



FORDHAM UNIVERSITY
MARKETING INTELLIGENCE COHORT

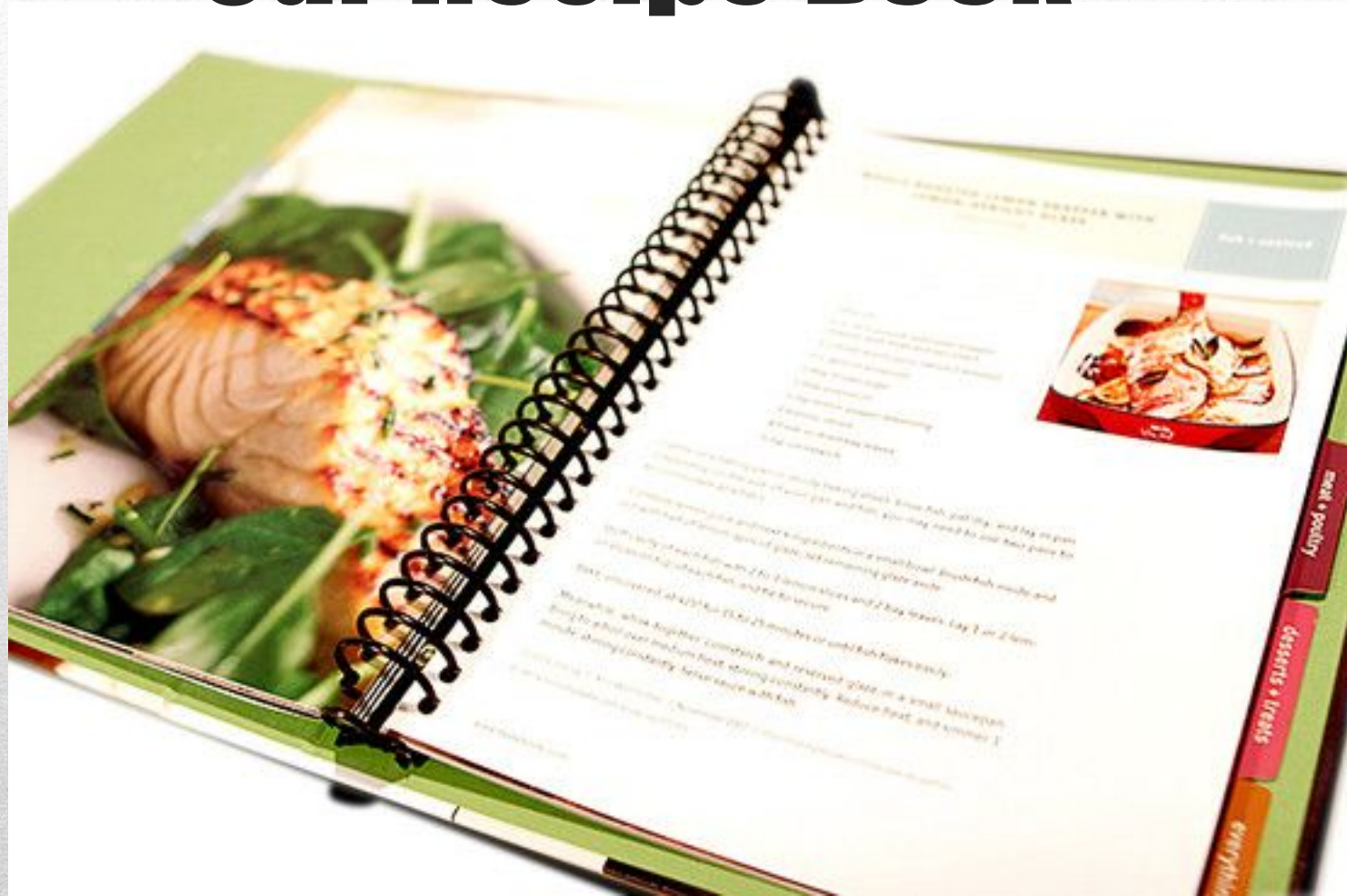


**Predictive Modeling
for Programming**

Your Fordham Team

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Our Recipe Book



Our Recipe

- Research Questions & Data Summary-*5mins*
- Methodologies -*10mins*
- Key Findings -*20mins*
- Recommendations -*5mins*
- Your Questions

Research Questions

- We started on Thursday, May 9
- Research Questions
 - Can we predict ratings for existing shows?
 - Can we predict how long a program might last?

SUMMARY OF DATA



Here's What You Gave Us:

- Food Network 10 prime time shows
- Food Network 47 competitors' shows
- Food Network 12 cancelled shows

# of Competitors	# of Competitors are picked
47	9

Criteria

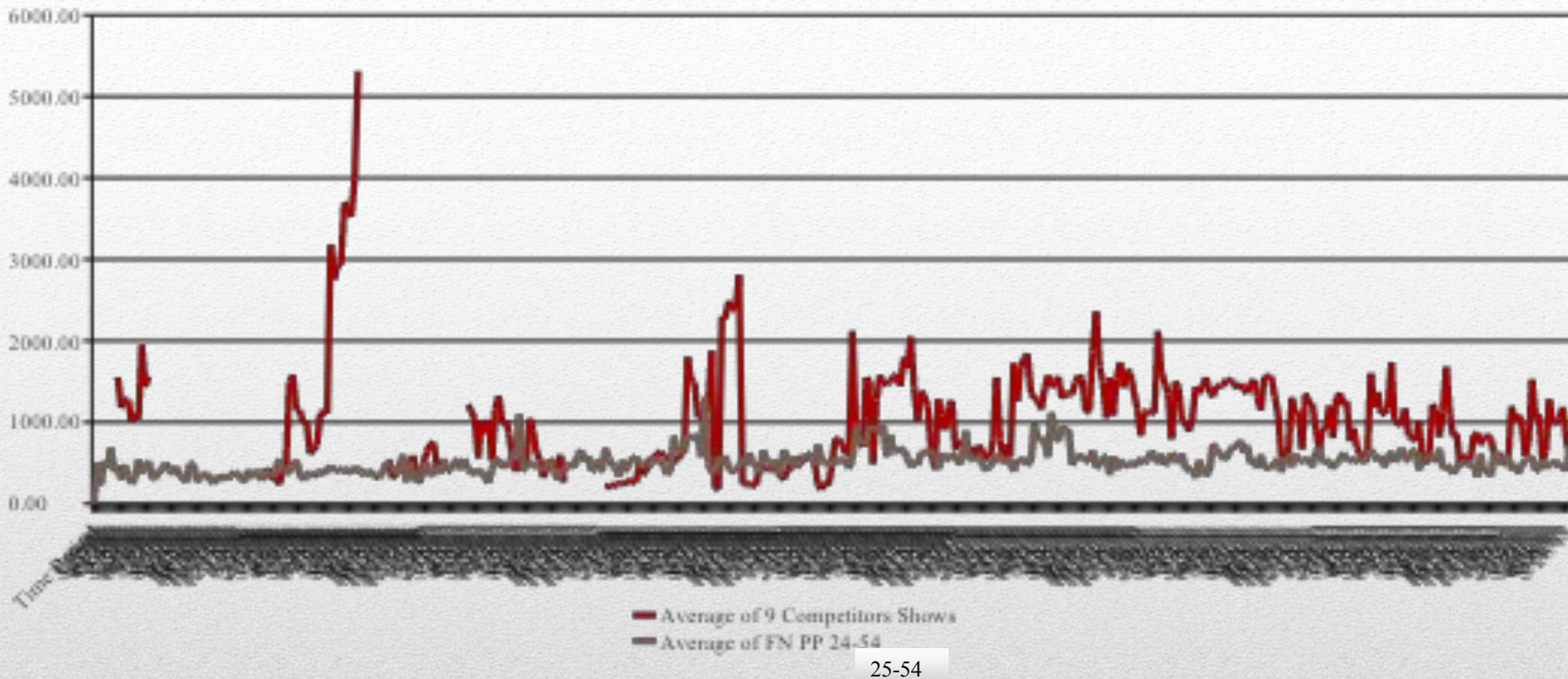
Similar time slot as FN prime time shows

Select one show from each direct competitive network

Select some food based shows

Competitors' Shows	Networks
Bizarre Foods W/Andrew Z.	TRAV
Cake Boss	TLC
Top Chef	BRAV
Pawn Stars	HIST
Deadliest Catch	DISC
Storage Wars	A&E
Jersey Shore	MTV
America Got Talent	Competition Show
Glee	Drama

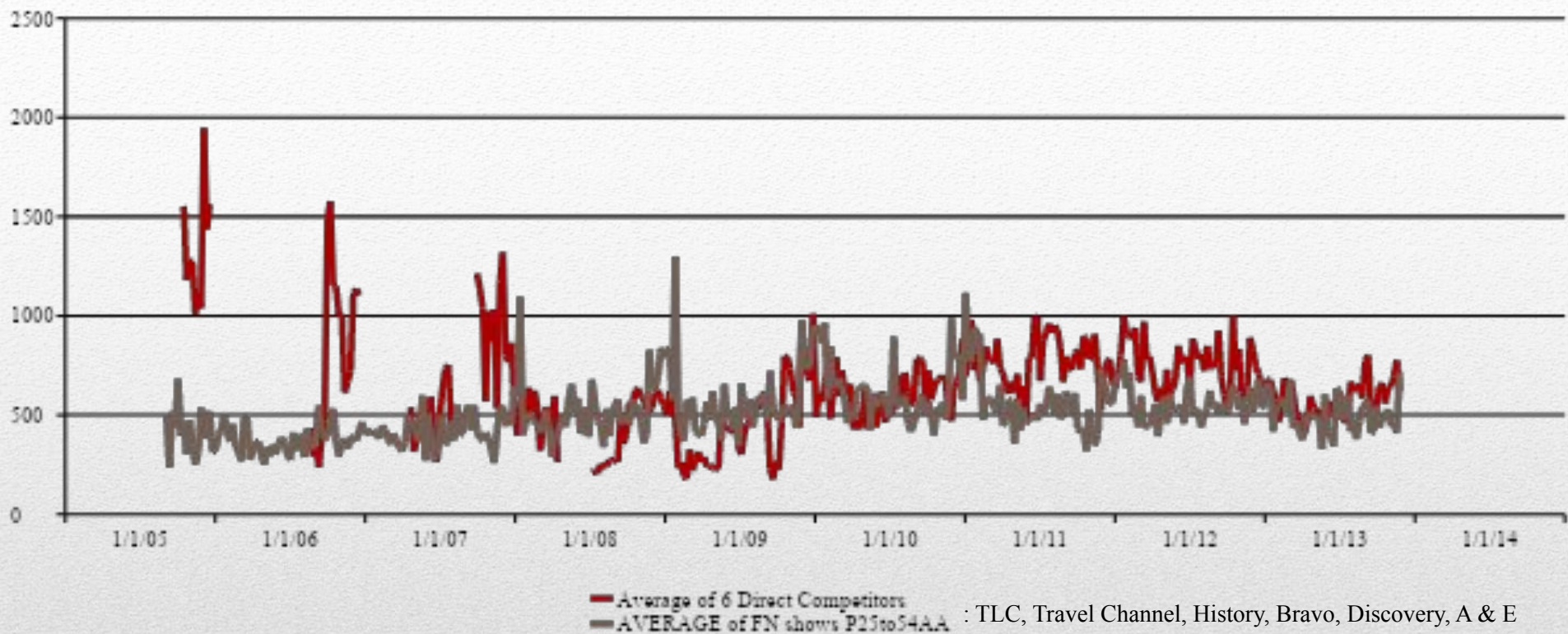
Key Findings: **Competitor Summary**



Average audience of people 25-54 from competitors' shows is **higher** than Food Network's shows.

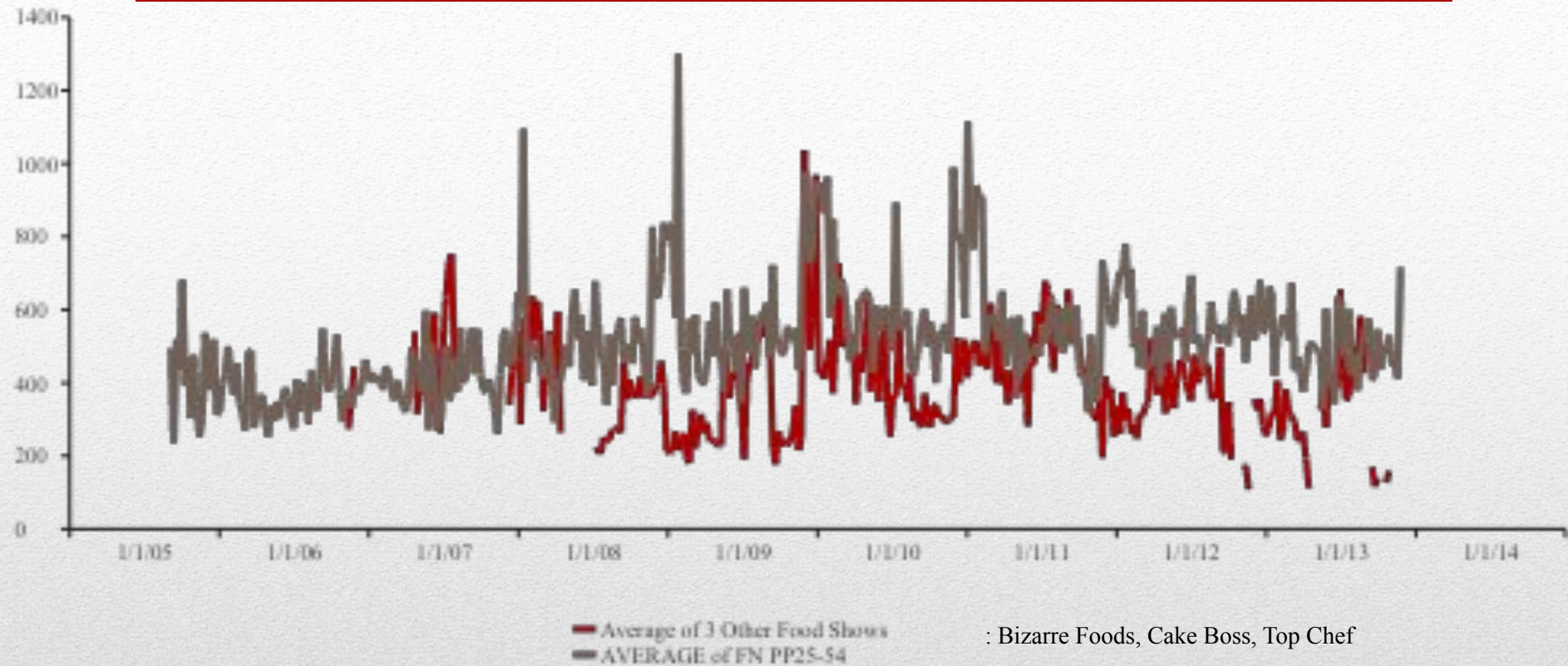
Key Findings:

1. Increasing levels of competition
2. Competitive Index



Average audience of people 25-54 from direct competitors' shows is **similar** to Food Network's shows.

Key Finding: Direct Competitor Analysis



Average audience of people 25-54 from other food shows is **lower** than Food Network’s shows.

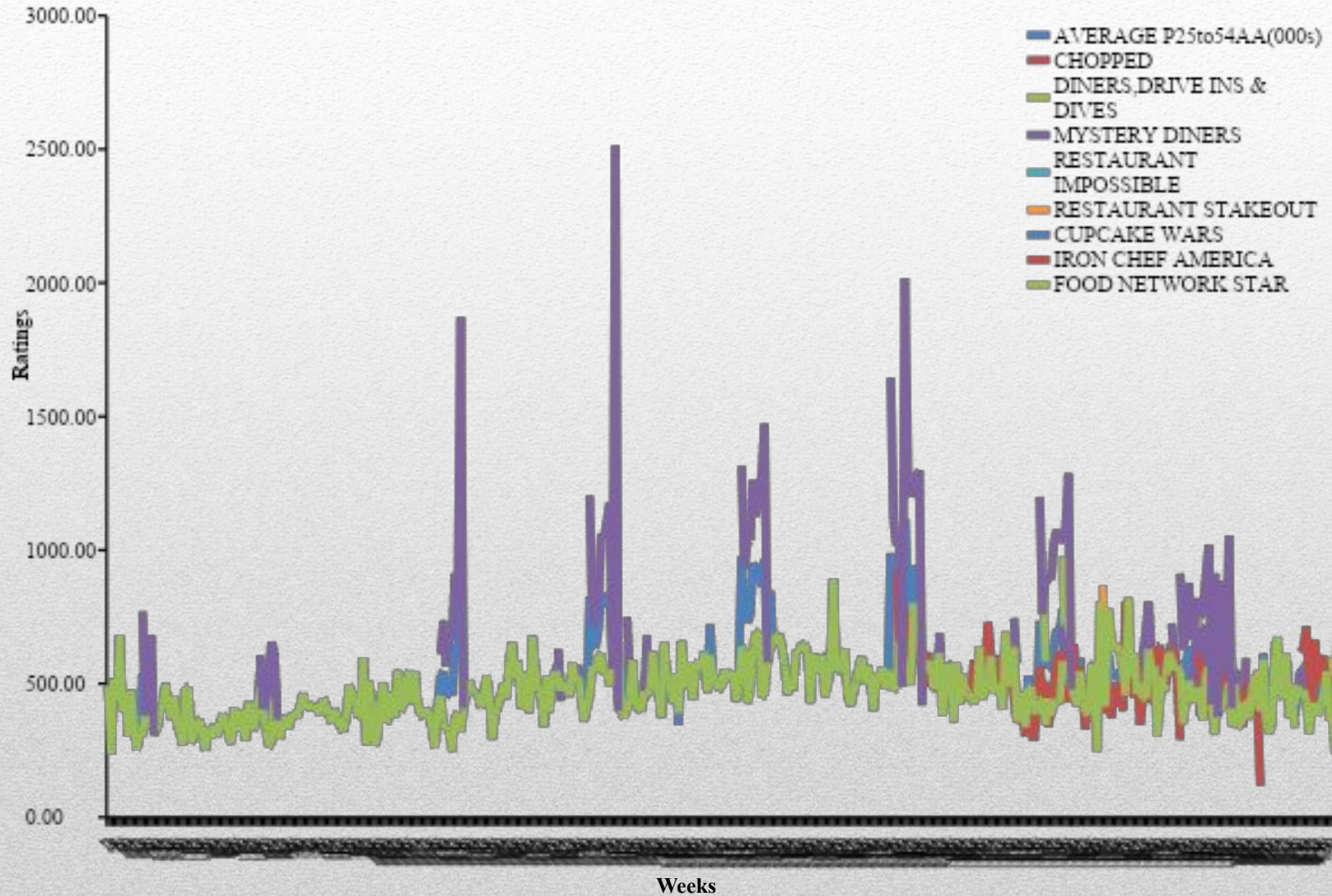
Key Findings:

1. Core programing is excelling
2. Cooking competitive index

METHODOLOGY



Food Network Primetime Show Ratings vs Average Ratings (P25-54AA)



Time series analysis

- Key variables in developing our model:
 - Time Period (Week numbers)
 - Ratings (Audience P 25- 54)
- Model is based on two approaches:
 - Exponential Smoothing
 - Moving Average Forecasting

Methodology: Exponential Smoothing

Highly seasonal data, weekly variations: spikes up and down

Even out to eliminate outliers

Exponential smoothing formula:

$$\hat{Y}_{t+1} = \hat{Y}_t + \alpha(Y_t - \hat{Y}_t)$$

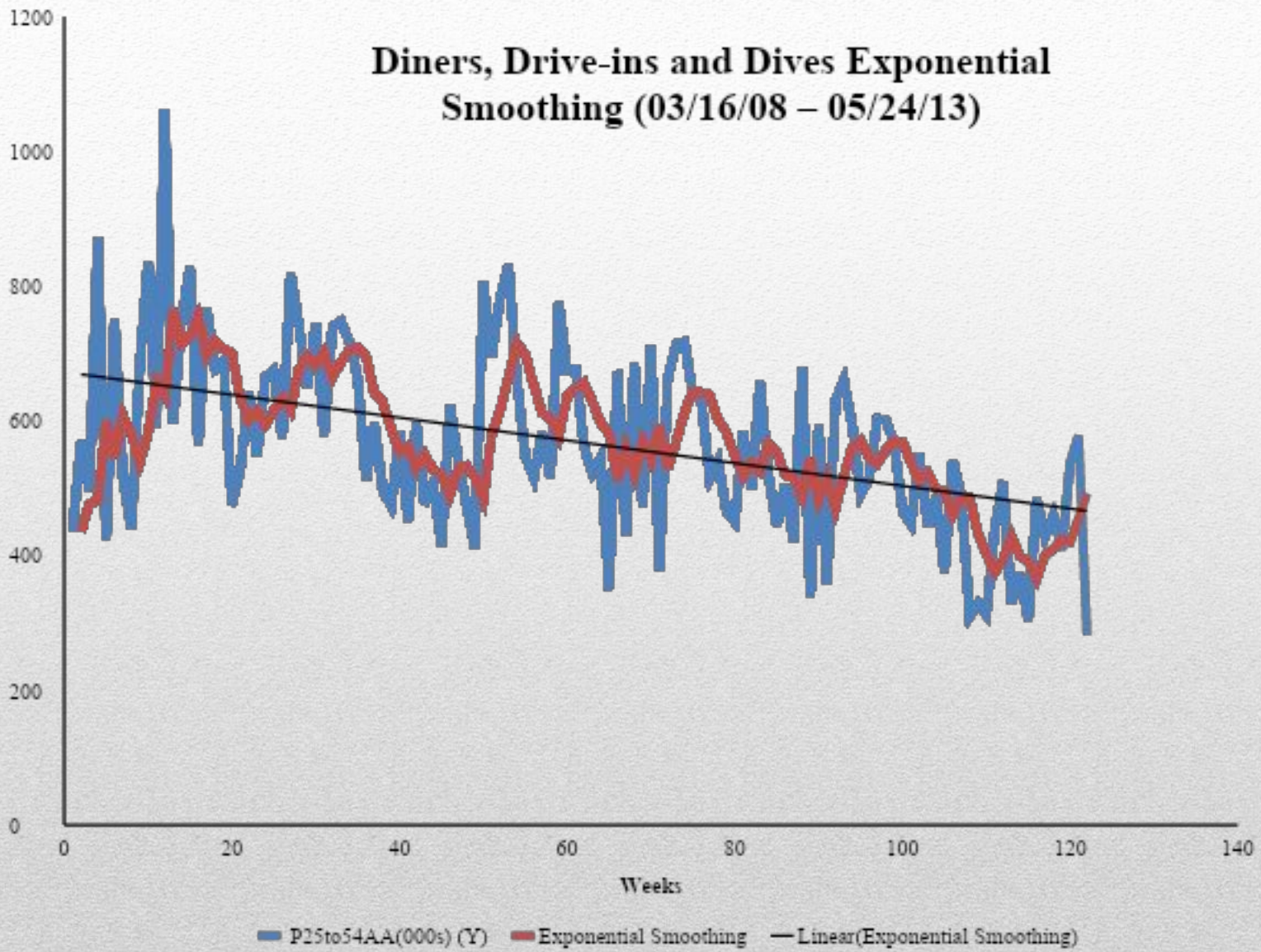
•

Where \hat{Y}_{t+1} = forecast for the next period

α = smoothing constant ($0 \leq \alpha \leq 1$)

\hat{Y}_t = forecast for the most recent period

Y_t = actual value for the most recent period



Methodology: Moving Average Forecasting

$$\frac{Y_t}{Season_t} = \frac{Trend_t * Season_t * Irregular_t}{Season_t}$$

$$\tilde{Y}_t = Trend_t * Irregular_t$$

$$\tilde{Y}_t = \beta_0 + \beta_1 t + \varepsilon$$

Where, $Trend_t$ = long-term movement of the time series value (Y)

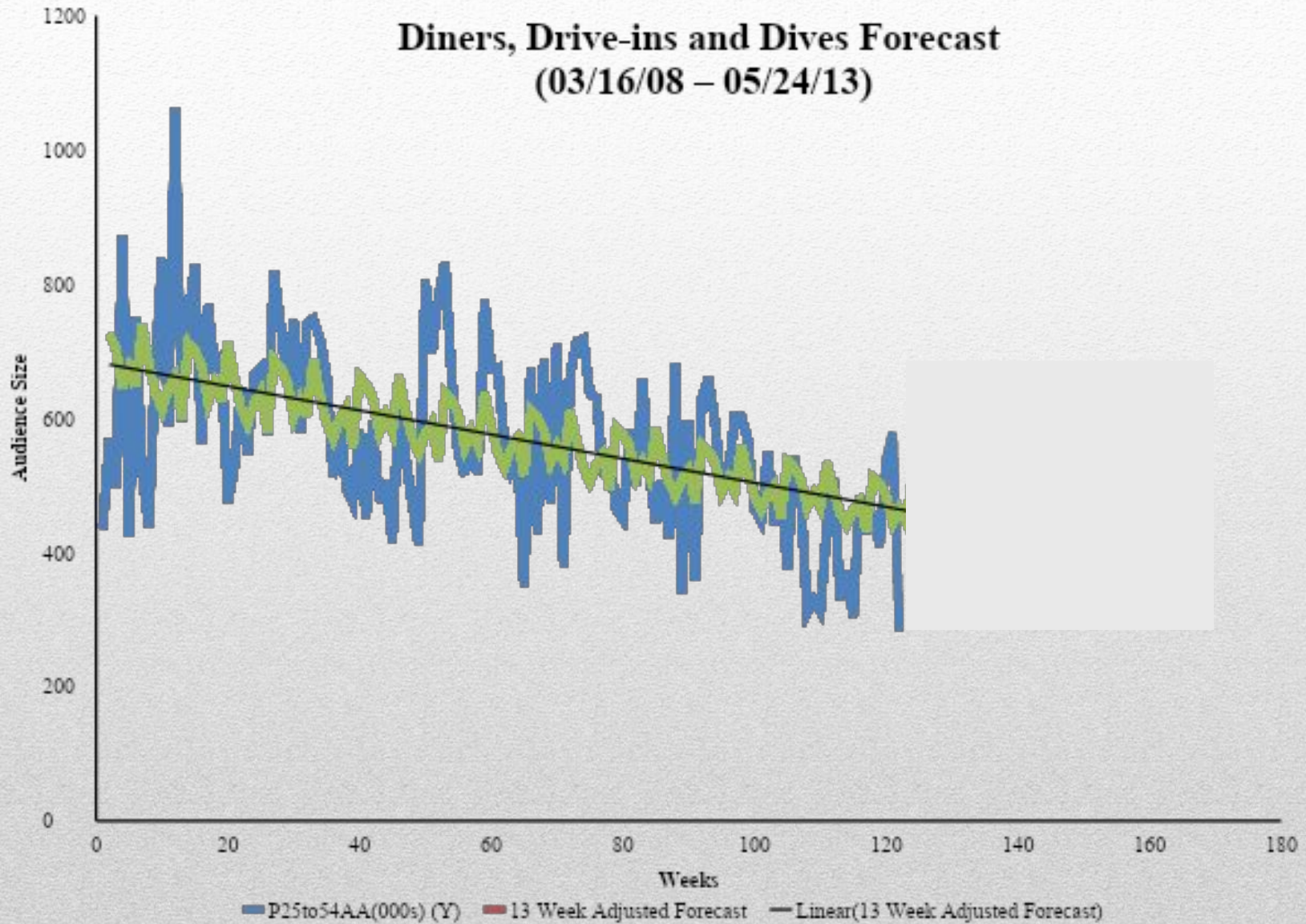
$Irregular_t$ = erratic variations from trend that cannot be ascribed to seasonality

$Season_t$ = seasonal variations over time

Y_t = actual value for the most recent period

\tilde{Y}_t = forecast for the most recent period





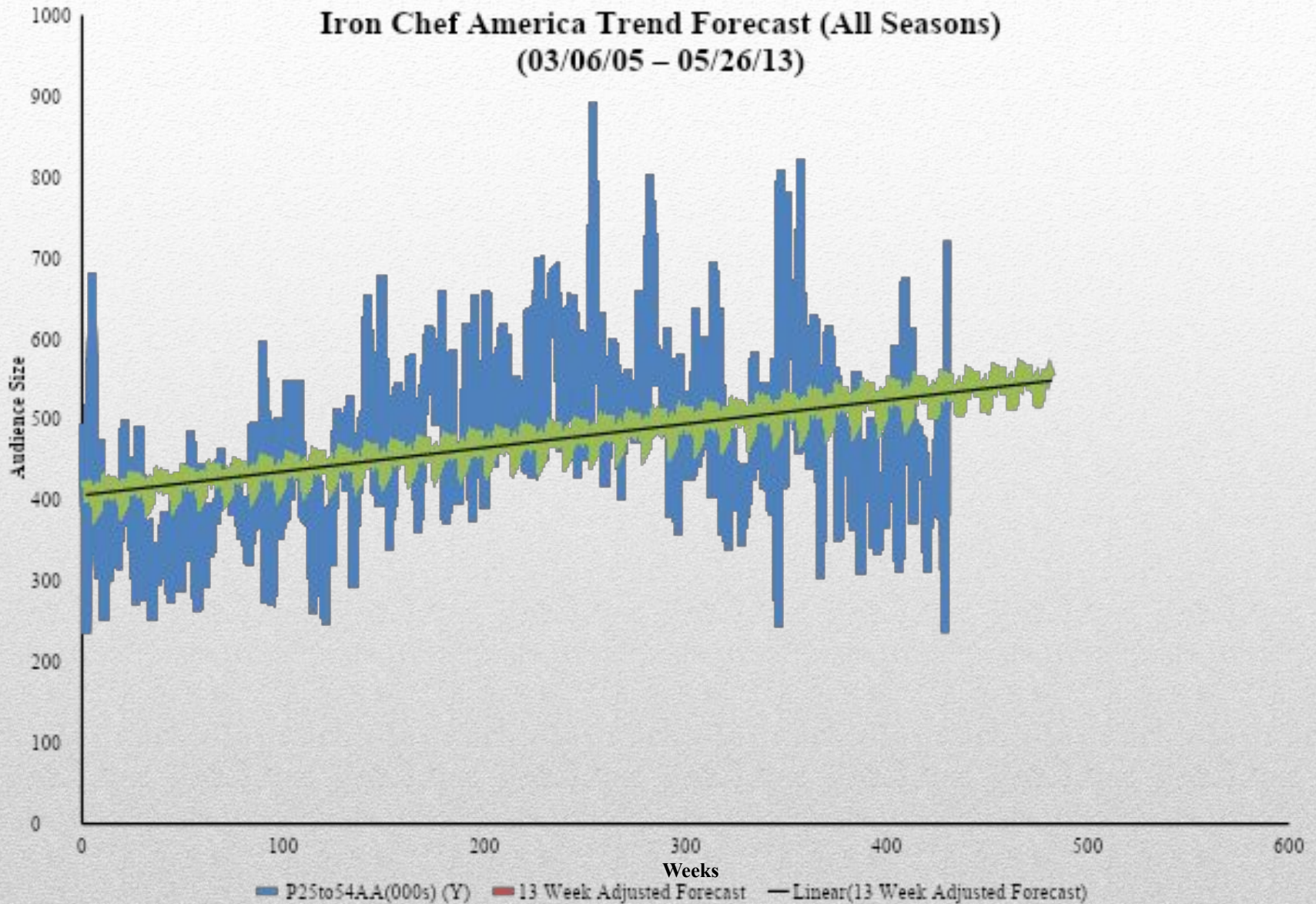
KEY FINDINGS



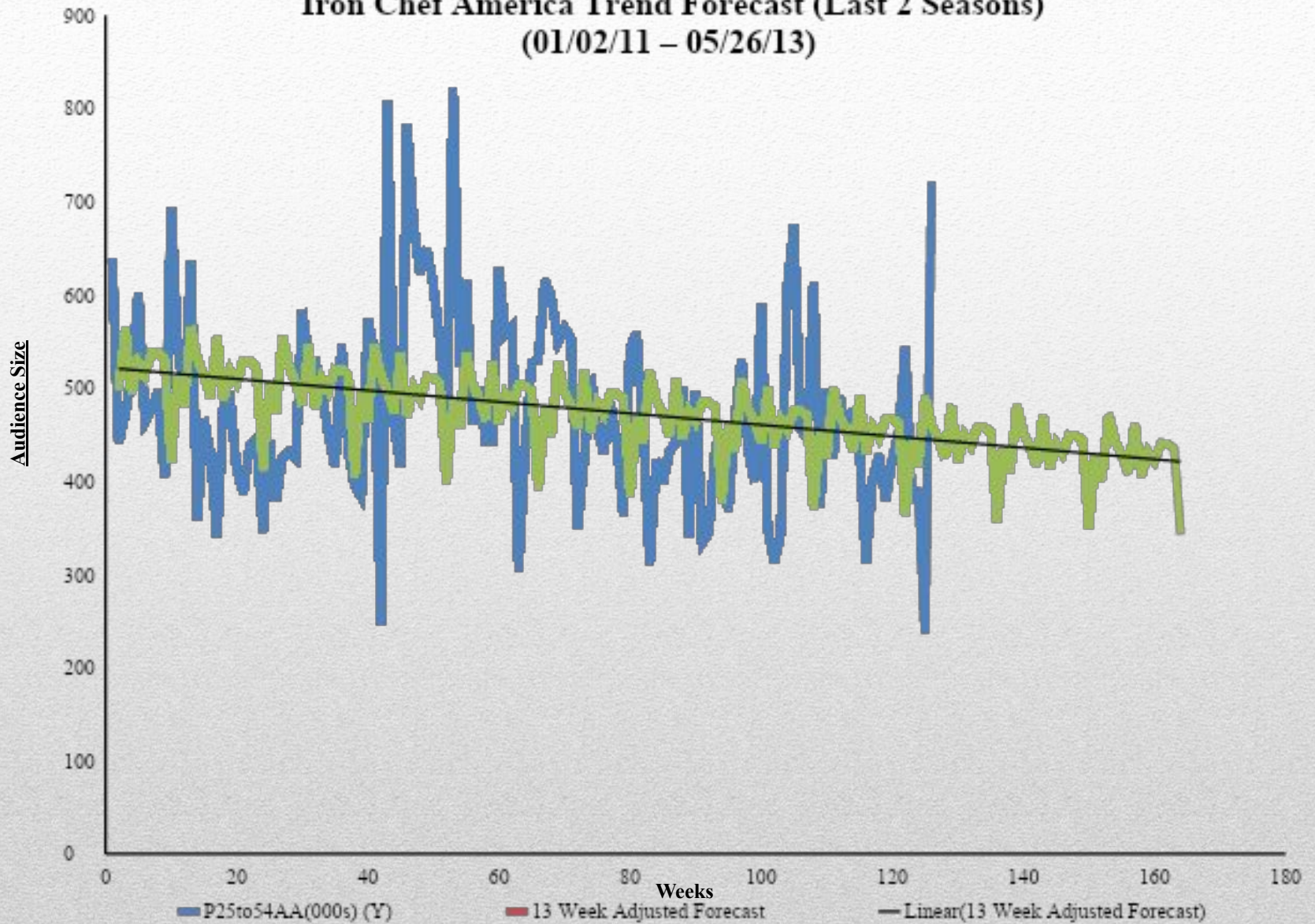
- Results using our modeling, shows the following trend and patterns for the prime Food Network shows such as Iron Chef America and Cupcake Wars.
- It shows that while Iron Chef America is maintaining it's strong rating and is trending upwards along with its forecast Cupcake wars seems to be in the decline.
- However over the last two seasons trends of these shows tend to show different trends.

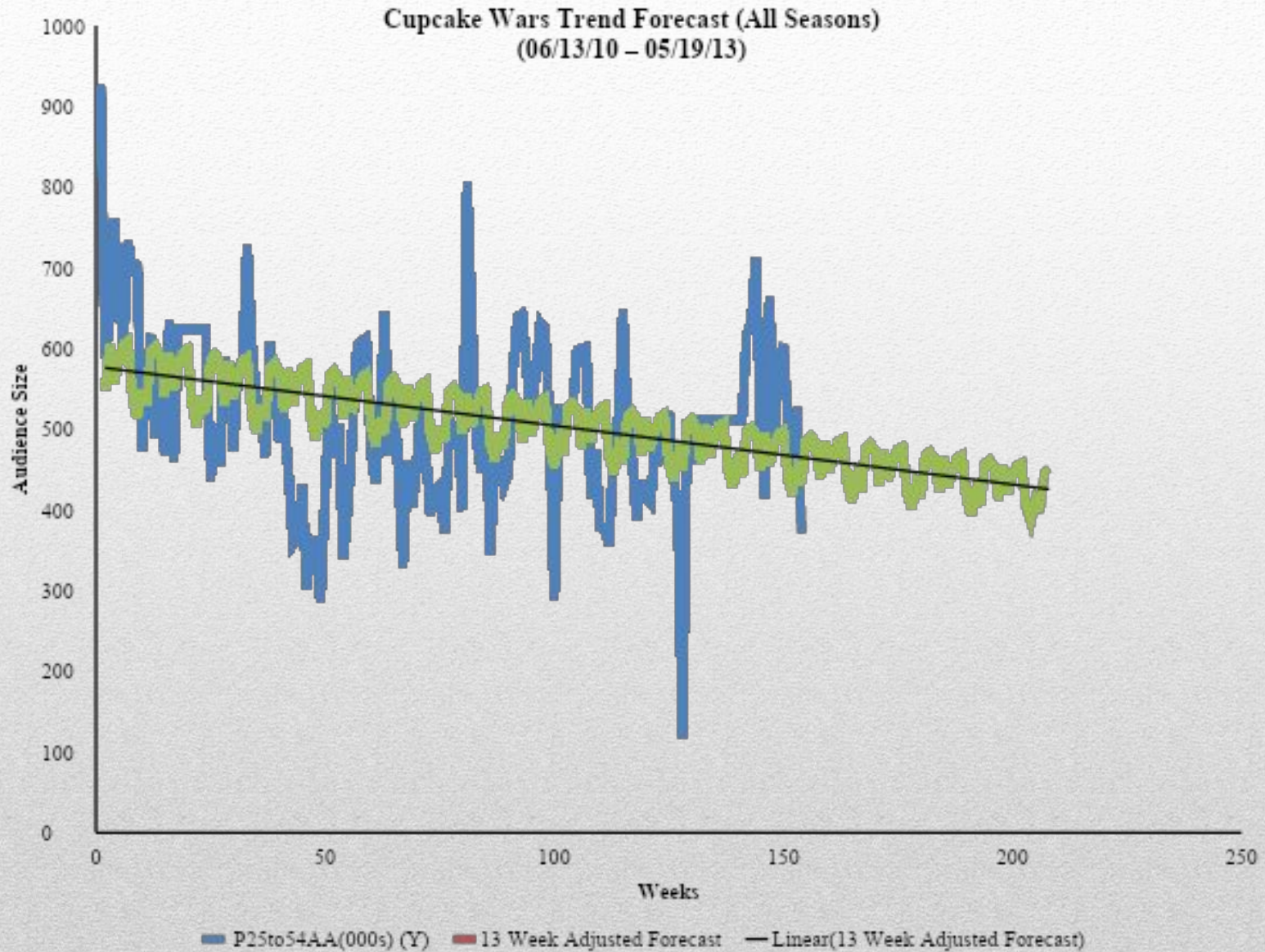
Key Findings: Prime-Time/Daytime Shows

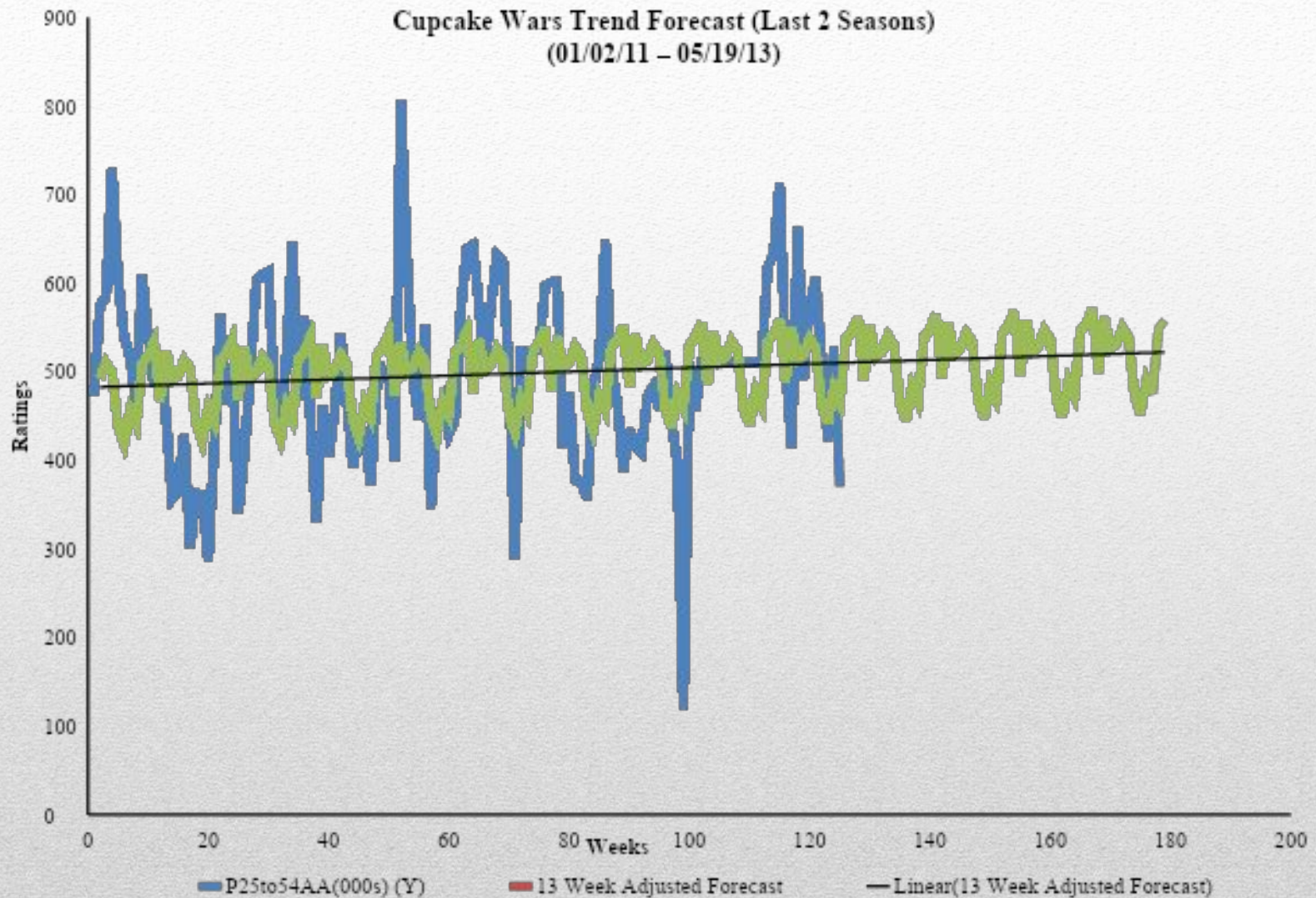


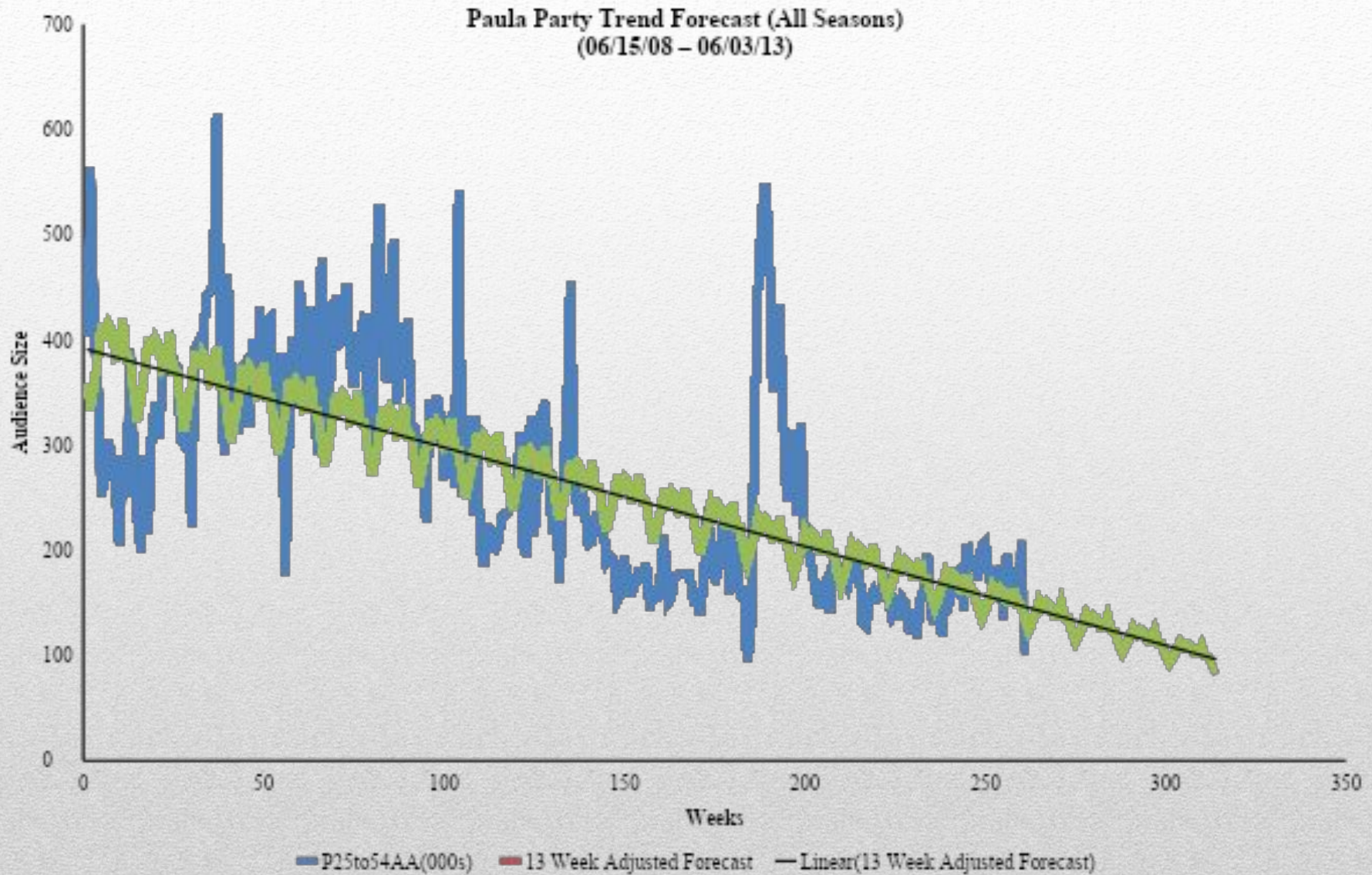


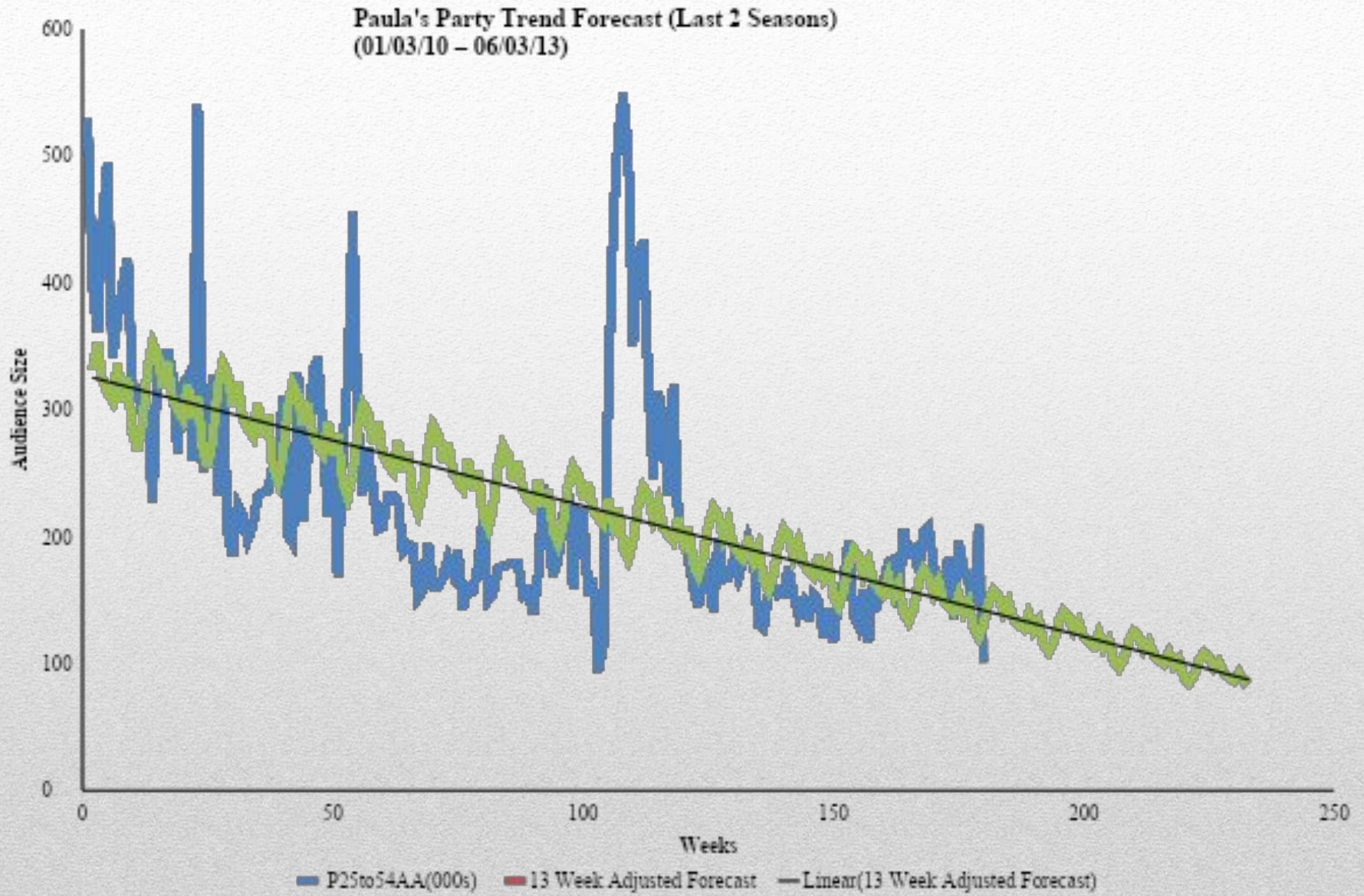
Iron Chef America Trend Forecast (Last 2 Seasons) (01/02/11 – 05/26/13)







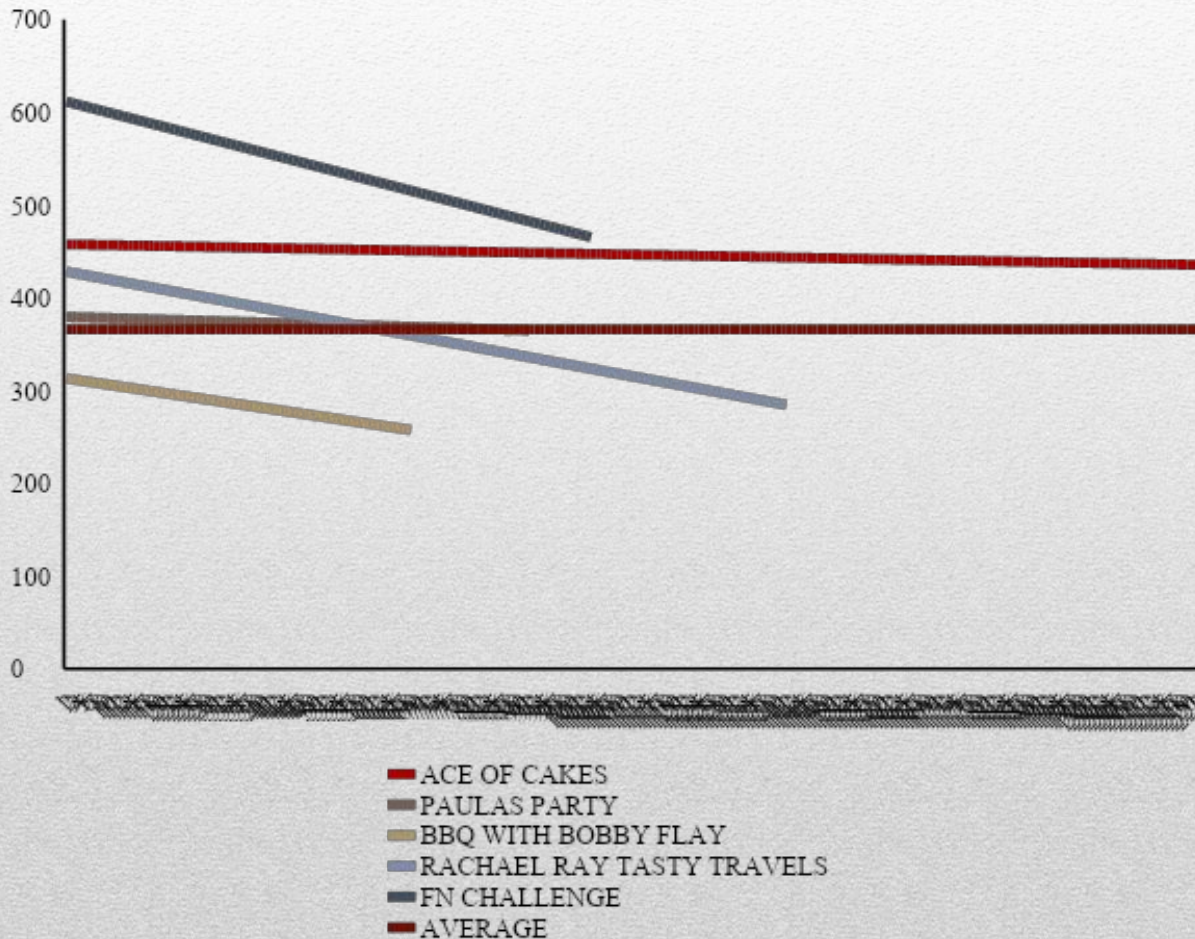




Key Findings: FN Cancelled Shows

Show	Equations:					Highest (000s)	Lowest (000s)	Range (000s)	Length in weeks	Average (000s)	Standard Deviation (000s)	
FOOD FINDS	Y	=	0.79	X	+	163.29	615.00	56.00	559.00	212.00	247.02	92.65
OLIVERS TWIST	Y	=	0.71	X	+	275.40	569.00	123.00	446.00	82.00	304.65	89.74
FOOD NATION W BOBBY FLAY	Y	=	0.62	X	+	180.23	673.00	41.00	632.00	270.00	263.57	101.05
DINNER IMPOSSIBLE (1 HR)	Y	=	0.55	X	+	378.39	676.00	178.00	498.00	175.00	426.89	105.91
\$40 A DAY	Y	=	0.31	X	+	321.14	584.00	112.00	472.00	256.00	360.73	82.55
SECRET LIFE OF...	Y	=	0.16	X	+	358.47	637.00	182.00	455.00	197.00	373.74	86.25
THROWDOWN W/ BOBBY FLAY	Y	=	0.14	X	+	398.35	722.00	163.00	559.00	239.00	414.88	92.88
ACE OF CAKES	Y	=	(0.10)	X	+	457.68	748.00	209.00	539.00	221.00	446.56	98.49
PAULAS PARTY	Y	=	(0.16)	X	+	379.41	551.00	221.00	330.00	90.00	372.21	76.23
BBQ WITH BOBBY FLAY	Y	=	(0.83)	X	+	313.02	482.00	98.00	384.00	67.00	285.22	76.36
RACHAEL RAY TASTY TRAVELS	Y	=	(1.03)	X	+	428.21	590.00	179.00	411.00	140.00	356.41	81.38
FN CHALLENGE	Y	=	(1.43)	X	+	611.56	1120.00	233.00	887.00	101.00	539.19	107.76
AVERAGE	Y	=	(0.02)	X	+	355	664	150	514	171	366	91

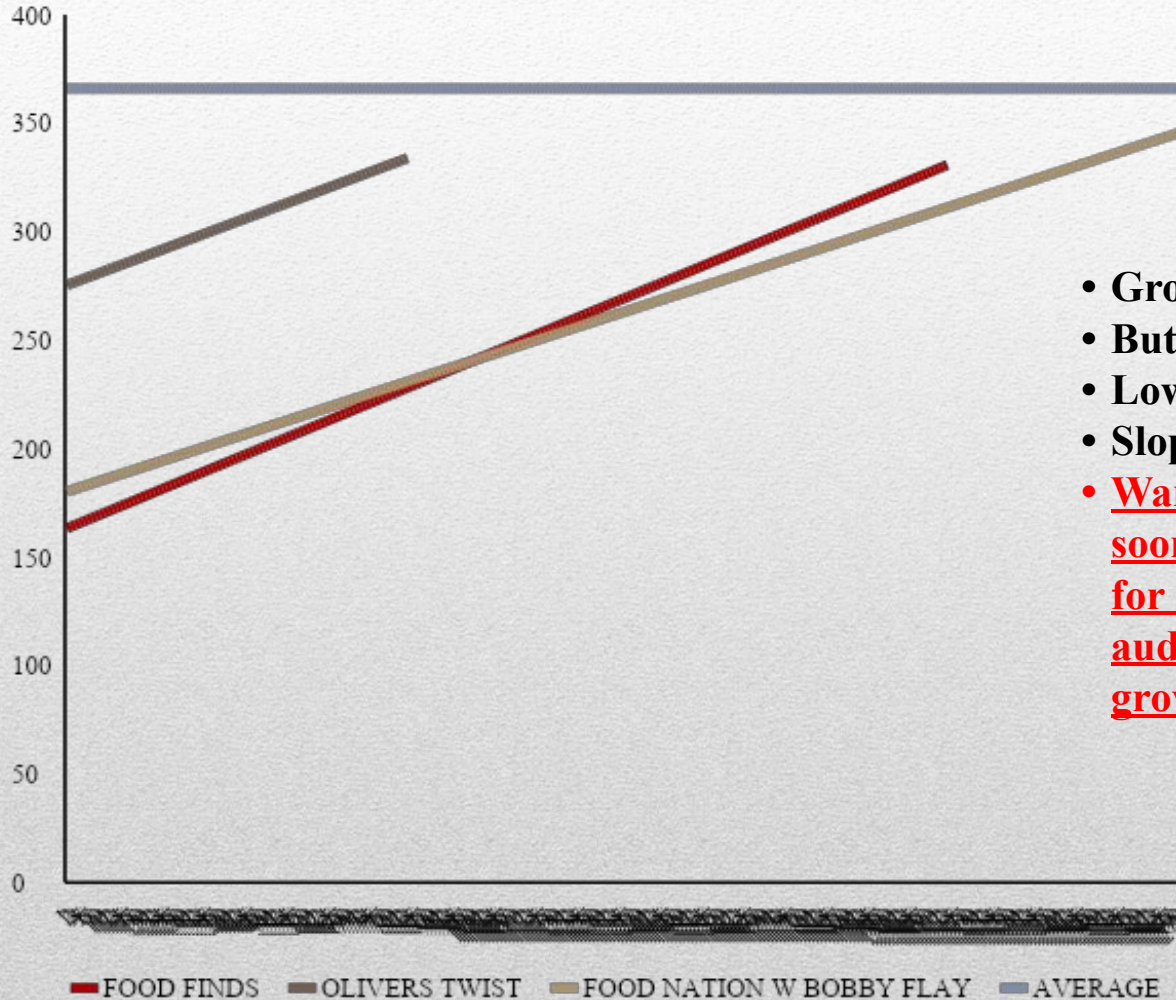
Key Findings: FN Cancelled Shows – Group 1



- Continuous drop in Audience
- Negative coefficient
- 3 out of 5 length in weeks below average
- Your choice is obvious
- When slope is neg.
WARNING LIGHT



Key Findings: FN Cancelled Shows – Group 2



- Growth of audience, slow trend
- But audience is still below average
- Low starting point
- Slope ends below the average line
- Warning Light: use model to cancel sooner, 169 weeks is the threshold for canceling the show if it's audience number is low and is growing slowly



Key Findings: FN Cancelled Shows – Group 3

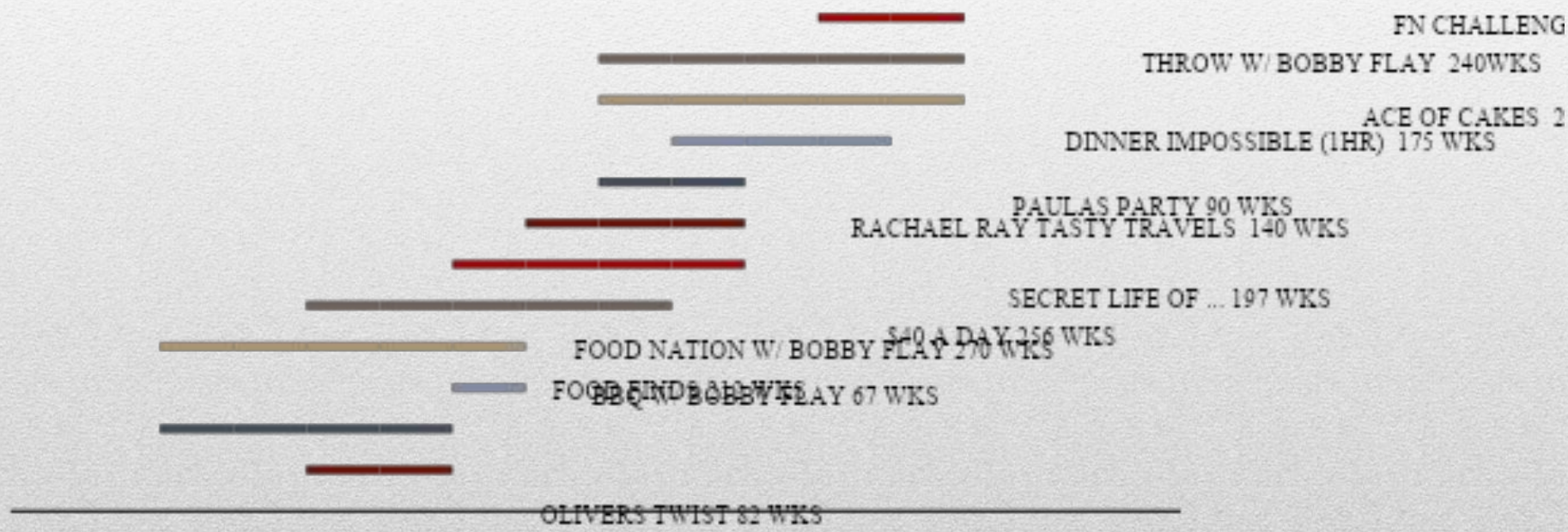


- Trend developing towards the average
- Let's see what is happening in the last 26 weeks before its cancellation

Exponential Moving Average Analysis: 3 out of 4 have negative slope!

- Dinner Impossible
 - \$40 A Day
 - Secret Life of ...
 - ThrownDown w/Bobby Flay
-

The length of programs were not shortened: 5vs7



RECOMMENDATIONS



BIG DATA



Recommendations

- **Can Future Ratings Be Predicted?**
 - Yes, Sometimes With the Right Conditions
 - The future is more art than science
 - But, no reason NOT to use data analytics for decision support

Input → **BLACK BOX** → Output

Recommendations

- **Can Future Ratings Be Predicted?**
 - Yes, Sometimes With the Right Conditions
 - The future is more art than science
 - N reason NOT to use STATISTICAL MODEL for decision support
- **Life of Hit Programs Getting Shorter?**
 - Not necessarily: 5 of 12 shorter than average
 - Cancelled programs have mixed signals:
 - 7 of 12 trending up but below alternative expectations
 - **Warning Light** when coefficient is at -0.02 or less



Thank you

Input → **BLACK BOX** → Output



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