



Productive Access Inc.
2002 - Q2

mTAB Newsletter

5.4 Release

V5.4 update summary

mTAB for Windows v5.4 is the latest, and quite possibly, the last major release of PAI's version 5 Windows series software. Future releases of mTAB are targeted for a web-browser environment as PAI programming resources have been working toward mTABWeb.

The focus of the version 5.4 release is on bolstering the analytical tools of mTAB. The area of improvement is in the graphing component and the addition of cluster analysis. These features extend the analytical performance of mTAB and can save the user time to perform tasks reserved for Excel or SPSS/SAS.

Improved Charting

The mTAB graph feature is now integrated into the spreadsheet view. User's can save multiple charts within a single tab. Each of the charts can be assigned a name and retrieved through a simple drop down menu.

Additionally, mTAB's XY (Scatter Chart) chart can easily show the relationship between two questions. An XY chart is an excellent method for displaying plot points on two different scales: age vs. income; satisfaction vs. problems per 100. A picture here easily communicates what the numbers are trying to tell us.

To illustrate, we start with tabbed data on age and income in mTAB's spreadsheet view.

continued on page 2

K-Means Cluster Analysis

What is it?

K-means clustering is used to create 'groupings' or 'clusters' based on

responses from a set of questions (usually scalar image ratings, product ratings, psychographics, etc). The goal is to create some number of classifications, defined by the user, from a large number of cases in the data set.

The K-means clustering approach moves cases (respondents) into the different groups to get the most significant variance between the groups. At the same time the algorithm finds members that share similar properties within each cluster. A successful analysis will yield minimal variability within a given cluster group, and maximum variability between the clusters. Using these new classifications within the scope of mTAB gives the user the opportunity to gain further analytical insights.

Getting started in mTAB

If you intend to run a cluster analysis on a specific market segment (eg. Lower Mid Utility) or other criteria, it is required that you add a filter(s) before you begin. Once you have established the filter criteria, the "Run K-Means Cluster Analysis..." function can be accessed in the Question Selection View at the bottom of the Question menu.

Run K-Means Cluster Analysis...

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Creating the XY (Scatter) Chart

The spreadsheet view shows an age-income report for models in the Small SUV segment.

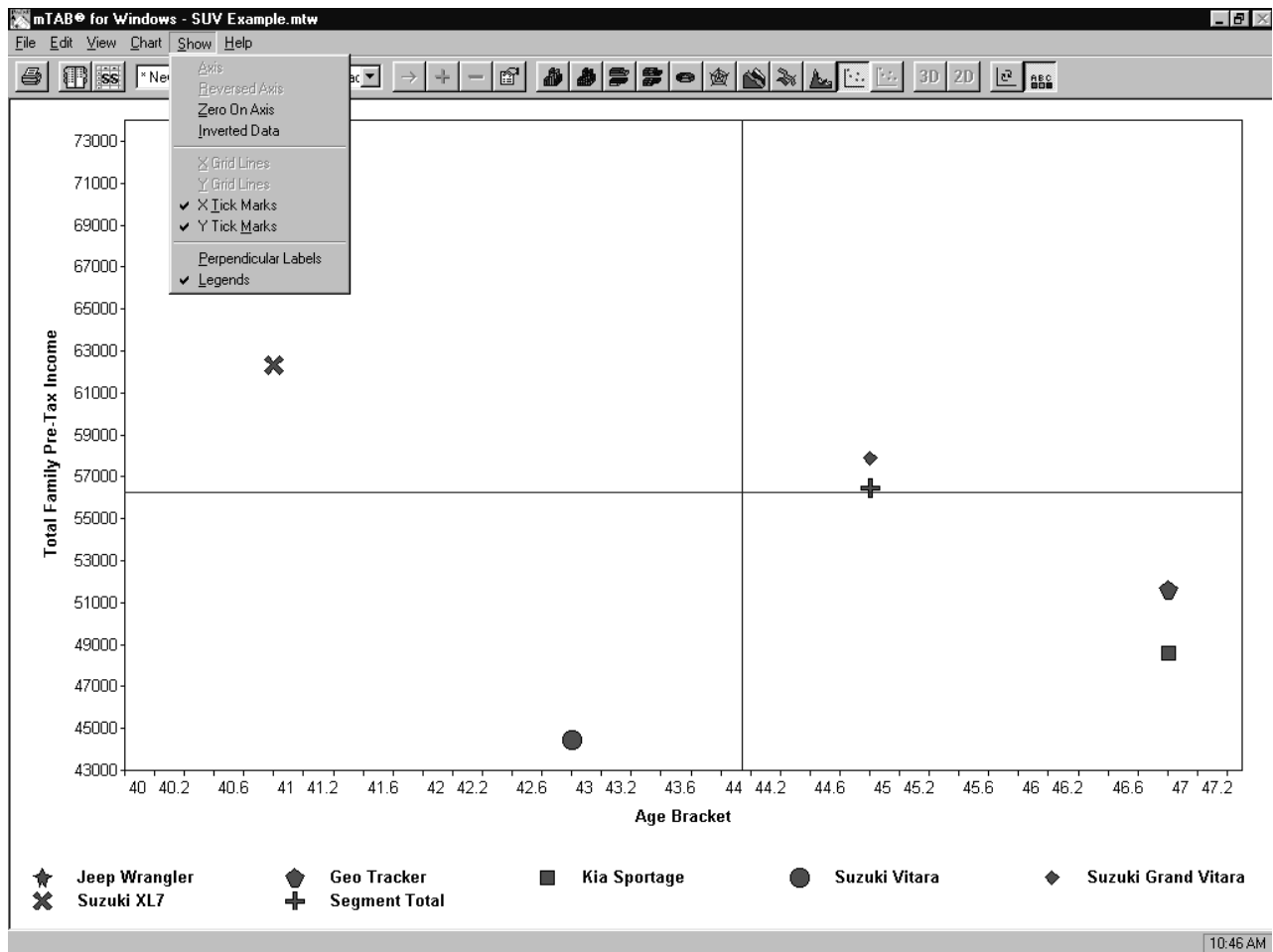
The mTAB toolbar now contains two graph icons. The 'active' graph icon reads "New Graph" when highlighted and is available when the user 'paints' a data range in the spreadsheet.

The 'inactive' graph icon reads "Current Graph" when highlighted. This icon will not be available for use until the first graph is created.

D4..G10							
	A	B	C	D	E	F	G
1			Age Bracket			Total Family Pre-T	
2				Median	Unweighted Subset Total Count		Median
3	New Model Purchased						
4		Jeep Wrangler		41	608		72,303
5		Geo Tracker		47	526		51,613
6		Kia Sportage		47	495		48,599
7		Suzuki Vitara		43	243		44,480
8		Suzuki Grand Vitara		45	591		57,900
9		Suzuki XL7		41	231		62,352
10		Segment Total		45	2,694		56,497



When the "New Graph" icon is selected, the default bar graph appears on the screen. A bar graph of age and income is of no use to the analyst due to the large difference in data values. Selecting the XY or scatter chart icon provides a more intelligent graph. Below, the XY chart shows the age-income composition of models in the Small SUV segment. Removing the check mark in front of "Zero on Axis" from the Show command will improve the look of your graph.



Saving the chart

If you want to save the XY chart within a saved tab file, use the **+** icon on the toolbar. The “Display Properties” dialog allows you to type in your own titles. The title also serves as the ‘saved’ description.

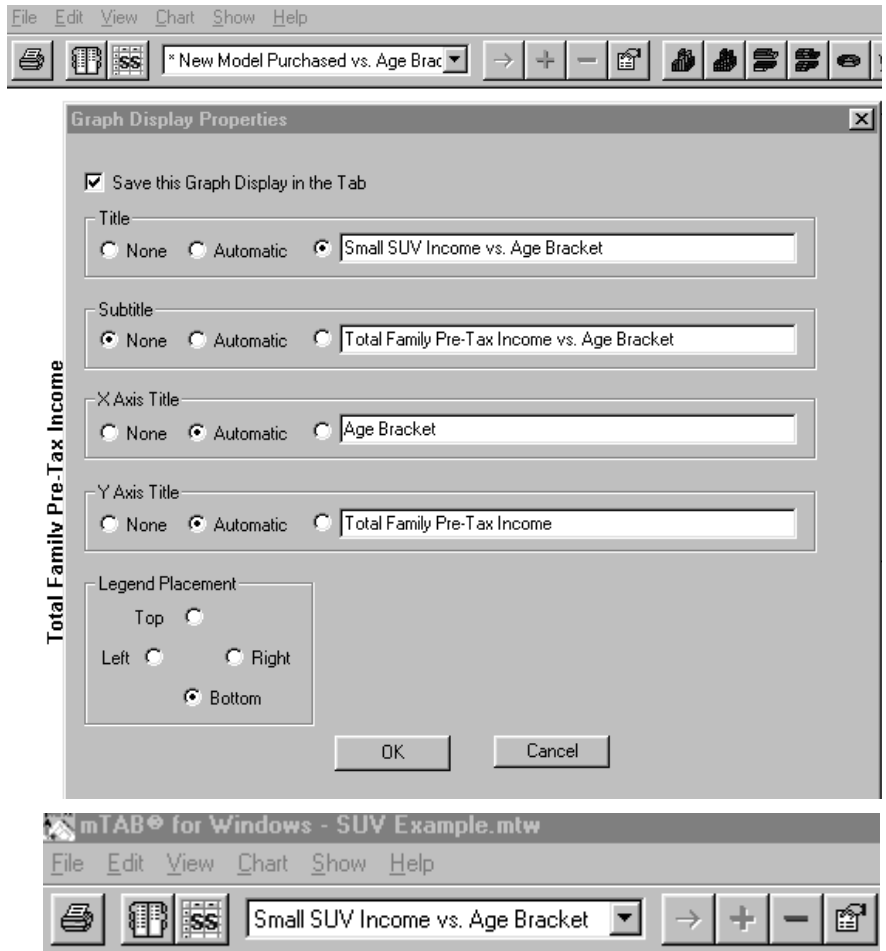
Here we have titled the graph “Small SUV Income vs. Age Bracket”

Placing a checkmark in the “Save this Graph Display in the Tab” will retain the graph settings throughout the mTAB session.

After selecting **OK**, the “Graph Views” drop down menu contains the “Small SUV Income vs. Age” title.

A graph can be deleted by using the **-** icon.

Multiple graphs can now be added to the Graph Views window. Return to the mTAB spreadsheet using the **SS** icon to add more graphs.



mTAB for Windows - SUV Example.mtw						
File Edit Format Data Run Tab View Help						
D16.G30						
A	B	C	D	E	F	G
1		Age Bracket			Total Family Pre-T	
2		Median	Unweighted Subset Total Count		Median	
9	Suzuki XL7	41	231		62,352	
10	Segment Total	45	2,694		56,497	
11	Formatted Sample Total	48	112,775		66,116	
12	Unweighted Sample Total Count		112,775			
13						
14	New Model Purchased					
16	Jeep Liberty	41	272		69,723	
17	Ford Escape	43	1,324		64,818	
18	Pontiac Aztek	46	502		65,739	
20	Honda CR-V	48	479		62,868	
22	Isuzu Rodeo Sport	40	300		53,762	
24	Hyundai Santa Fe	44	1,350		62,137	
25	Mazda Tribute	45	723		68,250	
26	Mitsubishi Montero Sport	38	866		63,518	
27	Nissan Xterra	36	511		68,734	
28	Subaru Forester	51	577		69,888	
29	Toyota RAV4	46	605		63,138	
30	Segment Total	44	9,506		64,307	
31	Formatted Sample Total	48	112,775		66,116	
32	Unweighted Sample Total Count		112,775			
33						
34	New Model Purchased					
35	Dodge Durango	43	536		76,772	
36	Jeep Grand Cherokee	48	804		86,468	

Adding more charts to your tab

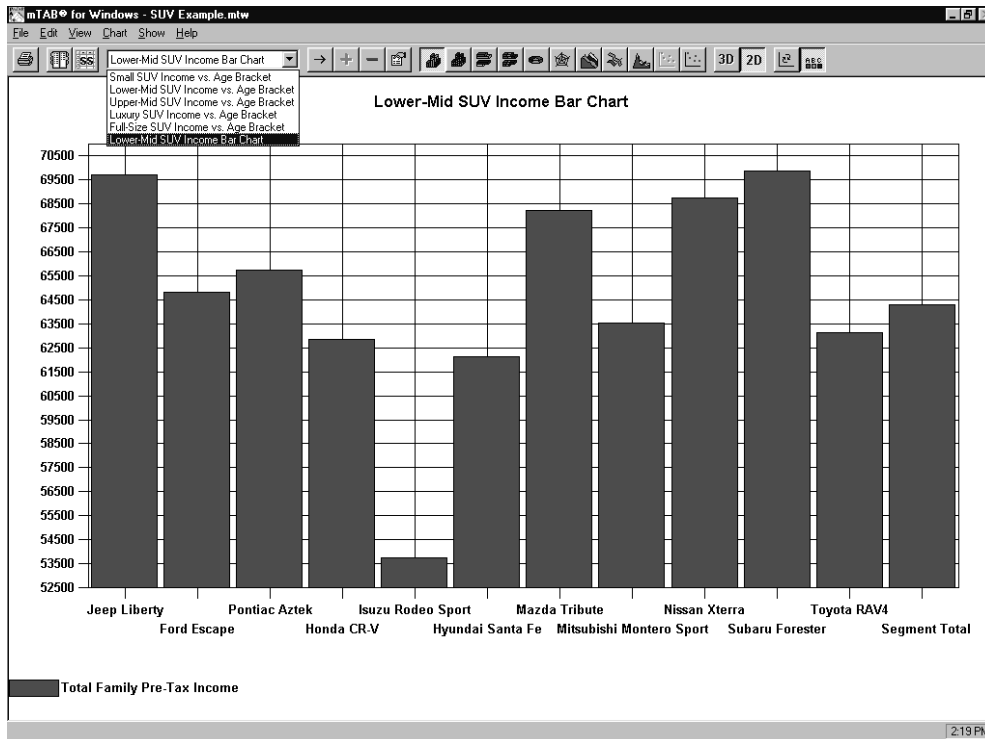
Returning to the spreadsheet view, the “Current Graph” icon is available. The icon will always return the user to most recently created graph regardless of the cells highlighted in the spreadsheet view.

In the spreadsheet view, the user can add more graphs to the saved tab. ‘Paint’ the spreadsheet cells representing median Age and Income for the Lower Middle SUV segment then select the “New Graph” icon.

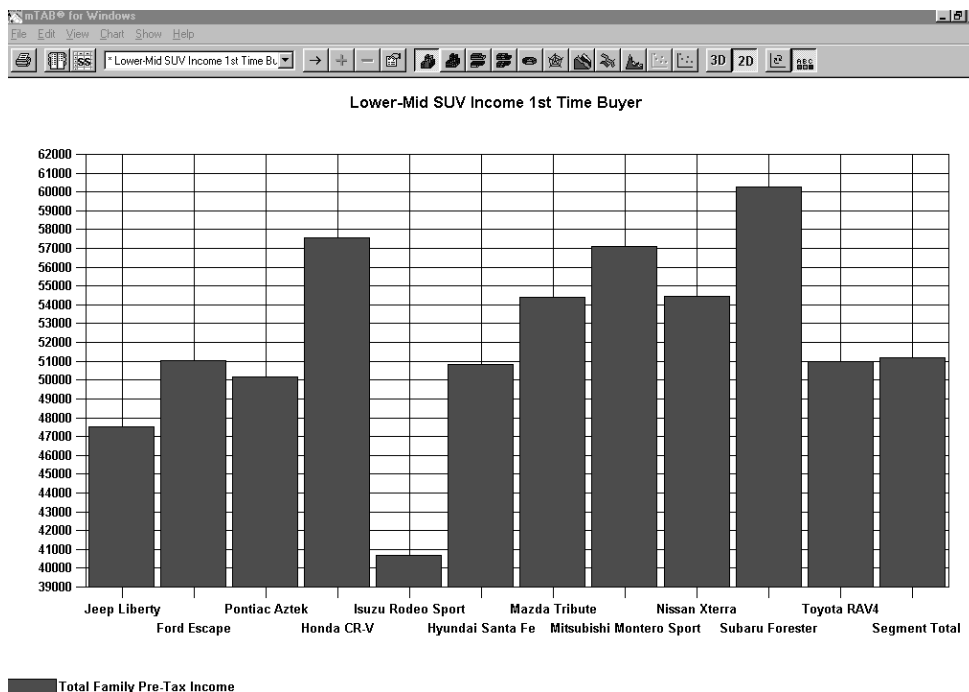
mTAB prompts for the ‘data type’ (median), then uses the current graph for the default settings of the new graph. The XY scatter chart plotting age and income for the Lower Middle SUV models is represented. Change the title of the graph for Lower Middle SUV models. Quite easily, the scatter chart becomes the second stored chart.

Make sure you save the tab once you return to the spreadsheet view to keep graphs for future use!

The “Graph Views” drop down menu below now shows how multiple charts, some of different types (bar, pie, scatter, etc.), can be stored in one tab report (SUV Example.mtw). Simply use the drop down menu or use the arrow icon → on the toolbar to quickly cycle through saved charts. In a future mTAB session, you can open a saved tab, run it, then use the “Current Graph” icon to cycle through any or all of the stored graphs.



The compilation of saved graphs is useful when **filtering** the tab. After re-running the current tab, filtered for **First Time Buyers**, all stored graphs will display the filtered results. Just click the ‘Current Graph’ icon in the spreadsheet view to see how the graphs have changed. All you need to do is edit the graph title(s) to reflect the definitional change when the filter was inserted. Save the current tab under a new name and all the ‘filtered’ graphs are saved with it.



continued from page 1

K-Mean Cluster Steps

To begin setup of the analysis, use the “Select Questions” and “Cluster Settings” tabs on the screen’s left side.

Select Questions tab

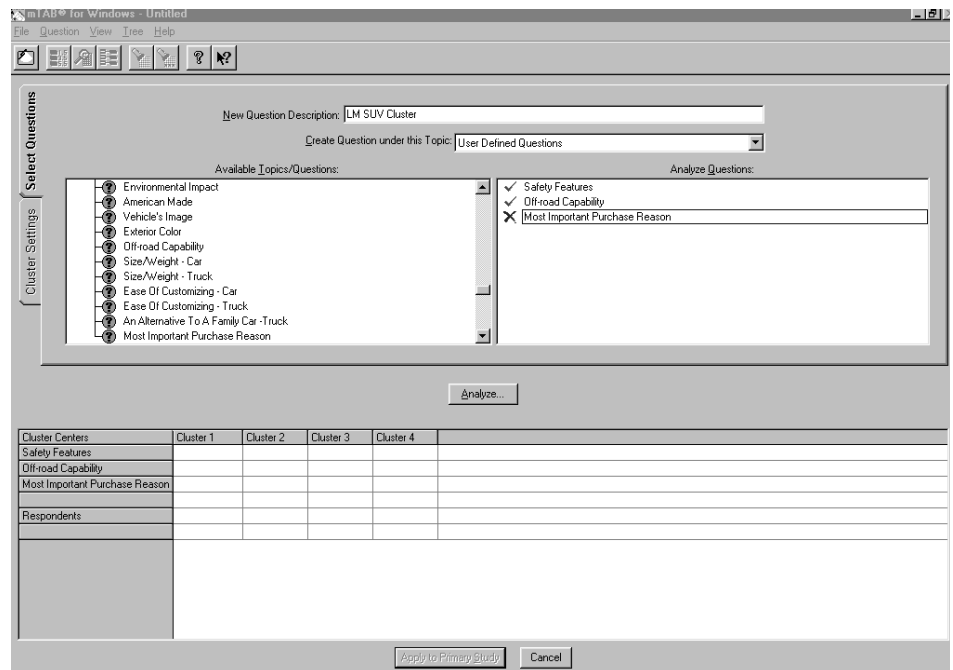
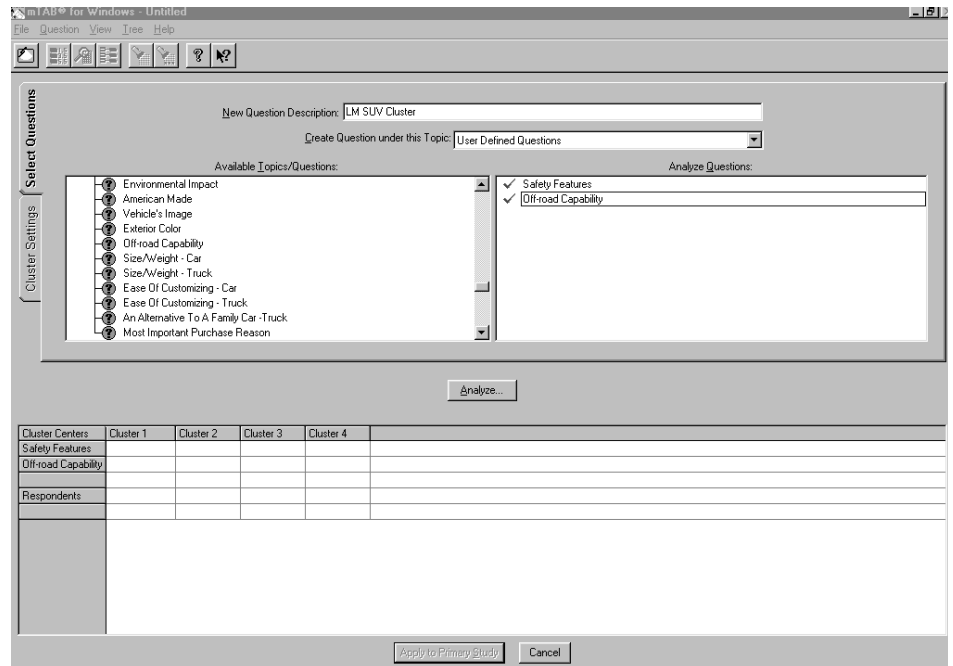
Add a description for the new cluster assignment question that will be created. The description used in this example is based on the filter that was established before launching k-means.

The familiar Topic/Question is available for selection of questions. Here, a simple clustering using the Purchase Decision questions “Safety” and “Off-Road Capability” will be illustrated. Notice each question selected also appears under the Cluster Centers column in the table at the bottom of the screen.

mTAB flags questions that are not appropriate for this analysis. A red **X** appears in front of any ‘non-scalar’ question description. It is an indication that it should be removed from the “Analyze Questions” bin. The Most Important Purchase Reason should not be used for a cluster analysis. See the Q&A section for exceptions.

Other questions that will have no bearing on the analysis and will prevent the analysis from being run should also be removed. “Car Only” questions should not be selected if the focus is a “Truck Only” related analysis. In this example a filter established before launching K-means identifies the Lower Mid SUV market.

After question selection is complete, select the **Cluster Settings** tab.



Cluster Settings tab

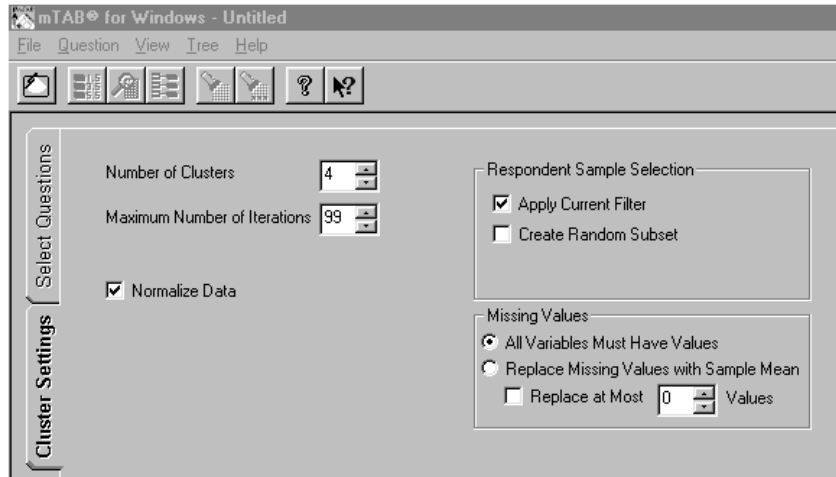
The default setting for the “Number of Clusters” to create is 4. This number can be adjusted as low as 2 and may never exceed the number of cases used for the analysis. Most k-means cluster groups end up in the range of 3 to 5 but this is dependent on the sample and number of questions being used for the analysis. Many analysts running k-means cluster will change the number up or down to see if the resulting groups appear more discriminate when changing this value.

The maximum number of iterations is set at 99. It is rare that the algorithm needs more than 25-30 iterations. Again, the number of iterations required to create the groups is dependent on the size of the data inputs.

A check box option to “Normalize Data” is a default setting. When unchecked, the cluster assignments can vary from the results of the normalized analysis. Using normalized data allows the user to toggle between means and normalized.

If you have created a filter that you want to use for the K-means cluster analysis, check the “Apply Current Filter” box. Without checking it, the analysis is run on the entire data set.

Finally, the default setting for missing values forces all variables to have values. This is standard assumption for the k-means cluster approach.



Click “Analyze...” and the cluster means solve

Analyze...

Iterations: 3

Cluster Centers	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Safety Features	2.6481	5.4644	8.5317	8.6957
Off-road Capability	6.2773	4.5685	3.3125	8.5081
Respondents	79	901	3221	2109
	1.25%	14.28%	51.05%	33.42%

Means for 4 clusters (normalized data)

K-means shows it took 3 iterations to solve for 4 cluster groups for Safety and Off-road. Cluster 1 represents a small percentage of the sample. Additionally, there are only two input questions (Safety and Off Road) so the number of clusters can be revised downward to 3.

Iterations: 3

Cluster Centers	Neutral	Safe On Road	Safe Off Road
Off-road Capability	4.7764	2.8435	7.8747
Safety Features	5.1218	8.3241	8.8650
Respondents	980	2660	2670
	15.53%	42.16%	42.31%

Means for 3 clusters (normalized data)

If you choose to use the cluster assignments in the mTAB session, edit the cluster labels with a right mouse button click. The “Edit Cluster Label” option allows for friendlier names than cluster #1, #2, #3. The mean ratings for each question reflect the assigned name.

Saving the Cluster Groupings

To use the 3 cluster grouping in mTAB, use the “Apply to Primary Study” selection at the bottom of the screen.

The “Create Question under this topic” drop down menu allows the LM SUV Cluster question description to be stored under any topic. The default location is the User Defined Questions item at the bottom of the topic menu.

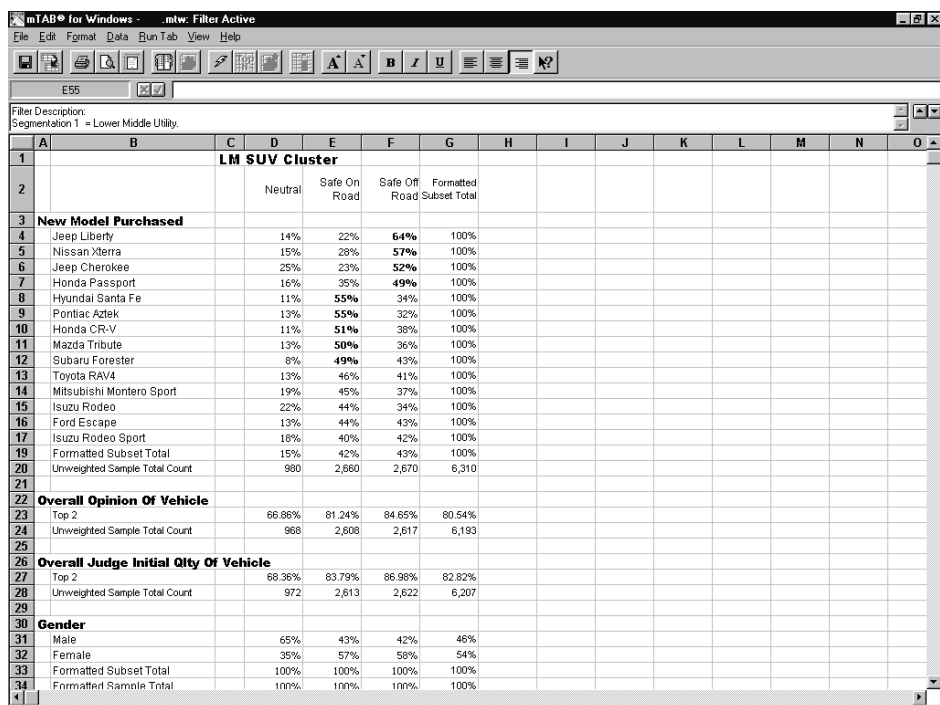
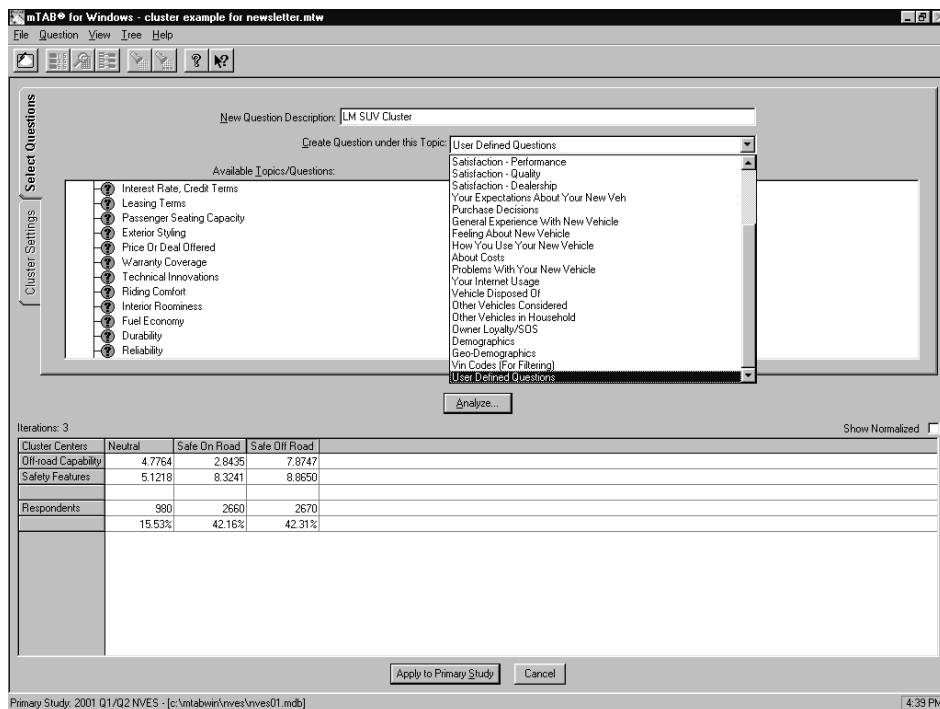
Once saved in mTAB’s topic/question menu, the cluster question can be edited, deleted, or copied to create a new cluster analysis grouping.

The new cluster question can be used in any of the question selection areas (row, column, filter, or 3rd Level Question) just like any other.

A column-row report shows the composition of the clusters across the models in the Lower Middle SUV segment.

Other measures can be captured on each cluster group.

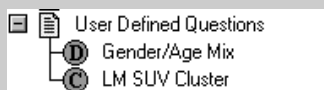
Using the clusters as a filter or 3rd level can allow examination across clusters at the model level given there is sufficient sample size.



Still far from employing the entire alphabet, the mTAB question menu can contain the following user created icon codes...

D – Defined User Question

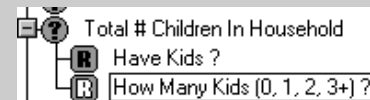
C – Cluster Question



...and don't forget our longtime friends...

R – Saved Recode

R – Session Recode

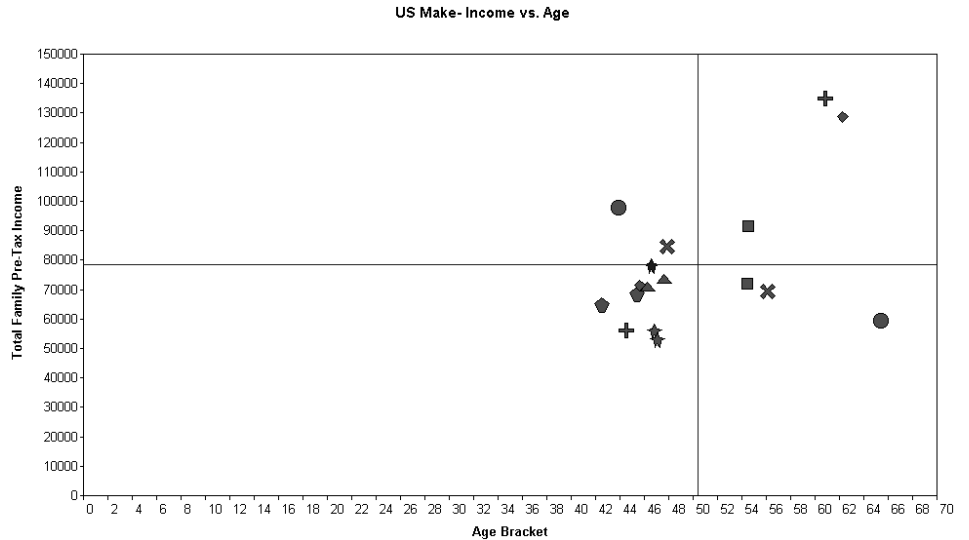


Zero on Axis

A nice little graphing feature is called “Zero On Axis”. You can find it tucked away under the “Show” option on the menu bar.

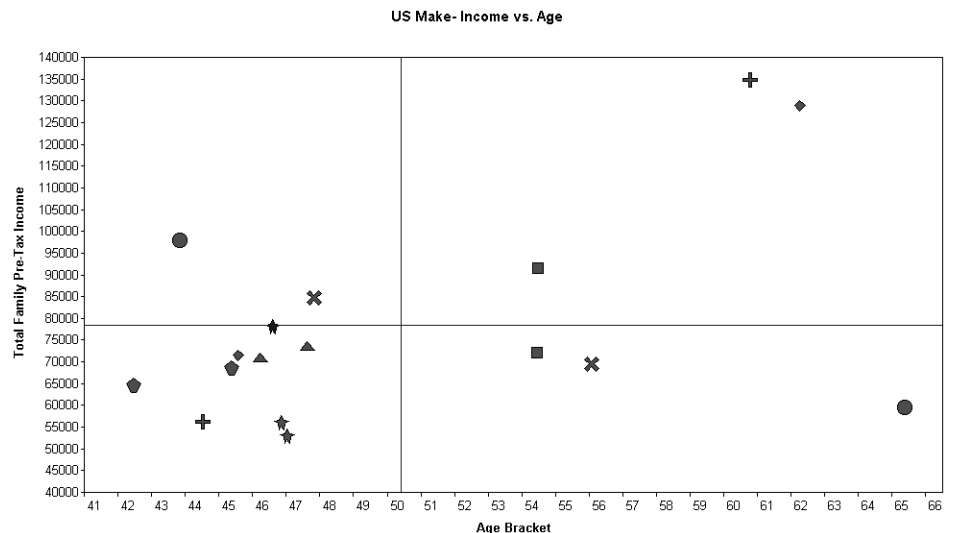


When “Zero On Axis” is checked off, the resulting chart will force the lowest value (usually zero) to be shown on the chart. Oftentimes the resulting chart will work out fine. When the data is clustered heavily around certain values however, the resulting chart could look too crowded and could be optimized by unchecking “Zero On Axis”. The resulting chart will in effect zoom in on the area where the data converges and become more readable. Now you can look at the data which is divided into four quadrants and see which makes fall into the desirable quadrant (high income, younger) and which fall into the least desirable quadrant (low income, elder).

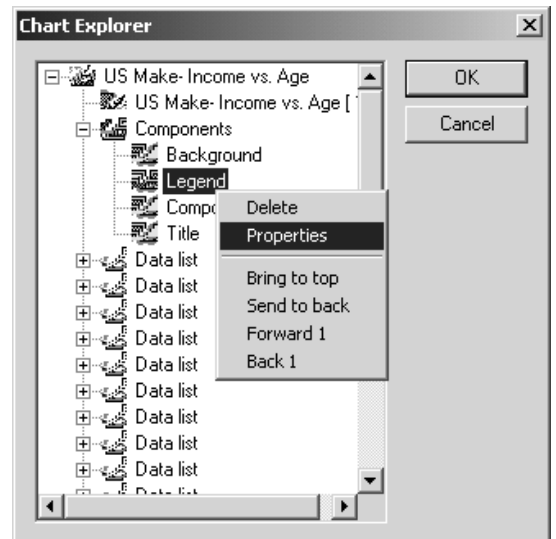


above: with “Zero On Axis”

below: without “Zero On Axis”



In an example such as this, you will have a very crowded legend, due to the large number of symbols it contains. By selecting “Chart” from the menu, followed by “Properties...” you can remedy the problem. Right-click on “Legend” in the Chart Explorer which comes up, then choose “Properties”. The resulting screen will allow you to shrink the font size under the “Font Style” tab, resulting in a less cluttered legend.



Multiple Scatter Chart Series


For purposes of presentation, or quick comparison, it is nice to be able to instantly flip through a series of charts. It will be very easy to accomplish this once you have saved the exact scatter charts which you would like to present. Either bring up one of the charts and simply start pressing the space bar to switch from one chart to the next, or you can accomplish the same thing by clicking on the “Switch to Next Graph” arrow icon above the graph. If you want to jump around the different graphs, you can do that in the chart window by using the drop-down box which gives you the names of the saved charts.

mTAB v5.4 Q&A

Q. I have just set up a great cluster chart showing the purchase brand. How can I quickly analyze the purchase market segment exactly the same way?

A. By switching to the question selection view, and replacing the purchase brand question with purchase market segment and running the tab. Now when you highlight the new results, you can go to the “current graph” view to see the new data graphed exactly the same way as the old!


Q. The cluster chart I created is perfect, except for one thing. Is there a way to switch the x and y axis without rearranging all the questions in my tab?

A. Yes, just click on the inverted data icon! Alternately you can select “Show”  from the menu, and click on “Inverted Data”.

Q. I need to use the graphs I created in a PowerPoint presentation, and a website as well. How can I do this?

A. From the menu bar, under “File”, you will have the option of exporting your chart into either a .bmp or .jpg file. Both are easily imported into almost any program. A .bmp file will have the advantage of not losing any resolution at all, while a .jpg would be good on a web site where file size and download time can become an issue.

Q. I noticed that when I am in the chart window and I want to close it, I can't seem to. What is going on with this?

A. This has been done to prevent you from losing all of your work in mTAB. In some programs, charts come up in separate windows which are usually closed in order to return to the main application. People accustomed to this would close this window by habit in order to get back to their tab, only to find out they have closed mTAB completely and lost all of their work in setting up the tab and chart. This solution allows you to go immediately back to the question selection view, or the spreadsheet view, either of which will  allow you to continue work on the tab, or to exit mTAB.

Q. Certain questions show up with an X when I try to do a K-means cluster analysis. I would like to use them anyways. Can I?

A. Yes. Any response to a question in mTAB can be assigned a numeric weight. So the responses to gender could be weighted 0 for male, 100 for female, and then you can use the question in your analysis. This cannot be used for any question however, some questions like purchase reasons can have no logical value assigned to them. To add weights to responses, go to the question subset view and type in the weight you would like to use in one of the columns.

New Service - AuditHost

We are pleased to announce that our mTAB service has a new companion called AuditHost. This is a turnkey service for “corporate auditing”. What is this? Well, large retailers, consumer product and consumer service companies run audit programs for compliance, such as environmental or safety inspections, inventory availability, etc. But, perhaps the application that you will be most familiar with is ‘secret shopping’ to determine the customer’s perspective. Mystery Shopping is typically performed using third party auditors, and for large corporations this usually means employing and co-ordinating different companies to completely cover national retail network. Each shopping company will have it’s own approach to implementing the audit and their own methods of collecting and presenting the results. This can result in a real headache for the corporate co-ordinator. He/She must ensure that the audits are conducted consistently across all of the auditing companies and then combine diverse data feeds from many different companies, in order to do any worthwhile analysis. Changing individual audit companies can also be problematic. This implies a change in the process and therefore consistency, as well as a probable change in the way the resultant data is delivered. Our AuditHost service removes these concerns, enabling the corporate co-ordinator to take control.

If you think AuditHost may be the solution for your company or to learn more, please contact Brad Hontz at 800-693-3111 x25. Brad will be pleased arrange a demonstration for you.

