Predicting new product adoption for American Apparel
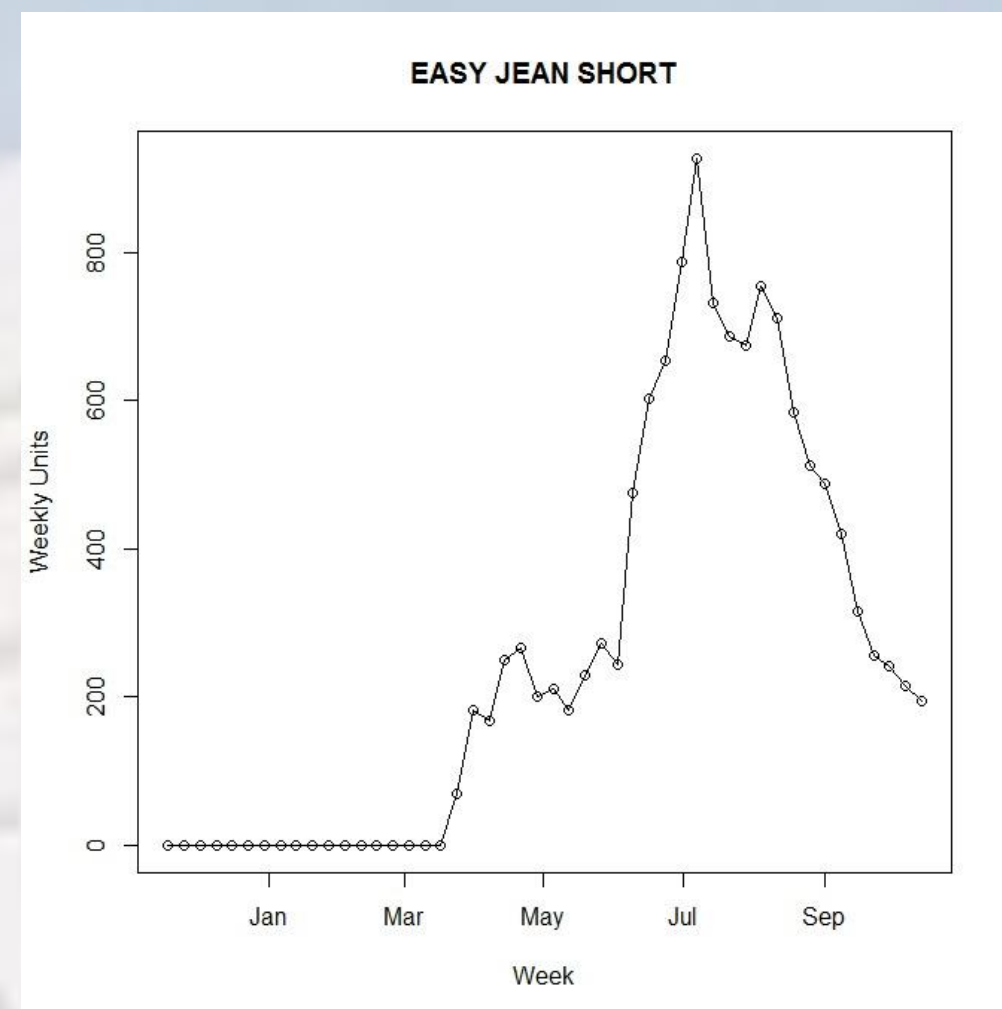## A-Lab 2014

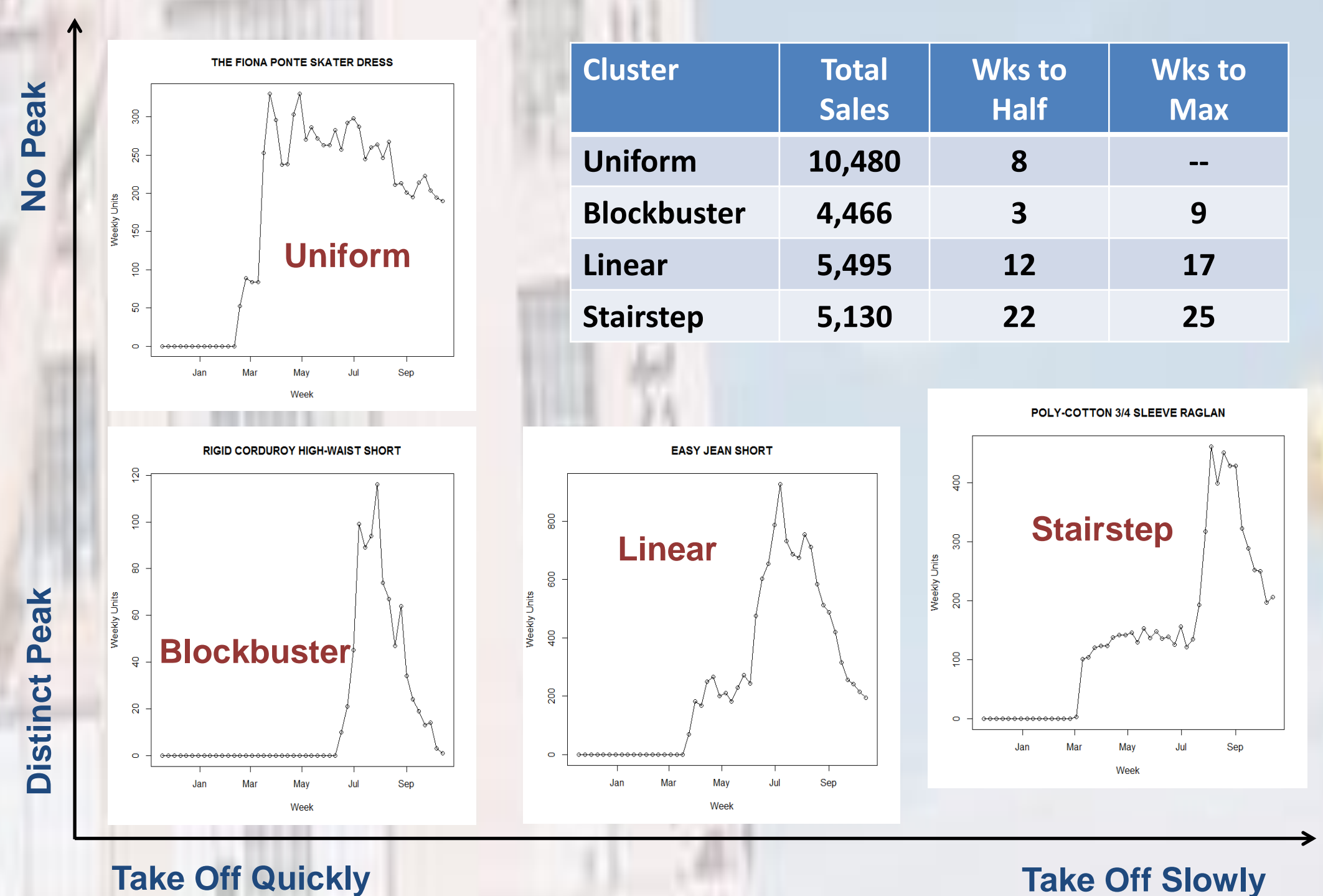## How do you quantify new product adoption?

EASY JEAN SHORT

What is new product adoption? One simple answer is total sales. However, a retailer might also want to understand sales growth, maximum sales, or other features of their data. This information is captured by a product adoption curve, which plots weekly sales for a product across time.

Our team plotted product adoption curves for 128 products introduced by American Apparel in 2013-2014, such as the Easy Jean Short (left). We observed significant variation in the shape of these curves and employed k-means clustering to identify distinct sales patterns among the products in our dataset.

Product adoption curves can be clustered into four distinct archetypes which provide a useful framework for understanding product sales.

The four product archetypes (right) vary in how quickly the products reach maximum sales and how quickly sales begin to fall. While some archetypes, like uniform and blockbuster, look very similar in early weeks, the shape of the curves and the magnitude of total sales ultimately differ greatly. As a result, our team found that it is very difficult to forecast a new product's archetype based solely on early sales data, though we tried a variety of approaches including regression, k-nearest neighbor, random forest, and SVM.

THE FIONA PONTE SKATER DRESS — Uniform
RIGID CORDUROY HIGH-WAIST SHORT — Blockbuster
EASY JEAN SHORT — Linear
POLY-COTTON 3/4 SLEEVE RAGLAN — Stairstep

No Peak / Distinct Peak / Take Off Quickly / Take Off Slowly

Cluster	Total Sales	Wks to Half	Wks to Max
Uniform	10,480	8	--
Blockbuster	4,466	3	9
Linear	5,495	12	17
Stairstep	5,130	22	25

Social media data provide useful consumer insight and show correlations with sales that should be explored further.

word tree — american apparel is
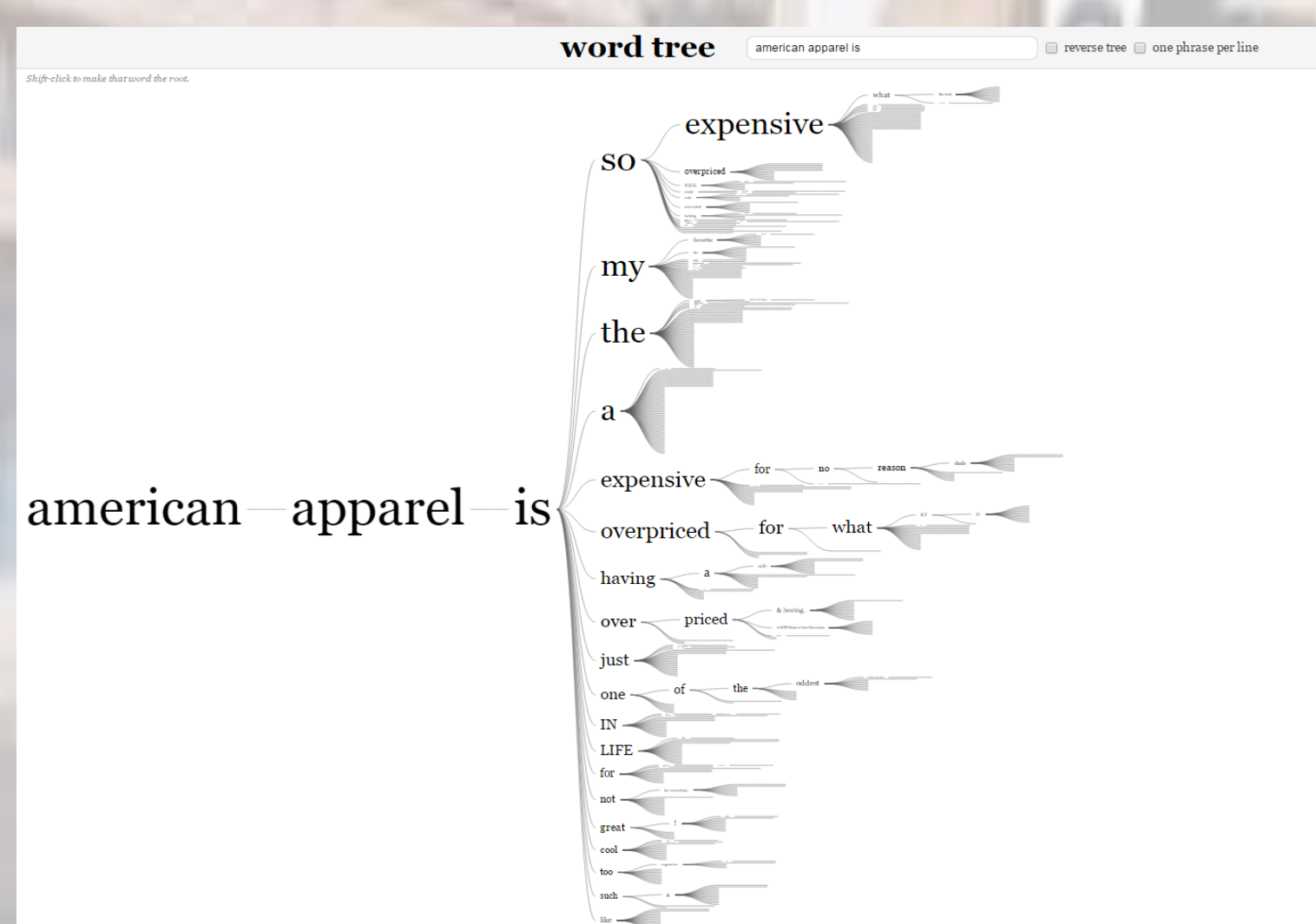
Text analytics such as a word tree (above) can help retailers understand what consumers are saying about their brand and products.
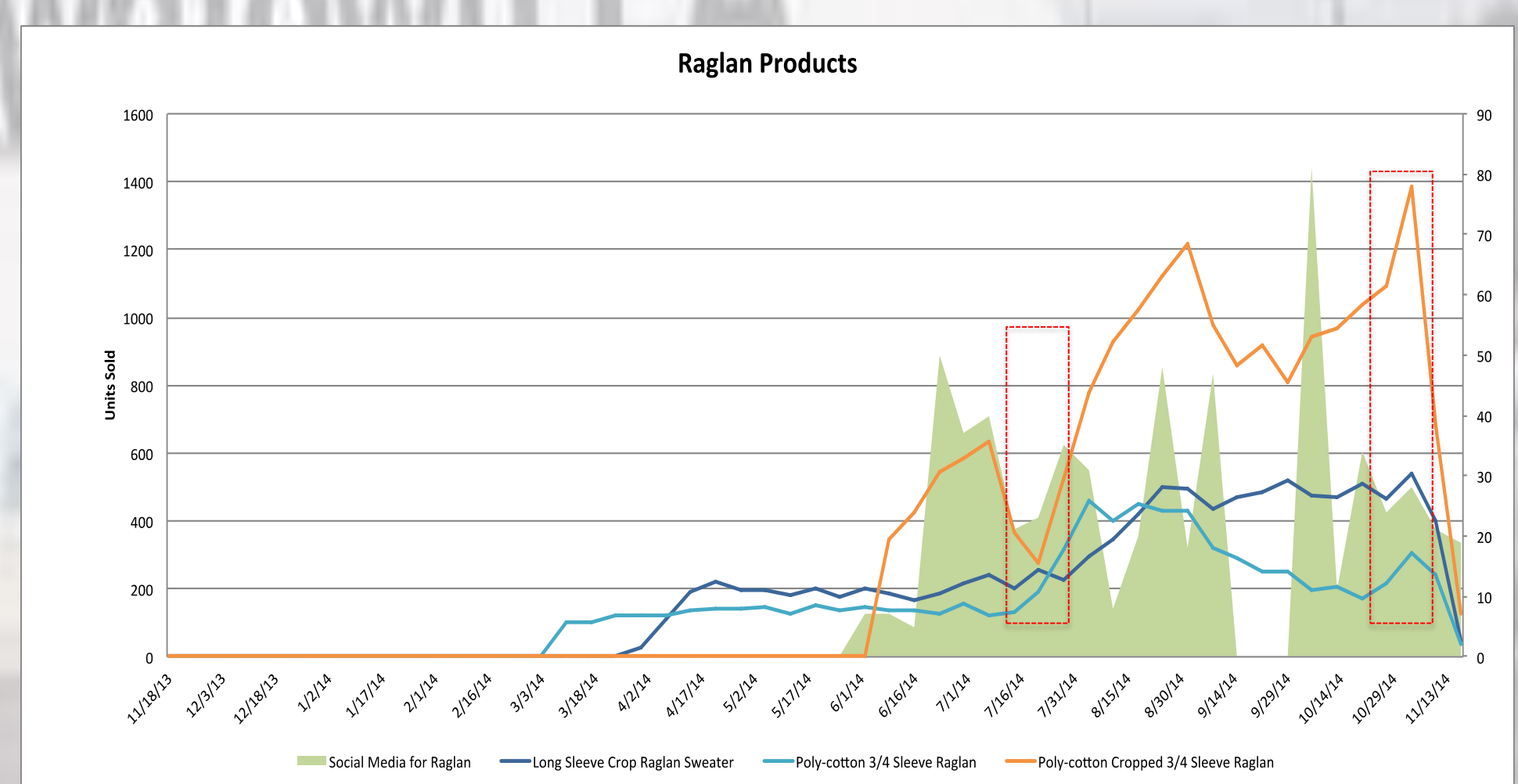
Raglan Products

By plotting sales data alongside social media mentions of key American Apparel products (like 'Raglan'), our group identified a small , consistent lag between social media activity and spikes/dips in purchasing patterns. Future work should try to incorporate this type of data into forecasting models .

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ZenSar TECHNOLOGIES

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