STATE MODELING USER GUIDE

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INTRODUCTION

This user guide explains the **Delphian Proprietary State Modeling™** technique to measure the upcoming trend in the stock and strength of bullishness or bearishness.

This guide covers:

1) State Modeling™ Overview
2) Conceptual Understanding of State Modeling™
3) Understanding State Modeling™ in Delphian
4) How to Apply State Modeling™ for Trading
5) Navigating State Modeling™ in Delphian

State Modeling™ Overview

Welcome to Delphian State Modeling™. State Modeling™ is our proprietary Buy/Sell indicator. It was created by Ashok Yarlagadda, the founder and CEO of Delphian.

Ashok, after studying various indicators, determined all signals had too much subjectivity to them. Should you buy stocks when RSI went below 30, 28 or 25? With State Modeling™, a stock is either in a buy state or a sell state. State Modeling™ uses a machine learning algorithm to determine whether the stock is bullish or bearish.

Trading can be emotional. Fear and greed can be crippling when trying to make trading decisions. We use mathematics to make decisions. With State Modeling™, we give clear signals with targets and stop losses (we are not always right!).

As noted, stocks are either bullish or bearish. There are 4 bullish states (think cycles or trends) and 4 bearish states. States are numbered 1-8. Odd numbers are bullish while even numbered states are bearish. If a stock is in a bullish state, we will want to buy the stock. If a stock is in a bearish state, we would want to short the stock. A stock is in its *current* state until it *transitions* into its new state. What makes it transition from state to state? Well, that's our secret! We give you the direction of underlying, target and stop losses, as well as, the time frame we expect the move to happen.

There are many different ways to trade, some people are day traders, and some buy and hold. We would classify ourselves as swing traders or position traders. Generally our trades are a few weeks to a few months, however, our targets are sometimes met within a few days.

Throughout this guide, we will give techniques we use here at Delphian. We give empirical data however, we do not give specific recommendations and each trader should use their own money management techniques.

It's time to take your trading to the next level. It's time to take your emotions out of trading. It's time for State Modeling™, it's Delphian time.

Let's get started!

What is State Modeling™?

There is so much data available about the market each and every day. It's more than any one person can manage, understand and take action upon. That is where Delphian's proprietary State Modeling™ algorithm comes in. Delphian's proprietary State Modeling™ uses machine learning, quantitative mathematics that analyzes huge sets of data, identifies patterns and correlates them to probable future outcomes.

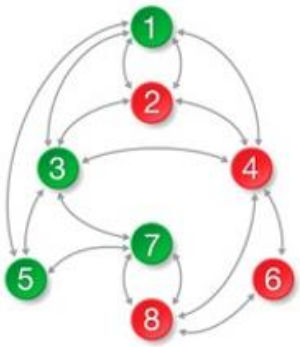
State Modeling™ is Delphian's custom buy/sell indicator. The model is based on discrete mathematics called finite-state machine or finite state automata. It is a mathematical model in which stocks and indices are placed into one of eight states. The eight states, which are similar to cycles or trends, are formed from our financial algorithm and provide bullish or bearish predictions. Each symbol has its own unique state characteristics for direction, time and magnitude of the upcoming trend. At any given point in time, a stock can only be in one state, which is called the current state. Utilizing our proprietary indicators, Delphian's algorithm will identify when market conditions trigger a stock's transition from one state to another state. When a symbol transitions into a new state, Delphian projects the direction, timeframe and magnitude of the move. These projections remain constant until the symbol transitions into a new state.

Conceptual Understanding of State Modeling™

State Modeling™ is based on discrete mathematics called finite-state machine or finite state automata. A traffic light, like State Modeling™, is a finite-state machine. A traffic light has three states: red, yellow and green. It can only be in one state (current state) at a time. When certain conditions are met (time, pedestrian cross walk button pushed, etc.) the light transitions from one state to another state.

With the understanding of finite-state machine, let us explore how it is applied in Delphian. Delphian has two cycles: bullish and bearish. Within each cycle there are four states, making a total of eight states. Using historical data, the State Modeling™ algorithm classifies each stock into one of the eight states (current state). When certain market conditions are met (based on Delphian's proprietary indicators) a stock will transition from one state to another state.

State Modeling™ Transitions from Current State to Next State:



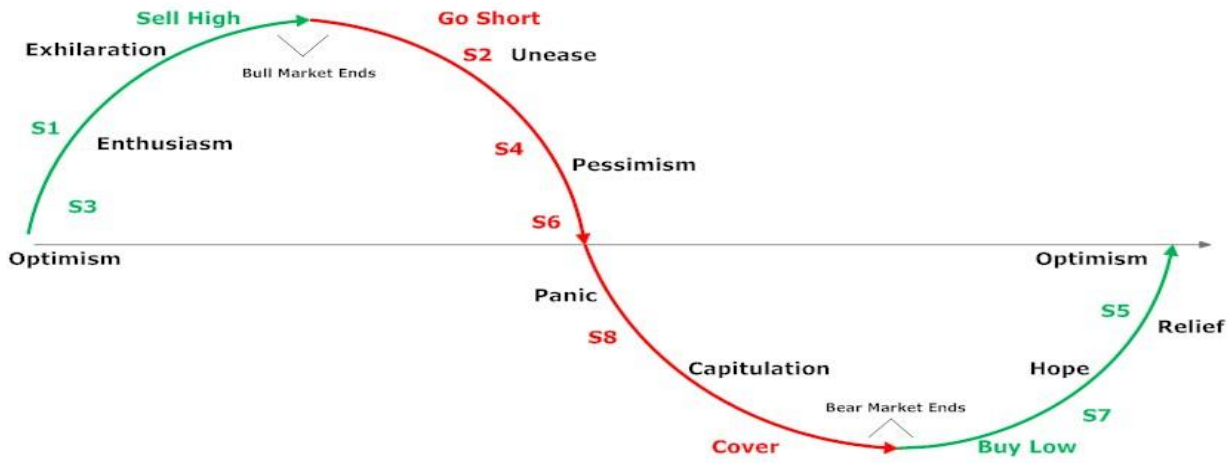
1. A stock or index will be in only one state at any given point in time (current state). When a stock or index enters a new state, Delphian provides you with the probabilities for the next state transition. This will give you percentage probabilities on whether a trend will continue or reverse.
2. At any given point in time, each stock or index can theoretically move from its current state to any other state.
3. On a practical basis, state to state transitions exhibit reoccurring patterns. For example, a stock in State 1 has the highest probability of transitioning into State 2.

State Modeling™ Signals

The following chart indicates the characteristics of each State.

STATE	TREND	PRICE BEHAVIOR
STATE 1	Extremely Bullish	End of current bullish trend/price peak
STATE 2	Bearish	Pullback from uptrend or start of a downtrend
STATE 3	Bullish	Confirmation of uptrend
STATE 4	Bearish	Confirmation of downtrend
STATE 5	Bullish	Confirmation of uptrend
STATE 6	Bearish	Confirmation of downtrend
STATE 7	Bullish	Pullback from downtrend or start of an uptrend
STATE 8	Extremely Bearish	End of current bearish trend/price capitulation

State Modeling™ and Market Cycles



Understanding State Modeling™ Within Delphian

The **State Modeling™ page** under the **stocks tab** displays the below information all in one page.

Figure 1: State Modeling™ Page

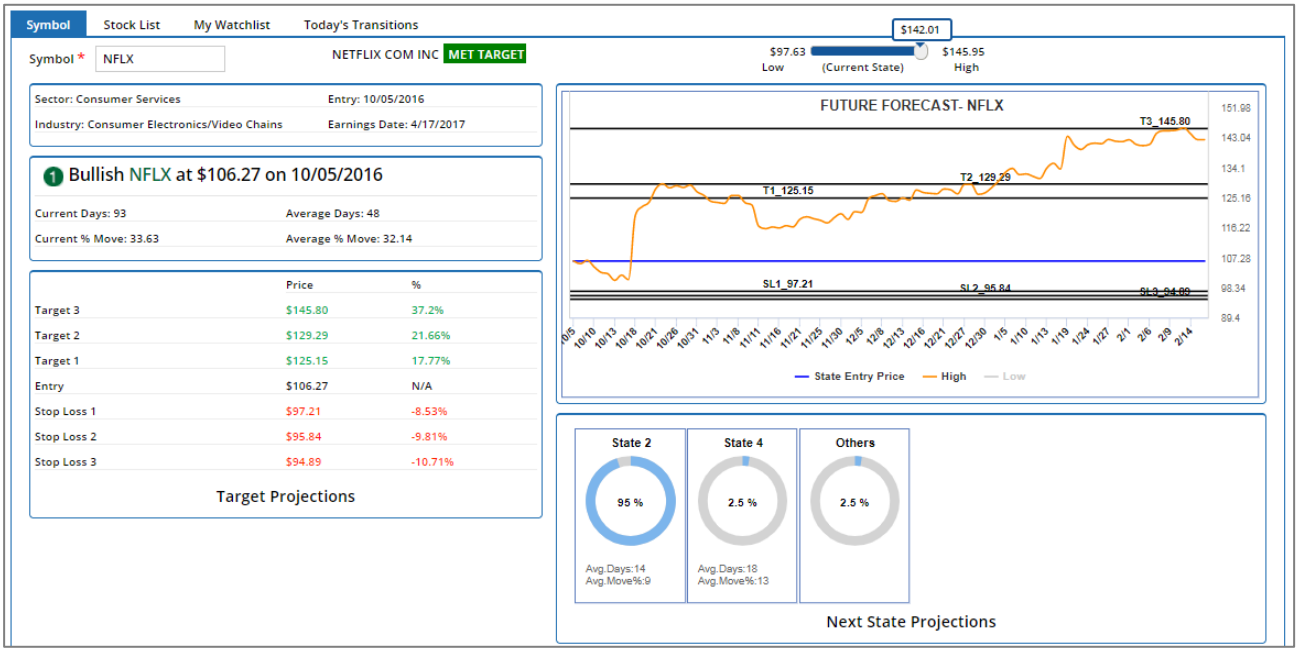
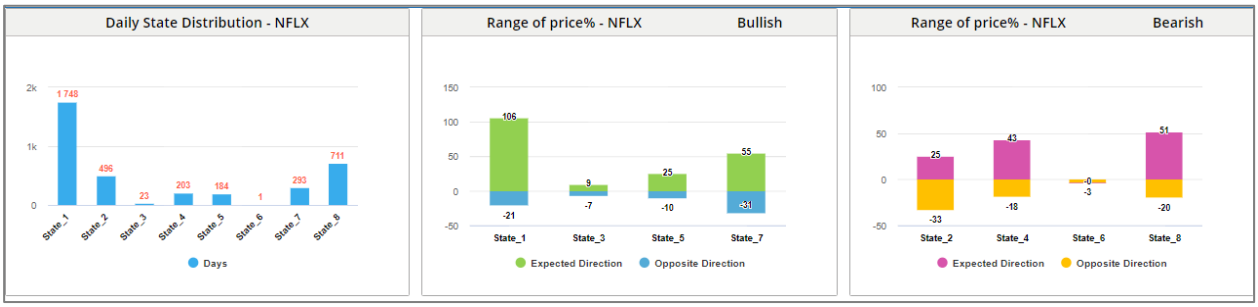
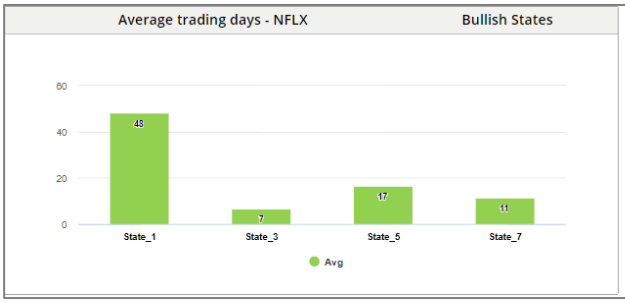
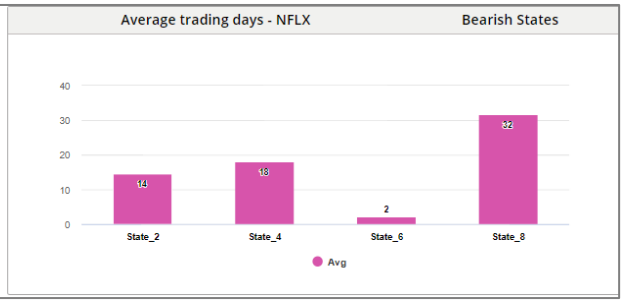
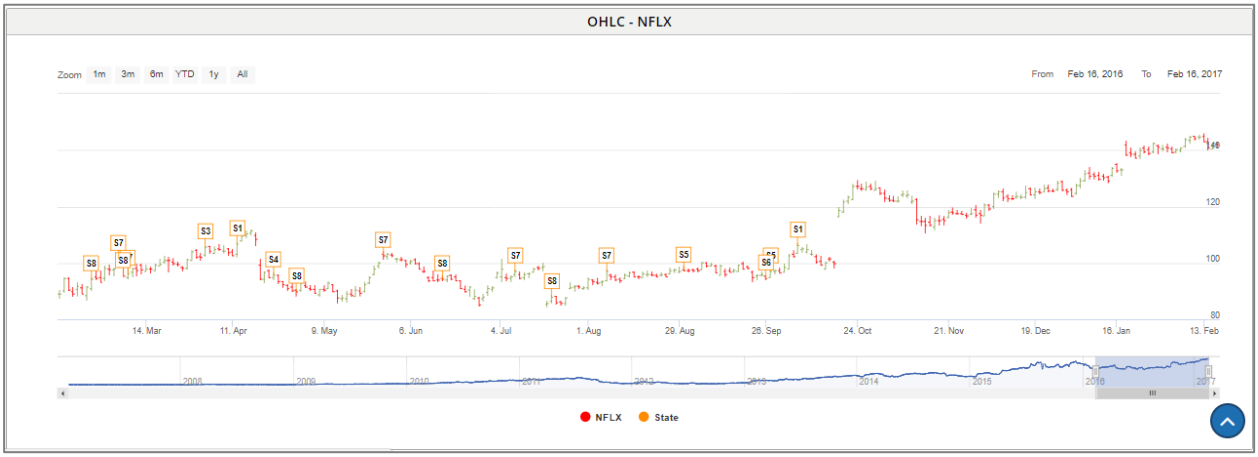


Figure 2: State Modeling™ Result





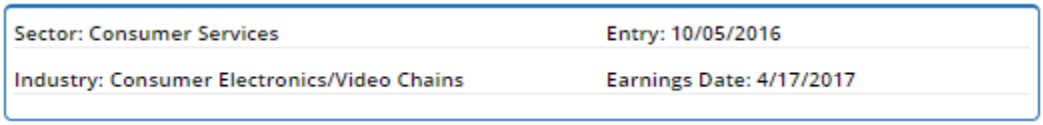




Symbol Selection for Netflix

Symbol	Enter symbol for search. NFLX.
Symbol Name	Name of symbol searched will be listed. NETFLIX COM INC.
Target Information	Indicates whether the current Target 1 or Stop Loss 1 have been met.

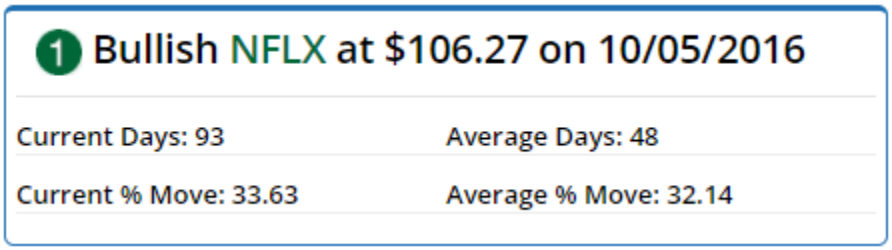
Symbol Details



Sector	Sector for symbol searched will be listed. NFLX is in the Consumer Services sector.
Industry	Industry for symbol searched will be listed. NFLX is in the Consumer Electronics/ Video Chains industry.

Entry	Date symbol entered in current state. NFLX entered into state 1 on 10/05/2016.
Earnings Date	Upcoming earnings date for symbol. Upcoming NFLX earnings is on 04/17/2017.

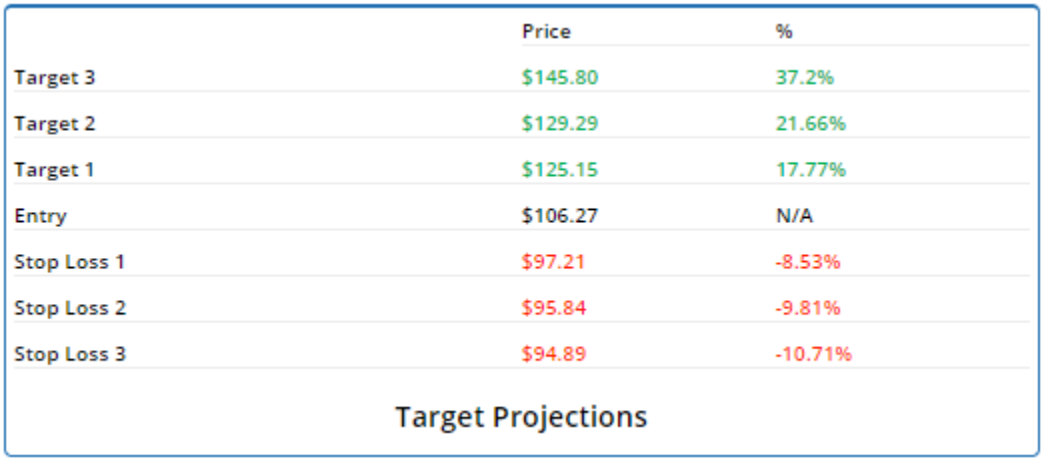
State Modeling™ Details



Title	Current state, symbol, entry price and entry date. NFLX entered into state 1, a bullish state, at a price of $106.27 on 10/05/2016
Average Days	Average number of days the symbol trades within current state. When NFLX enters into state 1, it historically trades there on average 48 days.
Average % Move	Average % move the symbol has within current state. When NFLX enters into state 1, it historically moves 32.14%.
Current Days	Current number of days the symbol has traded within current state. NFLX has been in current state 1 for 93 days.
Current Move	Current % move the symbol has traded within current state. NFLX has moved 33.63% since entering in current state 1.

State Modeling™ Targets and Stop Loss Projections for NFLX

The Target Projections chart provides the **Expected** and **Unexpected** direction of the stock. The expected direction (green) are Target 1, Target 2 and Target 3 price points. The unexpected direction (red) are Stop Loss 1, Stop Loss 2 and the Stop Loss 3 price points. Bullish states (States 1, 3, 5, 7) will have targets above the entry price and stop losses below the entry price. Bearish states (States 2, 4, 6, 8) will have targets below the entry price and stop losses above the entry price.



	Price	%
Target 3	$145.80	37.2%
Target 2	$129.29	21.66%
Target 1	$125.15	17.77%
Entry	$106.27	N/A
Stop Loss 1	$97.21	-8.53%
Stop Loss 2	$95.84	-9.81%
Stop Loss 3	$94.89	-10.71%

Target Projections

The **Price Target** for each symbol are computed from our algorithm (T1, T2 and T3) and are defined below:

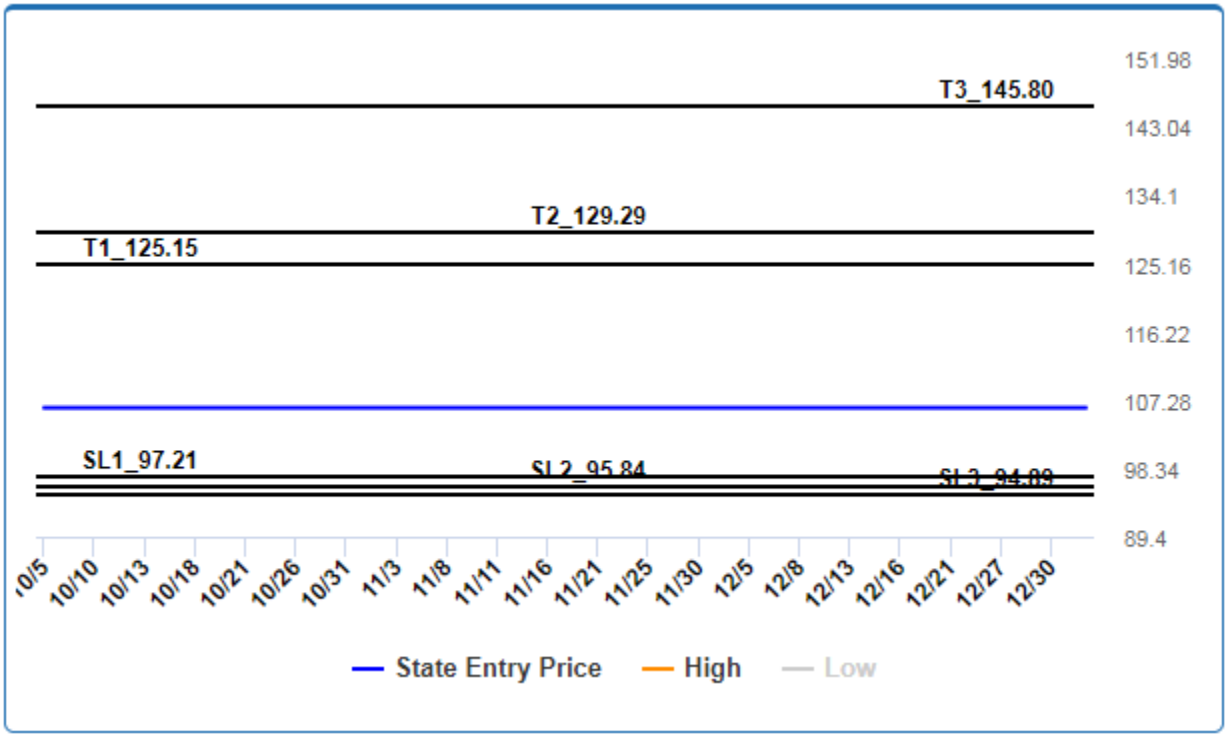
Target 1 (T1) - Conservative	Highest percentage win rate.
Target 2 (T2) – Moderate	Balance between win rate and profits.
Target 3 (T3) – Aggressive	Lowest percentage win rate but largest amount of profits.

The **Stop Loss** for each symbol are computed from our algorithm (SL1, SL2 and SL3) and are defined below:

Stop Loss 1 (SL1) – Conservative	Used with less volatile stocks.
Stop Loss 2 (SL2) – Moderate	Balance between cutting losses early and amount of losses.
Stop Loss 3 (SL3) – Aggressive	Used for volatile stocks.

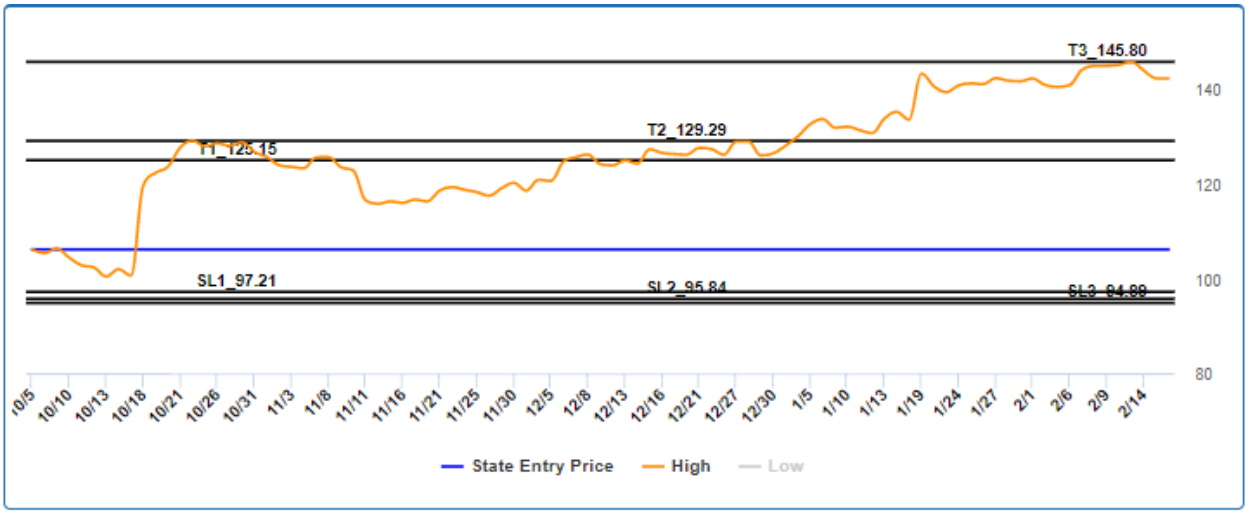
State Modeling™ Daily Projection Chart

NFLX state 1 transition day



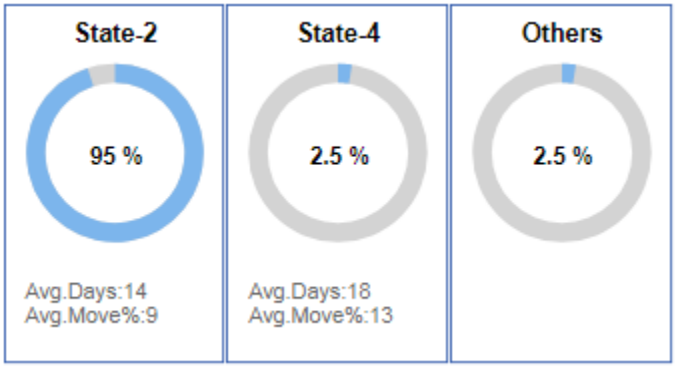
The chart displays a visual representation of targets and stop losses on transition day. The blue line represents NFLX state 1 entry price of $106.27.

NFLX chart after state 1 transition



The chart displays a visual representation of the daily move of NFLX. Here you can clearly identify if NFLX has hit a target and/or stop loss.

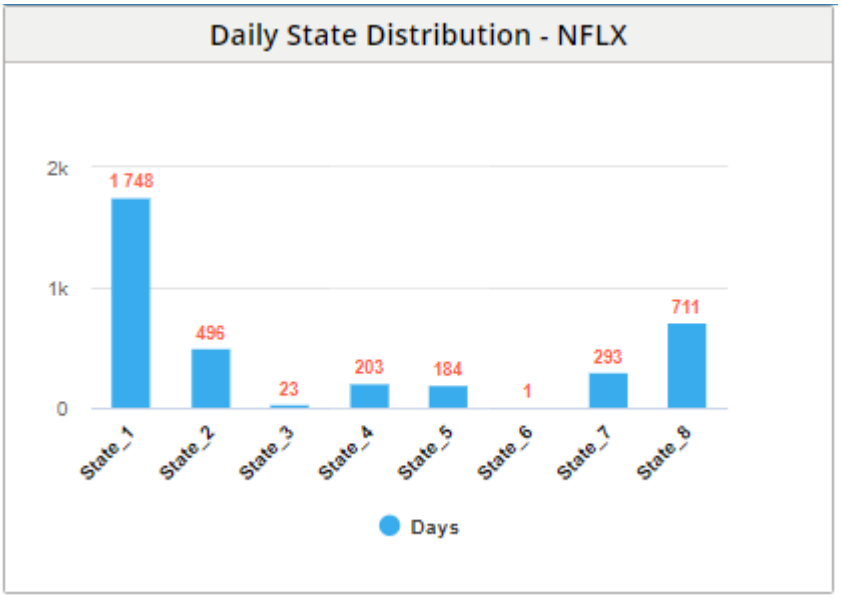
Probability of Next State



This display gives the probability of the next state. This probability analysis uses historical transitions, which can be used to design strategy adjustments and/or plan new trades. In this example, NFLX has probability of 95% to go into state 2, 2.5% to go into state 4 and 2.5% probability to go into any other state when it moves out of state 1.

Daily State Distribution Graph

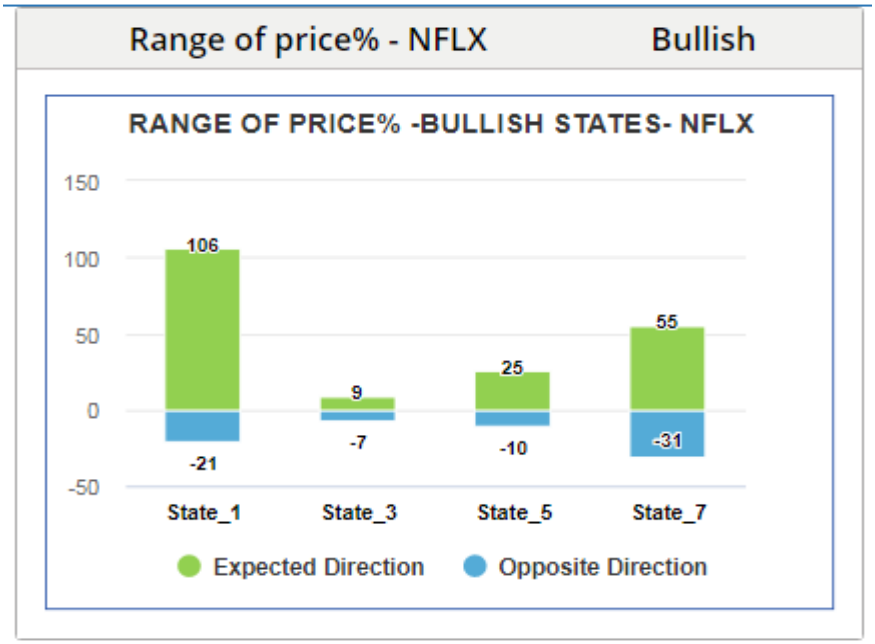
This graph provides the daily distribution for each state.



Since Jan. 3, 2007, NFLX has been in state 1 for 1,748 days and state 8 for 711 days.

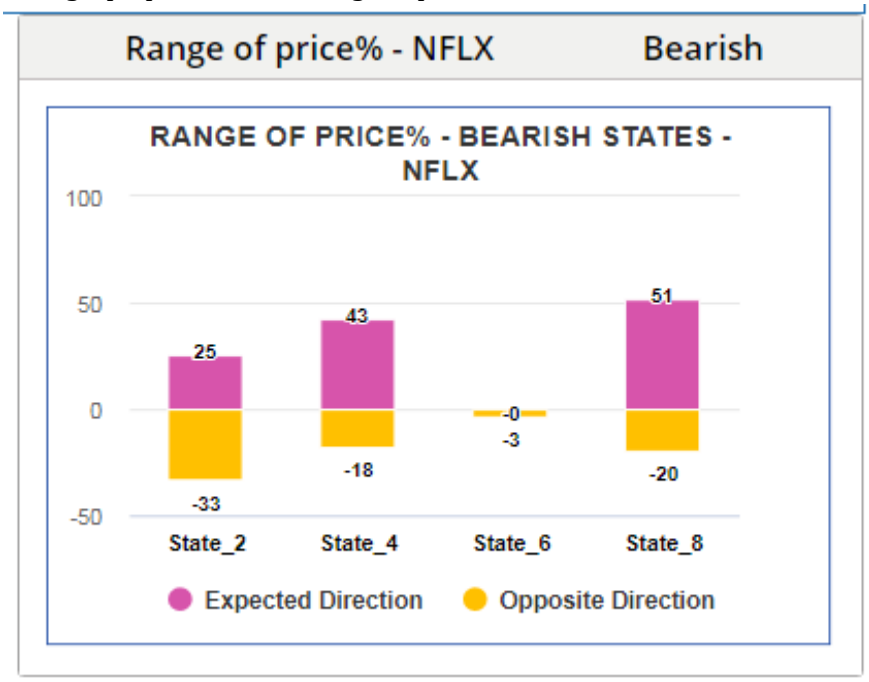
Range of Price % by State

This graph provides the range of prices for bullish states.



Since Jan. 3, 2007, at some point while in state 1, NFLX has moved 106% in the expected direction and 21% in the opposite direction.

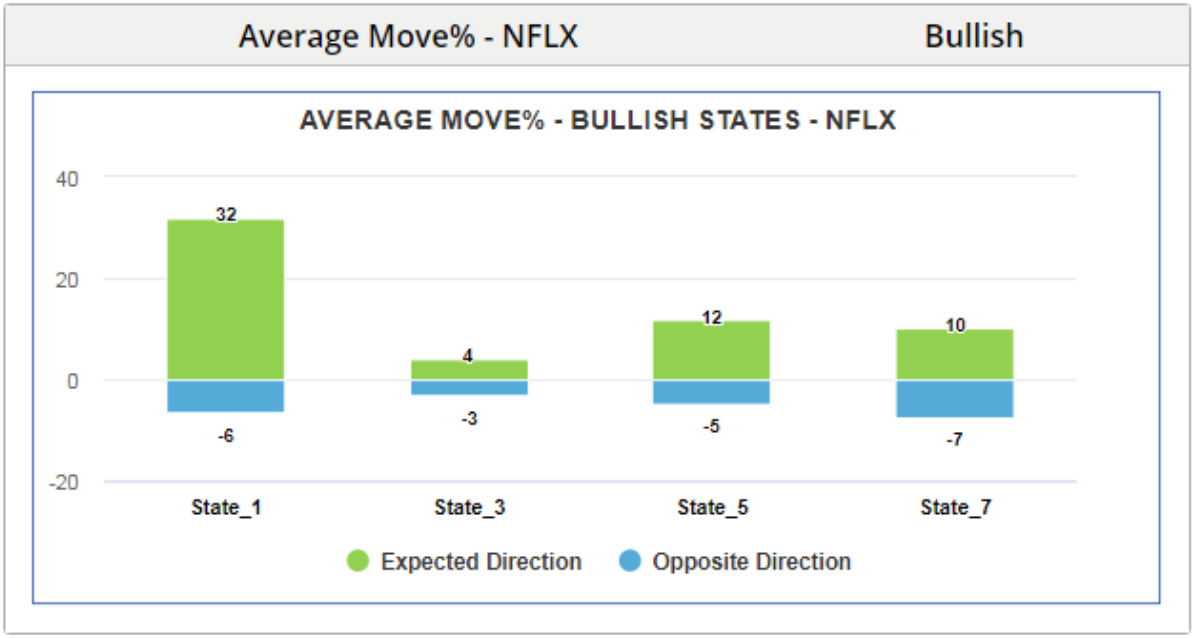
This graph provides the range of prices for bearish states.



Since Jan. 3, 2007, at some point while in state 8, NFLX has moved 51% in the expected direction and 20% in the opposite direction.

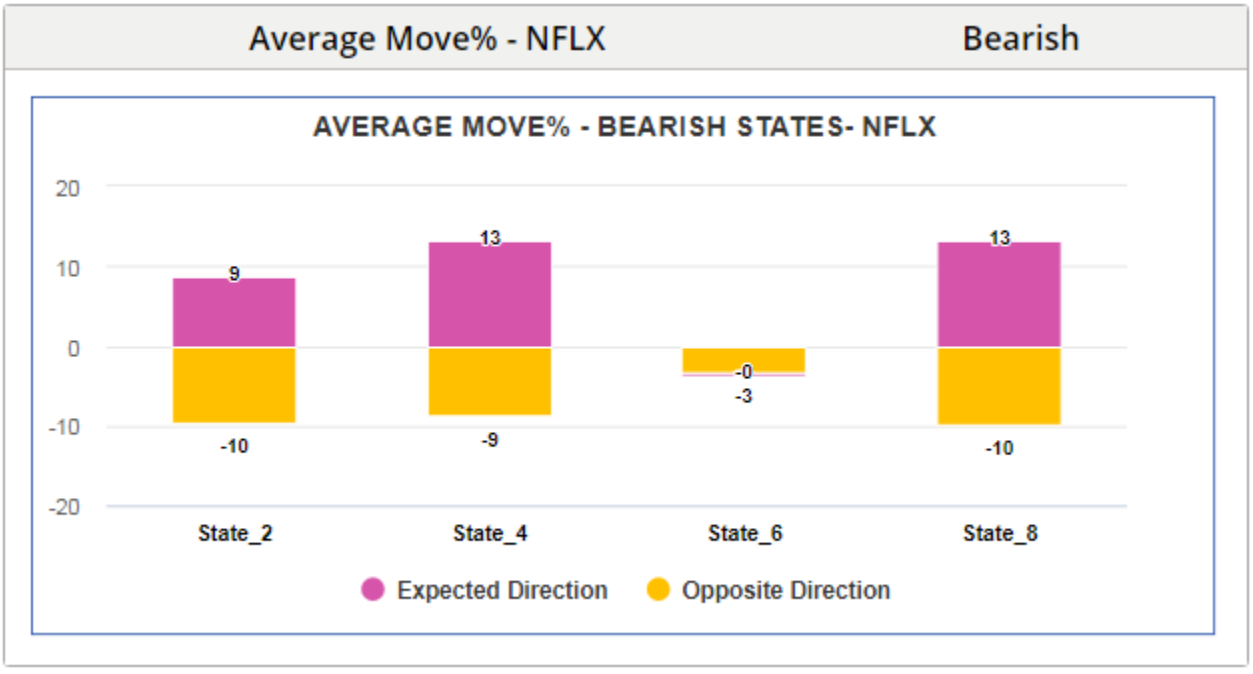
Average Move % by State

This chart provides the average move percentages for bullish states.



Since Jan. 3, 2007, while in state 1, NFLX has an average move of 32% in the expected direction and 6% in the opposite direction.

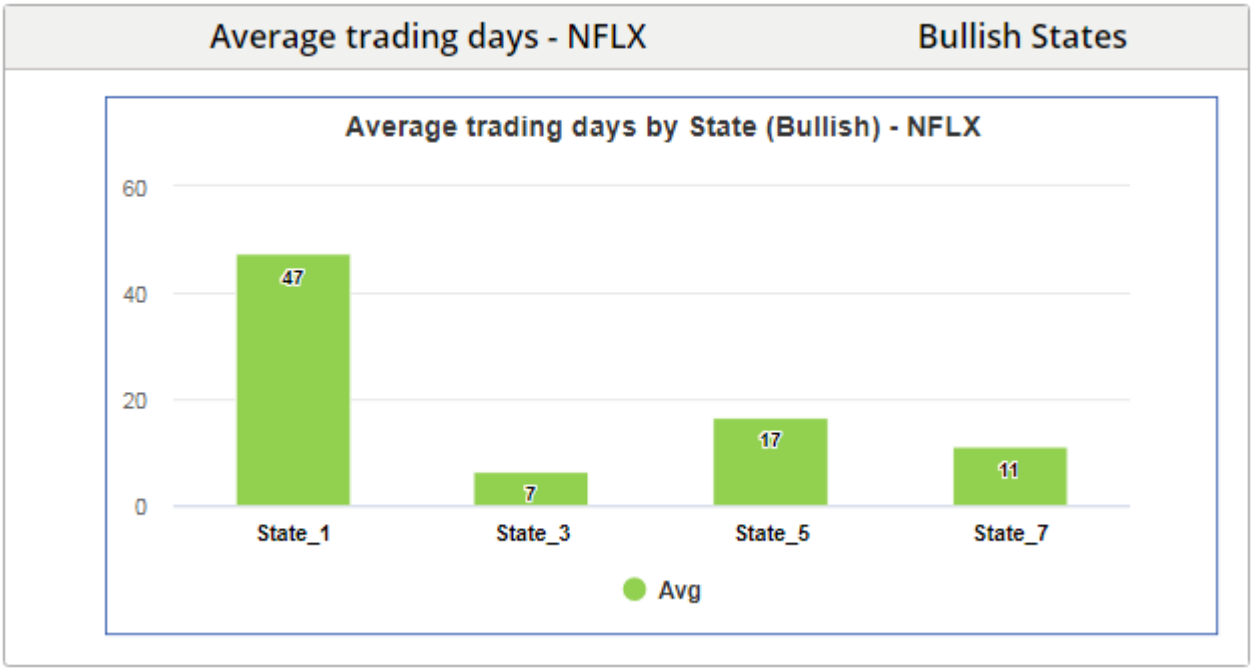
This chart provides the average move percentages for bearish states.



Since Jan. 3, 2007, while in state 8, NFLX has an average move of 13% in the expected direction and 10% in the opposite direction.

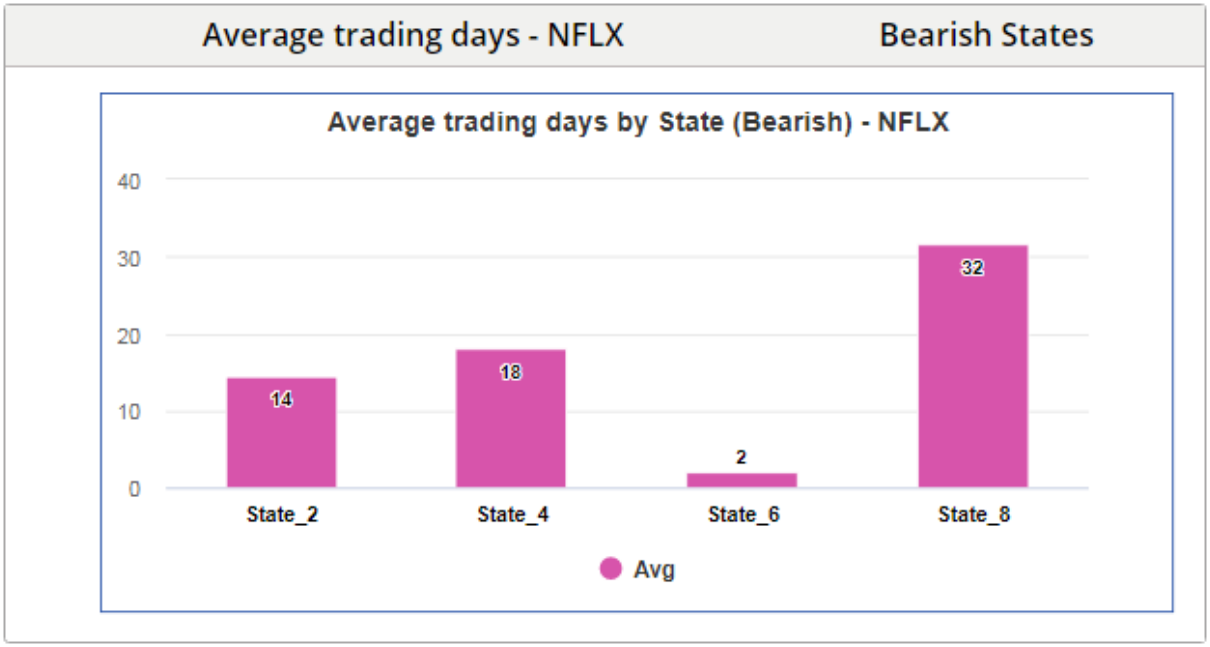
Average Trading Days by State

This chart provides the average trading days by bullish state.



Since Jan. 3, 2007, while in state 1, NFLX has averaged 47 trading days.

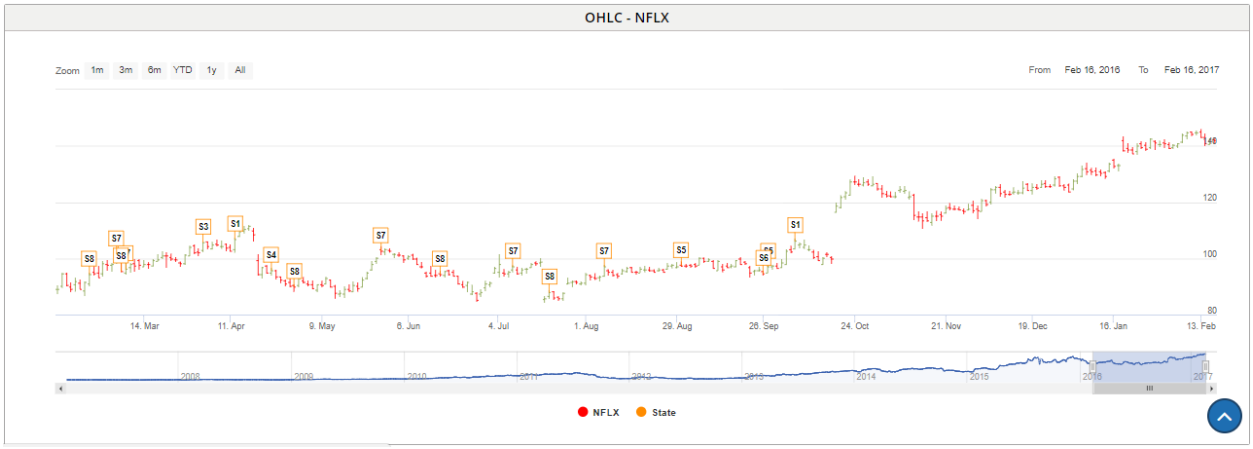
This chart provides the average trading days by bearish state.



Since Jan. 3, 2007, while in state 8, NFLX has averaged 32 trading days.

OHLC Chart

Open, High, Low and Close chart



OHLC chart for NFLX from Feb. 16, 2016 to Feb. 16, 2017.

How to Apply State Modeling™ for Trading.

There are eight states in State Modeling™, four bullish (states 1, 3, 5, 7) and four bearish (states 2, 4, 6, 8). In states 1, 3, 5, 7, we want to buy (long) the underlying on the transition day. In states 2, 4, 6, 8, we want to sell (short) the underlying on the transition day.

Transition Day

State 1

Buy signal - entry
T1 – Sell 50% of position
T2 – Sell 25% of position
T3 – Sell 25% of position

- Stop loss points can be used based on individual risk tolerance.
- If next highest probably state is a bearish state, then aggressive traders can look to reverse long position at T3.

State 8

Sell signal - entry
T1 – Buy 50% of position
T2 – Buy 25% of position
T3 – Buy 25% of position

- Stop loss points can be used based on individual risk tolerance.
- If next highest probably state is a bullish state, then aggressive traders can look to reverse short position at T3.

State 3, 5, 7

Buy signal - entry
T1 – Sell 50% of position
T2 – Sell 25% of position
T3 – Sell 25% of position

- Stop loss points can be used based on individual risk tolerance.

  *Transition days are important to trade, but state paths and next highest probable state are as equally important for your trading plan. If a stock is in a bullish state with next highest probable state another bullish state, then a trader could be aggressive with the targets and hold through the next transition.

State 2, 4, 6

Sell signal - entry
T1 – Buy 50% of position
T2 – Buy 25% of position
T3 – Buy 25% of position

- Stop loss points can be used based on individual risk tolerance.

* If a stock is in a bearish state with next highest probable state another bearish state, then a trader could be aggressive with the targets and hold through the next transition.

Most Common State Paths

State Path: 1->2->1

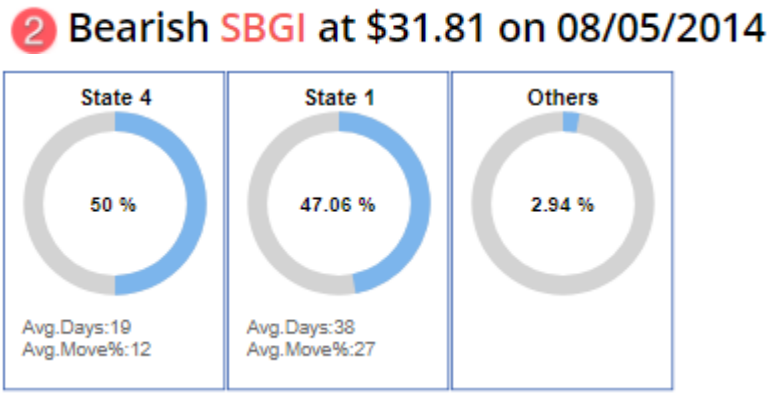
After a state 1 and currently in state 2, look for the next highest probable state. If the highest probable state is state 1, look for a short term pullback with a reversal back to a bullish trend.

Typically, this state path is an uptrend, followed by a short term pullback then followed by a continued uptrend.

TAKE NOTE: State 2 can either be a short term pullback from an uptrend or a start of a new downtrend.

State Path: 1->2->4->8

State 2 is either a pullback from an uptrend or a start of a new downtrend. Once a stock transitions from state 1 to state 2, look for the next highest probable state. If the highest probable state is state 4, look for start of a new downtrend.

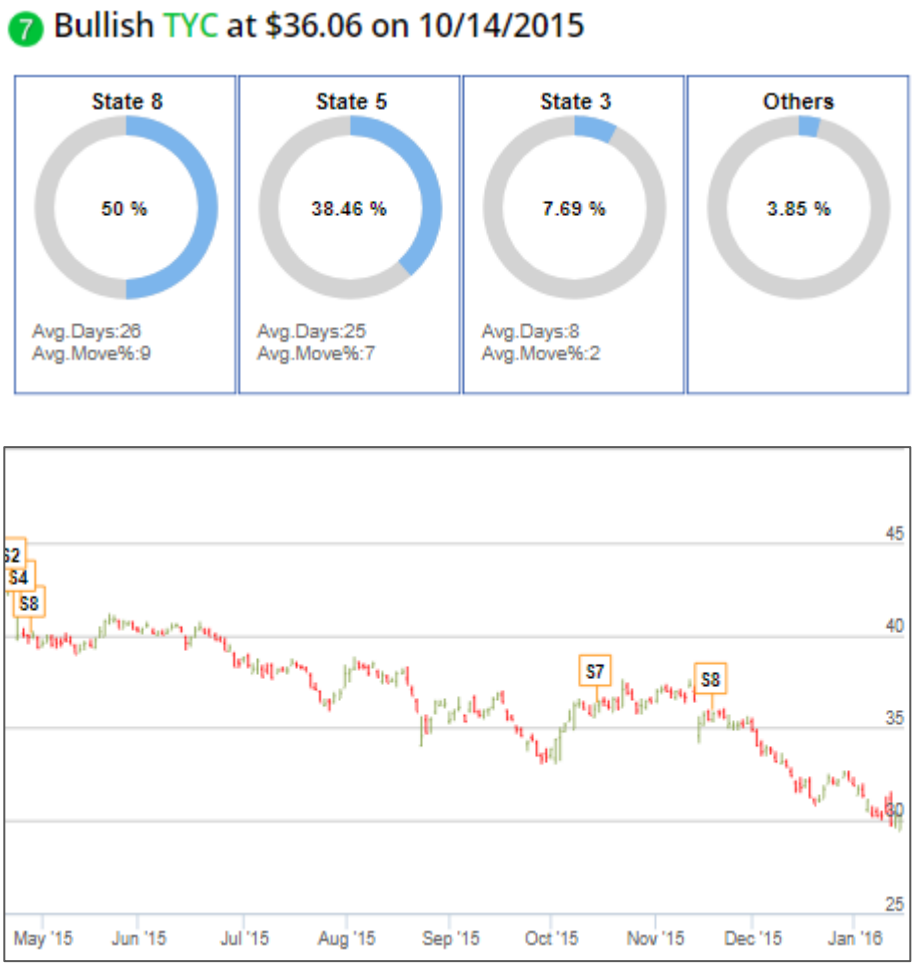


State Path: 8->7->8

After a state 8 and currently in state 7, look for the next highest probable state. If the highest probable state is state 8, look for a short term up move with a reversal back to a bearish trend.

Typically, this state path is a downtrend, followed by a short term up move then followed by a continued downtrend.

TAKE NOTE: state 7 can either be a short term move up from a downtrend or a start of a new uptrend.



State Path: 8->7->5->1

State 7 is either a pullback from a downtrend or a start of a new uptrend. Once a stock transitions from state 8 to state 7, look for the next highest probable state. If the highest probable state is state 5, look for start of a new uptrend.