



Synchrony Demo

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ABOUT THE DOCUMENTATION

Revision Date: October 23, 1998

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Getting Started

Introduction

Synchrony™ is analytic software designed for business analysts and decision-makers to examine in-depth relationships across multiple aspects of their businesses. Based on the foundation of relational OLAP, and extended to encompass the full capability of multidimensional analysis, Synchrony permits you to understand your true business drivers. By utilizing temporal concepts and methodology, Synchrony becomes the framework for a new class of *analytic application*.

The goal of this documentation is to familiarize you with the ways you can use Synchrony to answer your important business questions so that you can begin using it productively right away. Utilizing sample databases, you will take control of business scenarios for a grocery store, credit card transactions, and a frequent flyer program. By doing so, you will learn how to maximize the power of Synchrony from your own desktop, and be able to apply what you learn in these scenarios to answer your own business questions.

About Synchrony Demo

There are three data marts available on Synchrony Demo. Each of these data marts has five reports associated with it. You may open any of these reports and run them against the databases provided with the software. Chapters 2, 3, and 4 in this document describe in a step by step manner how each of these reports were constructed. We suggest that you choose the data mart that most interests you and step through the construction of at least a few of the reports included. You may also want to try constructing reports of your own design.

The data marts included with Synchrony Demo are:

Credit Card Transactions Data Mart

This is a marketing/customer profitability sample database from the credit card industry that includes credit cardholder account number, address, demographic, and purchase transaction information. Data is available for Q4 1994 and Q4 1995.

Grocery Data Mart

This is a sample database from the retail industry that includes product, sales, promotion, and store information. Data is available for the full years 1994 and 1995.

Frequent Flyer Data Mart

This is a revenue generation/loyalty program sample database from the airline industry that includes customer, flight, fare, and sales channel information. Data is available for Q4 1994 and Q4 1995.

Synchrony Demo allows you to run reports scripted in this document and any reports you construct on your own. All reports constructed must use one of the sample data marts included. Synchrony Demo does not support the ability to query your own data marts. To try your own data, please contact *if...* to find out about the Synchrony Evaluation Program.

Synchrony Demo runs with Microsoft Access databases that are included with the Synchrony Demo CD. The full version of Synchrony supports a number of RDBMSs as listed in the Synchrony Data Sheet.

Synchrony Demo supports “one-button” access to Microsoft Excel from the Synchrony application. Unlike the full version of Synchrony, Synchrony Demo does not support the ability to call Synchrony directly from Excel.

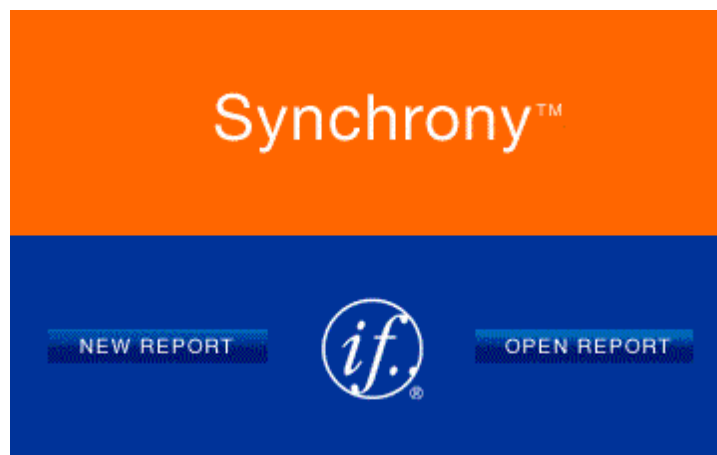
The titles for the Synchrony Demo reports include the names of the sample data marts. For example, **Credit Card Transactions – Simple Query** means that the Credit Card Transactions data mart is used. You must select **Credit Transactions** when creating a new report. See the section **Creating Your First Report**.

To Install Synchrony Demo

- Please insert the Synchrony Demo CD and follow the installation instructions on screen. If the CD does not autorun, go to **Add/Remove Programs** in the **Control Panel**, and click the **Install** button. Follow the instructions on your screen.
- Note that in addition to installing the Synchrony Demo software, the Synchrony User Manual will also be installed in both HTML and Microsoft Word 7.0 formats. You may refer to those documents to supplement the information contained within this document.

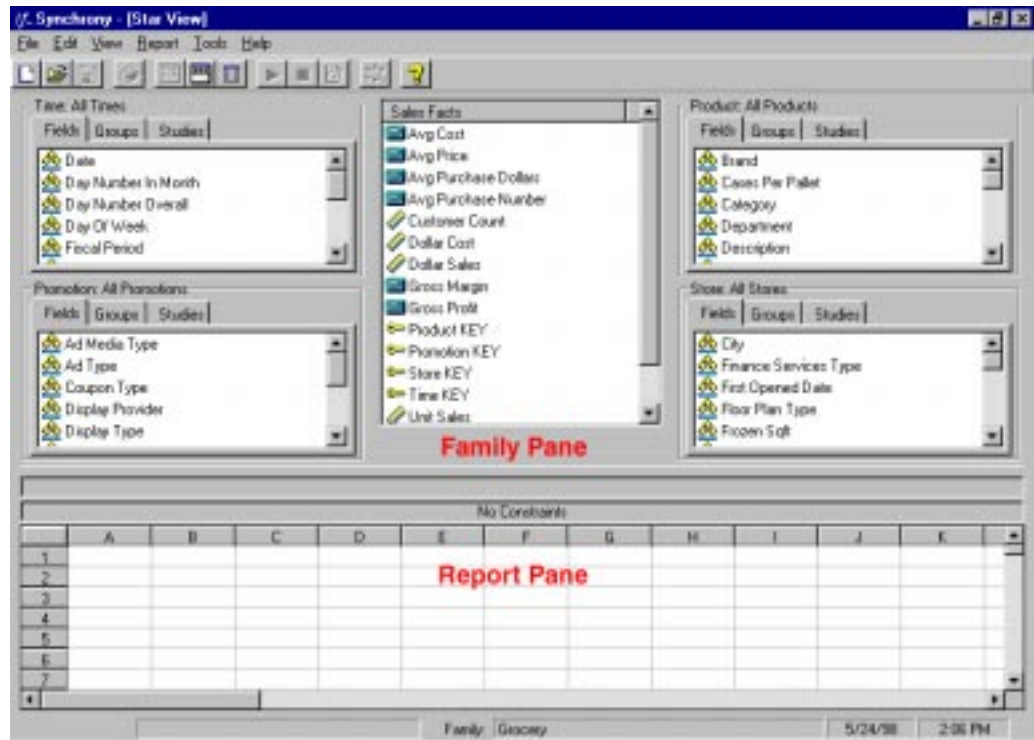
Getting Started

- By default, the installation program has already configured Synchrony Demo to run the sample data that we are going to be using in order to familiarize you with the product.
- Upon launching the program, you are presented with two choices: **New Report** and **Open Report**. These options are also available from the **File** menu.



- To create a new report, click on **New Report** and select the data mart for which you wish to create a report.
- To open an existing report, click on **Open Report**, expand the report list for one of the provided data marts, and choose one the existing reports.
- The main Synchrony window will appear. The main Synchrony window is divided into two parts; the **Report Pane**, which takes up the lower half of the screen and resembles a spreadsheet, and the **Family Pane**, which takes up the upper half of the screen.

GETTING STARTED

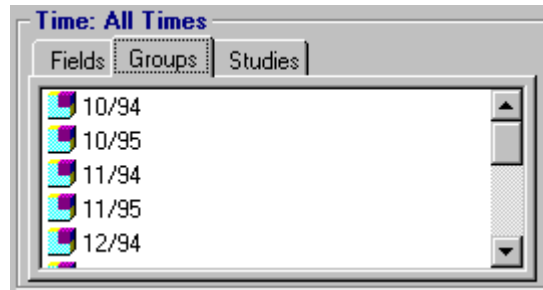
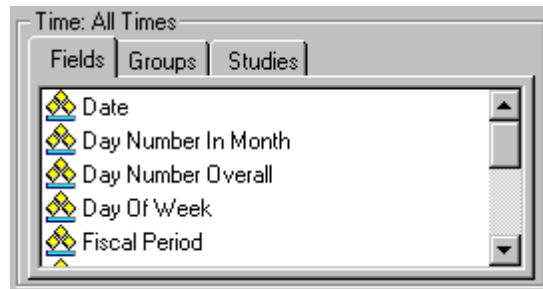


The central table shown in the Family pane is called the **Fact table**. The tables arranged around the Fact table are referred to as **Dimension tables**. In every Family Pane, there is always a Fact table, and anywhere from 1 to 20 Dimension tables. In the illustration above, the Family pane is displayed in **Star View** mode. If there are too many dimensions to effectively display the information in Star View mode, Synchrony will automatically switch to **Single View** mode. In Single View mode, you will see a list that includes the titles of the available dimension tables. By clicking on the dimension table you wish to view, you will see the details of your chosen dimension table displayed.

The Fact table contains the facts, or **measures**, relating to your business. Anything from the Fact table can be dragged down onto the report pane. To do so, point at the item in the Fact table you wish to drag onto the report pane, hold down the left mouse button, and drag the icon onto the report pane.

A dimension table contains lists of **Fields**, **Groups**, and **Studies**. Fields represent the attributes associated with the dimension. Groups and Studies represent constraints constructed for a dimension. You can select between these three by clicking on the Fields, Groups, or Studies tab on a given dimension.

GETTING STARTED



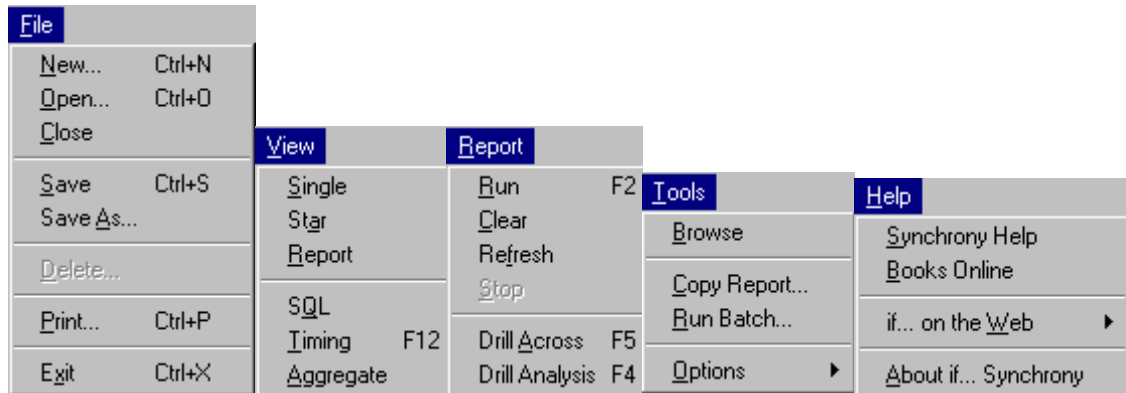
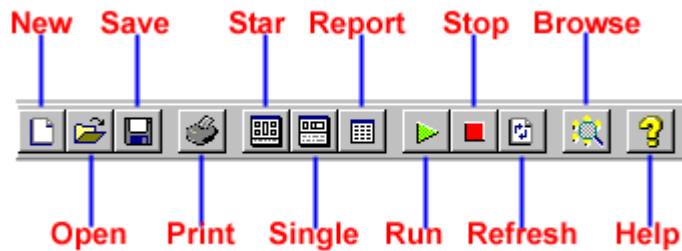
The three have somewhat different characteristics in the way in which they are applied to a report in Synchrony.

First, only Fields can actually be dragged from the given dimension table directly onto the report pane, as can anything from the Fact table. To do so, point at the item in the Dimension table you wish to drag onto the report pane, hold down the left mouse button, and drag the icon onto the report pane.

Groups and Studies, on the other hand, are constraints that may be applied either to the report as a whole, or to individual fact columns in the report. To apply a Group or Study constraint, simply drag and drop it onto a fact column or onto the report title area. In other words, Groups and Studies cannot be used to create columns in the report pane, only to constrain existing fact columns there.

Toolbar and Menus


Before we delve deeply into Synchrony, let's go over some basic toolbar and menu functionality.



- The purpose of the **Clear** function on the Report menu is to clear the results obtained from running the report. The column headers remain intact.
- On the **Help** menu, Synchrony Help brings up the standard help dialog including an index, as does the question mark icon on the toolbar. Books Online brings up the Synchrony User Guide, while *if...* on the Web consists of relevant links to the *if...* website.
- **Single**, **Star** and **Report** on the View menu and on the toolbar change how the main window is displayed.
- Selecting **Run** from the Report menu runs the report. Selecting **Refresh** re-executes all of the queries which are associated with the report.
- **Stop** interrupts the running of a report.

Creating Your First Report

To create a new report:

1. Click on the **Create New Report**  button or click on New Report from the splash screen if you have just launched the program. Alternately, select **File→New...**
2. This will pop up the **New Report** dialog.
3. From this dialog, scroll down and choose one of the three available data marts, then click **OK**.

Chapters 2, 3, and 4 in this document walk you through the process of constructing a new report. You should select one of the available data marts and try following the steps described in constructing a report as detailed in one of those chapters.

Credit Card Data Mart

SIMPLE QUERY

Lily is in the Credit Risk Department of a major credit card company. She wants to understand how much credit risk each state had outstanding during November 1995. November is traditionally a high spending month because of the holiday season.

This is a simple query that shows a snapshot of data in time. Most query tools can run simple queries such as this one.

To create a new report

- Go to **File→New** on the menu.
- Click on **Credit Transactions**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report click **No**.
- Click **View→Single** on the menu.

1. To select fields for your report:

- From the Day dimension, drag and drop **Date** onto the report pane.
- From the Account dimension, drag and drop **Account State** onto the report pane.
- From Card Transactions (Fact table), drag and drop **Current Debt** onto the report pane.
- From the Day dimension, click the **Groups tab** and drag and drop **Month = Nov 1995** onto the report title area.


2. To create report title:

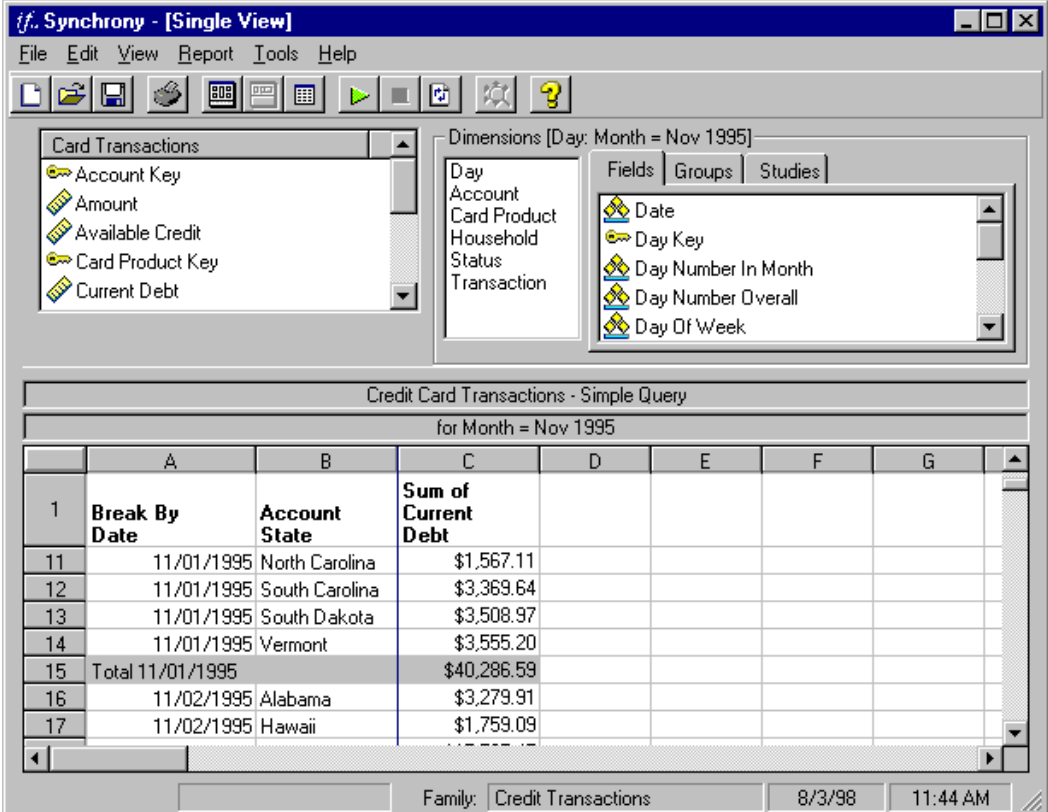
- **Right** click on the report title area.
- Click in the Report Title edit box and type **Credit Card Transactions – Simple Query**.
- Click **Close**.

3. To create a subtotal:

- **Right** click on column A (Date) and select **Properties→Break by**.

CREDIT CARD DATA MART

- Check the **Break on this column** box to enable it.
 - Click **OK**.
4. To run the report:
- Click **Run Report** .
5. To view full report:
- Choose **View→Report** from the menu.



The screenshot shows a software window titled "if. Synchrony - [Single View]" with a menu bar (File, Edit, View, Report, Tools, Help) and a toolbar. On the left, a list of fields includes Account Key, Amount, Available Credit, Card Product Key, and Current Debt. On the right, a "Dimensions" panel shows a list of fields including Date, Day Key, Day Number In Month, Day Number Overall, and Day Of Week. The main area displays a table titled "Credit Card Transactions - Simple Query for Month = Nov 1995". The table has columns A through G. Column A is labeled "Break By Date", column B is "Account State", and column C is "Sum of Current Debt". The data rows show transactions for November 1995, including a total for the month and transactions for the following month (December 1995).

	A	B	C	D	E	F	G
1	Break By Date	Account State	Sum of Current Debt				
11	11/01/1995	North Carolina	\$1,567.11				
12	11/01/1995	South Carolina	\$3,369.64				
13	11/01/1995	South Dakota	\$3,508.97				
14	11/01/1995	Vermont	\$3,555.20				
15	Total 11/01/1995		\$40,286.59				
16	11/02/1995	Alabama	\$3,279.91				
17	11/02/1995	Hawaii	\$1,759.09				

Family: Credit Transactions 8/3/98 11:44 AM

This is an example of a simple query that shows a snapshot of data in time. Most query tools can run simple queries such as this one.

COMPLEX QUERY

Evan is in the Marketing Department of a major credit card company. He believes that customers holding high interest credit cards are high-risk spenders. Evan wants to look at the spending patterns and the debt load of his high interest card customers over the heavy purchasing period of November and December 1995 and compare the differences in purchasing behavior and average current debt for each customer.

This is a complex query where a **constraint** is created to look at only customers in the High Interest Card Product Category and only in the months of November and December 1995. Then a **comparison** is made between the two months and a percentage difference is calculated. Synchrony is able to show *atomic data* and identify individual customer account information within the High Interest Card Product constraint. Some query tools are able to run queries with constraints and comparisons. However, few are able to report *atomic data* (e.g. individual customer accounts, names, addresses) with constraints and comparisons applied.

To create a new report

- Go to **File→New** on the menu.
 - Click on **Credit Transactions**.
 - Click **OK**.
 - If a dialogue box comes up asking if you want to save the report click **No**.
 - Choose **View→Single** on the menu.
1. **To create report:**
 - From the Account dimension, drag and drop **Account No** onto column A.
 - From Card Transactions (Fact table), drag and drop **Available Credit** onto column B.
 - From Card Transactions, drag and drop **Number of Transactions** *three* times onto columns C, D and E.
 - From Card Transactions, drag and drop **Current Debt** *three* times onto columns F, G and H.
 2. **To constrain report and create report title:**
 - In the Card Product dimension click the **Groups** tab and drag and drop **High Risk** onto the report title area.
 - **Right** click on the report title area.
 - Click in the Report Title edit box and type **Credit Card Transactions – Complex Query**.
 - Click **Close**.
 3. **To calculate an average of available credit:**
 - **Right** click on column B (Available Credit) and select **Properties→Aggregate**.
 - Select **Average**.
 - Click **OK**.
 4. **To select dates to constrain report columns:**
 - From the Day dimension, click the **Groups** tab and drag and drop the following:
 - a. **Month = Nov 1995** to column C (Number of Transactions)
 - b. **Month = Dec 1995** to column D (Number of Transactions)

- c. **Month = Nov 1995** to column E (Number of Transactions)
- d. **Month = Nov 1995** to column F (Current Debt)
- e. **Month = Dec 1995** to column G (Current Debt)
- f. **Month = Nov 1995** to column H (Current Debt)

5. To create comparisons:

- **Right** click on column E (Number of Transactions Nov 1995) and select **Properties→Comparison**.
- Select **Percent Difference of**.
- Click **OK**.
- **Right** click on column H (Current Debt Nov 1995) and select **Properties→Comparison**.
- Select **Percent Difference of**.
- Click **OK**.
- While holding down the **Shift key**, drag and drop **Month = Dec 1995** from the **Groups** tab on the Day dimension onto column E (Percent Difference of Number of Transactions). Using the shift key sets the date as the one being compared.
- While holding down the **Shift key**, drag and drop **Month = Dec 1995** from the Day dimension **Groups** tab to column H (Percent Difference of Current Debt) Using the shift key sets the date as the one being compared.

6. To create averages:

- **Right** click on column F (Current Debt Nov 1995) and select **Properties→Aggregate**.
- Select **Average**.
- Click **OK**.
- **Right** click on column G (Current Debt Dec 1995) and select **Properties→Aggregate**.
- Select **Average**.
- Click **OK**.
- **Right** click on column H (Current Debt Nov 1995) and select **Properties→Aggregate**.
- Select **Average**.
- Click **OK**.

7. To remove blank rows:

- **Right** click on column C and select **Properties→Exceptions**.
- Check the **Omit Nulls** box.
- Click **OK**.

8. To run the report:

- Click **Run Report** 

9. To switch to report view:
- Choose **View→Report** from the menu.

The screenshot shows the Synchrony - [Single View] application window. The menu bar includes File, Edit, View, Report, Tools, and Help. The toolbar contains icons for file operations and a help icon. The left pane shows a tree view of data fields: Card Transactions, Account Key, Amount, Available Credit, Card Product Key, and Current Debt. The right pane shows dimensions: Day, Account, Card Product, Household, Status, and Transaction. The main area displays a table titled 'Credit Card Transactions - Complex Query for High Risk'. The table has columns A through H, representing various metrics for high-risk customers. The data is organized by account number, showing metrics like sum of transactions, average available credit, average current debt, and percentage difference between November and December 1995.

	A	B	C	D	E	F	G	H
1	Account No	Avg of Available Credit	Sum of Number of Transactions for Month = Nov 1995	Sum of Number of Transactions for Month = Dec 1995	Percent Difference of Sum of Number of Transactions for Month = Dec 1995 vs. Month = Nov 1995	Avg of Current Debt for Month = Nov 1995	Avg of Current Debt for Month = Dec 1995	Percent Difference of Avg of Current Debt for Month = Dec 1995 vs. Month = Nov 1995
2	1230010023	\$1,687.77	15	32	113.33%	\$3,553.04	\$3,214.45	-9.53%
3	1230010054	\$1,262.25	24	43	79.17%	\$2,282.33	\$1,518.91	-33.45%
4	1230010055	\$2,393.08	33	41	24.24%	\$1,525.46	\$1,861.53	22.03%
5	1230010059	\$1,098.52	13	21	61.54%	\$2,664.71	\$2,402.92	-9.82%
6	1230010071	\$1,926.67	39	45	15.38%	\$2,876.63	\$1,971.12	-31.48%
7	1230010085	\$2,548.87	20	32	60.00%	\$1,179.84	\$1,810.11	53.42%

Family: Credit Transactions 8/3/98 11:50 AM

This is a complex query where a **constraint** is created and a **comparison** is made between two periods of time. Some query tools are able to run queries with constraints and comparisons. However, few are able to report *atomic data* (e.g. individual customer accounts, names, addresses) with constraints and comparisons applied.

**COMPLEX
QUERY WITH
A STUDY AND
SLOWLY
CHANGING
DIMENSIONS**

Paige is in the Marketing Department of a major credit card company. She wants to increase interest revenue for the company by increasing the average current debt of customers. She knows that household income is a business driver of purchasing behavior. She wants to look at the change in average current debt and total number of transactions for the months of November and December 1994 for customers that were granted a credit limit increase of \$1000 or more in November 1994. She wants to list the report by household income, account number, sum of total transactions, average available credit, average current debt for October and November 1994, percentage difference between the two months, sum of

transactions for October and November 1994, and percentage difference between the two months.

This is a very complex query where a **Study** is created to *save the results of a constraint* of customers that were granted credit limit increases of \$1000 or more in November 1994. Synchrony has the unique ability to create Studies. **The results of applying constraints on various dimensions in a report can be saved as a Study.**

Slowly changing dimensions contain data that tend to change gradually over time. Customer and product information are the most common data that varies over time. If the speed of your industry is outpacing your data, then chances are you have data that varies over time and you need analytic software that can track *slowly changing dimensions*. In this example, *slowly changing dimensions* are demonstrated by identifying the *change* in average current debt and total number of transactions between the periods October and November 1994. Do you have analytic software that can tell you what changed over time?

To create a new report

- Go to **File→New** on the menu.
- Click on **Credit Transactions**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report click **No**.
- Choose **View→Single** on the menu.


1. To select fields for your report:


- From the Household dimension, drag and drop **Household Income** onto column A.
- From the Account dimension, drag and drop **Account No** onto column B.
- From Card Transactions (Fact table), drag and drop **Amount** onto column C.
- From Card Transactions, drag and drop **Available Credit** onto column D.
- From Card Transactions, drag and drop **Current Debt** *three* times onto columns E, F and G.
- From Card Transactions, drag and drop **Number of Transactions** *three* times onto columns H, I and J.

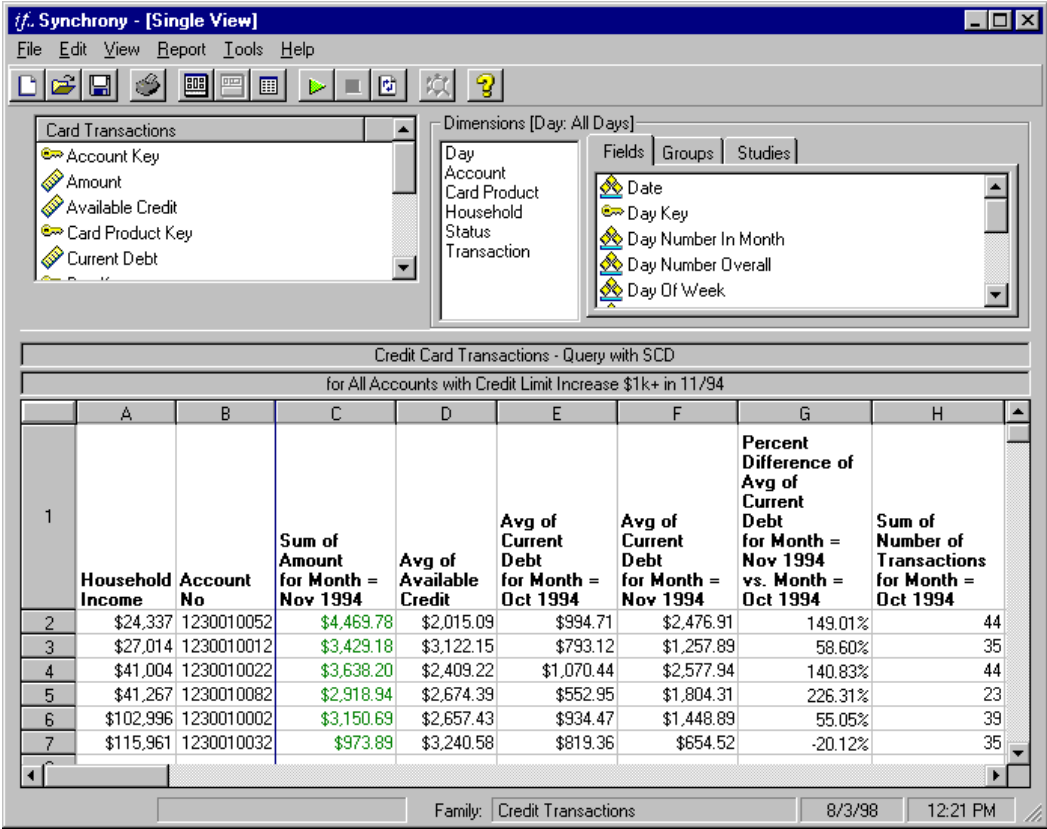
2. To create report title:

- **Right** click on the report title area.
- Click in the Report Title edit box and type **Credit Card Transactions – Query with SCD**.
- Click **Close**.

3. To create a Study:

- This study has been created for you. If you wish to create it yourself, follow these steps. Otherwise, skip to step 4.
 - a. With the Account dimension selected, click the **Browse**  button.
 - b. Select **Tools→Study Changes** from the menu
 - c. Select the **Credit Limit** field to study
 - d. For Type, choose **Value Increase**.
 - e. In the box marked Min enter **1000**.
 - f. Select **Month = Nov 1994** for the time constraint for the study.
 - g. Click **OK**.
 - h. **Name** the study **Credit Limit Increase \$1k+ in 11/94**.
 - i. Click **OK**.
 - j. Close the Browser window.
- 4. **To use the Study:**
 - From the Account dimension, click the **Studies** tab and drag and drop the study named **Credit Limit Increase \$1k+ in 11/94** to the report title.
 - When prompted to choose a time period for the study, select **All of time** and click **OK**.
- 5. **To select dates to constrain report columns:**
 - From the Day dimension, click the **Groups** tab and drag down the following:
 - a. **Month = Nov 1994** to column C (Amount)
 - b. **Month = Oct 1994** to column E (Current Debt)
 - c. **Month = Nov 1994** to column F (Current Debt)
 - d. **Month = Oct 1994** to column G (Current Debt)
 - e. **Month = Oct 1994** to column H (Number of Transactions)
 - f. **Month = Nov 1994** to column I (Number of Transactions)
 - g. **Month = Oct 1994** to column J (Number of Transactions)
- 6. **To create an average:**
 - **Right** click on column D (Available Credit) and select **Properties→Aggregate**.
 - Select **Average**.
 - Click **OK**.
 - **Right** click on column E (Current Debt Oct 1994) and select **Properties→Aggregate**.
 - Select **Average**.
 - Click **OK**.
 - **Right** click on column F (Current Debt Nov 1994) and select **Properties→Aggregate**.
 - Select **Average**.
 - Click **OK**.

- **Right** click on column G (Current Debt Oct 1994) and select **Properties→Aggregate**.
 - Select **Average**.
 - Click **OK**.
- 7. To create comparisons:**
- **Right** click on column G (Current Debt) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - **Right** click on column J (Number of Transactions Oct 1994) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - While holding down the **Shift key**, drag and drop **Month = Nov 1994** from the **Groups** tab on the Day dimension onto column G (Percent Difference of Current Debt). Using the shift key sets the date as the one being compared.
 - While holding down the **Shift key**, drag and drop **Month = Nov 1994** from the **Groups** tab on the Day dimension onto column J (Percent Difference of Number of Transactions). Using the shift key sets the date as the one being compared.
- 8. To create an exception:**
- **Right** click on column C (Amount) and select **Properties→Exceptions**.
 - For Top Condition click on **At or Above Value of M**.
 - Enter **500** in the **M =** edit box.
 - For Report Display, click **Restrict to Exceptions**.
 - Click **OK**.
- 9. To run the report:**
- Click **Run Report** 
- 10. To view full report:**
- Choose **View → Report** from the menu.



	A	B	C	D	E	F	G	H
1	Household Income	Account No	Sum of Amount for Month = Nov 1994	Avg of Available Credit	Avg of Current Debt for Month = Oct 1994	Avg of Current Debt for Month = Nov 1994	Percent Difference of Avg of Current Debt for Month = Nov 1994 vs. Month = Oct 1994	Sum of Number of Transactions for Month = Oct 1994
2	\$24,337	1230010052	\$4,469.78	\$2,015.09	\$994.71	\$2,476.91	149.01%	44
3	\$27,014	1230010012	\$3,429.18	\$3,122.15	\$793.12	\$1,257.89	58.60%	35
4	\$41,004	1230010022	\$3,638.20	\$2,409.22	\$1,070.44	\$2,577.94	140.83%	44
5	\$41,267	1230010082	\$2,918.94	\$2,674.39	\$552.95	\$1,804.31	226.31%	23
6	\$102,996	1230010002	\$3,150.69	\$2,657.43	\$934.47	\$1,448.89	55.05%	39
7	\$115,961	1230010032	\$973.89	\$3,240.58	\$819.36	\$654.52	-20.12%	35

This is an example of a very complex query where a **Study** is created and **slowly changing dimensions** are demonstrated by identifying the *change* between two periods of time. Synchrony is the only analytic software today that combines the power of **Studies** and **temporal technology** to track *slowly changing dimensions*.

**COMPLEX
QUERY WITH
A STUDY**

Ellie is in the Finance Department of a major credit card company. She is looking for ways to increase revenue for her company. She wants to look at the revenue of the customer segment that is expected to have the highest revenue growth rate in her company. The customer segment criteria has household income over \$50,000, no overdrawn status, average debt of \$500 or more in 1994, and a family household type. She will calculate interest revenue by multiplying average current debt by 12% which is the interest rate that her company charges. She wants to list the report by household income, account number, average current debt, and annual revenue (average current debt multiplied by 12%).

This is a complex query where a **Study** is created to save the *results of a constraint* of the customer segment. Synchrony has the unique ability to create **Studies**. **The**

results of applying constraints on various dimensions in a report can be saved as a Study.


A **calculation** is done from the results of the Study to determine interest revenue from average current debt.

Few query tools are able to save the *results of constraints* as in Synchrony. Some query tools can create a *filter* which is a set of constraints, but cannot save the *result set* from the constraints. Thus, Synchrony saves the *results of constraints* which can then be used as the basis of other reports.

To create a new report

- Go to **File→New** on the menu.
- Click on **Credit Transactions**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report click **No**.
- Choose **View→Single** on the menu.

1. To create a Study:

- This Study has been created for you. If you wish to create it yourself, follow these steps. Otherwise, skip to step 2.
 - a. From the Household dimension, click the **Browse**  button.
 - b. In the Browser window, drag and drop **Household Income**.
 - c. **Click inside** the Household Income edit box and **type >50000**.
 - d. Drag and drop **Household Type** and click **Family**.
 - e. Click **Run**.
 - f. Click **Save** to save this constraint as a Group.
 - g. **Name** the Group **Income > \$50k and Type = Family**.
 - h. Click **OK**.
 - i. Close the Browser window.
 - j. From the Account dimension, drag and drop **Account Key**.
 - k. From Card Transactions (Fact table), drag and drop **Current Debt**.
 - l. From the Day dimension, click **Groups tab** and drag and drop **Year = 1994** to the report title.
 - m. From the Household dimension, click **Groups tab** and drag and drop **Income > \$50k and Type = Family** to the report title.
 - n. From the Status dimension, click **Groups tab** and drag and drop **Status = Not Overdrawn** to the report title.
 - o. **Right** click on column B (Current Debt) and select **Properties→Exceptions**.
 - p. For Top Condition, select **At or Above Value of M**.
 - q. Enter **500** in the **M =** edit box.
 - r. For Report Display, check **Restrict to Exceptions**.

- s. Click **OK**.
- s. Click **Run Report**.
- t. **Right** click on column A (Account Key) and select **Create Study**.
- u. **Name** the study **Families > \$50k income, >\$500 debt in 1994, not overdrawn**.
- v. Click **OK**.
- w. To clear the report used in creating the Study, choose **File→New** from the menu and select the **Credit Transactions** family and click **OK**.
When asked if you want to save the report, respond **No**.

2. To create report title:

- **Right** click on the report title area.
- Click in the Report Title edit box and type **Credit Card Transactions – Query with Study**.
- Click **Close**.

3. To select fields for your report:

- From the Household dimension, drag and drop **Household Income** to column A.
- From the Account dimension, drag and drop **Account No** to column B.
- From Card Transactions (Fact Table), drag and drop **Current Debt** to column C.

4. To select a Study for report:

- From the Account dimension, click the **Studies tab** and drag and drop the study **Families > \$50k income, >\$500 debt in 1994, not overdrawn** onto the report title.

5. To create an average:

- **Right** click on column C (Current Debt) and select **Properties→Aggregate**.
- Select **Average**.
- Click **OK**.


6. To create a user defined formula for interest revenue:

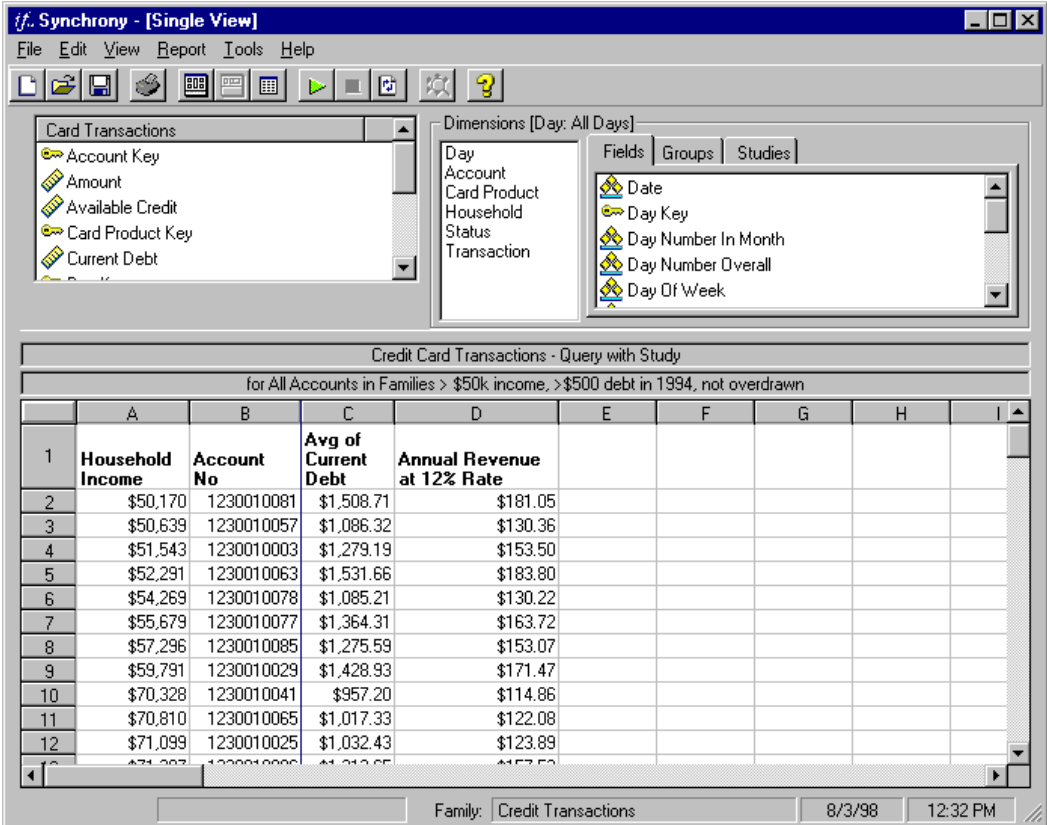
- From Card Transactions, drag and drop **User Defined Formula** to column D.
- Click in the edit box for the Calculation and enter **C*0.12** - This means column C times 12%.
- Click **OK**.

7. To create column heading:

- **Right** click on column D and select **Properties→Headings**.
- Select all the text in the **column Heading** edit box and press the **Delete key**.

CREDIT CARD DATA MART

- Enter a new heading of **Annual Revenue** <Enter> **at 12% Rate**, pressing the Enter key where you see <Enter>.
 - Click **OK**.
8. To run report:
- Click **Run Report** 
9. To view full report:
- Choose **View→Report** from the menu.



The screenshot shows the Synchrony - [Single View] window. The main data table is titled "Credit Card Transactions - Query with Study" and "for All Accounts in Families > \$50k income, >\$500 debt in 1994, not overdrawn". The table has columns A through I. The data is as follows:

	A	B	C	D	E	F	G	H	I
1	Household Income	Account No	Avg of Current Debt	Annual Revenue at 12% Rate					
2	\$50,170	1230010081	\$1,508.71	\$181.05					
3	\$50,639	1230010057	\$1,086.32	\$130.36					
4	\$51,543	1230010003	\$1,279.19	\$153.50					
5	\$52,291	1230010063	\$1,531.66	\$183.80					
6	\$54,269	1230010078	\$1,085.21	\$130.22					
7	\$55,679	1230010077	\$1,364.31	\$163.72					
8	\$57,296	1230010085	\$1,275.59	\$153.07					
9	\$59,791	1230010029	\$1,428.93	\$171.47					
10	\$70,328	1230010041	\$957.20	\$114.86					
11	\$70,810	1230010065	\$1,017.33	\$122.08					
12	\$71,099	1230010025	\$1,032.43	\$123.89					

This is an example of a complex query where a **Study** is created and a **calculation** is done on the results of the Study. Few query tools are able to save the results of constraints as in Synchrony. Synchrony saves the *results of constraints* which can then be used as the basis of other reports.

COMPLEX
QUERY WITH
A STUDY AND
AN
EXCEPTION

Ellie is in the Finance Department of a major credit card company. She wants to look for new ways to increase revenue for her company. Based on the customer segment created in the previous query (household income over \$50,000, no overdrawn status, average debt of \$500 or more in 1994, and a family household type), Ellie wants to identify the subset of customers that carry an average current debt greater than \$1000. She wants to list the household income, account number, account status, average current debt, and total number of transactions in 1994.

This is a complex query that uses a **Study** created in the previous example that *saved the results of constraints* on the customer segment. **The results of applying constraints on various dimensions in a report can be saved as a Study.** Since the Study was saved it is *reusable* and can be the basis of another query. This query takes the results of the previous constraint and applies an **exception**. The exception restricts the constraint to those customers that have average current debt greater than \$1000.

To create a new report

- Go to **File→New** on the menu.
- Click on **Credit Transactions**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report click **No**.
- Choose **View→Single** on the menu.
- This report uses the same Study as the previous report. See that report to see how the Study was created.

1. To select fields for your report:

- From the Household dimension, drag and drop **Household Income** onto column A.
- From the Account dimension, drag and drop **Account No** onto column B.
- From the Status dimension, drag and drop **Status Description** onto column C.
- From Card Transactions (Fact Table), drag and drop **Current Debt** onto column D.

2. To create report title:

- **Right** click on the report title area.
- Click in the Report Title edit box and type **Credit Card Transactions – Complex Query with Study**.
- Click **Close**.

3. To use a Study created in previous report:

- From the Account dimension, click **Studies tab** and drag and drop the study **Families > \$50k income, >\$500 debt in 1994, not overdrawn** to the report title

4. To create an average:

- **Right** click on column D (Current Debt) and select **Properties→Aggregate**.
- Select **Average**.
- Click **OK**.

5. To select fields for your report:

- From Card Transactions, drag and drop **Number of Transactions** onto column E.

6. To select a date to constrain a field:

- From the Day dimension, click **Groups tab** and drag and drop **Year = 1994** to column E (Number of Transactions).

7. To create an exception:

- **Right** click on top of column D (Current Debt) and select **Properties→Exceptions**.
- For Top Condition click on **At or Above Value of M**.
- Enter **1000** in the **M =** edit box.
- For Report Display, select **Restrict to Exceptions**.
- Click **OK**.

8. To run report:

- Click **Run Report** 

9. To select report view:

- Choose **View→Report** from the menu.

CREDIT CARD DATA MART

Synchrony - [Single View]

File Edit View Report Tools Help

Card Transactions

- Account Key
- Amount
- Available Credit
- Card Product Key
- Current Debt

Dimensions [Day: All Days]

Day
Account
Card Product
Household
Status
Transaction

Fields Groups Studies

- Date
- Day Key
- Day Number In Month
- Day Number Overall
- Day Of Week

Credit Card Transactions - Complex Query with Study

for All Accounts in Families > \$50k income, >\$500 debt in 1994, not overdrawn

	A	B	C	D	E	F	G	H
1	Household Income	Account No	Status Description	Avg of Current Debt	Sum of Number of Transactions for Year = 1994			
2	\$50,170	1230010081	Normal	\$1,508.71	90			
3	\$50,639	1230010057	Normal	\$1,086.32	76			
4	\$51,543	1230010003	Normal	\$1,279.19	94			
5	\$52,291	1230010063	Normal	\$1,531.66	85			
6	\$54,269	1230010078	Normal	\$1,085.21	46			
7	\$55,679	1230010077	Normal	\$1,364.31	103			
8	\$57,296	1230010085	Normal	\$1,275.59	114			
9	\$59,791	1230010029	Normal	\$1,428.93	101			
10	\$70,810	1230010065	Normal	\$1,017.33	46			
11	\$71,099	1230010025	Normal	\$1,032.43	83			
12	\$71,397	1230010006	Normal	\$1,312.65	106			

Family: Credit Transactions 8/3/98 1:05 PM

This is a complex query where a **Study** was created in the previous example and used as the basis of this complex query. An **exception** is applied to the Study that restricts the constraint to those customers that have average current debt greater than \$1000. Few query tools are able to save the *results of constraints* as in Synchrony. Synchrony saves the *results of constraints* which can then be used as the basis of other reports.

Grocery Data Mart

S I M P L E
Q U E R Y

Caleb is in the Accounting Department of a major grocery store chain. He wants to compare the total dollar sales for each product for the month of November 1995 compared with November 1994 and see the percentage change between the two.

This is a simple query that compares two snapshots of data in time. Most query tools can run simple queries such as this one.

To create a new report:

- Go to **File→New** on the menu.
- Click on **Grocery**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report click **No**.
- Choose **View→Single** on the menu.

1. To select fields for your report:

- From the Product dimension, drag and drop **Description** onto column A.
- From Sales (Fact Table), drag and drop **Dollar Sales** *three* times onto columns B, C and D.

2. To create report title:


- **Right** click on the report title area.
- Click in the Report Title edit box and type **Simple Query**.
- Click **Close**.

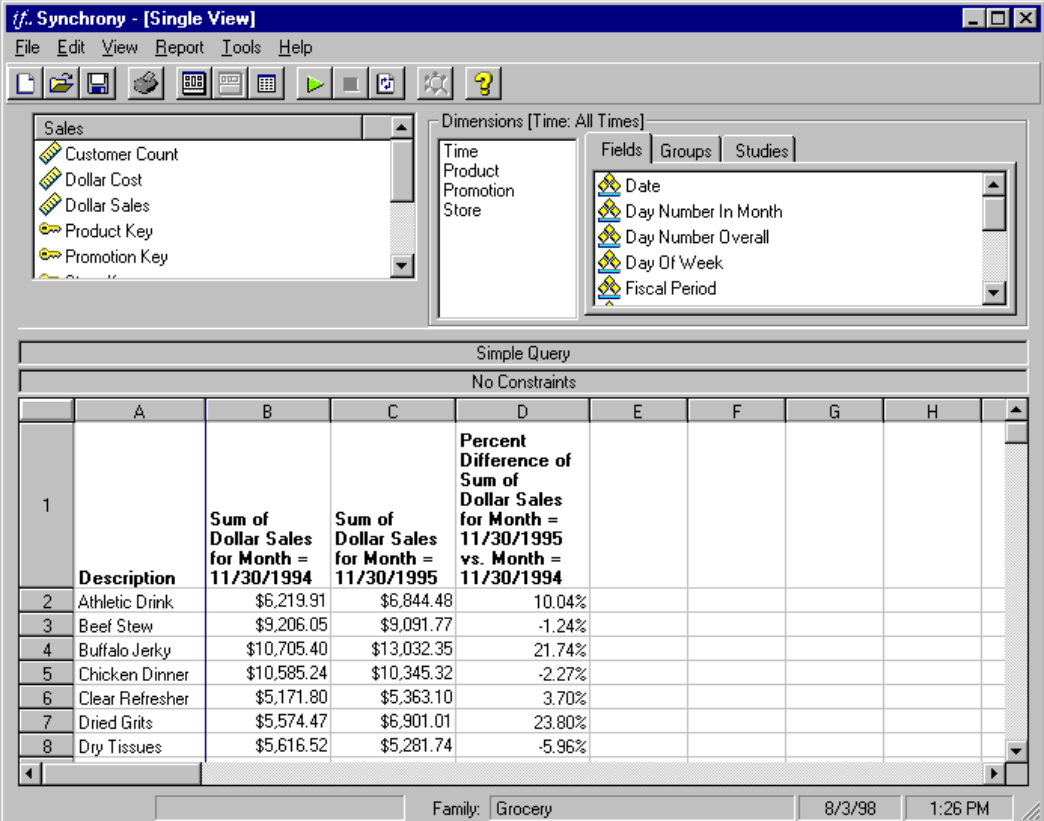
**3. To select dates to constrain fields:**

- From the Time dimension, click the **Groups** tab and drag and drop the following:
 - a. **Month = 11/30/1994** to column B.
 - b. **Month = 11/30/1995** to column C.
 - c. **Month = 11/30/1994** to column D.

4. To create a comparison:

GROCERY DATA MART

- **Right** click on column D (Dollar Sales 11/1994) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - While holding down the **Shift** key, drag and drop **Month = 11/30/1995** from the **Groups** tab on the Time dimension onto column D. Using the shift key sets the date as the one being compared
5. **To run report:**
- Click **Run Report** 
6. **To view full report:**
- Choose **View→Report** from the menu.



Simple Query

No Constraints

	A	B	C	D	E	F	G	H
1		Sum of Dollar Sales for Month = 11/30/1994	Sum of Dollar Sales for Month = 11/30/1995	Percent Difference of Sum of Dollar Sales for Month = 11/30/1995 vs. Month = 11/30/1994				
	Description							
2	Athletic Drink	\$6,219.91	\$6,844.48	10.04%				
3	Beef Stew	\$9,206.05	\$9,091.77	-1.24%				
4	Buffalo Jerky	\$10,705.40	\$13,032.35	21.74%				
5	Chicken Dinner	\$10,585.24	\$10,345.32	-2.27%				
6	Clear Refresher	\$5,171.80	\$5,363.10	3.70%				
7	Dried Grits	\$5,574.47	\$6,901.01	23.80%				
8	Dry Tissues	\$5,616.52	\$5,281.74	-5.96%				

Family: Grocery 8/3/98 1:26 PM

This is a simple query that compares two snapshots of data in time. Most query tools can run simple queries such as this one.

**C O M P L E X
Q U E R Y**

Evan is in the Sales Department of a major grocery store chain. He wants to increase the number of promotions and amount of sales on products sold in his company. The manufacturer of the National Bottle brand wants to do a store promotion where samples of the National Bottle drinks are given out along with coupons. In return, the manufacturer will pay the grocery store chain 1% of the price of each bottle sold. Evan wants to estimate the incremental sales to his company. He will make his estimates based on the sales from the last National Bottle brand promotion and add 1% to calculate incremental sales. He wants to list the description of the product, total sales during the promotion, and incremental sales from the promotion.

This is a complex query where a **constraint** is created to look at only National Bottle brand products during the period of the last promotion. Then a **user calculation** is made to multiply the total sales of the National Bottle brand constraint by 101% to get to incremental sales. Some query tools can run this type of query.

To create a new report:

- Go to **File→New** on the menu.
- Click on **Grocery**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report, click **No**.
- Choose **View→Single** on the menu.

1. To select fields for your report:

- From the Product dimension, drag and drop **Full Description** onto column A.
- From the Sales (Fact Table), drag and drop **Dollar Sales** onto column B.

2. To constrain report and create report title:

- From the Product dimension, click the **Groups** tab and drag and drop **Brand = National Bottle** onto the report title area.
- From the Promotion dimension, click the **Groups** tab and drag and drop **Promotion Name = Big Promo** to the report title area.
- **Right** click on the report title area.
- Click in the Report Title edit box and type **Constraint and User Calculation**.
- Click **Close**.

3. To create a user defined formula:

- From Sales, drag and drop **User Defined Formula** onto column C.
- Click in the edit box for the Calculation and enter **B*1.01** - This means column B times 101%.
- Click **OK**.

4. To create a column heading:

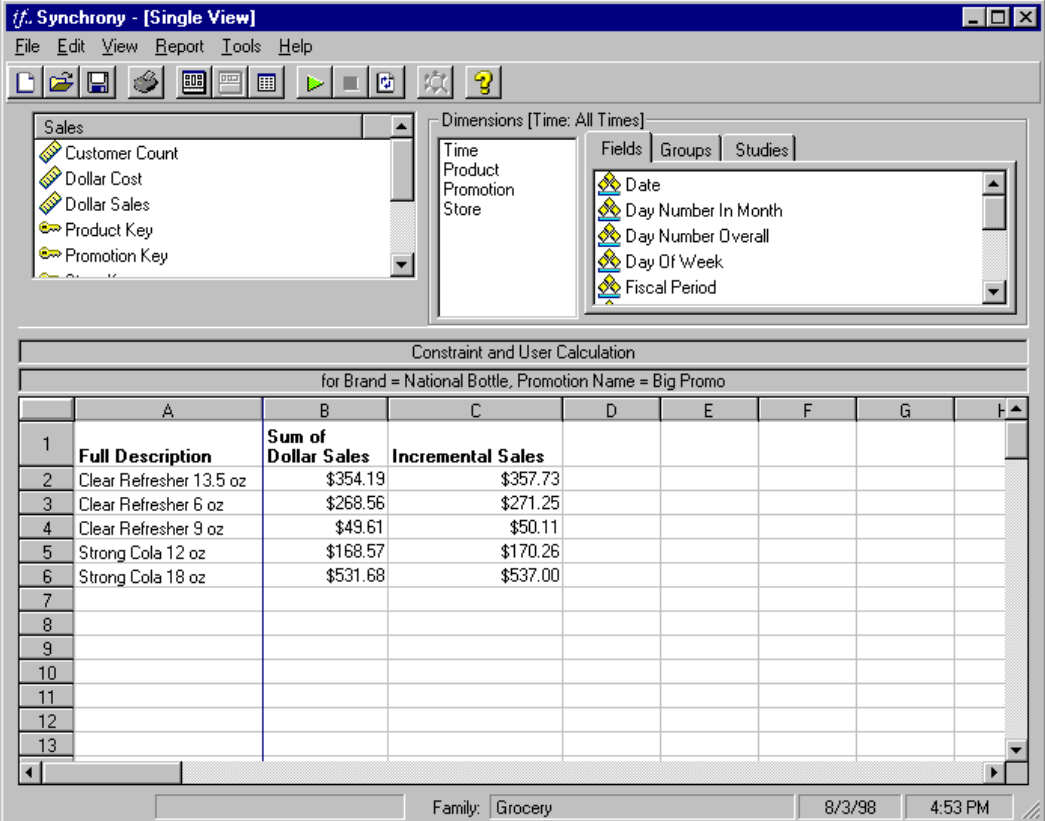
- **Right** click on column C and select **Properties→Heading**.
- Select all the text in the **column Heading** edit box and press the **Delete** key.
- Enter a new heading of **Incremental Sales**.
- Click **OK**.

5. To run your report:

- Click **Run Report** 

6. To view full report:

- Choose **View→Report** from the menu.



Synchrony - [Single View]

File Edit View Report Tools Help

Sales

- Customer Count
- Dollar Cost
- Dollar Sales
- Product Key
- Promotion Key

Dimensions [Time: All Times]

Time

- Product
- Promotion
- Store

Fields Groups Studies

- Date
- Day Number In Month
- Day Number Overall
- Day Of Week
- Fiscal Period

Constraint and User Calculation

for Brand = National Bottle, Promotion Name = Big Promo

	A	B	C	D	E	F	G	H
1	Full Description	Sum of Dollar Sales	Incremental Sales					
2	Clear Refresher 13.5 oz	\$354.19	\$357.73					
3	Clear Refresher 6 oz	\$268.56	\$271.25					
4	Clear Refresher 9 oz	\$49.61	\$50.11					
5	Strong Cola 12 oz	\$168.57	\$170.26					
6	Strong Cola 18 oz	\$531.68	\$537.00					
7								
8								
9								
10								
11								
12								
13								

Family: Grocery 8/3/98 4:53 PM

This is a complex query where a **constraint** is created and a **user calculation** is made to the constraint. Some query tools can run this type of query.

**COMPLEX
QUERY WITH
A STUDY AND
SLOWLY
CHANGING
DIMENSIONS**

Ryan is in the Marketing Department of a major grocery store chain. Some grocery stores were expanded in January 1995 increasing the square footage of the retail space. He wants to determine if the increase in square footage has caused an increase in the sales of the Western Vegetable brand. He wants to identify the stores that had an increase in square footage in January 1995 and compare the average sales of the Western Vegetable brand by region and by store between 1994 and 1995 and determine the percentage difference.

This is a very complex query where a **Study** is created to save the *results of a constraint* of the grocery stores that had an increase in square footage in January 1994. Synchrony has the unique ability to create Studies. **The results of applying constraints on various dimensions in a report can be saved as a Study.**

Slowly changing dimensions contain data that tend to change gradually over time. Customer and product information are the most common data that varies over time. If the speed of your industry is outpacing your data, then chances are you have data that varies over time and you need analytic software that can track *slowly changing dimensions*. In this example **slowly changing dimensions** are demonstrated by identifying the *change* in average sales of the Western Vegetable brand between 1994 and 1995. Synchrony is the only analytic software today that combines the power of **Studies** and **temporal technology** to track *slowly changing dimensions*.

To create a new report:

- Go to **File→New** on the menu.
- Click on **Grocery**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report click **No**.
- Choose **View→Single** on the menu.

1. To select fields for your report:

- From the Store dimension, drag and drop **Name** to column A.
- From the Store dimension, drag and drop **Sales Region** to column B.
- From Sales (Fact Table), drag and drop **Dollar Sales** *four* times to columns C, D, E and F.

2. To create report title:


- **Right** click on the report title area.
- Click in the Report Title edit box and type **Slowly Changing Dimension**.
- Click **Close**.

3. To select dates to constrain fields:

- From the Time dimension, click the **Groups** tab and drag down the following:

- a. **Year = 1995** to report title
- b. **Year = 1994** to column C
- c. **Year = 1994** to column E
- d. **Year = 1994** to column F


4. To create a Study:

- This Study has been created for you. If you wish to create it yourself, follow these steps. Otherwise, skip to step 5.
 - a. With the Store dimension selected, click the **Browse**  button.
 - b. In the Browser window, select **Study Changes** from the Tools menu.
 - c. Select the **Store Sqft** field to study.
 - d. For Type, choose **Value Unchanged**.
 - e. Leave **<Any Value>** selected in the From box and **<All Times>** selected for the time constraint for the study.
 - f. Click **OK**.
 - g. **Name** the study **Unchanged Sq. Ft.**
 - h. Click **OK**.
 - i. Close the Browser window.

5. To use a Study:

- From the Store dimension, click the **Studies** tab and drag and drop the study named **Unchanged Sq. Ft.** to column E.
- When prompted to choose a time period for the study, select **All of time** and click **OK**.

6. To create another Study:

- This Study has been created for you. If you wish to create it yourself, follow these steps. Otherwise, skip to step 7.
 - a. With the Store dimension selected, click the **Browse**  button.
 - b. In the Browser window, select **Study Changes** from the Tools menu.
 - c. Select the **Store Sqft** field to study.
 - d. For Type, choose **Value Increase**.
 - e. In the box marked Min enter **1**.
 - f. Select **Month = 01/31/1995** for the time constraint for the study.
 - g. Click **OK**.
 - h. **Name** the study **Increased Sq. Ft. in 1/95**.
 - i. Click **OK**.
 - j. Close the Browser window.

7. To use a Study:

- From the Store dimension, click **Studies** tab and drag and drop the study named **Increased Sq. Ft. in 1/95** to column F.

- When prompted to choose a time period for the study, select **All of time** and click **OK**.
8. **To create a comparison:**
- **Right** click on column E (Unchanged Sq. Ft.) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - **Right** click on column F (Increased Sq. Ft.) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - While holding down the **Shift key**, drag and drop **Unchanged Sq. Ft.** from the **Studies** tab on the Store dimension onto column E. Using the shift key sets the date as the one being compared.
 - When prompted to choose a time period for the study, select **All of time** and click **OK**.
 - While holding down the **Shift key**, drag and drop **Increased Sq. Ft. in 1/95** from the **Studies** tab on the Store dimension onto column F. Using the shift key sets the date as the one being compared.
 - When prompted to choose a time period for the study, select **All of time** and click **OK**.
9. **To create an average:**
- **Right** click on column E (Unchanged Sq. Ft.) and select **Properties→Aggregate**.
 - Select **Average**.
 - Click **OK**.
 - **Right** click on column F (Increased Sq. Ft.) and select **Properties→Aggregate**.
 - Select **Average**.
 - Click **OK**.
10. **To constrain report and create report title:**
- From the Product dimension, click the **Groups** tab and drag and drop **Brand = Western Vegetable** onto the report title area.
11. **To change a column heading:**
- **Right** click on column E and select **Properties→Heading**.
 - Place the cursor in the **Column Heading** edit box at the end of the line **Dollar Sales** and press **Enter**.
 - Type **for unremodeled stores**.
 - Click **OK**.

GROCERY DATA MART

- **Right** click on column F and select **Properties→Heading**.
- Place the cursor in the **Column Heading** edit box at the end of the line **Dollar Sales** and press **Enter**.
- Type **for remodeled stores**.
- Click **OK**.

12. To create a sort:

- **Right** click on column F and select **Properties→Sort**.
- Select **F** from **Column** for primary sort.
- Select **Descending** from **Direction** for primary sort.
- Click **OK**.

13. To run report:

- Click **Run Report** 

14. To switch to report view:

- Choose **View→Report** from the menu.

tf. Synchrony - [Single View]

File Edit View Report Tools Help

Dimensions [Time: Year = 1995]

Fields Groups Studies

Time
Product
Promotion
Store

Date
Day Number In Month
Day Number Overall
Day Of Week
Fiscal Period
Holiday Flag

Slowly Changing Dimension

for Year = 1995, Brand = Western Vegetable

	A	B	C	D	E	F
	Name	Sales Region	Sum of Dollar Sales for Year = 1994	Sum of Dollar Sales	Percent Difference of Avg of Dollar Sales for unremodeled stores for Year = 1995 vs. Year = 1994	Percent Difference of Avg of Dollar Sales for remodeled stores for Year = 1995 vs. Year = 1994
8	Store No. 20	Mid West	\$7,520.28	\$10,378.16	6.43%	
9	Store No. 4	Pacific	\$9,780.81	\$9,274.40	-11.27%	
10	Store No. 5	Pacific	\$8,988.59	\$10,520.14	8.75%	
11	Store No. 7	Eastern	\$8,937.94	\$8,548.94	-5.25%	
12	Store No. 8	South West	\$8,647.95	\$9,936.07		22.00%
13	Store No. 17	Mid Atlantic	\$9,484.01	\$11,569.83		21.99%
14	Store No. 6	Eastern	\$10,298.16	\$11,402.77		20.40%
15	Store No. 2	Mid West	\$8,086.64	\$9,822.59		18.21%
16	Store No. 9	Pacific	\$10,455.50	\$9,646.54		13.48%

Family: Grocery 8/5/98 12:04 PM

This is an example of a complex query where a **Study** is created and **slowly changing dimensions** are demonstrated by identifying the *change* between two periods. Synchrony is the only analytic software today that combines the power of **Studies** and **temporal technology** to track *slowly changing dimensions*.

**C O M P L E X
Q U E R Y W I T H A
S T U D Y A N D A
C O M P A R I S O N**

Grace is in the Brand Management Department of a major grocery store chain. She wants to increase the sales of the Big Can brand and Cold Gourmet brand foods. She wants to determine if promotions of the Big Can brand increases the sales of the Cold Gourmet brand foods. She wants to identify the stores that had promotions of the Big Can brand and carried the Cold Gourmet brand. She wants to determine total sales of Cold Gourmet in 1994 and total sales of Cold Gourmet in 1995, and the percentage difference between total unit sales of Cold Gourmet in 1994 and total unit sales of Cold Gourmet in 1995.

This is a complex query where a **Study** is created to save the *results of a constraint* of grocery stores that carried the Big Can brand and the Cold Gourmet brand. **The results of applying constraints on various dimensions in a report can be saved as a Study.** Few query tools are able to save the *results of constraints* as in Synchrony. A **comparison** is done on the Study to compare the sales of Cold Gourmet in 1994 and 1995.

To create a new report:


- Go to **File→New** on the menu.
- Click on **Grocery**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report, click **No**.
- Choose **View→Single** on the menu.

1. To create Studies:

- These Studies were created for you. If you wish to create them yourself, follow these steps. Otherwise, skip to step 2.
 - a. From the Store dimension, drag and drop **Store Key**.
 - b. From Sales (Fact table), drag and drop **Dollar Sales**.
 - c. From the Product dimension, click the **Groups** tab and drag and drop **Brand = Big Can** onto the report title area.
 - d. From the Promotion dimension, click the **Groups** tab then drag and drop **All Promos** onto the report title area.
 - e. **Right** click on column B (Dollar Sales) and select **Properties→Exceptions**.
 - f. For Report Display, select **Omit Nulls** by checking the box.
 - g. Click **OK**.
 - h. Click **Run Report**.

- i. **Right** click on column A (Store Key) and select **Create Study**.
- j. **Name** the study **Stores with Big Can Promo**.
- k. Click **OK**.
- l. From Product dimension, select the **Groups** tab and drag and drop **Brand = Cold Gourmet** to the report title.
- m. **Right** click on the report title. A dialog box will appear.
- n. In the dialog box, select the **Promotion** dimension then click the **Reset** button – the Promotions constraint is removed from the report.
- o. Click **Close**.
- p. Click **Run Report**.
- q. **Right** click on column A (Store Key) and select **Create Study**.
- r. **Name** the study **Stores Carrying Cold Gourmet**.
- s. Click **OK**.
- t. To clear the report used in creating the Study, choose **File→New** from the menu and select the **Grocery** family and click **OK**. When asked if you want to save the report, respond **No**.

2. To create a Study by combining two Studies:

- a. With the Store dimension selected, click the **Browse**  button.
- b. Select **Combine** from the Tools menu of the Browser.
- c. Select the **Studies** option button.
- d. For Constraint A choose **Stores with Big Can Promo**.
- e. For the Operator choose **Intersection/AND**.
- f. For Constraint B choose **Stores Carrying Cold Gourmet**.
- g. Click **Save**.
- h. **Name** the combined study **Stores with Big Can Promo Carrying Cold Gourmet**.
- i. Click **OK**.
- j. Close the Browser window.

3. To create report title:

- **Right** click on the report title area.
- Click in the Report Title edit box and type **Grocery – Study and Comparison**.
- Click **Close**.

4. To select fields for your report:

- From the Store dimension, drag and drop **Name** to column A.
- From Sales (Fact Table), drag and drop **Dollar Sales** to column B.
- From Sales, drag and drop **Unit Sales** to column C.

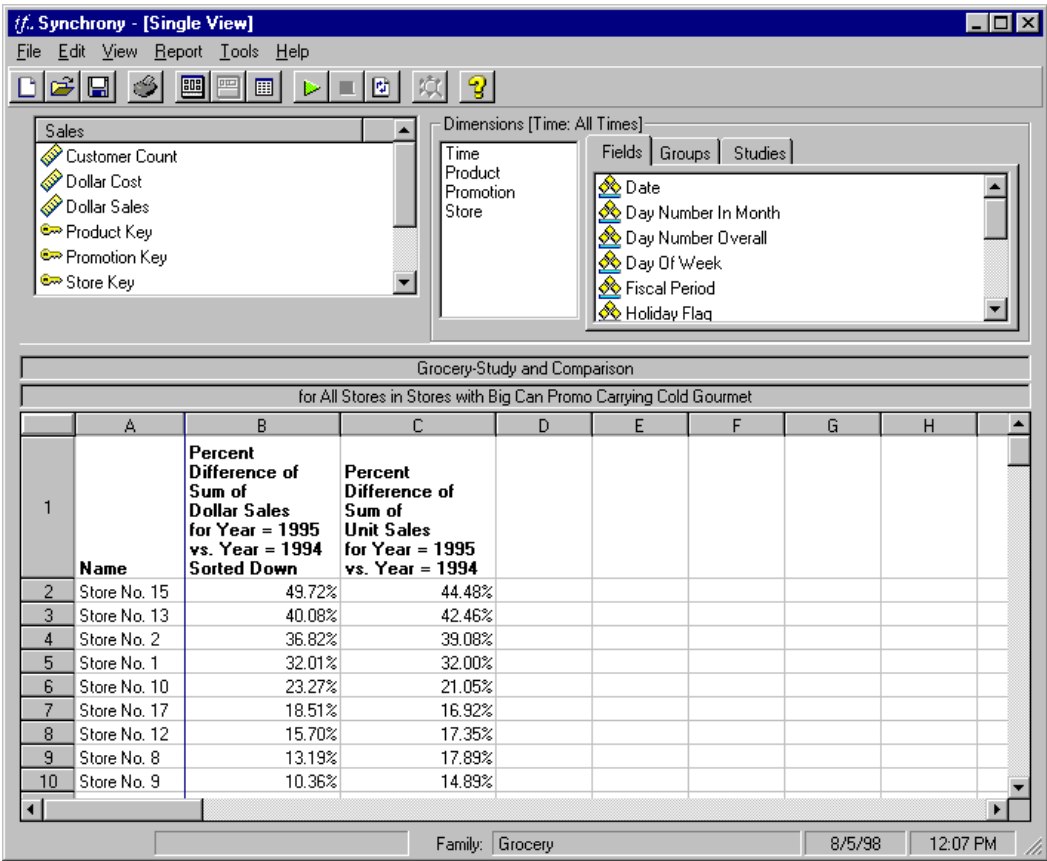
5. To use a Study:

- From the Store dimension, click the **Studies** tab and drag and drop the study **Stores with Big Can Promo Carrying Cold Gourmet** to the report title.
6. **To select dates to constrain fields:**
- From the Time dimension, click the **Groups** tab and drag and drop the following:
 - a. **Year = 1994** to column B
 - b. **Year = 1994** to column C
7. **To select brands to constrain fields**
- From the Product dimension, click the **Groups** tab and drag and drop the following:
 - a. **Brand = Cold Gourmet** to column B
 - b. **Brand = Cold Gourmet** to column C
8. **To create a comparison:**
- **Right** click on column B (Dollar Sales) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - **Right** click on column C (Unit Sales) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - While holding down the **Shift** key, drag and drop **Year = 1995** from the **Groups** tab on the Time dimension onto column B. Using the shift key sets the date as the one being compared.
 - While holding down the **Shift** key, drag and drop **Year = 1995** from the **Groups** tab on the Time dimension onto column C. Using the shift key sets the date as the one being compared.
 - While holding down the **Shift** key, drag and drop **Brand = Cold Gourmet** from the **Groups** tab on the Product dimension onto column B. Using the shift key sets the brand as the one being compared.
 - While holding down the **Shift** key, drag and drop **Brand = Cold Gourmet** from the **Groups** tab on the Product dimension onto column C. Using the shift key sets the brand as the one being compared.
9. **To create a sort:**
- **Right** click on column B and select **Properties→Sort**.
 - Select **B** from **Column** for the primary sort.
 - Select **Descending** from **Direction** for the primary sort.
 - Click **OK**.
10. **To run report:**

- Click **Run Report** 

11. To select report view:

- Choose **View→Report** from the menu.



	A	B	C	D	E	F	G	H
1		Percent Difference of Sum of Dollar Sales for Year = 1995 vs. Year = 1994 Sorted Down	Percent Difference of Sum of Unit Sales for Year = 1995 vs. Year = 1994					
2	Store No. 15	49.72%	44.48%					
3	Store No. 13	40.08%	42.46%					
4	Store No. 2	36.82%	39.08%					
5	Store No. 1	32.01%	32.00%					
6	Store No. 10	23.27%	21.05%					
7	Store No. 17	18.51%	16.92%					
8	Store No. 12	15.70%	17.35%					
9	Store No. 8	13.19%	17.89%					
10	Store No. 9	10.36%	14.89%					

This is a complex query with a **Study** and a **comparison** made within the Study. Few query tools are able to save the *results of constraints* as in Synchrony. Synchrony saves the *results of constraints* that can then be used as the basis of other reports.

COMPLEX
QUERY WITH
A STUDY
THAT IS
REUSED

Grace is in the Brand Management Department of a major grocery store chain. She wants to increase the sales of the Big Can brand and Cold Gourmet brand foods. Based on the previous question where she identified the stores that had promotions of the Big Can Brand and carried the Cold Gourmet brand foods, Grace now wants to compare by store the sales of Cold Gourmet in 1994 to the sales of Cold Gourmet in 1995 and calculate the percentage difference between the

two years. She wants to compare by store the number of unit sales of Cold Gourmet in 1994 to unit sales of Cold Gourmet in 1995 and calculate a percentage difference between the two years.

This is a very complex query where a **Study** is reused. The previous Study which has the *results of a constraint* is used as the basis of this new report.

To create a new report:

- Go to **File→New** on the menu.
- Click on **Grocery**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the click **No**.
- Choose **View→Single** on the menu.

1. To create a Study:

- This report uses the same Study called **Stores with Big Can Promo Carrying Cold Gourmet** as created in the previous report. If you wish to create the Study, see step 1 in the previous report for directions.

2. To create report title:

- **Right** click on the report title area.
- Click in the Report Title edit box and type **Study with comparison**.
- Click **Close**.

3. To select fields for your report:

- From the Store dimension, drag and drop **Name** onto column A.
- From Sales (Fact Table), drag and drop **Dollar Sales** onto column B.
- From Sales, drag and drop **Unit Sales** onto column C.
- From Sales, drag and drop **Dollar Sales** onto column D.
- From Sales, drag and drop **Unit Sales** onto column E.

4. To use a Study:


- From the **Studies** tab on the Store dimension, drag and drop the study **Stores with Big Can Promo Carrying Cold Gourmet** to the report title.

5. To select dates to constrain fields:

- From the Time dimension, click **Groups** tab and drag and drop the following:
 - a. **Year = 1994** to column B
 - b. **Year = 1994** to column C
 - c. **Year = 1994** to column D
 - d. **Year = 1994** to column E

6. To select brands to constrain fields

- From the Product dimension, click the Groups tab and drag and drop the following:
 - c. **Brand = Cold Gourmet** to column B
 - d. **Brand = Cold Gourmet** to column C
 - e. **Brand = Big Can** to column D
 - f. **Brand = Big Can** to column E
7. To create comparisons:
- **Right** click on column B (Dollar Sales) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - **Right** click on column C (Unit Sales) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - **Right** click on column D (Dollar Sales) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - **Right** click on column E (Unit Sales) and select **Properties→Comparison**.
 - Select **Percent Difference of**.
 - Click **OK**.
 - While holding down the **Shift** key, drag and drop **Year = 1995** from the **Groups** tab on the Time dimension onto column B. Using the shift key sets the date as the one being compared.
 - While holding down the **Shift** key, drag and drop **Year = 1995** from the **Groups** tab on the Time dimension onto column C. Using the shift key sets the date as the one being compared.
 - While holding down the **Shift** key, drag and drop **Year = 1995** from the **Groups** tab on the Time dimension onto column D. Using the shift key sets the date as the one being compared.
 - While holding down the **Shift** key, drag and drop **Year = 1995** from the **Groups** tab on the Time dimension onto column E. Using the shift key sets the date as the one being compared.
 - While holding down the **Shift** key, drag and drop **Brand = Cold Gourmet** from the **Groups** tab on the Product dimension onto column B. Using the shift key sets the brand as the one being compared.
 - While holding down the **Shift** key, drag and drop **Brand = Cold Gourmet** from the **Groups** tab on the Product dimension onto column C. Using the shift key sets the brand as the one being compared.
 - While holding down the **Shift** key, drag and drop **Brand = Big Can** from the **Groups** tab on the Product dimension onto column D. Using the shift key sets the brand as the one being compared.

- While holding down the **Shift key**, drag and drop **Brand = Big Can** from the Groups tab on the Product dimension onto column E. Using the shift key sets the brand as the one being compared.
8. **To create a sort:**
- **Right** click on column B and select **Properties→Sort**.
 - Select **B** from **Column** for the primary sort.
 - Select **Descending** from **Direction** for the primary sort.
 - Click **OK**.
9. **To change column headings:**
- **Right** click on column B and select **Properties→Heading**.
 - Place the cursor in the **Column Heading** edit box at the end of the line **Dollar Sales** and press **Enter**.
 - Type **for Cold Gourmet**.
 - Click **OK**.
 - **Right** click on column C and select **Properties→Heading**.
 - Place the cursor in the **Column Heading** edit box at the end of the line **Unit Sales** and press **Enter**.
 - Type **for Cold Gourmet**.
 - Click **OK**.
 - **Right** click on column D and select **Properties→Heading**.
 - Place the cursor in the **Column Heading** edit box at the end of the line **Dollar Sales** and press **Enter**.
 - Type **for Big Can**.
 - Click **OK**.
 - **Right** click on column E and select **Properties→Heading**.
 - Place the cursor in the **Column Heading** edit box at the end of the line **Unit Sales** and press **Enter**.
 - Type **for Big Can**.
 - Click **OK**.
10. **To run report:**
- Click **Run Report** 
11. **To view full report:**
- Choose **View→Report** from the menu.

GROCERY DATA MART

f. Synchrony - [Single View]

File Edit View Report Tools Help

Dimensions [Time: All Times]

Fields Groups Studies

Time
Product
Promotion
Store

Date
Day Number In Month
Day Number Overall
Day Of Week
Fiscal Period
Holiday Flag

Study with comparison
for All Stores in Stores with Big Can Promo Carrying Cold Gourmet

	A	B	C	D	E	F	G
1		Percent Difference of Sum of Dollar Sales for Cold Gourmet for Year = 1995 vs. Year = 1994 Sorted Down	Percent Difference of Sum of Unit Sales For Cold Gourmet for Year = 1995 vs. Year = 1994	Percent Difference of Sum of Dollar Sales for Big Can for Year = 1995 vs. Year = 1994	Percent Difference of Sum of Unit Sales for Big Can for Year = 1995 vs. Year = 1994		
	Name						
2	Store No. 15	49.72%	44.48%	9.68%	18.72%		
3	Store No. 13	40.08%	42.46%	5.91%	11.83%		
4	Store No. 2	36.82%	39.08%	15.09%	3.24%		
5	Store No. 1	32.01%	32.00%	5.93%	11.92%		
6	Store No. 10	23.27%	21.05%	-4.32%	-3.48%		
7	Store No. 17	18.51%	16.92%	-7.53%	-14.87%		
8	Store No. 12	15.70%	17.35%	13.66%	15.27%		
9	Store No. 8	13.19%	17.89%	16.43%	4.04%		

Family: Grocery 8/5/98 12:11 PM

This is a very complex query where a **Study** is reused. The previous report created a Study which saved the *results of constraints* and is used as the basis of this new report.

Frequent Flyer Data Mart

S I M P L E
Q U E R Y

Andy is in the Pricing Department of a large airline. He wants to understand the growth in fares by fare class for the month of November 1995 compared to November 1994.

This is a simple query that compares two snapshots of data in time. Most query tools can run simple queries such as this one.

To create a new report

- Go to **File→New** on the menu.
- Click on **Frequent Flyer**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report, click **No**.
- Choose **View→Single** on the menu.

1. To select fields for your report:

- From the Fare Class dimension, drag and drop **Fare Class Description** onto column A.
- From Frequent Flyer (Fact Table), drag and drop **Fare** *three* times onto columns B, C and D.
- From the Date Flown dimension, click **Groups** tab and drag and drop the following:
 - a. **Flown Month = 11/1994** to column B
 - b. **Flown Month = 11/1995** to column C
 - c. **Flown Month = 11/1994** to column D


2. To create report title:

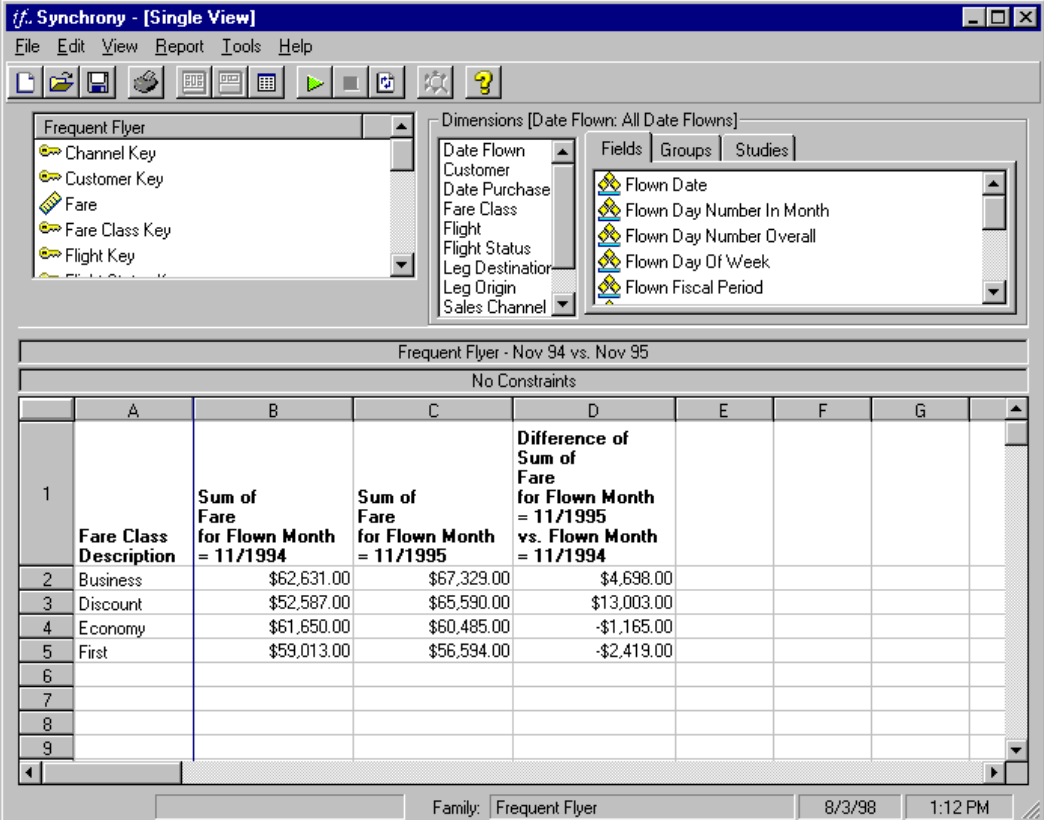
- **Right** click on the report title area.
- Click in the Report Title edit box and type **Frequent Flyer – Nov 94 vs. Nov 95**.
- Click **Close**.

3. To create a comparison:

- **Right** click on column D (Fare 11/1994) and select **Properties→Comparison**.

FREQUENT FLYER DATA MART

- Select **Difference of**.
 - Click **OK**.
 - While holding down the **Shift key**, drag and drop **Flown Month = 11/1995** from the **Groups** tab on the Date Flown dimension onto column D. Using the shift key sets the date as the one being compared.
4. To run report:
- Click **Run Report** 
5. To select report view:
- Choose **View→Report** from the menu.



Synchrony - [Single View]

File Edit View Report Tools Help

Dimensions [Date Flown: All Date Flowns]

Fields Groups Studies

Flown Date
Flown Day Number In Month
Flown Day Number Overall
Flown Day Of Week
Flown Fiscal Period

Frequent Flyer - Nov 94 vs. Nov 95

No Constraints

	A	B	C	D	E	F	G
1		Sum of Fare for Flown Month = 11/1994	Sum of Fare for Flown Month = 11/1995	Difference of Sum of Fare for Flown Month = 11/1995 vs. Flown Month = 11/1994			
2	Business	\$62,631.00	\$67,329.00	\$4,698.00			
3	Discount	\$52,587.00	\$65,590.00	\$13,003.00			
4	Economy	\$61,650.00	\$60,485.00	-\$1,165.00			
5	First	\$59,013.00	\$56,594.00	-\$2,419.00			
6							
7							
8							
9							

Family: Frequent Flyer 8/3/98 1:12 PM

This is a simple query that compares two snapshots of data in time. Most query tools can run simple queries such as this one.

**C O M P L E X
Q U E R Y**

Jason is in the Finance Department of a large airline. He is looking for ways to decrease the cost of his sales channels. He has just been told that his airline is considering reducing the commission paid to the travel agent sales channel. He wants to determine the average ticket fares in each ticket fare class in 1995 and compare the average ticket fares in the travel agent sales channel to the direct counter sales channel.

This is an example of a complex query where a **constraint** is created to identify ticket fares in the travel agent sales channel and in the direct counter sales channel. A **comparison** is made between the two constraints. Some query tools are able to run this complex query.

To create a new report:

- Go to **File→New** on the menu.
- Click on **Frequent Flyer**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report, click **No**.
- Choose **View→Single** on the menu.

1. To select fields for your report:

- From the Fare Class dimension, drag and drop **Fare Class Description** onto column A.
- From Frequent Flyer (Fact Table), drag and drop **Fare** *three* times onto columns B, C and D.
- From the **Groups** tab on the Sales Channel dimension, drag and drop the following:
 - a. **Channel Name = Travel Agent** to column B
 - b. **Channel Name = Direct Counter** to column C
 - c. **Channel Name = Direct Counter** to column D


2. To create report title:

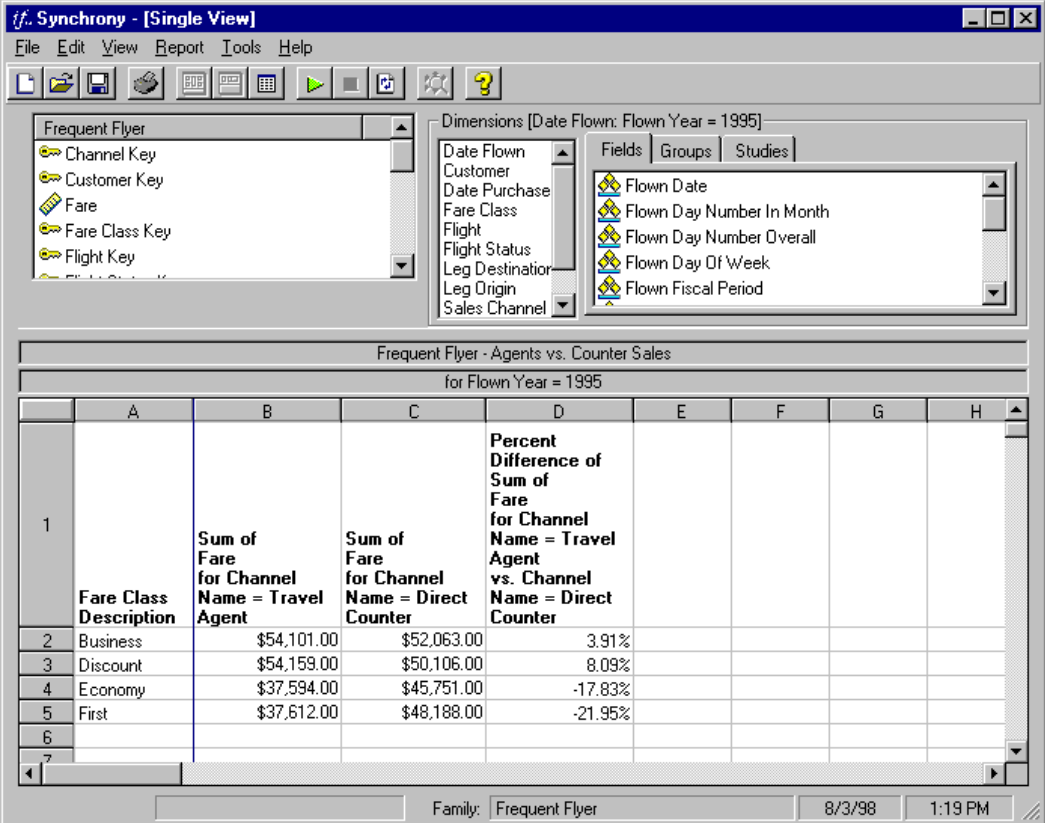
- **Right** click on the report title area.
- Click in the Report Title edit box and type **Frequent Flyer – Agent vs. Counter Sales**.
- Click **Close**.

3. To create a comparison:

- **Right** click on column D (Fare Direct Counter) and select **Properties→Comparison**.
- Select **Percent Difference of**.
- Click **OK**.
- While holding down the **Shift key**, drag and drop **Channel Name = Travel Agent** from the **Groups** tab on the Sales Channel dimension onto column D. Using the shift key sets the channel as the one being compared.

FREQUENT FLYER DATA MART

- From the Groups tab on the Date Flown dimension, drag and drop **Flown Year = 1995** onto the report title.
4. To run report:
- Click **Run Report** 
5. To View Report:
- Choose **View→Report** from the menu.



Frequent Flyer - Agents vs. Counter Sales
for Flown Year = 1995

	A	B	C	D	E	F	G	H
1				Percent Difference of Sum of Fare for Channel Name = Travel Agent vs. Channel Name = Direct Counter				
	Fare Class Description	Sum of Fare for Channel Name = Travel Agent	Sum of Fare for Channel Name = Direct Counter					
2	Business	\$54,101.00	\$52,063.00	3.91%				
3	Discount	\$54,159.00	\$50,106.00	8.09%				
4	Economy	\$37,594.00	\$45,751.00	-17.83%				
5	First	\$37,612.00	\$48,188.00	-21.95%				
6								
7								

Family: Frequent Flyer 8/3/98 1:19 PM

This is an example of a complex query where a **constraint** is created and a **comparison** is made. Some query tools are able to run this complex query.

C O M P L E X
Q U E R Y A N D
S L O W L Y
C H A N G I N G
D I M E N S I O N S

Claudia is in the Marketing Department of a large airline. She is looking to increase revenue by offering new products to a profitable segment of customers. In identifying a profitable segment of customers, she wants to understand how increases in household income affect increases in miles flown on her airline. She wants to identify customers that had an increase in household income of between 1% and 15% and those with an increase greater than 15%. She then wants to compare the number of miles each group flew in 1994 compared to the number of miles each group flew in 1995 and find the percentage difference in miles flown between the two years for each group. She wants to sort the results in descending order by the difference in miles between 1994 and 1995 for all customers.

This is a very complex query where two **Studies** are created; one that saves the *results of constraints* for the customers with a 1-15% increase in household income, and a second Study that saves the *results of constraints* for the customers with a greater than 15% increase in household income. **The results of applying constraints on various dimensions in a report can be saved as a Study.** Few query tools are able to save the *results of constraints* as in Synchrony.

Slowly changing dimensions contain data that tend to change gradually over time. Customer and product information are the most common data that varies over time. If the speed of your industry is outpacing your data, then chances are you have data that varies over time and you need analytic software that can track *slowly changing dimensions*. In this example, **slowly changing dimensions** are demonstrated by identifying the *change* in miles flown between 1994 and 1995 for each group of customers that had an increase in household income. Synchrony is the only analytic software today that combines the power of **Studies** and **temporal technology** to track *slowly changing dimensions*.

To create a new report

- Go to **File→New** on the menu.
- Click on **Frequent Flyer**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report click **No**.
- Choose **View→Single** on the menu.

1. To select the fields for your report:


- From the Customer dimension, drag and drop **Customer Name** onto column A.
- From Frequent Flyer (Fact Table), drag and drop **Miles** *five* times onto columns B, C, D, E and F.
- From the **Groups** tab on the Date Flown dimension, drag and drop the following:
 - a. **Flown Year = 1994** to column B
 - b. **Flown Year = 1995** to column C

- c. **Flown Year = 1994** to column D
- d. **Flown Year = 1994** to column E
- e. **Flown Year = 1994** to column F
- f. **Flown Year = 1995** to report title

2. To create report title:

- **Right** click on the report title area.
- Click in the Report Title edit box and type **Frequent Flyer with SCD**.
- Click **Close**.


3. To create a Study:

- This Study has been created for you. If you wish to create it yourself, follow these steps. Otherwise, skip to step 4.
 - a. With the Customer dimension selected, click the **Browse**  button.
 - b. In the Browser window, select **Study Changes** from the Tools menu.
 - c. Select the **Customer Income** field to study.
 - d. For Type, choose **Percent Increase**.
 - e. In the box labeled **Min**, enter **0.01**.
 - f. In the box labeled **Max**, enter **0.15**.
 - g. Leave **<All Times>** selected for the time constraint for the study.
 - h. Click **OK**.
 - i. **Name** the study **Income Increase 1-15%**.
 - j. Click **OK**.
 - k. Close the Browser window.

4. To use a Study:

- From the Customer dimension, click the **Studies** tab and drag and drop the study named **Income Increase 1-15%** to column E.
- When prompted to choose a time period for the Study, select **All of time** and click **OK**.

5. To create a Study:

- This Study has been created for you. If you wish to create it yourself, follow these steps. Otherwise, skip to step 6.
 - a. With the Customer dimension selected, click the **Browse**  button.
 - b. In the Browser window, select **Study Changes** from the Tools menu.
 - c. Select the **Customer Income** field to study.
 - d. For Type, choose **Percent Increase**.
 - e. In the box marked Min enter **0.15**.
 - f. Leave **<All Times>** selected for the time constraint for the study.

- g. Click **OK**.
- h. **Name** the study **Income Increase > 15%**.
- i. Click **OK**.
- j. Close the Browser window.

6. To use a Study:

- From the Customer dimension, click **Studies** tab and drag and drop the study named **Income Increase > 15%** to column F.
- When prompted to choose a time period for the Study, select **All of time** and click **OK**.

7. To create a comparison:

- **Right** click on column D (Miles 1994) and select **Properties→Comparison**.
- Select **Percent Difference of**.
- Click **OK**.
- **Right** click on column E (Income Increase 1-15% 1994) and select **Properties→Comparison**.
- Select **Percent Difference of**.
- Click **OK**.
- **Right** click on column F (Income Increase > 15% 1994) and select **Properties→Comparison**.
- Select **Percent Difference of**.
- Click **OK**.
- While holding down the **Shift key**, drag and drop **Income Increase 1-15%** from the Studies tab on the Customer dimension onto column E (Percent Difference with Income Increase 1-15%). Using the shift key sets the date as the one being compared.
- When prompted to choose a time period for the Study, select **All of time** and click **OK**.
- While holding down the **Shift key**, drag and drop **Income Increase > 15%** from the Studies tab on the Customer dimension onto column F (Percent Difference with Income Increase > 15%). Using the shift key sets the date as the one being compared.
- When prompted to choose a time period for the Study, select **All of time** and click **OK**.

8. To create a sort:

- **Right** click on column D (Percent Difference) and select **Properties→Sort**.
- Select **D** from the **Column** drop down list box for the primary sort.
- Select **Descending** from the **Direction** drop down list box for the primary sort.
- Click **OK**.

9. To change column headings:

- **Right** click on column B and select **Properties→Heading**.
- Select all the text in the **Column Heading** edit box and press the **Delete** key.
- **Enter** a new heading of **Miles Flown <Enter> in 1994**, pressing the Enter key where you see <Enter>.
- Click **OK**.
- **Right** click on column C and select **Properties→Heading**.
- Select all the text in the **Column Heading** edit box and press the **Delete** key.
- **Enter** a new heading of **Miles Flown <Enter> in 1995**, pressing the Enter key where you see <Enter>.
- Click **OK**.
- **Right** click on column D and select **Properties→Heading**.
- Select all the text in the **Column Heading** edit box and press the **Delete** key.
- **Enter** a new heading of **Change in Miles Flown <Enter> for All Customers <Enter> From 1994 to 1995 <Enter> Sorted Down**, pressing the Enter key where you see <Enter>.
- Click **OK**.
- **Right** click on column E and select **Properties→Heading**.
- Select all the text in the **Column Heading** edit box and press the **Delete** key.
- **Enter** a new heading of **Change in Miles Flown <Enter> for Customers with <Enter> Income Increase of 1-15% <Enter> From 1994 to 1995**, pressing the Enter key where you see <Enter>.
- Click **OK**.
- **Right** click on column F and select **Properties→Heading**.
- Select all the text in the **Column Heading** edit box and press the **Delete** key.
- **Enter** a new heading of **Change in Miles Flown <Enter> for Customers with <Enter> Income Increase of > 15% <Enter> From 1994 to 1995**, pressing the Enter key where you see <Enter>.
- Click **OK**.

10. To remove blank rows:

- **Right** click on column D and select **Properties→Exceptions**.
- Check the **Omit Nulls** box.
- Click **OK**.

11. To run report:

- Click **Run Report** 

12. To view full report:

- Choose **View→Report** from the menu.

The screenshot shows the Synchrony - [Single View] application window. The menu bar includes File, Edit, View, Report, Tools, and Help. The toolbar contains icons for file operations and analysis. The left pane shows a tree view of the Frequent Flyer data mart with nodes for Channel Key, Customer Key, Fare, Fare Class Key, Flight Key, and Flight Status Key. The right pane shows the Dimensions (Date Flown: Flown Year = 1995) and Fields (Flown Date, Flown Day Number In Month, Flown Day Number Overall, Flown Day Of Week, Flown Fiscal Period) panes. The main area displays a report titled 'Frequent Flyer with SCD for Flown Year = 1995'. The report table has columns A through F, with headers for Customer Name, Miles Flown in 1994, Miles Flown in 1995, and Change in Miles Flown for All Customers, Customers with Income Increase of 1-15%, and Customers with Income Increase of >15%.

	A	B	C	D	E	F
1	Customer Name	Miles Flown in 1994	Miles Flown in 1995	Change in Miles Flown for All Customers From 1994 to 1995 Sorted Down	Change in Miles Flown for Customers with Income Increase of 1-15% From 1994 to 1995	Change in Miles Flown for Customers with Income Increase of >15% From 1994 to 1995
2	Ortiz	25,108	58,562	133.24%		133.24%
3	Vargas	23,835	50,431	111.58%		111.58%
4	Emory	25,426	46,000	80.92%		80.92%
5	Hale	25,804	45,224	75.26%		75.26%
6	Clewett	27,349	46,919	71.56%		71.56%
7	Verch	28,230	48,363	71.32%		71.32%
8	Galt	28,883	47,078	63.00%		63.00%
9	Quiroz	24,524	39,743	62.06%		62.06%
10	Richards	30,627	48,388	57.99%		57.99%
11	Guy	31,383	48,939	55.94%	55.94%	
12	Kirk	24,782	38,030	52.46%	52.46%	

This is an example of a very complex query where two **Studies** are created and *slowly changing dimensions* are tracked for each Study. Obtaining the answer to this very complex question is extremely difficult. Only Synchrony with its ability to create **Studies** and apply **temporal technology** can perform this query easily.

COMPLEX
QUERY WITH
A STUDY

Matthew is in the Marketing Department of a large airline. He wants to send direct mail advertising to a targeted group of customers that fly out of JFK Airport in New York. He wants to identify the customers that flew from JFK Airport in November 1994 and had over 500 miles in their account. He wants to produce the mailing list that includes customer name, address, city, state, zip code, and number of miles flown.

This is a complex query where a **Study** is created that saves the *results of constraints* that represents the set of customers that flew out of JFK Airport in

November 1994 and had over 500 miles in their account. **The results of applying constraints on various dimensions in a report can be saved as a Study.** Few query tools are able to save the *results of constraints* as in Synchrony. This complex query also demonstrates that *atomic data* (transaction level data) can be obtained and individual customer account information can be put onto a report for a Marketing direct mailing.

To create a new report:

- Go to **File→New** on the menu.
- Click on **Frequent Flyer**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report click **No**.
- Choose **View→Single** on the menu.

1. To create a Study:

- This Study was created for you. If you wish to create it yourself, follow these steps. Otherwise, skip to step 2.
 - a. From the Customer dimension, drag and drop **Customer Key**.
 - b. From the **Groups** tab on the Date Flown dimension, drag and drop **Flown Month = 11/1994** onto the report title.
 - c. From the **Groups** tab on the Trip Origin dimension, drag and drop **Trip Origin Name = JFK** onto the report title area.
 - d. Click **Run Report**.
 - e. **Right** click on column A (Customer Key) and select **Create Study**.
 - f. **Name** the study **Flew in 11/94 from JFK**.
 - g. Click **OK**.
 - h. Open a new report in the **Frequent Flyer** family.
 - i. Click **No** when asked if you want to save the report.


2. To create report title:

- **Right** click on the report title area.
- Click in the Report Title edit box and type **Frequent Flyer Study**.
- Click **Close**.

3. To select fields for your report:

- From the Customer dimension, drag and drop **Customer Name** onto column A.
- From the Customer dimension, drag and drop **Customer Address** onto column B.
- From the Customer dimension, drag and drop **Customer City** onto column C.
- From the Customer dimension, drag and drop **Customer State** onto column D.

FREQUENT FLYER DATA MART

- From the Customer dimension, drag and drop **Customer Zip** onto column E.
 - From Frequent Flyer (Fact Table), drag and drop **Miles** onto column F.
4. **To create an exception:**
- **Right** click on column F (Miles) and select **Properties→Exceptions**.
 - For Top Condition, click **At or Above Value of M**.
 - Enter **500** in the **M = edit box**.
 - For Report Display, select **Restrict to Exceptions**.
 - Click **OK**.
5. **To use a Study:**
- From the **Studies** tab on the Customer dimension, drag and drop the study **Flew in 11/94 from JFK** onto the report title area.
6. **To run report:**
- Click **Run Report** 
7. **To view full report:**
- Choose **View→Report** from the menu.

FREQUENT FLYER DATA MART

Synchrony - [Single View]

File Edit View Report Tools Help

Frequent Flyer

- Channel Key
- Customer Key
- Fare
- Fare Class Key
- Flight Key
- Flight Status Key

Dimensions [Date Flown: All Date Flowns]

- Date Flown
- Customer
- Date Purchased
- Fare Class
- Flight
- Flight Status
- Leg Destination
- Leg Origin
- Sales Channel

Fields Groups Studies

- Flown Date
- Flown Day Number In Month
- Flown Day Number Overall
- Flown Day Of Week
- Flown Fiscal Period
- Flown Holiday Flag

Frequent Flyer Study

for All Customers in Flown in 11/94 from JFK

	A	B	C	D	E	F	G	H	I
1	Customer Name	Customer Address	Customer City	Customer State	Customer Zip	Sum of Miles			
2	Appley	1923 Shady Lane	Anchorage	Alaska	76546	84,572			
3	Ashby	9369 Shady Lane	Juneau	Alaska	74154	67,597			
4	Barrett	5332 Shady Lane	Phoenix	Arizona	88392	72,727			
5	Clewett	3997 Shady Lane	Red Bluff	California	37374	27,349			
6	Cluster	8640 Shady Lane	Denver	Colorado	61892	71,614			
7	Deardorff	8151 Shady Lane	Wilmington	Delaware	40860	76,063			
8	Erickson	2254 Shady Lane	Augusta	Georgia	60997	77,738			
9	Ford	119 Shady Lane	Sun Valley	Idaho	71699	66,503			
10	Hale	584 Shady Lane	Council Bluffs	Iowa	37536	25,804			
11	Jackson	8614 Shady Lane	Bethesda	Maryland	11802	73,159			
12	Jensen	8195 Shady Lane	Augusta	Maine	58098	27,925			
13	Kitch	361 Shady Lane	Greenfield	Massachusetts	75026	24,782			

Family: Frequent Flyer 10/23/98 11:01 AM

This is a complex query where a **Study** is created and *atomic data* reported in the form of customer names and address. Few query tools are able to create **Studies** that saves the *results of constraints* and report *atomic data*.

COMPLEX QUERY WITH A STUDY ON A STUDY

Matthew is in the Marketing Department of a large airline. He wants to send direct mail advertising to a target group of customers. In the previous query, he identified the customers that flew from JFK Airport in November 1994 and had over 500 miles in their account. Now he thinks that he wants to refine his target group and identify from the original group the subset of customers that had household income over \$50,000 and are married. He wants to list the customer name, address, city, state, zip code, marital status, income, number of miles flown in 1994 so that he can do a direct mailing from this report.

This is a very complex query where a **Study on a Study** is created. The previous Study which saved the *results of a constraint* for a target group of customers is used as the basis of this new Study. The new Study is a *subset of the results of the previous constraint*. Synchrony stands alone in its ability to create **Studies on Studies**.

To create a new report

- Go to **File→New** on the menu.
- Click on **Frequent Flyer**.
- Click **OK**.
- If a dialogue box comes up asking if you want to save the report click **No**.
- Choose **View→Single** on the menu.

1. To create a Study:

- This Study has been created for you. If you wish to create it yourself, follow these steps. Otherwise, skip to step 2.
 - a. From the Customer dimension, drag and drop **Customer Key**.
 - b. From the **Groups** tab on the Customer dimension, drag and drop **Married and Income > \$50k** onto the report title area.
 - c. From the **Studies** tab on the Customer dimension, drag and drop **Flew in 11/94 from JFK** onto the report title area.
 - d. Click **Run Report**.
 - e. **Right** click on column A (Customer Key) and select **Create Study**.
 - f. **Name** the study **Flew 11/94 from JFK, Married, High Income**.
 - g. Click **OK**.
 - h. Open a new report in the **Frequent Flyer** family.
 - i. Click **No** when asked if you want to save the report.

2. To create report title:

- **Right** click on the report title area.
- Click in the Report Title edit box and type **Frequent Flyer - Study on Study**.
- Click **Close**.

3. To select fields for your report:


- From the Customer dimension, drag and drop **Customer Name**.
- From the Customer dimension, drag and drop **Customer Address**.
- From the Customer dimension, drag and drop **Customer City**.
- From the Customer dimension, drag and drop **Customer State**.
- From the Customer dimension, drag and drop **Customer Zip**.
- From the Customer dimension, drag and drop **Customer Marital**.
- From the Customer dimension, drag and drop **Customer Income**.
- From Frequent Flyer (Fact Table), drag and drop **Miles**.
- From Frequent Flyer, drag and drop **Fare**.

4. To use a Study:

- From the **Studies** tab on the Customer dimension, drag and drop the study **Flew 11/94 from JFK, Married, High Income** onto the report title.

5. To constrain report:

FREQUENT FLYER DATA MART

- From the **Groups** tab on the Date Flown dimension, drag and drop **Flown Year = 1994** to the report title.
6. To run report:
- Click **Run Report** 
7. To select report view:
- Choose **View→Report** from the menu.

f. Synchrony - [Single View]

File Edit View Report Tools Help

Dimensions [Date Flown: Flown Year = 1994]

Fields Groups Studies

Flown Date
Flown Day Number In Month
Flown Day Number Overall
Flown Day Of Week
Flown Fiscal Period
Flown Holiday Flag

Frequent Flyer - Study on Study

for Flown Year = 1994, All Customers in Flew 11/94 from JFK, Married, High Income

	A	B	C	D	E	F	G	H	I
	Customer Name	Customer Address	Customer City	Customer State	Customer Zip	Customer Marital	Customer Income	Sum of Miles	Sum of Fare
1	Ashby	9369 Shady Lane	Juneau	Alaska	74154	Married	\$94,000	32,898	\$6,252.00
2	Barrett	5332 Shady Lane	Phoenix	Arizona	88392	Married	\$117,000	32,378	\$6,151.00
3	Deardorff	8151 Shady Lane	Wilmington	Delaware	40860	Married	\$62,000	32,653	\$6,203.00
4	Ford	119 Shady Lane	Sun Valley	Idaho	71699	Married	\$76,000	36,805	\$6,994.00
5	Jackson	8614 Shady Lane	Bethesda	Maryland	11802	Married	\$80,000	32,050	\$6,088.00
6	Kitch	361 Shady Lane	Greenfield	Massachusetts	75026	Married	\$60,000	24,782	\$4,708.00
7	Landino	700 Shady Lane	Minneapolis	Minnesota	23552	Married	\$62,000	33,047	\$6,277.00
8	Moran	8147 Shady Lane	Bozeman	Montana	46909	Married	\$109,000	39,450	\$7,495.00
9	Nielson	9511 Shady Lane	Lincoln	Nebraska	32541	Married	\$100,000	37,706	\$7,164.00
10	Pavlovich	5698 Shady Lane	New York	New York	81372	Married	\$81,000	31,709	\$6,027.00
11	Quick	4374 Shady Lane	Greensboro	North Carolina	37164	Married	\$89,000	26,789	\$5,090.00
12	Utzig	8841 Shady Lane	Knoxville	Tennessee	99749	Married	\$94,000	38,894	\$7,389.00

Family: Frequent Flyer 10/23/98 10:57 AM

This is a very complex query where a **Study on a Study** is created. Few query tools are able to save the *results of constraints* as in Synchrony and no other is able to *subset and then save the results of the previous constraints*. The new subset is saved and can be used as the basis of a new query. Synchrony stands alone in its ability to create **Studies on Studies**.

