

# 21. TUTORIAL FOR GEODEMOGRAPHIC SITE PLANNING<sup>1</sup>

## CASE: J&J FAMILY VIDEO, P. 411

In selecting a physical location for a retail outlet, a firm makes two decisions: it chooses a market area, such as a city, region, or country, in which to establish the outlet, and then it chooses a specific site within that location. Because of the recent availability of computerized geodemographic databases, managers can use formal models, such as “gravity models,” in making location decisions. These databases overlay demographic, and other types of data (e.g., psychographic), on a geocoded database containing the latitude and longitude of most households in a specified geographic area.

The gravity model helps managers evaluate the combined effects of factors such as customer characteristics, store image, drive times, and the location of competing retailers, on the potential value of a site. Although gravity models have been around for many years, the recent development of geodemographic databases now make it feasible to apply these models to address a broad range of problems. Without the availability of these databases, it is difficult to specify exact geographic areas for analysis, and it is cumbersome to obtain distance and demographic data for a large number of geographic zones and retail outlets. Managers are no longer constrained to evaluate store attractiveness by traditional geographic units such as census tracts or zip codes.

To develop a gravity model, you have to follow several general steps. The software allows you to implement these steps:

### **Step 1—Define the market area**

Identify a suitable geographic area that is likely to be served by the proposed outlet, and divide that area into its constituent zones. Ideally, the zones should be relatively homogeneous in their demographic characteristics and in the availability of competitive stores and movement barriers (e.g., rivers, railway lines, high-crime neighborhoods).

### **Step 2—Obtain data about existing stores that are potential competitors to proposed outlet**

In particular, get data on the location, size, sales, and other characteristics of each competing outlet within the market area.

### **Step 3—Compute distances**

Compute distances from each store to each zone. The accompanying software automatically computes distances once the zones and locations of stores are specified.

### **Step 4—Calibrate the gravity model**

Calibrate the gravity model on the existing competitors in the market area. Specifically, choose a set of parameter values for the *Store Attractiveness* coefficient (alpha) and the *Distance Impact* coefficient (Beta) that fit the existing data well. Starting values can be alpha = 1 and beta = 1, unless there is reason to believe that other values are more likely to recover the current market shares of the competitors.

<sup>1</sup> Unless you are running the Local Area Network (LAN) version of *Marketing Engineering*, you will need the *Marketing Engineering* (v 2.0) CD to run this software.

\* Tutorial 21, June 2005

**Step 5—Evaluate sales potential of a new outlet at various locations**

Introduce new outlet options at several proposed locations (this has already been done for the J&J Video exercise).

**Step 6—Select the location of the new outlet**

Select the location of the new outlet where sales potential or another measure of performance (e.g., profit potential) is the highest.

**SCAN/US**

The gravity model in Scan/US uses a Microsoft Excel macro to evaluate the market shares for up to eighty sites in a single run. After you specify the location of the competing retail stores, the model can compute the required distances internally using its databases. However, you must provide an index of each store's attractiveness.

Scan/US is a comprehensive software program for geodemographic analysis. It includes a detailed online help file. Here we describe only the features that you will need for the J&J Family Video exercise.

*Note: To view or print a copy of the complete manual, you will need the original CD on which the Marketing Engineering software was distributed.*

*If you do not have Adobe Acrobat™ Reader installed on your system, you can install it by downloading the appropriate files from [www.adobe.com](http://www.adobe.com) or you can install the version supplied with the Marketing Engineering CD in the directory... \adobe.*

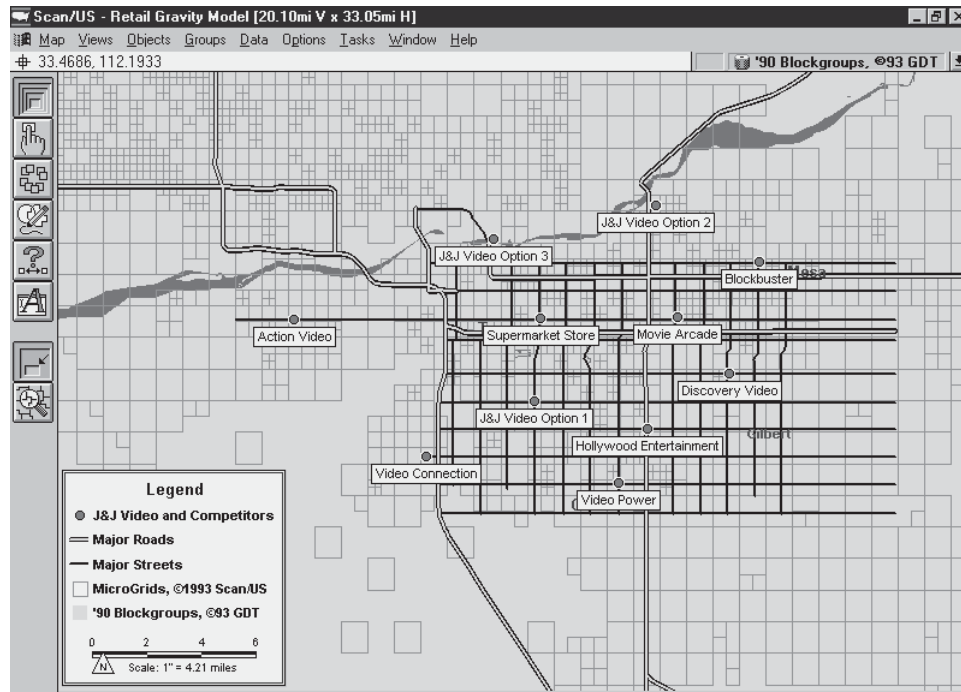
*After Acrobat™ is successfully installed, start the Acrobat program. From the **File** menu, select **Open** and open the file manual.pdf from the x:\scanus\manuals directory, where x is the letter representing your CD-ROM drive. Under the **File** menu, select **Print** to print any part of the manual.*

In the J&J Family Video exercise, you will build a gravity model to locate a new video store in the Phoenix, Arizona metropolitan area. This tutorial describes the three steps that you should follow to complete the exercise:

- Setting up the data for the gravity model
- Using Microsoft Excel to build the gravity model
- Mapping the results of the gravity model

Insert your *Marketing Engineering* CD in the CD drive. From the **Model** menu, select **Geodemographic Site Planning** to see the following screen.

*Note: You will not be able to run the Scan/US software online from our servers. Either you should have the stand alone version of Marketing Engineering supplied on a CD, or you must have access to the network version of Marketing Engineering that runs on local area networks.*

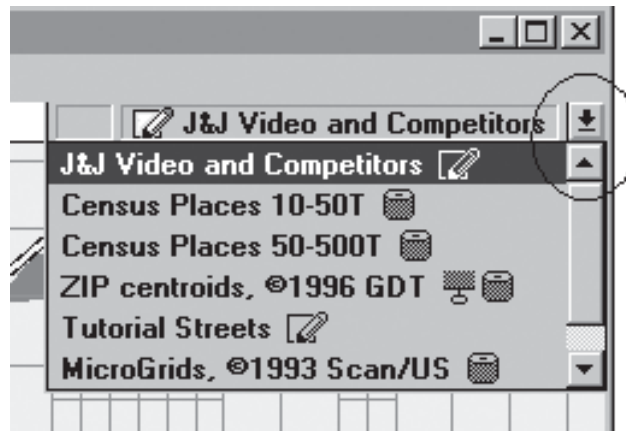


## STEP 1—SETTING UP THE DATA FOR THE GRAVITY MODEL

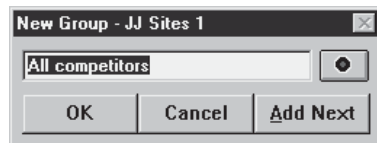
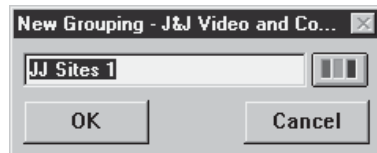
To set up the gravity model, you should first create or load the specific geographical area with which you want to work with. Next, you add various types of data, called layers, to the specified geography. You should then load a file indicating the locations of the retail sites (if it is not already loaded) as the location layer. We have completed these tasks for the J&J Family Video exercise. If this exercise is not automatically loaded when you open the program, go to the **Map** menu and select **J&J Family Video Exercise**.



***Note:** Gain familiarity with the software before you attempt to set up your own study area and retail site options. Follow the instructions available in the online **Help** menu. Briefly, the steps are: (1) select an area of the US map for study, (2) select the geographic features you want to include for analysis (e.g., zip centroids, major streets), (3) indicate the location of various retail sites of interest, and (4) create and name a new location layer.*

**Specify the set of competitive sites to be used in the analysis (Location Layer):** Make locations the active layer by clicking on the arrow in the upper right corner of the screen and selecting **J&J Video and Competitors**.



Next, select the set of retail sites (video stores) that you want to include in your analysis. To do this, first define a group that contains the selected stores. From the **Groups** menu, choose **New Grouping**, name the grouping (e.g., J&J Sites 1) and click **OK**. Go to the **Groups** menu, click **New Group** and name the group (e.g., All competitors). You can specify many different groups within one grouping.



Click **OK**. This should bring you back to the original screen and in group mode (click the group mode icon  on the left side of the screen, if it is not already activated). Now you are ready to specify the sites to be used for the analysis under the group name you provided. It is convenient to first activate the Group-By Polygon submode  and draw a polygon around the selected video stores, including all the possible J&J Family Video Stores, by dragging the mouse while pressing the left mouse button. (For the present, select for analysis all the stores that you see on the screen.)

**Specify the geographic area you want to include for analysis (Consumer Layer):** Here you have two options: you can either specify the entire geography already included in the J&J Family Video exercise, or you can select a part of this area. The purpose of this step is to indicate to the software the geographical entities between which it should compute the distances (here from each MicroGrid to each video store).

**Option 1: Using the entire geography in the J&J Family Video exercise:** (Until you become familiar with the software, we suggest that you select the entire geography for analysis.) Here, simply copy the distances from the location layer (J&J Video and competitors) to the

consumer layer (MicroGrid layer), which contains information about where people live in the study area. To do so, make locations (i.e., **J&J Video and Competitors**) the active layer at the right upper corner of the screen. Go to the **Objects** menu and select **Copy Distance**. You will see the following box:



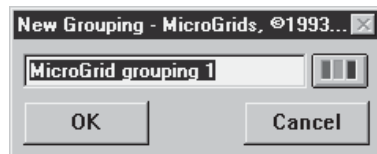
Copy the distance information from **Objects in groups** (e.g., J&J Sites 1 in **All competitors**) to **All objects** on the consumer layer (MicroGrid layer) by choosing **MicroGrids, ©1993 Scan/US** from the drop down menu under **To objects on layer**. Follow this last step carefully—otherwise, the proper set of distances will not be computed for the rest of the analysis.


Click **OK** to proceed.

*Option 2: Using a subset of the geography in the J&J Family Video exercise:* Instead of computing distances for all geographical units in the consumer layer, you can also first create a group on the consumer layer and load the distance information from the location layer to the newly defined group on the consumer layer. To do this, click the arrow in the upper right corner of the screen and select the MicroGrid layer:



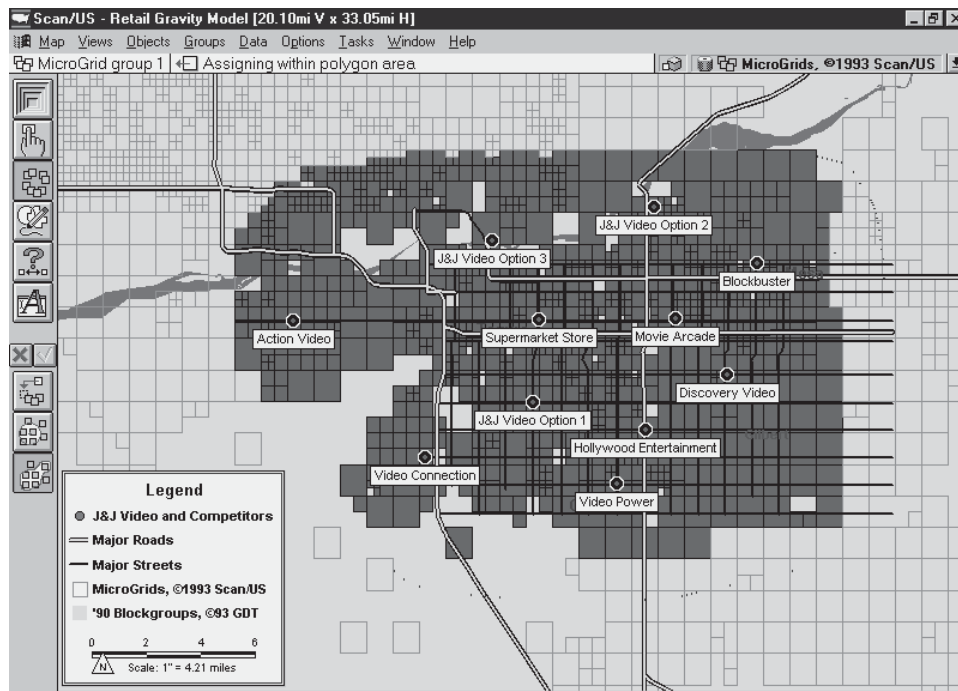
Go to the **Groups** menu and select **New Grouping** and give the MicroGrid grouping a name:



Click the **Group-By Polygon** button  and draw a polygon around the selected geography by dragging the mouse while pressing the left mouse button. Once you have defined a closed polygon, the system will ask you to give a name to the group, for example, MicroGrid group 1:



Click **OK**, and you will see a screen highlighting in red the area you selected:



To run the gravity model, you have to first copy the data containing the distances of the stores to the MicroGrids, to the consumer layer (e.g., a selected group in the MicroGrids layer). This data is then made available to the Excel routine that runs the gravity model. You need to make sure that the location layer (i.e., J&J Video and Competitors) is activated by clicking the arrow in the right upper corner and choosing **J&J Video and Competitors**. Next, go to the **Objects** menu and choose **Copy Distance**. You will see the following box:



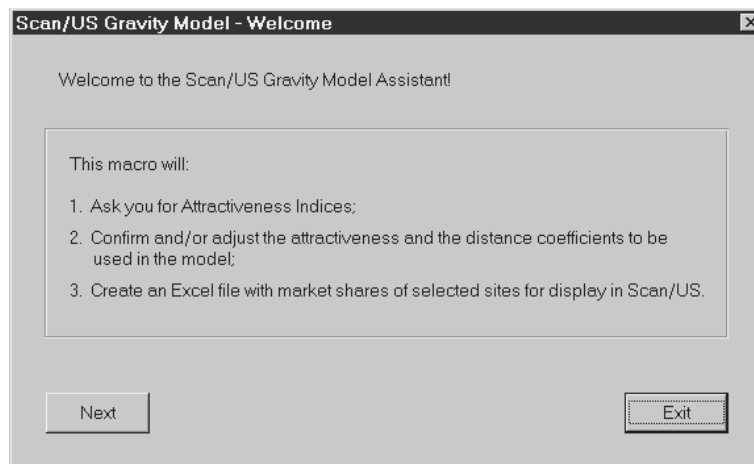
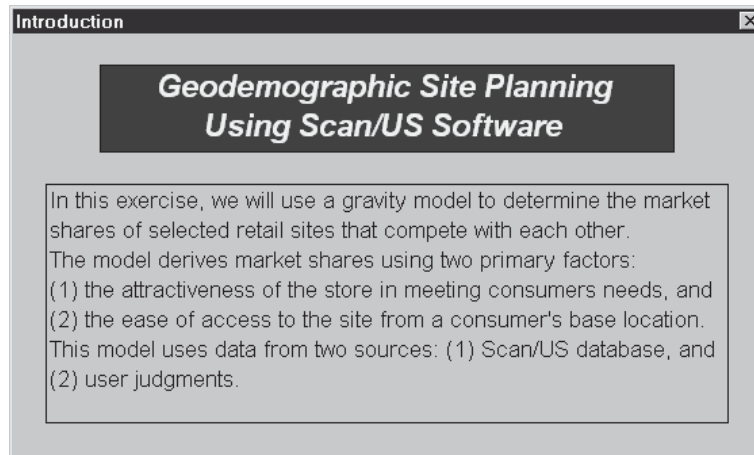
Select **Objects in group(s)** and specify the group and the grouping in the MicroGrid layer you want to include in the analysis. If you select a small geographical area as a group, the gravity model will calculate estimates only for that specific group (area), thus reducing its computation time. Follow this step carefully – otherwise the proper set of distances will not be computed for the rest of the analysis. Click **OK**.

For the rest of this tutorial, we will assume that you selected Option 1.

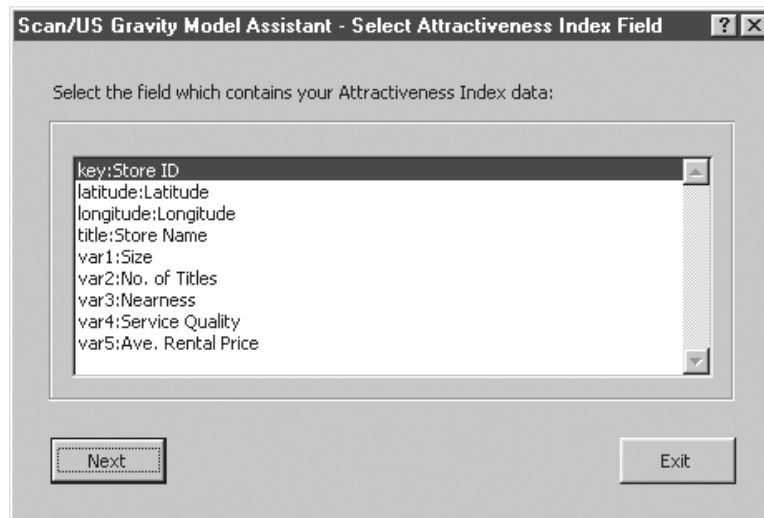
## STEP 2—USING EXCEL TO BUILD THE GRAVITY MODEL

You build the gravity model using a Microsoft Excel macro. First, you must enter data on store attractiveness indices for each site, as well as the store attractiveness and distance impact coefficients. The Scan/US Gravity Model Assistant, a Microsoft Excel macro, generates an output data file containing the gravity model probability (market share) estimates, which can then be displayed graphically within the Scan/US program. You can also combine the probability estimates in the Excel worksheet with other information to compute other indices of store performance at each location, the profit potential at a location.

On **Tasks** menu, choose **Build Gravity Model**. Microsoft Excel will launch and bring up the Scan/US Gravity Model Assistant.



Click **Next**. If you see a screen listing several fields for Attractiveness Index Data, select the Store ID field. Click **Next**.



Fill in the attractiveness index for each video store on a suitable scale (1-100 is typical, with higher numbers indicating more attractive stores) based on your best judgment about the attractiveness of each store. This index represents the intrinsic value of a store, independent of the ability of the customer to find or come to that store. The attractiveness depends on many factors, such as the variety of titles offered, store atmospherics, and average price. In the J&J Video case, for example, you should have higher attractiveness indices for Blockbuster or Hollywood Entertainment, than for Video Connection or the Supermarket Store.

**Scan/US Gravity Model - Adjust Attractiveness Index Values**

Model Locations:

- Supermarket Store
- Movie Arcade
- Blockbuster
- Video Power
- Discovery Video
- Action Video
- Hollywood Entertainment
- Video Connection
- J&J Video Option 1
- J&J Video Option 2
- J&J Video Option 3

Attractiveness Index:

Supermarket Store

40

You may wish to adjust Attractiveness Index values for each location. To adjust the values, click on the location and enter the value desired in the field above. When finished, click 'Next.'

Next

Click **Next** to get to this screen:

**Scan/US Gravity Model - Adjust Model Factors**

Store Image:

Coefficient (alpha): 1.5

Distance Decay:

Use Incremental Values...

Factor: 1.4

To finish building your gravity model, click the "Finish" button. You may also wish to adjust the coefficients used in calculating your model data.

To build multiple models on a range of distance decay factors, click the "Use Incremental Values..." button.

Finish

Exit

Enter your best estimates as to how store attractiveness (image) and distance influence store choice, choosing alpha and beta coefficients to reflect these influences. The larger a coefficient, the higher is the relative influence of the corresponding factor. For example, the distance impact coefficient indicates how the ease of access to a store (site) would in-

fluence a consumer's decision to buy from that store. The higher this coefficient, the faster the decline is in the consumer's utility for a site as its distance from the consumer's home base increases. For example, in a rural area, people commonly travel five miles or more to a store; in a metropolitan area, they do not. The distance impact coefficient in a rural area might be 1.5, while in a metropolitan area it might be 2.0 or higher.

*Note: For the J&J Video exercise, values of alpha and beta around 1.5 seem to be appropriate.*

One way to determine whether your guesses for store attractiveness indices and distance impact coefficients are good is to check whether the resulting market share estimates for the existing stores (excluding the proposed new store altogether) correspond closely with the market shares for those stores in the chosen geographical area. In the J&J case, one way to assess this is to check the correspondence between market share estimates computed by the model and the estimates provided by Ms. Jackson.

You can choose a single value for the beta coefficient or choose multiple values in a selected range to represent varying degrees of influence of distance on store choice. For the latter case, click **Use Incremental Values** and specify the range:

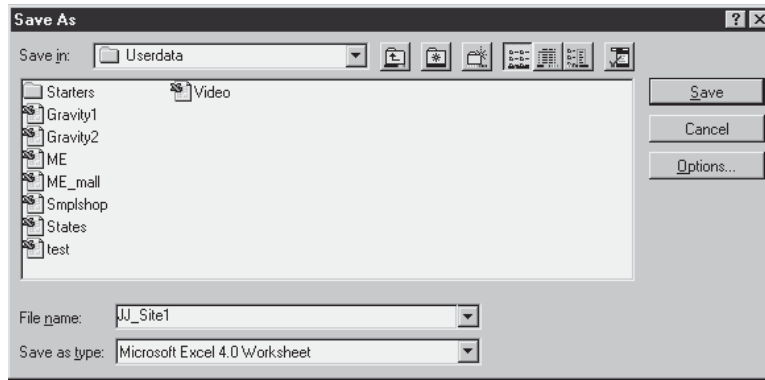
(If you choose a range of values for distance impact, save each set of results under a different Excel 4.0 file at the end of the model run.)

Click **Finish** to continue.

The model now starts its computations by using the distances generated by Scan/US and the attractiveness indices, as well as the alpha and beta coefficients that you provided. Processing may take several minutes (or even hours) depending on the number of geographic entities included in the analysis. For the J&J Family Video exercise, it should take only a few minutes. The status bar at the bottom of the screen indicates the progress.

When data processing is completed, the Gravity Model Assistant prompts you to save your gravity model table. Change the path in the **Save in** box to the ...\\MktgEng\Scanus\Userdata folder and be sure to set the **Save as Type** to Microsoft Excel 4.0 Worksheet. Enter a filename and click **Save**.

*Note: Do not save the file as an Excel 4.0 **Workbook**, which is also one of the file type options. Also, if you do not save this the data as an Excel 4.0 **worksheet**, the rest of the analyses described in the tutorial cannot be completed.*

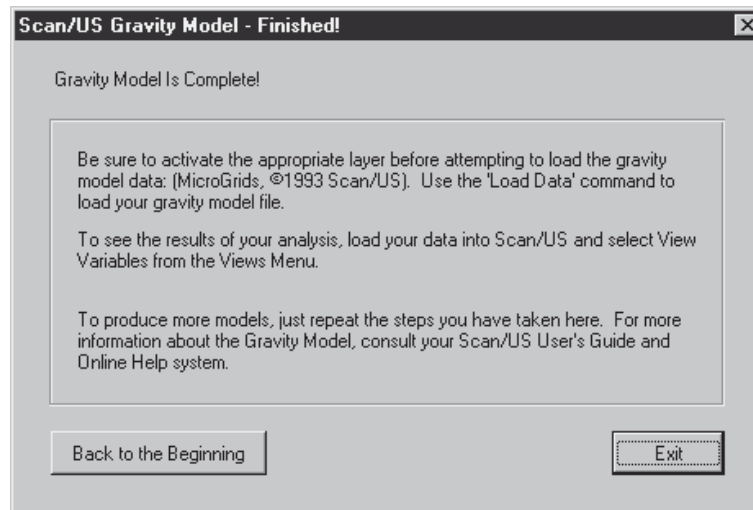


The saved data file should look something like this:

	1	2	3	4	5	6	7	8
1	[distance]	11	J&J Video anc	JVIDEO_loc	Objects	mi		
2	Vid001	33.39297	111.90827	Supermarket	25	1.5	1.4	
3	Vid002	33.39355	111.82207	Movie Arcade	40	1.5	1.4	
4	Vid003	33.42259	111.76999	Blockbuster	100	1.5	1.4	
5	Vid004	33.30638	111.85905	Video Power	60	1.5	1.4	
6	Vid005	33.36419	111.78939	Discovery Vic	35	1.5	1.4	
7	Vid006	33.39225	112.06322	Action Video	60	1.5	1.4	
8	Vid007	33.33503	111.84089	Hollywood Er	80	1.5	1.4	
9	Vid008	33.31999	111.97982	Video Connec	30	1.5	1.4	
10	Vid009	33.34922	111.91139	J&J Video Op	0	1.5	1.4	
11	Vid010	33.45293	111.83561	J&J Video Op	0	1.5	1.4	
12	Vid011	33.43503	111.93763	J&J Video Op	0	1.5	1.4	
13	Key	Primary Contours:	HuffProb1: Sup	HuffProb2: Mo	HuffProb3:	HuffProb4:	HuffProb5:	HuffProb6:
14	#33111/11:	0.286018123	0.028614771	0.0739592	0.286018	0.172415	0.077264	0.069681
15	#33111/11:	0.289134752	0.028701375	0.07420627	0.289135	0.170302	0.077327	0.070079
16	#33111/11:	0.279255828	0.028471373	0.07334402	0.279256	0.176871	0.077136	0.068921
17	#33111/11:	0.282736298	0.028538075	0.07361464	0.282736	0.174564	0.077234	0.069267
18	#33111/11:	0.278567431	0.029897511	0.0619618	0.195561	0.242422	0.059907	0.07899
19	#33111/11:	0.275928539	0.030485652	0.06128936	0.191647	0.243012	0.058224	0.082888
20	#33111/11:	0.272377512	0.031197683	0.0608458	0.188683	0.241632	0.056682	0.087523

At this point, you are given the option to restart the Excel macro to obtain model results under a different set of attractiveness indices and alpha and beta coefficients. To restart the Excel macro, click **Back to the Beginning**. Save each run under separate Excel 4.0 worksheets.

*Note: For the J&J Family Video exercise, you have to run the gravity model at least four times. In the first run, include only the existing stores (i.e., set the attractiveness indices to zero for all three new sites being considered by Jack and Jeri) to calibrate the alpha and beta coefficients for the model. The next three runs are one for each new store location under consideration (i.e., set attractiveness indices to zero for the two new sites not included in an analysis).*

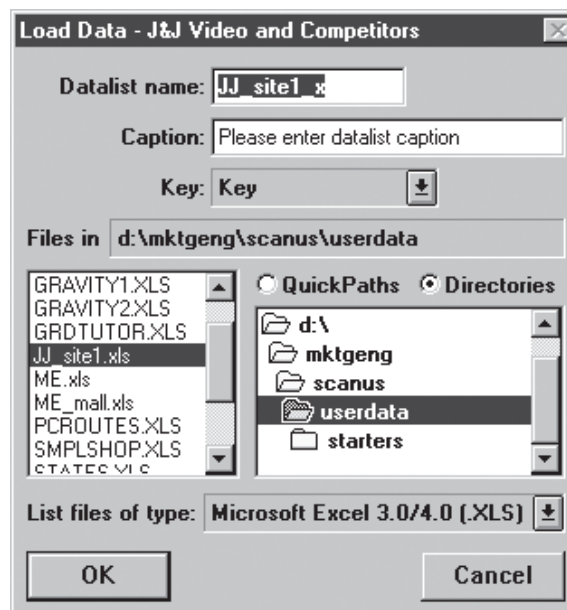


Click **Exit** to get back to Scan/US.

### STEP 3—MAPPING THE RESULTS OF THE GRAVITY MODEL GRAPHIC

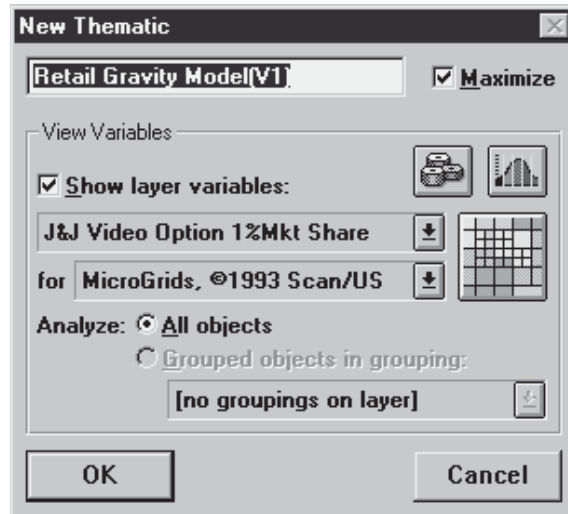
To view the model's market share estimates in Scan/US, you need to load the gravity model results (which are in the saved Microsoft Excel 4.0 files) to the consumer layer (MicroGrids) and create a new thematic view.

1. Click the arrow in the upper right corner of the screen and choose MicroGrids (the consumer layer) from the drop down menu.
2. Go to the **Data** menu and choose **Load Data**. Switch to the \MktgEng\Scanus\Userdata folder and select one of the gravity model files you saved as Excel 4.0 worksheets (to change directories, check the **Directories** option first). Click **OK** after you select the Excel file.




- Go to the **Views** menu and click **New Thematic**.

*Note: If you grouped objects in the consumer layer when you set up the model, be sure to select **Analyze: Grouped objects in grouping** to view the selected area.*

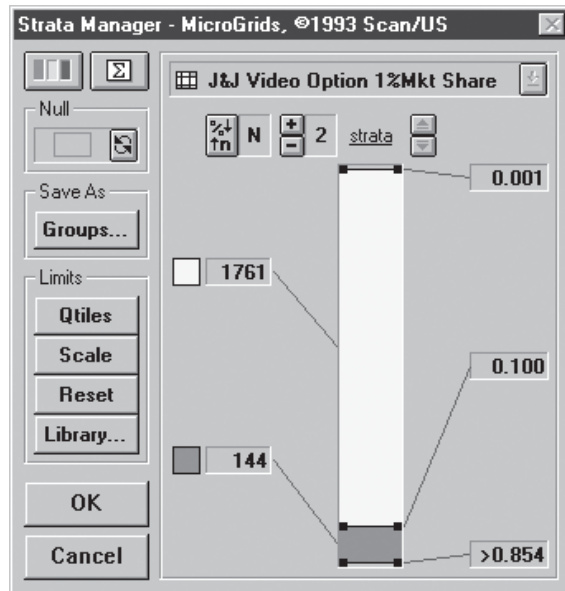


If you click on the drop down menu for **J&J Video Option 1%Mkt Share**, you will see menu options that allow you to select a store to view its market share in each MicroGrid. If you select **huffprob9:J&J Video Option 1% Mkt Share**, then you can see the market share distribution across the MicroGrids for the first store location.



To more clearly see how each geographical area (MicroGrid) contributes market share to a specific site that you select, you can stratify geographical areas using a color scheme. Click on the **Strata Manager** button .

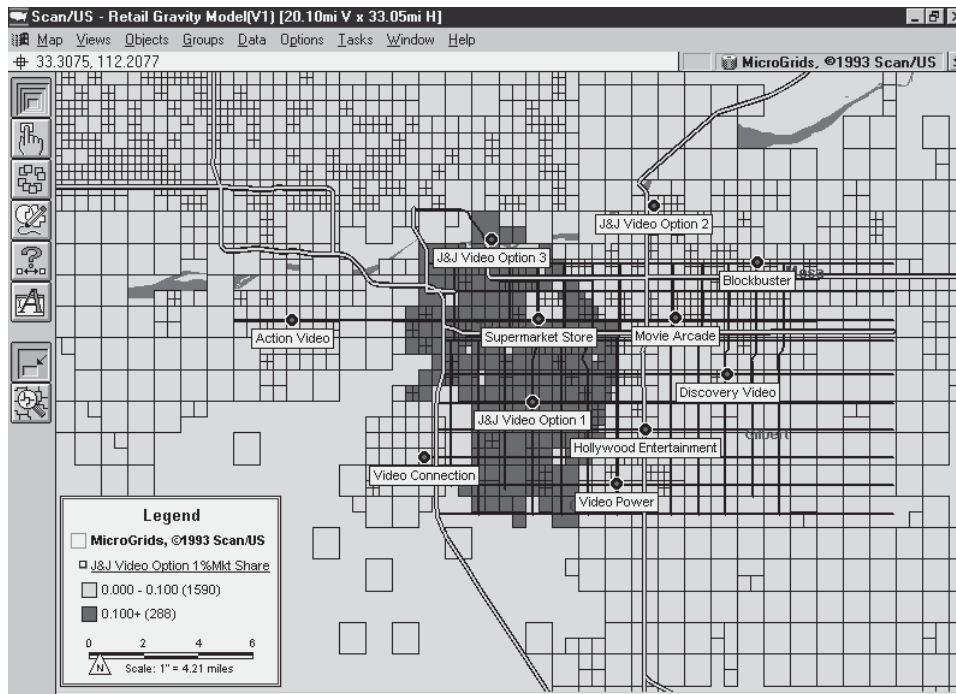
You can change the market share range assigned to a particular color by dragging the appropriate black dumbbell up or down with the mouse. Here, we are separating the MicroGrids into two groups. The first group of MicroGrids provides a share of 10 percent or less for the new store in location 1, and the second group of MicroGrids provide a share of more than 10 percent. After you finish specifying the parameters, click **OK**.




Click **Groups** and assign a name to the data grouping for the display that you created.

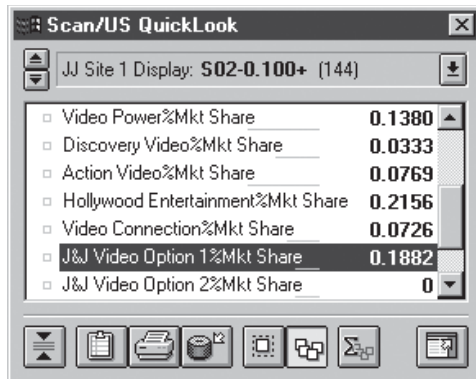


Click **OK** on all the open windows. You will now see the selected geography, highlighted with the color scheme you specified, showing how market shares for J&J Video Store Option 1 varies by geographical units.





**Viewing a group's data:** You can also use Scan/US to aggregate the data for each object in a group to create a group summary. First, you must ensure that the data that you want to view are attached to the active layer. For example, if you want to investigate the results of the gravity model, activate the MicroGrids layer by clicking on the arrow at the upper right corner of the screen and choosing **MicroGrids, ©1993 Scan/US** from the drop down menu.

The market share estimates for each group are loaded into this layer. Next, click the group mode button . Select an existing grouping or create a new group for which you wish to see summary information. For example, if you want to look at market share estimates for a specified geographical area extending over several MicroGrids, you should build a group containing the MicroGrids that lie in the area of interest. You can then go to the **Views** menu and click **QuickLook** to see the data corresponding to the active group. The following screen shows the market shares for each competitor when we select only MicroGrids for which the new store in location 1 gets at least a market share of 10 percent. In particular, it shows that when we include those MicroGrids, the new store gets an aggregate market share of 18.82 percent across those MicroGrids.



(**Estimated %Market Shares** gives the value for the primary contours, i.e., it is the highest market share estimate reached by any of the competitors in the set in any of the Microgrids.)

You can switch between viewing the data for the active group or the data for an object (e.g., a selected MicroGrid) by clicking on the “Show Group” button  or “Show Object” button .

## ADVANCED ANALYSES: CUSTOMIZING YOUR DATA IN EXCEL

You can get further insights about the sales potential of a store, if you combine the estimated choice probabilities from the gravity model with other information available from the Scan/US database to create new indices of market potential for each store. For instance, in the J&J Video exercise, you can combine the probability estimates with the data regarding density of family households with children in each geographical area. You can also calculate potential sales by using the probability values and data from the Scan/US retail potential database. To conduct these analyses, use Microsoft Excel to create your own customized data set or to merge your data with the data provided by Scan/US.

*Note: There are various databases commercially available that offer information—beyond that contained in the Scan/US BasePak—that can aid your analyses (e.g., data about household expenditures by product category) Some of these databases (e.g., Scan/US retail potential database) come with this educational version of Scan/US but are restricted to the Washington DC and Phoenix, AZ areas.*

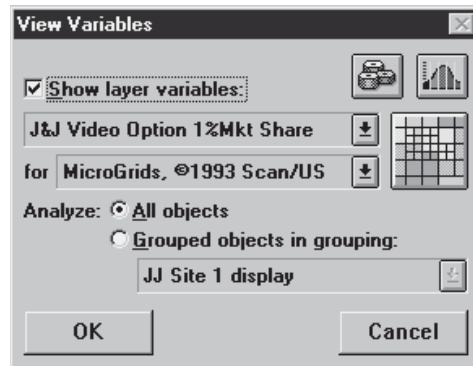
In the following section, we explain how to combine the data from a Scan/US application with your own data. Principally, you need to know:


- How to group a subset of the Scan/US product databases and export it to Excel for further manipulation.
- How to prepare your own Excel data for import into the Scan/US program.
- How to display your data by creating a thematic view (see previous sections).

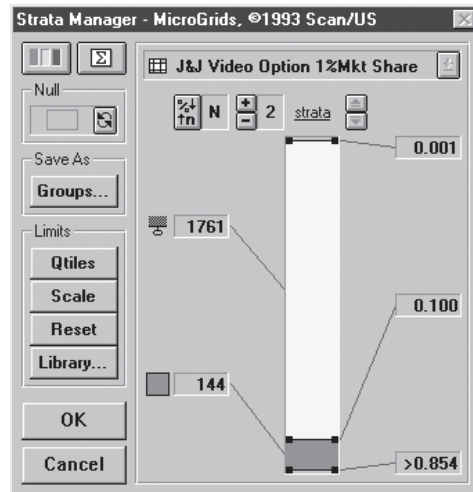
## SPECIFYING DATA FOR EXPORT TO EXCEL

First, you need to indicate which data to include in the analysis. The following example considers only the MicroGrids that have share estimates of more than 10 percent for the J&J Video Store Location Option 1. You can limit the amount of data to use in an analysis by “hiding strata.” Or, you can select a geographical area by grouping objects (e.g., MicroGrids) as we described earlier.

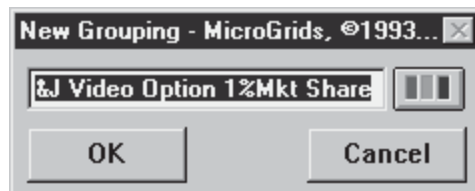
“Hiding strata” is a useful way of focusing an analysis on a specific set of objects. You can hide strata only when a variable’s strata, rather than data values, are being rendered by the thematic presentation. To prepare your data, go to the **Views** menu and click **View Variables**. Select **J&J Video Option1%Mkt Share** as the layer variable to be displayed. (You can repeat these analyses separately for each of the three store locations being considered.)



To open the dialog box shown below, click the “Strata Manager” button . Click the presentation icon next to the desired stratum, and a window shade will replace the color icon for the stratum (i.e., a hidden stratum has been created). Make sure that the data for the analysis is set to the **J&J Video Option 1%Mkt Share** in the top drop-down box.



Click on **Groups** button and save your data as a new grouping.



Click **OK** (on several open windows). Next, from the **Data** menu, click **Copy Data** and copy the data to the Windows clipboard for **Objects in groups**.

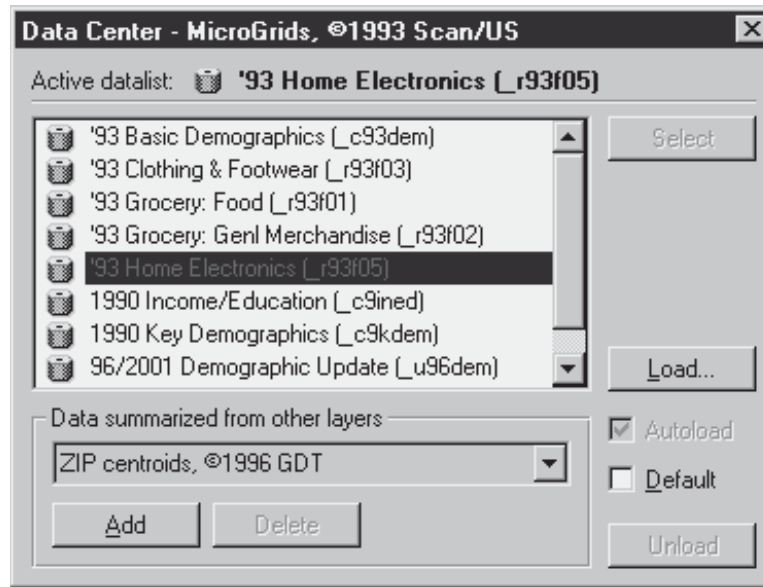


Click **OK**. Now open Excel, place the cursor in row 1, column 1, and paste the data into the spreadsheet (use the Windows copy command or the key combination Ctrl+V).

	1	2	3	4	5	6	7	8
1	[data]	288	1	1	1	jj_site1_x:	1	1
2	Key	Group	Name	huffprob9:J&J Video Option 1%Mkt Share				
3	#33111/17:	2	Grid 33111	0.10811				
4	#33111/17:	2	Grid 33111	0.12628				
5	#33111/17:	2	Grid 33111	0.12173				
6	#33111/17:	2	Grid 33111	0.13041				
7	#33111/17:	2	Grid 33111	0.13349				
8	#33111/17:	2	Grid 33111	0.11403				
9	#33111/17:	2	Grid 33111	0.12373				
10	#33111/18:	2	Grid 33111	0.13015				
11	#33111/18:	2	Grid 33111	0.14965				
12	#33111/18:	2	Grid 33111	0.14274				
13	#33111/18:	2	Grid 33111	0.13684				

**Exporting Scan/US demographic data:** As an example, we will copy the “Average annual expenditure per household for videos, tapes, disks” variable from the Home Electronics datalist and the “Total Households (hh90)” variable from the data in the BasePak and paste the data into the spreadsheet shown above.

For these tasks, the relevant data need to be available to the consumer layer. Several data lists can be loaded onto a layer (although only one can be active at a time). In this example, we use information from the Scan/US data lists on home electronics and key demographics, as well as the probability estimates from the gravity model. To load the home electronics data list, go to the **Data** menu in the Scan/US program, choose **Data Center**, select **'93 Home Electronics**, and click the **Load** button (if the data is not already loaded).

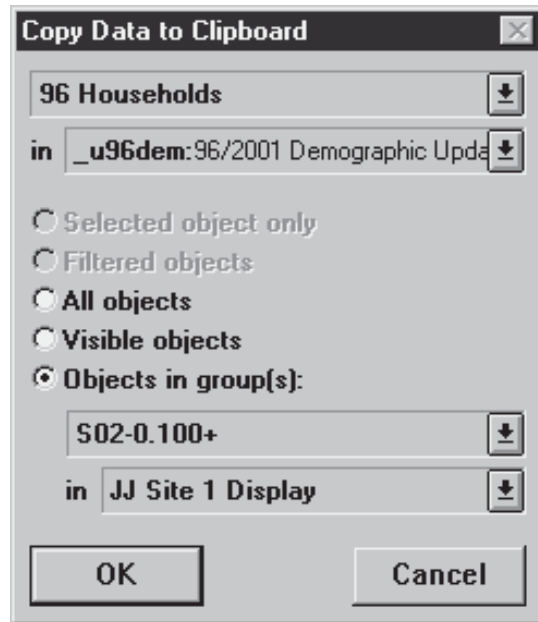


Next, go to the **Data** menu and click **Copy Data**. Choose Home Electronics as your database in the drop down menu and select the variables that you want to copy into your spreadsheet. In this example, restrict the demographic data that will be copied to the strata group that you specified earlier (e.g., J&J Video Option1%Mkt Share) or simply choose **Filtered Objects**. This ensures that only data for the MicroGrids that obtained choice probability values of more than 10 percent for J&J Video Option 1 will be copied.



Switch back to Excel and paste the data into the spreadsheet, making sure that the data are copied beginning with the correct row (i.e., matched on key # given in column 1).

Similarly, copy the Total Households variable from the data in your BasePak and paste the data into the spreadsheet.



Now you can create variables that combine demographic information and choice probabilities from the gravity model. To compute potential sales for J&J Video Option 1 for the “filtered” area (assuming that this is the primary trade area), multiply the column containing the probability values (the variable is called huffprob9 on the spreadsheet) by the Total Households and Average Annual Expenditure per Household for Video rentals, disks, and tapes. You can then total the potential sales across MicroGrids to derive an estimate for the total potential sales for the retail site under consideration.

## PREPARE YOUR OWN EXCEL DATA FOR IMPORT INTO SCAN/US

	A	B	C	D	E	F	G	H	I	J	K
1	[data]	288	1	1	1	jj_site1_xc	1	1	MG90	M-grid	JJ Site 1
2	Key	Group Name		huffprob9:J&J Video Option 1%Mkt Share							
3	#B3111/1658.0	2 Grid 33111/1658.0		0.10448							
4	#B3111/1754.0	2 Grid 33111/1754.0		0.11534							
5	#B3111/1755.4	2 Grid 33111/1755.4		0.13601							
6	#B3111/1756.2	2 Grid 33111/1756.2		0.13075							
7	#B3111/1756.3	2 Grid 33111/1756.3		0.14079							
8	#B3111/1756.4	2 Grid 33111/1756.4		0.14426							
9	#B3111/1757.3	2 Grid 33111/1757.3		0.12213							
10	#B3111/1757.4	2 Grid 33111/1757.4		0.1332							
11	#B3111/1853.3	2 Grid 33111/1853.3		0.10559							
12	#B3111/1854.0	2 Grid 33111/1854.0		0.1405							
13	#B3111/1855.1	2 Grid 33111/1855.1		0.16271							
14	#B3111/1855.21	2 Grid 33111/1855.21		0.1548							
15	#B3111/1855.22	2 Grid 33111/1855.22		0.14808							
16	#B3111/1855.23	2 Grid 33111/1855.23		0.16808							
17	#B3111/1855.24	2 Grid 33111/1855.24		0.16064							
18	#B3111/1855.3	2 Grid 33111/1855.3		0.19468							
19	#B3111/1855.41	2 Grid 33111/1855.41		0.18505							
20	#B3111/1855.42	2 Grid 33111/1855.42		0.17578							
21	#B3111/1855.43	2 Grid 33111/1855.43		0.20647							
22	#B3111/1855.44	2 Grid 33111/1855.44		0.19616							
23	#B3111/1856.0	2 Grid 33111/1856.0		0.15672							
24	#B3111/1857.1	2 Grid 33111/1857.1		0.12629							
25	#B3111/1857.2	2 Grid 33111/1857.2		0.144							
26	#B3111/1857.3	2 Grid 33111/1857.3		0.13257							
27	#B3111/1857.4	2 Grid 33111/1857.4		0.16002							

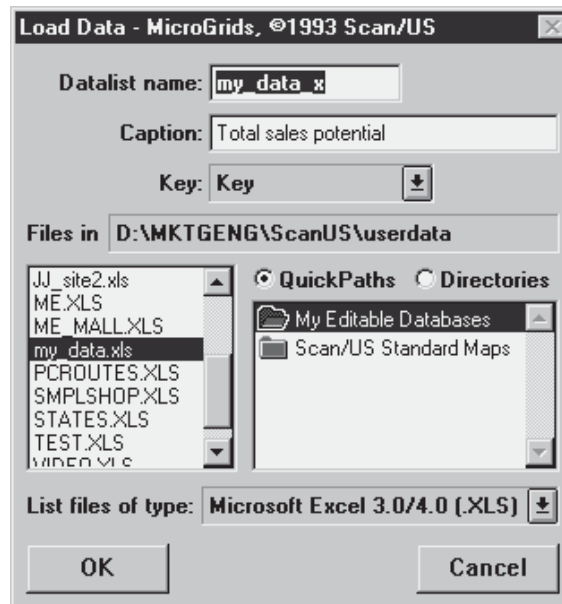
When preparing your own Excel data for input to Scan/US, you need to ensure that your Excel data file meets the following specifications to make it readable by the Scan/US software:

- Put your object keys in column A. An object key is a unique identifier for each record that matches the data with the geographic object to which it pertains. These keys must be in text format. A pound sign (#) in front of numeric keys makes them “text.” (For best performance, sort the object keys in ascending order.)
- Your data columns must have column headings without any numbers in their names.
- You must define a named range called “**database**” that includes all the cells containing the column names, object keys, and data. You must complete this step, or Scan/US may not read your data correctly. If you modify the number of rows and columns in your data file, you must redefine the range of “**database**”.
- You must save your spreadsheet in Excel 4.0 format. For convenience, save it in the Scanus\userdata folder. Close the file before trying to import it into Scan/US.

	A	B	C	D	E	F	G	H
1	[data]	288	1	1	1	1	1	u96den
2	Key	Group Name	huffprob	Jm232	Exp/hh	rental	hh96	Households
3	#33111/1658.0	2 Grid 33111/1658.0	0.10448		36.59		1	3.8229232
4	#33111/1754.0	2 Grid 33111/1754.0	0.11534		2.83		11	3.5905342
5	#33111/1755.4	2 Grid 33111/1755.4	0.13601		62.66		600	5113.43196
6	#33111/1756.2	2 Grid 33111/1756.2	0.13075		36.59		9	43.0572825
7	#33111/1756.3	2 Grid 33111/1756.3	0.14079		62.09		675	5900.614493
8	#33111/1756.4	2 Grid 33111/1756.4	0.14426		67.51		332	3233.345543
9	#33111/1757.3	2 Grid 33111/1757.3	0.12213		60.62		137	1014.282322
10	#33111/1757.4	2 Grid 33111/1757.4	0.1332		60.62		169	1364.604696
11	#33111/1853.3	2 Grid 33111/1853.3	0.10559		62.18		103	676.2553786
12	#33111/1854.0	2 Grid 33111/1854.0	0.1405		62.33		306	2679.75369
13	#33111/1855.1	2 Grid 33111/1855.1	0.16271		62.65		68	693.177142
14	#33111/1855.21	2 Grid 33111/1855.21	0.1548		62.65		258	2502.14076
15	#33111/1855.22	2 Grid 33111/1855.22	0.14808		62.65		133	1233.869196
16	#33111/1855.23	2 Grid 33111/1855.23	0.16808		56.85		502	4796.784696
17	#33111/1855.24	2 Grid 33111/1855.24	0.16064		56.72		129	1175.383603
18	#33111/1855.3	2 Grid 33111/1855.3	0.19468		56.72		40	441.689984
19	#33111/1855.41	2 Grid 33111/1855.41	0.18505		56.72		348	3652.620528
20	#33111/1855.42	2 Grid 33111/1855.42	0.17578		56.72		153	1525.446965
21	#33111/1855.43	2 Grid 33111/1855.43	0.20647		56.72		400	4684.39136
22	#33111/1855.44	2 Grid 33111/1855.44	0.19616		56.72		59	656.4455168
23	#33111/1856.0	2 Grid 33111/1856.0	0.15672		59.59		828	7732.646294
24	#33111/1857.1	2 Grid 33111/1857.1	0.12638		56.59		265	1893.890142

## DISPLAY IMPORTED DATA WITHIN SCAN/US

Now you can load your data into Scan/US, more specifically, to the layer that contains your object codes. In this example, make sure that MicroGrids is the active layer. Next, go to the **Data** menu, choose **Load Data**, and select the file you saved. You may then create thematic views to visualize your data and conduct further analyses.



## GLOSSARY

**Data:** Scan/US provides census-based demographic data with most geographic features in the BasePak. Data are automatically loaded with each feature in a study area.

**Groups:** By creating groups, you can classify objects on a layer into distinct and unique subsets. In general, you can select any group to operate on as a unit. For instance, you can copy, paste, hide, or show groups on a layer.

A classification of objects into groups is called a grouping. A grouping can consist of a number of groups. Because objects can be classified in any number of ways, you can define any number of groupings on the layer. You can create as many groupings as you like, limited only by the amount of memory on your computer. However, only one grouping can be active at a time on any given layer.

Grouping objects is a powerful feature in Scan/US. As a fundamental tool for handling multiple objects, grouping is a first step in analyzing a territory, or in limiting an analysis to a specific region. For example, you can examine sales across territories by creating a group for each territory, such as California, Washington, and Oregon in the western region/group, and then look at the group's data in "QuickLook."

**Layers:** Geographic features, such as states, counties, roads, or geology, are loaded as layers into the study area, each feature on its own layer. In the gravity model application, there are special names for two of those layers: the consumer layer and the location layer. The *consumer layer* contains (demographic) geo-coded information about your clientele — at the level of detail needed for your analysis (e.g., mostly data provided by Scan/US, such as MicroGrids or block-level census data). The *location layer* contains information about the location of the sites that you wish to consider in your analysis.

Each item of a feature on a layer is called an *object*. For example, California is an object on the Places 500T+ layer. Although several features or layers are present in a study area, only one layer can be active at a time. The terms *feature* and *layer* are often used interchangeably.

**Object:** A set of points, lines, or polygons in a spatial database that represent a real-world entity.

**Object key:** An object key is a unique identifier for each record. This key matches the data with the geographic object to which it pertains. You have object keys that match your data to standard geographical units, such as zip codes or census tracts. Or, you can have your own unique keys that identify your store or branch office locations.

## REFERENCES

*Scan/US Basic Skills*, fourth edition, June 1996.  
*Scan/US User's Guide*, first edition, December 1994.

## LIMITATIONS

MicroGrid data is available only for Phoenix and Washington, DC areas.