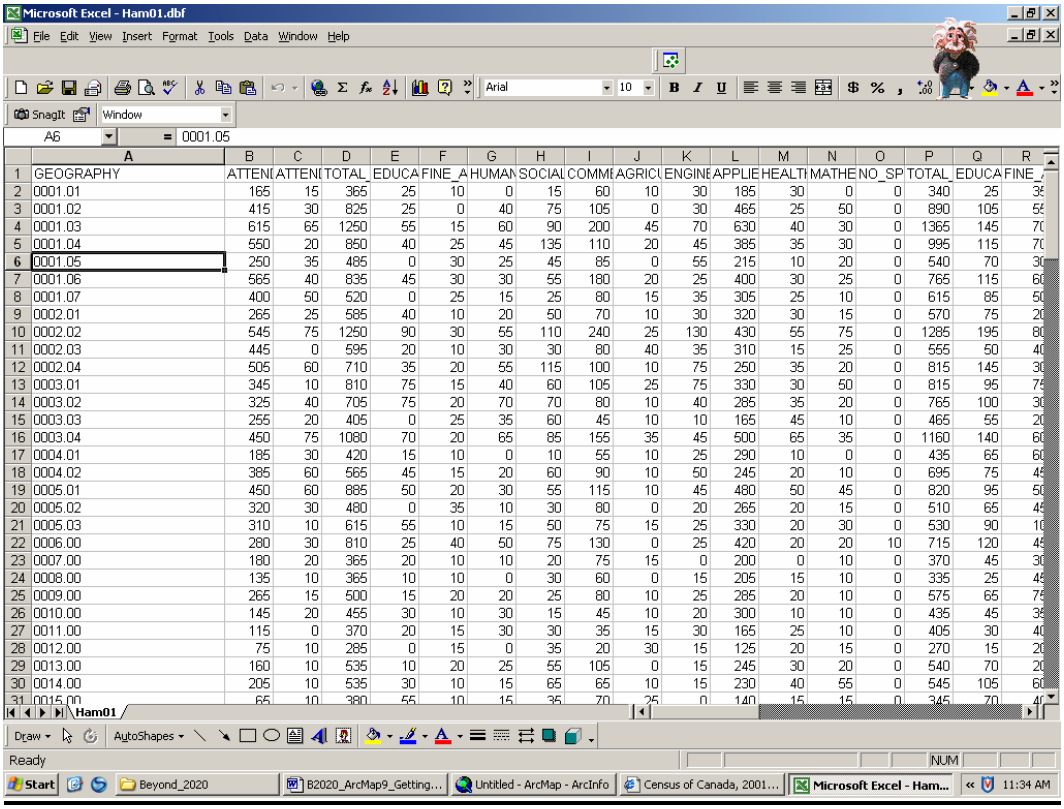
From the **Main Menu Bar** *select* **Data > Text to Columns**
The **Convert Text to Columns Wizard - Step 1 of 3** will open.
For **Original Data Type** = **Fixed Width**
Click **Next**

The **Convert Text to Columns Wizard Step 2 of 3** will open
Simply *Click* **Next**

The **Convert Text to Columns Wizard Step 3 of 3** will open,
Select the first column (the one with the two decimal places) then under the **Column Data Format** heading *Select* **Text**
Click **Finish**
Select **OK** for the **"Do you want to replace the contents of the destination cells?"**

3(c). *Highlight* **Columns B & C**. Then **Edit > Delete > Columns B & C**
(You will also notice that the column title for column A has been altered, simply click on the title and change it back to Geography)
3(e). *Highlight* the entire **worksheet** by *selecting* the **grey cell** above the **Row 1**, and left of **Column A**.

From the **Main Menu Bar** *select* **Data > Sort**
Sort By = GEOGRAPHY
Select Ascending
Click **OK**

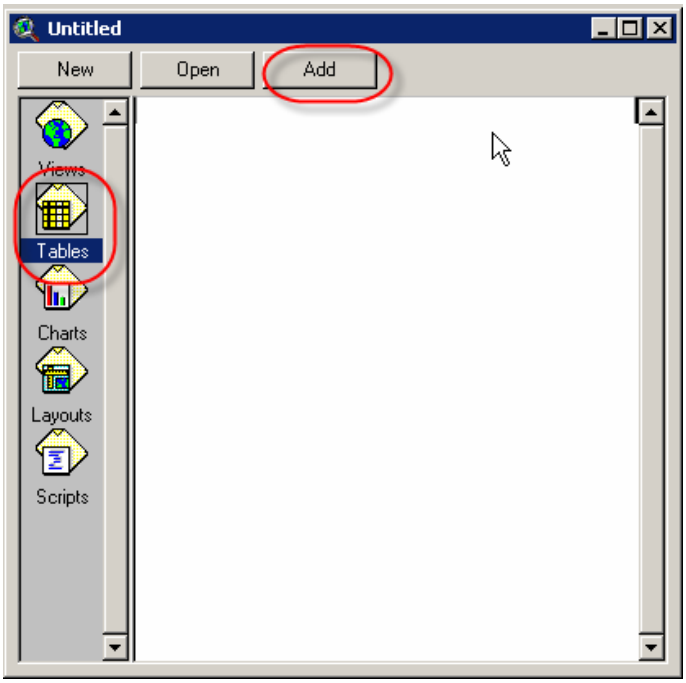


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	GEOGRAPHY	ATTEN	ATTEN	TOTAL_	EDUCA	FINE_A	HUMAN	SOCIAL	COMM	AGRICL	ENGINE	APPLIE	HEALTH	MATHE	NO_SP	TOTAL_	EDUCA	FINE_
2	0001.01	165	15	365	25	10	0	15	60	10	30	185	30	0	0	340	25	3
3	0001.02	415	30	825	25	0	40	75	105	0	30	465	25	50	0	890	105	5
4	0001.03	615	65	1250	55	15	60	90	200	45	70	630	40	30	0	1365	145	7
5	0001.04	550	20	850	40	25	45	135	110	20	45	385	35	30	0	995	115	7
6	0001.05	250	35	485	0	30	25	45	85	0	55	215	10	20	0	540	70	3
7	0001.06	565	40	835	45	30	30	55	180	20	25	400	30	25	0	765	115	6
8	0001.07	400	50	520	0	25	15	25	80	15	35	305	25	10	0	615	85	5
9	0002.01	265	25	585	40	10	20	50	70	10	30	320	30	15	0	570	75	2
10	0002.02	545	75	1250	90	30	55	110	240	25	130	430	55	75	0	1285	195	8
11	0002.03	445	0	595	20	10	30	30	80	40	35	310	15	25	0	555	50	4
12	0002.04	505	60	710	35	20	55	115	100	10	75	250	35	20	0	815	145	3
13	0003.01	345	10	810	75	15	40	60	105	25	75	330	30	50	0	815	95	7
14	0003.02	325	40	705	75	20	70	70	80	10	40	285	35	20	0	765	100	3
15	0003.03	255	20	405	0	25	35	60	45	10	10	165	45	10	0	465	55	2
16	0003.04	450	75	1080	70	20	65	85	155	35	45	500	65	35	0	1160	140	6
17	0004.01	185	30	420	15	10	0	10	55	10	25	290	10	0	0	435	65	6
18	0004.02	385	60	565	45	15	20	60	90	10	50	245	20	10	0	695	75	4
19	0005.01	450	60	885	50	20	30	55	115	10	45	480	50	45	0	820	95	5
20	0005.02	320	30	480	0	35	10	30	80	0	20	265	20	15	0	510	65	4
21	0005.03	310	10	615	55	10	15	50	75	15	25	330	20	30	0	530	90	1
22	0006.00	280	30	810	25	40	50	75	130	0	25	420	20	20	10	715	120	4
23	0007.00	180	20	365	20	10	10	20	75	15	0	200	0	10	0	370	45	3
24	0008.00	135	10	365	10	10	0	30	60	0	15	205	15	10	0	335	25	4
25	0009.00	265	15	500	15	20	20	25	80	10	25	285	20	10	0	575	65	7
26	0010.00	145	20	455	30	10	30	15	45	10	20	300	10	10	0	435	45	3
27	0011.00	115	0	370	20	15	30	30	35	15	30	165	25	10	0	405	30	4
28	0012.00	75	10	285	0	15	0	35	20	30	15	125	20	15	0	270	15	2
29	0013.00	160	10	535	10	20	25	55	105	0	15	245	30	20	0	540	70	2
30	0014.00	205	10	535	30	10	15	65	65	10	15	230	40	55	0	545	105	6
31	0015.00	65	10	380	55	10	15	35	70	25	0	140	15	15	0	345	70	4

4. Save the file. You may choose to give the file a new name or retain the old one. Make sure that you choose **DB4** in the **Save as type column**. A warning will pop up indicating that your dbf file may contain features that are not compatible with DB4 (dbase IV) and will ask you if you would like to keep the workbook in the current format. *Click* **Yes.** Then close Microsoft Excel. If the save prompt pops up, simply follow the procedures above. Close Microsoft Excel.

E. Opening the Data File in ArcView 3.3

1. From the main menu, select **Window**. *Click* **Untitled.**



(Figure 2)

2. **(Figure 2)** In the **Untitled** window, *click* **Tables** from the left menu, then *click* **Add** from the top menu. In the **Add Table** window browse to **Ham01.dbf**, select it, then *click* **OK**.

F. Joining the Files

Explanation of what occurs when two tables are joined:

You can join a database table to an ArcView table (e.g., a shapefile theme's attribute table), if they share common fields of values. All of the rows selected by the database table's query can be joined to the ArcView table.

The contents of the ArcView table changes to include the joined attributes from the database table while the database table remains open and unchanged.
The joined attributes are not permanently part of the ArcView table. ArcView gets the joined attributes from the database using a join query taken from the database table's query at the time of the join. If the values in the database change you can see those changes by refreshing the joined table. When you open a saved project, ArcView will recreate the join and retrieve the appropriate values into the local table.

The join query is not linked to the database table's query. After joining a database table and a local table, if you change the database table's query in a way that affects which rows are joined, the rows joined to the local table won't change when you refresh its values. To update which records are joined, you need to remove the join from the local table then join the tables again following the steps above.

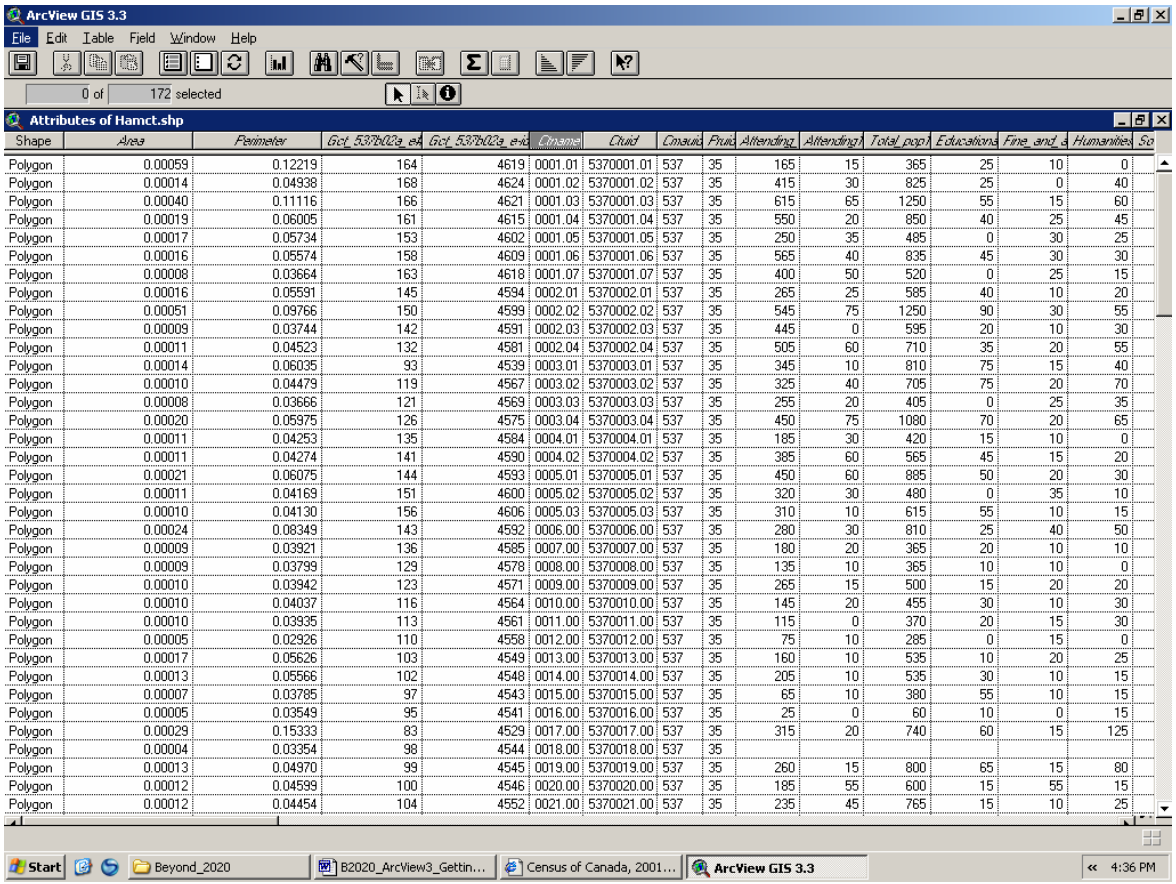
1. *Click* on the field labelled **Geography** (this is the census tract name column which is needed in order to join the database file to the attribute table)**.** Now sort datafile records in ascending order  (3rd last button in the middle row). *Minimize* (***DO NOT CLOSE***) the **Ham01.dbf** table however ***REMEMBER*** to leave the **Geography** field *highlighted*.

2. Select **Window** from the main menu and *click* **View1**. *Click* **Hamct.shp** to make it active (do not double click). *Click* the **Open Theme Table** button  .

3. *Click* on the field labelled **Ctname,** to which the datafile will be joined. Sort boundary file records in ascending order  .

4. Make sure that **Attributes of Hamct.shp** is *active* (meaning, this is the current window that you are looking at). From the **Main Menu** *select* **Table > Join**. The **Ham01.dbf file** should *disappear*. *Scroll* along the *boundary file* to see if the ***.dbf file** data fields are present.

If the procedure was carried out correctly the new table should look like **(Figure 3)**. You have now completed the process of getting census data. In addition, the Hamilton census data is now joined to the Hamilton CMA shapefile.



Shape	Area	Perimeter	Gct_5370b02a_e#	Gct_5370b02a_e-id	Ctname	Ctuid	Cmauid	Prui	Attending	Attending/	Total_popl	Educational	Fine_and_a	Humanities	Sc
Polygon	0.00059	0.12219	164	4619	0001.01	5370001.01	537	35	165	15	365	25	10	0	
Polygon	0.00014	0.04938	168	4624	0001.02	5370001.02	537	35	415	30	825	25	0	40	
Polygon	0.00040	0.11116	166	4621	0001.03	5370001.03	537	35	615	65	1250	55	15	60	
Polygon	0.00019	0.06005	161	4615	0001.04	5370001.04	537	35	550	20	850	40	25	45	
Polygon	0.00017	0.05734	153	4602	0001.05	5370001.05	537	35	250	35	485	0	30	25	
Polygon	0.00016	0.05574	158	4609	0001.06	5370001.06	537	35	565	40	835	45	30	30	
Polygon	0.00008	0.03664	163	4618	0001.07	5370001.07	537	35	400	50	520	0	25	15	
Polygon	0.00016	0.05591	145	4594	0002.01	5370002.01	537	35	265	25	585	40	10	20	
Polygon	0.00051	0.09766	150	4599	0002.02	5370002.02	537	35	545	75	1250	90	30	55	
Polygon	0.00009	0.03744	142	4591	0002.03	5370002.03	537	35	445	0	595	20	10	30	
Polygon	0.00011	0.04523	132	4581	0002.04	5370002.04	537	35	505	60	710	35	20	55	
Polygon	0.00014	0.06035	93	4539	0003.01	5370003.01	537	35	345	10	810	75	15	40	
Polygon	0.00010	0.04479	119	4567	0003.02	5370003.02	537	35	325	40	705	75	20	70	
Polygon	0.00008	0.03666	121	4569	0003.03	5370003.03	537	35	255	20	405	0	25	35	
Polygon	0.00020	0.05975	126	4575	0003.04	5370003.04	537	35	450	75	1080	70	20	65	
Polygon	0.00011	0.04253	135	4584	0004.01	5370004.01	537	35	185	30	420	15	10	0	
Polygon	0.00011	0.04274	141	4590	0004.02	5370004.02	537	35	385	60	565	45	15	20	
Polygon	0.00021	0.06075	144	4593	0005.01	5370005.01	537	35	450	60	885	50	20	30	
Polygon	0.00011	0.04169	151	4600	0005.02	5370005.02	537	35	320	30	480	0	35	10	
Polygon	0.00010	0.04130	156	4606	0005.03	5370005.03	537	35	310	10	615	55	10	15	
Polygon	0.00024	0.08349	143	4592	0006.00	5370006.00	537	35	280	30	810	25	40	50	
Polygon	0.00009	0.03921	136	4585	0007.00	5370007.00	537	35	180	20	365	20	10	10	
Polygon	0.00009	0.03799	129	4578	0008.00	5370008.00	537	35	135	10	365	10	10	0	
Polygon	0.00010	0.03942	123	4571	0009.00	5370009.00	537	35	265	15	500	15	20	20	
Polygon	0.00010	0.04037	116	4564	0010.00	5370010.00	537	35	145	20	455	30	10	30	
Polygon	0.00010	0.03935	113	4561	0011.00	5370011.00	537	35	115	0	370	20	15	30	
Polygon	0.00005	0.02926	110	4558	0012.00	5370012.00	537	35	75	10	285	0	15	0	
Polygon	0.00017	0.05626	103	4549	0013.00	5370013.00	537	35	160	10	535	10	20	25	
Polygon	0.00013	0.05566	102	4548	0014.00	5370014.00	537	35	205	10	535	30	10	15	
Polygon	0.00007	0.03785	97	4543	0015.00	5370015.00	537	35	65	10	380	55	10	15	
Polygon	0.00005	0.03549	95	4541	0016.00	5370016.00	537	35	25	0	60	10	0	15	
Polygon	0.00029	0.15333	83	4529	0017.00	5370017.00	537	35	315	20	740	60	15	125	
Polygon	0.00004	0.03354	98	4544	0018.00	5370018.00	537	35							
Polygon	0.00013	0.04970	99	4545	0019.00	5370019.00	537	35	260	15	800	65	15	80	
Polygon	0.00012	0.04599	100	4546	0020.00	5370020.00	537	35	185	55	600	15	55	15	
Polygon	0.00012	0.04454	104	4552	0021.00	5370021.00	537	35	235	45	765	15	10	25	