



Forecasting Products in the Near Term: Short-Term Forecaster™ (STF) Model



- Short-Term Forecaster™ (STF)
 - Trend- and event-based forecasting tool combines:
 - » Product's trend or momentum
 - » Other events not reflected in trend
- Whole market is forecasted
 - Company products
 - Competitive products
 - Classes and market totals
- Forecasts for multiple indications, products, & geographies easily consolidated and analyzed as a portfolio

Monte Carlo simulation



Uses OI
Prediction
Engine

Monthly, quarterly, &
annual forecasts



0: Save Results for Reference (OPTIONAL)

Last Saved:
03-May-2010 4:03 PM

1: Fetch Data from Repository

Last Fetched:
03-May-2010 4:02 PM













2: Generate Trends

Last Generated:
03-May-2010 4:11 PM

3: Run Monte Carlo

Last Run:
03-Mar-2010 5:34 PM
Number of Iterations:
700

Color Key

-  Model input cell
-  Model input cell with embedded dropdown list
-  Calculated cell—please do not change!
-  Optional Inputs
-  Imported Data
-  Totals
-  Trends
-  Intermediate Results
-  Budget
-  Revenue Units
-  FOC Units
-  Total Units

Select Product for Sensitivity Results

Extra C 

Select Quantity for Sensitivity Results

Revenues 

Select Year for Sensitivity Results

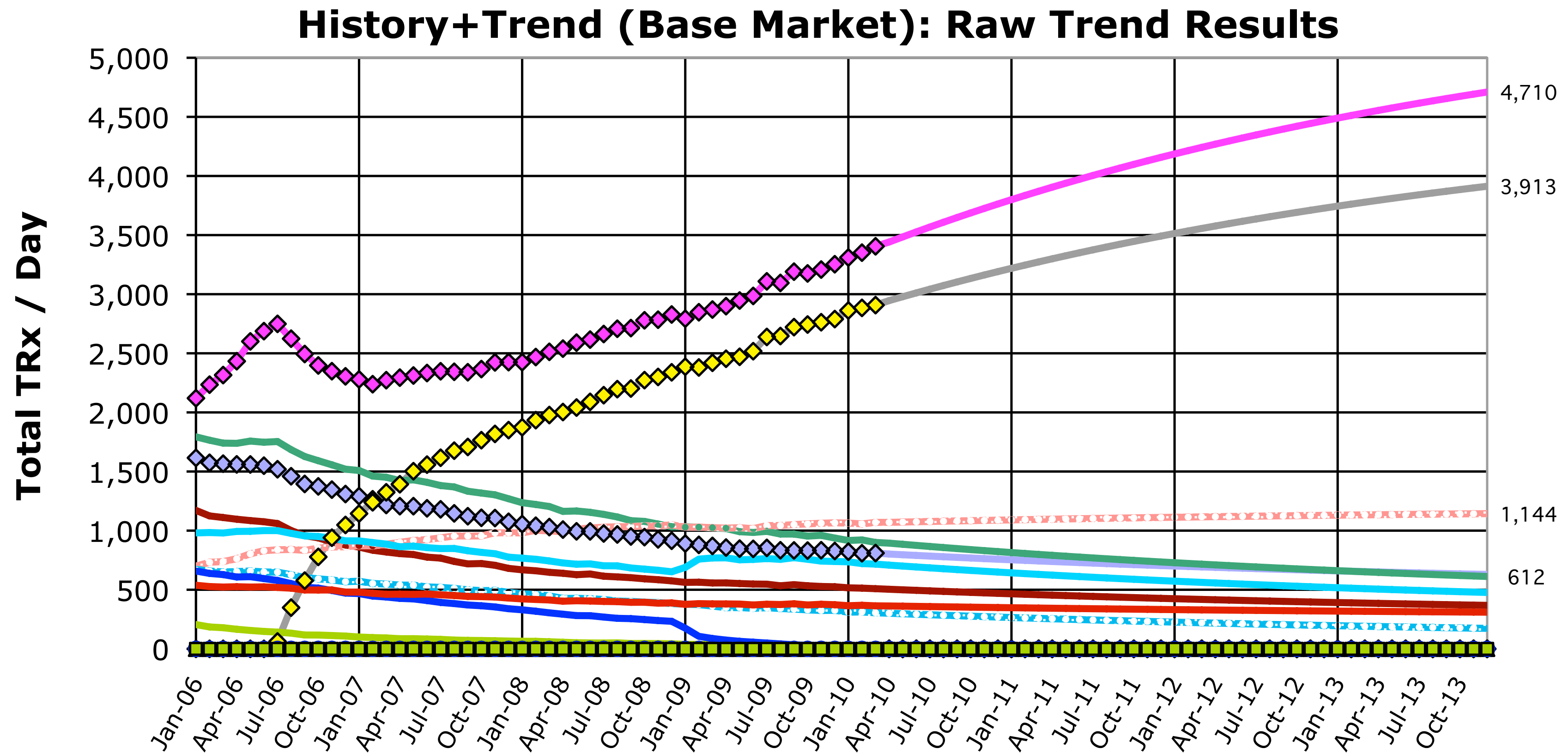
2011 

- One-button, automatic data import from Excel-based Data Repository
- Demand Units
 - Total prescriptions by month for all company and competitors' products, submarkets, and markets
 - Retail + mail order units (bottles) for all company products
 - Non-retail units (bottles) for all company products
- Shipped Units & Sales
 - Ex-factory sales: units (packages), gross revenues, and net revenues
 - Net revenue budgets for all company products
 - Free-of-charge (PAP + PIK) units for all company products
- Monthly Weighting Factors
 - “BII” (Buying Intensity Index) weights for each historical and future month
 - » Adjusts for a number of seasonal and other factors in each individual month
 - » Thorough testing found that BII weights were superior to other weighting methodologies
 - One-third to one-half the MAPE compared to other approaches
- Other monthly weights (“days”) are provided in the STF for comparison

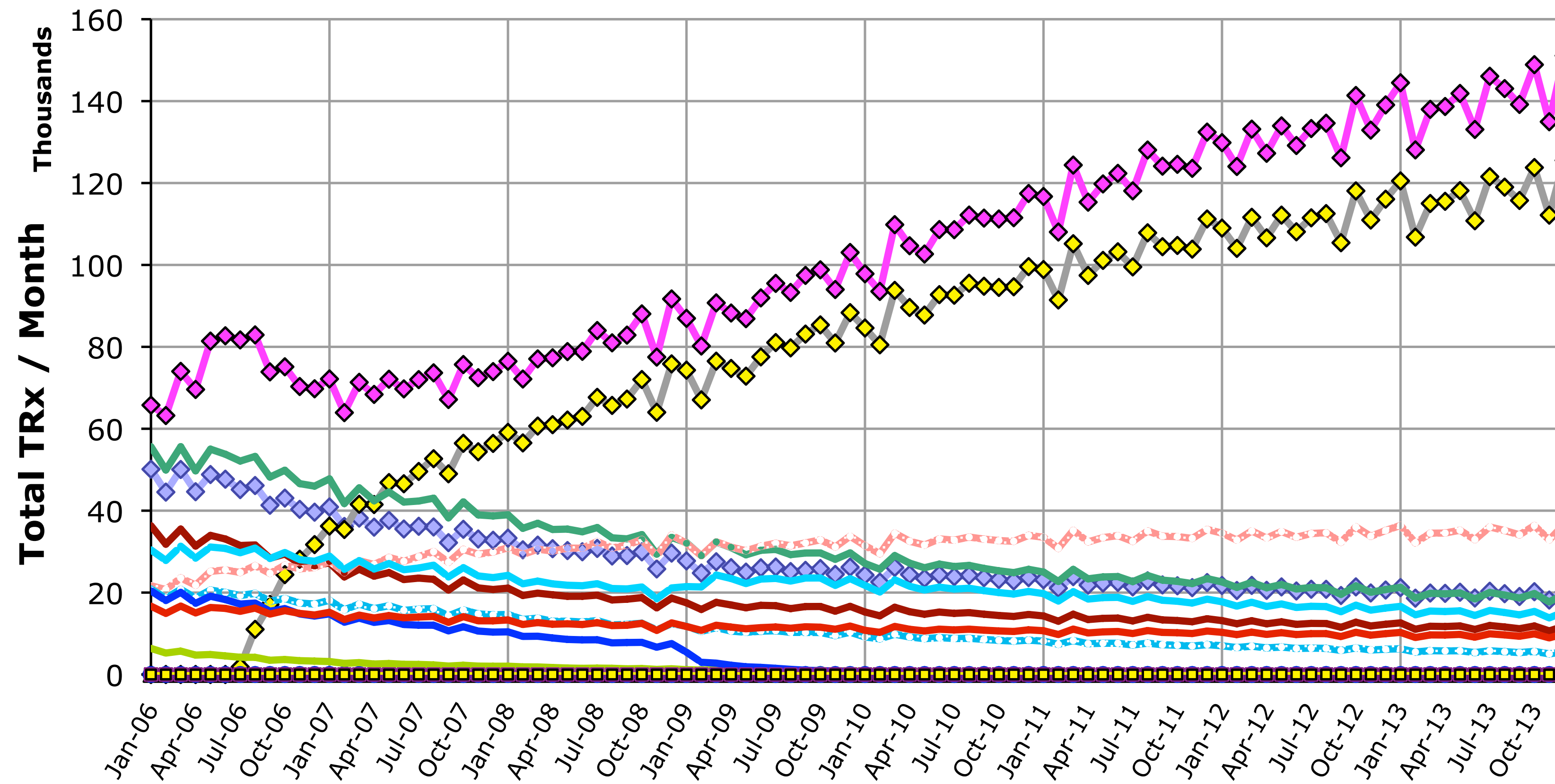
- Future price and discount rate (gross to net price) changes
- Trend upper and lower bounds
- Inventory uncertainty factor for Monte Carlo simulation
- New product launch assumptions
 - New competitive products (can be combination products)
 - New company products (can be combination products)
 - » Cannibalization by automatic calculation or specified in cannibalization matrix
 - » Launch date, peak share, sales from market growth, and adoption curves
- Event assumptions
 - Class event specified by parameters
 - Product-specific events with relative class effects
- Overall overrides and month-specific overrides are provided for all inputs

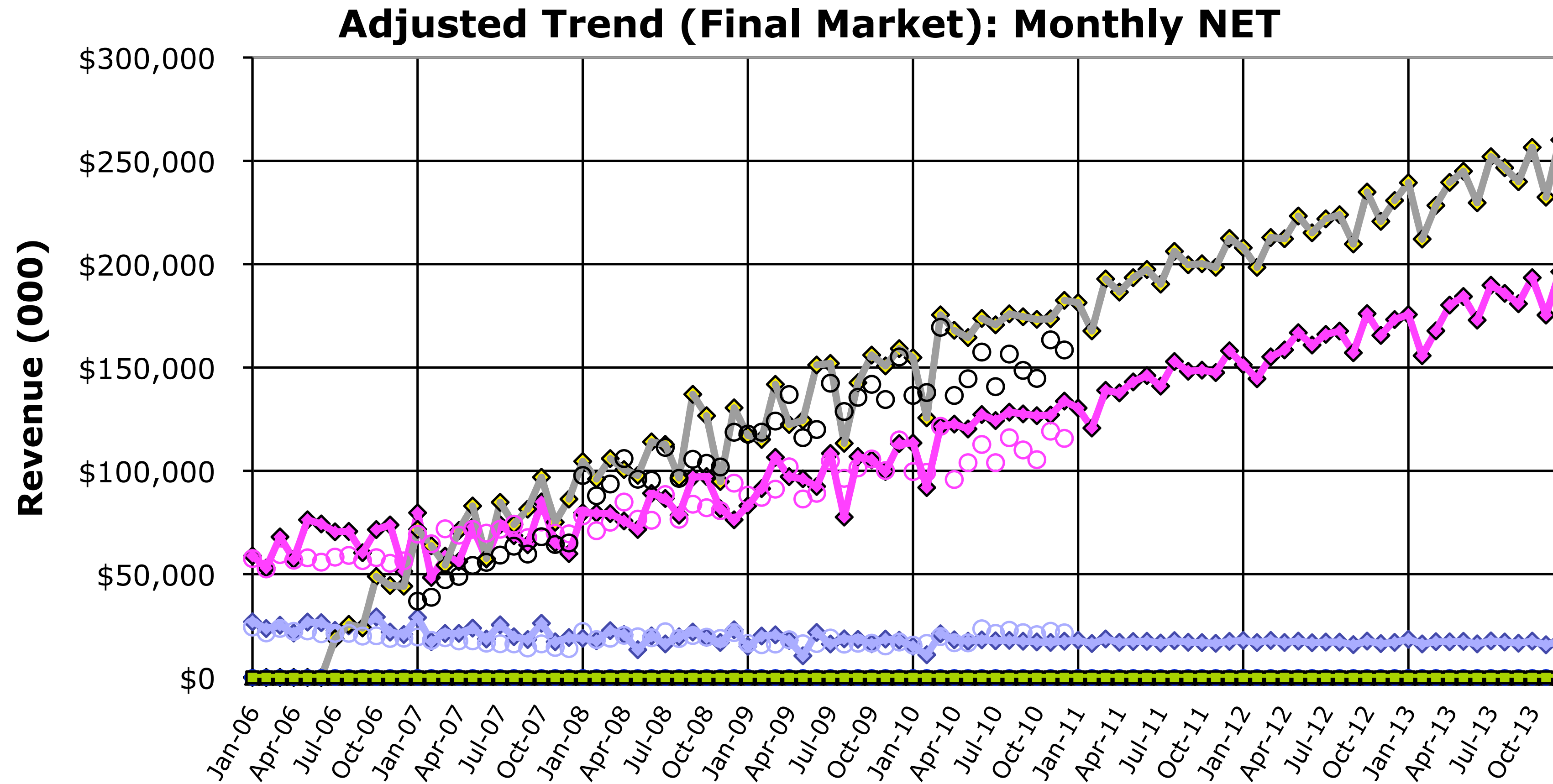
- User clicks one button to automatically trend all products
- All quantities to be trended have default exponential smoothing settings (default varies by quantity trended, by subproduct)
 - Trend type: default, none, linear, multiplicative
 - Seasonality type: default, none, linear, multiplicative
 - Damped trend: default, yes, no
 - Trend parameters (specify to override or leave blank to optimize):
 - » Alpha, gamma, delta, and phi
 - Number of historical months to trend (blank equals trend all)
- Trends can be overridden
 - Trend Explorer tool can be useful for this
- User can select monthly weighting factor to use for the TRx/month to TRx/day conversion (e.g., Bll, calendar days, business days)

- The STF provides a variety of parameter and diagnostic statistics for each quantity trended
 - Total data points found and data points trended
 - Exponential smoothing trend parameters used (alpha, gamma, delta, and phi)
 - Mean absolute error (MAE)
 - Mean squared error (MSE)
 - Mean absolute percentage error (MAPE)
 - Symmetric mean absolute percentage error (sMAPE)
 - Mean absolute scaled error (MASE)
 - R squared/adjusted R squared
 - Thiel's U statistic
 - Akaike's information criterion (AIC)
 - Schwarz's Bayesian information criterion (BIC)
 - Variance of historical data



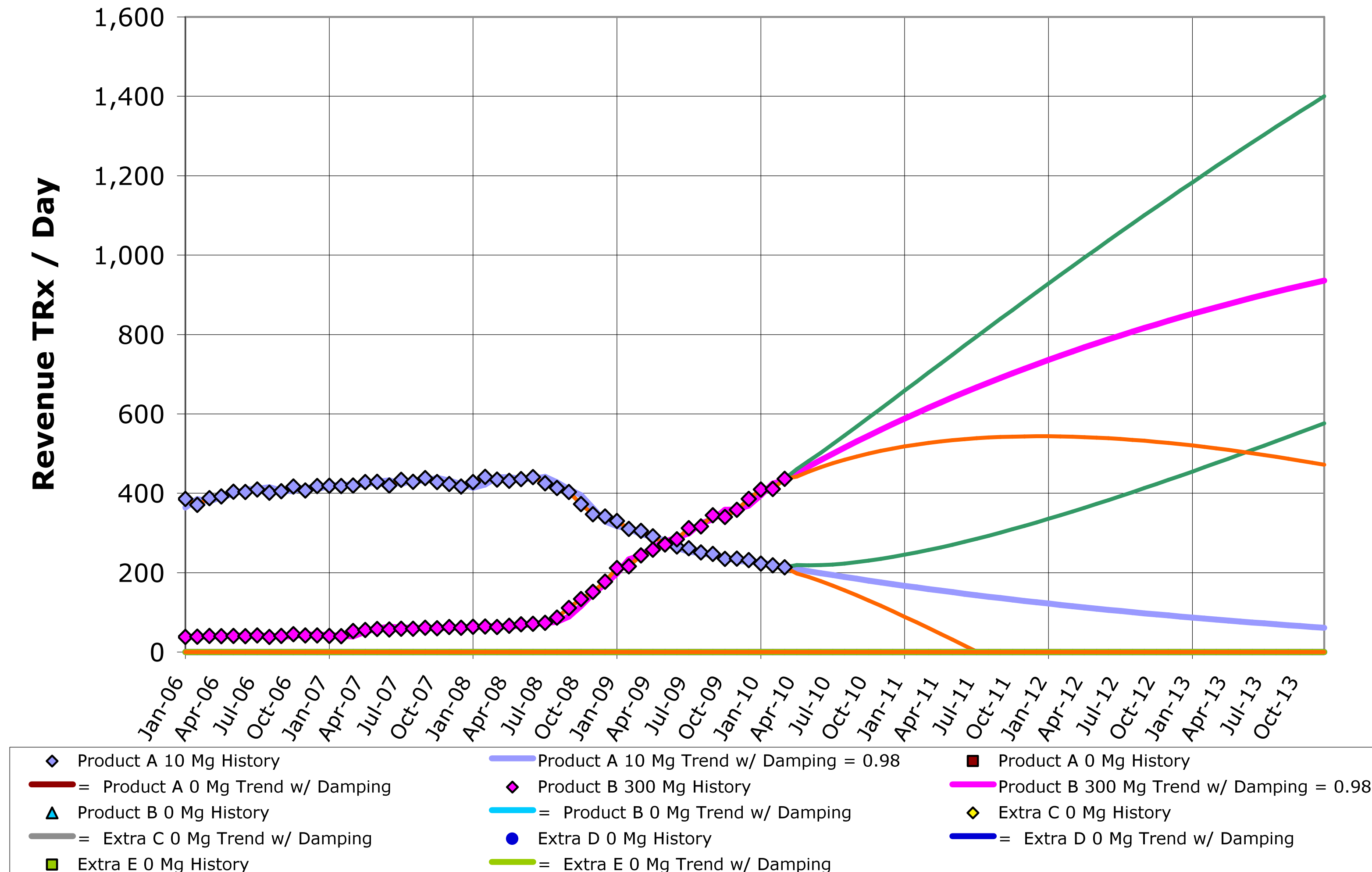
Adjusted Trend (Final Market)



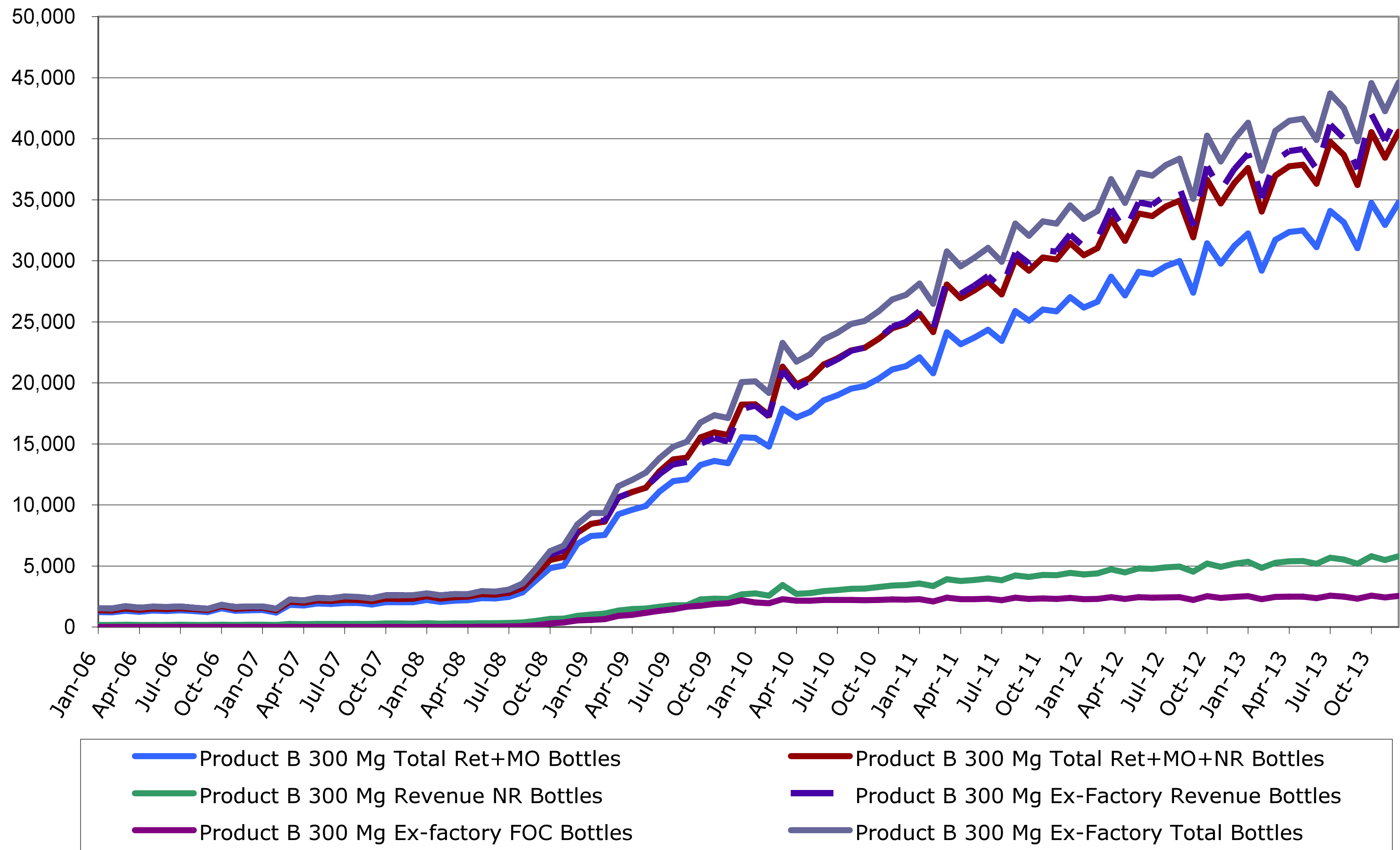


- Two forecasts are created
 - Base market before new products or events
 - Final market after new products and events
 - Incremental forecast build-ups are shown
 - » Value of each event is shown along with total in prescriptions and dollars
- STF automatically adjusts to market structure
 - Trends company and competitors' products
 - Can handle new product strengths when needed
- Distinction made between ex-factory and customer-level data
- Distinction made between revenue, free-of-charge, and total units
- Forecasts created by channel (retail+mail order, non-retail, and free-of-charge)
- Intermediate “demand factors” are trended for increased accuracy and explanatory value
- Built-in trending methods using the OI Prediction Engine are fully tested and easy to specify
 - Abundant graphs and statistics for diagnostics
 - Correct calculation of trend and lead-time prediction intervals

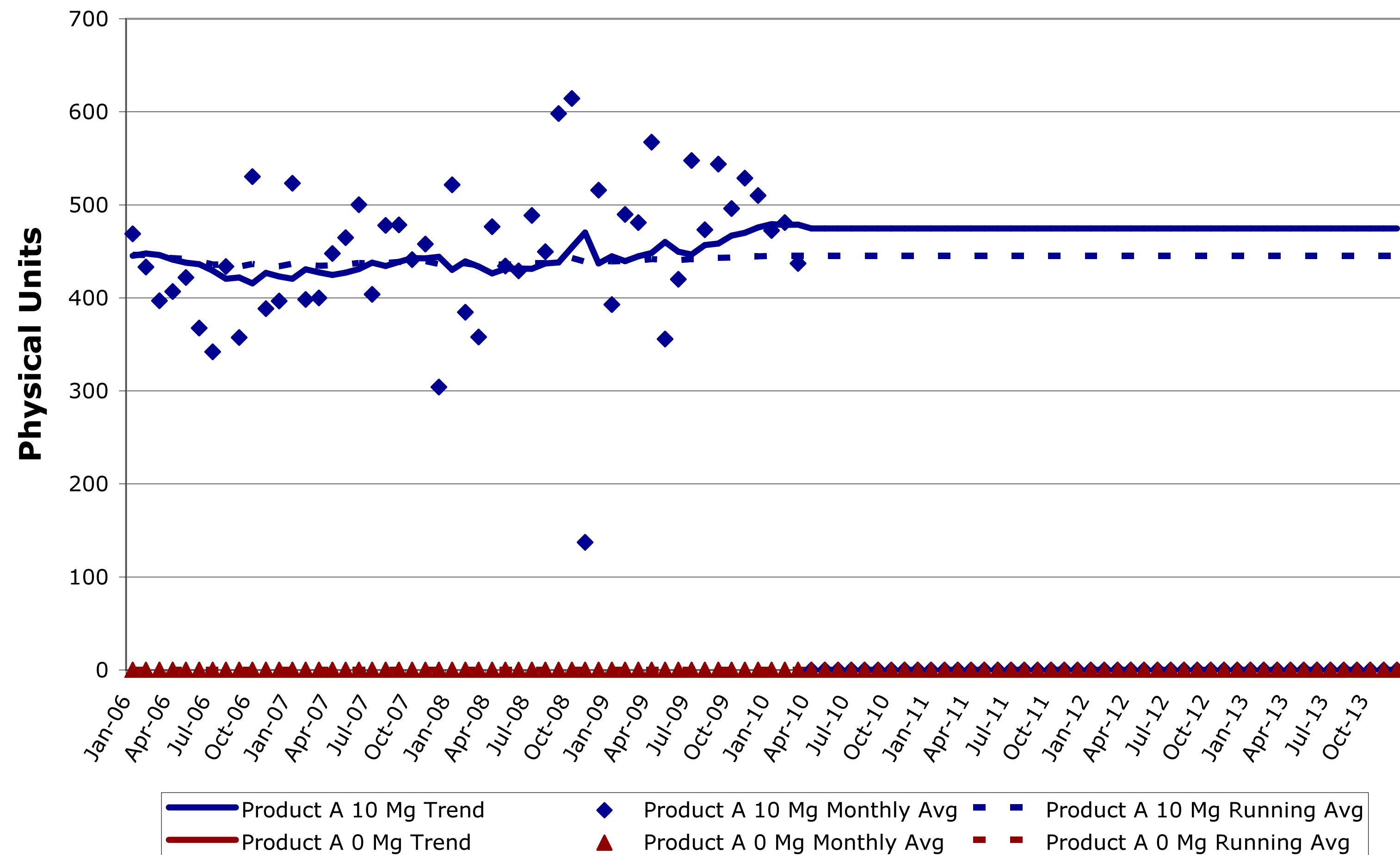
History+Trend (Base Market): Raw Trend Results



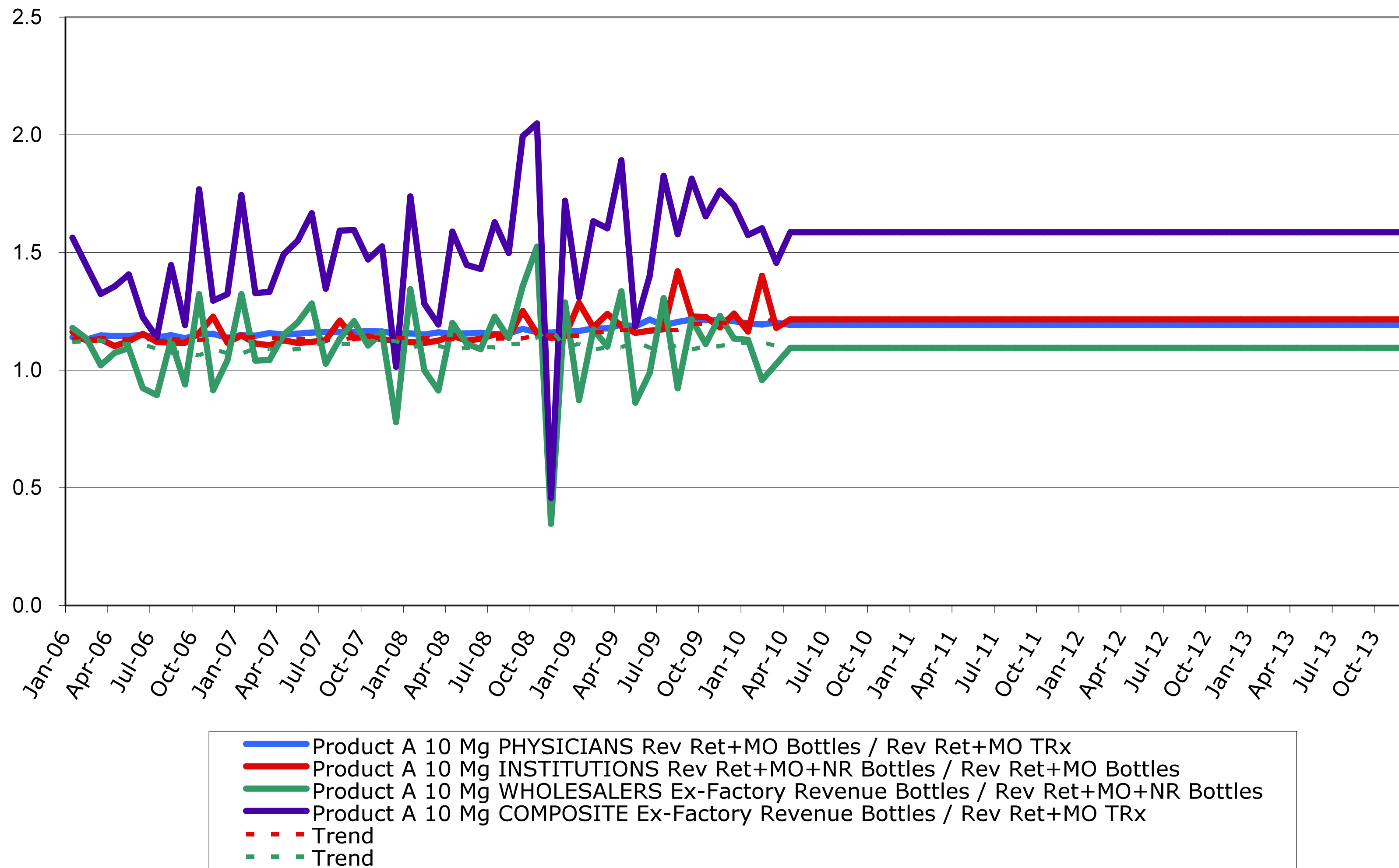
Product B 300 Mg Bottles

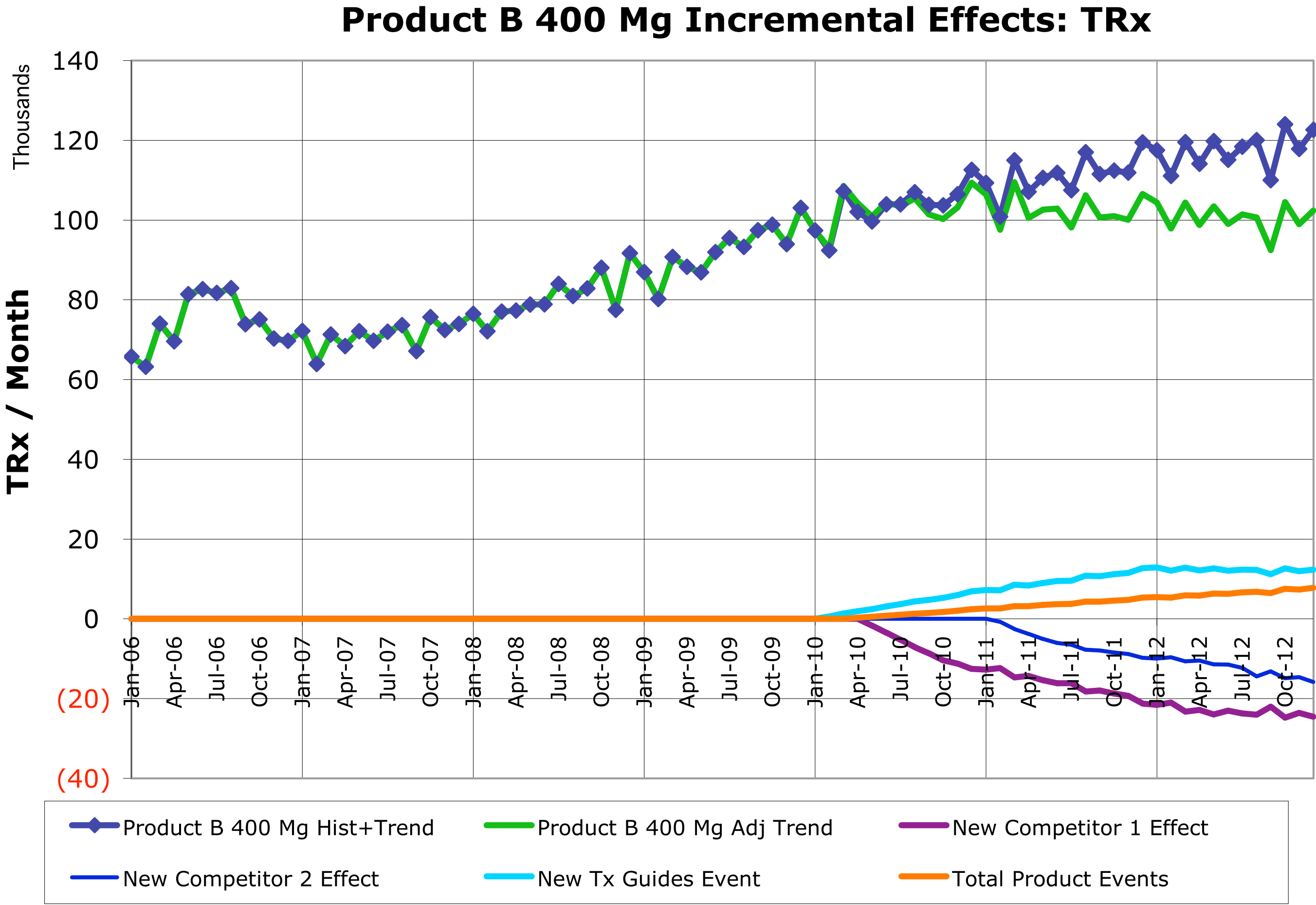


Product A 'Mg/Rx' Averages and Trend



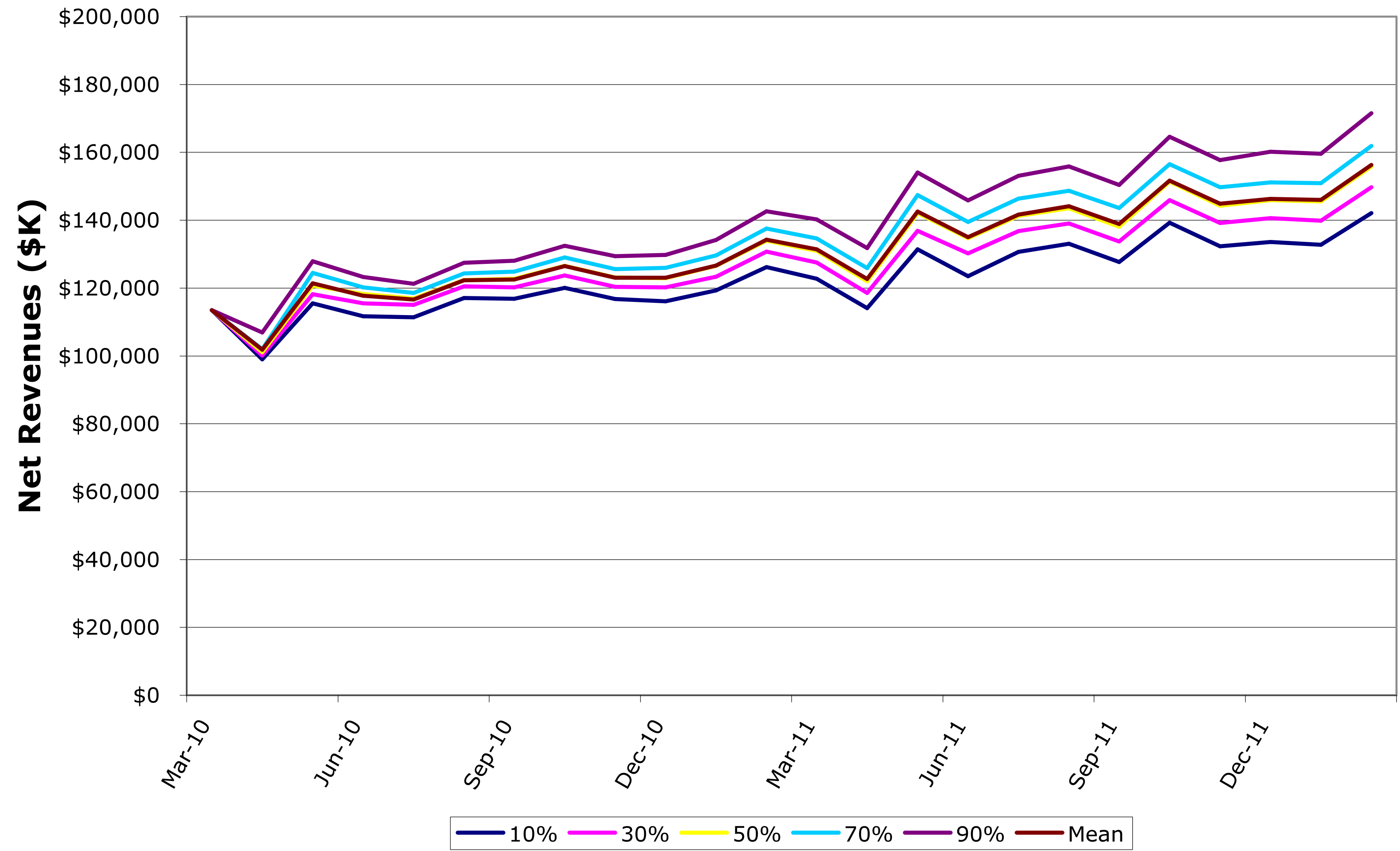
Product A 10 Mg Demand Factor Build-up





- Monte Carlo simulation
 - Built-in Monte Carlo simulation uses events and trend prediction intervals as inputs
 - Monte Carlo simulation provides sensitivity analysis of model variables
- Ability to import pricing information from another STF model
- Outputs
 - Forecasts for company products include prescriptions, units, gross revenues, net revenues, and patients
 - Monthly, quarterly, and annual summaries
 - Full array of graphs for diagnostics and summary
 - Comparison with previously saved forecast
- Feedback
 - Color-coding of input sections reduces chance of user error
 - Error flags indicate whether inputs make sense or not (i.e., cannibalization must not make a product go negative)
 - Time and date stamps and multiple saved Excel files for version control

Product B



- STF is easy to use
 - Simple importation of product and market data from Data Repository
 - One-click trend generation
 - One-click Monte Carlo simulation and sensitivity analysis
- Accurately and quickly forecast near-term revenues based on historical market data and user-supplied market insight
 - If no assumptions change, you can produce an updated forecast in minutes
 - Events are parametric and easy to enter
- Forecasters know Excel and can use Excel's powerful features
 - Allows for what-if analysis and Excel's "Goal Seek" and "Solver" solutions
 - All intermediate results are accessible
 - Side calculations and custom tables and charts are allowed
 - Calculation flow is clearly laid out and visible
 - » Use of Excel's formulas and Trace Precedents and Trace Dependents aids understanding and debugging power
 - Results can be exported to other Excel models and elsewhere
- Two decades of design, development, and debugging work
 - Tested at multiple companies and with multiple products