Defining the Hierarchy

Setting up the Historic Data · https://dev.forecastpro.com/documentation/forecast-pro-trac/setting-up-the-historic-data/defining-the-hierarchy/

Demand data can almost always be organized into several levels of aggregation. Suppose that the lowest-level forecasts you need to generate represent SKUs (Stock Keeping Units). SKU-level forecasts are often needed to support production planning and inventory control. The corporation might aggregate these SKUs first into products and then into product lines for marketing and sales. These might be aggregated further into geographical regions for the benefit of top management.

For the purposes of this discussion, we will be referring to *end-items* and *groups.* End-items are the lowest-level data in your hierarchy. In the above example, each SKU would be an end-item. Groups are aggregations of end-items. In the above example, products, product lines and geographical territories would all be examples of groups.

Forecast Pro allows you to define product hierarchies and create one set of self-consistent forecasts. It allows top-down, bottom-up or user-defined reconciliation, seasonal adjustment based upon aggregate data and model selection at the aggregate level.

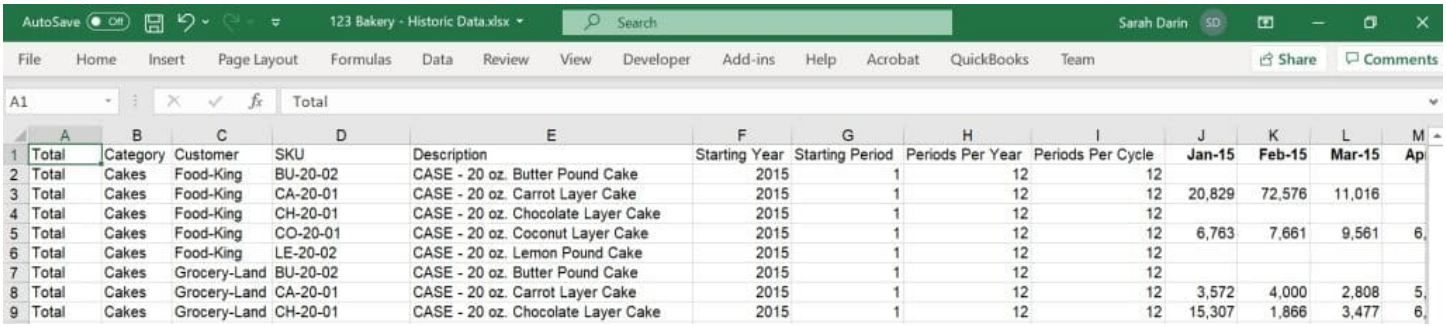
It is *not* necessary that the end-item histories begin and end at the same time. Thus group-level data may consist of end-items that have been retired or replaced by new end-items. Obsolete end-items will contribute to the group-level history but will not themselves be forecasted. You will notice that the starting and ending dates for the overall historic data consist of the starting date for the oldest end-item and the ending date for the newest. Forecasts will be prepared for all end-items and groups that are “alive” at the end of the data set. Those whose histories terminate before that time are considered discontinued—they contribute to the historic aggregates (and therefore influence aggregate forecasts), but they are not themselves forecasted.

Using Attribute Fields to Define a Hierarchy

If you do not include any attribute fields, when you read the data into Forecast Pro, it will create a one-level hierarchy (i.e., there will be no group totals).

If your data file, table or query includes attribute fields prior to the Variable Name field, Forecast Pro will automatically build a multiple-level hierarchy. The first level of the hierarchy will correspond to the first attribute field, the second level of the forecasting hierarchy will correspond to the second attribute field, etc.

Let's illustrate this with an example. The spreadsheet *123 Bakery – Historic Data.xlsx* is a sample data file shipped with Forecast Pro. It is shown below.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Total	Category	Customer	SKU	Description	Starting Year	Starting Period	Periods Per Year	Periods Per Cycle	Jan-15	Feb-15	Mar-15	Ap
2	Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2015	1	12	12				
3	Total	Cakes	Food-King	CA-20-01	CASE - 20 oz. Carrot Layer Cake	2015	1	12	12	20,829	72,576	11,016	
4	Total	Cakes	Food-King	CH-20-01	CASE - 20 oz. Chocolate Layer Cake	2015	1	12	12				
5	Total	Cakes	Food-King	CO-20-01	CASE - 20 oz. Coconut Layer Cake	2015	1	12	12	6,763	7,661	9,561	6,
6	Total	Cakes	Food-King	LE-20-02	CASE - 20 oz. Lemon Pound Cake	2015	1	12	12				
7	Total	Cakes	Grocery-Land	BU-20-02	CASE - 20 oz. Butter Pound Cake	2015	1	12	12				
8	Total	Cakes	Grocery-Land	CA-20-01	CASE - 20 oz. Carrot Layer Cake	2015	1	12	12	3,572	4,000	2,808	5,
9	Total	Cakes	Grocery-Land	CH-20-01	CASE - 20 oz. Chocolate Layer Cake	2015	1	12	12	15,307	1,866	3,477	6,

In our example, our first attribute field is Total. Notice that the value for the field Total is "Total" for all items. Since all items have the same value for the first attribute field, when we read this spreadsheet into Forecast Pro the first level of our forecasting hierarchy will provide a grand total for all items in our spreadsheet. Notice that the next attribute field is Category, which contains both Cakes and Muffins. Thus, when we read this spreadsheet into Forecast Pro the second level of our forecasting hierarchy will breakdown total sales into Cakes and Muffins. The next attribute field is Customer. Thus, the third level of our forecasting hierarchy will breakdown the Cakes and Muffins into Customers. The next field is the Variable Name (labeled "SKU") so the final level of our hierarchy will breakdown the Category-by-Customer into SKUs.

By default, the *Automatically sort* option on the Formats tab of the Options dialog box is selected, and Forecast Pro sorts the data alphabetically prior to reading it in. If *Automatically sort* is not selected, the order of appearance on the spreadsheet dictates the structure of the hierarchy and you'll want to take care when constructing your spreadsheet.

ODBC attribute fields

The file *123 Bakery – ODBC.mdb* is a sample data file shipped with Forecast Pro. It is shown below.

Historic_Data

ItemId0	ItemId1	ItemId2	ItemId3	Description	Hist_Year	Hist_Period	Ppy	Ppc	Hist_Value
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2016	6	12	12	1944
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2016	7	12	12	3888
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2016	8	12	12	5832
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2016	9	12	12	8748
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2016	10	12	12	16524
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2016	11	12	12	16524
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2016	12	12	12	23328
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2017	1	12	12	17496
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2017	2	12	12	2916
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2017	3	12	12	6804
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2017	4	12	12	17496
Total	Cakes	Food-King	BU-20-02	CASE - 20 oz. Butter Pound Cake	2017	5	12	12	1944

If you are using ODBC the first attribute field *must* be named ItemId0, the second attribute field must be named ItemId1, etc. All attribute fields must be text fields. Other than that, the operation is identical to the spreadsheet format described above.